EXPANDED PROJECT NOTIFICATION FORM

5 Washington Street

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

Submitted by:
Five Washington Square Owner LLC
257 Highland Avenue
Needham, MA 02494

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

In Association with:
Stantec Architecture
Mel Shuman Law
Howard Stein Hudson
Bohler Engineering
RW Sullivan Engineering
McPhail Associates, LLC

January 12, 2018

Epsilon
ASSOCIATES INC.

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Chapter 1.0

Introduction/ Project Description

1.0 INTRODUCTION/ PROJECT DESCRIPTION

1.1 Introduction

5 Washington Square Owner LLC (the Proponent), proposes to develop an approximately 43,500 square foot (sf) site (the Project site) at 5 Washington Street in Brighton (the Project). The existing site consists of a gas station, a service station, office space, and surface parking spaces. The site will be developed into an approximately 132,500 sf building with ground floor retail space and approximately 115 units above. At the corner of Washington Street and Bartlett Crescent will be a space dedicated to local retail, to be leased at a discounted rate with flexible lease terms to support new business creation. Approximately 104 parking spaces will be provided in a two-level garage that is partially below grade.

The Project will improve the vehicular and pedestrian experience by consolidating multiple curb cuts into a single entrance, creating a consistent street wall closer to the street with expanded sidewalks and visible residential and retail entrances. Improvements to the streetscape will further enhance the site and the surrounding area. The residential entrance will include new landscaped open space with seating that will be open for use by both the neighborhood and the building residents. In addition to the benefits to the public realm, the Project also provides new housing, including new affordable housing, construction and permanent jobs, significant on-site environmental remediation, and improved tax revenues for the City.

Because the proposed Project exceeds 50,000 square feet of gross floor area, the Project is subject to the requirements of Large Project Review pursuant to Article 80 of the Boston Zoning Code (the Code). This Expanded Project Notification Form (PNF) is being submitted to the Boston Redevelopment Authority (BRA), doing business as Boston Planning and Development Agency (herein, the BPDA) to initiate review of the Project under Article 80B, Large Project Review, of the Code.

1.2 Project Identification

Address/Location:	5 Washington Street, Brighton
Developer:	5 Washington Square Owner LLC 257 Hillside Avenue Needham, MA 02494 Justin D. Krebs Matthew J. Faris Andrew Tibma

Architect:	Stantec Architecture 311 Summer Street Boston, MA 02210 (617) 234-3100 James Gray Tamara Roy Brett Eksuzian
Legal Counsel:	Mel Shuman Law 189 Eliot Street Brookline, MA 02467 (617) 487-5228 Melvin R. Shuman
Permitting Consultant:	Epsilon Associates, Inc. 3 Mill & Main Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Dave Hewett Talya Moked
Transportation and Parking Consultant:	Howard/Stein Hudson Associates, Inc 11 Beacon Street, Suite 1010 Boston, MA 02108 (617) 482-7080 Keri Pyke Michael Littman
Civil Engineer:	Bohler Engineering 352 Turnpike Road Southborough, MA 01772 (508) 480-9900 Stephen Martorano Zachary Richards
MEP Engineer:	RW Sullivan Engineering 529 Main Street #203 Boston, MA 02129 (617) 523-8227 Dorian Alba

Geotechnical Consultant: McPhail Associates, LLC
2269 Massachusetts Avenue
Cambridge, MA 02140
(617) 868-1420
Scott Smith

1.3 Project Description

1.3.1 Project Site

The Project site is an approximately 43,500 sf site located in Brighton, and is bound by Bartlett Crescent to the east, Washington Street to the south, and Corey Road to the west. The site currently includes a gas station, a service station, approximately 22,000 sf of office space, and approximately 120 parking spaces. See Figure 1-1 for an aerial locus map and Figures 1-2 and through 1-3 for photographs of the existing conditions on the Project site. Figure 1-4 presents the existing site plan.

1.3.2 Area Context

The Project site is located in a residential neighborhood in Brighton. Immediately to the west of the site is a Whole Foods Market, and to the south of the site is the Baldwin Early Learning Center. To the east of the Project site, in Brookline, buildings range from approximately two to three stories. To the west of the site, in Boston, buildings range from approximately four to ten stories. The Project site is ideally situated to take advantage of several public transportation opportunities, and is located adjacent to the MBTA #65 bus line, approximately an eighth of a mile east of the Washington Street Station that serves the MBTA Green Line B Branch, and approximately a third of a mile west of the Washington Square Station that serves the Green Line C Branch. A Hubway station is located less than one-half mile from the site, as are several ZipCar locations.

1.3.3 Proposed Project

The Project, as shown in Table 1-1, is an approximately 132,500 sf, five-story residential building that includes approximately 115 units and approximately 12,500 sf of ground floor retail. It is anticipated that approximately 1,000 square feet of the retail space will be designated as local retail, and leased at a discounted rate. The development team has been pursuing several retail options, and there is potential for the retail space to be used as a pharmacy. The residential units will contain a mix of studios, one, two and three-bedroom apartments. The Project includes 104 parking spaces with 25 enclosed spaces at grade and 79 spaces below-grade.

Enclosed, secure storage for 115 bicycles will also be provided on the Project site for the residential units, and an additional 4 for the retail space. The Project will also contain a bicycle maintenance facility for the residents that will be conveniently located on the

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division - Data Obtained March 2014

5 Washington Street Boston, Massachusetts

Epsilon Associates Inc.

Figure 1-1
Aerial Locus Map

5 Washington Street Boston, Massachusetts

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Figure 1-2

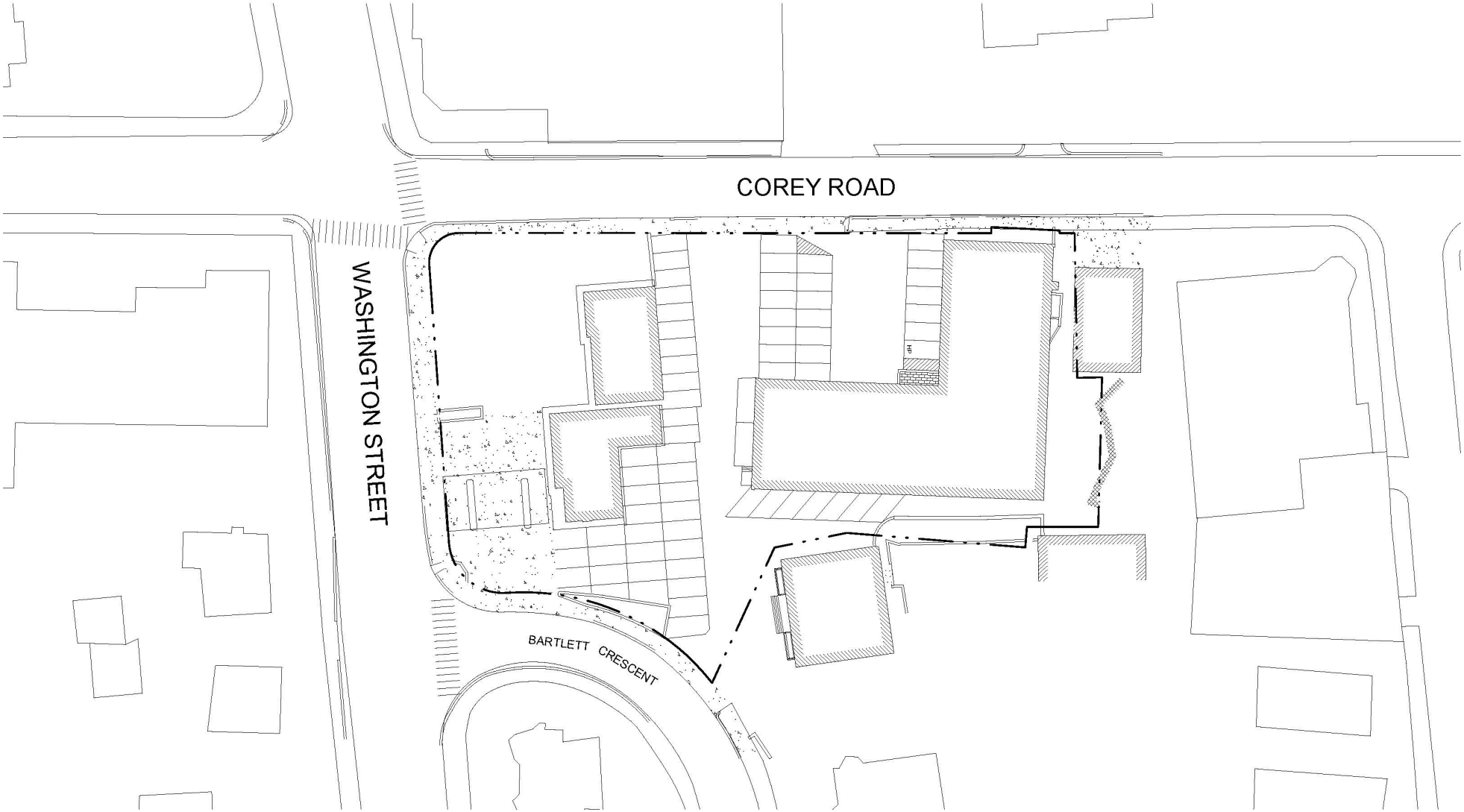
Existing Conditions from Washington Street Looking Northwest at the Site

5 Washington Street Boston, Massachusetts

Stantec

Figure 1-3

Existing Conditions from Corey Road Looking Northeast at the Site



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0 20' 40' 80'

5 Washington Street Boston, Massachusetts

Stantec

Figure 1-4

Existing Site Plan

ground floor. Additional outdoor bicycle racks will be provided and will be accessible to visitors to the site. Loading, deliveries and trash collection will take place off the street inside the at-grade level of the parking garage. A ground floor lobby, leasing offices, and common spaces on the second floor of the building that open out to a small landscaped area facing Brookline to the south are also included. See Appendix A for floor plans, elevations, and sections.

Table 1-1 Project Program

Project Element	Approximate Dimension
Residential	115 units
Retail	12,500 square feet
Floor Area, Gross*	132,500
Parking	104 spaces
Zoning Height/Stories	70 feet/five stories
Parcel Area	43,500 sf
FAR**	2.58

Unit Type	Average Size (sf)
Studio	558 sf
One Bedroom	658 sf
One Bedroom +	790 sf
Two Bedroom	984 sf
Two Bedroom +	1,041 sf
Three Bedroom	1,111 sf

*Floor Area, Gross as calculated per the Code. In accordance with the Code, the gross floor area excludes the garage space located in the basement, but includes the garage space located at grade.

**FAR as calculated per the Code. In accordance with the Code, floor area required to meet the off-street parking requirements of the Code is excluded for purposes of calculating FAR. Under Section 51-56 of the Code, parking requirements are determined through review of the Project under Article 80. Accordingly, all parking areas, including those located at grade, have been excluded in calculating FAR since the parking ultimately approved for the Project during the Article 80 process will be required to meet the requirements of the Code.

The Project's parking spaces located in the building will be accessible from Corey Road. The entrance to the retail space will be at the intersection of Washington Street and Corey Road, a convenient and visible location for both pedestrians and automobiles. The residential entrance will be located on Washington Street adjacent to a new landscaped open space. All existing curb cuts on Washington Street will be closed. See Figure 1-5 for a site plan.

The Project will transform a blighted site currently used for a gas station and offices into a distinctive residential building with ground floor retail space and related sidewalk improvements and landscaping. Rather than the constant flow of cars entering and exiting the site from multiple curb cuts as is typical of a gas station, the Project will result in an active pedestrian environment with a single curb cut, more suitable to this thriving

5 Washington Street Boston, Massachusetts

Stantec

Figure 1-5

Proposed Site Plan

residential neighborhood. As part of the Project, the Proponent will bring all abutting sidewalks and pedestrian ramps to the City of Boston standards in accordance with the Boston Complete Streets design guidelines. This will include the reconstruction and widening of the sidewalks where possible, the installation of new, accessible ramps, improvements to street lighting where necessary, planting of street trees, and providing bicycle storage racks surrounding the site, where appropriate.

1.4 Public Benefits

Transforming the site into an approximately 115-unit residential building with ground floor retail space will provide active edges to this busy intersection in Brighton. The Project will include numerous benefits to the neighborhood and the City of Boston, including but not limited to:

- Creation of approximately 1,000 sf of local retail space to be leased at a discount to market rents with the flexible lease terms needed to support the creation of new local business enterprises;
- Creation of approximately 115 new residential units proximate to public transportation;
- Increase the City's affordable housing stock in accordance with the Mayor's Executive Order Relative to Affordable Housing. Pursuant to the City of Boston's Inclusionary Development Policy (IDP), Five Washington Square Owner LLC will comply with the same by providing 15 affordable units on the site. Should the unit count change through the community and permitting process, the number of units would be adjusted accordingly. These units will comply with the income levels in the IDP of at or below 70% of the Area Median Income;
- As part of the Project's construction, significant environmental remediation will be performed on the site;
- Creation of approximately 250 construction jobs and fifteen permanent full- and part-time jobs; and
- Increased property tax revenues to the City of Boston by increasing the assessed value of the Property.

The proposed Project will provide a variety of urban design benefits to the surrounding neighborhood, including:

- Provide an improved streetscape with street trees and new lighting that will be activated with new retail space;

- Provide an outdoor space with benches, lighting, and landscape that is open to the neighboring community;
- Provide approximately 12,500 square feet of ground-floor retail or space, which will both create pedestrian activity around the site and provide amenities to the neighbors and building residents;
- Improve the urban design characteristics and aesthetic character of the Project surroundings through the introduction of high-quality architecture to the site; and
- Comply with Article 37 of the Code by being Leadership in Energy and Environmental Design (LEED) certifiable.

1.5 City of Boston Zoning

As indicated in Maps 7A-7D of the Boston Zoning Maps, the Project site is located within the Washington Street Neighborhood Shopping (NS-1) subdistrict established within the Allston Brighton Neighborhood District established by Code Article 51. The Project site is not located within either the Neighborhood Design Overlay District or the Greenbelt Protection Overlay District areas of Article 51. Since the Project involves a proposal to erect a building having a gross floor area of more than fifty thousand (50,000) square feet, the Project is subject to the Section 80B Large Project Review process in accordance with the Code Section 80B-2.2(a).

Use

The Project's primary use as a multi-family residential building as well as the parking garage use of the Project are conditional uses within the NS subdistrict in which the Project site is located. The Project may also include two parking spaces dedicated to use by Zipcar or another car-sharing service. Such use will require a variance if it is deemed to be a "rental agency for cars".

Project Dimensions

The dimensional zoning requirements applicable to the Project are as follows:

Dimensional Zoning Category	Maximum FAR	Maximum Building Height	Minimum Lot Size	Minimum Lot Area per Dwelling Unit	Minimum Usable Open Space per Dwelling Unit
Required Condition	1.0	35′	None	None	50 sf
Proposed Condition	2.58	69′-11″	43,476 sf	N/a	50 sf
Relief Required?	Yes	Yes	No	No	No

Dimensional Zoning Category	Minimum Lot Width	Minimum Lot Frontage	Minimum Front Yard	Minimum Side Yard	Minimum Rear Yard
Required Condition	None	None	None	None	20′
Proposed Condition	N/a	N/a	N/a	N/a	0′
Relief Required?	No	No	No	No	Yes

Parking and Loading

Code Section 51-56, Off-Street Parking and Loading Requirements, provides that, for any Proposed Project subject to Large Project Review, the number of "required off-street parking spaces and off-street loading facilities shall be determined through such review in accordance with the provisions of Article 80." The Project proposes to supply 104 off-street parking spaces and one off-street loading bay as shown on the Project plans.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

There are no legal judgments adverse to the proposed Project.

1.6.2 History of Tax Arrears on Property

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

1.6.3 Site Control/ Public Easements

5 Washington Square Owner LLC entered into a 99-year ground lease with JMD 5 Wash, LLC in June of 2017. The ground lease covers parcels known as 3 Washington Street, 5 Washington Street and 165-167 Corey Road located in the Brighton section of Boston, Massachusetts. The ground lease also includes two small parcels known as 43 and 51 Bartlett Crescent in the Town of Brookline.

The site is subject to sewer easements benefitting the City of Boston.

See Appendix B for a site survey.

1.7 Anticipated Permits

Table 1-2 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project, based on currently available information. It is possible that some of these permits or actions will not be required, or that additional permits or actions will be required.

Table 1-2 Anticipated Permits and Approvals

Agency	Approval
Local	
Boston Civic Design Commission	Design Review
Boston Employment Commission	Construction Employment Plan
Boston Inspectional Services Department	Building Permit; Other construction-related permits; Certificates of Occupancy
Boston Landmarks Commission	Article 85 Demolition Delay Review
Boston Public Works Department	Curb Cut Permit(s); Sidewalk Occupancy Permit (as required)
Boston Planning and Development Agency	Article 80B Large Project Review; Cooperation Agreement; Affordable Housing Agreement;
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Agreement
Boston Water and Sewer Commission	Site Plan Review; Water and Sewer connection permits;
Office of Jobs and Community Services	Permanent Employment Agreement (as required)
Public Improvement Commission	Air and Subsurface Discontinuances; Permits/Canopy Licenses for signs and awnings (as required); Specific Repair Plan
Federal	
Environmental Protection Agency	NPDES General Construction Permit (if required)
Federal Aviation Authority	Determination of No Hazard to Air Navigation

1.8 Public Participation

The previous owner of the Project site had originally proposed a 152,000 sf, six-story residential building with approximately 145 units and approximately 12,000 sf of ground floor retail space. Through the community process consisting of meetings with the community, the Brighton Allston Improvement Association (BAIA), the Impact Advisory Group (IAG), Boston Civic Design Commission (BCDC), BPDA, and other City agencies, the Project was revised from the original proposal to a modified six-story residential building with various massing elements at 4, 5, and 6 stories. The unit count was reduced to 118 units, and the overall architectural design was changed to better reflect the materiality existing within the neighborhood. As described in Section 1.3.3, the Proponent has further reduced the size of the Project by eliminating one story, decreasing the gross floor area to approximately 132,500 square feet and reducing the number of units to approximately 115 units.

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

1.9 Schedule

Construction is anticipated to begin in the fourth quarter of 2018 and will occur over approximately 18 months.

Chapter 2.0

Urban Design

2.0 URBAN DESIGN

2.1 Existing Urban Condition

The site at 5 Washington Street is located at a bustling corner of Washington Street and Corey Road, across from the Whole Foods Market, a community daycare center, and near several housing complexes. The Project will replace a deteriorating gas station, concrete and glass office building, and a 120-car asphalt parking lot. From an urban design perspective, this visible corner at the intersection of three streets – Washington, Corey Road, and Bartlett Crescent, will greatly benefit from having a building constructed here.

2.2 Improved Public Realm

The Project site will be transformed into a new apartment building with two retail tenants, a building lobby on the ground floor, covered parking, and two landscaped terraces. The retail will activate what are currently empty sidewalks, and the residential tenants will add new neighbors to the community. The pedestrian experience will be greatly improved, with widened sidewalks, new street trees and convenient bike racks, as well as a landscaped public open space and plaza that will provide places for the community to sit facing Bartlett Crescent (see Figure 2-1).

Sidewalk paving will be concrete, with the possible exception of the residential lobby entrance. Street lights will be selected to signal a residential presence to the Project and to tie it to the surrounding context. Along Washington Street and Cory Road, the street light fixture will be at the scale of the street, while the lighting in the open space at Bartlett Crescent will be more subdued to fit with the residential neighborhood (see Figure 2-2).

2.3 Scale and Materials

Most of the surrounding buildings between the Project site and Commonwealth Avenue are red brick apartment buildings with double hung windows, ranging in height from four to ten stories, as well as the three-story red brick Baldwin School. On the Brookline side of the site, the neighborhood is a mixture of brick, stone, and wood clapboard one-, two-, and three-family houses and a two-story medical office building.

The Project being proposed has responded to community height concerns as well as comments by the Boston Civic Design Commission (BCDC). In the first case, the original height of six stories has been reduced to five to better mediate between the larger apartment buildings to the west and the lower houses to the east. In the second case, the BCDC suggested that the building be broken down into several sections, reinforced by changes of material, so that it appears to be a compilation of several buildings rather than one large Project (see Figure 2-3).

The revised design has a mixture of gray and red brick elements as well as charcoal standing seam metal and various parapet heights, to create separate masses at the four corners of the site. The lightest gray brick faces the corner of Washington and Corey, while the red brick portions face Corey Road and Bartlett Crescent.

The Base

The base of the building is now designed to be charcoal brick, with decorative patterning and a stone base. The retail entrance at the Corey/Washington corner will be set back from the property line to enlarge the sidewalk area at this busy corner, and its signage is tucked under the building overhang (see Figure 2-4). Retail windows will be full height and open to the street. The smaller local retail near Bartlett Crescent will also include colorful canopies and large floor to ceiling windows and doors that open out into an attractive side yard with outdoor seating, landscape, and lighting (see Figure 2-5).

2.4 Recent Detail Refinement

Since its last iteration, the Project has gone through another level of design refinement, as the design and new development team focused on base, cornice, and window frame details. These changes shift the aesthetic toward a higher level of craft reminiscent of brick work from the 20th century, without being imitative. This type of brick work can be seen in many of the apartment buildings along Commonwealth Avenue – including soldier courses, stacked bond, basket weave, and others.

5 Washington Street Boston, Massachusetts

Stantec

Figure 2-1
Aerial View

5 Washington Street Boston, Massachusetts

Stantec

Figure 2-2

Washington Street facing the Open Space

5 Washington Street Boston, Massachusetts

Stantec

Figure 2-3

View from Corey Road

5 Washington Street Boston, Massachusetts

Stantec

Figure 2-4

View from the Corner of Washington Street and Corey Road

5 Washington Street Boston, Massachusetts

Stantec

Figure 2-5

View from the Corner of Washington Street and Bartlett Crescent

Chapter 3.0

Transportation Component

3.0 TRANSPORTATION

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

The intersections studied will continue to operate at the same Level of Service during the Build (2024) Condition as during the No-Build (2024) Condition during both the weekday a.m. and p.m. peak hours. The Project will have minimal impact on the study area intersections, the public transportation services, and bicycle facilities in the area, and will improve the pedestrian facilities by eliminating several curb cuts and reducing the width of the curb cut at the site driveway.

3.1 Project Description

The Project site is located on the northeast corner of the intersection of Washington Street and Corey Road. The Project site is adjacent to the MBTA bus route #65, is approximately 1,000 ft southeast of the Washington Street Station on the B Branch of the MBTA Green Line and approximately a third of a mile northwest of the Washington Square Station on the C Branch of the MBTA Green Line, providing convenient access to multiple public transportation opportunities.

The site currently contains a gasoline and service station, and a 22,000 square foot two-story office building. In total there are six curb cuts accessing the site with one along Washington Street, three along Corey Road, and two along Bartlett Crescent. Additionally, there are approximately 120 parking spaces for all existing uses (50 parking spaces that serve the gasoline/service station and 70 spaces that serve the office building).

The proposed Project will replace the existing uses on site with approximately 132,500 square feet of gross floor area in a five-story, mixed-use residential building that includes approximately 115 units and approximately 12,500 sf of ground floor retail space. The Project also includes approximately 104 parking spaces with 25 at-grade spaces and 79 spaces in the basement.

Secure storage for 119 bicycles will also be provided inside the building, as well as a bicycle maintenance facility for the residents conveniently located on the ground floor, and additional outdoor bicycle racks accessible to visitors, guests, and customers to the site. The Proponent is actively working with Zipcar to provide two car-sharing spaces on the site. There will also be two electric vehicle charging stations that will serve four parking spaces located within the garage.

Vehicular access to the garage will be provided by a single driveway along Corey Road. All existing curb cuts will be closed, improving the pedestrian environment surrounding the Project site. Primary pedestrian access to the residential units will be provided along Washington Street, and access to the retail space will be provided at the corner of Washington Street and Corey Road. Pedestrian connectivity will be provided between the garage, retail space, and residential lobby. Loading, deliveries, and trash pick-up will take place on the Project site in the garage at the ground floor.

3.1.1 Study Area

The transportation study area runs along the Washington Street corridor, bounded by Corey Road to the south, and Commonwealth Avenue to the south. The study area consists of the following intersections in the vicinity of the Project site, also shown on Figure 3-1:

- Washington Street/Corey Road;
- Washington Street/Commonwealth Avenue; and
- Washington Street/Allston Street.

3.1.2 Study Methodology

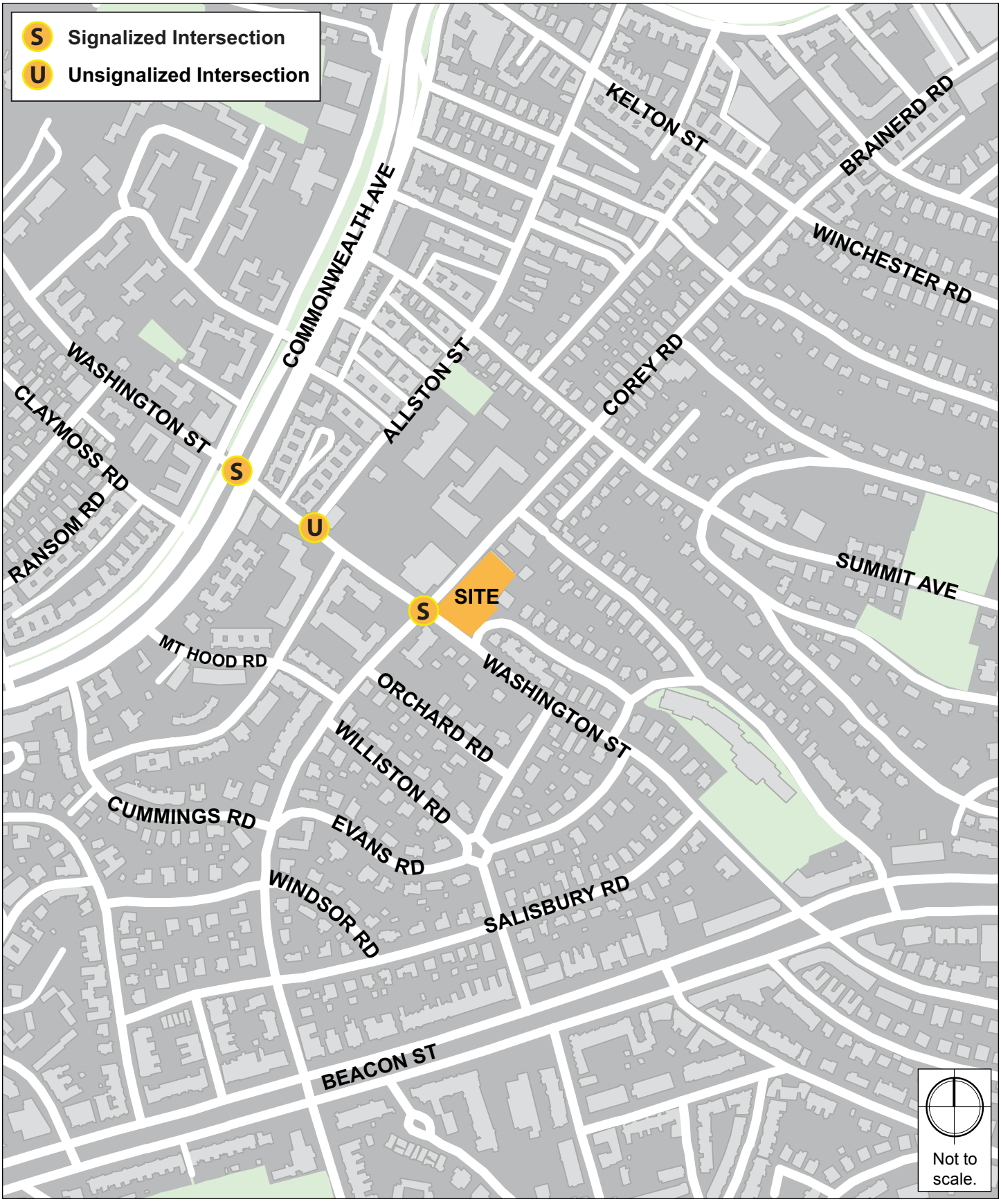
This transportation study and its supporting analyses were conducted in accordance with BTD guidelines, and are described below.

The Existing (2017) Condition analysis includes an inventory of the existing transportation conditions that was undertaken in the fall of 2017, such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for the year 2024, based on a seven-year horizon from the year of the filing of this traffic study.

The No-Build (2024) Condition analysis includes general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project site.

The Build (2024) Condition analysis includes a net change in traffic volume due to the addition of Project-generated trip estimates, to the traffic volumes developed as part of the No-Build (2024) Condition analysis. The transportation study identified expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies.



5 Washington Street Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-1
Study Area Intersections

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

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

3.2 Existing Condition

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

3.2.1 Existing Roadway Conditions

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

Commonwealth Avenue is a two-way, four lane roadway located north of the Project site. It is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately east-west direction between Route 95 in Weston to the west and Arlington Street in Boston to the east. The B Branch of the MBTA Green line travels within a wide median that separates the directions of travel along Commonwealth Avenue in the vicinity of the site. Carriage Roads are provided along both sides of Commonwealth Avenue, providing access to local destinations, parking, and minor streets. The Carriage Road along Commonwealth Avenue eastbound will be herein referred to as the "Eastbound Commonwealth Avenue Carriage Road" and the Carriage Road along Commonwealth Avenue westbound will be herein referred to as the "Westbound Commonwealth Avenue Carriage Road". Sidewalks are provided along both sides of Commonwealth Avenue. Parking is intermittently provided along the Carriage Roads.

Washington Street is a two-way, two-lane roadway located adjacent to the west side of the Project site. Washington Street is classified as an urban minor arterial roadway under BTD jurisdiction. Washington Street runs between Route 9 in Brookline to the south and Cambridge Street to the north where it continues through Brighton Center to Newton Corner. Sidewalks and parallel parking are provided along Washington Street within the study area.

Corey Road is a two-way, two-lane roadway located adjacent to the north side of the Project site. Corey Road is classified as an urban collector roadway under BTD jurisdiction. Corey Road runs in an east-west direction through the study area between Kelton Street to the east and Beacon Street to the west. Corey Road has no lane markings and parking is provided along the northern side. Sidewalks are provided on both sides of Corey Road.

Allston Street is a two-way, two-lane roadway located north of the Project site. Allston Street is classified as an urban collector roadway under BTD jurisdiction. Allston Street runs in a northeast-southwest direction through the study area between Brighton Avenue to the northeast and Washington Street to the southwest. Allston Street has no lane markings, parking on the northern side, and sidewalks on both sides of the roadway.

3.2.2 Existing Intersection Conditions

Existing conditions at the study area intersections are described below.

Commonwealth Avenue/Washington Street is a signalized, 10-legged intersection that consists of six approaches: Commonwealth Avenue eastbound and westbound, Washington Street eastbound and westbound, and the Eastbound and Westbound Commonwealth Avenue Carriage Roads. Additionally, the eastbound and westbound tracks of the MBTA Green Line B Branch travel along the median of Commonwealth Avenue across Washington Street with a station for both directions on the east side of the intersection.

Due to the complexity of the intersection, there are many turning restrictions. The Commonwealth Avenue eastbound approach consists of one through lane and one shared through/right-turn lane. Left-turns are restricted along this approach. The Commonwealth Avenue westbound approach consists of a left-turn lane and two through lanes. Right-turns are restricted along this approach. The Eastbound Commonwealth Avenue Carriage Road approach consists of one through lane and one wide shared right-turn/parking lane. Left-turns are restricted along this approach. The Westbound Commonwealth Avenue Carriage Road approach consists of a parking lane and one shared through/right-turn lane. Left-turns are restricted along this approach.

The Washington Street northbound approach consists of a single shared left-turn/through/ right-turn lane. An MBTA bus stop is located along the northbound approach at the intersection. The Washington Street southbound approach consists of a single shared left-turn/through/right-turn lane. An MBTA bus stop is located along the southbound approach. Parking is not allowed along the Washington Street approaches due to the location of the MBTA bus stops.

The traffic signal operates in four phases with concurrent pedestrian phasing provided. The Green Line trolleys run during the Commonwealth Avenue eastbound/westbound phase. Sidewalks are provided along both sides of Washington Street along the outer edge of the Carriage Roads. Crosswalks are marked across all approaches. Wheelchair ramps are provided at every point a crosswalk meets a curb except on the southwest corner of the intersection of Commonwealth Avenue westbound and Washington Street. Pedestrian signals are provided for all crossings.

Washington Street/Corey Road is a signalized, four legged intersection that consists of four approaches. The Washington Street northbound approach consists of a single shared left-turn/through/right-turn lane and an exclusive bike lane. Parking is restricted along the northbound approach. The Washington Street southbound approach consists of a single shared left-turn/through/right-turn lane. An MBTA bus stop is located along the southbound approach.

The Corey Road eastbound and westbound approaches both consist of a single shared left-turn/through/right-turn lane. Street parking is allowed on both approaches. There are no lane markings or centerline on Corey Road.

The traffic signal operates in three phases, including an exclusive pedestrian phase that is pushbutton actuated. Sidewalks, wheelchair ramps, pedestrian signals, and crosswalks are provided along all sides of the roadway and all approaches to the intersection.

Washington Street/Allston Street is an unsignalized, three-legged intersection that consists of three approaches. The Washington Street northbound approach consists of a single shared through/right-turn lane. The Washington Street southbound approach consists of a single shared left-turn/through lane with on-street parking allowed.

The Allston Street westbound approach consists of a single shared left-turn/right-turn lane under stop sign control with on-street parking allowed. The Allston Street eastbound receiving lane consists of a single travel lane with on-street parking prohibited.

Sidewalks are provided along both sides of Washington Street and Allston Street. A marked crosswalk with wheelchair ramps is provided across the Allston Street approach.

3.2.3 Existing Parking

On-street parking surrounding the Project site generally consists of no parking, two-hour parking, residential permit parking, and unrestricted parking. Corey Road, adjacent to the north side of the Project site, is signed as resident only parking. Washington Street to the west of the Project site is signed for no parking, unrestricted parking, and two-hour parking. The on-street parking regulations within the study area are shown on Figure 3-2.

The existing Project site currently contains approximately 120 parking spaces in surface lots that serve the office building and the service station uses.

3.2.3.1 Car Sharing Services

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

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Figure 3-2
On-Street Parking

Zipcar is the primary company in the Boston car sharing market. There are currently five Zipcar locations within a half-mile walk of the Project site. The nearby car sharing locations are shown in Figure 3-3.

3.2.4 Existing Traffic Data

Traffic volume data was collected at the three study area intersections on November 16, 2017. Turning Movement Counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. peak period and the weekday p.m. peak period (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively). The traffic classification counts included car, heavy vehicle, pedestrian, and bicycle movements. The detailed traffic counts are provided in Appendix C.

3.2.4.1 Seasonal Adjustment

To account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT was reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the November 2017 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) is 0.97. This indicates that average month traffic volumes are approximately three percent less than the traffic volumes that were collected. Therefore, the traffic counts were not adjusted downward to reflect average month conditions, and provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in Appendix C.

3.2.4.2 Existing Vehicular Traffic Volumes

The existing traffic volumes that were collected in November 2017 were balanced through the network, and then used to develop the Existing (2017) Condition traffic volumes. The Existing (2017) weekday a.m. and p.m. peak hour traffic volumes are shown in Figure 3-4 and Figure 3-5, respectively.

3.2.5 Existing Pedestrian Volumes and Accommodations

Sidewalks are provided along all roadways and are generally in good condition near the Project site. Crosswalks and pedestrian curb ramps are provided at the study area intersections, with pedestrian signal equipment and phasing at the two signalized intersections. Washington Street provides the primary pedestrian routes to popular destinations such as the MBTA Green Line stations along the B and C Branches, and to other nearby retail and commercial opportunities.

To estimate the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs on November 16, 2017 at the study area intersections and are presented in Figure 3-6.

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Figure 3-3
Car Sharing Services

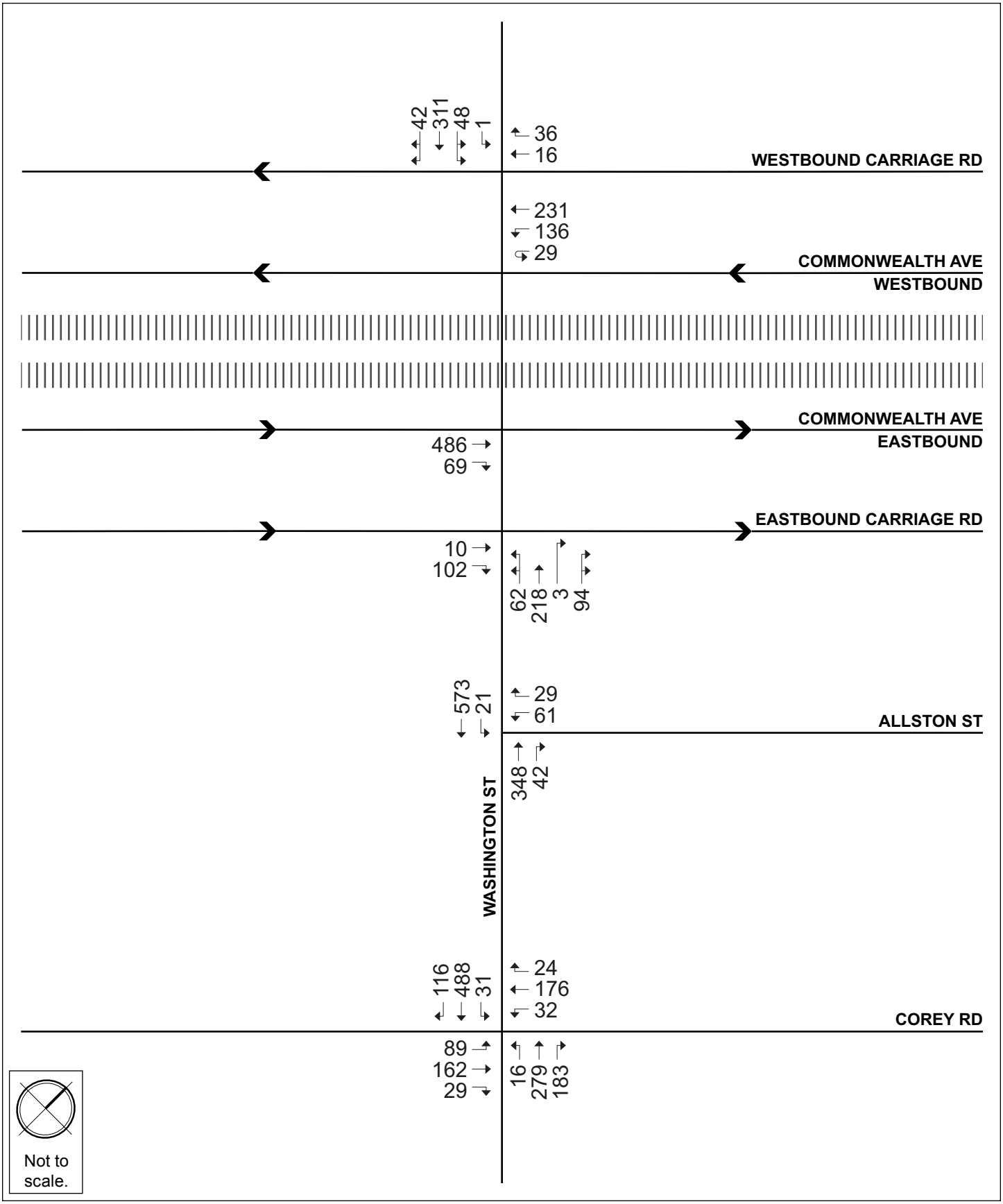

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Figure 3-4

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

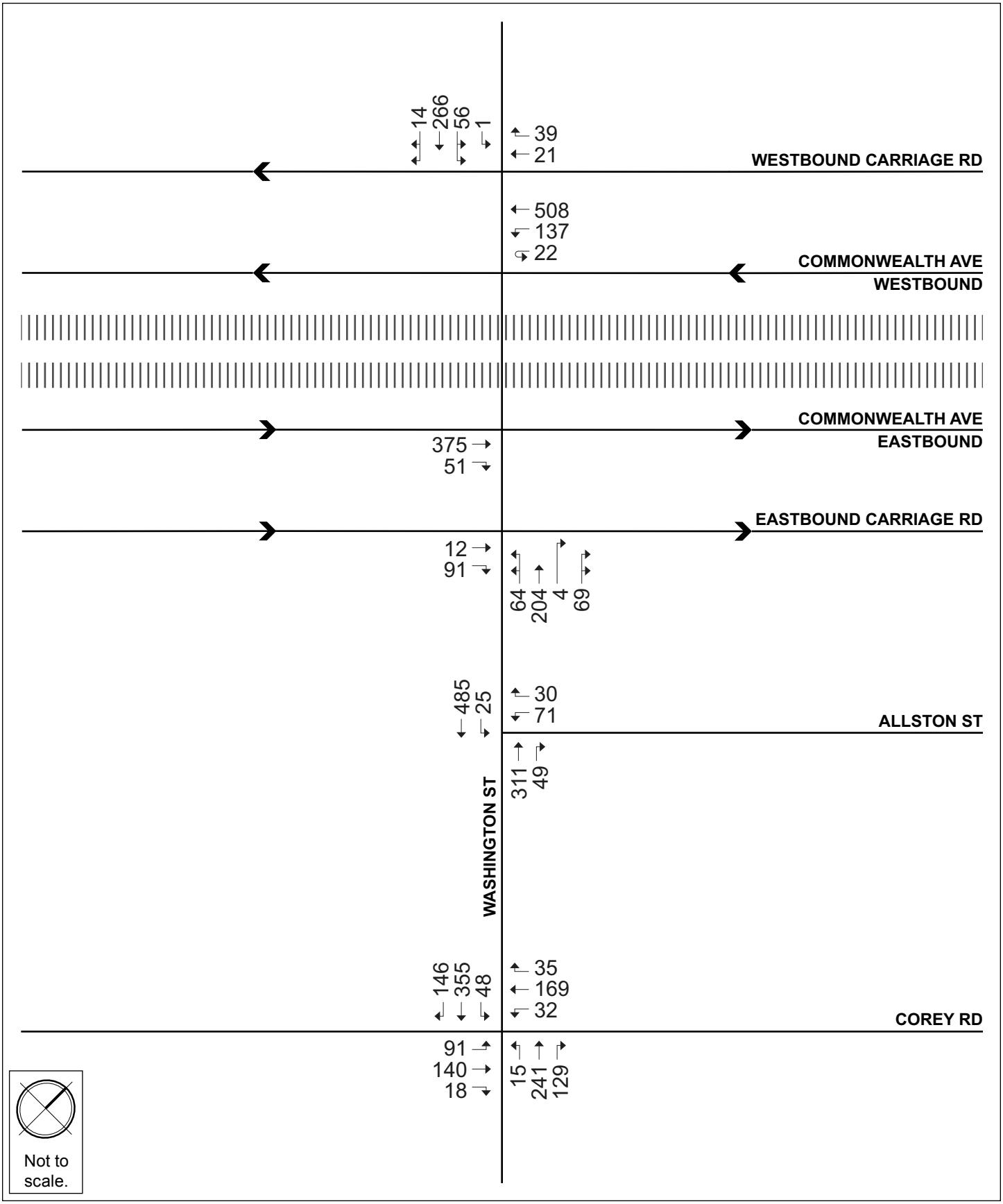

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Figure 3-5

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

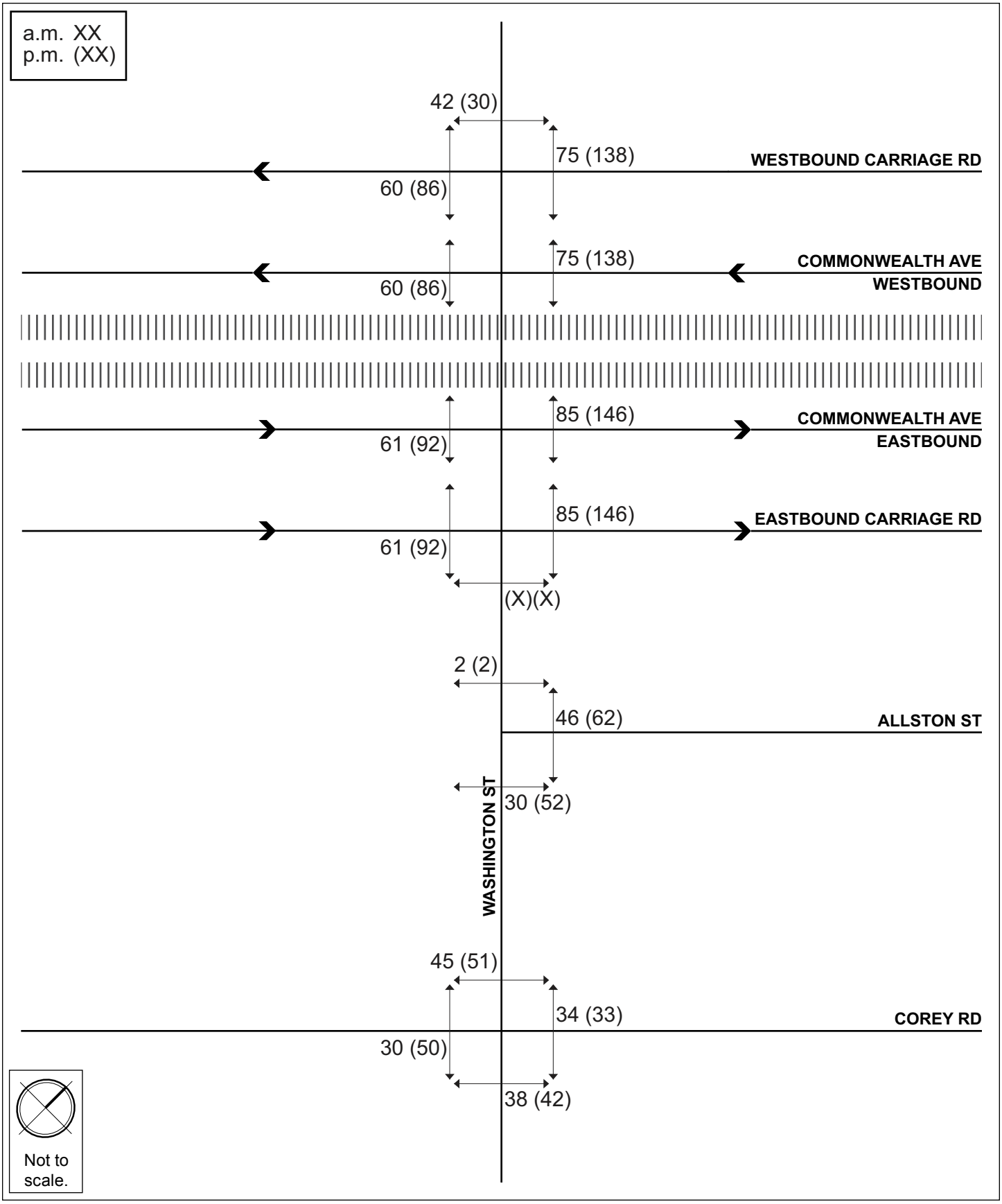

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Figure 3-6

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

3.2.6 Existing Bicycle Volumes and Accommodations

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is conveniently located in close proximity to several bicycle facilities. The City of Boston's "Bike Routes of Boston" map shows Allston Street is designated as an intermediate route, suitable for riders with some on-road experience. Washington Street and Commonwealth Avenue are designated as advanced routes, suitable for experienced and traffic confident cyclists. Bicycle lanes are provided along Washington Street within the Town of Brookline, immediately east of the Project site. The eastbound and westbound Carriage Roads on Commonwealth Avenue are marked with sharrows for cyclists.

Bicycle counts were conducted concurrent with the vehicular TMCs on November 16 2017, and are presented in Figure 3-7.

3.2.6.1 Bicycle Sharing Services

The Project site is also located in proximity to bicycle sharing stations provided by Hubway. Hubway is the bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 185 stations and 1,800 bicycles in four municipalities. There is one Hubway located at Washington Street/Beacon Street to the south of the Project site, as shown in Figure 3-8.

3.2.7 Existing Public Transportation Services

The Project site is located in Boston's Brighton neighborhood with several different public transportation opportunities. The MBTA Green Line and the MBTA Bus Route 65 provide access across the city.

Figure 3-9 maps all of the public transportation service located in close proximity of the Project site, and Table 3-1 provides a brief summary of all routes.

Table 3-1 Existing Public Transportation Service Summary

Route	Description	Peak-hour Headway (in minutes)*	Weekday Service Duration
Rapid Transit Routes			
Green Line	B Branch: Park Street – Boston College	5-7	5:01 a.m. to 12:52 a.m.
	C Branch: North Station – Cleveland Circle	6-7	5:01 a.m. to 12:46 a.m.
	D Branch: Government Center – Riverside	5-6	6:14 a.m.–1:00 a.m.
Local Bus Routes			
65	Brighton Center – Kenmore Station	10	9:05 a.m.–8:58 p.m.

* Headway is the time between buses.

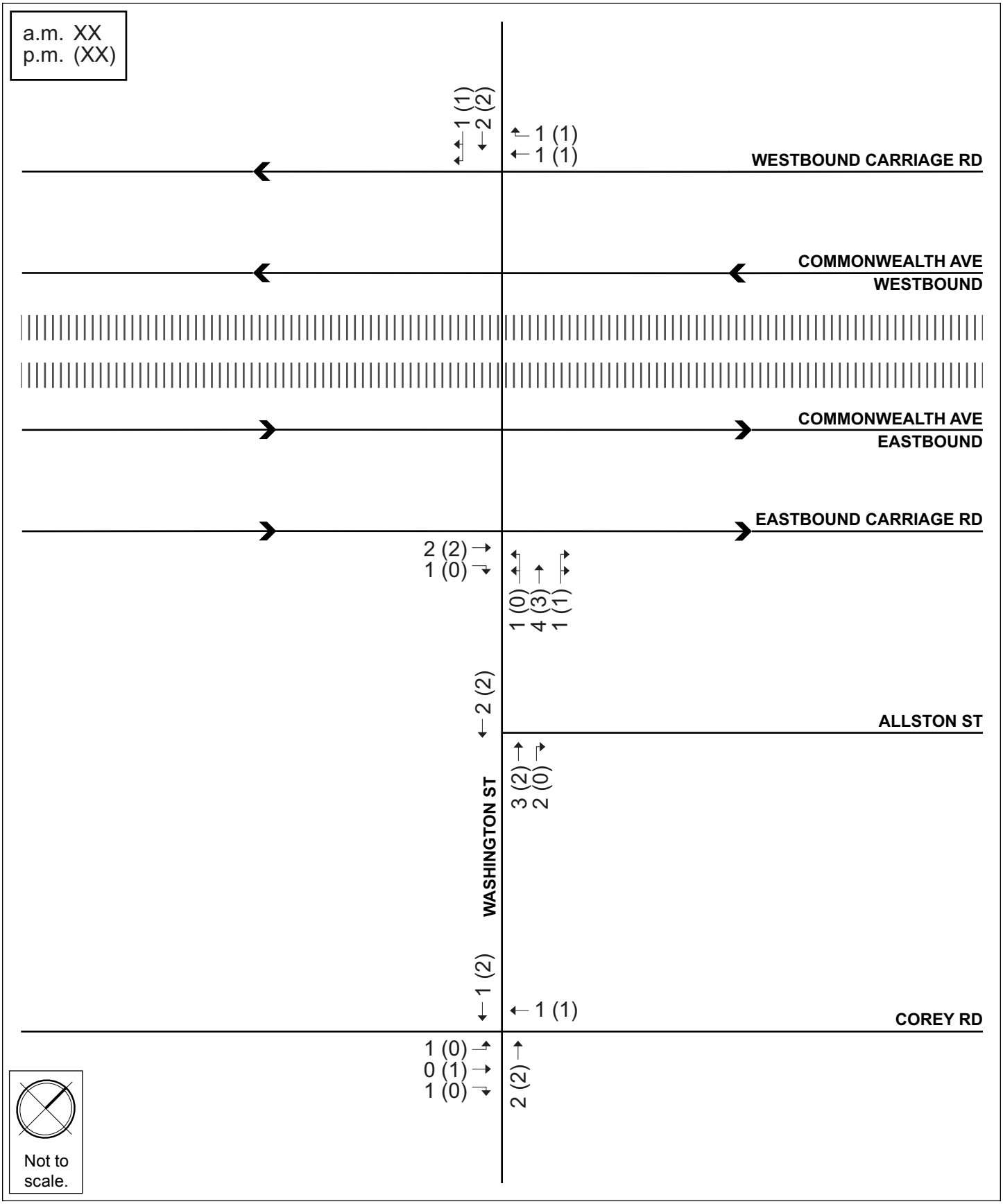

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Figure 3-7

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

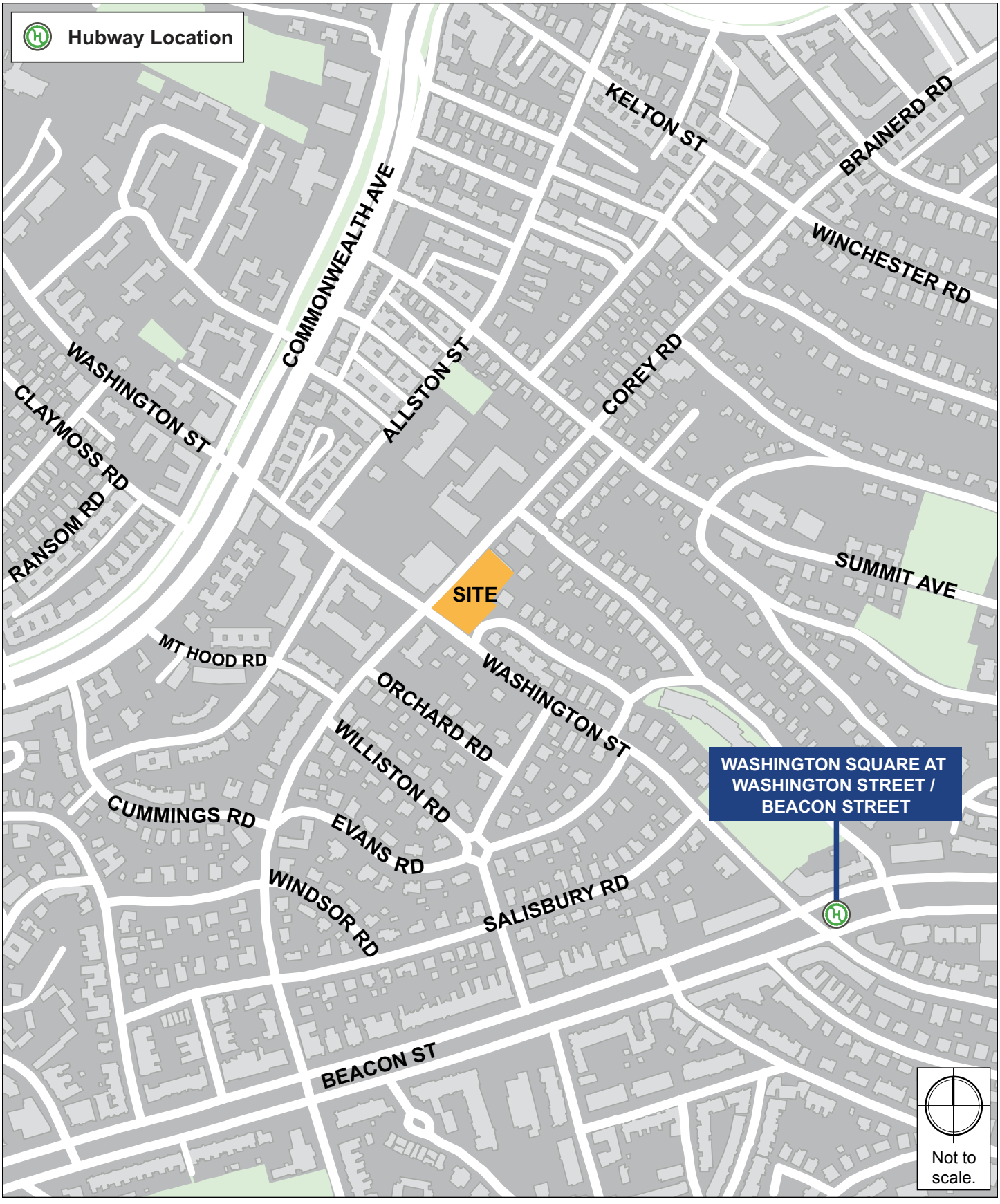

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Figure 3-8
Bicycle Sharing Services

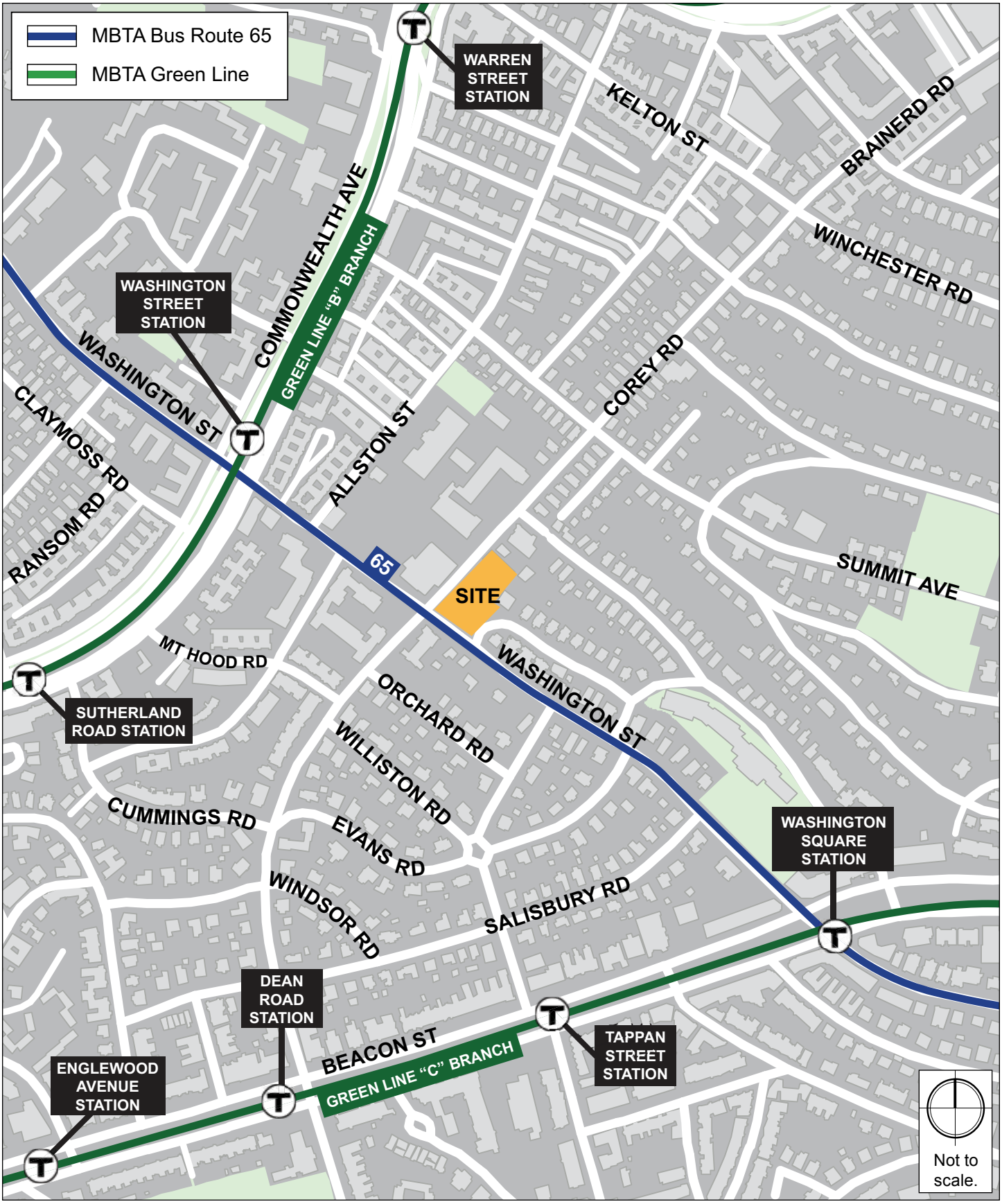

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Figure 3-9
Public Transportation

3.2.8 Existing (2017) Condition Traffic Operations Analysis

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM).

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

Table 3-2 Vehicle Level of Service Criteria

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

Source: 2000 Highway Capacity Manual, Transportation Research Board.

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

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

The 95th percentile queue, measured in feet, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs five percent, or less, of the time during the peak hour, and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" condition. Queues at

an intersection are generally below the 95th percentile length throughout most of the peak hour. It is also unlikely that 95th percentile queues for each approach to an intersection occur simultaneously.

Table 3-3 and Table 3-4 summarize the Existing (2017) Condition capacity analysis for the study area intersections during the weekday a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

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

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Washington Street/Corey Road	**D**	**41.2**	-	-	-
Corey Road EB left/thru/right	F	83.3	0.97	187	#351
Corey Road WB left/thru/right	D	41.1	0.60	145	227
Washington Street NB left/thru/right	C	25.9	0.65	250	366
Washington Street SB left/thru/right	C	34.5	0.83	364	#572
Commonwealth Avenue/Washington Street	**C**	**20.3**	-	-	-
Commonwealth Avenue EB thru|thru/right	C	27.7	0.40	163	236
Eastbound Carriage Road EB thru	C	26.7	0.01	5	20
Eastbound Carriage Road EB right	A	6.6	0.22	0	41
Commonwealth Avenue WB u-turn/left	E	67.1	0.72	126	#205
Commonwealth Avenue WB thru|thru	C	22.4	0.15	58	96
Westbound Carriage Road WB thru/right	D	40.4	0.16	36	78
Washington Street NB thru/right	C	35.0	0.63	255	326
Washington Street SB left/thru/right	D	35.5	0.65	271	344
Unsignalized					
Washington Street/Allston Street	**-**	**-**	-	-	-
Allston Street WB left/right	D	25.2	0.35	-	38
Washington Street NB thru/right	A	0.0	0.25	-	0
Washington Street SB left/thru	A	0.6	0.02	-	2

Grey Shading indicates LOS E or F.
95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

Table 3-4 Existing (2017) Condition, Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Washington Street/Corey Road	**D**	**37.5**	-	-	-
Corey Road EB left/thru/right	F	80.2	0.94	159	#302
Corey Road WB left/thru/right	D	41.2	0.59	136	215
Washington Street NB left/thru/right	C	21.2	0.48	173	257
Washington Street SB left/thru/right	C	27.7	0.71	282	415
Commonwealth Avenue/Washington Street	**B**	**19.2**	-	-	-
Commonwealth Avenue EB thru|thru/right	C	22.9	0.29	110	178
Eastbound Carriage Road EB thru	C	23.7	0.02	6	21
Eastbound Carriage Road EB right	A	5.7	0.22	0	34
Commonwealth Avenue WB u-turn/left	E	65.4	0.69	120	195
Commonwealth Avenue WB thru|thru	C	20.7	0.29	126	200
Westbound Carriage Road WB thru/right	D	35.9	0.15	39	86
Washington Street NB left/thru/right	D	37.8	0.60	230	281
Washington Street SB left/thru/right	D	37.9	0.61	237	289
Unsignalized					
Washington Street/Allston Street	**-**	**-**	-	-	-
Allston Street WB left/right	C	24.4	0.36	-	40
Washington Street NB thru/right	A	0.0	0.22	-	0
Washington Street NB left/thru	A	0.7	0.02	-	2

Grey Shading indicates LOS E or F.
95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

As shown in Table 3-3 and Table 3-4, the majority of intersections and approaches have acceptable operations (LOS D or better) under the Existing (2017) Condition with the following exception:

- The **Washington Street/Corey Road** intersection operates at LOS D during both the a.m. and p.m. peak hours. The Corey Road eastbound approach operates at LOS F during both the a.m. and p.m. peak hours. This is due to the high volume of left turning vehicles in the shared eastbound approach lane paired with the lack of gaps in the westbound direction. The longest queue lengths occur at the Washington Street southbound approach during both the a.m. and p.m. peak hours ranging from 282 feet (11 vehicles) to approximately 572 feet (23 vehicles).

- The **Commonwealth Avenue/Washington Street** intersection operates at LOS C during the a.m. peak hour and LOS B during the p.m. peak hour. The Commonwealth Avenue westbound u-turn/left-turn approach operates at LOS E during both the a.m. and p.m. peak hours. The longest queue lengths occur at the Washington Street southbound approach during both the a.m. and p.m. peak hours ranging from 237 feet 9 vehicles to approximately 344 feet (14 vehicles).

3.3 No-Build (2024) Condition

The No-Build (2024) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements.

3.3.1 Background Traffic Growth

The methodology to account for future traffic growth, independent of the Project, consists of two parts. The first part of the methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. Based on a review of recent and historic traffic data collected for nearby projects and to account for any additional unforeseen traffic growth, a one-half percent per year annual traffic growth rate was used to develop the future conditions traffic volumes.

3.3.2 Specific Development Traffic Growth

The second part of the methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon. Nine projects have been identified and were specifically accounted for in the future traffic growth. Figure 3-10 shows the specific development projects in the vicinity of the study area, which are summarized below:

Brighton Marine Residences – This project is located to the northwest of the Project site and will consist of replacing five medical use buildings with approximately 101 mixed-income residential units and 101 parking spaces that will be split between surface and garage spaces. This project has been approved by the BPDA.

375 Chestnut Hill Avenue-Cleveland Circle Cinema – This project is located to the southwest of the Project site and will consist of a 181 room hotel, 82 residential units, 19,000 sf of medical offices, 14,200 sf of retail space and 228 parking spaces split between surface and underground spaces. This project has been approved by the BPDA.

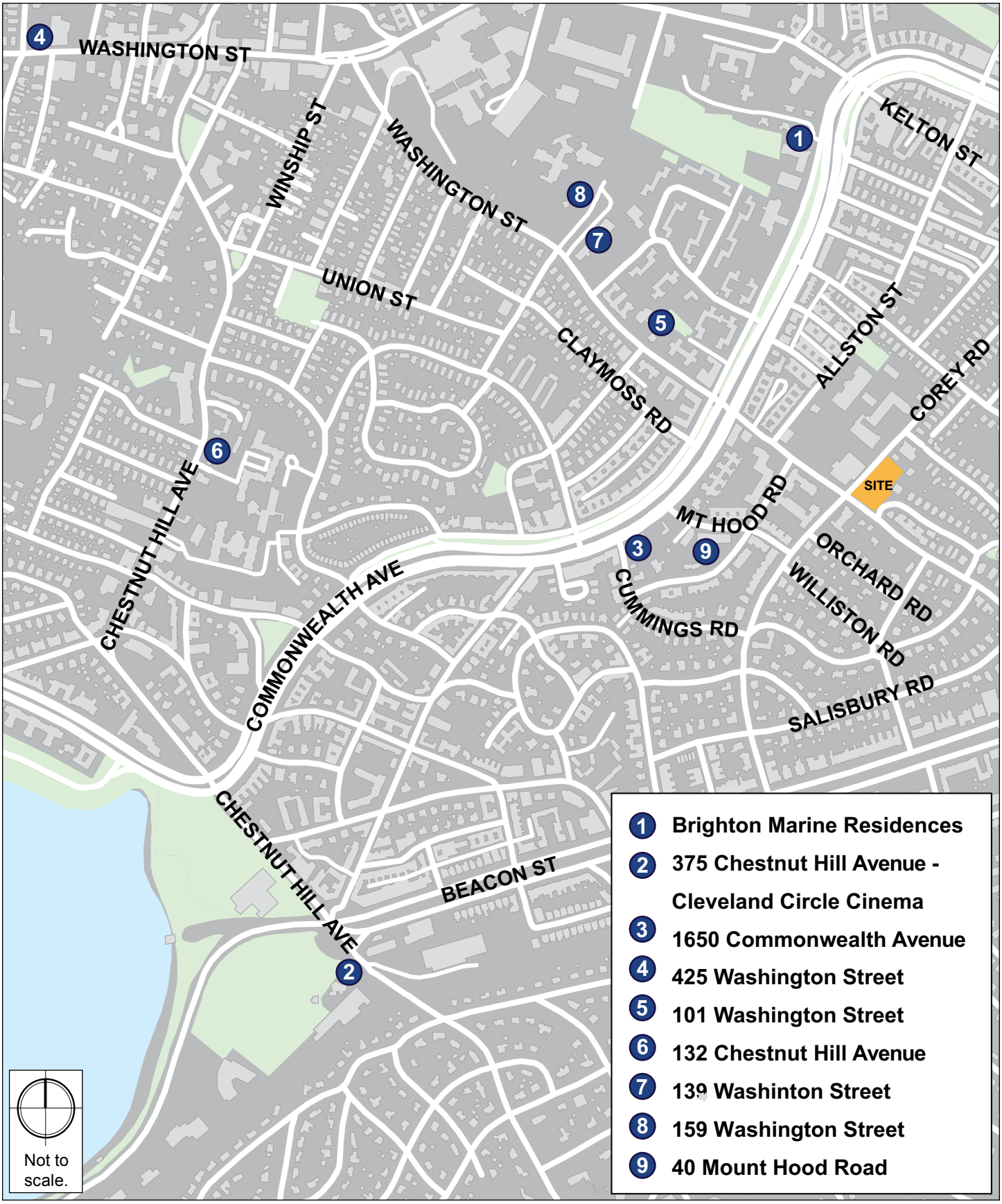

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Figure 3-10
Background Projects

425 Washington Street – This project is located to the northwest of the Project site and will consist of approximately 54 residential units, 14,200 sf of ground floor retail space, and 125 off-street parking spaces. This project has been approved by the BPDA.

101 Washington Street – This project is located to the west of the Project site and will consist of an approximately seven story residential building containing 73 units, two story Mikvah, and two story Synagogue. The project will include 12 surface parking spaces as well as 64 parking spaces and 73 bicycle storage spaces in a below-grade garage. This project has been approved by the BPDA.

1650 Commonwealth Avenue – This project is adjacent to the northwest side of the Project site and will consist of the construction of a five-story building containing 39 residential units, 2,600 sf of retail on the ground floor, and 35 at-grade parking spaces. This project is under construction.

132 Chestnut Hill Avenue – This project is located to the west of the Project site and will consist of the construction of a six-story building containing approximately 61 apartments and 3,500 sf of ground floor retail space. The project will include 21 at grade parking spaces, 6 of which are to be dedicated to retail use and the remaining 15 for residential. This project is under construction.

139-149 Washington Street – This project is located to the northwest of the Project site and will consist of a five story residential rental building containing approximately 250 apartment units, a five story residential condominium building containing approximately 30 condominium units. The project will include 220 at grade garage spaces in the lower levels of the apartment complex and 30 at grade spaces in the lower level of the condominium complex. The project is under review by the BRA.

159-201 Washington Street – This project is located to the northwest of the Project site and will consist of the restoration of the Saint Gabriel's Monastery, Pierce House, and the verdant landscaping along Washington Street. The project will consist of the construction of 679 residential units in three new buildings as well as within the renovated Saint Gabriel's Monastery and the demolition of the Saint Gabriel's church and attached dormitory. There will be a total of 395 parking spaces split between the lower levels of two buildings. This project has been approved by the BPDA.

40 Mt Hood Road– This project is located to the west of the Project site. The project will include the demolition of the existing Best Western University Hotel with 74 rooms and consist of the construction of approximately 178 residential units with 142 parking spaces split between two garage levels. The project has submitted a Letter of Intent to the BPDA.

3.3.3 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. Based on this review, there are no proposed improvement projects in the vicinity of the study area.

3.3.4 No-Build (2024) Condition Traffic Volumes

The one-half percent per year annual growth rate, compounded annually, was applied to the Existing (2017) Condition traffic volumes, then the traffic volumes associated with the background development projects listed above were added to develop the No-Build (2024) Condition traffic volumes. The No-Build (2024) weekday a.m. peak hour and p.m. peak hour traffic volumes are shown on Figures 3-11 and Figure 3-12, respectively.

3.3.5 No-Build (2024) Condition Traffic Operations Analysis

The No-Build (2024) Condition capacity analysis uses the same methodology as the Existing (2017) Condition capacity analysis. Table 3-5 and Table 3-6 present the No-Build (2024) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

Table 3-5 No-Build (2024) Condition, Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Washington Street/Corey Road	**D**	**50.9**	-	-	-
Corey Road EB left/thru/right	F	118.5	1.10	~232	#402
Corey Road WB left/thru/right	D	41.7	0.61	151	236
Washington Street NB left/thru/right	C	27.2	0.68	268	391
Washington Street SB left/thru/right	D	42.3	0.90	421	#660
Commonwealth Avenue/Washington Street	**C**	**21.6**	-	-	-
Commonwealth Avenue EB thru|thru/right	C	31.3	0.47	196	254
Eastbound Carriage Road EB thru	C	27.2	0.02	6	20
Eastbound Carriage Road EB right	A	6.7	0.25	0	42
Commonwealth Avenue WB u-turn/left	E	70.4	0.76	136	#234
Commonwealth Avenue WB thru|thru	C	24.7	0.18	75	109
Westbound Carriage Road WB thru/right	D	43.0	0.20	45	87
Washington Street NB thru/right	C	32.0	0.61	250	355
Washington Street SB left/thru/right	D	36.0	0.72	319	445

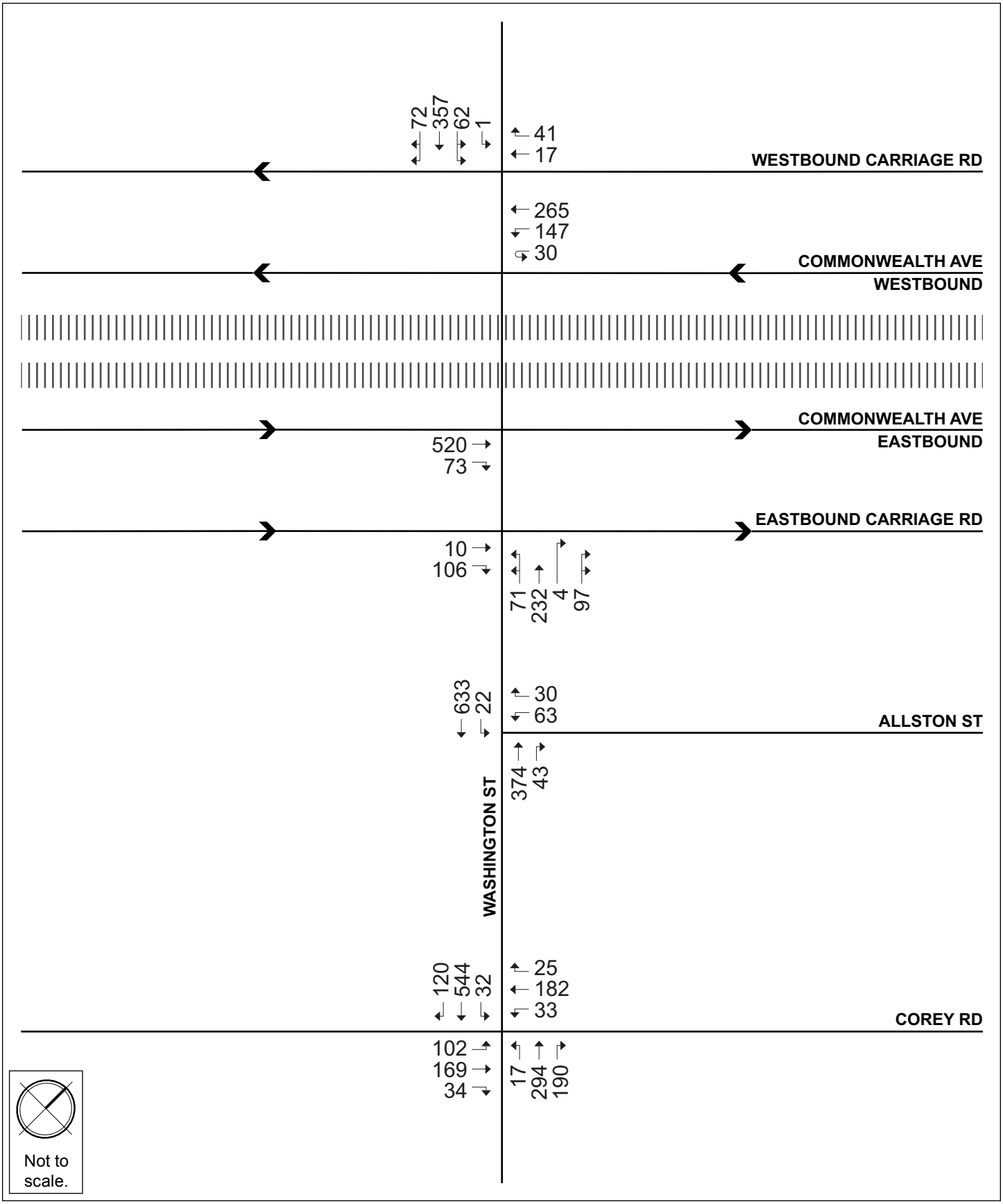

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Figure 3-11

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

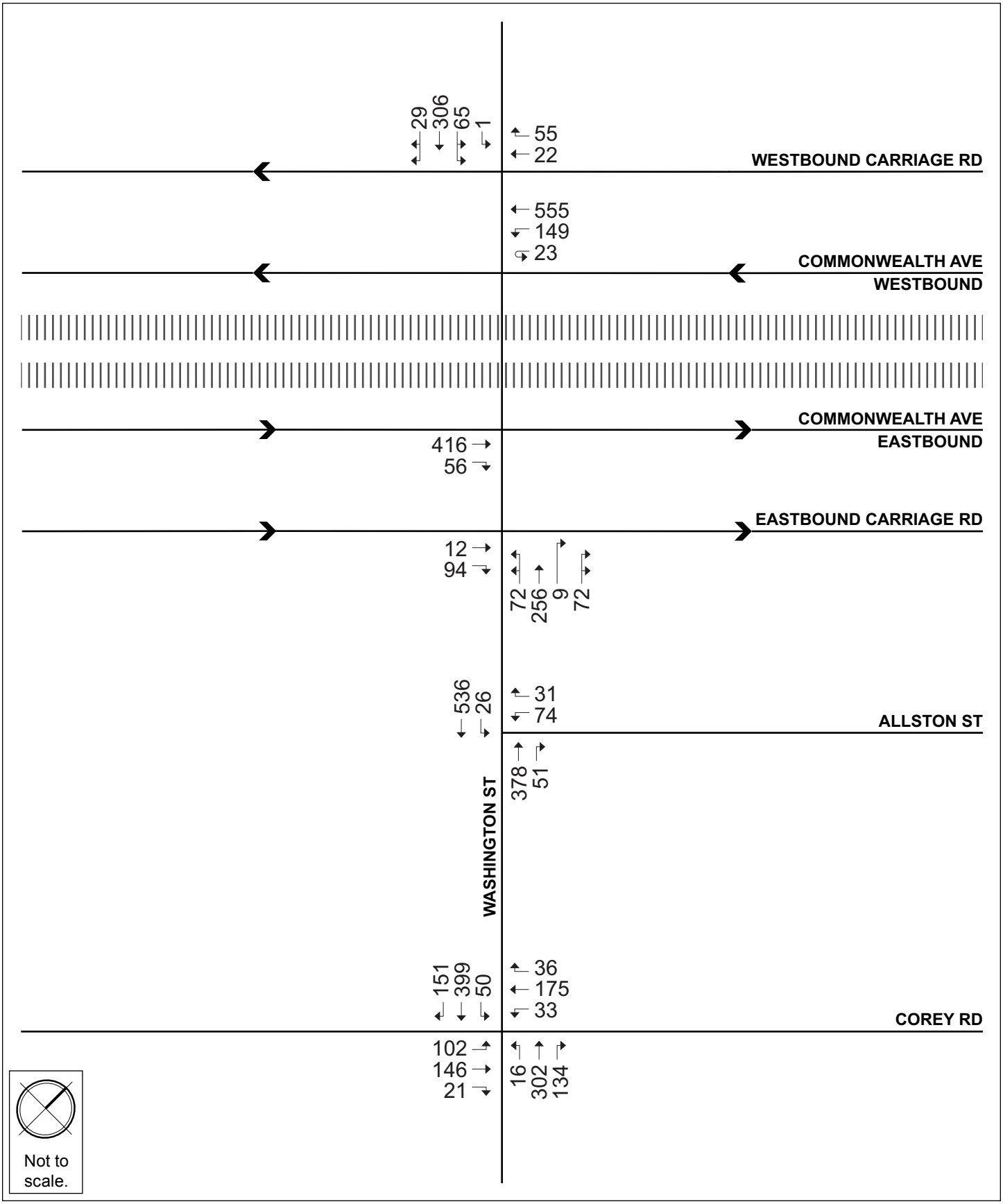

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Figure 3-12

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

Table 3-5 No-Build (2024) Condition, Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Unsignalized					
Washington Street/Allston Street	**-**	**-**	-	-	-
Allston Street WB left/right	D	29.9	0.41	-	47
Washington Street NB thru/right	A	0.0	0.27	-	0
Washington Street SB left/thru	A	0.6	0.02	-	2

~ 50th percentile volume exceeds capacity. Queue shown is maximum after two cycles
# 95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

Table 3-6 No-Build (2024) Condition, Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Washington Street/Corey Road	**D**	**40.0**	-	-	-
Corey Road EB left/thru/right	F	84.3	0.96	176	#339
Corey Road WB left/thru/right	D	40.2	0.57	142	223
Washington Street NB left/thru/right	C	23.7	0.57	213	313
Washington Street SB left/thru/right	C	32.2	0.79	323	472
Commonwealth Avenue/Washington Street	**C**	**20.5**	-	-	-
Commonwealth Avenue EB thru|thru/right	C	26.4	0.35	138	198
Eastbound Carriage Road EB thru	C	25.6	0.02	6	21
Eastbound Carriage Road EB right	A	6.5	0.25	0	38
Commonwealth Avenue WB u-turn/left	E	67.8	0.73	131	#223
Commonwealth Avenue WB thru|thru	C	23.8	0.34	157	220
Westbound Carriage Road WB thru/right	D	39.7	0.22	56	107
Washington Street NB thru/right	D	36.2	0.65	262	346
Washington Street SB left/thru/right	D	36.3	0.65	269	353

Table 3-6 No-Build (2024) Condition, Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Unsignalized					
Washington Street/Allston Street	**-**	**-**	-	-	-
Allston Street WB left/right	D	31.6	0.45	-	54
Washington Street NB thru/right	A	0.0	0.26	-	0
Washington Street NB left/thru	A	0.7	0.03	-	2

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

As shown in Table 3-5 and Table 3-6, all the traffic operations are expected to remain the same or operate below capacity under the No-Build (2024) Condition. The longest queue lengths continue to occur at the intersection of Washington Street/Corey Road during both the weekday a.m. and p.m. peak hours.

3.4 Build (2024) Condition

As previously summarized, the Project will consist of approximately 115 residential units ranging from studio apartments to three-bedroom units, 12,500 sf of ground floor retail space, and 104 parking spaces to be provided in a two-level garage. The lower level of the garage will be below grade and will contain 79 parking spaces and the upper level of the garage will be at-grade and will contain 25 parking spaces. Covered, secure storage for 119 bicycles will also be provided on the Project site. The Project will also contain a bicycle maintenance facility for the residents. The bicycle maintenance facility will be conveniently located on the ground floor for ease of use.

3.4.1 Site Access and Vehicle Circulation

Vehicular access to the Project site will be provided at a 22 foot curb-cut along Corey Road. The driveway will lead to the ground floor level in the garage which will consist of 25 parking spaces, a designated loading area, and a ramp to the basement level of the parking garage. The basement level will consist of an additional 79 parking spaces. All existing curb cuts will be closed, improving the pedestrian environment surrounding the Project site.

Primary pedestrian access to the residential lobby will be provided along Washington Street and access to the retail space will be provided on the corner of Washington Street and Corey Road. Pedestrian connectivity will be provided between the garage, retail space, and residential lobby. Loading, deliveries, and trash pick-up will take place on the Project site in the at grade level of the garage.

The site access plan is shown in Figure 3-13.

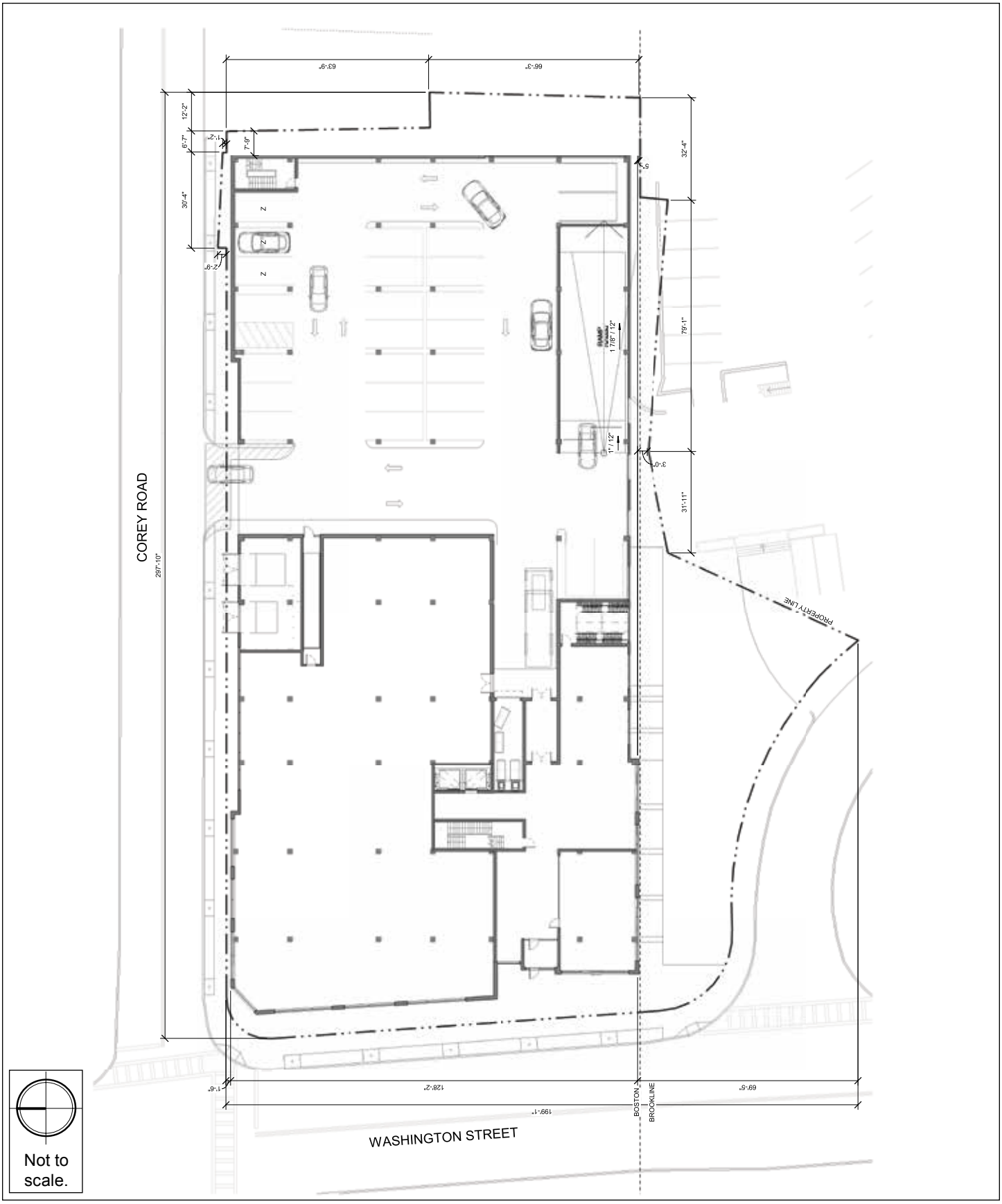

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Figure 3-13
Site Plan

3.4.2 Project Parking

The Project is proposing to construct 104 parking spaces in a two story garage with the first floor at grade and the second floor below-grade. The below-grade level will have 79 parking spaces, including 75 standard spaces, three handicapped spaces, and one handicapped van space. The ground floor will have 25 parking spaces, including 21 standard spaces, three compact spaces, and one handicapped van parking space. The Proponent is actively working with Zipcar to provide two car-sharing spaces on the site as well as two electric vehicle charging stations that will serve four parking spaces located within the garage.

The parking goals developed by the BTD for this section of Brighton are a maximum of 0.75 to 1.25 parking spaces per residential unit within a ten minute walk of an MBTA station and a maximum of 0.75 to 1.25 parking spaces per 1,000 sf of retail space within a ten minute walk of an MBTA station. The Project is providing a combined parking ratio of 0.82 parking spaces per residential unit/1,000 sf of retail space, which is below the allowable maximum.

3.4.3 Loading and Service Accommodations

Residential units primarily generate delivery trips related to small packages and prepared food on a daily basis, whereas commercial land uses primarily generate more frequent deliveries from smaller trucks. Residential units also generate move-in/move-out activity, although less frequently. Loading and service operations will occur in the garage on the ground floor. The loading area measures approximately 20 feet wide and 41 feet long and can accommodate a 36 foot box truck (SU-36) or smaller. This space will accommodate all deliveries, trash pick-up, and residential move-in/move-out activity.

3.4.4 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and employees and short-term bicycle racks for visitors. Based on BTD guidelines, the Project will supply one indoor secure bicycle parking/storage for each new residential unit, 0.3 indoor secure bicycle parking/storage spaces for every 1,000 sf of retail space, as well as an appropriate number of outdoor public bicycle racks for guests, visitors, and customers. In total the project will supply 119 indoor secured bicycle parking spaces, 115 for the new residential units, and 4 for the ground floor retail space. Additionally the Project will supply eight outdoor racks for guests, visitors, and customers to accommodate a total of sixteen bicycles.

3.4.5 Trip Generation Methodology

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

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

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

Land Use Code 221 – Multifamily Housing Mid-Rise. The Multifamily Housing Mid-Rise LUC includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Calculations of the number of trips use ITE's average rate per dwelling units.

Land Use Code 820 – Shopping Center. The Shopping Center LUC is defined as an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store and also provides on-site parking facilities sufficient to serve its own parking demands. Shopping center trip generation estimates are based on the gross leasable area (GLA) of the center. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

Existing Site Trip Generation. As previously discussed, the site currently contains a gasoline/service station and an office building. Counts were conducted at the existing curb cuts to determine the trip generation for the existing uses on the site. It was assumed that all of the trips entering/exiting the gasoline/service station curb cuts were pass-by trips that would continue to travel along Washington Street and Corey Road after the gas station was removed. The trips entering/exiting the curb cut serving the office building were assumed to be primary trips beginning or ending at the site.

3.4.6 Mode Share

BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located in Area 10 – Brighton. The daily residential mode shares were based on US Census Journey to Work data. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[2]. The person trips were then distributed to different modes according to the mode shares shown in Table 3-7.

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

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

Table 3-7 Travel Mode Share

Land Use	Direction	Walk/ Bicycle Share	Transit Share	Auto Share	Vehicle Occupancy Rate
Daily					
Residential	In	19%	22%	59%	1.13
	Out	19%	22%	59%	1.13
Retail	In	30%	5%	65%	1.78
	Out	30%	5%	65%	1.78
a.m. Peak Hour					
Residential	In	19%	30%	51%	1.13
	Out	30%	20%	50%	1.13
Retail	In	40%	5%	55%	1.78
	Out	29%	10%	61%	1.78
p.m. Peak Hour					
Residential	In	30%	20%	50%	1.13
	Out	19%	30%	51%	1.13
Retail	In	29%	10%	61%	1.78
	Out	40%	5%	55%	1.78

3.4.7 Project Trip Generation

The mode share percentages shown in Table 3-7 were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates for the Project. The trip generation for the Project by mode is shown in Table 3-8. The detailed trip generation information is provided in Appendix C.

Pass-By Trips. Pass-by trips are trips are already in the transportation network that accesses a land use as an intermediate stop between the origin and destination points. Retail uses along arterials such as Washington Street typically experiences pass-by trips. Based on data provided in the *Trip Generation Manual*, pass-by trips can account for approximately 34 percent of all retail trips. To account for pass-by trips, it was assumed that 25 percent of the retail trips would be pass-by trips.

Table 3-8 Project Trip Generation

Land Use		Walk/Bicycle Trips	Transit Trips	Vehicle Trips	Pass-By Vehicle Trips
Daily					
Residential[1]	In	67	78	185	0
	Out	67	78	185	0
	Total	134	156	370	0
Retail[2]	In	124	21	113	38
	Out	124	21	113	38
	Total	248	42	226	76
Total	In	191	99	298	38
	Out	191	99	298	38
	Total	382	198	596	76
a.m. Peak Hour					
Residential[1]	In	2	4	5	0
	Out	11	7	15	0
	Total	13	11	20	0
Retail[2]	In	5	1	2	1
	Out	2	1	1	1
	Total	7	2	3	2
Total	In	7	5	7	1
	Out	13	8	16	1
	Total	20	13	23	2
p.m. Peak Hour					
Residential[1]	In	11	7	15	0
	Out	4	7	11	0
	Total	15	14	26	0
Retail[2]	In	12	4	11	3
	Out	17	2	10	3
	Total	29	6	21	6
Total	In	23	11	26	3
	Out	21	9	21	3
	Total	44	20	47	6

1. ITE Trip Generation Rate, 10th Edition, LUC 221 (Multifamily Housing Mid-Rise), 115 units.
2. ITE Trip Generation Rate, 10th Edition, LUC 820 (Shopping Center), 12,500 sf.

3.4.8 Net New Vehicle Trip Generation

As previously mentioned, to account for the future impact of the Project, the existing vehicle trips using the site were taken into consideration. To develop the net new vehicle trip generation estimates, the existing trips associated with the Project site were removed from the existing roadway network. The existing gas station trips are assumed to be pass-by trips, therefore the vehicles will no longer pull into the driveway but will remain on the roadway network. The existing office trips are assumed to be removed from the roadway network. The net new vehicular trips associated with the Project are summarized in Table 3-9. The detailed trip generation information is provided in Appendix C.

Table 3-9 Net New Project Vehicle Trip Generation

Direction	Existing		Proposed Residential[3]	Proposed Retail[4]		Project Generated Trips[6]	Net New Trips[7]
	Gas Station[1]	Office[2]		Primary	Pass-By[5]		
Daily							
In	688	92	185	113	38	298	206
Out	688	92	185	113	38	298	206
Total	**1,367**	**184**	**370**	**226**	**76**	**596**	**412**
a.m. Peak Hour							
In	18	29	5	2	1	7	-22
Out	18	22	15	1	1	16	-6
Total	**36**	**51**	**20**	**3**	**2**	**23**	**-28**
p.m. Peak Hour							
In	14	26	15	11	3	26	0
Out	14	29	11	10	3	21	-8
Total	**28**	**55**	**26**	**21**	**6**	**47**	**-8**

1 Daily counts based on ITE LUC 944 – Gas/Service Station, 8 pumping locations, a.m. and p.m. peak hours based on counts conducted at the curb cut that serves the existing gas station on the Project site.
2 Daily counts based on ITE LUC 710 – General Office Building, 22,000 sf, a.m. and p.m. peak hours based on counts conducted at the curb cut that serves the existing office building on the Project site.
3 Based on ITE LUC 221 – Multifamily Housing Mid-Rise for 115 units.
4 Based on ITE LUC 820 – Shopping Center for 12,500 sf
5 A pass-by rate of 25 percent was applied to the trips generated by the proposed retail uses on the site.
6 Sum of residential trips and primary retail trips. New trips that are being added to the roadway network.
7 Project generated new trips minus the existing office trips from the existing driveways serving the site.

As shown in Table 3-9, the net change in vehicle trips during the weekday a.m. and p.m. peak hours is negative. Therefore the Project is expected to have less of an impact that the existing uses on site. After accounting for existing trips, there is expected to be a reduction of 28 vehicle trips during the weekday a.m. peak hour and a reduction of 8 vehicle trips during the weekday p.m. peak hour.

3.4.9 Trip Distribution

The trip distribution identifies the various travel paths for vehicles associated with the Project. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 10 – Brighton, and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are illustrated in Figure 3-14.

3.4.10 Build (2024) Condition Traffic Volumes

The vehicle trips were distributed through the study area. The Project-generated trips for the a.m. and p.m. peak hours are shown in Figure 3-15 and Figure 3-16, respectively. The trip assignments were added to the No-Build (2024) Condition vehicular traffic volumes to develop the Build (2024) Condition vehicular traffic volumes. The Build (2024) Condition a.m. and p.m. peak hour traffic volumes are shown on Figure 3-17 and Figure 3-18, respectively.

3.4.11 Build (2024) Condition Traffic Operations Analysis

The Build (2024) Condition analysis uses the same methodology as the Existing (2017) Condition analysis and No-Build (2024) Condition analysis. Table 3-10 and Table 3-11 present the Build (2024) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

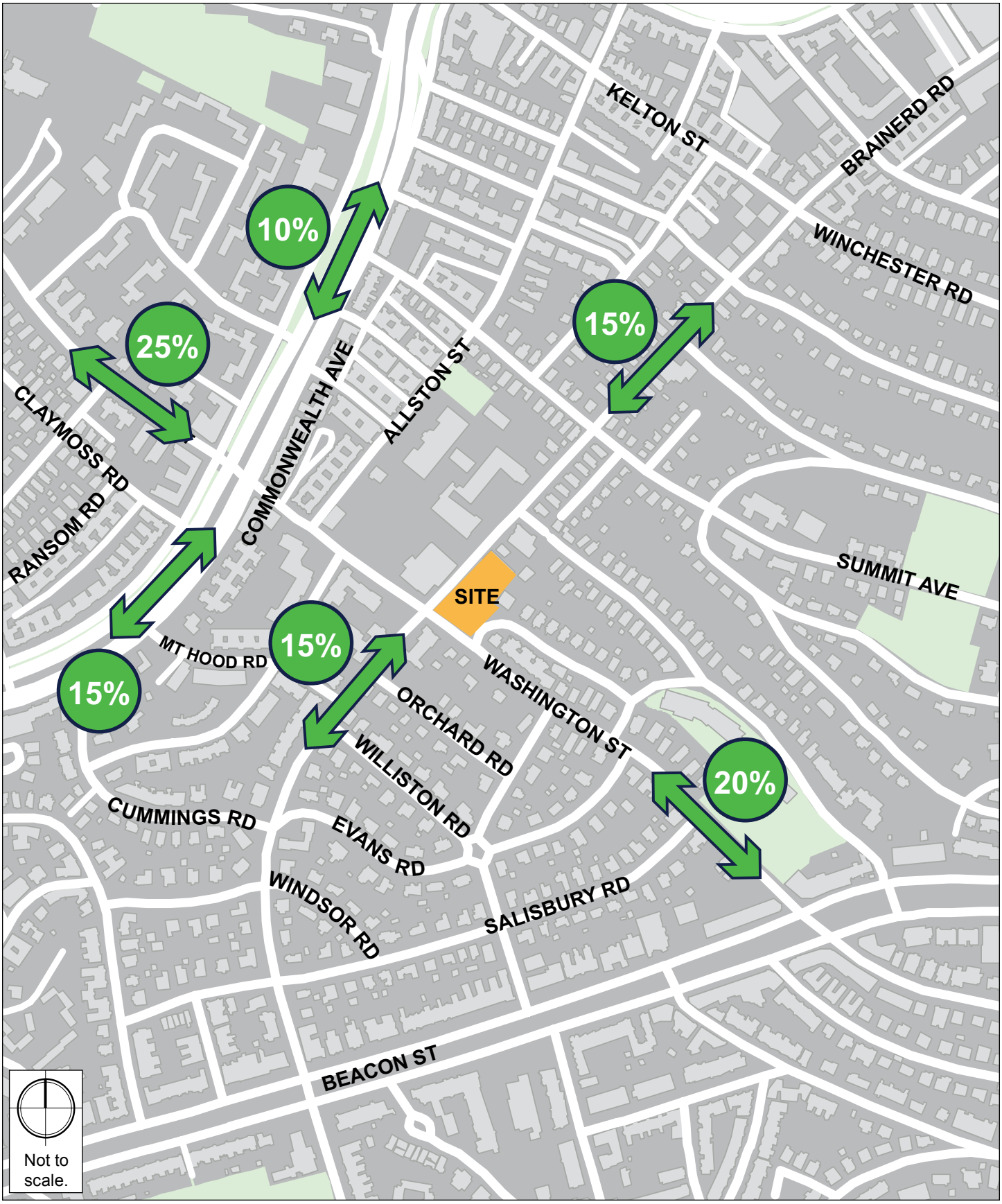

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Figure 3-14
Trip Distribution

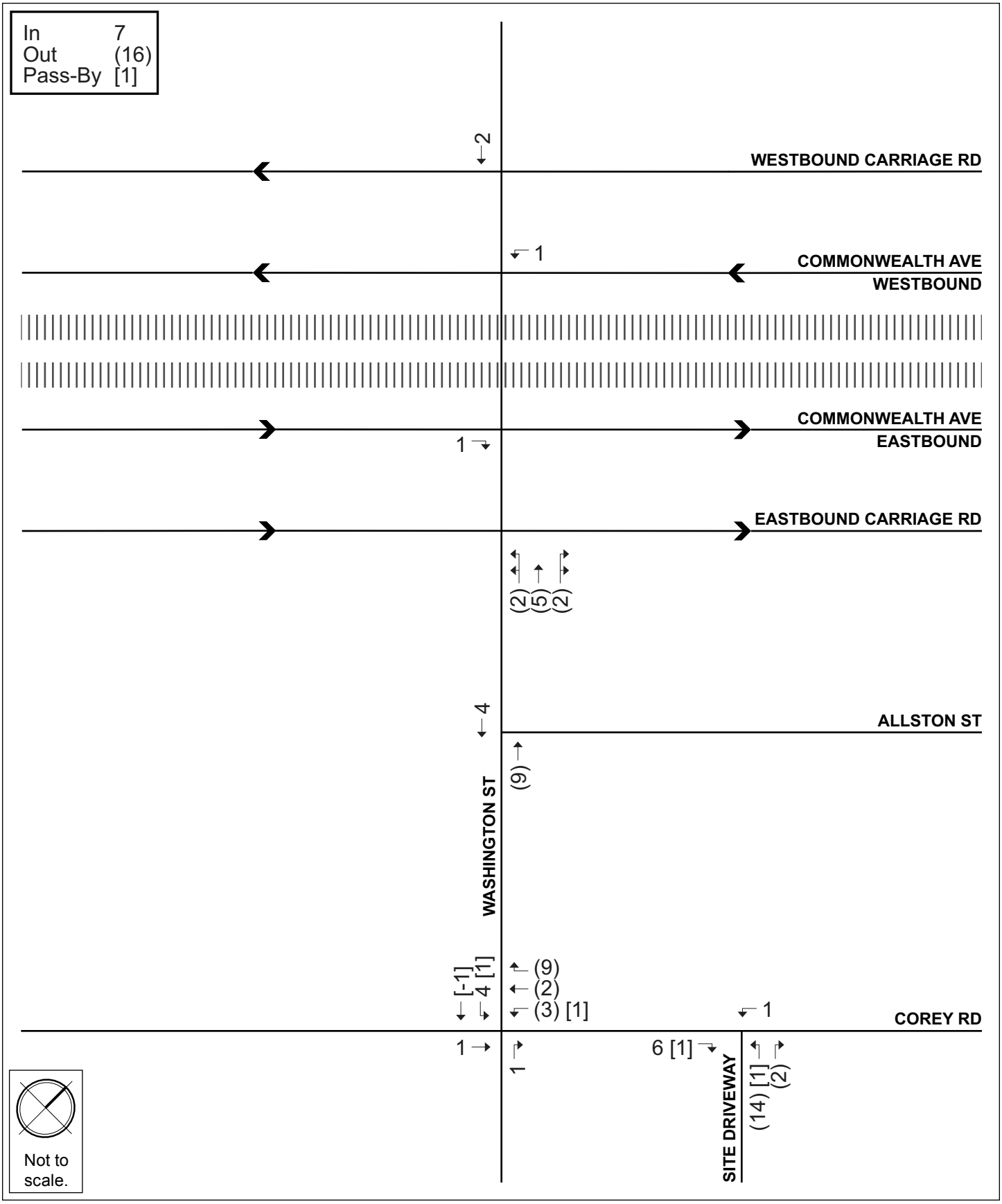

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Figure 3-15

Project Generated Trips (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour

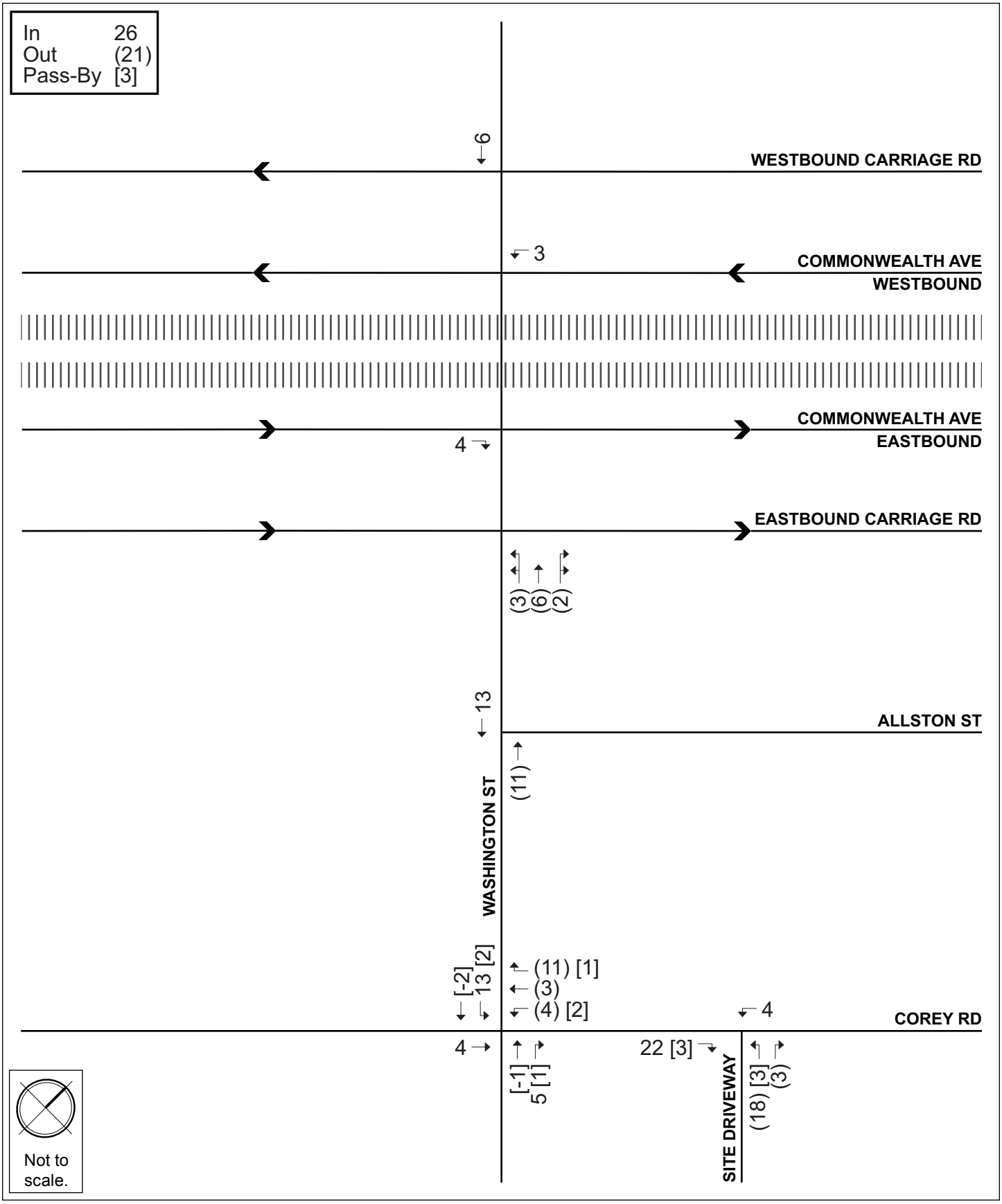

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Figure 3-16

Project Generated Trips (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

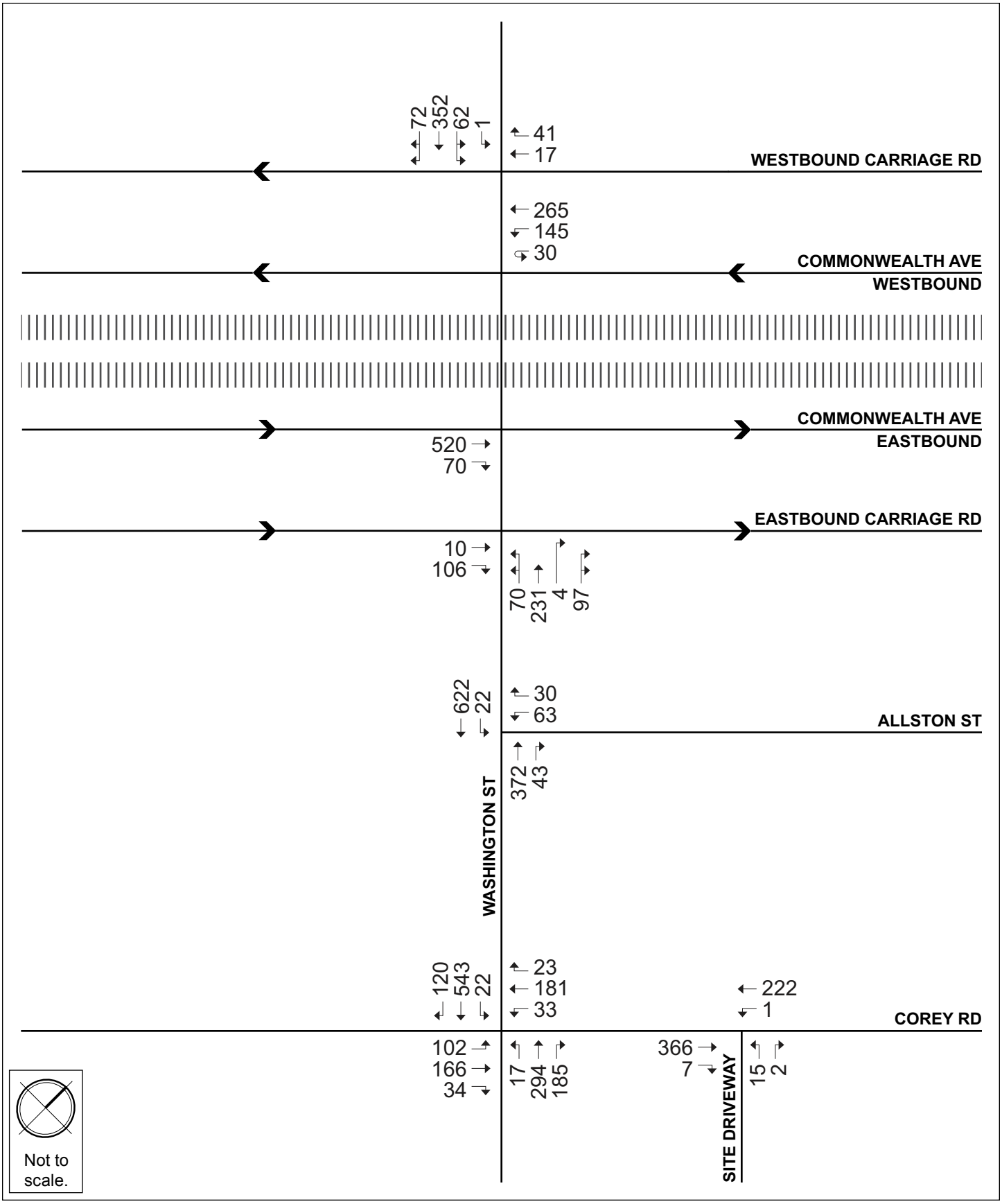

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Figure 3-17

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

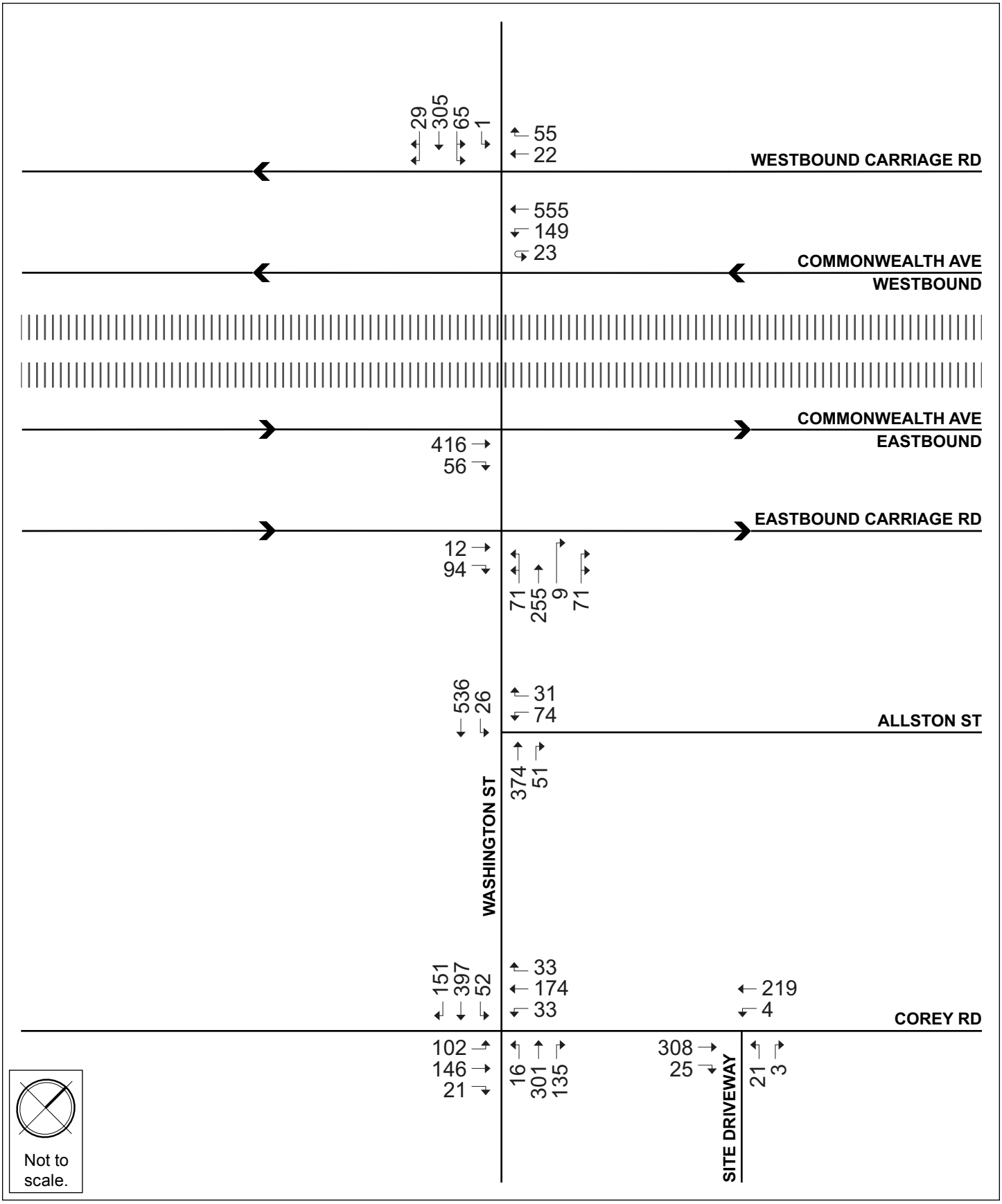

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Figure 3-18

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

Table 3-10 Build (2024) Condition, Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Washington Street/Corey Road	**D**	**48.8**	-	-	-
Corey Road EB left/thru/right	F	114.2	1.08	~228	#397
Corey Road WB left/thru/right	D	41.4	0.61	149	233
Washington Street NB left/thru/right	C	26.9	0.67	263	385
Washington Street SB left/thru/right	D	39.0	0.88	406	#636
Commonwealth Avenue/Washington Street	**C**	**21.5**	-	-	-
Commonwealth Avenue EB thru|thru/right	C	31.0	0.47	194	253
Eastbound Carriage Road EB thru	C	27.7	0.02	6	20
Eastbound Carriage Road EB right	A	6.7	0.25	0	42
Commonwealth Avenue WB u-turn/left	E	69.7	0.75	134	#231
Commonwealth Avenue WB thru|thru	C	24.6	0.18	74	109
Westbound Carriage Road WB thru/right	D	42.9	0.20	45	87
Washington Street NB thru/right	C	32.2	0.61	248	353
Washington Street SB left/thru/right	D	36.0	0.72	314	438
Unsignalized					
Washington Street/Allston Street	**-**	**-**	-	-	-
Allston Street WB left/right	D	29.2	0.40	-	46
Washington Street NB thru/right	A	0.0	0.27	-	0
Washington Street SB left/thru	A	0.6	0.02	-	2
Corey Road/Site Driveway	-	-	-	-	-
Corey Road EB thru/right	A	0.0	0.24	-	0
Corey Road WB left/thru	A	0.0	0.00	-	0
Site Driveway left/right	B	13.1	0.04	-	3

~ 50th percentile volume exceeds capacity. Queue shown is maximum after two cycles
# 95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

Table 3-11 Build (2024) Condition, Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Washington Street/Corey Road	**D**	**40.2**	-	-	-
Corey Road EB left/thru/right	F	85.8	0.97	176	#338
Corey Road WB left/thru/right	D	40.2	0.57	139	220
Washington Street NB left/thru/right	C	23.6	0.57	213	314
Washington Street SB left/thru/right	C	32.2	0.79	323	474
Commonwealth Avenue/Washington Street	**C**	**20.6**	-	-	-
Commonwealth Avenue EB thru|thru/right	C	26.4	0.35	138	198
Eastbound Carriage Road EB thru	C	25.6	0.02	6	21
Eastbound Carriage Road EB right	A	6.5	0.25	0	38
Commonwealth Avenue WB u-turn/left	E	67.8	0.73	131	#223
Commonwealth Avenue WB thru|thru	C	23.8	0.34	157	220
Westbound Carriage Road WB thru/right	D	39.7	0.22	56	107
Washington Street NB thru/right	D	36.1	0.64	261	343
Washington Street SB left/thru/right	D	36.3	0.65	268	353
Unsignalized					
Washington Street/Allston Street	**-**	**-**	-	-	-
Allston Street WB left/right	D	31.3	0.45	-	54
Washington Street NB thru/right	A	0.0	0.26	-	0
Washington Street NB left/thru	A	0.7	0.03	-	2
Corey Road/Site Driveway	-	-	-	-	-
Corey Road EB thru/right	A	0.0	0.21	-	0
Corey Road WB left/thru	A	0.2	0.00	-	0
Site Driveway left/right	B	12.7	0.05	-	4

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

As shown in Table 3-10 and Table 3-11, all the traffic operations impacts are expected to remain the same or operate below capacity under the Build (2024) Condition. The longest queue lengths continue to occur at the intersection of Washington Street/Corey Road during both the weekday a.m. and p.m. peak hours.

3.5 Transportation Demand Management

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

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

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

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

- Orientation Packets: The Proponent will provide orientation packets to new residents containing information on available transportation choices, including transit routes/schedules and nearby vehicle sharing and bicycle sharing locations. On-site management will work with residents and tenants as they move in to help facilitate transportation for new arrivals.

- Provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, and other travel options.

- Transportation Coordinator: The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries, and will work with residents as they move in to raise awareness of public transportation, bicycling, and walking opportunities.

- Website: Provide information on travel alternatives for employees and visitors via the Internet and in the building lobby.

- Electric Vehicle Charging: The Proponent will provide two electric vehicle charging station(s) within the garage.

- Vehicle Sharing Program: The Proponent is actively working with Zipcar to provide up to two car-sharing spaces on the site.

- Bicycle Accommodation: The Proponent will provide bicycle storage in secure, sheltered areas for residents. Subject to necessary approvals, public use bicycle racks for visitors will be placed near building entrances.

3.6 Transportation Mitigation Measures

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

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

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTD. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project. See Section 2.7 for additional information related to the CMP.

3.7 Evaluation of Short-term Construction Impacts

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

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

- Limited construction worker parking on-site;
- Encouragement of worker carpooling;
- Consideration of a subsidy for MBTA passes for full-time employees; and

- Providing secure spaces on-site for workers' supplies and tools so they do not have to be brought to the site each day.

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

Chapter 4.0

Environmental Review Component

4.0 ENVIRONMENTAL REVIEW COMPONENT

4.1 Wind

Major buildings, especially those that protrude above their surroundings, often cause increased local wind speeds at the pedestrian level. Typically, wind speeds increase with elevation above the ground surface, and taller buildings intercept these faster winds and deflect them down to the pedestrian level. The funneling of wind through gaps between buildings and the acceleration of wind around corners of buildings may also cause increases in wind speed. Conversely, if a building is surrounded by others of equivalent height, it may be protected from the prevailing upper-level winds, resulting in no substantial changes to the local pedestrian-level wind environment.

Winds in the Boston area are predominantly from the northwest and southwest, with northeasterly winds also frequent in the spring.

The proposed Project is five stories and approximately 70 feet tall at its highest point. The area to the west of the Project is developed with buildings of similar height, and would be anticipated to shield the Project site from upper level winds. In addition, the building design includes setbacks along both Washington Street and Corey Road that will help to deflect any winds that may downwash from the upper floors, preventing higher wind speeds from reaching the street. Due to the Project's design and height in relation to its surroundings, the Project is not anticipated to have a significant impact on pedestrian level winds.

4.2 Shadow

4.2.1 Introduction and Methodology

A shadow impact analysis was conducted to investigate shadow impacts from the Project during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21), and winter solstice (December 21). In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox.

The shadow analysis presents the existing shadow and new shadow that would be created by the proposed Project, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces, sidewalks and bus stops adjacent to and in the vicinity of the Project site. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new shadow from the Project are provided in Figures 4.2-1 to 4.2-14 at the end of this section.

The results of the analysis show that new shadow from the Project will be limited to the streets, sidewalks and landscaped open space adjacent to the Project site. No new shadow will be cast onto any bus stops or public open space during the time periods studied as a result of the Project.

4.2.2 Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, new shadow from the Project will be cast to the northwest onto Corey Road and its sidewalks, and onto a small portion of Washington Street and its northern sidewalk. No new shadow will be cast onto nearby bus stops or open spaces.

At 12:00 p.m., new shadow will be cast to the north onto Corey Road and its sidewalks. No new shadow will be cast onto nearby bus stops or open spaces.

At 3:00 p.m., shadow will be cast to the northeast. No new shadow will be cast onto nearby streets, sidewalks, bus stops or open spaces.

4.2.3 Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, new shadow from the Project will cast to the northwest onto Corey Road and its sidewalks, and onto a portion of Washington Street and its northern sidewalk. No new shadow will be cast onto nearby bus stops or open spaces.

At 12:00 p.m., new shadow will be cast to the north onto a portion of Corey Road and its eastern sidewalk. No new shadow will be cast onto nearby bus stops or open spaces.

At 3:00 p.m., shadow will be cast to the east. Shadow will be cast onto a portion of the landscaped space adjacent to the Project. No new shadow will be cast onto nearby streets, sidewalks, bus stops or open spaces.

At 6:00 p.m., new shadow will be cast to the southeast onto Bartlett Crescent and its sidewalks, and onto the landscaped space adjacent to the Project. No new shadow will be cast onto nearby bus stops or open spaces.

4.2.4 Autumnal Equinox (September 21)

At 9:00 a.m., during the autumnal equinox, new shadow from the Project will be cast to the northwest onto Corey Road and its sidewalks, and onto a small portion of the Washington Street sidewalk adjacent to the site. No new shadow will be cast onto nearby bus stops or open spaces.

At 12:00 p.m., new shadow will be cast to the north onto Corey Road and its sidewalks. No new shadow will be cast onto nearby bus stops or open spaces.

At 3:00 p.m., shadow will be cast to the northeast. No new shadow will be cast onto nearby streets, sidewalks, bus stops or open spaces.

At 6:00 p.m., much of the area is under existing shadow. New shadow will be cast to the northeast onto a small portion of Westbourne Terrace and its sidewalks. No new shadow will be cast onto nearby streets, sidewalks, bus stops or open spaces.

4.2.5 Winter Solstice (December 21)

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

At 9:00 a.m., during the winter solstice, new shadow will be cast to the northwest onto Corey Road, its sidewalks, and Whole Foods. No new shadow will be cast onto nearby bus stops or open spaces.

At 12:00 p.m., new shadow will be cast to the north onto Corey Road and its sidewalks. No new shadow will be cast onto nearby bus stops or open spaces.

At 3:00 p.m., new shadow will be cast to the northeast onto a sliver of Westbourne Terrace and its sidewalks. No new shadow will be cast onto nearby streets, sidewalks, bus stops or open spaces.

4.2.6 Conclusions

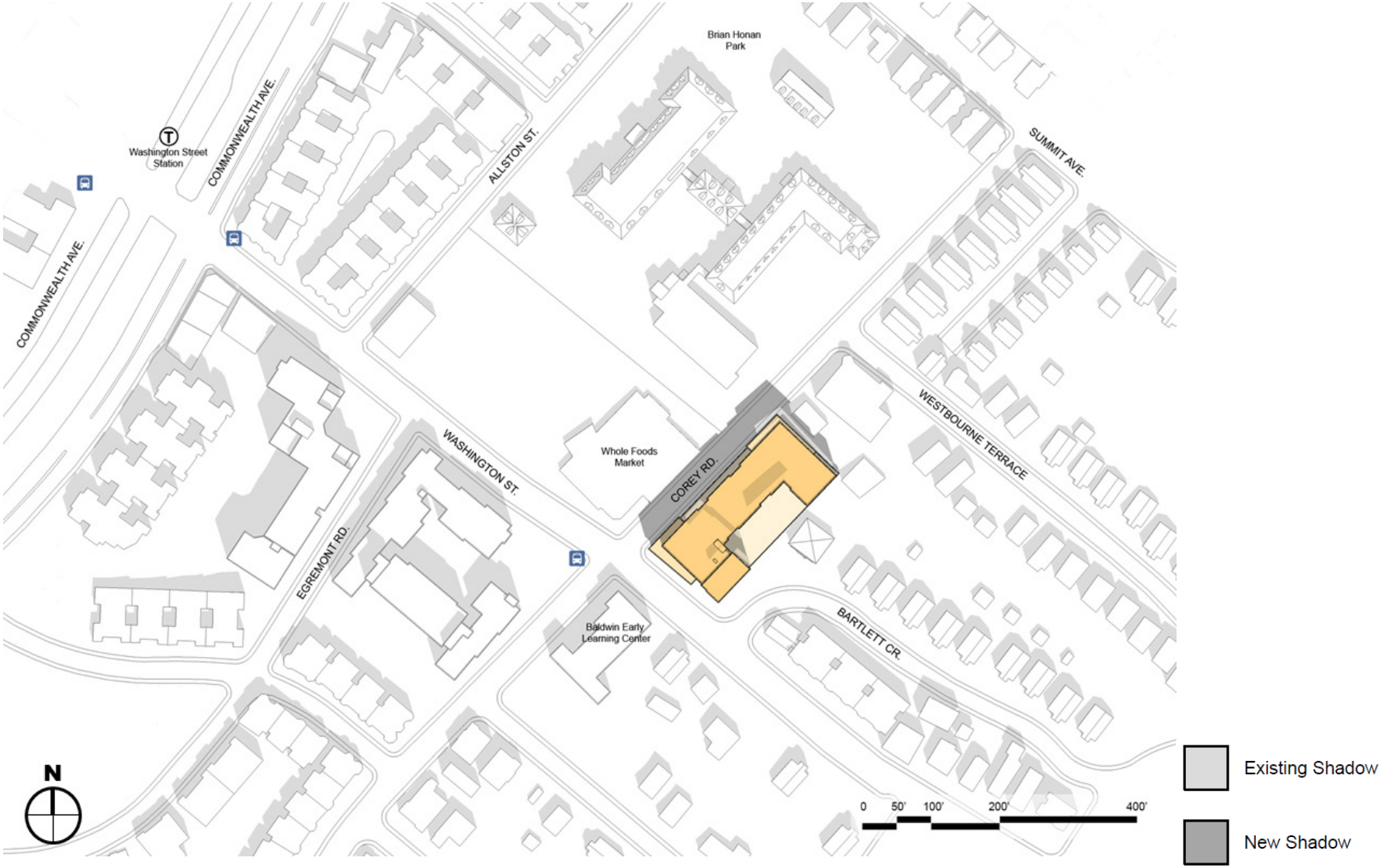
The results of the analysis show that new shadow from the Project will be limited to the streets, sidewalks and landscaped space adjacent to the Project site. No new shadow will be cast onto any bus stops or public open space during the time periods studied as a result of the Project.

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-1

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



5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-2

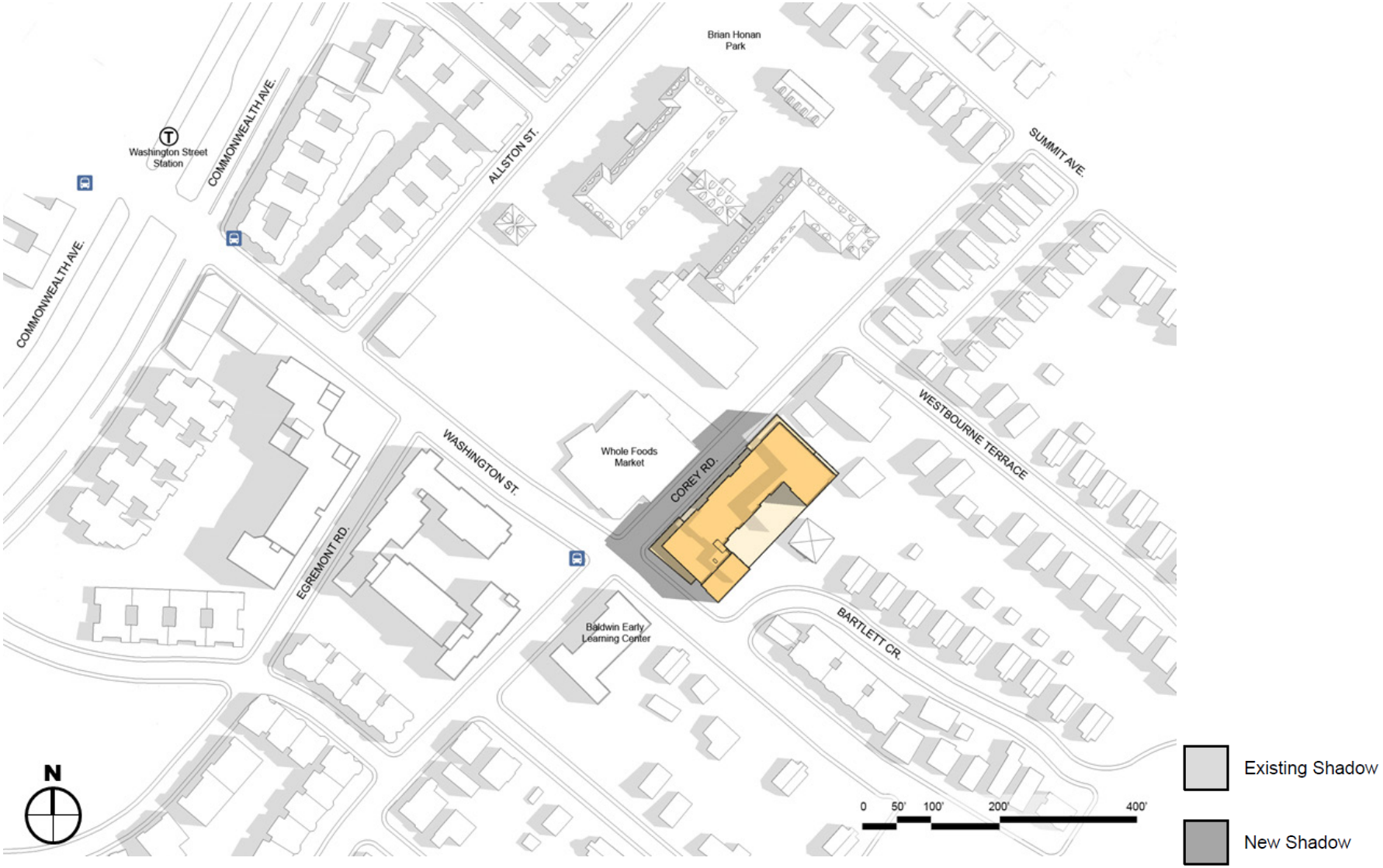
Shadow Study: March 21, 12:00 p.m.

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-3

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

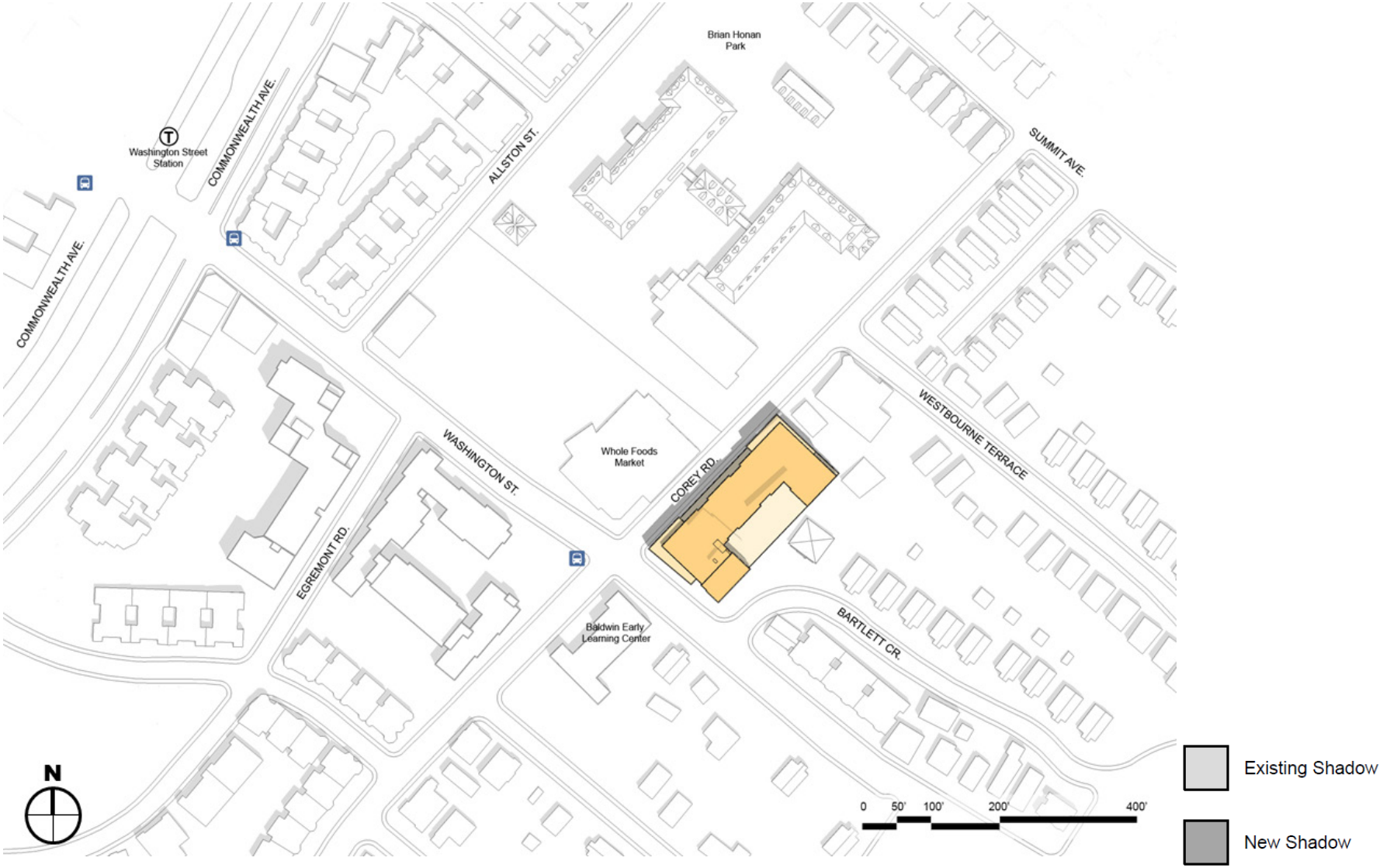


5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-4

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

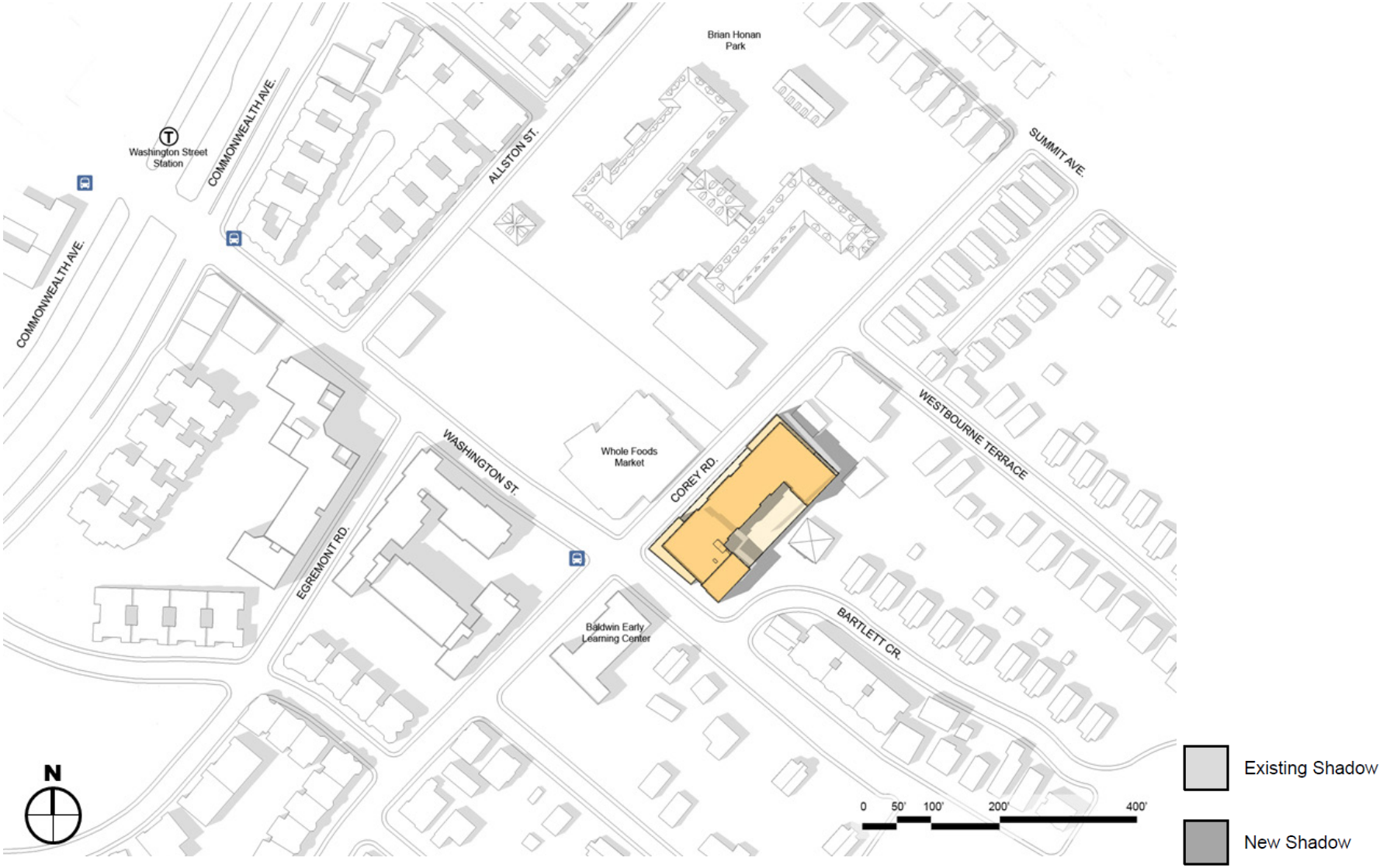


5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-5

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



5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-6

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

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-7

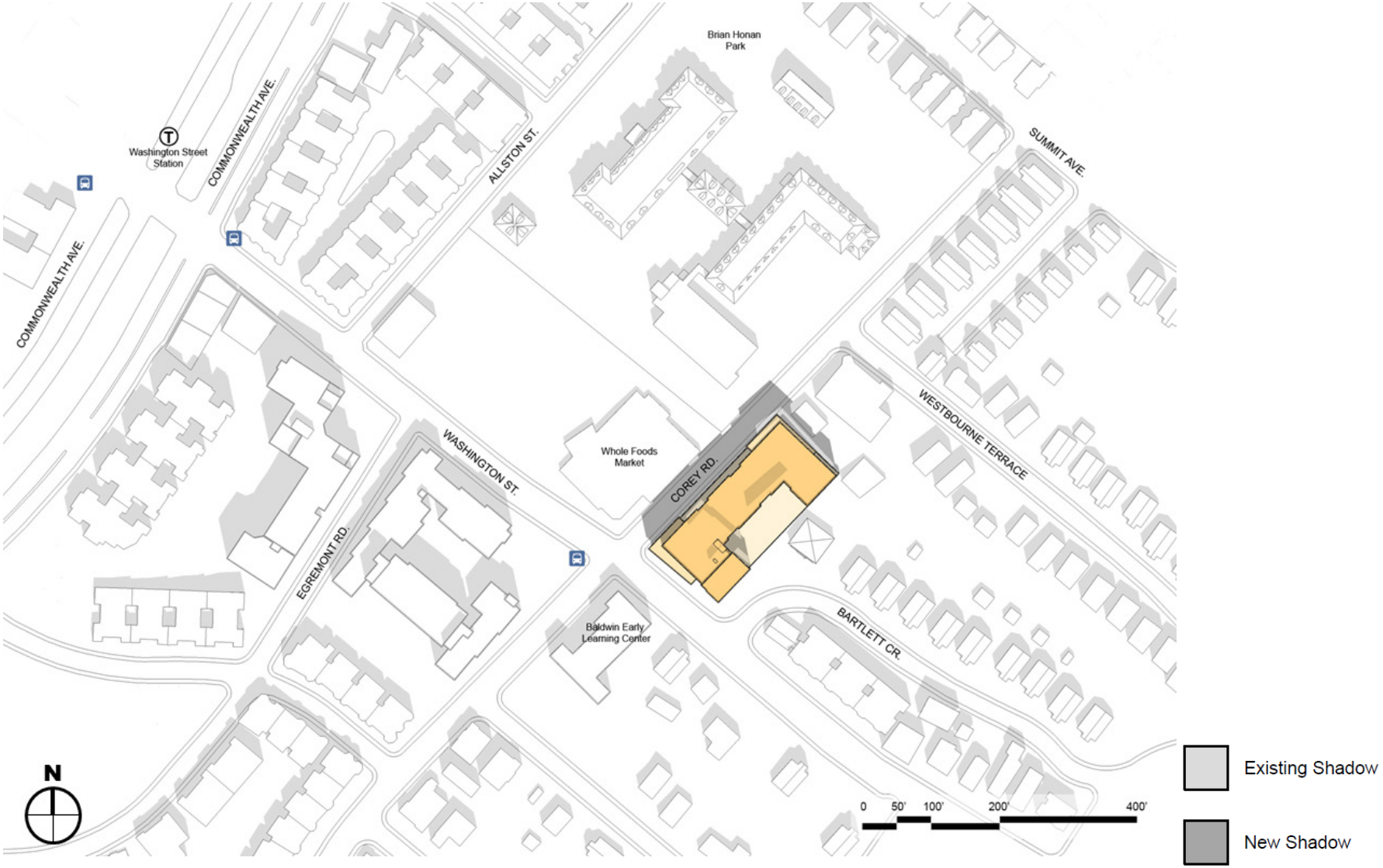
Shadow Study: June 21, 6:00 p.m.

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-8

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



5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-9

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

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-10

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

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-11

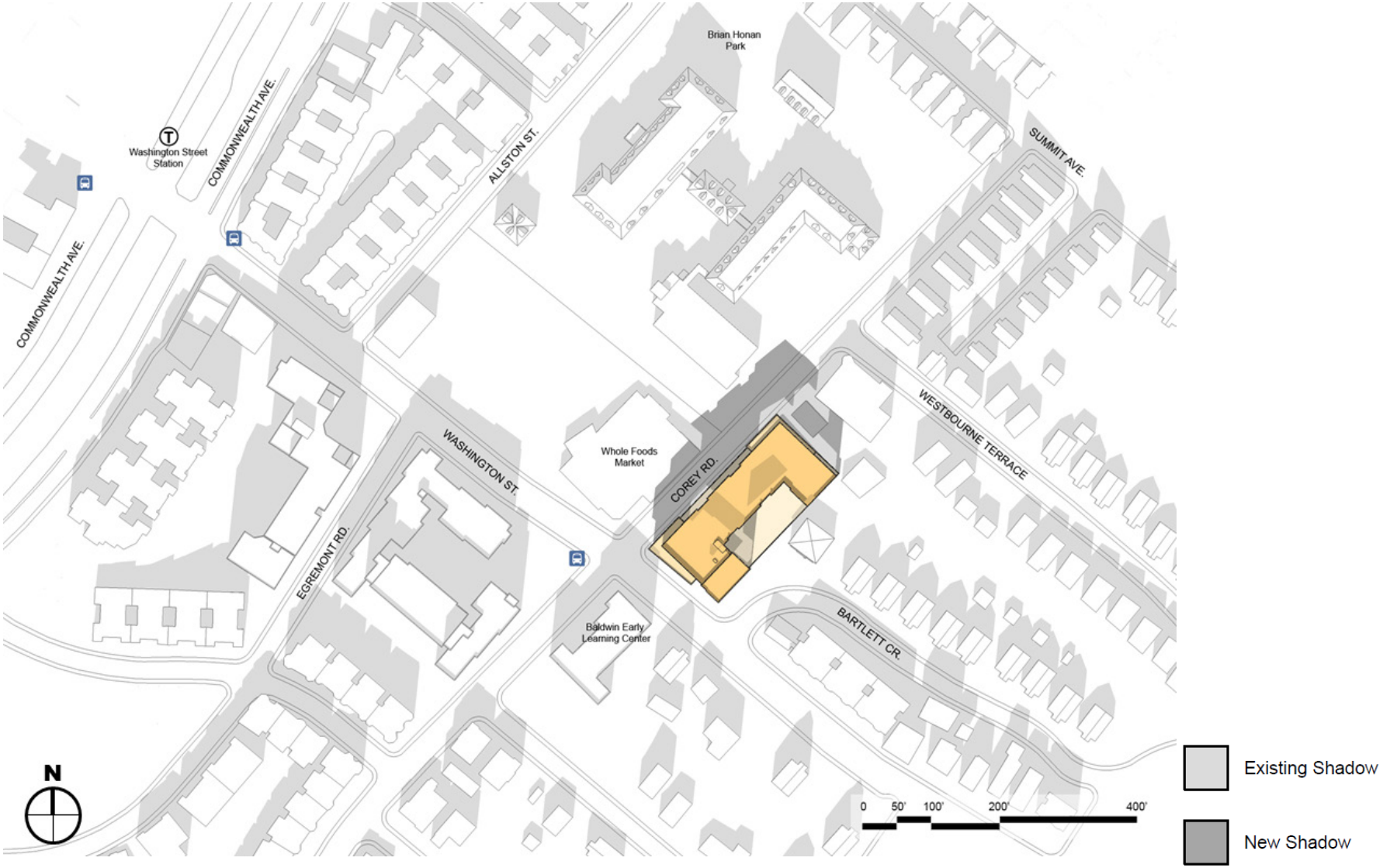
Shadow Study: September 21, 6:00 p.m.

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-12

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



5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-13

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

5 Washington Street Boston, Massachusetts

Stantec

Figure 4.2-14

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

4.3 Daylight Analysis

4.3.1 Introduction

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

Because the Project site currently consists of low-rise buildings and parking lots, the proposed Project will increase daylight obstruction; however, the resulting conditions will be typical of the area and other urban areas.

4.3.2 Methodology

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

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

Since the Project site currently contains structures that have a negligible impact on daylight obstruction, for simplicity, this analysis assumes a 0% daylight obstruction for the existing conditions, and the analysis compares the proposed conditions to the context of the area.

Three viewpoints were chosen to evaluate the daylight obstruction for the proposed conditions, one from Washington Street, one from Corey Road, and one from Bartlett Crescent. Three area context points were considered in order to provide a basis of comparison to existing conditions in the surrounding area. The viewpoint and area context viewpoints were taken in the following locations and are shown on Figure 4.3-1.

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

- **Viewpoint 1:** View from Washington Street facing northeast toward the Project site
- **Viewpoint 2:** View from Corey Road facing east toward the Project site
- **Viewpoint 3:** View from Bartlett Crescent facing northwest toward the Project site
- **Area Context Viewpoint AC1:** View from Washington Street facing southwest toward the building at 121 Corey Road
- **Area Context Viewpoint AC2:** View from Egremont Street facing west toward the building at 30 Washington Street
- **Area Context Viewpoint AC3:** View from Allston Street facing northwest toward the building at 305 Allston Street

4.3.3 Results

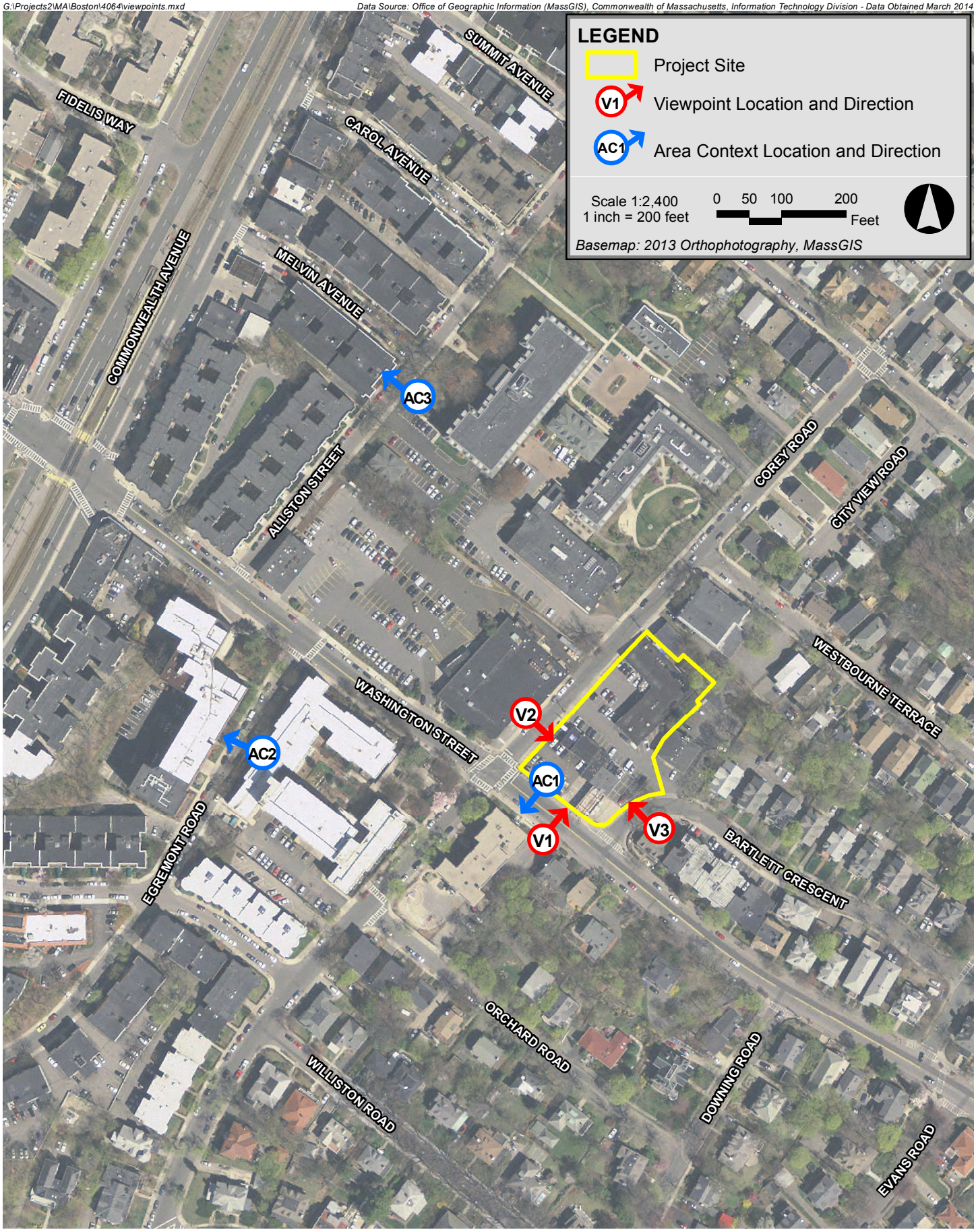
The results for each viewpoint are described in Table 4.3-1. Figures 4.3-2 and 4.3-3 illustrate the BRADA results for each analysis.

Table 4.3-1 Daylight Analysis Results

Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	View from Washington Street facing northeast toward the Project site	0%[1]	44.0%
Viewpoint 2	View from Corey Road facing east toward the Project site	0%[1]	72.3%
Viewpoint 3	View from Bartlett Crescent facing northwest toward the Project site	0%[1]	43.0%
Area Context Points			
AC1	View from Washington Street facing southwest toward the building at 121 Corey Road	38.5%	N/A
AC2	View from Egremont Street facing west toward the building at 30 Washington Street	68.2%	N/A
AC3	View from Allston Street facing northwest toward the building at 305 Allston Street	78.6%	N/A

[1] The Project site includes structures that have a negligible impact on daylight obstruction; therefore, for simplicity, this analysis assumes a 0% daylight obstruction for the existing conditions.

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division - Data Obtained March 2014

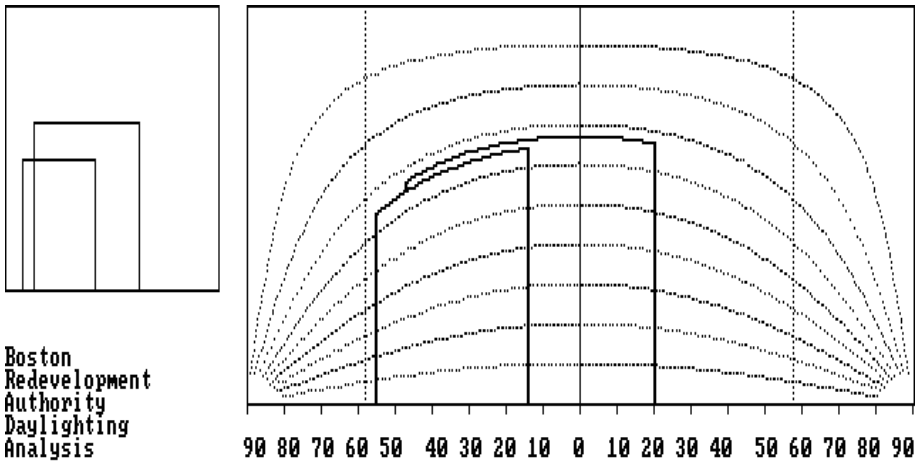


5 Washington Street Boston, Massachusetts

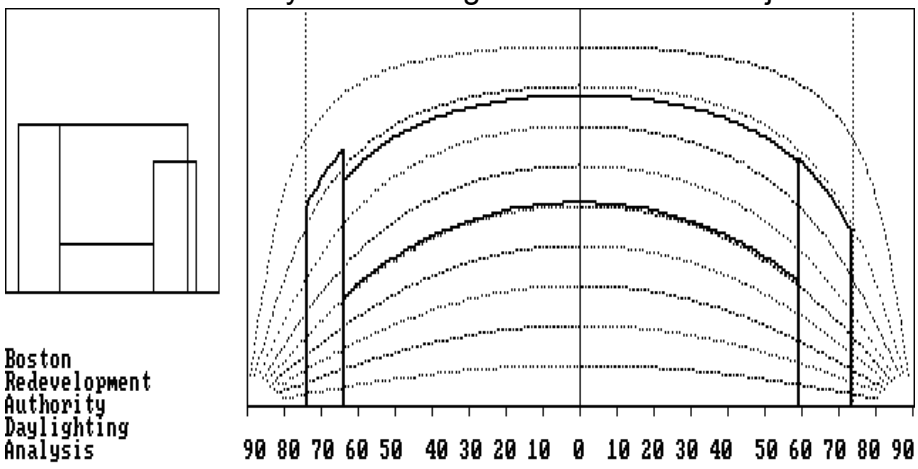
Epsilon ASSOCIATES INC.

Figure 4.3-1
Viewpoint Location Map

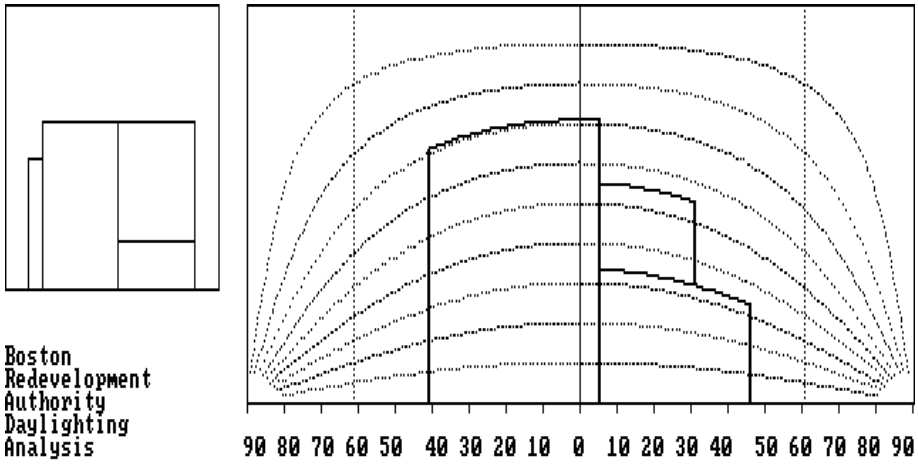
Viewpoint 1: View from Washington Street facing northeast toward the Project site



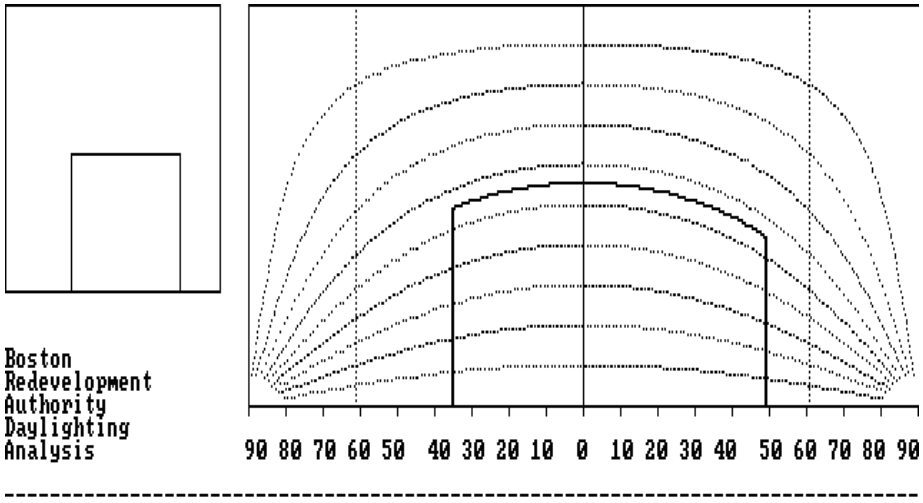
Viewpoint 2: View from Corey Road facing east toward the Project site



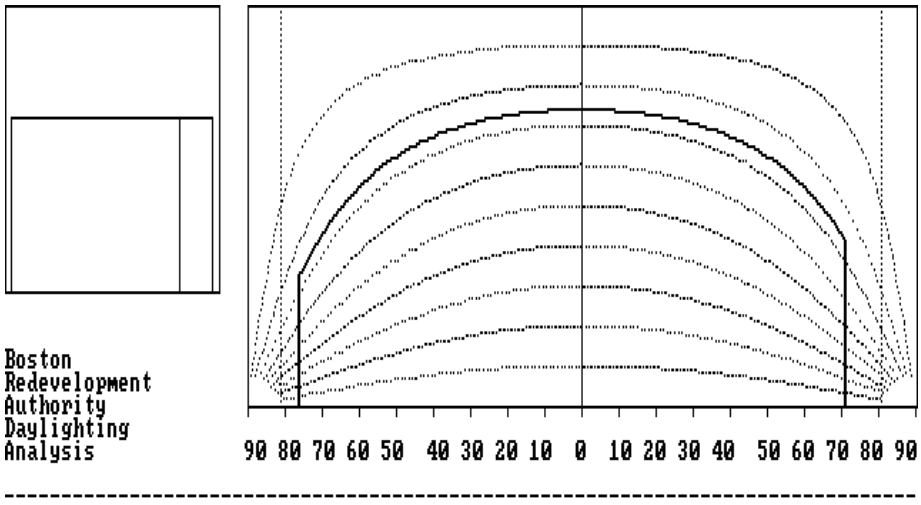
Viewpoint 3: View from Bartlett Crescent facing northwest toward the Project site



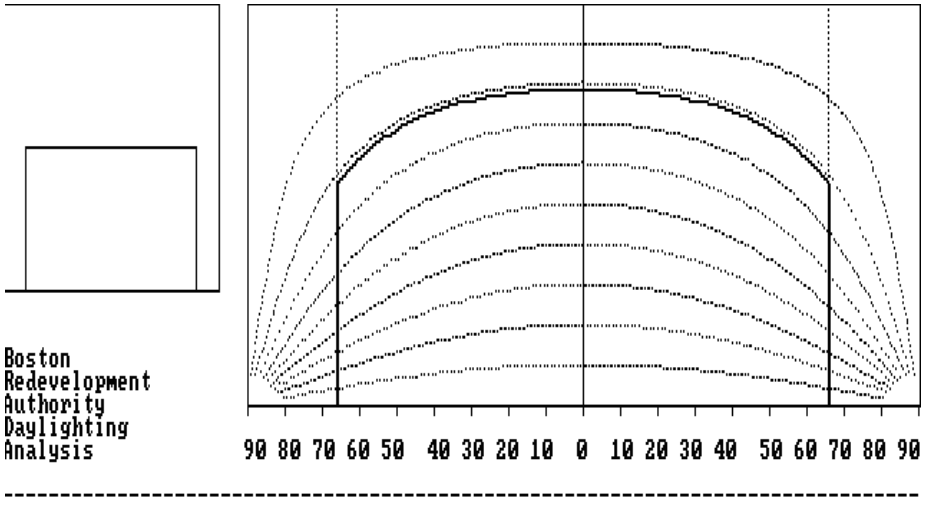
AC1: View from Washington Street facing southwest toward the building at 121 Corey Road



AC2: View from Egremont Street facing west toward the building at 30 Washington Street



AC3: View from Allston Street facing northwest toward the building at 305 Allston Street



Washington Street – Viewpoint 1

Washington Street runs along the southern edge of the Project site. Viewpoint 1 was taken from the center of Washington Street looking directly northeast toward the Project site. The development of the Project will result in a daylight obstruction value of 44.0%. While this is an increase over existing conditions, the daylight obstruction value is consistent with or lower than other buildings in the area, including the Area Context buildings.

Corey Road – Viewpoint 2

Corey Road runs along the western edge of the Project site. Viewpoint 2 was taken from the center of Corey Road looking east toward the Project site. The development of the Project will result in a daylight obstruction value of 72.3% because the building is located on the property line. While this is an increase over existing conditions, the daylight obstruction value is consistent with or lower than other buildings in the area, including the Area Context buildings.

Bartlett Crescent

Bartlett Crescent runs along the southeastern edge of the Project site. Viewpoint 3 was taken from the center of Bartlett Crescent facing northwest toward the Project site. The development of the Project will result in a daylight obstruction value of 43.0%. While this is an increase over existing conditions, the daylight obstruction value is consistent with other buildings in the area, including the Area Context buildings.

Area Context Views

The Project area currently consists of low-rise and mid-rise residential and commercial buildings. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for the three Area Context Viewpoints described above and shown on Figure 3.3-1. The daylight obstruction values ranged from 38.5% for AC1 to 78.6% for AC3. Daylight obstruction values for the Project are generally consistent with the Area Context values.

4.3.4 Conclusions

The daylight analysis conducted for the Project describes existing and proposed daylight obstruction conditions at the Project site and in the surrounding area. The results of the BRADA analysis indicate that while the development of the Project will result in increased daylight obstruction over existing conditions, the resulting conditions will be similar to the daylight obstruction values within the surrounding area.

4.4 Solar Glare

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

4.5 Air Quality Analysis

The BPDA requires that project-induced impacts to ambient air quality be addressed. A microscale analysis is used to determine the effect on air quality of the increase in traffic generated by the Project. This microscale analysis may be required for a project at intersections where 1) project traffic would impact intersections or roadway links currently operating at Level of Service (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 (ADT) on roadways providing access to a single location.

The proposed Project does not generate 3,000 ADT, nor does it increase traffic volumes by 10 percent or 100 vehicles per hour. As discussed in Chapter 2, all intersections studied will continue to operate at the same LOS as under the No Build conditions during both the a.m. and p.m. peak hours. Therefore, no quantitative analysis is required. Given the generally well-operating intersections, and the small increases in volume at the worst intersections, it is expected that there will be no violations of the NAAQS for CO at any intersections associated with Project-related traffic.

It is expected that the majority of stationary sources (boilers, engines, etc) would be subject to the MassDEP's Environmental Results Program (ERP). The ERP regulation applies to new emergency generators greater than 37 kW. The regulation is similar to the boiler ERP in that new engines are subject to emission standards, recordkeeping, certification, and compliance with the MassDEP noise policy. Since the generator maximum rating capacity will be greater than the ERP limit of 37 kW, it will be subject to the ERP program. Per the ERP, the generator owner will limit operation of the generator to less than 300 hours per year and submit a certification form to MassDEP within 60 days of installation.

4.6 Stormwater/Water Quality

See Section 7.3 for information on stormwater and water quality impacts.

4.7 Flood Hazard Zones/ Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for this area (25025C0059G) shows that the FEMA Flood Zone Designation for the Project site is Zone X, "Areas determined to be outside the 0.2% annual chance floodplain." Future floodplain delineation maps are not anticipated to result in a change of the classification of the Project site.

The site does not contain wetlands.

4.8 Geotechnical Impacts

4.8.1 Existing Site Conditions

The approximate 43,500 square foot site generally consists of three parcels in Brighton (3 Washington Street, 5 Washington Street and 165 Corey Road) and two parcels in Brookline. The 165 Corey Road parcel is currently occupied by a two-story, L-shaped office building, the 5 Washington Street parcel is currently occupied by a one-story auto repair building, and the 3 Washington Street parcel is currently occupied by a gas station and auto repair building. Outside of the footprints of the existing buildings the ground surface generally consists of paved parking areas and driveways.

4.8.2 Subsurface Conditions

Based on available subsurface data, it is anticipated that the surface treatments across the site overlie an approximate 5 to 10-foot thickness of granular fill, which is underlain by a dense glacial till deposit over the bedrock surface. Groundwater at the site is anticipated to be temporarily "perched" on the surface or within the upper few feet of the glacial till deposit at a depth of about 8 to 12 feet below the existing ground surface.

4.8.3 Proposed Foundation Construction Methodology

The site will be developed into an approximately, five-story, 132,500 sf building with ground floor retail space and approximately 115 units above. Parking will be provided in a two-level garage that is partially below grade.

Construction of the foundations and below-grade parking level will require an excavation approximately 12 feet deep below the entire building footprint. To limit potential adverse excavation-related impacts to the adjacent streets, sidewalks, utilities and private property, temporary excavation support will be required along the perimeter of the site. The temporary excavation support system is anticipated to consist of cantilevered steel solider piles and timber lagging. It is anticipated that the excavation support system will extend over the property line along Washington Street and Corey Road, and a construction easement will be required from the City of Boston in order to install the excavation support system in these areas.

Foundation support for the below-grade level will consist of reinforced concrete footings bearing on the undisturbed, natural glacial till deposit or on compacted structural fill placed directly over the undisturbed glacial till deposit. Due to the depth of the below-grade parking level, minimal over-excavation of existing fill soils is anticipated. The lowest level slab will consist of a soil-supported slab-on-grade.

It is anticipated that temporary construction dewatering will be required during construction of the foundations and potentially during slab-on-grade construction. It is anticipated that groundwater and surface water can generally be controlled using conventional sumping in combination with strategic use of trenches. Off-site discharge of groundwater will be performed in accordance with the construction dewatering permit, which will be obtained from the appropriate agency.

4.8.4 Project Impacts and Foundation Considerations

Since the adjacent streets, sidewalks, and private property properties will be supported by a temporary excavation support system, the depth of excavation and foundation construction will have limited impacts to the area.

Noise and ground vibrations will be produced during installation of the excavation support system. The magnitude of these vibrations typically decreases with increased distance from the vibration source. Impacts from these vibrations are not anticipated to include damage to adjacent structures, streets and utilities. Mitigation measures such as pre-drilling will be considered to reduce the magnitude of noise and vibrations generated during installation of the excavation support system.

Due to the relatively impermeable nature of the glacial till soils, temporary construction dewatering performed for foundation construction is not anticipated to adversely affect the groundwater level outside of the project site.

The Project is not located within the Groundwater Conservation Overlay District (GCOD) as defined by Article 32 of the City of Boston Zoning Code.

4.9 Solid and Hazardous Waste

4.9.1 Hazardous Waste

Lightship Engineering has completed a Phase I Environmental Site Assessment of the site. This assessment was performed with consideration to standard industry practice and the ASTM E-1527-05 site assessment standard entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". Due to the existing use on the site is a gas station, there are Recognized Environmental Conditions (RECs) on the site.

However, impacts associated with current and historical uses of the property are at levels that do not pose a significant risk except with potential indoor air impacts. Proposed redevelopment of the site includes the installation of a sub-slab venting system to mitigate potential indoor air impacts. Otherwise, remediation of the property is expected to be limited to the off-site disposal of excess soils as necessary to accommodate the proposed construction. Excess soils are expected to be managed consistent with the Massachusetts Contingency Plan ("MCP," 310 CMR 40.0000) and expected to be treated at a permitted facility or re-used as daily cover at a landfill. If impacted groundwater requiring remediation is encountered at the site, remediation activities are expected to be limited to chemical oxidation technology where a reactant is injected into the subsurface to chemically breakdown the petroleum to non-hazardous compounds. Long term soil and/or groundwater remediation at the site is not anticipated.

4.9.2 Operation Solid and Hazardous Waste Generation

The Project will generate solid waste typical of residential and restaurant 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 189 tons of solid waste per year.

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

4.9.3 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 Project will include either a single trash/recycle chute with a 'bi-sorter' or two separate chutes; one each for trash and recycling, leading to the trash room on the ground level. The trash will have a compactor and the recycling will be single stream, which collects more types of recycled materials and results in more recycling because there is no need to separate different types of materials.

4.10 Noise Impacts

The primary set of noise regulations relating to a potential increase in sound levels due to the Project is the City of Boston Zoning District Noise Standards (City of Boston Code – Ordinances: Section 16–26 Unreasonable Noise and City of Boston Air Pollution Control Commission Regulations for the Control of Noise in the City of Boston). Separate regulations within the Standards provide criteria to control different types of noise. Regulation 2 is applicable to the effects of the Project, as completed. Zoning District Standards are presented below in Table 4.10-1.

Table 4.10-1 City Noise Standards, Maximum Allowable Sound Pressure Levels

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

Additionally, the MassDEP has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. According to MassDEP, "unnecessary" noise is considered an air contaminant and thus prohibited by 310 CMR 7.10. The MassDEP administers this regulation through Noise Policy DAQC 90-001 which limits a source to a 10-dBA increase above the L90 ambient sound level measured at the Project property line and at the nearest residences. The MassDEP policy further prohibits "pure tone" conditions where the sound pressure level in one octave-band is 3 dB or more than the sound levels in each of two adjacent bands.

While the details of the mechanical equipment associated with the Project have not yet been precisely determined, steady operational noise from stationary sources will primarily involve a minimal amount of residentially-sized heating, cooling, and ventilation equipment, including: small residential cooling fans, boilers and furnaces located within interior mechanical spaces, and rooftop chillers/air conditioner units. It is assumed that the proposed chillers will be fitted with appropriate sound blankets or acoustical enclosures to control noise emissions, providing at least 10 dBA of attenuation per unit.

No detailed sound level assessment was performed due to the limited size and scope of the mechanical equipment proposed for the Project at this time. However, it is anticipated that the Project will operate without significant impact on the existing acoustical environment.

At this time, the mechanical equipment and noise controls are conceptual in nature and, during the final design phase of the Project, will be specified to meet the applicable City of Boston and MassDEP noise limits. Reasonable efforts will be made, if necessary, to minimize noise impacts from the Project using routinely employed methods of noise control, including the:

- Selection of "low-noise" equipment models
- Fitting of inlet and discharge vents with duct silencers;
- Installation of screening barriers to provide shielding where appropriate;
- Use of sound-attenuating enclosures and/or acoustical blankets on continuously operating equipment with outdoor exposure;
- Siting of noisy equipment at locations that protect sensitive receptors by shielding or with increased distance.

In summary, the Project, with appropriate noise control, is not expected to result in any adverse noise impacts at nearby sensitive receptors. Short-term, intermittent increases in noise levels will occur during Project construction. However, every reasonable effort will be made to minimize the noise impacts and ensure the project complies with the requirements of the City of Boston noise ordinance.

4.11 Construction Impacts

4.11.1 Introduction

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

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

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

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

4.11.2 Construction Methodology/Public Safety

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

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

4.11.3 Construction Schedule

The Proponent anticipates that the Project will commence construction in the fourth quarter of 2018 and last for approximately 18 months.

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

4.11.4 Construction Staging/Access

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

Although specific construction and staging details have not been finalized, the Proponent and its construction management consultant will work to ensure that staging areas will be located to minimize impacts to pedestrian and vehicular flow. Secure fencing and

barricades will be used to isolate construction areas from pedestrian traffic adjacent to the site. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

4.11.5 Construction Mitigation

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

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

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

4.11.6 Construction Employment and Worker Transportation

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

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

4.11.7 Construction Truck Routes and Deliveries

Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner 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.

4.11.8 Construction Air Quality

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

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

4.11.9 Construction Noise

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

Mitigation measures are expected to include:

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

- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

4.11.10 Construction Vibration

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

4.11.11 Construction Waste

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

4.11.12 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with the MWRA, BWSC, Boston Public Works, Dig Safe, and the governing utility company requirements. All necessary permits will be obtained before the

commencement of the specific utility installation. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its site plan review process.

4.11.13 Rodent Control

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

4.11.14 Wildlife Habitat

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

Chapter 5.0

Sustainable Design and Climate Change Resiliency

5.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE RESILIENCY

5.1 Sustainable Design

To measure the results of their sustainability initiatives and to comply with Article 37, the Proponent intends to use the framework of the Leadership in Energy and Environmental Design (LEED) rating system promulgated by the US Green Building Council (USGBC). The Project will use LEED for New Construction (LEED v4 for BD+C) as the rating system to demonstrate compliance with Article 37. The LEED rating system tracks the sustainable features of a project by achieving points in the following categories: Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation and Design Process, and Regional Priority Credits.

A LEED checklist for the Project is included at the end of this section, and the narrative below outlines how the Project intends to achieve the prerequisites and credits for each credit category. The checklist will be updated regularly as the design develops and engineering assumptions are substantiated. At present, 50 points have been targeted. Additional credits, identified as "Maybe" on the checklist, will be evaluated as the design progresses.

Integrative Process

Integrative Process: Beginning in pre-design and continuing throughout the design phases, the Project team will identify and use opportunities to achieve synergies across disciplines and building systems. The analyses will inform the Proponent's Project requirements, basis of design, design documents, and construction documents.

Location and Transportation

Sensitive Land Protection: The Project site is a previously developed site.

High Priority Site: The Project site is located within a Federal Empowerment Zone, meeting the criteria for Option 2.

Surrounding Density and Diverse Uses: The Project site is within a ½ mile of at least eight basic services, including restaurants, community retail, community spaces, and food retail. The area around the site is also densely developed.

Access to Quality Transit: The Project site is located within ½ mile of MBTA B and C Green Line branches, and is within ¼ mile of the MBTA #65 bus line.

Bicycle Facilities: All Project entrances are connected by an existing bike route which connects to at least 10 diverse uses within three miles of the site. The Project will also include at least one bicycle storage space per unit, as well as short term bicycle racks for visitors.

Reduced Parking Footprint: The Project achieves at least a 40% reduction in parking spaces from the base ratios recommended in the ITE Transportation Planning handbook. At least 5% of the parking spaces will be designated as preferred parking for carpools.

Green Vehicles: The Proponent will provide preferred parking for green vehicles totaling 5% of the total spaces, and will provide electric vehicle charging equipment in an additional 2% of parking spaces.

Sustainable Sites

Construction Activity Pollution Prevention (Prerequisite): An Erosion and Sedimentation Control Plan will be established to control erosion, waterway sedimentation and airborne dust generation during construction.

Environmental Site Assessment: The team will complete and document an assessment of the following information:

1. Topography – contours and sloping,
2. Hydrology – flood hazards and existing water bodies,
3. Climate – solar exposure and sun angles,
4. Vegetation – vegetation types and greenfield spaces,
5. Soils – soils delineation, prime farmland, and disturbed soils,
6. Human Use – enhanced views, availability of transportation, and future building potential, and
7. Human Health Effects – population assessment, physical fitness, and existing air pollution sources.

Heat Island Reduction: The building will utilize high albedo materials for all hardscapes, including both nonroof and roof installations. All installed materials will meet LEED requirements for either initial or three-year Solar Reflectance Index values.

Light Pollution Reduction: The design team will ensure that all exterior lighting fixtures are full cutoff and meet the LEED dark sky requirements. No up lighting will be utilized, and fixtures will be dimmed at night to keep the site safe while minimizing light pollution.

Water Efficiency

Outdoor Water Use Reduction (Prerequisite): The Project's landscape will be designed to reduce water usage by at least 30%, calculated from the site's baseline peak watering month.

Indoor Water Use Reduction (Prerequisite): The building will achieve a minimum reduction of 20% of water consumption from the baseline.

Building-Level Water Metering (Prerequisite): A water meter will be installed for the building.

Outdoor Water Use Reduction: The landscaping will be designed to reduce potable water for irrigation by 50% from a calculated midsummer baseline case.

Indoor Water Use Reduction: An additional reduction to 30% will be achieved through the use of efficient fixtures.

Cooling Tower Water Use: A one-time potable water analysis will be conducted. The design will maximize the number of water cycles, and at least 20% of the water used will be from non-potable sources.

Water Metering: The Proponent will measure at least two of the following water flows: irrigation, indoor plumbing fixtures, domestic hot water, boiler, or reclaimed water.

Energy and Atmosphere

Fundamental Commissioning and Verification (Prerequisite): The team will include an experienced Commissioning (Cx) Agent - this person will be hired before the end of the design development phase and will provide review services for the project Basis of Design and Owner's Project Requirements as well as a thorough review of both the Design Development and Construction Documents plan and specification set, observation of all start-up testing and balancing procedures, and confirmation of installation and operation according to the design parameters.

Minimum Energy Performance (Prerequisite): Through a Whole Building Energy Simulation, the Proponent will demonstrate at least a 5% improvement in the proposed building performance rating, compared with the baseline building performance rating. The baseline building performance rating will be calculated according to Appendix G of ASHRAE 90.1-2010 using a computer simulation model for the whole building project.

Building-Level Energy Metering (Prerequisite): Energy meters will be installed to measure total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass).

Fundamental Refrigerant Management (Prerequisite): It is the intent of this Project to use zero CFC-based refrigerants in the building heating, ventilating, air conditioning and refrigeration equipment.

EA Enhanced Commissioning: The team will include an experienced Commissioning (Cx) Agent. This person will be hired before the end of the design development phase and will provide review services for the project Basis of Design and Owner's Project Requirements as well as a thorough review of both the Design Development and Construction Documents plan and specification set, observation of all start-up testing and balancing procedures, and confirmation of installation and operation according to the design parameters.

Optimize Energy Performance: The Project will strive to optimize energy performance and realize energy cost savings of 14% compared with ASHRAE 90.1-2010. Energy conservation measures will be determined via an integrative approach investigating the overlapping of architectural and engineering systems to reduce energy cost. Energy conservation measures are expected to include green roofs, reflective roofs, efficient lighting and HVAC systems, heat recovery systems, and enhanced glazing and insulation.

EA Enhanced Refrigerant Management: It is the intent of this Project to use zero CFC-based refrigerants in the building heating, ventilating, air conditioning and refrigeration equipment. In addition, the Project will only use refrigerants with an ozone depletion potential equal to zero and a global warming potential of less than 50.

Materials and Resources

Storage and Collection of Recyclables (Prerequisite): An easily accessible area will be provided for the collection and storage of materials for recycling for the entire building. Materials will include paper, corrugated cardboard, glass, plastics and metals. Appropriate measures will be taken for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste

Construction and Demolition Waste Management Planning (Prerequisite): The construction team will institute a Construction Waste Management Plan, which will establish waste diversion goals for five materials.

Construction and Demolition Waste Management: The Project team intends to divert at least 75 percent of waste with at least four material streams.

Indoor Environmental Quality

IEQ Prerequisite – Minimum Indoor Air Quality Performance: The team will ensure that all ventilation systems meet the minimum requirements of Sections 4 through 7 of the ASHRAE 62.1-2007 standard for Acceptable Indoor Air Quality.

IEQ Prerequisite – Environmental Tobacco Smoke Control: Smoking will be prohibited inside the building and within 25-feet of all entries, outdoor air intakes, and operable windows; these prohibitions will be incited in all leasing agreements and will be displayed via on-site signage.

IEQ Low Emitting Materials: The team will specify low-emitting materials for paints, coatings, flooring, adhesives, and sealants.

Construction Indoor Air Quality Management Plan: The Proponent will develop and implement an IAQ management plan for the construction and pre-occupancy phase of the building.

Thermal Comfort Controls: All HVAC systems will be designed in compliance with ASHRAE 55-2010 (with errata). Thermal comfort controls will be provided for a minimum of 50% of individual occupant spaces with group thermal comfort controls for all shared multi-occupant spaces.

EQ Interior Lighting: The Project will provide individual lighting controls for at least 90% of individual occupant spaces, and all shared spaces will include controls for adjustment per group needs. The Project will also apply at least four additional strategies as outlined in Option 2.

Innovation in Design

The team will pursue the following four innovation credits:

- Exemplary Performance for Construction and Demolition Waste Management
- Indoor Environmental Quality Pilot Credit 57 – Enhanced Acoustical Performance – Exterior Noise Control
- Sustainable Sites Pilot Credit 75 – Clean Construction
- Sustainable Sites Pilot Credit 121 – Solar Access to Green Space

LEED Accredited Professional: At least one LEED Accredited Professional is part of the team.

Regional Priority

Regional Priority Credits (RPCs) 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. Currently, the Project does not anticipate achieving any of the Regional Priority credits.

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

5 Washington St.
Date: 12/07/2017

Y	?	N			
1			Credit	Integrative Process	1

13	1	2	Location and Transportation		16
		n/a	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
1	1		Credit	High Priority Site	2
5			Credit	Surrounding Density and Diverse Uses	5
3		2	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

4	4	2	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
	1		Credit	Open Space	1
	3		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

7	4	0	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
2	4		Credit	Indoor Water Use Reduction	6
2			Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

8	22	3	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
2	4		Credit	Enhanced Commissioning	6
5	13		Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
	1	1	Credit	Demand Response	2
	3		Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
		2	Credit	Green Power and Carbon Offsets	2

2	9	2	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	3	2	Credit	Building Life-Cycle Impact Reduction	5
	2		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	2		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	2		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

7	9	0	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
	2		Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	2		Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
	3		Credit	Daylight	3
	1		Credit	Quality Views	1
	1		Credit	Acoustic Performance	1

5	1	0	Innovation		6
4	1		Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

0	4	0	Regional Priority		4
	1		Credit	Rainwater Management (2pts)	1
	1		Credit	Indoor Water Use Reduction (4pts)	1
	1		Credit	Optimize Energy (8pts)	1
	1		Credit	Renewables (2pts); or High Priority Site (2pts)	1

47	54	9	TOTALS	Possible Points:	110

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

5.2 Climate Change Resiliency

5.2.1 Introduction

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

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

5.2.2 Extreme Heat Events

The *Climate Ready Boston* report predicts that in Boston, there may be between 25 to 90 days with temperatures over 90 degrees by 2070, compared to an average of 11 days per year over 90 degrees between 1971 to 2000. The Project design will include measures to adapt to these conditions, including installing high performance HVAC equipment, a high-performance building envelope and including operable windows where possible. The Project will also include measures to reduce the heat island effect, including: high-albedo rooftops, some lower-level roofs will feature green terraces, and ground level landscaping.

5.2.3 Rain Events

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. To mitigate this, the Proponent will take measures to minimize stormwater runoff and protect the Project's mechanical equipment, as necessary. The Project will be designed to reduce the existing peak rates and volumes of stormwater runoff from the site, and to promote runoff recharge to the greatest extent practicable.

5.2.4 Drought Conditions

Although more intense rain storms are predicted, extended periods of drought are also predicted due to climate change. Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project's susceptibility to drought conditions, the landscape design is anticipated to incorporate native and adaptive plant materials and high efficiency irrigation systems will be installed. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

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 Project Site

The Project site consists of three parcels containing a gas station, office building, and surface parking spaces. Although the buildings located within the Project site are not included in the Boston Landmarks Commission's (BLC's) Comprehensive Survey, the buildings are over 50 years of age and thus are subject to review by the BLC under Article 85 of the Boston Zoning Code.

Research indicates that the two southern parcels (addressed as 3 and 5 Washington Street) were developed as a gasoline filling station circa 1936 consisting of an office, service area and filling pumps. Over time the site and buildings thereon have undergone significant changes. The station, located at 5 Washington Street, was initially designed as a one and a half story building clad in brick with a slate roof and dormers. In approximately 1956, the site was redeveloped with at least a portion of filing station removed and a new two story concrete block service building added at 3 Washington Street. Subsequently, the slate roof with dormers was removed. Canopies were added to cover the gas pumps in the late 1960s and 1970s. In 1990, stucco siding and stone veneer cladding was added to each building. Presently, 3 Washington Street contains the two story, two bay stone veneer clad concrete block service building as well as filling pumps with canopy above. The building on the site contains an office area and two service bays. A portion of 3 Washington Street extends into the Town of Brookline and serves as asphalt paved parking and a driveway area with some landscaping.

The northern parcel addressed as 165 Corey Road was utilized as a construction yard with a one family residence and barn in 1938. In 1951, the house was demolished. The barn was removed in 1956. By 1959, the present two story brick and concrete building was constructed to serve warehouse and office space, later occupied by the Brookline Driving School. The existing concrete building has large window openings evenly spaced along all elevations of its two wings and a central entrance at the intersection of the wings situated under a projecting canopy. All windows are modern replacement sash and the center canopy and entrance are from a later date. A large paved parking area is located along Corey Road.

6.2 Historic Resources Within the Project Site

There are no portions of the Project site within the City of Boston listed within the State and National Registers or included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory). A small portion of the Project site, located within the Town of Brookline, is included in the Corey Hill Area, an area included in the Inventory. The Brookline portion of the Project site consists of paved parking and driveway areas only.

6.3 Historic Resources Within the Vicinity of the Project Site

The Project site is also located in the vicinity of several historic resources listed in the State and National Registers of Historic Places and included in the Inventory. Table 6-1 identifies these resources and corresponds to resources depicted in Figure 6-1.

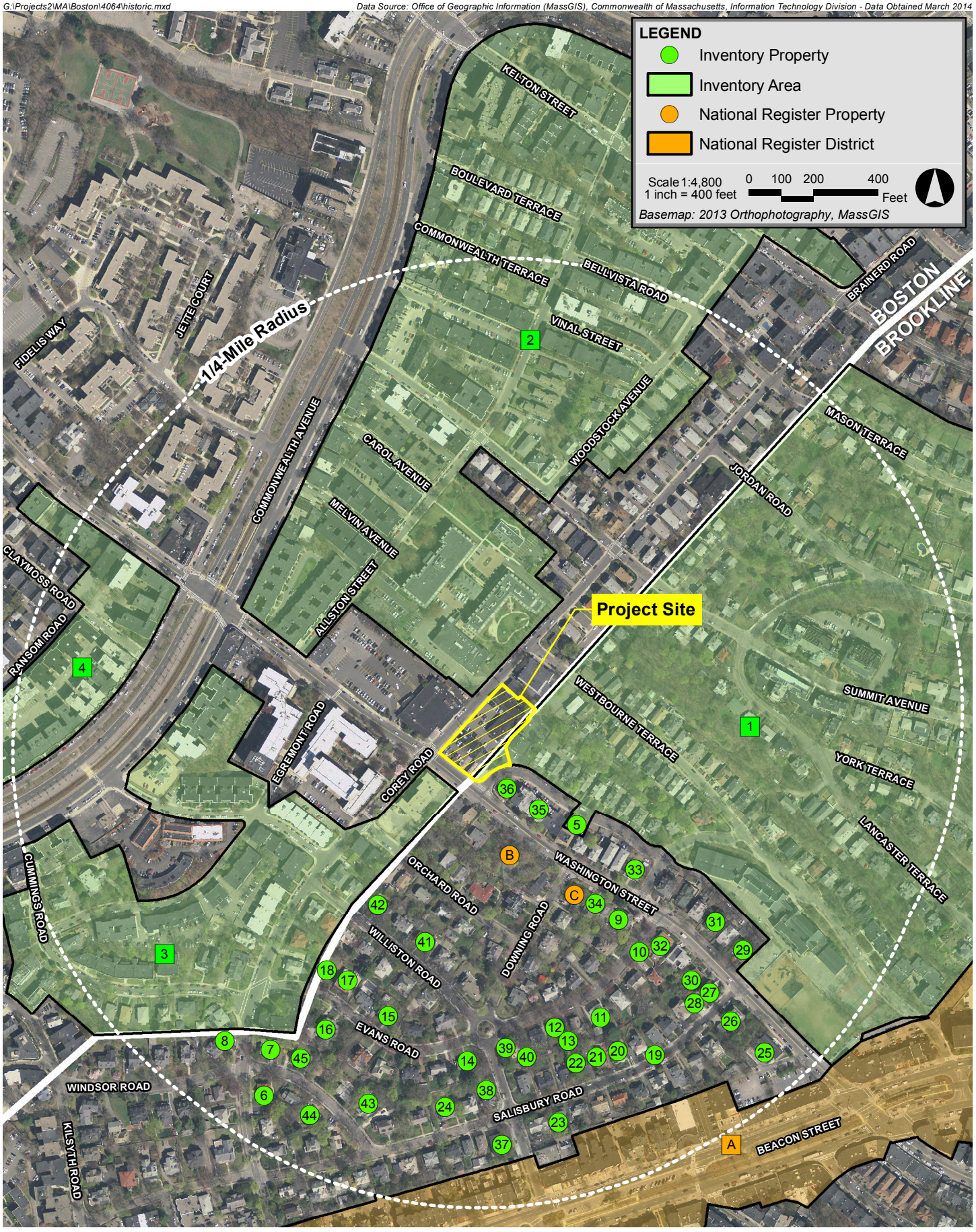
Table 6-1 Historic Resources in the Vicinity of the Project Site

Map No.	Name	Address
State and National Register-Listed Properties		
A	Beacon Street Historic District	Canal, Causeway, Friend, Lancaster, Lowell Square, Merrimack, Portland, and Traverse Streets Brookline
Properties included in the Inventory of Historic and Archaeological Assets of the Commonwealth		
2	Summit Avenue – Kelton Street Area	Bounded by Commonwealth Avenue, Summit Avenue, Allston Street and Kelton Street Boston
3	Mount Hood – Corey Roads Area	Bounded by Commonwealth Avenue, Washington Street, Corey Road and Cummings Road Boston
4	Commonwealth Avenue – Ransom Road Area	Bounded by Commonwealth Avenue, Euston Road, Colborne Road, Ransom Road, and Washington Street Boston

6.4 Archaeological Resources Within the Project Site

A review of the Inventory indicates 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.

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division - Data Obtained March 2014



5 Washington Street Boston, Massachusetts

Epsilon Associates Inc.

Figure 6-1

Historic Resources Map

6.5 Potential Impacts to Historic Resources

6.5.1 Demolition of Historic Resources

The Project will involve the demolition of the existing buildings on site. As noted previously, the buildings are not listed in State or National Register of Historic Places or included in the City's Comprehensive Preservation Survey. They are not part of a pending Landmark designation, and are not representatives of a historically and architecturally significant period, style or method of construction. The buildings are utilitarian in design and have been significantly altered resulting in the loss of their original character. The buildings lack an important association with events or broad cultural, political, economic or social patterns of history in the City, and their demolition would not have a significant negative impact of the historical or architectural integrity or urban design character of the neighborhood.

The proposed demolition of the existing buildings on the Project site will be subject to review by the BLC under Article 85 of the Boston Zoning Code. Article 85 Applications for each building will be submitted to the BLC. It is anticipated that the buildings will not be determined to be historically or architecturally significant under Article 85. Given the lack of historically or architecturally significant resources within the Project site, the proposed demolition is not anticipated to have any adverse impacts on historic resources within the Project site.

6.5.2 Visual Impacts to Historic Resources

The site at 5 Washington Street is located in the vicinity of several properties listed in State or National Register of Historic Places and included in the Inventory. Historic resources in the immediate vicinity of the Project site within the City of Boston are limited to the three-story red brick Harriet Baldwin School at 121 Corey Road, situated across Washington Street from the Project site, and the contemporary nursing home complex at 170 Corey Road. The proposed wood frame building will be five-stories in height and have a U-shaped footprint. The building will be situated at the rear edge of the sidewalk at the corner of Washington Street and Corey Road with the interior courtyard facing Bartlett Crescent. The Corey Road elevation will rise from a tall first story base creating an active street wall opposite the one-and –one-half story rear elevation of the Whole Foods Supermarket and the contemporary three-story Brighton House Rehabilitation and Nursing Center at 170 Corey Road. Along Washington Street, the main block of the building is set back from the first story located across the street from the Harriet Baldwin School. The ends of the U shaped wings overlook the modern buildings at 45 Bartlett Street. By setting the larger mass of the long north wing along Corey Road, the building steps down to a central one-story section that serves as a transition to the smaller two-and-three-story wood frame buildings within the Corey Hill Area in Brookline.

The exterior materials of the building are intended to blend with the nearby historic resources including brick and plank siding at the base, two variations of brick and metal panel above level two, and wood details that complement the existing palette of materials seen in the surrounding neighborhood of brick apartment buildings and wood frame houses. Projecting bay windows will add additional depth and rhythm to the façade, and the ground floor will have storefront glass at the retail space and the residential entry. Sidewalks will be incorporated into the site design and street trees located along Washington Street in keeping with the presence of greenscape at the Harriet Baldwin School. A passive greenspace is also proposed along the east side of the site to further transition from the new construction to the lower-scale residential character of Bartlett Crescent.

6.5.3 Shadow Impacts to Historic Resources

Shadow impacts to the historic resources will be minimal. As illustrated in the shadow study diagrams (Figures 3.2-1 to 3.2-14), during isolated time periods the Project will cast minimal net new shadow on areas of the Summit Avenue – Kelton Road Area in Boston, an area included in the Inventory.

New shadow on historic resources with the City of Boston is limited to new shadow at 9:00 a.m. at the Winter Solstice on 170 Corey Road, a contemporary building (1982) located within the boundaries of the Summit Avenue – Kelton Road Area. Fleeting shadow also passes over the southwest corner of the 170 Corey Road site at 9:00 a.m. and 12:00 p.m. on March 21st, and 9:00 a.m. on June 21st, and 9:00 a.m. and 12:00 p.m. on September 21st.

New shadow cast by the Project is largely limited to non-contributing and significantly altered properties within the Summit Avenue – Kelton Roads Area. Net new shadow created by the Project will have no significant impacts to historic resources.

6.6 Consistency with Historic Reviews

6.6.1 Article 85 of the Boston Zoning Code

The proposed demolition of the existing buildings on the Project site will be subject to review by the BLC under Article 85 of the Boston Zoning Code. The Article 85 Review for the demolition of buildings in the Project site will be initiated through the filing of an Article 85 application for each building to the BLC. It is anticipated that the buildings will not be determined to be historically or architecturally significant under Article 85.

Chapter 7.0

Infrastructure

7.0 INFRASTRUCTURE

This Chapter outlines the existing utilities surrounding the Project site, the connections required to provide service to the Project, and any impacts on the existing utility systems that may result from the construction of the Project.

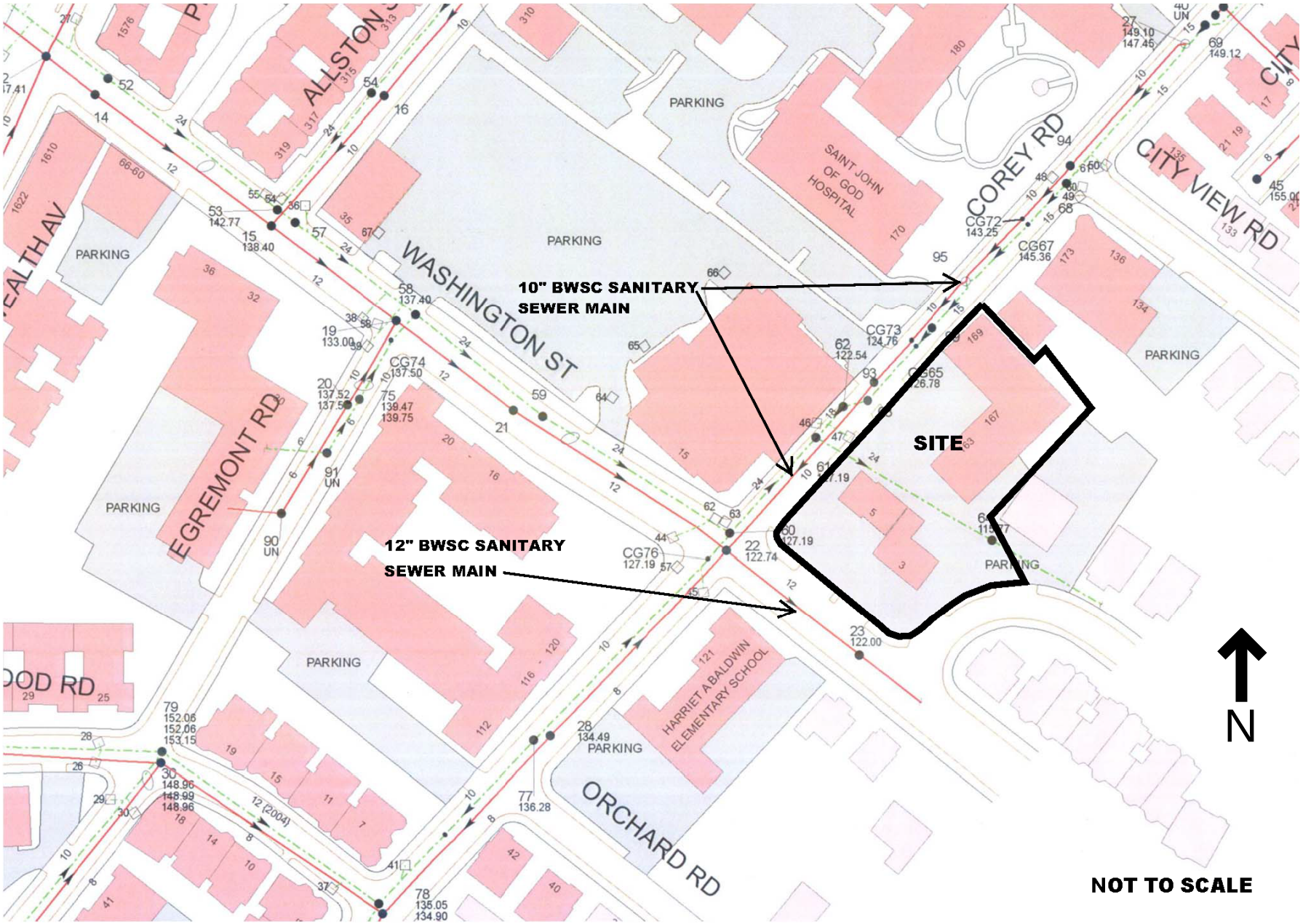
The Project site is approximately 43,500 sf within the City of Boston and is bound by Bartlett Crescent to the east, Washington Street to the south, and Corey Road to the west. The Project includes the development of an approximately 132,500 sf, five-story residential building with ground floor retail space. As shown on Figures 7-1, 7-3, and 7-5, there are existing utilities in each of the adjacent streets. In Corey Road, there are existing sanitary sewer, storm drainage, water, gas, electric, and telecommunications lines. In Washington Street, there are existing sanitary sewer and water, gas, electric, and telecommunications lines. It is notable that the existing Boston Water and Sewer Commission (BWSC) storm drainage system within Corey Road discharges via a 24-inch main through the Project site, bisecting the Project site as further described below.

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 are separated sewer mains in Washington Street and Corey Road, adjacent to the Project site. The sewer in Corey Road is a 10-inch main that flows to the southwest along the frontage of the site and connects to the sewer in Washington Street at a junction point. This junction point at Washington Street includes a manhole that collects sewer discharge from an existing 12-inch separated sanitary sewer within Washington Street (flow travels southeast) and sewer discharge from an existing 8-inch sanitary sewer within Corey Road (flow travels northeast). This discharge from three contributing sewer lines then flows southeast down Washington Street and into the Town of Brookline. 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. The existing sewer system is illustrated in Figure 7-1.



5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-1

Existing Sanitary Sewer System

Table 7-1 Existing Sewer Flow Capacity (Washington Street – 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)
22 to 23	150	122.74	122.00	0.005	12	0.013	2.71	1.75

Table 7-2 Existing Wastewater Generation

Unit Type	Program	Sewer Generation Rate	Sewer Flow (gpd)
Office	22,000 sq. ft.	75 gallons/day/1,000 sf	1,650
Gasoline Station	4 islands	75 gallons/day/island	300
Gasoline Station Service	4 bays	125 gallons/day/bay	500
Total Existing Sewer Generation			**2,450**

7.1.2 Project Generated Sanitary Sewer Flow

The Massachusetts Department of Environmental Protection (MassDEP) establishes sewer generation rates for various types of establishments in a section of the State Environmental Code Title V (Title V), 310 CMR 15.203. Based on an estimate of the Project's building program, Table 7-3 gives the estimated proposed sanitary sewer flows anticipated to be generated by the Project. Based on these Title V sewer generation rates, the Project is expected to produce approximately 16,025-gallons per day (gpd) of sewer flow.

Table 7-3 Sewer Generation

Unit Type	Program	Sewer Generation Rate	Sewer Flow (gpd)
Residential	140 bedrooms	110 gallons/day/bedroom	15,400
Retail	12,500 sf	50 gallons/day/1,000 sf	625
Total Sewer Generation (gpd)			**16,025**
Total Sewer Generation (MGD)			**0.016 MGD**

In accordance with revisions to 314 CMR 7.00 Sewer Extension and Connection Permitting regulations, promulgated June 20, 2014, the Project is no longer required to file a Compliance Certification for a sanitary sewer connection between 15,000-50,000 gpd within 60 days of the activation of the service, therefore the sanitary sewer service connection approval and notification of completion will be through BWSC.

Since the Project's proposed sewer generation exceeds 15,000 gpd, it is anticipated that the Project will be subject to BWSC inflow and infiltration (I/I) requirements, at a rate of 4-gallons for every 1-gallon of new sewer flow, initially calculated at 64,100-gallons per day. Through the Site Plan Approval process, the Project's Proponent and engineer will work with BWSC to identify any existing sources I/I that may be eliminated.

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 12-inch BWSC sanitary sewer main in Washington Street 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.

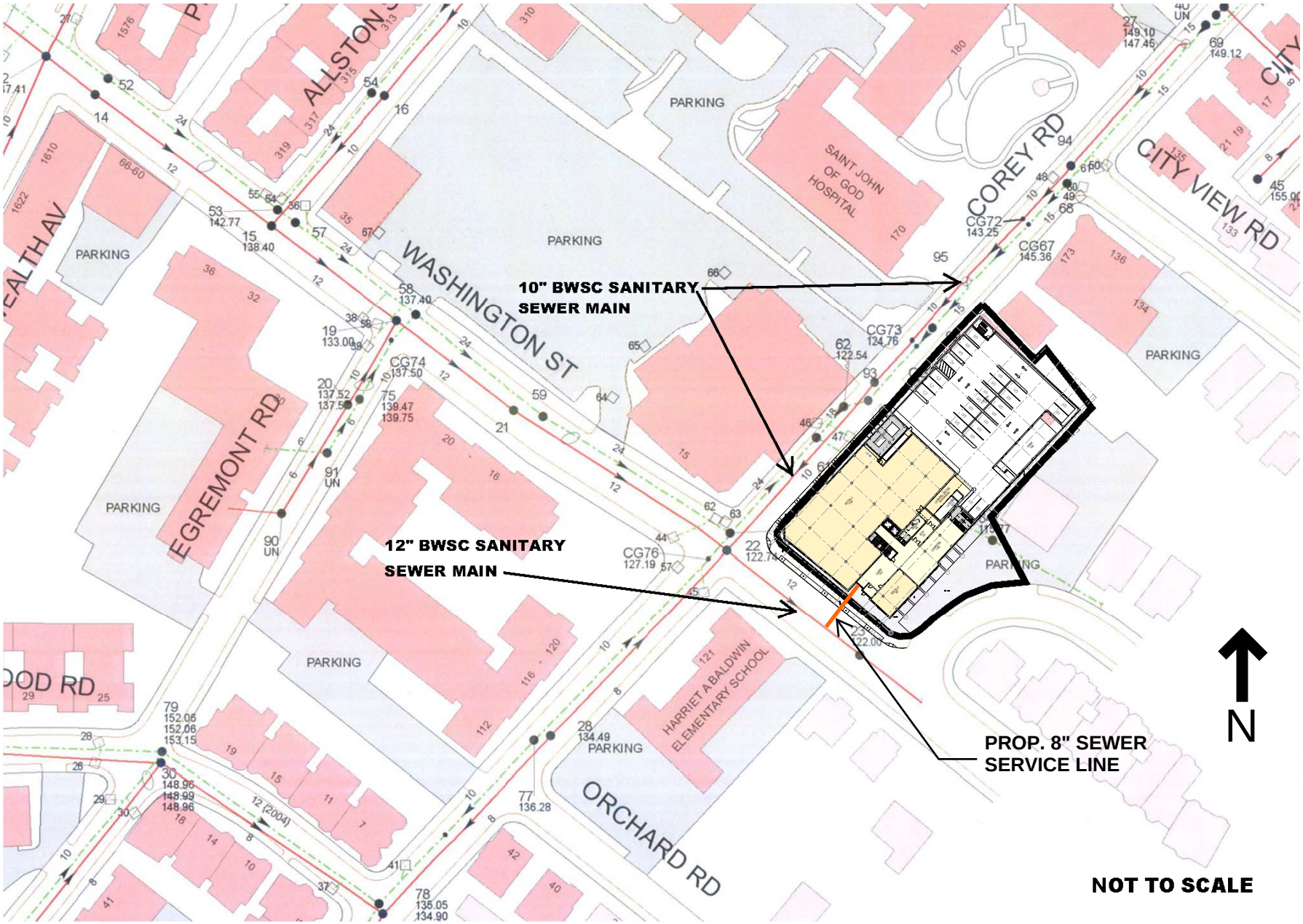
The sewer connection will be constructed so as to minimize effects on adjacent streets, sidewalks, and other areas within the public right-of-way and will be kept separate from storm drain connections in accordance with BWSC requirements. The proposed sanitary sewer connection is illustrated in Figure 7-2.

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) high pressure water main in Corey Road fronting the Project site on the far side of the street that was built in 1932 with repairs made in 2004. Additionally, there is an 8-inch cast iron (CI) high pressure main built in 1934 with repairs made in 1992 located closest to the Project site within Washington Street. The 8-inch service within Washington Street appears to be dead-ended at a hydrant (adjacent to the property) as this is in close proximity to the municipal boundary with the Town of Brookline. There are two existing fire hydrants adjacent to the Project site; one of which is connected to the 12-inch main within Corey Road and located across the street, and one of which is connected to the 8-inch main within Washington Street, where the 8-inch main appears to be capped approximately 5-feet from the hydrant. The existing water distribution in the vicinity of the Project site is shown on Figure 7-3.

Additionally, the Town of Brookline owns and maintains a separate water supply system in the adjacent Washington Street and Bartlett Crescent.

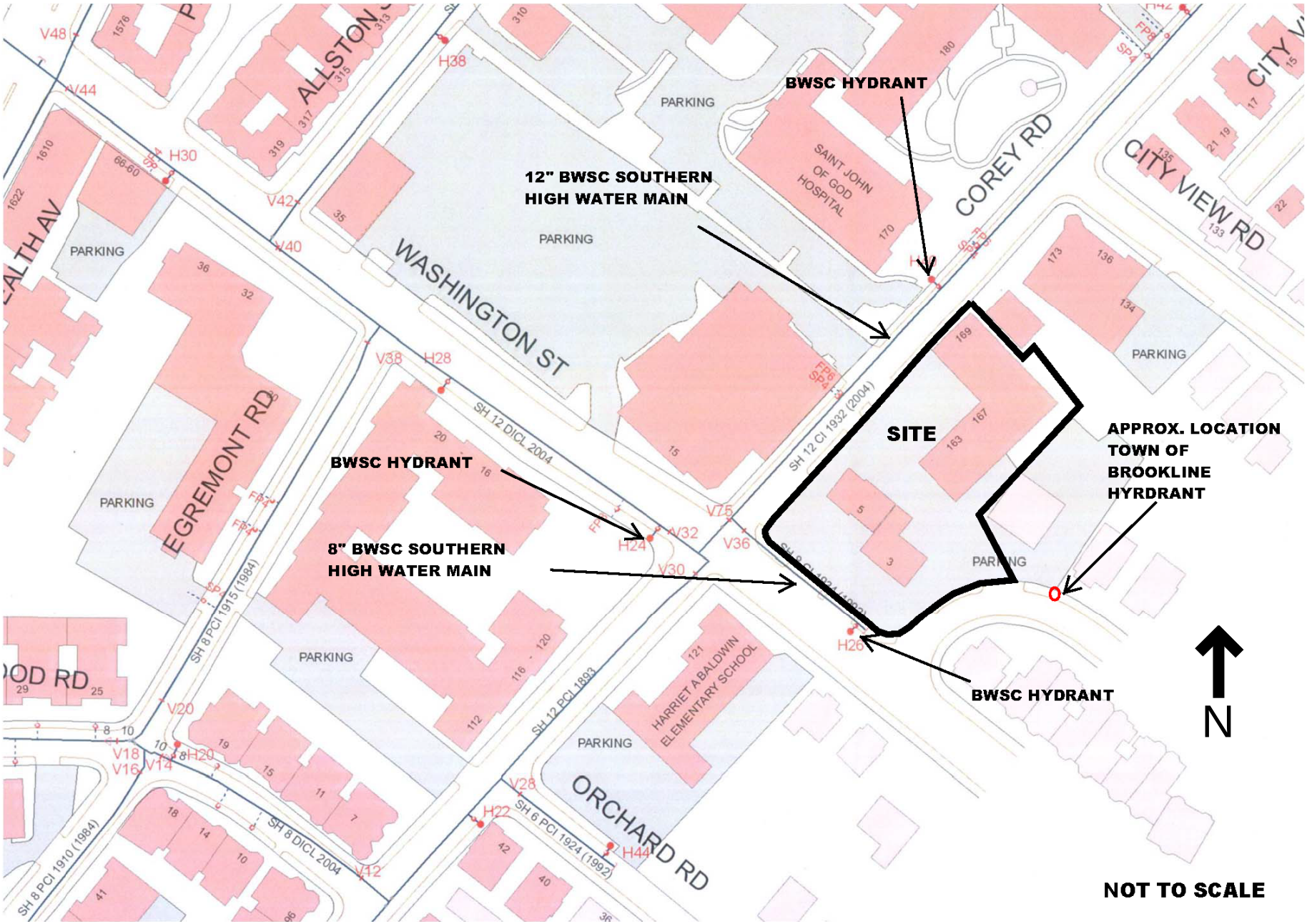


5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-2

Proposed Sanitary Sewer Connection



5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-3

Existing Water Supply System

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 17,628 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 needs are met while maintaining adequate water flows to the surrounding neighborhood.

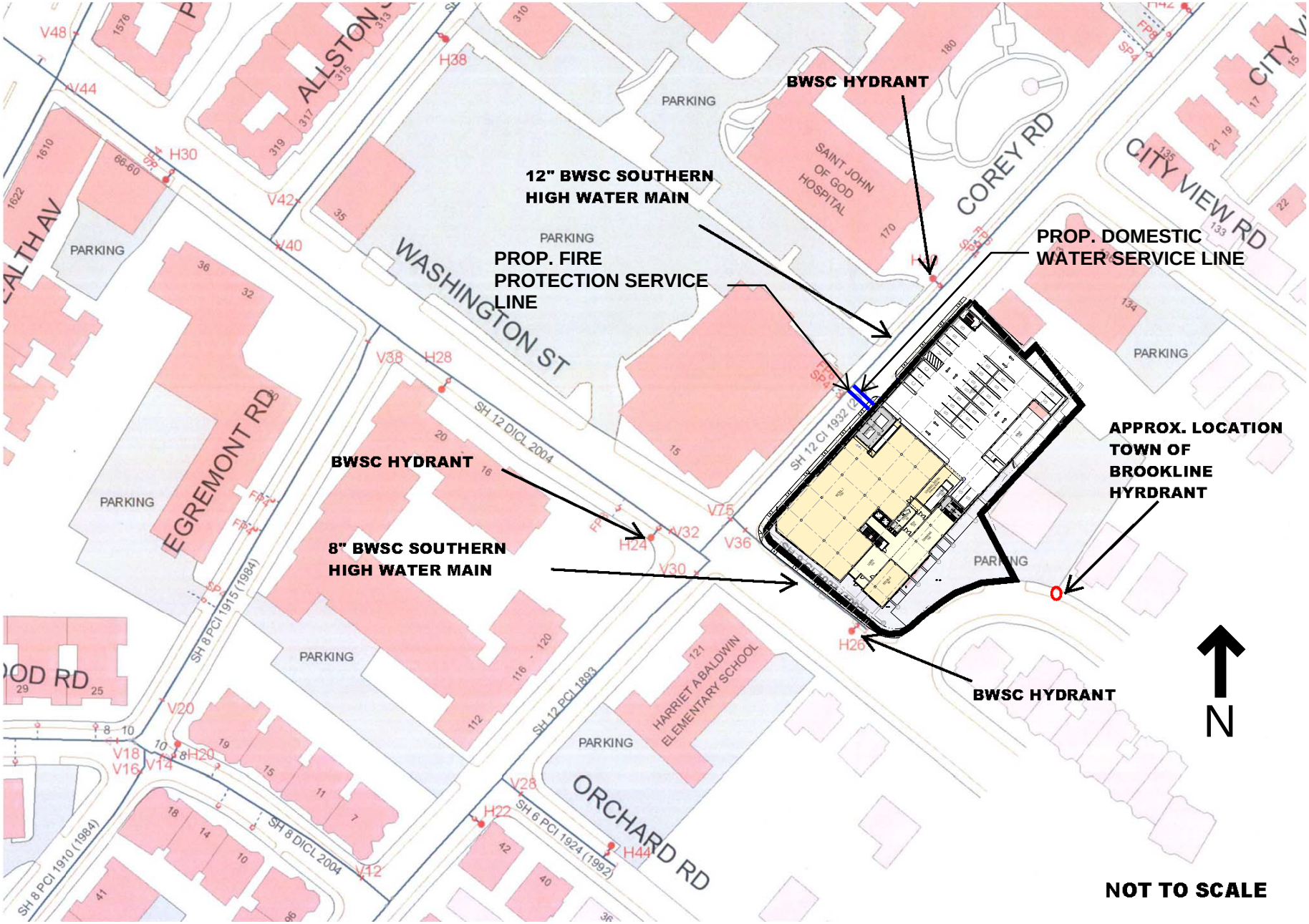
7.2.3 Proposed Water Service

It is anticipated that the Project will be served by a single domestic service connection from the 12-inch main in Corey Road. 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.

The Project is also expected to include a single fire protection service connection, also anticipated from the 12-inch main in Corey Road. 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. The proposed water service connections are illustrated in Figure 7-4.

There are no proposed connections to or anticipated impacts to the Town of Brookline water supply system.



5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-4

Proposed Water Supply Connections

7.2.3.1 Water Supply Conservation and Mitigation

Various measures for water conservation and wastewater reduction such as low-flow toilets and urinals, restricted flow faucets, and sensor operated sinks, toilets, and urinals may be incorporated in order to meet the LEED 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

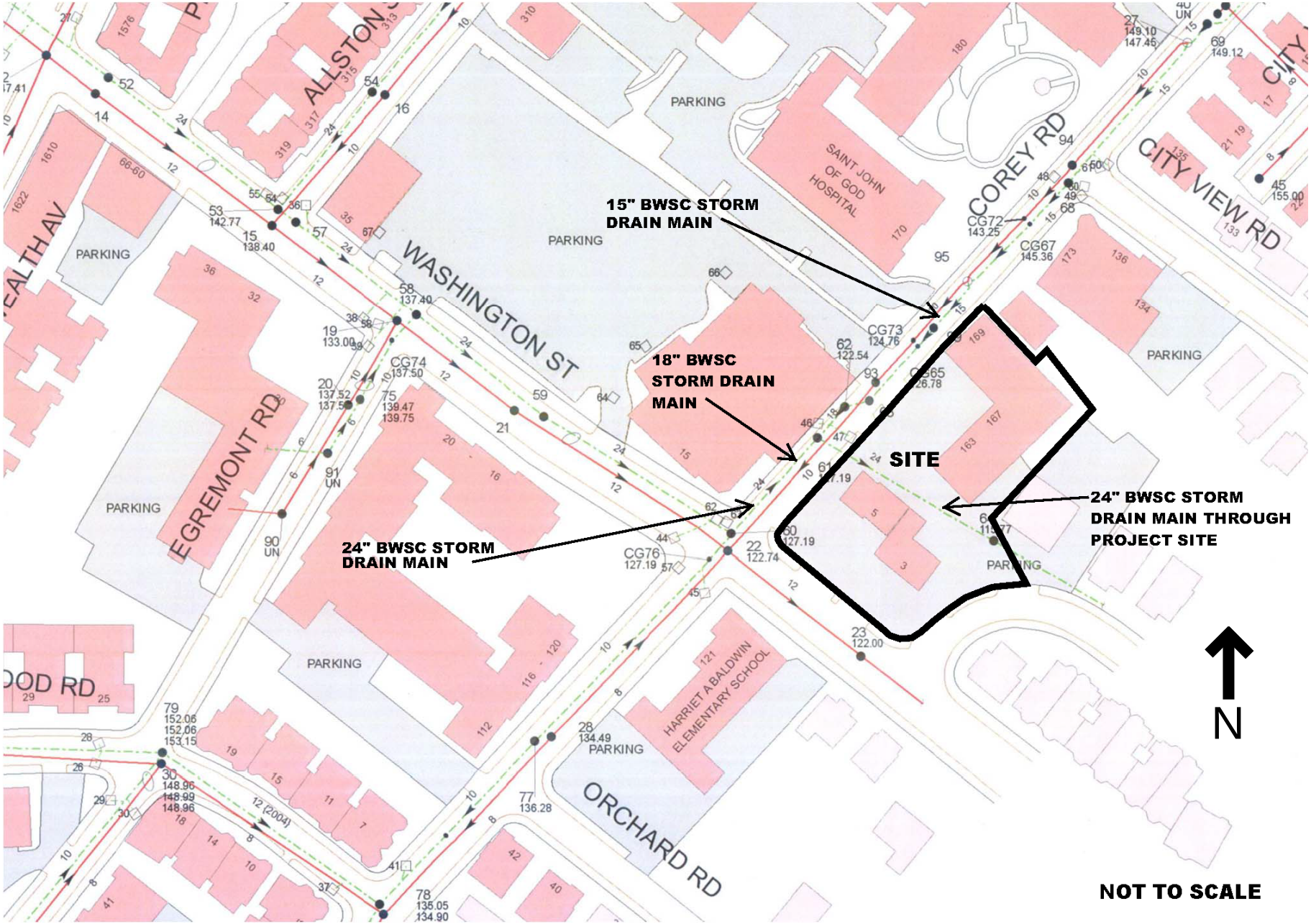
7.3.1 Existing Storm Drainage System

BWSC owns, operates, and maintains the storm sewer mains in the vicinity of the Project site. Available records show a 15-inch main flowing southwest in Corey Road, from City View Road, increasing to an 18-inch main and connecting to BWSC MH #61. On Washington Street, there is a 24-inch main flowing southeast towards the intersection of Corey Road where it converges with a 10-inch main flowing northeast on Corey Road, from Orchard Road. From the intersection of Washington St and Corey Road, the drainage flows in a 24-inch main and also connects to BWSC MH#61. The BWSC system then flows southeast via a 24-inch main through the Project site, into Brookline, and is discharged into a Brookline 1foot 7-1/4-inch x 2foot 7-1/4-inch brick culvert. 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, three buildings and some small landscaped islands and perimeter vegetation along the north east property line. Runoff from the office building and the gas station outlet at grade via downspouts and the service station appears to be piped to the BWSC storm drain system. No records of the roof drain connections were available at BWSC and will need to be confirmed during the Site Plan approval process. Approximately one-third of the site flows overland into Corey Road and Washington Street, while the remainder of the site flows overland towards Bartlett Crescent. There is one on-site leaching catch basin in the parking lot, near the southeast corner of the existing office building, which appears to be functioning, as it was dry during site visits. The existing storm sewer system is illustrated in Figure 7-5.

7.3.2 Proposed Storm Drainage System

Typically, BWSC requires a new project to provide an infiltration system with a volume equal to 1-inch of rainfall over the project area. Stormwater runoff will be collected and treated, as necessary, on-site, and will be routed to infiltration systems to the maximum extent practicable in an effort to reduce the impact on the surrounding drainage system. Appropriate stormwater best management practices (BMP's) will be included in the Project



5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-5

Existing Storm Sewer System

to improve the quality of stormwater runoff discharged from the Project site, to promote infiltration to groundwater, and to reduce the peak flows to be at or below existing levels. Overflow from the underground infiltration areas due to larger, less frequent storm events will be routed to the BWSC drain system. Specific BMP's proposed for the Project will be described in more detail in the Site Plan application to BWSC.

It is currently anticipated that the site will connect to the proposed 30-inch relocated storm drain pipe discussed in Section 7.3.5 "Proposed Storm Drain Relocation". The proposed storm sewer connection is illustrated in Figure 7-6.

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 DEP's Stormwater Management Standards (the Standards) are as follows:

Standard 1 - New Stormwater Conveyances

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

Standard 2 – Stormwater Runoff Rates

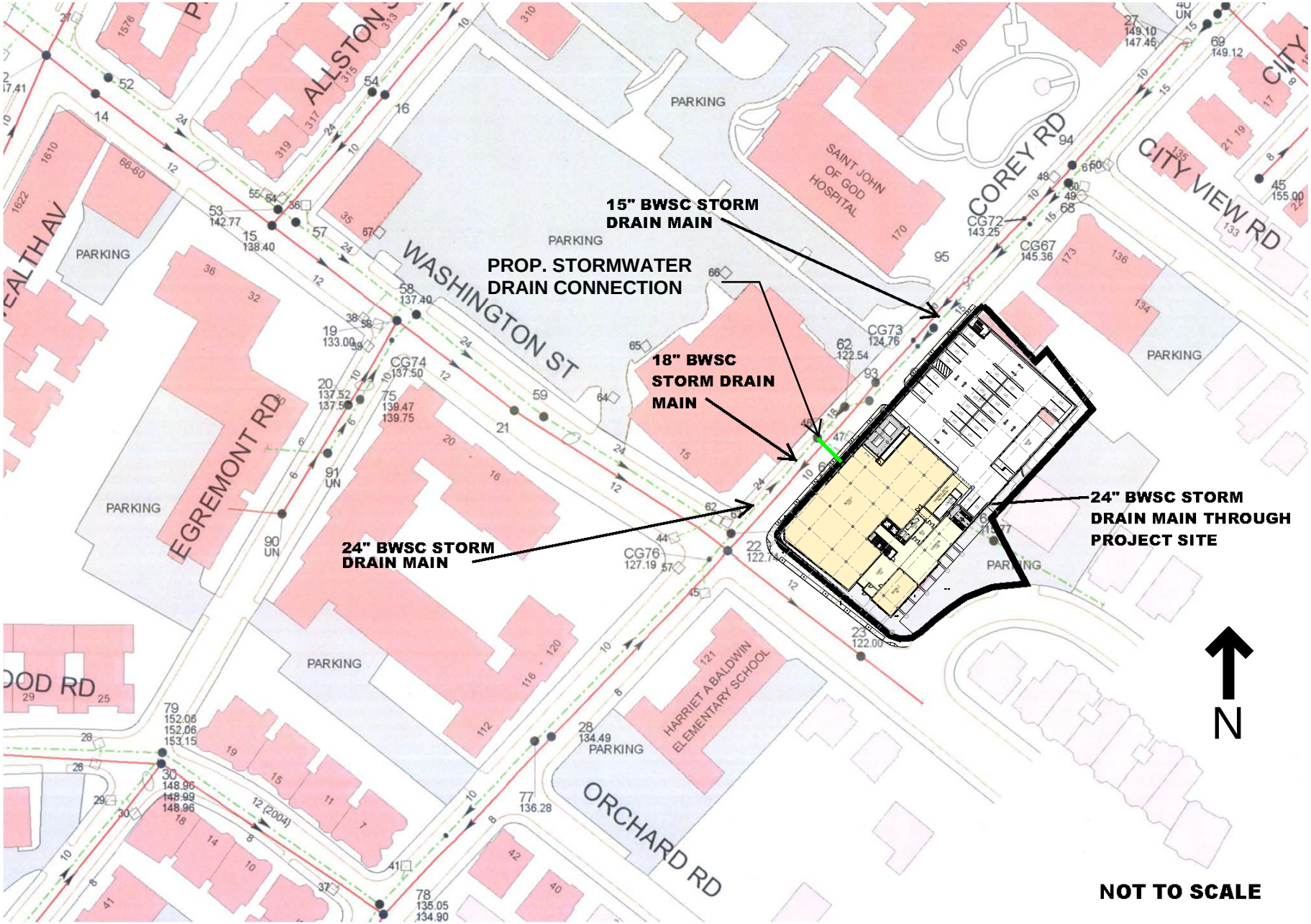
The Project will comply with this Standard. Post development peak discharge rates from the Project site will be at or below existing peak discharge rates for each of the analyzed storm events.

Standard 3 – Groundwater Recharge

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

Standard 4 – Water Quality

The Project will comply with this Standard to the maximum extent practicable. The proposed Project is covered predominantly by building roof with some smaller landscape and pedestrian areas. As necessary, runoff will be appropriately treated, most likely by underground water quality structures, prior to discharge to the BWSC storm drainage system.



5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-6

Proposed Storm Sewer Connection

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 DEP's Massachusetts Stormwater Handbook.

Standard 7 – Redevelopment Project

This Project is considered a redevelopment project as defined by DEP'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

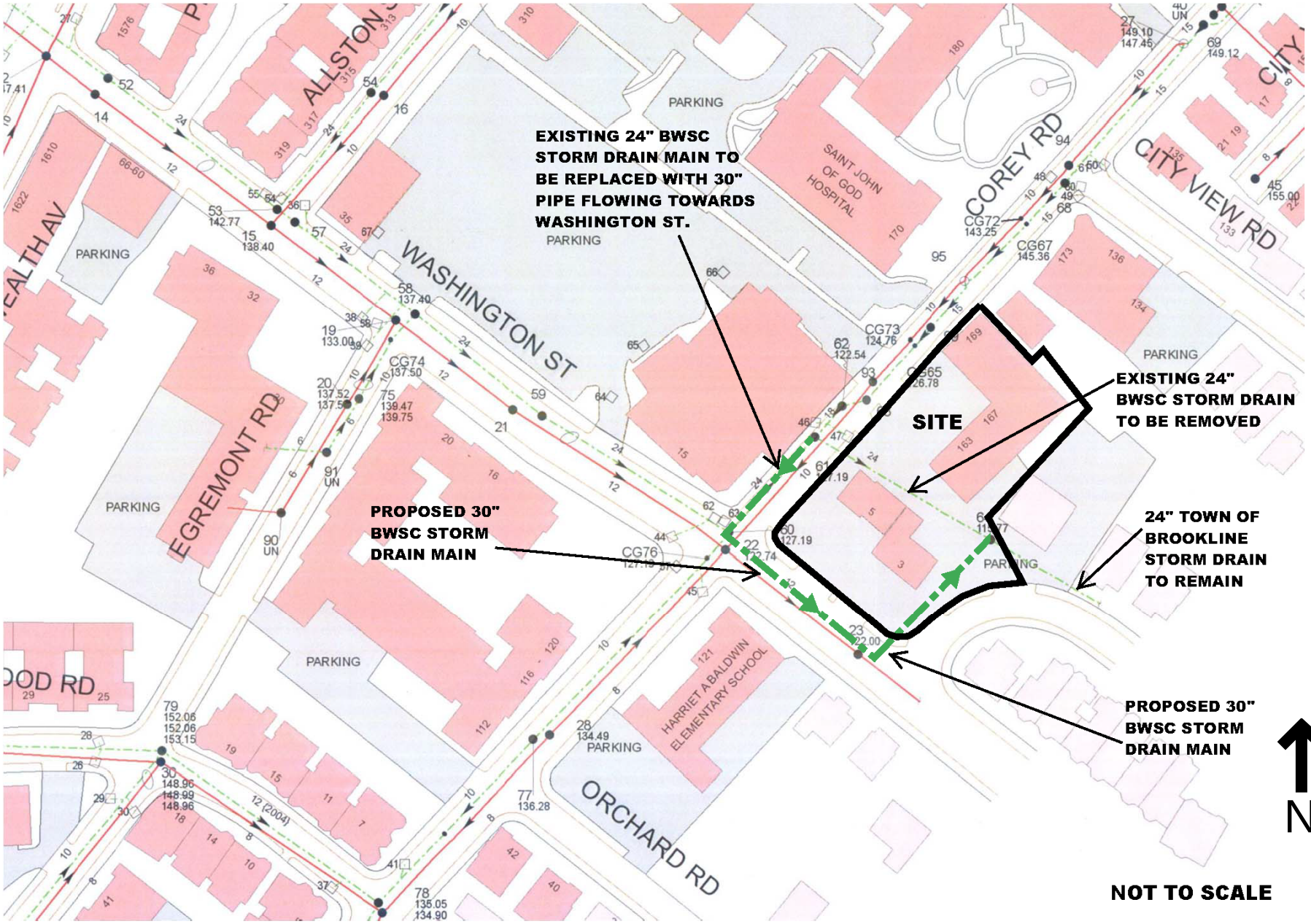
The Project will comply with this Standard. A long-term operation and maintenance plan will be prepared as part of the final design documents.

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.

7.3.5 Proposed Storm Drainage Relocation

The existing 24-inch drainage pipe that bisects the property and flows to the southeast into a brick culvert to the rear of the site will be relocated as part of the site redevelopment. It is anticipated that this will be accomplished by removing and replacing the existing drainage manhole within Corey Road fronting the Project site, including the removal of 125 ft. of existing 24-inch drain pipe to the intersection of Washington Street and Corey Road. The manhole at this junction point may also be removed and replaced with a larger manhole. The proposed drainage system is intended to reroute the BWSC stormwater system around the site by means of a new 30-inch drainage pipe, running from Corey Road to the intersection of Washington Street and southeast on Washington Street and finally to connect back to the existing brick culvert behind the Project site. See Figure 7-7. Per the below drainage tables, the drainage system upgrades will convey a flow equal to the existing system capacity and if needed, has the ability to be constructed to convey additional runoff due to the increased pipe size.



5 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-7

Proposed Storm Drain Pipe Relocation

Table 7-4 Existing Drainage Pipe Capacity (24-inch on-site)

Manhole	Distance (ft)	Invert El. (up)	Invert El. (down)	Slope (%)	Diameter (in.)	Manning's Number	Flow Capacity (cfs)
0+00 to 0+09.80	210	121.82	116.37	0.026	24	0.013	39.2

Table 7-5 Proposed Drainage Pipe Capacity (30-inch Washington Street Relocation)

Manhole	Distance (ft)	Invert El. (up)	Invert El. (down)	Slope (%)	Diameter (in.)	Manning's Number	Max. Flow Capacity (cfs)
0+00(new) to Ex. Brick Culvert	445	121.32	116.37	0.011	30	0.013	46.4

7.4 Electrical Service

Eversource record plans show a combination of overhead wires and underground electric distribution lines adjacent to the Project site in Corey Road, Washington Street and Barlett Crescent. The Proponent will work with Eversource 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 and will be designated to comply with the standards of the Americans with Disabilities Act. See Appendix E for the Accessibility Checklist.

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

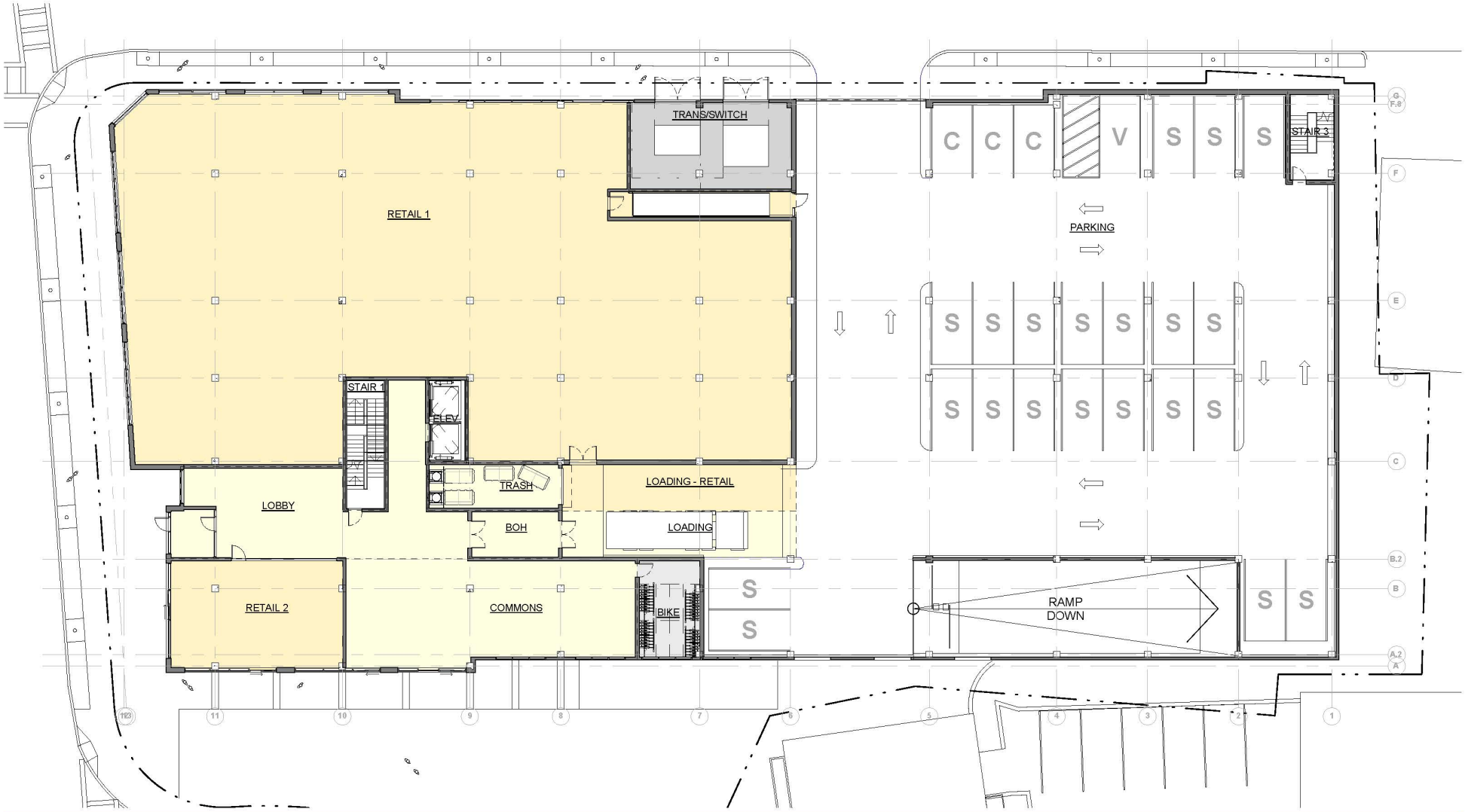
The Proponent does not anticipate that the Project will require any state or federal licenses, permits or approvals, and does not anticipate utilizing any state or federal funds. Therefore, review by the Massachusetts Historical Commission (MHC) is not anticipated at this time. In the event that state 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 BPDA as part of the Article 80 process.

Appendix A

Floor Plans



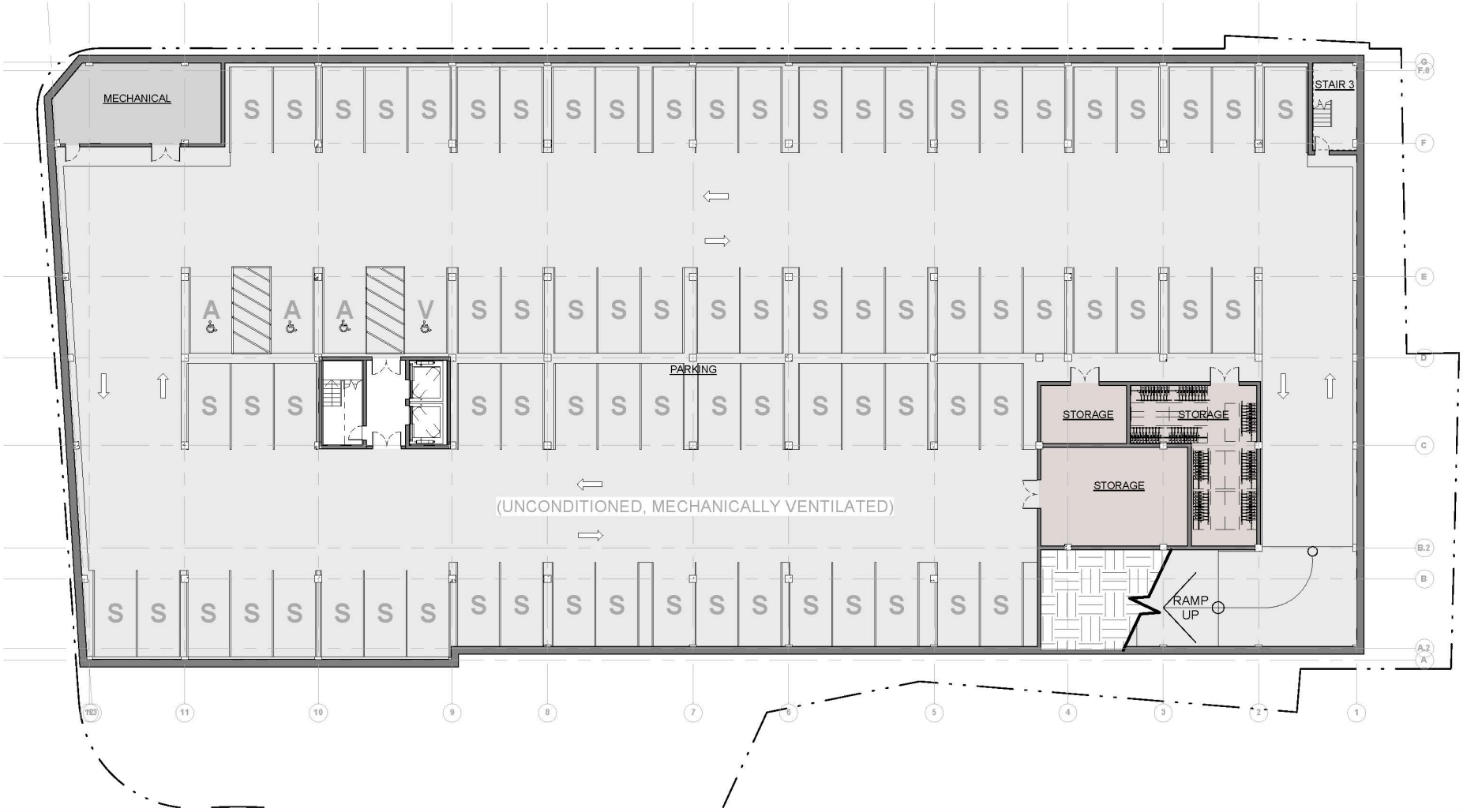
218421037

0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Ground Floor Plan



218421037

0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Parking Level 1

218421037

0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Second Floor Plan

218421037

0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Third Floor Plan

218421037

0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Fourth Floor Plan

218421037

0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Fifth Floor Plan

North Elevation

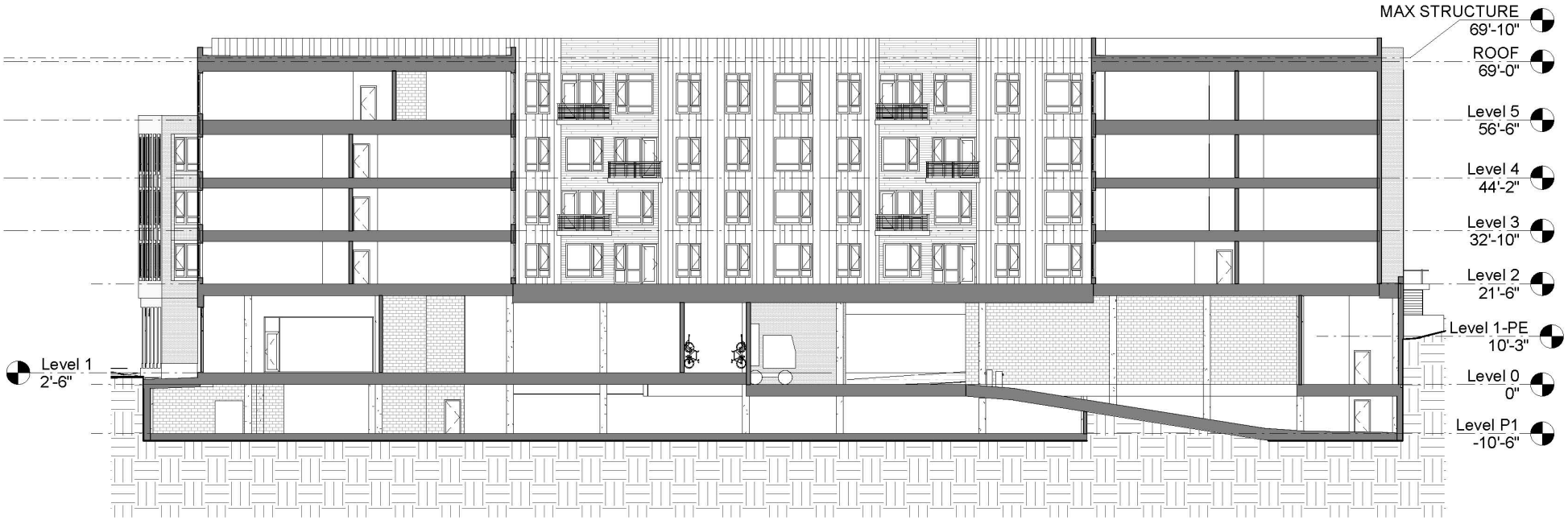
East Elevation

5 Washington Street Boston, Massachusetts

South Elevation

West Elevation

5 Washington Street Boston, Massachusetts



5 Washington Street Boston, Massachusetts

0 10' 20' 40'

Stantec

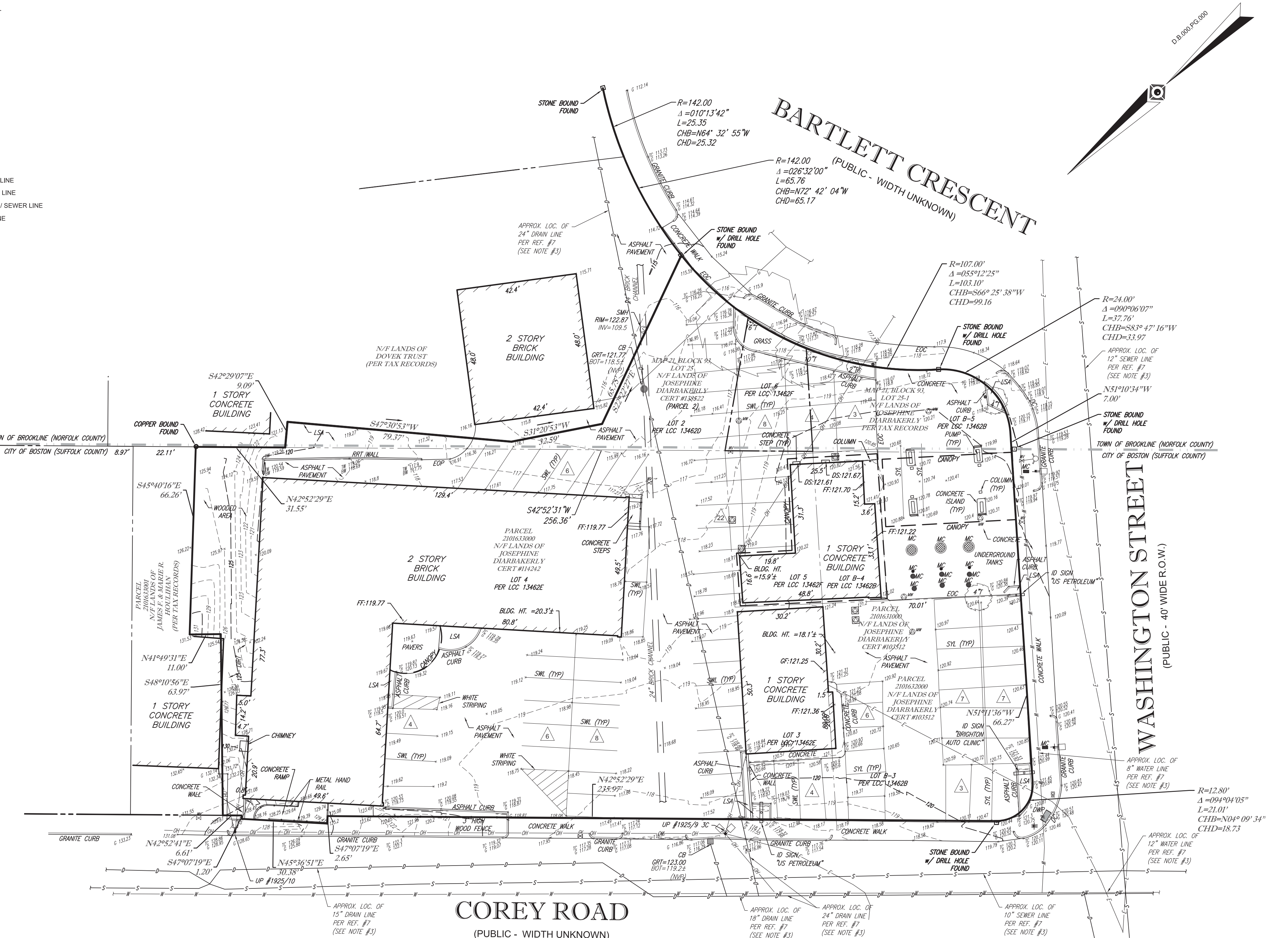
Section

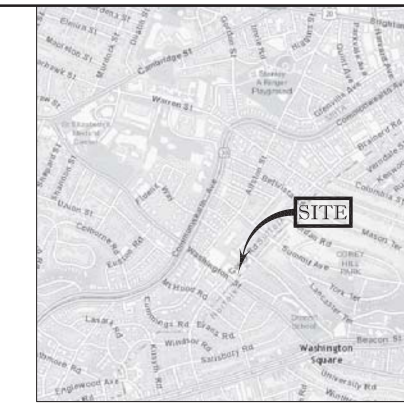
Appendix B

Site Survey

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
× DS 123.45	EXISTING DOOR SILL ELEVATION
	HYDRANT
WV	WATER VALVE
GV	GAS VALVE
OH	OVERHEAD WIRES
E	APPROX. LOC. UNDERGROUND ELECTRIC LINE
D	APPROX. LOC. UNDERGROUND DRAINAGE LINE
S	APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
W	APPROX. LOC. UNDERGROUND WATER LINE
UP	UTILITY POLE
	TRAFFIC SIGNAL
MW	MONITORING WELL
	MONITORING WELL ON CONCRETE
	AREA LIGHT
	SIGN
	BOLLARD
DC	DEPRESSED CURB
EOP	EDGE OF PAVEMENT
LSA	LANDSCAPED AREA
MC	METAL COVER
RRT WALL	RAILROAD TIE WALL
(TYP)	TYPICAL
SMH	SANITARY/SEWER MANHOLE
CB	CATCH BASIN OR INLET
FLOW	FLOW DIRECTION
7#	DECIDUOUS TREE & TRUNK SIZE
10	PARKING SPACE COUNT
DWP	DETECTABLE WARNING PAD
SWL	SOLID WHITE LINE
SYL	SOLID YELLOW LINE
HT	HEIGHT
BLDG	BUILDING
NVP	NO VISIBLE PIPE
SBDH	STONE BOUND w/DRILL HOLE
INV	INVERT ELEVATION
GRT	GRATE ELEVATION
BOT	BOTTOM ELEVATION





LOCUS MAP
©2013 ESRI WORLD STREET MAPS

NOTES:

1. PROPERTY KNOWN AS PARCELS 2101631000, 2101632000 & 2101633000 AS SHOWN THE CITY OF BOSTON ONLINE GIS & LOTS 25 & 25-01 OF BLOCK 93 AS SHOWN ON THE TOWN OF BROOKLINE TAX ASSESSOR'S MAP# 21.
2. AREA = 43,476 SQ. FT. OR 0.998 AC.
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 (AREASDETYERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. #2
7. ELEVATIONS REFER TO THE BOSTON CITY BASE VERTICAL DATUM, BASED ON A CONVERSION FACTOR OF 6.457' BELOW NAVD '88.
8. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.

REFERENCES:

1. THE TAX ASSESSOR'S MAP OF CITY OF BOSTON, SUFFOLK COUNTY, MASSACHUSETTS, SHEET #XX.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, SUFFOLK COUNTY, MASSACHUSETTS, (ALL JURISDICTIONS), PANEL 59 OF 151," MAP NUMBER 25025C0059G, EFFECTIVE DATE: SEPTEMBER 25, 2009.
3. MAP ENTITLED "SUBDIVISION PLAN OF LAND IN BROOKLINE," PREPARED BY SCHOFIELD BROTHERS, CIVIL ENGINEERS , DATED SEPTEMBER 25, 1951, FILED IN THE NORFOLK REGISTRY OF DEEDS AS BOOK 223, PAGE 106.
4. MAP ENTITLED "SUBDIVISION OF LOT B2 SHOWN ON PLAN, FIELD WITH CENT. OF TITLE NO. 13508 REGISTRY OF NORFOLK COUNTY LAND IN BROOKLINE," PREPARED BY HENRY F. BRYANT & SON, DATED AUGUST 8, 1933, FILED IN THE NORFOLK REGISTRY OF DEEDS AS BOOK 320, PAGE 161.
5. MAP ENTITLED "PLAN OF LAND IN BROOKLINE," PREPARED BY HENRY F. BRYANT & SON, ENGINEERS, DATED JUNE 8, 1927, FILED IN THE NORFOLK REGISTRY OF DEEDS AS BOOK 681, PAGE 108.
6. MAP ENTITLED "SUBDIVISION PLAN OF LAND IN BROOKLINE," PREPARED BY SCHOFIELD BROTHERS, CIVIL ENGINEERS, DATED APRIL 17, 1957, FILED IN THE NORFOLK REGISTRY OF DEEDS AS BOOK 317, PAGE 2.
7. WATER, DRAINAGE & SEWER FACILITY MAPPING PROVIDED BY BOSTON WATER AND SEWER, DATED SEPTEMBER 10, 2014.
8. ELECTRIC FACILITY MAPPING PROVIDED BY NSTAR ELECTRIC.

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): 20143603637

UTILITY COMPANY	PHONE NUMBER
VERIZON	1-800-544-3900
COMCAST - PEMBROKE	617-564-3959
CROWN CASTLE NG NETWORKS	855-892-4733
VERIZON	800-837-4966
RCN	877-726-7000
NSTAR ELECTTRIC	800-592-2000
NATIONAL GRID GAS-BOSTON	800-233-5325
ON TARGET LOCATION	508-429-1002
INNOVATIVE DATA MANAGEMENT	888-604-5577

STOP - CALL BEFORE YOU DIG!

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.

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

No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
1	REVISED OWNER'S NAME IN TITLE BLOCK	N/A	J.I.L.	A.J.L.	9-25-14

BOUNDARY & TOPOGRAPHIC SURVEY
FIVE WASHINGTON STREET, LLC
#3 & #5 WASHINGTON STREET & #165 COREY ROAD
PARCEL ID 2101631000, 2101632000 & 2101633000
CITY OF BOSTON, SUFFOLK COUNTY
MAP 21, BLOCK 93, LOTS 25 & 25-01
TOWN OF BROOKLINE, NORFOLK COUNTY
COMMONWEALTH OF MASSACHUSETTS

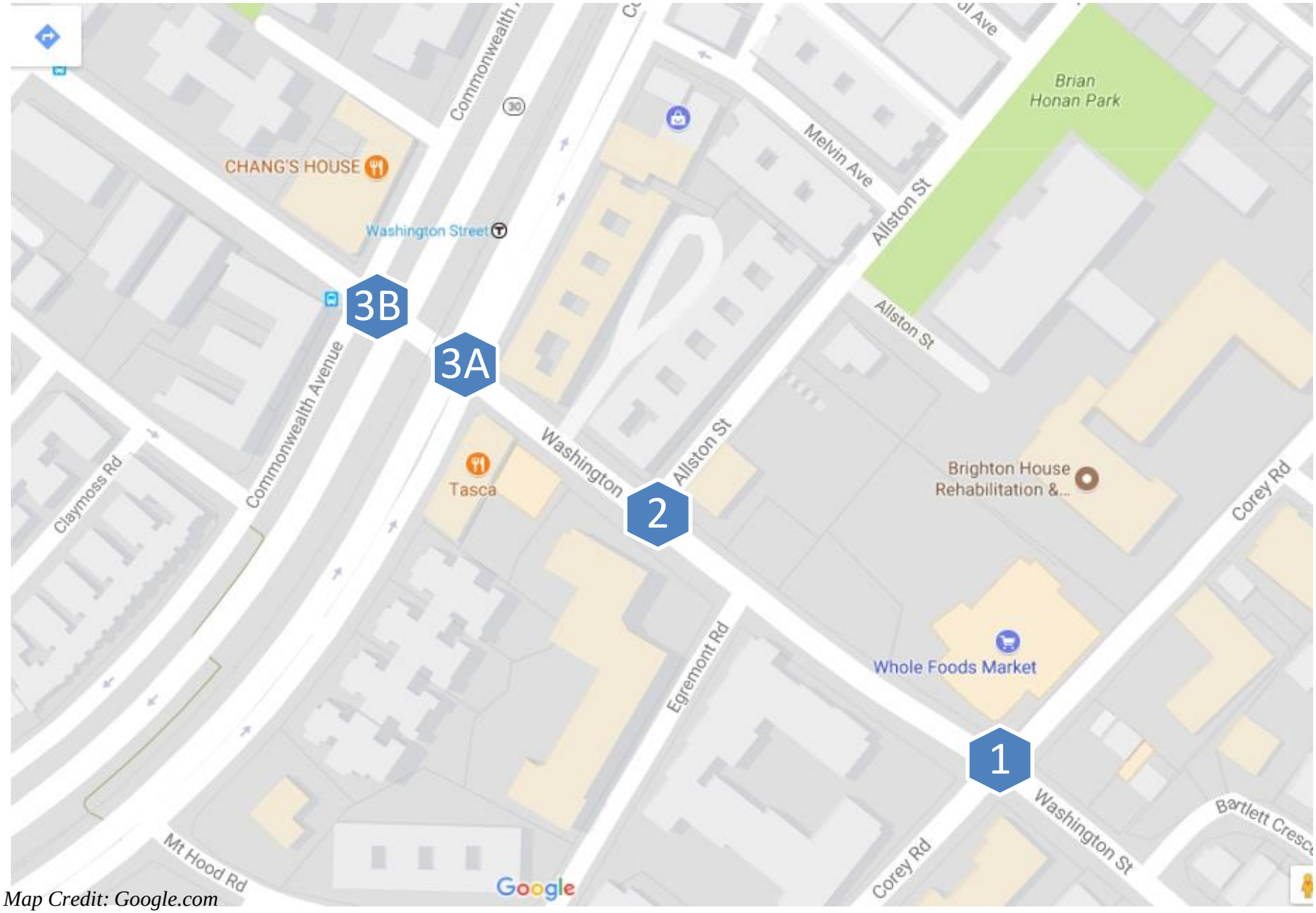
FIELD DATE: 3-9-14
FIELD BOOK NO.: 14-04MA
FIELD BOOK PG.: 68-70
FIELD CREW: T.M.
DRAWN: INDO

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

REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
J.I.L.	A.J.L.	9-24-14	1"=20'	CM14135	1 OF 1

Appendix C

Transportation



Map Credit: Google.com

BOSTON TRAFFIC DATA	BTD ID:141_044_HSH	Brighton, MA	# of TMC's: 03	Client: Howard Stein Hudson
		Collect on November 16, 2017	# of ATR's: 00	Contact: Michael Littman

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 1
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Corey Road
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

TOTAL (CARS & TRUCKS)

	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	5	59	14	0	5	127	23	0	21	34	5	0	8	36	4
7:15 AM	0	4	63	28	0	6	135	25	0	23	37	6	0	9	39	5
7:30 AM	0	4	64	40	0	8	132	27	0	22	40	7	0	7	41	6
7:45 AM	0	5	68	49	0	7	124	28	0	21	39	7	0	8	44	5
8:00 AM	0	3	69	58	0	8	120	31	0	24	42	8	0	7	43	7
8:15 AM	0	4	78	36	0	8	112	30	0	22	41	7	0	10	48	6
8:30 AM	0	2	72	39	0	9	112	29	0	21	40	8	0	9	46	5
8:45 AM	0	3	68	35	0	7	107	27	0	20	37	6	0	8	42	6

	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	4	64	32	0	10	84	36	0	22	31	3	0	7	42	12
4:15 PM	0	5	63	31	0	12	89	38	0	23	33	4	0	8	41	11
4:30 PM	0	3	61	33	0	13	90	37	0	21	36	5	0	8	43	9
4:45 PM	0	4	60	34	0	11	87	36	0	24	35	4	0	7	44	8
5:00 PM	0	3	57	31	0	12	89	35	0	23	36	5	0	9	41	7
5:15 PM	0	5	58	32	0	11	91	32	0	22	37	3	0	10	42	8
5:30 PM	0	4	55	30	0	12	92	33	0	24	35	4	0	8	39	6
5:45 PM	0	3	53	28	0	10	88	30	0	21	36	3	0	7	37	8

AM PEAK HOUR 7:30 AM to 8:30 AM	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**16**	**279**	**183**	**0**	**31**	**488**	**116**	**0**	**89**	**162**	**29**	**0**	**32**	**176**	**24**
PHF	**0.92**				**0.95**				**0.95**				**0.91**			
HV %	**0.0%**	**0.0%**	**1.1%**	**0.5%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**1.1%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**15**	**241**	**129**	**0**	**48**	**355**	**146**	**0**	**91**	**140**	**18**	**0**	**32**	**169**	**35**
PHF	**0.97**				**0.98**				**0.97**				**0.98**			
HV %	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**1.1%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 1
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Corey Road
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TRUCKS

	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0
8:15 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**3**	**1**	**0**	**0**	**3**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**
PHF	**0.50**				**0.75**				**0.50**				**0.25**			

PM PEAK HOUR 4:15 PM to 5:15 PM	Washington Street Northwestbound				Washington Street Southeastbound				Corey Road Northeastbound				Corey Road Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**
PHF	**0.50**				**0.50**				**0.50**				**0.25**			

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 1
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Corey Road
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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PEDESTRIANS & BICYCLES

	Washington Street Northwestbound					Washington Street Southeastbound					Corey Road Northeastbound					Corey Road Southwestbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	2		0	2	0	10		0	0	0	9		0	0	0	4	
7:15 AM	0	0	0	4		0	1	0	7		0	0	0	6		0	0	0	5	
7:30 AM	0	1	0	10		0	0	0	12		0	0	0	5		0	1	0	7	
7:45 AM	0	0	0	7		0	0	0	10		1	0	0	8		0	0	0	8	
8:00 AM	0	0	0	9		0	1	0	11		0	0	0	10		0	0	0	10	
8:15 AM	0	1	0	12		0	0	0	12		0	0	1	7		0	0	0	9	
8:30 AM	0	1	0	11		0	1	0	9		0	1	0	8		0	0	0	8	
8:45 AM	0	0	0	8		0	1	0	10		0	0	0	9		0	1	0	11	

	Washington Street Northwestbound					Washington Street Southeastbound					Corey Road Northeastbound					Corey Road Southwestbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	7		0	0	0	9		1	0	0	9		0	0	0	5	
4:15 PM	0	0	0	11		0	1	0	12		0	0	0	12		0	0	0	8	
4:30 PM	0	1	0	10		0	0	0	15		0	0	0	10		0	1	0	10	
4:45 PM	0	0	0	9		0	1	0	13		0	1	0	13		0	0	0	7	
5:00 PM	0	1	0	12		0	0	0	11		0	0	0	15		0	0	0	8	
5:15 PM	0	1	0	11		0	0	0	14		1	0	0	12		0	0	0	6	
5:30 PM	0	0	0	8		0	1	0	12		0	0	0	14		0	0	0	9	
5:45 PM	0	0	0	7		0	0	0	13		0	0	0	12		0	0	0	7	

AM PEAK HOUR[1] 7:30 AM to 8:30 AM	Washington Street Northwestbound					Washington Street Southeastbound					Corey Road Northeastbound					Corey Road Southwestbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	2	0	38		0	1	0	45		1	0	1	30		0	1	0	34	

PM PEAK HOUR[1] 4:15 PM to 5:15 PM	Washington Street Northwestbound					Washington Street Southeastbound					Corey Road Northeastbound					Corey Road Southwestbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	2	0	42		0	2	0	51		0	1	0	50		0	1	0	33	

[1] *Peak hours corresponds to vehicular peak hours.*

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 2
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Allston Street
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TOTAL (CARS & TRUCKS)

	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	76	8	0	4	141	0	0	0	0	0	0	14	0	3
7:15 AM	0	0	81	10	0	6	151	0	0	0	0	0	0	15	0	4
7:30 AM	0	0	83	9	0	5	152	0	0	0	0	0	0	15	0	5
7:45 AM	0	0	84	10	0	6	142	0	0	0	0	0	0	17	0	6
8:00 AM	0	0	89	11	0	5	145	0	0	0	0	0	0	14	0	7
8:15 AM	0	0	94	12	0	5	135	0	0	0	0	0	0	15	0	8
8:30 AM	0	0	88	10	0	4	137	0	0	0	0	0	0	13	0	7
8:45 AM	0	0	85	9	0	5	129	0	0	0	0	0	0	12	0	6

	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	87	11	0	5	110	0	0	0	0	0	0	20	0	6
4:15 PM	0	0	85	12	0	7	120	0	0	0	0	0	0	19	0	7
4:30 PM	0	0	79	12	0	6	123	0	0	0	0	0	0	17	0	8
4:45 PM	0	0	78	14	0	7	119	0	0	0	0	0	0	15	0	9
5:00 PM	0	0	74	13	0	5	123	0	0	0	0	0	0	13	0	10
5:15 PM	0	0	76	12	0	6	120	0	0	0	0	0	0	14	0	11
5:30 PM	0	0	74	11	0	5	125	0	0	0	0	0	0	12	0	9
5:45 PM	0	0	72	10	0	5	117	0	0	0	0	0	0	11	0	8

AM PEAK HOUR 7:30 AM to 8:30 AM	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**350**	**42**	**0**	**21**	**574**	**0**	**0**	**0**	**0**	**0**	**0**	**61**	**0**	**26**
PHF	**0.92**				**0.95**				**0.00**				**0.95**			
HV %	**0.0%**	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:00 PM to 5:00 PM	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**329**	**49**	**0**	**25**	**472**	**0**	**0**	**0**	**0**	**0**	**0**	**71**	**0**	**30**
PHF	**0.96**				**0.96**				**0.00**				**0.97**			
HV %	**0.0%**	**0.0%**	**0.9%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 2
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Allston Street
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TRUCKS

	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
7:30 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
8:30 AM	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.50**				**0.75**				**0.00**				**0.00**			

PM PEAK HOUR	Washington Street Northwestbound				Washington Street Southeastbound				Northeastbound				Allston Street Southwestbound			
4:15 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.38**				**0.50**				**0.00**				**0.00**			

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 2
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Allston Street
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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PEDESTRIANS & BICYCLES

	Washington Street Northwestbound					Washington Street Southeastbound					Northeastbound					Allston Street Southwestbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	0		0	2	0	1		0	0	0	0		0	0	0	4	
7:15 AM	0	0	0	2		0	1	0	0		0	0	0	0		0	0	0	8	
7:30 AM	0	1	0	6		0	0	0	1		0	0	0	0		0	0	0	10	
7:45 AM	0	1	0	7		0	0	0	0		0	0	0	0		0	0	0	13	
8:00 AM	0	0	1	9		0	1	0	0		0	0	0	0		0	0	0	12	
8:15 AM	0	1	1	8		0	1	0	1		0	0	0	0		0	0	0	11	
8:30 AM	0	0	0	11		0	0	0	1		0	0	0	0		0	0	0	14	
8:45 AM	0	1	0	10		0	1	0	0		0	0	0	0		0	0	0	12	

	Washington Street Northwestbound					Washington Street Southeastbound					Northeastbound					Allston Street Southwestbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	14		0	0	0	0		0	0	0	0		0	0	0	15	
4:15 PM	0	1	0	12		0	1	0	1		0	0	0	0		0	0	0	17	
4:30 PM	0	1	0	11		0	1	0	0		0	0	0	0		0	0	0	14	
4:45 PM	0	0	0	15		0	0	0	1		0	0	0	0		0	0	0	16	
5:00 PM	0	1	0	13		0	0	0	1		0	0	0	0		0	0	0	12	
5:15 PM	0	2	0	12		0	0	0	0		0	0	0	0		0	0	0	15	
5:30 PM	0	0	0	9		0	1	0	0		0	0	0	0		0	0	0	17	
5:45 PM	0	0	0	8		0	0	0	0		0	0	0	0		0	0	0	13	

AM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southeastbound					Northeastbound					Allston Street Southwestbound				
7:30 AM to 8:30 AM	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	3	2	30		0	2	0	2		0	0	0	0		0	0	0	46	

PM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southeastbound					Northeastbound					Allston Street Southwestbound				
4:00 PM to 5:00 PM	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	2	0	52		0	2	0	2		0	0	0	0		0	0	0	62	

[1] *Peak hours corresponds to vehicular peak hours.*

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3A & 3B (Carriage Road)
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Carriage Road EB & WB
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TOTAL (CARS & TRUCKS)

	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
Start Time	-	-	-	-	-	-	-	-	Left	Thru (Commonwelath)	Thru (Carriage)	Right	Left	Thru (Commonwelath)	Thru (Carriage)	Right
7:00 AM	-	-	-	-	-	-	-	-	0	0	2	20	0	0	1	7
7:15 AM	-	-	-	-	-	-	-	-	0	0	3	22	0	0	2	8
7:30 AM	-	-	-	-	-	-	-	-	0	0	3	24	0	0	3	8
7:45 AM	-	-	-	-	-	-	-	-	0	1	2	25	1	0	4	9
8:00 AM	-	-	-	-	-	-	-	-	0	0	2	26	0	0	4	9
8:15 AM	-	-	-	-	-	-	-	-	0	0	3	27	0	0	5	10
8:30 AM	-	-	-	-	-	-	-	-	0	0	1	25	0	0	4	8
8:45 AM	-	-	-	-	-	-	-	-	0	1	2	23	0	0	3	9

	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
Start Time	-	-	-	-	-	-	-	-	Left	Thru (Commonwelath)	Thru (Carriage)	Right	Left	Thru (Commonwelath)	Thru (Carriage)	Right
4:00 PM	-	-	-	-	-	-	-	-	0	0	4	22	0	0	6	7
4:15 PM	-	-	-	-	-	-	-	-	0	1	3	21	1	0	5	9
4:30 PM	-	-	-	-	-	-	-	-	0	0	5	23	0	0	4	8
4:45 PM	-	-	-	-	-	-	-	-	0	0	4	25	0	0	5	9
5:00 PM	-	-	-	-	-	-	-	-	0	1	3	22	0	0	5	10
5:15 PM	-	-	-	-	-	-	-	-	0	0	2	24	0	0	6	11
5:30 PM	-	-	-	-	-	-	-	-	0	0	3	20	0	0	5	9
5:45 PM	-	-	-	-	-	-	-	-	0	0	4	19	0	0	4	8

AM PEAK HOUR 7:30 AM	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
to	-	-	-	-	-	-	-	-	Left	Thru (Commonwelath)	Thru (Carriage)	Right	Left	Thru (Commonwelath)	Thru (Carriage)	Right
8:30 AM	-	-	-	-	-	-	-	-	**0**	**1**	**10**	**102**	**1**	**0**	**16**	**36**
PHF		**-**				**-**				**0.94**				**0.88**		
HV %	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0.0%**	**0.0%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
to	-	-	-	-	-	-	-	-	Left	Thru (Commonwelath)	Thru (Carriage)	Right	Left	Thru (Commonwelath)	Thru (Carriage)	Right
5:30 PM	-	-	-	-	-	-	-	-	**0**	**1**	**14**	**94**	**0**	**0**	**20**	**38**
PHF		**-**				**-**				**0.94**				**0.85**		
HV %	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

* Note
Washington Street Northwestbound & Southeastbound counts are shown in 141_044_TMC_Loc 3A & 141_044_TMC_Loc 3B files.

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3A & 3B (Carriage Road)
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Carriage Road EB & WB
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TRUCKS

	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
Start Time	-	-	-	-	-	-	-	-	Left	Thru (Commonwealth)	Thru (Carriage)	Right	Left	Thru (Commonwealth)	Thru (Carriage)	Right
7:00 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
7:15 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
7:30 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
7:45 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
8:00 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
8:15 AM	-	-	-	-	-	-	-	-	0	0	0	1	0	0	0	0
8:30 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
8:45 AM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0

	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
Start Time	-	-	-	-	-	-	-	-	Left	Thru (Commonwealth)	Thru (Carriage)	Right	Left	Thru (Commonwealth)	Thru (Carriage)	Right
4:00 PM	-	-	-	-	-	-	-	-	0	0	1	0	0	0	0	0
4:15 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
4:30 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
4:45 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
5:00 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
5:15 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
5:30 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
5:45 PM	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
to	-	-	-	-	-	-	-	-	Left	Thru (Commonwealth)	Thru (Carriage)	Right	Left	Thru (Commonwealth)	Thru (Carriage)	Right
8:30 AM	-	-	-	-	-	-	-	-	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
PHF	**-**				**-**				**0.25**				**0.00**			

PM PEAK HOUR 4:00 PM	Washington Street* Northwestbound*				Washington Street* Southeastbound*				Carriage Road Eastbound Northeastbound				Carriage Road Westbound Southwestbound			
to	-	-	-	-	-	-	-	-	Left	Thru (Commonwealth)	Thru (Carriage)	Right	Left	Thru (Commonwealth)	Thru (Carriage)	Right
5:00 PM	-	-	-	-	-	-	-	-	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
PHF	**-**				**-**				**0.25**				**0.00**			

* Note
Washington Street Northwestbound & Southeastbound counts are shown in 141_044_TMC_Loc 3A & 141_044_TMC_Loc 3B files.

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3A & 3B (Carriage Road)
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Carriage Road EB & WB
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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PEDESTRIANS & BICYCLES

	Washington Street* Northwestbound*					Washington Street* Southeastbound*					Carriage Road Eastbound Northeastbound					Carriage Road Westbound Southwestbound				
Start Time	-	-	-	-		-	-	-	-		Thru (Commonwealth)	Thru (Carriage)	Right	PED**		Thru (Commonwealth)	Thru (Carriage)	Right	PED**	
7:00 AM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	
7:15 AM	-	-	-	-		-	-	-	-		0	0	0	0		0	1	0	0	
7:30 AM	-	-	-	-		-	-	-	-		0	1	0	0		0	0	0	0	
7:45 AM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	1	0	
8:00 AM	-	-	-	-		-	-	-	-		0	0	1	0		0	1	0	0	
8:15 AM	-	-	-	-		-	-	-	-		0	1	0	0		0	0	0	0	
8:30 AM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	
8:45 AM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	

	Washington Street* Northwestbound*					Washington Street* Southeastbound*					Carriage Road Eastbound Northeastbound					Carriage Road Westbound Southwestbound				
Start Time	-	-	-	-		-	-	-	-		Thru (Commonwealth)	Thru (Carriage)	Right	PED**		Thru (Commonwealth)	Thru (Carriage)	Right	PED**	
4:00 PM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	
4:15 PM	-	-	-	-		-	-	-	-		0	1	0	0		0	0	0	0	
4:30 PM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	
4:45 PM	-	-	-	-		-	-	-	-		0	1	0	0		0	1	0	0	
5:00 PM	-	-	-	-		-	-	-	-		0	1	0	0		0	0	0	0	
5:15 PM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	1	0	
5:30 PM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	
5:45 PM	-	-	-	-		-	-	-	-		0	0	0	0		0	0	0	0	

AM PEAK HOUR[1]	Washington Street* Northwestbound*					Washington Street* Southeastbound*					Carriage Road Eastbound Northeastbound					Carriage Road Westbound Southwestbound				
7:30 AM											Thru	Thru				Thru	Thru			
to	-	-	-	-		-	-	-	-		(Commonwealth)	(Carriage)	Right	PED**		(Commonwealth)	(Carriage)	Right	PED**	
8:30 AM	-	-	-	-		-	-	-	-		0	2	1	0		0	1	1	0	

PM PEAK HOUR[1]	Washington Street* Northwestbound*					Washington Street* Southeastbound*					Carriage Road Eastbound Northeastbound					Carriage Road Westbound Southwestbound				
4:30 PM											Thru	Thru				Thru	Thru			
to	-	-	-	-		-	-	-	-		(Commonwealth)	(Carriage)	Right	PED**		(Commonwealth)	(Carriage)	Right	PED**	
5:30 PM	-	-	-	-		-	-	-	-		0	2	0	0		0	1	1	0	

[1] *Peak hours corresponds to vehicular peak hours.*

** Note
Pedestrians counts are shown in 141_044_TMC_Loc 3A & 141_044_TMC_Loc 3B files.

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3A
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Commonwealth Avenue
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TOTAL (CARS & TRUCKS)

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
Start Time	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
7:00 AM	0	58	18	3	0	5	1	112	0	96	2	13	0	0	0	0
7:15 AM	0	64	17	4	0	6	1	123	0	108	4	12	0	0	0	0
7:30 AM	0	65	19	5	0	8	2	121	0	115	5	12	0	0	0	0
7:45 AM	0	66	18	6	0	9	1	110	0	122	6	13	0	0	0	0
8:00 AM	0	72	17	7	0	11	2	113	0	124	7	11	0	0	0	0
8:15 AM	0	80	16	6	0	13	2	104	0	125	6	9	0	0	0	0
8:30 AM	0	72	15	8	0	12	1	106	0	121	8	10	0	0	0	0
8:45 AM	0	70	14	7	0	11	2	102	0	115	7	9	0	0	0	0

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
Start Time	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
4:00 PM	0	81	10	2	0	10	3	89	0	91	5	4	0	0	0	0
4:15 PM	0	77	12	3	0	9	3	99	0	92	6	5	0	0	0	0
4:30 PM	0	72	11	4	0	10	2	101	0	89	7	5	0	0	0	0
4:45 PM	0	70	13	5	0	11	3	97	0	91	8	4	0	0	0	0
5:00 PM	0	69	12	3	0	12	3	103	0	93	9	3	0	0	0	0
5:15 PM	0	68	14	4	0	10	2	98	0	96	10	5	0	0	0	0
5:30 PM	0	65	13	5	0	11	4	105	0	95	8	4	0	0	0	0
5:45 PM	0	64	11	4	0	9	3	98	0	89	7	5	0	0	0	0

AM PEAK HOUR 7:45 AM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
to	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
8:45 AM	**0**	**290**	**66**	**27**	**0**	**45**	**6**	**433**	**0**	**492**	**27**	**43**	**0**	**0**	**0**	**0**
PHF		**0.94**				**0.96**				**0.99**				**0.00**		
HV %	**0.0%**	**1.4%**	**3.0%**	**3.7%**	**0.0%**	**4.4%**	**16.7%**	**0.7%**	**0.0%**	**0.6%**	**0.0%**	**2.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:45 PM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
to	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
5:45 PM	**0**	**272**	**52**	**17**	**0**	**44**	**12**	**403**	**0**	**375**	**35**	**16**	**0**	**0**	**0**	**0**
PHF		**0.97**				**0.96**				**0.96**				**0.00**		
HV %	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3A
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Commonwealth Avenue
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TRUCKS

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
Start Time	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:15 AM	0	1	1	0	0	1	0	1	0	1	0	0	0	0	0	0
7:30 AM	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0
7:45 AM	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0
8:00 AM	0	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0
8:15 AM	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
8:45 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
Start Time	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0
4:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:15 AM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
to	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
8:15 AM	**0**	**3**	**3**	**1**	**0**	**2**	**1**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**
PHF	**0.88**				**0.75**				**0.63**				**0.00**			

PM PEAK HOUR 4:15 PM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound			
to	U-Turn	Thru	Right	Right (Carriage)	U-Turn	Left	Left (Carriage)	Thru	Left	Thru	Thru (Carriage)	Right	U-Turn	Left	Thru	Right
5:15 PM	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**
PHF	**0.38**				**0.75**				**0.50**				**0.00**			

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3A
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Commonwealth Avenue
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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PEDESTRIANS & BICYCLES

	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound				
Start Time	Thru	Right	Right (Carriage)	PED		Left	Left (Carriage)	Thru	PED		Thru	Thru (Carriage)	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	11		0	0	2	2		0	0	0	13		0	0	0	15	
7:15 AM	1	0	0	14		0	0	0	0		0	0	0	16		0	0	0	17	
7:30 AM	0	0	0	16		0	0	1	1		0	0	0	14		0	0	0	16	
7:45 AM	1	0	0	13		0	0	0	0		0	0	0	12		0	0	0	19	
8:00 AM	1	0	0	15		0	0	1	1		0	0	0	15		0	0	0	22	
8:15 AM	2	0	1	12		0	0	0	2		0	0	0	18		0	0	0	20	
8:30 AM	0	0	0	10		0	0	1	0		0	0	0	16		0	0	0	24	
8:45 AM	1	0	0	11		0	0	1	1		0	0	0	17		0	0	0	22	

	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound				
Start Time	Thru	Right	Right (Carriage)	PED		Left	Left (Carriage)	Thru	PED		Thru	Thru (Carriage)	Right	PED		Left	Thru	Right	PED	
4:00 PM	1	0	0	11		0	0	0	0		0	0	0	22		0	0	0	28	
4:15 PM	0	0	0	12		0	0	1	1		0	0	0	20		0	0	0	34	
4:30 PM	1	0	0	18		0	0	0	0		0	0	0	24		0	0	0	35	
4:45 PM	0	0	1	22		0	0	1	0		0	0	0	25		0	0	0	38	
5:00 PM	1	0	0	16		0	0	0	0		0	0	0	21		0	0	0	36	
5:15 PM	2	0	0	20		0	0	0	0		0	0	0	24		0	0	0	35	
5:30 PM	0	0	0	18		0	0	1	0		0	0	0	22		0	0	0	37	
5:45 PM	0	0	0	17		0	0	0	0		0	0	0	26		0	0	0	35	

AM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound				
7:45 AM																				
to	Thru	Right	Right (Carriage)	PED		Left	Left (Carriage)	Thru	PED		Thru	Thru (Carriage)	Right	PED		Left	Thru	Right	PED	
8:45 AM	4	0	1	50		0	0	2	3		0	0	0	61		0	0	0	85	

PM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound				
4:45 PM																				
to	Thru	Right	Right (Carriage)	PED		Left	Left (Carriage)	Thru	PED		Thru	Thru (Carriage)	Right	PED		Left	Thru	Right	PED	
5:45 PM	3	0	1	76		0	0	2	0		0	0	0	92		0	0	0	146	

[1] *Peak hours corresponds to vehicular peak hours.*

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3B
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Commonwealth Avenue
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TOTAL (CARS & TRUCKS)

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
Start Time	Left	Left (Carriage)	Thru	Right (Carriage)	Left (Carriage)	Thru	Right	Right (Carriage)	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru (Carriage)	Right
7:00 AM	4	0	54	0	0	90	7	3	0	0	0	0	5	29	53	1	1
7:15 AM	8	1	55	0	0	98	8	4	0	0	0	0	6	32	56	2	1
7:30 AM	11	1	53	0	0	96	7	5	0	0	0	0	8	35	58	2	2
7:45 AM	14	2	49	1	0	85	5	5	0	0	0	0	7	34	59	1	1
8:00 AM	16	1	54	1	1	91	6	4	0	0	0	0	8	35	58	3	1
8:15 AM	15	2	62	1	0	87	6	4	0	0	0	0	6	32	56	2	1
8:30 AM	14	1	57	0	0	88	5	5	0	0	0	0	7	31	56	2	2
8:45 AM	13	1	55	1	0	86	4	4	0	0	0	0	5	29	54	1	2

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
Start Time	Left	Left (Carriage)	Thru	Right (Carriage)	Left (Carriage)	Thru	Right	Right (Carriage)	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru (Carriage)	Right
4:00 PM	17	1	61	2	0	71	1	2	0	0	0	0	3	30	105	1	1
4:15 PM	15	2	59	1	1	78	1	2	0	0	0	0	3	32	103	1	2
4:30 PM	16	1	53	2	0	80	2	3	0	0	0	0	5	33	112	2	1
4:45 PM	15	2	54	0	0	77	2	1	0	0	0	0	6	34	117	1	2
5:00 PM	14	2	52	1	0	82	1	2	0	0	0	0	6	36	127	2	2
5:15 PM	15	1	51	1	1	77	2	1	0	0	0	0	5	33	132	2	1
5:30 PM	13	2	48	2	0	86	2	3	0	0	0	0	5	34	132	1	1
5:45 PM	12	3	47	1	0	79	1	2	0	0	0	0	5	31	126	2	1

AM PEAK HOUR 7:30 AM to 8:30 AM	Washington Street Northwest				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
	Left	Left	Thru	Right	Left	Thru	Right	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru	Right
	56	**6**	**218**	**3**	**1**	**359**	**24**	**18**	**0**	**0**	**0**	**0**	**29**	**136**	**231**	**8**	**5**
PHF	**0.88**				**0.93**				**0.00**				**0.98**				
HV %	**1.8%**	**0.0%**	**1.8%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.5%**	**2.6%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:45 PM to 5:45 PM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
	Left	Left	Thru	Right	Left	Thru	Right	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru	Right
	57	**7**	**205**	**4**	**1**	**322**	**7**	**7**	**0**	**0**	**0**	**0**	**22**	**137**	**508**	**6**	**6**
PHF	**0.96**				**0.93**				**0.00**				**0.98**				
HV %	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.7%**	**0.4%**	**0.0%**	**0.0%**

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3B
Location:	Brighton, MA
Street 1:	Washington Street
Street 2:	Commonwealth Avenue
Count Date:	11/16/2017
Day of Week:	Thursday
Weather:	Cloudy & Rain, 50°F

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TRUCKS

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
Start Time	Left	Left (Carriage)	Thru	Right (Carriage)	Left (Carriage)	Thru	Right	Right (Carriage)	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru (Carriage)	Right
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
7:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
7:45 AM	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0
8:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0
8:30 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0

	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
Start Time	Left	Left (Carriage)	Thru	Right (Carriage)	Left (Carriage)	Thru	Right	Right (Carriage)	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru (Carriage)	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
	Left	Left	Thru	Right	Left	Thru	Right	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru	Right
	1	**0**	**4**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**	**0**	**0**
PHF	**0.63**				**0.50**				**0.00**				**0.67**				

PM PEAK HOUR 4:15 PM to 5:15 PM	Washington Street Northwestbound				Washington Street Southeastbound				Commonwealth Avenue Northeastbound				Commonwealth Avenue Southwestbound				
	Left	Left	Thru	Right	Left	Thru	Right	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Thru	Right
	1	**0**	**3**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**
PHF	**0.50**				**0.50**				**0.00**				**0.50**				

Client:	Michael Littman
Project #:	141_044_HSH_Brighton
BTD #:	Location 3B
Location:	Brighton, MA
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Count Date:	11/16/2017
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PEDESTRIANS & BICYCLES

	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound					
Start Time	Left	Left (Carriage)	Thru	Right (Carriage)	PED	Left (Carriage)	Thru	Right	Right (Carriage)	PED	U-Turn	Left	Thru	Right	PED	U-Turn	Left	Thru	Thru (Carriage)	Right	PED
7:00 AM	0	0	0	0	0	0	2	0	0	5	0	0	0	0	11	0	0	0	0	0	12
7:15 AM	0	0	1	0	0	0	0	0	0	7	0	0	0	0	15	0	0	0	0	0	15
7:30 AM	0	0	0	0	0	0	1	0	1	9	0	0	0	0	14	0	0	0	0	0	17
7:45 AM	0	0	1	0	0	0	0	0	0	8	0	0	0	0	13	0	0	0	0	0	16
8:00 AM	0	0	1	0	0	0	1	0	0	11	0	0	0	0	16	0	0	0	0	0	20
8:15 AM	0	1	2	0	0	0	0	0	0	14	0	0	0	0	17	0	0	0	0	0	22
8:30 AM	0	0	0	0	0	0	1	0	1	13	0	0	0	0	15	0	0	0	0	0	25
8:45 AM	0	0	1	0	0	0	1	0	0	15	0	0	0	0	16	0	0	0	0	0	26

	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound					
Start Time	Left	Left (Carriage)	Thru	Right (Carriage)	PED	Left (Carriage)	Thru	Right	Right (Carriage)	PED	U-Turn	Left	Thru	Right	PED	U-Turn	Left	Thru	Thru (Carriage)	Right	PED
4:00 PM	0	0	1	0	0	0	0	0	0	6	0	0	0	0	19	0	0	0	0	0	25
4:15 PM	0	0	0	0	0	0	1	0	0	5	0	0	0	0	21	0	0	0	0	0	32
4:30 PM	0	0	1	0	0	0	0	0	0	8	0	0	0	0	20	0	0	0	0	0	37
4:45 PM	0	0	0	0	0	0	1	0	1	6	0	0	0	0	22	0	0	0	0	0	34
5:00 PM	0	0	1	0	0	0	0	0	0	7	0	0	0	0	25	0	0	0	0	0	38
5:15 PM	0	0	2	0	0	0	0	0	0	9	0	0	0	0	20	0	0	0	0	0	32
5:30 PM	0	0	0	0	0	0	1	0	0	8	0	0	0	0	19	0	0	0	0	0	34
5:45 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	0	24	0	0	0	0	0	31

AM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound					
7:30 AM	Left	Left	Thru	Right	PED	Left	Thru	Right	Right	PED	U-Turn	Left	Thru	Right	PED	U-Turn	Left	Thru	Thru	Right	PED
to 8:30 AM	0	1	4	0	0	0	2	0	1	42	0	0	0	0	60	0	0	0	0	0	75

PM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southeastbound					Commonwealth Avenue Northeastbound					Commonwealth Avenue Southwestbound					
4:45 PM	Left	Left	Thru	Right	PED	Left	Thru	Right	Right	PED	U-Turn	Left	Thru	Right	PED	U-Turn	Left	Thru	Thru	Right	PED
to 5:45 PM	0	0	3	0	0	0	2	0	1	30	0	0	0	0	86	0	0	0	0	0	138

[1] *Peak hours corresponds to vehicular peak hours.*

MASSACHUSETTS HIGHWAY DEPARTMENT - STATEWIDE TRAFFIC DATA COLLECTION

2011 WEEKDAY SEASONAL FACTORS *

* Note: These are weekday factors. The average of the factors for the year will not equal 1, as weekend data are not considered.

FACTOR GROUP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
GROUP 1 - WEST INTERSTATE	0.98	0.93	0.90	0.89	0.90	0.88	0.91	0.90	0.89	0.89	0.93	0.95
Use group 2 for R5, R6, & R0 GROUP 2 - **RURAL MAJOR COLLECTOR (R-5)**	1.12	1.12	1.07	0.99	0.91	0.90	0.86	0.86	0.92	0.93	1.01	1.05
GROUP 3A - RECREATIONAL **(1-4) See below	1.26	1.25	1.20	1.06	0.96	0.89	0.76	0.76	0.92	0.99	1.08	1.14
GROUP 3B - RECREATIONAL ***(5) See below	1.22	1.26	1.22	1.06	0.96	0.90	0.72	0.74	0.97	1.02	1.14	1.15
GROUP 4 - I-495 INTERSTATE	1.02	1.00	1.00	0.96	0.92	0.89	0.85	0.83	0.93	0.96	1.01	1.03
GROUP 5 - EAST INTERSTATE	1.04	1.00	0.96	0.93	0.92	0.91	0.91	0.89	0.93	0.93	0.96	1.01
GROUP 6: Use group 6 for U2, U3, U5, U6, U0, R2, & R3 **URBAN ARTERIALS, COLLECTORS & RURAL ARTERIALS (R-2, R-3)**	1.03	1.01	0.96	0.92	0.91	0.90	0.92	0.92	0.93	0.92	0.97	0.97
GROUP 7 - I-84 PROXIMITY (STA. 17, 3921)	1.24	1.24	1.15	1.04	0.99	1.00	0.93	0.89	1.05	1.05	1.05	1.12
GROUP 8 - I-295 PROXIMITY (STA. 6590)	1.00	0.99	0.95	0.92	0.94	0.91	0.93	0.92	0.95	0.94	0.97	0.95
GROUP 9 - I-195 PROXIMITY (STA. 7)	1.13	1.05	1.03	0.95	0.89	0.87	0.86	0.79	0.88	0.91	0.99	1.03

RECREATIONAL: (ALL YEARS)

**GROUP 3A:

1. CAPE COD (ALL TOWNS)

2.PLYMOUTH(SOUTH OF RTE.3A)

7014, 7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108,7178

3.MARTHA'S VINEYARD

4.NANTUCKET

***GROUP 3B:

5.PERMANENTS 2 & 189

1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,

1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,

1105,1106,1107,1108,1113,1114,1116,2196,2197,2198

2011 AXLE CORRECTION FACTORS

ROAD INVENTORY FUNCTIONAL CLASSIFICATION	AXLE CORRECTION FACTOR
RURAL	
1	0.95
2	0.97
3	0.98
0,5,6	0.98
URBAN	
1	0.96
2,3	0.98
5	0.98
0,6	0.99
I-84	0.90

ROUND OFF

0 - 999.....10

> 1,000.....100

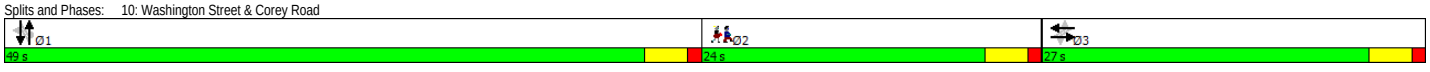
Apply I-84 factor to stations:

3290, 3921, 3929

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	89	162	29	32	176	24	16	279	183	31	488	116	
Future Volume (vph)	89	162	29	32	176	24	16	279	183	31	488	116	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00			0.99			1.00		
Frt		0.986			0.986			0.948			0.975		
Flt Protected		0.984			0.993			0.998			0.998		
Satd. Flow (prot)	0	2071	0	0	2088	0	0	1824	0	0	1864	0	
Flt Permitted		0.643			0.892			0.973			0.960		
Satd. Flow (perm)	0	1353	0	0	1875	0	0	1779	0	0	1793	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		340			544			523			535		
Travel Time (s)		7.7			12.4			11.9			12.2		
Confl. Bikes (#/hr)						1			2			1	
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	1%	1%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5	
Parking (#/hr)											0		
Adj. Flow (vph)	94	171	31	35	193	26	17	303	199	33	514	122	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	296	0	0	254	0	0	519	0	0	669	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1		2
Permitted Phases	3			3			1	1		1	1		
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	4.0		4.0	4.0		4.0
Minimum Split (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0		24.0
Total Split (s)	27.0	27.0		27.0	27.0		49.0	49.0		49.0	49.0		24.0
Total Split (%)	27.0%	27.0%		27.0%	27.0%		49.0%	49.0%		49.0%	49.0%		24%
Maximum Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0		1.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		4.0			4.0			4.0			4.0		
Lead/Lag							Lead	Lead		Lead	Lead		Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													10.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													147
Act Effct Green (s)		22.6			22.6			45.0			45.0		
Actuated g/C Ratio		0.23			0.23			0.45			0.45		
v/c Ratio		0.97			0.60			0.65			0.83		
Control Delay		83.3			41.1			25.9			34.5		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		83.3			41.1			25.9			34.5		
LOS		F			D			C			C		
Approach Delay		83.3			41.1			25.9			34.5		
Approach LOS		F			D			C			C		
90th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
30th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
10th %ile Green (s)	20.9	20.9		20.9	20.9		45.0	45.0		45.0	45.0		20.0
10th %ile Term Code	Gap	Gap		Gap	Gap		MaxR	MaxR		MaxR	MaxR		Ped
Queue Length 50th (ft)		187			145			250			364		
Queue Length 95th (ft)		#351			227			366			#572		
Internal Link Dist (ft)		260			464			443			455		
Turn Bay Length (ft)													
Base Capacity (vph)		312			433			803			810		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			0			0			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.95			0.59			0.65			0.83		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 41.2		Intersection LOS: D	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 97.9			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 10: Washington Street & Corey Road

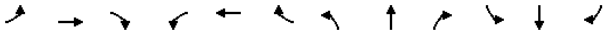


Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2
Lane Configurations															
Traffic Volume (vph)	0	486	69	29	136	231	0	56	227	70	41	318	24		
Future Volume (vph)	0	486	69	29	136	231	0	56	227	70	41	318	24		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor		0.98			0.88				1.00			1.00			
Frt		0.981							0.965			0.989			
Flt Protected					0.950			0.950			0.950				
Satd. Flow (prot)	0	3459	0	0	1790	3505	0	1770	1801	0	1719	1877	0		
Flt Permitted					0.950			0.349			0.401				
Satd. Flow (perm)	0	3459	0	0	1582	3505	0	650	1801	0	726	1877	0		
Right Turn on Red			Yes				Yes			No			No		
Satd. Flow (RTOR)		14													
Link Speed (mph)		30				30			30			30			
Link Distance (ft)		545				375			111			116			
Travel Time (s)		12.4				8.5			2.5			2.6			
Confl. Peds. (#/hr)			50	85											
Confl. Bikes (#/hr)										4			2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93		
Heavy Vehicles (%)	0%	0%	3%	0%	1%	3%	0%	2%	1%	3%	5%	0%	0%		
Adj. Flow (vph)	0	496	70	30	139	236	0	61	247	76	44	342	26		
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	566	0	0	169	236	0	61	323	0	44	368	0		
Turn Type		NA		Prot	Prot	NA		Perm	NA		Perm	NA			
Protected Phases		1 2		6	6	1 6			5			5		1	2
Permitted Phases								5			5				
Detector Phase		1		6	6	1 6		5	5		5	5			
Switch Phase															
Minimum Initial (s)				6.0	6.0			10.0	10.0		10.0	10.0		8.0	5.0
Minimum Split (s)				17.0	17.0			22.0	22.0		22.0	22.0		18.0	17.0
Total Split (s)				21.0	21.0			56.0	56.0		56.0	56.0		23.0	20.0
Total Split (%)				17.5%	17.5%			46.7%	46.7%		46.7%	46.7%		19%	17%
Maximum Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		17.0	14.0
Yellow Time (s)				3.0	3.0			3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)				3.0	3.0			6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0			-5.0	-5.0		-5.0	-5.0			
Total Lost Time (s)					4.0			4.0	4.0		4.0	4.0			
Lead/Lag				Lag	Lag			Lead	Lead		Lead	Lead		Lead	Lag
Lead-Lag Optimize?				Yes	Yes			Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)				2.0	2.0			2.0	2.0		2.0	2.0		2.0	4.0
Recall Mode				None	None			None	None		None	None		C-Max	None
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	7.0		8.0	7.0
Flash Dont Walk (s)				4.0	4.0			6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)				127	127			136	136		136	136		0	60
Act Effct Green (s)		48.5			15.9	54.7		43.7	43.7		43.7	43.7			
Actuated g/C Ratio		0.40			0.13	0.46		0.36	0.36		0.36	0.36			
v/c Ratio		0.40			0.72	0.15		0.26	0.49		0.17	0.54			
Control Delay		27.7			67.1	22.4		3.8	3.8		2.7	4.3			
Queue Delay		0.0			0.0	0.0		1.4	0.4		1.5	0.4			
Total Delay		27.7			67.1	22.4		5.2	4.2		4.2	4.7			
LOS		C			E	C		A	A		A	A			
Approach Delay		27.7				41.1			4.4			4.6			
Approach LOS		C				D			A			A			
90th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
90th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
70th %ile Green (s)				15.0	15.0			46.4	46.4		46.4	46.4		20.6	11.0
70th %ile Term Code				Max	Max			Gap	Gap		Gap	Gap		Coord	Ped
50th %ile Green (s)				15.0	15.0			39.8	39.8		39.8	39.8		27.2	11.0
50th %ile Term Code				Max	Max			Gap	Gap		Gap	Gap		Coord	Ped
30th %ile Green (s)				13.3	13.3			34.0	34.0		34.0	34.0		34.7	11.0
30th %ile Term Code				Gap	Gap			Gap	Gap		Gap	Gap		Coord	Ped
10th %ile Green (s)				11.0	11.0			26.1	26.1		26.1	26.1		61.9	0.0
10th %ile Term Code				Ped	Ped			Gap	Gap		Gap	Gap		Coord	Skip
Queue Length 50th (ft)		163			126	58		1	6		1	8			
Queue Length 95th (ft)		236			#205	96		m2	8		m1	10			
Internal Link Dist (ft)		465				295			31			36			
Turn Bay Length (ft)															
Base Capacity (vph)		1405			253	1585		281	780		314	813			
Starvation Cap Reductn		0			0	0		118	144		176	125			
Spillback Cap Reductn		0			0	0		0	0		0	0			
Storage Cap Reductn		0			0	0		0	0		0	0			
Reduced v/c Ratio		0.40			0.67	0.15		0.37	0.51		0.32	0.53			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 20.3 Intersection LOS: C
Intersection Capacity Utilization 65.1% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

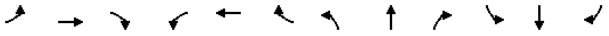
Splits and Phases: 20: Washington Street & Commonwealth Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations															
Traffic Volume (vph)	0	10	102	0	0	0	0	353	24	31	492	0			
Future Volume (vph)	0	10	102	0	0	0	0	353	24	31	492	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.73					1.00		0.78					
Frt			0.850					0.991							
Flt Protected										0.950					
Satd. Flow (prot)	0	1900	1439	0	0	0	0	1800	0	1752	1881	0			
Flt Permitted										0.522					
Satd. Flow (perm)	0	1900	1055	0	0	0	0	1800	0	749	1881	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)			110												
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		613			386			187			111				
Travel Time (s)		13.9			8.8			4.3			2.5				
Confl. Peds. (#/hr)			50							85					
Confl. Bikes (#/hr)			2						4			2			
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	0%	1%	2%	2%	2%	0%	2%	8%	3%	1%	0%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	0			
Parking (#/hr)			0												
Adj. Flow (vph)	0	11	110	0	0	0	0	384	26	33	523	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	11	110	0	0	0	0	410	0	33	523	0			
Turn Type		NA	Perm					NA		custom	NA				
Protected Phases		1 2!						5			5		1	2	6
Permitted Phases			1 2							1 2 5 6!	1 2 6!				
Detector Phase		1	1					5		1 2 5 6	5				
Switch Phase															
Minimum Initial (s)								10.0			10.0		8.0	5.0	6.0
Minimum Split (s)								22.0			22.0		18.0	17.0	17.0
Total Split (s)								56.0			56.0		23.0	20.0	21.0
Total Split (%)								46.7%			46.7%		19%	17%	18%
Maximum Green (s)								47.0			47.0		17.0	14.0	15.0
Yellow Time (s)								3.0			3.0		3.0	3.0	3.0
All-Red Time (s)								6.0			6.0		3.0	3.0	3.0
Lost Time Adjust (s)								-5.0			-5.0				
Total Lost Time (s)								4.0			4.0				
Lead/Lag								Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?								Yes			Yes		Yes	Yes	Yes
Vehicle Extension (s)								2.0			2.0		2.0	4.0	2.0
Recall Mode								None			None		C-Max	None	None
Walk Time (s)								7.0			7.0		8.0	7.0	7.0
Flash Dont Walk (s)								6.0			6.0		4.0	4.0	4.0
Pedestrian Calls (#/hr)								136			136		0	60	127
Act Effct Green (s)		48.5	48.5					43.7		120.0	120.0				
Actuated g/C Ratio		0.40	0.40					0.36		1.00	1.00				
v/c Ratio		0.01	0.22					0.63		0.04	0.28				
Control Delay		26.7	6.6					35.0		0.1	0.3				
Queue Delay		0.0	0.0					0.0		0.0	0.0				
Total Delay		26.7	6.6					35.0		0.1	0.3				
LOS		C	A					C		A	A				
Approach Delay		8.4						35.0			0.3				
Approach LOS		A						C			A				
90th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
90th %ile Term Code								Max			Max		Coord	Ped	Max
70th %ile Green (s)								46.4			46.4		20.6	11.0	15.0
70th %ile Term Code								Gap			Gap		Coord	Ped	Max
50th %ile Green (s)								39.8			39.8		27.2	11.0	15.0
50th %ile Term Code								Gap			Gap		Coord	Ped	Max
30th %ile Green (s)								34.0			34.0		34.7	11.0	13.3
30th %ile Term Code								Gap			Gap		Coord	Ped	Gap
10th %ile Green (s)								26.1			26.1		61.9	0.0	11.0
10th %ile Term Code								Gap			Gap		Coord	Skip	Ped
Queue Length 50th (ft)		5	0					255		0	0				
Queue Length 95th (ft)		20	41					326		m0	0				
Internal Link Dist (ft)		533			306			107			31				
Turn Bay Length (ft)															
Base Capacity (vph)		767	491					780		736	1870				
Starvation Cap Reductn		0	0					0		0	0				
Spillback Cap Reductn		0	0					0		0	0				
Storage Cap Reductn		0	0					0		0	0				
Reduced v/c Ratio		0.01	0.22					0.53		0.04	0.28				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 14.3		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

Splits and Phases: 21: Washington Street & Eastbound Carriage Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø6
Lane Configurations														
Traffic Volume (vph)	0	0	0	0	16	36	6	218	3	1	383	18		
Future Volume (vph)	0	0	0	0	16	36	6	218	3	1	383	18		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor					0.84			1.00			1.00			
Frt					0.906			0.998			0.994			
Flt Protected							0.950							
Satd. Flow (prot)	0	0	0	0	1304	0	1805	1852	0	0	1832	0		
Flt Permitted							0.331				0.999			
Satd. Flow (perm)	0	0	0	0	1304	0	629	1852	0	0	1829	0		
Right Turn on Red			Yes			No			Yes			Yes		
Satd. Flow (RTOR)								1			2			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		413			241			116			254			
Travel Time (s)		9.4			5.5			2.6			5.8			
Confl. Peds. (#/hr)						42			75	75				
Confl. Bikes (#/hr)						1			4			2		
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.93	0.93	0.93		
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	2%	0%	0%	1%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0		
Parking (#/hr)					0									
Adj. Flow (vph)	0	0	0	0	18	41	7	251	3	1	412	19		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	0	0	0	59	0	7	254	0	0	432	0		
Turn Type					NA		Perm	NA		Perm	NA			
Protected Phases					1			5			5		2	6
Permitted Phases							5			5				
Detector Phase					1		5	5		5	5			
Switch Phase														
Minimum Initial (s)					8.0		10.0	10.0		10.0	10.0		5.0	6.0
Minimum Split (s)					18.0		22.0	22.0		22.0	22.0		17.0	17.0
Total Split (s)					23.0		56.0	56.0		56.0	56.0		20.0	21.0
Total Split (%)					19.2%		46.7%	46.7%		46.7%	46.7%		17%	18%
Maximum Green (s)					17.0		47.0	47.0		47.0	47.0		14.0	15.0
Yellow Time (s)					3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)					3.0		6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0		-5.0	-5.0			-5.0			
Total Lost Time (s)					4.0		4.0	4.0			4.0			
Lead/Lag					Lead		Lead	Lead		Lead	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)					2.0		2.0	2.0		2.0	2.0		4.0	2.0
Recall Mode					C-Max		None	None		None	None		None	None
Walk Time (s)					8.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					4.0		6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)					0		136	136		136	136		60	127
Act Effct Green (s)					34.9		43.7	43.7			43.7			
Actuated g/C Ratio					0.29		0.36	0.36			0.36			
v/c Ratio					0.16		0.03	0.38			0.65			
Control Delay					40.4		2.5	4.2			35.5			
Queue Delay					0.0		0.7	0.4			0.0			
Total Delay					40.4		3.2	4.6			35.5			
LOS					D		A	A			D			
Approach Delay					40.4			4.6			35.5			
Approach LOS					D			A			D			
90th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
90th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
70th %ile Green (s)					20.6		46.4	46.4		46.4	46.4		11.0	15.0
70th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Max
50th %ile Green (s)					27.2		39.8	39.8		39.8	39.8		11.0	15.0
50th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Max
30th %ile Green (s)					34.7		34.0	34.0		34.0	34.0		11.0	13.3
30th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Gap
10th %ile Green (s)					61.9		26.1	26.1		26.1	26.1		0.0	11.0
10th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Skip	Ped
Queue Length 50th (ft)					36		0	11			271			
Queue Length 95th (ft)					78		m1	14			344			
Internal Link Dist (ft)		333			161			36			174			
Turn Bay Length (ft)														
Base Capacity (vph)					379		272	803			793			
Starvation Cap Reductn					0		198	233			0			
Spillback Cap Reductn					0		0	0			0			
Storage Cap Reductn					0		0	0			0			
Reduced v/c Ratio					0.16		0.09	0.45			0.54			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 25.2		Intersection LOS: C	
Intersection Capacity Utilization 38.7%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 22: Washington Street & Westbound Carriage Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	29	348	42	21	573
Future Volume (Veh/h)	61	29	348	42	21	573
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95
Hourly flow rate (vph)	64	31	378	46	22	603
Pedestrians	46		30			2
Lane Width (ft)	13.0		16.0			16.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	4		3			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			535			187
pX, platoon unblocked	0.90	0.89			0.89	
vC, conflicting volume	1124	449			470	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1029	319			343	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	95			98	
cM capacity (veh/h)	213	618			1047	

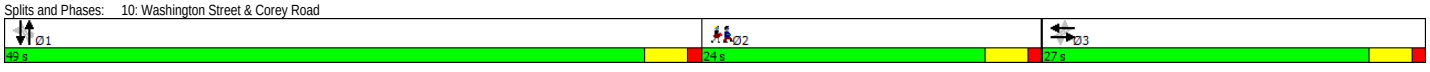
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	95	424	625
Volume Left	64	0	22
Volume Right	31	46	0
cSH	271	1700	1047
Volume to Capacity	0.35	0.25	0.02
Queue Length 95th (ft)	38	0	2
Control Delay (s)	25.2	0.0	0.6
Lane LOS	D		A
Approach Delay (s)	25.2	0.0	0.6
Approach LOS	D		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	91	140	18	32	169	35	15	241	129	48	355	146	
Future Volume (vph)	91	140	18	32	169	35	15	241	129	48	355	146	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00			1.00			0.99			0.99		
Frt		0.990			0.980			0.955			0.964		
Flt Protected		0.982			0.993			0.998			0.996		
Satd. Flow (prot)	0	2071	0	0	2074	0	0	1846	0	0	1838	0	
Flt Permitted		0.608			0.910			0.975			0.937		
Satd. Flow (perm)	0	1282	0	0	1901	0	0	1804	0	0	1729	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		340			544			523			535		
Travel Time (s)		7.7			12.4			11.9			12.2		
Confl. Bikes (#/hr)			1			1			2			2	
Peak Hour Factor	0.97	0.97	0.97	0.98	0.98	0.98	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5	
Parking (#/hr)											0		
Adj. Flow (vph)	94	144	19	33	172	36	15	248	133	49	362	149	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	257	0	0	241	0	0	396	0	0	560	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1		2
Permitted Phases	3			3			1	1		1	1		
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	4.0		4.0	4.0		4.0
Minimum Split (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0		24.0
Total Split (s)	27.0	27.0		27.0	27.0		49.0	49.0		49.0	49.0		24.0
Total Split (%)	27.0%	27.0%		27.0%	27.0%		49.0%	49.0%		49.0%	49.0%		24%
Maximum Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0		1.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		4.0			4.0			4.0			4.0		
Lead/Lag							Lead	Lead		Lead	Lead		Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													10.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													176
Act Effct Green (s)		21.0			21.0			45.0			45.0		
Actuated g/C Ratio		0.21			0.21			0.46			0.46		
v/c Ratio		0.94			0.59			0.48			0.71		
Control Delay		80.2			41.2			21.2			27.7		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		80.2			41.2			21.2			27.7		
LOS		F			D			C			C		
Approach Delay		80.2			41.2			21.2			27.7		
Approach LOS		F			D			C			C		
90th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
30th %ile Green (s)	21.0	21.0		21.0	21.0		45.0	45.0		45.0	45.0		20.0
30th %ile Term Code	Gap	Gap		Gap	Gap		MaxR	MaxR		MaxR	MaxR		Ped
10th %ile Green (s)	15.2	15.2		15.2	15.2		45.0	45.0		45.0	45.0		20.0
10th %ile Term Code	Gap	Gap		Gap	Gap		MaxR	MaxR		MaxR	MaxR		Ped
Queue Length 50th (ft)		159			136			173			282		
Queue Length 95th (ft)		#302			215			257			415		
Internal Link Dist (ft)		260			464			443			455		
Turn Bay Length (ft)													
Base Capacity (vph)		300			446			828			794		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			0			0			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.86			0.54			0.48			0.71		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 37.4		Intersection LOS: D	
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 98			
10th %ile Actuated Cycle: 92.2			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 10: Washington Street & Corey Road

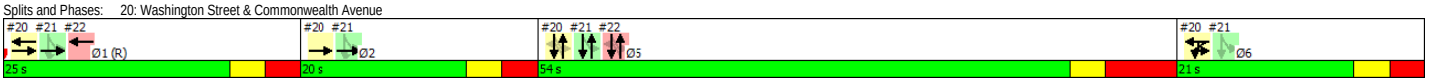


Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2
Lane Configurations															
Traffic Volume (vph)	0	375	51	22	137	508	0	57	215	52	44	278	7		
Future Volume (vph)	0	375	51	22	137	508	0	57	215	52	44	278	7		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor		0.97			0.82				1.00			1.00			
Frt		0.982							0.971			0.996			
Flt Protected					0.950			0.950			0.950				
Satd. Flow (prot)	0	3415	0	0	1790	3610	0	1805	1825	0	1805	1892	0		
Flt Permitted					0.950			0.382			0.429				
Satd. Flow (perm)	0	3415	0	0	1473	3610	0	726	1825	0	815	1892	0		
Right Turn on Red			Yes				Yes			No			No		
Satd. Flow (RTOR)		13													
Link Speed (mph)		30				30			30			30			
Link Distance (ft)		545				375			111			116			
Travel Time (s)		12.4				8.5			2.5			2.6			
Confl. Peds. (#/hr)			76	146											
Confl. Bikes (#/hr)										3			2		
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.93	0.93	0.93		
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%		
Adj. Flow (vph)	0	391	53	22	140	518	0	58	219	53	47	299	8		
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	444	0	0	162	518	0	58	272	0	47	307	0		
Turn Type		NA		Prot	Prot	NA		Perm	NA		Perm	NA			
Protected Phases		1 2		6	6	1 6			5			5		1	2
Permitted Phases								5			5				
Detector Phase		1		6	6	1 6		5	5		5	5			
Switch Phase															
Minimum Initial (s)				6.0	6.0			10.0	10.0		10.0	10.0		8.0	5.0
Minimum Split (s)				17.0	17.0			22.0	22.0		22.0	22.0		18.0	17.0
Total Split (s)				21.0	21.0			54.0	54.0		54.0	54.0		25.0	20.0
Total Split (%)				17.5%	17.5%			45.0%	45.0%		45.0%	45.0%		21%	17%
Maximum Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		19.0	14.0
Yellow Time (s)				3.0	3.0			3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)				3.0	3.0			6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0			-5.0	-5.0		-5.0	-5.0			
Total Lost Time (s)					4.0			4.0	4.0		4.0	4.0			
Lead/Lag				Lag	Lag			Lead	Lead		Lead	Lead		Lead	Lag
Lead-Lag Optimize?				Yes	Yes			Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)				2.0	2.0			2.0	2.0		2.0	2.0		2.0	4.0
Recall Mode				None	None			None	None		None	None		C-Max	None
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	7.0		8.0	7.0
Flash Dont Walk (s)				4.0	4.0			6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)				176	176			230	230		230	230		0	86
Act Effct Green (s)		53.9			15.8	60.1		38.3	38.3		38.3	38.3			
Actuated g/C Ratio		0.45			0.13	0.50		0.32	0.32		0.32	0.32			
v/c Ratio		0.29			0.69	0.29		0.25	0.47		0.18	0.51			
Control Delay		22.9			65.4	20.7		3.9	4.1		3.0	4.5			
Queue Delay		0.0			0.0	0.0		1.0	0.3		0.9	0.3			
Total Delay		22.9			65.4	20.7		4.9	4.4		3.9	4.8			
LOS		C			E	C		A	A		A	A			
Approach Delay		22.9				31.4			4.5			4.7			
Approach LOS		C				C			A			A			
90th %ile Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		22.0	11.0
90th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
70th %ile Green (s)				15.0	15.0			39.3	39.3		39.3	39.3		27.7	11.0
70th %ile Term Code				Max	Max			Gap	Gap		Gap	Gap		Coord	Ped
50th %ile Green (s)				15.0	15.0			33.1	33.1		33.1	33.1		33.9	11.0
50th %ile Term Code				Max	Max			Gap	Gap		Gap	Gap		Coord	Ped
30th %ile Green (s)				12.8	12.8			28.1	28.1		28.1	28.1		41.1	11.0
30th %ile Term Code				Gap	Gap			Gap	Gap		Gap	Gap		Coord	Ped
10th %ile Green (s)				11.0	11.0			21.2	21.2		21.2	21.2		66.8	0.0
10th %ile Term Code				Ped	Ped			Gap	Gap		Gap	Gap		Coord	Skip
Queue Length 50th (ft)		110			120	126		1	5		1	6			
Queue Length 95th (ft)		178			195	200		2	7		2	8			
Internal Link Dist (ft)		465				295			31			36			
Turn Bay Length (ft)															
Base Capacity (vph)		1540			253	1796		302	760		339	788			
Starvation Cap Reductn		0			0	0		120	151		168	125			
Spillback Cap Reductn		0			0	0		0	0		0	0			
Storage Cap Reductn		0			0	0		0	0		0	0			
Reduced v/c Ratio		0.29			0.64	0.29		0.32	0.45		0.27	0.46			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 19.2 Intersection LOS: B
Intersection Capacity Utilization 58.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 20: Washington Street & Commonwealth Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations															
Traffic Volume (vph)	0	12	91	0	0	0	0	324	17	47	419	0			
Future Volume (vph)	0	12	91	0	0	0	0	324	17	47	419	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.61					1.00							
Frt			0.850					0.993							
Flt Protected										0.950					
Satd. Flow (prot)	0	1900	1454	0	0	0	0	1829	0	1805	1900	0			
Flt Permitted										0.550					
Satd. Flow (perm)	0	1900	881	0	0	0	0	1829	0	1045	1900	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)			109												
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		613			386			187			111				
Travel Time (s)		13.9			8.8			4.3			2.5				
Confl. Peds. (#/hr)			76												
Confl. Bikes (#/hr)			2						3			2			
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96			
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	1%	0%	0%	0%	0%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	0			
Parking (#/hr)			0												
Adj. Flow (vph)	0	13	102	0	0	0	0	334	18	49	436	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	13	102	0	0	0	0	352	0	49	436	0			
Turn Type		NA	Perm					NA		custom	NA				
Protected Phases		1 2!						5			5		1	2	6
Permitted Phases			1 2							1 2 5 6!	1 2 6!				
Detector Phase		1	1					5		1 2 5 6	5				
Switch Phase															
Minimum Initial (s)								10.0			10.0		8.0	5.0	6.0
Minimum Split (s)								22.0			22.0		18.0	17.0	17.0
Total Split (s)								54.0			54.0		25.0	20.0	21.0
Total Split (%)								45.0%			45.0%		21%	17%	18%
Maximum Green (s)								45.0			45.0		19.0	14.0	15.0
Yellow Time (s)								3.0			3.0		3.0	3.0	3.0
All-Red Time (s)								6.0			6.0		3.0	3.0	3.0
Lost Time Adjust (s)								-5.0			-5.0				
Total Lost Time (s)								4.0			4.0				
Lead/Lag								Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?								Yes			Yes		Yes	Yes	Yes
Vehicle Extension (s)								2.0			2.0		2.0	4.0	2.0
Recall Mode								None			None		C-Max	None	None
Walk Time (s)								7.0			7.0		8.0	7.0	7.0
Flash Dont Walk (s)								6.0			6.0		4.0	4.0	4.0
Pedestrian Calls (#/hr)								230			230		0	86	176
Act Effct Green (s)		53.9	53.9					38.3		120.0	120.0				
Actuated g/C Ratio		0.45	0.45					0.32		1.00	1.00				
v/c Ratio		0.02	0.22					0.60		0.05	0.23				
Control Delay		23.7	5.7					37.8		0.1	0.3				
Queue Delay		0.0	0.0					0.0		0.0	0.0				
Total Delay		23.7	5.7					37.8		0.1	0.3				
LOS		C	A					D		A	A				
Approach Delay		7.7						37.8			0.2				
Approach LOS		A						D			A				
90th %ile Green (s)								45.0			45.0		22.0	11.0	15.0
90th %ile Term Code								Max			Max		Coord	Ped	Max
70th %ile Green (s)								39.3			39.3		27.7	11.0	15.0
70th %ile Term Code								Gap			Gap		Coord	Ped	Max
50th %ile Green (s)								33.1			33.1		33.9	11.0	15.0
50th %ile Term Code								Gap			Gap		Coord	Ped	Max
30th %ile Green (s)								28.1			28.1		41.1	11.0	12.8
30th %ile Term Code								Gap			Gap		Coord	Ped	Gap
10th %ile Green (s)								21.2			21.2		66.8	0.0	11.0
10th %ile Term Code								Gap			Gap		Coord	Skip	Ped
Queue Length 50th (ft)		6	0					230		0	0				
Queue Length 95th (ft)		21	34					281		m0	0				
Internal Link Dist (ft)		533			306			107			31				
Turn Bay Length (ft)															
Base Capacity (vph)		853	455					762		1035	1900				
Starvation Cap Reductn		0	0					0		0	0				
Spillback Cap Reductn		0	0					0		0	0				
Storage Cap Reductn		0	0					0		0	0				
Reduced v/c Ratio		0.02	0.22					0.46		0.05	0.23				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 44.7%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

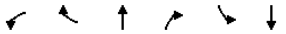
Splits and Phases: 21: Washington Street & Eastbound Carriage Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø6
Lane Configurations														
Traffic Volume (vph)	0	0	0	0	21	39	7	204	4	1	329	7		
Future Volume (vph)	0	0	0	0	21	39	7	204	4	1	329	7		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor					0.89			0.99			1.00			
Frt					0.913			0.997			0.997			
Flt Protected							0.950							
Satd. Flow (prot)	0	0	0	0	1391	0	1805	1839	0	0	1856	0		
Flt Permitted							0.342				0.999			
Satd. Flow (perm)	0	0	0	0	1391	0	650	1839	0	0	1852	0		
Right Turn on Red			Yes			No			Yes			Yes		
Satd. Flow (RTOR)								1			1			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		413			241			116			254			
Travel Time (s)		9.4			5.5			2.6			5.8			
Confl. Peds. (#/hr)						30			138	138				
Confl. Bikes (#/hr)						1			3			2		
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.96	0.96	0.96	0.93	0.93	0.93		
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	2%	0%	0%	0%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0		
Parking (#/hr)					0									
Adj. Flow (vph)	0	0	0	0	24	44	7	213	4	1	354	8		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	0	0	0	68	0	7	217	0	0	363	0		
Turn Type					NA		Perm	NA		Perm	NA			
Protected Phases					1			5			5		2	6
Permitted Phases							5			5				
Detector Phase					1		5	5		5	5			
Switch Phase														
Minimum Initial (s)					8.0		10.0	10.0		10.0	10.0		5.0	6.0
Minimum Split (s)					18.0		22.0	22.0		22.0	22.0		17.0	17.0
Total Split (s)					25.0		54.0	54.0		54.0	54.0		20.0	21.0
Total Split (%)					20.8%		45.0%	45.0%		45.0%	45.0%		17%	18%
Maximum Green (s)					19.0		45.0	45.0		45.0	45.0		14.0	15.0
Yellow Time (s)					3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)					3.0		6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0		-5.0	-5.0			-5.0			
Total Lost Time (s)					4.0		4.0	4.0			4.0			
Lead/Lag					Lead		Lead	Lead		Lead	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)					2.0		2.0	2.0		2.0	2.0		4.0	2.0
Recall Mode					C-Max		None	None		None	None		None	None
Walk Time (s)					8.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					4.0		6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)					0		230	230		230	230		86	176
Act Effct Green (s)					40.3		38.3	38.3			38.3			
Actuated g/C Ratio					0.34		0.32	0.32			0.32			
v/c Ratio					0.15		0.03	0.37			0.61			
Control Delay					35.9		2.0	3.7			37.9			
Queue Delay					0.0		0.4	0.3			0.0			
Total Delay					35.9		2.4	4.1			37.9			
LOS					D		A	A			D			
Approach Delay					35.9			4.0			37.9			
Approach LOS					D			A			D			
90th %ile Green (s)					22.0		45.0	45.0		45.0	45.0		11.0	15.0
90th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
70th %ile Green (s)					27.7		39.3	39.3		39.3	39.3		11.0	15.0
70th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Max
50th %ile Green (s)					33.9		33.1	33.1		33.1	33.1		11.0	15.0
50th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Max
30th %ile Green (s)					41.1		28.1	28.1		28.1	28.1		11.0	12.8
30th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Gap
10th %ile Green (s)					66.8		21.2	21.2		21.2	21.2		0.0	11.0
10th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Skip	Ped
Queue Length 50th (ft)					39		0	6			237			
Queue Length 95th (ft)					86		m0	8			289			
Internal Link Dist (ft)		333			161			36			174			
Turn Bay Length (ft)														
Base Capacity (vph)					467		270	766			772			
Starvation Cap Reductn					0		180	208			0			
Spillback Cap Reductn					0		0	0			0			
Storage Cap Reductn					0		0	0			0			
Reduced v/c Ratio					0.15		0.08	0.39			0.47			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 26.1 Intersection LOS: C
Intersection Capacity Utilization 35.2% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Washington Street & Westbound Carriage Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	71	30	311	49	25	485
Future Volume (Veh/h)	71	30	311	49	25	485
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	73	31	324	51	26	505
Pedestrians	62		52			2
Lane Width (ft)	13.0		16.0			16.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		6			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			535			187
pX, platoon unblocked	0.94	0.93			0.93	
vC, conflicting volume	1020	414			437	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	956	331			356	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	69	95			98	
cM capacity (veh/h)	234	626			1065	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	104	375	531
Volume Left	73	0	26
Volume Right	31	51	0
cSH	288	1700	1065
Volume to Capacity	0.36	0.22	0.02
Queue Length 95th (ft)	40	0	2
Control Delay (s)	24.4	0.0	0.7
Lane LOS	C		A
Approach Delay (s)	24.4	0.0	0.7
Approach LOS	C		

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B	
Analysis Period (min)	15			

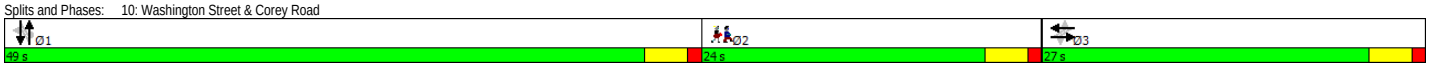
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	102	169	34	33	182	25	17	294	190	32	544	120	
Future Volume (vph)	102	169	34	33	182	25	17	294	190	32	544	120	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00			0.99			1.00		
Frt		0.985			0.986			0.949			0.977		
Flt Protected		0.984			0.993			0.998			0.998		
Satd. Flow (prot)	0	2069	0	0	2088	0	0	1827	0	0	1868	0	
Flt Permitted		0.608			0.886			0.970			0.962		
Satd. Flow (perm)	0	1278	0	0	1863	0	0	1775	0	0	1801	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		340			544			523			535		
Travel Time (s)		7.7			12.4			11.9			12.2		
Confl. Bikes (#/hr)						1			2			1	
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	1%	1%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5	
Parking (#/hr)											0		
Adj. Flow (vph)	107	178	36	36	200	27	18	320	207	34	573	126	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	321	0	0	263	0	0	545	0	0	733	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1		2
Permitted Phases	3			3			1	1		1	1		
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	4.0		4.0	4.0		4.0
Minimum Split (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0		24.0
Total Split (s)	27.0	27.0		27.0	27.0		49.0	49.0		49.0	49.0		24.0
Total Split (%)	27.0%	27.0%		27.0%	27.0%		49.0%	49.0%		49.0%	49.0%		24%
Maximum Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0		1.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		4.0			4.0			4.0			4.0		
Lead/Lag							Lead	Lead		Lead	Lead		Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													10.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													147
Act Effct Green (s)		23.0			23.0			45.0			45.0		
Actuated g/C Ratio		0.23			0.23			0.45			0.45		
v/c Ratio		1.10			0.61			0.68			0.90		
Control Delay		118.5			41.7			27.2			42.3		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		118.5			41.7			27.2			42.3		
LOS		F			D			C			D		
Approach Delay		118.5			41.7			27.2			42.3		
Approach LOS		F			D			C			D		
90th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
30th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
10th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
10th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
Queue Length 50th (ft)		~232			151			268			421		
Queue Length 95th (ft)		#402			236			391			#660		
Internal Link Dist (ft)		260			464			443			455		
Turn Bay Length (ft)													
Base Capacity (vph)		293			428			798			810		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			0			0			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		1.10			0.61			0.68			0.90		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 50.9 Intersection LOS: D
Intersection Capacity Utilization 89.0% ICU Level of Service E
Analysis Period (min) 15
90th %ile Actuated Cycle: 100
70th %ile Actuated Cycle: 100
50th %ile Actuated Cycle: 100
30th %ile Actuated Cycle: 100
10th %ile Actuated Cycle: 100

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Washington Street & Corey Road



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2
Lane Configurations															
Traffic Volume (vph)	0	520	73	30	147	265	0	65	242	72	55	364	53		
Future Volume (vph)	0	520	73	30	147	265	0	65	242	72	55	364	53		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor		0.98			0.89				1.00			1.00			
Frt		0.982							0.966			0.981			
Flt Protected					0.950			0.950			0.950				
Satd. Flow (prot)	0	3463	0	0	1790	3505	0	1770	1803	0	1719	1861	0		
Flt Permitted					0.950			0.295			0.407				
Satd. Flow (perm)	0	3463	0	0	1593	3505	0	550	1803	0	736	1861	0		
Right Turn on Red			Yes				Yes			No			No		
Satd. Flow (RTOR)		13													
Link Speed (mph)		30				30			30			30			
Link Distance (ft)		545				375			111			116			
Travel Time (s)		12.4				8.5			2.5			2.6			
Confl. Peds. (#/hr)			50	85											
Confl. Bikes (#/hr)										4			2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93		
Heavy Vehicles (%)	0%	0%	3%	0%	1%	3%	0%	2%	1%	3%	5%	0%	0%		
Adj. Flow (vph)	0	531	74	31	150	270	0	71	263	78	59	391	57		
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	605	0	0	181	270	0	71	341	0	59	448	0		
Turn Type		NA		Prot	Prot	NA		Perm	NA		Perm	NA			
Protected Phases		1 2		6	6	1 6			5			5		1	2
Permitted Phases								5			5				
Detector Phase		1		6	6	1 6		5	5		5	5			
Switch Phase															
Minimum Initial (s)				6.0	6.0			10.0	10.0		10.0	10.0		8.0	5.0
Minimum Split (s)				17.0	17.0			22.0	22.0		22.0	22.0		18.0	17.0
Total Split (s)				21.0	21.0			56.0	56.0		56.0	56.0		23.0	20.0
Total Split (%)				17.5%	17.5%			46.7%	46.7%		46.7%	46.7%		19%	17%
Maximum Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		17.0	14.0
Yellow Time (s)				3.0	3.0			3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)				3.0	3.0			6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0			-5.0	-5.0		-5.0	-5.0			
Total Lost Time (s)					4.0			4.0	4.0		4.0	4.0			
Lead/Lag				Lag	Lag			Lead	Lead		Lead	Lead		Lead	Lag
Lead-Lag Optimize?				Yes	Yes			Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)				2.0	2.0			2.0	2.0		2.0	2.0		2.0	4.0
Recall Mode				None	None			None	None		None	None		C-Max	None
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	7.0		8.0	7.0
Flash Dont Walk (s)				4.0	4.0			6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)				127	127			136	136		136	136		0	60
Act Effct Green (s)		44.0			16.0	50.4		48.0	48.0		48.0	48.0			
Actuated g/C Ratio		0.37			0.13	0.42		0.40	0.40		0.40	0.40			
v/c Ratio		0.47			0.76	0.18		0.32	0.47		0.20	0.60			
Control Delay		31.3			70.4	24.7		4.7	3.3		2.6	4.3			
Queue Delay		0.0			0.0	0.0		2.0	0.6		3.6	0.7			
Total Delay		31.3			70.4	24.7		6.7	3.9		6.2	5.0			
LOS		C			E	C		A	A		A	A			
Approach Delay		31.3				43.0			4.4			5.2			
Approach LOS		C				D			A			A			
90th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
90th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
70th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
70th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
50th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
50th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
30th %ile Green (s)				14.2	14.2			41.6	41.6		41.6	41.6		26.2	11.0
30th %ile Term Code				Gap	Gap			Gap	Gap		Gap	Gap		Coord	Ped
10th %ile Green (s)				11.0	11.0			32.2	32.2		32.2	32.2		55.8	0.0
10th %ile Term Code				Ped	Ped			Gap	Gap		Gap	Gap		Coord	Skip
Queue Length 50th (ft)		196			136	75		1	6		1	9			
Queue Length 95th (ft)		254			#234	109		m2	8		m2	11			
Internal Link Dist (ft)		465				295			31			36			
Turn Bay Length (ft)															
Base Capacity (vph)		1278			253	1454		238	781		318	806			
Starvation Cap Reductn		0			0	0		84	167		195	133			
Spillback Cap Reductn		0			0	0		0	0		0	0			
Storage Cap Reductn		0			0	0		0	0		0	0			
Reduced v/c Ratio		0.47			0.72	0.19		0.46	0.56		0.48	0.67			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 21.6 Intersection LOS: C
Intersection Capacity Utilization 71.0% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Washington Street & Commonwealth Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations															
Traffic Volume (vph)	0	10	106	0	0	0	0	379	25	32	552	0			
Future Volume (vph)	0	10	106	0	0	0	0	379	25	32	552	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.73					1.00		0.79					
Frt			0.850					0.992							
Flt Protected										0.950					
Satd. Flow (prot)	0	1900	1439	0	0	0	0	1802	0	1752	1881	0			
Flt Permitted										0.508					
Satd. Flow (perm)	0	1900	1055	0	0	0	0	1802	0	737	1881	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)			114												
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		613			386			187			111				
Travel Time (s)		13.9			8.8			4.3			2.5				
Confl. Peds. (#/hr)			50							85					
Confl. Bikes (#/hr)			2						4			2			
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	0%	1%	2%	2%	2%	0%	2%	8%	3%	1%	0%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	0			
Parking (#/hr)			0												
Adj. Flow (vph)	0	11	114	0	0	0	0	412	27	34	587	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	11	114	0	0	0	0	439	0	34	587	0			
Turn Type		NA	Perm					NA		custom	NA				
Protected Phases		1 2!						5			5		1	2	6
Permitted Phases			1 2							1 2 5 6!	1 2 6!				
Detector Phase		1	1					5		1 2 5 6	5				
Switch Phase															
Minimum Initial (s)								10.0			10.0		8.0	5.0	6.0
Minimum Split (s)								22.0			22.0		18.0	17.0	17.0
Total Split (s)								56.0			56.0		23.0	20.0	21.0
Total Split (%)								46.7%			46.7%		19%	17%	18%
Maximum Green (s)								47.0			47.0		17.0	14.0	15.0
Yellow Time (s)								3.0			3.0		3.0	3.0	3.0
All-Red Time (s)								6.0			6.0		3.0	3.0	3.0
Lost Time Adjust (s)								-5.0			-5.0				
Total Lost Time (s)								4.0			4.0				
Lead/Lag								Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?								Yes			Yes		Yes	Yes	Yes
Vehicle Extension (s)								2.0			2.0		2.0	4.0	2.0
Recall Mode								None			None		C-Max	None	None
Walk Time (s)								7.0			7.0		8.0	7.0	7.0
Flash Dont Walk (s)								6.0			6.0		4.0	4.0	4.0
Pedestrian Calls (#/hr)								136			136		0	60	127
Act Effct Green (s)		44.0	44.0					48.0		120.0	120.0				
Actuated g/C Ratio		0.37	0.37					0.40		1.00	1.00				
v/c Ratio		0.02	0.25					0.61		0.05	0.31				
Control Delay		27.7	6.7					32.0		0.1	0.4				
Queue Delay		0.0	0.0					0.0		0.0	0.0				
Total Delay		27.7	6.7					32.0		0.1	0.4				
LOS		C	A					C		A	A				
Approach Delay		8.6						32.0			0.4				
Approach LOS		A						C			A				
90th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
90th %ile Term Code								Max			Max		Coord	Ped	Max
70th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
70th %ile Term Code								Max			Max		Coord	Ped	Max
50th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
50th %ile Term Code								Max			Max		Coord	Ped	Max
30th %ile Green (s)								41.6			41.6		26.2	11.0	14.2
30th %ile Term Code								Gap			Gap		Coord	Ped	Gap
10th %ile Green (s)								32.2			32.2		55.8	0.0	11.0
10th %ile Term Code								Gap			Gap		Coord	Skip	Ped
Queue Length 50th (ft)		6	0					250		0	0				
Queue Length 95th (ft)		20	42					355		m0	0				
Internal Link Dist (ft)		533			306			107			31				
Turn Bay Length (ft)															
Base Capacity (vph)		696	458					780		728	1881				
Starvation Cap Reductn		0	0					0		0	0				
Spillback Cap Reductn		0	0					0		0	0				
Storage Cap Reductn		0	0					0		0	0				
Reduced v/c Ratio		0.02	0.25					0.56		0.05	0.31				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 46.3% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 21: Washington Street & Eastbound Carriage Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø6
Lane Configurations														
Traffic Volume (vph)	0	0	0	0	17	41	6	232	4	1	472	19		
Future Volume (vph)	0	0	0	0	17	41	6	232	4	1	472	19		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor					0.84			0.99			1.00			
Frt					0.905			0.997			0.995			
Flt Protected							0.950							
Satd. Flow (prot)	0	0	0	0	1300	0	1805	1845	0	0	1834	0		
Flt Permitted							0.299							
Satd. Flow (perm)	0	0	0	0	1300	0	568	1845	0	0	1833	0		
Right Turn on Red			Yes			No			Yes			Yes		
Satd. Flow (RTOR)								1			2			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		413			241			116			254			
Travel Time (s)		9.4			5.5			2.6			5.8			
Confl. Peds. (#/hr)						42			75	75				
Confl. Bikes (#/hr)						1			4			2		
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.93	0.93	0.93		
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	2%	0%	0%	1%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0		
Parking (#/hr)					0									
Adj. Flow (vph)	0	0	0	0	20	47	7	267	5	1	508	20		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	0	0	0	67	0	7	272	0	0	529	0		
Turn Type					NA		Perm	NA		Perm	NA			
Protected Phases					1			5			5		2	6
Permitted Phases							5			5				
Detector Phase					1		5	5		5	5			
Switch Phase														
Minimum Initial (s)					8.0		10.0	10.0		10.0	10.0		5.0	6.0
Minimum Split (s)					18.0		22.0	22.0		22.0	22.0		17.0	17.0
Total Split (s)					23.0		56.0	56.0		56.0	56.0		20.0	21.0
Total Split (%)					19.2%		46.7%	46.7%		46.7%	46.7%		17%	18%
Maximum Green (s)					17.0		47.0	47.0		47.0	47.0		14.0	15.0
Yellow Time (s)					3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)					3.0		6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0		-5.0	-5.0			-5.0			
Total Lost Time (s)					4.0		4.0	4.0			4.0			
Lead/Lag					Lead		Lead	Lead		Lead	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)					2.0		2.0	2.0		2.0	2.0		4.0	2.0
Recall Mode					C-Max		None	None		None	None		None	None
Walk Time (s)					8.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					4.0		6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)					0		136	136		136	136		60	127
Act Effct Green (s)					30.4		48.0	48.0			48.0			
Actuated g/C Ratio					0.25		0.40	0.40			0.40			
v/c Ratio					0.20		0.03	0.37			0.72			
Control Delay					43.0		2.5	3.9			36.0			
Queue Delay					0.0		1.8	0.7			0.0			
Total Delay					43.0		4.3	4.6			36.0			
LOS					D		A	A			D			
Approach Delay					43.0			4.6			36.0			
Approach LOS					D			A			D			
90th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
90th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
70th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
70th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
50th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
50th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
30th %ile Green (s)					26.2		41.6	41.6		41.6	41.6		11.0	14.2
30th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Gap
10th %ile Green (s)					55.8		32.2	32.2		32.2	32.2		0.0	11.0
10th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Skip	Ped
Queue Length 50th (ft)					45		0	11			319			
Queue Length 95th (ft)					87		m1	15			445			
Internal Link Dist (ft)		333			161			36			174			
Turn Bay Length (ft)														
Base Capacity (vph)					329		246	800			795			
Starvation Cap Reductn					0		198	269			0			
Spillback Cap Reductn					0		0	0			0			
Storage Cap Reductn					0		0	0			0			
Reduced v/c Ratio					0.20		0.15	0.51			0.67			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 43.5%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 22: Washington Street & Westbound Carriage Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	63	30	374	43	22	633
Future Volume (Veh/h)	63	30	374	43	22	633
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95
Hourly flow rate (vph)	66	32	407	47	23	666
Pedestrians	46		30			2
Lane Width (ft)	13.0		16.0			16.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	4		3			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			535			187
pX, platoon unblocked	0.88	0.87			0.87	
vC, conflicting volume	1218	478			500	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1111	325			349	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	65	95			98	
cM capacity (veh/h)	187	599			1017	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	98	454	689
Volume Left	66	0	23
Volume Right	32	47	0
cSH	241	1700	1017
Volume to Capacity	0.41	0.27	0.02
Queue Length 95th (ft)	47	0	2
Control Delay (s)	29.9	0.0	0.6
Lane LOS	D		A
Approach Delay (s)	29.9	0.0	0.6
Approach LOS	D		

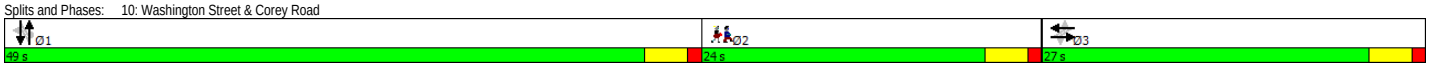
Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	102	146	21	33	175	36	16	302	134	50	399	151	
Future Volume (vph)	102	146	21	33	175	36	16	302	134	50	399	151	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00			1.00			0.99			0.99		
Frt		0.989			0.980			0.960			0.966		
Flt Protected		0.981			0.993			0.998			0.996		
Satd. Flow (prot)	0	2067	0	0	2074	0	0	1857	0	0	1842	0	
Flt Permitted		0.599			0.910			0.975			0.935		
Satd. Flow (perm)	0	1262	0	0	1901	0	0	1814	0	0	1729	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		340			544			523			535		
Travel Time (s)		7.7			12.4			11.9			12.2		
Confl. Bikes (#/hr)			1			1			2			2	
Peak Hour Factor	0.97	0.97	0.97	0.98	0.98	0.98	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5	
Parking (#/hr)											0		
Adj. Flow (vph)	105	151	22	34	179	37	16	311	138	51	407	154	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	278	0	0	250	0	0	465	0	0	612	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1		2
Permitted Phases	3			3			1	1		1	1		
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	4.0		4.0	4.0		4.0
Minimum Split (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0		24.0
Total Split (s)	27.0	27.0		27.0	27.0		49.0	49.0		49.0	49.0		24.0
Total Split (%)	27.0%	27.0%		27.0%	27.0%		49.0%	49.0%		49.0%	49.0%		24%
Maximum Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0		1.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		4.0			4.0			4.0			4.0		
Lead/Lag							Lead	Lead		Lead	Lead		Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													10.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													176
Act Effct Green (s)		22.9			22.9			45.0			45.0		
Actuated g/C Ratio		0.23			0.23			0.45			0.45		
v/c Ratio		0.96			0.57			0.57			0.79		
Control Delay		84.3			40.2			23.7			32.2		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		84.3			40.2			23.7			32.2		
LOS		F			D			C			C		
Approach Delay		84.3			40.2			23.7			32.2		
Approach LOS		F			D			C			C		
90th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
30th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
10th %ile Green (s)	22.3	22.3		22.3	22.3		45.0	45.0		45.0	45.0		20.0
10th %ile Term Code	Gap	Gap		Gap	Gap		MaxR	MaxR		MaxR	MaxR		Ped
Queue Length 50th (ft)		176			142			213			323		
Queue Length 95th (ft)		#339			223			313			472		
Internal Link Dist (ft)		260			464			443			455		
Turn Bay Length (ft)													
Base Capacity (vph)		290			438			817			779		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			0			0			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.96			0.57			0.57			0.79		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 99.9
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 40.0 Intersection LOS: D
Intersection Capacity Utilization 89.7% ICU Level of Service E
Analysis Period (min) 15
90th %ile Actuated Cycle: 100
70th %ile Actuated Cycle: 100
50th %ile Actuated Cycle: 100
30th %ile Actuated Cycle: 100
10th %ile Actuated Cycle: 99.3
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Washington Street & Corey Road



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2
Lane Configurations															
Traffic Volume (vph)	0	416	56	23	149	555	0	65	272	54	53	318	22		
Future Volume (vph)	0	416	56	23	149	555	0	65	272	54	53	318	22		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor		0.97			0.83				1.00			1.00			
Frt		0.982							0.975			0.990			
Flt Protected					0.950			0.950			0.950				
Satd. Flow (prot)	0	3416	0	0	1789	3610	0	1805	1833	0	1805	1879	0		
Flt Permitted					0.950			0.345			0.384				
Satd. Flow (perm)	0	3416	0	0	1493	3610	0	656	1833	0	730	1879	0		
Right Turn on Red			Yes				Yes			No			No		
Satd. Flow (RTOR)		13													
Link Speed (mph)		30				30			30			30			
Link Distance (ft)		545				375			111			116			
Travel Time (s)		12.4				8.5			2.5			2.6			
Confl. Peds. (#/hr)			76	146											
Confl. Bikes (#/hr)										3			2		
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.93	0.93	0.93		
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%		
Adj. Flow (vph)	0	433	58	23	152	566	0	66	278	55	57	342	24		
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	491	0	0	175	566	0	66	333	0	57	366	0		
Turn Type		NA		Prot	Prot	NA		Perm	NA		Perm	NA			
Protected Phases		1 2		6	6	1 6			5			5		1	2
Permitted Phases								5			5				
Detector Phase		1		6	6	1 6		5	5		5	5			
Switch Phase															
Minimum Initial (s)				6.0	6.0			10.0	10.0		10.0	10.0		8.0	5.0
Minimum Split (s)				17.0	17.0			22.0	22.0		22.0	22.0		18.0	17.0
Total Split (s)				21.0	21.0			54.0	54.0		54.0	54.0		25.0	20.0
Total Split (%)				17.5%	17.5%			45.0%	45.0%		45.0%	45.0%		21%	17%
Maximum Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		19.0	14.0
Yellow Time (s)				3.0	3.0			3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)				3.0	3.0			6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0			-5.0	-5.0		-5.0	-5.0			
Total Lost Time (s)					4.0			4.0	4.0		4.0	4.0			
Lead/Lag				Lag	Lag			Lead	Lead		Lead	Lead		Lead	Lag
Lead-Lag Optimize?				Yes	Yes			Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)				2.0	2.0			2.0	2.0		2.0	2.0		2.0	4.0
Recall Mode				None	None			None	None		None	None		C-Max	None
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	7.0		8.0	7.0
Flash Dont Walk (s)				4.0	4.0			6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)				176	176			230	230		230	230		0	86
Act Effct Green (s)		49.0			16.1	55.5		42.9	42.9		42.9	42.9			
Actuated g/C Ratio		0.41			0.13	0.46		0.36	0.36		0.36	0.36			
v/c Ratio		0.35			0.73	0.34		0.28	0.51		0.22	0.55			
Control Delay		26.4			67.8	23.8		4.0	3.9		3.2	4.3			
Queue Delay		0.0			0.0	0.0		1.7	0.5		1.8	0.4			
Total Delay		26.4			67.8	23.8		5.8	4.4		5.0	4.7			
LOS		C			E	C		A	A		A	A			
Approach Delay		26.4				34.2			4.6			4.8			
Approach LOS		C				C			A			A			
90th %ile Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		22.0	11.0
90th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
70th %ile Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		22.0	11.0
70th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
50th %ile Green (s)				15.0	15.0			40.1	40.1		40.1	40.1		26.9	11.0
50th %ile Term Code				Max	Max			Gap	Gap		Gap	Gap		Coord	Ped
30th %ile Green (s)				14.6	14.6			33.6	33.6		33.6	33.6		33.8	11.0
30th %ile Term Code				Gap	Gap			Gap	Gap		Gap	Gap		Coord	Ped
10th %ile Green (s)				11.0	11.0			25.8	25.8		25.8	25.8		62.2	0.0
10th %ile Term Code				Ped	Ped			Gap	Gap		Gap	Gap		Coord	Skip
Queue Length 50th (ft)		138			131	157		1	6		1	7			
Queue Length 95th (ft)		198			#223	220		m2	8		m2	9			
Internal Link Dist (ft)		465				295			31			36			
Turn Bay Length (ft)															
Base Capacity (vph)		1401			253	1647		273	763		304	782			
Starvation Cap Reductn		0			0	0		113	145		156	120			
Spillback Cap Reductn		0			0	0		0	0		0	0			
Storage Cap Reductn		0			0	0		0	0		0	0			
Reduced v/c Ratio		0.35			0.69	0.34		0.41	0.54		0.39	0.55			

Intersection Summary

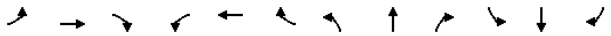
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 63.2% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Washington Street & Commonwealth Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations															
Traffic Volume (vph)	0	12	94	0	0	0	0	391	18	48	475	0			
Future Volume (vph)	0	12	94	0	0	0	0	391	18	48	475	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.61					1.00							
Frt			0.850					0.994							
Flt Protected										0.950					
Satd. Flow (prot)	0	1900	1454	0	0	0	0	1831	0	1805	1900	0			
Flt Permitted										0.516					
Satd. Flow (perm)	0	1900	881	0	0	0	0	1831	0	980	1900	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)			109												
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		613			386			187			111				
Travel Time (s)		13.9			8.8			4.3			2.5				
Confl. Peds. (#/hr)			76												
Confl. Bikes (#/hr)			2						3			2			
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96			
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	1%	0%	0%	0%	0%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	0			
Parking (#/hr)			0												
Adj. Flow (vph)	0	13	106	0	0	0	0	403	19	50	495	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	13	106	0	0	0	0	422	0	50	495	0			
Turn Type		NA	Perm					NA		custom	NA				
Protected Phases		1 2!						5			5		1	2	6
Permitted Phases			1 2							1 2 5 6!	1 2 6!				
Detector Phase		1	1					5		1 2 5 6	5				
Switch Phase															
Minimum Initial (s)								10.0			10.0		8.0	5.0	6.0
Minimum Split (s)								22.0			22.0		18.0	17.0	17.0
Total Split (s)								54.0			54.0		25.0	20.0	21.0
Total Split (%)								45.0%			45.0%		21%	17%	18%
Maximum Green (s)								45.0			45.0		19.0	14.0	15.0
Yellow Time (s)								3.0			3.0		3.0	3.0	3.0
All-Red Time (s)								6.0			6.0		3.0	3.0	3.0
Lost Time Adjust (s)								-5.0			-5.0				
Total Lost Time (s)								4.0			4.0				
Lead/Lag								Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?								Yes			Yes		Yes	Yes	Yes
Vehicle Extension (s)								2.0			2.0		2.0	4.0	2.0
Recall Mode								None			None		C-Max	None	None
Walk Time (s)								7.0			7.0		8.0	7.0	7.0
Flash Dont Walk (s)								6.0			6.0		4.0	4.0	4.0
Pedestrian Calls (#/hr)								230			230		0	86	176
Act Effct Green (s)		49.0	49.0					42.9		120.0	120.0				
Actuated g/C Ratio		0.41	0.41					0.36		1.00	1.00				
v/c Ratio		0.02	0.25					0.65		0.05	0.26				
Control Delay		25.6	6.5					36.2		0.1	0.3				
Queue Delay		0.0	0.0					0.0		0.0	0.0				
Total Delay		25.6	6.5					36.2		0.1	0.3				
LOS		C	A					D		A	A				
Approach Delay		8.6						36.2			0.3				
Approach LOS		A						D			A				
90th %ile Green (s)								45.0			45.0		22.0	11.0	15.0
90th %ile Term Code								Max			Max		Coord	Ped	Max
70th %ile Green (s)								45.0			45.0		22.0	11.0	15.0
70th %ile Term Code								Max			Max		Coord	Ped	Max
50th %ile Green (s)								40.1			40.1		26.9	11.0	15.0
50th %ile Term Code								Gap			Gap		Coord	Ped	Max
30th %ile Green (s)								33.6			33.6		33.8	11.0	14.6
30th %ile Term Code								Gap			Gap		Coord	Ped	Gap
10th %ile Green (s)								25.8			25.8		62.2	0.0	11.0
10th %ile Term Code								Gap			Gap		Coord	Skip	Ped
Queue Length 50th (ft)		6	0					262		0	0				
Queue Length 95th (ft)		21	38					346		m0	0				
Internal Link Dist (ft)		533			306			107			31				
Turn Bay Length (ft)															
Base Capacity (vph)		775	424					762		967	1894				
Starvation Cap Reductn		0	0					0		0	0				
Spillback Cap Reductn		0	0					0		0	0				
Storage Cap Reductn		0	0					0		0	0				
Reduced v/c Ratio		0.02	0.25					0.55		0.05	0.26				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

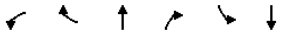
Splits and Phases: 21: Washington Street & Eastbound Carriage Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø6
Lane Configurations														
Traffic Volume (vph)	0	0	0	0	22	55	7	256	9	1	393	7		
Future Volume (vph)	0	0	0	0	22	55	7	256	9	1	393	7		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor					0.88			0.98			1.00			
Frt					0.903			0.995			0.997			
Flt Protected							0.950							
Satd. Flow (prot)	0	0	0	0	1358	0	1805	1822	0	0	1856	0		
Flt Permitted							0.325				0.999			
Satd. Flow (perm)	0	0	0	0	1358	0	618	1822	0	0	1853	0		
Right Turn on Red			Yes			No			Yes			Yes		
Satd. Flow (RTOR)								2			1			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		413			241			116			254			
Travel Time (s)		9.4			5.5			2.6			5.8			
Confl. Peds. (#/hr)						30			138	138				
Confl. Bikes (#/hr)						1			3			2		
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.96	0.96	0.96	0.93	0.93	0.93		
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	2%	0%	0%	0%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0		
Parking (#/hr)					0									
Adj. Flow (vph)	0	0	0	0	25	63	7	267	9	1	423	8		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	0	0	0	88	0	7	276	0	0	432	0		
Turn Type					NA		Perm	NA		Perm	NA			
Protected Phases					1			5			5		2	6
Permitted Phases							5			5				
Detector Phase					1		5	5		5	5			
Switch Phase														
Minimum Initial (s)					8.0		10.0	10.0		10.0	10.0		5.0	6.0
Minimum Split (s)					18.0		22.0	22.0		22.0	22.0		17.0	17.0
Total Split (s)					25.0		54.0	54.0		54.0	54.0		20.0	21.0
Total Split (%)					20.8%		45.0%	45.0%		45.0%	45.0%		17%	18%
Maximum Green (s)					19.0		45.0	45.0		45.0	45.0		14.0	15.0
Yellow Time (s)					3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)					3.0		6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0		-5.0	-5.0			-5.0			
Total Lost Time (s)					4.0		4.0	4.0			4.0			
Lead/Lag					Lead		Lead	Lead		Lead	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)					2.0		2.0	2.0		2.0	2.0		4.0	2.0
Recall Mode					C-Max		None	None		None	None		None	None
Walk Time (s)					8.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					4.0		6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)					0		230	230		230	230		86	176
Act Effct Green (s)					35.4		42.9	42.9			42.9			
Actuated g/C Ratio					0.30		0.36	0.36			0.36			
v/c Ratio					0.22		0.03	0.42			0.65			
Control Delay					39.7		1.9	3.7			36.3			
Queue Delay					0.0		0.9	0.4			0.0			
Total Delay					39.7		2.7	4.0			36.3			
LOS					D		A	A			D			
Approach Delay					39.7			4.0			36.3			
Approach LOS					D			A			D			
90th %ile Green (s)					22.0		45.0	45.0		45.0	45.0		11.0	15.0
90th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
70th %ile Green (s)					22.0		45.0	45.0		45.0	45.0		11.0	15.0
70th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
50th %ile Green (s)					26.9		40.1	40.1		40.1	40.1		11.0	15.0
50th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Max
30th %ile Green (s)					33.8		33.6	33.6		33.6	33.6		11.0	14.6
30th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Gap
10th %ile Green (s)					62.2		25.8	25.8		25.8	25.8		0.0	11.0
10th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Skip	Ped
Queue Length 50th (ft)					56		0	6			269			
Queue Length 95th (ft)					107		m0	9			353			
Internal Link Dist (ft)		333			161			36			174			
Turn Bay Length (ft)														
Base Capacity (vph)					400		257	760			772			
Starvation Cap Reductn					0		191	159			0			
Spillback Cap Reductn					0		0	0			0			
Storage Cap Reductn					0		0	0			0			
Reduced v/c Ratio					0.22		0.11	0.46			0.56			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 38.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 22: Washington Street & Westbound Carriage Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	74	31	378	51	26	536
Future Volume (Veh/h)	74	31	378	51	26	536
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	76	32	394	53	27	558
Pedestrians	62		52			2
Lane Width (ft)	13.0		16.0			16.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		6			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			535			187
pX, platoon unblocked	0.88	0.87			0.87	
vC, conflicting volume	1146	484			509	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1053	337			365	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	61	95			97	
cM capacity (veh/h)	193	584			993	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	108	447	585
Volume Left	76	0	27
Volume Right	32	53	0
cSH	241	1700	993
Volume to Capacity	0.45	0.26	0.03
Queue Length 95th (ft)	54	0	2
Control Delay (s)	31.6	0.0	0.7
Lane LOS	D		A
Approach Delay (s)	31.6	0.0	0.7
Approach LOS	D		

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

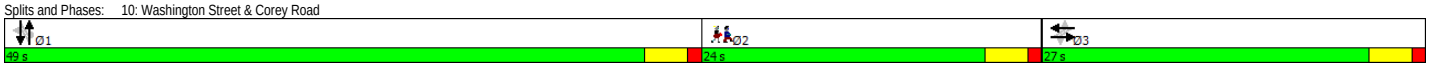
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	102	166	34	33	181	23	17	294	185	22	543	120	
Future Volume (vph)	102	166	34	33	181	23	17	294	185	22	543	120	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00			0.99			1.00		
Frt		0.985			0.987			0.950			0.976		
Flt Protected		0.983			0.993			0.998			0.998		
Satd. Flow (prot)	0	2067	0	0	2090	0	0	1829	0	0	1866	0	
Flt Permitted		0.610			0.886			0.970			0.976		
Satd. Flow (perm)	0	1282	0	0	1865	0	0	1777	0	0	1825	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		340			224			523			535		
Travel Time (s)		7.7			5.1			11.9			12.2		
Confl. Bikes (#/hr)						1			2			1	
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	1%	1%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5	
Parking (#/hr)											0		
Adj. Flow (vph)	107	175	36	36	199	25	18	320	201	23	572	126	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	318	0	0	260	0	0	539	0	0	721	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1		2
Permitted Phases	3			3			1	1		1	1		
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	4.0		4.0	4.0		4.0
Minimum Split (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0		24.0
Total Split (s)	27.0	27.0		27.0	27.0		49.0	49.0		49.0	49.0		24.0
Total Split (%)	27.0%	27.0%		27.0%	27.0%		49.0%	49.0%		49.0%	49.0%		24%
Maximum Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0		1.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		4.0			4.0			4.0			4.0		
Lead/Lag							Lead	Lead		Lead	Lead		Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													10.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													147
Act Effct Green (s)		23.0			23.0			45.0			45.0		
Actuated g/C Ratio		0.23			0.23			0.45			0.45		
v/c Ratio		1.08			0.61			0.67			0.88		
Control Delay		114.2			41.4			26.9			39.0		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		114.2			41.4			26.9			39.0		
LOS		F			D			C			D		
Approach Delay		114.2			41.4			26.9			39.0		
Approach LOS		F			D			C			D		
90th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
30th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
10th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
10th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
Queue Length 50th (ft)		~228			149			263			406		
Queue Length 95th (ft)		#397			233			385			#636		
Internal Link Dist (ft)		260			144			443			455		
Turn Bay Length (ft)													
Base Capacity (vph)		294			428			799			821		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			0			0			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		1.08			0.61			0.67			0.88		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 48.8 Intersection LOS: D
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15
90th %ile Actuated Cycle: 100
70th %ile Actuated Cycle: 100
50th %ile Actuated Cycle: 100
30th %ile Actuated Cycle: 100
10th %ile Actuated Cycle: 100

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Washington Street & Corey Road



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2
Lane Configurations															
Traffic Volume (vph)	0	520	70	30	145	265	0	64	241	72	55	359	53		
Future Volume (vph)	0	520	70	30	145	265	0	64	241	72	55	359	53		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor		0.98			0.89				1.00			1.00			
Frt		0.982							0.966			0.981			
Flt Protected					0.950			0.950			0.950				
Satd. Flow (prot)	0	3466	0	0	1790	3505	0	1770	1803	0	1719	1861	0		
Flt Permitted					0.950			0.298			0.407				
Satd. Flow (perm)	0	3466	0	0	1592	3505	0	555	1803	0	736	1861	0		
Right Turn on Red			Yes				Yes			No			No		
Satd. Flow (RTOR)		13													
Link Speed (mph)		30				30			30			30			
Link Distance (ft)		545				375			111			116			
Travel Time (s)		12.4				8.5			2.5			2.6			
Confl. Peds. (#/hr)			50	85											
Confl. Bikes (#/hr)										4			2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93		
Heavy Vehicles (%)	0%	0%	3%	0%	1%	3%	0%	2%	1%	3%	5%	0%	0%		
Adj. Flow (vph)	0	531	71	31	148	270	0	70	262	78	59	386	57		
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	602	0	0	179	270	0	70	340	0	59	443	0		
Turn Type		NA		Prot	Prot	NA		Perm	NA		Perm	NA			
Protected Phases		1 2		6	6	1 6			5			5		1	2
Permitted Phases								5			5				
Detector Phase		1		6	6	1 6		5	5		5	5			
Switch Phase															
Minimum Initial (s)				6.0	6.0			10.0	10.0		10.0	10.0		8.0	5.0
Minimum Split (s)				17.0	17.0			22.0	22.0		22.0	22.0		18.0	17.0
Total Split (s)				21.0	21.0			56.0	56.0		56.0	56.0		23.0	20.0
Total Split (%)				17.5%	17.5%			46.7%	46.7%		46.7%	46.7%		19%	17%
Maximum Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		17.0	14.0
Yellow Time (s)				3.0	3.0			3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)				3.0	3.0			6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0			-5.0	-5.0		-5.0	-5.0			
Total Lost Time (s)					4.0			4.0	4.0		4.0	4.0			
Lead/Lag				Lag	Lag			Lead	Lead		Lead	Lead		Lead	Lag
Lead-Lag Optimize?				Yes	Yes			Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)				2.0	2.0			2.0	2.0		2.0	2.0		2.0	4.0
Recall Mode				None	None			None	None		None	None		C-Max	None
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	7.0		8.0	7.0
Flash Dont Walk (s)				4.0	4.0			6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)				127	127			136	136		136	136		0	60
Act Effct Green (s)		44.3			16.0	50.7		47.7	47.7		47.7	47.7			
Actuated g/C Ratio		0.37			0.13	0.42		0.40	0.40		0.40	0.40			
v/c Ratio		0.47			0.75	0.18		0.32	0.47		0.20	0.60			
Control Delay		31.0			69.7	24.6		4.6	3.3		2.7	4.3			
Queue Delay		0.0			0.0	0.0		2.0	0.6		3.5	0.7			
Total Delay		31.0			69.7	24.6		6.6	3.9		6.2	5.0			
LOS		C			E	C		A	A		A	A			
Approach Delay		31.0				42.6			4.4			5.1			
Approach LOS		C				D			A			A			
90th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
90th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
70th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
70th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
50th %ile Green (s)				15.0	15.0			47.0	47.0		47.0	47.0		20.0	11.0
50th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
30th %ile Green (s)				14.1	14.1			40.6	40.6		40.6	40.6		27.3	11.0
30th %ile Term Code				Gap	Gap			Gap	Gap		Gap	Gap		Coord	Ped
10th %ile Green (s)				11.0	11.0			31.8	31.8		31.8	31.8		56.2	0.0
10th %ile Term Code				Ped	Ped			Gap	Gap		Gap	Gap		Coord	Skip
Queue Length 50th (ft)		194			134	75		1	6		1	9			
Queue Length 95th (ft)		253			#231	109		m2	8		m2	11			
Internal Link Dist (ft)		465				295			31			36			
Turn Bay Length (ft)															
Base Capacity (vph)		1287			253	1463		240	781		318	806			
Starvation Cap Reductn		0			0	0		87	167		194	132			
Spillback Cap Reductn		0			0	0		0	0		0	0			
Storage Cap Reductn		0			0	0		0	0		0	0			
Reduced v/c Ratio		0.47			0.71	0.18		0.46	0.55		0.48	0.66			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 21.5 Intersection LOS: C
Intersection Capacity Utilization 70.5% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

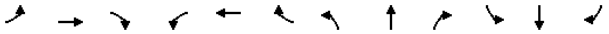
Splits and Phases: 20: Washington Street & Commonwealth Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations															
Traffic Volume (vph)	0	10	106	0	0	0	0	377	25	32	542	0			
Future Volume (vph)	0	10	106	0	0	0	0	377	25	32	542	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.73					1.00		0.79					
Frt			0.850					0.992							
Flt Protected										0.950					
Satd. Flow (prot)	0	1900	1439	0	0	0	0	1802	0	1752	1881	0			
Flt Permitted										0.509					
Satd. Flow (perm)	0	1900	1055	0	0	0	0	1802	0	738	1881	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)			114												
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		613			386			187			111				
Travel Time (s)		13.9			8.8			4.3			2.5				
Confl. Peds. (#/hr)			50							85					
Confl. Bikes (#/hr)			2						4			2			
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	0%	1%	2%	2%	2%	0%	2%	8%	3%	1%	0%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	0			
Parking (#/hr)			0												
Adj. Flow (vph)	0	11	114	0	0	0	0	410	27	34	577	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	11	114	0	0	0	0	437	0	34	577	0			
Turn Type		NA	Perm					NA		custom	NA				
Protected Phases		1 2!						5			5		1	2	6
Permitted Phases			1 2							1 2 5 6!	1 2 6!				
Detector Phase		1	1					5		1 2 5 6	5				
Switch Phase															
Minimum Initial (s)								10.0			10.0		8.0	5.0	6.0
Minimum Split (s)								22.0			22.0		18.0	17.0	17.0
Total Split (s)								56.0			56.0		23.0	20.0	21.0
Total Split (%)								46.7%			46.7%		19%	17%	18%
Maximum Green (s)								47.0			47.0		17.0	14.0	15.0
Yellow Time (s)								3.0			3.0		3.0	3.0	3.0
All-Red Time (s)								6.0			6.0		3.0	3.0	3.0
Lost Time Adjust (s)								-5.0			-5.0				
Total Lost Time (s)								4.0			4.0				
Lead/Lag								Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?								Yes			Yes		Yes	Yes	Yes
Vehicle Extension (s)								2.0			2.0		2.0	4.0	2.0
Recall Mode								None			None		C-Max	None	None
Walk Time (s)								7.0			7.0		8.0	7.0	7.0
Flash Dont Walk (s)								6.0			6.0		4.0	4.0	4.0
Pedestrian Calls (#/hr)								136			136		0	60	127
Act Effct Green (s)		44.3	44.3					47.7		120.0	120.0				
Actuated g/C Ratio		0.37	0.37					0.40		1.00	1.00				
v/c Ratio		0.02	0.25					0.61		0.05	0.31				
Control Delay		27.7	6.7					32.2		0.1	0.4				
Queue Delay		0.0	0.0					0.0		0.0	0.0				
Total Delay		27.7	6.7					32.2		0.1	0.4				
LOS		C	A					C		A	A				
Approach Delay		8.6						32.2			0.3				
Approach LOS		A						C			A				
90th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
90th %ile Term Code								Max			Max		Coord	Ped	Max
70th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
70th %ile Term Code								Max			Max		Coord	Ped	Max
50th %ile Green (s)								47.0			47.0		20.0	11.0	15.0
50th %ile Term Code								Max			Max		Coord	Ped	Max
30th %ile Green (s)								40.6			40.6		27.3	11.0	14.1
30th %ile Term Code								Gap			Gap		Coord	Ped	Gap
10th %ile Green (s)								31.8			31.8		56.2	0.0	11.0
10th %ile Term Code								Gap			Gap		Coord	Skip	Ped
Queue Length 50th (ft)		6	0					248		0	0				
Queue Length 95th (ft)		20	42					353		m0	0				
Internal Link Dist (ft)		533			306			107			31				
Turn Bay Length (ft)															
Base Capacity (vph)		701	461					780		729	1881				
Starvation Cap Reductn		0	0					0		0	0				
Spillback Cap Reductn		0	0					0		0	0				
Storage Cap Reductn		0	0					0		0	0				
Reduced v/c Ratio		0.02	0.25					0.56		0.05	0.31				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 45.7% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 21: Washington Street & Eastbound Carriage Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø6
Lane Configurations														
Traffic Volume (vph)	0	0	0	0	17	41	6	231	4	1	467	19		
Future Volume (vph)	0	0	0	0	17	41	6	231	4	1	467	19		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor					0.84			0.99			1.00			
Frt					0.905			0.997			0.995			
Flt Protected							0.950							
Satd. Flow (prot)	0	0	0	0	1300	0	1805	1845	0	0	1834	0		
Flt Permitted							0.301							
Satd. Flow (perm)	0	0	0	0	1300	0	572	1845	0	0	1833	0		
Right Turn on Red			Yes			No			Yes			Yes		
Satd. Flow (RTOR)								1			2			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		413			241			116			254			
Travel Time (s)		9.4			5.5			2.6			5.8			
Confl. Peds. (#/hr)						42			75	75				
Confl. Bikes (#/hr)						1			4			2		
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.93	0.93	0.93		
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	2%	0%	0%	1%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0		
Parking (#/hr)					0									
Adj. Flow (vph)	0	0	0	0	20	47	7	266	5	1	502	20		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	0	0	0	67	0	7	271	0	0	523	0		
Turn Type					NA		Perm	NA		Perm	NA			
Protected Phases					1			5			5		2	6
Permitted Phases							5			5				
Detector Phase					1		5	5		5	5			
Switch Phase														
Minimum Initial (s)					8.0		10.0	10.0		10.0	10.0		5.0	6.0
Minimum Split (s)					18.0		22.0	22.0		22.0	22.0		17.0	17.0
Total Split (s)					23.0		56.0	56.0		56.0	56.0		20.0	21.0
Total Split (%)					19.2%		46.7%	46.7%		46.7%	46.7%		17%	18%
Maximum Green (s)					17.0		47.0	47.0		47.0	47.0		14.0	15.0
Yellow Time (s)					3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)					3.0		6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0		-5.0	-5.0			-5.0			
Total Lost Time (s)					4.0		4.0	4.0			4.0			
Lead/Lag					Lead		Lead	Lead		Lead	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)					2.0		2.0	2.0		2.0	2.0		4.0	2.0
Recall Mode					C-Max		None	None		None	None		None	None
Walk Time (s)					8.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					4.0		6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)					0		136	136		136	136		60	127
Act Effct Green (s)					30.7		47.7	47.7			47.7			
Actuated g/C Ratio					0.26		0.40	0.40			0.40			
v/c Ratio					0.20		0.03	0.37			0.72			
Control Delay					42.9		2.5	3.9			36.0			
Queue Delay					0.0		1.8	0.7			0.0			
Total Delay					42.9		4.3	4.6			36.0			
LOS					D		A	A			D			
Approach Delay					42.9			4.6			36.0			
Approach LOS					D			A			D			
90th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
90th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
70th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
70th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
50th %ile Green (s)					20.0		47.0	47.0		47.0	47.0		11.0	15.0
50th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
30th %ile Green (s)					27.3		40.6	40.6		40.6	40.6		11.0	14.1
30th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Gap
10th %ile Green (s)					56.2		31.8	31.8		31.8	31.8		0.0	11.0
10th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Skip	Ped
Queue Length 50th (ft)					45		0	11			314			
Queue Length 95th (ft)					87		m1	15			438			
Internal Link Dist (ft)		333			161			36			174			
Turn Bay Length (ft)														
Base Capacity (vph)					332		247	800			795			
Starvation Cap Reductn					0		199	270			0			
Spillback Cap Reductn					0		0	0			0			
Storage Cap Reductn					0		0	0			0			
Reduced v/c Ratio					0.20		0.15	0.51			0.66			

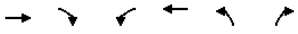
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 43.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 22: Washington Street & Westbound Carriage Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	63	30	372	43	22	622
Future Volume (Veh/h)	63	30	372	43	22	622
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95
Hourly flow rate (vph)	66	32	404	47	23	655
Pedestrians	46		30			2
Lane Width (ft)	13.0		16.0			16.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	4		3			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			535			187
pX, platoon unblocked	0.88	0.87			0.87	
vC, conflicting volume	1204	476			497	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1097	319			344	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	65	95			98	
cM capacity (veh/h)	190	603			1020	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	98	451	678
Volume Left	66	0	23
Volume Right	32	47	0
cSH	244	1700	1020
Volume to Capacity	0.40	0.27	0.02
Queue Length 95th (ft)	46	0	2
Control Delay (s)	29.2	0.0	0.6
Lane LOS	D		A
Approach Delay (s)	29.2	0.0	0.6
Approach LOS	D		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	366	7	1	222	15	2
Future Volume (Veh/h)	366	7	1	222	15	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	398	8	1	241	16	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	224					
pX, platoon unblocked			0.90		0.90	0.90
vC, conflicting volume			406		645	402
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			281		547	277
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1150		446	684

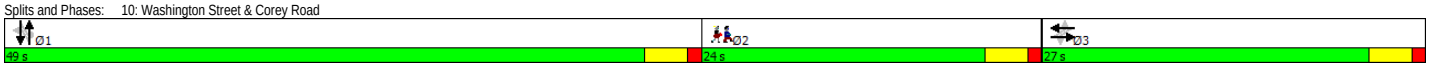
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	406	242	18
Volume Left	0	1	16
Volume Right	8	0	2
cSH	1700	1150	464
Volume to Capacity	0.24	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	102	146	21	33	174	33	16	302	135	52	397	151	
Future Volume (vph)	102	146	21	33	174	33	16	302	135	52	397	151	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00			1.00			0.99			0.99		
Frt		0.989			0.981			0.960			0.966		
Flt Protected		0.981			0.993			0.998			0.996		
Satd. Flow (prot)	0	2067	0	0	2076	0	0	1856	0	0	1842	0	
Flt Permitted		0.601			0.908			0.975			0.931		
Satd. Flow (perm)	0	1266	0	0	1899	0	0	1814	0	0	1722	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		340			210			523			535		
Travel Time (s)		7.7			4.8			11.9			12.2		
Confl. Bikes (#/hr)			1			1			2			2	
Peak Hour Factor	0.97	0.97	0.97	0.98	0.98	0.98	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5	
Parking (#/hr)											0		
Adj. Flow (vph)	105	151	22	34	178	34	16	311	139	53	405	154	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	278	0	0	246	0	0	466	0	0	612	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1		2
Permitted Phases	3			3			1	1		1	1		
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	4.0		4.0	4.0		4.0
Minimum Split (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0		24.0
Total Split (s)	27.0	27.0		27.0	27.0		49.0	49.0		49.0	49.0		24.0
Total Split (%)	27.0%	27.0%		27.0%	27.0%		49.0%	49.0%		49.0%	49.0%		24%
Maximum Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0		1.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		4.0			4.0			4.0			4.0		
Lead/Lag							Lead	Lead		Lead	Lead		Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													10.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													176
Act Effct Green (s)		22.6			22.6			45.0			45.0		
Actuated g/C Ratio		0.23			0.23			0.45			0.45		
v/c Ratio		0.97			0.57			0.57			0.79		
Control Delay		85.8			40.2			23.6			32.2		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		85.8			40.2			23.6			32.2		
LOS		F			D			C			C		
Approach Delay		85.8			40.2			23.6			32.2		
Approach LOS		F			D			C			C		
90th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
30th %ile Green (s)	23.0	23.0		23.0	23.0		45.0	45.0		45.0	45.0		20.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
10th %ile Green (s)	20.9	20.9		20.9	20.9		45.0	45.0		45.0	45.0		20.0
10th %ile Term Code	Gap	Gap		Gap	Gap		MaxR	MaxR		MaxR	MaxR		Ped
Queue Length 50th (ft)		176			139			213			323		
Queue Length 95th (ft)		#338			220			314			474		
Internal Link Dist (ft)		260			130			443			455		
Turn Bay Length (ft)													
Base Capacity (vph)		292			438			819			777		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			0			0			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.95			0.56			0.57			0.79		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 40.2		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 97.9			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 10: Washington Street & Corey Road



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2
Lane Configurations															
Traffic Volume (vph)	0	416	56	23	149	555	0	64	271	53	53	317	22		
Future Volume (vph)	0	416	56	23	149	555	0	64	271	53	53	317	22		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor		0.97			0.83				1.00			1.00			
Frt		0.982							0.976			0.990			
Flt Protected					0.950			0.950			0.950				
Satd. Flow (prot)	0	3416	0	0	1789	3610	0	1805	1835	0	1805	1879	0		
Flt Permitted					0.950			0.346			0.386				
Satd. Flow (perm)	0	3416	0	0	1493	3610	0	657	1835	0	733	1879	0		
Right Turn on Red			Yes				Yes			No			No		
Satd. Flow (RTOR)		13													
Link Speed (mph)		30				30			30			30			
Link Distance (ft)		545				375			111			116			
Travel Time (s)		12.4				8.5			2.5			2.6			
Confl. Peds. (#/hr)			76	146											
Confl. Bikes (#/hr)										3			2		
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.93	0.93	0.93		
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%		
Adj. Flow (vph)	0	433	58	23	152	566	0	65	277	54	57	341	24		
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	491	0	0	175	566	0	65	331	0	57	365	0		
Turn Type		NA		Prot	Prot	NA		Perm	NA		Perm	NA			
Protected Phases		1 2		6	6	1 6			5			5		1	2
Permitted Phases								5			5				
Detector Phase		1		6	6	1 6		5	5		5	5			
Switch Phase															
Minimum Initial (s)				6.0	6.0			10.0	10.0		10.0	10.0		8.0	5.0
Minimum Split (s)				17.0	17.0			22.0	22.0		22.0	22.0		18.0	17.0
Total Split (s)				21.0	21.0			54.0	54.0		54.0	54.0		25.0	20.0
Total Split (%)				17.5%	17.5%			45.0%	45.0%		45.0%	45.0%		21%	17%
Maximum Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		19.0	14.0
Yellow Time (s)				3.0	3.0			3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)				3.0	3.0			6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0			-5.0	-5.0		-5.0	-5.0			
Total Lost Time (s)					4.0			4.0	4.0		4.0	4.0			
Lead/Lag				Lag	Lag			Lead	Lead		Lead	Lead		Lead	Lag
Lead-Lag Optimize?				Yes	Yes			Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)				2.0	2.0			2.0	2.0		2.0	2.0		2.0	4.0
Recall Mode				None	None			None	None		None	None		C-Max	None
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	7.0		8.0	7.0
Flash Dont Walk (s)				4.0	4.0			6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)				176	176			230	230		230	230		0	86
Act Effct Green (s)		49.0			16.1	55.5		42.9	42.9		42.9	42.9			
Actuated g/C Ratio		0.41			0.13	0.46		0.36	0.36		0.36	0.36			
v/c Ratio		0.35			0.73	0.34		0.28	0.51		0.22	0.54			
Control Delay		26.4			67.8	23.8		4.0	3.9		3.2	4.3			
Queue Delay		0.0			0.0	0.0		1.7	0.5		1.8	0.4			
Total Delay		26.4			67.8	23.8		5.7	4.4		5.0	4.7			
LOS		C			E	C		A	A		A	A			
Approach Delay		26.4				34.2			4.6			4.8			
Approach LOS		C				C			A			A			
90th %ile Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		22.0	11.0
90th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
70th %ile Green (s)				15.0	15.0			45.0	45.0		45.0	45.0		22.0	11.0
70th %ile Term Code				Max	Max			Max	Max		Max	Max		Coord	Ped
50th %ile Green (s)				15.0	15.0			40.0	40.0		40.0	40.0		27.0	11.0
50th %ile Term Code				Max	Max			Gap	Gap		Gap	Gap		Coord	Ped
30th %ile Green (s)				14.6	14.6			33.6	33.6		33.6	33.6		33.8	11.0
30th %ile Term Code				Gap	Gap			Gap	Gap		Gap	Gap		Coord	Ped
10th %ile Green (s)				11.0	11.0			25.7	25.7		25.7	25.7		62.3	0.0
10th %ile Term Code				Ped	Ped			Gap	Gap		Gap	Gap		Coord	Skip
Queue Length 50th (ft)		138			131	157		1	6		1	7			
Queue Length 95th (ft)		198			#223	220		m2	8		m2	9			
Internal Link Dist (ft)		465				295			31			36			
Turn Bay Length (ft)															
Base Capacity (vph)		1403			253	1649		273	764		305	782			
Starvation Cap Reductn		0			0	0		114	144		156	120			
Spillback Cap Reductn		0			0	0		0	0		0	0			
Storage Cap Reductn		0			0	0		0	0		0	0			
Reduced v/c Ratio		0.35			0.69	0.34		0.41	0.53		0.38	0.55			

Intersection Summary

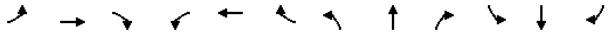
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 20.6 Intersection LOS: C
Intersection Capacity Utilization 63.1% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Washington Street & Commonwealth Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations															
Traffic Volume (vph)	0	12	94	0	0	0	0	388	18	48	474	0			
Future Volume (vph)	0	12	94	0	0	0	0	388	18	48	474	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.61					1.00							
Frt			0.850					0.994							
Flt Protected										0.950					
Satd. Flow (prot)	0	1900	1454	0	0	0	0	1831	0	1805	1900	0			
Flt Permitted										0.517					
Satd. Flow (perm)	0	1900	881	0	0	0	0	1831	0	982	1900	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)			109												
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		613			386			187			111				
Travel Time (s)		13.9			8.8			4.3			2.5				
Confl. Peds. (#/hr)			76												
Confl. Bikes (#/hr)			2						3			2			
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96			
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	1%	0%	0%	0%	0%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	0			
Parking (#/hr)			0												
Adj. Flow (vph)	0	13	106	0	0	0	0	400	19	50	494	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	13	106	0	0	0	0	419	0	50	494	0			
Turn Type		NA	Perm					NA		custom	NA				
Protected Phases		1 2!						5			5		1	2	6
Permitted Phases			1 2							1 2 5 6!	1 2 6!				
Detector Phase		1	1					5		1 2 5 6	5				
Switch Phase															
Minimum Initial (s)								10.0			10.0		8.0	5.0	6.0
Minimum Split (s)								22.0			22.0		18.0	17.0	17.0
Total Split (s)								54.0			54.0		25.0	20.0	21.0
Total Split (%)								45.0%			45.0%		21%	17%	18%
Maximum Green (s)								45.0			45.0		19.0	14.0	15.0
Yellow Time (s)								3.0			3.0		3.0	3.0	3.0
All-Red Time (s)								6.0			6.0		3.0	3.0	3.0
Lost Time Adjust (s)								-5.0			-5.0				
Total Lost Time (s)								4.0			4.0				
Lead/Lag								Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?								Yes			Yes		Yes	Yes	Yes
Vehicle Extension (s)								2.0			2.0		2.0	4.0	2.0
Recall Mode								None			None		C-Max	None	None
Walk Time (s)								7.0			7.0		8.0	7.0	7.0
Flash Dont Walk (s)								6.0			6.0		4.0	4.0	4.0
Pedestrian Calls (#/hr)								230			230		0	86	176
Act Effct Green (s)		49.0	49.0					42.9		120.0	120.0				
Actuated g/C Ratio		0.41	0.41					0.36		1.00	1.00				
v/c Ratio		0.02	0.25					0.64		0.05	0.26				
Control Delay		25.6	6.5					36.1		0.1	0.3				
Queue Delay		0.0	0.0					0.0		0.0	0.0				
Total Delay		25.6	6.5					36.1		0.1	0.3				
LOS		C	A					D		A	A				
Approach Delay		8.6						36.1			0.3				
Approach LOS		A						D			A				
90th %ile Green (s)								45.0			45.0		22.0	11.0	15.0
90th %ile Term Code								Max			Max		Coord	Ped	Max
70th %ile Green (s)								45.0			45.0		22.0	11.0	15.0
70th %ile Term Code								Max			Max		Coord	Ped	Max
50th %ile Green (s)								40.0			40.0		27.0	11.0	15.0
50th %ile Term Code								Gap			Gap		Coord	Ped	Max
30th %ile Green (s)								33.6			33.6		33.8	11.0	14.6
30th %ile Term Code								Gap			Gap		Coord	Ped	Gap
10th %ile Green (s)								25.7			25.7		62.3	0.0	11.0
10th %ile Term Code								Gap			Gap		Coord	Skip	Ped
Queue Length 50th (ft)		6	0					261		0	0				
Queue Length 95th (ft)		21	38					343		m0	0				
Internal Link Dist (ft)		533			306			107			31				
Turn Bay Length (ft)															
Base Capacity (vph)		776	424					762		969	1895				
Starvation Cap Reductn		0	0					0		0	0				
Spillback Cap Reductn		0	0					0		0	0				
Storage Cap Reductn		0	0					0		0	0				
Reduced v/c Ratio		0.02	0.25					0.55		0.05	0.26				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			
! Phase conflict between lane groups.			

Splits and Phases: 21: Washington Street & Eastbound Carriage Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø6
Lane Configurations														
Traffic Volume (vph)	0	0	0	0	22	55	7	255	9	1	392	7		
Future Volume (vph)	0	0	0	0	22	55	7	255	9	1	392	7		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor					0.88			0.98			1.00			
Frt					0.903			0.995			0.997			
Flt Protected							0.950							
Satd. Flow (prot)	0	0	0	0	1358	0	1805	1822	0	0	1856	0		
Flt Permitted							0.326				0.999			
Satd. Flow (perm)	0	0	0	0	1358	0	619	1822	0	0	1853	0		
Right Turn on Red			Yes			No			Yes			Yes		
Satd. Flow (RTOR)								2			1			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		413			241			116			254			
Travel Time (s)		9.4			5.5			2.6			5.8			
Confl. Peds. (#/hr)						30			138	138				
Confl. Bikes (#/hr)						1			3			2		
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.96	0.96	0.96	0.93	0.93	0.93		
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	2%	0%	0%	0%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0		
Parking (#/hr)					0									
Adj. Flow (vph)	0	0	0	0	25	63	7	266	9	1	422	8		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	0	0	0	88	0	7	275	0	0	431	0		
Turn Type					NA		Perm	NA		Perm	NA			
Protected Phases					1			5			5		2	6
Permitted Phases							5			5				
Detector Phase					1		5	5		5	5			
Switch Phase														
Minimum Initial (s)					8.0		10.0	10.0		10.0	10.0		5.0	6.0
Minimum Split (s)					18.0		22.0	22.0		22.0	22.0		17.0	17.0
Total Split (s)					25.0		54.0	54.0		54.0	54.0		20.0	21.0
Total Split (%)					20.8%		45.0%	45.0%		45.0%	45.0%		17%	18%
Maximum Green (s)					19.0		45.0	45.0		45.0	45.0		14.0	15.0
Yellow Time (s)					3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)					3.0		6.0	6.0		6.0	6.0		3.0	3.0
Lost Time Adjust (s)					-2.0		-5.0	-5.0			-5.0			
Total Lost Time (s)					4.0		4.0	4.0			4.0			
Lead/Lag					Lead		Lead	Lead		Lead	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)					2.0		2.0	2.0		2.0	2.0		4.0	2.0
Recall Mode					C-Max		None	None		None	None		None	None
Walk Time (s)					8.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					4.0		6.0	6.0		6.0	6.0		4.0	4.0
Pedestrian Calls (#/hr)					0		230	230		230	230		86	176
Act Effct Green (s)					35.4		42.9	42.9			42.9			
Actuated g/C Ratio					0.30		0.36	0.36			0.36			
v/c Ratio					0.22		0.03	0.42			0.65			
Control Delay					39.7		1.9	3.7			36.3			
Queue Delay					0.0		0.9	0.4			0.0			
Total Delay					39.7		2.7	4.0			36.3			
LOS					D		A	A			D			
Approach Delay					39.7			4.0			36.3			
Approach LOS					D			A			D			
90th %ile Green (s)					22.0		45.0	45.0		45.0	45.0		11.0	15.0
90th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
70th %ile Green (s)					22.0		45.0	45.0		45.0	45.0		11.0	15.0
70th %ile Term Code					Coord		Max	Max		Max	Max		Ped	Max
50th %ile Green (s)					27.0		40.0	40.0		40.0	40.0		11.0	15.0
50th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Max
30th %ile Green (s)					33.8		33.6	33.6		33.6	33.6		11.0	14.6
30th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Ped	Gap
10th %ile Green (s)					62.3		25.7	25.7		25.7	25.7		0.0	11.0
10th %ile Term Code					Coord		Gap	Gap		Gap	Gap		Skip	Ped
Queue Length 50th (ft)					56		0	6			268			
Queue Length 95th (ft)					107		m0	9			353			
Internal Link Dist (ft)		333			161			36			174			
Turn Bay Length (ft)														
Base Capacity (vph)					400		257	760			772			
Starvation Cap Reductn					0		191	161			0			
Spillback Cap Reductn					0		0	0			0			
Storage Cap Reductn					0		0	0			0			
Reduced v/c Ratio					0.22		0.11	0.46			0.56			

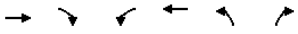
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 23 (19%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 22: Washington Street & Westbound Carriage Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	74	31	374	51	26	536
Future Volume (Veh/h)	74	31	374	51	26	536
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	76	32	390	53	27	558
Pedestrians	62		52			2
Lane Width (ft)	13.0		16.0			16.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		6			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			535			187
pX, platoon unblocked	0.88	0.87			0.87	
vC, conflicting volume	1142	480			505	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1049	334			362	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	61	95			97	
cM capacity (veh/h)	194	587			997	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	108	443	585
Volume Left	76	0	27
Volume Right	32	53	0
cSH	242	1700	997
Volume to Capacity	0.45	0.26	0.03
Queue Length 95th (ft)	54	0	2
Control Delay (s)	31.3	0.0	0.7
Lane LOS	D		A
Approach Delay (s)	31.3	0.0	0.7
Approach LOS	D		

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	62.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	308	25	4	219	21	3
Future Volume (Veh/h)	308	25	4	219	21	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	335	27	4	238	23	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	210					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			362		594	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			260		514	246
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1197		476	728

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	362	242	26
Volume Left	0	4	23
Volume Right	27	0	3
cSH	1700	1197	496
Volume to Capacity	0.21	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.2	12.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.7
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Five Washington Street

Trip Generation Assessment

HOWARD STEIN HUDSON

1-Nov-2017

XX HARD CODED TO BALANCE

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Transit Share[3]	Transit Person-Trips	Walk/Bike/ Other Share[3]	Walk/ Bike/ Other Trips	Auto Share[3]	Auto Person-Trips	Assumed Local Auto Occupancy Rate[4]	Total Private Auto Trips	Pass-By Trips Share	Pass-By Vehicle-Trips[5]	Total Primary Vehicle Trips Vehicle-Trips
Daily Peak Hour																		
Multifamily Housing (Mid Rise)[6]	115	Total		5.440	**626**	1.13	**708**	22%	**156**	19%	**134**	59%	**418**	1.13	**370**	0%	**0**	**370**
	units	In	50%	2.720	**313**	1.13	**354**	22%	**78**	19%	**67**	59%	**209**	1.13	**185**		**0**	**185**
		Out	50%	2.720	**313**	1.13	**354**	22%	**78**	19%	**67**	59%	**209**	1.13	**185**		**0**	**185**
Shopping Center[7]	12.3	Total		37.750	**464**	1.78	**826**	5%	**42**	30%	**248**	65%	**536**	1.78	**302**	25%	**76**	**226**
	KSF	In	50%	18.875	**232**	1.78	**413**	5%	**21**	30%	**124**	65%	**268**	1.78	**151**		**38**	**113**
		Out	50%	18.875	**232**	1.78	**413**	5%	**21**	30%	**124**	65%	**268**	1.78	**151**		**38**	**113**
Total		Total			**1,090**		**1,534**		**198**		**382**		**954**		**672**		**76**	**596**
		In			**545**		**767**		**99**		**191**		**477**		**336**		**38**	**298**
		Out			**545**		**767**		**99**		**191**		**477**		**336**		**38**	**298**
AM Peak Hour																		
Multifamily Housing (Mid Rise)[6]	115	Total		0.360	**42**	1.13	**47**		**11**		**13**		**23**	1.13	**20**	0%	**0**	**20**
	units	In	26%	0.094	**11**	1.13	**12**	30%	**4**	19%	**2**	51%	**6**	1.13	**5**		**0**	**5**
		Out	74%	0.266	**31**	1.13	**35**	20%	**7**	30%	**11**	50%	**17**	1.13	**15**		**0**	**15**
Shopping Center[7]	12.3	Total		0.94	**11**	1.78	**19**		**2**		**7**		**10**	1.78	**5**	25%	**2**	**3**
	KSF	In	62%	0.583	**7**	1.78	**12**	5%	**1**	40%	**5**	55%	**6**	1.78	**3**		**1**	**2**
		Out	38%	0.357	**4**	1.78	**7**	10%	**1**	29%	**2**	61%	**4**	1.78	**2**		**1**	**1**
Total		Total			**53**		**66**		**13**		**20**		**33**		**25**		**2**	**23**
		In			**18**		**24**		**5**		**7**		**12**		**8**		**1**	**7**
		Out			**35**		**42**		**8**		**13**		**21**		**17**		**1**	**16**
PM Peak Hour																		
Multifamily Housing (Mid Rise)[6]	115	Total		0.440	**51**	1.13	**58**		**14**		**15**		**29**	1.13	**26**	0%	**0**	**26**
	units	In	61%	0.268	**31**	1.13	**35**	20%	**7**	30%	**11**	50%	**17**	1.13	**15**		**0**	**15**
		Out	39%	0.172	**20**	1.13	**23**	30%	**7**	19%	**4**	51%	**12**	1.13	**11**		**0**	**11**
Shopping Center[7]	12.3	Total		3.81	**47**	1.78	**84**		**6**		**29**		**49**	1.78	**27**	25%	**6**	**21**
	KSF	In	48%	1.829	**23**	1.78	**41**	10%	**4**	29%	**12**	61%	**25**	1.78	**14**		**3**	**11**
		Out	52%	1.981	**24**	1.78	**43**	5%	**2**	40%	**17**	55%	**24**	1.78	**13**		**3**	**10**
Total		Total			**98**		**142**		**20**		**44**		**78**		**53**		**6**	**47**
		In			**54**		**76**		**11**		**23**		**42**		**29**		**3**	**26**
		Out			**44**		**66**		**9**		**21**		**36**		**24**		**3**	**21**

1. 2009 National vehicle occupancy rates - 1.13:home to work; 1.84: family/personal business; 1.78: shopping; 2.2 social/recreational
2. Based on ITE Trip Generation Handbook, 3rd Edition method
3. Mode shares based on peak-hour BTD Data for Area 10
4. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates
5. Pass-By Trips based on Trip Generation Manual, retail uses can account for 34% of all trips
6. ITE Trip Generation Manual, 10th Edition, LUC 221 (Multifamily Housing Mid-Rise (3-10 floors)), average rate
7. ITE Trip Generation Manual, 10th Edition, LUC 820 (Shopping Center), average rate

Appendix D

Climate Resiliency Checklist

Boston Planning & Development Agency
Climate Resiliency Report Summary

Submitted: 01/11/2018 09:42:06

A.1 - Project Information

Project Name:	5 Washington Street			
Project Address:	5 Washington Street			
Filing Type:	Initial (PNF, EPNF, NPC or other substantial filing)			
Filing Contact:	Talya Moked	Epsilon Associates	tmoked@epsilonassociates.com	9784616223
Is MEPA approval required?	No	MEPA date:		

A.2 - Project Team

Owner / Developer:	5 Washington Square Owner LLC
Architect:	Stantec Architecture
Engineer:	RW Sullivan Engineering
Sustainability / LEED:	Stantec Architecture
Permitting:	Epsilon Associates, Inc.
Construction Management:	

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential, Retail
List the First Floor Uses:	Retail, residential lobby, parking
List any Critical Site Infrastructure and or Building Uses:	

Site and Building:

Site Area (SF):	43,500	Building Area (SF):	132,500
Building Height (Ft):	70	Building Height (Stories):	5
Existing Site Elevation – Low (Ft BCB):	128	Existing Site Elevation – High (Ft BCB):	144
Proposed Site Elevation – Low (Ft BCB):	128	Proposed Site Elevation – High (Ft BCB):	144
Proposed First Floor Elevation (Ft BCB):	120	Below grade spaces/levels (#):	1

Article 37 Green Building:

LEED Version - Rating System:	LEED V4 for BD+C	LEED Certification:	No
Proposed LEED rating:	Certified	Proposed LEED point score (Pts.):	47

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	Trance Trace 700		
Annual Electric (kWh):	897000	Peak Electric (kW):	240
Annual Heating (MMbtu/hr):	1726	Peak Heating (MMbtu):	134
Annual Cooling (Tons/hr):	29920	Peak Cooling (Tons):	120
Energy Use - Below ASHRAE 90.1 - 2013 (%):	10	Have the local utilities reviewed the building energy performance?:	No
Energy Use - Below Mass. Code (%):	10	Energy Use Intensity (kBtu/SF):	42

Back-up / Emergency Power System

Electrical Generation Output (kW):	250	Number of Power Units:	1
System Type (kW):	Combustion Engine	Fuel Source:	Diesel

Emergency and Critical System Loads (in the event of a service interruption)

Electric (kW):	250	Heating (MMbtu/hr):	
		Cooling (Tons/hr):	

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing greenhouse gas emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon-neutrality by 2050 the performance of new buildings will need to progressively improve to carbon net zero and net positive.

B.1 – GHG Emissions - Design Conditions

For this filing - Annual Building GHG Emissions (Tons):

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The team has had a meeting to discuss performance targets for the building, and supporting analysis will be completed as the design progresses.

Describe building specific passive energy efficiency measures including orientation, massing, building envelop, and systems:

The Project includes a high-performance building envelope.

Describe building specific active energy efficiency measures including high performance equipment, controls, fixtures, and systems:

The Project includes high-performance HVAC equipment, lighting and controls. EnergyStart equipment and appliances will be installed.

Describe building specific load reduction strategies including on-site renewable energy, clean energy, and storage systems:

The project team will continue to evaluate energy conservation strategies during the design phase of the Project.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

Describe any energy efficiency assistance or support provided or to be provided to the project:

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The building/systems may evolve to further reduce GHG over time through inclusion of metering, tenant guidelines, energy conservation measures, opportunities for renewables, and exploring energy storage options as they emerge and as systems get upgraded. The project team will continue to evaluate energy conservation strategies during the design phase of the project. It is anticipated that the building will be PV-ready, and may be installed if found to be economically feasible.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low (Deg.): 8

Temperature Range - High (Deg.): 91

Annual Heating Degree Days:	5512	Annual Cooling Degree Days	776

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90° (#):	60	Days - Above 100° (#):	30
Number of Heatwaves / Year (#):	6	Average Duration of Heatwave (Days):	5

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The Project will install high-reflective paving materials and roof materials, and will include new landscaping on the site.

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The building will include high performance HVAC equipment. Measures to reduce the heat island effect include high-albedo rooftops, landscaping on the lower-level roof, and ground level landscaping.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

The building will include a generator for life safety systems. Also, units will feature operable windows for passive ventilation in case of ventilation system failures and/or extreme heat.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

What is the project design precipitation level? (In. / 24 Hours)	6

Describe all building and site measures for reducing storm water run-off:

The building will include an infiltration system for the first one inch of run-off

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

boston planning & development agency

The Project includes new landscaping.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, the sea level in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA Special Flood Hazard Area?	No	What Zone:	
What is the current FEMA SFHA Zone Base Flood Elevation for the site (Ft BCB)?			
Is any portion of the site in the BPDA Sea Level Rise Flood Hazard Area (see SLR-FHA online map)?	No		

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented by the Sea Level Rise Flood Hazard Area (SLR-FHA), which includes 3.2' of sea level rise above 2013 tide levels, an additional 2.5" to account for subsidence, and the 1% Annual Chance Flood. After using the SLR-FHA to identify a project's Sea Level Rise Base Flood Elevation, proponents should calculate the Sea Level Rise Design Flood Elevation by adding 12" of freeboard for buildings, and 24" of freeboard for critical facilities and infrastructure and any ground floor residential units.

What is the Sea Level Rise - Base Flood Elevation for the site (Ft BCB)?			
What is the Sea Level Rise - Design Flood Elevation for the site (Ft BCB)?		First Floor Elevation (Ft BCB):	
What are the Site Elevations at Building (Ft BCB)?		What is the Accessible Route Elevation (Ft BCB)?	

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

Thank you for completing the Boston Climate Change Checklist!

For questions or comments about this checklist or Climate Change best practices, please contact:
John.Dalzell@boston.gov

Appendix E

Accessibility Checklist

Article 80 – Accessibility Checklist

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

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

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

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

Accessibility Analysis Information Sources:

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

Glossary of Terms:

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

1. Project Information:

If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.

Project Name:	5 Washington Street
Primary Project Address:	5 Washington Street
Total Number of Phases/Buildings:	One
Primary Contact (Name / Title / Company / Email / Phone):	Justin Krebs/KIG Advisors/JKrebs@kigadvisors.com
Owner / Developer:	5 Washington Square Owner LLC
Architect:	Stantec
Civil Engineer:	Bohler Engineering
Landscape Architect:	Ground, Inc.
Permitting:	Epsilon Associates, Inc.
Construction Management:	

At what stage is the project at time of this questionnaire? Select below:

	☑PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BPDA Board Approved
	BPDA Design Approved	Under Construction	Construction Completed:

Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? ***If yes,*** identify and explain.	521 CMR 43.3.2 & 45.4.5 - Variance for kitchen sink depths. Required to be 6.5" in depth for all Group 1 and 2a units – request for deeper sinks with intent that should an ADA compliant sink be needed it will be provided. 521 CMR 39.3.1 - Variance for outlets below windows. Required to be 15" AFF to centerline of lowest receptacle. Request for outlets to be allowed lower on walls below windows, provided an adjacent accessible outlet is included.

2. Building Classification and Description:

This section identifies preliminary construction information about the project including size and uses.

What are the dimensions of the project?

Site Area:	*43,500 SF*	Building Area:	*132,500 GSF*
Building Height:	*70 FT.*	Number of Stories:	*5 Flrs.*
First Floor Elevation:	120 BCB	Is there below grade space:	*Yes*

What is the Construction Type? (Select most appropriate type)

	☑Wood Frame	Masonry	Steel Frame	Concrete

What are the principal building uses? (IBC definitions are below – select all appropriate that apply)

	Residential – One - Three Unit	☑Residential - Multi-unit, Four +	Institutional	Educational

	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		
List street-level uses of the building:	*Retail, residential lobby, parking*			

3. Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The Project site is located in a residential neighborhood in Brighton. Immediately to the west of the site is a Whole Foods Market, and to the south of the site is the Baldwin Early Learning Center. To the east of the Project site, in Brookline, buildings range from approximately two to three stories. To the west of the site, in Boston, buildings range from approximately four to ten stories. The Project site slopes up in a northeastern direction along Corey Road.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	MBTA Bus Route 65 travels adjacent to the Project site along Washington Street with stops located along Washington Street, west of Corey Road (approximately 75 feet from the Project site). The Washington Street Station serves the MBTA Green Line B Branch and is located approximately 1/8th of a mile to the west of the Project site at the intersection of Washington Street/Commonwealth Avenue. The Washington Square Station serves the MBTA Green line C Branch and is located approximately 1/3rd of a mile to the east of the Project site at the intersection of Washington Street/Beacon Street.
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	Institutions within the vicinity of the Project site include the Baldwin Early Learning Center, the Boston International Academy, Michael Driscoll School, the Corey Hill Nursing Home, Providence House Senior Living Community, and Kindred Hospital.
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	Within the vicinity of the Project site are several public parks including the Brian Honan Park, Fidelis Way Park, and Corey Hill Outlook Park.

4. Surrounding Site Conditions – Existing:

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

Is the development site within a historic district? ***If yes,*** identify which district:	The Project site is not within a historic district.
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions,	Yes. The sidewalks and pedestrian ramps are concrete and are in poor to fair condition

slopes, materials, and physical condition at the development site:	
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	No, the Proponent will replace all sidewalks and pedestrian ramps adjacent to the Project site.
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	Yes. The neighborhood connector will be applied to Washington Street, and neighborhood residential will be applies to Corey Road.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	17'-2" Overall dimension along Washington St. Frontage = 5'-8"; Pedestrian = 8'-0"; Furnishing Zone = 4'-0"; Curb = 0'-6" 8'-6" Overall dimension along Corey Rd. Frontage = 0'-0"; Pedestrian = 5'-0"; Furnishing Zone = 3'-0"; Curb = 0'-6"
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?	Concrete Sidewalk, located both on private property and pedestrian right of way.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No.

If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	No
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	Yes, for air and subsurface discontinuances, permits/canopy licenses for signs and awnings as required, and for a specific repair plan.
6. Accessible Parking: *See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability – Disabled Parking Regulations*.	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	There will be 104 parking spaces. 25 spaces will be surface parking, and 79 spaces will be in a below-grade garage.
What is the total number of accessible spaces provided at the development site? How many of these are "Van Accessible" spaces with an 8 foot access aisle?	There will be 5 accessible spaces, two of which will be van accessible.
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	No.
Where is the accessible visitor parking located?	Four of the spaces will be in the garage, and one van accessible space will be located on the surface parking lot closest to the building entrance.
Has a drop-off area been identified? ***If yes,*** will it be accessible?	No.
7. Circulation and Accessible Routes: *The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors*.	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	All entryways will provide a flush condition to the ground level uses and elevator access to all uses above or below the ground level.

Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no****,* what is the reason?	Yes
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	A way-finding package has not yet been developed.
8. Accessible Units (Group 2) and Guestrooms: (If applicable) *In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.*	
What is the total number of proposed housing units or hotel rooms for the development?	115
If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	All units will be for rent and the Project will comply with the City's IDP. There will be 15 IDP units and 100 market value units.
If a residential development, how many accessible Group 2 units are being proposed?	Five percent of the total unit count will be type 2A in accordance with MAAB.
If a residential development, how many accessible Group 2 units will also be IDP units? ***If none***, describe reason.	Two of the Group 2 units will also be IDP units.
If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? ***If yes,*** provide amount and location of equipment.	
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs / thresholds at entry, step to balcony, others. ***If yes***, provide reason.	All units that are not type 2A will be type 1 in accordance with MAAB. There are no plans for units that require stairs to enter.

Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? ***If yes***, describe:	Yes. There is an accessible ramp for access to the large retail space located at the north side of the building from the surface parking area.
9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community*.	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	Approximately 1,000 square feet will be reserved for community retail at below market rents or as space available to local community groups or entrepreneurship driven programs. The Project will also include new street trees, and an open space to the south of the new building.
What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	Indoor lounge space, community room, amenity kitchen, and a common outdoor terrace. All amenity spaces in the Project will be accessible.
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Yes. Accessible bathrooms will be provided for use around common public spaces.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	No.
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this	No.

project more accessible?	

10. Attachments

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

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. • Accessibility Diagram, Level P1 • Accessibility Diagram, Level 1 • Accessibility Diagram, Level 2 •

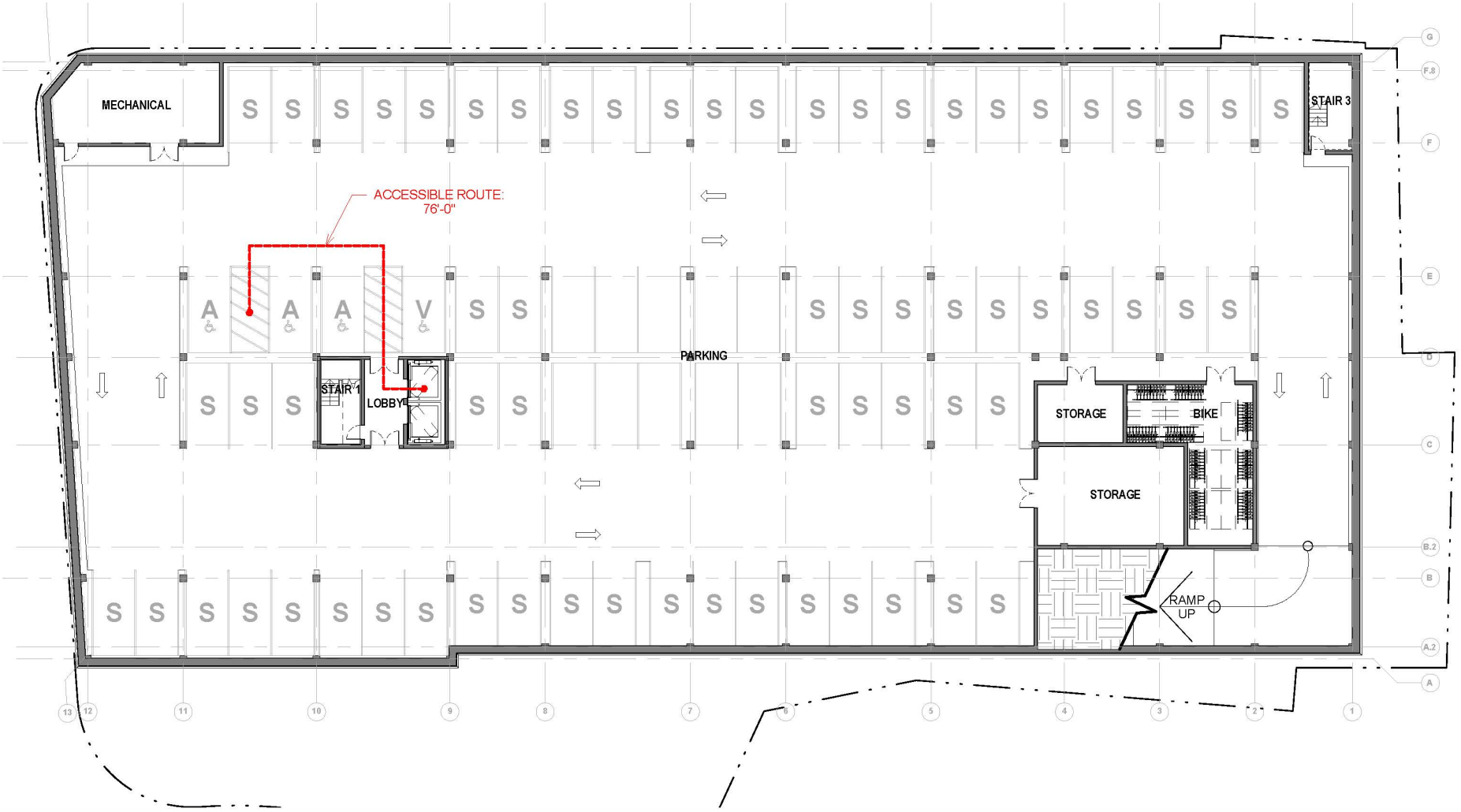
This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open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

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

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

Architectural Access staff can be reached at:

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



218421037

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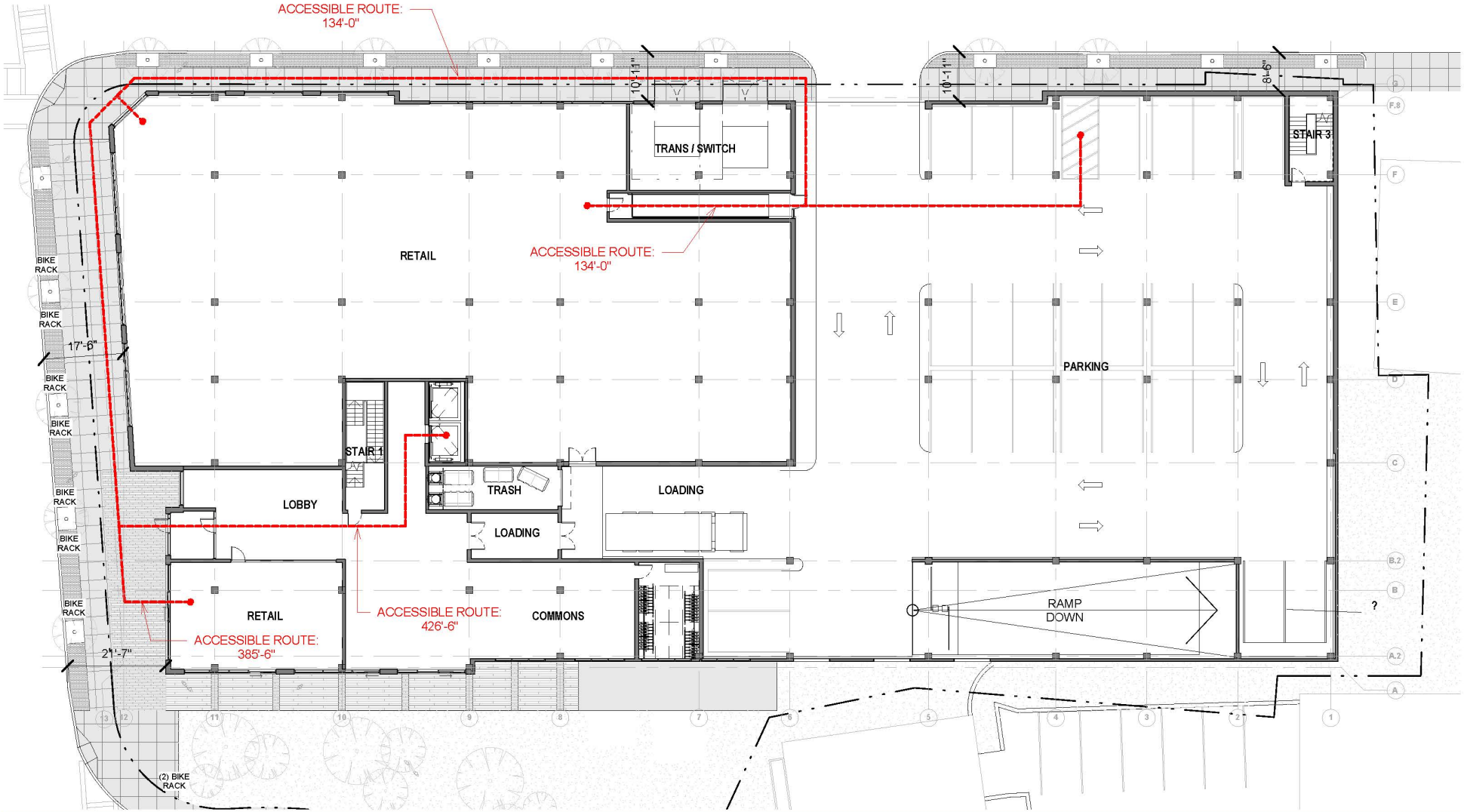
5 Washington Street Boston, Massachusetts

Stantec

Accessibility Diagram – Parking



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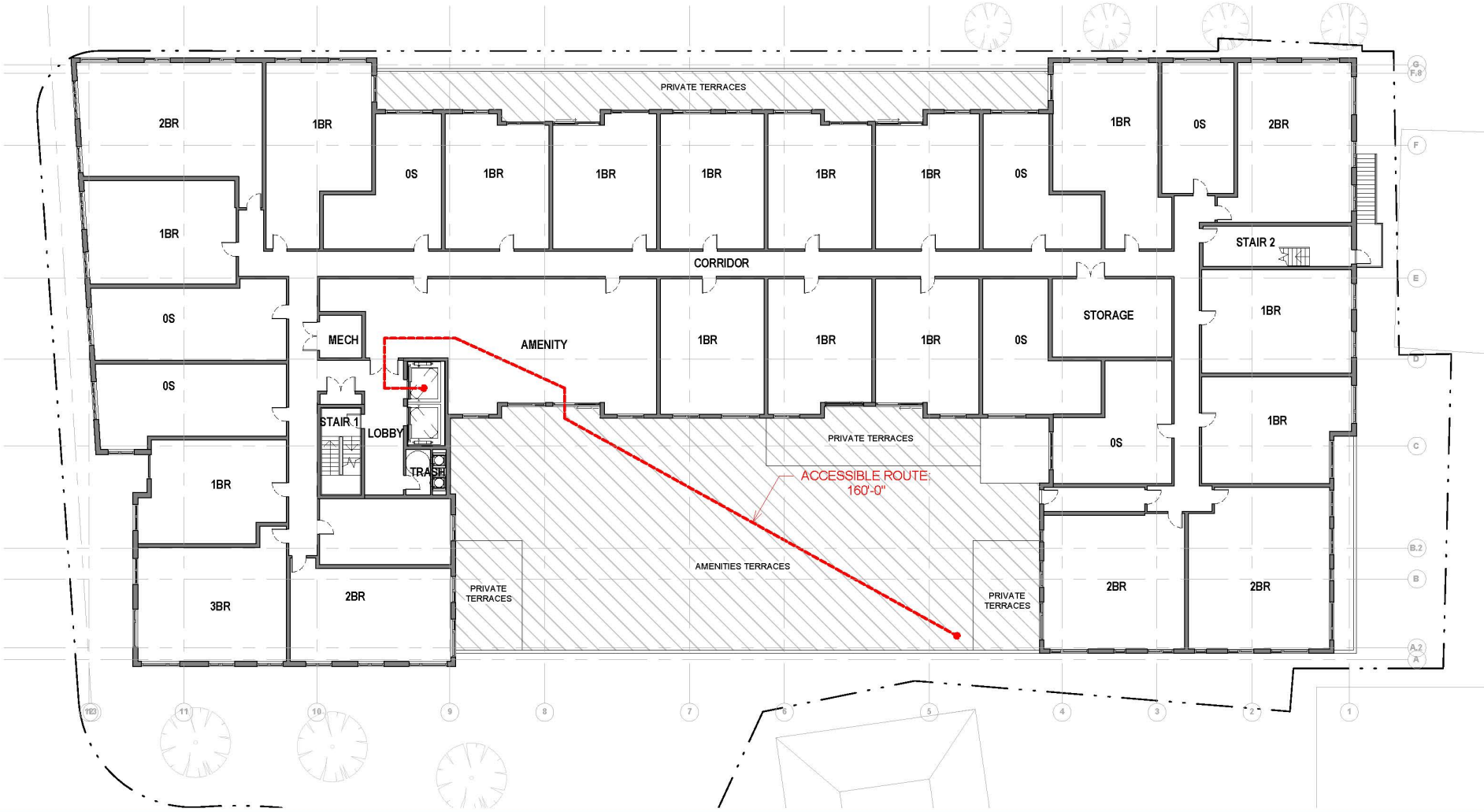
0 10' 20' 40'

5 Washington Street Boston, Massachusetts

Stantec

Accessibility Diagram – Level 1



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5 Washington Street Boston, Massachusetts