PROJECT NOTIFICATION FORM

1120-1132 Washington Street

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

Submitted by:
City Point Center LLC
1 Gateway Center, Suite #613
Newton, MA 02458

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

In Association with:
RCA, LLC
R. Jon Henson Landscape Architects
Rudolph Friedmann LLP
Howard Stein Hudson
New Ecology, Inc.

August 25, 2017

Epsilon
ASSOCIATES INC.

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Chapter 1.0

General Information

1.0 GENERAL INFORMATION

1.1 Introduction

City Point Center, LLC (the Proponent) proposes to redevelop the approximately 48,303 square foot site located at 1120-1132 Washington Street in the Lower Mills neighborhood of Dorchester. The Project site, located on the eastern side of Washington Street south of Richmond Street, currently contains the former Molloy Funeral Home, a vacant lot behind the funeral home building, and residential buildings on each side of the funeral home. The site will be redeveloped into a four-story, approximately 67,000 square foot (sf) building with approximately 57 residential units and ground floor commercial space. The Project will include approximately 86 residential parking spaces and eight parking spaces for the commercial space.

The Project will redevelop an underutilized site with a design that will complement and respect the existing buildings surrounding the site. The ground floor commercial spaces, envisioned as professional offices and/or a locally owned and operated store, will have large aluminum glass storefront windows and doors along Washington Street to create an inviting pedestrian experience. The sidewalk along Washington Street will be improved with a combination of bollards, lighting, and street trees. In addition to the benefits to the public realm, and a design that complements the existing architecture of the area, the Project also provides new housing units, including new affordable housing, construction and permanent jobs, and improved tax revenues for the City of Boston.

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 Boston Zoning Code. The PNF offers a description of the Project, its minimal impacts, and its benefits to the City of Boston.

1.2 Development Team

Address/Location:	1120-1132 Washington Street
Developer:	City Point Center LLC 1 Gateway Center, Suite #613 Newton, MA 02458 (617) 244-4599 John A. Sambucci

Architect:	RCA, LLC 415 Neponset Avenue Dorchester, MA 02122 (617) 282-0030 Chris Drew
Landscape Architect:	R. Jon Henson Landscape Architects 146 Hinckley Street Florence, MA 01062 (413) 586-4054 Jon Henson
Legal Counsel:	Rudolph Friedmann LLP 92 State Street Boston, MA 02109 (617) 723-7700 John H. Rogers, Esq. Anthony L. Leccese, Esq.
Permitting Consultants:	Epsilon Associates, Inc. 3 Mill & Main Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Geoff Starsiak Talya Moked
Transportation Consultant and Civil Engineer	Howard Stein Hudson 11 Beacon Street, Suite 1010 Boston, MA 02108 (617) 482-7080 Rick Latini, P.E. Keri Pyke, P.E., PTOE
Sustainability Consultant:	New Ecology, Inc. 15 Court Square, #420 Boston, MA 02108 (617) 557-1700 Lauren Baumann Paul Eddows

1.3 Public Benefits

The Project will generate many public benefits for the surrounding neighborhood and the City of Boston as a whole, both during construction and on an ongoing basis upon its completion.

Smart Growth/Transit-Oriented Development

The Project is consistent with smart-growth and transit-oriented development principles. The Project site is well served by existing public transportation, including major regional rapid transit and bus lines that provide easy access to the Project site from the Greater Boston region.

Improved Pedestrian Environment

The streetscape and the pedestrian experience will be improved though the use of lighting and landscaping.

Inclusionary Affordable Housing

The Project is subject to the Mayor's Executive Order regarding inclusionary affordable housing, dated February 29, 2000, as amended, as well as the Inclusionary Development Policy (IDP). Thirteen percent (13%) of the approximately 57 dwelling units in the Project will be IDP units.

Sustainable Design/Green Building

Energy conservation and other sustainable design measures are an integral component of the proposed Project. The Project will employ energy and water efficient features for mechanical, electrical, architectural, and structural systems, assemblies, and materials, where feasible. Sustainable design elements relating to building energy management systems, lighting, recycling, conservation measures, local building materials, and clean construction vehicles will be included, to the greatest extent practicable. The Proponent is committed to building a LEED certifiable project with a target of the Silver level, incorporating sustainable design features into the Project to preserve and protect the environment.

Increased Employment

The Project will create approximately 50 construction jobs and approximately 10 permanent jobs upon stabilization.

New Property Tax

The Project will result in increased tax revenues compared to the existing condition.

1.4 Legal Information

1.4.1 Legal Judgments Adverse to the Proposed Project

There are no legal judgements adverse to the proposed Project.

1.4.2 History of Tax Arrears on Property Owned in Boston by the Proponent

There is no current or past history of tax arrears on property owned in Boston by the Proponent.

1.4.3 Site Control/ Public Easements

The Proponent acquired the site by deed dated August 4, 2014, and recorded with the Suffolk County Registry of Deeds in Book 53327, Page 44. The site is bounded by utility easements within Washington Street for sewer (sanitary and storm), water, electric, communications, and gas. In addition, there are overhead electric lines that cross the site and run into and along the side property lines of the site.

A site survey is provided in Appendix A.

1.5 Public Participation

As part of its planning efforts, the Proponent has engaged with nearby residents and representatives of numerous neighborhood groups, elected officials, and public agencies since 2014. The Proponent revised its plans for the Project as a result of several meetings, including a meeting with representatives of the BPDA and other City officials on January 26, 2015, and meetings with the Executive Board of the Dorchester Lower Mills Civic Association beginning on May 27, 2015.

The Proponent is 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.

Chapter 2.0

Project Description

2.0 PROJECT DESCRIPTION

2.1 Project Description

2.1.1 Project Site

The Project site comprises six contiguous parcels of land with a total of approximately 48,303 sf located on the eastern side of Washington Street south of Richmond Street (see Figure 2-1). The Project site contains the former Molloy Funeral Home, a vacant lot behind the funeral home building, and residential buildings on each side of the funeral home. To the south of the funeral home is a building containing one two-family and one three-family dwelling, and to the north of funeral home is another two-family dwelling. Existing conditions are presented in Figure 2-2.

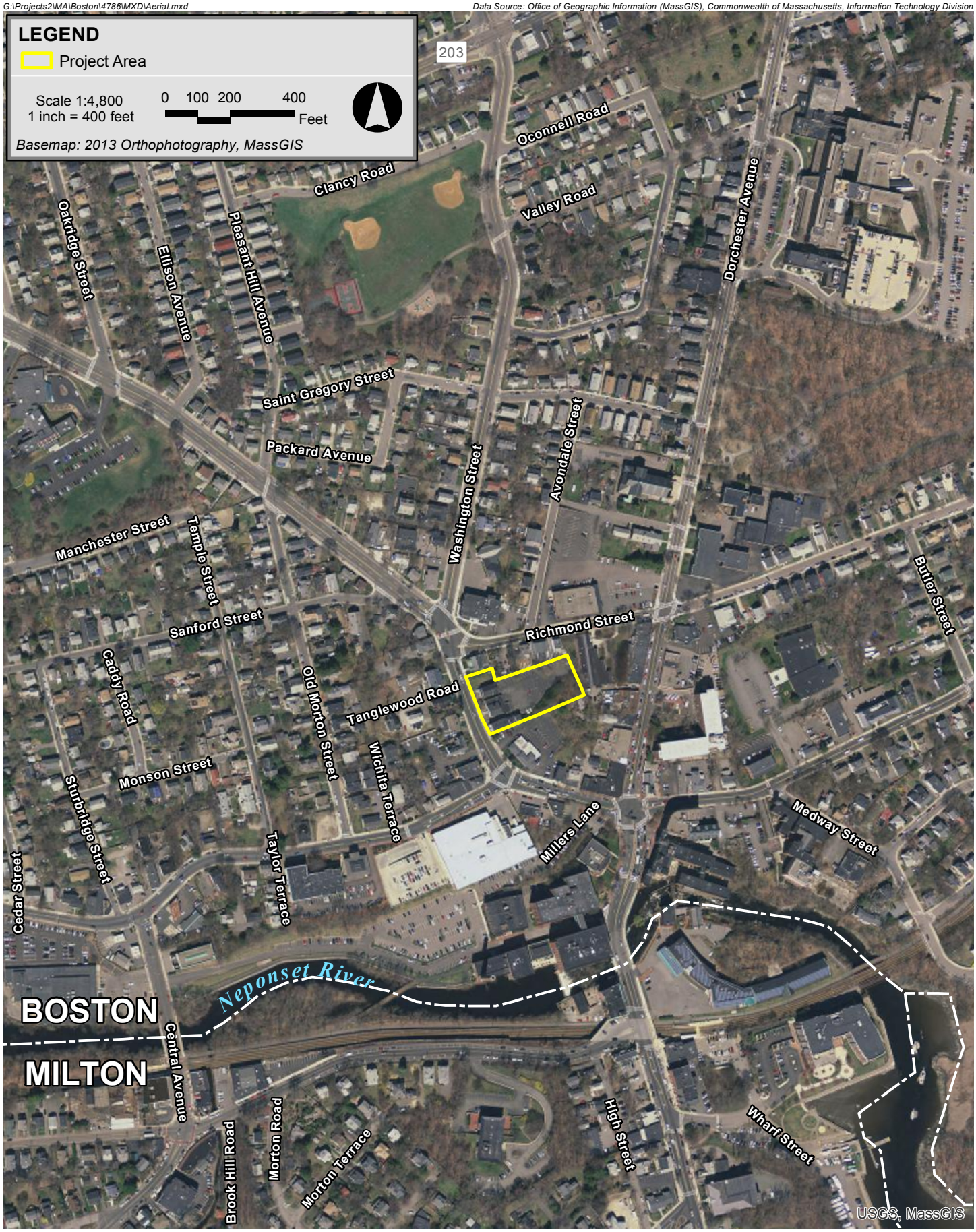
2.1.2 Area Context

The Project site is located in the Lower Mills neighborhood at the southeastern edge of Dorchester. Immediately to the west of the site is the Mattapan neighborhood of Boston, and to the south just across the Neponset River is the town of Milton. The area surrounding the Project site contains a mix of uses, including two to three-story residential buildings, as well as some commercial uses. A Star Market is located to the south of the Project site on River Street, and there are a variety of locally owned and operated eateries along Dorchester Avenue to the east of the Project site. Within a quarter-mile from the Project site are several public open spaces, including the William G. Walsh Playground, Dorchester Park, and the Neponset River Greenway.

The Project site is located just steps away from several Massachusetts Bay Transportation Authority (MBTA) bus stops serviced by multiple bus routes, and is just over a quarter-mile from the MBTA Milton Station, providing access to the Mattapan Trolley section of the Red Line. The proximity to the bus stops, train station and a variety of basic services makes the area an ideal location for a pedestrian-oriented residential development.

2.1.3 Proposed Project

The Project, as shown in Table 2-1, includes approximately 67,000 sf anticipated to contain approximately 3,600 sf of ground floor commercial space, and approximately 57 residential units. The residential units are anticipated to be condominiums, however, they could be developed as rental units should market conditions, financing, or other factors make a condominium development unfeasible. The commercial space is envisioned to consist of two professional offices and/or a locally owned and operated store. Approximately 86 residential parking spaces will be included in a combination of at-grade and below-grade facilities, and eight at-grade parking spaces will be provided for the commercial space.



1120-1132 Washington Street Boston, Massachusetts

Epsilon Associates Inc.

Figure 2-1
Aerial Locus Map

1120-1132 Washington Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 2-2

Existing Conditions – View from Washington Street

The residential units will be a variety of sizes, including one bedroom, two bedroom and three bedroom units. Secure bicycle storage for residents (one per residential unit) will be included within the building. Figures 2-3 to 2-7 present a site plan, floor plans, and elevations.

Table 2-1 Project Program

Project Element	Approximate Dimension
Residential	57 units
1-bedroom	12 units
2-bedroom	39 units
3-bedroom	6 units
Commercial	3,600 sf
Total Square Footage	**67,000 sf**
Parking	94 spaces
Height	40 feet

The Project includes five open space components, including a private open space in the northwest corner of the site consisting of a lawn for small scale informal play, a play area for toddlers, and a patio with benches where the residents can sit in the shade of the proposed trees; perhaps while tending to their toddler on the play sculpture. The parking for the Project is divided up into a series of bays which are visually separated by building components and proposed natural features. The proposed landscaping in each area helps to provide a spatial context for the building. The proposed shrub foundation plantings provide scale transition from the vertical building walls to the horizontal ground plane. All proposed plantings will be selected to generate seasonal interest and to minimize maintenance.

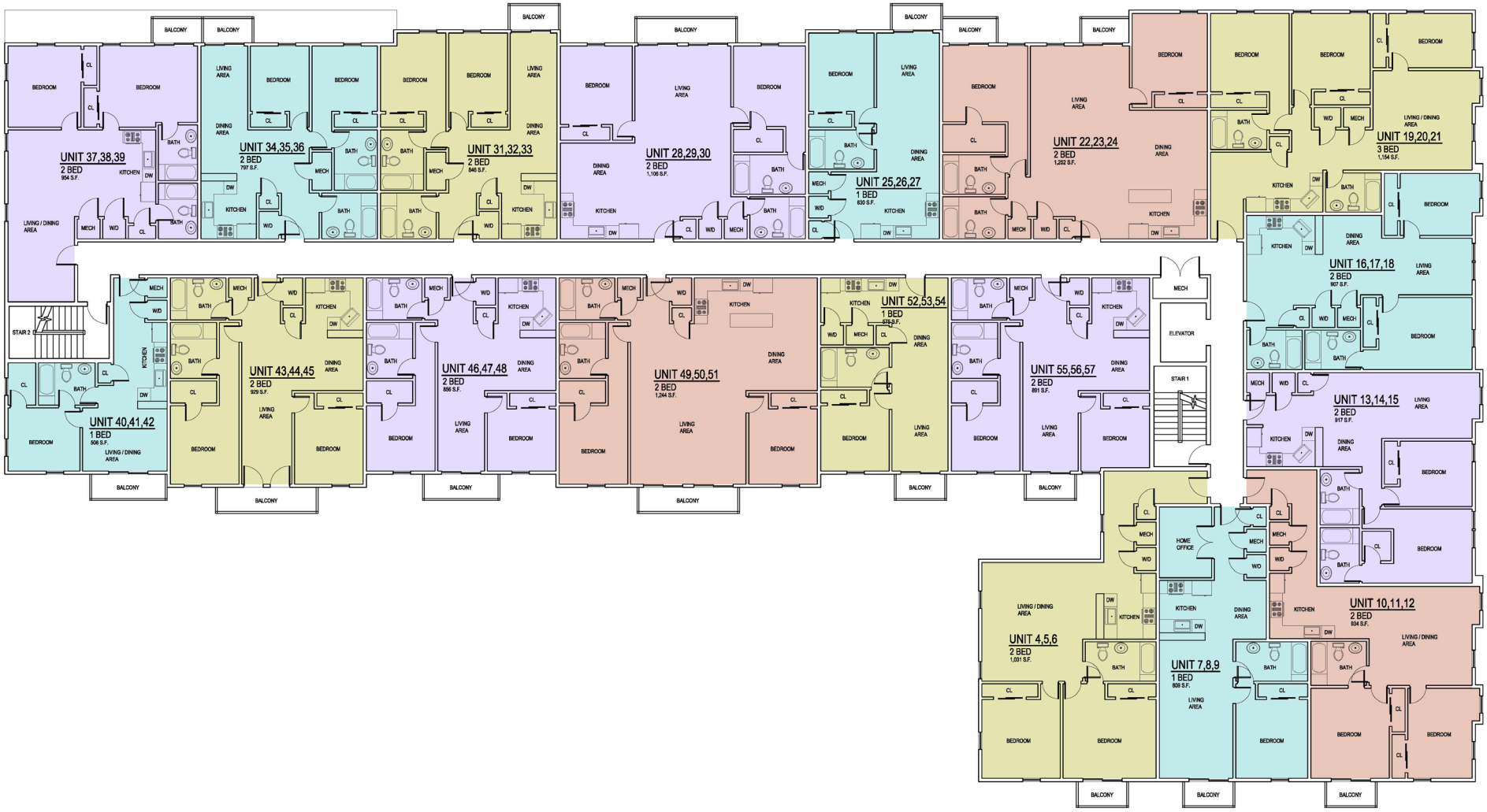
The Project front is along Washington Street, and is designed to maintain a consistent streetwall with the existing surrounding buildings. The main entrances to both commercial spaces and to the residential lobby are on Washington Street. The building footprint has the longest leg of the structure pulled back along the southerly property line, adjoining the former Funeral Home parking lot to the south, and a small, off site, wooded cluster. This creates a substantial open space buffer between the building and the three adjoining residences fronting on Richmond Street to the north.

Vehicular access and egress is on Washington Street, located at the northwesterly edge of the Project site farthest from the Washington Street/River Street intersection, allowing for more favorable entry and exit to the site with minimal impacts from the intersection. Parking has been divided up into a series of smaller scaled lot areas, to the side and rear of the proposed building, leaving the front for open space streetscape amenities.

1120-1132 Washington Street Boston, Massachusetts

RCA, LLC
Architects - Designers - Planners

Figure 2-3
Site Plan



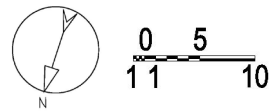


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Figure 2-4
Second, Third and Fourth Floor Plan

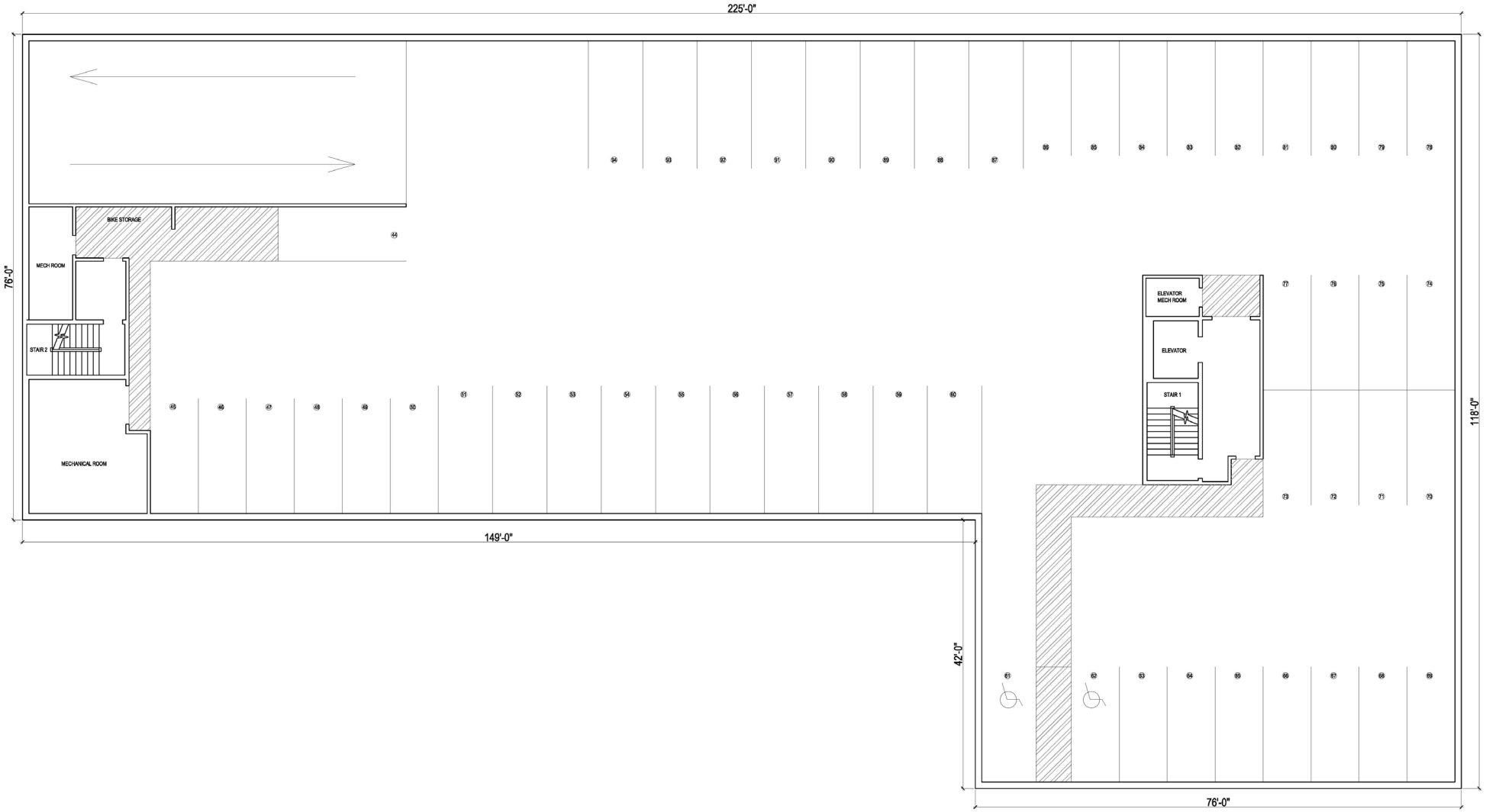

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Figure 2-5
Parking Plan

1120-1132 Washington Street Boston, Massachusetts

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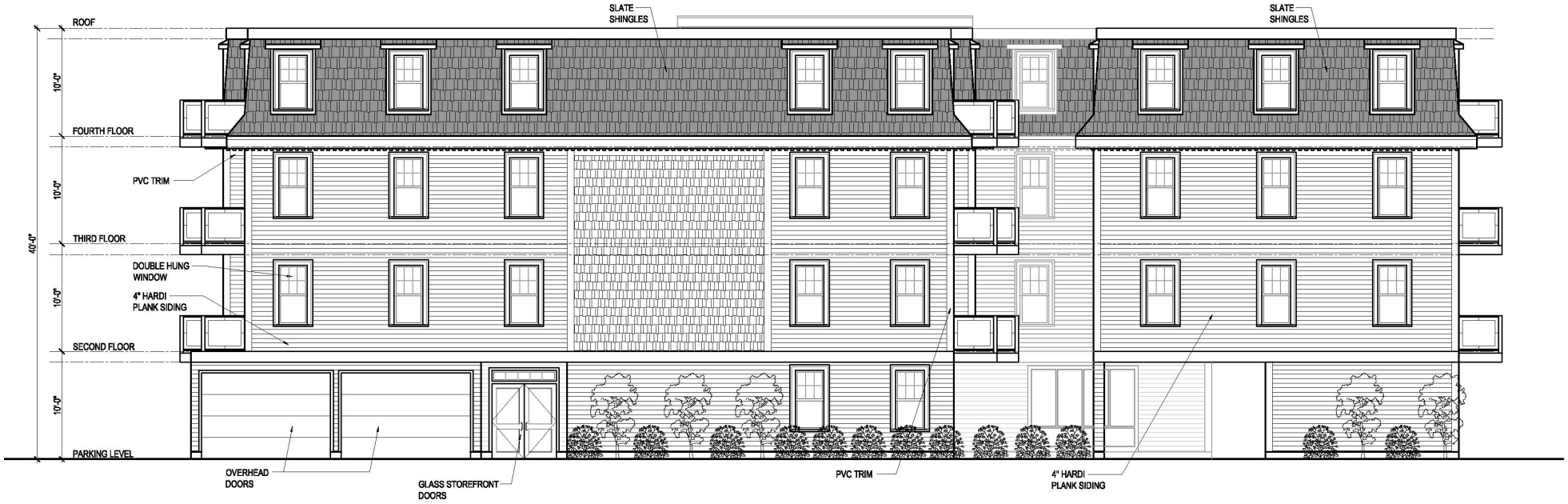
Figure 2-6
Elevations



ELEVATION 4

1120-1132 Washington Street Boston, Massachusetts

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Architects - Designers - Planners

Figure 2-7
Elevations

2.2 City of Boston Zoning

The Project site is located within the Neighborhood Shopping Subdistrict (NS) of the Dorchester Neighborhood District, Article 65 of the Boston Zoning Code. The Project also lies within a Neighborhood Design Overlay District (NDOD). The Project as presently contemplated requires a conditional use approval from the City of Boston Board of Appeal for the proposed first floor multi-family dwelling use (multi-family dwelling use on the second, third, and fourth floors is allowed) and dimensional relief to exceed the allowed maximum floor area ratio. The Project is subject to review by the Boston Landmarks Commission pursuant to the requirements of the NDOD and Article 85 (demolition delay), with the associated BPDA design review requirements of the NDOD addressed pursuant to the pending Large Project Review.

The Project's uses for Boston Zoning Code purposes will consist of a multi-family dwelling and ground-floor commercial uses, most likely local retail, restaurant, professional offices, and/or services uses, as well as accessory parking for both the residential and commercial uses.

2.3 Anticipated Permits and Approvals

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

Table 2-2 Anticipated Permits and Approvals

Agency	Approval
Local	
Board of Appeal or Boston Zoning Commission	Zoning relief
Boston Civic Design Commission	Design Review
Boston Public Safety Commission Committee on Licenses	Parking Garage Permit and Fuel Storage License
Boston Employment Commission	Construction Employment Plan
Boston Fire Department	Approval of Fire Safety Equipment; Fuel Oil Storage Permit (if required)
Boston Inspectional Services Department	Demolition/Building Permit; Other construction-related permits; Certificates of Occupancy
Boston Landmarks Commission	Article 85 Demolition Delay Review; Design Review
Boston Public Works Department	Curb Cut Permit(s); Sidewalk Occupancy Permit (as required)
Boston Planning and Development Agency	Article 80B Large Project Review
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Agreement

Table 2-2 Anticipated Permits and Approvals (Continued)

Agency	Approval
Local	
Boston Water and Sewer Commission	Site Plan Review; Water and Sewer connection permits; Storm Drainage
Office of Jobs and Community Services	Permanent Employment Agreement (as required)
Public Improvement Commission	Specific Repair Plan and Sidewalk Improvements (as required)
State	
Department of Environmental Protection	Notification of Demolition and Construction
Massachusetts Historical Commission	Determination of No Adverse Effect on Historic Properties
Massachusetts Water Resources Authority	8(m) Permit
Federal	
U.S. Environmental Protection Agency	NPDES Notice of Intent for Construction (if required)

2.4 Schedule

It is anticipated that construction will commence in the first quarter of 2018. Once begun, construction is expected to last approximately 18-24 months.

Chapter 3.0

Transportation

3.0 TRANSPORTATION

3.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the proposed Project. This transportation study adheres to the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* and the BPDA Article 80 Large Project Review process. This study includes an evaluation of the existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian and bicycle activity. The Project will have minimal impact on the study area intersections and the pedestrian and public transportation facilities in the area.

3.1.1 Project Description

The Project is located at 1120-1132 Washington Street in the Lower Mills neighborhood of Dorchester. The Project consists of the demolition of the existing buildings to construct a new, approximately 67,000 square foot building containing approximately 57 residential units, 3,600 sf of ground floor commercial/office space, and a total of 94 parking spaces. Approximately 43 parking spaces will be located in a surface lot and the remaining 51 spaces will be located in a below-grade garage. A total of eight parking spaces in a surface lot will be designated for the commercial uses, with the remainder for the residential uses. Access to the parking will be provided by a curb cut located along the east side of Washington Street, just south of Richmond Street. All loading, trash/recycling, service, and delivery activity will also take place on the site in the surface parking lot. The Project will include a bicycle storage room on site that will store approximately 57 bicycles.

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

The future transportation conditions analyses evaluate potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for the year 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 increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-Build (2024) Condition analysis. The transportation study identifies expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies.

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

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

3.1.3 Study Area

The transportation study area consists of intersections surrounding the Project site along Washington Street, Dorchester Avenue, Richmond Street and Adams Street. The study area includes the following four signalized intersections, also shown in Figure 3-1:

- Washington Street/River Street;
- Washington Street/Morton Street/Richmond Street;
- Dorchester Avenue/Richmond Street; and
- Dorchester Avenue/Washington Street/Adams Street.

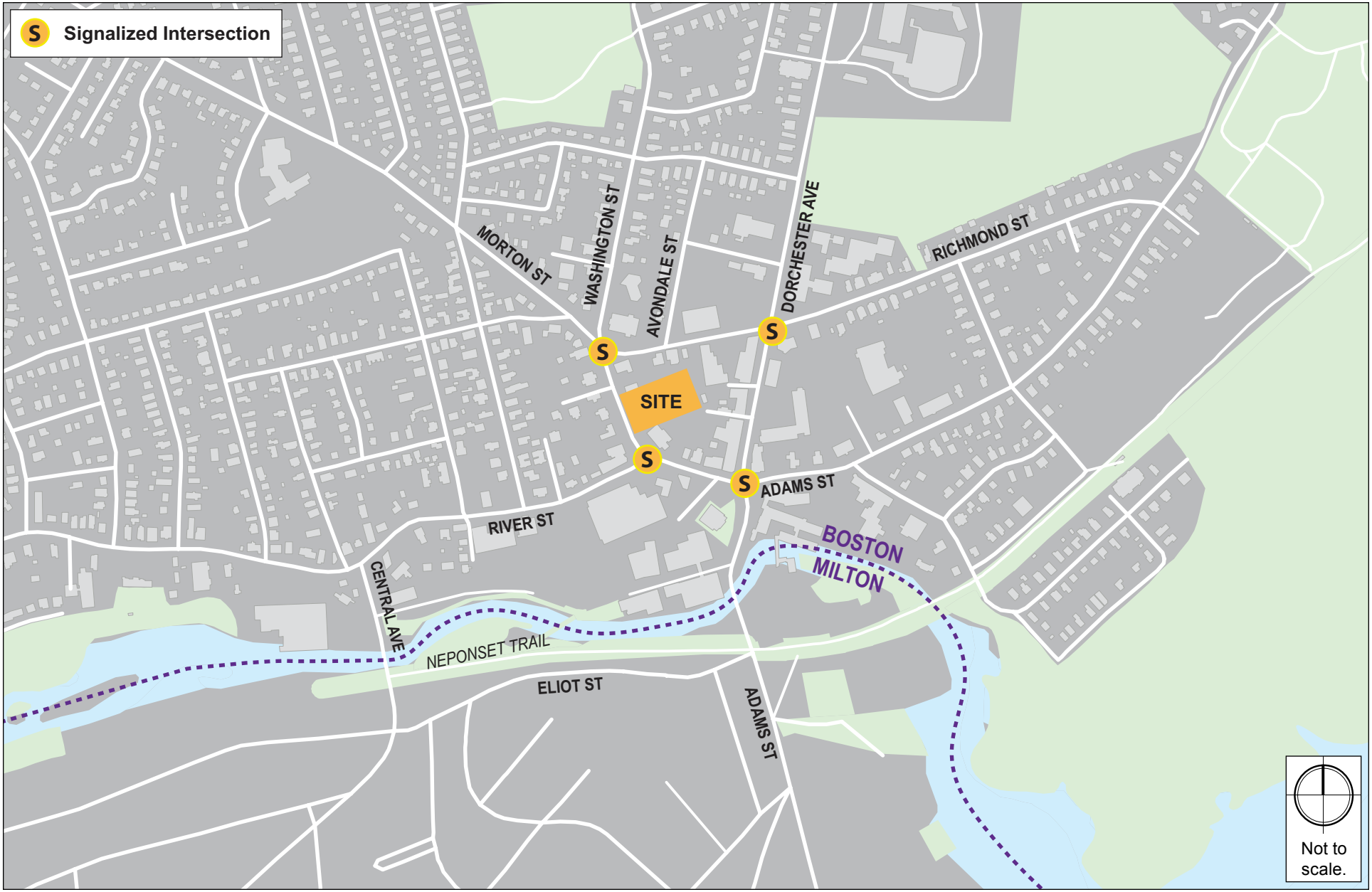
3.2 Existing (2017) Condition

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

3.2.1 Existing Roadway Conditions

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

Washington Street is a two-way, two-lane roadway adjacent to the western edge of the Project site and runs in a north-south direction between Blue Hill Avenue to the north and Adams Street to the south. Washington Street is classified as an urban minor arterial roadway under BTD Jurisdiction. In the vicinity of the site, on-street parking is restricted on both sides of Washington Street. Sidewalks are provided on both sides of the roadway.



1120-1132 Washington Street Boston, Massachusetts

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Figure 3-1
Study Area Intersections

Dorchester Avenue is a two-way, two-lane roadway located east of the Project site. Dorchester Avenue generally runs in a north-south direction between Broadway in South Boston to the north and the Milton Town Line to the south. Dorchester Avenue is classified as an urban principal arterial roadway under BTD jurisdiction. In the vicinity of the site, two-hour parking is available on both sides of the road. Sidewalks are provided on both sides of Dorchester Avenue.

Richmond Street is a two-way, two lane roadway located north of the Project site. Richmond Street generally runs in an east-west direction between Dorchester Avenue to the east and Washington Street to the west. Richmond Street is classified as a local roadway under BTD jurisdiction. In the vicinity of the site, unrestricted parking is available on the south side of the roadway only. Sidewalks are provided on both sides of Richmond Street.

Adams Street is a two-way, two-lane roadway located south of the Project site. Adams Street generally runs in a north-south direction between Gallivan Boulevard to the north and Dorchester Avenue to the south. Adams Street is classified as an urban minor arterial roadway under BTD jurisdiction. In the vicinity of the site, parking is generally prohibited on both sides of the roadway. Sidewalks are provided on both sides of Adams Street.

River Street is a two-way, two lane roadway located to south of the Project site that generally runs in an east-west direction between Washington Street to the east and Cedar Street in Dedham to the west. River Street is classified as an urban minor arterial roadway under BTD jurisdiction. In the vicinity of the site, parking is restricted along both sides of the roadway. Sidewalks are provided on both sides of the roadway.

Morton Street is a two-way, two lane roadway located north of the Project site that generally runs in an east-west direction between Washington Street to the east and Arborway to the west. Morton Street is classified as an urban minor arterial roadway under BTD jurisdiction. In the vicinity of the site, parking is provided on both sides of Morton Street. Sidewalks are provided on both sides of the roadway.

3.2.2 Existing Intersection Conditions

The existing study area intersections are described below. Intersection characteristics such as traffic control, lane usage, pedestrian facilities, pavement markings, and adjacent land use are described.

Washington Street/River Street is a four-legged, signalized intersection with four approaches. The River Street eastbound approach consists of an exclusive left-turn lane and an exclusive right-turn lane. The Washington Street northbound approach consists of an exclusive left-turn lane and a through lane. The Washington Street southbound approach consists of a through lane and an exclusive right-turn lane. A driveway that provides access to the Star

Market loading dock serves as the fourth and northbound leg of the intersection. Sidewalks are provided along all approaches. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection.

Washington Street/Morton Street/Richmond Street is a four-legged, signalized intersection with four approaches. The Morton Street eastbound approach consists of two undesignated travel lanes. The Richmond Street westbound approach consists of a single travel lane. The Washington Street northbound and southbound approaches each consist of a single travel lane. Sidewalks are provided along all approaches. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection.

Dorchester Avenue/Richmond Street is a four-legged, signalized intersection with four approaches. The Richmond Street eastbound and westbound approaches each consist of a single lane. The Richmond Street westbound approach consists of one shared left-turn/through/right-turn. The Dorchester Avenue northbound and southbound approaches also each consist of a single travel lane. Sidewalks are provided along all approaches. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection.

Dorchester Avenue/Washington Street/Adams Street is a four-legged, signalized intersection with four approaches. The Washington Street eastbound approach consists of one shared left-turn/through lane and one shared through/right-turn lane. The Adams Street westbound approach consists of a single lane that operates as two lanes (one left-turn lane and one shared through/right-turn lane). The Adams Street northbound approach consists of an exclusive left-turn lane, a through travel lane, and an exclusive right-turn lane. The Dorchester Avenue southbound approach consist of one shared left-turn/through lane and one shared through/right-turn lane. Sidewalks are provided along all approaches. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection.

3.2.3 Existing Parking and Curb Use

On-street parking surrounding the Project site generally consists of residential, metered, and commercial parking. The on-street parking regulations within the study area are shown in Figure 3-2. Parking is not provided on either side of Washington Street adjacent to the site.

3.2.4 Car and Bicycle Sharing Services

Car sharing services enable easy access to short-term vehicular transportation. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location. Pick-up/drop-off locations are typically in existing

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Figure 3-2
On-Street Parking

parking lots or other parking areas throughout neighborhoods as a convenience to users of the services. Nearby car sharing services provide an important transportation option and reduce the need for private vehicle ownership.

One major car sharing service with vehicle locations near the Project site is Zipcar Car Share. The nearest car sharing location to the Project site is at 209 Ashmont Street north of the Project site.

Boston's major bicycle sharing service, Hubway, launched in 2011 and currently consists of more than 1,600 shared bicycles at more than 160 stations throughout Boston, Brookline, Cambridge, and Somerville. However, there are currently no Hubway stations in the immediate Project area. The car and bicycle sharing locations within more than a mile of the Project site are described in Table 3-1.

Table 3-1 Vehicle Sharing Locations

Description	Location	Distance
Zipcar[1]		
All Saints Church	209 Ashmont Street	0.9 miles
Mattapan Train Station	500 River Street	1.25 miles
River Street Lot	451 River Street	1.25 miles
Dorchester Ave/Wrentham St Lot	1859 Dorchester Avenue	1.0 miles
Dorchester Ave/Banton St Rear Lot	1815 Dorchester Avenue	1.1 miles

1. Source: www.zipcar.com, March 2017.

3.2.5 Existing Bicycle Conditions

In recent years, bicycle use has increased dramatically throughout the City of Boston. Several streets in the vicinity of the Project site are designated in the City of Boston's 2013 "Bike Routes of Boston" map. Dorchester Avenue currently has bicycle lanes and is designated as a route for advanced riders. Adams Street, Washington Street, and River Street are all designated as intermediate routes. Morton Street is designated as an advanced route.

Bicycle counts were conducted concurrent with the vehicular Turning Movement Counts (TMCs) and are presented in Figure 3-3. As shown in the figure, bicycle activity in the area was generally light during the data collection period. It is expected that bicycle activity is higher during the warmer months.

3.2.6 Existing Pedestrian Conditions

Sidewalks are provided along all roadways in the study area and are generally in good condition. Crosswalks and pedestrian signal equipment are provided at all study area intersections.

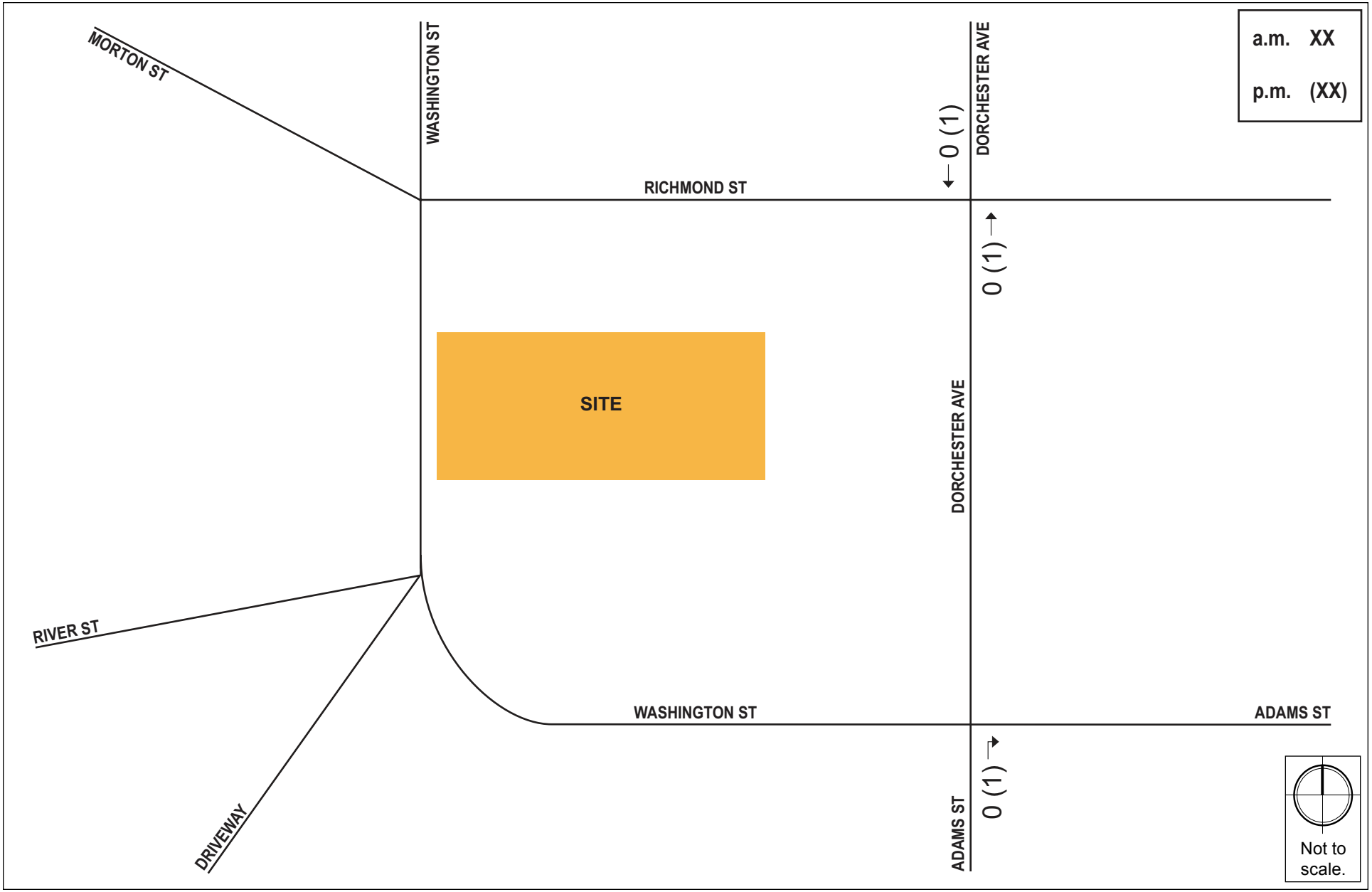

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Figure 3-3

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

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersections and are presented in Figure 3-4. The heaviest pedestrian volumes occurred at the intersection of Dorchester Avenue/Washington Street/Adams Street.

3.2.7 Existing Public Transportation

The Project site area is well-served by public transportation. The MBTA's Red Line Mattapan Trolley and several bus lines are located in proximity to the site. The closest Mattapan Trolley Station, Milton Station, is a quarter mile away. The Mattapan Trolley runs between Mattapan Station and Ashmont Station, connecting passengers to the MBTA's Red Line.

The MBTA Route 15 and Route 27 buses travel along Dorchester Avenue and River Street with bus stops located at the intersections of Washington Street/River Street and Washington Street/Adams Street/ Dorchester Avenue. The MBTA Route 217 bus travels along Dorchester Avenue with a bus stop at the intersection of Dorchester Avenue/Washington Street. The MBTA Route 240 bus travels along Dorchester Avenue, River Street, and Central Avenue with bus stops at the intersection of Dorchester Avenue/Washington Street.

The nearby public transit services are shown in Figure 3-5 and summarized in Table 3-2.

Table 3-2 Existing Public Transportation

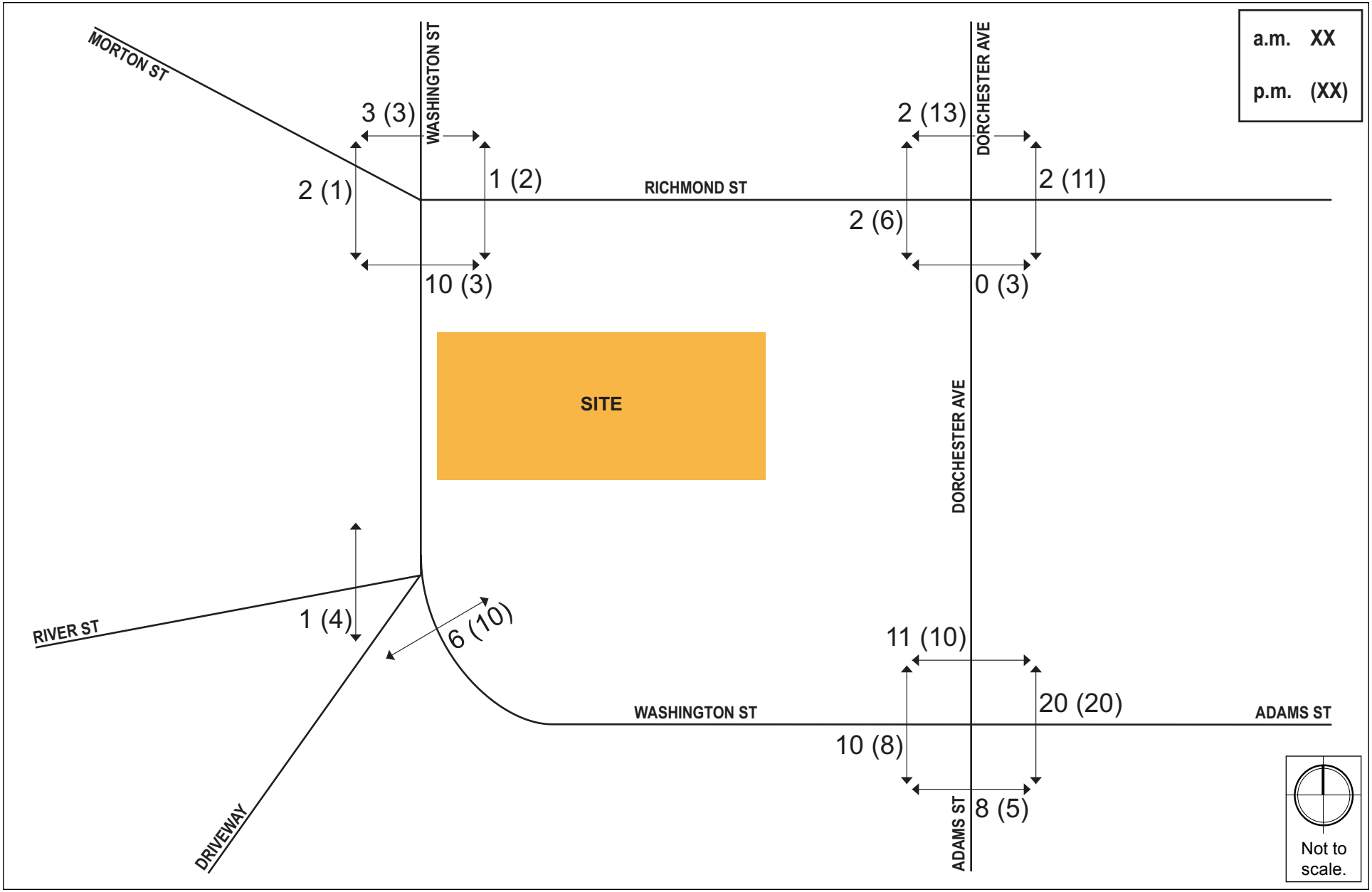
Transit	Description	Peak-Hour Headway
Subway Lines		
Red Line	Mattapan Trolley –Mattapan Station- Ashmont Station	5-12
Bus Routes		
15	Kane Square or Fields Corner Station –Ruggles Station via Uphams Corner	3-20
27	Mattapan Station –Ashmont Station via River Street	15-35
217	Quincy Center Station –Ashmont Station via Beale St, Wollaston, & E. Milton Square	30
240	Avon Square or Holbrook/Randolph Commuter Rail Station –Ashmont Station via Crawford Square, Randolph	10-45

1 Headway is the scheduled time between trains or buses. Headways are approximate.
Source: www.mbta.com, March 2017.

3.2.8 Existing Traffic Conditions

3.2.8.1 Turning Movement Counts

Traffic volume data was collected at the study area intersections on March 21, 2017. Traffic Turning Movement Counts and vehicle classification counts were conducted during the weekday a.m. and weekday p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively). The traffic classification counts included car, heavy vehicle, pedestrian, and bicycle movements. Detailed traffic counts are provided in Appendix B.



1120-1132 Washington Street Boston, Massachusetts

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Figure 3-4

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

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Figure 3-5
Public Transportation

3.2.8.2 Seasonal Adjustment

In order to account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT were reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the March 2017 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) indicates that average month traffic volumes are approximately four percent less than the traffic volumes that were collected. The traffic counts were not adjusted downward to reflect average month conditions in order to provide a conservatively high analysis.

Existing traffic volumes were collected to develop the 2017 Existing Condition vehicular traffic volumes. The Existing (2017) Condition weekday a.m. peak hour and weekday p.m. peak hour traffic volumes are shown in Figure 3-6 and Figure 3-7, respectively.

3.2.9 Traffic Operations Analysis

Trafficware's Synchro (version 9) software package was used to calculate average delay and associated Level of Service (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 3-3 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

Table 3-3 Vehicle Level of Service Criteria

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

Source: 2000 Highway Capacity Manual, Transportation Research Board.

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.

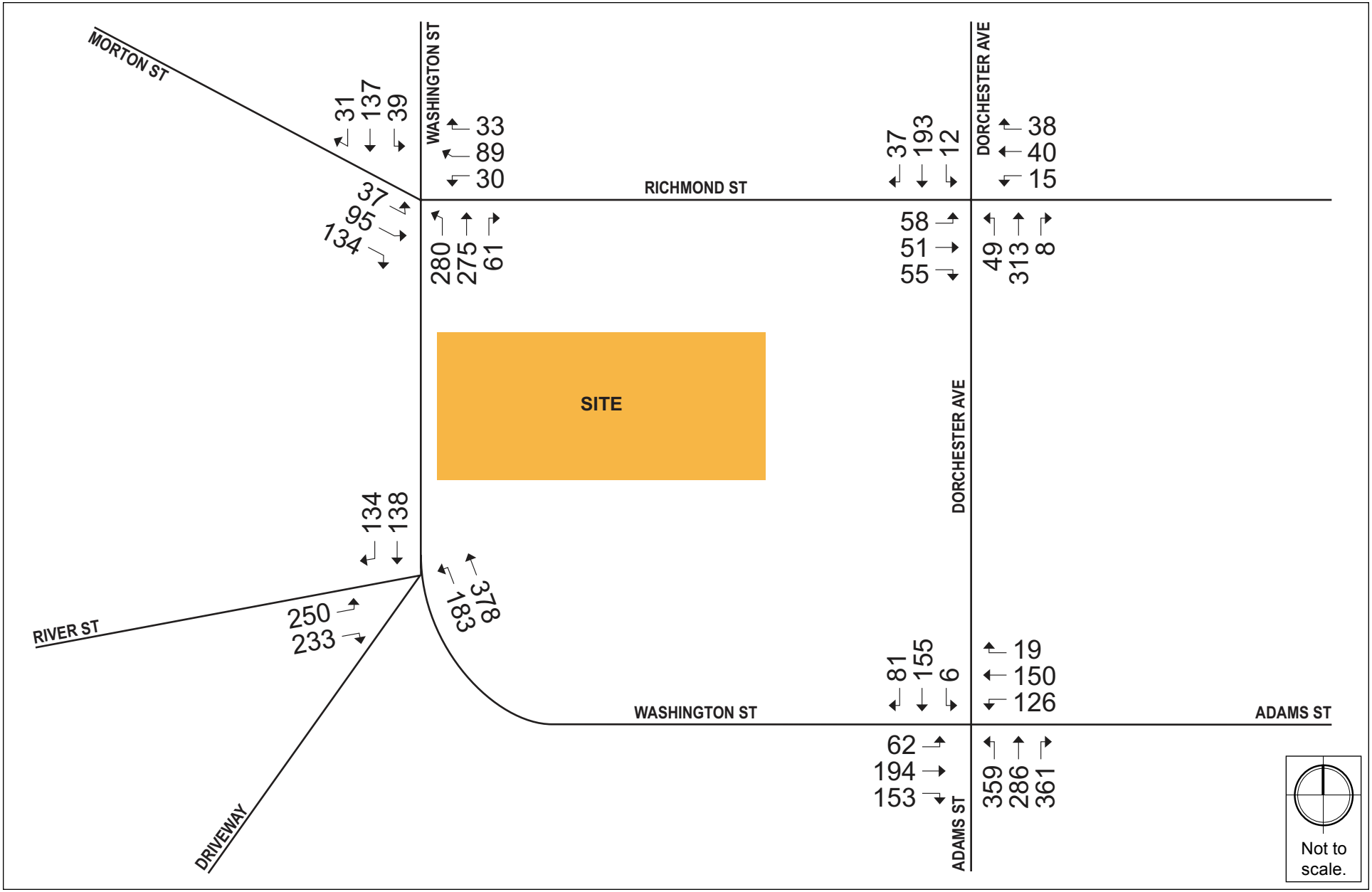

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Figure 3-6

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

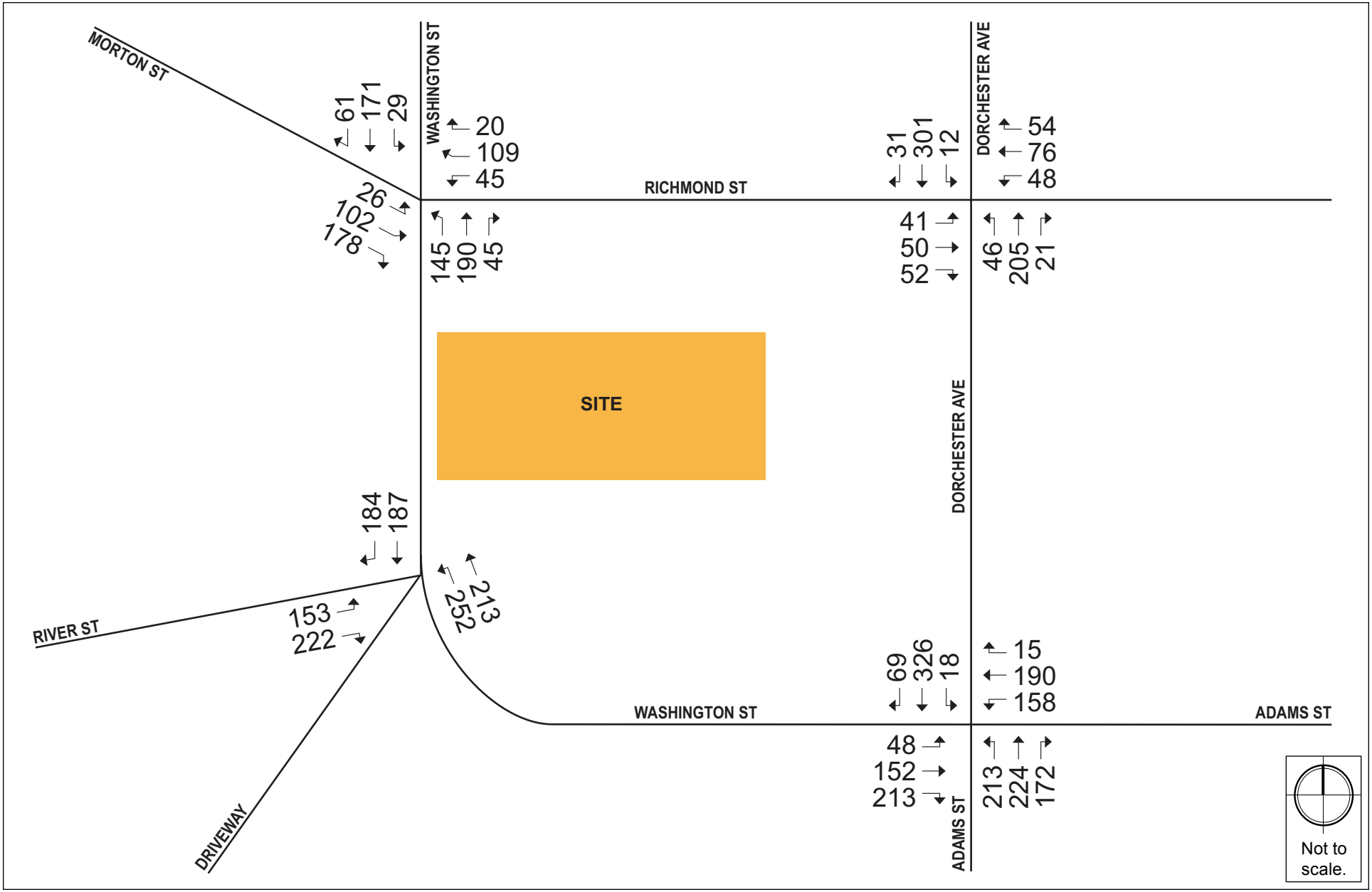

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Figure 3-7

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

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

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

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously.

3.2.10 Existing (2017) Condition Traffic Operations Analysis

Table 3-4 and Table 3-5 summarize the Existing (2017) Condition capacity analysis for the study area intersection during the weekday a.m. peak hour and the weekday p.m. peak hour. The detailed analysis sheets are provided in Appendix B.

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street/Morton Street/Richmond Street	**D**	**47.6**	**-**	**-**	**-**
Morton Street EB left/thru	D	40.9	0.27	74	170
Morton Street EB right	A	0.9	0.23	0	0
Richmond Street WB left/thru | thru/right	F	>80.0	0.89	130	#246
Washington Street NB bear left	E	61.8	0.85	187	m#299
Washington Street NB thru/right	D	37.4	0.56	166	m#251
Washington Street SB bear left	D	53.5	0.40	28	68
Washington Street SB thru/right	D	42.4	0.45	117	190
Washington Street/River Street	**C**	**24.1**	**-**	**-**	**-**
River Street EB left	E	70.3	0.83	191	#337
River Street EB right	A	7.7	0.22	49	101
Washington Street NB left	B	10.7	0.23	43	148
Washington Street NB thru	A	2.9	0.31	4	113
Washington Street SB thru	D	52.7	0.51	123	m171
Washington Street SB right	B	15.8	0.37	25	m70

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Dorchester Avenue/Washington Street/Adams Street	**C**	**34.8**	**-**	**-**	**-**
Washington Street EB left/thru	E	68.6	0.87	138	298
Washington Street EB right	A	8.7	0.22	10	57
Adams Street WB left	F	>80.0	0.86	102	#195
Adams Street WB thru/right	D	43.0	0.46	121	183
Adams Street NB left	D	36.0	0.67	217	#404
Adams Street NB thru	C	27.5	0.35	165	259
Adams Street NB right	A	4.2	0.40	0	65
Dorchester Avenue SB left/thru | thru/right	C	32.8	0.30	67	109
Dorchester Avenue/Richmond Street	**B**	**13.5**	**-**	**-**	**-**
Richmond Street EB left/thru/right	C	23.7	0.54	24	#131
Richmond Street WB left/thru/right	B	14.5	0.29	10	58
Dorchester Avenue NB left/thru/right	B	11.8	0.45	44	#222
Dorchester Avenue SB left/thru/right	A	9.0	0.26	22	117

# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates LOS E or F.

Table 3-5 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street/Morton Street/Richmond Street	**D**	**41.9**	**-**	**-**	**-**
Morton Street EB left/thru	C	34.8	0.22	70	162
Morton Street EB right	A	3.2	0.27	0	27
Richmond Street WB left/thru | thru/right	F	>80.0	0.94	152	#290
Washington Street NB bear left	C	34.4	0.56	72	m110
Washington Street NB thru/right	C	26.4	0.39	163	162
Washington Street SB bear left	D	41.3	0.16	20	49
Washington Street SB thru/right	D	48.2	0.62	165	255
Washington Street/River Street	**C**	**27.3**	**-**	**-**	**-**
River Street EB left	E	72.5	0.75	121	#197
River Street EB right	A	8.9	0.23	50	102
Washington Street NB left	C	22.6	0.30	56	240

Table 3-5 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street NB thru	A	9.2	0.16	40	103
Washington Street SB thru	D	50.7	0.62	153	m163
Washington Street SB right	B	14.3	0.48	54	m22
Dorchester Avenue/Washington Street/Adams Street	**D**	**36.9**	**-**	**-**	**-**
Washington Street EB left/thru	E	62.2	0.83	162	250
Washington Street EB right	A	6.7	0.34	73	43
Adams Street WB left	F	>80.0	0.88	128	#217
Adams Street WB thru/right	D	48.0	0.59	153	222
Adams Street NB left	C	30.8	0.50	116	193
Adams Street NB thru	C	25.8	0.27	124	204
Adams Street NB right	A	4.6	0.21	0	49
Dorchester Avenue SB left/thru | thru/right	D	38.2	0.43	151	206
Dorchester Avenue/Richmond Street	**B**	**19.8**	**-**	**-**	**-**
Richmond Street EB left/thru/right	C	27.6	0.56	44	92
Richmond Street WB left/thru/right	D	36.2	0.69	65	121
Dorchester Avenue NB left/thru/right	B	13.2	0.30	36	167
Dorchester Avenue SB left/thru/right	B	13.3	0.34	45	201

# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates LOS E or F.

The signalized intersection of **Washington Street/ Morton Street/ Richmond Street** currently operates at LOS D during both the weekday a.m. and p.m. peak hour. During the a.m. and p.m. peak hour, the Richmond Street westbound approach operates at LOS F, but under capacity (v/c is less than 1.0). The Washington Street northbound approach operates at LOS E during the a.m. peak hour. The longer delays at the intersection are a result of a long cycle length (120 seconds) at the traffic signal. The longest queues at the intersection occur along the Washington Street northbound approach.

The signalized intersection of **Washington Street/ River Street** currently operates at LOS C during both the a.m. and p.m. peak hours. The River Street eastbound left lane operates at LOS E during both the a.m. and p.m. peak hours. The longest queues at the intersection occur along the River Street eastbound approach during the a.m. peak hour and along the Washington Street northbound approach during the p.m. peak hour.

The signalized intersection of **Dorchester Avenue/ Washington Street/ Adams Street** currently operates at LOS C during the a.m. peak hour and LOS D during the p.m. peak hour. The Washington Street eastbound left/thru lane operates at LOS E during both the a.m. and p.m.

peak hours. The Adams Street westbound left operates at LOS F during both the a.m. and p.m. peak hours. The longest queues at the intersection occur along the Adams Street northbound approach during the a.m. peak hour and at the Washington Street eastbound approach during the p.m. peak hour.

The signalized intersection of **Dorchester Avenue/ Richmond Street** operates under capacity with acceptable levels of service.

All movements at the study area intersections currently operate under capacity (v/c less than 1.0) during the weekday peak hours.

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. The No-Build (2024) Condition does not include the Project-related impacts.

3.3.1 Background Traffic Growth

The methodology to account for future background traffic growth, independent of large development projects, may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of recent traffic studies conducted for nearby projects and historic traffic data, to account for any additional unforeseen traffic growth, a one percent per year annual traffic growth rate was used.

3.3.2 Specific Development Traffic Growth

Traffic volumes associated with known, larger or adjacent development projects can affect traffic patterns throughout the study area within the future analysis time horizon. The following nearby development projects were identified in the vicinity of the Project and are shown in Figure 3-8:

- **Lower Mills Apartments** –This project is located to the east of the Project site and consists of the renovation of the existing Lower Mills Apartments at 2262 Dorchester Avenue. The renovation will update the existing building, which contains 177 residential units. This project has completed construction.
- **73 River Street** –This project is located to the west of the Project site and consists of the demolition of two single story structures and the construction of a new four-story retail/residential building. This project will consist of approximately 33,942 gross square feet of space.

1120-1132 Washington Street Boston, Massachusetts

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Figure 3-8
Area Development Projects

These projects are expected to generate minimal vehicular activity. Traffic volumes related to these projects were assumed to be included in the general background growth rate.

3.3.3 Proposed Infrastructure Improvements and Planning Initiatives

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects or planning initiatives in the vicinity of the study area. Based on this review, the following projects are in the vicinity of the Project:

Harborwalk – The Harborwalk project is located to the east of the Project site and consists of a continuous public walkway along the water's edge that is mostly re-established shoreline. The Harborwalk System connects the City's neighborhoods to its Harbor, linking recreational, cultural and historic attractions, as well as access to public transit, including water transportation facilities. Currently 38 miles of Harborwalk have been constructed and when completed, the walkway system will stretch over 47 miles from Dorchester to East Boston. Access to the planned extension of the Harborwalk will be provided east of the site at the Neponset Trail.

Mattapan Economic Development Initiative – This project, located to the west of the Project site, focuses on improving the business districts of Mattapan Square, Blue Hill Avenue Center and the Morton Street Village Corridor, creating job opportunities within the neighborhood, and increasing capital investment in commercial areas and properties. This project includes the creation of the "Fast Track" Rapid Rail along the Fairmont Commuter Rail line. The project may also include improving the maintenance of existing pedestrian infrastructure and upgrading the alleyway between Blue Hill Avenue northbound and River Street to provide a more direct connection between Mattapan Square and the River Street and MBTA parking lots.

3.3.4 No-Build (2024) Condition Traffic Volumes

The one percent per year annual growth rate was applied to the Existing (2017) Condition traffic volumes to develop the No-Build (2024) Condition traffic volumes. The No-Build (2024) weekday a.m. peak hour and weekday p.m. peak hour traffic volumes are shown on Figure 3-9 and Figure 3-10, 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 3-6 and Table 3-7 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 B.

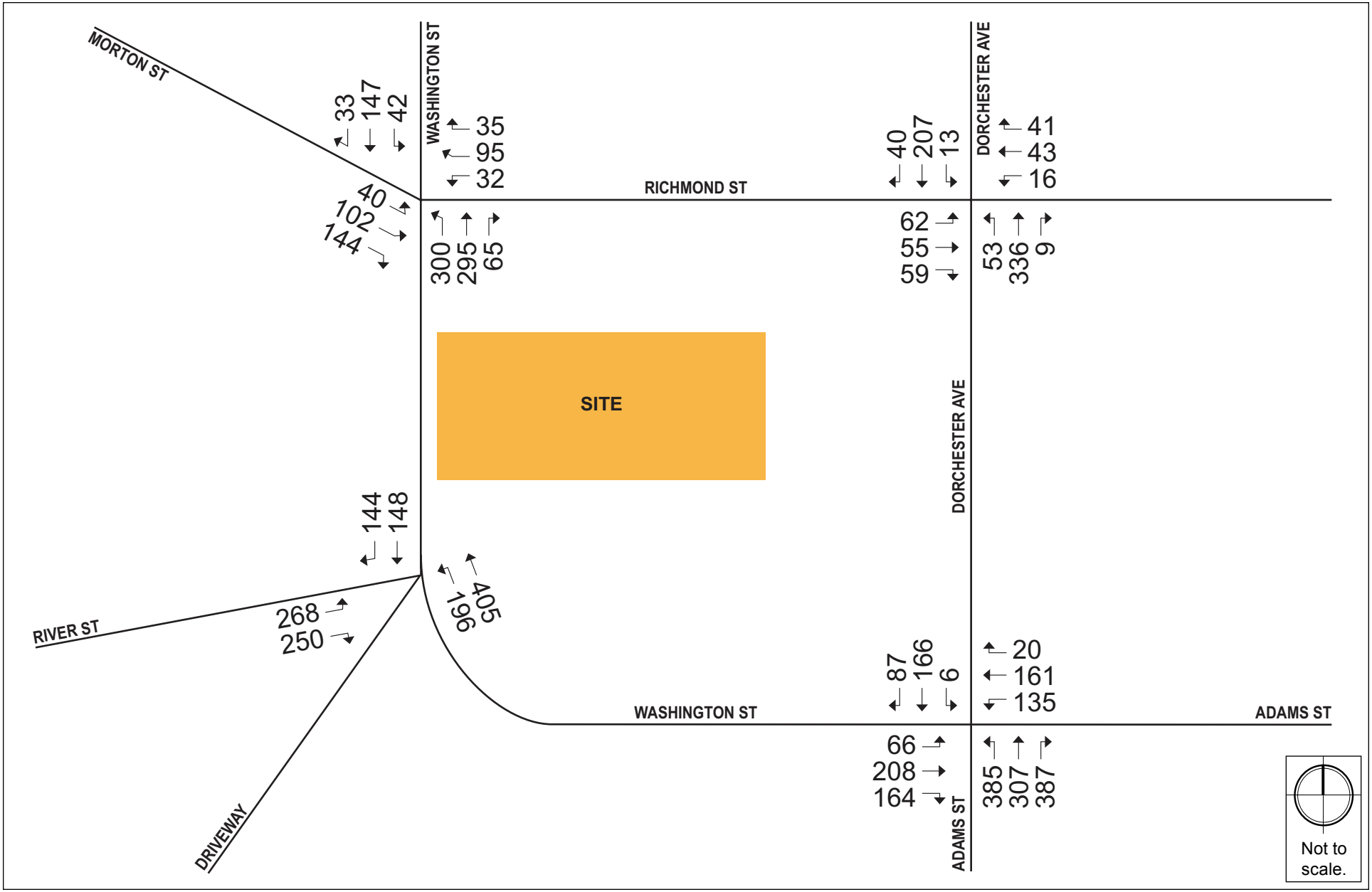

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Figure 3-9

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

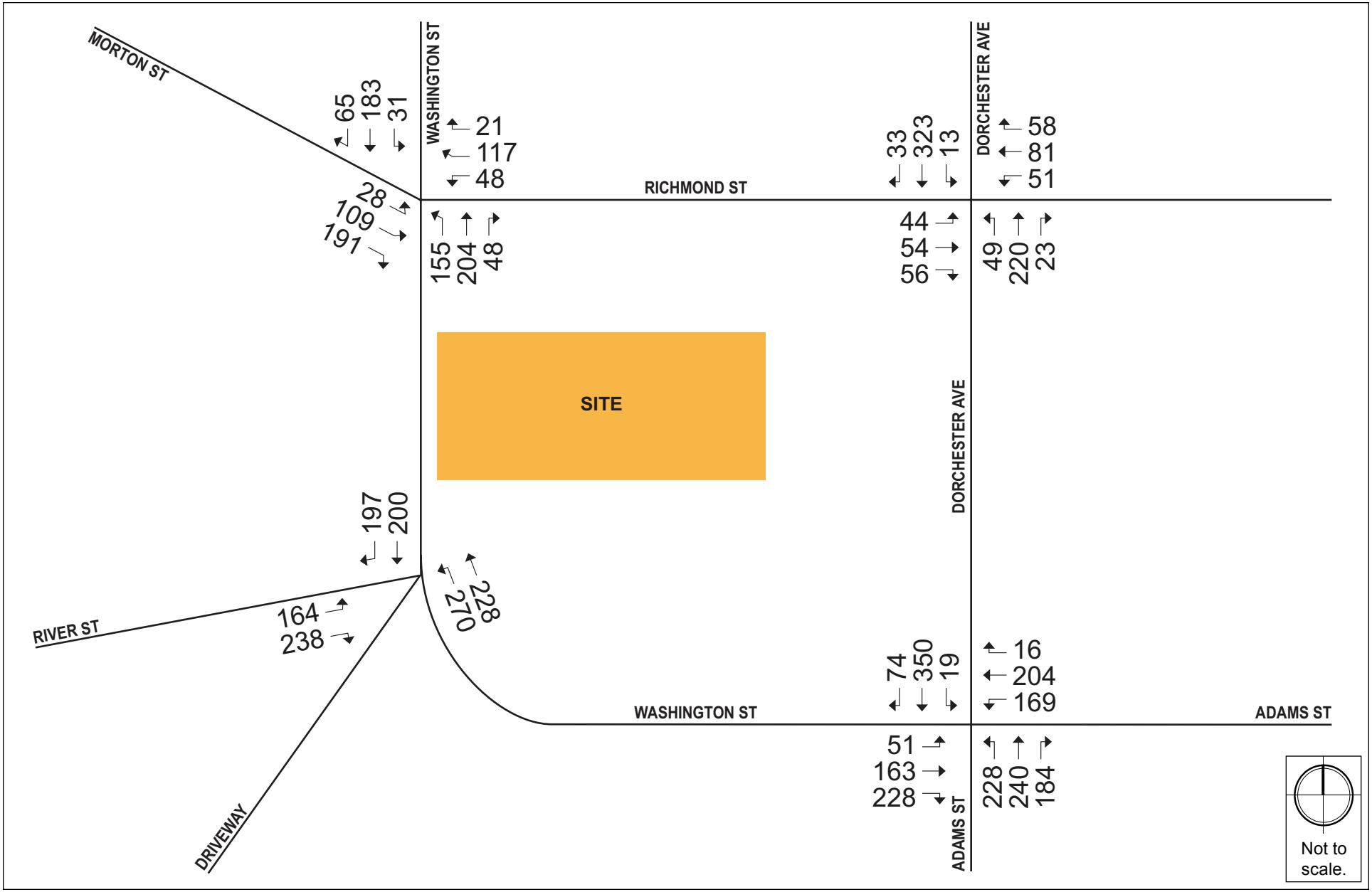

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Figure 3-10

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

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street/Morton Street/Richmond Street	**D**	**53.4**	**-**	**-**	**-**
Morton Street EB left/thru	D	41.2	0.29	79	180
Morton Street EB right	A	1.1	0.25	0	1
Richmond Street WB left/thru | thru/right	F	>80.0	0.95	140	#267
Washington Street NB bear left	E	76.9	0.95	183	m#340
Washington Street NB thru/right	D	38.3	0.60	178	m173
Washington Street SB bear left	E	68.7	0.55	32	#87
Washington Street SB thru/right	D	43.3	0.48	127	203
Washington Street/River Street	**C**	**24.1**	**-**	**-**	**-**
River Street EB left	E	68.2	0.83	202	#369
River Street EB right	A	8.2	0.24	58	109
Washington Street NB left	B	11.5	0.26	46	m149
Washington Street NB thru	A	3.1	0.34	4	120
Washington Street SB thru	D	52.6	0.52	131	m181
Washington Street SB right	B	16.9	0.39	32	m77
Dorchester Avenue/Washington Street/Adams Street	**D**	**37.0**	**-**	**-**	**-**
Washington Street EB left/thru	E	71.6	0.90	147	#347
Washington Street EB right	A	9.5	0.23	14	66
Adams Street WB left	F	>80.0	0.90	108	#221
Adams Street WB thru/right	D	42.0	0.47	125	195
Adams Street NB left	D	41.5	0.75	249	#346
Adams Street NB thru	C	29.0	0.39	188	278
Adams Street NB right	A	4.3	0.43	0	67
Dorchester Avenue SB left/thru | thru/right	C	33.9	0.34	73	117
Dorchester Avenue/Richmond Street	**B**	**14.2**	**-**	**-**	**-**
Richmond Street EB left/thru/right	C	24.9	0.57	26	#141
Richmond Street WB left/thru/right	B	14.7	0.31	11	61
Dorchester Avenue NB left/thru/right	B	12.8	0.49	48	#267
Dorchester Avenue SB left/thru/right	A	9.2	0.28	24	126

95th percentile volume exceeds capacity.
Grey shading indicates a decrease to LOS E or F from Existing (2017) Condition.
m = Queue is metered from upstream signal.

Table 3-7 No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street/Morton Street/Richmond Street	**D**	**52.9**	-	-	-
Morton Street EB left/thru	D	35.0	0.24	76	175
Morton Street EB right	A	4.3	0.30	0	42
Richmond Street WB left/thru | thru/right	F	>80.0	>1.00	~188	#324
Washington Street NB bear left	D	46.1	0.63	97	151
Washington Street NB thru/right	C	34.7	0.42	175	244
Washington Street SB bear left	D	41.5	0.19	22	53
Washington Street SB thru/right	D	49.0	0.66	182	277
Washington Street/River Street	**C**	**26.8**	-	-	-
River Street EB left	E	67.8	0.73	127	195
River Street EB right	B	10.0	0.25	60	103
Washington Street NB left	B	20.0	0.36	94	287
Washington Street NB thru	A	3.6	0.19	1	112
Washington Street SB thru	D	53.4	0.63	178	m231
Washington Street SB right	C	21.3	0.50	72	m104
Dorchester Avenue/Washington Street/Adams Street	**D**	**41.1**	-	-	-
Washington Street EB left/thru	E	76.9	0.86	98	#275
Washington Street EB right	B	11.4	0.33	4	96
Adams Street WB left	F	>80.0	0.92	136	#249
Adams Street WB thru/right	D	47.1	0.59	161	238
Adams Street NB left	C	31.4	0.55	130	206
Adams Street NB thru	C	27.0	0.29	138	216
Adams Street NB right	A	4.6	0.23	0	50
Dorchester Avenue SB left/thru | thru/right	D	44.3	0.53	174	#256
Dorchester Avenue/Richmond Street	**B**	**19.5**	-	-	-
Richmond Street EB left/thru/right	C	25.7	0.52	21	#118
Richmond Street WB left/thru/right	C	32.6	0.65	32	#168
Dorchester Avenue NB left/thru/right	B	14.2	0.43	32	163
Dorchester Avenue SB left/thru/right	B	14.2	0.46	38	188

95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.
m = Queue is metered from upstream signal.

As shown in Table 3-6 and Table 3-7, the study area intersections are expected to operate at the same LOS as Existing Conditions. At the **Washington Street/Morton Street/Richmond Street** intersection, the Washington Street southbound bear left decreases from LOS D to LOS E during the a.m. peak hour.

3.4 Build (2024) Condition

As previously summarized, the Project site is located at 1120-1132 Washington Street in the Lower Mills neighborhood of Dorchester. The Project consists of the construction of approximately 57 residential units, 3,600 sf of ground floor commercial/office space, and a total of 94 parking spaces

3.4.1 Site Access and Vehicle Circulation

Vehicular access to the site will be provided by a curb cut along the east side of Washington Street, south of Richmond Street. As part of the Project, the two curb cuts that serve the existing uses will be closed. The new curb cut will provide access to approximately 43 parking spaces in a surface lot and 51 spaces in a below-grade garage. A total of eight parking spaces in a surface lot will be designated for the commercial uses, with the remainder for the residential uses. All loading, trash/recycling, service, and delivery activity will also take place on the site in the surface parking lot. The Project will include a bicycle storage room on site that will store approximately 57 bicycles.

Primary pedestrian access to the site will be from Washington Street. The site plan is shown in Figure 3-11.

3.4.2 Parking

The parking goals developed by the BTD for this section of Dorchester are a maximum of 1.0 to 1.5 parking spaces per residential unit. The Project is proposing to construct a total of 94 parking spaces – 43 spaces in a surface lot and 51 spaces in a below-grade garage. Of the 94 parking spaces, eight spaces will be designated for commercial uses and the remaining 86 spaces will be designated for residential uses, resulting in a parking ratio of 1.5 parking spaces per residential unit.

Approximately 57 secure, covered bicycle parking spaces will also be provided as part of the Project.

3.4.3 Loading and Service Accommodations

Loading and service operations for the Project will occur on the site and will accommodate up to an SU-36 box truck, which is expected to be the largest vehicle traveling to the site. Trash pick-up will also occur on the site without impacting pedestrian and vehicular movements along Washington Street.

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RCA, LLC
Architects – Designers – Planners

Figure 3-11
Site Plan

Delivery estimates for the residential element of the Project are based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area report[1]. Deliveries to the Project site will likely be SU-36 trucks and smaller delivery vehicles. Residential units primarily generate delivery trips related to small packages and prepared food. Based on the CTPS report, the Project is expected to generate one light truck trip per day to the site.

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 short-term bicycle racks for visitors. Based on BTD guidelines, the Project will supply a minimum of 57 secure bicycle parking/storage spaces within the site, as well as short-term bicycle spaces.

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, walk trips, and 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 project 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*[2] 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 trip generation for the Project, the following ITE land use code (LUCs) were used:

Land Use Code 220 –Apartment. The apartment land use includes rental dwelling units located within the same building with at least three other dwelling units. Calculations of the number of trips use ITE's average rate per residential unit. The Apartment land use code has slightly higher trip generation rates than condominiums based on the ITE data and was used in this analysis to provide a more conservative (higher) estimate.

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

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

Land Use Code 710 –General Office Building. The General Office Building land use code is defined as a building with multiple tenants where affairs of business, industrial organizations, professional persons, or firms are conducted. Calculations of the number of trips use ITE's average rate per 1,000 sf.

3.4.6 Mode Share

BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located within designated Area 9 – Outer Red Line, Mattapan. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[3]. The person trips were then distributed to different modes according to the mode shares shown in Table 3-8.

Table 3-8 Travel Mode Shares

Time Period		Land Use	Vehicle Occupancy Rate[1]	Walk/Bike Share[2]	Transit Share[2]	Vehicle Share[2]
Daily	In	Apartment	1.13	18%	16%	66%
	Out		1.13	18%	16%	66%
	In	Office Building	1.13	10%	15%	75%
	Out		1.13	10%	15%	75%
a.m. Peak Hour	In	Apartment	1.13	28%	18%	54%
	Out		1.13	13%	31%	56%
	In	Office Building	1.13	17%	19%	64%
	Out		1.13	8%	29%	63%
p.m. Peak Hour	In	Apartment	1.13	13%	31%	56%
	Out		1.13	28%	18%	54%
	In	Office Building	1.13	8%	29%	63%
	Out		1.13	17%	19%	64%

1. 2009 National Household Travel Survey.
2. Based on rates published by the Boston Transportation Department for Area 9.

3.4.7 Project Trip Generation

The mode share percentages shown in Table 3-8 were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates. The trip generation for the Project by mode is shown in Table 3-9. The detailed trip generation information is provided in Appendix B.

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

Table 3-9 Project Trip Generation

Time Period		Walk/Bike Trips	Transit Trips	Primary Vehicle Trips
Daily				
Apartment [1]		78	68	252
Office Building [2]		4	6	32
Total Daily Trips		**82**	**74**	**284**
a.m. Peak Hour				
Apartment [1]	In	2	1	4
	Out	3	8	13
	Total	5	9	17
Office Building [2]	In	1	1	4
	Out	0	0	1
	Total	1	1	5
Total a.m. Peak Hour Trips		**6**	**10**	**22**
p.m. Peak Hour				
Apartment [1]	In	3	3	13
	Out	4	8	6
	Total	7	11	19
Office Building [2]	In	0	1	1
	Out	1	0	3
	Total	1	1	4
Total p.m. Peak Hour Trips		**8**	**12**	**23**

1. Based on ITE LUC 220- Apartment, average rate per unit
2. Based on ITE LUC 710 –1,000 sf General Office Building, average rate

As shown in Table 3-9, the Project is expected to generate approximately 284 vehicular trips on a daily basis, with 22 trips during the weekday a.m. peak hour and 23 trips during the weekday p.m. peak hour. The transit trips will be accommodated by the MBTA buses that run along Dorchester Avenue and by the nearby Mattapan Trolley portion of the Red Line.

3.4.8 Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on BTD's origin-destination data and trip distribution patterns presented in traffic studies for nearby projects. The vehicle trips associated with the Project were assigned to the proposed parking garage on site. The trip distribution patterns for the Project are illustrated in Figure 3-12.

3.4.9 Build (2024) Traffic Volumes

The vehicle trips were distributed through the study area. The Project-generated trips for the weekday a.m. peak hour and weekday p.m. peak hour are shown in Figure 3-13 and Figure 3-14, 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) weekday a.m. peak hour and weekday p.m. peak hour traffic volumes are shown on Figure 3-15 and Figure 3-16, respectively.

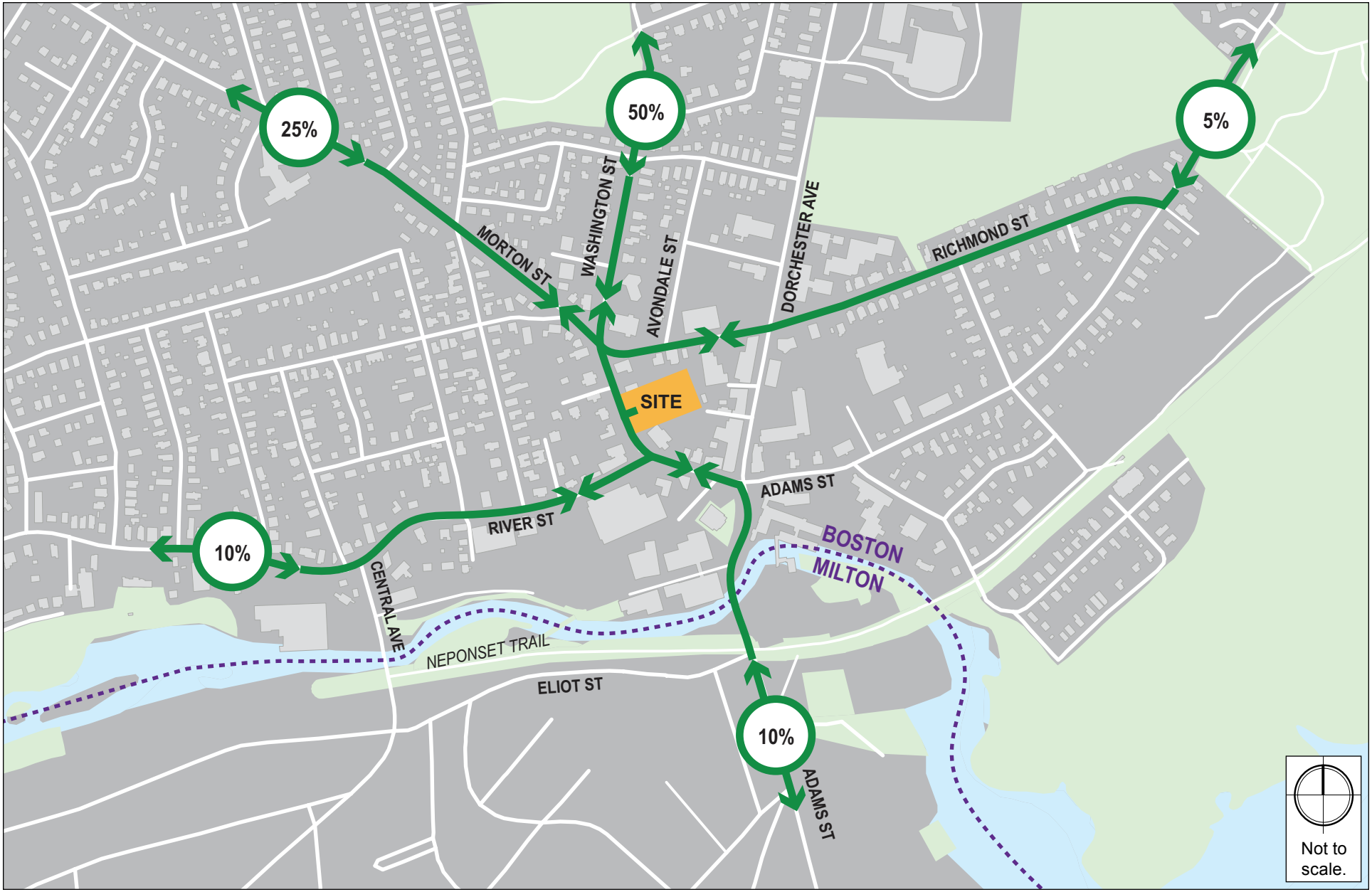

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Figure 3-12
Vehicle Trip Distribution

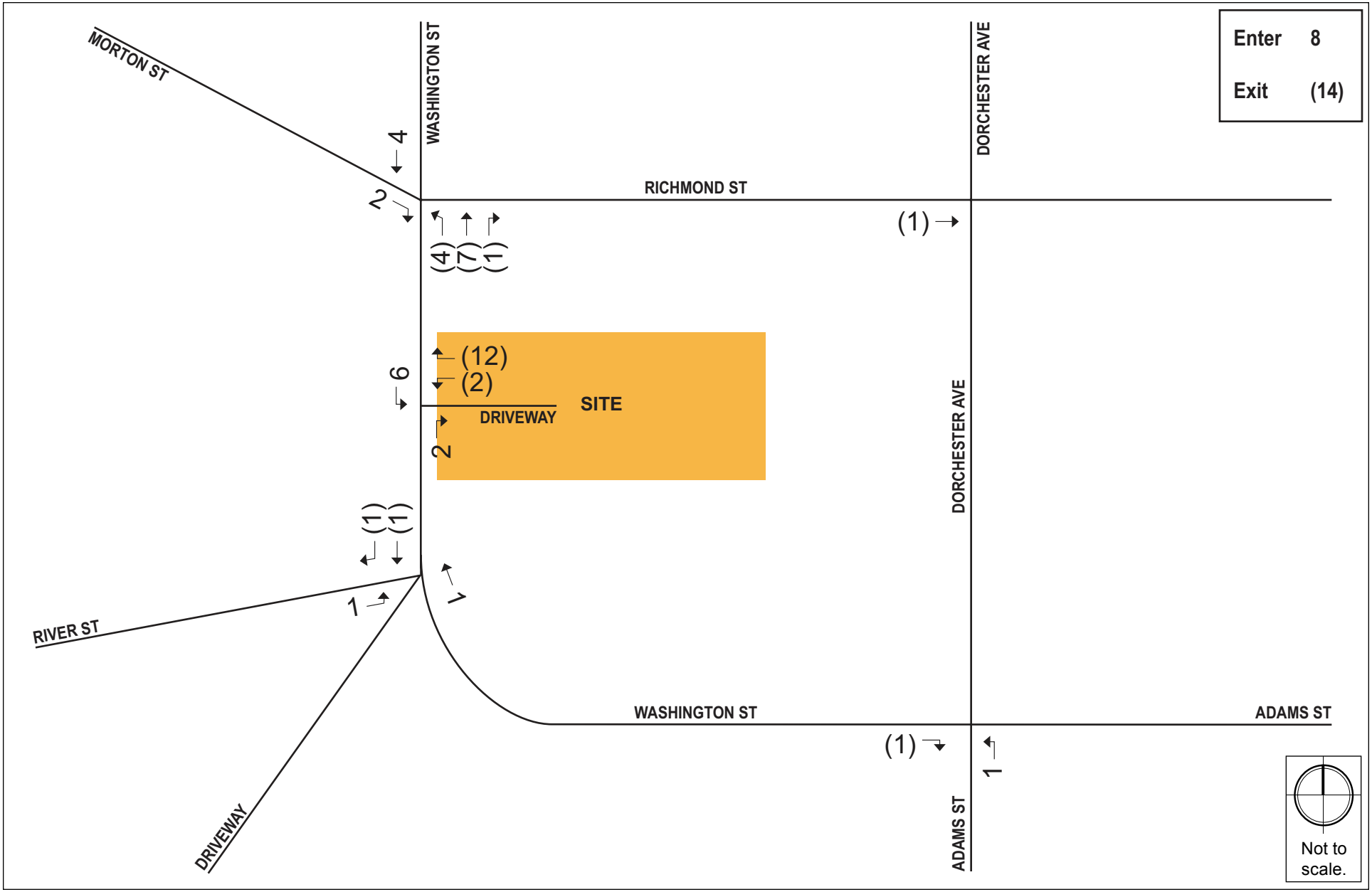

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Figure 3-13

Project-Generated Vehicle Trip Assigments, a.m. Peak Hour

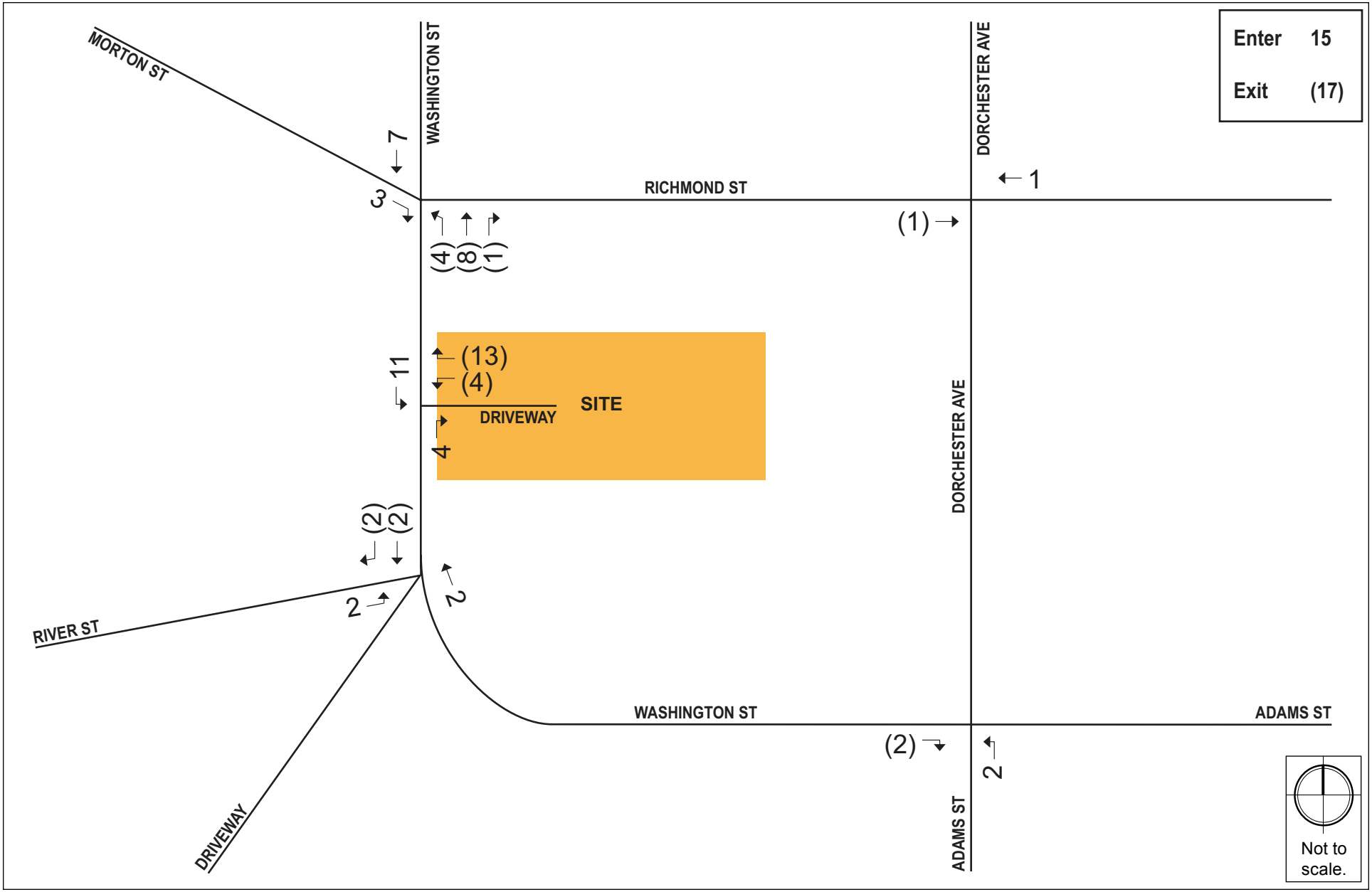

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Figure 3-14

Project-Generated Vehicle Trip Assigments, p.m. Peak Hour

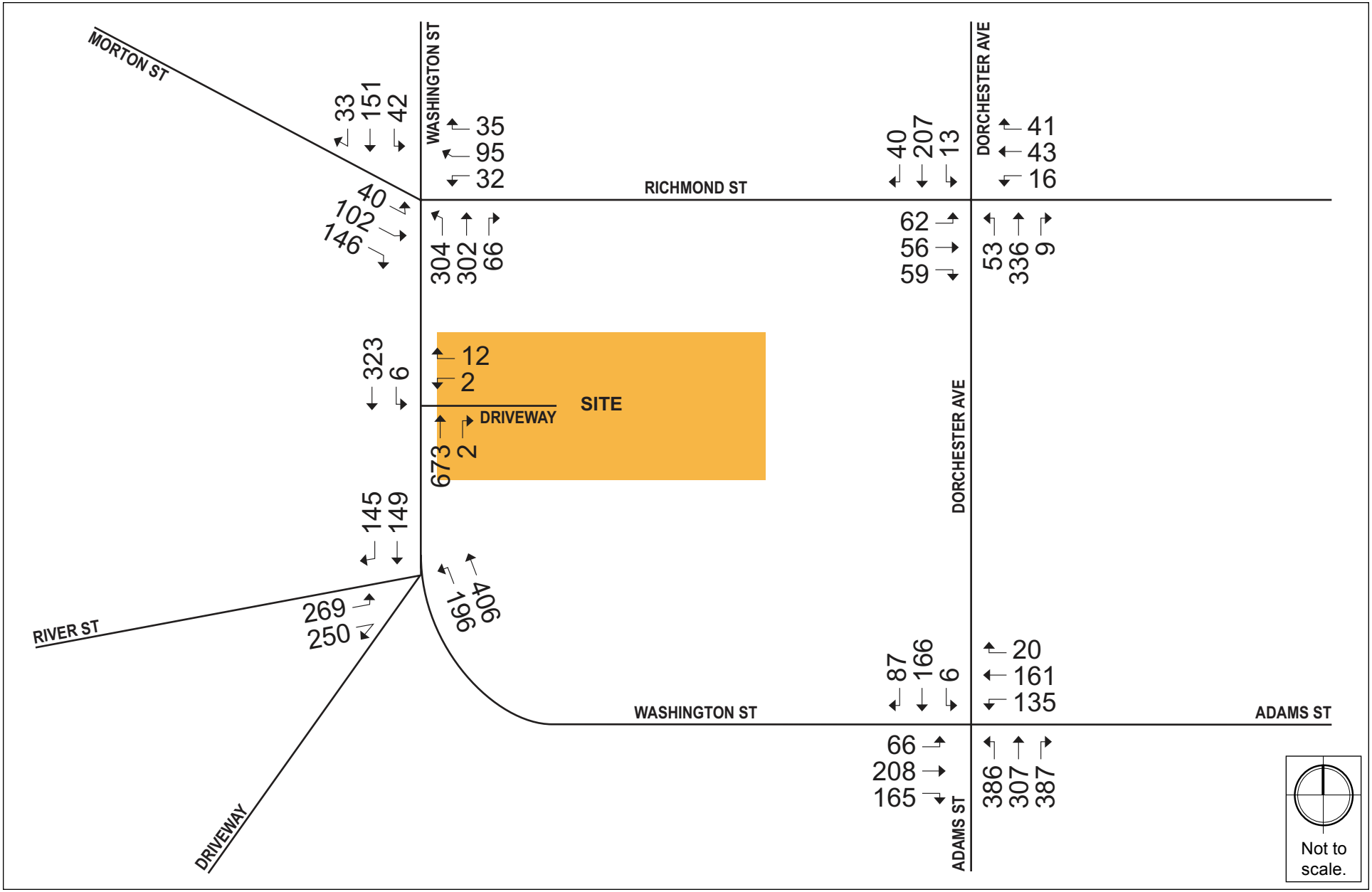

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Figure 3-15

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

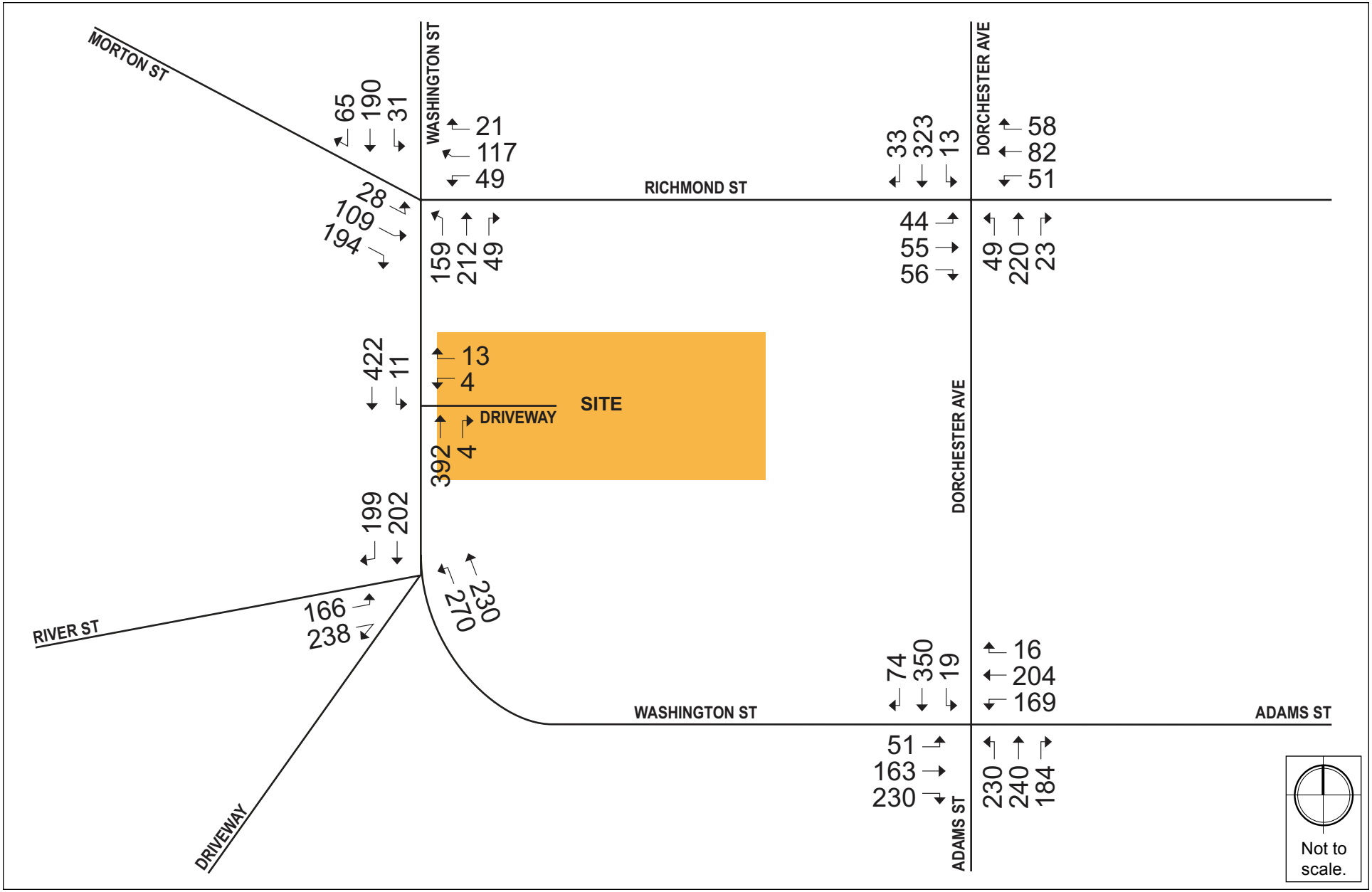

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Figure 3-16

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

3.4.10 Build (2024) Condition Traffic Operations Analysis

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

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street/Morton Street/Richmond Street	**D**	**55.0**	**-**	**-**	**-**
Morton Street EB left/thru	D	41.2	0.29	79	180
Morton Street EB right	A	1.3	0.25	0	2
Richmond Street WB left/thru | thru/right	F	>80.0	0.95	140	#267
Washington Street NB bear left	F	>80.0	0.97	186	m#354
Washington Street NB thru/right	D	38.7	0.62	238	m324
Washington Street SB bear left	E	75.1	0.60	32	#92
Washington Street SB thru/right	D	43.8	0.49	131	207
Washington Street/River Street	**C**	**24.1**	**-**	**-**	**-**
River Street EB left	E	67.9	0.83	203	#370
River Street EB right	A	8.2	0.24	58	109
Washington Street NB left	B	11.6	0.26	46	m149
Washington Street NB thru	A	2.7	0.34	4	120
Washington Street SB thru	D	52.5	0.52	131	m182
Washington Street SB right	B	16.8	0.39	33	m78
Dorchester Avenue/Washington Street/Adams Street	**D**	**37.1**	**-**	**-**	**-**
Washington Street EB left/thru	E	72.1	0.90	151	#347
Washington Street EB right	A	9.6	0.23	14	66
Adams Street WB left	F	>80.0	0.90	108	#221
Adams Street WB thru/right	D	42.0	0.47	125	195
Adams Street NB left	D	41.6	0.76	250	#348
Adams Street NB thru	C	29.0	0.39	188	278
Adams Street NB right	A	4.3	0.43	0	67
Dorchester Avenue SB left/thru | thru/right	C	33.9	0.34	73	117
Dorchester Avenue/Richmond Street	**B**	**14.2**	**-**	**-**	**-**
Richmond Street EB left/thru/right	C	25.0	0.58	27	#143
Richmond Street WB left/thru/right	B	14.7	0.31	11	61
Dorchester Avenue NB left/thru/right	B	12.8	0.49	48	#267
Dorchester Avenue SB left/thru/right	A	9.2	0.28	24	126

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized					
Washington Street/ Site Driveway	-	-	-	-	-
Site Driveway WB left/right	B	14.9	0.04	-	2.5
Washington Street NB thru/right	A	0.0	0.00	-	0
Washington Street SB left/thru	A	9.2	0.07	-	0

# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Washington Street/Morton Street/Richmond Street	**D**	**46.4**	**-**	**-**	**-**
Morton Street EB left/thru	C	34.9	0.24	75	171
Morton Street EB right	A	4.2	0.30	0	41
Richmond Street WB left/thru | thru/right	F	>80.0	1.01	~166	#318
Washington Street NB bear left/thru/right	D	40.8	0.67	82	m117
Washington Street NB thru/right	C	27.2	0.44	182	m176
Washington Street SB bear left/thru/right	D	42.6	0.20	21	52
Washington Street SB thru/right	D	51.4	0.69	186	282
Washington Street/River Street	**C**	**27.8**	**-**	**-**	**-**
River Street EB left	E	73.8	0.78	131	#229
River Street EB right	A	9.7	0.25	58	116
Washington Street NB left	C	24.1	0.33	60	254
Washington Street NB thru	A	9.3	0.18	45	107
Washington Street SB thru	D	49.2	0.62	153	m173
Washington Street SB right	B	14.8	0.49	50	m29
Dorchester Avenue/Washington Street/Adams Street	**D**	**38.5**	**-**	**-**	**-**
Washington Street EB left/thru	E	65.2	0.87	173	#276
Washington Street EB right	A	7.6	0.36	77	53
Adams Street WB left	F	>80.0	0.91	136	#247
Adams Street WB thru/right	D	47.0	0.59	161	237
Adams Street NB left	C	34.8	0.59	132	#237
Adams Street NB thru	C	27.0	0.30	140	219
Adams Street NB right	A	4.5	0.23	0	50
Dorchester Avenue SB left/thru | thru/right	D	39.6	0.48	164	222

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Dorchester Avenue/Richmond Street	**C**	**20.8**	**-**	**-**	**-**
Richmond Street EB left/thru/right	C	29.6	0.60	49	100
Richmond Street WB left/thru/right	D	38.1	0.72	70	130
Dorchester Avenue NB left/thru/right	B	13.7	0.33	41	181
Dorchester Avenue SB left/thru/right	B	13.8	0.36	52	219
Unsignalized					
Washington Street/Site Driveway	-	-	-	-	-
Site Driveway WB left/right	B	12.5	0.04	-	2.5
Washington Street NB thru/right	A	0	0.00	-	0
Washington Street SB left/thru	A	8.2	0.01	-	0

95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.
m = Queue is metered from upstream signal.

As shown in Table 3-10 and Table 3-11, the study area intersections are expected to continue to operate at LOS D or better during the peak hours. The site driveway will operate at LOS B, with minimal delay and queueing.

The Project is expected to have minimal impact on traffic operations throughout the study area. Based on this analysis, no additional mitigation is required to accommodate the Project.

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 the following TDM measures to encourage the use of non-vehicular modes of travel.

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

- The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries, and will work with tenants as they move in to the retail/commercial spaces to raise awareness of public transportation, bicycling, and walking opportunities;

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

- The Proponent will provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options;

- The Proponent will provide two electric vehicle charging stations on the site;

- The Proponent will provide information on travel alternatives for employees and visitors via the Internet and in the building lobby; and

- The Proponent will explore the feasibility of providing spaces on-site for a car sharing service.

3.6 Transportation Mitigation Measures

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

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

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

3.7 Evaluation of Short-term Construction Impacts

Most construction activities will be accommodated within the current 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 significant changes to the local pedestrian-level wind environment.

The proposed Project is four stories and approximately 40 feet tall at its highest point. The other buildings surrounding the Project site are primarily two to three-story buildings and are similar in height. In addition, the Project will include new trees on the sidewalks surrounding the Project, which serve to reduce wind speeds. Due to the Project's low height, along with significant landscaping included in the Project, wind impacts are not anticipated.

4.2 Shadow Impacts

The proposed Project consists of the demolition of three existing, two to three-story buildings, and the construction of one four-story building. Due to the minimal new height being proposed, new shadow from the Project will be limited to Washington Street and its sidewalks. In the mornings, shadow is cast to the northwest, and the Project will cast new shadow onto Washington Street. In the afternoons, the shadow moves north, and most of the shadow cast by the Project will be within the Project site. In the afternoons shadow swings east, onto areas adjacent to the Lower Mills Branch library. No new shadow will be cast onto nearby public open spaces or bus stops.

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 daylight obstruction values of the surrounding area.

Because the Project site currently consists of several two to three-story buildings with space between each, the proposed Project will inherently increase daylight obstruction; however, resulting conditions will be similar to the daylight obstruction values within the surrounding area due to the height of the building and open areas on each side of the building, which is consistent with the development pattern in the neighborhood.

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.

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

One viewpoint was chosen to evaluate the daylight obstruction for the Existing and Proposed Conditions, since the Project site is adjacent to only one public way. Three area context points were considered to provide a basis of comparison to existing conditions in the surrounding area. The viewpoint and area context viewpoints were taken in the following locations and are shown in Figure 4.3-1.

- **Viewpoint 1:** View from Washington Street facing northeast toward the Project site.
- **Area Context Viewpoint AC1:** View from Washington Street facing northeast toward 1110 Washington Street.
- **Area Context Viewpoint AC2:** View from Richmond Street facing south toward a residence on Richmond Street.
- **Area Context Viewpoint AC3:** View from Dorchester Avenue facing west toward 2269 Dorchester Avenue.

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.

---

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

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Figure 4.3-1
Viewpoint Map

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	21.8%	40.7%
Area Context Points			
AC1	View from Washington Street facing northeast toward 1110 Washington Street	29.6%	N/A
AC2	View from Richmond Street facing south toward a residence on Richmond Street	56.2%	N/A
AC3	View from Dorchester Avenue facing west toward 2269 Dorchester Avenue	27.8%	N/A

Washington Street – Viewpoint 1

Washington Street runs along the southwestern edge of the Project site. Viewpoint 1 was taken from the center of Washington Street facing northeast toward the Project site. The Project site has an existing daylight obstruction of 21.8% due to the spaces between the buildings and the low heights of the existing buildings. The development of the Project will increase the daylight obstruction to 40.7%. Daylight obstruction is minimized by the spaces next to the building which allow for views of the sky, as well as the height of the building, which is similar to heights of other buildings in the neighborhood. The daylight obstruction value is consistent with the daylight obstruction value of other buildings in the area, including the Area Context buildings.

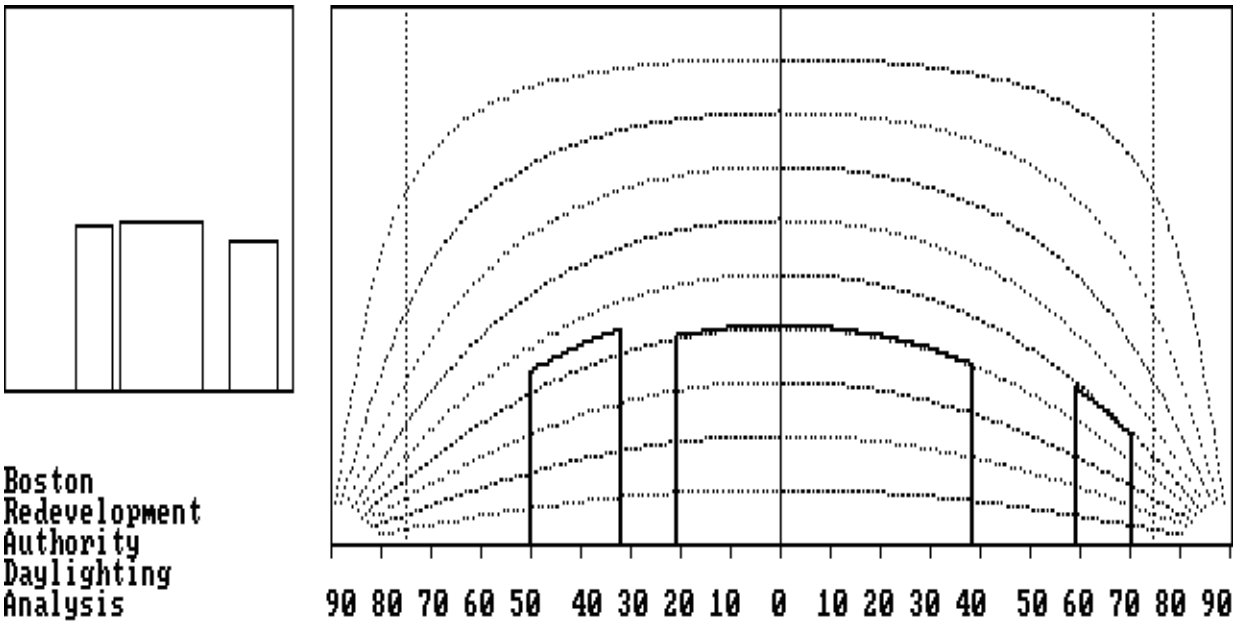
Area Context Viewpoints

The Project site is located in an area with a mix of one to three-story buildings with a mix of residential and commercial uses. 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 4.3-1. The daylight obstruction values ranged from 27.8% for AC3 to 56.2% for AC2. Daylight obstruction values for the Project are 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.

Existing Conditions: View from Washington Street facing northeast toward the Project site



Proposed Conditions: View from Washington Street facing northeast toward the Project site

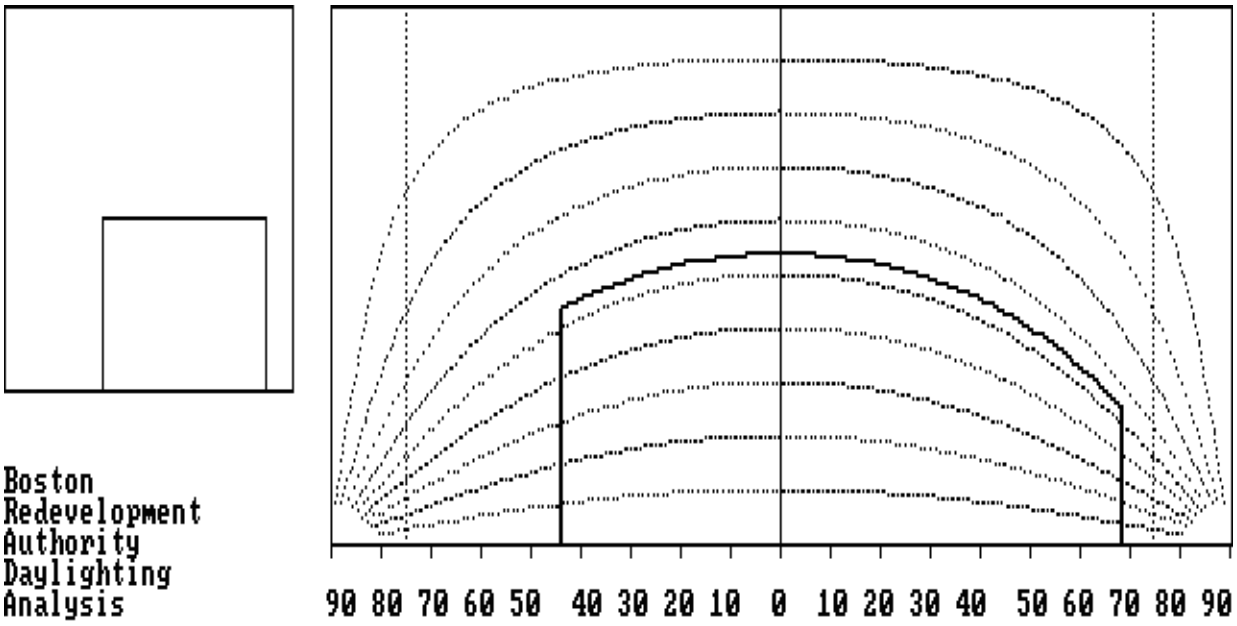


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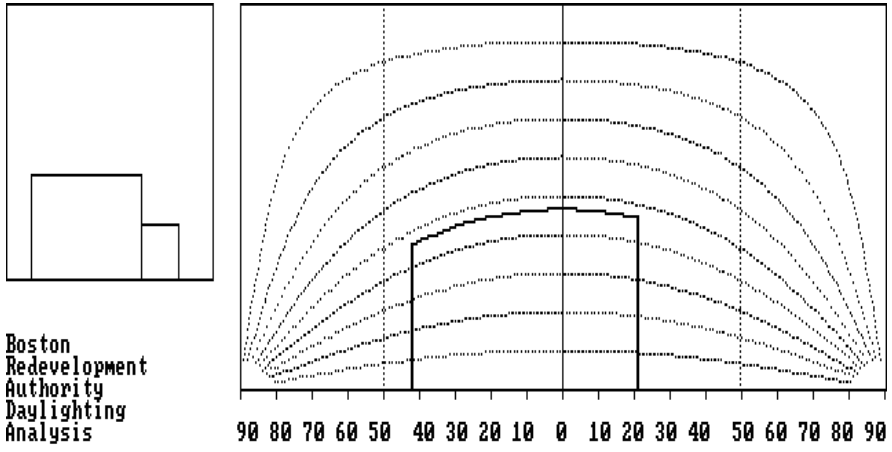
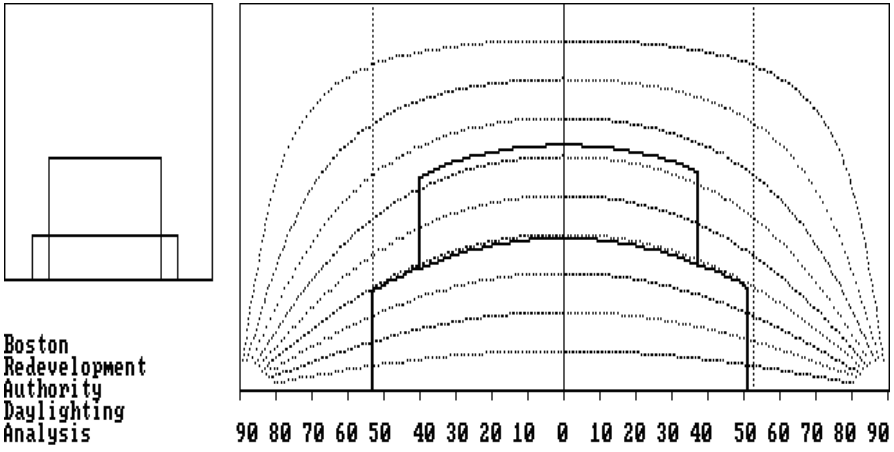
Figure 4.3-2
Existing and Proposed Conditions



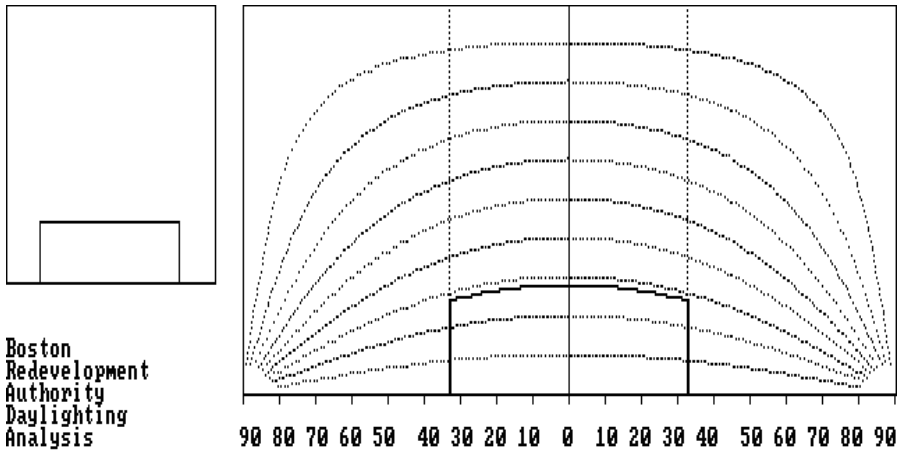
Obstruction of daylight by the building is 29.6 %

Area Context Viewpoint AC1: View from Washington Street facing northeast toward 1110 Washington Street



Obstruction of daylight by the building is 56.2 %

Area Context Viewpoint AC2: View from Richmond Street facing south toward 17 Richmond Street



Obstruction of daylight by the building is 27.8 %

Area Context Viewpoint AC3: View from Dorchester Avenue facing west toward 2269 Dorchester Avenue

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 proposed, solar glare impacts are not currently anticipated.

4.5 Air Quality Analysis

4.5.1 Introduction

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

The Project doesn't generate enough traffic to require a mesoscale vehicle emissions quantification analysis. However, the Project creates new trips to local intersections operating at LOS D or worse. Therefore, a microscale analysis of carbon monoxide has been completed to provide information on the Project's impact to air quality from mobile sources. Results of the microscale analysis show that all predicted CO concentrations are well below one-hour and eight-hour National Ambient Air Quality Standards (NAAQS).

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

4.5.2 National Ambient Air Quality Standards and Background Concentrations

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

4.5.2.1 National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated NAAQS for the following criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM-10 and PM-2.5), carbon monoxide (CO),

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

ozone (O_3), and lead (Pb). The NAAQS are listed in Table 4.5-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS (differences are highlighted in **bold** in Table 4.5-1).

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

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

Table 4.5-1 National (NAAQS) and Massachusetts (MAAQS) Ambient Air Quality Standards

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

(1) Not to be exceeded.
(2) 98th percentile of one-hour daily maximum concentrations, averaged over three years.
(3) Not to be exceeded more than once per year.
(4) 99th percentile of one-hour daily maximum concentrations, averaged over three years.
(5) 98th percentile, averaged over three years.
(6) EPA revoked the annual PM-10 NAAQS in 2006.
(7) Not to be exceeded more than once per year on average over three years.
(8) Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.
(9) EPA revoked the annual and 24-hour SO_2 NAAQS in 2010. However, they remain in effect until one year after the area's initial attainment designation, unless designated as "nonattainment".

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

4.5.2.2 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP to EPA was obtained for 2013 to 2015. Data for the pollutant and averaging time combinations were obtained from the EPA's AirData website.

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

Background concentrations were determined from the closest available monitoring stations to the Project site. All pollutants are not monitored at every station, so data from multiple locations are necessary. The closest monitor is at Harrison Avenue in Boston, roughly 3.9 miles north of the Project site. A summary of the background air quality concentrations are presented in Table 4.5-2.

Table 4.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 (1)(6)(7)	1-Hour (5)	28.6	32.2	24.6	28.5	196.0	15%
	3-Hour	25.4	56.3	22.8	56.3	1300.0	4%
	24-Hour	13.1	13.4	11.3	13.4	365.0	4%
	Annual	2.8	2.8	2.1	2.8	80.0	4%
PM-10	24-Hour	34.0	61.0	28.0	61.0	150.0	41%
	Annual	15.1	13.9	12.4	15.1	50.0	30%
PM-2.5	24-Hour (5)	15.9	12.7	19.0	15.9	35.0	45%
	Annual (5)	7.3	6.0	8.8	7.4	12.0	61%
NO_2 (3)	1-Hour (5)	94.0	95.9	99.6	96.5	188.0	51%
	Annual	32.8	29.6	28.1	32.8	100.0	33%
CO (2)	1-Hour	2145.3	1963.1	1560.9	2145.3	40000.0	5%
	8-Hour	1375.2	1489.8	1031.4	1489.8	10000.0	15%

Table 4.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels (Continued)

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

Notes:
From 2013-2015 EPA's AirData Website
[1] SO_2 reported ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 2.62 $\mu g/m^3$.
[2] CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.
[3] NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1.88 $\mu g/m^3$.
[4] O_3 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1963 $\mu g/m^3$.
[5] Background level is the average concentration of the three years.
[6] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.
[7] The E. 1st St. monitor was closed in 2014. Harrison Avenue data used for 2015 SO_2 and NO_2.

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

4.5.3 Methodology

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

4.5.3.1 Microscale Analysis

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

The microscale analysis typically examines ground-level CO impacts due to traffic queues in the immediate vicinity of a project. CO is used in microscale studies to indicate roadway pollutant levels since it is the most abundant pollutant emitted by motor vehicles and can result in so-called "hot spot" (high concentration) locations around congested intersections. The NAAQS standards do not allow ambient CO concentrations to exceed 35 parts per

million (ppm) for a one-hour averaging period, and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on current vehicles has reduced the occurrences of CO hotspots. Air quality modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The microscale analysis has been conducted using the latest versions of EPA's MOVES and CAL3QHC programs to estimate CO concentrations at sidewalk receptor locations. Baseline (2017) and future year (2024) emission factor data calculated from the MOVES model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections. The modeling methodology was developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[3]

Existing background values of CO at the nearest monitor location at Harrison Avenue were obtained from MassDEP. CAL3QHC results were then added to background CO values of 1.9 ppm (one-hour) and 1.3 ppm (eight-hour), as provided by MassDEP, to determine total air quality impacts due to the Project. These values were compared to the NAAQS for CO of 35 ppm (one-hour) and 9 ppm (eight-hour).

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

Intersection Selection

Two signalized intersections included in the traffic study meet the above conditions described at the beginning of this section (see Chapter 3). The traffic volumes and LOS calculations provided in Chapter 3 form the basis of evaluating the traffic data versus the microscale thresholds. The intersections found to meet the criteria are:

- Washington Street, Morton Street, and Richmond Street, and
- Washington Street, Adams Street, Dorchester Avenue.

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

Emissions Calculations (MOVES)

The EPA MOVES computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOVES model are based on motor vehicle operations typical of daily periods. The Commonwealth's statewide annual

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

Inspection and Maintenance (I&M) program was included, as well as the county specific vehicle age registration distribution, fleet mix, meteorology, and other inputs. The inputs for MOVES for the existing (2017) and future year (2024) are provided by MassDEP.

All link types for the modeled intersections were input into MOVES. Idle emission factors are obtained from factors for a link average speed of 0 miles per hour (mph). Moving emissions are calculated based on speeds at which free-flowing vehicles travel through the intersection as stated in traffic modeling (Synchro) reports. A speed of 25 mph is used for all free-flow traffic, consistent with the City of Boston speed limit. Speeds of 10 and 15 mph were used for right (and U-turns, if necessary) and left turns, respectively. Roadway emissions factors were obtained from MOVES using EPA guidance.[4]

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

Receptors & Meteorology Inputs

Sets of up to 200 receptors were placed in the vicinity of the modeled intersections. Receptors extended approximately 300 feet on the sidewalks along the roadways approaching the intersections. The roadway links and receptor locations of the modeled intersections are presented in Figures 4.5-1 and 4.5-2.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[5], a wind speed of one meter per second, stability class D (4), and a mixing height of 1,000 meters were used. To account for the intersection geometry, wind directions from 0° to 350°, every 10° were selected. A surface roughness length of 321 centimeters was selected.[6]

Impact Calculations (CAL3QHC)

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

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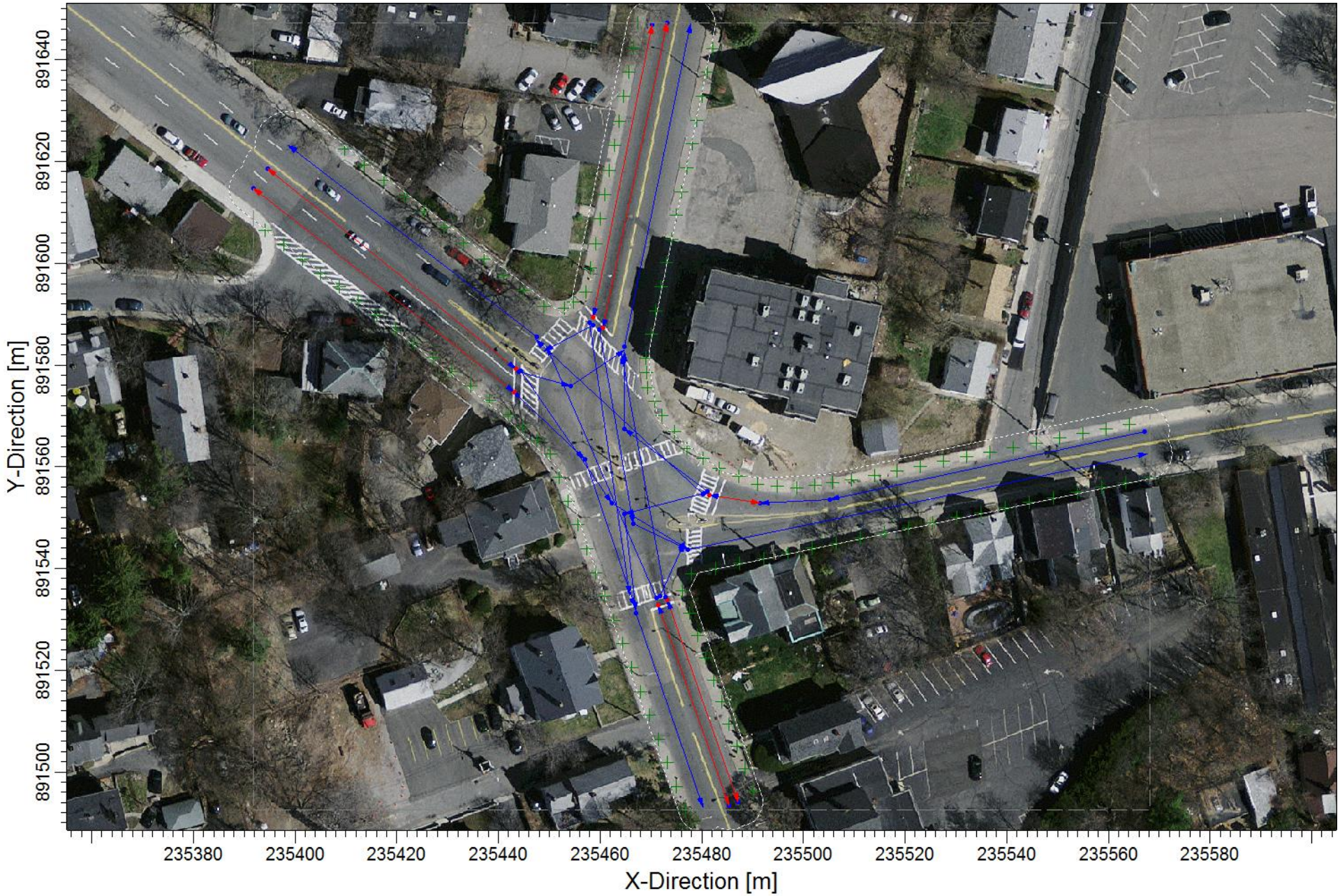
4 U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041

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

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

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



1120-1132 Washington Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 4.5-1

Intersection of Washington Street, Morton Street, and Richmond Street

Figure 4.5-2

Intersection of Washington Street, Adams Street, and Dorchester Avenue

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

4.5.3.2 Air Quality Results

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 4.5-3 through 4.5-5 for the 2017 and 2024 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.9.[8]

Table 4.5-3 Summary of Microscale Modeling Analysis (Existing 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Washington Street, Morton Street, and Richmond Street	AM	0.2	1.9	2.1	35
	PM	0.2	1.9	2.1	35
Washington Street, Adams Street, Dorchester Avenue	AM	0.3	1.9	2.2	35
	PM	0.3	1.9	2.2	35
8-Hour					
Washington Street, Morton Street, and Richmond Street	AM	0.2	1.3	1.5	9
	PM	0.2	1.3	1.5	9
Washington Street, Adams Street, Dorchester Avenue	AM	0.3	1.3	1.6	9
	PM	0.3	1.3	1.6	9

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

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

Table 4.5-4 Summary of Microscale Modeling Analysis (No-Build 2024)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Washington Street, Morton Street, and Richmond Street	AM	0.1	1.9	2.0	35
	PM	0.1	1.9	2.0	35
Washington Street, Adams Street, Dorchester Avenue	AM	0.2	1.9	2.1	35
	PM	0.2	1.9	2.1	35
8-Hour					
Washington Street, Morton Street, and Richmond Street	AM	0.1	1.3	1.4	9
	PM	0.1	1.3	1.4	9
Washington Street, Adams Street, Dorchester Avenue	AM	0.2	1.3	1.5	9
	PM	0.2	1.3	1.5	9

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

Table 4.5-5 Summary of Microscale Modeling Analysis (Build 2024)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Washington Street, Morton Street, and Richmond Street	AM	0.1	1.9	2.0	35
	PM	0.1	1.9	2.0	35
Washington Street, Adams Street, Dorchester Avenue	AM	0.2	1.9	2.1	35
	PM	0.2	1.9	2.1	35
8-Hour					
Washington Street, Morton Street, and Richmond Street	AM	0.1	1.3	1.4	9
	PM	0.1	1.3	1.4	9
Washington Street, Adams Street, Dorchester Avenue	AM	0.2	1.3	1.5	9
	PM	0.2	1.3	1.5	9

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

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

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

All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

4.5.3.3 Conclusions

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

4.6 Solid and Hazardous Waste

4.6.1 Hazardous Waste

A Phase I Environmental Site Assessment was conducted at the Project site by Penney Engineering, Inc. using methods consistent with ASTM E1527-105. No recognized environmental conditions were identified at the Project site.

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

4.6.2 Operation Solid and Hazardous Waste Generation

The Project will generate solid waste typical of residential and commercial 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 98 tons of solid waste per year.

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

4.6.3 Recycling

A dedicated recyclables storage and collection program will facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills. Each floor of the residential building will provide a separate recycling bay, and individual units will include dedicated space in the kitchen for two bins in order to encourage recycling.

4.7 Noise Impacts

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

Table 4.7-1 below presents the "Zoning District Noise Standards" contained in Regulation 2.5 of the APCC "Regulations for the Control of Noise in the City of Boston," adopted December 17, 1976. These maximum allowable sound pressure levels apply at the property line of the receiving property. Zoning District Standards are presented below in Table 4.7-1.

Table 4.7-1 City of Boston Zoning District Noise Standards, Maximum Allowable Sound Pressure Levels

Octave-band Center Frequency (Hz)	Residential Zoning District		Residential-Industrial Zoning District		Business Zoning District Anytime (dB)	Industrial Zoning District Anytime (dB)
	Daytime (dB)	All Other Times (dB)	Daytime (dB)	All Other Times (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 sound pressure of 20 micropascals.

'Daytime' refers to the period between 7:00 a.m. and 6:00 p.m. daily, excluding 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 L_{90} 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 heating, cooling, and ventilation equipment for the commercial spaces and residential units. During the final design phase of the Project, mechanical equipment 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.

With appropriate noise control, the Project 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.

4.8 Stormwater/Water Quality

Chapter 8 includes a discussion of stormwater and water quality.

4.9 Flood Hazard Zones/ Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the site located in the City of Boston - Community Panel Number 25025C0089J, effective March 16, 2016, indicates the FEMA Flood Zone Designations for the site area. The map shows that the Project is located in a Zone X, "Areas determined to be outside the 0.2% annual chance floodplain."

The site does not contain wetlands.

4.10 Geotechnical Impacts

4.10.1 Site Conditions

The Project site, as described in Section 2.1.1, comprises six parcels of land with a total of approximately 48,303 sf located on the easterly side of Washington Street south of Richmond Street. The site currently contains the former Molloy Funeral Home, a parking lot, and residential building on each side of the funeral home. The site is relatively flat, with a high point and bedrock outcroppings in the southeastern corner of the site. Soil boring to determine the generalized subsurface conditions at the Project site have not yet been conducted, but will be conducted prior to determining the appropriate foundation approach.

4.10.2 Groundwater

Based on Massachusetts Geographic Information System mapping and field observations of the local topography, the local groundwater flow direction is assumed to be to the east toward Dorchester Bay and in the same flow direction as the Neponset River.

The Project is not located in the Groundwater Conservation Overlay District and will therefore not need to comply with the requirements of Article 32 of the City of Boston Zoning Code.

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 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 as appropriate. 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 businesses and residents 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 first quarter of 2018 and last for approximately 18-24 months.

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

4.11.4 Construction Staging/Access

Access to the site and construction staging areas will be described 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 of Boston 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 Neponset 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 50 construction jobs will be created over the length of construction. The Proponent will make reasonable good-faith efforts to have at least 51% of the total

employee work hours be for Boston residents, at least 40% of total employee work hours be for minorities and at least 12% of the total employee work hours be for women. 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 are anticipated to 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. 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 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.

4.11.11 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with the Massachusetts Water Resources Authority, Boston Water and Sewer Commission (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.

4.12 Rodent Control

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

4.13 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

5.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE

5.1 Sustainable Design

To comply with Article 37 of the Boston Zoning Code, the Project will be designed and constructed under the guidelines of U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) for Building Design and Construction (BD+C): Homes (H) Version 4 (V4). The Project is currently targeting to be LEED certifiable at the Silver level.

In the case of four-story multifamily buildings, LEED has a specific set of guidelines to determine whether the project should utilize the LEED for Homes or the LEED for Homes Midrise pathway. New Ecology, the Project's sustainability consultant, reviewed those guidelines and determined that the Project qualifies for use of the LEED for Homes low rise pathway, which corresponds well with the requirement for a Home Energy Rating System (HERS) score necessary to demonstrate compliance with the Massachusetts Stretch Code.

The preliminary LEED for Homes checklist is included at the end of this chapter, and illustrates an overview of the credits the Project anticipates achieving within each LEED category. This is a preliminary evaluation of the LEED checklist, and applicable credits may change as the building design advances.

The following is a detailed credit-by-credit analysis of the Project team's approach to achieving LEED certifiability at the Silver level. Points that are still being studied and marked as "maybe" on the LEED checklist are italicized below.

Integrative Process

IP Integrative Process: The Project includes a comprehensive design team that is composed of the skilled professionals required to comply with this Credit, including architecture, mechanical, electrical, plumbing, building science and performance testing, green building, civil, and landscape architecture specialists. The team is committed to close coordination during the future design development, final design, and construction phases of Project execution.

Location and Transportation

LT Prerequisite – Floodplain Avoidance: The Project site is not located within the FEMA 100-year floodplain.

LT Site Selection: The Project meets the requirements for several of the options provided under this credit

- Option 1 Path 1 – Previously Developed: The entire Project site is previously developed, exceeding the 75% requirement. The Project site currently consists of three buildings and surface parking.

- Option 2 – Infill Development: The Project site is located within a one-half mile from previously developed land. The Project site is located in a densely populated area of Boston.

- Option 3 – Open Space: The Project site is located within a half-mile of Dorchester Park.

- Option 5 – Bicycle Network and Storage: The Project will comply with City of Boston bicycle storage requirements. It will include 57 covered and protected bicycle spaces, as well as three short term bicycle parking spots. Residents will be within a 176-yard walk/bike of Dorchester Avenue, which is a bike friendly roadway and connects to a large variety of biking paths, services, and amenities.

LT Compact Development: The Project has a density of 51 units per acre, exceeding the 20 unit per acre requirement.

LT Community Resources: The Project site has significant access to community resources. The Project easily meets the credit requirement of 12 uses and qualifies for one exemplary performance credit. The nearby resources include, but are not limited to:

- Star Market Grocery - 0.1 mile
- RTN Federal Credit Union - 0.2 miles
- Meeting House Bank - 0.2 miles
- CVS - 0.2 miles
- Rite-Aid - 0.3 miles
- Harbor Health Services - 0.3 miles
- Carney Hospital - 0.4 miles
- A large number of restaurants (over 15) in a 0.5-mile radius
- Dorchester Park - 0.4 miles
- Willian G. Walsh Playground - 0.3 miles
- Milton Hill Sport and Spa Health Club - 0.3 miles
- US Post Office - 0.3 miles
- Eclipse Salon - 0.3 miles
- Milton Village Hardware - 0.3 miles
- St. Gregory Grammar School - 0.2 miles
- Conservatory Lab Charter School - 0.4 miles
- Boston Youth Sanctuary - 0.2 miles
- St. Gregory Parish - 0.2 miles
- Wesley United Methodist Church – 436 feet

LT Access to Transit: The Project site is located within a seven-minute walk (0.3 miles) of the Mattapan High-Speed line at the Milton Station as well as multiple bus routes that will meet the ride frequency requirement of this credit.

Sustainable Sites

SS Prerequisite – Construction Activity Pollution Prevention: The construction documents will include a Soil Erosion Sedimentation Control Plan to be developed in accordance with the EPA Construction General Permit of the National Pollutant Discharge Elimination System (NPDES). A Stormwater Pollution Prevention Plan (SWPPP) will also be developed for the site in accordance with the requirements for the EPA's NPDES Construction General Permit. These documents will be used to show compliance with this prerequisite.

SS Prerequisite – No Invasive Plants: The Project team is committed to meeting this prerequisite and complying with United States Department of Agriculture's Germplasm Resources Information Network (GRIN) Taxonomy for Plants database, the National Association of Exotic Pest Plant Council, or the UMass Extension school invasive plant list. The Project team includes a Massachusetts licensed landscape architect that will adhere to these guidelines during design.

SS Nontoxic Pest Control: The Project will comply with this credit by using solid concrete foundation walls and sealing all external cracks, joints, penetrations and entry points. *The Project team will investigate incorporating additional features as the design progresses.*

Water Efficiency

WE Prerequisite – Water Metering: The Project will comply with the requirements of this credit by installing a water meter for each unit within the development.

WE Indoor Water Use: The Project will reduce demand for water through high efficiency fixtures and efficient landscaping practices. The design will specify fixtures that will achieve the following flow rates:

- Shower: 1.5 GPM
- Bath Lavatory: 1.0 GPM
- Toilet: 0.8 GPF
- Clothes washers: Energy Star certified

WE Outdoor Water Use: The Project will reduce demand for water through water conserving landscape design. Less than 40% of the vegetated site area will be composed of turf, which includes the planted roof areas, and more than 50% of the planted areas will be planted with native/adaptive species.

Energy and Atmosphere

EA Prerequisite – Minimum Energy Performance: The Project will comply with this prerequisite by:

- Meeting the requirements of Energy Star for Homes, Version 3 and achieving a HERS index of, at most, 55. This will be achieved through strategies that include above code levels of insulation in the cavity as well as continuous exterior of the sheathing, very high efficiency unit-based mechanical systems, LED lighting and controls, Energy Star appliances, and Smart Home systems that reduce unnecessary consumption when a unit is unoccupied. The team also plans to utilize efficient technologies and design to mitigate common area energy and water consumption, including integration of a PV system to offset the common area electric loads.

- Specifying Energy Star certification for all refrigerators, dishwashers, and clothes washers

- Fully ducting all duct runs.

EA Prerequisite – Energy Metering: The Project will sub meter every unit for electrical and gas consumption.

EA Prerequisite – Education of the Homeowner, Tenant or Building Manager: The Project team will provide to the owner an operations and maintenance manual outlining all LEED/sustainability related requirements.

EA Annual Energy Use: The Project will achieve additional energy savings beyond the prerequisite requirements. At this stage of design, it is anticipated that the Project will achieve a HERS score of 55 or less (16 points). The Project achieves an additional 10 points for units smaller than the baseline per the USGBC home size adjustment.

EA Efficient Hot Water Distribution System: The Project will consider insulating all hot water piping to a minimum of R-4.

EA HVAC Start-up Credentialing: The Project team will consider requiring that the HVAC subcontractors have the H-QUITO credential and complete the Energy Star for Homes, Version 3, HVAC system quality installation contractor checklist.

Materials and Resources

MR Prerequisite – Certified Tropical Wood: Every effort will be made to avoid using tropical woods, or if tropical woods are used, FSC Certified woods will be specified.

MR Prerequisite – Durability Management: The Project will promote durability and performance of the building enclosure and its components and systems through appropriate measures as outlined by the USGBC including:

- Use of non-paper faced backer board in specific bath areas;
- Use of water resistant flooring in kitchen and baths; and
- Design and install drain pan and automatic water shutoff valve.

MR Durability Management Verification: Through the process of complying with the Energy Star Version 3 requirements, a third-party verifier will confirm compliance with the water management system builder checklist.

MR Environmentally Preferable Products: The Project will minimize its environmental impact through thoughtful selection of materials. The Proponent will specify local aggregate and recycled content drywall, and will investigate additional options for points in this section during the design process.

MR Construction Waste Management: The Proponent is committed to reducing construction waste at least ten percent below USGBC's baseline, and will strive for a 30% reduction target.

Indoor Environmental Quality

EQ Prerequisite – Ventilation: The unit designs will meet all requirements of ASHRAE Standard 62.2-2010 (with errata). Each unit will have kitchen and bath exhaust as required by the Standard. In addition, fresh air will be mechanically supplied directly to each unit. The team will engage in an integrated design process with the mechanical engineer to analyze the cost/benefit of unit-based heat recovery ventilation systems with smart control capacity to mitigate the energy impact of ventilation. All non-unit spaces will be designed to meet the requirements of ASHRAE 62.1-2010, Sections 4-7.

EQ Prerequisite – Combustion Venting: The Project will only install sealed combustion equipment and will install CO monitors in each unit.

EQ Prerequisite – Garage Pollutant Protection: The Project design will ensure complete separation and air sealing of living spaces from the underground garage. No duct work will run in the garage space, and the garage will be mechanically ventilated to further reduce the potential for CO contamination to the living areas.

EQ Prerequisite – Radon Resistant Construction: The Project site is located in EPA radon zone 2, which does not require a mitigation system. Additionally, the living spaces will be separated by a mechanically ventilated garage, which will further mitigate any potential radon issues.

EQ Prerequisite – Air Filtering: The Project will install MERV 8 filters on the return side of the air handling equipment in each unit. Additionally, the outdoor supply air provided to each unit will be filtered by MERV 6 filters, at minimum. The specifics of the system chosen for outdoor air will dictate whether a higher MERV rating is feasible and appropriate.

EQ Prerequisite - Environmental Tobacco Smoke: The building will be entirely non-smoking, including individual units. A designated outdoor smoking area will be the only area on site where smoking is permitted, and it will be located at least 25 feet from entries, air intakes and operable windows.

EQ Prerequisite – Compartmentalization: A comprehensive set of air sealing details and specifications will be developed during the design process to set expectations and approaches around unit compartmentalization. A third-party testing agent will be used to verify that the constructed building complies with LEED infiltration requirements.

EQ Enhanced Ventilation: As the mechanical system design progresses, the Project team evaluate the approach for ventilation of the units, and will consider systems that would qualify the Project for these enhanced ventilation points.

EQ Contaminant Control: The Project may include compliant walk-off mats at each primary entrance into the building that meet the 10-foot requirement. For units with direct entry, a shoe removal and storage space that is separated from the living space may be included.

EQ Balancing of Heating and Cooling Distribution Systems: The Project will comply with Option 3. *Per the requirements of Energy Star Version 3, pressure testing of the forced air system will be done to ensure no more than a 3Pa differential between any bedroom and the rest of the unit.*

EQ Enhanced Compartmentalization: The Project team will strive to comply with this credit.

EQ Combustion Venting: The Project will not install fireplaces or wood stoves in any of the units.

EQ Enhanced Garage Pollutant Protection: The Project will strive to follow the requirements of ASHRAE 62.1–2010. The garage will be exhausted sufficiently to create negative pressure with respect to adjacent spaces with the doors to the garage closed. The Project will provide self-closing doors and deck-to-deck partitions or a hard lid ceiling. The pressure differential with the surrounding spaces will be at least 5 Pascal's (Pa) (0.02 inches of water gauge) when all doors are closed.

EQ Low Emitting Products: The Project team will specify paints, coatings, flooring, adhesives, and sealants that comply with California Department of Public Health Standard Method V1.1–2010, using CA Section 01350, Appendix B, New Single-Family Residence Scenario.

Innovation in Design

ID Prerequisite – Preliminary Rating: In preparation for this submission, the Project team met with New Ecology to set greening goals and vet strategies for achieving compliance. From this process, the team developed the preliminary LEED checklist and this narrative.

ID Exemplary Performance: The Project will qualify for exemplary performance points for the Site Selection credit, the Compact Development credit, and the Community Resources credit.

ID LEED Accredited Professional: Paul Eddowes, LEED AP, is coordinating the Article 37 Compliance process and LEED certifiability for this project.

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. RPCs applicable to the site include: LT Community Resources, LT Access to Transit, and SS Non-Toxic Pest Control.

5.2 Climate Change Resilience

5.2.1 Introduction

Projects subject to Article 80B, Large Project Review, are required to complete the Climate Change Preparedness Checklist. 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 Climate Change Checklist is included in Appendix D.

5.2.2 Extreme Heat Events

The *Climate Ready Boston* report predicts that in Boston, there may be between 25 to 90 days 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 incorporate a number of measures to minimize the impact of high temperature events, including:

- Installing a high-performance building envelope and high-performance HVAC equipment;
- New street trees;
- Significant new landscaped areas;
- Installing operable windows where possible; and
- Installing a vegetated roof to minimize the heat island effect.

5.2.3 Rain Events

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. To mitigate the impacts of these events, the Proponent will take measures to minimize stormwater runoff at the Project site, and protect the Project's mechanical equipment, as necessary. The performance capabilities of the proposed stormwater management system are anticipated to significantly improve the site's infiltration capacity. Stormwater measures will include:

- Decreasing stormwater runoff from the site;
- Water tight utility conduits; and
- Wastewater and stormwater back flow prevention.

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 which require low or no irrigation and are known for their ability to withstand adverse conditions. Plumbing fixtures will be specified to achieve a reduction in water use through low-flow water-closets, low-flow showers, and low-flow sinks.

5.3 Renewable Energy

The Proponent is evaluating the potential for a roof-mounted solar photovoltaic (PV) system, and anticipates installing solar panels on the roof to produce energy to support the common areas of the building. The feasibility of installing a solar PV system will depend on the incentives available at the time of construction, and the ability of the Proponent to take advantage of these benefits.

LEED v4 for Building Design and Construction: Homes
Project Checklist

Project Name: 1120-1132 Washington St.
Date: 4/4/2017

Y	?	N			
1			Credit	Integrative Process	2

15	0	15	**Location and Transportation**		15
Y			Prereq	Floodplain Avoidance	Required
			PERFORMANCE PATH		
		15	Credit	LEED for Neighborhood Development Location	15
			PRESCRIPTIVE PATH		
8			Credit	Site Selection	8
3			Credit	Compact Development	3
2			Credit	Community Resources	2
2			Credit	Access to Transit	2

1	1	5	**Sustainable Sites**		7
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	No Invasive Plants	Required
		2	Credit	Heat Island Reduction	2
		3	Credit	Rainwater Management	3
1	1		Credit	Non-Toxic Pest Control	2

5	3	2	**Water Efficiency**		12
Y			Prereq	Water Metering	Required
			PERFORMANCE PATH		
			Credit	Total Water Use	12
			PRESCRIPTIVE PATH		
3	3		Credit	Indoor Water Use	6
2		2	Credit	Outdoor Water Use	4

26	5	7	**Energy and Atmosphere**		38
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Energy Metering	Required
Y			Prereq	Education of the Homeowner, Tenant or Building Manager	Required
			PERFORMANCE PATH		
26	2	1	Credit	Annual Energy Use	29
			BOTH PATHS		
	2	3	Credit	Efficient Hot Water Distribution System	5
		2	Credit	Advanced Utility Tracking	2
		1	Credit	Active Solar Ready Design	1
	1		Credit	HVAC Start-Up Credentialing	1
			PRESCRIPTIVE PATH		
Y			Prereq	Home Size	Required
			Credit	Building Orientation for Passive Solar	3
			Credit	Air Infiltration	2
			Credit	Envelope Insulation	2
			Credit	Windows	3
			Credit	Space Heating & Cooling Equipment	4
			EA PRESCRIPTIVE PATH (continued)		
			Credit	Heating & Cooling Distribution Systems	3
			Credit	Efficient Domestic Hot Water Equipment	3
			Credit	Lighting	2
			Credit	High Efficiency Appliances	2
			Credit	Renewable Energy	4

1	3.5	5.5	**Materials and Resources**		10
Y			Prereq	Certified Tropical Wood	Required
Y			Prereq	Durability Management	Required
	1		Credit	Durability Management Verification	1
0.5	1.5	2	Credit	Environmentally Preferable Products	4
0.5	1	1.5	Credit	Construction Waste Management	3
		2	Credit	Material Efficient Framing	2

4.5	6.5	3	**Indoor Environmental Quality**		16
Y			Prereq	Ventilation	Required
Y			Prereq	Combustion Venting	Required
Y			Prereq	Garage Pollutant Protection	Required
Y			Prereq	Radon-Resistant Construction	Required
Y			Prereq	Air FIltering	Required
Y			Prereq	Environmental Tobacco Smoke	Required
Y			Prereq	Compartmentalization	Required
	3		Credit	Enhanced Ventilation	3
	0.5	1.5	Credit	Contaminant Control	2
1	1		Credit	Balancing of Heating and Cooling Distribution Systems	3
	1		Credit	Enhanced Compartmentalization	1
2			Credit	Enhanced Combustion Venting	2
	1		Credit	Enhanced Garage Pollutant Protection	2
1.5		1.5	Credit	Low Emitting Products	3

4	0	0	**Innovation**		6
Y			Prereq	Preliminary Rating	Required
3			Credit	Innovation	5
1			Credit	LEED AP Homes	1

3	0	0	**Regional Priority**		4
1			Credit	Regional Priority: Access to Transit	1
1			Credit	Regional Priority: Community Resources	1
1			Credit	Regional Priority: Nontoxic Pest Control	1
			Credit	Regional Priority: Specific Credit	1

59.5	19	38	**TOTALS**	Possible Points:	110

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

Chapter 6.0

Urban Design

6.0 URBAN DESIGN

6.1 Architecture and Landscape Design

The proposed Project consists of a four-story residential building with approximately 3,600 sf of commercial space on the ground floor. The mix of land uses surrounding the Project site, located in the Lower Mills neighborhood of Dorchester, include two and three-story residential buildings, the Lower Mills Branch of the Boston Public Library, and a commercial district with restaurants, cafés, and shops. The building footprint has the longest leg of the structure along the southerly property line, adjoining the Dolan Funeral Home parking lot and a small, off site, wooded cluster. This retracts the building back away from the three adjoining residences fronting on Richmond Street to the north.

The building has been designed to complement and respect the existing buildings surrounding the site. The mansard roof on the fourth level not only compliments the characteristics of the neighboring buildings, but also helps reduce the height of the building. The decorative dental moldings under the soffits along with the decorative columns tie the Project in with the rich details incorporated in the surrounding buildings, including the Baker Chocolate Factory Apartments on Adams Street. The red brick that will be used on the first level of the building, as well as the walkways, are similar to materials found in many of the buildings in Lower Mills (see Figure 6-1). The large aluminum glass storefront windows and doors on the first level will bring natural light and ventilation into the spaces to make them welcoming and inviting to both the residents of the building and the local neighborhood.

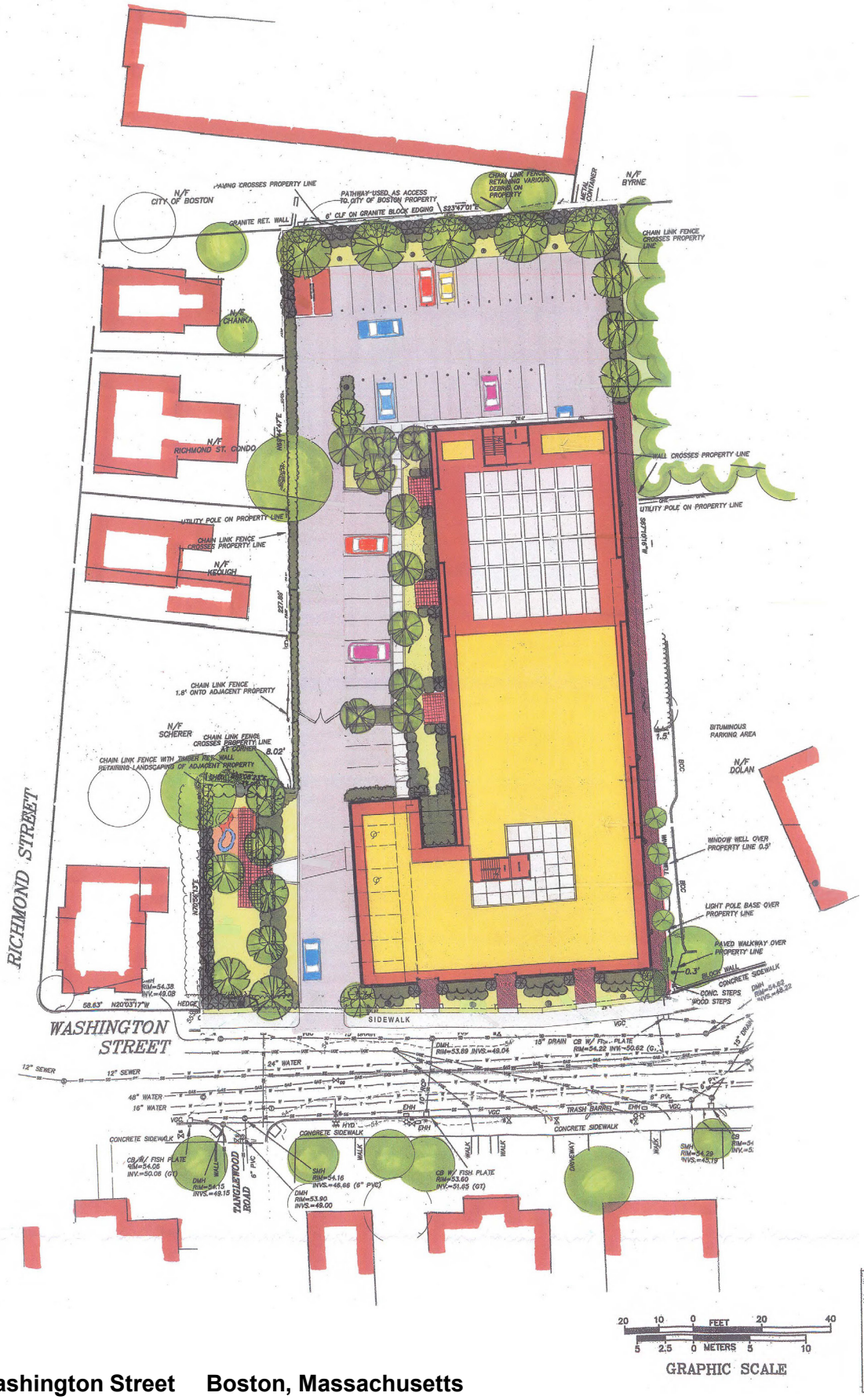
The Project contains five open space components and three surface parking areas. The proposed planting in each area provides a spatial context for the building. The shrub foundation plantings provide scale transition from the vertical building walls to the horizontal ground plane. The parking for the Project is divided up into a series of bays which are visually separated by building components and proposed natural features. All proposed plantings will be selected to generate seasonal interest and to minimize maintenance.

The first open space area is at the front of the building, along Washington Street, and consists of a lawn apron along the existing sidewalk and paver walkways leading to the building entry points (see Figure 6-3). There will be a blend of deciduous and evergreen shrubs in a foundation planting along the building front to transition from the vertical building to the horizontal ground plane. This design replicates the character of the existing lawn areas currently on the site. There are granite bollards flanking some of the existing walkway entries which will be reused and/or replicated at the walkway entries for the new building. Low level ornamental pole lighting will also be introduced along the

1120-1132 Washington Street Boston, Massachusetts

RCA, LLC
Architects - Designers - Planners

Figure 6-1
View facing Northeast on Washington Street



1120-1132 Washington Street Boston, Massachusetts

R. Jon Henson
Landscape Architects

Figure 6-2
Landscape Plan

1120-1132 Washington Street Boston, Massachusetts

RCA, LLC
Architects - Designers - Planners

Figure 6-3
View facing Southeast on Washington Street

existing sidewalk. Appropriate deciduous street tree plantings are proposed in locations that do not conflict with visual access to the two commercial spaces on the ground floor at the front of the building. The combination of bollards, lighting, and street trees will provide a safe and inviting pedestrian environment in this location.

The area on the northerly side of the Project site contains the access drive, parking, and two of the open space components (see Figure 6-4). A small private open space area is proposed in the northwest corner of the site. This open space will consist of a lawn area for small scale informal play and a small play area for toddlers. There will also be a patio area with benches and a trash receptacle, where the residents can sit in the shade of the trees and relax; perhaps while tending to their toddler on the play sculpture. Deciduous and evergreen shrub and tree plantings will be introduced to screen the area from surrounding uses and to provide a natural setting with seasonal interest. This open space will be accessed via a crosswalk across the access drive linked to the building's pedestrian circulation system. This open space will be enclosed by an ornamental fence on the sides abutting adjoining properties and with an ornamental metal fence, with gated access, along the Project access drive. This open space will be for use during the daylight hours and will be secured overnight. The eight commercial parking spaces opposite the drive from the open space are tucked in under the building where they will be less visible.

The third open space component lies along the northerly side of the building where the structure steps back from the property line to provide a separation from the existing residential uses abutting the site. This open space area is configured as linear commons space. Three of the three-bedroom residential units will front onto the commons, and each will have partially enclosed patio space within the commons area. The commons will be enclosed on all open sides with an ornamental metal fence with gated access. A walkway providing pedestrian access for the parking area along the commons will be provided if the site grading permits; otherwise that area will be devoted to open space. The commons will provide a small linear lawn area flanked by deciduous and evergreen trees and shrubs. The trees will provide shade to cool pavement and parked cars, vegetation mass to help break views of the building into a series of smaller scaled segments, and seasonal interest. Low level ornamental pole lighting may either be located along the parking edge of the commons or along the narrow open space strip near the proposed opaque fencing along the property line adjacent the access drive. This segment of fencing will completely screen vehicular movements from the three adjoining houses, which front onto Richmond Street. The residential parking will be separated from the commercial parking by gated access in this location.

The fourth open space area lies along the back of the property, which parallels the existing Lower Mills Branch library. This component will serve primarily as a visual element with the capacity for on-site snow storage. There will be opaque fencing along the property lines coupled with evergreen shrubs on the Project side of the fence along the back property line.

1120-1132 Washington Street Boston, Massachusetts

RCA, LLC
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Figure 6-4
View facing South toward the Project Site

Deciduous trees will be planted to provide shade and seasonal interest. There will be low level ornamental pole lighting for the parking located in this open space area. The parking here is in a conventional double loaded bay configuration with the access drive continuing on to provide ramp access to the parking in the basement level.

The fifth open space component consists of a lane along the Dolan Funeral Home on the southerly side of the Project site. This lane includes a paver walkway and deciduous trees to break up the views of the building's southern elevation. Some shrubs may also be utilized, where space permits. An opaque ornamental fence will run along the entire property line to visually separate the Project site from the adjoining funeral home. There is currently a large evergreen tree in a planter adjacent to the Project site at the adjoining front corner of the Funeral Home parking lot. The tree does not appear be healthy; if the tree fails, the Proponent will work with the Dolan Funeral Home to provide a replacement tree, at the Proponent's expense, to help maintain the natural setting provided by a tree in this location.

6.2 Evolution of Design

The initial design yielded a more contemporary building, set further back from Washington Street. The vehicular access occurred on the southerly side along the street frontage, adjacent the Dolan Funeral Home. The corresponding parking was located in front, on the street side, of the proposed building. However, the contemporary building design and location was not well received by the Lower Mills community. The community commented that the proposed vehicular access point was in a location where traffic consistently backed up from the traffic light just to the south of the Funeral Home, and that the building should be moved so that it fronts the street.

The present site and building design respond to these concerns expressed by the community. The building has been moved forward to front on Washington Street with a setback that is consistent with existing surrounding buildings. The vehicular access, off Washington Street, has been shifted to the northwesterly side of the site, allowing for more favorable conditions for turning traffic from the site onto Washington Street. Parking has been divided up into a series of smaller scaled lot areas, to the side and rear of the proposed building, leaving the front for open space streetscape amenities.

Chapter 7.0

Historic and Archaeological Resources

7.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

The Historic and Archaeological Resources section describes the historic and archaeological resources within and in the vicinity of the Project site.

7.1 Project Site

The Project site is located within the Washington Street 1107-1140 Area (MHC # BOS.IA) and the Lower Mills West Area (MHC # BOS.IA) which are both included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory). The Washington Street 1107-1140 Area is a small residential, institutional, and commercial district located at the southerly end of Washington Street near the point where it joins Adams Street and River Street. The area is characterized by Georgian, Federal and Greek Revival residential properties constructed between roughly 1740 and 1870. The properties feature broad proportions, classical forms and classical detailing. The boundaries of the Lower Mills West Area more or less adhere to the inhabited extents of the area shown on the 1850 map of Dorchester. The roughly 45-acre area retains the visual image of an early 19th century industrial village. The majority of the area's historic properties are located southwest of Morton Street, to the west of the Project site.

1126 Washington Street

One building within the Project site is included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory). The building is the George Haynes House (BOS.6382), more commonly known as the John G. Molloy Funeral Home at 1126 Washington Street. Believed to be constructed during the mid-eighteenth to mid-nineteenth century, the building is identified on the inventory form as a five bay Georgian house with a later pedimented gable added during the Greek Revival Period. Boston building permits indicate that the property was altered in 1957 with the introduction of aluminum siding. In 1986, a new roof was installed. In addition, a one-story wing was added to the north side of the residence.

1120 Washington Street

This two-story Greek Revival residence was constructed after 1850. The building features a pedimented front gable roof, and has been altered with the addition of vinyl siding and replacement windows. Boston City Permits indicate that the slate roof of the residence was removed in 1962. In addition, an associated barn was razed in 1947 due to its unsound condition.

1132/1130R Washington Street

This three-story, wood frame, late nineteenth century multi-family residential block located at 1132 Washington Street is capped by a flat roof. The building has been altered by the introduction of vinyl siding and replacement windows. The residential block spans the lot line with a two-story multi-family residential block (1130R Washington Street) to the rear. The rear block features a mansard roof with dormers and two-story bay windows. Like 1132 Washington Street, the rear block has been significantly altered with the introduction of vinyl siding and replacement windows.

7.2 Historic Resources Within the Vicinity of the Project Site

The Project site is located within and in the vicinity of two historic resources listed in the State and National Registers of Historic Places. Table 7-1 identifies the resources within one-quarter mile of the Project site, and corresponds to resources depicted in Figure 7-1.

Table 7-1 Historic Resources in the Vicinity of the Project Site

Historic Resource	Address	Designation*
Dorchester-Milton Lower Mills Industrial District	Boston: Follows Adams, River and Medway Streets and Millers Lane Milton: Follows Eliot and Adams Streets	NRDIS
Dorchester Park	Roughly bounded by Dorchester Avenue, Richmond, Adams, and Richview Streets.	NRIND
Individually listed on the National Register of Historic Places National Register of Historic Places historic district		

7.3 Archaeological Resources Within the Project Site

A review of Massachusetts Historical Commission's (MHC) online archaeological base maps was conducted on March 9, 2017. It found that the Project site is within the mapped extents of site 19-SU-28. As the proposed Project involves construction on areas of the Project site previously excavated, disturbed and then developed, impacts to archaeological resources are not anticipated. As the Project advances, the Proponent will consult with MHC in accordance with M.G.L., Chapter 9, Sections 26-27C (50 CMR 71.00), as necessary, to assess potential impacts to significant historic and archeological resources. If impacts associated with the Project are unavoidable, the Proponent with work with MHC and interested parties in developing appropriate measures to mitigate Project impacts to those resources.

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

1120-1132 Washington Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 7-1
Historic Resources

7.4 Potential Impacts to Historic Resources

7.4.1 Demolition of Existing Buildings

The proposed Project will require the demolition of the three existing buildings within the Project site. None of the buildings are listed or have been found to be eligible for listing on the National Register of Historic Places. Additionally, all of the buildings have had some level of alteration, such as new roofs, replacement windows, and vinyl siding. The Boston Landmarks Commission (BLC) will be afforded the opportunity to review the proposed demolition through the Article 85 Demolition Delay review process.

7.4.2 Urban Design

The proposed Project consists of a four-story residential building with approximately 3,600 square feet of commercial space on the ground floor. The area surrounding the Project site, located in the Lower Mills neighborhood of Dorchester, contains a mix of uses, including two to three-story residential buildings as well as some commercial uses. The proposed building will have varied elevations with different setbacks and elements that are characteristic of the nearby buildings and neighborhoods.

The proposed building has been designed to complement and respect the existing buildings surrounding the site, but is executed in a manner that clearly reads as new. The mansard roof on the fourth level not only compliments the characteristics of the neighboring buildings, but also helps reduce the height of the building. The decorative dental moldings under the soffits along with the decorative columns tie in with the rich details incorporated in the surrounding buildings, and the red brick that will be used on the first level of the building, as well as the walkways, are similar materials found in many of the buildings in Lower Mills. The large aluminum glass storefront windows and doors on the first level will bring natural light and ventilation into the spaces to make them welcoming and inviting to both the residents of the building as well as the local neighborhood.

7.4.3 Visual Impacts to Historic Resources

While the Project site is located in the vicinity of two historic resources, the Dorchester-Milton Lower Mills Industrial District and Dorchester Park which are listed in the State and National Registers of Historic Places, the proposed four-story Project is not anticipated to have adverse visual impacts to historic resources. The Project is similar in height to other buildings in the area, and the building has been designed to complement and respect the existing buildings surrounding the site. The mansard roof not only compliments the characteristics of the neighboring buildings, but also helps reduce the height of the building. The Project is in keeping with the architectural character of the surrounding neighborhood.

7.5 Consistency with Other Historic Reviews

7.5.1 Boston Landmarks Commission Article 80 Review

The submission of this PNF initiates review of the Project by the BLC under the City's Article 80 Review process.

7.5.2 Boston Landmarks Commission Article 85 Review

The proposed demolition of the existing buildings on the Project site, including 1120 Washington Street, 1126 Washington Street, and 1130R/1132 Washington Street will be subject to review by the BLC under Article 85 of the Boston Zoning Code. An Article 85 Application for each property will be submitted to the BLC.

7.5.3 Massachusetts Historical Commission

The MHC has review authority over projects requiring state funding, licensing, permitting and/or approvals that may have direct or indirect impacts to properties listed in the State Register of Historic Places. As the Project will require an 8(m) permit from the Massachusetts Water Resources Authority (MWRA), an MHC PNF will be filed to initiate the State Register Review process.

Chapter 8.0

Infrastructure

8.0 INFRASTRUCTURE

This Chapter describes the existing sewer, water, and drainage systems surrounding the Project site, and explains how these systems will service the development. The analysis also discusses any anticipated Project-related impacts on the utilities, and identifies mitigation measures to address these potential impacts. The Project is in the early design stages and as the design evolves, the Proponent will coordinate with the various utility companies to ensure full services for the new development.

The construction of the Project is expected to result in the disturbance of an acre or more of earth. A Notice of Intent will be filed under the Environmental Protection Agency's 2017 Construction General Permit. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared, specifying best management practices (BMPs) for protecting the existing stormwater drainage system during construction. A copy of the SWPPP and EPA tracking number will be copied to the Boston Water and Sewer Commission (BWSC).

The Massachusetts Water Resources Authority (MWRA) maintains water distribution lines in Washington Street. An 8(m) permit will be requested from the MWRA to allow construction within their easement.

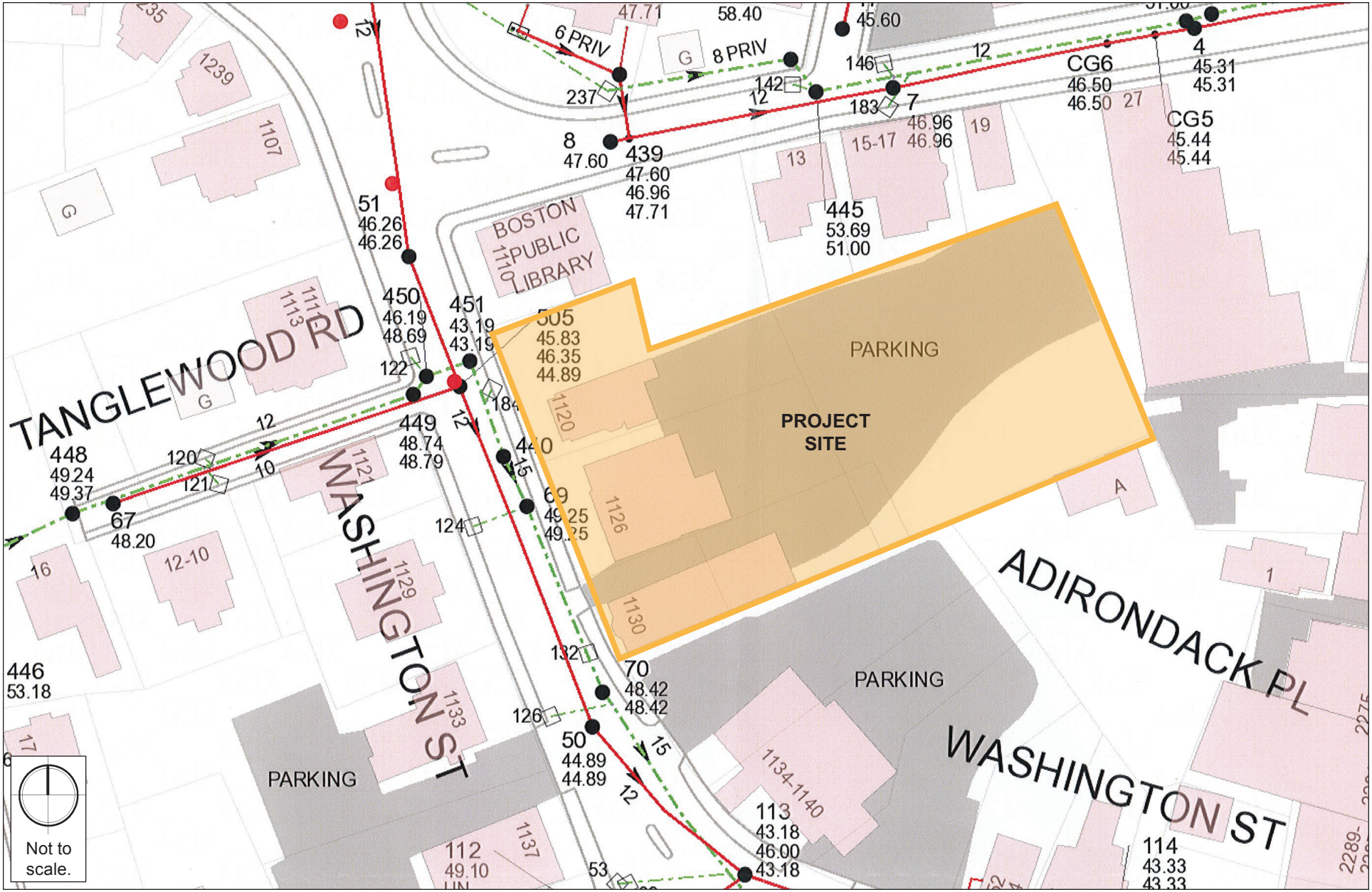
A Site Plan will be submitted to BWSC requesting abandonment of existing water and sewer services, and construction of the new connections. A Drainage Discharge Permit Application will be submitted to BWSC if construction dewatering is anticipated. The Contractor will file a General Service Application with BWSC to allow the water and sewer work, and file a hydrant meter permit if water is needed during construction.

8.1 Wastewater

8.1.1 Existing Sanitary Sewer System

The BWSC owns and maintains a separated sewer system in the area. There is a 15-inch storm drain and 12-inch sanitary sewer in Washington Street. BWSC's existing sewer system is shown in Figure 8-1.

There are four existing buildings located on the Project site with 1130 and 1132 Washington Street sharing a party wall. The estimated wastewater flow generated by existing uses in these buildings is 2,820 gallons per day (gpd) as shown in Table 8-1. Wastewater flows are based on the wastewater flow estimates provided in 310 CMR 15.00- The State Environmental Code, Title 5.



1120-1132 Washington Street Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 8-1
Existing BWSC Sewer System

Table 8-1 Estimated Existing Wastewater Flows

Use	Quantity	Wastewater Generation Rate	Total gpd
1120 Washington Street			
Two Family	5 bedrooms	110 gpd/bedroom	550
1126 Washington Street			
Funeral Home	5,335 sf	75 gpd/1,000 sf[1]	400
1130 Washington Street			
Two Family	8 bedrooms	110 gpd/bedroom	880
1132 Washington Street			
Three Family	9 bedrooms	110 gpd/bedroom	990
Total Estimated Existing Wastewater Flow			**2,820 gpd**

[1]Assumed wastewater generation rate.

8.1.2 Project-Generated Wastewater Generation

The Project will generate an estimated 12,060 gpd, resulting in an estimated net flow increase of 9,240 gpd over existing conditions. Proposed wastewater flows are based on design wastewater flow rates provided in 310 CMR 15-The State Environmental Code, Title 5 as summarized in Table 8-2.

Table 8-2 Project Wastewater Generation

Use	Quantity	Wastewater Generation Rate	Total gpd
Multi-Family	108 bedrooms	110 gpd/bedroom	11,880
Retail	3,600 sf	50 gpd/1,000 sf	180
Total Estimated Project Wastewater Generation			**12,060 gpd**

8.1.3 Sanitary Sewer Connection

The proposed sanitary sewer line from the new building will connect to the 12-inch sanitary sewer in Washington Street. The garage floor drains will be routed through a gas/oil separator prior to tying into the building's sanitary sewer service.

8.2 Water System

8.2.1 Existing Water Service

BWSC owns and maintains a 16-inch cement-lined, ductile iron water main in Washington Street that is part of the Southern High distribution system. They also maintain an existing hydrant located across the street from the site (H98). The MWRA owns two water distribution pipelines in Washington Street, a 24-inch pit cast iron pipe and a 48-inch cement-lined, cast iron pipe. BWSC's water system map is shown on Figure 8-2.

8.2.2 Proposed Water Service

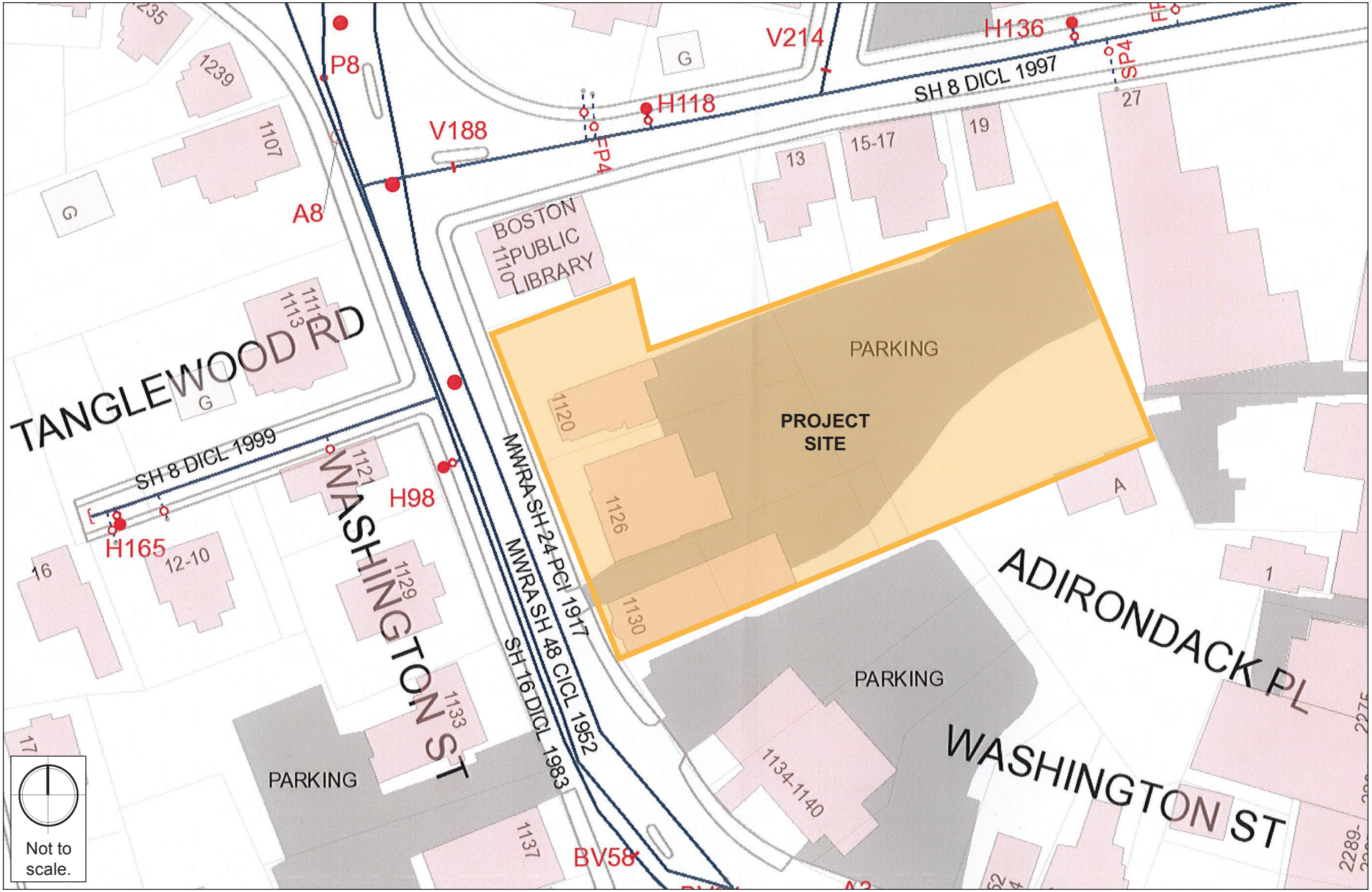
The proposed building will have separate domestic water and fire protection services. Both will connect to the BWSC's 16-inch water main in Washington Street. Water meters will be of a type approved by BWSC and tied into the BWSC's Automatic Meter Reading (AMR) System. Fixture counts and water meter sizing information will be provided to the BWSC, and services will be designed and coordinated with the BWSC, as part of the Site Plan Review process and General Service Application. The fire protection service will be provided with a backflow prevention device that will be approved though BWSC's Enforcement Section. The location of hydrants and siamese connections will be reviewed by BWSC and the Boston Fire Department (BFD) during the design development phase of the Project.

8.2.3 Anticipated Water Consumption

The Project's estimated water consumption is based on the Project's estimated sewage generation, plus a factor to account for consumption, system losses, and other usages. The total estimated water demand is 13,266 gpd. A more detailed water demand calculation will be submitted to BWSC as part of the Site Plan Review process.

8.2.4 Water Supply Conservation and Mitigation Measures

To help conserve water and reduce the amount of wastewater generated by the Project, the Proponent will investigate the use of water conservation devices such as low-flow toilets and urinals in the residences, flow-restricting faucets in residences and commercial spaces, and sensor operated sinks, toilets, and urinals in commercial spaces consistent with the Proponent's compliance at the LEED Certifiable threshold and in compliance with all pertinent Code requirements.



1120-1132 Washington Street Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 8-2
Existing BWSC Water System

8.3 Storm Drainage System

8.3.1 Existing Storm Drainage System

Runoff from a majority of the rooftops and the front third of the site appear to drain towards Washington Street where it is picked up by catch basins in the street, which tie into the 15-inch storm drain in Washington Street. The back portion of the site appears to pond within the existing paved surface lot, overflowing to northeasterly properties in large storm events.

8.3.2 Proposed Storm Drainage System

It is anticipated that a large portion of the roof will be vegetated, and the remaining rooftop runoff will be directed to a subsurface infiltration system capable of infiltrating the first inch of runoff from the roof. Runoff from pavement areas will primarily be captured by deep-sump catch basins before being routed to either a subsurface infiltration system or water quality unit and detention system. The system will be designed to treat the first inch of runoff, and remove 80% of the total suspended solids. Overflows from larger storm events are expected to be directed to BWSC's 15-inch storm drain in Washington Street. The detailed design of the system will depend on the location of bedrock and groundwater and will be submitted to BWSC as part of the Site Plan Review process.

8.3.3 Water Quality and Construction Stormwater Management

The Project will not impact the water quality of nearby water bodies. The Project proposes a stormwater management program, designed in compliance with MassDEP Stormwater Management Standards for Redevelopment, which will provide pretreatment and infiltration, if feasible, prior to discharging stormwater to the drainage system. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

A SWPPP will be prepared for the Project. Stormwater pollution prevention measures will include good housekeeping such as properly storing materials, spill prevention and response plans, and proper storage and disposal of solid wastes. Erosion and sediment controls will be used during construction to protect adjacent properties, the storm drain system, and the nearby surface waters. The Contractor will be responsible for controlling dust using street sweeping, watering and other means as necessary.

8.3.4 City of Boston Groundwater Overlay District

The Project site is not located within the City of Boston's Groundwater Conservation Overlay District.

8.4 Electrical Service

Eversource owns and maintains the electrical transmission system in the vicinity of the Project. There are underground conduits in Washington Street, and overhead wires in the back of the site. The electrical power supply design and loads for the building will be coordinated with Eversource during the design phase. The Proponent is investigating energy conservation measures, including solar panels, and energy efficient lighting and heating and cooling systems for the Project.

8.5 Natural Gas

National Grid provides natural gas in the Project area, and owns and maintains a gas main in Washington Street. The building is expected to be provided with a new gas service. The size and location will be coordinated with National Grid during the detailed design phase of the Project.

8.6 Telecommunications Systems

Verizon and Comcast provide cable and telephone services in the Project area. It is anticipated that cable service to the proposed building will be underground from Washington Street.

8.7 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. In addition, in the event a utility cannot be maintained in service during switch over to a temporary or permanent system, the Construction Contractor will be required to coordinate the shutdown with the utility owners and Project abutters to minimize impacts and inconveniences.

Chapter 9.0

Coordination with Other Governmental Agencies

9.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

9.1 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.

9.2 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.

9.3 Massachusetts Historical Commission

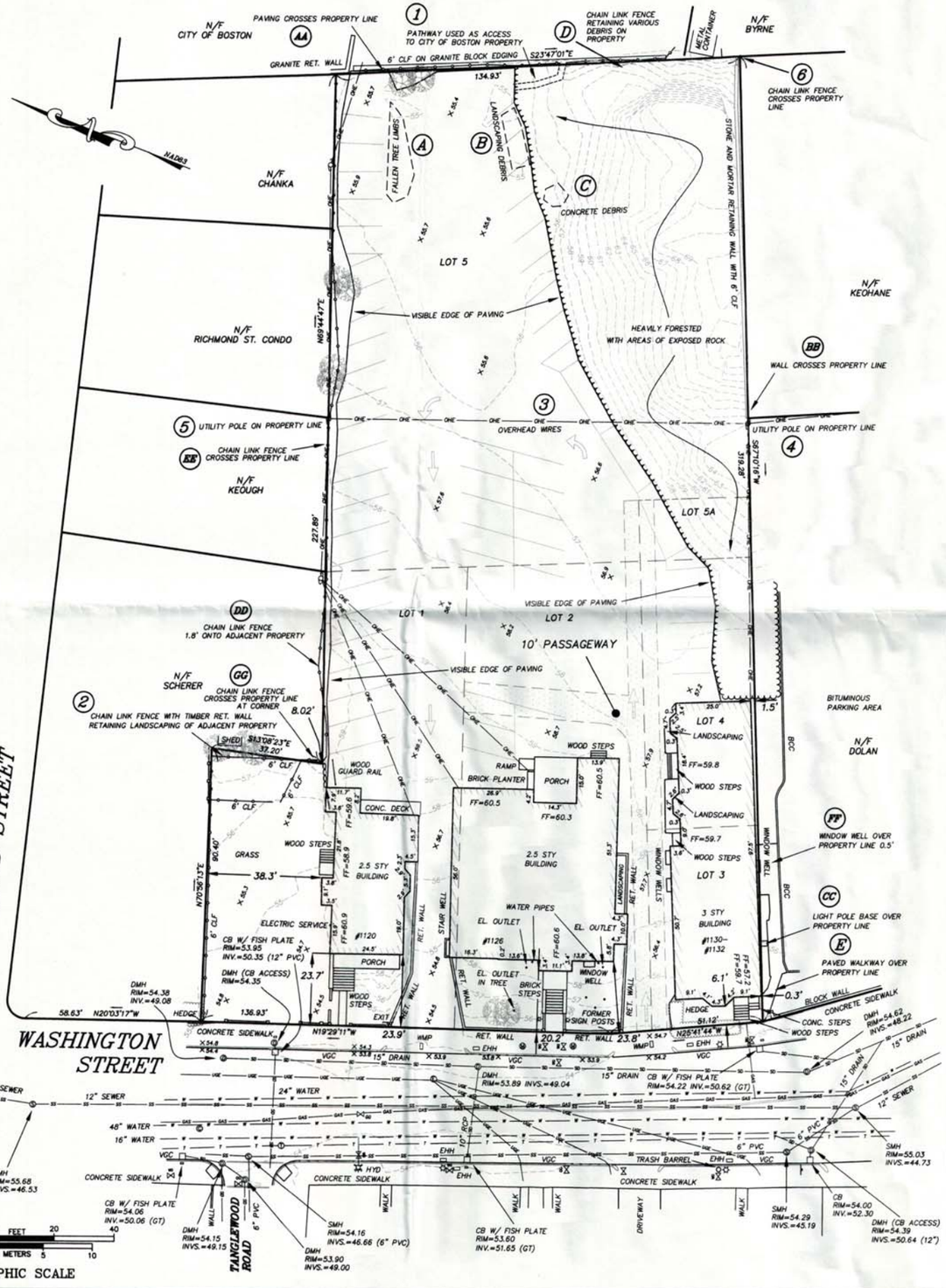
The MHC has review authority over projects requiring state funding, licensing, permitting and/or approvals that may have direct or indirect impacts to properties listed in the State Register of Historic Places. An MHC PNF will be filed to initiate the State Register Review process.

9.4 Boston Civic Design Commission

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

Appendix A

Site Survey



GENERAL NOTES

1. THE PROPERTY IS SHOWN ON THE CITY OF BOSTON ASSESSORS MAPS AS PARCEL ID'S 1704070000 THRU 1704070005 THEREON.

2. LOCUS TITLE IS RECORDED AT THE SUFFOLK COUNTY REGISTRY OF DEEDS AS FOLLOWS:

OWNERS OF RECORD: CITY POINT CENTER LLC

OWNERS REFERENCE: –BOOK 53327 PG. 44

3. PLAN BOOK REFERENCES:
–BOOK 6707 PG. 250 AND 541
–BOOK 6657 PG. 250
–BOOK 10275 PG. END
–PLAN OF BOSTON PUBLIC LIBRARY (LAND N/F SCHERER) FILED WITH THE CITY OF BOSTON ENGINEERING DEPARTMENT
–PLAN OF LAND DORCHESTER, MASS. 10–14–50 BY H.M. FLETCHER
–ENG. BOOK 137 PAGE 71–75 (BWSC UTILITY AS–BUILT OF WASHINGTON STREET)

CITY OF BOSTON FIELD BOOKS
–BOOK 834 PG. 1
–BOOK 206 PGS. 130–133
–BOOK 939 PGS. 48–49

4. BEARING SYSTEM IN USE REFERENCES THE NORTH AMERICAN DATUM OF 1983.

5. OVERALL LOT AREA 48,564 S.F.± (CALC) 48,303 S.F.± (RECORD)

6. DATUM – HORIZONTAL – NAD 83'
VERTICAL – CITY OF BOSTON

7. NUMBER OF PARKING SPACES – 52

8. LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. UNDERGROUND UTILITIES ARE SHOWN BASED ON A VISUAL INSPECTION OF SURFACE OBSERVABLE FEATURES ONLY. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED FOR SERVICE, SIZE, INVERT ELEVATION, LOCATIONS, ETC. PRIOR TO NEW CONNECTIONS TO OR RELOCATION OF SAME. CONTRACTOR MUST NOTIFY DIG–SAFE AT 1–888–344–7233 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION. NOTIFY THIS FIRM IN WRITING OF ANY AND ALL DISCREPANCIES PRIOR TO COMMENCING ANY WORK.

9. NO INFORMATION ON SERVICE CONNECTIONS FOR WATER OR SEWER COULD BE FOUND IN THE BOSTON WATER AND SEWER COMMISION RECORDS.

10. LOCUS LIES WITHIN FLOOD INSURANCE ZONE X (AREA OF MINIMAL FLOODING) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF BOSTON, MASSACHUSETTS, COMMUNITY PANEL NO. 25025C 0089 G, DATED SEPTEMBER 25, 2009.

11. THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS BEST KNOWLEDGE, INFORMATION, AND BELIEF, FORMULATED IN ACCORDANCE WITH COMMONLY ACCEPTED PROCEDURES CONSISTENT WITH APPLICABLE STANDARDS OF PRACTICE, AND AS SUCH IT CONSTITUTES NEITHER A GUARANTEE NOR WARRANTY, EITHER EXPRESS OR IMPLIED. THE CERTIFICATIONS SHOWN ARE NOT CERTIFICATIONS TO THE TITLE OR OWNERSHIP OF THE PROPERTIES SHOWN.

TITLE NOTES

– DESCRIPTION OF 10' PASSAGEWAY IS FOUND WITHIN OWNERS REFERENCE DEEDS AND SHOWN ON PLAN REFERENCE 1.

– THERE ARE NO APPARENT DEEDED EASEMENTS IN THE RECORDED DEED FOR OVERHEAD UTILITIES CROSSING THE PROPERTY.

– SEE DETAIL NOTES 1 THROUGH 6 FOR AREAS OF ABUTTING ENCROACHMENTS ONTO LOCUS

– SEE DETAIL NOTES AA THROUGH GG FOR AREAS OF LOCUS ENCROACHMENTS ONTO ABUTTING PROPERTIES

– SEE DETAIL NOTES A THROUGH D FOR OBSERVABLE DEBRIS DUMPING AREAS

– THE LOCATION OF THE BUILDINGS SHOWN HEREON WAS EITHER IN COMPLIANCE WITH THE LOCAL ZONING BY–LAWS AT THE TIME OF CONSTRUCTION OR IS EXEMPT FROM VIOLATION ENFORCEMENT ACTION PER MASSACHUSETTS GENERAL LAWS CHAPTER 40A, SECTION 7.

SURVEYOR'S CERTIFICATION

TO: CITY POINT CENTER LLC, FIRST AMERICAN TITLE INSURANCE COMPANY, EAST WEST BANK AND RUDOLPH FRIEDMANN LLP;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS AND INCLUDES ITEMS 2–6(a and b), 7(a), 8, 9, 11(a and b), 13, 14, AND 16–18 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JUNE 12, 2014.

COMMONWEALTH OF MASSACHUSETTS PETER G. HOYT # 41509 REGISTERED PROFESSIONAL LAND SURVEYOR

PETER G. HOYT, REG. NO. 41509 — DATE: 10/16/14

LENDERS CERTIFICATION

TO: CITY POINT CENTER LLC, FIRST AMERICAN TITLE INSURANCE COMPANY, EAST WEST BANK AND RUDOLPH FRIEDMANN LLP;

PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, THE UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR IN THE STATE OF MASSACHUSETTS, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN. IN ADDITION, THE UNDERSIGNED HEREBY CERTIFIES THAT (1) THE INFORMATION, COURSES AND DISTANCES SHOWN ON THIS SURVEY ARE CORRECT, (2) THE SIZE, LOCATION AND TYPE OF IMPROVEMENTS ARE SHOWN HEREON AND ALL ARE LOCATED WITHIN THE BOUNDARIES OF THE PROPERTY, EXCEPT AS SHOWN ON THE PLAN, AND SET BACK FROM THE PROPERTY LINES THE DISTANCES INDICATED, (3) THE PROPERTY IS CONTIGUOUS TO, AND HAS ACCESS TO AND FROM WASHINGTON STREET, A PUBLIC WAY, (4) THERE ARE NO KNOWN EASEMENTS OR ENCUMBRANCES (INCLUDING VISIBLE UTILITY LINES) AFFECTING THE PROPERTY OTHER THAN AS SHOWN AND DEPICTED ON THIS SURVEY, (5) THERE ARE NO ENCROACHMENTS OF ANY IMPROVEMENTS ON ADJOINING PROPERTY ONTO THE PROPERTY, EXCEPT AS SHOWN ON THE PLAN, (6) THERE ARE NO ENCROACHMENTS OF ANY IMPROVEMENTS ON THE PROPERTY ONTO ADJOINING PROPERTY, EXCEPT AS SHOWN ON THE PLAN, (7) ALL PLOTTABLE RECORDED EASEMENTS AND OTHER EXCEPTIONS, AS NOTED ON FIRST AMERICAN TITLE COMMITMENT DATED APRIL 21, 2014, HAVE BEEN CORRECTLY PLATTED HEREON, AND (8) ALL ZONING, USE AND DENSITY CLASSIFICATIONS ARE SHOWN THEREON.

COMMONWEALTH OF MASSACHUSETTS PETER G. HOYT # 41509 REGISTERED PROFESSIONAL LAND SURVEYOR

PETER G. HOYT, REG. NO. 41509 — DATE: 10/16/14

LEGAL DESCRIPTION

1120 Washington Street, Dorchester, MA 02124

The land with the buildings thereon numbered 1120 Washington Street in that part of Boston called Dorchester and shown as Lot No. 1 on "Plan of Land, Dorchester, Mass., October 14, 1950, H.M. Fletcher, Surveyor" recorded November 30, 1950 and bounded and described as follows:

SOUTHWESTERLY: by Washington Street, eighty–five (85) feet;

NORTHWESTERLY: by land of owners unknown, ninety and 40/100 (90.40) feet;

NORTHEASTERLY: by land of owners unknown, thirty–seven and 20/100 (37.20) feet;

NORTHWESTERLY: again by land or owners unknown, sixty–three and 70/100 (63.70) feet;

NORTHEASTERLY: by Lot 5 as shown on said plan, forty–seven and 67/100 (47.67) feet; and

SOUTHEASTERLY: by Lot 2 as shown on said plan, one hundred fifty–two and 70/100 (152.70) feet.

Containing 10,437 square feet of land.

Being the same premises conveyed by deed of John G. Molloy, Trustee of 1120 Washington Street Realty Trust, dated April 18, 2007 and recorded with Suffolk Registry of Deeds in Book 42393, Page 138.

1126 Washington Street, Dorchester, MA 02124

A certain parcel of land with the buildings thereon now numbered 1126 Washington Street in the Dorchester District of Boston, County of Suffolk and Commonwealth of Massachusetts, being shown as Lot 2 on a Plan of Land, Dorchester, Massachusetts, May 26, 1951, H.M. Fletcher Surveyor, recorded with the Suffolk Registry of Deeds, Book 6707, Page 541 and being bounded and described as follows:

SOUTHWESTERLY: by Washington Street by two lines, fifty–one and 93/100 (51.93) feet and twelve and 45/100 (12.45) feet;

NORTHWESTERLY: by Lot 1 as shown on said plan, one hundred fifty–two and 74/100 (152.74) feet;

NORTHEASTERLY: by Lot 5 as shown on said plan, fifty–five and 07/100 (55.07) feet; and

SOUTHEASTERLY: by Lots 3 and 4 as shown on said plan, one hundred fifty–four and 95/100 (154.95) feet.

Containing 9,212 square feet of land.

Also another certain parcel of vacant land in the Dorchester District of Boston, Suffolk County, Massachusetts, being shown as Lot 5 on "Plan of Land Dorchester, Mass." Dated May 26, 1951 by H.M. Fletcher, Surveyor, which plan is recorded with Suffolk Deeds, Book 6707, Page 541, bounded and described as follows:

NORTHWESTERLY: by land of owners unknown one hundred sixty–four and 19/100 (164.19) feet;

NORTHEASTERLY: by land of owners unknown, one hundred thirty–four and 93/100 (134.93) feet;

SOUTHEASTERLY: by land of owners unknown, one hundred forty–six and 18/100 (146.18) feet;

SOUTHWESTERLY: by Lot 5A shown on said plan, thirty–seven and 93/100 feet (37.93) feet;

SOUTHEASTERLY: by Lot 5A shown on said plan, twenty (20) feet;

SOUTHWESTERLY: by Lots 1 and 2 as shown on said plan, one hundred two and 74/100 (102.74) feet.

Containing twenty–two thousand (22,000) square feet of land according to said plan.

Being the same premises conveyed by deed of Dan G. Molloy, Trustee of the 126 Washington Street Realty Trust, dated October 31, 2000, recorded with the Suffolk Registry of Deeds in Book 25526, Page 285.

1130–1132 Washington Street

The land with the buildings thereon situated in that part of said Boston called Dorchester and numbered 1130–1132 Washington Street being Lot 3 on a plan by H.M. Fletcher surveyor, dated October 14, 1950 and recorded with the Suffolk Registry of Deeds in Book 6657, Page 250, bounded and described according to said plan as follows:

SOUTHWESTERLY: by Washington Street, thirty–eight and 67/100 (38.67) feet;

NORTHWESTERLY: by lot 2, sixty–six and 17/100 (66.17) feet;

NORTHEASTERLY: by lot 4, in part through the middle of an eight–inch wall, thirty–eight and 33/100 (38.33) feet; and

SOUTHEASTERLY: by lot 7, sixty–four and 31/100 (64.31) feet.

Containing 2,510 square feet

Also another parcel in said Dorchester being Lot 5A on a plan by H.M. Fletcher, surveyor dated May 26, 1951, recorded with said Deeds in Book 6707, Page 541, bounded and described as follows.

SOUTHWESTERLY: by lot 4, thirty–seven and 93/100 (37.93) feet;

NORTHWESTERLY: by lot 5, twenty (20) feet;

NORTHEASTERLY: by lot 5, thirty–seven and 93/100 (37.93) feet; and

SOUTHEASTERLY: by land of owners unknown, twenty (20) feet.

Containing 759 square feet.

Being the same premises conveyed by deed of John G. Molloy, Catherine L. O'Meara and Joseph F. Molloy dated December 17, 2004, recorded with Suffolk Registry of Deeds in Book 36396, Page 241.

1130R Washington Street, Dorchester, MA

The land with buildings thereon situated in Boston, Suffolk County, Massachusetts, Dorchester District, being 1130 Rear Washington Street, and shown as Lot 4 on "Plan of land, Dorchester, Mass., October 14, 1950, A. M. Fletcher, Surveyor", recorded with Suffolk Registry of Deeds on November 30, 1950 in Book 6657, Page 250.

Bounded and described as follows:

SOUTHWESTERLY: by Lot 3 as shown on said plan in part through the middle of an 8 inch wall, thirty eight and 33/100 (38.33) feet;

NORTHWESTERLY: by Lot 2 as shown on said plan, eighty eight and 78/100 (88.78) feet;

NORTHEASTERLY: by Lot 5 as shown on said plan, thirty seven and 93/100 (37.93) feet;

SOUTHEASTERLY: by Lot 7 as shown on said plan, eighty eight and 79/100 (88.79) feet.

Containing 3,385 square feet of land.

Being the same premises conveyed by deed of John G. Molloy and Catherine L. Molloy to John G. Molloy, Trustee of the 1130 Rear Washington Street Realty Trust, dated March 23, 1992 and recorded with said Deeds in Book 17370, Page 62.

ZONING LEGEND

ZONING DISTRICT:
NEIGHBORHOOD SHOPPING SUBDISTRICT
NEIGHBORHOOD DESIGN OVERLAY DISTRICT

	REQUIRED
COUNTY, STATE	SUFFOLK, MA
MINIMUM LOT AREA	NONE
MAXIMUM BUILDING HEIGHT	40'
MINIMUM LOT FRONTAGE	NONE
MINIMUM FRONT SETBACK	NONE
MINIMUM SIDE SETBACK	NONE
MINIMUM REAR SETBACK	20'
MAXIMUM FLOOR AREA RATIO	1.0
MINIMUM OPEN SPACE PER UNIT	50'
MINIMUM LOT WIDTH	NONE

LINE, SYMBOL, AND ABBREVIATION LEGEND

CB	CATCH BASIN
SMH	SEWER MANHOLE
DMH	DRAIN MANHOLE
T	TELEPHONE MANHOLE
C	CABLE MANHOLE
M	MWRA MANHOLE
	LIGHT POLE
	UTILITY POLE
	GAS GATE
	WATER GATE
	GATE UNKNOWN
INV.	INVERT
CLF	CHAIN LINT FENCE
VGC	VERTICAL CONCRETE CURB
BCC	BITUMINOUS CONCRETE CURB
EHH	ELECTRIC HAND HOLE
RET.	RETAINING
WMP	WATER METER PIT
EL.	ELECTRIC
STY	STORY
FF	FINISHED FLOOR
GT	GREASE TRAP
–ONE–	OVERHEAD ELECTRIC LINE
–G–	GAS LINE
–T–	COMMUNICATIONS LINE
SS	SANITARY SERVER LINE
–W–	WATER LINE
–UGE–	UNDERGROUND ELECTRIC
SD	STORM DRAIN
55	CONTOUR LINE
x55.2	SPOT GRADE
	TREE/HEDGE LINE

ALTA/ACSM LAND TITLE SURVEY PLAN

1120-1132 WASHINGTON STREET
DORCHESTER, MASSACHUSETTS
DATE: JUNE 11, 2014 SCALE:1"=20'
REV DATE: OCTOBER 16, 2014

HOYT LAND SURVEYING
1287 WASHINGTON STREET
WEYMOUTH MA. 02189
781-682-9192

Appendix B

Transportation

Appendix B – Transportation

Vehicle, Pedestrian, and Bicycle Counts
Trip Generation
Synchro Intersection Level of Service Reports

- Existing (2017) Condition
- No-Build (2024) Condition
- Build (2024) Condition

Vehicle, Pedestrian, and Bicycle Counts

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 1
Location:	Dorchester (Boston), MA
Street 1:	Washington Street
Street 2:	River Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
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TOTAL (CARS & TRUCKS)

	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
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	52	91	0	0	0	33	20	0	58	0	51	0	0	0	0
7:15 AM	0	50	99	0	0	0	35	21	0	63	0	55	0	0	0	0
7:30 AM	0	43	97	0	0	0	35	32	0	67	0	53	0	0	0	0
7:45 AM	0	46	96	0	0	0	32	40	0	64	0	61	0	0	0	0
8:00 AM	0	44	86	0	0	0	36	41	0	56	0	64	0	0	0	0
8:15 AM	0	45	93	0	0	0	37	39	0	42	0	62	0	0	0	0
8:30 AM	0	42	95	0	0	0	38	38	0	43	0	54	0	0	0	0
8:45 AM	0	38	89	0	0	0	35	33	0	39	0	49	0	0	0	0

	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
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	60	52	0	0	0	42	40	0	39	0	48	0	0	0	0
4:15 PM	0	65	53	0	0	0	47	43	0	37	0	50	0	0	0	0
4:30 PM	0	66	48	0	0	0	48	46	0	38	0	47	0	0	0	0
4:45 PM	0	64	54	0	0	0	47	45	0	36	0	56	0	0	0	0
5:00 PM	0	62	55	0	0	0	49	48	0	39	0	60	0	0	0	0
5:15 PM	0	60	56	0	0	0	43	45	0	40	0	59	0	0	0	0
5:30 PM	0	56	51	0	0	0	41	43	0	39	0	53	0	0	0	0
5:45 PM	0	52	46	0	0	0	38	37	0	35	0	48	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**183**	**378**	**0**	**0**	**0**	**138**	**134**	**0**	**250**	**0**	**233**	**0**	**0**	**0**	**0**
PHF	**0.94**				**0.88**				**0.97**				**0.00**			
HV %	**0.0%**	**1.1%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**252**	**213**	**0**	**0**	**0**	**187**	**184**	**0**	**153**	**0**	**222**	**0**	**0**	**0**	**0**
PHF	**0.99**				**0.96**				**0.95**				**0.00**			
HV %	**0.0%**	**0.4%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**2.1%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 1
Location:	Dorchester (Boston), MA
Street 1:	Washington Street
Street 2:	River Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TRUCKS

	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
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	1	2	0	0	0	0	0	0	2	0	1	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
8:30 AM	0	2	2	0	0	0	2	0	0	2	0	1	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
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	1	0	0	0	1	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	1	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	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:45 AM to 8:45 AM	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**3**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**0**
PHF	**0.44**				**0.38**				**0.33**				**0.00**			

PM PEAK HOUR 4:30 PM to 5:30 PM	Washington Street Northwestbound				Washington Street Southbound				River Street Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**1**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.50**				**0.50**				**0.25**				**0.00**			

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 1
Location:	Dorchester (Boston), MA
Street 1:	Washington Street
Street 2:	River Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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PEDESTRIANS & BICYCLES

	Washington Street Northwestbound					Washington Street Southbound					River Street Eastbound					Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	1		0	0	0	1		0	0	0	0		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	3		0	0	0	0		0	0	0	1		0	0	0	0	
7:45 AM	0	0	0	2		0	0	0	0		0	0	0	0		0	0	0	0	
8:00 AM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
8:15 AM	0	0	0	2		0	0	0	1		0	0	0	0		0	0	0	0	
8:30 AM	0	0	0	2		0	0	0	0		0	0	0	0		0	0	0	0	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	

	Washington Street Northwestbound					Washington Street Southbound					River Street Eastbound					Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
4:15 PM	0	0	0	2		0	0	0	0		0	0	0	0		0	0	0	0	
4:30 PM	0	0	0	3		0	0	0	0		0	0	0	1		0	0	0	0	
4:45 PM	0	0	0	4		0	0	0	0		0	0	0	0		0	0	0	0	
5:00 PM	0	0	0	1		0	0	0	0		0	0	0	2		0	0	0	0	
5:15 PM	0	0	0	2		0	0	0	0		0	0	0	1		0	0	0	0	
5:30 PM	0	0	0	2		0	0	0	0		0	0	0	1		0	0	0	0	
5:45 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	

AM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southbound					River Street Eastbound					Westbound				
7:15 AM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
8:15 AM	0	0	0	6		0	0	0	0		0	0	0	1		0	0	0	0	

PM PEAK HOUR[1]	Washington Street Northwestbound					Washington Street Southbound					River Street Eastbound					Westbound				
4:30 PM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
5:30 PM	0	0	0	10		0	0	0	0		0	0	0	4		0	0	0	0	

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

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 2
Location:	Dorchester (Boston), MA
Street 1:	Washington Street
Street 2:	Morton St/Richmond St
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TOTAL (CARS & TRUCKS)

	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
7:00 AM	0	77	49	12	0	6	21	5	0	9	13	20	0	4	15	7
7:15 AM	0	79	64	15	0	7	22	6	0	8	20	29	0	5	14	8
7:30 AM	0	74	73	17	0	8	30	7	0	8	26	36	0	7	20	9
7:45 AM	0	72	72	16	0	12	36	6	0	9	24	35	0	9	25	10
8:00 AM	0	66	64	14	0	11	37	8	0	10	23	31	0	8	24	8
8:15 AM	0	68	66	14	0	8	34	10	0	10	22	32	0	6	20	6
8:30 AM	0	63	62	12	0	8	34	9	0	9	24	30	0	6	20	7
8:45 AM	0	61	60	13	0	7	31	8	0	9	23	28	0	5	18	6

	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
4:00 PM	0	33	40	9	0	4	40	9	0	6	22	41	0	6	20	4
4:15 PM	0	32	48	11	0	4	38	10	0	6	26	45	0	6	19	5
4:30 PM	0	30	51	11	0	6	41	14	0	5	28	44	0	11	25	5
4:45 PM	0	34	47	12	0	7	43	16	0	6	25	43	2	15	29	4
5:00 PM	0	41	46	12	1	8	45	16	0	7	24	45	0	12	28	5
5:15 PM	0	40	46	10	0	8	42	15	0	8	25	46	0	7	27	6
5:30 PM	0	37	42	10	0	7	41	15	0	6	23	43	0	7	27	6
5:45 PM	0	39	39	11	0	6	37	13	0	5	22	41	0	6	25	5

AM PEAK HOUR 7:30 AM to 8:30 AM	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
	0	**280**	**275**	**61**	**0**	**39**	**137**	**31**	**0**	**37**	**95**	**134**	**0**	**30**	**89**	**33**
PHF	**0.94**				**0.92**				**0.95**				**0.86**			
HV %	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**0.0%**	**2.6%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
	0	**145**	**190**	**45**	**1**	**29**	**171**	**61**	**0**	**26**	**102**	**178**	**2**	**45**	**109**	**20**
PHF	**0.96**				**0.94**				**0.97**				**0.88**			
HV %	**0.0%**	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 2
Location:	Dorchester (Boston), MA
Street 1:	Washington Street
Street 2:	Morton St/Richmond St
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TRUCKS

	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
7:00 AM	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
4:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	1	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 7:45 AM to 8:45 AM	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
	0	**0**	**5**	**1**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.50**				**0.38**				**0.00**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Washington Street Northbound				Washington Street Southbound				Morton Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Hard Left	Left	Soft Right	U-Turn	Left	Soft Right	Hard Right
	0	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.25**				**0.38**				**0.00**				**0.00**			

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 2
Location:	Dorchester (Boston), MA
Street 1:	Washington Street
Street 2:	Morton St/Richmond St
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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PEDESTRIANS & BICYCLES

	Washington Street Northbound					Washington Street Southbound					Morton Street Eastbound					Richmond Street Westbound				
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	0	0	0		0	0	0	1		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	1		0	0	0	1		0	0	0	0		0	0	0	1	
7:45 AM	0	0	0	2		0	0	0	0		0	0	0	2		0	0	0	0	
8:00 AM	0	0	0	4		0	0	0	2		0	0	0	0		0	0	0	0	
8:15 AM	0	0	0	3		0	0	0	0		0	0	0	0		0	0	0	0	
8:30 AM	0	1	0	1		0	0	0	0		0	0	0	1		0	0	0	0	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	

	Washington Street Northbound					Washington Street Southbound					Morton Street Eastbound					Richmond Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
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	1		0	0	0	0		0	0	0	1		0	0	0	0	
4:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
4:45 PM	0	0	0	2		0	0	0	1		0	0	0	0		0	0	0	0	
5:00 PM	0	0	0	0		0	0	0	0		0	0	0	1		0	0	0	0	
5:15 PM	0	0	0	1		0	0	0	2		0	0	0	0		0	0	0	1	
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[1] 7:30 AM to 8:30 AM	Washington Street Northbound					Washington Street Southbound					Morton Street Eastbound					Richmond Street Westbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	0	0	10		0	0	0	3		0	0	0	2		0	0	0	1	

PM PEAK HOUR[1] 4:30 PM to 5:30 PM	Washington Street Northbound					Washington Street Southbound					Morton Street Eastbound					Richmond Street Westbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	0	0	3		0	0	0	3		0	0	0	1		0	0	0	2	

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

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 3
Location:	Dorchester (Boston), MA
Street 1:	Dorchester Avenue
Street 2:	Richmond Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TOTAL (CARS & TRUCKS)

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
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	7	86	0	0	5	40	8	0	10	8	9	0	1	9	15
7:15 AM	0	12	76	2	0	5	41	9	0	13	12	11	0	1	10	14
7:30 AM	0	16	58	3	0	4	48	10	0	14	14	12	0	3	9	12
7:45 AM	0	14	78	2	0	2	50	10	0	15	13	14	0	5	8	8
8:00 AM	0	10	91	1	0	3	49	9	0	15	12	14	0	4	11	10
8:15 AM	0	9	86	2	0	3	46	8	0	14	12	15	0	3	12	8
8:30 AM	0	8	72	3	0	4	47	8	0	13	11	12	0	3	12	8
8:45 AM	0	8	69	2	0	3	43	7	0	12	12	13	0	2	11	7

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
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	9	56	2	0	4	71	5	0	8	9	13	0	11	18	5
4:15 PM	0	10	55	2	0	4	72	5	0	11	11	14	0	10	17	5
4:30 PM	0	9	51	2	0	3	74	7	0	13	11	13	0	11	17	13
4:45 PM	0	13	54	5	0	2	79	8	0	11	12	13	0	11	16	19
5:00 PM	0	12	52	7	0	4	75	9	0	8	14	12	0	13	20	14
5:15 PM	0	12	48	7	0	3	73	7	0	9	13	14	0	13	23	8
5:30 PM	0	10	46	6	0	3	70	7	0	9	10	11	0	12	23	8
5:45 PM	0	11	43	5	0	2	68	6	0	8	11	12	0	10	21	7

AM PEAK HOUR 7:30 AM to 8:30 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**49**	**313**	**8**	**0**	**12**	**193**	**37**	**0**	**58**	**51**	**55**	**0**	**15**	**40**	**38**
PHF	**0.91**				**0.98**				**0.98**				**0.93**			
HV %	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**46**	**205**	**21**	**0**	**12**	**301**	**31**	**0**	**41**	**50**	**52**	**0**	**48**	**76**	**54**
PHF	**0.94**				**0.97**				**0.97**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 3
Location:	Dorchester (Boston), MA
Street 1:	Dorchester Avenue
Street 2:	Richmond Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TRUCKS

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
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	0	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	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8:15 AM	0	0	1	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	1	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
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	2	0	0	0	0	1	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	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 to 8:15 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
	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**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
PHF	**0.50**				**0.50**				**0.25**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Richmond Street Eastbound				Richmond Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.25**				**0.25**				**0.00**			

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 3
Location:	Dorchester (Boston), MA
Street 1:	Dorchester Avenue
Street 2:	Richmond Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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PEDESTRIANS & BICYCLES

	Dorchester Avenue Northbound					Dorchester Avenue Southbound					Richmond Street Eastbound					Richmond Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	0		0	0	0	0		0	0	0	1		0	0	0	0	
7:45 AM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	1	
8:00 AM	0	0	0	0		0	0	0	0		0	0	0	1		0	0	0	0	
8:15 AM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	1	
8:30 AM	0	0	0	3		0	0	0	0		0	0	0	1		0	0	0	1	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	

	Dorchester Avenue Northbound					Dorchester Avenue Southbound					Richmond Street Eastbound					Richmond Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	1		0	0	0	2		0	0	0	2		0	0	0	6	
4:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	4	
4:30 PM	0	0	0	1		0	0	0	7		0	0	0	3		0	0	0	5	
4:45 PM	0	0	0	0		0	0	0	3		0	0	0	1		0	0	0	2	
5:00 PM	0	1	0	2		0	1	0	1		0	0	0	2		0	0	0	4	
5:15 PM	0	0	0	0		0	0	0	2		0	0	0	0		0	0	0	0	
5:30 PM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	1	
5:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	

AM PEAK HOUR[1] 7:30 AM to 8:30 AM	Dorchester Avenue Northbound					Dorchester Avenue Southbound					Richmond Street Eastbound					Richmond Street Westbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	0	0	0		0	0	0	2		0	0	0	2		0	0	0	2	

PM PEAK HOUR[1] 4:30 PM to 5:30 PM	Dorchester Avenue Northbound					Dorchester Avenue Southbound					Richmond Street Eastbound					Richmond Street Westbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	1	0	3		0	1	0	13		0	0	0	6		0	0	0	11	

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

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 4
Location:	Dorchester (Boston), MA
Street 1:	Dorchester Ave/Adams St
Street 2:	Washington Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TOTAL (CARS & TRUCKS)

	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
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	90	65	83	0	2	38	15	0	15	38	29	0	28	40	5
7:15 AM	0	93	63	91	0	2	40	16	0	16	40	32	0	26	38	4
7:30 AM	0	94	55	90	0	1	41	20	0	15	48	36	0	25	35	5
7:45 AM	0	91	72	95	0	0	38	22	0	12	51	37	0	32	36	5
8:00 AM	0	86	82	91	0	2	39	21	0	16	50	40	0	35	41	4
8:15 AM	0	88	77	85	0	3	37	18	0	19	45	40	0	34	38	5
8:30 AM	0	81	76	82	0	3	38	19	0	16	41	37	0	29	32	4
8:45 AM	0	76	73	74	0	2	35	19	0	17	39	35	0	27	31	4

	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
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	50	49	44	0	2	83	17	0	12	41	45	0	54	52	4
4:15 PM	0	53	53	44	0	2	82	18	0	13	43	47	0	48	47	4
4:30 PM	0	51	52	39	0	4	84	18	0	13	39	54	0	37	43	3
4:45 PM	0	55	59	44	0	6	79	17	0	11	32	55	0	38	48	4
5:00 PM	0	54	60	45	0	6	81	16	0	11	38	57	0	35	52	4
5:15 PM	0	53	56	45	0	6	83	14	0	10	41	53	0	35	50	5
5:30 PM	0	49	54	41	0	6	80	13	0	10	41	52	0	32	43	3
5:45 PM	0	48	51	39	0	5	78	13	0	9	37	46	0	30	41	3

AM PEAK HOUR 7:30 AM to 8:30 AM	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**359**	**286**	**361**	**0**	**6**	**155**	**81**	**0**	**62**	**194**	**153**	**0**	**126**	**150**	**19**
PHF	**0.97**				**0.98**				**0.96**				**0.92**			
HV %	**0.0%**	**0.6%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**1.2%**	**0.0%**	**0.0%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**213**	**224**	**172**	**0**	**18**	**326**	**69**	**0**	**48**	**152**	**213**	**0**	**158**	**190**	**15**
PHF	**0.96**				**0.97**				**0.97**				**0.92**			
HV %	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.1%**	**0.7%**	**0.5%**	**0.0%**	**0.0%**	**0.5%**	**0.0%**

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 4
Location:	Dorchester (Boston), MA
Street 1:	Dorchester Ave/Adams St
Street 2:	Washington Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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TRUCKS

	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
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	2	1	0	0	0	0	0	0	0	1	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:30 AM	0	3	1	0	0	0	1	0	0	0	2	0	0	0	1	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
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	2	1	0	0	0	1	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	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 7:45 AM to 8:45 AM	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**4**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**
PHF	**0.31**				**0.50**				**0.38**				**0.25**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Adams Street Northbound				Dorchester Avenue Southbound				Washington Street Eastbound				Adams Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**
PHF	**0.00**				**0.25**				**0.50**				**0.50**			

Client:	Michael Littman
Project #:	53_016_HSH_Dorchester
BTD #:	Location 4
Location:	Dorchester (Boston), MA
Street 1:	Dorchester Ave/Adams St
Street 2:	Washington Street
Count Date:	3/21/2017
Day of Week:	Tuesday
Weather:	Cloudy, 45°F

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PEDESTRIANS & BICYCLES

	Adams Street Northbound					Dorchester Avenue Southbound					Washington Street Eastbound					Adams Street Westbound				
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	0	0	0		0	0	0	0		0	0	0	4	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
7:30 AM	0	0	0	2		0	0	0	1		0	0	0	1		0	0	0	2	
7:45 AM	0	0	0	1		0	0	0	3		0	0	0	3		0	0	0	4	
8:00 AM	0	0	0	3		0	0	0	5		0	0	0	4		0	0	0	9	
8:15 AM	0	0	0	2		0	0	0	2		0	0	0	2		0	0	0	5	
8:30 AM	0	0	0	1		0	0	0	0		0	0	0	3		0	0	0	7	
8:45 AM	0	0	0	0		0	0	0	1		0	0	0	1		0	0	0	4	

	Adams Street Northbound					Dorchester Avenue Southbound					Washington Street Eastbound					Adams Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	2		0	0	0	4		0	0	0	4		0	0	0	7	
4:15 PM	0	0	0	0		0	0	0	3		0	0	0	1		0	0	0	3	
4:30 PM	0	0	1	1		0	0	0	2		0	0	0	2		0	0	0	4	
4:45 PM	0	0	0	2		0	0	0	3		0	0	0	3		0	0	0	5	
5:00 PM	0	0	0	2		0	0	0	2		0	0	0	2		0	0	0	8	
5:15 PM	0	0	0	0		0	0	0	3		0	0	0	1		0	0	0	4	
5:30 PM	0	0	0	1		0	0	0	4		0	0	0	0		0	0	0	5	
5:45 PM	0	0	0	0		0	0	0	2		0	0	0	0		0	0	0	3	

AM PEAK HOUR[1]	Adams Street Northbound					Dorchester Avenue Southbound					Washington Street Eastbound					Adams Street Westbound				
7:30 AM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
8:30 AM	0	0	0	8		0	0	0	11		0	0	0	10		0	0	0	20	

PM PEAK HOUR[1]	Adams Street Northbound					Dorchester Avenue Southbound					Washington Street Eastbound					Adams Street Westbound				
4:15 PM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
5:15 PM	0	0	1	5		0	0	0	10		0	0	0	8		0	0	0	20	

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

Trip Generation - Proposed Program

1120 Washington Street

Trip Generation Assessment

HOWARD STEIN HUDSON
7-Mar-2017

xx HARD CODED TO BALANCE (Manually change formatting)

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Primary 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 Adjusted Auto Trips
Daily Peak Hour																
Apartment[5]	57	Total		6.650	380	1.13	**430**	**430**	16%	**68**	18%	**78**	66%	**284**	1.13	**252**
	units	In	50%	3.325	190	1.13	**215**	**215**	16%	**34**	18%	**39**	66%	**142**	1.13	**126**
		Out	50%	3.325	190	1.13	**215**	**215**	16%	**34**	18%	**39**	66%	**142**	1.13	**126**
Office Building[6]	3.6	Total		11.030	40	1.13	**46**	**46**	15%	**6**	10%	**4**	75%	**36**	1.13	**32**
	KSF	In	50%	5.515	20	1.13	**23**	**23**	15%	**3**	10%	**2**	75%	**18**	1.13	**16**
		Out	50%	5.515	20	1.13	**23**	**23**	15%	**3**	10%	**2**	75%	**18**	1.13	**16**
Total		Total			**420**		**476**	**476**		**74**		**82**		**320**		**284**
		In			**210**		**238**	**238**		**37**		**41**		**160**		**142**
		Out			**210**		**238**	**238**		**37**		**41**		**160**		**142**
AM Peak Hour																
Apartment[5]	57	Total		0.51	29	1.13	**33**	**33**		**9**		**5**		**19**	1.13	**17**
	units	In	20%	0.102	6	1.13	**7**	**7**	18%	**1**	28%	**2**	54%	**4**	1.13	**4**
		Out	80%	0.408	23	1.13	**26**	**26**	31%	**8**	13%	**3**	56%	**15**	1.13	**13**
Office Building[6]	3.6	Total		1.56	6	1.13	**7**	**7**		**1**		**1**		**5**	1.13	**5**
	KSF	In	88%	1.373	5	1.13	**6**	**6**	19%	**1**	17%	**1**	64%	**4**	1.13	**4**
		Out	12%	0.187	1	1.13	**1**	**1**	29%	**0**	8%	**0**	63%	**1**	1.13	**1**
Total		Total			**35**		**40**	**40**		**10**		**6**		**24**		**22**
		In			**11**		**13**	**13**		**2**		**3**		**8**		**8**
		Out			**24**		**27**	**27**		**8**		**3**		**16**		**14**
PM Peak Hour																
Apartment[5]	57	Total		0.62	35	1.13	**40**	**40**		**11**		**7**		**22**	1.13	**19**
	units	In	65%	0.403	23	1.13	**26**	**26**	31%	**8**	13%	**3**	56%	**15**	1.13	**13**
		Out	35%	0.217	12	1.13	**14**	**14**	18%	**3**	28%	**4**	54%	**7**	1.13	**6**
Office Building[6]	3.6	Total		1.49	5	1.13	**6**	**6**		**1**		**1**		**4**	1.13	**4**
	KSF	In	17%	0.253	1	1.13	**1**	**1**	29%	**0**	8%	**0**	63%	**1**	1.13	**1**
		Out	83%	1.237	4	1.13	**5**	**5**	19%	**1**	17%	**1**	64%	**3**	1.13	**3**
Total		Total			**40**		**46**	**46**		**12**		**8**		**26**		**23**
		In			**24**		**27**	**27**		**8**		**3**		**16**		**14**
		Out			**16**		**19**	**19**		**4**		**5**		**10**		**9**

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 9
4. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates
5. ITE Trip Generation Manual, 9th Edition, LUC 220 (Apartment), average rate
6. ITE Trip Generation Manual, 9th Edition, LUC 710 (General Office Building), average rate

Synchro Intersection Level of Service Reports

- Existing (2017) Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	37	95	134	30	89	33	280	275	61	39	137	31	
Future Volume (vph)	37	95	134	30	89	33	280	275	61	39	137	31	
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	
Frt			0.850		0.971			0.973			0.972		
Flt Protected		0.986			0.990		0.950			0.950			
Satd. Flow (prot)	0	1873	1615	0	1826	0	1805	1819	0	1752	1832	0	
Flt Permitted		0.986			0.990		0.606			0.256			
Satd. Flow (perm)	0	1873	1615	0	1826	0	1151	1819	0	472	1832	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			236		9			10			9		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			710			537			620		
Travel Time (s)		14.0			16.1			12.2			14.1		
Peak Hour Factor	0.95	0.95	0.95	0.86	0.86	0.86	0.94	0.94	0.94	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	3%	1%	0%	
Adj. Flow (vph)	39	100	141	35	103	38	298	293	65	42	149	34	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	139	141	0	176	0	298	358	0	42	183	0	
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA		
Protected Phases	3	3		4	4		5	1 5			1		2
Permitted Phases			3				1 5			1			
Detector Phase	3	3	3	4	4		5	1 5		1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0			10.0	10.0		1.0
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		14.0			19.5	19.5		27.0
Total Split (s)	23.0	23.0	23.0	19.0	19.0		15.0			36.0	36.0		27.0
Total Split (%)	19.2%	19.2%	19.2%	15.8%	15.8%		12.5%			30.0%	30.0%		23%
Maximum Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
Yellow Time (s)	4.0	4.0	4.0	3.5	3.5		3.0			3.5	3.5		2.0
All-Red Time (s)	2.5	2.5	2.5	3.0	3.0		6.0			6.0	6.0		2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0			0.0	0.0		
Total Lost Time (s)		6.5	6.5		6.5		9.0			9.5	9.5		
Lead/Lag	Lead	Lead	Lead	Lag	Lag					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			4.0	4.0		3.0
Recall Mode	Max	Max	Max	Max	Max		Max			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													16
Act Effct Green (s)		32.7	32.7		12.5		33.0	41.5		26.5	26.5		
Actuated g/C Ratio		0.27	0.27		0.10		0.28	0.35		0.22	0.22		
v/c Ratio		0.27	0.23		0.89		0.85	0.56		0.40	0.45		
Control Delay		40.9	0.9		91.2		61.8	37.4		53.5	42.4		
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0		
Total Delay		40.9	0.9		91.2		61.8	37.4		53.5	42.4		
LOS		D	A		F		E	D		D	D		
Approach Delay		20.8			91.2			48.5			44.4		
Approach LOS		C			F			D			D		
90th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
70th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
50th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
50th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
30th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
30th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
10th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
10th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)		74	0		130		187	166		28	117		
Queue Length 95th (ft)		170	0		#246		m#299	m251		68	190		
Internal Link Dist (ft)		535			630			457			540		
Turn Bay Length (ft)													
Base Capacity (vph)		510	611		198		349	635		104	411		
Starvation Cap Reductn		0	0		0		0	0		0	0		
Spillback Cap Reductn		0	0		0		0	0		0	0		
Storage Cap Reductn		0	0		0		0	0		0	0		
Reduced v/c Ratio		0.27	0.23		0.89		0.85	0.56		0.40	0.45		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 47.6 Intersection LOS: D
Intersection Capacity Utilization 62.8% 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.

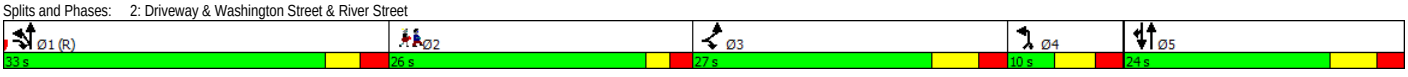
Splits and Phases: 1: Washington Street & Morton Street/Richmond Street

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	NEL2	NEL	NER	Ø2
Lane Configurations											
Traffic Volume (vph)	250	233	183	378	138	0	134	0	0	0	
Future Volume (vph)	250	233	183	378	138	0	134	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	75	0	100			75			0	0	
Storage Lanes	1	1	1			1			1	1	
Taper Length (ft)	100		100						25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850					0.850				
Flt Protected	0.950		0.950								
Satd. Flow (prot)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Flt Permitted	0.950		0.950								
Satd. Flow (perm)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Right Turn on Red							Yes			Yes	
Satd. Flow (RTOR)							173				
Link Speed (mph)	30			30	30				30		
Link Distance (ft)	464			447	537				214		
Travel Time (s)	10.5			10.2	12.2				4.9		
Peak Hour Factor	0.97	0.97	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	0%	2%	2%	2%	
Adj. Flow (vph)	258	240	195	402	157	0	152	0	0	0	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	258	240	195	402	157	0	152	0	0	0	
Turn Type	Prot	pt+ov	Prot	NA	NA		Prot	Prot		Prot	
Protected Phases	3	1 3	1	1 5	5		5	4		4	2
Permitted Phases											
Detector Phase	3	1 3	1	1 5	5		5	4		4	
Switch Phase											
Minimum Initial (s)	10.0		10.0		10.0		10.0	4.0		4.0	1.0
Minimum Split (s)	16.5		15.5		16.5		16.5	10.0		10.0	26.0
Total Split (s)	27.0		33.0		24.0		24.0	10.0		10.0	26.0
Total Split (%)	22.5%		27.5%		20.0%		20.0%	8.3%		8.3%	22%
Maximum Green (s)	20.5		27.5		17.5		17.5	4.0		4.0	22.0
Yellow Time (s)	4.0		3.0		4.0		4.0	3.5		3.5	2.0
All-Red Time (s)	2.5		2.5		2.5		2.5	2.5		2.5	2.0
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.5		5.5		6.5		6.5	6.0		6.0	
Lead/Lag	Lead		Lead					Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes					Yes		Yes	Yes
Vehicle Extension (s)	2.0		2.0		4.0		4.0	2.0		2.0	3.0
Recall Mode	None		C-Max		None		None	None		None	None
Walk Time (s)											7.0
Flash Dont Walk (s)											15.0
Pedestrian Calls (#/hr)											7
Act Effct Green (s)	20.6	82.3	56.2	82.2	19.4		19.4				
Actuated g/C Ratio	0.17	0.69	0.47	0.68	0.16		0.16				
v/c Ratio	0.83	0.22	0.23	0.31	0.51		0.37				
Control Delay	70.3	7.7	10.7	2.6	52.7		15.8				
Queue Delay	0.0	0.0	0.0	0.3	0.0		0.0				
Total Delay	70.3	7.7	10.7	2.9	52.7		15.8				
LOS	E	A	B	A	D		B				
Approach Delay	40.1			5.4	34.5						
Approach LOS	D			A	C						
90th %ile Green (s)	20.5		27.5		27.5		27.5	0.0		0.0	22.0
90th %ile Term Code	Max		Coord		Max		Max	Skip		Skip	Ped
70th %ile Green (s)	25.2		53.0		23.3		23.3	0.0		0.0	0.0
70th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
50th %ile Green (s)	22.6		60.1		18.8		18.8	0.0		0.0	0.0
50th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
30th %ile Green (s)	19.6		66.2		15.7		15.7	0.0		0.0	0.0
30th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
10th %ile Green (s)	15.3		74.4		11.8		11.8	0.0		0.0	0.0
10th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
Queue Length 50th (ft)	191	49	43	4	123		25				
Queue Length 95th (ft)	#337	101	148	113	m171		m70				
Internal Link Dist (ft)	384			367	457				134		
Turn Bay Length (ft)	75		100				75				
Base Capacity (vph)	328	1123	837	1289	331		424				
Starvation Cap Reductn	0	0	0	405	0		0				
Spillback Cap Reductn	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0		0				
Reduced v/c Ratio	0.79	0.21	0.23	0.45	0.47		0.36				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 1:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 47.7% ICU Level of Service A
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: 2: Driveway & Washington Street & River Street

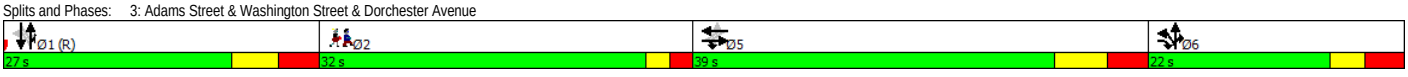


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	62	194	153	126	150	19	359	286	361	6	155	81	
Future Volume (vph)	62	194	153	126	150	19	359	286	361	6	155	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		25	0		50	0		0	0		0	
Storage Lanes	0		1	1		1	1		1	0		0	
Taper Length (ft)	25			25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	
Frt			0.850		0.983				0.850		0.950		
Flt Protected		0.988		0.950			0.950				0.999		
Satd. Flow (prot)	0	1863	1615	1805	1851	0	1787	1900	1615	0	3393	0	
Flt Permitted		0.766		0.396			0.599				0.944		
Satd. Flow (perm)	0	1444	1615	752	1851	0	1127	1900	1615	0	3206	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			77		5				372		63		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		447			673			443			615		
Travel Time (s)		10.2			15.3			10.1			14.0		
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	1%	1%	
Adj. Flow (vph)	65	202	159	137	163	21	370	295	372	6	158	83	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	267	159	137	184	0	370	295	372	0	247	0	
Turn Type	Perm	NA	pt+ov	Perm	NA		D.P+P	NA	Prot	Perm	NA		
Protected Phases		5	5 6		5		6	1 6	1 6		1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5	5 6	5	5		6	1 6	1 6	1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0			10.0	10.0		1.0
Minimum Split (s)	18.0	18.0		18.0	18.0		14.5			17.5	17.5		32.0
Total Split (s)	39.0	39.0		39.0	39.0		22.0			27.0	27.0		32.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		18.3%			22.5%	22.5%		27%
Maximum Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0			4.0	4.0		2.0
All-Red Time (s)	3.5	3.5		3.5	3.5		3.5			3.5	3.5		2.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)		8.0		8.0	8.0		6.5				7.5		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			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		4.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		None			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													21.0
Pedestrian Calls (#/hr)													49
Act Effct Green (s)		25.4	50.3	25.4	25.4		48.0	53.5	53.5		28.6		
Actuated g/C Ratio		0.21	0.42	0.21	0.21		0.40	0.45	0.45		0.24		
v/c Ratio		0.87	0.22	0.86	0.46		0.67	0.35	0.40		0.30		
Control Delay		68.6	8.7	87.3	43.0		36.0	27.5	4.2		32.8		
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		68.6	8.7	87.3	43.0		36.0	27.5	4.2		32.8		
LOS		E	A	F	D		D	C	A		C		
Approach Delay		46.2			61.9			22.2			32.8		
Approach LOS		D			E			C			C		
90th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
90th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
70th %ile Green (s)	30.6	30.6		30.6	30.6		15.9			19.5	19.5		28.0
70th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
50th %ile Green (s)	26.4	26.4		26.4	26.4		20.1			19.5	19.5		28.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
30th %ile Green (s)	22.7	22.7		22.7	22.7		23.8			19.5	19.5		28.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
10th %ile Green (s)	16.5	16.5		16.5	16.5		16.5			65.0	65.0		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Skip
Queue Length 50th (ft)		138	10	102	121		217	165	0		67		
Queue Length 95th (ft)		298	57	#195	183		#404	259	65		109		
Internal Link Dist (ft)		367			593			363			535		
Turn Bay Length (ft)			25										
Base Capacity (vph)		373	693	194	481		551	846	925		811		
Starvation Cap Reductn		0	0	0	0		0	0	0		0		
Spillback Cap Reductn		0	0	0	0		0	0	0		0		
Storage Cap Reductn		0	0	0	0		0	0	0		0		
Reduced v/c Ratio		0.72	0.23	0.71	0.38		0.67	0.35	0.40		0.30		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 117 (98%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 34.8 Intersection LOS: C
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Adams Street & Washington Street & Dorchester Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	58	51	55	15	40	38	49	313	8	12	193	37	
Future Volume (vph)	58	51	55	15	40	38	49	313	8	12	193	37	
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	
Frt		0.955			0.945			0.997			0.979		
Flt Protected		0.983			0.992			0.993			0.998		
Satd. Flow (prot)	0	1772	0	0	1781	0	0	1865	0	0	1842	0	
Flt Permitted		0.848			0.941			0.932			0.977		
Satd. Flow (perm)	0	1528	0	0	1690	0	0	1751	0	0	1803	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		35			41			2			16		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		710			686			615			708		
Travel Time (s)		16.1			15.6			14.0			16.1		
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.91	0.91	0.91	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%	
Adj. Flow (vph)	59	52	56	16	43	41	54	344	9	12	197	38	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	167	0	0	100	0	0	407	0	0	247	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		5			5			1			1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5		5	5		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		22.0
Total Split (s)	13.0	13.0		13.0	13.0		25.0	25.0		25.0	25.0		22.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%		41.7%	41.7%		41.7%	41.7%		37%
Maximum Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
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		2.0	2.0		2.0	2.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													8.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													6
Act Effct Green (s)		8.3			8.3			23.4			23.4		
Actuated g/C Ratio		0.18			0.18			0.52			0.52		
v/c Ratio		0.54			0.29			0.45			0.26		
Control Delay		23.7			14.5			11.8			9.0		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		23.7			14.5			11.8			9.0		
LOS		C			B			B			A		
Approach Delay		23.7			14.5			11.8			9.0		
Approach LOS		C			B			B			A		
90th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0		0.0
10th %ile Term Code	Max	Max		Max	Max		Dwell	Dwell		Dwell	Dwell		Skip
Queue Length 50th (ft)		24			10			44			22		
Queue Length 95th (ft)		#131			58			#222			117		
Internal Link Dist (ft)		630			606			535			628		
Turn Bay Length (ft)													
Base Capacity (vph)		308			343			902			935		
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		0.54			0.29			0.45			0.26		

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 45.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 13.5 Intersection LOS: B
Intersection Capacity Utilization 59.2% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 60
70th %ile Actuated Cycle: 38
50th %ile Actuated Cycle: 38
30th %ile Actuated Cycle: 38
10th %ile Actuated Cycle: 53
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Dorchester Avenue & Richmond Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	26	102	178	45	109	20	145	190	45	29	171	61	
Future Volume (vph)	26	102	178	45	109	20	145	190	45	29	171	61	
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	
Frt			0.850		0.984			0.971			0.961		
Flt Protected		0.990			0.987		0.950			0.950			
Satd. Flow (prot)	0	1881	1615	0	1845	0	1805	1830	0	1805	1813	0	
Flt Permitted		0.990			0.987		0.442			0.472			
Satd. Flow (perm)	0	1881	1615	0	1845	0	840	1830	0	897	1813	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			236		4			11			14		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			710			537			620		
Travel Time (s)		14.0			16.1			12.2			14.1		
Peak Hour Factor	0.97	0.97	0.97	0.88	0.88	0.88	0.96	0.96	0.96	0.94	0.94	0.94	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	
Adj. Flow (vph)	27	105	184	51	124	23	151	198	47	31	182	65	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	132	184	0	198	0	151	245	0	31	247	0	
Turn Type	Split	NA	Perm	Split	NA		D.P+P	NA		Perm	NA		
Protected Phases	3	3		4	4		5	1 5			1		2
Permitted Phases			3				1			1			
Detector Phase	3	3	3	4	4		5	1 5		1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0			10.0	10.0		1.0
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		14.0			19.5	19.5		27.0
Total Split (s)	23.0	23.0	23.0	20.0	20.0		15.0			35.0	35.0		27.0
Total Split (%)	19.2%	19.2%	19.2%	16.7%	16.7%		12.5%			29.2%	29.2%		23%
Maximum Green (s)	16.5	16.5	16.5	13.5	13.5		6.0			25.5	25.5		23.0
Yellow Time (s)	4.0	4.0	4.0	3.5	3.5		3.0			3.5	3.5		2.0
All-Red Time (s)	2.5	2.5	2.5	3.0	3.0		6.0			6.0	6.0		2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0			0.0	0.0		
Total Lost Time (s)		6.5	6.5		6.5		9.0			9.5	9.5		
Lead/Lag	Lead	Lead	Lead	Lag	Lag					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			4.0	4.0		3.0
Recall Mode	Max	Max	Max	Max	Max		Max			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													9
Act Effct Green (s)		38.1	38.1		13.5		32.0	40.5		25.5	25.5		
Actuated g/C Ratio		0.32	0.32		0.11		0.27	0.34		0.21	0.21		
v/c Ratio		0.22	0.27		0.94		0.56	0.39		0.16	0.62		
Control Delay		34.8	3.2		100.0		34.4	26.4		41.3	48.2		
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0		
Total Delay		34.8	3.2		100.0		34.4	26.4		41.3	48.2		
LOS		C	A		F		C	C		D	D		
Approach Delay		16.4			100.0			29.4			47.5		
Approach LOS		B			F			C			D		
90th %ile Green (s)	16.5	16.5	16.5	13.5	13.5		6.0			25.5	25.5		23.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
70th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
50th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
50th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
30th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
30th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
10th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
10th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)		70	0		152		72	163		20	165		
Queue Length 95th (ft)		162	27		#290		m110	162		49	255		
Internal Link Dist (ft)		535			630			457			540		
Turn Bay Length (ft)													
Base Capacity (vph)		596	673		211		272	624		190	396		
Starvation Cap Reductn		0	0		0		0	0		0	0		
Spillback Cap Reductn		0	0		0		0	0		0	0		
Storage Cap Reductn		0	0		0		0	0		0	0		
Reduced v/c Ratio		0.22	0.27		0.94		0.56	0.39		0.16	0.62		

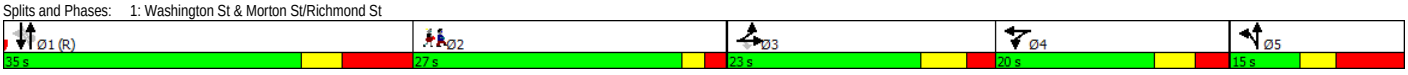
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 41.9 Intersection LOS: D
Intersection Capacity Utilization 58.4% 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: 1: Washington St & Morton St/Richmond St

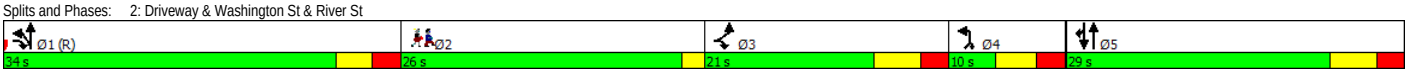


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	NEL2	NEL	NER	Ø2
Lane Configurations											
Traffic Volume (vph)	153	222	252	213	187	0	184	0	0	0	
Future Volume (vph)	153	222	252	213	187	0	184	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	75	0	100			75			0	0	
Storage Lanes	1	1	1			1			1	1	
Taper Length (ft)	100		100						25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850					0.850				
Flt Protected	0.950		0.950								
Satd. Flow (prot)	1787	1615	1805	1900	1863	0	1615	1863	0	1863	
Flt Permitted	0.950		0.950								
Satd. Flow (perm)	1787	1615	1805	1900	1863	0	1615	1863	0	1863	
Right Turn on Red							Yes			Yes	
Satd. Flow (RTOR)							155				
Link Speed (mph)	30			30	30				30		
Link Distance (ft)	464			447	537				214		
Travel Time (s)	10.5			10.2	12.2				4.9		
Peak Hour Factor	0.95	0.95	0.99	0.99	0.96	0.96	0.96	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	0%	0%	0%	2%	0%	0%	2%	2%	2%	
Adj. Flow (vph)	161	234	255	215	195	0	192	0	0	0	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	161	234	255	215	195	0	192	0	0	0	
Turn Type	Prot	pt+ov	Prot	NA	NA		Prot	Prot		Prot	
Protected Phases	3	1 3	1	1 5	5		5	4		4	2
Permitted Phases											
Detector Phase	3	1 3	1	1 5	5		5	4		4	
Switch Phase											
Minimum Initial (s)	10.0		10.0		10.0		10.0	4.0		4.0	1.0
Minimum Split (s)	16.5		15.5		16.5		16.5	10.0		10.0	24.0
Total Split (s)	21.0		34.0		29.0		29.0	10.0		10.0	26.0
Total Split (%)	17.5%		28.3%		24.2%		24.2%	8.3%		8.3%	22%
Maximum Green (s)	14.5		28.5		22.5		22.5	4.0		4.0	24.0
Yellow Time (s)	4.0		3.0		4.0		4.0	3.5		3.5	2.0
All-Red Time (s)	2.5		2.5		2.5		2.5	2.5		2.5	0.0
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.5		5.5		6.5		6.5	6.0		6.0	
Lead/Lag	Lead		Lead					Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes					Yes		Yes	Yes
Vehicle Extension (s)	2.0		2.0		4.0		4.0	2.0		2.0	3.0
Recall Mode	None		C-Max		None		None	None		None	None
Walk Time (s)											7.0
Flash Dont Walk (s)											15.0
Pedestrian Calls (#/hr)											14
Act Effct Green (s)	14.4	75.7	57.0	84.0	20.5		20.5				
Actuated g/C Ratio	0.12	0.63	0.48	0.70	0.17		0.17				
v/c Ratio	0.75	0.23	0.30	0.16	0.62		0.48				
Control Delay	72.5	8.9	22.6	9.2	50.7		14.3				
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	72.5	8.9	22.6	9.2	50.7		14.3				
LOS	E	A	C	A	D		B				
Approach Delay	34.8			16.5	32.7						
Approach LOS	C			B	C						
90th %ile Green (s)	16.5		32.3		28.7		28.7	0.0		0.0	22.0
90th %ile Term Code	Max		Coord		Gap		Gap	Skip		Skip	Ped
70th %ile Green (s)	16.5		37.3		23.7		23.7	0.0		0.0	22.0
70th %ile Term Code	Max		Coord		Gap		Gap	Skip		Skip	Ped
50th %ile Green (s)	15.7		65.4		20.4		20.4	0.0		0.0	0.0
50th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
30th %ile Green (s)	13.3		71.1		17.1		17.1	0.0		0.0	0.0
30th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
10th %ile Green (s)	10.0		79.0		12.5		12.5	0.0		0.0	0.0
10th %ile Term Code	Min		Coord		Gap		Gap	Skip		Skip	Skip
Queue Length 50th (ft)	121	50	56	40	153		54				
Queue Length 95th (ft)	#197	102	240	103	m163		m22				
Internal Link Dist (ft)	384			367	457				134		
Turn Bay Length (ft)	75		100				75				
Base Capacity (vph)	231	1034	857	1318	372		446				
Starvation Cap Reductn	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0		0				
Reduced v/c Ratio	0.70	0.23	0.30	0.16	0.52		0.43				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 1:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 27.3 Intersection LOS: C
Intersection Capacity Utilization 47.7% ICU Level of Service A
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: 2: Driveway & Washington St & River St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	48	152	213	158	190	15	213	224	172	18	326	69	
Future Volume (vph)	48	152	213	158	190	15	213	224	172	18	326	69	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		25	0		50	0		0	0		0	
Storage Lanes	0		1	1		1	1		1	0		0	
Taper Length (ft)	25			25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	
Frt			0.850		0.989				0.850		0.975		
Flt Protected		0.988		0.950			0.950				0.998		
Satd. Flow (prot)	0	1854	1615	1805	1879	0	1805	1900	1615	0	3513	0	
Flt Permitted		0.656		0.515			0.437				0.931		
Satd. Flow (perm)	0	1231	1615	978	1879	0	830	1900	1615	0	3277	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			105		3				179		18		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		447			673			443			615		
Travel Time (s)		10.2			15.3			10.1			14.0		
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97	0.97	
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	49	157	220	172	207	16	222	233	179	19	336	71	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	206	220	172	223	0	222	233	179	0	426	0	
Turn Type	Perm	NA	pt+ov	Perm	NA		D.P+P	NA	Prot	Perm	NA		
Protected Phases		5	5 6		5		6	1 6	1 6		1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5	5 6	5	5		6	1 6	1 6	1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0			10.0	10.0		1.0
Minimum Split (s)	18.0	18.0		18.0	18.0		14.5			17.5	17.5		32.0
Total Split (s)	39.0	39.0		39.0	39.0		16.0			33.0	33.0		32.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		13.3%			27.5%	27.5%		27%
Maximum Green (s)	31.0	31.0		31.0	31.0		9.5			25.5	25.5		28.0
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0			4.0	4.0		2.0
All-Red Time (s)	3.5	3.5		3.5	3.5		3.5			3.5	3.5		2.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)		8.0		8.0	8.0		6.5				7.5		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			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		4.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		None			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													21.0
Pedestrian Calls (#/hr)													43
Act Effct Green (s)		24.2	43.0	24.2	24.2		49.2	54.7	54.7		35.9		
Actuated g/C Ratio		0.20	0.36	0.20	0.20		0.41	0.46	0.46		0.30		
v/c Ratio		0.83	0.34	0.88	0.59		0.50	0.27	0.21		0.43		
Control Delay		62.3	6.7	83.9	48.0		30.8	25.8	4.6		38.2		
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		62.3	6.7	83.9	48.0		30.8	25.8	4.6		38.2		
LOS		E	A	F	D		C	C	A		D		
Approach Delay		33.6			63.6			21.6			38.2		
Approach LOS		C			E			C			D		
90th %ile Green (s)	31.0	31.0		31.0	31.0		9.5			25.5	25.5		28.0
90th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
70th %ile Green (s)	30.3	30.3		30.3	30.3		10.2			25.5	25.5		28.0
70th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
50th %ile Green (s)	25.5	25.5		25.5	25.5		15.0			25.5	25.5		28.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
30th %ile Green (s)	20.5	20.5		20.5	20.5		17.3			28.2	28.2		28.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Ped
10th %ile Green (s)	13.5	13.5		13.5	13.5		9.8			74.7	74.7		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Skip
Queue Length 50th (ft)		162	73	128	153		116	124	0		151		
Queue Length 95th (ft)		250	43	#217	222		193	204	49		206		
Internal Link Dist (ft)		367			593			363			535		
Turn Bay Length (ft)			25										
Base Capacity (vph)		318	624	252	487		441	866	833		992		
Starvation Cap Reductn		0	0	0	0		0	0	0		0		
Spillback Cap Reductn		0	0	0	0		0	0	0		0		
Storage Cap Reductn		0	0	0	0		0	0	0		0		
Reduced v/c Ratio		0.65	0.35	0.68	0.46		0.50	0.27	0.21		0.43		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 36.9 Intersection LOS: D
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Adams St & Washington St & Dorchester Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	41	50	52	48	76	54	46	205	21	12	301	31	
Future Volume (vph)	41	50	52	48	76	54	46	205	21	12	301	31	
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								1.00			1.00		
Frt		0.951			0.959			0.990			0.988		
Flt Protected		0.986			0.987			0.992			0.998		
Satd. Flow (prot)	0	1782	0	0	1798	0	0	1863	0	0	1870	0	
Flt Permitted		0.800			0.847			0.900			0.988		
Satd. Flow (perm)	0	1446	0	0	1543	0	0	1690	0	0	1851	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		38			28			6			8		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		710			686			615			708		
Travel Time (s)		16.1			15.6			14.0			16.1		
Confl. Bikes (#/hr)									1			1	
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.94	0.94	0.94	0.97	0.97	0.97	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	42	52	54	51	80	57	49	218	22	12	310	32	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	148	0	0	188	0	0	289	0	0	354	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		5			5			1			1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5		5	5		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		22.0
Total Split (s)	20.0	20.0		20.0	20.0		28.0	28.0		28.0	28.0		22.0
Total Split (%)	28.6%	28.6%		28.6%	28.6%		40.0%	40.0%		40.0%	40.0%		31%
Maximum Green (s)	15.0	15.0		15.0	15.0		23.0	23.0		23.0	23.0		18.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
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		2.0	2.0		2.0	2.0		3.0
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None
Walk Time (s)													8.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													33
Act Effct Green (s)		11.4			11.4			39.8			39.8		
Actuated g/C Ratio		0.16			0.16			0.57			0.57		
v/c Ratio		0.56			0.69			0.30			0.34		
Control Delay		27.6			36.2			13.2			13.3		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		27.6			36.2			13.2			13.3		
LOS		C			D			B			B		
Approach Delay		27.6			36.2			13.2			13.3		
Approach LOS		C			D			B			B		
90th %ile Green (s)	15.0	15.0		15.0	15.0		23.0	23.0		23.0	23.0		18.0
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Coord	Coord		Ped
70th %ile Green (s)	13.5	13.5		13.5	13.5		24.5	24.5		24.5	24.5		18.0
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Coord	Coord		Ped
50th %ile Green (s)	11.3	11.3		11.3	11.3		48.7	48.7		48.7	48.7		0.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Coord	Coord		Skip
30th %ile Green (s)	9.1	9.1		9.1	9.1		50.9	50.9		50.9	50.9		0.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Coord	Coord		Skip
10th %ile Green (s)	8.0	8.0		8.0	8.0		52.0	52.0		52.0	52.0		0.0
10th %ile Term Code	Min	Min		Min	Min		Coord	Coord		Coord	Coord		Skip
Queue Length 50th (ft)		44			65			36			45		
Queue Length 95th (ft)		92			121			167			201		
Internal Link Dist (ft)		630			606			535			628		
Turn Bay Length (ft)													
Base Capacity (vph)		339			352			963			1056		
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		0.44			0.53			0.30			0.34		

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 45 (64%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 54.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: Dorchester Ave/Dorchester St & Richmond St

- No-Build (2024) Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	40	102	144	32	95	35	300	295	65	42	147	33	
Future Volume (vph)	40	102	144	32	95	35	300	295	65	42	147	33	
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	
Frt			0.850		0.971			0.973			0.972		
Flt Protected		0.986			0.990		0.950			0.950			
Satd. Flow (prot)	0	1873	1615	0	1826	0	1805	1819	0	1752	1832	0	
Flt Permitted		0.986			0.990		0.576			0.206			
Satd. Flow (perm)	0	1873	1615	0	1826	0	1094	1819	0	380	1832	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			236		9			10			9		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			710			537			620		
Travel Time (s)		14.0			16.1			12.2			14.1		
Peak Hour Factor	0.95	0.95	0.95	0.86	0.86	0.86	0.94	0.94	0.94	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	3%	1%	0%	
Adj. Flow (vph)	42	107	152	37	110	41	319	314	69	46	160	36	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	149	152	0	188	0	319	383	0	46	196	0	
Turn Type	Split	NA	Perm	Split	NA		D.P+P	NA		Perm	NA		
Protected Phases	3	3		4	4		5	1 5			1		2
Permitted Phases			3				1			1			
Detector Phase	3	3	3	4	4		5	1 5		1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0			10.0	10.0		1.0
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		14.0			19.5	19.5		27.0
Total Split (s)	23.0	23.0	23.0	19.0	19.0		15.0			36.0	36.0		27.0
Total Split (%)	19.2%	19.2%	19.2%	15.8%	15.8%		12.5%			30.0%	30.0%		23%
Maximum Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
Yellow Time (s)	4.0	4.0	4.0	3.5	3.5		3.0			3.5	3.5		2.0
All-Red Time (s)	2.5	2.5	2.5	3.0	3.0		6.0			6.0	6.0		2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0			0.0	0.0		
Total Lost Time (s)		6.5	6.5		6.5		9.0			9.5	9.5		
Lead/Lag	Lead	Lead	Lead	Lag	Lag					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			4.0	4.0		3.0
Recall Mode	Max	Max	Max	Max	Max		Max			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													16
Act Effct Green (s)		32.7	32.7		12.5		33.0	41.5		26.5	26.5		
Actuated g/C Ratio		0.27	0.27		0.10		0.28	0.35		0.22	0.22		
v/c Ratio		0.29	0.25		0.95		0.95	0.60		0.55	0.48		
Control Delay		41.2	1.1		103.3		76.9	37.8		68.7	43.3		
Queue Delay		0.0	0.0		0.0		0.0	0.5		0.0	0.0		
Total Delay		41.2	1.1		103.3		76.9	38.3		68.7	43.3		
LOS		D	A		F		E	D		E	D		
Approach Delay		21.0			103.3			55.8			48.1		
Approach LOS		C			F			E			D		
90th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
70th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
50th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
50th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
30th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
30th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
10th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
10th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)		79	0		140		183	178		32	127		
Queue Length 95th (ft)		180	1		#267		m#340	m173		#87	203		
Internal Link Dist (ft)		535			630			457			540		
Turn Bay Length (ft)													
Base Capacity (vph)		510	611		198		336	635		83	411		
Starvation Cap Reductn		0	0		0		0	53		0	0		
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	0.25		0.95		0.95	0.66		0.55	0.48		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 53.4 Intersection LOS: D
Intersection Capacity Utilization 64.6% 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.

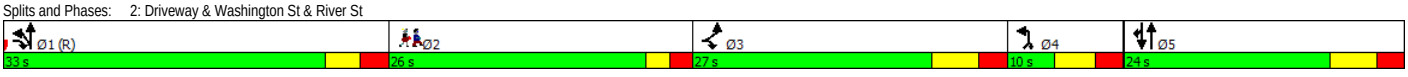
Splits and Phases: 1: Washington St & Morton St/Richmond St

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	NEL2	NEL	NER	Ø2
Lane Configurations											
Traffic Volume (vph)	268	250	196	405	148	0	144	0	0	0	
Future Volume (vph)	268	250	196	405	148	0	144	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	75	0	100			75			0	0	
Storage Lanes	1	1	1			1			1	1	
Taper Length (ft)	100		100						25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850					0.850				
Flt Protected	0.950		0.950								
Satd. Flow (prot)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Flt Permitted	0.950		0.950								
Satd. Flow (perm)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Right Turn on Red							Yes			Yes	
Satd. Flow (RTOR)							173				
Link Speed (mph)	30			30	30				30		
Link Distance (ft)	464			447	537				214		
Travel Time (s)	10.5			10.2	12.2				4.9		
Peak Hour Factor	0.97	0.97	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	0%	2%	2%	2%	
Adj. Flow (vph)	276	258	209	431	168	0	164	0	0	0	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	276	258	209	431	168	0	164	0	0	0	
Turn Type	Prot	pt+ov	Prot	NA	NA		Prot	Prot		Prot	
Protected Phases	3	1 3	1	1 5	5		5	4		4	2
Permitted Phases											
Detector Phase	3	1 3	1	1 5	5		5	4		4	
Switch Phase											
Minimum Initial (s)	10.0		10.0		10.0		10.0	4.0		4.0	1.0
Minimum Split (s)	16.5		15.5		16.5		16.5	10.0		10.0	26.0
Total Split (s)	27.0		33.0		24.0		24.0	10.0		10.0	26.0
Total Split (%)	22.5%		27.5%		20.0%		20.0%	8.3%		8.3%	22%
Maximum Green (s)	20.5		27.5		17.5		17.5	4.0		4.0	22.0
Yellow Time (s)	4.0		3.0		4.0		4.0	3.5		3.5	2.0
All-Red Time (s)	2.5		2.5		2.5		2.5	2.5		2.5	2.0
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.5		5.5		6.5		6.5	6.0		6.0	
Lead/Lag	Lead		Lead					Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes					Yes		Yes	Yes
Vehicle Extension (s)	2.0		2.0		4.0		4.0	2.0		2.0	3.0
Recall Mode	None		C-Max		None		None	None		None	None
Walk Time (s)											7.0
Flash Dont Walk (s)											15.0
Pedestrian Calls (#/hr)											7
Act Effct Green (s)	22.1	81.1	53.6	80.7	20.6		20.6				
Actuated g/C Ratio	0.18	0.68	0.45	0.67	0.17		0.17				
v/c Ratio	0.83	0.24	0.26	0.34	0.52		0.39				
Control Delay	68.2	8.2	11.5	2.7	52.6		16.9				
Queue Delay	0.0	0.0	0.0	0.4	0.0		0.0				
Total Delay	68.2	8.2	11.5	3.1	52.6		16.9				
LOS	E	A	B	A	D		B				
Approach Delay	39.2			5.8	35.0						
Approach LOS	D			A	C						
90th %ile Green (s)	20.5		27.5		27.5		27.5	0.0		0.0	22.0
90th %ile Term Code	Max		Coord		Max		Max	Skip		Skip	Ped
70th %ile Green (s)	26.7		49.9		24.9		24.9	0.0		0.0	0.0
70th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
50th %ile Green (s)	24.6		55.7		21.2		21.2	0.0		0.0	0.0
50th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
30th %ile Green (s)	21.6		63.3		16.6		16.6	0.0		0.0	0.0
30th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
10th %ile Green (s)	17.2		71.7		12.6		12.6	0.0		0.0	0.0
10th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
Queue Length 50th (ft)	202	58	46	4	131		32				
Queue Length 95th (ft)	#369	109	m149	120	m181		m77				
Internal Link Dist (ft)	384			367	457				134		
Turn Bay Length (ft)	75		100				75				
Base Capacity (vph)	342	1101	798	1261	344		434				
Starvation Cap Reductn	0	0	0	396	0		0				
Spillback Cap Reductn	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0		0				
Reduced v/c Ratio	0.81	0.23	0.26	0.50	0.49		0.38				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 1:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 49.5% ICU Level of Service A
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: 2: Driveway & Washington St & River St

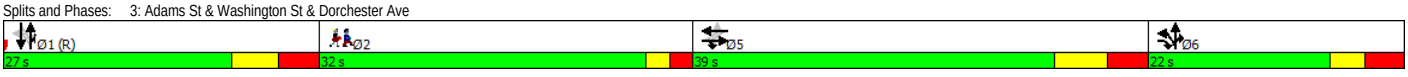


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	66	208	164	135	161	20	385	307	387	6	166	87	
Future Volume (vph)	66	208	164	135	161	20	385	307	387	6	166	87	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		25	0		50	0		0	0		0	
Storage Lanes	0		1	1		1	1		1	0		0	
Taper Length (ft)	25			25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	
Frt			0.850		0.983				0.850		0.949		
Flt Protected		0.988		0.950			0.950				0.999		
Satd. Flow (prot)	0	1863	1615	1805	1851	0	1787	1900	1615	0	3389	0	
Flt Permitted		0.749		0.379			0.581				0.944		
Satd. Flow (perm)	0	1412	1615	720	1851	0	1093	1900	1615	0	3203	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			77		5				399		64		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		447			673			443			615		
Travel Time (s)		10.2			15.3			10.1			14.0		
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	1%	1%	
Adj. Flow (vph)	69	217	171	147	175	22	397	316	399	6	169	89	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	286	171	147	197	0	397	316	399	0	264	0	
Turn Type	Perm	NA	pt+ov	Perm	NA		D.P+P	NA	Prot	Perm	NA		
Protected Phases		5	5 6		5		6	1 6	1 6		1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5	5 6	5	5		6	1 6	1 6	1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0			10.0	10.0		1.0
Minimum Split (s)	18.0	18.0		18.0	18.0		14.5			17.5	17.5		32.0
Total Split (s)	39.0	39.0		39.0	39.0		22.0			27.0	27.0		32.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		18.3%			22.5%	22.5%		27%
Maximum Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0			4.0	4.0		2.0
All-Red Time (s)	3.5	3.5		3.5	3.5		3.5			3.5	3.5		2.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)		8.0		8.0	8.0		6.5				7.5		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			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		4.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		None			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													21.0
Pedestrian Calls (#/hr)													49
Act Effct Green (s)		27.1	52.0	27.1	27.1		46.3	51.8	51.8		26.9		
Actuated g/C Ratio		0.23	0.43	0.23	0.23		0.39	0.43	0.43		0.22		
v/c Ratio		0.90	0.23	0.90	0.47		0.75	0.39	0.43		0.34		
Control Delay		71.5	9.5	94.1	42.0		41.5	29.0	4.3		33.9		
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		71.5	9.5	94.1	42.0		41.5	29.0	4.3		33.9		
LOS		E	A	F	D		D	C	A		C		
Approach Delay		48.3			64.3			24.6			33.9		
Approach LOS		D			E			C			C		
90th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
90th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
70th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
70th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
50th %ile Green (s)	29.8	29.8		29.8	29.8		16.7			19.5	19.5		28.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
30th %ile Green (s)	25.2	25.2		25.2	25.2		21.3			19.5	19.5		28.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
10th %ile Green (s)	18.7	18.7		18.7	18.7		22.6			56.7	56.7		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Skip
Queue Length 50th (ft)		147	14	108	125		249	188	0		73		
Queue Length 95th (ft)		#348	66	#221	195		#346	278	67		117		
Internal Link Dist (ft)		367			593			363			535		
Turn Bay Length (ft)			25										
Base Capacity (vph)		364	720	186	481		527	819	923		769		
Starvation Cap Reductn		0	0	0	0		0	0	0		0		
Spillback Cap Reductn		0	0	0	0		0	0	0		0		
Storage Cap Reductn		0	0	0	0		0	0	0		0		
Reduced v/c Ratio		0.79	0.24	0.79	0.41		0.75	0.39	0.43		0.34		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 117 (98%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 37.0 Intersection LOS: D
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Adams St & Washington St & Dorchester Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	62	55	59	16	43	41	53	336	9	13	207	40	
Future Volume (vph)	62	55	59	16	43	41	53	336	9	13	207	40	
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	
Frt		0.955			0.944			0.997			0.979		
Flt Protected		0.983			0.992			0.993			0.998		
Satd. Flow (prot)	0	1772	0	0	1779	0	0	1865	0	0	1842	0	
Flt Permitted		0.863			0.938			0.928			0.975		
Satd. Flow (perm)	0	1555	0	0	1682	0	0	1743	0	0	1799	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		35			44			2			16		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		710			686			615			708		
Travel Time (s)		16.1			15.6			14.0			16.1		
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.91	0.91	0.91	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%	
Adj. Flow (vph)	63	56	60	17	46	44	58	369	10	13	211	41	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	179	0	0	107	0	0	437	0	0	265	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		5			5			1			1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5		5	5		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		22.0
Total Split (s)	13.0	13.0		13.0	13.0		25.0	25.0		25.0	25.0		22.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%		41.7%	41.7%		41.7%	41.7%		37%
Maximum Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
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		2.0	2.0		2.0	2.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													8.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													6
Act Effct Green (s)		8.3			8.3			23.4			23.4		
Actuated g/C Ratio		0.18			0.18			0.52			0.52		
v/c Ratio		0.57			0.31			0.49			0.28		
Control Delay		24.9			14.7			12.8			9.2		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		24.9			14.7			12.8			9.2		
LOS		C			B			B			A		
Approach Delay		24.9			14.7			12.8			9.2		
Approach LOS		C			B			B			A		
90th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0		0.0
10th %ile Term Code	Max	Max		Max	Max		Dwell	Dwell		Dwell	Dwell		Skip
Queue Length 50th (ft)		26			11			48			24		
Queue Length 95th (ft)		#141			61			#267			126		
Internal Link Dist (ft)		630			606			535			628		
Turn Bay Length (ft)													
Base Capacity (vph)		313			343			897			933		
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		0.57			0.31			0.49			0.28		

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 45.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 62.6% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 60
70th %ile Actuated Cycle: 38
50th %ile Actuated Cycle: 38
30th %ile Actuated Cycle: 38
10th %ile Actuated Cycle: 53
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Dorchester Ave/Dorchester St & Richmond St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	28	109	191	48	117	21	155	204	48	31	183	65	
Future Volume (vph)	28	109	191	48	117	21	155	204	48	31	183	65	
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	
Frt			0.850		0.985			0.971			0.961		
Flt Protected		0.990			0.987		0.950			0.950			
Satd. Flow (prot)	0	1881	1615	0	1847	0	1805	1815	0	1752	1813	0	
Flt Permitted		0.990			0.987		0.401			0.432			
Satd. Flow (perm)	0	1881	1615	0	1847	0	762	1815	0	797	1813	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			236		4			11			14		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			710			537			620		
Travel Time (s)		14.0			16.1			12.2			14.1		
Peak Hour Factor	0.95	0.95	0.95	0.86	0.86	0.86	0.94	0.94	0.94	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	3%	1%	0%	
Adj. Flow (vph)	29	115	201	56	136	24	165	217	51	34	199	71	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	144	201	0	216	0	165	268	0	34	270	0	
Turn Type	Split	NA	Perm	Split	NA		D.P+P	NA		Perm	NA		
Protected Phases	3	3		4	4		5	1 5			1		2
Permitted Phases			3				1			1			
Detector Phase	3	3	3	4	4		5	1 5		1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0			10.0	10.0		1.0
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		14.0			19.5	19.5		27.0
Total Split (s)	23.0	23.0	23.0	19.0	19.0		15.0			36.0	36.0		27.0
Total Split (%)	19.2%	19.2%	19.2%	15.8%	15.8%		12.5%			30.0%	30.0%		23%
Maximum Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
Yellow Time (s)	4.0	4.0	4.0	3.5	3.5		3.0			3.5	3.5		2.0
All-Red Time (s)	2.5	2.5	2.5	3.0	3.0		6.0			6.0	6.0		2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0			0.0	0.0		
Total Lost Time (s)		6.5	6.5		6.5		9.0			9.5	9.5		
Lead/Lag	Lead	Lead	Lead	Lag	Lag					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			4.0	4.0		3.0
Recall Mode	Max	Max	Max	Max	Max		Max			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													9
Act Effct Green (s)		38.1	38.1		12.5		33.0	41.5		26.5	26.5		
Actuated g/C Ratio		0.32	0.32		0.10		0.28	0.35		0.22	0.22		
v/c Ratio		0.24	0.30		1.11		0.63	0.42		0.19	0.66		
Control Delay		35.0	4.3		144.6		46.1	34.7		41.5	49.0		
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0		
Total Delay		35.0	4.3		144.6		46.1	34.7		41.5	49.0		
LOS		D	A		F		D	C		D	D		
Approach Delay		17.1			144.6			39.0			48.1		
Approach LOS		B			F			D			D		
90th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
70th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
50th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
50th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
30th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
30th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
10th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
10th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)		76	0		~188		97	175		22	182		
Queue Length 95th (ft)		175	42		#324		151	244		53	277		
Internal Link Dist (ft)		535			630			457			540		
Turn Bay Length (ft)													
Base Capacity (vph)		596	673		195		261	634		176	411		
Starvation Cap Reductn		0	0		0		0	0		0	0		
Spillback Cap Reductn		0	0		0		0	0		0	0		
Storage Cap Reductn		0	0		0		0	0		0	0		
Reduced v/c Ratio		0.24	0.30		1.11		0.63	0.42		0.19	0.66		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 52.9 Intersection LOS: D
Intersection Capacity Utilization 60.0% ICU Level of Service B
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

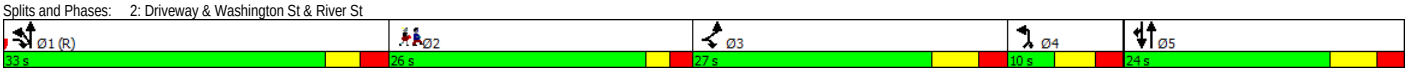
Splits and Phases: 1: Washington St & Morton St/Richmond St

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	NEL2	NEL	NER	Ø2
Lane Configurations											
Traffic Volume (vph)	164	238	270	228	200	0	197	0	0	0	
Future Volume (vph)	164	238	270	228	200	0	197	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	75	0	100			75			0	0	
Storage Lanes	1	1	1			1			1	1	
Taper Length (ft)	100		100						25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850					0.850				
Flt Protected	0.950		0.950								
Satd. Flow (prot)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Flt Permitted	0.950		0.950								
Satd. Flow (perm)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Right Turn on Red							Yes			Yes	
Satd. Flow (RTOR)							173				
Link Speed (mph)	30			30	30				30		
Link Distance (ft)	464			447	537				214		
Travel Time (s)	10.5			10.2	12.2				4.9		
Peak Hour Factor	0.97	0.97	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	0%	2%	2%	2%	
Adj. Flow (vph)	169	245	287	243	227	0	224	0	0	0	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	169	245	287	243	227	0	224	0	0	0	
Turn Type	Prot	pt+ov	Prot	NA	NA		Prot	Prot		Prot	
Protected Phases	3	1 3	1	1 5	5		5	4		4	2
Permitted Phases											
Detector Phase	3	1 3	1	1 5	5		5	4		4	
Switch Phase											
Minimum Initial (s)	10.0		10.0		10.0		10.0	4.0		4.0	1.0
Minimum Split (s)	16.5		15.5		16.5		16.5	10.0		10.0	26.0
Total Split (s)	27.0		33.0		24.0		24.0	10.0		10.0	26.0
Total Split (%)	22.5%		27.5%		20.0%		20.0%	8.3%		8.3%	22%
Maximum Green (s)	20.5		27.5		17.5		17.5	4.0		4.0	22.0
Yellow Time (s)	4.0		3.0		4.0		4.0	3.5		3.5	2.0
All-Red Time (s)	2.5		2.5		2.5		2.5	2.5		2.5	2.0
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.5		5.5		6.5		6.5	6.0		6.0	
Lead/Lag	Lead		Lead					Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes					Yes		Yes	Yes
Vehicle Extension (s)	2.0		2.0		4.0		4.0	2.0		2.0	3.0
Recall Mode	None		C-Max		None		None	None		None	None
Walk Time (s)											7.0
Flash Dont Walk (s)											15.0
Pedestrian Calls (#/hr)											14
Act Effct Green (s)	15.4	72.6	52.9	82.2	22.8		22.8				
Actuated g/C Ratio	0.13	0.60	0.44	0.68	0.19		0.19				
v/c Ratio	0.73	0.25	0.36	0.19	0.63		0.50				
Control Delay	67.8	10.0	19.4	3.6	53.4		21.3				
Queue Delay	0.0	0.0	0.6	0.0	0.0		0.0				
Total Delay	67.8	10.0	20.0	3.6	53.4		21.3				
LOS	E	B	B	A	D		C				
Approach Delay	33.6			12.5	37.4						
Approach LOS	C			B	D						
90th %ile Green (s)	20.5		27.5		27.5		27.5	0.0		0.0	22.0
90th %ile Term Code	Max		Coord		Max		Max	Skip		Skip	Ped
70th %ile Green (s)	18.0		30.5		27.0		27.0	0.0		0.0	22.0
70th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Ped
50th %ile Green (s)	15.6		62.0		23.9		23.9	0.0		0.0	0.0
50th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
30th %ile Green (s)	13.1		67.9		20.5		20.5	0.0		0.0	0.0
30th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
10th %ile Green (s)	10.0		76.6		14.9		14.9	0.0		0.0	0.0
10th %ile Term Code	Min		Coord		Gap		Gap	Skip		Skip	Skip
Queue Length 50th (ft)	127	60	94	1	178		72				
Queue Length 95th (ft)	195	103	287	112	m231		m104				
Internal Link Dist (ft)	384			367	457				134		
Turn Bay Length (ft)	75		100				75				
Base Capacity (vph)	308	1045	787	1291	368		452				
Starvation Cap Reductn	0	0	221	0	0		0				
Spillback Cap Reductn	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0		0				
Reduced v/c Ratio	0.55	0.23	0.51	0.19	0.62		0.50				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 1:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 26.8 Intersection LOS: C
Intersection Capacity Utilization 50.0% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Driveway & Washington St & River St

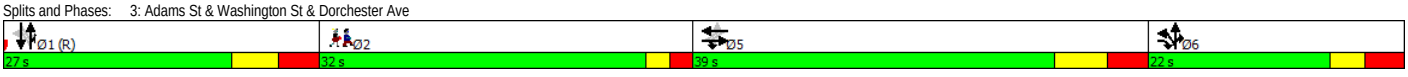


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	51	163	228	169	204	16	228	240	184	19	350	74	
Future Volume (vph)	51	163	228	169	204	16	228	240	184	19	350	74	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		25	0		50	0		0	0		0	
Storage Lanes	0		1	1		1	1		1	0		0	
Taper Length (ft)	25			25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	
Frt			0.850		0.989				0.850		0.975		
Flt Protected		0.988		0.950			0.950				0.998		
Satd. Flow (prot)	0	1863	1615	1805	1862	0	1787	1900	1615	0	3479	0	
Flt Permitted		0.636		0.492			0.391				0.931		
Satd. Flow (perm)	0	1199	1615	935	1862	0	736	1900	1615	0	3246	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			115		3				190		17		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		447			673			443			615		
Travel Time (s)		10.2			15.3			10.1			14.0		
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	1%	1%	
Adj. Flow (vph)	53	170	238	184	222	17	235	247	190	19	357	76	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	223	238	184	239	0	235	247	190	0	452	0	
Turn Type	Perm	NA	pt+ov	Perm	NA		D.P+P	NA	Prot	Perm	NA		
Protected Phases		5	5 6		5		6	1 6	1 6		1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5	5 6	5	5		6	1 6	1 6	1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0			10.0	10.0		1.0
Minimum Split (s)	18.0	18.0		18.0	18.0		14.5			17.5	17.5		32.0
Total Split (s)	39.0	39.0		39.0	39.0		22.0			27.0	27.0		32.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		18.3%			22.5%	22.5%		27%
Maximum Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0			4.0	4.0		2.0
All-Red Time (s)	3.5	3.5		3.5	3.5		3.5			3.5	3.5		2.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)		8.0		8.0	8.0		6.5				7.5		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			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		4.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		None			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													21.0
Pedestrian Calls (#/hr)													43
Act Effct Green (s)		25.9	47.8	25.9	25.9		47.5	53.0	53.0		31.1		
Actuated g/C Ratio		0.22	0.40	0.22	0.22		0.40	0.44	0.44		0.26		
v/c Ratio		0.86	0.33	0.92	0.59		0.55	0.29	0.23		0.53		
Control Delay		76.8	11.4	89.9	47.1		31.4	27.0	4.6		44.3		
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		76.8	11.4	89.9	47.1		31.4	27.0	4.6		44.3		
LOS		E	B	F	D		C	C	A		D		
Approach Delay		43.1			65.7			22.2			44.3		
Approach LOS		D			E			C			D		
90th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
90th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
70th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
70th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
50th %ile Green (s)	28.5	28.5		28.5	28.5		18.0			19.5	19.5		28.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
30th %ile Green (s)	23.2	23.2		23.2	23.2		18.1			24.7	24.7		28.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Ped
10th %ile Green (s)	15.7	15.7		15.7	15.7		10.1			72.2	72.2		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Skip
Queue Length 50th (ft)		98	4	136	161		130	138	0		174		
Queue Length 95th (ft)		#275	96	#249	238		206	216	50		#256		
Internal Link Dist (ft)		367			593			363			535		
Turn Bay Length (ft)			25										
Base Capacity (vph)		309	712	241	483		442	832	814		853		
Starvation Cap Reductn		0	0	0	0		0	0	0		0		
Spillback Cap Reductn		0	0	0	0		0	0	0		0		
Storage Cap Reductn		0	0	0	0		0	0	0		0		
Reduced v/c Ratio		0.72	0.33	0.76	0.49		0.53	0.30	0.23		0.53		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 117 (98%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 41.1 Intersection LOS: D
Intersection Capacity Utilization 74.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Adams St & Washington St & Dorchester Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	44	54	56	51	81	58	49	220	23	13	323	33	
Future Volume (vph)	44	54	56	51	81	58	49	220	23	13	323	33	
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								1.00			1.00		
Frt		0.951			0.959			0.989			0.988		
Flt Protected		0.986			0.987			0.992			0.998		
Satd. Flow (prot)	0	1769	0	0	1798	0	0	1847	0	0	1854	0	
Flt Permitted		0.835			0.888			0.890			0.985		
Satd. Flow (perm)	0	1498	0	0	1618	0	0	1657	0	0	1830	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		39			30			8			9		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		710			686			615			708		
Travel Time (s)		16.1			15.6			14.0			16.1		
Confl. Bikes (#/hr)									1			1	
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.91	0.91	0.91	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%	
Adj. Flow (vph)	45	55	57	55	87	62	54	242	25	13	330	34	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	157	0	0	204	0	0	321	0	0	377	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		5			5			1			1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5		5	5		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		22.0
Total Split (s)	13.0	13.0		13.0	13.0		25.0	25.0		25.0	25.0		22.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%		41.7%	41.7%		41.7%	41.7%		37%
Maximum Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
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		2.0	2.0		2.0	2.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													8.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													33
Act Effct Green (s)		8.4			8.4			21.0			21.0		
Actuated g/C Ratio		0.18			0.18			0.45			0.45		
v/c Ratio		0.52			0.65			0.43			0.46		
Control Delay		25.7			32.6			14.2			14.2		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		25.7			32.6			14.2			14.2		
LOS		C			C			B			B		
Approach Delay		25.7			32.6			14.2			14.2		
Approach LOS		C			C			B			B		
90th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
50th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
10th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		21			32			32			38		
Queue Length 95th (ft)		#118			#168			163			188		
Internal Link Dist (ft)		630			606			535			628		
Turn Bay Length (ft)													
Base Capacity (vph)		301			315			748			827		
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		0.52			0.65			0.43			0.46		

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 46.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 19.5 Intersection LOS: B
Intersection Capacity Utilization 57.4% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 60
70th %ile Actuated Cycle: 60
50th %ile Actuated Cycle: 38
30th %ile Actuated Cycle: 38
10th %ile Actuated Cycle: 38
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Dorchester Ave/Dorchester St & Richmond St

- Build (2024) Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	40	102	146	32	95	35	304	302	66	42	151	33	
Future Volume (vph)	40	102	146	32	95	35	304	302	66	42	151	33	
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	
Frt			0.850		0.971			0.973			0.973		
Flt Protected		0.986			0.990		0.950			0.950			
Satd. Flow (prot)	0	1873	1615	0	1826	0	1805	1819	0	1752	1834	0	
Flt Permitted		0.986			0.990		0.567			0.191			
Satd. Flow (perm)	0	1873	1615	0	1826	0	1077	1819	0	352	1834	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			236		9			10			8		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			710			282			620		
Travel Time (s)		14.0			16.1			6.4			14.1		
Peak Hour Factor	0.95	0.95	0.95	0.86	0.86	0.86	0.94	0.94	0.94	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	3%	1%	0%	
Adj. Flow (vph)	42	107	154	37	110	41	323	321	70	46	164	36	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	149	154	0	188	0	323	391	0	46	200	0	
Turn Type	Split	NA	Perm	Split	NA		D.P+P	NA		Perm	NA		
Protected Phases	3	3		4	4		5	1 5			1		2
Permitted Phases			3				1			1			
Detector Phase	3	3	3	4	4		5	1 5		1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0			10.0	10.0		1.0
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		14.0			19.5	19.5		27.0
Total Split (s)	23.0	23.0	23.0	19.0	19.0		15.0			36.0	36.0		27.0
Total Split (%)	19.2%	19.2%	19.2%	15.8%	15.8%		12.5%			30.0%	30.0%		23%
Maximum Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
Yellow Time (s)	4.0	4.0	4.0	3.5	3.5		3.0			3.5	3.5		2.0
All-Red Time (s)	2.5	2.5	2.5	3.0	3.0		6.0			6.0	6.0		2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0			0.0	0.0		
Total Lost Time (s)		6.5	6.5		6.5		9.0			9.5	9.5		
Lead/Lag	Lead	Lead	Lead	Lag	Lag					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			4.0	4.0		3.0
Recall Mode	Max	Max	Max	Max	Max		Max			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													16
Act Effct Green (s)		32.7	32.7		12.5		33.0	41.5		26.5	26.5		
Actuated g/C Ratio		0.27	0.27		0.10		0.28	0.35		0.22	0.22		
v/c Ratio		0.29	0.25		0.95		0.97	0.62		0.60	0.49		
Control Delay		41.2	1.3		103.3		82.6	38.2		75.1	43.8		
Queue Delay		0.0	0.0		0.0		0.0	0.5		0.0	0.0		
Total Delay		41.2	1.3		103.3		82.6	38.7		75.1	43.8		
LOS		D	A		F		F	D		E	D		
Approach Delay		20.9			103.3			58.5			49.6		
Approach LOS		C			F			E			D		
90th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
70th %ile Green (s)	16.5	16.5	16.5	12.5	12.5		6.0			26.5	26.5		23.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
50th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
50th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
30th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
30th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
10th %ile Green (s)	43.5	43.5	43.5	12.5	12.5		6.0			26.5	26.5		0.0
10th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)		79	0		140		186	238		32	131		
Queue Length 95th (ft)		180	2		#267		m#354	m324		#92	207		
Internal Link Dist (ft)		535			630			202			540		
Turn Bay Length (ft)													
Base Capacity (vph)		510	611		198		332	635		77	411		
Starvation Cap Reductn		0	0		0		0	52		0	0		
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	0.25		0.95		0.97	0.67		0.60	0.49		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 55.0 Intersection LOS: D
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.

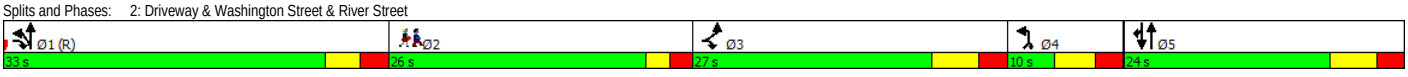
Splits and Phases: 1: Washington Street & Morton Street/Richmond Street

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	NEL2	NEL	NER	Ø2
Lane Configurations											
Traffic Volume (vph)	269	250	196	406	149	0	145	0	0	0	
Future Volume (vph)	269	250	196	406	149	0	145	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	75	0	100			75			0	0	
Storage Lanes	1	1	1			1			1	1	
Taper Length (ft)	100		100						25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850					0.850				
Flt Protected	0.950		0.950								
Satd. Flow (prot)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Flt Permitted	0.950		0.950								
Satd. Flow (perm)	1805	1615	1787	1900	1900	0	1615	1863	0	1863	
Right Turn on Red							Yes			Yes	
Satd. Flow (RTOR)							173				
Link Speed (mph)	30			30	30				30		
Link Distance (ft)	464			447	255				214		
Travel Time (s)	10.5			10.2	5.8				4.9		
Peak Hour Factor	0.97	0.97	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	0%	2%	2%	2%	
Adj. Flow (vph)	277	258	209	432	169	0	165	0	0	0	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	277	258	209	432	169	0	165	0	0	0	
Turn Type	Prot	pt+ov	Prot	NA	NA		Prot	Prot		Prot	
Protected Phases	3	1 3	1	1 5	5		5	4		4	2
Permitted Phases											
Detector Phase	3	1 3	1	1 5	5		5	4		4	
Switch Phase											
Minimum Initial (s)	10.0		10.0		10.0		10.0	4.0		4.0	1.0
Minimum Split (s)	16.5		15.5		16.5		16.5	10.0		10.0	26.0
Total Split (s)	27.0		33.0		24.0		24.0	10.0		10.0	26.0
Total Split (%)	22.5%		27.5%		20.0%		20.0%	8.3%		8.3%	22%
Maximum Green (s)	20.5		27.5		17.5		17.5	4.0		4.0	22.0
Yellow Time (s)	4.0		3.0		4.0		4.0	3.5		3.5	2.0
All-Red Time (s)	2.5		2.5		2.5		2.5	2.5		2.5	2.0
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.5		5.5		6.5		6.5	6.0		6.0	
Lead/Lag	Lead		Lead					Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes					Yes		Yes	Yes
Vehicle Extension (s)	2.0		2.0		4.0		4.0	2.0		2.0	3.0
Recall Mode	None		C-Max		None		None	None		None	None
Walk Time (s)											7.0
Flash Dont Walk (s)											15.0
Pedestrian Calls (#/hr)											7
Act Effct Green (s)	22.2	81.1	53.5	80.6	20.6		20.6				
Actuated g/C Ratio	0.18	0.68	0.45	0.67	0.17		0.17				
v/c Ratio	0.83	0.24	0.26	0.34	0.52		0.39				
Control Delay	67.9	8.2	11.6	2.7	52.5		16.8				
Queue Delay	0.0	0.0	0.0	0.4	0.0		0.0				
Total Delay	67.9	8.2	11.6	3.1	52.5		16.8				
LOS	E	A	B	A	D		B				
Approach Delay	39.1			5.9	34.9						
Approach LOS	D			A	C						
90th %ile Green (s)	20.5		27.5		27.5		27.5	0.0		0.0	22.0
90th %ile Term Code	Max		Coord		Max		Max	Skip		Skip	Ped
70th %ile Green (s)	26.8		49.7		25.0		25.0	0.0		0.0	0.0
70th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
50th %ile Green (s)	24.7		55.5		21.3		21.3	0.0		0.0	0.0
50th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
30th %ile Green (s)	21.8		63.0		16.7		16.7	0.0		0.0	0.0
30th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
10th %ile Green (s)	17.3		71.6		12.6		12.6	0.0		0.0	0.0
10th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
Queue Length 50th (ft)	203	58	46	4	131		33				
Queue Length 95th (ft)	#370	109	m149	120	m182		m78				
Internal Link Dist (ft)	384			367	175				134		
Turn Bay Length (ft)	75		100				75				
Base Capacity (vph)	343	1099	796	1258	344		434				
Starvation Cap Reductn	0	0	0	396	0		0				
Spillback Cap Reductn	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0		0				
Reduced v/c Ratio	0.81	0.23	0.26	0.50	0.49		0.38				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 1:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 49.5% ICU Level of Service A
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: 2: Driveway & Washington Street & River Street

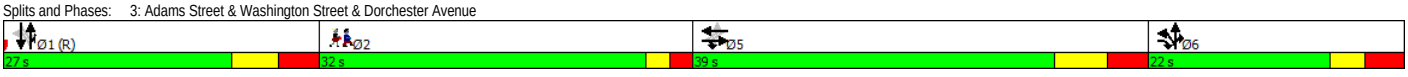


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	66	208	165	135	161	20	386	307	387	6	166	87	
Future Volume (vph)	66	208	165	135	161	20	386	307	387	6	166	87	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		25	0		50	0		0	0		0	
Storage Lanes	0		1	1		1	1		1	0		0	
Taper Length (ft)	25			25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	
Frt			0.850		0.983				0.850		0.949		
Flt Protected		0.988		0.950			0.950				0.999		
Satd. Flow (prot)	0	1863	1615	1805	1851	0	1787	1900	1615	0	3389	0	
Flt Permitted		0.749		0.379			0.581				0.944		
Satd. Flow (perm)	0	1412	1615	720	1851	0	1093	1900	1615	0	3203	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			77		5				399		64		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		447			673			443			615		
Travel Time (s)		10.2			15.3			10.1			14.0		
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	1%	1%	
Adj. Flow (vph)	69	217	172	147	175	22	398	316	399	6	169	89	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	286	172	147	197	0	398	316	399	0	264	0	
Turn Type	Perm	NA	pt+ov	Perm	NA		D.P+P	NA	Prot	Perm	NA		
Protected Phases		5	5 6		5		6	1 6	1 6		1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5	5 6	5	5		6	1 6	1 6	1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0			10.0	10.0		1.0
Minimum Split (s)	18.0	18.0		18.0	18.0		14.5			17.5	17.5		32.0
Total Split (s)	39.0	39.0		39.0	39.0		22.0			27.0	27.0		32.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		18.3%			22.5%	22.5%		27%
Maximum Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0			4.0	4.0		2.0
All-Red Time (s)	3.5	3.5		3.5	3.5		3.5			3.5	3.5		2.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)		8.0		8.0	8.0		6.5				7.5		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			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		4.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		None			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													21.0
Pedestrian Calls (#/hr)													49
Act Effct Green (s)		27.1	52.0	27.1	27.1		46.3	51.8	51.8		26.9		
Actuated g/C Ratio		0.23	0.43	0.23	0.23		0.39	0.43	0.43		0.22		
v/c Ratio		0.90	0.23	0.90	0.47		0.76	0.39	0.43		0.34		
Control Delay		71.6	9.6	94.1	42.0		41.6	29.0	4.3		33.9		
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		71.6	9.6	94.1	42.0		41.6	29.0	4.3		33.9		
LOS		E	A	F	D		D	C	A		C		
Approach Delay		48.3			64.3			24.6			33.9		
Approach LOS		D			E			C			C		
90th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
90th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
70th %ile Green (s)	31.0	31.0		31.0	31.0		15.5			19.5	19.5		28.0
70th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
50th %ile Green (s)	29.8	29.8		29.8	29.8		16.7			19.5	19.5		28.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
30th %ile Green (s)	25.2	25.2		25.2	25.2		21.3			19.5	19.5		28.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
10th %ile Green (s)	18.7	18.7		18.7	18.7		23.0			56.3	56.3		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Skip
Queue Length 50th (ft)		147	14	108	125		250	188	0		73		
Queue Length 95th (ft)		#346	66	#221	195		#348	278	67		117		
Internal Link Dist (ft)		367			593			363			535		
Turn Bay Length (ft)			25										
Base Capacity (vph)		364	721	186	481		527	819	923		766		
Starvation Cap Reductn		0	0	0	0		0	0	0		0		
Spillback Cap Reductn		0	0	0	0		0	0	0		0		
Storage Cap Reductn		0	0	0	0		0	0	0		0		
Reduced v/c Ratio		0.79	0.24	0.79	0.41		0.76	0.39	0.43		0.34		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 117 (98%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 37.0 Intersection LOS: D
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Adams Street & Washington Street & Dorchester Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	62	56	59	16	43	41	53	336	9	13	207	40	
Future Volume (vph)	62	56	59	16	43	41	53	336	9	13	207	40	
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	
Frt		0.955			0.944			0.997			0.979		
Flt Protected		0.983			0.992			0.993			0.998		
Satd. Flow (prot)	0	1772	0	0	1779	0	0	1865	0	0	1842	0	
Flt Permitted		0.864			0.938			0.928			0.975		
Satd. Flow (perm)	0	1557	0	0	1682	0	0	1743	0	0	1799	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		35			44			2			16		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		710			686			615			708		
Travel Time (s)		16.1			15.6			14.0			16.1		
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.91	0.91	0.91	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%	
Adj. Flow (vph)	63	57	60	17	46	44	58	369	10	13	211	41	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	180	0	0	107	0	0	437	0	0	265	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		5			5			1			1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5		5	5		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		22.0
Total Split (s)	13.0	13.0		13.0	13.0		25.0	25.0		25.0	25.0		22.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%		41.7%	41.7%		41.7%	41.7%		37%
Maximum Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
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		2.0	2.0		2.0	2.0		3.0
Recall Mode	None	None		None	None		Max	Max		Max	Max		None
Walk Time (s)													8.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													6
Act Effct Green (s)		8.3			8.3			23.4			23.4		
Actuated g/C Ratio		0.18			0.18			0.52			0.52		
v/c Ratio		0.58			0.31			0.49			0.28		
Control Delay		25.0			14.7			12.8			9.2		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		25.0			14.7			12.8			9.2		
LOS		C			B			B			A		
Approach Delay		25.0			14.7			12.8			9.2		
Approach LOS		C			B			B			A		
90th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		18.0
90th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Ped
70th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
70th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
50th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0		0.0
10th %ile Term Code	Max	Max		Max	Max		Dwell	Dwell		Dwell	Dwell		Skip
Queue Length 50th (ft)		27			11			48			24		
Queue Length 95th (ft)		#143			61			#267			126		
Internal Link Dist (ft)		630			606			535			628		
Turn Bay Length (ft)													
Base Capacity (vph)		313			343			897			933		
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		0.58			0.31			0.49			0.28		

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 45.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 62.6% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 60
70th %ile Actuated Cycle: 38
50th %ile Actuated Cycle: 38
30th %ile Actuated Cycle: 38
10th %ile Actuated Cycle: 53
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Dorchester Avenue & Richmond Street

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	12	673	2	6	323
Future Vol, veh/h	2	12	673	2	6	323
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	13	732	2	7	351

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1097	733	0	0	734	0
Stage 1	733	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	236	421	-	-	871	-
Stage 1	475	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	234	421	-	-	871	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	378	871	-
HCM Lane V/C Ratio	-	-	0.04	0.007	-
HCM Control Delay (s)	-	-	14.9	9.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

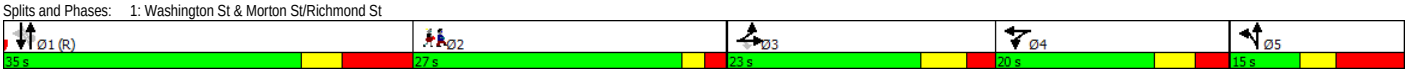
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	28	109	194	49	117	21	159	212	49	31	190	65	
Future Volume (vph)	28	109	194	49	117	21	159	212	49	31	190	65	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
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	
Frt			0.850		0.985			0.972			0.962		
Flt Protected		0.990			0.987		0.950			0.950			
Satd. Flow (prot)	0	1881	1615	0	1847	0	1805	1832	0	1805	1814	0	
Flt Permitted		0.990			0.987		0.385			0.411			
Satd. Flow (perm)	0	1881	1615	0	1847	0	732	1832	0	781	1814	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			236		4			10			13		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			710			282			620		
Travel Time (s)		14.0			16.1			6.4			14.1		
Peak Hour Factor	0.97	0.97	0.97	0.88	0.88	0.88	0.96	0.96	0.96	0.94	0.94	0.94	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	
Adj. Flow (vph)	29	112	200	56	133	24	166	221	51	33	202	69	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	141	200	0	213	0	166	272	0	33	271	0	
Turn Type	Split	NA	Perm	Split	NA		D.P+P	NA		Perm	NA		
Protected Phases	3	3		4	4		5	1 5			1		2
Permitted Phases			3				1			1			
Detector Phase	3	3	3	4	4		5	1 5		1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0			10.0	10.0		1.0
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		14.0			19.5	19.5		27.0
Total Split (s)	23.0	23.0	23.0	20.0	20.0		15.0			35.0	35.0		27.0
Total Split (%)	19.2%	19.2%	19.2%	16.7%	16.7%		12.5%			29.2%	29.2%		23%
Maximum Green (s)	16.5	16.5	16.5	13.5	13.5		6.0			25.5	25.5		23.0
Yellow Time (s)	4.0	4.0	4.0	3.5	3.5		3.0			3.5	3.5		2.0
All-Red Time (s)	2.5	2.5	2.5	3.0	3.0		6.0			6.0	6.0		2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0			0.0	0.0		
Total Lost Time (s)		6.5	6.5		6.5		9.0			9.5	9.5		
Lead/Lag	Lead	Lead	Lead	Lag	Lag					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			4.0	4.0		3.0
Recall Mode	Max	Max	Max	Max	Max		Max			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													9
Act Effct Green (s)		38.1	38.1		13.5		32.0	40.5		25.5	25.5		
Actuated g/C Ratio		0.32	0.32		0.11		0.27	0.34		0.21	0.21		
v/c Ratio		0.24	0.30		1.01		0.67	0.44		0.20	0.69		
Control Delay		34.9	4.2		116.6		40.8	27.2		42.6	51.4		
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0		
Total Delay		34.9	4.2		116.6		40.8	27.2		42.6	51.4		
LOS		C	A		F		D	C		D	D		
Approach Delay		16.9			116.6			32.3			50.5		
Approach LOS		B			F			C			D		
90th %ile Green (s)	16.5	16.5	16.5	13.5	13.5		6.0			25.5	25.5		23.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Ped
70th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
50th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
50th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
30th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
30th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
10th %ile Green (s)	43.5	43.5	43.5	13.5	13.5		6.0			25.5	25.5		0.0
10th %ile Term Code	MaxR	MaxR	MaxR	MaxR	MaxR		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)		75	0		~166		82	182		21	186		
Queue Length 95th (ft)		171	41		#318		m117	m176		52	282		
Internal Link Dist (ft)		535			630			202			540		
Turn Bay Length (ft)													
Base Capacity (vph)		596	673		211		248	624		165	395		
Starvation Cap Reductn		0	0		0		0	0		0	0		
Spillback Cap Reductn		0	0		0		0	0		0	0		
Storage Cap Reductn		0	0		0		0	0		0	0		
Reduced v/c Ratio		0.24	0.30		1.01		0.67	0.44		0.20	0.69		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 46.4 Intersection LOS: D
Intersection Capacity Utilization 60.5% ICU Level of Service B
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Washington St & Morton St/Richmond St

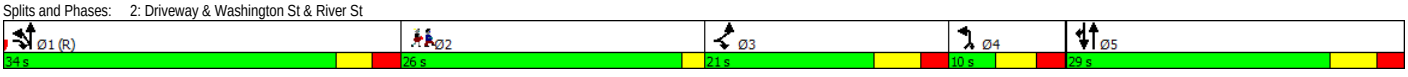


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	NEL2	NEL	NER	Ø2
Lane Configurations											
Traffic Volume (vph)	166	238	270	230	202	0	199	0	0	0	
Future Volume (vph)	166	238	270	230	202	0	199	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	75	0	100			75			0	0	
Storage Lanes	1	1	1			1			1	1	
Taper Length (ft)	100		100						25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850					0.850				
Flt Protected	0.950		0.950								
Satd. Flow (prot)	1787	1615	1805	1900	1863	0	1615	1863	0	1863	
Flt Permitted	0.950		0.950								
Satd. Flow (perm)	1787	1615	1805	1900	1863	0	1615	1863	0	1863	
Right Turn on Red							Yes			Yes	
Satd. Flow (RTOR)							155				
Link Speed (mph)	30			30	30				30		
Link Distance (ft)	464			447	255				214		
Travel Time (s)	10.5			10.2	5.8				4.9		
Peak Hour Factor	0.95	0.95	0.99	0.99	0.96	0.96	0.96	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	0%	0%	0%	2%	0%	0%	2%	2%	2%	
Adj. Flow (vph)	175	251	273	232	210	0	207	0	0	0	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	175	251	273	232	210	0	207	0	0	0	
Turn Type	Prot	pt+ov	Prot	NA	NA		Prot	Prot		Prot	
Protected Phases	3	1 3	1	1 5	5		5	4		4	2
Permitted Phases											
Detector Phase	3	1 3	1	1 5	5		5	4		4	
Switch Phase											
Minimum Initial (s)	10.0		10.0		10.0		10.0	4.0		4.0	1.0
Minimum Split (s)	16.5		15.5		16.5		16.5	10.0		10.0	24.0
Total Split (s)	21.0		34.0		29.0		29.0	10.0		10.0	26.0
Total Split (%)	17.5%		28.3%		24.2%		24.2%	8.3%		8.3%	22%
Maximum Green (s)	14.5		28.5		22.5		22.5	4.0		4.0	24.0
Yellow Time (s)	4.0		3.0		4.0		4.0	3.5		3.5	2.0
All-Red Time (s)	2.5		2.5		2.5		2.5	2.5		2.5	0.0
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.5		5.5		6.5		6.5	6.0		6.0	
Lead/Lag	Lead		Lead					Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes					Yes		Yes	Yes
Vehicle Extension (s)	2.0		2.0		4.0		4.0	2.0		2.0	3.0
Recall Mode	None		C-Max		None		None	None		None	None
Walk Time (s)											7.0
Flash Dont Walk (s)											15.0
Pedestrian Calls (#/hr)											14
Act Effct Green (s)	15.1	74.3	54.9	83.3	21.9		21.9				
Actuated g/C Ratio	0.13	0.62	0.46	0.69	0.18		0.18				
v/c Ratio	0.78	0.25	0.33	0.18	0.62		0.49				
Control Delay	73.8	9.7	24.1	9.3	49.2		14.8				
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	73.8	9.7	24.1	9.3	49.2		14.8				
LOS	E	A	C	A	D		B				
Approach Delay	36.0			17.3	32.1						
Approach LOS	D			B	C						
90th %ile Green (s)	16.5		30.4		30.6		30.6	0.0		0.0	22.0
90th %ile Term Code	Max		Coord		Gap		Gap	Skip		Skip	Ped
70th %ile Green (s)	16.5		35.5		25.5		25.5	0.0		0.0	22.0
70th %ile Term Code	Max		Coord		Gap		Gap	Skip		Skip	Ped
50th %ile Green (s)	17.1		62.2		22.2		22.2	0.0		0.0	0.0
50th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
30th %ile Green (s)	14.6		69.0		17.9		17.9	0.0		0.0	0.0
30th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
10th %ile Green (s)	11.0		77.3		13.2		13.2	0.0		0.0	0.0
10th %ile Term Code	Gap		Coord		Gap		Gap	Skip		Skip	Skip
Queue Length 50th (ft)	131	58	60	45	153		50				
Queue Length 95th (ft)	#229	116	254	107	m173		m29				
Internal Link Dist (ft)	384			367	175				134		
Turn Bay Length (ft)	75		100				75				
Base Capacity (vph)	235	1009	825	1298	383		455				
Starvation Cap Reductn	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0		0				
Reduced v/c Ratio	0.74	0.25	0.33	0.18	0.55		0.45				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 1:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 27.8 Intersection LOS: C
Intersection Capacity Utilization 50.2% ICU Level of Service A
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: 2: Driveway & Washington St & River St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	51	163	230	169	204	16	230	240	184	19	350	74	
Future Volume (vph)	51	163	230	169	204	16	230	240	184	19	350	74	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		25	0		50	0		0	0		0	
Storage Lanes	0		1	1		1	1		1	0		0	
Taper Length (ft)	25			25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	
Frt			0.850		0.989				0.850		0.975		
Flt Protected		0.988		0.950			0.950				0.998		
Satd. Flow (prot)	0	1854	1615	1805	1879	0	1805	1900	1615	0	3513	0	
Flt Permitted		0.634		0.496			0.405				0.930		
Satd. Flow (perm)	0	1190	1615	942	1879	0	770	1900	1615	0	3273	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			106		3				192		18		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		447			673			443			615		
Travel Time (s)		10.2			15.3			10.1			14.0		
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97	0.97	
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	53	168	237	184	222	17	240	250	192	20	361	76	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	221	237	184	239	0	240	250	192	0	457	0	
Turn Type	Perm	NA	pt+ov	Perm	NA		D.P+P	NA	Prot	Perm	NA		
Protected Phases		5	5 6		5		6	1 6	1 6		1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5	5 6	5	5		6	1 6	1 6	1	1		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0			10.0	10.0		1.0
Minimum Split (s)	18.0	18.0		18.0	18.0		14.5			17.5	17.5		32.0
Total Split (s)	39.0	39.0		39.0	39.0		16.0			33.0	33.0		32.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		13.3%			27.5%	27.5%		27%
Maximum Green (s)	31.0	31.0		31.0	31.0		9.5			25.5	25.5		28.0
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0			4.0	4.0		2.0
All-Red Time (s)	3.5	3.5		3.5	3.5		3.5			3.5	3.5		2.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)		8.0		8.0	8.0		6.5				7.5		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			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		4.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		None			C-Max	C-Max		None
Walk Time (s)													7.0
Flash Dont Walk (s)													21.0
Pedestrian Calls (#/hr)													43
Act Effct Green (s)		25.8	44.2	25.8	25.8		47.6	53.1	53.1		34.7		
Actuated g/C Ratio		0.22	0.37	0.22	0.22		0.40	0.44	0.44		0.29		
v/c Ratio		0.87	0.36	0.91	0.59		0.59	0.30	0.23		0.48		
Control Delay		65.2	7.6	88.8	47.0		34.8	27.0	4.5		39.6		
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0		
Total Delay		65.2	7.6	88.8	47.0		34.8	27.0	4.5		39.6		
LOS		E	A	F	D		C	C	A		D		
Approach Delay		35.4			65.2			23.4			39.6		
Approach LOS		D			E			C			D		
90th %ile Green (s)	31.0	31.0		31.0	31.0		9.5			25.5	25.5		28.0
90th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
70th %ile Green (s)	31.0	31.0		31.0	31.0		9.5			25.5	25.5		28.0
70th %ile Term Code	Max	Max		Max	Max		Max			Coord	Coord		Ped
50th %ile Green (s)	28.3	28.3		28.3	28.3		12.2			25.5	25.5		28.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
30th %ile Green (s)	23.1	23.1		23.1	23.1		17.4			25.5	25.5		28.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Max			Coord	Coord		Ped
10th %ile Green (s)	15.6	15.6		15.6	15.6		11.0			71.4	71.4		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap			Coord	Coord		Skip
Queue Length 50th (ft)		173	77	136	161		132	140	0		164		
Queue Length 95th (ft)		#277	53	#247	237		#237	219	50		222		
Internal Link Dist (ft)		367			593			363			535		
Turn Bay Length (ft)			25										
Base Capacity (vph)		307	648	243	487		408	840	821		958		
Starvation Cap Reductn		0	0	0	0		0	0	0		0		
Spillback Cap Reductn		0	0	0	0		0	0	0		0		
Storage Cap Reductn		0	0	0	0		0	0	0		0		
Reduced v/c Ratio		0.72	0.37	0.76	0.49		0.59	0.30	0.23		0.48		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 38.5 Intersection LOS: D
Intersection Capacity Utilization 74.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Adams St & Washington St & Dorchester Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	44	55	56	51	82	58	49	220	23	13	323	33	
Future Volume (vph)	44	55	56	51	82	58	49	220	23	13	323	33	
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								1.00			1.00		
Frt		0.951			0.959			0.990			0.988		
Flt Protected		0.986			0.987			0.992			0.998		
Satd. Flow (prot)	0	1782	0	0	1798	0	0	1863	0	0	1870	0	
Flt Permitted		0.784			0.835			0.894			0.987		
Satd. Flow (perm)	0	1417	0	0	1521	0	0	1679	0	0	1849	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		37			29			6			8		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		710			686			615			708		
Travel Time (s)		16.1			15.6			14.0			16.1		
Confl. Bikes (#/hr)									1			1	
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.94	0.94	0.94	0.97	0.97	0.97	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	45	57	58	54	86	61	52	234	24	13	333	34	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	160	0	0	201	0	0	310	0	0	380	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		5			5			1			1		2
Permitted Phases	5			5			1			1			
Detector Phase	5	5		5	5		1	1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		22.0
Total Split (s)	20.0	20.0		20.0	20.0		28.0	28.0		28.0	28.0		22.0
Total Split (%)	28.6%	28.6%		28.6%	28.6%		40.0%	40.0%		40.0%	40.0%		31%
Maximum Green (s)	15.0	15.0		15.0	15.0		23.0	23.0		23.0	23.0		18.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
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		2.0	2.0		2.0	2.0		3.0
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None
Walk Time (s)													8.0
Flash Dont Walk (s)													10.0
Pedestrian Calls (#/hr)													33
Act Effct Green (s)		11.7			11.7			39.5			39.5		
Actuated g/C Ratio		0.17			0.17			0.56			0.56		
v/c Ratio		0.60			0.72			0.33			0.36		
Control Delay		29.6			38.1			13.7			13.8		
Queue Delay		0.0			0.0			0.0			0.0		
Total Delay		29.6			38.1			13.7			13.8		
LOS		C			D			B			B		
Approach Delay		29.6			38.1			13.7			13.8		
Approach LOS		C			D			B			B		
90th %ile Green (s)	15.0	15.0		15.0	15.0		23.0	23.0		23.0	23.0		18.0
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Coord	Coord		Ped
70th %ile Green (s)	14.2	14.2		14.2	14.2		23.8	23.8		23.8	23.8		18.0
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Coord	Coord		Ped
50th %ile Green (s)	11.9	11.9		11.9	11.9		48.1	48.1		48.1	48.1		0.0
50th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Coord	Coord		Skip
30th %ile Green (s)	9.6	9.6		9.6	9.6		50.4	50.4		50.4	50.4		0.0
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Coord	Coord		Skip
10th %ile Green (s)	8.0	8.0		8.0	8.0		52.0	52.0		52.0	52.0		0.0
10th %ile Term Code	Min	Min		Min	Min		Coord	Coord		Coord	Coord		Skip
Queue Length 50th (ft)		49			70			41			52		
Queue Length 95th (ft)		100			130			181			219		
Internal Link Dist (ft)		630			606			535			628		
Turn Bay Length (ft)													
Base Capacity (vph)		332			348			948			1045		
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		0.48			0.58			0.33			0.36		

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 45 (64%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 57.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Ave/Dorchester St & Richmond St

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	13	392	4	11	422
Future Vol, veh/h	4	13	392	4	11	422
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	14	426	4	12	459

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	911	428	0	0	430	0
Stage 1	428	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	304	627	-	-	1129	-
Stage 1	657	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	300	627	-	-	1129	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	611	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	499	1129	-
HCM Lane V/C Ratio	-	-	0.037	0.011	-
HCM Control Delay (s)	-	-	12.5	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Appendix C

Air Quality

AIR QUALITY APPENDIX

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 4.5 of the report. Included within this documentation is a brief description of the methodology employed along with pertinent calculations and data used in the emissions and dispersion calculations supporting the microscale air quality analysis.

Motor Vehicle Emissions

The EPA MOVES computer program generated motor vehicle emissions used in the garage stationary source analysis along with the mobile source CAL3QHC modeling and mesoscale analysis. The model input parameters were provided by MassDEP. Emission rates were derived for 2017 and 2024 for speed limits of idle, 10, 15, and 25 mph for use in the microscale analyses.

MOVES CO Emission Factor Summary

Carbon Monoxide Only

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

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

CAL3QHC

For the intersection studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOVES. The intersection's queue links and free flow links were input to the model along with sensitive receptors at all locations nearby each intersection. The meteorological assumptions input into the model were a 1.0 meter per second wind speed, Pasquill-Gifford Class D stability combined with a mixing height of 1000 meters. For each direction, the full range of wind directions at 10 degree intervals was examined. In addition, a surface roughness (z_0) of 321 cm was used for the intersection. Idle emission rates for queue links were based on 0 mph emission rates derived in MOVES. Emission rates for speeds of 10, 15, and 25 mph were used for right turn, left turn, and free flow links, respectively.

1120-1132 Washington Street, Boston, MA
Background Concentrations

POLLUTANT	AVERAGING TIME	Form	2013	2014	2015	Units	ppm/ppb to $\mu g/m^3$ Conversion Factor	2013-2015 Background Concentration ($\mu g/m^3$)	Location
SO_2 [1][6]	1-Hour [5]	99th %	10.9	12.3	9.4	ppb	2.62	28.5	Harrison Ave., Boston
	3-Hour	H2H	9.7	21.5	8.7	ppb	2.62	56.3	Harrison Ave., Boston
	24-Hour	H2H	5	5.1	4.3	ppb	2.62	13.4	Harrison Ave., Boston
	Annual	H	1.1	1.1	0.8	ppb	2.62	2.8	Harrison Ave., Boston
PM-10	24-Hour	H2H	34	61	28	$\mu g/m^3$	1	61	Harrison Ave., Boston
	Annual	H	15.1	13.9	12.4	$\mu g/m^3$	1	15.1	Harrison Ave., Boston
PM-2.5	24-Hour [5]	98th %	15.9	12.7	19	$\mu g/m^3$	1	15.9	Harrison Ave., Boston
	Annual [5]	H	7.3	6.0	8.8	$\mu g/m^3$	1	7.4	Harrison Ave., Boston
NO_2 [3]	1-Hour [5]	98th %	50	51	53	ppb	1.88	96.5	Harrison Ave., Boston
	Annual	H	17.4	15.8	15.0	ppb	1.88	32.8	Harrison Ave., Boston
CO [2]	1-Hour	H2H	1.9	1.7	1.4	ppm	1146	2145.3	Harrison Ave., Boston
	8-Hour	H2H	1.2	1.3	0.9	ppm	1146	1489.8	Harrison Ave., Boston
Ozone [4]	8-Hour	H4H	0.059	0.054	0.056	ppm	1963	115.8	Harrison Ave., Boston
Lead	Rolling 3-Month	H	0.006	0.014	0.016	$\mu g/m^3$	1	0.016	Harrison Ave., Boston

Notes:
From 2013-2015 EPA's AirData Website

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

[2] CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.

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

[4] O_3 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1963 $\mu g/m^3$.

[5] Background level is the average concentration of the three years.

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

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

Appendix D

Climate Change Preparedness Checklist

AIR QUALITY APPENDIX

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 4.5 of the report. Included within this documentation is a brief description of the methodology employed along with pertinent calculations and data used in the emissions and dispersion calculations supporting the microscale air quality analysis.

Motor Vehicle Emissions

The EPA MOVES computer program generated motor vehicle emissions used in the garage stationary source analysis along with the mobile source CAL3QHC modeling and mesoscale analysis. The model input parameters were provided by MassDEP. Emission rates were derived for 2017 and 2024 for speed limits of idle, 10, 15, and 25 mph for use in the microscale analyses.

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CAL3QHC

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1120-1132 Washington Street, Boston, MA
Background Concentrations

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

Notes:
From 2013-2015 EPA's AirData Website

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[2] CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.

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[4] O_3 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1963 $\mu g/m^3$.

[5] Background level is the average concentration of the three years.

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

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

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:	**1120-1132 Washington Street**
Primary Project Address:	**1120-1132 Washington Street**
Total Number of Phases/Buildings:	**One**
Primary Contact (Name / Title / Company / Email / Phone):	**John Sambucci / City Point Development /** john@citypointdevelopment.com
Owner / Developer:	**City Point Development LLC**
Architect:	**RCA, LLC**
Civil Engineer:	**Howard Stein Hudson**
Landscape Architect:	**R. Jon Henson Landscape Architects**
Permitting:	**Epsilon Associates**
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.	No MAAB variances are anticipated.

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:	*48,303 SF*	Building Area:	*67,000 GSF*
Building Height:	*40 FT.*	Number of Stories:	*4 Flrs.*
First Floor Elevation:	55 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:	*Residential, commercial*			

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 the Lower Mills neighborhood at the southeastern edge of Dorchester. Immediately to the west of the site is the Mattapan neighborhood of Boston, and to the south just across the Neponset River is the town of Milton. The area surrounding the Project site contain a mix of uses, including two to three-story residential buildings as well as some commercial uses. The topography in the area is generally flat, sloping gradually downhill as you go south down Dorchester Avenue and Adams Street.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	MBTA Bus #27 – River Street
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	Within the vicinity of the Project site is the Conservatory Lab Charter School and the Carney Hospital.
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	Within the vicinity of the site is the Boston Public Library – Lower Mills Branch. There are also numerous open spaces in the area.

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, slopes, materials, and physical condition at the development site:	Yes, the existing concrete sidewalk at Washington Street is 8' wide. The existing sidewalk does not have a handicap ramp at the Project 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:	Yes, with modifications for new driveway entrances into the property. No, the existing sidewalks and pedestrian ramps have not been verified as being in compliance at this time, but will be verified during the Project design.
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 residential Street Type was applied.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	The sidewalk along Washington Street is approximately 8' wide with minimal slope. The frontage, pedestrian, and furnishing zones will be designed in accordance with Complete Streets Guidelines.
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?	Existing materials are concrete with granite curbing along Washington Street – All materials will be on the City of Boston 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	No

what will the remaining right-of-way clearance be?	
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	N/A
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	This will be determined as the Project continues to develop the scope of work in the public way.
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?	94 parking spaces, partially in a below-grade garage and partially at grade.
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 four accessible spaces. The exterior accessible spaces will have 7 foot wide access aisles.
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	None will be required.
Where is the accessible visitor parking located?	Two spaces are in the retail parking area and the other two spaces are in the basement level parking garage
Has a drop-off area been identified? ***If yes,*** will it be accessible?	Yes the drop off and pick up area will be in the retail parking area of the site
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:	Flush Conditions.
Are the accessible entrances and standard entrance integrated? ***If yes,***	Yes

*describe. **If no**,* what is the reason?	
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	Accessible routes diagrams are attached. A way finding/signage package has not yet been developed, but will be developed to meet Building Code and Accessibility Board requirements.
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?	Approximately 57 residential units are proposed.
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 sale. Approximately 13% of the 57 units will be IDP units, which results in seven units.
If a residential development, how many accessible Group 2 units are being proposed?	All residential units will all be Group 1 Adaptable and 5% of units will be Group 2
If a residential development, how many accessible Group 2 units will also be IDP units? ***If none***, describe reason.	It is anticipated that one of the accessible units will also be an IDP unit.
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.	No.
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? ***If yes***, describe:	

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?	The Proponent has contributed $2,500 towards improvements for Dorchester Park, which is in the vicinity of the Project site. The Proponent has pledged an additional $10,000 for civic causes, and the City and neighborhood associations will determine the most appropriate use for this funding. The Project will provide, on site, additional street trees and ornamental pole lighting, to cover the existing street walk, as well as entry walks into the 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?	Access for persons with disabilities will be provided on all pathways from parking and open spaces to and from the building. A space will be designated for an accessible barbeque grill in the green space being developed on site as a part of the Project. The Condo Association will be responsible for determining the status of the grill.
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.	There are no restrooms planned in the common spaces of the residential portion of the building. The restrooms for the commercial space will be designed once tenants have been finalized.
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 project more accessible?	The Proponent has not presented the plan to the Advisory Board.

10. Attachments *Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.*
Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances. **See attached.**
Provide a diagram of the accessible route connections through the site, including distances. **See attached.**
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable) **See attached.**
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry. **See attached.**
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. • • • •

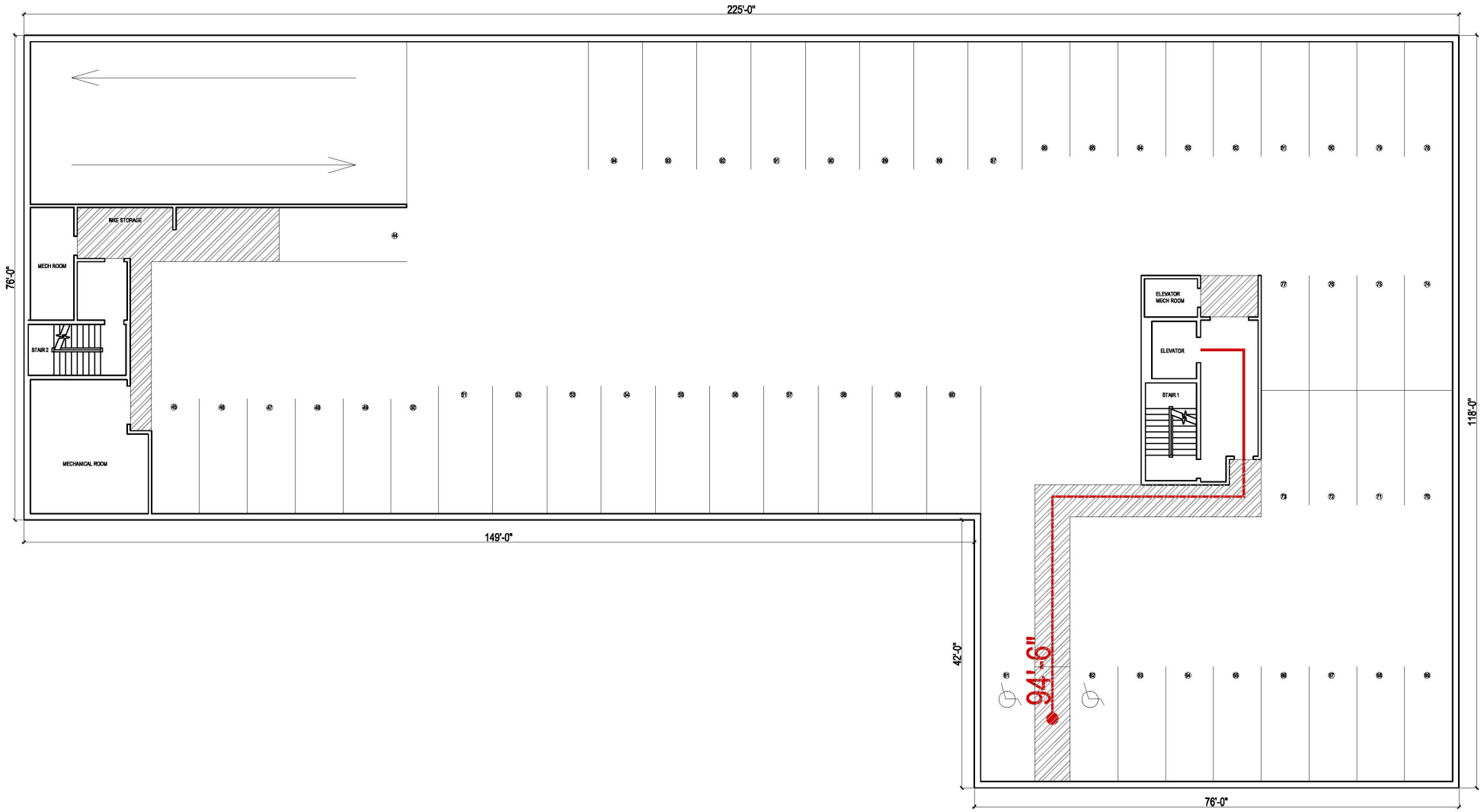
This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open 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



1120 Washington Street Boston, Massachusetts

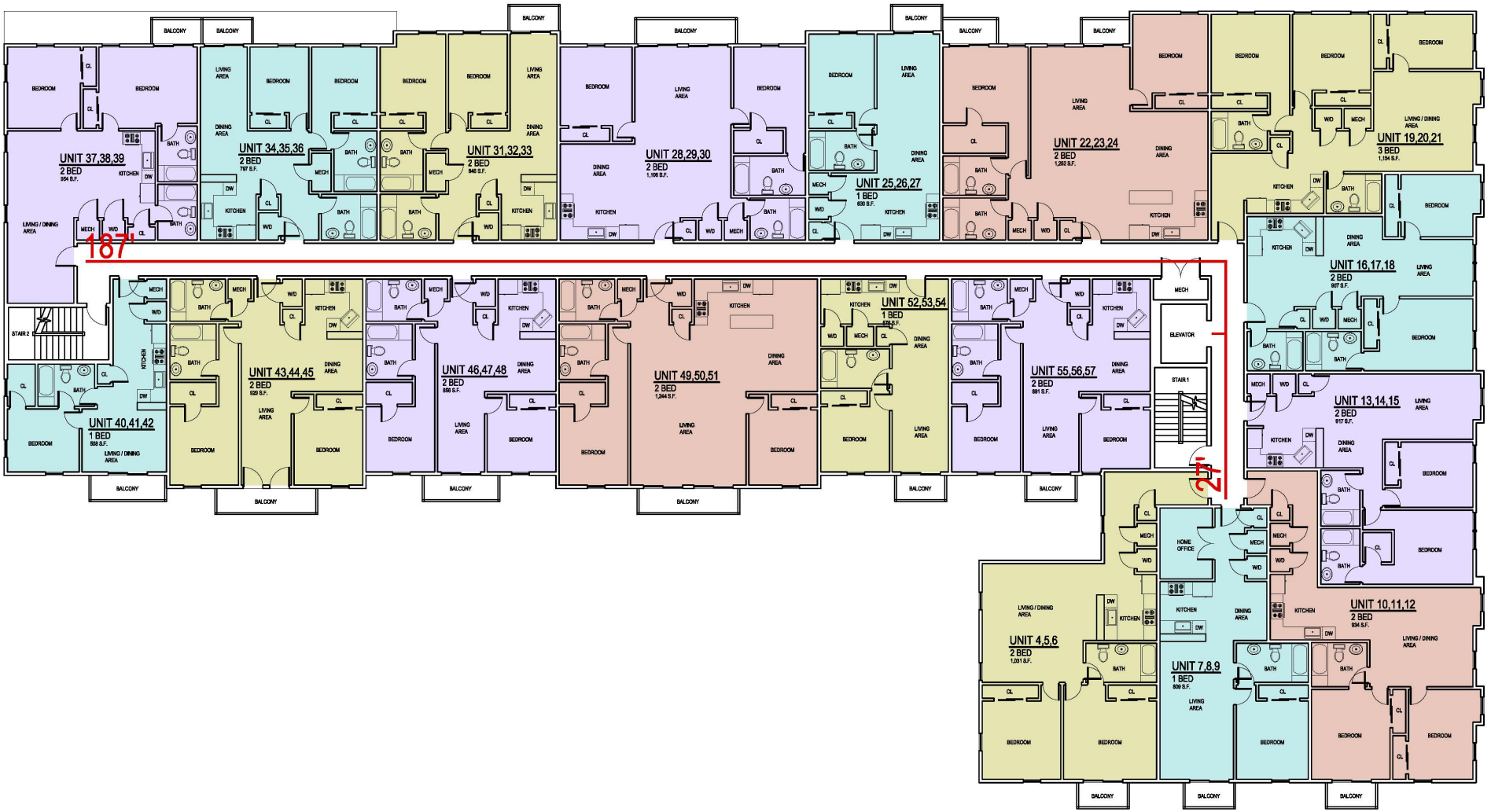
RCA, LLC
Architects - Designers - Planners

Basement Plan

1120 Washington Street Boston, Massachusetts

RCA, LLC
Architects - Designers - Planners

First Floor Plan



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Upper Floors