248 Dorchester Avenue, South Boston, MA
Mixed-Use Hotel/Commercial Development

Project Notification Form
October 2, 2017
Submitted Pursuant to Article 80B of the Boston Zoning Code

SUBMITTED BY:

Evergreen Property Group, LLC
8 Byron Street
Boston, MA 02018

PREPARED BY:

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41 Brush Hill Road
Newton, MA 02461

SUBMITTED TO:

Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

IN ASSOCIATION WITH:

Utile, Inc.
McDermott Quilty & Miller LLP
Howard Stein Hudson
Tech Environmental, Inc.
GroundView LLC
RWDI
Samiotes Consultants, Inc.
McPhail Associates
GZA GeoEnvironmental, Inc.

McDERMOTT
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MILLER LLP

28 STATE STREET, SUITE 802
BOSTON, MA 02109

30 ROWES WHARF, SUITE 600
Boston, MA 02110

October 2, 2017

Mr. Brian Golden, Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201
Attn: Casey Hines, Project Manager

RE: Project Notification Form
Proposed Mixed - Use Hotel / Commercial Development
248 Dorchester Avenue, Ward 6, South Boston

Dear Director Golden:

On behalf of Evergreen Property Group, LLC (the "Proponent"), as owner-developer of 22,042 square feet of real property located at 246-248 Dorchester Avenue, South Boston (the "Project Site"), we are pleased to submit this Project Notification Form ("PNF") to the Boston Planning and Development Agency ("BPDA") in accordance with the Article 80B-2 Large Project Review requirements of the Boston Zoning Code. The public notice for the PNF appears in the October 2, 2017, edition of the *Boston Herald*.

The Proponent proposes to revitalize this under-utilized Project Site with a new eight-story hotel of approximately 87,000 gross square feet, including 159 rooms, approximately 15,000 - 20,000 gross square feet of hospitality amenities, restaurant, lounge, event and outdoor deck space. On-site parking will also be provided in a covered facility for approximately 60 valet-parked vehicles, with sidewalk, open space and site improvements (collectively, the "Proposed Project").

As an "independent" boutique hotel concept, the Proposed Project has been designed to enhance the vibrancy of the West Broadway commercial district and complements the growing needs of the surrounding mixed-use community, which is also situated in the BPDA's South Boston Dorchester Avenue Planning Initiative (the "Planning Initiative"). Culminating in the adoption of guidelines and related public comment in November, 2016 (the "Adopted Guidelines"), the Planning Initiative now includes a detailed program of prospective zoning modifications, with certain community input and resulting market dynamics that, taken together, precipitated the Proponent to reexamine its prior plans for a residential apartment building at the Project Site, as currently approved by the City. As a result, the Project has also been carefully designed with a building scale that substantially complies with the Adopted Guidelines, while also including a lower building height, and with certain enhanced open space and setback measures contemplated by the Planning Initiative.

Since the Proposed Project exceeds the 50,000 square foot size threshold of Article 80 for a project within a Boston neighborhood, it will require several additional filings pursuant to Large Project Review. A Letter of Intent to File a Project Notification Form was filed with the BPDA on June 30, 2017 (attached hereto as Appendix "A"). In support of the Article 80 Large Project Review process, the Proponent has also conducted extensive preliminary community outreach with neighbors and nearby residents, including meetings and discussions with local elected representatives, other officials and the applicable neighborhood organizations.

On behalf of the entire project team, we thank you and the BPDA staff assigned to the Proposed Project, particularly its Project Manager Casey Hines and the BPDA Urban Designers Michael Cannizzo and Matthew Martin, for their invaluable input in helping shape the Proposed Project and the related PNF filing. We also look forward to further processing the underlying Large Project Review case with continued cooperation and leadership by the BPDA, City officials, the Impact Advisory Group and the South Boston community.

In accordance with BPDA requirements, please find attached ten (10) copies of the PNF plus a CD containing the electronic PNF file to be uploaded to the BPDA's online portal for public review.

Very truly yours,

Joseph P. Hanley, Esq., Partner
McDermott, Quilty & Miller LLP

Enclosures

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APPENDICES

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

Evergreen Property Group, LLC (the "Proponent") is submitting this Project Notification Form ("PNF") for a mixed-use hotel /commercial development at 246-248 Dorchester Avenue ("248 Dorchester Avenue") in the South Boston neighborhood in accordance with the Article 80 requirements of the Boston Zoning Code ("Code"). The Project proposes construction of up to 159 hotel rooms with approximately 15,000-20,000 gross square feet (gsf) of neighborhood serving and hospitality amenities, including restaurant, lounge, event space and outdoor deck, and covered at-grade on-site parking for approximately 60 valet-parked vehicles, all totaling approximately 87,000 gsf of interior space (the "Proposed Project"). The Proposed Project will also provide a distinct hospitality use at a design-forward development that better activates the street frontage along Dorchester Avenue with enhanced pedestrian amenities and increased foot traffic attracting local residents, guests and visitors within a short walk from the MBTA's West Broadway Redline Station.

Currently occupied by the Enterprise Rent-A-Car business, the Property Site consists of 22,042 square foot of under-utilized land in South Boston, with a single-story building occupied by an automobile rental business surrounded by asphalt parking lots. With frontage on Dorchester Avenue, the Property Site is bounded by West Fifth and West Sixth Streets, and the South Boston Bypass/Haul Road at its rear. While the immediate area along this section of Dorchester Avenue is mostly industrial, the Property Site is in a unique section of the Planning Initiative area which the Boston Planning and Development Agency (BPDA) has determined to be generally appropriate for a potential new hotel use, as it transitions from the nearby commercial district to other more residential parts of the Planning Initiative area. All existing structures will be removed to enable the new development. Please see **Figures 1-1** thru **1-6**.

A Letter of Intent ("LOI") to File a Project Notification Form was filed with the BPDA for the proposed mixed-use development on June 30, 2017 (See **Appendix A**).

The nearby neighborhood is a mix of light industrial, retail, and other commercial uses, as well as residential buildings ranging from a small number of single-family homes to numerous multi-unit condominiums and apartments. MBTA buses run on Routes 9, 11 and 47 close to the site on both Dorchester Avenue and West Broadway, and the Broadway Redline Line MBTA station is less than five blocks from the site. Broadway Station provides a direct connection to South Station and downtown Boston, and points north to Cambridge and south to Quincy. The context of the immediate area is supportive of, and well-suited to the proposed scale and scope of the Proposed Project, including several buildings of four to six stories in height, and the Macallen Building with a height of up to ten stories at Dorchester Avenue and West Fourth Street.

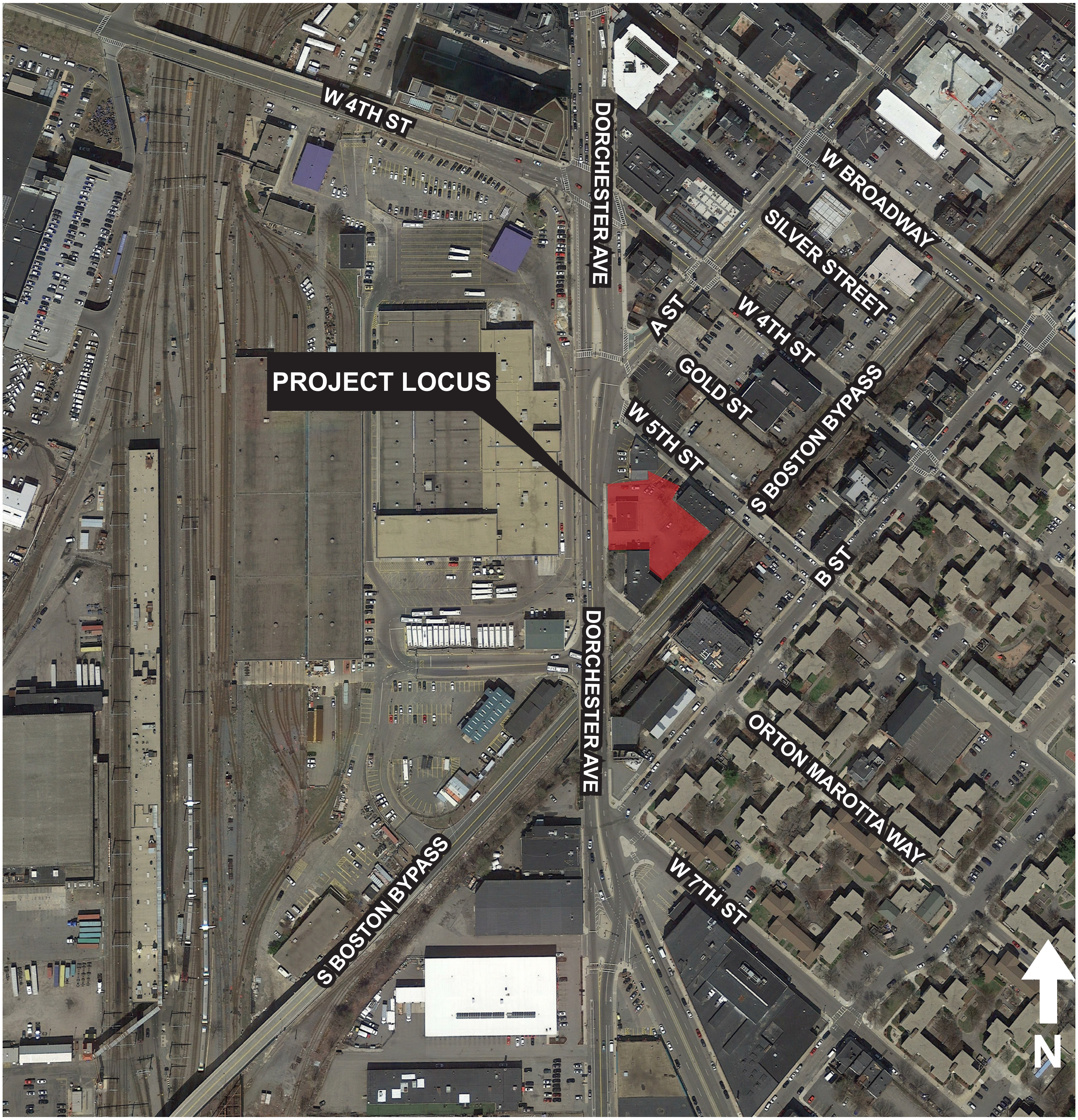


Figure 1-1. Project Locus
248 Dorchester Ave, Boston, MA

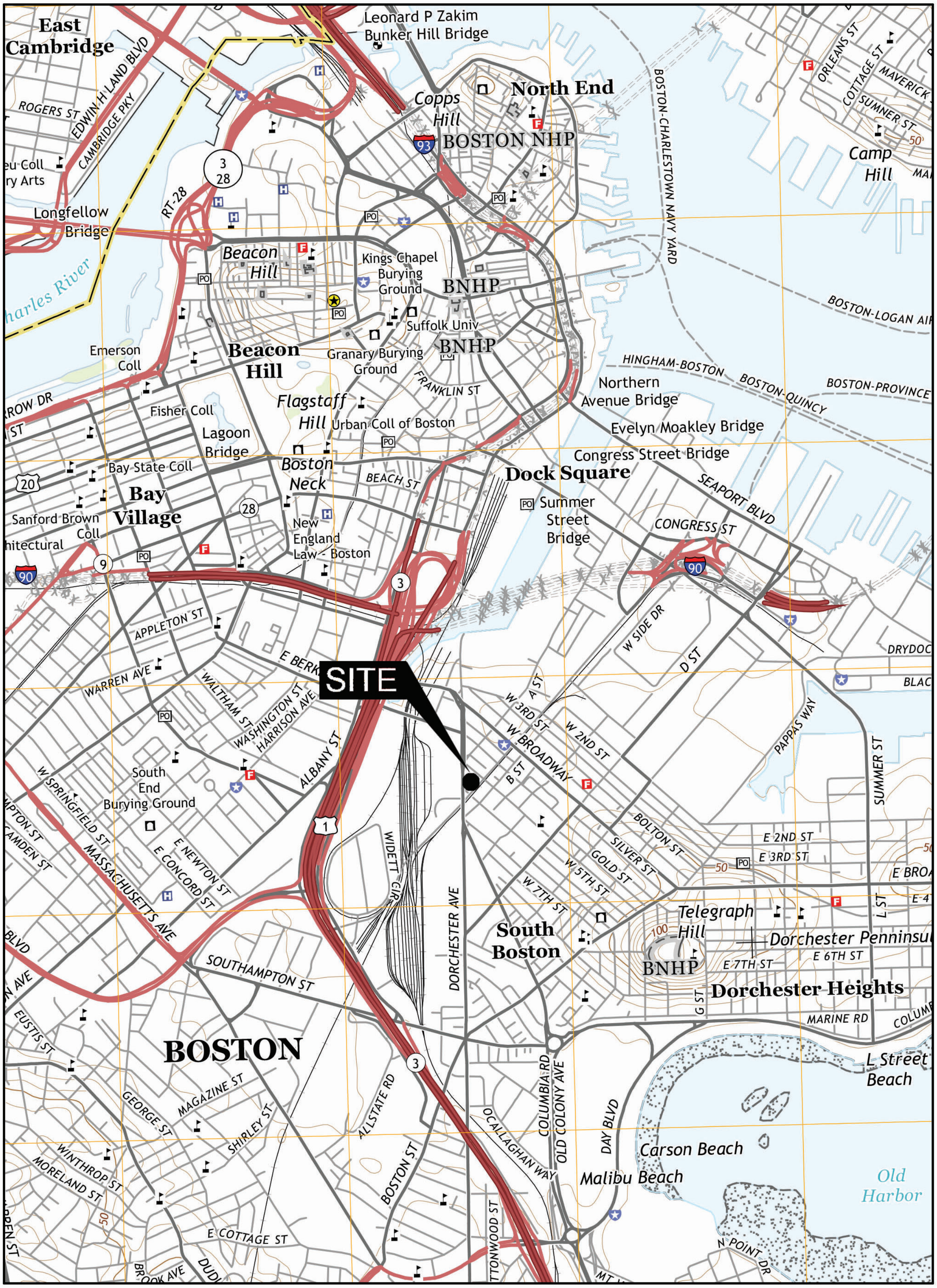


Figure 1-2. USGS Map
70 Leo M. Birmingham Pkwy, Brighton, MA

MLF CONSULTING LLC

Figure 1-3. Existing Site Photos

Existing 250 Dorchester Ave Building

Onsite Enterprise Rent A Car

Figure 1-4. Existing Site Photos

Adjacent Doughboys Restaurant

Parking on Private Street next to Existing Building and Adjacent Residential Structure (under construction) on otherside of the Haul Road

Figure 1-5. Existing Site Photos

Adjacent Haul Road

Nearby MBTA Storage Yards on Dorchester Avenue

Figure 1-6. Existing Site Photos

Front of Existing Building along Dorchester Ave

View of Macallen Building Looking North Along Dorchester Ave

1.2 Detailed Project Description

1.2.1 Existing Conditions Plan

The proposed site includes 0.5 acres (22,042 sf) and includes 246-248 Dorchester Avenue (Enterprise Rent-A-Car Office) and is bounded to the north by 270 Dorchester Avenue (Doughboy Donuts & Deli) and 26-29 West Fifth Street (multi-family residences), to the east by the MA Department of Transportation Haul Road (South Boston Bypass), to the south by 250 Dorchester Avenue and West Sixth Street, and to the east by Dorchester Avenue. The site is currently occupied by one-story Enterprise Rent-A-Car office building with surface parking on both sides along Dorchester Avenue and in the rear of the site along the Haul Road, which will be demolished to allow for the new construction to commence. (See **Figure 1-7**. **Existing Conditions Plan.**)

1.2.2 Detailed Project Program

The Project proposes construction of up to 159 hotel rooms with approximately 15,000-20,000 gross square feet of neighborhood serving and hospitality amenities, including restaurant, lounge, event space and outdoor deck, and at-grade on-site parking for approximately 60 valet-parked vehicles (the "Proposed Project"). The Proposed Project will also provide a distinct hospitality use at a design-forward development that better activates the street frontage along Dorchester Avenue with enhanced pedestrian amenities and increased foot traffic attracting local residents, guests and visitors within a short walk from the West Broadway MBTA Station.

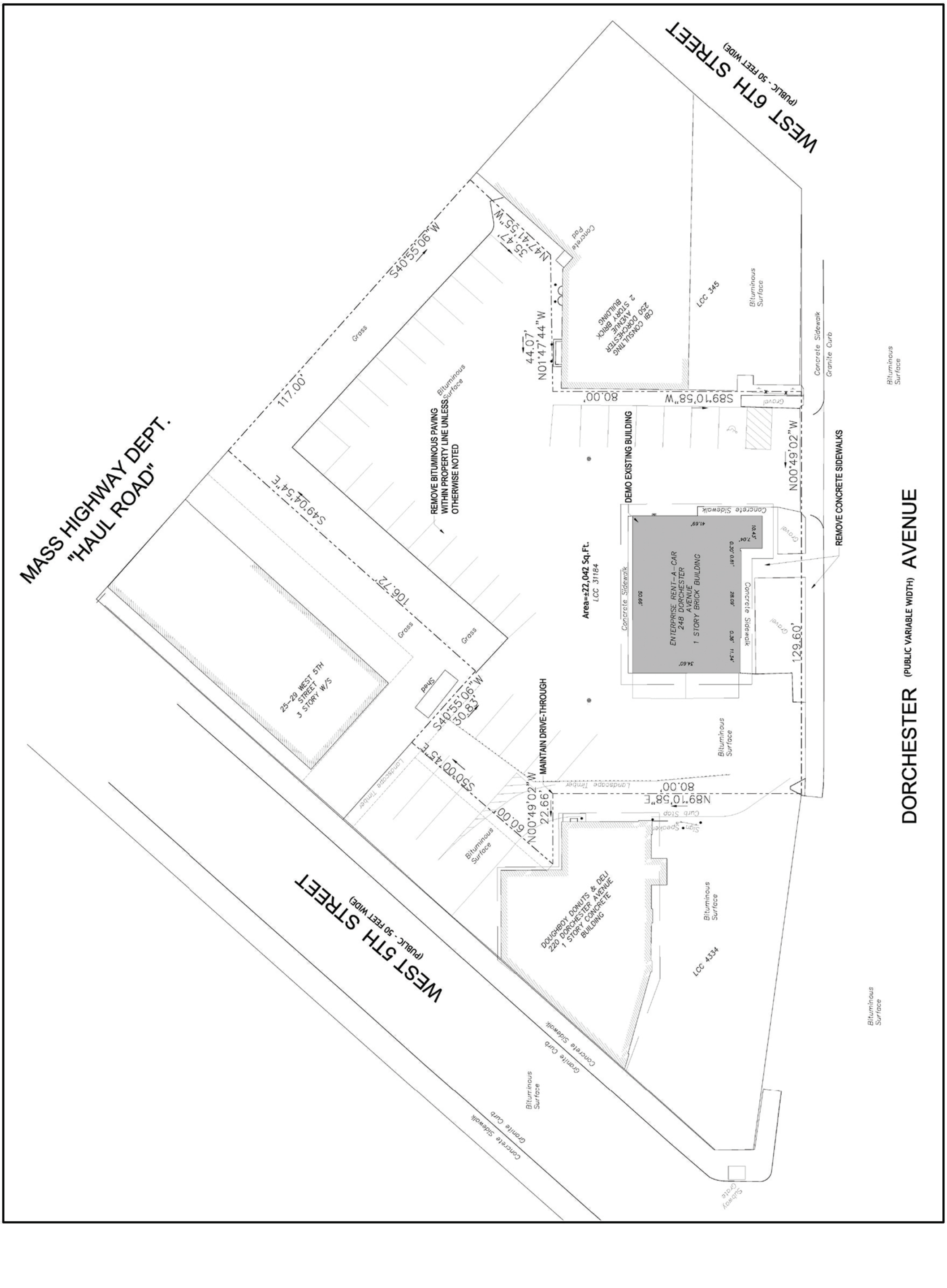
The hotel which will include five hotel floors over the ground level lobby/commercial spaces/garage will be topped by an amenity seventh floor, with an eighth floor with an amenity deck. Typical upper floors will be approximately 13,244 sf. Total height to the top of the highest occupiable floor will be 99 feet. Automobile access will be undercover into a turnaround area and access to the garage from Dorchester Avenue. Service vehicle access will be provided from Dorchester Avenue and accommodate SU-36 trucks with maneuvering within the site. The context of the immediate area is supportive of, and well-suited to the proposed scale and scope of the Proposed Project, including several buildings of four to six stories in height, and the Macallen Building with a height of up to ten stories at Dorchester Avenue and West Fourth Street. See Project Dimensions in **Table 1-1** below.

Table 1-1. Approximate Project Dimensions of Proposed Project

Lot Area	0.5 acres / 22,042 square feet
Gross Square Feet	87,000 gross square feet
FAR	3.9
Floors	8 Floors with an Amenity Deck
Height*	99 feet

*Height from Average Front Grade

Figure 1-7. Existing Conditions Plan



1.3 Summary of Project Impacts and Mitigation

1.3.1 Urban Design

The proposed project will have many positive impacts on the surrounding neighborhood. Key components such as active ground floor uses, generous public space along street side, carefully located vehicle access and proximity to public transportation have all been thoughtfully considered to reduce the negative impacts and enhance the positive impacts. The project will meet Stretch Code and achieve a high level of energy efficiency. The project team is familiar with the recommendation and principals of the ongoing Dorchester Avenue Study and has taken every opportunity to integrate these principals into the project. See **Section 3.1** for a more detailed discussion of the Project's urban design approach.

1.3.2 Sustainable Design

The Proponent and the project design team are committed to an integrated design approach and the proposed design will meet the Massachusetts Stretch Energy Code as well as the city's LEED Silver Certifiable requirement. The site's unique location provides inherent sustainability benefits. Density, proximity to public transit, storm water mitigation, a fleet of rental bicycles, bicycle storage for employees, accommodation for fuel efficient vehicles are all part of the site design. The heating and cooling energy demands will be reduced through high performance insulation strategies, carefully selected glass specifications and reduced water use fixtures. The project will provide internal space for trash and recycling and will divert much of the construction waste from landfills. Indoor air quality will be controlled through the use of an energy recovery ventilator providing tempered outdoor air to all habitable spaces as well as low emitting paints and sealants. Urban heat Island effect will be mitigated through the use of light colored roofing materials as well as rooftop terraces with extensive planted areas. For a detailed list of projected sustainable strategies please see the attached LEED checklist (**Figure 3-19** at the end of **Section 3.6**).

1.3.3 Pedestrian Level Wind Conditions

RWDI completed a Pedestrian Wind Assessment which is found in **Appendix G.** It is predicted in the Assessment that wind speeds at most areas around the Project will be suitable for pedestrian activities on an annual basis. Wind conditions with the Project added to the existing surroundings are expected to be similar to those that exist currently in the neighborhood. On particularly windy days in the winter and spring, however, higher than desired wind speeds may occur occasionally on the adjacent sidewalk on Dorchester Avenue due to the exposure of the Project to the west and southwest winds, and the interaction of the winds with the proposed building. Potential entrances on Dorchester Avenue fronting on the sidewalk, as well as the upper terrace, are expected to be windy for the intended use due to their exposure to the prevailing winds, with some mitigation being considered.

1.3.4 Shadow Impact Analysis

Utile Inc., the Project's architect, prepared a shadow study to assess the potential shadow impacts of the Project on the surrounding neighborhood with the shadow drawings contained in detail in **Section 4.1**. New shadows from the project will be primarily limited to the immediate surrounding public ways and sidewalks of Dorchester Avenue and the adjacent properties to the north (Doughboy Donuts) and northeast (25-31 West 5th St.). Shadows will extend further during the winter months, but will not cause significant impact due to existing buildings in the area.

1.3.5 Daylight Analysis

Although the Proposed Project would cause an increase in daylight obstruction when compared to the existing one-story site building, the Proposed Project was designed to be within the guidelines of the Dorchester Avenue Planning Initiative area for this location, where the nearby commercial district transitions to other more residential parts of the area. Although the building is higher along the rear of the property adjacent to West Fifth Street, the additional setback mitigates increased daylight obstruction. The impact on Dorchester Avenue is also limited because of the significant width of the roadway and the presence on the non-residential MBTA bus depot on the other side of Dorchester Avenue. As a result, daylight obstruction values from the Proposed Project are expected to be consistent with, and typical to, other proposed developments within the Planning Initiative area.

1.3.6 Solar Glare

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

1.3.7 Air Quality Analysis

Tech Environmental, Inc., the Project's air quality consultant, conducted analyses to evaluate the existing air quality in the Project area, predict the worst-case air quality impacts from the Project's enclosed parking garage, and evaluate the potential impacts of Project-generated traffic on the air quality at the most congested local intersections (See **Section 4.2**).

Recent representative air quality measurements from the Massachusetts Department of Environmental Protection (DEP) monitors reveal that the existing air quality in the Project area is in compliance with Massachusetts and National Ambient Air Quality Standards (NAAQS) for all of the criteria air pollutants.

The worst-case air quality impacts from the Project's parking garage will not have an adverse impact on air quality. The maximum one-hour and eight-hour ambient CO impacts from the parking garage, at all locations around the Project site, including background CO concentrations, are predicted to be safely in compliance with the NAAQS for CO.

A microscale CO air quality analysis was conducted for the two intersections in the Project area that meet the Boston Planning and Development Agency (BPDA)/DEP selection criteria. Three cases were analyzed: 2017 Existing, 2024 No-Build, and 2024 Build. The microscale air quality analysis indicates that the worst-case air quality impacts from motor vehicles operating at the two analyzed intersections will improve in 2024, for both the Build and No-Build cases, compared to the 2017 Existing case. The analysis shows that with mitigation the worst-case CO impacts for the 2024 Build case are lower than those predicted for the 2024 No-Build case and the worst-case impacts for all three cases are safely in compliance with the NAAQS for CO at all modeled receptors.

1.3.8 Noise Analysis

Tech Environmental, Inc., the Project's noise consultant, conducted a noise study to determine whether the operation of the proposed Project will comply with the Massachusetts DEP Noise Policy and City of Boston Noise Regulations, and the Housing Urban Development (HUD) noise guideline (See **Section 4.3**).

This acoustical analysis involved five steps: (1) establishment of pre-construction ambient sound levels in the vicinity of the Site; (2) identification of potential major noise sources; (3) development of noise source terms based on manufacturer specifications (where available) and similar project designs; (4) conservative predictions of maximum sound level impacts at sensitive locations using industry standard acoustic methodology; and (5) determination of compliance with applicable City of Boston noise regulations, ordinances and guidelines and with the DEP Noise Policy.

Nighttime ambient baseline sound level (L_{90}) monitoring was conducted at four locations deemed to be representative of the nearby residential areas, during the time period when human activity is at a minimum and any future noise would be most noticeable. The lowest nighttime L_{90} measured in the Project area was 54.7 dBA.

The potential significant sources of exterior sound from the Project have been identified as:

- One (1) CAT Model C15 diesel generator set enclosed in an aluminum sound attenuated enclosure,
- Twelve (12) Daikin Model REYQ168TYDN rooftop condensing units,
- Two (2) Daikin Model DPS028A packaged rooftop systems.

The 248 Dorchester Avenue project will not create a noise nuisance condition and will fully comply with the most stringent sound level limits set by the DEP Noise Policy and City of Boston Noise Regulations.

1.3.9 *Stormwater Management and Water Quality*

The Proposed Project is expected to substantially improve the water quality (See **Section 4.4**) and will meet the Boston Water and Sewer Commission (BWSC) Site Plan requirements. The Project will result in an increase in impervious area by approximately 3,750 sf, but will improve the quality and attenuate the quantity of stormwater runoff being discharged to BWSC storm drain system through the installation of an on-site underground infiltration system. As per the BWSC requirements, at a minimum, no less than a volume of one inch of rainfall (drainage runoff) over the site's impervious area will be recharged.

An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

1.3.10 *Solid and Hazardous Waste*

Solid Waste

During the preparation of the Site, debris, including asphalt, trash, and demolition debris will be removed from the Project Site. The Proponent will ensure that waste removal and disposal during construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste.

In order to meet the requirements for the Boston Environmental Department and the LEED^{TM} rating system, the Project will include space dedicated to the storage and collection of recyclables, including dedicated dumpsters at the loading area. The recycling program will meet or exceed the City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (21 through 27, co-mingled).

Hazardous Waste

The Project Site is not listed on the Massachusetts Department of Environmental Protection's list of Disposal Sites. At this time there are no known environmental contaminant releases to soil and/or groundwater that require MCP regulatory action. However, the area of the Project Site was historically filled with "urban" soil materials which typically contain coal, coal ash, and cinders, and occasional building debris. Therefore, it is possible that existing fill soils at the project site contain varying concentrations of common "urban" contaminants such as lead, arsenic, polynuclear aromatic hydrocarbons (PAH's) and petroleum hydrocarbons.

The Proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the project, including proper management and/or off-site disposal of contaminated soil and groundwater encountered during construction. If necessary, the LSP will also prepare the required Massachusetts Contingency Plan (MCP) (310 CMR 40.0000) regulatory submittals. Additional information is presented in **Section 4.5.2.**

1.3.11 Geotechnical/Groundwater Impacts Analysis

Based upon available information from the area of the Project Site, the ground surface across the site is anticipated to be underlain by a fill layer that ranges in thickness from about 8 to 15 feet below the existing ground surface. Underlying the existing fill, a relatively thick deposit of marine sand and marine clay is anticipated to be present. Natural deposits of dense to very dense glacial till and/or bedrock is anticipated at depths ranging from 60 to 80 feet below ground surface. Groundwater is anticipated within a depth range of 8 to 12 feet below ground surface.

Based on the anticipated soil conditions described above, foundation support for the proposed building will depend on the overall thickness of the existing fill and the final column loadings for the building. However, it is anticipated that support for the building will be provided by a conventional spread footing foundation system in conjunction with a soil supported slab-on-grade for the lowest level slab. Depending on the thickness of the existing fill, ground improvement may be employed to increase the soil's allowable bearing capacity for footing bearing soils. Although not anticipated, depending on the building column loads, it is possible that pile foundations may be required.

Excavation for construction of the building foundations and below grade level is anticipated to typically extend to depths ranging from 4 to 6 feet below the ground surface. Within the proposed limited basement area, the excavation is anticipated to extend to approximately 10 to 12 feet below ground surface. Some limited temporary construction dewatering may be necessary during construction of the basement. Construction dewatering, if needed, will consist of localized sumps in conjunction with on-site recharge of the groundwater. Furthermore, construction of the proposed below grade level is not expected to have adverse short or long-term impact on the existing groundwater conditions. A groundwater recharge system will be installed as part the development of the site. See **Section 4.7** for additional information.

1.3.12 Construction Impacts Analysis

Section 4.7 describes impacts likely to result from the Proposed Project's construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager that will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

Construction is expected to commence in the 4th quarter 2018 expected to be completed in the 3rd quarter of 2020.

The Proponent will comply with applicable state and local regulations governing construction of the Project. The Proponent will require that the general contractor comply with the Construction

Management Plan ("CMP") developed in consultation with and approved by the Boston Transportation Department ("BTD"), prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the Project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

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 Construction Management Plan to be filed with BTD in accordance with the City's transportation maintenance plan requirements. To minimize transportation impacts during the construction period, there will be limited construction worker parking on-site, carpooling will be encouraged, secure on-site spaces will be provided for workers' supplies and tools so they do not have to be brought to the site each day, and subsidies for MBTA passes will be considered. The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

1.3.13 Wetlands/Flood Hazard Zone

The existing Project Site is not a part of a wetland resource area regulated by the Massachusetts Wetland Protection Act. Based on the Preliminary Flood Insurance Rate Maps (FIRM) for Suffolk County, the Project site is not located in a special flood hazard area, floodway area, or other flood area.

1.3.14 Historic Resources Component

According to files at the Massachusetts Historical Commission, there are no existing structures listed in the National or State Register of Historic Places, or the Inventory of Historical and Archaeological Assets of the Commonwealth on-site. It is not expected that the Project will cause adverse impacts on the historic or architectural elements of nearby historic resources outside the Project Site (see **Section 5.0**).

1.3.15 Infrastructure Systems Component

An infrastructure system's analysis (**Section 6.0**) was completed by Samiotes Consultants, Inc., the Project's Civil Engineer. The existing infrastructure surrounding the site appears sufficient to service the needs of the Proposed Project. This section describes the existing sewer, water, and drainage systems surrounding the site and explains how these systems will service the development. This analysis also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts

1.3.16 Transportation Component

Section 7.0 presents the comprehensive transportation study completed by HSH for the proposed Project in conformance with the BTD Guidelines as outlined in Access Boston 2000-2010. The study analyzes existing conditions within the Project study area, as well as conditions forecast to be in place under the seven-year planning horizon of 2024.

Access to the Site will be provided by one full access, existing curb cut, located along Dorchester Avenue to the south of the site. The second existing curb cut will be closed to vehicles. The driveway will lead to a valet-only parking garage and a loading area for vehicles up to the size of a 36-foot box truck (SU-36).

The analysis identifies the number of trips generated by the Project using ITE's *Trip Generation Manual*, 9th Edition and employs mode use data for the area surrounding the Project site based on BTD data for Area 8 – Inner Red Line. Based on the land use of the Site, the Project is estimated to generate approximately 1,204 vehicle trips on a daily basis, with 75 trips during the a.m. peak hour (43 entering/32 exiting) and 80 trips during the p.m. peak hour (37 entering/43 exiting). It is estimated that 25% of those vehicles trips will be taxi trips.

The Project will contain 60 valet-only parking spaces. This results in a parking ratio of approximately 0.4 parking spaces per hotel room, consistent with the BTD maximum parking goals. Loading and service operations will occur on-site, with a designated loading area provided along the east side of the building.

The Proponent is committed to implementing a transportation demand management ("TDM") program that supports the City's efforts to reduce dependency on the automobile by encouraging alternatives to driving alone, especially during peak travel periods. Proposed measures include, but are not limited to, employing an on-site transportation coordinator, providing transit information (schedules, maps, and fare information) to hotel guests and visitors, providing on-site bicycle storage, providing a guaranteed ride home program to employees, and providing a transit pass program to the employees. The transportation coordinator will oversee all transportation issues including managing valet operations, service and loading, and TDM programs.

1.3.17 Response to Climate Change Questionnaire

Please see **Appendix E** for the Proponent's Response to the City of Boston's Climate Change Questionnaire.

1.3.18 Response to City of Boston Access Guidelines

Please see **Appendix F** for the Proponent's Response to the City of Boston's Access Guidelines.

2.0 GENERAL INFORMATION

2.1 Applicant Information

2.1.1 Project Proponent

The Proponent is Evergreen Property Group LLC ("EPG") based in Boston, MA. The principal of EPG is Jason Cincotta. Since 2009, EPG and its affiliated companies have been involved in real estate development and investment in the Boston area and beyond. EPG specializes in complex boutique urban projects across the hotel, multifamily, retail, and office asset classes. It is currently engaged in multi-phase development projects in Downtown Boston, South Boston, and downtown Sarasota, Florida. EPG has a strategy to work with local stakeholders to entitle development that will both add to and fit in with the neighborhoods in which it builds and builds to own and remain invested in the neighborhoods as an operator and small business owner.

Principal Jason Cincotta has been working in the Broadway Station neighborhood since 2012 when his firm, EPG, purchased properties at 22-26 West Broadway and 25 Athens Street, combining the three lots into a larger parcel to support a mid-scale development. Shortly after that, he moved to the neighborhood in time to watch EPG's first South Boston project, 26 West Broadway, get underway. As both a resident and a developer, he's been interested in and fascinated by the evolution of this small corner of the South Boston neighborhood.

EPG's plans for 248 Dorchester Avenue will draw on the knowledge and lessons gained from these past projects. The project as designed fits in with the firm's philosophy to build high-quality, architecturally significant projects and remain invested for the long term in the neighborhood as a business owner upon completion.

2.1.2 Project Team

Project Name	248 Dorchester Avenue, So. Boston
Property Owner / Developer	**Evergreen Property Group, LLC** 8 Byron Street Boston, MA 02018 Jason F. Cincotta Tel: 508-344-5727

Article 80 Permitting Consultant	**Mitchell L. Fischman Consulting ("MLF Consulting") LLC** 41 Brush Hill Road Newton, MA 02461 Mitch Fischman mitchfischman@gmail.com Tel: 781-760-1726
Legal Counsel/Outreach	**McDermott Quilty & Miller LLP** 28 State Street, Suite 802 Boston, MA 02109 Tel: 617-946-4600 Joseph Hanley, Esq. - Partner jhanley@mqmllp.com Tel: 617-946-4600, Ext. 4438 Nicholas Zozula, Esq. nzozula@mqmllp.com Tel: 617-946-4600
Architect	**Utile, Inc.** 115 Kingston Street Boston, MA 02111 Tel: 617-423-7200 Michael LeBlanc lebalanc@utiledesign.com Ben Greer greer@utiledesign.com
Sustainable Consultant	**WSP USA** 88 Black Falcon Avenue Suite 210 Boston, MA 02210 Tel: 617-210-1708 Jeremy Pinkham, P.E., LEED AP BD+C jeremy.pinkham@WSP.com
Landscape Architect	**GroundView LLC** 5 Dell Street Somerville, MA 02145 Tel: 617-548-9688 Wilson Martin wilsonmartin@groundviewdesign.com

Transportation Planner / Engineer	**Howard Stein Hudson** 11 Beacon Street, Suite 1010 Boston, MA 02108 Tel: 617-482-7080 Keri Pyke, P.E., PTOE, kpyke@hshassoc.com Tel: 617-348-3301
Civil Engineer/ Infrastructure / Survey	**Samiotes Consultants, Inc.** 20 A Street Framingham, MA 01701 Tel: 508-877-6688 Stephen R. Garvin, PE, LEED AP sgarvin@samiotes.com Alicja Zukowski azukowski@samiotes.com
Noise and Air Consultant	**Tech Environmental, Inc.** Hobbs Brook Office Park 303 Wyman Street, Suite 295 Waltham, MA 02451 Tel: 781-890-2220 Marc C. Wallace mwallace@techenv.com Tel: 781-890-2220 x30
Geotechnical Engineer	**McPhail Associates** 2269 Massachusetts Avenue Cambridge, MA 02140 Tel: 617-868-1420 Tom Fennick TJF@mcphailgeo.com
Hazardous Waste Consultant	**GZA GeoEnvironmental, Inc.** 249 Vanderbilt Avenue Norwood, MA 02062

Construction Commencement	**4th Quarter 2018**
Construction Completion	**3rd Quarter 2020**
Status of Project Design	**Schematic**

2.1.3 Legal Information

Site Control
The project site is owned by the Proponent's affiliated company, Dot Ave Property LLC.

Legal Judgments or Actions Pending Concerning the Proposed Project:
None, based upon available information and belief.

History of Tax Arrears on Property Owned in Boston by the Applicant:
There is no history of tax arrears on property owned by the Applicant in the City of Boston.

Nature and Extent of Any and All Public Easements:
None of record. The Site is bounded by utility easements for sewer, electric, telephone and gas. Additionally, the team is currently evaluating whether there are any utilities that cross the Site.

2.1.4 Public Benefits

The Proposed Project will provide substantial public benefits to the City of Boston and the South Boston neighborhood. The Proposed Project provides for:

- Creation of up to 159 hotel rooms and approximately 15,000 - 20,000 gross square feet of neighborhood serving and hospitality amenities, including restaurant, lounge, event space and outdoor deck;
- Provide a local hotel to complement the population increase and expanded residential growth within the community;
- Assist in addressing the current shortage in the availability of high-quality hotel rooms for guests and visitors to the City of Boston at a location within ready access to the Boston Convention and Exhibition Center, the Innovation District and the downtown area of the City;
- Introduction of new neighborhood visitors who will provide support to the local community and utilize local businesses;
- Establishment of a design forward development that helps better activate the street frontage along Dorchester Avenue, and provides enhanced pedestrian amenities and increased foot traffic;

- Replacement of a blighted open and underutilized lot used for rental car parking and storage, improving the safety and visual appearance of the area, and improving environmental conditions on the existing site;
- Activation of an underutilized site at the crossroads of numerous modes of public transit and ready access to the state highway system;
- Improvement of the safety and visual appearance of the site and surrounding neighborhood by replacing an unattractive concrete-block commercial building surrounded by open-air parking and vehicle storage;
- Introduction of planting of new street trees, improved sidewalks, and other streetscape amenities to improve and enhance the pedestrian landscape and experience;
- Establishment of a premier example of sustainable construction and development;
- Temporary creation of many new jobs in the construction and building trade industries; and
- Substantial addition to real property taxes for the City of Boston.

2.2 Regulatory Controls and Permits

2.2.1 Zoning Overview

The Project Site is located within a Restricted Manufacturing (M-1) zoning district under the base underlying Boston Zoning Code. The Proposed Project will therefore require relief from the Code in the form of Variances and/or Conditional Use Permits under the *currently* applicable code sections applicable to the Proposed Project at the Project Site. The Project Site is also subject to review under the Restricted Parking Overlay District (RPOD) but the determination of off-street parking and loading will be reviewed by the BRA as stipulated by Article 80. While 60 valet parking spaces are currently programmed, the final amount of off-street parking and loading will be reviewed and determined by the BPDA pursuant to the provisions of the Article 80 Large Project Review process.

More significant, the Site is within the area of the South Boston Dorchester Avenue Planning Initiative (the “Planning Initiative”), a planning initiative commenced by the BPDA and the City of Boston for the purpose of ensuring that the 144 acres of the Study Area are strategically planned for a broader type of uses and a scale of development best suited to the future growth of the Dorchester Avenue corridor. A product of months of intensive participation by a broad group of area residents, property owners, business owners, advocates, public agencies, and other stakeholders, the Planning Initiative details a framework for new zoning for the area that will allow for future growth in a manner that is consistent with the community’s vision. The development team has taken great care to work within the applicable framework of the Planning Initiative, with respect to building height, density, setbacks, parking, and design, in order to achieve a Proposed Project that lives up to the objectives of the Planning Initiative. With frontage on Dorchester Avenue, the Project Site is bounded by West Fifth and West Sixth Streets and the South Boston Bypass/Haul Road at its rear. While the immediate area along this section of Dorchester Avenue is mostly industrial with limited retail uses, the Project Site is in a unique section of the Planning Initiative area which the BPDA has determined to be generally appropriate for a potential new hotel use, as it transitions from the nearby commercial district to other more residential parts of the Planning Initiative area. All existing structures will be removed to enable the new development.

2.2.2 Boston Zoning Code – Use Requirements

Hotel Use (Use Item No. 15) is a Forbidden Use within the relevant M-1 zoning subdistrict. Both Local Retail Business (Use Item No. 34) and General Retail Business (Use Item No. 35) are Allowed Uses within the relevant M-1 zoning subdistrict. Additionally, both Retail Catering (Use Item No. 36A – Take Out Restaurant) and Restaurant (Use Item No. 37) are Allowed Uses within the relevant M-1 zoning subdistrict.

2.2.3 Boston Zoning Code – Dimensional Requirements

The Proposed Project will include approximately 87,000 feet of gross floor area on a site that consists of approximately 22,042 square feet of land, for a resulting projected floor area ratio (“FAR”) of approximately 3.90. Current M-1 zoning establishes a maximum FAR of 1.0. The applicable dimensional regulations for “Other Use” under zoning require No Minimum Lot Size, No Additional Lot Area, No Lot Width Minimum, No Usable Open Space Minimum, and No Front Yard or Side Yard Minimum. The applicable dimensional regulations require a maximum building height of 2-½ stories and 35 feet and a Rear Yard Setback Minimum of 20 feet. It is anticipated that the proposed building will require Variances for excessive building height, excessive FAR and insufficient rear yard setback. It is important to note that the development team is being responsive to cues about future height, density, and off-street parking goals being discussed as part of the ongoing South Boston Dorchester Avenue Planning Initiative. As a project that is subject to Large Project Review, required off-street parking spaces and off-street loading facilities are expected to be determined as a part of the Large Project Review process in accordance with the provisions of Article 80 of the Boston Zoning Code. Design elements of the Proposed Project will also be reviewed pursuant to Large Project Review.

Table 2-1. M-1 Zoning District - Dimensional and Off-Street Parking Requirements

Dimensional Element	M-1 Zoning (*Other Use*)	Proposed Project*	Expected Zoning Relief Required?
Minimum Lot Size	None	22,042 sf	No
Minimum Lot Size (Add'l Dwelling Units)	None	22,042 sf total	No
Max. Floor Area Ratio	1.0	3.82	Yes
Max. Building Height	35 feet 2-½ Stories	99 feet 8-Stories	Yes
Minimum Lot Width	None	129' 7"	No
Minimum Lot Frontage	None	126 feet	No
Minimum Front Yard Setback	None	10 feet	No
Minimum Side Yard	None	Varies (0'-3')	No
Minimum Rear Yard	20 feet	0 feet	Yes
Required Off-Street Parking	Per Article 80	60	Per Article 80
Minimum Number of Loading Bays	Per Article 80	1	Per Article 80
Minimum Usable Open Space	None	3,000 sf	No

* The dimensions cited in this table may change as the Proposed Project undergoes ongoing review by BPDA staff.

2.2.4 Preliminary List of Permits or Other Approvals Which May be Sought

Agency Name	Permit or Action*
Local Agencies	
Boston Planning and Development Agency	Article 80 Review and Execution of Related Agreements; Section 80B-6 Certificate of Compliance
Boston Civic Design Commission	Schematic Design Review
Boston Zoning Board of Appeal	Variances/Zoning Relief, as Required
Boston Public Safety Commission Committee on Licenses	Garage License, Flammable Fuels
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Plan
Boston Department of Public Works Public Improvements Commission	Possible Sidewalk Repair Plan; Curb-Cut Permit; Street/Sidewalk Occupancy Permit; Permit for Street Opening
Boston Fire Department	Approval of Fire Safety Equipment
Boston Water and Sewer Commission	Approval for Sewer and Water Connections; Construction Site Dewatering; and Storm Drainage
Boston Department of Inspectional Services	Building Permits; Certificates of Occupancy; Other Construction-Related Permits
Federal Agencies	
Federal Environmental Protection Agency	Notice of Intent for EPA Construction Activities General Discharge Permit with Associated SWPPP
State Agencies	
MA Department of Environmental Protection Division of Water Pollution Control	Sewer Connection Permit
MA Department of Environmental Protection Division of Air Quality Control	Fossil Fuel Permit

*This is a preliminary list based on project information currently available. It is possible that not all of these permits or actions will be required, or that additional permits may be needed.

2.3 Public Review Process and Agency Coordination

In support of the required Article 80 Large Project Review process, the Proponent has conducted, and will continue to conduct, community outreach with neighbors and abutters of the Site, including meetings and discussions with the elected representatives and officials from the area, and with area residents. Over the past two years, the Proponent has worked closely with neighborhood interests, local elected and appointed officials and the BPDA, including participation in the South Boston's Dorchester Avenue Planning Initiative's public review process, and obtained detailed input and guidance from community stakeholders and the BPDA for a resulting new development proposal. Consistent with the public input received as part of the Planning Initiative, which includes written support for a new hotel use at the Project Site (in place of a previous 2015 approved project's rental housing programming by the same Proponent), the Proposed Project has been carefully designed with a new building scale that substantially complies with the Planning Initiative while also including a lower building height than contemplated by it and with enhanced open space and set-back measures to better conform with the character of the surrounding community.

Specifically, the Proponent presented project plans at a meeting with the South Boston elected officials on July 27, 2017 and at meetings with the West Broadway Neighborhood Association on August 2, 2017 and September 12, 2017.

The Proponent has also conducted numerous meetings concerning the Proposed Project with representatives of the Boston Planning and Development Agency prior to the filing this Project Notification Form in order to identify planning and urban design issues and concerns.

In accordance with Article 80 requirements, an Impact Advisory Committee ("IAG") has been formed and a neighborhood meeting will be scheduled to review the PNF and to receive community comments on the Project during the PNF public review period.

The Proponent will also continue to meet with public agencies, neighborhood representatives, local business organizations, abutting property owners, and other interested parties, and will follow the requirements of Article 80 pertaining to the public review process.

2.4 Development Impact Payment ("DIP") Status

Based on current schematic design plans, it is <u>not</u> anticipated that the Proposed Project will be subject to the requirements of Section 80B-7 of the Article 80, owing to the fact the Proposed Project will not occupy an aggregate gross floor area of more than 100,000 square feet.

3.0 URBAN DESIGN AND SUSTAINABILITY COMPONENT

3.1 Introduction

The proposed project will have many positive impacts on the surrounding neighborhood. Key components such as active ground floor uses, generous public space along street side, carefully located vehicle access and proximity to public transportation have all been thoughtfully considered to reduce the negative impacts and enhance the positive impacts. The project will meet Stretch Code and achieve a high level of energy efficiency. The project team is familiar with the recommendation and principals of the ongoing Dorchester Avenue Study and has taken every opportunity to integrate these principals into the project.

3.2 Urban Design Principles

3.2.1 Place Making Opportunities – Small Business, Visual Access to Ground Floor Use

In keeping with the City of Boston Strategic Plan's stated goal of bolstering place making opportunities along Dorchester Avenue, the project proposes to provide approximately 3,600 square feet of commercial/retail space along the highly visible Dorchester Avenue frontage. The Hotel Lobby is also located along Dorchester Avenue providing maximum active uses along the street. The both entries are set back from the Street creating a **public plaza** alongside the street which would be ideal for outdoor dining or other uses increasing the public profile and urban realm opportunities on the site. The retail storefronts are proposed to be constructed of glass curtain wall providing **high visual access to the ground floor uses**. This will also further enhance and extend the West Broadway commercial/retail district further along Dorchester Avenue.

The hotel lobby is located to the south of the retail space near the vehicle access allowing for easy off street guest arrival for the hotel. It will have glass storefront windows, accent lighting and a canopy to mark the entry and bring a pedestrian scale to the streetscape. The volume of pedestrians coming and going from the hotel and various publicly accessible spaces on site will further bolster the overall activity along this stretch of Dorchester Avenue and create a **strong pedestrian presence** at its edges.

3.2.2 Recreation and Green Space Connections

The Project will house indoor storage for bicycles to encourage their use as primary transportation. The project's location provides guests with quick and direct access to the **South Bay Harbor Bike Trail** which connects Dudley Square to the waterfront. The project is also proximate to the new park under the expressway overpass and the culmination of the Emerald Necklace as is arrives at the water at Carson Beach. The project also proposes to study a linear park along the Haul Road connecting adjacent properties with a boardwalk through the existing urban wild with the potential for micro-retail to be dispersed along its extents.

3.2.3 Streetscape/Open Space

As stated above, the Project will provide a public plaza-like space along Dorchester Avenue. This will be in keeping with the Strategic Plan's stated goal of **improving the pedestrian realm** and will create a usable, accessible street level activity hub which will serve as a touchstone for new active uses along this stretch of Dorchester Avenue. This will include a bike lane, planters, planted trees, an accessible pathway and a generous area which can be used for outdoor dining or other retail activities. Additionally, the upper floors of the hotel will include publicly accessible restaurant, lounge, roof deck and pool uses as well as a 5,000 gsf event venue.

3.2.4 Dorchester Avenue Corridor Uses –Support/Small Business Opportunity

The approximately 4,500 square feet of commercial/retail space will offer a new opportunity for one or more small businesses to flourish and add to the unique retail experience of this part of South Boston.

3.2.5 Proximity to Public Transit and Alternative Transportation

The Project will take full advantage of its proximity to public transit and is within close range of 6 different bus lines, a host of Zipcar and Hubway locations and is one stop away from South Station on the redline and a quick two station ride to Logan Airport via the MBTA Red to Silver Lines. Additionally, the project plans to provide rental bicycles available to the hotel guests to encourage alternative and sustainable forms of transportation. This will reduce overall trips generated from the site and reduce pressures on the busy traffic moving along Dorchester Avenue towards downtown and the expressway. Please refer to the traffic narratives in **Section 7.0** for more detailed information regarding this issue.

3.3 Building Exterior Design Principals

3.3.1 Summary

The site sits within the West Broadway neighborhood of South Boston and will be considerate of input from both the West Broadway Neighborhood Association and the St. Vincent's Neighborhood Association. The site is also within the ongoing Dorchester Avenue Study area and will closely consider the goals and vision of that study. The immediate context varies widely in its architectural style and era. Much of the neighboring properties are of an industrial nature with open surface parking lots. As such the facades of the buildings are driven by factors ranging from historic references to urban scaled responses to adjacent conditions as well as more sustainable criteria such as maximizing the benefits of the sun.

3.3.2 Materiality

Historically, South Boston was made up of street after street of brick and wood framed row houses all built at the edges of the water front industrial districts. More recently buildings of larger scale and varying materiality have been emerging from the vacant lots and industrial parcels which currently reside along the Dorchester avenue corridor. The recently completed buildings range in materiality from brick to metal panel to “Hardy board” siding. In general, there is little consistency to point to in terms of finding a prevailing character in the neighborhood. The project at 248 Dorchester Avenue proposes a contemporary vision and character which we feel is consistent with the more ambitious buildings recently built nearby. We also feel that a clean, more contemporary expression is critical to the success of the project and its position within this emerging neighborhood. The “body” of the building (up to 70’) proposes generous windows framed by a deeply recessed metal panel system which accentuates the play of light on the facades throughout the day while also providing critical shading to the windows. Above 70’ the building steps back, consistent with the Dorchester Avenue study, and proposes a pavilion which floats above the roof of the building base and becomes a glowing beacon in the evenings. This portion of the building is intended to be clad in a metal mesh or graphically patterned metal panel that reinforces the abstract nature of this floating form. Between the building base and the floating pavilion will be a publicly accessible restaurant/lounge with a generous roof terrace which is occupiable in warmer months. The detailing of this level will reinforce the indoor/outdoor nature of this program but having full height glass walls that are detailed with the most slender mullions possible.

3.3.3 Scale

The new Dorchester Avenue study permits building heights of up to 120’ at this location. With a few notable exceptions, the majority of nearby development projects built prior to the Dorchester Avenue Study top out at 70’. As such, the proposed design of the project endeavors to recall the scale of these building from the pedestrian perspective by stepping the upper floors back from the street edge by 30’ and the side yards typically by 20’. With these setbacks, the 7th and 8th floors of the proposed project are much smaller and more pavilion-like on the roof of the larger building. This element of the design allows the project to be a scale bridge between existing and future development along this corridor.

The building is setback at the ground floor along Dorchester Avenue beyond the requirement. While maintaining recommended street wall setbacks, the second floor of the proposed building cantilevers toward the street by four feet creating an eighteen foot high “ceiling” along our street level plaza. This move helps to create a more intimate sense of scale to the pedestrian passerby.

3.4 Landscape Design

In accordance with the Complete Street guidelines, the project landscape proposes to enhance the public realm experience at the sidewalks along Dorchester Avenue by providing generous space for bikes pedestrians and outdoor activities as well as providing a row of tree planters along Dorchester Avenue to create shade for the active uses along the sidewalk and beautify the street experience. Along the northeast side of the parcel where we abut a residential uses we plan to provide planted buffers to soften the impacts of the proposed building on the rear yards of the residential building. The project will also propose rooftop uses most of which will be publicly accessible and will deploy areas of planted roof both intensive and extensive. Plant selection will carefully consider our climate and region and will primarily propose native and local plantings to reduce the overall need for irrigation.

3.5 Sustainable Design/Energy Conservation

3.5.1 Introduction

The proposed design will meet the Massachusetts Stretch Energy Code as well as the city's LEED Silver Certifiable requirement. The site's unique location provides inherent sustainability benefits. Density, proximity to public transit, storm water mitigation, a fleet of rental bicycles, bicycle storage for employees, accommodation for fuel efficient vehicles are all part of the site design. The heating and cooling energy demands will be reduced through high performance insulation strategies, carefully selected glass specifications and reduced water use fixtures. The project will provide internal space for trash and recycling and will divert much of the construction waste from landfills. Indoor air quality will be controlled through the use of an energy recovery ventilator providing tempered outdoor air to all habitable spaces as well as low emitting paints and sealants. Urban heat Island effect will be mitigated through the use of light colored roofing materials as well as rooftop terraces with extensive planted areas.

Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. The project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while some access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts.

The Proponent and the Project design team are committed to an integrated design approach and are using the LEED v4 for BD+C: New Construction and Major Renovation rating system and intend to meet certification as presented in **Figure 3.6-19** at the end of this section. This rating will meet or exceed Boston's Green Building standard. The LEED rating system tracks the sustainable features of the project by achieving points in following categories: Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation and Design Process.

3.5.2 Sustainable Sites

The development of sustainable sites is at the core of sustainable design. The sustainable sites credit category encourages development on previously developed land, minimizing a building's impact on ecosystems and waterways, regionally appropriate landscaping, smart transportation choices, stormwater runoff management, and reduction of erosion, light pollution, heat island effect, and pollution related to construction and site maintenance.

The previously developed site features connectivity to basic services in the community and is located in an urban setting that is well served by the existing utility infrastructure. The site's adjacency to basic services in the community and the development density of its urban context enable the project to satisfy available approaches to the Development Density and Community Connectivity credit. Access to the Broadway Redline Line MBTA station is less than five blocks from the site, and MBTA buses run on Routes 9, 11 and 47 close to the site on both Dorchester Avenue and West Broadway. On-site bike storage/rental will offer environmentally sound transportation alternatives. Coupled with alternative parking options, the Project will try to reduce parking capacity below zoning requirements. Through these approaches, the Project also achieves many of the Alternative Transportation credits.

The planted gardens interspersed on the ground help to limit stormwater runoff to assist in meeting Stormwater Design- Quantity credit. To achieve Heat Island Effect credits and minimize the project's impact on the creation of urban heat islands, a combination of high-albedo roofing membrane and planted areas to maximize solar reflectance and minimize heat gain. In addition more than 50% of the parking spaces are below grade.

3.5.3 Water Efficiency

Buildings are major users of our potable water supply and conservation of water preserves a natural resource while reducing the amount of energy and chemicals used for sewage treatment. The goal of the Water Efficiency credit category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside. To satisfy the requirements of the Water Use Reduction Prerequisite and credit, the project will incorporate water conservation strategies that include low flow plumbing fixtures for water closets and faucets. Further, drought tolerant plant species will be specified in landscaped areas to eliminate the requirement for irrigation in most areas and satisfy the requirements for the Water Efficient Landscaping credit.

3.5.4 Energy and Atmosphere

According to the U.S. Department of Energy, buildings use 39% of the energy and 74% of the electricity produced each year in the United States. The Energy and Atmosphere credit category encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances, systems and lighting; the use of renewable and clean sources of energy, generated on-site or off-site; and other innovative practices.

To meet the Optimize Energy Performance credit, the building envelope will include high performance glazing systems and high levels of insulation. The HVAC system will incorporate a multi variable refrigerant volume (VRV) split HVAC system, which utilizes energy recovery units and VRV heat pumps to maximize the building's energy performance. In addition, the large amount of glass used in each building reduces the daytime requirement for electrical lighting. LED, halogen or fluorescent bulbs are used in light fixtures throughout the property. These lights use much less energy, generate less heat and last much longer than incandescent bulbs.

The Project will meet or exceed the ASHRAE 90.1-2007 standard for Minimum Energy Performance through a variety of measures. Further, no chlorofluorocarbon (CFC) based refrigerants will be used in the project to reduce ozone depletion in the atmosphere and satisfy the Fundamental Refrigeration Management prerequisite. Fundamental Commissioning of Building Energy Systems will be performed to ensure that systems are operating at peak efficiency. In addition, Enhanced Commissioning will assess the performance of energy and water systems during the first days of building operation and can help to bring additional efficiency to the systems for the life of the building.

3.5.5 Materials and Resources

During both construction and operations, buildings generate a lot of waste and use a lot of materials and resources. This credit category encourages the selection of sustainable materials, including those that are harvested and manufactured locally, contain high-recycled content, and are rapidly renewable. It also promotes the reduction of waste through building and material reuse, construction waste management, and ongoing recycling programs.

The project includes recycling facilities within the building for the convenience of the occupants in accordance with the requirements of the Storage and Collection of Recyclables prerequisite. A Demolition and Construction Waste Management Plan will be implemented to divert construction waste material from landfills per the Construction Waste Management credit. Building materials will be specified based on their recycled content and proximity of extraction and manufacturing locations to the project site such that points will be achieved in each of the Recycled Content and Regional Materials credits.

3.5.6 Indoor Environmental Quality

The U.S. Environmental Protection Agency estimates that Americans spend about 90% of their day indoors, where the air quality can be significantly worse than outside. The Indoor Environmental Quality credit category promotes strategies that can improve indoor air through low emitting materials selection and increased ventilation. It also promotes access to natural daylight and views.

During construction, an indoor air quality management plan will be implemented to prevent contamination of mechanical systems and absorptive materials. Material specifications will include only low-emitting interior finishes for paints, carpets, and woods to preserve indoor air quality. Occupants will also have control over lighting and their thermal environment. The project shall be designed to meet or exceed the rates as per ASHRAE 62.1-2007 "Ventilation for Acceptable Indoor Air Quality" and rooms will have access to daylight and views.

3.5.7 Innovation and Design Process

The Innovation in Design and Innovation in Operations credit categories provide additional points for projects that use new and innovative technologies, achieve performance well beyond what is required by LEED credits, or utilize green building strategies that are not specifically addressed elsewhere in LEED. This credit category also rewards projects for including a LEED Accredited Professional on the team to ensure a holistic, integrated approach to design, construction, operations and maintenance. Four credits are being pursued and could include the following.

- Innovation in Design: Exemplary Perf SS 5.2
- Innovation in Design: Exemplary Perf WEc3

- Innovation in Design: Green Housekeeping
- Innovation in Design: Energy Star Appliances
- Innovation in Design: Education Plan

Regional Priority:

- Regional Priority: SS c3
- Regional Priority: Heat Island 7.1-Non- Roof
- Regional Priority: Heat Island 7.2 Roof
- Regional Priority: SS 6.1 Stormwater Quantity

3.6 Urban Design and LEED Drawings

Urban design drawings and renderings depicting the Proposed Project, and the LEED Checklist include:

Figure 3.6-1. Urban Context
Figure 3.6-2. Aerial: Northeast
Figure 3.6-3. Dorchester Avenue Elevation
Figure 3.6-4. Roof Deck View
Figure 3.6-5. Dorchester Avenue Streetscape
Figure 3.6-6. Sidewalk Section
Figure 3.6-7. Site Plan
Figure 3.6-8. Ground Floor Plan
Figure 3.6-9. Typical Hotel Floor Plan
Figure 3.6-10. 7th Floor Plan
Figure 3.6-11. 8th Floor Plan
Figure 3.6-12. Dorchester Avenue Section
Figure 3.6-13. South Boston Bypass Road Section
Figure 3.6-14. North Elevation
Figure 3.6-15. West Elevation
Figure 3.6-16. South + Southwest Elevation
Figure 3.6-17. Southeast Elevation
Figure 3.6-18. Northeast + East Elevation
Figure 3.6-19. Project Checklist: LEED v4 for BC+D: New Construction and Major Renovations

Figure 3.6-1. Urban Context


Figure 3.6-2. Aerial: Northeast

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Figure 3.6-3. Dorchester Ave Elevation

Figure 3.6-4. Roof Deck View

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Figure 3.6-5. Dorchester Ave Street Scape

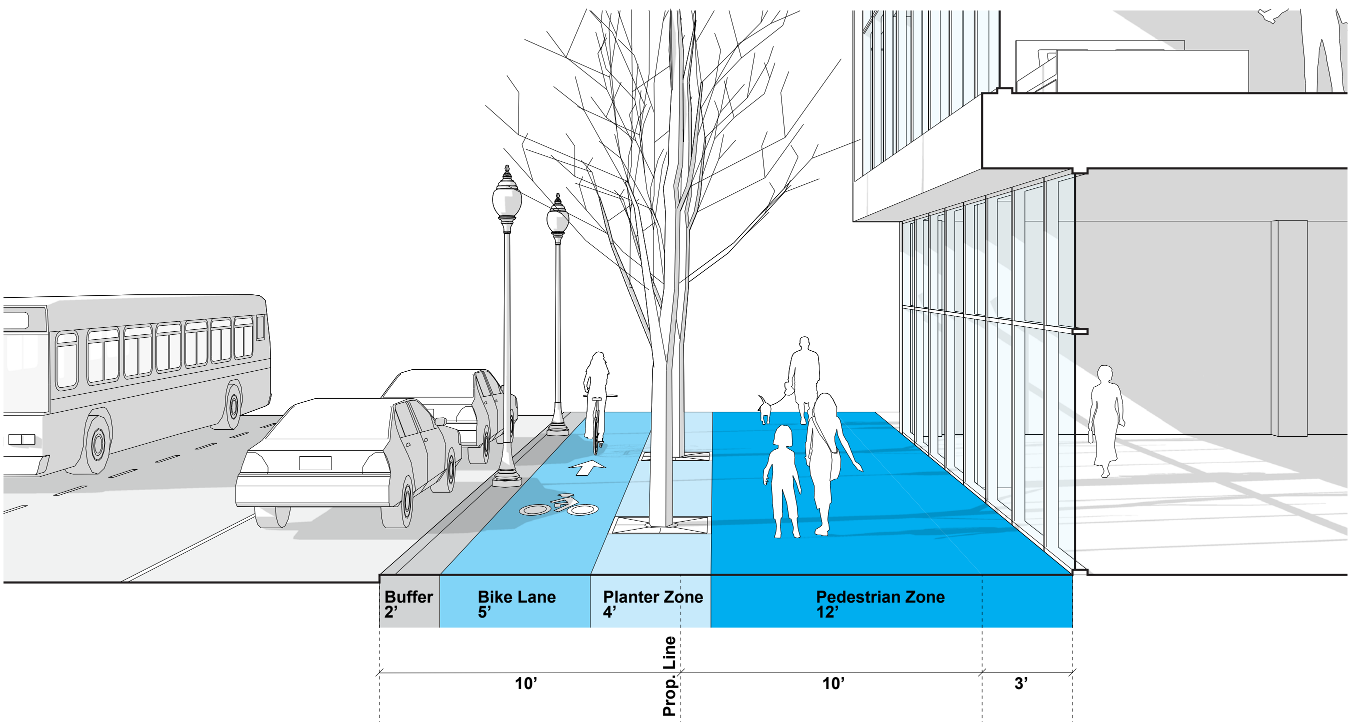

Figure 3.6-6. Sidewalk Section

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Figure 3.6-7. Site Plan

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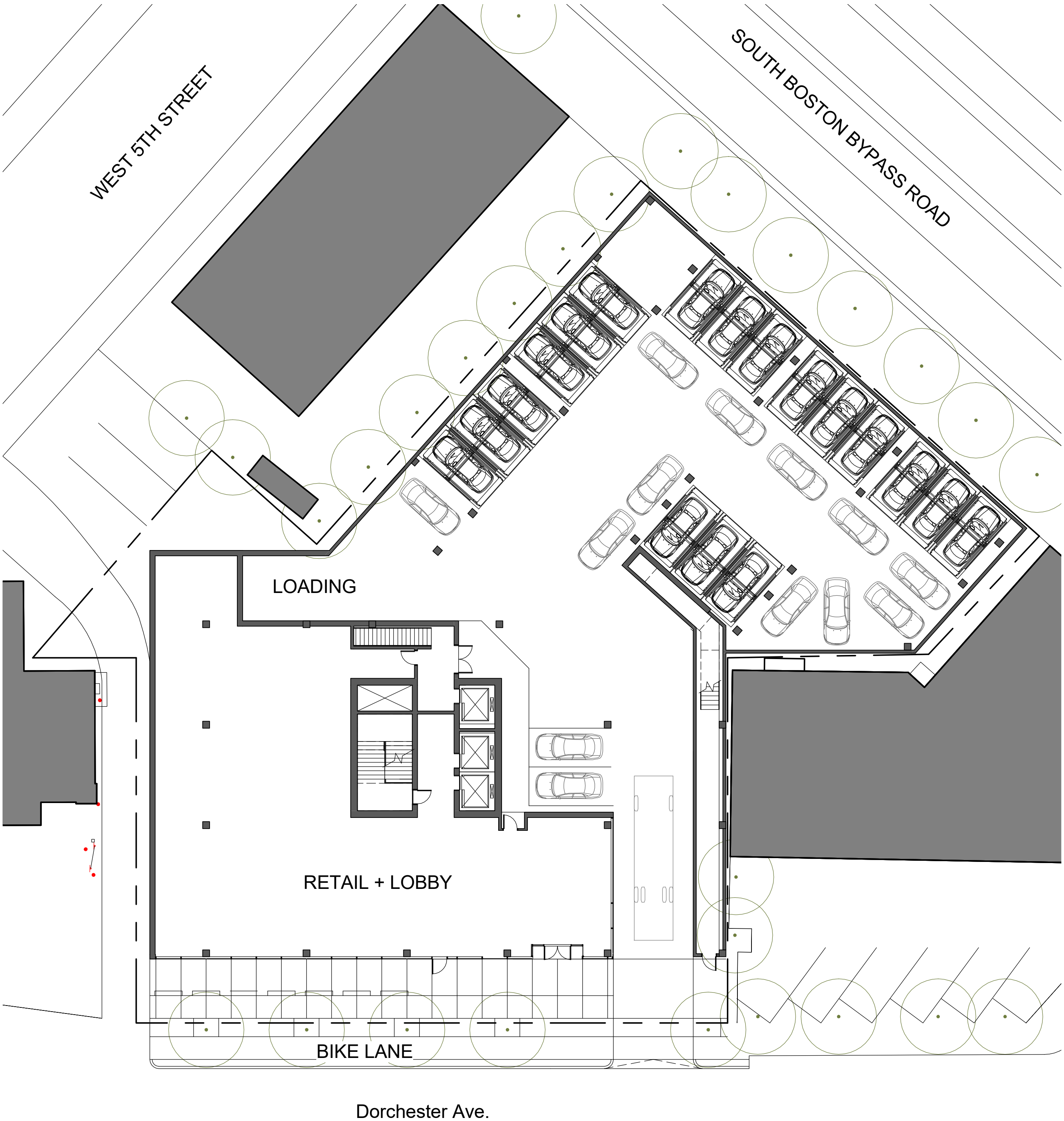

Figure 3.6-8. Ground Floor Plan

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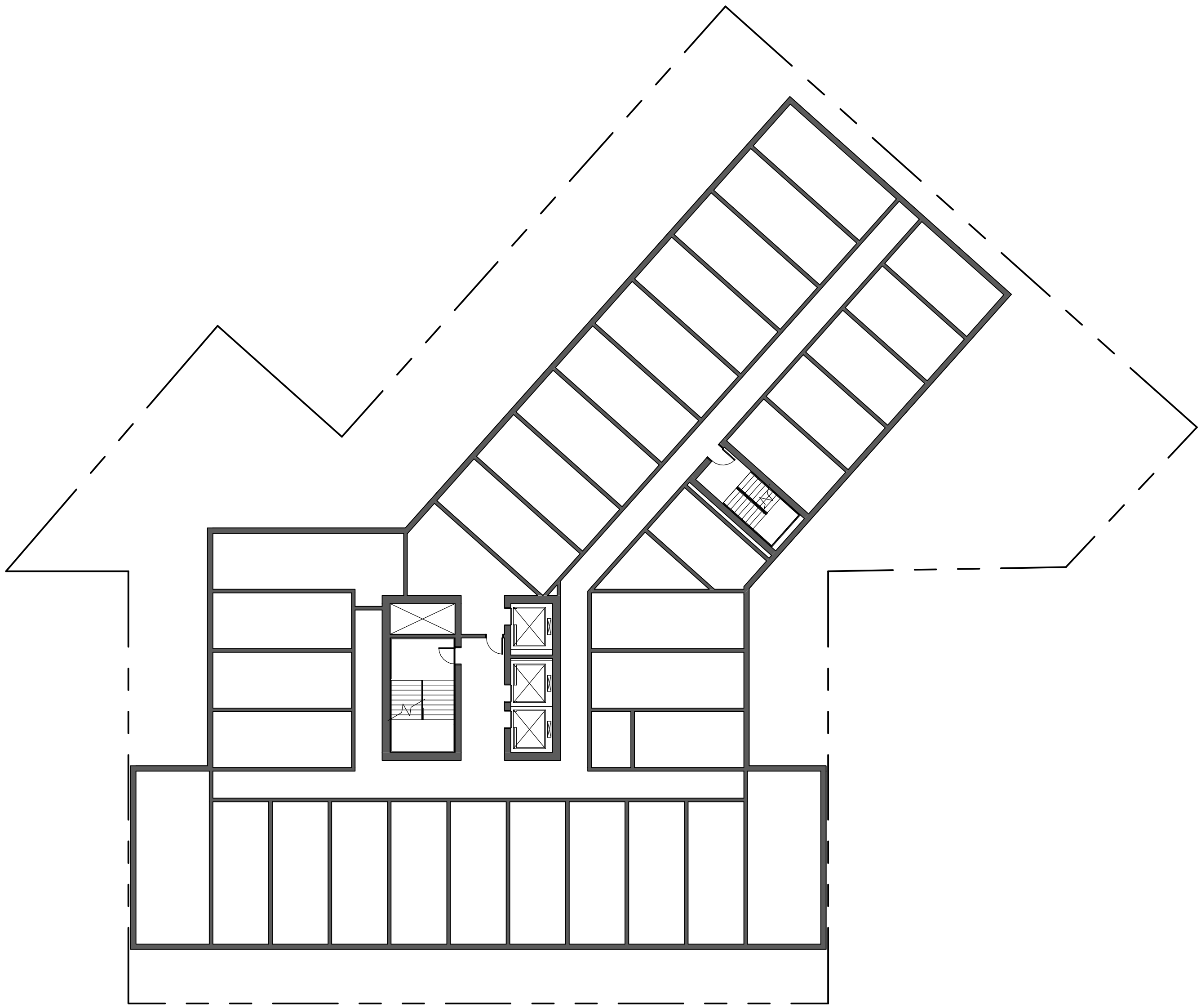
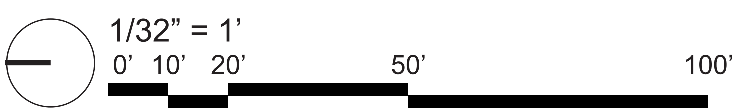


Figure 3.6-9. Typical Hotel Floor Plan



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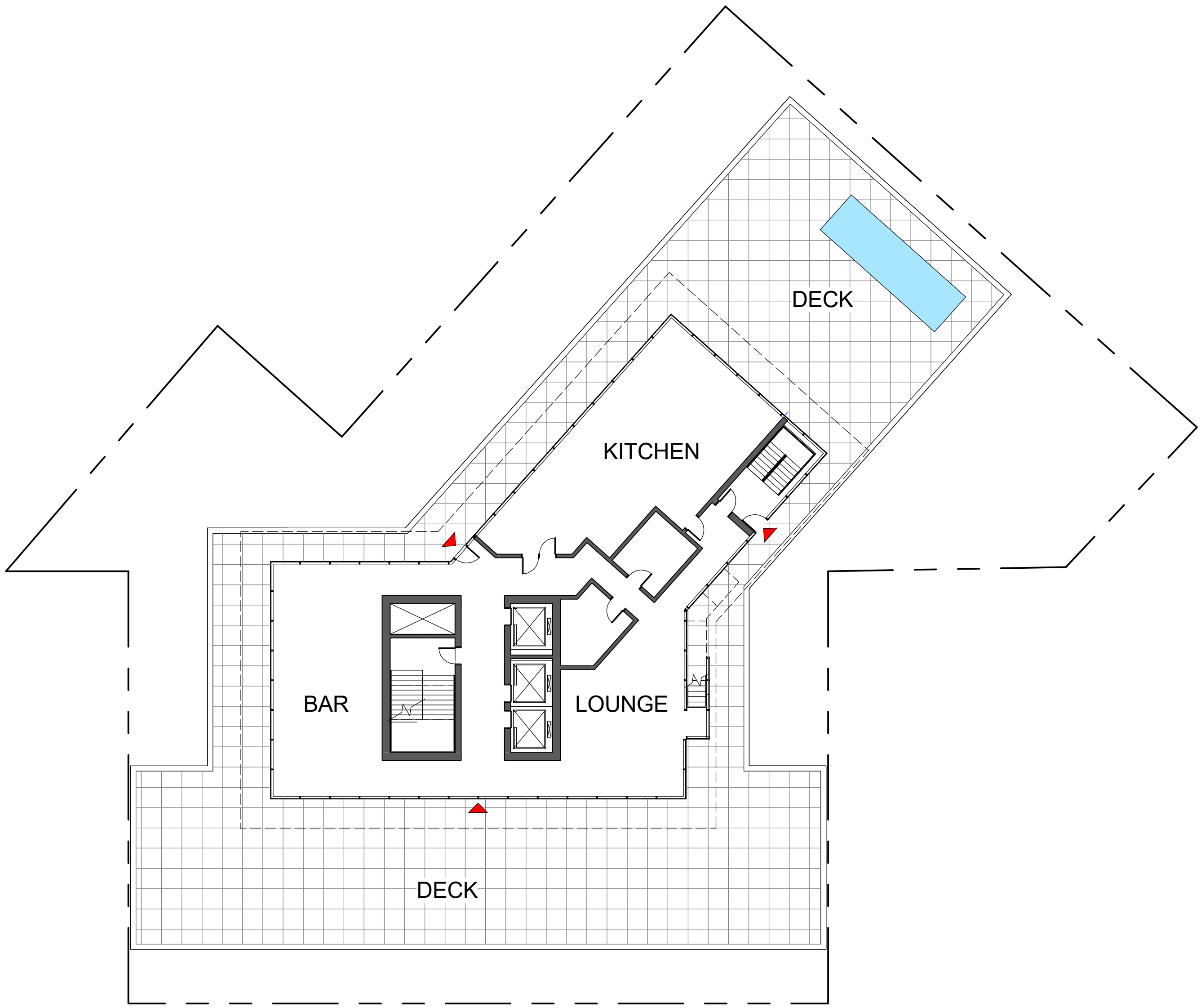
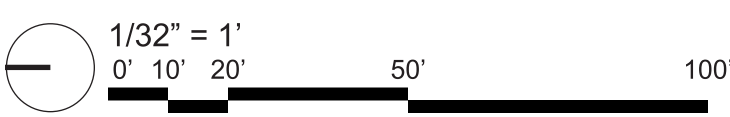


Figure 3.6-10. 7th Floor Plan



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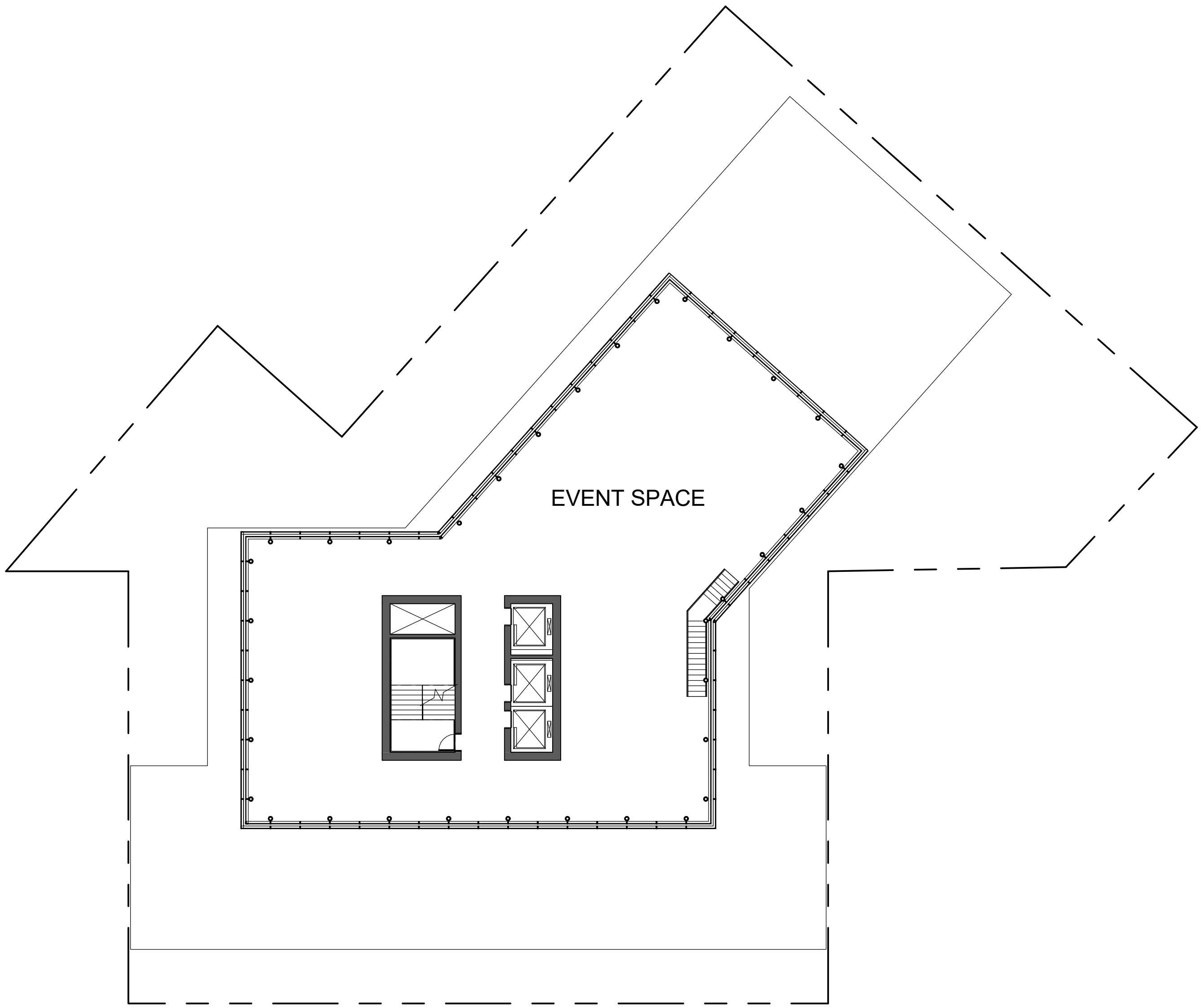
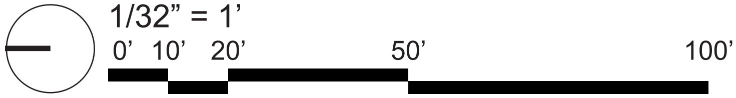


Figure 3.6-11. 8th Floor Plan



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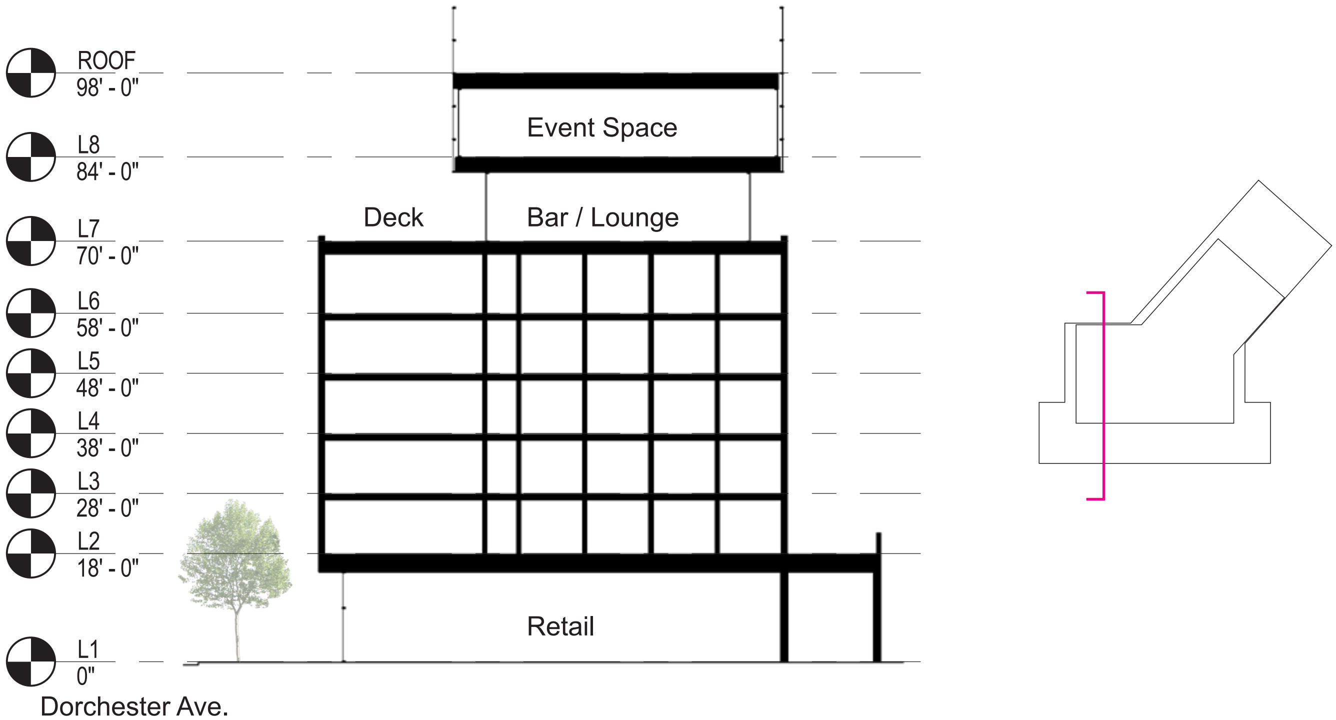

Figure 3.6-12. Dorchester Ave. Section

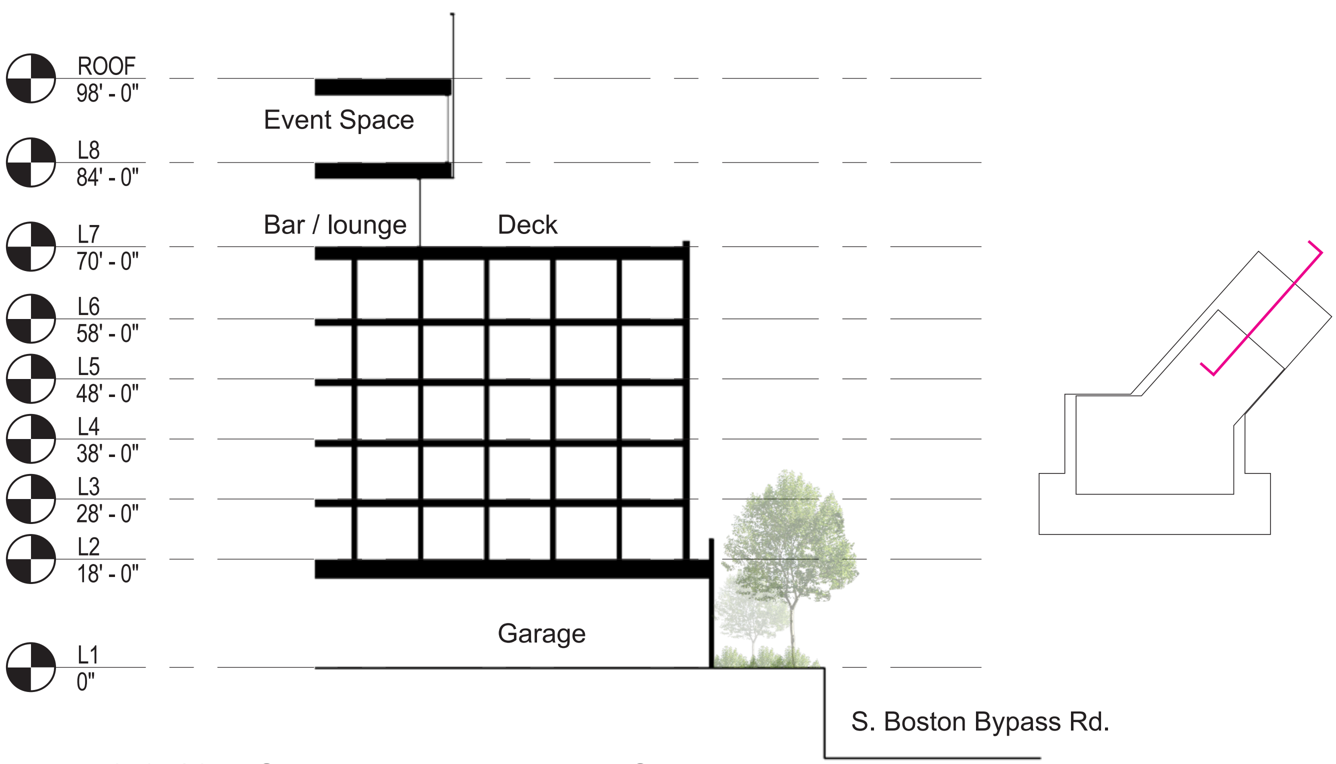

Figure 3.6-13. S. Boston Bypass Rd. Section

1/32" = 1'
0' 10' 20' 50' 100'

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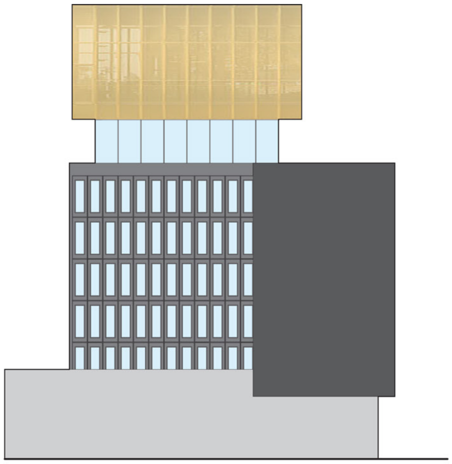


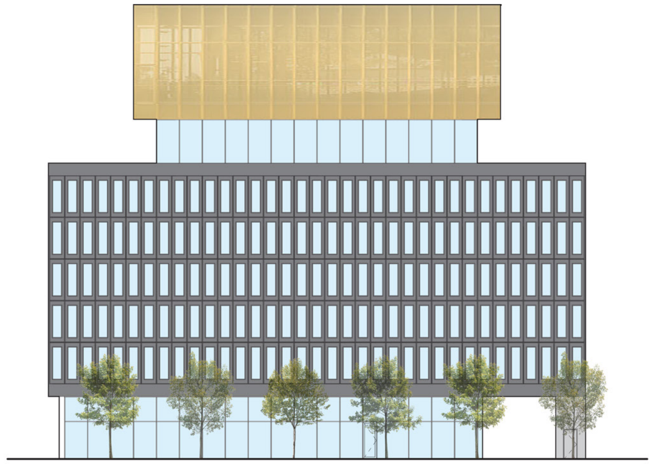
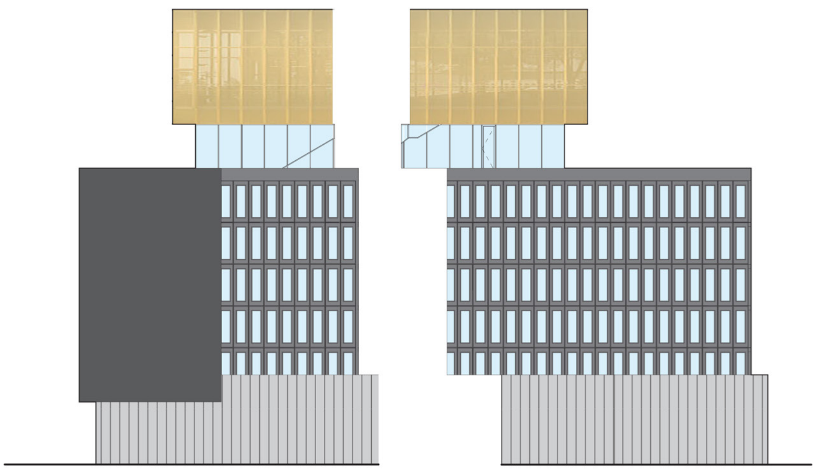


Fig. 3.6-14. North Elevation

Fig. 3.6-15. West Elevation



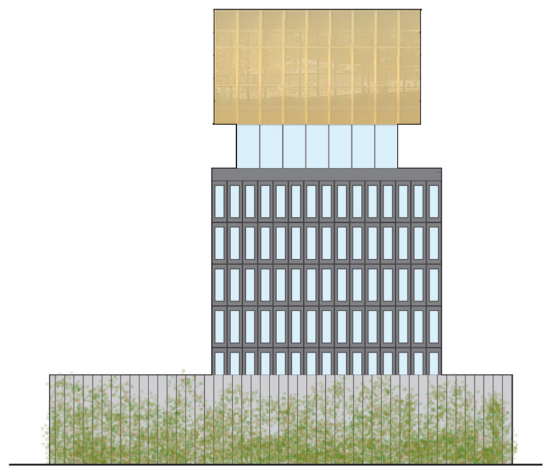


Fig. 3.6-16. South + Southwest Elevation

Fig. 3.6-17. Southeast Elevation

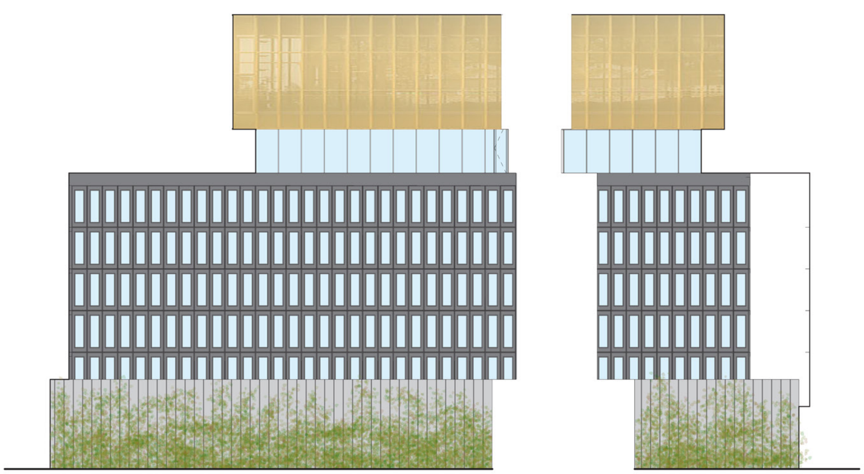


Fig. 3.6-18. Northeast + East Elevation

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

Project Name: 248 Dorchester
Date: 8/9/2017

Y	?	N	Category / Credit	Points
0	1	0	**Integrative Process**	**1**
0	1	0	Credit Integrative Process	1
12	0	4	**Location and Transportation**	**16**
0	0	0	Credit LEED for Neighborhood Development Location	16
1	0	0	Credit Sensitive Land Protection	1
0	0	2	Credit High Priority Site	2
5	0	0	Credit Surrounding Density and Diverse Uses	5
3	0	2	Credit Access to Quality Transit	5
1	0	0	Credit Bicycle Facilities	1
1	0	0	Credit Reduced Parking Footprint	1
1	0	0	Credit Green Vehicles	1
5	0	5	**Sustainable Sites**	**10**
Y			Prereq Construction Activity Pollution Prevention	
0	0	1	Credit Site Assessment	1
0	0	2	Credit Site Development - Protect or Restore Habitat	2
0	0	1	Credit Open Space	1
3	0	0	Credit Rainwater Management	3
2	0	0	Credit Heat Island Reduction	2
0	0	1	Credit Light Pollution Reduction	1
6	3	2	**Water Efficiency**	**11**
Y			Prereq Outdoor Water Use Reduction	
Y			Prereq Indoor Water Use Reduction	
Y			Prereq Building-Level Water Metering	
1	1	0	Credit Outdoor Water Use Reduction	2
2	2	2	Credit Indoor Water Use Reduction	6
2	0	0	Credit Cooling Tower Water Use	2
1	0	0	Credit Water Metering	1
12	2	19	**Energy and Atmosphere**	**33**
Y			Prereq Fundamental Commissioning and Verification	
Y			Prereq Minimum Energy Performance	
Y			Prereq Building-Level Energy Metering	
Y			Prereq Fundamental Refrigerant Management	
6	0	0	Credit Enhanced Commissioning	6
3	0	15	Credit Optimize Energy Performance	18
1	0	0	Credit Advanced Energy Metering	1
0	0	2	Credit Demand Response	2
0	1	2	Credit Renewable Energy Production	3
0	1	0	Credit Enhanced Refrigerant Management	1
2	0	0	Credit Green Power and Carbon Offsets	2

Y	?	N	Category / Credit	Points
5	6	2	**Materials and Resources**	**13**
Y			Prereq Storage and Collection of Recyclables	
Y			Prereq Construction and Demolition Waste Management Planning	
0	3	2	Credit Building Life-Cycle Impact Reduction	5
1	1	0	Credit Building Product Disclosure and Optimization - Environmental Product	2
1	1	0	Credit Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1	0	Credit Building Product Disclosure and Optimization - Material Ingredients	2
2	0	0	Credit Construction and Demolition Waste Management	2
4	9	3	**Indoor Environmental Quality**	**16**
Y			Prereq Minimum Indoor Air Quality Performance	
Y			Prereq Environmental Tobacco Smoke Control	
1	1	0	Credit Enhanced Indoor Air Quality Strategies	2
1	1	1	Credit Low-Emitting Materials	3
1	0	0	Credit Construction Indoor Air Quality Management Plan	1
0	0	2	Credit Indoor Air Quality Assessment	2
1	0	0	Credit Thermal Comfort	1
0	2	0	Credit Interior Lighting	2
0	3	0	Credit Daylight	3
0	1	0	Credit Quality Views	1
0	1	0	Credit Acoustic Performance	1
6	0	0	**Innovation**	**6**
5	0	0	Credit Innovation	5
1	0	0	Credit LEED Accredited Professional	1
1	1	2	**Regional Priority**	**4**
0	0	1	Credit Regional Priority: Specific Credit	1
0	0	1	Credit Regional Priority: Specific Credit	1
1	0	0	Credit Regional Priority: Specific Credit	1
0	1	0	Credit Regional Priority: Specific Credit	1
51	22	37	**TOTALS** Possible Points:	**110**

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

Fig. 3.6-19. LEED v4 for BD+C: New Construction and Major Renovation

4.0 ENVIRONMENTAL PROTECTION COMPONENT

4.1 Shadow Impacts Analysis

4.1.1 Introduction

A shadow impact analysis was conducted in order to illustrate new shadow created from the proposed project on the surrounding area. The study presents both existing and new shadow impact for the hours 9:00 AM, 12:00 Noon, and 3:00 PM for the vernal equinox, summer solstice, autumnal equinox, and winter solstice. In addition, shadows are depicted for 6:00 PM during the summer solstice and autumnal equinox.

4.1.2 Vernal Equinox (March 21)

Figures 4.1-1 through **4.1-3** depict shadows on March 21.

At 9:00 AM, new shadows are cast in a northwesterly direction on Dorchester Avenue and the roof of the MBTA Bus Depot. Additional shadow will be cast on a small portion of the Doughboy Donut site.

At 12:00 Noon, new shadows are cast in a northerly direction on the Doughboy Donut site and in the backyard of 25-31 West 5th Street.

At 3:00 PM, new shadows are cast in a northeasterly direction on 25-31 West 5th Street Additional shadows are cast on portions of West 5th Street and the Doughboy Donuts site.

4.1.3 Summer Solstice (June 21)

Figures 4.1-4 through **4.1-7** depict shadow impacts on June 21.

At 9:00 AM, new shadows are cast in a westerly direction on Dorchester Avenue and the roof of the MBTA Bus Depot.

At 12:00 Noon, new shadows are cast in a northwesterly direction on the east sidewalk of Dorchester Avenue and a small portion of the Doughboy Donut site.

At 3:00 PM, new shadows are cast in a northeasterly direction on the 25-31 West 5th Street site. Additional shadows are cast on portions of the Doughboy Donuts site.

At 6:00 PM, new shadows are cast in an easterly direction on the 25-31 West 5th Street site. Additional shadows are cast on portions of the South Boston Bypass Road, West 5th Street, and the 55 West 5th Street site.

4.1.4 Autumnal Equinox (September 21)

Figures 4.1-8 through **4.1-11** depict shadow impacts on September 21.

At 9:00 AM, new shadows are cast in a northwesterly direction on Dorchester Avenue and the roof of the MBTA Bus Depot. Additional shadow will be cast on a small portion of the Doughboy Donuts site.

At 12:00 Noon, new shadows are cast in a northerly direction on the east sidewalk of Dorchester Ave., the Doughboy Donut site, and in the backyard of 25-31 West 5th Street.

At 3:00 PM, new shadows are cast in a northeasterly direction on 25-31 West 5th Street. Additional shadows are cast on portions of West 5th Street and the Doughboy Donuts site.

At 6:00 PM, new shadows are cast in an easterly direction on portions of the Doughboy Donut site and the side yard of 25-31 West 5th Street. Additional shadows are cast on small portions of West 5th Street, and the roofs of surrounding buildings.

4.1.5 Winter Solstice (December 21)

Figures 4.1-12 through **4.1-14** depict shadow impacts on December 21. Winter sun casts the longest shadows of the year.

At 9:00 AM, new shadows are cast in a northwesterly direction on Dorchester Avenue and the roof of the MBTA Bus Depot. Additional shadow will be cast on a small portion of the Doughboy Donuts site and 25-31 West 5th Street site.

At 12:00 Noon, new shadows are cast in a northerly direction on the Doughboy Donuts site, the backyard of 25-31 West 5th Street, and in the parking lot on the corner of West 5th and A Street. Additional shadows are cast on a small portion of the Colmar Belting site at 20 West 5th Street.

At 3:00 PM, new shadows are cast in a northeasterly direction on portions of the Doughboy Donut site and the side yard of 25-31 West 5th Street. Additional shadows extend to Silver Street.

4.1.6 Summary

New shadows from the project will be primarily limited to the immediate surrounding public ways and sidewalks of Dorchester Avenue and the adjacent properties to the north (Doughboy Donuts) and northeast (25-31 West 5th Street). Shadows will extend further during the winter months, but will not cause significant impact due to existing buildings in the area.

Figure 4.1-1. March 21 Shadows- 9:00 AM

Figure 4.1-2. March 21 Shadows- 12:00 PM

utile

Figure 4.1-3. March 21 Shadows- 3:00 PM

utile

Figure 4.1-4. June 21 Shadows- 9:00 AM

Figure 4.1-5. June 21 Shadows- 12:00 PM

utile

Figure 4.1-6. June 21 Shadows- 3:00 PM

Figure 4.1-7. June 21 Shadows- 6:00 PM

utile

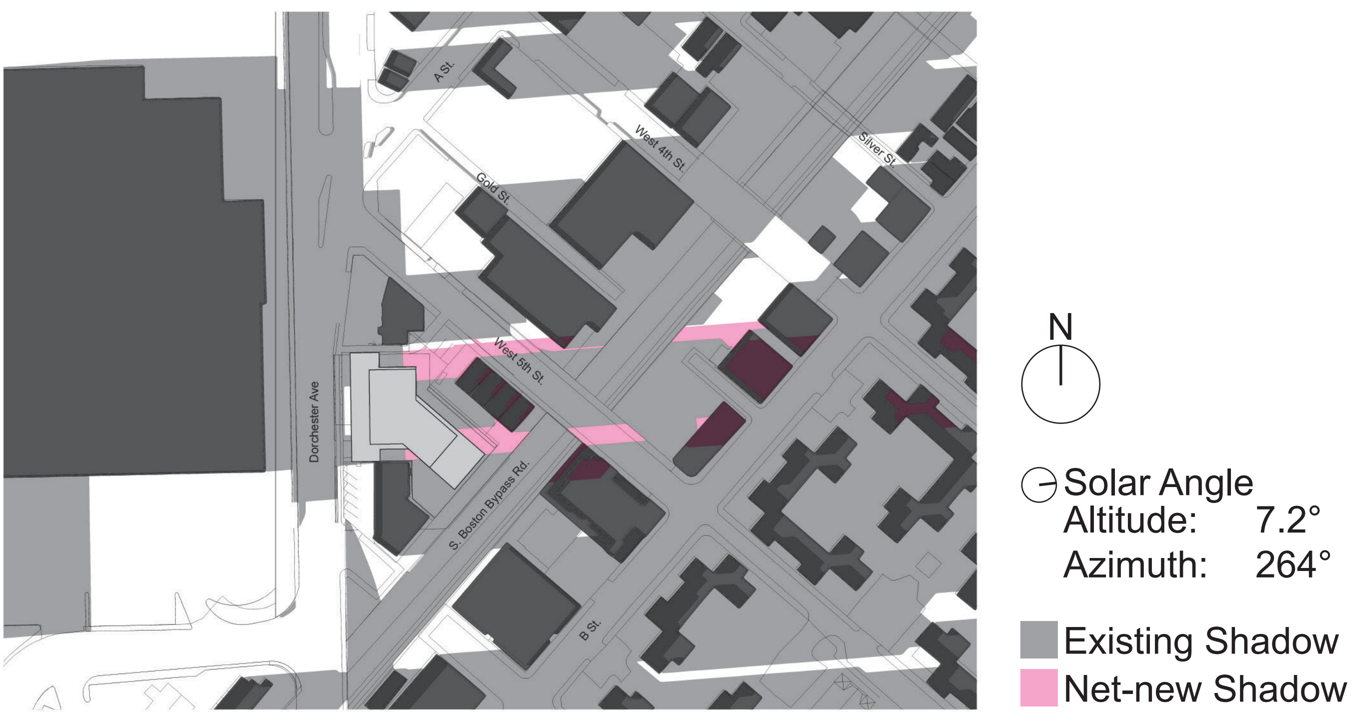
Figure 4.1-8. September 21 Shadows- 9:00 AM

Figure 4.1-9. September 21 Shadows- 12:00 PM

utile

Figure 4.1-10. September 21 Shadows- 3:00 PM

Figure 4.1-11. September 21 Shadows- 6:00 PM



utile

Figure 4.1-12. December 21 Shadows- 9:00 AM

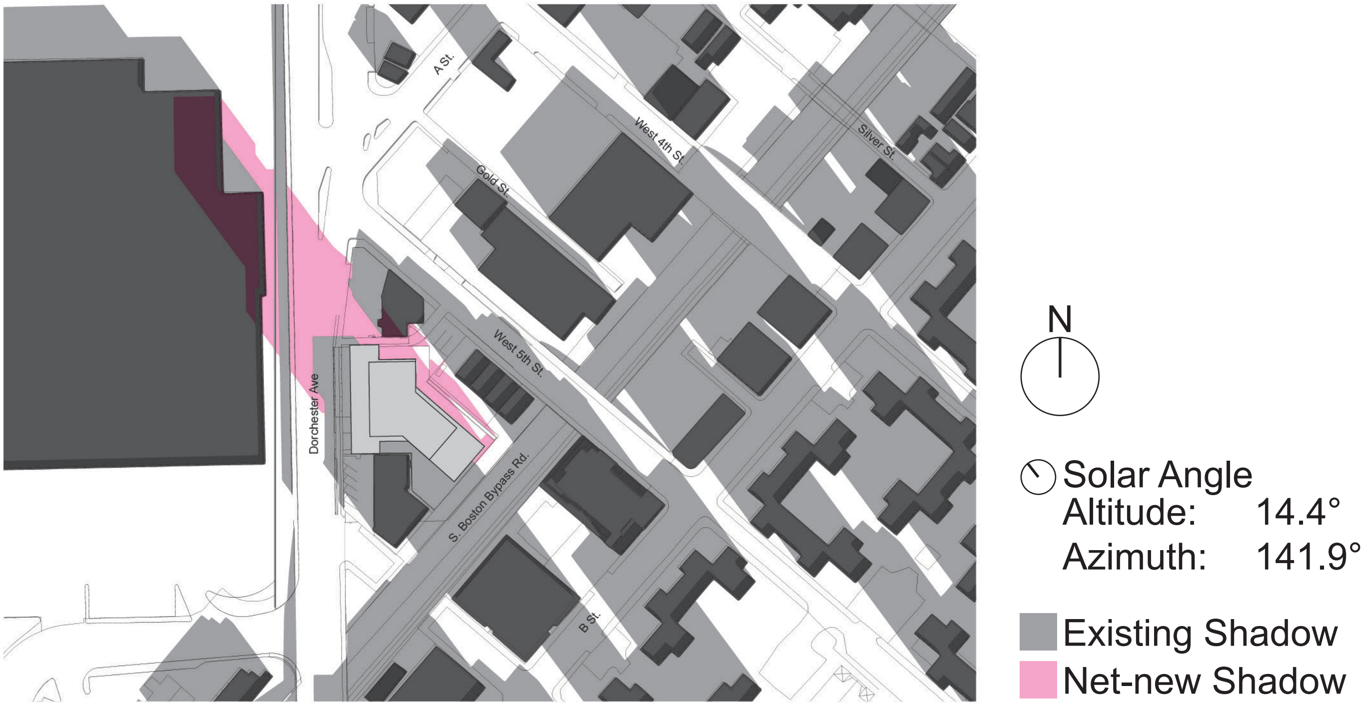


Figure 4.1-13. December 21 Shadows- 12:00 PM

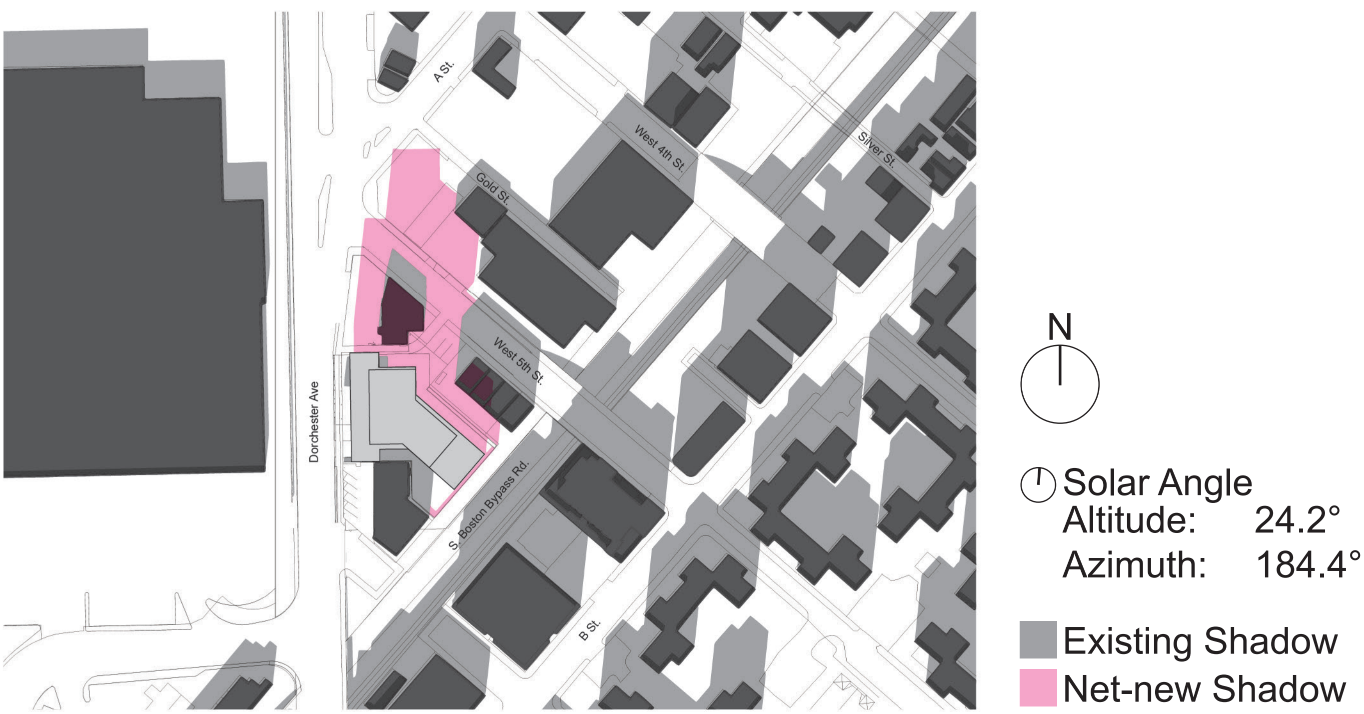
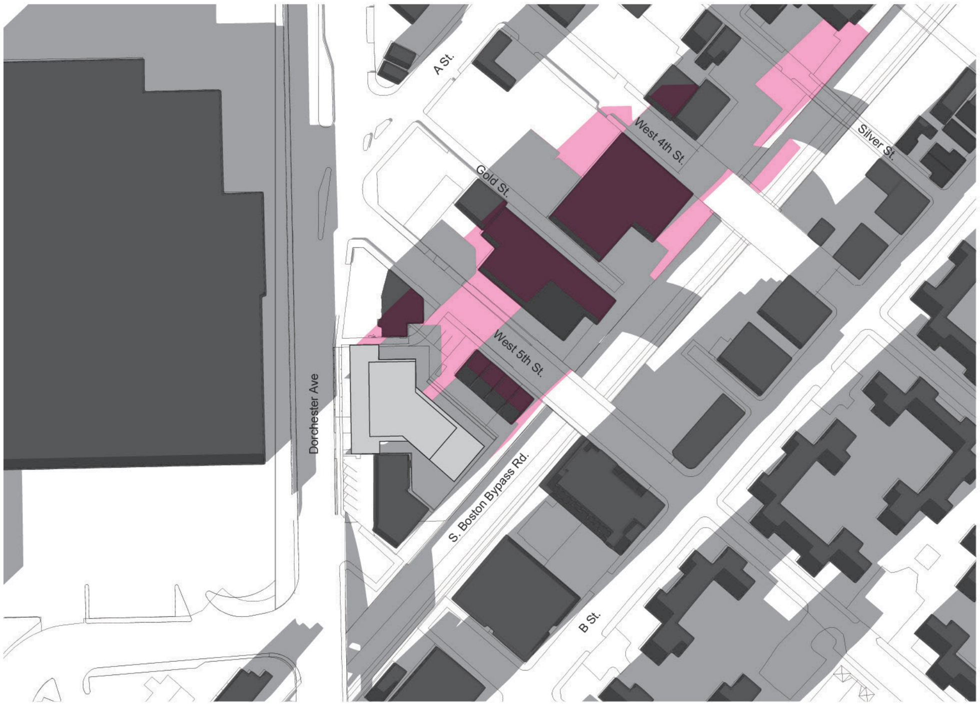


Figure 4.1-14. December 21 Shadows- 3:00 PM



N

Solar Angle
Altitude: 10.1°
Azimuth: 225°

Existing Shadow
Net-new Shadow

utile

4.2 Air Quality

Tech Environmental, Inc. performed air quality analyses for the Proposed Project (the "Project") to be located at 248 Dorchester Avenue in South Boston, MA. These analyses consisted of: 1) an evaluation of existing air quality; 2) an evaluation of potential carbon monoxide (CO) impacts from the operation of the Project's underground parking garage, and 3) a microscale CO analysis for intersections in the Project area that meet the BPDA criteria for requiring such an analysis.

4.2.1 Existing Air Quality

The City of Boston is currently classified as being in attainment of the Massachusetts and National Ambient Air Quality Standards ("NAAQS") for all of the criteria air pollutants except ozone (see **Table 4.2-1**). These air quality standards have been established to protect the public health and welfare in ambient air, with a margin for safety.

The Massachusetts Department of Environmental Protection ("DEP") currently operates air monitors in various locations throughout the city. The closest, most representative, DEP monitors for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter ($PM_{2.5}$), coarse particulate matter (PM_{10}), and lead (Pb) are located at Dudley Square (Harrison Avenue), Boston, MA.

Table 4.3-2 summarizes the DEP air monitoring data, for the most recent available, complete, three-year period (2013-2015), that are considered to be representative of the project area. **Table 4.3-2** shows that the existing air quality in the Project area is generally much better than the NAAQS. The highest impacts relative to a NAAQS are for ozone, $PM_{2.5}$, and NO_2. Ozone is a regional air pollutant on which the small amount of additional traffic generated by this Project will have an insignificant impact. The Project's operations will not have a significant impact on local $PM_{2.5}$ and NO_2 concentrations.

Table 4.2-1. Massachusetts and National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	NAAQS ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	1-hour[P] 3-hour[S] Annual[P] (Arithmetic Mean)	196[a] 1,300[b] 80
Carbon Monoxide (CO)	1-hour[P] 8-hour[P]	40,000[b] 10,000[b]
Nitrogen Dioxide (NO_2)	1-hour[P] Annual[P/S] (Arithmetic Mean)	188[c] 100
Coarse Particulate Matter (PM_{10})	24-hour[P/S]	150
Fine Particulate Matter ($PM_{2.5}$)	24-hour[P/S] Annual[P] (Arithmetic Mean) Annual[S] (Arithmetic Mean)	35[d] 12[e,f] 15
Ozone (O_3)	8-hour[P/S]	137[g]
Lead (Pb)	Rolling 3-Month Avg.[P/S]	0.15

P = primary standard; S = secondary standard.
[a] 99th percentile 1-hour concentrations in a year (average over three years).
[b] One exceedance per year is allowed.
[c] 98th percentile 1-hour concentrations in a year (average over three years).
[d] 98th percentile 24-hour concentrations in a year (average over three years).
[e] Three-year average of annual arithmetic means.
[f] As of March 18, 2013, the U.S. EPA lowered the $PM_{2.5}$ annual standard from 15 ug/m^3 to 12 ug/m^3.
[g] Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.070 ppm (137 ug/m^3) (effective December 28, 2015); the annual PM_{10} standard was revoked in 2006.

Table 4.2-2. Representative Existing Air Quality in the Project Area

Pollutant, Averaging Period	Monitor Location	Value ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
CO, 1-hour	Harrison Avenue, Boston	2,142	40,000	5%
CO, 8-hour	Harrison Avenue, Boston	1,260	10,000	13%
NO_2, 1-hour	Harrison Avenue, Boston	96.6	188	51%
NO_2, Annual	Harrison Avenue, Boston	32.8	100	33%
Ozone, 8-hour	Harrison Avenue, Boston	111	137	80%
PM_{10}, 24-hour	Harrison Avenue, Boston	61	150	41%
$PM_{2.5}$, 24-hour	Harrison Avenue, Boston	14.7	35	42%
$PM_{2.5}$, Annual	Harrison Avenue, Boston	6.5	12	54%
Lead, Quarterly	Harrison Avenue, Boston	0.014	1.5	1%
SO_2, 1-hour	Harrison Avenue, Boston	28.6	197	15%

Source: MassDEP, http://www.mass.gov/eea/agencies/massdep/air/quality/air-monitoring-reports-and-studies.html, downloaded August 29, 2017.

Notes:

(1) Annual and quarterly averages are highest measured during the most recent three-year period for which data are available (2013 - 2015). Values for periods of 24-hours or less are highest, second-highest over the three-year period unless otherwise noted.

(2) The eight-hour ozone value is the 3-year average of the annual fourth-highest values, the 24-hour $PM_{2.5}$ value is the 3-year average of the 98th percentile values, the annual $PM_{2.5}$ value is the 3-year average of the annual values – these are the values used to determine compliance with the NAAQS for these air pollutants.

(3) The one-hour NO_2 value is the -year average of the 98th percentile values and the one-hour SO_2 value is the -year average of the 99th percentile values.

(4) Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.070 ppm (137 ug/m^3) (effective December 28, 2015); the annual PM_{10} standard was revoked in 2006 and the 3-hour SO_2 standard was revoked by the US EPA in 2010.

4.2.2 Impacts from Parking Garage

The Project will include a parking garage designed to provide parking spaces for 70 vehicles. An analysis of the worst-case air quality impacts from the proposed parking garage was performed (see **Appendix B**). The procedures used for this analysis are consistent with U.S. EPA's Volume 9 guidance.[1] The objective of this analysis was to determine the maximum CO concentrations inside the garage and at the closest sensitive receptors surrounding the Project. These closest sensitive receptors include: air intakes located on the proposed building and nearby existing buildings and pedestrians at ground level anywhere near the Project. CO emissions from motor

[1] US EPA, "Guidelines for Air Quality Maintenance Planning and Analysis Volume 9 (Revised): Evaluating Indirect Sources," EPA-450/4-78-001, September 1978.

vehicles operating inside the garage were calculated and the CO concentrations inside the garage and surrounding the Project were based on morning and afternoon peak traffic periods.

The objective of this analysis was to determine the maximum CO concentrations at the closest sensitive receptors surrounding the Project. These closest sensitive receptors include: air intakes located on the proposed building and nearby existing buildings, and pedestrians at ground level anywhere near the Project. The parking garage CO emissions were modeled using a U.S. EPA-approved air model.

Garage Ventilation System

The proposed parking garage will require mechanical ventilation. The garage ventilation system will be designed to provide adequate dilution of the motor vehicle emissions before they are vented outside. The design of the garage ventilation system will meet all building code requirements. Full ventilation of the garage will require a maximum flow of approximately 18,800 cubic feet per minute (cfm) of fresh air. This quantity of air is designed to meet the building code and will be more than adequate to dilute the emissions inside the parking garage to safe levels before they are vented outside. The garage ventilation exhausts will likely be located at two side vents.

Peak Garage Traffic Volumes

The peak morning and afternoon one-hour entering and exiting traffic volumes for the garage are shown in **Table 4.2-3**.

Table 4.2-3. Peak-Hour Garage Traffic Volumes

Period	Entering (vehicles/hour)	Exiting (vehicles/hour)	Total (vehicles/hour)
Morning Peak Hour	43	13	56
Afternoon Peak Hour	17	43	60

Source: Howard-Stein Hudson

Motor Vehicle Emission Rates

The U.S. Environmental Protection Agency (EPA) MOVES2014 emission factor model was used to calculate single vehicle CO emissions rates, for a vehicle speed of 5 mph. The inputs to the MOVES2014 model followed the latest guidance from the Massachusetts Department of Environmental Protection (DEP) and were performed for the future traffic year of 2024. The CO emission rate calculated by MOVES2014, for vehicles moving at 5 miles per hour (mph), was 2.976 grams per vehicle-mile (g/veh-mi) for each entering and exiting vehicle. These emission rates apply to wintertime conditions when motor vehicle CO emissions are greatest due to cold temperatures. MOVES2014 model output is provided in the **Appendix B.**

To determine the maximum one-hour CO emissions inside the garage it was necessary to estimate the amount of time each motor vehicle will be in the parking garage with its engine running. To be conservative, it was assumed that every car entering or leaving the garage will be operating during that peak hour and will travel to the furthest parking spot. The calculations in **Appendix B** show how long each vehicle will be operating in the garage for both the morning and afternoon peak periods.

Peak Garage CO Emission Rate and CO Concentration Inside the Garage

The peak one-hour CO emission rate for the parking garage was calculated to be 0.12 grams per minute for the morning peak hour and 0.13 grams per minute for the afternoon peak hour. Applying the maximum volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the garage was calculated to be 0.20 parts of CO per million parts of air (ppm) for the morning peak hour and 0.21 ppm for the afternoon peak hour. Therefore, the peak one-hour CO concentration inside the garage will be 0.21 ppm with a peak one-hour emission rate of 0.13 grams/minute (0.0022 grams/second), corresponding to the afternoon peak period. These predictions represent conservative estimates of the peak garage CO emissions and concentrations.

Peak Ambient CO Concentration

The worst-case concentrations of CO from the parking garage were predicted for locations around the building using AERMOD model (Version 16216r) in screening-mode. The results of the air quality analysis for locations outside and around the building are summarized in **Table 4.2-4**. The results in Table 4.3-4 represent all outside locations on and near the Project Site, including nearby building air intakes and nearby residences. **Appendix B** contains the AERMOD model output.

The AERMOD model in screening-mode was used to predict the maximum concentration of CO by modeling the parking garage emissions as volume sources using worst-case meteorological conditions for an urban area. The screening-mode option simulates modeling results predicted by AERMOD. The predicted concentrations presented here represent the worst-case air quality impacts from the parking garage at all locations on and around the Project. AERMOD predicted one-hour average concentrations of air pollutants.

AERMOD predicted that the maximum one-hour CO concentration from the parking garage will be 0.00091 ppm (1.13 $\mu g/m^3$). This concentration represents the maximum CO concentration at any location surrounding the Project. AERSCREEN guidance allows the maximum eight-hour CO impact to be conservatively estimated by multiplying the maximum one-hour impact by a factor of 0.9 (i.e. the eight-hour impact is 90% of the one-hour impact). The maximum predicted eight-hour CO concentration was determined to be approximately 0.00081 ppm (0.00091 ppm x 0.9).

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare in ambient air, with a margin for safety. The NAAQS for CO are 35 ppm for a one-hour average and 9 ppm for an eight-hour average. The Commonwealth of Massachusetts has established the same standards for CO. Conservative, urban CO background values of 1.9 ppm for a one-hour period and 1.1 ppm for an eight-hour period were added to the maximum predicted garage ambient impacts to represent the CO contribution from other, more distant, sources. With the conservative background concentration added, the peak, total, one-hour and eight-hour CO impacts from the parking garage, at any location around the building, will be no larger than 1.9009 ppm and 1.1008 ppm, respectively. These maximum predicted total CO concentrations (garage exhaust impacts plus background) are safely in compliance with the NAAQS. This analysis demonstrates that the operation of the parking garage will not have an adverse impact on air quality.

Table 4.2-4. Peak Predicted Parking Garage Air Quality Impacts

Location	Peak Predicted One-Hour Impact (ppm)	One-Hour NAAQS (ppm)	Peak Predicted Eight-Hour Impact (ppm)	Eight-Hour NAAQS (ppm)
Outside – Surrounding the Building* (Parking Garage)	1.9009**	35 (NAAQS)	1.1008**	9 (NAAQS)

NAAQS = Massachusetts and National Ambient Air Quality Standards for CO (ppm = parts per million)
* Representative of maximum CO impact at all nearby residences, buildings, and sidewalks.
** Includes background concentrations of 1.9 ppm for the one-hour period and 1.1 ppm for the eight-hour period.

4.2.3 Microscale CO Analysis for Selected Intersections

The Boston Planning and Development Agency (BPDA) and the Massachusetts DEP typically require a microscale air quality analysis for any intersection in the Project study area, where the level of service (LOS) is expected to deteriorate to D and the proposed project causes a 10% increase in traffic or where the level of service is E or F and the project contributes to a reduction in LOS. For such intersections, a microscale air quality analysis is required to examine the CO concentrations at sensitive receptors near the intersection.

A microscale CO air quality analysis was performed to predict the maximum one-hour and eight-hour CO concentrations for sensitive receptors at the two intersections that meet the BPDA selection criteria in the Project area. The analysis was performed for three cases: 2017 Existing, 2024 No-Build, and 2024 Build. Estimation of CO levels at the intersections that meet the BPDA/DEP selection criteria under the 2024 Build scenario provides a good indication of whether the project will interfere with the maintenance of the NAAQS for CO. Since CO levels are highest near intersections where the worst traffic congestion occurs, compliance with the NAAQS at these intersections and receptors protects public health elsewhere in the community.

Dispersion Model

The latest version of the U.S. EPA CAL3QHC model[2] (Version 2.0, dated October 1995) was used to predict maximum one-hour CO concentrations at each intersection from both moving and idling vehicles. This model includes the U.S. EPA CALINE-3 dispersion model[3] along with methods for estimating queue lengths and the contribution of emissions from idling vehicles at intersections. The Air Quality Appendix (**Appendix B)** contains the CAL3QHC model output.

Meteorological Inputs

The following meteorological parameters were selected for the CAL3QHC modeling, in accordance with U.S. EPA and Massachusetts DEP guidance:

- Roughness Length: 370 cm (apartment residential)
- Mixing Height: 1,000 meters
- Wind Speed: 1.0 m/s (minimum)
- Wind Direction: 360^{o} in 10^{o} increments
- Stability Class: Class D.

Intersections

Six (6) intersections were included in the transportation study area, and each of these intersections was considered for a microscale CO air quality analysis. **Table 4.2-5** shows a summary of the 2024 Build LOS analysis for each intersection. Based on data presented in Section 7.0 (summarized in **Table 4.2-5**), two (2) intersections meet the DEP/BPDA criteria for a microscale analysis:

1. Dorchester Avenue & A Street
2. Dorchester Avenue Site Driveway

[2] U.S. EPA, User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollution Concentrations Near Roadway Intersections, Office of Air Quality Planning and Standards, September 1995.
[3] California Department of Transportation, CALINE-3, A Versatile Dispersion Model for Predicting Air Pollutant Levels Near Highways and Arterial Streets, FHWA/CA/TL-79/23, Sacramento, CA, November 1979.

Table 4.2-5. Summary of Build Case Level of Service

Intersection	Build LOS (AM/PM)	Requires Analysis?
Dorchester Avenue/Old Colony Road/Milhender Place	B/B	NO
Dorchester Avenue/Haul Road	A/A	NO
Dorchester Avenue/A Street	C/D	YES
Dorchester Avenue/West Fifth Street	B/B	NO
Flaherty Way/West Fifth Street/B Street	B/B	NO
Dorchester Avenue/Site Driveway	E/C	YES

The LOS shown represents the overall delay at each signalized intersection and the worst approach at the unsignalized intersection.

Source: Howard/Stein-Hudson

Receptors

Receptors are the locations where the CAL3QHC model predicts CO concentrations. Receptors were placed at regular intervals along each modeled roadway, where the public could have access. These receptors conservatively cover all of the locations where the general public may have frequent and prolonged access to the ambient air at each intersection. Following U.S. EPA guidance, all receptors were placed at a height of 1.8 meters and were located at least 3 meters away from the roadway curbsides.

Modeled Roadways

Each roadway approach was modeled as a 1,000 feet, free-flow (moving vehicles), and line source. The width of each free-flow link was set equal to the width of the roadway (excluding the parking areas) plus 3 meters on each side. Composite CO emission rates, in units of grams per mile, were applied to each free-flow link.

Each roadway approach that has a traffic signal control was also modeled as a queue link (vehicles waiting for a traffic signal to turn green). The width of each queue link was modeled as the actual approach lane width. The length of each queue was calculated by the CAL3QHC model. An idle CO emission factor, in grams per hour, was applied to each queue link.

The CAL3QHC model requires the input of signal timing for signalized intersections. One intersection was modeled as signalized intersection (Dorchester Avenue & A Street). Signal timings were provided by Howard/Stein-Hudson, the Project's transportation consultant.. The other intersection (Dorchester Avenue & Site Driveway) was modeled as an unsignalized intersection. As a result, queue lengths and idling emissions were calculated to represent delay conditions for unsignalized intersections.

Eight-Hour Average CO Concentrations

Peak eight-hour CO concentrations from roadway traffic were calculated by multiplying the model predicted one-hour CO values (without an added background concentration) by a persistence factor of 0.7.[4] The persistence factor takes into account that the intensity of the traffic during the peak eight-hour period will be less than that which will occur during the peak one-hour period. It also takes into account that the worst-case meteorological conditions (i.e. low wind speed blowing directly from the source to the receptor), corresponding to the peak one-hour concentrations, will not persist for an entire eight-hour period.

Background CO Concentrations

The one-hour and eight-hour traffic-related CO concentrations predicted by the CAL3QHC model were added to conservative one-hour and eight-hour background CO concentrations of 1.9 parts of CO (ppm) and 1.1 ppm, respectively, for the existing case. Background concentrations for the year 2024 will likely be lower than the existing background CO concentrations. To be conservative, the same background concentrations were used for the 2024 No-Build and Build cases. The sums of the CAL3QHC modeled CO concentrations plus background were compared to the NAAQS for CO.

CO Emission Factors

The U.S. Environmental Protection Agency (EPA) MOVES2014 emission factor model was used to calculate CO emissions factors. The inputs to the MOVES2014 model followed the latest guidance from the DEP and were performed for the existing (2017) and future (2024) traffic years. Both free flow and idling emissions factors were calculated for each traffic year. The free flow emission rate for vehicles traveling on the roadways was based on a vehicle speed of 30 mph for all of the modeled roadways. The free flow CO emission rates for a traffic speed of 30 mph were predicted to be 2.76 grams/mile in 2017 and 2.01 grams/mile in 2024. The CO emission rate calculated by MOVES2014, for idling vehicles, was 9.62 grams/mile in 2017 and 5.128 grams/mile in 2024. The CO emission rate calculated by MOVES2014, for queued vehicles at unsignalized intersections, was 5.67 grams/mile in 2017 and 3.86 grams/mile in 2024. These emission rates apply to wintertime conditions, when the motor vehicle CO emissions are greatest due to cold temperatures. MOVES2014 model output is provided in the **Appendix B.**

[4] U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections, EPA-454/R-92-005, Office of Air Quality Planning and Standards, November 1992.

Traffic Information

The available traffic volume data were for the peak weekday morning and afternoon periods. Traffic data for the period with the worst LOS (i.e. largest traffic congestion and vehicle delays) at each intersection were modeled to reflect the potential worst-case air quality impacts.

Predicted Project Impacts

The microscale air quality analysis predicted that the maximum CO concentrations were one-hour and eight-hour for sensitive receptors for the two (2) intersections in the project area which meet the BPDA/DEP selection criteria. The highest predicted CO concentrations for the one-hour and eight-hour periods, which consist of the sum of the maximum predicted impacts from intersection traffic and a conservative background CO concentration, are summarized in Tables **4.2-6** and **4.2-7**. The results in these tables do not represent typical air pollution levels in the project area. Rather, they represent the highest concentrations that could exist during the joint occurrence of worst-case meteorology and peak roadway traffic.

2017 Existing Case: The maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, for the 2017 Existing case are 2.3 ppm and 1.8 ppm, respectively. These maximum air quality impacts are in compliance with the NAAQS for CO.

2024 No-Build Case: For the 2024 No-Build case, the maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, are 2.3 ppm and 1.4 ppm, respectively. These maximum concentrations are less than, or equivalent to, those predicted for the 2017 Existing case and comply with the one-hour and eight-hour NAAQS for CO.

2024 Build Case: For the 2024 Build case, the maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, are 2.2 and 1.3 ppm, respectively. These maximum concentrations are less than, or equivalent to, those predicted for the 2017 Existing case and the 2024 No-Build case. The predicted CO impacts at all receptors are safely in compliance with the one-hour and eight-hour NAAQS for CO. These results demonstrate that the project will not have an adverse impact on air quality at the most congested intersections in the project area.

Table 4.2-6. Maximum Predicted One-Hour CO Concentrations at Sensitive Receptors (ppm)

Intersection	2017 Existing	2024 No-Build	2024 Build
Dorchester Avenue & A Street	2.3	2.3	2.2
Dorchester Avenue Site Driveway	N/A	N/A	2.1
NAAQS	**35**	**35**	**35**

Note: Maximum predicted one-hour concentrations include background concentrations.
The added one-hour average background CO concentration is 1.9 ppm in 2013.

Table 4.2-7. Maximum Predicted Eight-Hour CO Concentrations at Sensitive Receptors (ppm)

Intersection	2017 Existing	2024 No-Build	2024 Build
Dorchester Avenue & A Street	1.4	1.4	1.3
Dorchester Avenue Site Driveway	N/A	N/A	1.3
NAAQS	**9**	**9**	**9**

Note: Maximum predicted eight-hour concentrations include background concentrations.
The added eight-hour average background CO concentration is 1.1 ppm in 2013 and 2014.

The maximum predicted CO impacts for the 2024 No-Build and Build cases are less than, or equal to those predicted for the 2017 Existing Case. This is a result of the lower CO emission rates for motor vehicles predicted by the MOVES2014 model for 2024, compared to 2017. The reduction in motor vehicle CO emission rates is primarily a result of the improved motor vehicle emission controls, and occurs as newer vehicles with lower CO emissions replace older vehicles on the road. The maximum predicted CO impacts for the 2024 Build case is less than those predicted for the 2024 No-Build Case due to proposed Travel Demand Management (TDM) measures presented in **Section 7.0.** The results show that the project will not have a significant impact on the air quality at the analyzed intersections.

The worst-case air quality impacts at the Project site can be conservatively represented by the highest predicted CO concentration at the intersections presented above. Adding in the impacts from the underground parking garage and background concentration, the conservative estimate of the worst-case total one-hour and eight-hour CO impacts at the Project site will be 2.3 ppm and 1.4 ppm, respectively. These values are safely in compliance with the NAAQS for CO and indicate that the Project will not have an adverse impact on local air quality.

Conclusions

The microscale CO air quality dispersion modeling analysis clearly indicates that the worst-case traffic generated by the Project will not cause or contribute to any violations of the NAAQS for CO, and will not significantly affect air quality. Total CO impacts at the intersections with the largest delays and at the Project site, including the impacts from the parking garage, are predicted to be safely in compliance with the NAAQS for CO.

4.3 Noise Impacts

Tech Environmental, Inc., performed a noise study to determine whether the operation of the proposed Project will comply with the City of Boston Noise Regulations and the Massachusetts Department of Environmental Protection ("DEP") Noise Policy.

4.3.1 Common Measures of Community Noise

The unit of sound pressure is the decibel (dB). The decibel scale is logarithmic to accommodate the wide range of sound intensities to which the human ear is subjected. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 70 dB is added to another sound of 70 dB, the total only increases by 3 dB (or 73 dB), it does not double to 140 dB. Thus, every 3 dB increase represents a doubling of sound energy. For broadband sounds, a 3 dB change is the minimum change perceptible to the human ear. **Table 4.3-1** gives the perceived change in loudness of different changes in sound pressure levels.[5]

Table 4.3-1. Subjective Effects of Changes in Sound Pressure Levels

Change in Sound Level	Apparent Change in Loudness
3 dB	Just perceptible
5 dB	Noticeable
10 dB	Twice (or half) as loud

Non-steady noise exposure in a community is commonly expressed in terms of the A-weighted sound level (dBA); A-weighting approximates the frequency response of the human ear. Levels of many sounds change from moment to moment. Some are sharp impulses lasting 1 second or less, while others rise and fall over much longer periods of time. There are various measures of sound pressure designed for different purposes. To establish the background ambient sound level in an area, the L_{90} metric, which is the sound level exceeded 90 percent of the time, is typically used. The L_{90} can also be thought of as the level representing the quietest 10 percent of any time period. Similarly, the L_{10} can also be thought of as the level representing the quietest 90 percent

[5] American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1989 ASHRAE Handbook--Fundamentals (I-P) Edition, Atlanta, GA, 1989.

of any time period. The L_{10} and L_{90} are broadband sound pressure measures, i.e., they include sounds at all frequencies.

Sound level measurements typically include an analysis of the sound spectrum into its various frequency components to determine tonal characteristics. The unit of frequency is Hertz (Hz), measuring the cycles per second of the sound pressure waves, and typically the frequency analysis examines nine octave bands from 32 Hz to 8,000 Hz. A source is said to create a pure tone if the acoustic energy is concentrated in a narrow frequency range and one octave band has a sound level 3 dB greater than both adjacent octave bands.

The acoustic environment in an urban area such as the Project area results from numerous sources. Observations show that the major contributors to the background sound level in the Project area are motor vehicle traffic on local and distant streets, aircraft over-flights, mechanical equipment on nearby buildings, nature noises such as insects, tree frogs, small animals, and general city noises such as street sweepers and police/fire sirens. Typical sound levels associated with various activities and environments are presented in **Table 4.3-2**.

4.3.2 Noise Regulations

Commonwealth Noise Policy

The DEP regulates noise through 310 CMR 7.00, "Air Pollution Control." In these regulations "air contaminant" is defined to include sound and a condition of "air pollution" includes the presence of an air contaminant in such concentration and duration as to "cause a nuisance" or "unreasonably interfere with the comfortable enjoyment of life and property."

Regulation 7.10 prohibits "unnecessary emissions" of noise. The DEP DAQC Policy Statement 90-001 (February 1, 1990) interprets a violation of this noise regulation to have occurred if the noise source causes either:

1. An increase in the broadband sound pressure level of more than 10 dBA above the ambient level; or
2. A "pure tone" condition.

The ambient background level is defined as the L_{90} level as measured during equipment operating hours. A "pure tone" condition occurs when any octave band sound pressure level exceeds both of the two adjacent octave band sound pressure levels by 3 dB or more.

The DEP does not regulate noise from motor vehicles accessing a site or the equipment backup notification alarms. Therefore, the provisions described above only apply to a portion of the sources that may generate sound following construction of the Project.

Table 4.3-2. Common Indoor and Outdoor Sound Levels

Outdoor Sound Levels	Sound Pressure (μPa)	Sound Level (dBA)	Indoor Sound Levels
	6,324,555	110	Rock Band at 5 m
Jet Over-Flight at 300 m		105	
	2,000,000	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		95	
	632,456	90	Food Blender at 1 m
Diesel Truck at 15 m		85	
Noisy Urban Area—Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		65	Normal Speech at 1 m
	20,000	60	
Quiet Urban Area—Daytime		55	Quiet Conversation at 1m
	6,325	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		45	
	2,000	40	Empty Theater or Library
Quiet Suburb—Nighttime		35	
	632	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		25	Empty Concert Hall
Rustling Leaves	200	20	Average Whisper
		15	Broadcast and Recording Studios
	63	10	
		5	Human Breathing
Reference Pressure Level	20	0	Threshold of Hearing

Notes: μPa, or micro-Pascals, describes sound pressure levels (force/area). DBA, or A-weighted decibels, describes sound pressure on a logarithmic scale with respect to 20 μPa (reference pressure level).

Local Regulations

The City of Boston Environment Department regulates noise through the Regulations for the Control of Noise as administered by the Air Pollution Control Commission. The Project is located in an area consisting of commercial and residential uses. The Project will have low-rise residential uses to the north, east, and south. The Project must comply with Regulation 2.2 for noise levels in Residential Zoning Districts at these residential locations**. Table 4.3-3** lists the maximum allowable octave band and broadband sound pressure levels for residential and business districts. Daytime is defined by the City of Boston Noise Regulations as occurring between the hours of 7:00 a.m. and 6:00 p.m. daily except Sunday. Compliance with the most restrictive nighttime residential limits will ensure compliance for other land uses with equal or higher noise limits.

Table 4.3-3. Maximum Allowable Sound Pressure Levels (dB) City of Boston

Octave Band (Hz)	Zoning District		
	Residential (Daytime)	Residential (All Other Times)	Business (anytime)
32 Hz	76	68	79
63 Hz	75	67	78
125 Hz	69	61	73
250 Hz	62	52	68
500 Hz	56	46	62
1000 Hz	50	40	56
2000 Hz	45	33	51
4000 Hz	40	28	47
8000 Hz	38	26	44
Broadband (dBA)	**60**	**50**	**65**

4.3.3 Pre-Construction Sound Level Measurements

Existing baseline sound levels in the Project area were measured during the quietest overnight period when human activity and street traffic were at a minimum, and when the Project's mechanical equipment (the principal sound sources) could be operating. Since the Project's mechanical equipment may operate at any time during a 24-hour day, a weekday between 11:00 p.m. and 4:00 a.m. was selected as the worst-case time period, i.e., the time period when Project-related sounds may be most noticeable due to the quieter background sound levels. Establishing an existing background (L_{90}) during the quietest hours of the facility operation is a conservative approach for noise impact assessment and is required by the DEP Noise Policy.

Nighttime noise measurements were collected at the nearest residential use in the Project area at 25 West 5th Street. Broadband (dBA) and octave band sound level measurements were made with a Larson Davis Model 831 environmental sound level analyzer, at each monitoring location, for a duration of approximately thirty minutes. The full octave band frequency analysis was performed on the frequencies spanning from 16 to 16,000 Hertz. A time-integrated statistical analysis of the data used to quantify the sound variation was also performed, including the calculation of the L_{90}, which is used to set the ambient background sound level.

The Larson Davis 831 is equipped with a ½" precision condenser microphone and has an operating range of 5 dB to 140 dB and an overall frequency range of 3.5 Hz to 20,000 Hz. This meter meets or exceeds all requirements set forth in the ANSI S1.4-1983 Standards for Type 1 quality and accuracy and the State and City requirements for sound level instrumentation. Prior to any measurements, this sound analyzer was calibrated with an ANSI Type 1 calibrator that has an accuracy traceable to the National Institute of Standards and Technology (NIST). During all measurements, the Larson Davis was tripod mounted at approximately five feet above the ground in open areas away from vertical reflecting surfaces.

The sound level monitoring was conducted on Wednesday Night, May 3rd. Weather conditions during the sound survey were conducive to accurate sound level monitoring: the temperature was 47^{o}F, the skies were partly cloudy, and the winds were 0 to 6 mph, from the northwest. The microphone of the sound level analyzer was fitted with a 3-inch windscreen to negate any effects of wind-generated noise.

The nighttime sound level measurements taken in the vicinity of the Project site revealed sound levels that are typical for an urban area. A significant source of existing sound at all locations is motor vehicle traffic on nearby highways and local streets, residential and commercial air handling equipment, crickets and other insects/animals and aircraft over-flights.

The results of the nighttime baseline sound level measurements are presented in **Table 4.3-4**, and the complete measurement printouts are provided in **Appendix C**. The nighttime background L_{90} level was 54.7 dBA. The octave band data in **Table 4.3-4** show that no pure tones were detected in the nighttime noise measurements.

Table 4.3-4. Nighttime Baseline Sound Level Measurements, May 3, 2017

Sound Level Measurement	25 West 5th St 11:00 p.m. - 11:30 p.m.
Broadband (dBA)	
Background (L_{90})	54.7
Octave Band L_{90}	
(dB)	57.3
16 Hz	62.2
32 Hz	60.7
63 Hz	55.5
125 Hz	53.8
250 Hz	50.7
500 Hz	51.8
1000 Hz	43.4
2000 Hz	30.6
4000 Hz	19.1
8000 Hz	14.4
16000 Hz	
Pure Tone?	No

Noise monitoring at the Project site during the morning peak traffic period was used to evaluate the existing ambient sound levels and to evaluate conformance with the Project site Acceptability Standards established by the United States Department of Housing and Urban Development (HUD) for residential development. The purpose of the HUD guidelines is to provide standards for determining the acceptability of residential project locations with regards to existing sound levels. The HUD criteria regarding the day-night average sound level (L_{dn}) are listed below. These standards apply to L_{dn} measurements taken several feet from the building in the direction of the predominant source of noise.

- Normally Acceptable – L_{dn} not exceeding 65 dBA
- Normally Unacceptable – L_{dn} above 65 dBA but not exceeding 75 dBA
- Unacceptable – L_{dn} above 75 dBA.

These HUD standards do not apply to the Project, but are used as guidance regarding the suitability of the Project area with regard to background sound levels.

Daytime sound level measurements were taken to help estimate the L_{dn} for the Project site. A 30-minute sound level measurement was taken during the afternoon, on Wednesday, April 19, 2017 between 12:45 p.m. and 1:15 p.m. at 25 West 5th Street (Location #1) which was used to represent the closest residential use to the Project site. The weather conditions during the sound survey were conducive to accurate sound level monitoring: the skies were clear, and the winds were 5-10 mph. The microphone of the sound level analyzer was fitted with a 7-inch windscreen to negate any effects of wind-generated noise.

The daytime sound level measurements taken in the vicinity of the Project site reveal sound levels that are typical for an urban area. The main sources of noise during the peak morning traffic period sound level measurement were from motor vehicle traffic on nearby local streets, construction vehicles in the distance, adjacent MBTA Broadway Street Red Line activity, and aircraft over-flights. The L_{eq} measured during the afternoon period was 59.7 dBA. The L_{eq} sound level measured during the nighttime at the same location was 57.3 dBA. Using both the daytime and nighttime L_{eq} sound levels, the calculated L_{dn} for the site is 64.1 dBA, which is below the HUD guideline noise limit of 65 dBA.

It is assumed that standard building construction practices will result in at least a 20 dBA reduction of sound from outdoor sound levels. The Proponent will incorporate sound mitigation, as necessary, to assure that motor vehicle sound sources and the MBTA rail yard do not result in noise impacts greater than 45 dBA inside the residential units closest to the neighboring streets.

4.3.4 Reference Data and Candidate Mitigation Measures

The mechanical systems for the Proposed Project are in the early design stage. Typical sound power data for the equipment of the expected size and type for the Project have been used in the acoustic model to represent the Project's mechanical equipment. The sound levels from all potential significant Project noise sources are discussed in this section.

The design for the Proposed Project is expected to include the following significant mechanical equipment:

- One (1) CAT Model C15 diesel generator set enclosed in an aluminum sound attenuated enclosure,
- Twelve (12) Daikin Model REYQ168TYDN rooftop condensing units,
- Two (2) Daikin Model DPS028A packaged rooftop systems.

The equipment listed above, which will be located on the building rooftop, within the enclosed penthouse, was included in the noise impact analysis. The Project's traffic was not included in the noise analysis because motor vehicles are exempt under both the City of Boston and DEP noise regulations.

The sound generation profiles for the mechanical equipment noise sources operating <u>concurrently</u> under <u>full-load</u> conditions were used to determine the maximum possible resultant sound levels from the Project Site as a whole, to define a worst-case scenario. To be in compliance with City and DEP regulations, the resultant sound level must not exceed the allowable octave band limits in the City of Boston noise regulation and must be below the allowable incremental noise increase, relative to existing noise levels, as required in the DEP Noise Policy.

This sound level impact analysis was performed using sound generation data for representative equipment to demonstrate compliance with noise regulations. As the building design evolves, the sound generation for the actual equipment selected may differ from the values that were utilized for the analysis.

4.3.5 Calculated Future Sound Levels

<u>Methodology</u>

Future maximum sound levels at the upper floors of all existing residences bordering the Project were calculated with acoustic modeling software assuming simultaneous operation of all mechanical equipment at their maximum loads.

The Cadna-A computer program, a comprehensive 3-dimensional acoustical modeling software package was used to calculate Project generated sound propagation and attenuation.[6] The model is based on ISO 9613, an internationally recognized standard specifically developed to ensure the highly accurate calculation of environmental noise in an outdoor environment. ISO 9613 standard incorporates the propagation and attenuation of sound energy due to divergence with distance, surface and building reflections, air and ground absorption, and sound wave diffraction and shielding effects caused by barriers, buildings, and ground topography.

Receptors

The closest/worst-case sensitive (residential) location is to the east of the project area at 25-31 West 5th Street. This location was selected based on the proximity of the equipment (smaller distances correspond to larger noise impacts). This location is expected to receive the largest sound level impacts from the Project's rooftop mechanical equipment. It can be classified as a residential zone.

The sound level impacts from the building's mechanical equipment were predicted at the closest residential location (25-31 West 5th Street), as well as additional residential uses to the east (50 B Street), southeast (Boston Housing Authority, West Broadway), and south (30 B Street), and southwest (178 Gardner Street). Noise impacts at other nearby noise-sensitive locations (residences, parks, etc.) farther from the Project Site will be less than those predicted for these receptors.

4.3.6 Compliance with State and Local Noise Standards

The City of Boston and DEP noise standards apply to the operation of the mechanical equipment at the proposed Project. The details of the noise predictions are presented in **Tables 4.3-5** through **4.3-8**. The sound impact analysis includes the simultaneous operation of the Project's rooftop HVAC equipment. The predicted sound levels are worst-case predictions that represent all hours of the day, as the analysis assumes full operation of the mechanical equipment 24-hours a day. The typical sound level impacts from the mechanical equipment will likely be lower than what is presented here, since most of the mechanical equipment will operate at full-load only during certain times of the day and during the warmer months of the year, it is not likely that all of the mechanical equipment will operate at the same time. Sound level impacts at locations farther from the Project (e.g. other residences, etc.) will be lower than those presented in this report.

City of Boston Noise Standards

The noise impact analysis results, presented in **Tables 4.3-5** through **4.3-8**, reveal that the sound level impact at the upper floors of the closest residences will be between 38.7 and 43.9 dBA. The smallest sound level impact of 38.7 dBA is predicted to occur at the Boston Housing Authority: West Broadway. The largest sound level impact of 43.9 dBA is predicted to occur at 25-31 West

[6] Cadna-A Computer Aided Noise Abatement Program, Version 4.3

5th Street. Noise impacts predicted at all locations are in compliance with the City of Boston's nighttime noise limit (50 dBA) for a residential area. Note that sound levels from the Project will be below the residential nighttime limits at all times. The results also demonstrate compliance with the City of Boston, residential, non-daytime, octave band noise limits at both closest locations.

The City of Boston noise limits for business areas are significantly higher than the nighttime noise limits for residential areas (see **Table 4.3-3**). The Project will also easily comply with the City of Boston business area noise limits at all surrounding commercial properties.

Massachusetts DEP Noise Regulations

The predicted sound level impacts at the worst-case residential locations were added to the measured L_{90} value of the quietest daily hour to test compliance with DEP's noise criteria. Assuming the Project's mechanical noise is constant throughout the day, the Project will cause the largest increase in sound levels during the period when the lowest background noise occurs. Minimum background sound levels (diurnal) typically occur between 12:00 a.m. and 5:00 a.m.

The predicted sound level impacts at the upper floors of the closest residences were added to the L_{90} values measured during the period with the least amount of background noise to test compliance with DEP's noise criteria. The predicted noise impacts at the property line and the closest residences were added to the most-representative measured L_{90} values to determine the largest possible increase in the sound level at each location during the quietest hour at the Project Site.

As shown in **Tables 4.3-5** through **4.3-8**, the Project is predicted to produce a less than 1 dBA change in the background sound levels at all modeled locations. Therefore, the Project’s worst-case sound level impacts during the quietest nighttime periods will be in compliance with the Massachusetts DEP allowed noise increase of 10 dBA. The noise predictions for each octave band indicate that the mechanical equipment will not create a pure tone condition at any location.

Table 4.3-5. Estimated Future Sound Level Impacts – Anytime, 25-31 West 5th Street (Closest/Worst Case Residence) – Location R1

Octave Bands	Residential Nighttime	Maximum Predicted Sound Levels*
32 Hz	68	55
63 Hz	67	55
125 Hz	61	53
250 Hz	52	45
500 Hz	46	41
1000 Hz	40	37
2000 Hz	33	33
4000 Hz	28	26
8000 Hz	26	18
Broadband (dBA)	**50**	**44**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90}	54.7
248 Dorchester Avenue Project*	43.9
Calculated Combined Future Sound Level	55.0
Calculated Incremental Increase	+0.3
Compliance with DEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA

Table 4.3-6. Estimated Future Sound Level Impacts – Anytime, 50 B Street – Location R2

Octave Bands	Residential Nighttime	Maximum Predicted Sound Levels*
32 Hz	68	49
63 Hz	67	52
125 Hz	61	51
250 Hz	52	44
500 Hz	46	39
1000 Hz	40	32
2000 Hz	33	25
4000 Hz	28	16
8000 Hz	26	2
Broadband (dBA)	**50**	**41**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90}	54.7
248 Dorchester Avenue Project*	41.0
Calculated Combined Future Sound Level	54.9
Calculated Incremental Increase	+0.2
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA.

Table 4.3-7. Estimated Future Sound Level Impacts – Anytime, Boston Housing Authority: West Broadway – Location R3

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	48
63 Hz	67	49
125 Hz	61	48
250 Hz	52	41
500 Hz	46	37
1000 Hz	40	30
2000 Hz	33	23
4000 Hz	28	14
8000 Hz	26	0
Broadband (dBA)	**50**	**39**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90}	54.7
248 Dorchester Avenue Project*	38.7
Calculated Combined Future Sound Level	54.8
Calculated Incremental Increase	+0.1
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA.

Table 4.3-8. Estimated Future Sound Level Impacts – Anytime, 30 B Street – Location R4

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	51
63 Hz	67	52
125 Hz	61	50
250 Hz	52	43
500 Hz	46	37
1000 Hz	40	30
2000 Hz	33	25
4000 Hz	28	19
8000 Hz	26	7
Broadband (dBA)	**50**	**40**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90}	54.7
248 Dorchester Avenue Project*	39.7
Calculated Combined Future Sound Level	54.8
Calculated Incremental Increase	+0.1
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.

4.3.7 Conclusions

Sound levels at all nearby sensitive locations and at all property lines will fully comply with the most stringent City of Boston and DEP daytime and nighttime sound level limits.

This acoustic analysis demonstrates that the Project's design will meet the applicable acoustic criteria.

4.4 Stormwater Management and Water Quality

The Proposed Project is expected to substantially improve the water quality (See Section 4.6) and will meet the Boston Water and Sewer Commission (BWSC) Site Plan requirements. The existing storm drain utility and combined sewer infrastructure surrounding the Site appears to be of adequate capacity to service the needs of the Project. The Project will result in an increase in impervious area by approximately 3,750 sf, but will improve the quality and attenuate the quantity of stormwater runoff being discharged to BWSC storm drain system through the installation of an on-site infiltration system. At a minimum, the equivalent of 1 inch over the site's impervious area will be recharged.

In addition to the installation of an on-site underground infiltration system, stormwater runoff will be treated through the use of deep sump drainage inlets prior to entering the infiltration system. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

Erosion and sediment controls will be used during construction to protect adjacent properties, the municipal storm drain system and the on-site storm drain system. A pollution prevention plan, if required, will be prepared for use during construction including during demolition activity.

4.5 Solid and Hazardous Waste Materials

4.5.1 Solid Waste

During the preparation of the Site, debris from the existing building(s) and parking lot will be removed from the Project Site. The Proponent will ensure that waste removal and disposal during construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste.

Upon completion of construction, the Project is estimated to generate approximately 376 tons of solid waste per year, based on the assumption that each of the 159 hotel rooms will generate approximately 4 lbs of solid waste per day or 266 tons per year, and the 15,000-20,000 gsf of commercial/retail space will generate 5.5 tons per 1,000 gsf or 110 tons per year. A significant portion of the waste will be recycled. The project will also include ambitious goals for construction waste management in order to meet the requirements for the LEED™ rating system. This strategy will divert demolition and construction waste by reusing and recycling materials.

In order to meet the requirements for the Boston Environmental Department and the LEED™ rating system, the Project will include space dedicated to the storage and collection of recyclables. The recycling program will meet or exceed the City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (21 through 27, co-mingled).

4.5.2 Hazardous Waste and Materials

The construction of the proposed building foundations and limited basement area will require the removal of the site soils to a depth ranging up to about 4 to 12 feet below the existing grade. Since the Project Site is relatively level, and no significant raise in site grades are proposed, it is anticipated that excess fill will be generated which will require off-site disposal.

Prior to off-site disposal, the Proponent will perform pre-characterization chemical analysis on representative soil samples. The results of the analysis will be used for off-site disposal facility acceptance.

The project proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the project, including proper management and/or off-site disposal of contaminated soil and groundwater encountered during construction. If necessary, the LSP will also prepare the required Massachusetts Contingency Plan (MCP) (310 CMR 40.0000) regulatory submittals.

The Project Site is not listed in the DEP's list of Disposal Sites. Therefore, significant contamination is not anticipated at the Project Site. However, Should evidence of a release be encountered during redevelopment, response actions will be performed in accordance with the provisions of the Massachusetts Contingency Plan (MCP).

4.6 Geotechnical/Groundwater Impacts Analysis

The project site is situated on a triangular parcel bounded by Dorchester Avenue and West 5th Street to the southwest, West 5th Street to the northeast, and the Mass Highway Department "Haul Road" to the southeast. The proposed hotel is planned to be located within the central portion of the triangular property, currently occupied by an Enterprise Rent-a-Car franchise and is bounded by a restaurant to the north, and office buildings located to the northeast and south. The current entrance to the project site is from Dorchester Avenue, and ground surface across the project site is relatively flat. Overall, the project site area occupies an approximately 22,000 square-foot plan area.

The proposed building will generally consist of a "podium" style structure with enclosed at-grade parking on the ground level and a 6-story hotel superstructure above. In addition, a two-story penthouse occupies a portion of the roof. Finally, an approximately 6,000 square-foot service basement is planned. In total, the proposed hotel footprint occupies the majority of the 22,000 square-foot project site.

Historically, the project site is located in close proximity to the colonial shoreline, which was present on the western side of Dorchester Avenue. Therefore, it appears that the project site, although close to the colonial shoreline, was located in an area that was not historically filled in to create new land. Based on this, and available subsurface information, the ground surface is anticipated to be underlain by a fill layer that ranges in thickness from about 8 to 15 feet below the existing ground surface. Underlying the existing fill, a relatively thick deposit of marine sand and marine clay is anticipated to be present. Natural deposits of dense to very dense glacial till and/or bedrock is anticipated at depths ranging from 60 to 80 feet below ground surface. Groundwater is anticipated within a depth range of 8 to 12 feet below ground surface.

Based on the anticipated soil conditions described above, foundation support for the proposed building will likely consist of conventional spread footings. The lowest level floor slab will consist of a soil supported slab-on-grade. The footings will bear directly on the underlying marine deposit or possibly, on ground-improved soils. It is possible, but unlikely that a pile foundation system may be required. If a pile foundation system is required, appropriate mitigative measures will be taken to control ground vibrations. The Contractor will be required to conform to industry accepted vibration levels while performing vibration-inducing work at the site. Vibration monitoring using one or more seismographs will be performed during all pile driving or other vibration-intensive activities.

For areas of the proposed limited basement that come in close proximity to Dorchester Avenue or surrounding structures, temporary earth support consisting of a system of soldier piles and lagging, or similar earth support will be utilized to protect the surrounding streets and structures from damage due to the basement excavation.

Groundwater and Temporary Construction Dewatering Considerations

The project site is not located within the Groundwater Conservation Overlay District (GCOD) as outlined in Article 32 of the City of Boston Zoning Code.

Excavation for construction of the building foundations outside of the building is not anticipated to encounter groundwater. However, excavation for the service basement is anticipated to extend to depths ranging from 10 to 12 feet below the ground surface. Therefore, based on the anticipated depth to groundwater at 8 to 12 feet below the existing ground surface, groundwater dewatering during excavation of the service basement may be required. Construction dewatering, if required, would consist of localized sumps in conjunction with on-site recharge of the groundwater. Furthermore, construction of the proposed below grade level is not expected to have adverse short or long-term impact on the existing groundwater conditions.

A groundwater recharge system will be installed as part the development of the site.

4.7 Construction Impact

4.7.1 Construction Impact

The following section describes impacts likely to result from the 248 Dorchester Avenue Project construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager who will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Project’s geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

4.7.2 Construction Management Plan

The Proponent will comply with applicable state and local regulations governing construction of the Project. The Proponent will require that the general contractor comply with the Construction Management Plan, ("CMP") developed in consultation with and approved by the Boston Transportation Department ("BTD") prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the Project and will include specific mitigation measures and staging plans to minimize impacts on abutters. Proper pre-construction planning with the neighborhood will be essential to the successful construction of this Project. Construction methodologies that will ensure safety will be employed, signage will include construction manager contact information with emergency contact numbers. The Proponent will also coordinate construction with other ongoing projects in the neighborhood.

4.7.3 Proposed Construction Program

Construction Activity Schedule

The construction period for the Proposed Project is expected to last approximately 20 months, beginning in the 4th Quarter 2018 and reaching completion in the 3rd Quarter 2020. The City of Boston Noise and Work Ordinances will dictate the normal work hours, which will be from 7:00 AM to 6:00 PM, Monday through Friday.

Perimeter Protection/Public Safety

The CMP will describe any necessary sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary to ensure safety around the Site perimeter. If possible, the sidewalk will remain open to pedestrian traffic during the construction period. Barricades and secure fencing will be used to isolate construction areas from pedestrian traffic. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety. Proper signage will be placed at every corner of the Project as well as those areas that may be confusing to pedestrians and automobile traffic. The Proponent will continue to coordinate with all pertinent regulatory agencies and representatives of the surrounding neighborhoods to ensure they are informed of any changes in construction activities.

4.7.4 Construction Traffic Impacts

Construction Vehicle Routes

Specific truck routes will be established with BTD through the CMP. These established truck routes will prohibit travel on any residential side streets. Construction contracts will include clauses restricting truck travel to BTD requirements. Maps showing approved truck routes will be provided to all suppliers, contractors, and subcontractors. It is anticipated that all deliveries will be via Dorchester Avenue.

4.7.5 Construction Worker Parking

The number of workers required for construction of the Project will vary during the construction period. However, it is anticipated that all construction workers will arrive and depart prior to peak traffic periods. Limited parking in designated areas of the Project Site and lay-down area(s) will be allowed. Parking will be discouraged in the immediate neighborhood. Further, public transit use will be encouraged with the Proponent and construction manager working to ensure the construction workers are informed of the public transportation options serving the area. Terms and conditions related to worker parking will be written into each subcontractor’s contract. The contractor will provide a weekly orientation with all new personnel to ensure enforcement of this policy.

4.7.6 Pedestrian Traffic

The Site abuts sidewalks on Dorchester Avenue. Pedestrian traffic may be temporarily impacted in this area. The Construction Manager will minimize the impact the construction of the proposed building will have and the adjacent sidewalk. The contractor will implement a plan that will clearly denote all traffic patterns. Safety measures such as jersey barriers, fencing, and signage will be used to direct pedestrian traffic around the construction site and to secure the work area.

4.7.7 Construction Environmental Impacts and Mitigation

Construction Air Quality

Construction activities may generate fugitive dust, which will result in a localized increase of airborne particle levels. Fugitive dust emission from construction activities will depend on such factors as the properties of the emitting surface (e.g. moisture content), meteorological variables, and construction practices employed.

To reduce the emission of fugitive dust and minimize impacts on the local environment the construction contractor will adhere to a number of strictly enforceable mitigation measures. These measures may include:

- Using wetting agents to control and suppress dust from construction debris;
- Ensuring that all trucks traveling to and from the Project Site will be fully covered;
- Removing construction debris regularly;
- Monitoring construction practices closely to ensure any emissions of dust are negligible;
- Cleaning streets and sidewalks to minimize dust and dirt accumulation;
- Monitoring construction activities by the job site superintendent and safety officer; and
- Wheel-washing trucks before they leave the Project Site during the excavation phase.

4.7.8 Construction Noise Impacts

To reduce the noise impacts of construction on the surrounding neighborhood, a number of noise mitigation measures will be included in the CMP. Some of the measures that may be taken to ensure a low level of noise emissions include:

- Initiating a proactive program for compliance to the City of Boston's noise limitation impact;
- Scheduling of work during regular working hours as much as possible;
- Using mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously operating equipment, such as air compressors and welding generators;
- Scheduling construction activities so as to avoid the simultaneous operation of the noisiest construction activities;
- Turning off all idling equipment;
- Reminding truck drivers that trucks cannot idle more than five (5) minutes unless the engine is required to operate lifts of refrigeration units;
- Locating noisy equipment at locations that protect sensitive locations and neighborhoods through shielding or distance;
- Installing a site barricade at certain locations;
- Identifying and maintaining truck routes to minimize traffic and noise throughout the project;
- Replacing specific construction techniques by less noisy ones where feasible, e.g., using vibration pile driving instead of impact driving if practical and mixing concrete off-site instead of on-site; and
- Maintaining all equipment to have proper sound attenuation devices.

4.7.9 Rodent Control

The City of Boston enforces the requirements established under Massachusetts State Sanitary Code, Chapter 11, 105 CMR 410.550. This policy establishes that the elimination of rodents is required for issuance of any building permits. During construction, rodent control service visits will be made by a certified rodent control firm to monitor the situation.

5.0 HISTORIC RESOURCES COMPONENT

This section provides a discussion of the history of the Project Site and the historic resources / districts in the Project vicinity.

5.1 Historic Resources on the Project Site and Property/Site History

Much of the area known today as the Seaport was initially tidal marsh. Originally a peninsula of approximately 579 acres, South Boston separated Boston Harbor and South Bay from Dorchester Bay. A rural area of little activity, South Boston during the 17^{th} and 18^{th} centuries served Dorchester as pasturage. In 1804, South Boston was annexed to Boston and legislation was passed allowing for landfill to create new sites for commercial development. In 1805, the South Boston toll bridge opened, providing access from South Boston to the center of the city and the Dorchester Turnpike was established, connecting the growing district to Dorchester. A commercial axis developed along Broadway with residential uses clustering around West Fourth Street. Industrial activities began to appear around Fort Point Channel, including iron and glass foundries and shipyards. The Old Colony Railroad was laid along Old Colony Avenue in 1845. During the period between 1830 and 1850, the population of South Boston had increased from 2,200 to 13,000 and by 1870 it stood at over 39,000. By 1910, South Boston' land area had increased in size to 1,333 acres. During the early industrial era of the first half of the 19^{th} century, iron foundries and machine shops formed the area's economic base. The next phase of industrialism focused on the area's premier intermodal transportation access (by rail and water) and manufacturing for transport took the lead as the single most important industry.

Based on the historical records, the Site was initially occupied by several buildings identified primarily as warehouses, a "horsing shop", a spring repair business, flats and stores. From the early 1900s through the 1950s, the majority of these buildings were razed, and the remaining buildings and several newly constructed buildings were used as warehouses and as a construction equipment sales and service company with associated buildings used for welding and auto repair. In the late 1950s, these buildings were razed for the construction of the existing building to be occupied by a bank, and subsequently by Enterprise Rent-A-Car. Also, the Site building may possibly have been used a tavern. Adjoining properties have historically been occupied by filling stations, a railroad yard, store, tenements and flats. The properties previously occupied by filling stations are currently occupied by a doughnut shop and deli to the north, and an office building to the south.

A historical atlas review completed by GZA GeoEnvironmental, Inc. for a 2014 Phase 1 Site Assessment indicated that 1888 and 1899 maps showed that the Site was occupied primarily as tenements, flats, store and warehouses. The 1923 map showed that the majority of the buildings at the Site had been razed. Buildings identified as "bottle" warehouse were shown on the Site. The 1950 map showed several buildings identified as construction equipment sales service company. Maps dated 1964 to 2005 showed site conditions similar to today. A 1964 map identified the existing Site building as a bank.

According to files at the Massachusetts Historical Commission, no on-site structures are listed in the National or State Register of Historic Places, or the Inventory of Historical and Archaeological Assets of the

Commonwealth. It is not expected that the Project will cause adverse impacts on any historic or architectural elements of nearby historic resources outside the Project Site.

5.2 Historic Districts and Resources

While there are no buildings or districts within a quarter mile of the Project Site that are presently on the National Register of Historic Places, there is one site and district that has previously been recommended for National Register historic designation in the nearby or surrounding area, as discussed below:

Church of Saints Peter and Paul and Parochial Residence

Located at 45 West Broadway two blocks away from the Project Site, this church was designed by Boston architect Gridley J. F. Bryant in the early 19th century. Constructed of Quincy granite, the building was begun in 1842 and completed in 1845. A severe fire in 1848 destroyed the interior leaving only the outer walls, but the structure was rebuilt and was rededicated in 1853.

Located at 55 West Broadway, the parish house is a large 3-story red brick building with double swell bowed façade, sandstone trim, and a porch with a single arched entry. Between 1891 and 1899 the building was connected to the Church.

Both buildings were recommended for inclusion on the National Register of Historic Places and for recognition as Boston Landmarks.

It is not expected that the Project will cause adverse impacts on any historic or architectural elements of nearby historic resources outside the Project Site (see **Figure 5-1** for identifications of historic resources in the Project vicinity).

The historic resources within one-quarter-mile radius of the Proposed Project are summarized in **Table 5-1** that follows.

Table 5.1. Historic Resources in the Vicinity of the Project Site

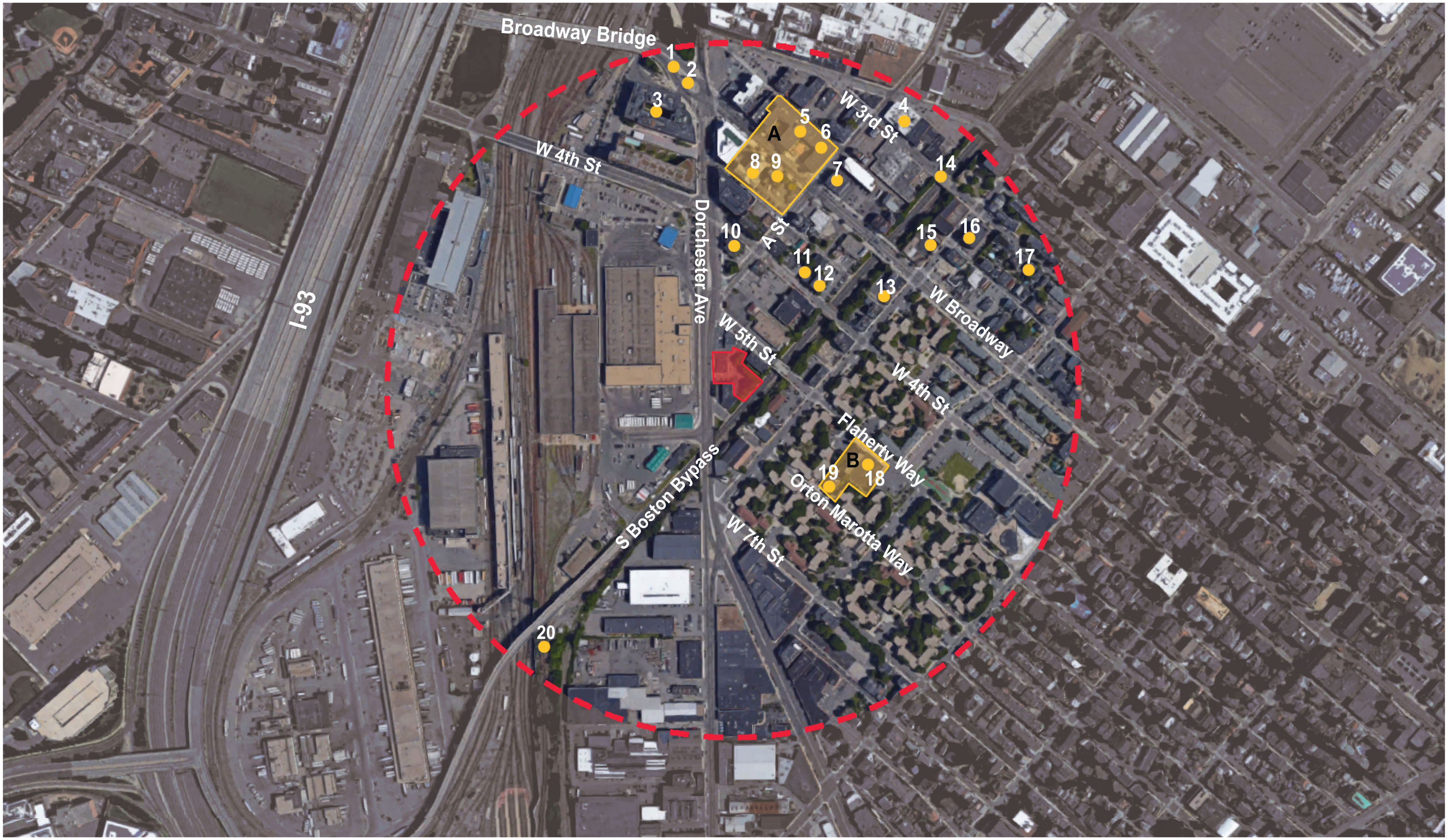
Key to Historic Resources in Figure 5-1	Historic Resource	Source of Listing
National Register Eligible Properties		
A	Saint Peter (Lithuanian) Roman Catholic Church	MHC Inventory
B	Saints Peter and Paul Roman Catholic Church	MHC Inventory

Properties Included the MA Inventory of Historical and Archaeological Assets		
1	York House - South Boston Hotel	MHC Inventory
2	Hausman, Harry and Joseph Building	MHC Inventory
3	Pike, Jacob - Abbott, Timothy Double House	MHC Inventory
4	Saints Peter and Paul Roman Catholic Rectory	MHC Inventory
5	Saint Peter Lithuanian Roman Catholic Church	MHC Inventory
6	Saints Peter and Paul Roman Catholic Church	MHC Inventory
7	Casey, Thomas Building	MHC Inventory
8	Hausman, Harry and Joseph Building	MHC Inventory

The Proposed Project is not expected to have effects on any of the listed historically significant resources in **Table 5-1.**

5.3 Archaeological Resources

No known archaeological resources were located within the Project site during the review of Massachusetts Historic Commission files and MACRIS; therefore, no impacts to archaeological resources are anticipated.



Project Site

Historic Inventory Areas

0.25 mi Radius

Properties included in the Massachusetts Inventory of Historic and Archaelogical Assets

MLF CONSULTING LLC

Figure 5-1. Historic Resources

6.0 Infrastructure Systems Component

6.1 Introduction

The existing infrastructure surrounding the site appears sufficient to service the needs of the Proposed Project. The following sections describe the existing sewer, water, and drainage systems surrounding the site and explain 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.

A detailed infrastructure analysis will be performed when the Project proceeds into the Design Development Phase. The Project's team will coordinate with the appropriate utilities to address the capacity of the area utilities to provide services for the new building. A Boston Water and Sewer Commission (BWSC) Site Plan and General Service Application is required for the new water, sanitary sewer, and storm drain connections.

A Drainage Discharge Permit Application is required from BWSC for any construction dewatering. The appropriate approvals from the Massachusetts Water Resource Authority (MWRA), Massachusetts Department of Environmental Protection (MassDEP), and the U.S. Environmental Protection Agency (EPA) will also be sought.

6.2 Sanitary Sewer System

6.2.1 Existing Sewer System

The Boston Water and Sewer Commission owns and maintains the sanitary sewer system adjacent to the site on Dorchester Avenue (See **Figure 6-1**). BWSC record drawings indicate an existing 18-inch and 30-inch combined sewer lines located in Dorchester Avenue to the west of the Project. Records also indicate a 48-inch combined sewer located on the MBTA, #163 Dorchester Avenue property. The existing site consists of a one-story building. Records show 6-inch sanitary sewer connection to the existing 18-inch combined sewer main located in Dorchester Avenue.

6.2.2 Project-Generated Sewage Flow

The existing Project Site consists of a one-story, Enterprise Rent-A-Car building. The total sewer flow from the existing building is estimated at 200 per day (gpd) based on the existing building's use and design sewer flows provided in 310 CMR 15.203.

The Proposed Project will generate an estimated 39,330 gallons per day (gpd) based on design sewer flows provided in 310 CMR 15.203 - The State Environmental Code, Title 5 and the proposed building program as summarized in **Table 6-1**. This is a net increase of 39,130 gpd over the estimated flows from the existing building.

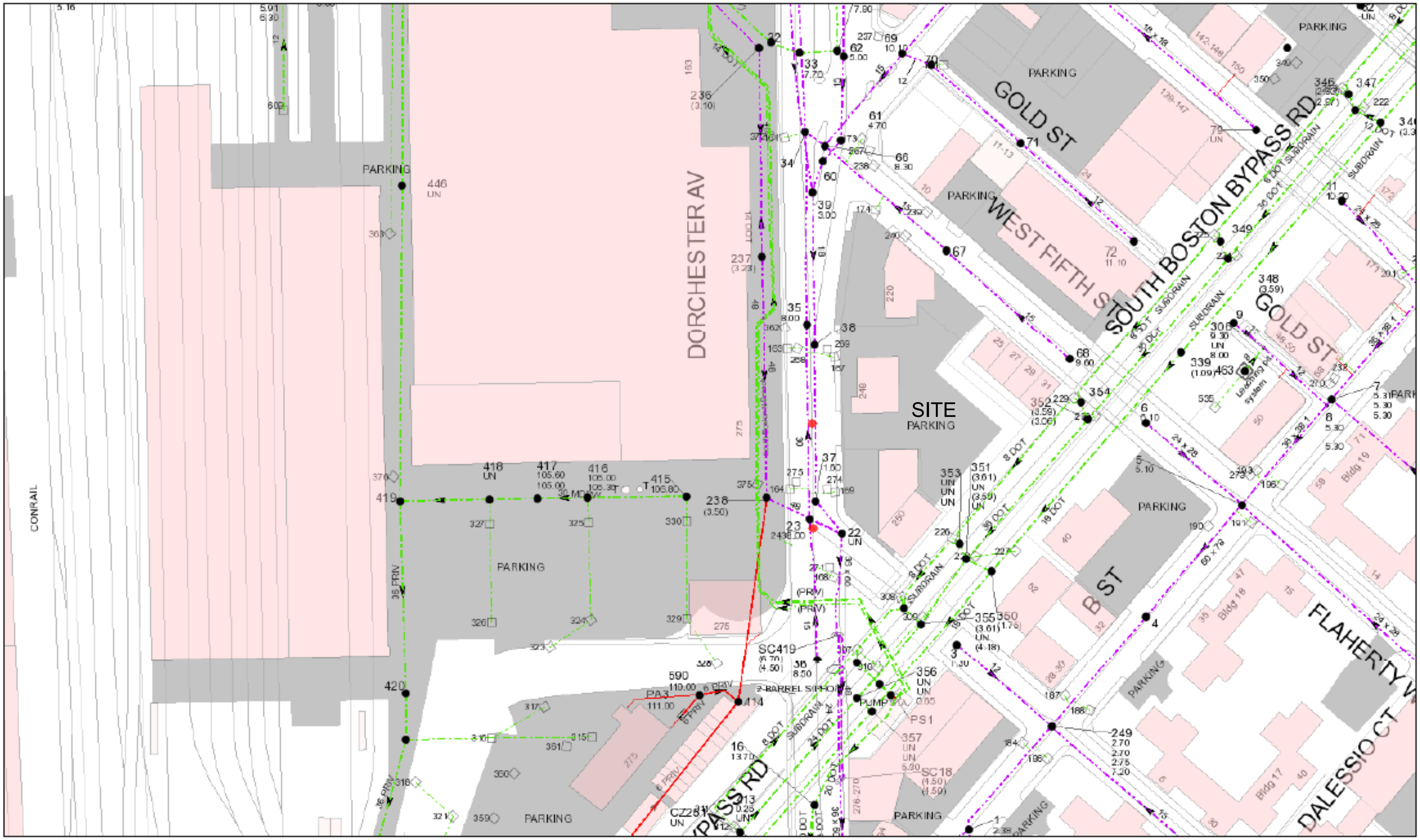


Figure 6-1
Drainage, Sanitary Sewer System Map

MLF CONSULTING LLC

samiotes

Samiotes Consultants, Inc.
Civil Engineers + Land Surveyors

248 Dorchester Avenue

Table 6-1. Projected Sanitary Sewer Flows

Use	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow (gpd)
Residential (Hotel)	159 rooms	110 gpd/bedroom	17,490 gpd
Restaurant (Ground Floor)	125 seats	35 gpd/seat	4,375 gpd
Restaurant / Ballroom (7th and 8th floor)	499 seats	35 gpd/seat	17,465 gpd
Total			**39,330 gpd**

6.2.3 Sanitary Sewage Connection

It is anticipated that the proposed building's sanitary services will tie into the 18-inch combined sewer main in Dorchester Avenue. The preliminary estimate is that the building will have one 12-inch sanitary service leaving the site. Parking garage floor drains will be routed through an oil and sand trap in accordance with the BWSC's Requirements for Site Plans, prior to discharge to the BWSC sanitary sewer / combined sewer system.

The proposed restaurants' kitchen flow will be routed through a separate kitchen waste line and via a grease trap prior to discharging to the 12" service and into the BWSC sewer system.

The Proponent will submit a Site Plan to the BWSC for review and approval. Based on the proposed estimated sanitary flow, which is greater than 15,000 gpd, BWSC will require the removal of infiltration/inflow (I/I) at a minimum ratio minimum 4:1 ratio of I/I removed to wastewater generated.

The existing building sanitary service will be cut and capped at the main.

6.2.4 Sewer System Mitigation

To help conserve water and reduce the amount of wastewater generated by the Proposed Project, the Proponent will investigate the use of water-efficient toilets, aerated shower-heads, and low-flow lavatory faucets in compliance with all pertinent Code requirements to reduce water usage and sewer generation.

6.3 Water System

6.3.1 Existing Water Service

The water distribution system in the vicinity of the Project site is owned and maintained by BWSC (see **Figure 6-2**). There is a 16-inch DICL (2006) line located in Dorchester Avenue to the west of the Project site.

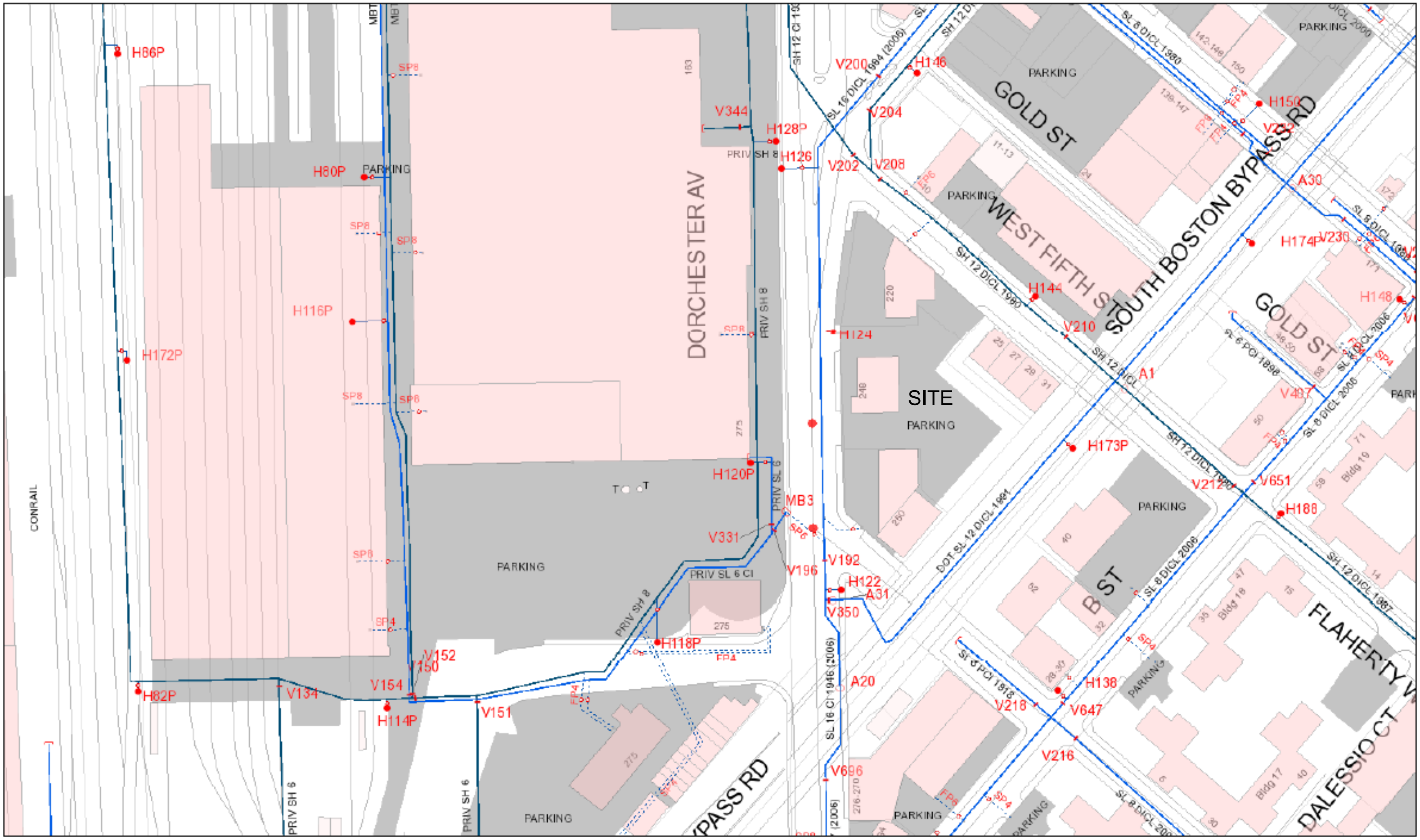


Figure 6-2
Water System Map

According to records, the existing building has a domestic water service that connects to the 16-inch water main in Dorchester Avenue.

There are three fire hydrants located on Dorchester Avenue in the vicinity of the Project site. There is one hydrant located in the sidewalk adjacent to the property (H 124), one hydrant located at the intersection with West Sixth Street (H122), and one hydrant (H126) located on the opposite side of Dorchester Avenue across the intersection with A Street and West Fifth Street. It appears that these hydrants will provide sufficient coverage for the Project. The Proponent will confirm this with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

The BWSC record flow test data containing actual flow and pressure for hydrants within the vicinity of the site will be requested by the Proponent. If hydrant flow data is not available for any hydrants located near the project site, as the design progresses, the Proponent will request hydrant flows be conducted by the BWSC adjacent to the site. Hydrant flow data must be less than a year old to be used as a design tool. The Proponent will confirm that the flow and pressure is sufficient for the redevelopment and coordinate any proposed changes with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

6.3.2 Anticipated Water Consumption

The Project's water demand estimate for domestic services is based on the project's estimated sewage generation, plus a factor to account for consumption, system losses, and other usages to estimate an average water demand. The total estimated water demand is 43,263 gpd. The water for the Project will be supplied by BWSC.

6.3.3 Proposed Water Service

It is anticipated that the domestic water and fire protection services for the Project will be directly tapped from the 16-inch water main in Dorchester Avenue. The water supply systems servicing the building will be gated so as to minimize public hazard or inconvenience in the event of a water main break. Final locations and sizes of the services will be provided on a Site Plan during the detailed design phase and submitted to BWSC for review and approval.

Water service to the building will be metered in accordance with BWSC's requirements. The property owner will provide a suitable location for a Meter Transmission Unit (MTU) as part of BWSC's Automatic Meter Reading System. Water meters over 3-inches will be provided with a bypass to allow BWSC testing without service interruption. A backflow preventer will be installed on the fire protection service and will be coordinated with BWSC's Cross Connection Control Department. Separate services will be provided for domestic use and fire protection.

6.3.4 Water Supply System Mitigation

As discussed in the Sewer System Mitigation Section, water conservation measures such as the use of water-efficient toilets, low-flow lavatory faucets, and aerated showerheads in compliance with all pertinent Code requirements are being considered to reduce potable water usage.

6.4 Storm Drainage System

6.4.1 Existing Drainage Conditions

The storm drain system in the vicinity of the Project site is owned and maintained by BWSC (see **Figure 6-1**). There are catch basins that collect stormwater on Dorchester Avenue that connect with the street's 30-inch combined sewers.

The rooftop runoff from the existing building is conveyed by building service pipes to the surrounding municipal combined sewer system. Runoff from majority of the parking lot and paved surfaces around the property is generally captured in two on-site catch basins. The stormwater runoff from the majority of the Project site eventually discharges to the 30-inch combined sewer drain located on Dorchester Avenue.

The existing site is mostly impervious with only approximately 3,750 sf vegetated with grass and trees at the back of the site, and gravel area at the front. Stormwater runoff from the vegetated area flows overland towards the neighboring 25-29 West 5TH Street property, and towards South Boston Bypass Road.

There are no existing stormwater management systems that would attenuate peak flows and the Project site provides little opportunity for recharge. Very little water quality treatment is realized before these areas are drained to the municipal storm drain system.

6.4.2 Proposed Drainage Systems

The proposed building will occupy almost the entire Project site. The Project will result in an increase in impervious area, but will improve the quality and attenuate the quantity of stormwater runoff being discharged to BWSC storm drain system through the installation of an on-site infiltration system. At a minimum, the equivalent of 1 inch over the site’s impervious area will be recharged.

It is assumed that the proposed underground infiltration system will be located under the ground level parking garage. The overflow from the infiltration system will discharge to the 30-inch combined sewer in Dorchester Avenue. The existing drainage patterns will not change significantly as the runoff will continue to drain to surrounding municipal storm drain /combined sewer systems.

All storm drain system improvements will be designed in accordance with BWSC's design standards and the BWSC "Requirements for Site Plans." A Site Plan will be submitted for BWSC approval and a General Service Application will be completed prior to any off-site storm drain work. Any storm drain connections terminated as a result of construction will be cut and capped at the main in accordance with BWSC standards.

Erosion and sediment controls will be used during construction to protect adjacent properties and the municipal storm drain system. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

6.5 Water Quality

The Proposed Project will improve the quality of stormwater leaving the site through the installation of an on-site infiltration system and therefore is not expected to have negative impacts on the water quality of the Boston Harbor. Erosion and sediment controls will be used during construction to protect adjacent properties and the municipal storm drain system. These controls will be inspected and maintained throughout the construction phase until the areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

All necessary dewatering will be conducted in accordance with applicable EPA and BWSC discharge permits. Once construction is complete, the Proposed Project will be in compliance with BWSC Site Plan requirements.

6.6 Electric Systems

Eversource owns and maintains the electrical transmission system located in Dorchester Avenue. The actual size and location of the proposed building services will be coordinated with Eversource during the detailed design phase.

The Proponent is investigating energy conservation measures, including high efficiency lighting.

6.7 Telephone and Cable Systems

Verizon, Comcast, and RCN provide telephone service in the Project area. It is anticipated that telephone service can be provide by any of the providers. Any upgrades will be coordinated with the provider. Telephone systems will be reviewed with the provider as the design progresses.

Comcast and RCN provide cable and internet service in the Project area. It is expected that Comcast and/or RCN can provide services to the Project site. Any upgrade required to the services will be coordinated with the services providers.

6.8 Steam and Gas Systems

The Proposed Project is not expected to require steam service. Veolia Energy does not own or maintain any steam infrastructure within the vicinity of the Project site.

National Grid owns and maintains an 8-inch gas main in Dorchester Avenue. The Project is expected to use natural gas for heating and domestic hot water. The actual size and location of the building services will be coordinated with National Grid during the detailed design phase.

6.9 Utility Protection During Construction

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

7.0 TRANSPORTATION COMPONENT

7.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the proposed redevelopment to be located at 248 Dorchester Avenue (the "Project" and/or "Site"), in Boston's South Boston neighborhood. This transportation study adheres to the Boston Transportation Department's (BTD) Transportation Access Plan Guidelines and the Boston Planning and Development Agency (BPDA) Article 80 development review process. The study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, transit services, and pedestrian and bicycle activity. The project is not expected to have a significant impact on the existing neighborhood.

7.2 Project Description

The Project site is located at 246-248 Dorchester Avenue on the east side of Dorchester Avenue between West 5th Street and the South Boston Bypass Road. The site currently consists of an Enterprise Rent-A-Car and is adjacent to the Doughboy Donuts & Deli, located at 220 Dorchester Avenue, and CBI Consulting located at 250 Dorchester Avenue. The existing site currently has two curb cuts.

The Project will include the construction of approximately 159 hotel rooms and approximately with approximately 15,000 - 20,000 gross square feet of neighborhood serving and hospitality amenities, including restaurant, lounge, event space and outdoor deck, and approximately 60 valet only parking spaces in three levels. Vehicular access will be provided via an existing curb cut along Dorchester Avenue.

7.2.1 Study Area

The transportation study area is generally bounded by Dorchester Avenue to the west, A Street to the north, Old Colony Avenue to the south, West 5th Street to the northeast, and B Street to the southeast. The study area includes the following six intersections:

- Dorchester Avenue/Milhender Place/Old Colony Avenue (signalized);
- Dorchester Avenue/Haul Road (signalized);
- Dorchester Avenue/A Street (signalized);
- Dorchester Avenue/West 5th Street (unsignalized);
- West 5th Street/B Street/Flaherty Way (unsignalized); and
- Dorchester Avenue/B Street/West 7th Street (unsignalized).

The study area is shown in **Figure 7-1**.

Figure 7-1.
Study Area Intesections

7.2.2 Study Methodology

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. The traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. Long-term 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 includes both 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 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. Expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies are identified.

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.

7.3 Existing (2017) Condition

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

7.3.1 Existing Roadway Conditions

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

Dorchester Avenue is a two-way, four-lane roadway located adjacent to the west of the Project site. Dorchester Avenue is classified as a principal arterial road under the City of Boston's jurisdiction and runs in a north-south direction between the Fort Point Channel to the north in Boston and the Neponset River to the south in Dorchester. In the vicinity of the site, on-street parking is not provided on either side of the roadway. However, south of Old Colony Avenue, on-street parking is provided on both sides of the street. Sharrows are provided along the northbound travel lane and a bike lane is provided along the southbound travel lane. Sidewalks are provided on both sides of the roadway.

Old Colony Avenue is a two-way, four-lane roadway located to the south of the Project site. Old Colony Avenue is classified as a principal arterial road under the City of Boston's jurisdiction and runs predominately in a north-south direction between Dorchester Avenue to the north in South Boston and Kosciuszko Circle to the south in Dorchester. In the vicinity of the site, on-street parking and sidewalks are provided along both sides of the roadway.

A Street is a two-way, two-lane roadway located to the north of the Project site. A Street is classified as a minor arterial road under the City of Boston's jurisdiction and runs in a predominately northeast-southwest direction between Congress Street to the northeast in South Boston and Dorchester Avenue to the southwest in South Boston. In the vicinity of the site, on-street parking is restricted on both sides of the roadway. There are sidewalks and bike lanes provided along both sides of the roadway.

Haul Road is a two-way, two-lane roadway located to the south of the Project Site. Haul Road is classified as a principal arterial road under MassDOT's jurisdiction and runs in a predominately east-west direction between Dorchester Avenue to the east in South Boston to South Boston Bypass Road to the west in South Boston, however it is currently blocked off from the South Boston Bypass Road by a concrete median barrier. Haul Road functions more as a driveway to the MBTA facility. There is a sidewalk located on the south side of the roadway. On-street parking is not provided.

B Street is a two-way, two-lane roadway located to the south of the Project site. B Street is classified as a minor arterial road under MassDOT's jurisdiction and runs predominately in a northeast-southwest direction between West 1st Street to the northeast in South Boston and Dorchester Avenue to the southwest in South Boston. In the vicinity of the site on-street parking and sidewalks are provided along both sides of the roadway.

West 7th Street is a two-way, two-lane roadway located to the south of the Project site. West 7th Street is classified as a local road under the City of Boston's jurisdiction and runs predominately in a northwest-southwest direction between Dorchester Avenue to the northwest in South Boston and Dorchester Street to the southeast direction in South Boston. In the vicinity of the site on-street parking and sidewalks are provided along both sides of the roadway.

West 5th Street is a two-way, two-lane roadway located to the south of the Project site. West 5th Street is classified as a local road under the City of Boston's jurisdiction and runs predominately in a northwest-southwest direction between Dorchester Avenue to the northwest in South Boston and Dorchester Street to the southeast in South Boston. In the vicinity of the site on-street parking and sidewalks are provided along both sides of the roadway. Between B Street and D Street, West

5th Street is known as Flaherty Road and runs one way in the southeast direction. Along Flaherty Road, sidewalks are provided on both sides of the roadway, and on-site parking is located on the east side of the street.

7.3.2 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.

Dorchester Avenue/Milhender Place/Old Colony Avenue is a four-legged, signalized intersection located to the south of the Project site. The Milhender Place eastbound approach consists of one shared left-turn/through/right-turn lane. The Dorchester Avenue northbound approach consists of two lanes, a shared left-turn/through lane and a shared through/right-turn lane, and a bike lane. The Dorchester Avenue southbound approach consists of three lanes, two left-turn only lanes and one shared through/right-turn lane. The Old Colony Avenue northwest-bound approach consists of two through lanes. On-street parking is provided along all approaches to the intersection. Crosswalks, wheel chair ramps, and pedestrian signal equipment are provided across the south, east, and west legs of intersection.

Dorchester Avenue/Haul Road is a three-legged, signalized intersection located to the south of the Project site. The Haul Road eastbound approach consists of one shared left-turn/right-turn lane. The Dorchester Avenue northbound approach consists of two lanes, a shared left-turn/through lane and a through lane. The Dorchester Avenue southbound approach consists of two lanes, a through lane and a shared through/right-turn lane, and a bike lane. On-street parking is restricted along all approaches to the intersection. There is a crosswalk, and wheel chair ramps are provided across the west leg of the intersection; however, there is no pedestrian signal equipment provided.

Dorchester Avenue/A Street is a three-legged signalized approach located to the north of the Project site. The A Street westbound approach consists of one shared left-turn/right-turn lane and a bike lane. The Dorchester Avenue northbound approach consists of three lanes, two through lanes and a right turn only lane. The Dorchester Avenue southbound approach consists of two through lanes and a buffered bike lane. On-street parking is restricted along all approaches to the intersection. Crosswalks, wheel chair ramps, and pedestrian signal equipment are provided on the north and east legs of the intersection. A bike box is provided on the A Street approach.

Dorchester Avenue/West 5th Street is a three-legged, unsignalized approach located to the north of the Project site. The West 5th Street westbound approach consists of one right-turn only lane. The Dorchester Avenue northbound approach consists of three lanes, two through lanes and a right-turn only lane. The Dorchester Avenue southbound approach consists of two through lanes and a bike lane. On-street parking is located along West 5th Street. A crosswalk with wheelchair ramps is located across the east leg of the intersection.

West 5th Street/B Street/Flaherty Way is a four-legged unsignalized intersection, with three approaches, located to the east of the Project site. The B Street eastbound approach consists of one shared left-turn/through/right-turn lane. The B Street westbound approach consists of one shared left-turn/through/right-turn lane. The West 5th Street southbound approach consists of one left-turn/through/right-turn lane. There is no northbound approach since Flaherty Way is one way in the southbound direction. On-street parking is provided along both sides of B Street and West 5th Street and on the east side of Flaherty Way. There are crosswalks with wheelchair ramps located across all four legs of the intersection.

Dorchester Avenue/ B Street/ West 7th Street is a four-legged unsignalized intersection located to the south of the Project site. The Dorchester Avenue northbound approach consists of three lanes, two through lanes and a right-turn lane that provides a right turn onto B Street and a channelized right turn onto West 7th Street. The Dorchester Avenue southbound approach consists of two through lanes. The West 7th Street northwest-bound approach consists of one lane allowing vehicles to turn onto Dorchester Avenue or B Street. The B Street southeast-bound approach consists of one shared left-turn/right-turn lane. Vehicles traveling southeast-bound on B Street can only turn left onto West 7th Street as a median separate B Street and West 7th Street from Dorchester Avenue in the southbound direction. On-street parking is provided along both sides of B Street. Crosswalks with wheel chair ramps are provided across West 7th Street, B Street, and the channelized right-turn lane.

7.3.3 Existing Parking and Curb Use

An inventory of the on-street parking in the vicinity of the Project was collected. On-street parking generally consists of two-hour parking, resident only parking, and unrestricted parking. The on-street parking regulations within the study area are shown in **Figure 7-2**.

7.3.4 Car Sharing Services

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

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who do not own cars. The nearby car sharing locations within walking distance of the Project site are shown in **Figure 7-3.**

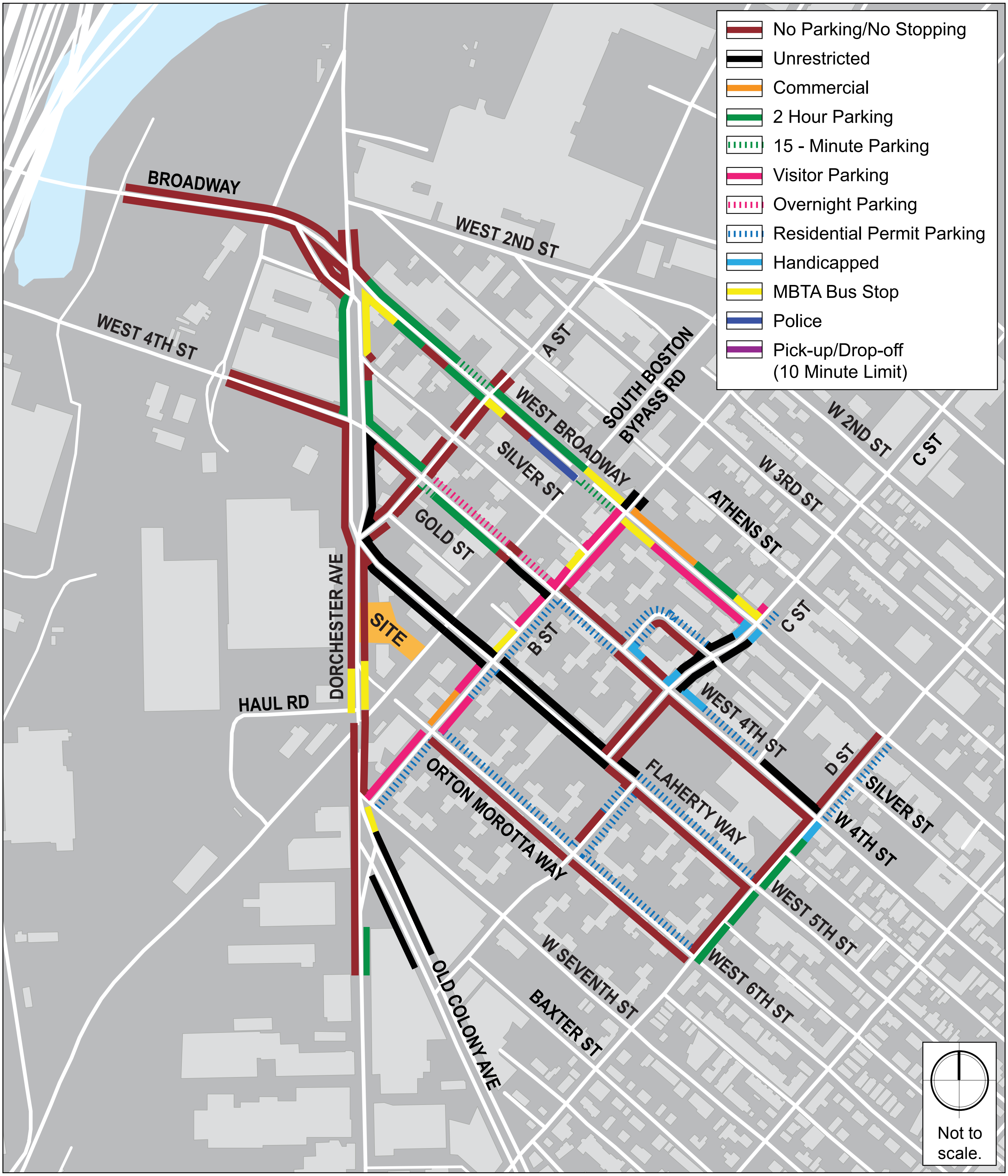


Figure 7-2.
On-Street Parking Regulations

Figure 7-3.
Car Sharing Locations

7.3.5 Existing Traffic Data

Traffic volume data was collected in the study area intersections in April and July of 2017. Turning Movement Counts (TMCs) 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) at the study area intersections. The TMCs collected vehicle classification including car, heavy vehicle, pedestrian, and bicycle movements. Based on the TMC data, the vehicular traffic peak hours for the study area intersection are generally 7:15 a.m. – 8:15 a.m. and 4:30 p.m. – 5:30 p.m. The detailed traffic counts are provided in **Appendix D.**

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 April and July 2017 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6 – Urban Arterials) during the months of April and July are both 0.92. This indicates that average month traffic volumes are approximately eight 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 consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in **Appendix D**.

7.3.6 Existing (2015) Traffic Volumes

Existing traffic volumes were balanced to develop the Existing (2017) Condition vehicular traffic volumes. The Existing (2017) Condition weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 7-4** and **Figure 7-5**, respectively.

7.3.7 Existing Pedestrian Conditions

In general, the sidewalks provided along nearby roadways are in fair or good condition. The sidewalk along the east side of Dorchester Avenue as Dorchester Avenue passes over the South Boston Bypass Road is narrow because there is a water pipe that is located along the sidewalk. Most sidewalks are concrete; however, there are some areas where the sidewalks are asphalt. Crosswalks are provided at all study area intersections with the exception of Dorchester Avenue at Haul Road. Pedestrian signal equipment is provided along all crosswalks located at a signalized intersection.

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersection. The weekday a.m. and p.m. peak hours pedestrian volumes are presented in **Figure 7-6**.

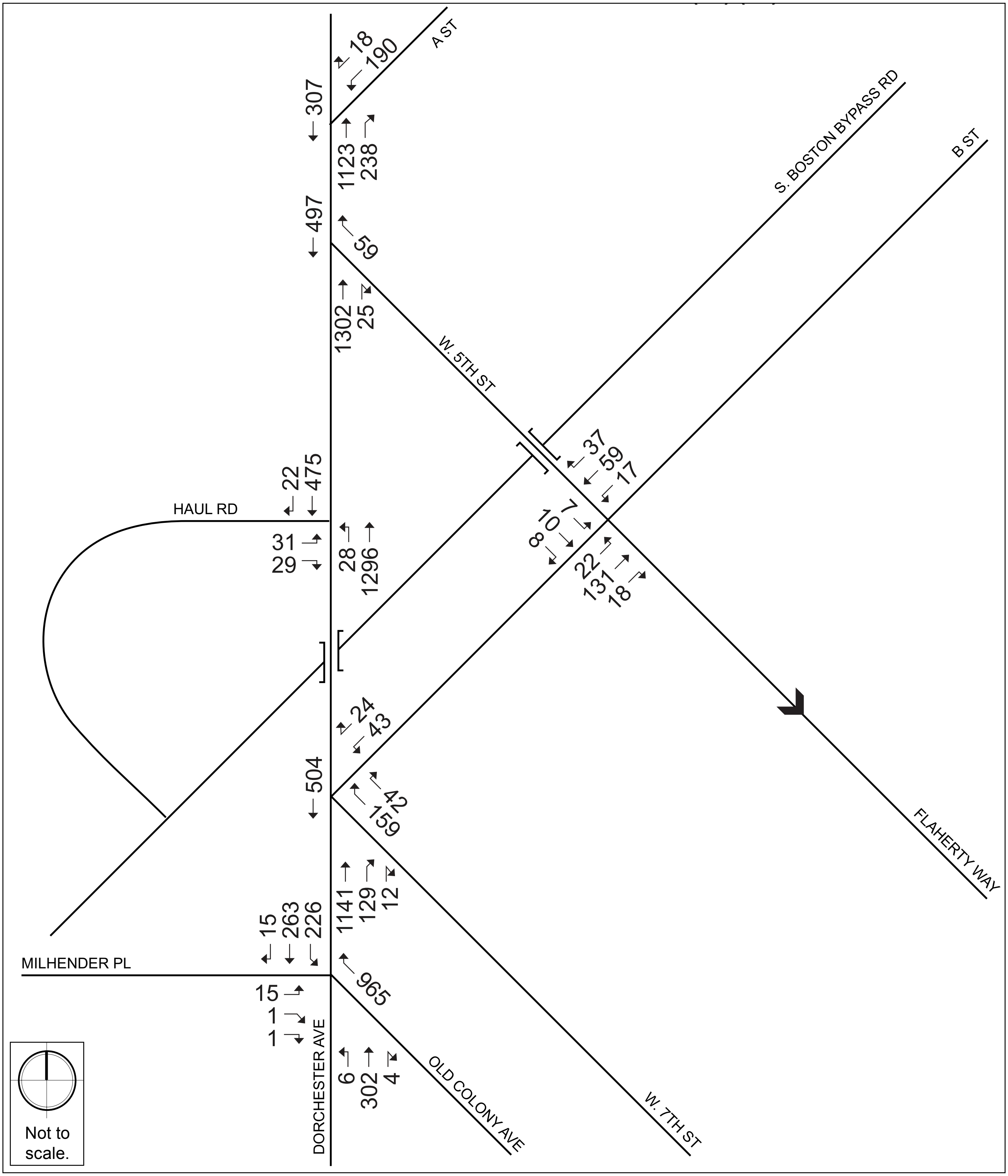


Figure 7-4.
Existing (2017) Condition Traffic Volumes, Weekday a.m. Peak Hour

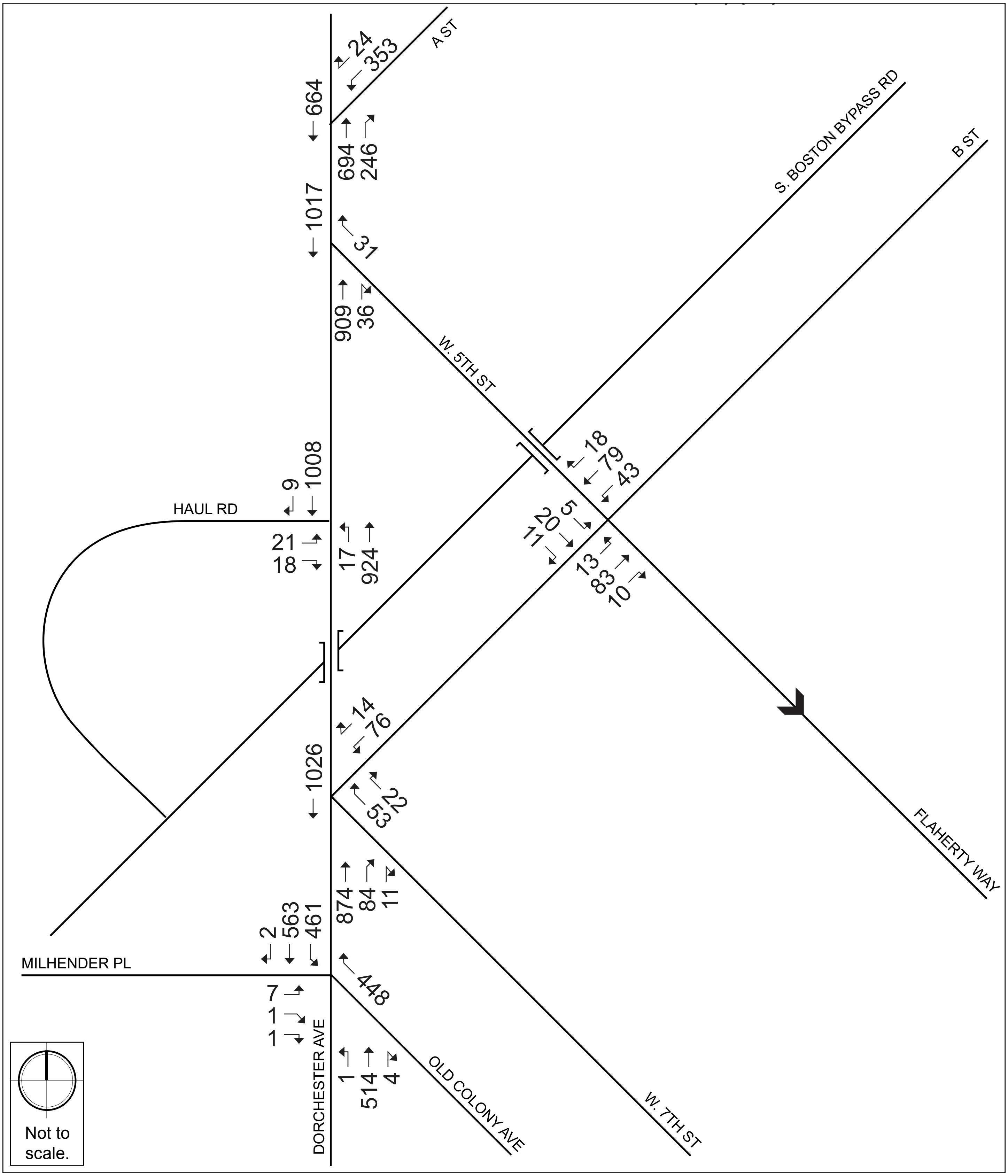


Figure 7-5.
Existing (2017) Condition Traffic Volumes, Weekday p.m. Peak Hour

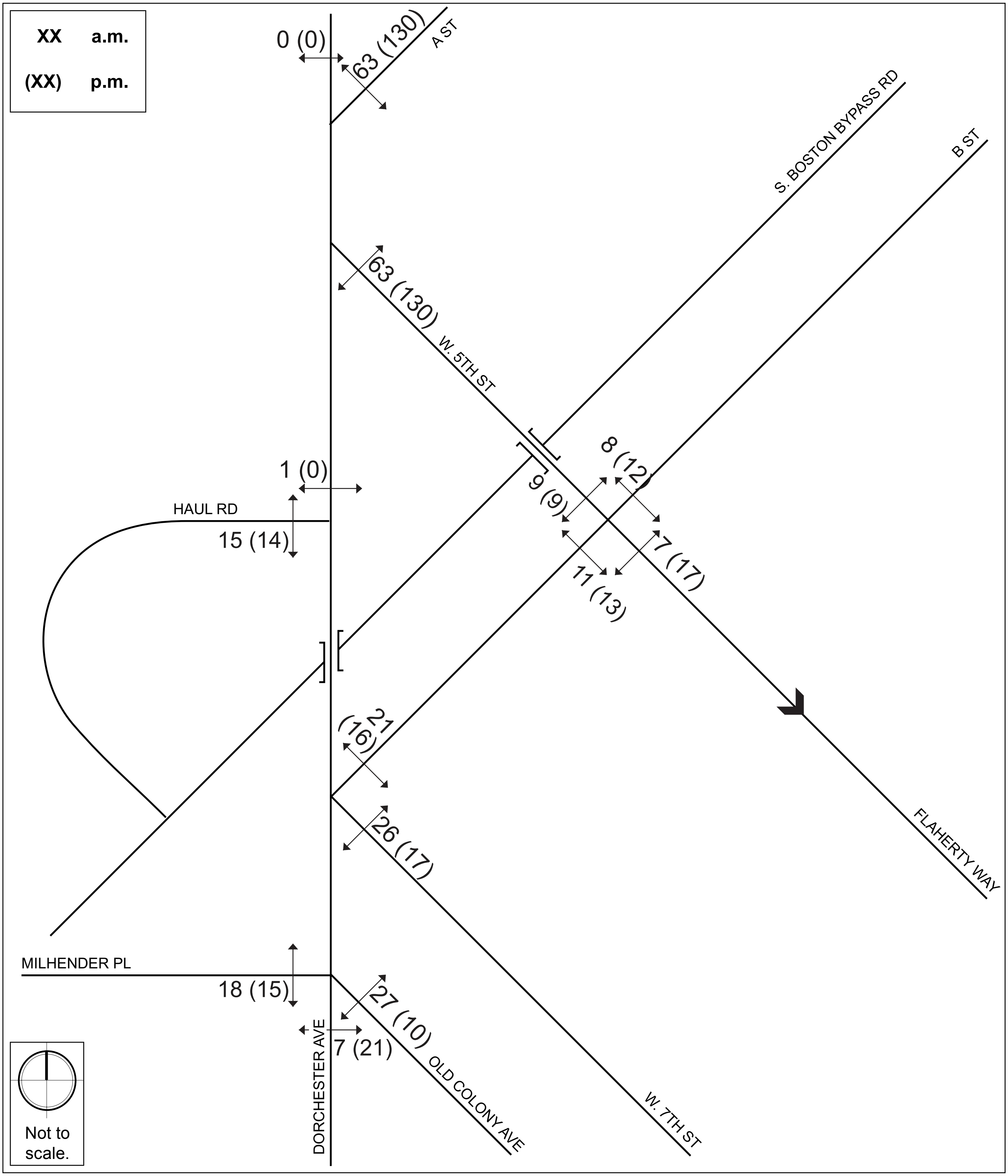


Figure 7-6.
Existing (2017) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours

7.3.9 Existing Bicycle Conditions

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is conveniently located near several bicycle facilities. The City of Boston's "Bike Routes of Boston" map, updated in August 201,3 indicates that the Dorchester Avenue, Old Colony Avenue, D Street, A Street, and West 4th Street are designated as intermediate routes suitable for riders with some on-road experience. Bike lanes are provided on Dorchester Avenue and A Street, and sharrows are provided on D Street and parts of Dorchester Avenue. The South Bay Harbor Trail is located just to the north at Broadway Station and provides an off-street path from the Fan Pier to the Southwest Corridor Park at Ruggles Station.

Bicycle volumes were collected during the TMCs. The weekday a.m. and p.m. peak hour bicycle volumes are presented in **Figure 7-7**.

7.3.10 Bicycle Sharing Services

The site is also located in proximity to bicycle sharing stations provided by Hubway. Hubway is the bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 185 stations and 1,800 bicycles in four municipalities. There are three Hubway locations close to the Project site, as shown in **Figure 7-8**.

7.3.11 Existing Public Transportation

The Project is located in Boston's South Boston neighborhood with several public transportation opportunities. The Project is close to Broadway Station along the MBTA Red Line as well as several bus routes, including the 9 bus, the 11 bus, and the 47 bus. The following describes each public transportation route located in the vicinity of the Project site. The nearby public transit services are shown in **Figure 7-9** and summarized in **Table 7-1**.

Table 7-1. Existing Public Transportation

Route	Description	Peak-hour Headway (in minutes)*	Weekday Service Duration
Rapid Transit			
Red Line	Alewife Station – Braintree Station	4-5	5:15 a.m. to 12:17 a.m.
	Alewife Station – Ashmont Station	4-5	5:16 a.m. to 12:30 a.m.
Local Bus Routes			
9	City Point – Copley Square	5	5:13 a.m. – 1:14 a.m.
11	City Point – Downtown	6	5:11 a.m. – 1:22 a.m.
47	Central Square, Cambridge – Broadway station	10	6:00 a.m. – 12:45 a.m.

* Source: MBTA.com, August 2017. Headway varies.

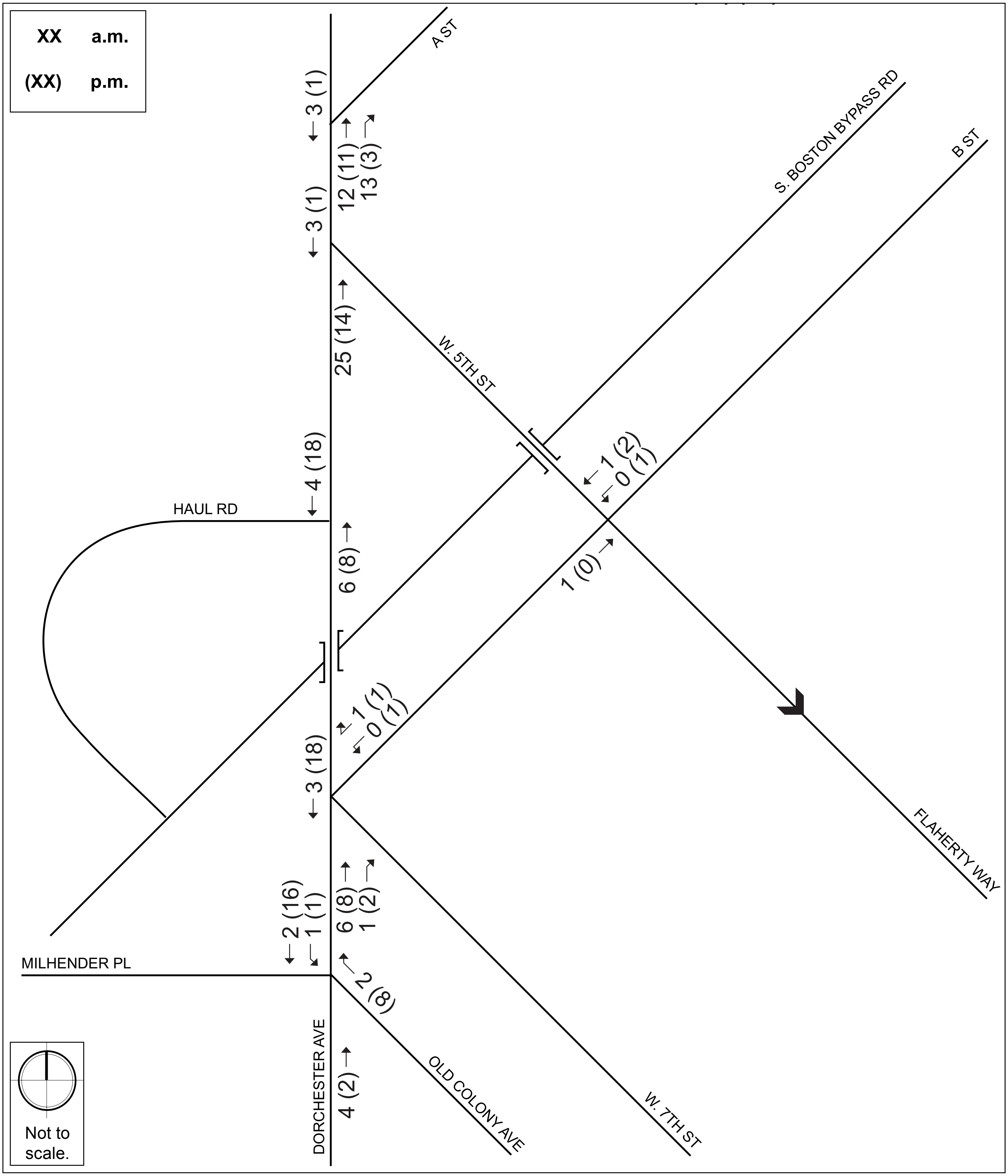


Figure 7-7.
Existing (2017) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours

Figure 7-8.
Bike Sharing Locations

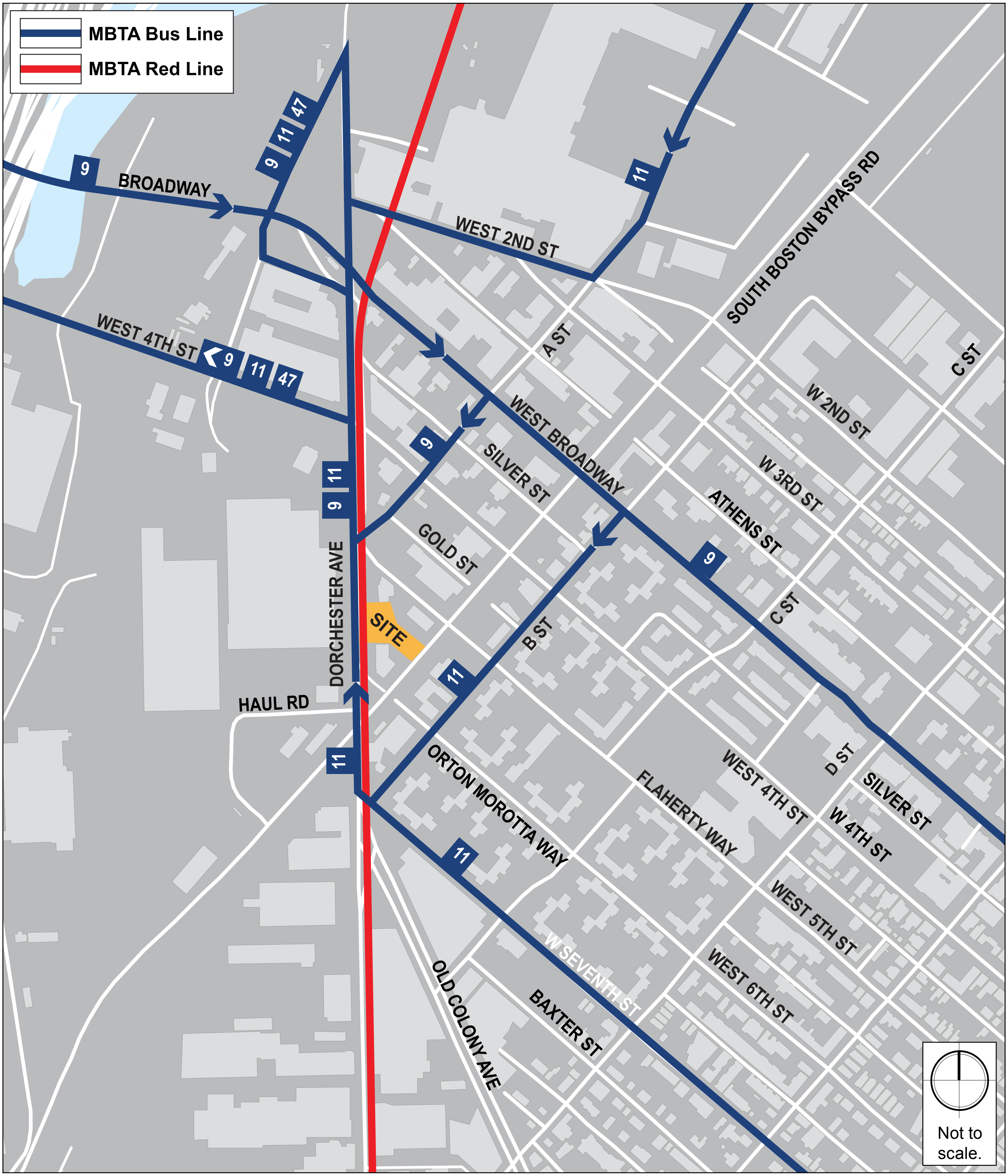


Figure 7-9.
Existing Public Transportation

7.3.12 *Traffic Operations Analysis*

Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 7-2** displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered 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 7-2. 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: 2010 Highway Capacity Manual, Transportation Research Board.

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

The volume-to-capacity (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.

7.3.13 Existing (2017) Condition Traffic Operations Analysis

Table 7-3 and **Table 7-4** summarize the Existing (2017) Condition capacity analysis for the study area intersection during the weekday a.m. and p.m. peak hours, respectively. The detailed analysis of the Synchro results is provided in **Appendix D.**

Table 7-3. Existing (2017) Condition, Capacity Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue/Old Colony Road/ Milhender Place	**B**	**17.5**	**-**	**-**	**-**
Milhender Place EB left/thru/right	A	0.7	0.09	0	0
Dorchester Avenue NB left/thru | thru/right	D	39.3	0.55	96	140
Dorchester Avenue SB bear left | bear left	A	6.0	0.11	27	55
Dorchester Avenue SB thru/right	A	3.6	0.18	64	103
Old Colony Avenue NWB bear right | bear right	B	17.2	0.58	259	387
Dorchester Avenue/Haul Road	**A**	**5.6**	**-**	**-**	**-**
Haul Road EB left/right	C	32.3	0.41	23	58
Dorchester Avenue NB left/thru | thru	A	5.9	0.47	149	304
Dorchester Avenue SB thru | thru/right	A	1.0	0.17	7	m9
Dorchester Avenue/A Street	**C**	**28.3**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	C	28.2	0.67	383	476
Dorchester Avenue NB slight right	A	1.8	0.21	13	13
Dorchester Avenue SB thru | thru	B	17.8	0.19	66	97
A Street SWB bear left/hard right	E	73.7	0.87	135	#263
Unsignalized Intersections					
Dorchester Avenue/West Fifth Street	**-**	**-**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru/ right	A	0.0	0.31	-	0
Dorchester Avenue SB thru | thru	A	0.0	0.15	-	0
West Fifth Street NWB bear right	B	12.2	0.13	-	11
Flaherty Way/ West Fifth Street/B Street	**-**	**-**	**-**	**-**	**-**
B Street EB left/thru/right	A	1.1	0.02	-	1
B Street WB left/thru/right	A	1.2	0.01	-	1
West Fifth Street SB left/thru/right	B	10.9	0.05	-	4

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

m – Volume for 95th percentile queue is metered by upstream traffic signal.

Grey shading indicates LOS E or F.

Table 7-4. Existing (2017) Condition, Capacity Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue/Old Colony Road/ Milhender Place	**B**	**16.5**	**-**	**-**	**-**
Milhender Place EB left/thru/right	A	0.5	0.07	0	0
Dorchester Avenue NB left/thru | thru/right	D	47.2	0.80	176	228
Dorchester Avenue SB bear left | bear left	A	2.2	0.24	20	32
Dorchester Avenue SB thru/right	A	2.4	0.37	58	73
Old Colony Avenue NWB bear right | bear right	B	13.7	0.29	90	156
Dorchester Avenue/Haul Road	**A**	**3.3**	**-**	**-**	**-**
Haul Road EB left/right	C	32.9	0.34	18	40
Dorchester Avenue NB left/thru | thru	A	1.4	0.34	7	35
Dorchester Avenue SB thru | thru/right	A	3.5	0.36	72	105
Dorchester Avenue/A Street	**D**	**35.2**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	D	35.7	0.68	220	#336
Dorchester Avenue NB slight right	A	3.0	0.23	0	41
Dorchester Avenue SB thru | thru	D	36.8	0.67	204	#320
A Street SWB bear left/hard right	D	51.0	0.85	243	331
Unsignalized Intersections					
Dorchester Avenue/West Fifth Street	**-**	**-**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru/ right	A	0.0	0.22	-	0
Dorchester Avenue SB thru | thru	A	0.0	0.31	-	0
West Fifth Street NWB bear right	B	13.2	0.08	-	7
Flaherty Way/ West Fifth Street/B Street	**-**	**-**	**-**	**-**	**-**
B Street EB left/thru/right	A	1.0	0.01	-	1
B Street WB left/thru/right	A	2.5	0.03	-	2
West Fifth Street SB left/thru/right	B	11.1	0.07	-	6

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

As shown in **Table 7-3** and **Table 7-4**, the study area intersections and approaches operate below capacity (v/c ratio below 1.00) and at acceptable levels of delay (LOS D or better) under the Existing (2017) Condition. The following locations were shown to have movements at capacity (v/c ratio or 1.00 or higher) or operating at high delays (LOS E or LOS F).

- At the signalized intersection at Dorchester Avenue/A Street, the A Street southwest-bound approach operates at LOS E during the weekday a.m. peak hour. The queue length at the A Street southwest-bound approach ranges from 135 feet (approximately 5 vehicles) during the 50th percentile volume, to 263 feet (approximately 10 vehicles) during the 95th percentile volume. This is due to the minimal amount of green time during the a.m. peak hour as the A Street approach only receives 15 seconds of green time of the 100 seconds during the cycle.

7.4 No-Build (2024) Condition

The No-build (2024) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. The No-build (2024) Condition does not include the impact of the Project. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements.

7.4.1 Background Traffic Growth

The methodology to account for generic 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 and historic traffic data collected recently and to account for any additional unforeseen traffic growth, a one-half percent per year annual traffic growth rate was used.

7.4.2 Specific Development Traffic Growth

Traffic volumes associated with the larger or closer known development projects can affect traffic patterns throughout the study area within the future analysis time horizon. Nine projects have been identified and were specifically accounted for in the future traffic. **Figure 7-10** show the specific development programs accounted for, which are summarized as follows:

14 West Broadway – This project calls for the construction of approximately 109,013 sf of residential space (47 units) and 8,715 sf of commercial and restaurant space. The project will also provide 70 parking spaces in an underground garage. This project is currently under construction.

20 West 5th Street – This project includes the construction of approximately 54 residential units, with approximately 41 below-grade parking spaces within the building. The letter of intent has been submitted to the city for this project.

45 West 3rd Street – This project involves the demolition of the existing one story industrial brick building to construct one mixed-use building with residential dwellings, retail/commercial space, interior parking, sidewalk improvements, and other public benefits. The construction will include 105 residential units, 3,400 sf of retail space and 109 parking spaces. This project is currently under construction.

87-93 West Third Street – This project will include the demolition of the gas station and the construction of approximately 65 residential units, and 7,230 sf of ground floor retail space. The site will be supplemented by 46 parking spaces and an on-site bicycle storage room for at least 70 bicycles. The letter of intent has been submitted to the city for this project.

Figure 7-10.
Specific Development Projects

105 West 1st Street – This project involves the construction of an eight story, approximately 266,000 square foot office building containing office/research and development space as well as ground floor retail, café, or retail space. The project will also include 35 parking spaces in an underground parking garage. This project is currently under review by the BPDA.

190-206 West Second Street – This project will consist of the construction of a multi-family residential development with 104 units and 4,000 sf of ground floor retail space with 115 parking spaces. This project has been approved by the BPDA board.

270 Dorchester Avenue – This project calls for the construction of a new 6-story building consisting of 116 residential units and approximately 6,520 sf of commercial space and a two level underground parking garage with 120 spaces. This project is currently under review by the BPDA.

South Boston Boutique Hotel – This project calls for a new 87,000 sf, 156-room hotel at the corner of Dorchester Avenue and West Broadway. This project is currently under construction.

Washington Village – This project calls for the construction of eight new buildings consisting of approximately 894,600 sf of space. The total development will include approximately 98,600 sf of retail space, 656 residential units, and 560 parking spaces. This project has been approved by the BPDA board.

7.4.3 Proposed Infrastructure Improvements

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

7.4.4 No-build (2020) Condition Traffic Volumes

The one-half percent per year annual growth rate was applied to the Existing (2017) Condition traffic volumes, then the traffic volumes associated with the background development project listed above was added to develop the No-build (2024) Condition traffic volumes. The No-build (2024) weekday a.m. and p.m. peak hour traffic volumes are shown on **Figure 7-11** and **Figure 7-12**, respectively.

7.4.5 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 7-5** and **Table 7-6** present the No-build (2024) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS between the Existing (2017) Condition and the No-build (2024) Condition. The detailed analysis sheets are provided in **Appendix D**.

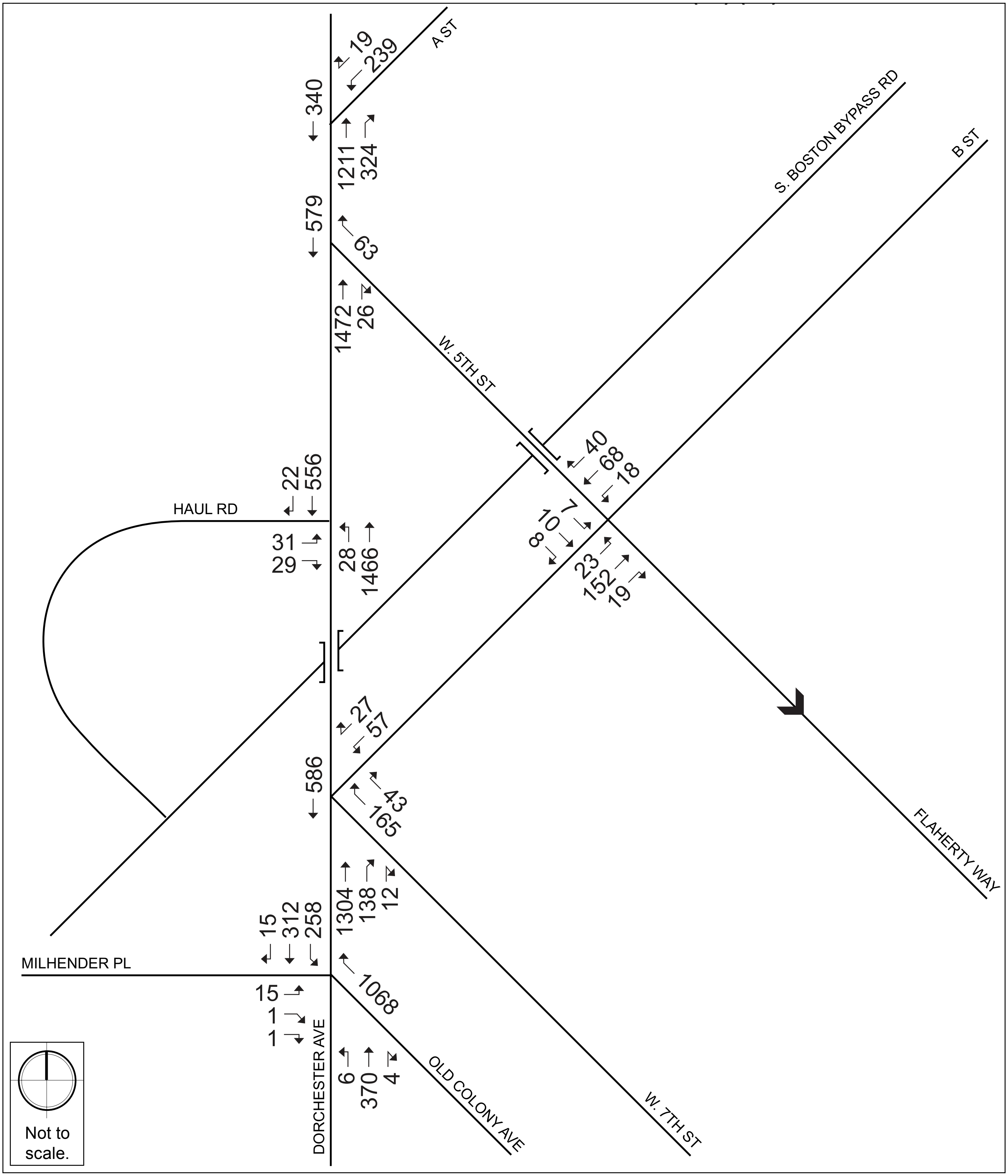


Figure 7-11.
No-build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour

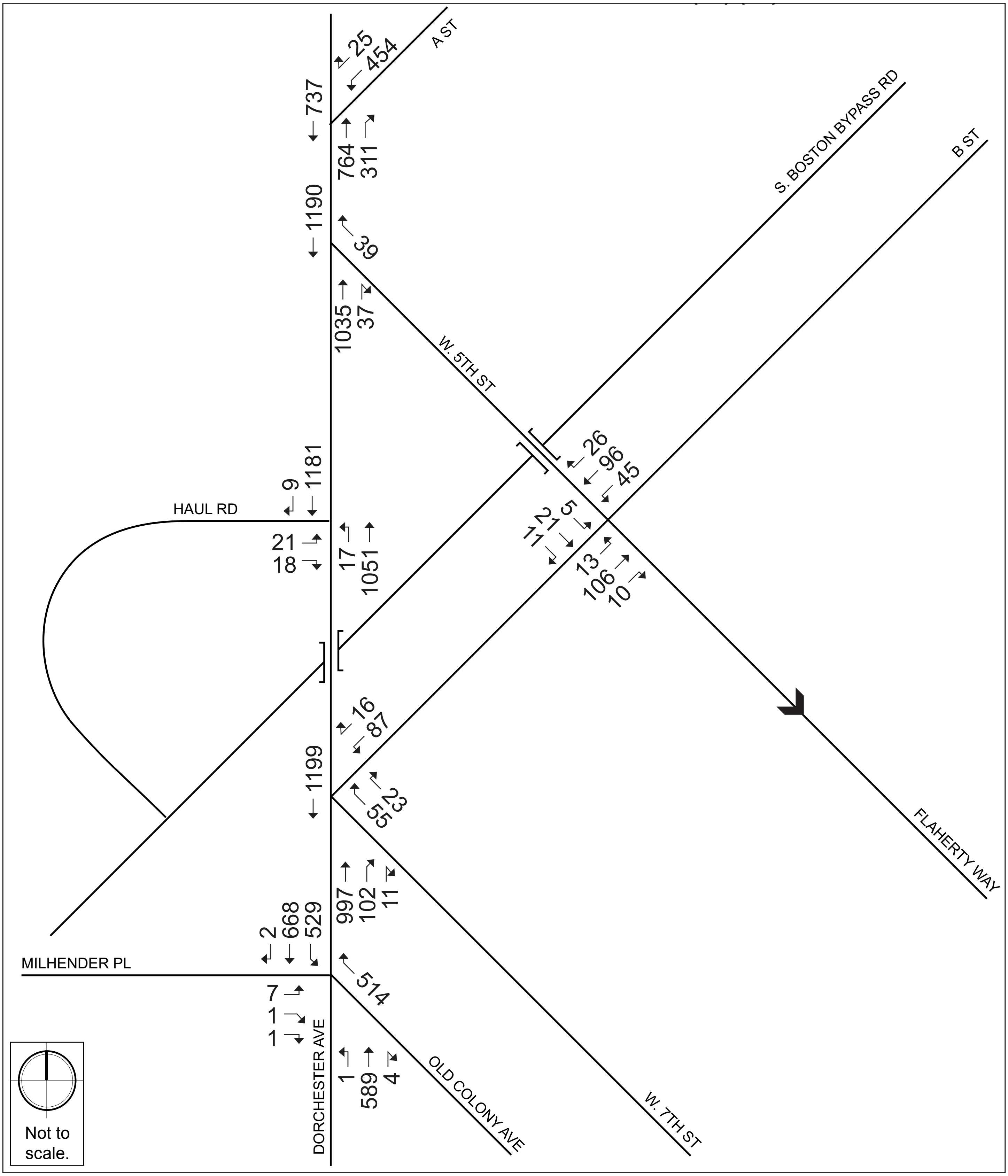


Figure 7-12.
No-build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 7-5. No-build (2024) Condition Capacity Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue/Old Colony Road/ Milhender Place	**B**	**19.2**	**-**	**-**	**-**
Milhender Place EB left/thru/right	A	0.7	0.09	0	0
Dorchester Avenue NB left/thru | thru/right	D	41.1	0.64	121	171
Dorchester Avenue SB bear left | bear left	A	6.3	0.13	28	65
Dorchester Avenue SB thru/right	A	4.2	0.21	72	163
Old Colony Avenue NWB bear right | bear right	B	19.1	0.65	305	#458
Dorchester Avenue/Haul Road	**A**	**6.0**	**-**	**-**	**-**
Haul Road EB left/right	C	32.3	0.41	23	58
Dorchester Avenue NB left/thru | thru	A	6.8	0.54	198	427
Dorchester Avenue SB thru | thru/right	A	0.9	0.20	7	m9
Dorchester Avenue/A Street	**C**	**32.7**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	C	28.5	0.73	418	512
Dorchester Avenue NB slight right	A	1.5	0.28	15	15
Dorchester Avenue SB thru | thru	B	18.1	0.21	74	107
A Street SWB bear left/hard right	F	108.4	1.04	~186	#350
Unsignalized Intersections					
Dorchester Avenue/West Fifth Street	**-**	**-**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru/ right	A	0.0	0.35	-	0
Dorchester Avenue SB thru | thru	A	0.0	0.18	-	0
West Fifth Street NWB bear right	B	11.8	0.13	-	11
Flaherty Way/ West Fifth Street/B Street	**-**	**-**	**-**	**-**	**-**
B Street EB left/thru/right	A	1.0	0.02	-	1
B Street WB left/thru/right	A	1.2	0.01	-	1
West Fifth Street SB left/thru/right	B	11.2	0.05	-	4

~ = 50th percentile volume exceeds capacity, queue may be longer. Queue shown is the maximum after two cycles.

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

m – Volume for 95th percentile queue is metered by upstream traffic signal.

Gray shading indicates decrease in LOS from Existing Condition below LOS E or LOS F.

Table 7-6. No-build (2024) Condition Capacity Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue/Old Colony Road/ Milhender Place	**B**	**17.5**	**-**	**-**	**-**
Milhender Place EB left/thru/right	A	0.5	0.07	0	0
Dorchester Avenue NB left/thru | thru/right	D	49.2	0.85	199	265
Dorchester Avenue SB bear left | bear left	A	3.5	0.28	30	58
Dorchester Avenue SB thru/right	A	2.8	0.44	74	88
Old Colony Avenue NWB bear right | bear right	B	14.9	0.34	115	181
Dorchester Avenue/Haul Road	**A**	**3.9**	**-**	**-**	**-**
Haul Road EB left/right	C	32.9	0.34	18	40
Dorchester Avenue NB left/thru | thru	A	1.8	0.39	15	58
Dorchester Avenue SB thru | thru/right	A	4.4	0.42	107	m138
Dorchester Avenue/A Street	**D**	**45.5**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	D	49.6	0.89	263	#377
Dorchester Avenue NB slight right	A	3.2	0.28	16	52
Dorchester Avenue SB thru | thru	D	50.7	0.88	254	#376
A Street SWB bear left/hard right	E	57.2	0.93	306	#497
Unsignalized Intersections					
Dorchester Avenue/West Fifth Street	**-**	**-**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru/ right	A	0.0	0.25	-	0
Dorchester Avenue SB thru | thru	A	0.0	0.36	-	0
West Fifth Street NWB bear right	B	13.7	0.11	-	9
Flaherty Way/ West Fifth Street/B Street	**-**	**-**	**-**	**-**	**-**
B Street EB left/thru/right	A	0.8	0.01	-	1
B Street WB left/thru/right	A	2.2	0.03	-	3
West Fifth Street SB left/thru/right	B	11.5	0.08	-	6

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

m – Volume for 95th percentile queue is metered by upstream traffic signal.

Gray shading indicates decrease in LOS from Existing Condition below LOS E or LOS F.

As shown in **Table 7-5** and **Table 7-6**, the study area intersections and approaches continue to operate below capacity (v/c ratio below 1.00) and at acceptable levels of delay (LOS D or better) under the No-build (2024) Condition. The following locations were shown to have movements at capacity (v/c ratio or 1.00 or higher) or operating at high delays (LOS E or LOS F).

- At the signalized intersection at Dorchester Avenue/A Street, the A Street southwest-bound approach decreases from LOS E to LOS F during the weekday a.m. peak hour and decreases from LOS D to LOS E during the a.m. peak hour. The v/c ratio decreased to 1.04 during the a.m. peak hour. This is due to the increased volume from nearby development projects projected to use the Dorchester Avenue corridor and A Street.

7.5 Build (2024) Condition

As previously summarized, the Project will include the construction of approximately 159 hotel rooms with approximately 15,000-20,000 gross square feet (gsf) of neighborhood serving and hospitality amenities, including restaurant, lounge, event space and outdoor deck, and approximately 60 valet only parking spaces in three levels. Vehicular access will be provided via an existing curb cut along Dorchester Avenue.

7.5.1 Site Access and Circulation

Vehicular access and egress will be provided by one full access curb cut along Dorchester Avenue. The driveway measures approximately seventy feet long by twenty feet wide, enough to accommodate about 3-5 vehicles for hotel guests at the same time. The driveway will also lead to the valet-only parking garage. The site plan is shown in **Figure 7-13**.

7.5.2 Parking

This section presents the Project's parking supply and an evaluation of the Project's parking demand. As previously mentioned, the Project will include 60 valet only parking spaces in three levels of the garage. This results in a parking ratio of close to 0.4 parking spaces per hotel room, consistent with the BTD maximum parking goals.

7.5.3 Loading and Service Accommodations

Loading and service operations will occur on-site, in designated loading area adjacent to the south of the driveway. The loading area will be able to accommodate an SU-36 typical of hotel restaurants, and event functions to be held at the hotel.

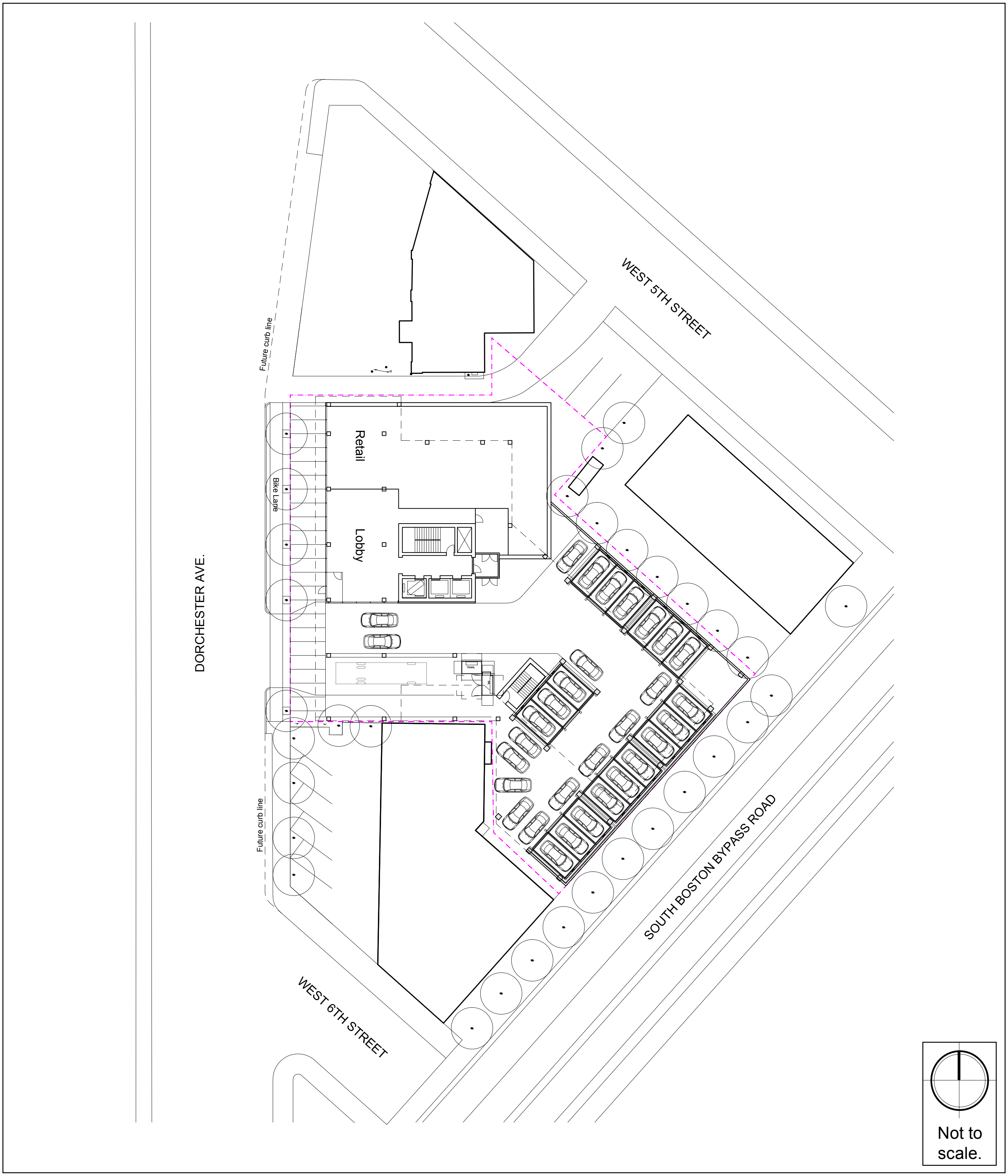


Figure 7-13.
Site Access Plan

7.5.4 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for employees, as well as short-term bicycle racks for hotel guests and visitors. Based on BTD guidelines, the Project will supply a minimum of 26 secure bicycle parking/storage spaces within the parking garage, at a rate of 0.3 secure indoor bicycle parking spaces per 1,000 sf of development. Additional storage will be provided by outdoor bicycle racks accessible to visitors to the site in accordance with BTD guidelines.

7.5.5 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*[7] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

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

Land Use Code 310 – Hotel. The hotel land use is defined as a place of lodging that provides sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention centers, limited access facilities (e.g., pool, fitness room), and/or other retail services or shops. The trip generation estimates are based on average vehicular rates per hotel room.

7.5.6 Mode Share

BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located within designated Area 8 – Inner Red Line, which includes areas along the Red Line from Broadway Station to JFK/UMass Station. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[8]. The person trips were then distributed to different modes according to the mode shares shown in **Table 7-7**.

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

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

Table 7-7. Travel Mode Shares

Land Use		Walk/Bicycle Share[1]	Transit Share[1]	Auto Share[1]	Private Vehicle Occupancy Rate[2]	Taxi Occupancy Rate[3]
Daily						
Hotel	In	24%	15%	61%	1.84	1.2
	Out	24%	15%	61%	1.84	1.2
a.m. Peak						
Hotel	In	20%	15%	65%	1.84	1.2
	Out	30%	24%	46%	1.84	1.2
p.m. Peak						
Hotel	In	30%	24%	46%	1.84	1.2
	Out	20%	15%	65%	1.84	1.2

1. 2009 National Household Travel Survey.
2. Based on rates published by the Boston Transportation Department for Area 8 – Inner Red Line.
3. For taxi cabs 1.2 passengers per cab based on 2.2 total people minus the driver.

7.5.7 Project Trip Generation

The mode share percentages shown in **Table 7-7** 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 7-8**. The detailed trip generation information is provided in **Appendix D**.

Taxi Trip Generation

The trip generation process described above yields the adjusted trips associated with the Project. It is also expected that a portion of the vehicle trips associated with the hotel will be made by taxi. Based on published data, it is expected that approximately 25% of the vehicular trips associated with the hotel will be made by taxi. All taxi trips are assumed to include one entering trip and one existing trip as taxis are expected to either drop-off guests or pick-up guests but not both.

Table 7-8. Trip Generation Summary

Land Use		*Walk/Bicycle Trips*[1]	*Transit Trips*[1]	*Private Auto Trips*[1]	*Taxi Trips*[1]	*Total Auto Trips*[1]
Daily						
Hotel	In	287	179	298	304	602
	Out	287	179	298	304	602
	Total	574	358	596	608	1,204
a.m. Peak						
Hotel	In	18	14	24	19	43
	Out	19	15	13	19	32
	Total	37	29	37	38	75
p.m. Peak						
Hotel	In	27	22	17	20	37
	Out	17	13	23	20	43
	Total	44	35	40	44	80

1. Based on ITE LUC 310 – 159 Hotel Rooms, average rate.

7.5.8 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 for Area 8 – Inner Red Line and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are illustrated in **Figure 7-14**.

7.5.9 Build (2024) Traffic Volumes

The vehicle trips were distributed through the study area. The project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure 7-15** and **Figure 7-16**, respectively. The trip assignments were added to the No-build (2024) Condition vehicular traffic volumes to develop the Build (2024) Condition vehicular traffic volumes. The Build (2024) weekday a.m. and p.m. peak hour traffic volumes are shown on **Figure 7-17** and **Figure 7-18**, respectively.

7.5.10 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 7-9** and **Table 7-10** present the Build (2024) Condition capacity analysis for the weekday a.m. and p.m. peak hour, respectively. The shaded cells in the tables indicate a worsening of LOS between the No-build (2024) Condition and the Build (2024) Condition. The detailed analysis sheets are provided in **Appendix D**.

Figure 7-14.
Trip Distribution

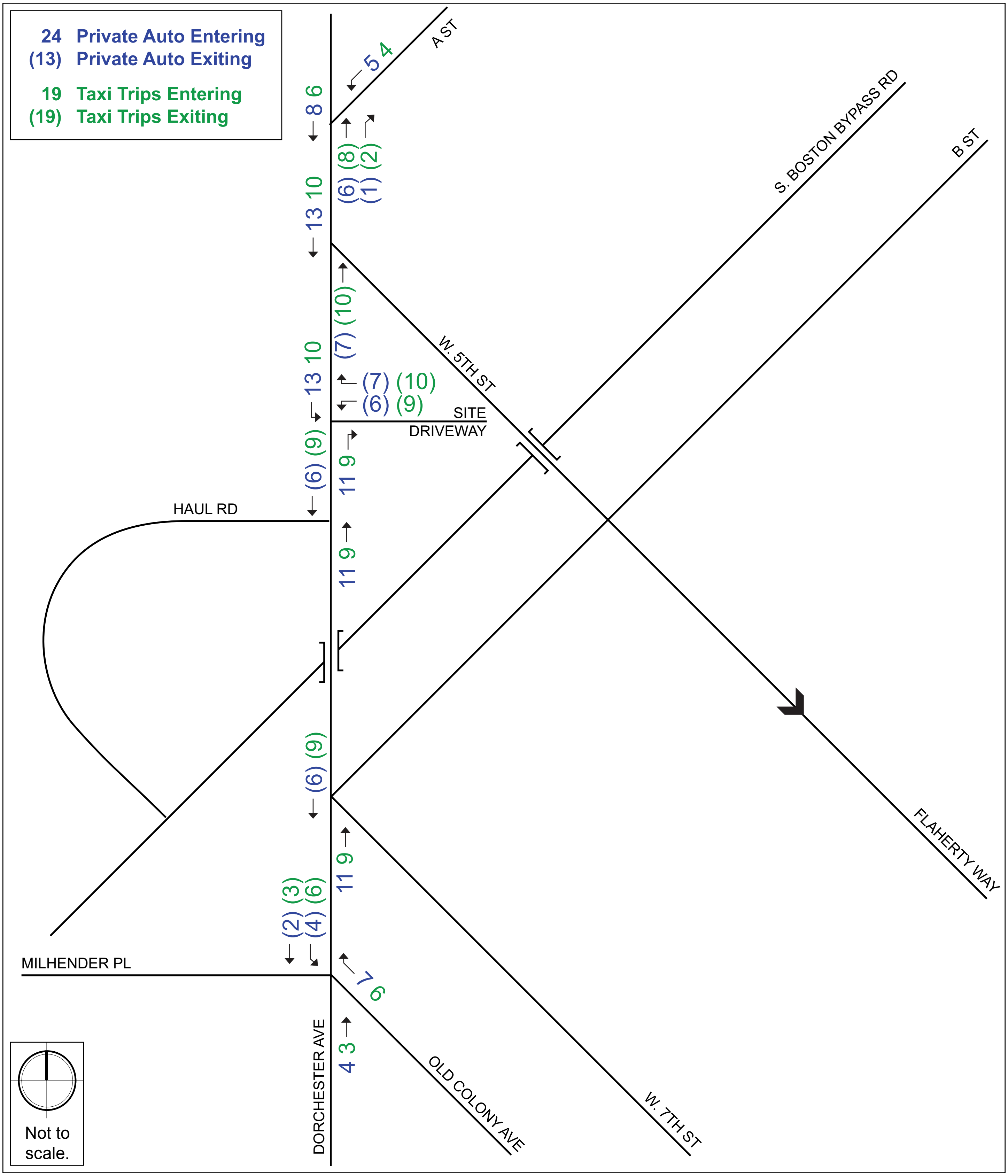


Figure 7-15.
Project-Generated Vehicle Trip Assignment, a.m. Peak Hour

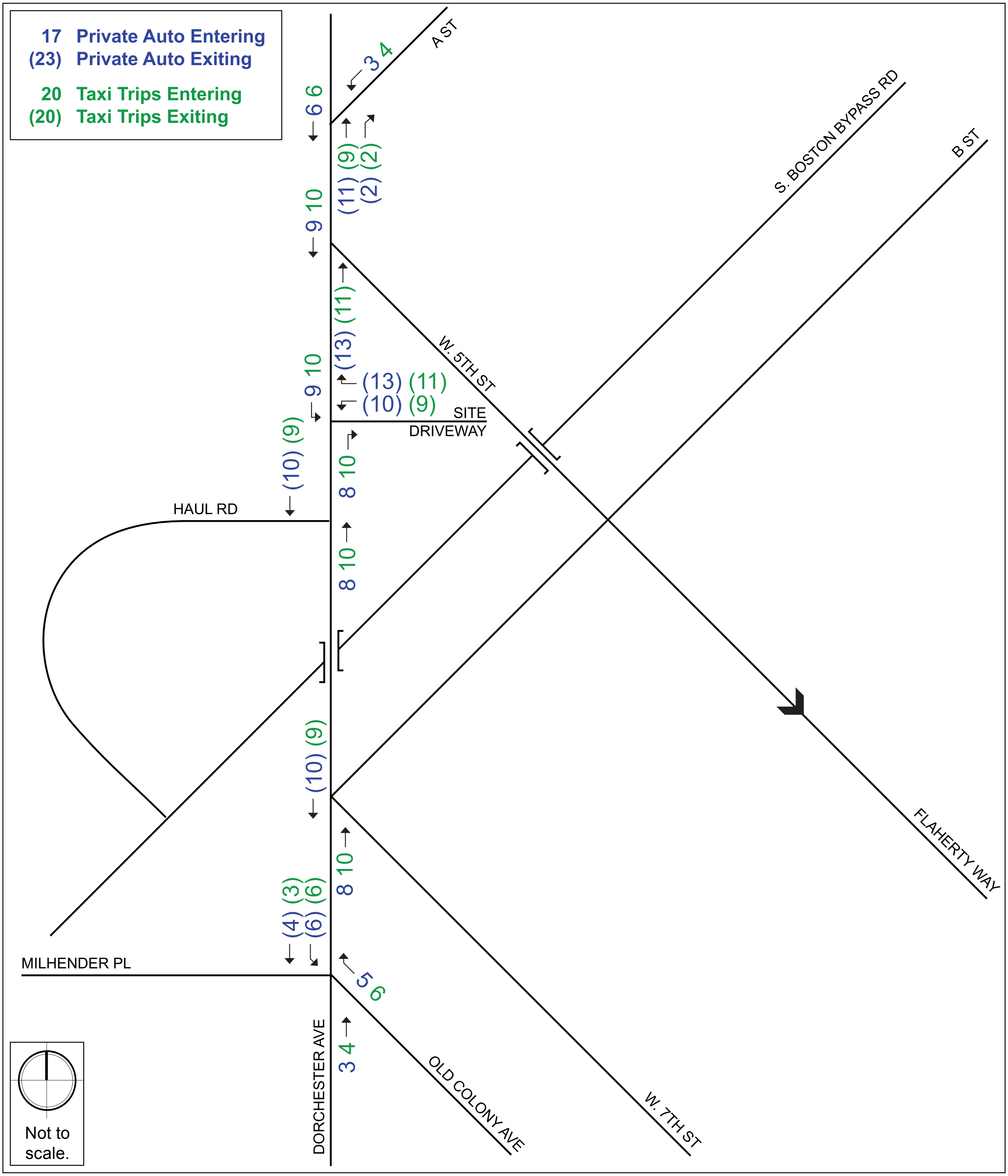


Figure 7-16.
Project-Generated Vehicle Trip Assignment, p.m. Peak Hour

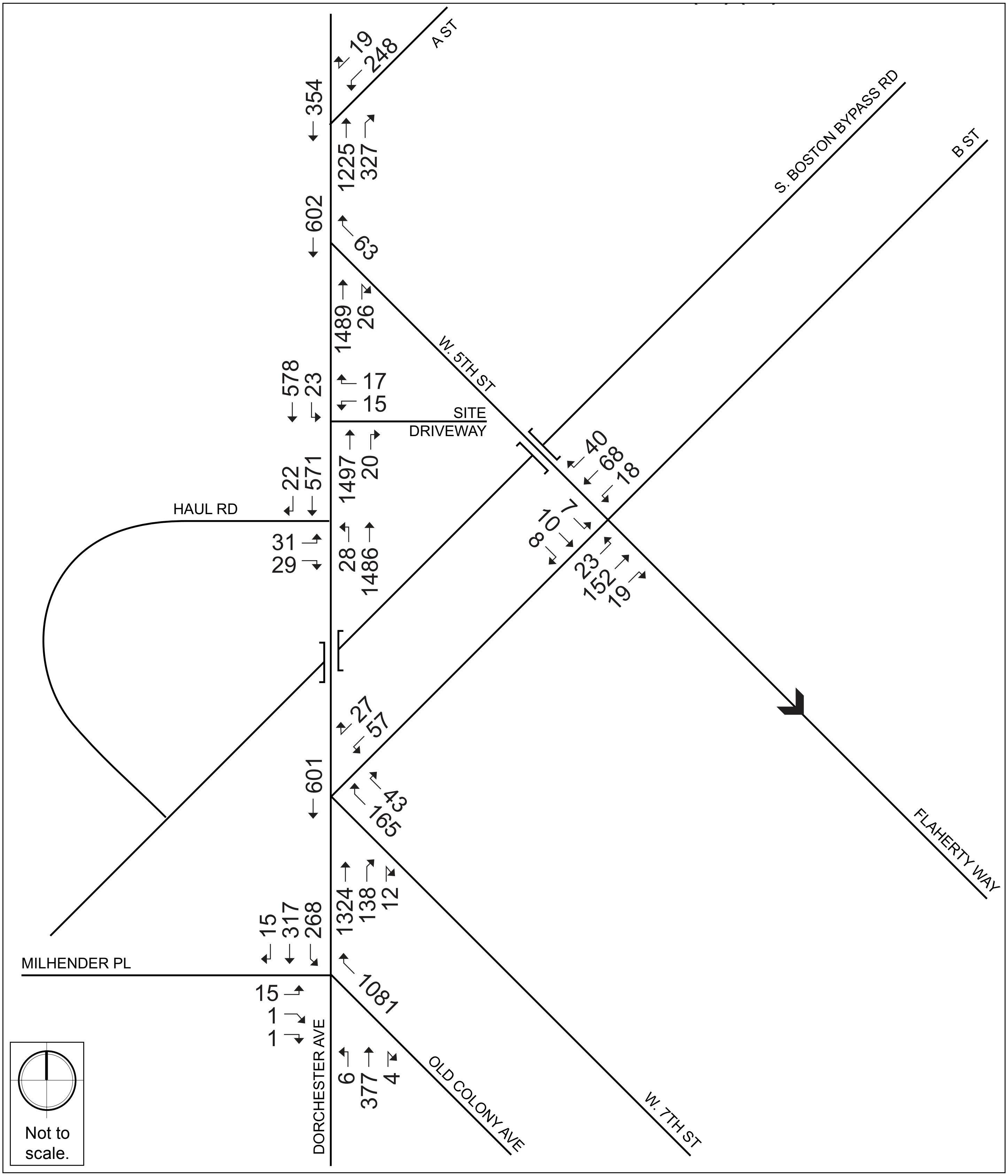


Figure 7-17.
Build (2024) Condition Traffic Volumes, a.m. Peak Hour

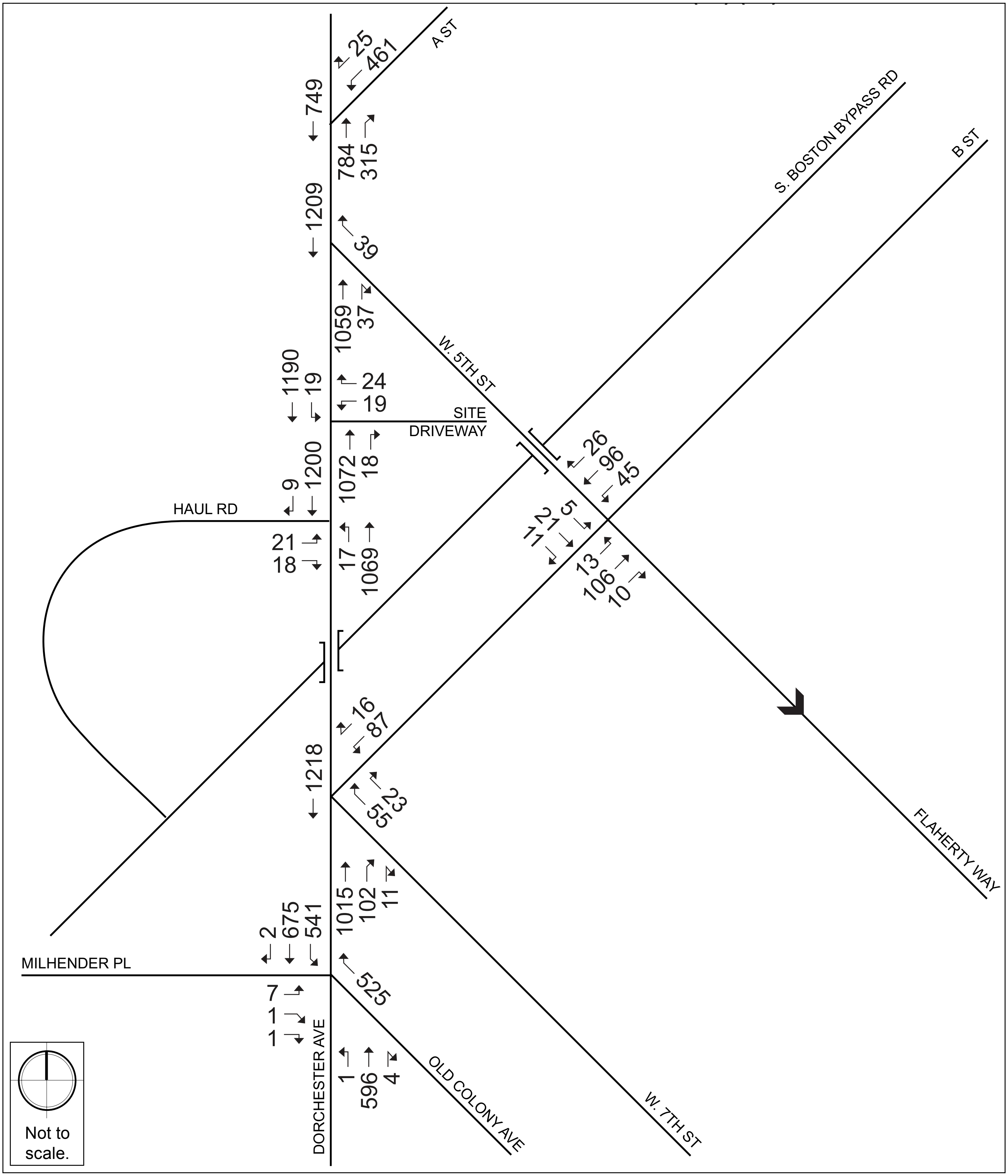


Figure 7-18.
Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 7-9. Build (2024) Condition Capacity Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue/Old Colony Road/ Milhender Place	**B**	**19.4**	**-**	**-**	**-**
Milhender Place EB left/thru/right	A	0.7	0.09	0	0
Dorchester Avenue NB left/thru | thru/right	D	41.5	0.65	124	174
Dorchester Avenue SB bear left | bear left	A	6.9	0.13	32	69
Dorchester Avenue SB thru/right	A	4.0	0.22	70	129
Old Colony Avenue NWB bear right | bear right	B	19.4	0.66	310	#476
Dorchester Avenue/Haul Road	**A**	**6.1**	**-**	**-**	**-**
Haul Road EB left/right	C	32.3	0.41	23	58
Dorchester Avenue NB left/thru | thru	A	6.9	0.54	204	442
Dorchester Avenue SB thru | thru/right	A	1.0	0.21	16	m18
Dorchester Avenue/A Street	**C**	**34.1**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	C	28.6	0.74	421	516
Dorchester Avenue NB slight right	A	1.5	0.29	13	14
Dorchester Avenue SB thru | thru	B	18.2	0.22	77	111
A Street SWB bear left/hard right	F	117.7	1.07	~198	#362
Unsignalized Intersections					
Dorchester Avenue/West Fifth Street	**-**	**-**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru/ right	A	0.0	0.36	-	0
Dorchester Avenue SB thru | thru	A	0.0	0.18	-	0
West Fifth Street NWB bear right	B	13.1	0.15	-	13
Flaherty Way/ West Fifth Street/B Street	**-**	**-**	**-**	**-**	**-**
B Street EB left/thru/right	A	1.0	0.02	-	1
B Street WB left/thru/right	A	1.2	0.01	-	1
West Fifth Street SB left/thru/right	B	11.2	0.05	-	4
Dorchester Avenue/Site Driveway	**-**	**-**	**-**	**-**	**-**
Driveway WB left/right	E	38.0	0.24	-	22
Dorchester Avenue NB thru | thru/right	A	0.0	0.64	-	0
Dorchester Avenue SB left/thru | thru	A	2.5	0.25	-	5

~ = 50th percentile volume exceeds capacity, queue may be longer. Queue shown is the maximum after two cycles.

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

m – Volume for 95th percentile queue is metered by upstream traffic signal.

Gray shading indicates decrease in LOS from Existing Condition below LOS E or LOS F.

Table 7-10. Build (2024) Condition Capacity Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue/Old Colony Road/ Milhender Place	**B**	**17.7**	**-**	**-**	**-**
Milhender Place EB left/thru/right	A	0.5	0.07	0	0
Dorchester Avenue NB left/thru | thru/right	D	49.5	0.86	201	267
Dorchester Avenue SB bear left | bear left	A	3.8	0.29	35	62
Dorchester Avenue SB thru/right	A	2.7	0.44	74	90
Old Colony Avenue NWB bear right | bear right	B	15.1	0.35	119	186
Dorchester Avenue/Haul Road	**A**	**3.9**	**-**	**-**	**-**
Haul Road EB left/right	C	32.9	0.34	18	40
Dorchester Avenue NB left/thru | thru	A	1.8	0.40	15	58
Dorchester Avenue SB thru | thru/right	A	4.4	0.43	110	m137
Dorchester Avenue/A Street	**D**	**48.0**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	D	53.8	0.92	281	#391
Dorchester Avenue NB slight right	A	3.2	0.28	16	50
Dorchester Avenue SB thru | thru	D	53.6	0.91	258	#384
A Street SWB bear left/hard right	E	58.0	0.93	313	#509
Unsignalized Intersections					
Dorchester Avenue/West Fifth Street	**-**	**-**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru/ right	A	0.0	0.25	-	0
Dorchester Avenue SB thru | thru	A	0.0	0.37	-	0
West Fifth Street NWB bear right	B	14.1	0.11	-	9
Flaherty Way/ West Fifth Street/B Street	**-**	**-**	**-**	**-**	**-**
B Street EB left/thru/right	A	0.8	0.01	-	1
B Street WB left/thru/right	A	2.2	0.03	-	3
West Fifth Street SB left/thru/right	B	11.5	0.08	-	6
Dorchester Avenue/Site Driveway	**-**	**-**	**-**	**-**	**-**
Driveway WB left/right	C	23.5	0.20	-	18
Dorchester Avenue NB thru | thru/right	A	0.0	0.46	-	0
Dorchester Avenue SB left/thru | thru	A	1.0	0.51	-	3

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

m – Volume for 95th percentile queue is metered by upstream traffic signal.

Gray shading indicates decrease in LOS from Existing Condition below LOS E or LOS F.

As shown in **Table 7-9** and **Table 7-10**, the study area intersections and approaches continue to operate below capacity (v/c ratio below 1.00) and at acceptable levels of delay (LOS D or better) under the No-Build (2024) Condition. The following locations were shown to have movements at capacity (v/c ratio or 1.00 or higher) or operating at high delays (LOS E or LOS F).

- At the unsignalized intersection at Dorchester Avenue/Project site driveway, the Project site Driveway approach operates at LOS E during the weekday a.m. peak hour. This is due to the heavy volume along Dorchester Avenue and few vehicles turning left out of the driveway. The queue length is approximately 22 feet long indicating that only one vehicle will be attempting to turn out of the driveway at a time.

7.6 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:

- **Transportation Coordinator**: The Proponent will encourage the hotel operator to designate a full-time, on-site employee as the transportation coordinator for the site. The transportation coordinator will oversee all transportation issues. This includes managing vehicular and valet operations, service and loading, and TDM programs.
- **Information and Promotion of Travel Alternatives**: The Proponent will encourage the hotel operator to provide employees and visitors with public transit system maps, schedules, and other information on transit services in the area; provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options; provide real-time information on travel alternatives for employees and visitors via the Internet and in the building lobby; and provide information on travel alternatives to new employees.
- **Transit Pass Programs**: The Proponent will encourage the hotel operator to encourage employees to use transit and will offer on-site transit pass sales and MBTA pass subsidies to full-time employees.

- **Electric Vehicle Charging**: The Proponent will explore the feasibility of providing electric vehicle charging station(s) within the garage.
- **Vehicle Sharing Program**: The Proponent will explore the feasibility of providing spaces in the garage for a car sharing service.
- **Bicycle Accommodation**: The Proponent will provide bicycle storage in secure, sheltered areas for employees to encourage bicycling as an alternative mode of transportation. Subject to necessary approvals, public use bicycle racks for visitors will be placed near building entrances.

7.7 Transportation Mitigation Measures

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

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

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

7.8 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 Construction Management Plan 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 Construction Management Plan:

- 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 Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

8.0 COORDINATION WITH GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

This Project will comply with the requirements of the Architectural Access Board. The Project will also be designed to comply with the Standards of the Americans with Disabilities Act.

8.2 Massachusetts Environmental Policy Act (MEPA)

Based on information currently available, development of the Proposed Project will not result in a state permit/state agency action and meet a review threshold that would require MEPA review by the MEPA Office of the Executive Office of Energy and Environmental Affairs.

8.3 Boston Civic Design Commission

The Project is not expected to exceed the 100,000 gross square feet size threshold requirement for review by the Boston Civic Design Commission.

9.0 PROJECT CERTIFICATION

This form has been circulated to the Boston Planning and Development Agency as required by Article 80 of the Boston Zoning Code.

Evergreen Property Group, LLC

Jason E. Cincotta, Principal

9/21/2017
Date

Mitchell L. Fischman Consulting LLC

Mitchell L. Fischman, Principal

9/21/17
Date

APPENDIX A – LETTER OF INTENT TO FILE PNF, JUNE 30, 2017

McDERMOTT
QUILTY &
MILLER LLP

28 STATE STREET, SUITE 802
BOSTON, MA 02109

30 ROWES WHARF, SUITE 600
Boston, MA 02110

June 30, 2017 **VIA HAND DELIVERY**

Mr. Brian Golden, Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201
Attn: Phil Cohen and Casey Hines, Project Managers

RE: Letter of Intent to File Project Notification Form
Article 80 - Large Project Review for Boutique Hotel Project
246-248 Dorchester Avenue, Ward 6, South Boston

Dear Director Golden:

Our office represents Evergreen Property Group, LLC and its affiliated title-holder entity, Dot Ave Property, LLC (collectively, the "Proponent"), as owner-developer of the real property located at 246-248 Dorchester Avenue, South Boston (the "Project Site"). The purpose of this letter is to notify the Boston Planning and Development Agency (the "BPDA") of the Proponent's intent to file a Project Notification Form ("PNF") with the BPDA pursuant to Article 80-B of the City of Boston Zoning Code (the "Code") and in accordance with the Mayor's Executive Order Relative to the Provision of Mitigation by Development Projects in Boston, as amended.

The Proponent envisions revitalizing this under-utilized Project Site in the City's South Boston neighborhood with an independent boutique hotel development, to enhance the vibrancy of the West Broadway commercial district and better serve the growing needs of the surrounding residential mixed-use community along this section of Dorchester Avenue, which is included in the study area of the BPDA's South Boston Dorchester Avenue Planning Initiative (the "Planning Initiative"). Culminating in the adoption of guidelines and related public comment in November, 2016 (the "Adopted Guidelines"), the Planning Initiative now includes a detailed program of prospective zoning modifications, with certain community input and resulting market dynamics that, taken together, precipitated the Proponent to re-examine its prior plans for a residential apartment building at the Project Site, as currently approved by the City.

By way of background, in early 2015 the Proponent submitted a project proposal pursuant to the Article 80-E Small Project Review procedure, which the BPDA (at that time acting as the Boston Redevelopment Authority) approved, and which also received related zoning relief from the Board of Appeal authorizing the demolition of the existing structure at the Project Site and construction of a new six-story, 43,650 square-foot, mixed-use building with 4,400 square feet of retail space, 33 residential rental housing units and 33 on-site parking spaces at the Project Site (the "2015 Approved Project"). After the Board of Appeal granted the enforceable Zoning Decision for the 2015 Approved Project, the BPDA launched its new Planning Initiative, which contemplates updated zoning and permitting regulations to incentivize residential growth and related mixed-use expansion in the study area for the Project Site.

Over the past two years, the Proponent has worked closely with neighborhood interests, local elected and appointed officials and the BPDA, including participation in the Planning Initiative's public review process, and obtained detailed input and guidance from community stakeholders and the BPDA for a resulting new development proposal. Consistent with the public input received as part of the Planning Initiative, which includes written support for a new hotel use at the Project Site (in place of the 2015 Approved Project's rental housing programming), the Proposed Project has been carefully designed with a new building scale that substantially complies with the Adopted Guidelines while also including a lower building height than contemplated by the Planning Initiative, with enhanced open space and set-back measures to better conform with the character of the surrounding community.

The building design for the Proposed Project will feature approximately 86,000 gross square feet in an eight (8)-story structure extending approximately 98-feet in building height, with a two-story top section significantly set-back and reduced in scale from its main six (6)-story building section. With up to 159 hotel rooms, the Proposed Project will also include approximately 15,000-20,000 gross square feet of neighborhood-serving and hospitality amenities, including outdoor terraces, pool, fitness and ballroom space on the upper level roofed area set-back from the main building base, ground level lobby/retail and at-grade/on-site for approximately 64 valet-parked vehicles. The Proposed Project will also provide a distinct hospitality use at a design-forward development that better activates the street frontage along Dorchester Avenue, with enhanced pedestrian amenities and increased foot traffic from local residents, guests and visitors within a very short walk of the MBTA's Broadway Redline Station.

Currently occupied by the Enterprise Rent-A-Car business, the Project Site consists of 22,000 +/- square foot of under-utilized land in South Boston, with a single-story building surrounded by asphalt parking lots. With frontage on Dorchester Avenue, the Project Site is bounded by West Fifth and West Sixth Streets and the South Boston Bypass/Haul Road at its rear. (See Figure 1. Project Locus). While the immediate area along this section of Dorchester Avenue is mostly industrial with limited retail uses, the Project Site is in a unique section of the Planning Initiative area which the BPDA has determined to be generally appropriate for a potential new hotel use, as it transitions from the nearby commercial district to other more residential parts of the Planning Initiative area. All existing structures will be removed to enable the new development.

As the Proposed Project exceeds 50,000 square-feet of new construction at this particular location in the South Boston neighborhood, it is subject to the BPDA's Large Project Review procedure, pursuant to Article 80-B of the Code. Furthermore, as of the date of this filing, the Proposed Project is also anticipated to require relief from the Code in the form of Variances and/or Conditional Use Permits under its current regulations applicable to the Proposed Project at the Project Site.

Thank you for your time and attention to this Proposed Project, and our team looks forward to working with you, the BPDA staff, members of the Impact Advisory Group to be formed, local elected officials and the community at large towards a successful outcome for the City of Boston. Please contact me at your convenience if you have any questions for the Proponent regarding the Proposed Project.

Very truly yours,

Joseph P. Hanley, Esq.,
Partner -- McDermott, Quilty & Miller, LLP

Attachment: Figure 1. Project Locus

cc: Phil Cohen and Casey Hines, BPDA Project Managers
Jonathan Greeley, BPDA Director of Development Review and Policy
Michael Christopher, BPDA Intergovernmental Liaison
District City Councilor Linehan
At Large City Councilor Flaherty
John Allison, Mayor's Office of Neighborhood Services
State Senator Dorcena-Forry
State Representative Collins

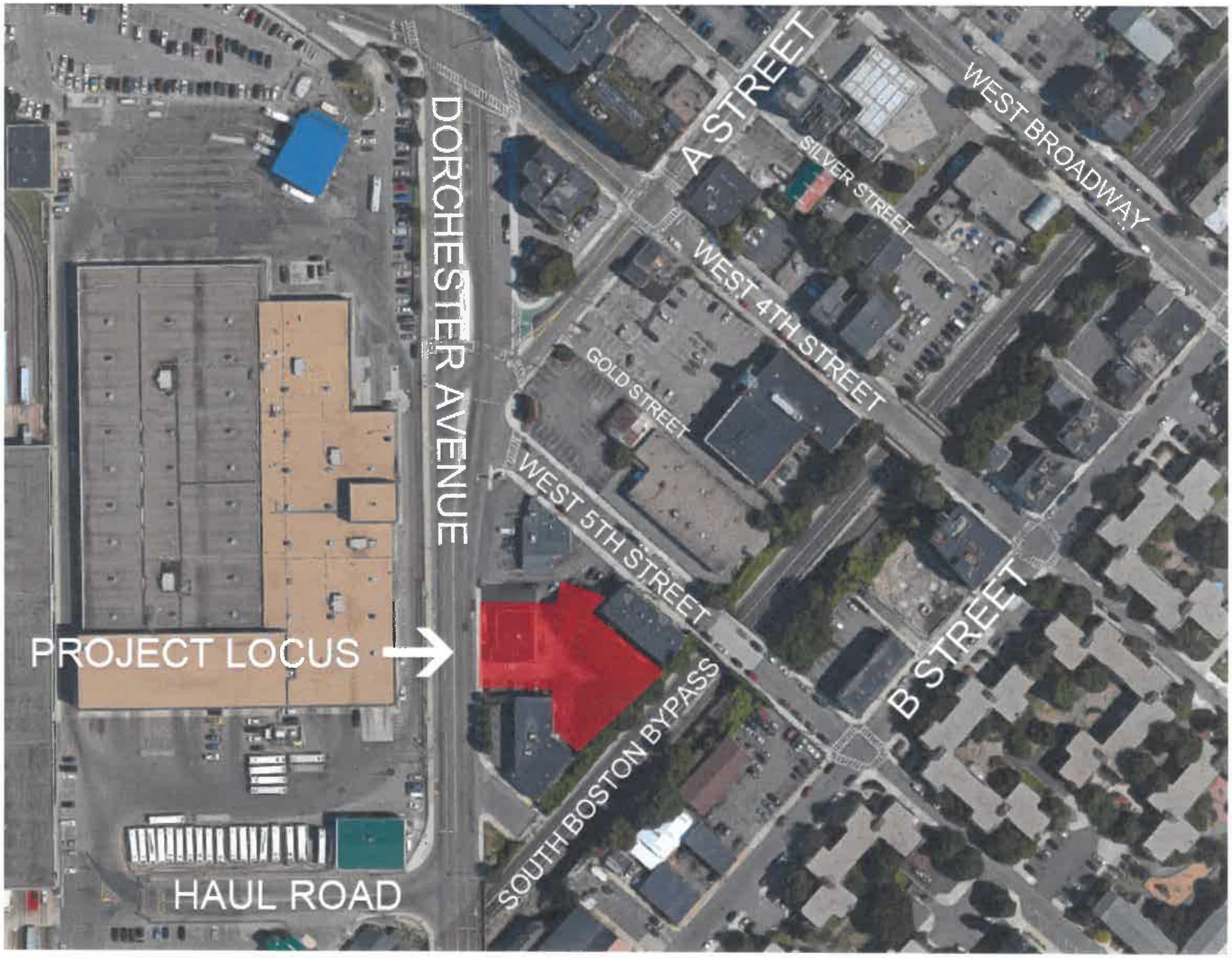


Figure 1. Project Locus
248 Dorchester Ave, Boston

APPENDIX B – AIR QUALITY APPENDIX

APPENDIX B
AIR QUALITY

248 DORCHESTER AVENUE
PROJECT NOTIFICATION FORM

Pages **Contents**

```
*** MODELOPTs:    NonDFAULT  CONC  FLAT  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =     28137.0 ;  Urban Roughness Length =  1.000 m

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Assumes Receptors on FLAT Terrain.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Used.

**Other Options Specified:
        NOCHKD   - Suppresses checking of date sequence in meteorology files
        SCREEN   - Use screening option
which forces calculation of centerline values

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  CO

**Model Calculates  1 Short Term Average(s) of:   1-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and     577 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      1 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 16126

**Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours
```

```
**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          CO_5yrs_CO.DTA
**Output Print File:             CO_5yrs_CO.LST

**File for Summary of Results:   W:\Apps\aermod\4213\CO_5yrs_CO.SUM
*** AERMOD - VERSION 16216r ***   *** 248 Dorchester Avenue Hotel                                             ***       08/31/17
*** AERMET - VERSION 16126  ***   *** CO 1-Hour Screening Modeling                                            ***       15:38:24
                                                                                                                       PAGE   2
*** MODELOPTs:    NonDFAULT  CONC  FLAT  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                             (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                          (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,  10.80,
*** AERMOD - VERSION 16216r ***   *** 248 Dorchester Avenue Hotel                                             ***       08/31/17
*** AERMET - VERSION 16126  ***   *** CO 1-Hour Screening Modeling                                            ***       15:38:24
                                                                                                                       PAGE   3
*** MODELOPTs:    NonDFAULT  CONC  FLAT  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   Urban.sfc                                                                    Met Version: 16126
  Profile file:   Urban.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    11111                 Upper air station no.:    22222
                Name: UNKNOWN                                    Name: UNKNOWN
                Year:   2010                                     Year:   2010
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
10	01	01	1	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	10.	10.0	255.2	2.0
10	01	02	2	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	20.	10.0	255.2	2.0
10	01	03	3	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	30.	10.0	255.2	2.0
10	01	04	4	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	40.	10.0	255.2	2.0
10	01	05	5	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	50.	10.0	255.2	2.0
10	01	06	6	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	60.	10.0	255.2	2.0
10	01	07	7	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	70.	10.0	255.2	2.0
10	01	08	8	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	80.	10.0	255.2	2.0
10	01	09	9	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	90.	10.0	255.2	2.0
10	01	10	10	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	100.	10.0	255.2	2.0

```
10 01 11  11 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  110.   10.0  255.2    2.0
10 01 12  12 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  120.   10.0  255.2    2.0
10 01 13  13 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  130.   10.0  255.2    2.0
10 01 14  14 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  140.   10.0  255.2    2.0
10 01 15  15 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  150.   10.0  255.2    2.0
10 01 16  16 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  160.   10.0  255.2    2.0
10 01 17  17 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  170.   10.0  255.2    2.0
10 01 18  18 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  180.   10.0  255.2    2.0
10 01 19  19 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  190.   10.0  255.2    2.0
10 01 20  20 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  200.   10.0  255.2    2.0
10 01 21  21 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  210.   10.0  255.2    2.0
10 01 22  22 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  220.   10.0  255.2    2.0
10 01 23  23 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  230.   10.0  255.2    2.0
10 01 24  24 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  240.   10.0  255.2    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
10 01 01 01    10.0 1   10.    0.50   255.3   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
*** AERMOD - VERSION 16216r ***   *** 248 Dorchester Avenue Hotel                                         ***       08/31/17
*** AERMET - VERSION 16126  ***   *** CO 1-Hour Screening Modeling                                        ***       15:38:24
                                                                                                                    PAGE   4
*** MODELOPTs:    NonDFAULT  CONC  FLAT  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                              *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                  ** CONC OF CO       IN MICROGRAMS/M**3                          **

                                                    DATE                                                                 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


ALL      HIGH   1ST HIGH VALUE IS       1.12792  ON 10020502: AT (  330543.80,  4689573.70,     5.00,     5.00,    0.00)  DC


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
*** AERMOD - VERSION 16216r ***   *** 248 Dorchester Avenue Hotel                                         ***       08/31/17
*** AERMET - VERSION 16126  ***   *** CO 1-Hour Screening Modeling                                        ***       15:38:24
                                                                                                                    PAGE   5
*** MODELOPTs:    NonDFAULT  CONC  FLAT  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of           0 Fatal Error Message(s)
A Total of           1 Warning Message(s)
A Total of           0 Informational Message(s)

A Total of       18504 Hours Were Processed

A Total of           0 Calm Hours Identified

A Total of           0 Missing Hours Identified (  0.00 Percent)

   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***
```

```
INDOOR GARAGE ANALYSIS PROGRAM

  PROJECT:  70 248 DORCHESTER AVENUE GARAGE PEAK PM HOUR - YEAR: 2017


  DISTANCE IN:                  71  METERS
  DISTANCE OUT:                 71  METERS


  NUMBER OF EXIT LANES:          1  LANE(S)
  PEAK VOLUME:                  60 VEH/HOUR

                CO RATE:         2.976 GRAMS CO/MILE

  SPEED IN GARAGE:               5.0  M.P.H.

  VENT CFM:                     18,802  CFM



  TOTAL CO EMISSIONS =         0.13 GRAMS/MIN = 0.0022 GRAMS/SEC
  TOTAL VENTILATION  =           532 CU. M/MIN


    PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES:   0.21 PPM
```

MOVES2014 OUTPUT

Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
5	0.044	56	5	CO	2.976
5	0.044	60	5	CO	2.976

```
1               CAL3QHC - (DATED 95221)

        CAL3QHC  PC (32 BIT) VERSION 3.0.0
       (C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on  8/29/2017 at 10:53:28

   JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 BUILD AM PEAK HOUR

   DATE : 08/29/   0
   TIME : 10:53:28

     The MODE flag has been set to C for calculating CO averages.

    SITE & METEOROLOGICAL VARIABLES
    -------------------------------
    VS =   0.0 CM/S      VD =   0.0 CM/S      Z0 = 370. CM
     U =  1.0 M/S        CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 PPM

    LINK VARIABLES
    --------------
     LINK DESCRIPTION    *        LINK COORDINATES (M)         *    LENGTH  BRG TYPE   VPH    EF     H   W    V/C QUEUE
                     *  X1       Y1       X2       Y2    *    (M)   (DEG)          (G/MI)   (M) (M)       (VEH)
    ------------------------*-----------------------------------------*----------------------------------------------------------
    1. QUEUE A ST SB       * 330564.8  ********  330957.0  ******** *     557.    45. AG     12. 100.0   0.0  3.4 2.57  92.9
    2. FREE A ST          * 330548.2  ********  330758.2  ******** *     311.    42. AG    594.   2.0   0.0 13.0
    3. QUEUE DOT AVE SB    * 330538.6  ********  330538.8  ******** *      16.     1. AG     15. 100.0   0.0  7.0 0.26   2.6
    4. FREE DOT AVE N      * 330546.7  ********  330545.9  ******** *     321.   360. AG   1598.   2.0   0.0 28.5
    5. QUEUE DOT AVE NBT   * 330550.6  ********  330544.7  ******** *      55.   186. AG     15. 100.0   0.0  7.0 0.86   9.2
    6. QUEUE DOT AVE NBR   * 330556.0  ********  330552.3  ******** *      16.   193. AG      4. 100.0   0.0  3.0 0.34   2.7
    7. FREE DOT AVE S      * 330546.3  ********  330539.6  ******** *     332.   181. AG   2154.   2.0   0.0 22.0
```

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:53:28

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. QUEUE A ST SB	*	100	85	7.0	267	1734	5.13	2	3
3. QUEUE DOT AVE SB	*	100	53	5.0	354	1736	5.13	2	3
5. QUEUE DOT AVE NBT	*	100	53	5.0	1225	1787	5.13	2	3
6. QUEUE DOT AVE NBR	*	100	30	5.0	327	1524	5.13	2	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	330564.1	********	1.8	*
2.	*	330583.8	********	1.8	*
3.	*	330603.9	********	1.8	*
4.	*	330624.2	********	1.8	*
5.	*	330644.4	********	1.8	*
6.	*	330664.6	********	1.8	*
7.	*	330682.2	********	1.8	*
8.	*	330662.0	********	1.8	*
9.	*	330641.8	********	1.8	*
10.	*	330621.6	********	1.8	*
11.	*	330601.4	********	1.8	*
12.	*	330581.2	********	1.8	*
13.	*	330561.9	********	1.8	*
14.	*	330532.3	********	1.8	*
15.	*	330532.3	********	1.8	*
16.	*	330532.2	********	1.8	*
17.	*	330532.1	********	1.8	*
18.	*	330532.1	********	1.8	*
19.	*	330532.0	********	1.8	*
20.	*	330531.9	********	1.8	*
21.	*	330560.6	********	1.8	*
22.	*	330560.6	********	1.8	*
23.	*	330560.7	********	1.8	*
24.	*	330560.8	********	1.8	*
25.	*	330560.8	********	1.8	*
26.	*	330560.9	********	1.8	*
27.	*	330559.7	********	1.8	*
28.	*	330556.8	********	1.8	*
29.	*	330556.2	********	1.8	*
30.	*	330555.6	********	1.8	*
31.	*	330555.0	********	1.8	*
32.	*	330554.4	********	1.8	*
33.	*	330553.8	********	1.8	*
34.	*	330531.5	********	1.8	*
35.	*	330532.1	********	1.8	*
36.	*	330532.7	********	1.8	*
37.	*	330533.3	********	1.8	*

38.	* 330533.9	********	1.8 *
39.	* 330534.6	********	1.8 *
40.	* 330535.2	********	1.8 *

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 BUILD AM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
30. *	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
40. *	0.0	0.2	0.2	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50. *	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
60. *	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
70. *	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80. *	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90. *	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
110. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
120. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
130. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
140. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
150. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
160. *	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	0.2	0.2	0.1	0.1	0.1	0.1	0.1
170. *	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	0.2	0.2	0.2	0.1	0.1	0.1	0.1
180. *	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
190. *	0.1	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1
200. *	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210. *	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX *	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
DEGR. *	200	190	40	50	40	50	20	10	10	10	10	10	10	160	160	170	0	0	0	0

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 BUILD AM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
10. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1
20. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.1
30. *	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	0.2	0.2	0.2	0.2	0.2	0.1	0.1
40. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
50. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
60. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
70. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
110. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
120. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
130. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
140. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
150. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2
160. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2
170. *	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
180. *	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
190. *	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
200. *	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1
MAX *	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
DEGR. *	0	0	0	0	180	180	190	0	0	180	180	0	0	10	10	10	10	20	0	150

THE HIGHEST CONCENTRATION OF 0.30 PPM OCCURRED AT RECEPTOR REC2 .

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JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:53:28

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
LINK # *	200	190	40	50	40	50	20	10	10	10	10	10	10	160	160	170	0	0	0	0
1 *	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
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	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0

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JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:53:28

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
LINK # *	0	0	0	0	180	180	190	0	0	180	180	0	0	10	10	10	10	20	0	150
1 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2

1 CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

Run Began on 8/29/2017 at 11:22:12

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 BUILD PM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:22:12

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 370. CM

U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	LENGTH (M)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (M)	W (M)	V/C	QUEUE (VEH)
1. QUEUE A ST SB	*	330564.8	********	330799.6	********	*	334.	45.	AG	9.	100.0	0.0	3.4	1.21	55.6
2. FREE A ST	*	330548.2	********	330758.2	********	*	311.	42.	AG	801.	2.0	0.0	13.0		
3. QUEUE DOT AVE SB	*	330538.6	********	330542.8	********	*	284.	1.	AG	21.	100.0	0.0	7.0	1.23	47.3
4. FREE DOT AVE N	*	330546.7	********	330545.9	********	*	321.	360.	AG	1558.	2.0	0.0	28.5		
5. QUEUE DOT AVE NBT	*	330550.6	********	330515.2	********	*	332.	186.	AG	21.	100.0	0.0	7.0	1.28	55.4
6. QUEUE DOT AVE NBR	*	330556.0	********	330551.6	********	*	19.	193.	AG	5.	100.0	0.0	3.0	0.35	3.2
7. FREE DOT AVE S	*	330546.3	********	330539.6	********	*	332.	181.	AG	2309.	2.0	0.0	22.0		

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. QUEUE A ST SB	*	100	68	7.0	486	1752	5.13	2	3
3. QUEUE DOT AVE SB	*	100	76	5.0	749	1787	5.13	2	3
5. QUEUE DOT AVE NBT	*	100	76	5.0	784	1805	5.13	2	3
6. QUEUE DOT AVE NBR	*	100	37	5.0	315	1599	5.13	2	3

RECEPTOR LOCATIONS

RECEPTOR	*	X	Y	Z	*
1.	*	330564.1	********	1.8	*
2.	*	330583.8	********	1.8	*
3.	*	330603.9	********	1.8	*
4.	*	330624.2	********	1.8	*
5.	*	330644.4	********	1.8	*
6.	*	330664.6	********	1.8	*
7.	*	330682.2	********	1.8	*
8.	*	330662.0	********	1.8	*
9.	*	330641.8	********	1.8	*
10.	*	330621.6	********	1.8	*
11.	*	330601.4	********	1.8	*
12.	*	330581.2	********	1.8	*
13.	*	330561.9	********	1.8	*
14.	*	330532.3	********	1.8	*
15.	*	330532.3	********	1.8	*
16.	*	330532.2	********	1.8	*
17.	*	330532.1	********	1.8	*
18.	*	330532.1	********	1.8	*

19.	*	330532.0	********	1.8	*
20.	*	330531.9	********	1.8	*
21.	*	330560.6	********	1.8	*
22.	*	330560.6	********	1.8	*
23.	*	330560.7	********	1.8	*
24.	*	330560.8	********	1.8	*
25.	*	330560.8	********	1.8	*
26.	*	330560.9	********	1.8	*
27.	*	330559.7	********	1.8	*
28.	*	330556.8	********	1.8	*
29.	*	330556.2	********	1.8	*
30.	*	330555.6	********	1.8	*
31.	*	330555.0	********	1.8	*
32.	*	330554.4	********	1.8	*
33.	*	330553.8	********	1.8	*
34.	*	330531.5	********	1.8	*
35.	*	330532.1	********	1.8	*
36.	*	330532.7	********	1.8	*
37.	*	330533.3	********	1.8	*
38.	*	330533.9	********	1.8	*
39.	*	330534.6	********	1.8	*
40.	*	330535.2	********	1.8	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
40. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
50. *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
60. *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1
70. *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1
80. *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1
90. *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1
100. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1
110. *	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1
120. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1
130. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
140. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
150. *	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
160. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
170. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
180. *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1
190. *	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.1

200. *	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210. *	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX *	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
DEGR. *	200	190	40	40	40	40	0	0	0	0	0	310	190	50	0	0	0	10	10	10

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.1	0.1	0.1	0.2	0.1
10. *	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.2	0.2	0.2	0.1
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.2	0.2	0.1
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.1	0.1
40. *	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	0.3	0.3	0.3	0.3	0.3	0.1	0.1
50. *	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	0.2	0.2	0.2	0.2	0.2	0.1	0.2
60. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.2
70. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
80. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
90. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
100. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
110. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
120. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
130. *	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	0.2	0.2	0.2	0.2	0.1	0.1	0.1
140. *	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	0.3	0.3	0.3	0.3	0.3	0.2	0.2
150. *	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	0.3	0.3	0.3	0.3	0.3	0.2	0.2
160. *	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	0.3	0.3	0.3	0.3	0.3	0.3	0.2
170. *	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.2
180. *	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2
190. *	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
200. *	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1
210. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0

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230. *  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0
240. *  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
250. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
260. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
270. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
280. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
290. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
300. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
310. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0
320. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.1  0.0  0.0  0.0  0.0  0.0
330. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.1  0.0  0.0  0.0  0.0  0.0  0.0
340. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.0  0.0  0.0  0.0  0.0  0.0
350. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.1  0.1  0.1  0.0  0.1
------*----------------------------------------------------------------------------------------------------
MAX  *  0.1  0.1  0.1  0.1  0.2  0.2  0.3  0.3  0.3  0.2  0.2  0.2  0.2  0.3  0.3  0.3  0.3  0.3  0.3  0.2
DEGR. *   0    0    0    0  180  180  190  190  200  180    0    0    0    0    0   10   20   30  160   50

THE HIGHEST CONCENTRATION OF    0.30 PPM OCCURRED AT RECEPTOR REC34.
                                                  PAGE  5
  JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 BUILD PM PEAK HOUR

  DATE : 08/29/  0
  TIME : 11:22:12


  RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
  THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

     *   CO/LINK  (PPM)
     *   ANGLE (DEGREES)
     *  REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20
 LINK # *  200  190   40   40   40   40    0    0    0    0    0  310  190   50    0    0    0   10   10   10
 -------*----------------------------------------------------------------------------------------------------
   1  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   2  *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.1  0.0  0.0  0.0  0.0  0.0  0.0
   3  *  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  0.0  0.1  0.1  0.1  0.1  0.1  0.1
   4  *  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   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  0.1  0.0  0.0  0.0  0.0  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   7  *  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.2  0.0  0.0  0.0  0.0  0.0  0.0  0.0

                                                  PAGE  6
  JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 BUILD PM PEAK HOUR

  DATE : 08/29/  0
  TIME : 11:22:12


  RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
  THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

     *   CO/LINK  (PPM)
     *   ANGLE (DEGREES)
     *  REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
 LINK # *    0    0    0    0  180  180  190  190  200  180    0    0    0    0    0   10   20   30  160   50
 -------*----------------------------------------------------------------------------------------------------
   1  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   2  *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1
   3  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
```

```
 4 *  0.1  0.1  0.1  0.1  0.1  0.1  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  0.1
 5 *  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.0
 6 *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 7 *  0.0  0.0  0.0  0.0  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.0

1            CAL3QHC - (DATED 95221)

      CAL3QHC  PC (32 BIT) VERSION 3.0.0
      (C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on  8/28/2017 at 16:35:29

   JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2017 EXISTING AM PEAK HOUR

   DATE : 08/28/   0
   TIME : 16:35:29

    The MODE flag has been set to C for calculating CO averages.

   SITE & METEOROLOGICAL VARIABLES
   -------------------------------
   VS =   0.0 CM/S      VD =   0.0 CM/S      Z0 = 370. CM
    U =  1.0 M/S        CLAS =   4  (D)    ATIM =  60. MINUTES    MIXH =  1000. M   AMB =  0.0 PPM

   LINK VARIABLES
   --------------
    LINK DESCRIPTION    *       LINK COORDINATES (M)         *   LENGTH  BRG TYPE   VPH    EF     H   W    V/C QUEUE
                        *   X1       Y1       X2       Y2    *    (M)   (DEG)          (G/MI)   (M) (M)      (VEH)
   ------------------------*----------------------------------------*---------------------------------------------------------
   1. QUEUE A ST SB      * 330564.8  ********  330861.9  ******** *    422.    45. AG     22. 100.0   0.0  3.4 2.42  70.3
   2. FREE A ST          * 330548.2  ********  330758.2  ******** *    311.    42. AG    446.   2.8   0.0 13.0
   3. QUEUE DOT AVE SB   * 330538.6  ********  330538.8  ******** *     13.     1. AG     27. 100.0   0.0  7.0 0.22   2.2
   4. FREE DOT AVE N     * 330546.7  ********  330545.9  ******** *    321.   360. AG   1448.   2.8   0.0 28.5
   5. QUEUE DOT AVE NBT  * 330550.6  ********  330545.4  ******** *     49.   186. AG     27. 100.0   0.0  7.0 0.77   8.1
   6. QUEUE DOT AVE NBR  * 330556.0  ********  330553.3  ******** *     12.   193. AG      8. 100.0   0.0  3.0 0.25   2.0
   7. FREE DOT AVE S     * 330546.3  ********  330539.6  ******** *    332.   181. AG   1858.   2.8   0.0 22.0
                                                            PAGE  2
   JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2017 EXISTING AM PEAK HOUR

   DATE : 08/28/   0
   TIME : 16:35:29

   ADDITIONAL QUEUE LINK PARAMETERS
   --------------------------------
    LINK DESCRIPTION    *   CYCLE   RED    CLEARANCE  APPROACH  SATURATION   IDLE   SIGNAL   ARRIVAL
                        *   LENGTH  TIME   LOST TIME    VOL     FLOW RATE   EM FAC   TYPE     RATE
                        *   (SEC)   (SEC)   (SEC)      (VPH)     (VPH)     (gm/hr)
   ------------------------*--------------------------------------------------------------------------------
   1. QUEUE A ST SB      *    100     86     7.0      208      1731      9.62     2       3
   3. QUEUE DOT AVE SB   *    100     52     5.0      307      1736      9.62     2       3
   5. QUEUE DOT AVE NBT  *    100     52     5.0     1123      1787      9.62     2       3
   6. QUEUE DOT AVE NBR  *    100     30     5.0      238      1524      9.62     2       3

   RECEPTOR LOCATIONS
   ------------------
                        *        COORDINATES (M)        *
    RECEPTOR            *     X          Y          Z   *
   -------------------------*------------------------------------*
   1.                   *  330564.1   ********      1.8  *
```

2.	*	330583.8	********	1.8	*
3.	*	330603.9	********	1.8	*
4.	*	330624.2	********	1.8	*
5.	*	330644.4	********	1.8	*
6.	*	330664.6	********	1.8	*
7.	*	330682.2	********	1.8	*
8.	*	330662.0	********	1.8	*
9.	*	330641.8	********	1.8	*
10.	*	330621.6	********	1.8	*
11.	*	330601.4	********	1.8	*
12.	*	330581.2	********	1.8	*
13.	*	330561.9	********	1.8	*
14.	*	330532.3	********	1.8	*
15.	*	330532.3	********	1.8	*
16.	*	330532.2	********	1.8	*
17.	*	330532.1	********	1.8	*
18.	*	330532.1	********	1.8	*
19.	*	330532.0	********	1.8	*
20.	*	330531.9	********	1.8	*
21.	*	330560.6	********	1.8	*
22.	*	330560.6	********	1.8	*
23.	*	330560.7	********	1.8	*
24.	*	330560.8	********	1.8	*
25.	*	330560.8	********	1.8	*
26.	*	330560.9	********	1.8	*
27.	*	330559.7	********	1.8	*
28.	*	330556.8	********	1.8	*
29.	*	330556.2	********	1.8	*
30.	*	330555.6	********	1.8	*
31.	*	330555.0	********	1.8	*
32.	*	330554.4	********	1.8	*
33.	*	330553.8	********	1.8	*
34.	*	330531.5	********	1.8	*
35.	*	330532.1	********	1.8	*
36.	*	330532.7	********	1.8	*
37.	*	330533.3	********	1.8	*
38.	*	330533.9	********	1.8	*
39.	*	330534.6	********	1.8	*
40.	*	330535.2	********	1.8	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
20. *	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1

30.	*	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
40.	*	0.1	0.3	0.2	0.2	0.2	0.0	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50.	*	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
60.	*	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
70.	*	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
80.	*	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
90.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1
100.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
110.	*	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
120.	*	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
130.	*	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
140.	*	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1
150.	*	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1
160.	*	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.2	0.2
170.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2
180.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1
190.	*	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1
200.	*	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210.	*	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220.	*	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230.	*	0.1	0.2	0.1	0.1	0.0	0.0	0.3	0.2	0.2	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.	*	0.1	0.2	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250.	*	0.1	0.2	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX	*	0.2	0.4	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
DEGR.	*	60	210	200	40	40	50	30	10	10	10	10	30	10	10	10	10	10	10	10	160

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)	*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2
10.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2
20.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
30.	*	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	0.2	0.2	0.2	0.2	0.2	0.2	0.1
40.	*	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	0.2	0.2	0.2	0.2	0.2	0.3	0.1

50. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.1
60. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.1
70. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.2
80. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.2
90. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.1
100. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.1
110. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.1
120. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
130. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2
140. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3
150. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2
160. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
170. *	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
180. *	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
190. *	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
200. *	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
210. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
350. *	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
MAX *	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
DEGR. *	190	190	340	340	180	180	210	230	350	0	0	0	0	0	0	0	10	10	40	140

THE HIGHEST CONCENTRATION OF 0.40 PPM OCCURRED AT RECEPTOR REC2 .

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JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING AM PEAK HOUR

DATE : 08/28/ 0
TIME : 16:35:29

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)

*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
LINK # *	60	210	200	40	40	50	30	10	10	10	10	30	10	10	10	10	10	10	10	160
1 *	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
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	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.1	0.1	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	0.0	0.0	0.0	0.0

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING AM PEAK HOUR

DATE : 08/28/ 0

TIME : 16:35:29

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

```
       *   CO/LINK  (PPM)
       *   ANGLE (DEGREES)
       * REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
LINK # *  190  190  340  340  180  180  210  230  350    0    0    0    0    0    0    0   10   10   40  140
-------*------------------------------------------------------------------------------------------------------------------------
   1  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   2  *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   3  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   4  *  0.2  0.2  0.2  0.2  0.1  0.1  0.0  0.0  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.0  0.0
   5  *  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.1
   6  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   7  *  0.0  0.0  0.0  0.0  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2
```

1 CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

Run Began on 8/29/2017 at 10:36:37

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING PM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:36:37

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

```
-------------------------------
VS =   0.0 CM/S      VD =   0.0 CM/S      Z0 = 370. CM
 U =  1.0 M/S       CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 PPM
```

LINK VARIABLES

```
--------------
  LINK DESCRIPTION    *        LINK COORDINATES (M)          *    LENGTH  BRG TYPE   VPH    EF     H  W    V/C QUEUE
                   *  X1       Y1       X2       Y2    *    (M)  (DEG)          (G/MI)  (M) (M)      (VEH)
------------------------*----------------------------------------*---------------------------------------------------------
1. QUEUE A ST SB      * 330564.8  ********  330746.7  ******** *    258.    45. AG    19. 100.0   0.0  3.4 1.20  43.1
2. FREE A ST          * 330548.2  ********  330758.2  ******** *    311.    42. AG   623.   2.8   0.0 13.0
3. QUEUE DOT AVE SB   * 330538.6  ********  330539.2  ******** *     42.     1. AG    37. 100.0   0.0  7.0 0.84   6.9
4. FREE DOT AVE N     * 330546.7  ********  330545.9  ******** *    321.   360. AG  1382.   2.8   0.0 28.5
5. QUEUE DOT AVE NBT  * 330550.6  ********  330545.8  ******** *     45.   186. AG    37. 100.0   0.0  7.0 0.87   7.6
6. QUEUE DOT AVE NBR  * 330556.0  ********  330552.6  ******** *     15.   193. AG    10. 100.0   0.0  3.0 0.27   2.5
7. FREE DOT AVE S     * 330546.3  ********  330539.6  ******** *    332.   181. AG  1957.   2.8   0.0 22.0
```

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING PM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:36:37

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. QUEUE A ST SB	*	100	73	7.0	377	1749	9.62	2	3
3. QUEUE DOT AVE SB	*	100	71	5.0	664	1787	9.62	2	3
5. QUEUE DOT AVE NBT	*	100	71	5.0	694	1805	9.62	2	3
6. QUEUE DOT AVE NBR	*	100	37	5.0	246	1599	9.62	2	3

RECEPTOR LOCATIONS

RECEPTOR	*	X	Y	Z	*
1.	*	330564.1	********	1.8	*
2.	*	330583.8	********	1.8	*
3.	*	330603.9	********	1.8	*
4.	*	330624.2	********	1.8	*
5.	*	330644.4	********	1.8	*
6.	*	330664.6	********	1.8	*
7.	*	330682.2	********	1.8	*
8.	*	330662.0	********	1.8	*
9.	*	330641.8	********	1.8	*
10.	*	330621.6	********	1.8	*
11.	*	330601.4	********	1.8	*
12.	*	330581.2	********	1.8	*
13.	*	330561.9	********	1.8	*
14.	*	330532.3	********	1.8	*
15.	*	330532.3	********	1.8	*
16.	*	330532.2	********	1.8	*
17.	*	330532.1	********	1.8	*
18.	*	330532.1	********	1.8	*
19.	*	330532.0	********	1.8	*
20.	*	330531.9	********	1.8	*
21.	*	330560.6	********	1.8	*
22.	*	330560.6	********	1.8	*
23.	*	330560.7	********	1.8	*
24.	*	330560.8	********	1.8	*
25.	*	330560.8	********	1.8	*
26.	*	330560.9	********	1.8	*
27.	*	330559.7	********	1.8	*
28.	*	330556.8	********	1.8	*
29.	*	330556.2	********	1.8	*
30.	*	330555.6	********	1.8	*
31.	*	330555.0	********	1.8	*
32.	*	330554.4	********	1.8	*
33.	*	330553.8	********	1.8	*
34.	*	330531.5	********	1.8	*
35.	*	330532.1	********	1.8	*
36.	*	330532.7	********	1.8	*
37.	*	330533.3	********	1.8	*

38.	* 330533.9	********	1.8	*
39.	* 330534.6	********	1.8	*
40.	* 330535.2	********	1.8	*

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING PM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
40. *	0.0	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
50. *	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
60. *	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1
70. *	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1
80. *	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1
90. *	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1
100. *	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1
110. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1
120. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1
130. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1
140. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.1	0.1	0.1	0.1
150. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.1	0.1	0.1	0.1
160. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.1	0.1	0.1	0.1
170. *	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1
180. *	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1
190. *	0.2	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1
200. *	0.2	0.3	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210. *	0.2	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350. *	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX *	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1
DEGR. *	50	190	200	50	60	40	0	10	20	0	0	250	200	140	10	160	10	0	0	0

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING PM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.1
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.3	0.1
40. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.2
50. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.2
60. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.2
70. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.2
80. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.1
90. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.2
100. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.2
110. *	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	0.1	0.1	0.1	0.1	0.1	0.2	0.2
120. *	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	0.2	0.2	0.2	0.2	0.2	0.3	0.2
130. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3
140. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3
150. *	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3
160. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.3
170. *	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3
180. *	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
190. *	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
200. *	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
210. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
350. *	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
MAX *	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
DEGR. *	0	0	0	180	180	180	200	190	350	0	0	0	0	0	0	0	0	10	30	130

THE HIGHEST CONCENTRATION OF 0.40 PPM OCCURRED AT RECEPTOR REC29.

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JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING PM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:36:37

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
LINK # *	50	190	200	50	60	40	0	10	20	0	0	250	200	140	10	160	10	0	0	0
1 *	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	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	0.0	0.1	0.1	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.2	0.1	0.1	0.1
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	0.1	0.1	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.0

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JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2017 EXISTING PM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:36:37

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
LINK # *	0	0	0	180	180	180	200	190	350	0	0	0	0	0	0	0	0	10	30	130
1 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
6 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

1 CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

Run Began on 8/29/2017 at 10:37:59

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 NO-BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 10:37:59

The MODE flag has been set to C for calculating CO averages.

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SITE & METEOROLOGICAL VARIABLES
-------------------------------
VS =  0.0 CM/S     VD =  0.0 CM/S     Z0 = 370. CM
U =  1.0 M/S     CLAS =  4  (D)    ATIM =  60. MINUTES    MIXH =  1000. M   AMB =  0.0 PPM

LINK VARIABLES
--------------
 LINK DESCRIPTION    *       LINK COORDINATES (M)        *  LENGTH  BRG TYPE   VPH    EF     H   W    V/C QUEUE
                     *  X1       Y1       X2       Y2    *   (M)   (DEG)            (G/MI)  (M) (M)        (VEH)
-------------------------*------------------------------------------*-----------------------------------------------------------
1. QUEUE A ST SB      * 330564.8  ********  330936.4  ******** *    528.    45. AG     12. 100.0   0.0  3.4 2.48  88.0
2. FREE A ST          * 330548.2  ********  330758.2  ******** *    311.    42. AG    582.   2.0   0.0 13.0
3. QUEUE DOT AVE SB   * 330538.6  ********  330538.8  ******** *     15.     1. AG     15. 100.0   0.0  7.0 0.24   2.5
4. FREE DOT AVE N     * 330546.7  ********  330545.9  ******** *    321.   360. AG   1570.   2.0   0.0 28.5
5. QUEUE DOT AVE NBT  * 330550.6  ********  330544.8  ******** *     54.   186. AG     15. 100.0   0.0  7.0 0.85   9.0
6. QUEUE DOT AVE NBR  * 330556.0  ********  330552.3  ******** *     16.   193. AG      4. 100.0   0.0  3.0 0.34   2.7
7. FREE DOT AVE S     * 330546.3  ********  330539.6  ******** *    332.   181. AG   2114.   2.0   0.0 22.0
                                                          PAGE  2
JOB: 248 DORCHESTER AVENUE - INTERS. #3                RUN: 2024 NO-BUILD AM PEAK HOUR

DATE : 08/29/  0
TIME : 10:37:59

ADDITIONAL QUEUE LINK PARAMETERS
--------------------------------
 LINK DESCRIPTION    *  CYCLE   RED    CLEARANCE  APPROACH  SATURATION   IDLE   SIGNAL   ARRIVAL
                     *  LENGTH  TIME   LOST TIME    VOL     FLOW RATE   EM FAC   TYPE     RATE
                     *  (SEC)   (SEC)   (SEC)      (VPH)     (VPH)     (gm/hr)
-------------------------*--------------------------------------------------------------------------------
1. QUEUE A ST SB      *   100     85      7.0       258      1734      5.13      2        3
3. QUEUE DOT AVE SB   *   100     53      5.0       340      1736      5.13      2        3
5. QUEUE DOT AVE NBT  *   100     53      5.0      1211      1787      5.13      2        3
6. QUEUE DOT AVE NBR  *   100     30      5.0       324      1524      5.13      2        3

RECEPTOR LOCATIONS
------------------
                     *       COORDINATES (M)       *
 RECEPTOR            *    X          Y        Z    *
-------------------------*-------------------------------*
1.                   *  330564.1  ********   1.8  *
2.                   *  330583.8  ********   1.8  *
3.                   *  330603.9  ********   1.8  *
4.                   *  330624.2  ********   1.8  *
5.                   *  330644.4  ********   1.8  *
6.                   *  330664.6  ********   1.8  *
7.                   *  330682.2  ********   1.8  *
8.                   *  330662.0  ********   1.8  *
9.                   *  330641.8  ********   1.8  *
10.                  *  330621.6  ********   1.8  *
11.                  *  330601.4  ********   1.8  *
12.                  *  330581.2  ********   1.8  *
13.                  *  330561.9  ********   1.8  *
14.                  *  330532.3  ********   1.8  *
15.                  *  330532.3  ********   1.8  *
16.                  *  330532.2  ********   1.8  *
17.                  *  330532.1  ********   1.8  *
18.                  *  330532.1  ********   1.8  *
19.                  *  330532.0  ********   1.8  *
20.                  *  330531.9  ********   1.8  *
```

21.	*	330560.6	********	1.8	*
22.	*	330560.6	********	1.8	*
23.	*	330560.7	********	1.8	*
24.	*	330560.8	********	1.8	*
25.	*	330560.8	********	1.8	*
26.	*	330560.9	********	1.8	*
27.	*	330559.7	********	1.8	*
28.	*	330556.8	********	1.8	*
29.	*	330556.2	********	1.8	*
30.	*	330555.6	********	1.8	*
31.	*	330555.0	********	1.8	*
32.	*	330554.4	********	1.8	*
33.	*	330553.8	********	1.8	*
34.	*	330531.5	********	1.8	*
35.	*	330532.1	********	1.8	*
36.	*	330532.7	********	1.8	*
37.	*	330533.3	********	1.8	*
38.	*	330533.9	********	1.8	*
39.	*	330534.6	********	1.8	*
40.	*	330535.2	********	1.8	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
40. *	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
60. *	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
70. *	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
110. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
120. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
130. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
140. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
150. *	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1
160. *	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	0.2	0.2	0.1	0.1	0.1	0.1	0.1
170. *	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	0.2	0.2	0.2	0.1	0.1	0.1	0.1
180. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
190. *	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1
200. *	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210. *	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

220. * 0.1 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

240. * 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

250. * 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

260. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

270. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

------*--

MAX * 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.1

DEGR. * 200 50 40 50 50 50 10 10 10 10 10 10 10 160 160 170 0 0 0 0

PAGE 4

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 NO-BUILD AM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

------*--

0. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.1 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.2 0.1

10. * 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.1 0.2 0.1

20. * 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 0.2 0.2 0.2 0.2 0.2 0.2 0.1

30. * 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 0.2 0.2 0.2 0.2 0.2 0.1 0.1

40. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

50. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

60. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

70. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

80. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

90. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

100. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

110. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

120. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

130. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

140. * 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 0.1 0.1 0.1 0.1 0.1 0.1 0.1

150. * 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 0.2 0.2 0.2 0.2 0.2 0.2 0.2

160. * 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 0.2 0.2 0.2 0.2 0.2 0.2 0.2

170. * 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2

180. * 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.2 0.2 0.2 0.2 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2

190. * 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1

200. * 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0

210. * 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0

220. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0

```
240. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
250. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
260. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
270. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
280. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
290. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
300. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
310. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
320. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
330. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.0  0.0  0.0  0.0  0.0  0.0  0.0
340. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.0  0.0  0.0  0.0  0.0  0.0  0.0
350. *  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.1  0.2  0.2  0.2  0.2  0.1  0.1  0.1  0.1  0.1  0.0  0.1
------*------------------------------------------------------------------------------------------------------------------------
MAX   *  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2
DEGR. *    0    0    0    0  180  180  190    0    0  180  180    0    0   10   10   10   10   20    0  150

THE HIGHEST CONCENTRATION OF    0.20 PPM OCCURRED AT RECEPTOR REC28.
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                                PAGE  5
  JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 NO-BUILD AM PEAK HOUR

  DATE : 08/29/   0
  TIME : 10:37:59

  RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
  THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

    *   CO/LINK  (PPM)
    *   ANGLE (DEGREES)
    *  REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20
 LINK # *  200   50   40   50   50   50   10   10   10   10   10   10   10  160  160  170    0    0    0    0
 -------*------------------------------------------------------------------------------------------------------------------------
   1 *  0.0  0.1  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  0.0  0.0  0.0  0.0  0.0
   2 *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   3 *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   4 *  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.0  0.1  0.1  0.1  0.1  0.1  0.1
   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  0.0  0.0  0.0  0.0  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   7 *  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.2  0.1  0.1  0.0  0.0  0.0  0.0
```

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                                PAGE  6
  JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 NO-BUILD AM PEAK HOUR

  DATE : 08/29/   0
  TIME : 10:37:59

  RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
  THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

    *   CO/LINK  (PPM)
    *   ANGLE (DEGREES)
    *  REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
 LINK # *    0    0    0    0  180  180  190    0    0  180  180    0    0   10   10   10   10   20    0  150
 -------*------------------------------------------------------------------------------------------------------------------------
   1 *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   2 *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   3 *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
   4 *  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1  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  0.0  0.0  0.0  0.0  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 7 *  0.0  0.0  0.0  0.0  0.1  0.1  0.2  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.2

1            CAL3QHC - (DATED 95221)

      CAL3QHC  PC (32 BIT) VERSION 3.0.0
     (C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on  8/29/2017 at 11:19:20

 JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 NO-BUILD PM PEAK HOUR

 DATE : 08/29/   0
 TIME : 11:19:20

   The MODE flag has been set to C for calculating CO averages.

  SITE & METEOROLOGICAL VARIABLES
  -------------------------------
  VS =   0.0 CM/S      VD =   0.0 CM/S      Z0 = 370. CM
   U =  1.0 M/S        CLAS =  4  (D)    ATIM =  60. MINUTES    MIXH =  1000. M   AMB =  0.0 PPM

  LINK VARIABLES
  --------------
   LINK DESCRIPTION    *        LINK COORDINATES (M)         *   LENGTH  BRG TYPE   VPH    EF     H   W   V/C QUEUE
                       *   X1       Y1       X2       Y2     *    (M)   (DEG)          (G/MI)   (M) (M)       (VEH)
 ------------------------*-----------------------------------------*------------------------------------------------------
  1. QUEUE A ST SB       * 330564.8  ********  330784.0  ******** *    311.   45. AG     9. 100.0   0.0  3.4 1.19  51.9
  2. FREE A ST           * 330548.2  ********  330758.2  ******** *    311.   42. AG   790.   2.0   0.0 13.0
  3. QUEUE DOT AVE SB    * 330538.6  ********  330542.6  ******** *    265.    1. AG    21. 100.0   0.0  7.0 1.21  44.1
  4. FREE DOT AVE N      * 330546.7  ********  330545.9  ******** *    321.  360. AG  1526.   2.0   0.0 28.5
  5. QUEUE DOT AVE NBT   * 330550.6  ********  330518.6  ******** *    300.  186. AG    21. 100.0   0.0  7.0 1.25  50.1
  6. QUEUE DOT AVE NBR   * 330556.0  ********  330551.6  ******** *     19.  193. AG     5. 100.0   0.0  3.0 0.35   3.2
  7. FREE DOT AVE S      * 330546.3  ********  330539.6  ******** *    332.  181. AG  2266.   2.0   0.0 22.0
                                                          PAGE  2
 JOB: 248 DORCHESTER AVENUE - INTERS. #3              RUN: 2024 NO-BUILD PM PEAK HOUR

 DATE : 08/29/   0
 TIME : 11:19:20

  ADDITIONAL QUEUE LINK PARAMETERS
  --------------------------------
   LINK DESCRIPTION    *   CYCLE    RED     CLEARANCE  APPROACH  SATURATION   IDLE   SIGNAL   ARRIVAL
                       *   LENGTH   TIME    LOST TIME    VOL     FLOW RATE   EM FAC   TYPE     RATE
                       *   (SEC)   (SEC)     (SEC)      (VPH)     (VPH)     (gm/hr)
 ------------------------*--------------------------------------------------------------------------------
  1. QUEUE A ST SB       *   100      68       7.0       479      1752       5.13      2        3
  3. QUEUE DOT AVE SB    *   100      76       5.0       737      1787       5.13      2        3
  5. QUEUE DOT AVE NBT   *   100      76       5.0       764      1805       5.13      2        3
  6. QUEUE DOT AVE NBR   *   100      37       5.0       311      1599       5.13      2        3

  RECEPTOR LOCATIONS
  ------------------
                       *        COORDINATES (M)        *
   RECEPTOR            *     X          Y          Z   *
 -------------------------*-------------------------------------*
 1.                    *   330564.1   ********     1.8  *
 2.                    *   330583.8   ********     1.8  *
 3.                    *   330603.9   ********     1.8  *
```

4.	*	330624.2	********	1.8	*
5.	*	330644.4	********	1.8	*
6.	*	330664.6	********	1.8	*
7.	*	330682.2	********	1.8	*
8.	*	330662.0	********	1.8	*
9.	*	330641.8	********	1.8	*
10.	*	330621.6	********	1.8	*
11.	*	330601.4	********	1.8	*
12.	*	330581.2	********	1.8	*
13.	*	330561.9	********	1.8	*
14.	*	330532.3	********	1.8	*
15.	*	330532.3	********	1.8	*
16.	*	330532.2	********	1.8	*
17.	*	330532.1	********	1.8	*
18.	*	330532.1	********	1.8	*
19.	*	330532.0	********	1.8	*
20.	*	330531.9	********	1.8	*
21.	*	330560.6	********	1.8	*
22.	*	330560.6	********	1.8	*
23.	*	330560.7	********	1.8	*
24.	*	330560.8	********	1.8	*
25.	*	330560.8	********	1.8	*
26.	*	330560.9	********	1.8	*
27.	*	330559.7	********	1.8	*
28.	*	330556.8	********	1.8	*
29.	*	330556.2	********	1.8	*
30.	*	330555.6	********	1.8	*
31.	*	330555.0	********	1.8	*
32.	*	330554.4	********	1.8	*
33.	*	330553.8	********	1.8	*
34.	*	330531.5	********	1.8	*
35.	*	330532.1	********	1.8	*
36.	*	330532.7	********	1.8	*
37.	*	330533.3	********	1.8	*
38.	*	330533.9	********	1.8	*
39.	*	330534.6	********	1.8	*
40.	*	330535.2	********	1.8	*

PAGE 3

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 NO-BUILD PM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
40. *	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2

50.	*	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
60.	*	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1
70.	*	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1
80.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1
90.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1
100.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1
110.	*	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	0.1	0.2	0.2	0.2	0.1	0.1	0.1
120.	*	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	0.1	0.1	0.2	0.2	0.1	0.1	0.1
130.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1
140.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
150.	*	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2
160.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
170.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.2	0.2	0.2
180.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1
190.	*	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1
200.	*	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210.	*	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230.	*	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340.	*	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX	*	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
DEGR.	*	200	50	40	40	40	40	20	0	0	0	0	310	200	60	0	0	10	10	10	20

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 NO-BUILD PM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)	*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.4	0.4	0.2	0.1	0.1	0.2	0.1
10.	*	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.3	0.1	0.2	0.1
20.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.2	0.1
30.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.1	0.1
40.	*	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	0.3	0.3	0.3	0.3	0.3	0.1	0.1
50.	*	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	0.2	0.2	0.2	0.2	0.2	0.1	0.2
60.	*	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	0.2	0.2	0.2	0.2	0.2	0.1	0.2

70. *	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1
80. *	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1
90. *	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1
100. *	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	0.1	0.1	0.2	0.2	0.1	0.1	0.1
110. *	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1
120. *	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1
130. *	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1
140. *	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	0.3	0.3	0.3	0.3	0.3	0.2	0.2
150. *	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	0.3	0.3	0.3	0.3	0.3	0.3	0.2
160. *	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	0.3	0.3	0.3	0.3	0.3	0.3	0.2
170. *	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.2
180. *	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.3	0.3	0.2	0.2
190. *	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1
200. *	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
210. *	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
220. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
230. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
240. *	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
250. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
340. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
350. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1
MAX *	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.3	0.3	0.3	0.2
DEGR. *	0	0	0	0	180	180	190	190	200	180	0	0	0	0	0	10	10	20	150	50

THE HIGHEST CONCENTRATION OF 0.40 PPM OCCURRED AT RECEPTOR REC34.

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JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 NO-BUILD PM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:19:20

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
LINK # *	200	50	40	40	40	40	20	0	0	0	0	310	200	60	0	0	10	10	10	20
1 *	0.0	0.1	0.0	0.0	0.0	0.0	0.1	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
2 *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3 *	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	0.0	0.1	0.1	0.1	0.1	0.1	0.1
4 *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
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	0.1	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

JOB: 248 DORCHESTER AVENUE - INTERS. #3 RUN: 2024 NO-BUILD PM PEAK HOUR

DATE : 08/29/ 0
TIME : 11:19:20

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

	* CO/LINK (PPM)																			
	* ANGLE (DEGREES)																			
	* REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
LINK # *	0	0	0	0	180	180	190	190	200	180	0	0	0	0	0	10	10	20	150	50
1 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
3 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.1	0.1	0.1	0.1	0.1	0.1	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	0.1
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.0
6 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0

1 CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

Run Began on 8/29/2017 at 11:40:02

JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0
TIME : 11:40:02

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 370. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION *	X1	Y1	X2	Y2 *	LENGTH (M)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (M)	W (M)	V/C	QUEUE (VEH)
1. FREE DOT AVE N *	330539.3	********	330545.1	******** *	320.	1.	AG	2115.	2.0	0.0	18.0		
2. FREE DOT AVE S *	330539.3	********	330538.0	******** *	333.	180.	AG	2110.	2.0	0.0	18.0		
3. FREE DRIVE WB *	330539.6	********	330610.7	******** *	71.	90.	AG	75.	2.0	0.0	9.7		
4. UNSIG QUEUE DRIVEWAY*	330549.2	********	330555.9	******** *	7.	90.	AG	32.	3.9	0.0	1.9		

JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:40:02

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	*	X	Y	Z	*
1.	*	330549.0	********	1.8	*
2.	*	330548.3	********	1.8	*
3.	*	330548.2	********	1.8	*
4.	*	330548.1	********	1.8	*
5.	*	330547.9	********	1.8	*
6.	*	330547.8	********	1.8	*
7.	*	330547.7	********	1.8	*
8.	*	330529.5	********	1.8	*
9.	*	330529.6	********	1.8	*
10.	*	330529.7	********	1.8	*
11.	*	330529.8	********	1.8	*
12.	*	330529.9	********	1.8	*
13.	*	330530.1	********	1.8	*
14.	*	330530.2	********	1.8	*
15.	*	330530.2	********	1.8	*
16.	*	330530.8	********	1.8	*
17.	*	330531.3	********	1.8	*
18.	*	330531.8	********	1.8	*
19.	*	330532.4	********	1.8	*
20.	*	330532.9	********	1.8	*
21.	*	330533.5	********	1.8	*
22.	*	330551.5	********	1.8	*
23.	*	330550.9	********	1.8	*
24.	*	330550.4	********	1.8	*
25.	*	330549.8	********	1.8	*
26.	*	330549.3	********	1.8	*
27.	*	330548.8	********	1.8	*
28.	*	330549.5	********	1.8	*
29.	*	330569.6	********	1.8	*
30.	*	330599.6	********	1.8	*
31.	*	330610.7	********	1.8	*
32.	*	330580.7	********	1.8	*
33.	*	330550.7	********	1.8	*

JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD AM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10. *	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
20. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
40. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
50. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
60. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
70. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
80. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
100. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
110. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
120. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
130. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
140. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
150. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
160. *	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
170. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
180. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
190. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
200. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
210. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
220. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
230. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
240. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
250. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
260. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
270. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
280. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
290. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
300. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
310. *	0.2	0.1	0.1	0.1	0.1	0.1	0.1	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
320. *	0.2	0.1	0.2	0.2	0.2	0.2	0.2	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
330. *	0.2	0.1	0.2	0.2	0.2	0.2	0.2	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
340. *	0.1	0.2	0.2	0.2	0.2	0.2	0.2	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
350. *	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX *	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
DEGR. *	180	0	350	180	0	0	0	0	0	0	10	10	0	0	0	0	170	0	0	0

JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD AM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33
0. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.1
10. *	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
20. *	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
30. *	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40. *	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130. *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140. *	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150. *	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160. *	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170. *	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
180. *	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1
190. *	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.2
200. *	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2
210. *	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.2
220. *	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1
230. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1
240. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1
250. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
260. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
270. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
280. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
290. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
300. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
310. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
320. *	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1
330. *	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.1
340. *	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2
350. *	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.2
MAX *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2
DEGR. *	0	0	0	0	0	0	0	0	190	0	0	200	190

THE HIGHEST CONCENTRATION OF 0.30 PPM OCCURRED AT RECEPTOR REC12.

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JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:40:02

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
LINK # *	180	0	350	180	0	0	0	0	0	0	10	10	0	0	0	0	170	0	0	0
1 *	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2 *	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
3 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD AM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:40:02

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33
LINK # *	0	0	0	0	0	0	0	0	190	0	0	200	190
1 *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2
3 *	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
4 *	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

1 CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

Run Began on 8/29/2017 at 11:42:00

JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD PM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:42:00

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 370. CM

U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (M)	W (M)	V/C	QUEUE (VEH)
1. FREE DOT AVE N	330539.3	********	330545.1	********	320.	1.	AG	2305.	2.0	0.0	18.0		
2. FREE DOT AVE S	330539.3	********	330538.0	********	333.	180.	AG	2299.	2.0	0.0	18.0		
3. FREE DRIVE WB	330539.6	********	330610.7	********	71.	90.	AG	80.	2.0	0.0	9.7		
4. UNSIG QUEUE DRIVEWAY	330549.2	********	330554.7	********	6.	90.	AG	43.	3.9	0.0	1.9		

JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD PM PEAK HOUR

DATE : 08/29/ 0

TIME : 11:42:00

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1.	330549.0	********	1.8
2.	330548.3	********	1.8
3.	330548.2	********	1.8
4.	330548.1	********	1.8
5.	330547.9	********	1.8
6.	330547.8	********	1.8
7.	330547.7	********	1.8
8.	330529.5	********	1.8
9.	330529.6	********	1.8
10.	330529.7	********	1.8
11.	330529.8	********	1.8
12.	330529.9	********	1.8

13.	*	330530.1	********	1.8	*
14.	*	330530.2	********	1.8	*
15.	*	330530.2	********	1.8	*
16.	*	330530.8	********	1.8	*
17.	*	330531.3	********	1.8	*
18.	*	330531.8	********	1.8	*
19.	*	330532.4	********	1.8	*
20.	*	330532.9	********	1.8	*
21.	*	330533.5	********	1.8	*
22.	*	330551.5	********	1.8	*
23.	*	330550.9	********	1.8	*
24.	*	330550.4	********	1.8	*
25.	*	330549.8	********	1.8	*
26.	*	330549.3	********	1.8	*
27.	*	330548.8	********	1.8	*
28.	*	330549.5	********	1.8	*
29.	*	330569.6	********	1.8	*
30.	*	330599.6	********	1.8	*
31.	*	330610.7	********	1.8	*
32.	*	330580.7	********	1.8	*
33.	*	330550.7	********	1.8	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10. *	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
20. *	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
30. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
40. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
50. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2
60. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
70. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
80. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
100. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
110. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
120. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
130. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
140. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
150. *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
160. *	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
170. *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
180. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
190. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
200. *	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1

210.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
220.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
230.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
240.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
250.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
260.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
270.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
280.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
290.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
300.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
310.	*	0.2	0.1	0.2	0.2	0.2	0.2	0.2	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
320.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
330.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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
340.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
350.	*	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX	*	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2
DEGR.	*	0	0	350	0	0	0	0	0	0	0	10	20	0	0	0	170	180	0	0	

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JOB: 248 DORCHESTER AVENUE - INTERS. #7 RUN: 2024 BUILD PM PEAK HOUR

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33
0.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.1
10.	*	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
20.	*	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
30.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.	*	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
180.	*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.2
190.	*	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.0	0.0	0.1	0.2
200.	*	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2
210.	*	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.2
220.	*	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.2

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230. *  0.0  0.2  0.2  0.2  0.2  0.2  0.1  0.2  0.1  0.0  0.0  0.1  0.1
240. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.1  0.0  0.0  0.1  0.1
250. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.1  0.1
260. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.1
270. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.1
280. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.1
290. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0  0.2
300. *  0.0  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.1  0.2
310. *  0.0  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.1  0.0  0.0  0.1  0.1
320. *  0.0  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.0  0.0  0.1  0.1
330. *  0.0  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.0  0.0  0.1  0.1
340. *  0.0  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.0  0.0  0.1  0.2
350. *  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.1  0.0  0.0  0.1  0.2
------*------------------------------------------------------------------
MAX   *  0.2  0.2  0.2  0.2  0.3  0.3  0.2  0.2  0.1  0.1  0.0  0.1  0.2
DEGR. *    0    0    0    0  190  190    0    0  190  210    0  190  180

THE HIGHEST CONCENTRATION OF    0.30 PPM OCCURRED AT RECEPTOR REC4 .

                                        PAGE  5
   JOB: 248 DORCHESTER AVENUE - INTERS. #7            RUN: 2024 BUILD PM PEAK HOUR

   DATE : 08/29/   0
   TIME : 11:42:00


   RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
   THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

      *   CO/LINK  (PPM)
      *   ANGLE (DEGREES)
      *  REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20
 LINK # *    0    0  350    0    0    0    0    0    0    0    0   10   20    0    0    0  170  180    0    0
 -------*------------------------------------------------------------------------------------------------------------
    1  *  0.2  0.1  0.1  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.1  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2
    2  *  0.0  0.1  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.0  0.0  0.0  0.1  0.1  0.0  0.0
    3  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0
    4  *  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  0.0  0.0  0.0  0.0  0.0  0.0  0.0

                                        PAGE  6
   JOB: 248 DORCHESTER AVENUE - INTERS. #7            RUN: 2024 BUILD PM PEAK HOUR

   DATE : 08/29/   0
   TIME : 11:42:00


   RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
   THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

      *   CO/LINK  (PPM)
      *   ANGLE (DEGREES)
      *  REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33
 LINK # *    0    0    0    0  190  190    0    0  190  210    0  190  180
 -------*------------------------------------------------------------------
    1  *  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.2  0.0  0.0  0.0  0.0  0.0
    2  *  0.0  0.0  0.0  0.0  0.1  0.1  0.0  0.0  0.1  0.1  0.0  0.1  0.2
    3  *  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
    4  *  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
```

APPENDIX C – NOISE APPENDIX

APPENDIX C
NOISE

248 DORCHESTER AVENUE
PROJECT NOTIFICATION FORM

Page **Contents**

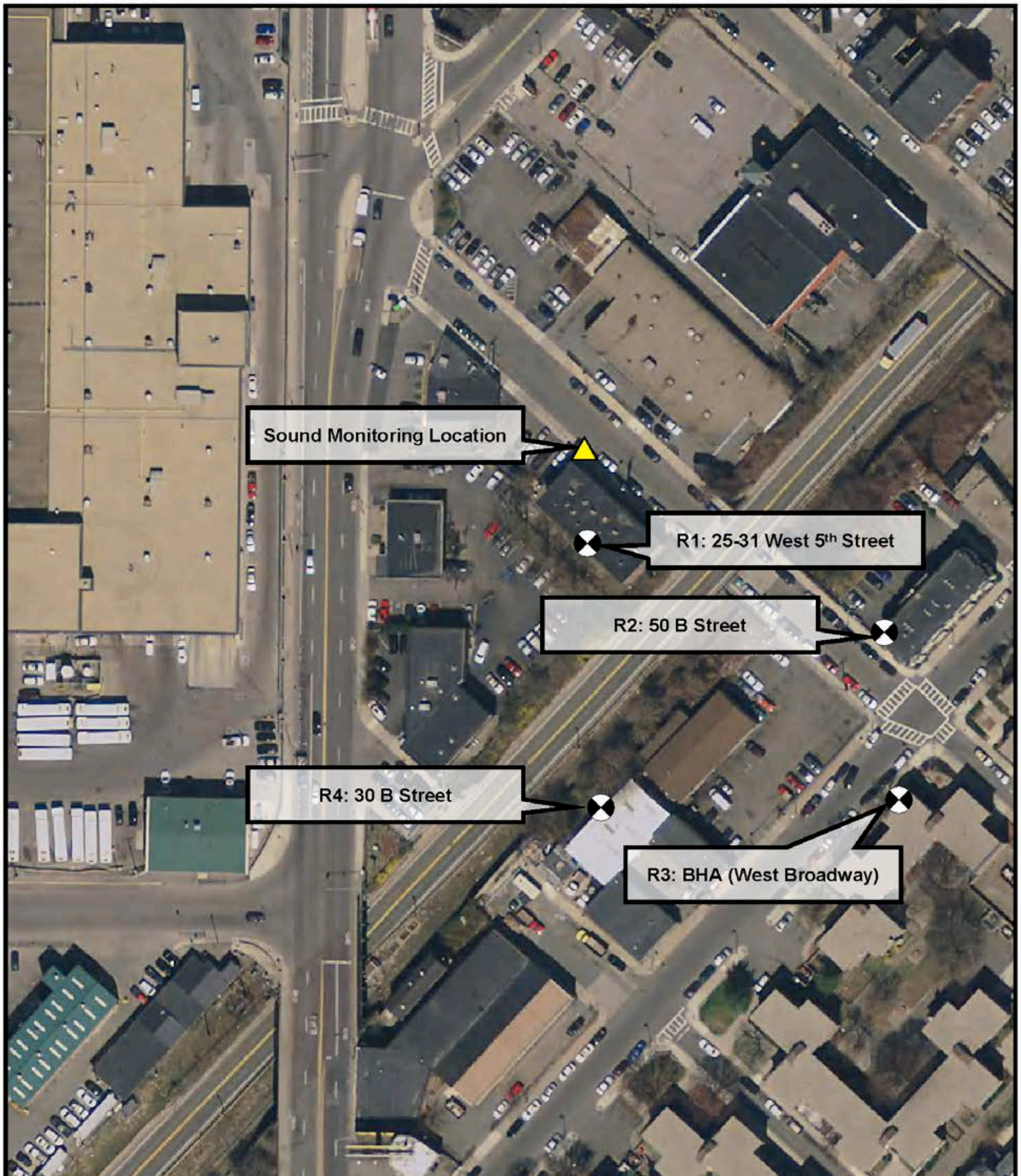

FIGURE 1
Sound Monitoring & Modeling Receptor Locations
248 Dorchester Avenue
Boston, MA

TECH environmental

Cadna Noise Modeling Results

City of Boston Noise Ordinance Analysis

	31.5	63	125	250	500	1000	2000	4000	8000	A-Wtd	
Local Nighttime Limit	68	67	61	52	46	40	33	28	26	**50**	
Nighttime Results	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**A-Wtd**	**Complies Night?**
25-31 West 5th Street	55	55	53	45	41	37	33	26	18	**43.9**	**YES**
50 B Street	49	52	51	44	39	32	25	16	2	**41.0**	**YES**
BHA: West Broadway	48	49	48	41	37	30	23	14	-2	**38.7**	**YES**
30 B Street	51	52	50	43	37	30	25	19	7	**39.7**	**YES**

MassDEP Noise Policy Analysis

Nighttime Results	Impact Level (dBA)	Background Level (dBA)	Total Level (dBA)	Increase (dBA)
25-31 West 5th Street	43.9	54.7	55.0	0.3
50 B Street	41.0	54.7	54.9	0.2
BHA: West Broadway	38.7	54.7	54.8	0.1
30 B Street	39.7	54.7	54.8	0.1

APPENDIX D – TRANSPORTATION APPENDIX

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 1A
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	Old Colony Avenue/Milhender Place
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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

TOTAL (CARS & TRUCKS)

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound				
Start Time	U-Turn	Left	Thru	Hard Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Soft Left	Soft Right	
7:00 AM	0	1	56	1	0	41	64	3	0	11	0	0	0	0	0	171	1477
7:15 AM	0	2	58	2	0	45	63	3	0	8	0	0	0	0	0	175	1530
7:30 AM	0	1	62	2	0	50	65	2	0	4	0	0	0	0	0	189	1547
7:45 AM	0	2	68	0	0	53	68	4	0	4	1	0	0	0	0	198	1535
8:00 AM	0	2	66	1	0	56	64	5	0	3	0	0	0	0	0	204	1481
8:15 AM	0	1	52	1	0	55	52	4	0	4	0	1	0	0	0	203	
8:30 AM	0	2	51	0	0	52	51	3	0	3	0	0	0	0	0	201	
8:45 AM	0	1	48	0	0	50	49	3	0	4	0	0	0	0	0	189	

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound				
Start Time	U-Turn	Left	Thru	Hard Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Soft Left	Soft Right	
4:00 PM	0	0	110	2	0	98	112	1	0	3	0	1	0	0	0	99	1647
4:15 PM	0	0	99	2	0	115	101	1	0	3	0	0	0	0	0	105	1651
4:30 PM	0	1	104	1	0	104	106	0	0	2	1	1	0	0	0	92	1686
4:45 PM	0	1	106	0	0	89	108	1	0	3	0	0	0	0	0	75	1720
5:00 PM	0	0	116	1	0	96	117	1	0	2	1	1	0	0	0	95	1746
5:15 PM	0	1	124	0	0	99	125	1	0	2	0	0	0	0	0	109	
5:30 PM	0	0	119	2	0	97	120	0	0	1	0	0	0	0	0	107	
5:45 PM	0	0	107	1	0	94	109	0	0	2	0	0	0	0	0	96	

AM PEAK HOUR 7:30 AM to 8:30 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
	U-Turn	Left	Thru	Hard Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Soft Left	Soft Right
	0	**6**	**248**	**4**	**0**	**214**	**249**	**15**	**0**	**15**	**1**	**1**	**0**	**0**	**0**	**794**
PHF	**0.92**				**0.96**				**0.85**				**0.97**			
HV %	**0.0%**	**0.0%**	**5.6%**	**0.0%**	**0.0%**	**1.4%**	**2.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**

PM PEAK HOUR 5:00 PM to 6:00 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
	U-Turn	Left	Thru	Hard Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Soft Left	Soft Right
	0	**1**	**466**	**4**	**0**	**386**	**471**	**2**	**0**	**7**	**1**	**1**	**0**	**0**	**0**	**407**
PHF	**0.94**				**0.95**				**0.56**				**0.93**			
HV %	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**0.0%**	**0.8%**	**1.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 1A
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	Old Colony Avenue/Milhender Place
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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Office: 978-746-1259
DataRequest@BostonTrafficData.com
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TRUCKS

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
Start Time	U-Turn	Left	Thru	Hard Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Soft Left	Soft Right
7:00 AM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	5	0	0	1	2	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	7	0	0	0	2	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	3	0	0	2	2	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	4	0	0	1	1	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
Start Time	U-Turn	Left	Thru	Hard Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Soft Left	Soft Right
4:00 PM	0	0	2	0	0	2	3	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	2	0	0	3	2	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	3	0	0	2	2	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	0	0	1	3	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	2	0	0	2	1	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
	U-Turn	Left	Thru	Right*	U-Turn	Left*	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Left	Thru
	0	**0**	**14**	**0**	**0**	**3**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.50**				**0.63**				**#DIV/0!**				**0.25**			

PM PEAK HOUR 5:00 PM to 6:00 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
	U-Turn	Left	Thru	Right*	U-Turn	Left*	Thru	Right	U-Turn	Left	Soft Right	Right	U-Turn	Hard Left	Left	Thru
	0	**0**	**7**	**0**	**0**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.88**				**0.75**				**#DIV/0!**				**#DIV/0!**			

Client: Michael Santos, P.E., PTOE
Project #: 93_031_HSH_South Boston
BTD #: Location 1A
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: Old Colony Avenue/Milhender Place
Count Date: 7/11/2017
Day of Week: Tuesday
Weather: Cloudy/Rainy, 80°F

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PEDESTRIANS & BICYCLES

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
Start Time	Left	Thru	Hard Right	PED	Soft Left	Thru	Right	PED	Left	Soft Right	Right	PED	Hard Left	Soft Left	Soft Right	PED
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	2
7:15 AM	0	0	0	1	0	1	0	0	0	0	0	3	0	0	2	3
7:30 AM	0	2	0	2	0	1	0	0	0	0	0	4	0	0	2	7
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6
8:00 AM	0	1	0	1	1	1	0	1	0	0	0	4	0	0	0	8
8:15 AM	0	1	0	2	0	0	0	1	0	0	0	5	0	0	0	6
8:30 AM	0	0	0	2	0	1	0	0	0	0	0	3	0	0	0	5
8:45 AM	0	0	0	1	0	0	0	0	0	0	0	4	0	0	1	6

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
Start Time	Left	Thru	Hard Right	PED	Soft Left	Thru	Right	PED	Left	Soft Right	Right	PED	Hard Left	Soft Left	Soft Right	PED
4:00 PM	0	1	0	2	1	3	0	0	0	0	0	3	0	0	1	3
4:15 PM	0	0	0	3	0	4	0	0	0	0	0	3	0	0	0	3
4:30 PM	0	0	0	3	0	3	0	1	0	0	0	4	0	0	1	4
4:45 PM	0	1	0	4	1	5	0	0	0	0	0	4	0	0	1	2
5:00 PM	0	0	0	3	0	4	0	2	0	0	0	3	0	0	2	3
5:15 PM	0	1	0	4	0	5	0	1	0	0	0	5	0	0	3	3
5:30 PM	0	1	0	4	1	4	0	4	0	0	0	4	0	0	1	2
5:45 PM	0	0	0	3	0	3	0	0	0	0	0	3	0	0	2	2

AM PEAK HOUR[1]	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
7:30 AM to	Left	Thru	Hard Right	PED	Soft Left	Thru	Right	PED	Left	Soft Right	Right	PED	Hard Left	Soft Left	Soft Right	PED
8:30 AM	0	4	0	5	1	2	0	2	0	0	0	18	0	0	2	27

PM PEAK HOUR[1]	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Milhender Place Eastbound				Old Colony Avenue Northwestbound			
5:00 PM to	Left	Thru	Hard Right	PED	Soft Left	Thru	Right	PED	Left	Soft Right	Right	PED	Hard Left	Soft Left	Soft Right	PED
6:00 PM	0	2	0	14	1	16	0	7	0	0	0	15	0	0	8	10

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

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 1B
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	West 7th Street/B Street
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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TOTAL (CARS & TRUCKS)

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
Start Time	Thru	Soft Right	Hard Right	Hard Left	Soft Left	Thru	Hard Left	Soft Right	Right	Left	Soft Left	Hard Right
7:00 AM	256	20	3	0	0	67	0	16	4	12	0	7
7:15 AM	259	20	2	0	0	66	0	26	5	13	0	6
7:30 AM	250	20	4	0	0	66	0	35	6	14	0	5
7:45 AM	250	24	4	0	0	72	0	40	8	11	0	6
8:00 AM	241	25	2	0	0	69	0	43	9	9	0	7
8:15 AM	252	27	2	0	0	56	0	41	8	9	0	6
8:30 AM	250	23	3	0	0	54	0	38	7	8	0	5
8:45 AM	248	19	3	0	0	52	0	35	5	7	0	4

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
Start Time	Thru	Soft Right	Hard Right	Hard Left	Left	Thru	Hard Left	Soft Right	Right	Hard Left	Left	Hard Right
4:00 PM	149	13	3	0	0	113	0	14	5	11	0	4
4:15 PM	166	15	4	0	0	102	0	15	4	14	0	3
4:30 PM	174	16	2	0	0	106	0	16	3	16	0	4
4:45 PM	173	14	3	0	0	109	0	14	4	19	0	4
5:00 PM	170	14	3	0	0	118	0	12	4	21	0	3
5:15 PM	169	16	3	0	0	126	0	11	5	20	0	3
5:30 PM	161	19	3	0	0	120	0	10	5	19	0	2
5:45 PM	157	14	1	0	0	109	0	9	3	18	0	3

AM PEAK HOUR 7:30 AM to 8:30 AM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
	Thru	Soft Right	Hard Right	Hard Left	Left	Thru	Hard Left	Soft Right	Right	Hard Left	Left	Hard Right
	993	**96**	**12**	**0**	**0**	**263**	**0**	**159**	**31**	**43**	**0**	**24**
PHF		**0.98**			**0.91**			**0.91**			**0.88**	
HV %	**1.3%**	**3.3%**	**0.0%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**12.5%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
	Thru	Soft Right	Hard Right	Hard Left	Left	Thru	Hard Left	Soft Right	Right	Hard Left	Left	Hard Right
	686	**60**	**11**	**0**	**0**	**459**	**0**	**53**	**16**	**76**	**0**	**14**
PHF		**0.99**			**0.91**			**0.91**			**0.94**	
HV %	**2.3%**	**4.2%**	**0.0%**	**0.0%**	**0.0%**	**1.7%**	**0.0%**	**1.9%**	**0.0%**	**0.0%**	**0.0%**	**7.1%**

Client: Michael Santos, P.E., PTOE
Project #: 93_031_HSH_South Boston
BTD #: Location 1B
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: West 7th Street/B Street
Count Date: 7/11/2017
Day of Week: Tuesday
Weather: Cloudy/Rainy, 80°F

BOSTON
TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
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www.BostonTrafficData.com

TRUCKS

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
Start Time	Thru	Soft Right	Hard Right	Hard Left	Soft Left	Thru	Hard Left	Soft Right	Right	Left	Soft Left	Hard Right
7:00 AM	6	0	0	0	0	3	0	1	0	0	0	0
7:15 AM	6	0	0	0	1	3	0	0	0	0	0	0
7:30 AM	6	1	0	0	0	2	0	0	0	0	0	1
7:45 AM	3	1	0	0	2	4	0	1	0	0	0	0
8:00 AM	2	0	0	0	1	2	0	0	0	0	0	1
8:15 AM	2	0	0	0	0	2	0	0	0	0	0	1
8:30 AM	3	1	0	0	1	2	0	0	0	0	0	1
8:45 AM	2	0	0	0	0	2	0	0	0	0	0	0

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
Start Time	Thru	Soft Right	Hard Right	Hard Left	Soft Left	Thru	Hard Left	Soft Right	Right	Left	Soft Left	Hard Right
4:00 PM	1	2	0	0	2	5	0	0	0	0	0	0
4:15 PM	3	0	0	0	3	5	0	0	0	0	0	0
4:30 PM	3	0	0	0	2	4	0	1	0	0	0	1
4:45 PM	2	0	0	0	1	4	0	0	0	0	0	0
5:00 PM	1	1	0	0	0	2	0	0	0	0	0	0
5:15 PM	2	0	0	0	2	3	0	0	0	0	0	0
5:30 PM	2	0	0	0	1	2	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	2	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
	Thru	Soft Right	Hard Right	Hard Left	Soft Left	Thru	Hard Left	Soft Right	Right	Left	Soft Left	Hard Right
	13	**2**	**0**	**0**	**3**	**10**	**0**	**1**	**0**	**0**	**0**	**3**
PHF	**0.54**			**0.54**			**0.25**			**0.75**		

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 7th Street Northwestbound			B Street Southwestbound		
	Thru	Soft Right	Hard Right	Hard Left	Soft Left	Thru	Hard Left	Soft Right	Right	Left	Soft Left	Hard Right
	8	**1**	**0**	**0**	**5**	**13**	**0**	**1**	**0**	**0**	**0**	**1**
PHF	**0.75**			**0.75**			**0.25**			**0.25**		

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 1B
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	West 7th Street/B Street
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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PEDESTRIANS & BICYCLES

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 7th Street Northwestbound				B Street Southwestbound			
Start Time	Thru	Soft Right	Hard	PED	Hard Left	Soft Left	Thru	PED	Hard Left	Soft Right	Right	PED	Left	Soft Left	Hard	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
7:15 AM	1	2	0	0	0	0	1	0	0	0	0	5	0	0	0	4
7:30 AM	4	0	0	0	0	0	1	0	0	0	0	8	0	0	0	6
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	5
8:00 AM	1	0	0	0	0	0	2	0	0	0	0	7	0	0	0	6
8:15 AM	1	1	0	0	0	0	0	0	0	0	0	5	0	0	1	4
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	5	0	0	0	5
8:45 AM	1	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 7th Street Northwestbound				B Street Southwestbound			
Start Time	Thru	Soft Right	Hard	PED	Hard Left	Soft Left	Thru	PED	Hard Left	Soft Right	Right	PED	Left	Soft Left	Hard	PED
4:00 PM	2	0	0	0	0	0	4	0	0	0	0	4	0	0	0	5
4:15 PM	0	0	0	0	0	0	4	0	0	0	0	4	0	0	1	4
4:30 PM	1	0	0	0	0	0	3	0	0	0	0	5	0	0	0	5
4:45 PM	2	0	0	0	0	0	6	0	0	0	0	3	0	1	0	4
5:00 PM	2	0	0	0	0	0	4	0	0	0	0	5	0	0	0	4
5:15 PM	3	2	0	0	0	0	5	0	0	0	0	4	0	0	1	3
5:30 PM	2	0	0	0	0	0	5	0	0	0	0	3	0	0	0	3
5:45 PM	2	0	0	0	0	0	4	0	0	0	0	4	0	0	0	3

AM PEAK HOUR[1] 7:30 AM to 8:30 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 7th Street Northwestbound				B Street Southwestbound			
	Thru	Soft Right	Hard	PED	Hard Left	Soft Left	Thru	PED	Hard Left	Soft Right	Right	PED	Left	Soft Left	Hard	PED
	6	1	0	0	0	0	3	0	0	0	0	26	0	0	1	21

PM PEAK HOUR[1] 4:30 PM to 5:30 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 7th Street Northwestbound				B Street Southwestbound			
	Thru	Soft Right	Hard	PED	Hard Left	Soft Left	Thru	PED	Hard Left	Soft Right	Right	PED	Left	Soft Left	Hard	PED
	8	2	0	0	0	0	18	0	0	0	0	17	0	1	1	16

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

Client: Michael Santos, P.E., PTOE
Project #: 93_031_HSH_South Boston
BTD #: Location 2
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: Haul Road
Count Date: 7/11/2017
Day of Week: Tuesday
Weather: Cloudy/Rainy, 80°F

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TOTAL (CARS & TRUCKS)

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	12	267	0	0	0	96	5	0	12	0	12	0	0	0	0
7:15 AM	0	10	281	0	0	0	103	8	0	10	0	8	0	0	0	0
7:30 AM	0	7	283	0	0	0	112	6	0	8	0	4	0	0	0	0
7:45 AM	0	6	290	0	0	0	118	4	0	7	0	7	0	0	0	0
8:00 AM	0	5	286	0	0	0	115	4	0	6	0	10	0	0	0	0
8:15 AM	0	6	293	0	0	0	104	3	0	4	0	7	0	0	0	0
8:30 AM	0	4	289	0	0	0	103	4	0	2	0	3	0	0	0	0
8:45 AM	0	4	283	0	0	0	98	3	0	3	0	4	0	0	0	0

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	9	158	0	0	0	198	3	0	7	0	13	0	0	0	0
4:15 PM	0	7	177	0	0	0	207	3	0	8	0	10	0	0	0	0
4:30 PM	0	5	189	0	0	0	204	4	0	8	0	6	0	0	0	0
4:45 PM	0	5	186	0	0	0	193	2	0	6	0	5	0	0	0	0
5:00 PM	0	4	181	0	0	0	211	2	0	3	0	3	0	0	0	0
5:15 PM	0	3	180	0	0	0	221	1	0	4	0	4	0	0	0	0
5:30 PM	0	2	171	0	0	0	215	2	0	3	0	2	0	0	0	0
5:45 PM	0	3	166	0	0	0	201	1	0	3	0	2	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**28**	**1140**	**0**	**0**	**0**	**448**	**22**	**0**	**31**	**0**	**29**	**0**	**0**	**0**	**0**
PHF	**0.99**				**0.96**				**0.83**				**0.00**			
HV %	**0.0%**	**3.6%**	**1.6%**	**0.0%**	**0.0%**	**0.0%**	**2.5%**	**0.0%**	**0.0%**	**3.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**17**	**736**	**0**	**0**	**0**	**829**	**9**	**0**	**21**	**0**	**18**	**0**	**0**	**0**	**0**
PHF	**0.97**				**0.94**				**0.70**				**0.00**			
HV %	**0.0%**	**0.0%**	**1.4%**	**0.0%**	**0.0%**	**0.0%**	**1.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client: Michael Santos, P.E., PTOE
Project #: 93_031_HSH_South Boston
BTD #: Location 2
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: Haul Road
Count Date: 7/11/2017
Day of Week: Tuesday
Weather: Cloudy/Rainy, 80°F

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TRUCKS

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	0	7	0	0	0	3	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	6	0	0	0	3	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	7	0	0	0	2	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	3	0	0	0	4	0	0	1	0	0	0	0	0	0
8:00 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	5	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	0	0	0	4	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	2	0	0	0	3	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:00 AM to 8:00 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**1**	**23**	**0**	**0**	**0**	**12**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.86**				**0.75**				**0.25**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**11**	**0**	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.55**				**0.90**				**0.00**				**0.00**			

Client: Michael Santos, P.E., PTOE
Project #: 93_031_HSH_South Boston
BTD #: Location 2
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: Haul Road
Count Date: 7/11/2017
Day of Week: Tuesday
Weather: Cloudy/Rainy, 80°F

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PEDESTRIANS & BICYCLES

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	0	0	0	0	0	0	0	0	4	0	0	0	0
7:15 AM	0	1	0	0	0	1	0	0	0	0	0	2	0	0	0	0
7:30 AM	0	4	0	0	0	1	0	0	0	0	0	2	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0
8:00 AM	0	1	0	0	0	2	0	1	0	0	0	5	0	0	0	0
8:15 AM	0	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	4	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0

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

AM PEAK HOUR[1]	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	6	0	0	0	4	0	1	0	0	0	15	0	0	0	0

PM PEAK HOUR[1]	Dorchester Avenue Northbound				Dorchester Avenue Southbound				Haul Road 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	8	0	0	0	18	0	0	0	0	0	14	0	0	0	0

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

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 3
Location:	South Boston, MA
Street 1:	B Street
Street 2:	West 5th Street/Flaherty Way
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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TOTAL (CARS & TRUCKS)

	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
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	28	3	0	7	10	2	0	0	0	0	0	1	3	6
7:15 AM	0	2	30	2	0	8	11	2	0	0	0	0	0	3	2	4
7:30 AM	0	1	29	1	0	7	12	4	0	0	0	0	0	4	1	2
7:45 AM	0	4	33	3	0	6	13	5	0	0	0	0	0	3	2	3
8:00 AM	0	7	36	4	0	5	14	4	0	0	0	0	0	1	2	2
8:15 AM	0	6	33	5	0	3	13	3	0	0	0	0	0	2	3	2
8:30 AM	0	5	29	6	0	3	14	3	0	0	0	0	0	1	3	1
8:45 AM	0	5	27	4	0	2	11	2	0	0	0	0	0	2	2	2

	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
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	5	19	4	0	12	10	4	0	0	0	0	0	1	2	2
4:15 PM	0	4	21	3	0	13	11	4	0	0	0	0	0	1	5	3
4:30 PM	0	2	23	2	0	11	15	5	0	0	0	0	0	1	8	3
4:45 PM	0	3	20	3	0	9	19	4	0	0	0	0	0	2	5	2
5:00 PM	0	4	19	2	1	10	17	3	0	0	0	0	2	1	2	3
5:15 PM	0	3	24	4	0	10	14	1	0	0	0	0	0	2	3	3
5:30 PM	0	2	26	6	0	9	13	2	0	0	0	0	0	1	3	2
5:45 PM	0	2	22	5	0	7	12	1	0	0	0	0	0	2	4	1

AM PEAK HOUR 7:45 AM to 8:45 AM	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**22**	**131**	**18**	**0**	**17**	**54**	**15**	**0**	**0**	**0**	**0**	**0**	**7**	**10**	**8**
PHF	**0.91**				**0.90**				**0.00**				**0.78**			
HV %	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**0.0%**	**5.9%**	**3.7%**	**6.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**12.5%**

PM PEAK HOUR 4:15 PM to 5:15 PM	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**13**	**83**	**10**	**1**	**43**	**62**	**16**	**0**	**0**	**0**	**0**	**2**	**5**	**20**	**11**
PHF	**0.95**				**0.95**				**0.00**				**0.79**			
HV %	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**1.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.0%**	**0.0%**

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 3
Location:	South Boston, MA
Street 1:	B Street
Street 2:	West 5th Street/Flaherty Way
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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TRUCKS

	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
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	0	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
8:30 AM	0	0	1	0	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

	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
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	1	1	0	0	0	0	1	0	0	0	0	0	1	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	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	1	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	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
	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**	**1**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.50**				**0.50**				**0.00**				**0.25**			

PM PEAK HOUR 4:00 PM to 5:00 PM	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
	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**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**
PHF	**0.25**				**0.50**				**0.00**				**0.38**			

Client:	Michael Santos, P.E., PTOE
Project #:	93_031_HSH_South Boston
BTD #:	Location 3
Location:	South Boston, MA
Street 1:	B Street
Street 2:	West 5th Street/Flaherty Way
Count Date:	7/11/2017
Day of Week:	Tuesday
Weather:	Cloudy/Rainy, 80°F

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PEDESTRIANS & BICYCLES

	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	3	0	0	0	2	0	0	0	2	0	0	0	3
7:15 AM	0	2	0	2	0	0	0	1	0	0	0	2	0	0	0	2
7:30 AM	0	0	0	2	0	0	0	2	0	0	0	1	0	0	0	3
7:45 AM	0	0	0	2	0	0	0	1	0	0	0	2	0	0	0	2
8:00 AM	0	0	0	3	0	0	0	2	0	0	0	2	0	0	0	2
8:15 AM	0	1	0	2	0	1	0	2	0	0	0	1	0	0	0	2
8:30 AM	0	0	0	4	0	0	0	3	0	0	0	2	0	0	0	3
8:45 AM	0	0	0	3	0	0	0	2	0	0	0	1	0	0	0	2

	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
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	3	0	0	0	2	0	0	0	1
4:15 PM	0	0	0	2	0	1	0	3	0	0	0	3	0	0	0	2
4:30 PM	0	0	0	2	1	0	0	3	0	0	0	3	0	0	0	1
4:45 PM	0	0	0	3	0	1	0	2	0	0	0	2	0	0	0	2
5:00 PM	0	0	0	6	0	0	0	4	0	0	0	9	0	0	0	4
5:15 PM	0	2	0	4	0	1	0	3	0	1	0	12	0	0	0	5
5:30 PM	0	0	0	3	0	0	0	3	0	0	0	6	0	0	0	4
5:45 PM	0	0	0	7	1	0	0	4	0	0	0	5	0	1	0	6

AM PEAK HOUR[1]	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
7:45 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:45 AM	0	1	0	11	0	1	0	8	0	0	0	7	0	0	0	9

PM PEAK HOUR[1]	B Street Northeastbound				B Street Southwestbound				Flaherty Way Northwestbound				West 5th Street Southeastbound			
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	0	13	1	2	0	12	0	0	0	17	0	0	0	9

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

Client: Andrew Fabiszewski
Project #: 64_021_HSH_South Boston
BTD #: Location 3
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: A Street
Count Date: 4/11/2017
Day of Week: Tuesday
Weather: Mostly sunny, 75°F

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TOTAL (CARS & TRUCKS)

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
Start Time	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
7:00 AM	0	286	50	0	0	60	0	45	4
7:15 AM	1	292	54	0	0	76	0	44	4
7:30 AM	0	286	59	0	0	78	0	48	5
7:45 AM	0	280	58	0	0	77	0	51	4
8:00 AM	0	264	67	0	0	76	0	47	5
8:15 AM	1	252	60	0	1	74	0	43	6
8:30 AM	0	231	52	0	0	72	0	37	7
8:45 AM	0	224	46	0	0	67	0	30	6

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
Start Time	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
4:00 PM	0	134	49	0	0	131	0	90	6
4:15 PM	0	156	56	0	0	136	0	93	7
4:30 PM	0	172	63	0	0	156	0	96	7
4:45 PM	0	174	63	0	0	169	0	94	6
5:00 PM	0	169	61	0	0	171	0	87	6
5:15 PM	0	179	59	0	0	168	0	76	5
5:30 PM	0	181	53	0	0	155	0	82	6
5:45 PM	0	174	50	0	0	135	0	87	5

AM PEAK HOUR 7:15 AM to 8:15 AM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
	1	**1122**	**238**	**0**	**0**	**307**	**0**	**190**	**18**
PHF		**0.98**			**0.98**			**0.95**	
HV %	**0.0%**	**1.2%**	**6.3%**	**0.0%**	**0.0%**	**3.9%**	**0.0%**	**3.7%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
	0	**694**	**246**	**0**	**0**	**664**	**0**	**353**	**24**
PHF		**0.99**			**0.97**			**0.92**	
HV %	**0.0%**	**0.3%**	**1.2%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**3.1%**	**0.0%**

Client:	Andrew Fabiszewski
Project #:	64_021_HSH_South Boston
BTD #:	Location 3
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	A Street
Count Date:	4/11/2017
Day of Week:	Tuesday
Weather:	Mostly sunny, 75°F

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TRUCKS

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
Start Time	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
7:00 AM	0	5	2	0	0	2	0	1	0
7:15 AM	0	4	2	0	0	3	0	3	0
7:30 AM	0	3	5	0	0	4	0	1	0
7:45 AM	0	3	3	0	0	3	0	3	0
8:00 AM	0	3	5	0	0	2	0	0	0
8:15 AM	0	4	3	0	0	2	0	2	0
8:30 AM	0	3	1	0	0	3	0	2	1
8:45 AM	0	3	3	0	0	2	0	1	0

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
Start Time	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
4:00 PM	0	1	4	0	0	2	0	1	0
4:15 PM	0	0	0	0	0	0	0	4	0
4:30 PM	0	1	1	0	0	1	0	5	0
4:45 PM	0	0	2	0	0	1	0	4	0
5:00 PM	0	0	0	0	0	2	0	2	0
5:15 PM	0	1	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0
5:45 PM	0	0	1	0	0	0	0	1	0

AM PEAK HOUR 7:15 AM to 8:15 AM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
	0	**13**	**15**	**0**	**0**	**12**	**0**	**7**	**0**
PHF	**0.88**			**0.75**			**0.58**		

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			A Street Southwestbound		
	U-Turn	Thru	Soft Right	U-Turn	Hard Left	Thru	U-Turn	Soft Left	Hard Right
	0	**2**	**3**	**0**	**0**	**4**	**0**	**11**	**0**
PHF	**0.63**			**0.50**			**0.55**		

Client:	Andrew Fabiszewski
Project #:	64_021_HSH_South Boston
BTD #:	Location 3
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	A Street
Count Date:	4/11/2017
Day of Week:	Tuesday
Weather:	Mostly sunny, 75°F

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PEDESTRIANS & BICYCLES

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				A Street Southwestbound			
Start Time	Thru	Soft Right	PED		Hard Left	Thru	PED		Soft Left	Hard Right	PED	
7:00 AM	2	6	0		0	1	2		0	0	24	
7:15 AM	3	3	0		0	0	0		0	0	19	
7:30 AM	4	4	0		0	2	0		0	0	17	
7:45 AM	2	3	0		0	1	0		0	0	15	
8:00 AM	3	3	0		1	0	0		0	0	12	
8:15 AM	4	4	0		0	1	0		0	0	15	
8:30 AM	5	7	0		0	0	1		0	0	16	
8:45 AM	3	6	0		0	0	0		0	0	13	

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				A Street Southwestbound			
Start Time	Thru	Soft Right	PED		Hard Left	Thru	PED		Soft Left	Hard Right	PED	
4:00 PM	0	0	0		0	0	0		0	0	11	
4:15 PM	0	1	0		0	0	0		0	0	15	
4:30 PM	1	0	0		0	1	0		0	0	32	
4:45 PM	3	0	0		0	0	0		0	0	29	
5:00 PM	5	2	0		0	0	0		0	0	33	
5:15 PM	2	1	0		0	0	0		0	0	36	
5:30 PM	1	0	0		0	1	0		0	0	42	
5:45 PM	0	3	0		0	0	0		0	0	28	

AM PEAK HOUR[1] 7:15 AM to 8:15 AM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				A Street Southwestbound			
	Thru	Soft Right	PED		Hard Left	Thru	PED		Soft Left	Hard Right	PED	
	12	13	0		1	3	0		0	0	63	

PM PEAK HOUR[1] 4:30 PM to 5:30 PM	Dorchester Avenue Northbound				Dorchester Avenue Southbound				A Street Southwestbound			
	Thru	Soft Right	PED		Hard Left	Thru	PED		Soft Left	Hard Right	PED	
	11	3	0		0	1	0		0	0	130	

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

Client: Andrew Fabiszewski
Project #: 64_021_HSH_South Boston
BTD #: Location 3
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: West 5th Street
Count Date: 4/11/2017
Day of Week: Tuesday
Weather: Mostly sunny, 75°F

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TOTAL (CARS & TRUCKS)

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
Start Time	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
7:00 AM	0	323	1	0	0	105	0	0	13
7:15 AM	0	333	0	0	0	120	0	0	14
7:30 AM	0	331	1	0	0	126	0	0	14
7:45 AM	0	325	2	0	0	128	0	0	13
8:00 AM	0	313	2	0	0	123	0	0	18
8:15 AM	0	297	2	0	1	117	0	0	16
8:30 AM	0	269	1	0	0	109	0	0	14
8:45 AM	0	258	1	0	0	97	0	0	12

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
Start Time	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
4:00 PM	0	178	0	0	0	221	0	0	5
4:15 PM	0	204	1	0	0	229	0	0	8
4:30 PM	0	225	0	0	0	252	0	0	10
4:45 PM	0	228	1	0	0	263	0	0	9
5:00 PM	0	225	1	0	0	258	0	0	5
5:15 PM	0	231	2	0	0	244	0	0	7
5:30 PM	0	228	0	0	0	237	0	0	6
5:45 PM	0	219	1	0	0	222	0	0	5

AM PEAK HOUR 7:15 AM to 8:15 AM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
	0	**1302**	**5**	**0**	**0**	**497**	**0**	**0**	**59**
PHF		**0.98**			**0.97**			**0.82**	
HV %	**0.0%**	**2.0%**	**0.0%**	**0.0%**	**0.0%**	**3.8%**	**0.0%**	**0.0%**	**3.4%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
	0	**909**	**4**	**0**	**0**	**1017**	**0**	**0**	**31**
PHF		**0.98**			**0.97**			**0.78**	
HV %	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**0.0%**	**0.0%**

Client:	Andrew Fabiszewski
Project #:	64_021_HSH_South Boston
BTD #:	Location 3
Location:	South Boston, MA
Street 1:	Dorchester Avenue
Street 2:	West 5th Street
Count Date:	4/11/2017
Day of Week:	Tuesday
Weather:	Mostly sunny, 75°F

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TRUCKS

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
Start Time	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
7:00 AM	0	7	0	0	0	3	0	0	0
7:15 AM	0	6	0	0	0	6	0	0	0
7:30 AM	0	7	0	0	0	5	0	0	1
7:45 AM	0	6	0	0	0	6	0	0	0
8:00 AM	0	7	0	0	0	2	0	0	1
8:15 AM	0	7	0	0	0	4	0	0	0
8:30 AM	0	4	0	0	0	5	0	0	0
8:45 AM	0	6	0	0	0	3	0	0	0

	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
Start Time	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
4:00 PM	0	3	0	0	0	3	0	0	2
4:15 PM	0	0	0	0	0	4	0	0	0
4:30 PM	0	2	0	0	0	6	0	0	0
4:45 PM	0	2	0	0	0	5	0	0	0
5:00 PM	0	0	0	0	0	4	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0
5:45 PM	0	1	0	0	0	1	0	0	0

AM PEAK HOUR 7:00 AM to 8:00 AM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
	0	**26**	**0**	**0**	**0**	**19**	**0**	**0**	**2**
PHF	**0.93**			**0.79**			**0.50**		

PM PEAK HOUR 4:00 PM to 5:00 PM	Dorchester Avenue Northbound			Dorchester Avenue Southbound			West 5th Street Northwestbound		
	U-Turn	Thru	Hard Right	U-Turn	Soft Left	Thru	U-Turn	Hard Left	Soft Right
	0	**5**	**0**	**0**	**0**	**15**	**0**	**0**	**0**
PHF	**0.63**			**0.63**			**#DIV/0!**		

Client: Andrew Fabiszewski
Project #: 64_021_HSH_South Boston
BTD #: Location 3
Location: South Boston, MA
Street 1: Dorchester Avenue
Street 2: West 5th Street
Count Date: 4/11/2017
Day of Week: Tuesday
Weather: Mostly sunny, 75°F

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PEDESTRIANS & BICYCLES

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 5th Street Northwestbound			
Start Time	Thru	Hard Right	PED		Soft Left	Thru	PED		Hard Left	Soft Right	PED	
7:00 AM	8	0	0		0	1	2		0	0	24	
7:15 AM	6	0	0		0	0	0		0	0	19	
7:30 AM	8	0	0		0	2	0		0	0	17	
7:45 AM	5	0	0		0	1	0		0	0	15	
8:00 AM	6	0	0		1	0	0		0	0	12	
8:15 AM	8	0	0		0	1	0		0	0	15	
8:30 AM	12	0	0		0	0	1		0	0	16	
8:45 AM	9	0	0		0	0	0		0	0	13	

	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 5th Street Northwestbound			
Start Time	Thru	Hard Right	PED		Soft Left	Thru	PED		Hard Left	Soft Right	PED	
4:00 PM	0	0	0		0	0	0		0	0	11	
4:15 PM	1	0	0		0	0	0		0	0	15	
4:30 PM	1	0	0		0	1	0		0	0	32	
4:45 PM	3	0	0		0	0	0		0	0	29	
5:00 PM	7	0	0		0	0	0		0	0	33	
5:15 PM	3	0	0		0	0	0		0	0	36	
5:30 PM	1	0	0		0	1	0		0	0	42	
5:45 PM	3	0	0		0	0	0		0	0	28	

AM PEAK HOUR[1]	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 5th Street Northwestbound			
7:15 AM to	Thru	Hard Right	PED		Soft Left	Thru	PED		Hard Left	Soft Right	PED	
8:15 AM	25	0	0		1	3	0		0	0	63	

PM PEAK HOUR[1]	Dorchester Avenue Northbound				Dorchester Avenue Southbound				West 5th Street Northwestbound			
4:30 PM to	Thru	Hard Right	PED		Soft Left	Thru	PED		Hard Left	Soft Right	PED	
5:30 PM	14	0	0		0	1	0		0	0	130	

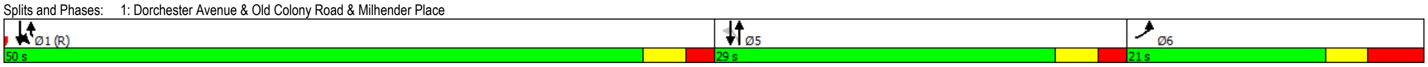
[1] *Peak hours corresponds to vehicular peak hours.*

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	15	1	1	6	302	4	226	263	15	0	965
Future Volume (vph)	15	1	1	6	302	4	226	263	15	0	965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		110	0		0	0	0
Storage Lanes	1	0		0		1	2		0	0	2
Taper Length (ft)	25			25			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.97	1.00	1.00	1.00	0.88
Ped Bike Factor	1.00				1.00			1.00			
Frt	0.986				0.998			0.992			0.850
Flt Protected	0.957				0.999		0.950				
Satd. Flow (prot)	1785	0	0	0	3400	0	3467	1830	0	0	2842
Flt Permitted	0.957				0.946		0.950				
Satd. Flow (perm)	1785	0	0	0	3218	0	3467	1830	0	0	2842
Right Turn on Red			Yes			No			No		No
Satd. Flow (RTOR)	76										
Link Speed (mph)	30				30			30		30	
Link Distance (ft)	310				770			258		891	
Travel Time (s)	7.0				17.5			5.9		20.3	
Confl. Peds. (#/hr)			7	18		27			18		
Confl. Bikes (#/hr)						4			2		
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	18	1	1	7	328	4	235	274	16	0	995
Shared Lane Traffic (%)											
Lane Group Flow (vph)	20	0	0	0	339	0	235	290	0	0	995
Turn Type	Prot			Perm	NA		Prot	NA			Over
Protected Phases	6				5		1	1 5			1
Permitted Phases				5							
Detector Phase	6			5	5		1	1 5			1
Switch Phase											
Minimum Initial (s)	8.0			8.0	8.0		8.0				8.0
Minimum Split (s)	21.0			29.0	29.0		13.0				13.0
Total Split (s)	21.0			29.0	29.0		50.0				50.0
Total Split (%)	21.0%			29.0%	29.0%		50.0%				50.0%
Maximum Green (s)	14.0			24.0	24.0		45.0				45.0
Yellow Time (s)	3.0			3.0	3.0		3.0				3.0
All-Red Time (s)	4.0			2.0	2.0		2.0				2.0
Lost Time Adjust (s)	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.0				5.0		5.0				5.0
Lead/Lag	Lag			Lead	Lead						
Lead-Lag Optimize?	Yes			Yes	Yes						
Vehicle Extension (s)	2.0			2.0	2.0		2.0				2.0
Recall Mode	None			None	None		C-Max				C-Max
Walk Time (s)	7.0			7.0	7.0						
Flash Dont Walk (s)	7.0			17.0	17.0						
Pedestrian Calls (#/hr)	7			27	27						
Act Effct Green (s)	9.2				19.1		60.7	86.8			60.7
Actuated g/C Ratio	0.09				0.19		0.61	0.87			0.61
v/c Ratio	0.09				0.55		0.11	0.18			0.58
Control Delay	0.7				39.1		6.0	3.6			17.2
Queue Delay	0.0				0.1		0.0	0.0			0.0
Total Delay	0.7				39.3		6.0	3.6			17.2
LOS	A				D		A	A			B
Approach Delay	0.7				39.3			4.7		17.2	
Approach LOS	A				D			A		B	
90th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
90th %ile Term Code	Ped			Ped	Ped		Coord				Coord
70th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
70th %ile Term Code	Min			Ped	Ped		Coord				Coord
50th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
50th %ile Term Code	Min			Ped	Ped		Coord				Coord
30th %ile Green (s)	0.0			13.1	13.1		76.9				76.9
30th %ile Term Code	Skip			Gap	Gap		Coord				Coord
10th %ile Green (s)	0.0			10.5	10.5		79.5				79.5
10th %ile Term Code	Skip			Gap	Gap		Coord				Coord
Queue Length 50th (ft)	0				96		27	64			259
Queue Length 95th (ft)	0				140		55	103			387
Internal Link Dist (ft)	230				690			178		811	
Turn Bay Length (ft)											
Base Capacity (vph)	315				772		2104	1588			1724
Starvation Cap Reductn	0				0		0	0			0
Spillback Cap Reductn	1				52		0	0			0
Storage Cap Reductn	0				0		0	0			0
Reduced v/c Ratio	0.06				0.47		0.11	0.18			0.58

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 17.5 Intersection LOS: B
Intersection Capacity Utilization 57.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Avenue & Old Colony Road & Milhender Place



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	29	28	1296	475	22
Future Volume (vph)	31	29	28	1296	475	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor	1.00			1.00	1.00	
Frt	0.934				0.993	
Flt Protected	0.975			0.999		
Satd. Flow (prot)	1704	0	0	3534	3480	0
Flt Permitted	0.975			0.936		
Satd. Flow (perm)	1702	0	0	3311	3480	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	35				15	
Link Speed (mph)	30			30	30	
Link Distance (ft)	293			237	502	
Travel Time (s)	6.7			5.4	11.4	
Confl. Peds. (#/hr)	1		15			15
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.83	0.83	0.99	0.99	0.96	0.96
Heavy Vehicles (%)	3%	0%	4%	2%	3%	0%
Adj. Flow (vph)	37	35	28	1309	495	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	0	1337	518	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	3			1	1	
Permitted Phases			1			
Detector Phase	3		1	1	1	
Switch Phase						
Minimum Initial (s)	8.0		8.0	8.0	8.0	
Minimum Split (s)	13.0		13.0	13.0	13.0	
Total Split (s)	17.0		83.0	83.0	83.0	
Total Split (%)	17.0%		83.0%	83.0%	83.0%	
Maximum Green (s)	12.0		78.0	78.0	78.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	C-Max	
Act Effct Green (s)	8.5			85.1	85.1	
Actuated g/C Ratio	0.08			0.85	0.85	
v/c Ratio	0.41			0.47	0.17	
Control Delay	32.3			5.5	1.0	
Queue Delay	0.0			0.4	0.0	
Total Delay	32.3			5.9	1.0	
LOS	C			A	A	
Approach Delay	32.3			5.9	1.0	
Approach LOS	C			A	A	
90th %ile Green (s)	10.5		79.5	79.5	79.5	
90th %ile Term Code	Gap		Coord	Coord	Coord	
70th %ile Green (s)	8.2		81.8	81.8	81.8	
70th %ile Term Code	Gap		Coord	Coord	Coord	
50th %ile Green (s)	8.0		82.0	82.0	82.0	
50th %ile Term Code	Min		Coord	Coord	Coord	
30th %ile Green (s)	8.0		82.0	82.0	82.0	
30th %ile Term Code	Min		Coord	Coord	Coord	
10th %ile Green (s)	0.0		95.0	95.0	95.0	
10th %ile Term Code	Skip		Coord	Coord	Coord	
Queue Length 50th (ft)	23			149	7	
Queue Length 95th (ft)	58			304	m9	
Internal Link Dist (ft)	213			157	422	
Turn Bay Length (ft)						
Base Capacity (vph)	235			2816	2962	
Starvation Cap Reductn	0			848	0	
Spillback Cap Reductn	0			74	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.31			0.68	0.17	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 44 (44%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 5.6 Intersection LOS: A
Intersection Capacity Utilization 69.7% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

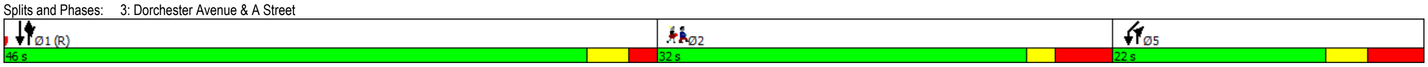
Splits and Phases: 2: Dorchester Avenue & Haul Road

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	Ø2
Lane Configurations							
Traffic Volume (vph)	1123	238	0	307	190	18	
Future Volume (vph)	1123	238	0	307	190	18	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor							
Frt		0.850			0.988		
Flt Protected					0.956		
Satd. Flow (prot)	3574	1524	0	3471	1731	0	
Flt Permitted					0.956		
Satd. Flow (perm)	3574	1524	0	3471	1731	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		243			4		
Link Speed (mph)	30			30	30		
Link Distance (ft)	60			712	224		
Travel Time (s)	1.4			16.2	5.1		
Confl. Bikes (#/hr)		12					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.95	0.95	
Heavy Vehicles (%)	1%	6%	0%	4%	4%	0%	
Adj. Flow (vph)	1146	243	0	313	200	19	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1146	243	0	313	219	0	
Turn Type	NA	pt+ov		NA	Prot		
Protected Phases	1	1 5		1	5		2
Permitted Phases							
Detector Phase	1	1 5		1	5		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		1.0
Minimum Split (s)	13.0			13.0	15.0		32.0
Total Split (s)	46.0			46.0	22.0		32.0
Total Split (%)	46.0%			46.0%	22.0%		32%
Maximum Green (s)	41.0			41.0	15.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	4.0		4.0
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	5.0			5.0	7.0		
Lead/Lag	Lead			Lead			Lag
Lead-Lag Optimize?	Yes			Yes			Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0
Recall Mode	C-Max			C-Max	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							63
Act Effct Green (s)	48.1	70.4		48.1	14.3		
Actuated g/C Ratio	0.48	0.70		0.48	0.14		
v/c Ratio	0.67	0.21		0.19	0.87		
Control Delay	28.2	1.8		17.8	73.7		
Queue Delay	0.0	0.0		0.0	0.0		
Total Delay	28.2	1.8		17.8	73.7		
LOS	C	A		B	E		
Approach Delay	23.6			17.8	73.7		
Approach LOS	C			B	E		
90th %ile Green (s)	41.0			41.0	15.0		26.0
90th %ile Term Code	Coord			Coord	Max		Ped
70th %ile Green (s)	41.0			41.0	15.0		26.0
70th %ile Term Code	Coord			Coord	Max		Ped
50th %ile Green (s)	41.0			41.0	15.0		26.0
50th %ile Term Code	Coord			Coord	Max		Ped
30th %ile Green (s)	41.0			41.0	15.0		26.0
30th %ile Term Code	Coord			Coord	Max		Ped
10th %ile Green (s)	76.4			76.4	11.6		0.0
10th %ile Term Code	Coord			Coord	Gap		Skip
Queue Length 50th (ft)	383	13		66	135		
Queue Length 95th (ft)	476	13		97	#263		
Internal Link Dist (ft)	1			632	144		
Turn Bay Length (ft)							
Base Capacity (vph)	1718	1141		1669	263		
Starvation Cap Reductn	24	0		0	0		
Spillback Cap Reductn	0	0		0	0		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.68	0.21		0.19	0.83		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 80 (80%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 28.3 Intersection LOS: C
Intersection Capacity Utilization 52.7% 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.

Splits and Phases: 3: Dorchester Avenue & A Street



Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	1302	25	0	497	0	59
Future Volume (Veh/h)	1302	25	0	497	0	59
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.97	0.97	0.82	0.82
Hourly flow rate (vph)	1329	26	0	512	0	72
Pedestrians					63	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					6	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	502			60		
pX, platoon unblocked			0.96		0.97	0.96
vC, conflicting volume			1418		1661	519
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1293		1376	357
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			490		126	575

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1
Volume Total	532	532	292	256	256	72
Volume Left	0	0	0	0	0	0
Volume Right	0	0	26	0	0	72
cSH	1700	1700	1700	1700	1700	575
Volume to Capacity	0.31	0.31	0.17	0.15	0.15	0.13
Queue Length 95th (ft)	0	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.2
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.2
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	131	18	17	59	37	0	0	0	7	10	8
Future Volume (Veh/h)	22	131	18	17	59	37	0	0	0	7	10	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.25	0.25	0.25	0.78	0.78	0.78
Hourly flow rate (vph)	24	144	20	19	66	41	0	0	0	9	13	10
Pedestrians		11			8			7			9	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	116			171			361	363	169	344	352	106
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	116			171			361	363	169	344	352	106
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			99			100	100	100	98	98	99
cM capacity (veh/h)	1473			1382			558	546	874	587	554	901

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	188	126	32
Volume Left	24	19	9
Volume Right	20	41	10
cSH	1473	1382	641
Volume to Capacity	0.02	0.01	0.05
Queue Length 95th (ft)	1	1	4
Control Delay (s)	1.1	1.2	10.9
Lane LOS	A	A	B
Approach Delay (s)	1.1	1.2	10.9
Approach LOS			B

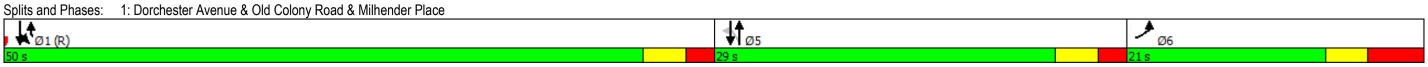
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	7	1	1	1	514	4	461	563	2	0	448
Future Volume (vph)	7	1	1	1	514	4	461	563	2	0	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		110	0		0	0	0
Storage Lanes	1	0		0		1	2		0	0	2
Taper Length (ft)	25			25			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.97	1.00	1.00	1.00	0.88
Ped Bike Factor	0.98				1.00			1.00			
Frt	0.968				0.999			0.999			0.850
Flt Protected	0.963						0.950				
Satd. Flow (prot)	1732	0	0	0	3536	0	3467	1879	0	0	2842
Flt Permitted	0.963				0.954		0.950				
Satd. Flow (perm)	1732	0	0	0	3373	0	3467	1879	0	0	2842
Right Turn on Red			Yes			No			No		No
Satd. Flow (RTOR)	76										
Link Speed (mph)	30				30			30		30	
Link Distance (ft)	310				770			258		891	
Travel Time (s)	7.0				17.5			5.9		20.3	
Confl. Peds. (#/hr)			21	15		10			15		
Confl. Bikes (#/hr)						2			17		
Peak Hour Factor	0.56	0.56	0.56	0.94	0.94	0.94	0.95	0.95	0.95	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%
Adj. Flow (vph)	13	2	2	1	547	4	485	593	2	0	482
Shared Lane Traffic (%)											
Lane Group Flow (vph)	17	0	0	0	552	0	485	595	0	0	482
Turn Type	Prot			Perm	NA		Prot	NA			Over
Protected Phases	6				5		1	1 5			1
Permitted Phases				5							
Detector Phase	6			5	5		1	1			1
Switch Phase											
Minimum Initial (s)	8.0			8.0	8.0		8.0				8.0
Minimum Split (s)	21.0			29.0	29.0		13.0				13.0
Total Split (s)	21.0			29.0	29.0		50.0				50.0
Total Split (%)	21.0%			29.0%	29.0%		50.0%				50.0%
Maximum Green (s)	14.0			24.0	24.0		45.0				45.0
Yellow Time (s)	3.0			3.0	3.0		3.0				3.0
All-Red Time (s)	4.0			2.0	2.0		2.0				2.0
Lost Time Adjust (s)	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.0				5.0		5.0				5.0
Lead/Lag	Lag			Lead	Lead						
Lead-Lag Optimize?	Yes			Yes	Yes						
Vehicle Extension (s)	2.0			2.0	2.0		2.0				2.0
Recall Mode	None			None	None		C-Max				C-Max
Walk Time (s)	7.0			7.0	7.0						
Flash Dont Walk (s)	7.0			17.0	17.0						
Pedestrian Calls (#/hr)	21			10	10						
Act Effct Green (s)	10.4				20.4		58.2	85.6			58.2
Actuated g/C Ratio	0.10				0.20		0.58	0.86			0.58
v/c Ratio	0.07				0.80		0.24	0.37			0.29
Control Delay	0.5				47.2		2.2	2.3			13.7
Queue Delay	0.0				0.0		0.0	0.1			0.0
Total Delay	0.5				47.2		2.2	2.4			13.7
LOS	A				D		A	A			B
Approach Delay	0.5				47.2			2.3		13.7	
Approach LOS	A				D			A		B	
90th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
90th %ile Term Code	Ped			Max	Max		Coord				Coord
70th %ile Green (s)	14.0			23.5	23.5		45.5				45.5
70th %ile Term Code	Ped			Gap	Gap		Coord				Coord
50th %ile Green (s)	8.0			20.6	20.6		54.4				54.4
50th %ile Term Code	Min			Gap	Gap		Coord				Coord
30th %ile Green (s)	0.0			18.5	18.5		71.5				71.5
30th %ile Term Code	Skip			Gap	Gap		Coord				Coord
10th %ile Green (s)	0.0			15.4	15.4		74.6				74.6
10th %ile Term Code	Skip			Gap	Gap		Coord				Coord
Queue Length 50th (ft)	0				176		20	58			90
Queue Length 95th (ft)	0				228		32	73			156
Internal Link Dist (ft)	230				690			178		811	
Turn Bay Length (ft)											
Base Capacity (vph)	307				809		2017	1608			1654
Starvation Cap Reductn	0				0		0	209			0
Spillback Cap Reductn	0				0		0	0			0
Storage Cap Reductn	0				0		0	0			0
Reduced v/c Ratio	0.06				0.68		0.24	0.43			0.29

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.5 — Intersection LOS: B
Intersection Capacity Utilization 69.1% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Avenue & Old Colony Road & Milhender Place



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	18	17	924	1008	9
Future Volume (vph)	21	18	17	924	1008	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor	0.98			1.00	1.00	
Frt	0.937				0.999	
Flt Protected	0.974			0.999		
Satd. Flow (prot)	1698	0	0	3571	3535	0
Flt Permitted	0.974			0.924		
Satd. Flow (perm)	1698	0	0	3303	3535	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	26				3	
Link Speed (mph)	30			30	30	
Link Distance (ft)	293			237	502	
Travel Time (s)	6.7			5.4	11.4	
Confl. Peds. (#/hr)			14			14
Confl. Bikes (#/hr)		18				18
Peak Hour Factor	0.70	0.70	0.97	0.97	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%
Adj. Flow (vph)	30	26	18	953	1072	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	0	971	1082	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	3			1	1	
Permitted Phases			1			
Detector Phase	3		1	1	1	
Switch Phase						
Minimum Initial (s)	8.0		8.0	8.0	8.0	
Minimum Split (s)	13.0		13.0	13.0	13.0	
Total Split (s)	17.0		83.0	83.0	83.0	
Total Split (%)	17.0%		83.0%	83.0%	83.0%	
Maximum Green (s)	12.0		78.0	78.0	78.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	C-Max	
Act Effct Green (s)	8.3			85.3	85.3	
Actuated g/C Ratio	0.08			0.85	0.85	
v/c Ratio	0.34			0.34	0.36	
Control Delay	32.9			1.3	3.0	
Queue Delay	0.0			0.1	0.5	
Total Delay	32.9			1.4	3.5	
LOS	C			A	A	
Approach Delay	32.9			1.4	3.5	
Approach LOS	C			A	A	
90th %ile Green (s)	9.6		80.4	80.4	80.4	
90th %ile Term Code	Gap		Coord	Coord	Coord	
70th %ile Green (s)	8.0		82.0	82.0	82.0	
70th %ile Term Code	Min		Coord	Coord	Coord	
50th %ile Green (s)	8.0		82.0	82.0	82.0	
50th %ile Term Code	Min		Coord	Coord	Coord	
30th %ile Green (s)	8.0		82.0	82.0	82.0	
30th %ile Term Code	Min		Coord	Coord	Coord	
10th %ile Green (s)	0.0		95.0	95.0	95.0	
10th %ile Term Code	Skip		Coord	Coord	Coord	
Queue Length 50th (ft)	18			7	72	
Queue Length 95th (ft)	40			35	105	
Internal Link Dist (ft)	213			157	422	
Turn Bay Length (ft)						
Base Capacity (vph)	226			2816	3015	
Starvation Cap Reductn	0			614	1321	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.25			0.44	0.64	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 2 (2%), Referenced to phase 1:NBSB, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 3.3	Intersection LOS: A
Intersection Capacity Utilization 52.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Dorchester Avenue & Haul Road

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	Ø2
Lane Configurations							
Traffic Volume (vph)	694	246	0	664	353	24	
Future Volume (vph)	694	246	0	664	353	24	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor							
Frt		0.850			0.991		
Flt Protected					0.955		
Satd. Flow (prot)	3610	1599	0	3574	1749	0	
Flt Permitted					0.955		
Satd. Flow (perm)	3610	1599	0	3574	1749	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		248			4		
Link Speed (mph)	30			30	30		
Link Distance (ft)	60			712	224		
Travel Time (s)	1.4			16.2	5.1		
Confl. Bikes (#/hr)		11					
Peak Hour Factor	0.99	0.99	0.97	0.97	0.92	0.92	
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	
Adj. Flow (vph)	701	248	0	685	384	26	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	701	248	0	685	410	0	
Turn Type	NA	pt+ov		NA	Prot		
Protected Phases	1	1 5		1	5		2
Permitted Phases							
Detector Phase	1	1 5		1	5		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		1.0
Minimum Split (s)	13.0			13.0	15.0		32.0
Total Split (s)	27.0			27.0	41.0		32.0
Total Split (%)	27.0%			27.0%	41.0%		32%
Maximum Green (s)	22.0			22.0	34.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	4.0		4.0
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	5.0			5.0	7.0		
Lead/Lag	Lead			Lead			Lag
Lead-Lag Optimize?	Yes			Yes			Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0
Recall Mode	C-Max			C-Max	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							130
Act Effct Green (s)	28.7	63.0		28.7	27.3		
Actuated g/C Ratio	0.29	0.63		0.29	0.27		
v/c Ratio	0.68	0.23		0.67	0.85		
Control Delay	35.7	3.0		36.8	51.0		
Queue Delay	0.0	0.0		0.0	0.0		
Total Delay	35.7	3.0		36.8	51.0		
LOS	D	A		D	D		
Approach Delay	27.2			36.8	51.0		
Approach LOS	C			D	D		
90th %ile Green (s)	22.0			22.0	34.0		26.0
90th %ile Term Code	Coord			Coord	Max		Ped
70th %ile Green (s)	24.7			24.7	31.3		26.0
70th %ile Term Code	Coord			Coord	Gap		Ped
50th %ile Green (s)	28.1			28.1	27.9		26.0
50th %ile Term Code	Coord			Coord	Gap		Ped
30th %ile Green (s)	31.7			31.7	24.3		26.0
30th %ile Term Code	Coord			Coord	Gap		Ped
10th %ile Green (s)	37.1			37.1	18.9		26.0
10th %ile Term Code	Coord			Coord	Gap		Ped
Queue Length 50th (ft)	220	0		204	243		
Queue Length 95th (ft)	#336	41		#320	331		
Internal Link Dist (ft)	1			632	144		
Turn Bay Length (ft)							
Base Capacity (vph)	1036	1093		1026	597		
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	0.68	0.23		0.67	0.69		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 97 (97%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 35.2 Intersection LOS: D
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.

Splits and Phases: 3: Dorchester Avenue & A Street

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	909	36	0	1017	0	31
Future Volume (Veh/h)	909	36	0	1017	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.97	0.97	0.78	0.78
Hourly flow rate (vph)	928	37	0	1048	0	40
Pedestrians					130	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					12	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	502			60		
pX, platoon unblocked					0.83	
vC, conflicting volume			1095		1600	458
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1095		1317	458
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	92
cM capacity (veh/h)			565		110	479

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1
Volume Total	371	371	223	524	524	40
Volume Left	0	0	0	0	0	0
Volume Right	0	0	37	0	0	40
cSH	1700	1700	1700	1700	1700	479
Volume to Capacity	0.22	0.22	0.13	0.31	0.31	0.08
Queue Length 95th (ft)	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.2
Lane LOS						B
Approach Delay (s)	0.0			0.0		13.2
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	83	10	43	79	18	0	0	0	5	20	11
Future Volume (Veh/h)	13	83	10	43	79	18	0	0	0	5	20	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.25	0.25	0.79	0.79	0.79
Hourly flow rate (vph)	14	87	11	45	83	19	0	0	0	6	25	14
Pedestrians		13			12			17			9	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	111			115			360	338	122	324	334	114
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	111			115			360	338	122	324	334	114
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			100	100	100	99	95	98
cM capacity (veh/h)	1479			1487			543	558	924	598	553	924

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	112	147	45
Volume Left	14	45	6
Volume Right	11	19	14
cSH	1479	1487	639
Volume to Capacity	0.01	0.03	0.07
Queue Length 95th (ft)	1	2	6
Control Delay (s)	1.0	2.5	11.1
Lane LOS	A	A	B
Approach Delay (s)	1.0	2.5	11.1
Approach LOS			B

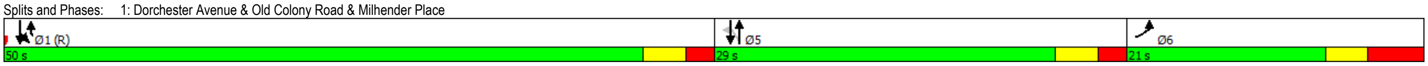
Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	15	1	1	6	370	4	258	312	15	0	1068
Future Volume (vph)	15	1	1	6	370	4	258	312	15	0	1068
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		110	0		0	0	0
Storage Lanes	1	0		0		1	2		0	0	2
Taper Length (ft)	25			25			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.97	1.00	1.00	1.00	0.88
Ped Bike Factor	1.00				1.00			1.00			
Frt	0.986				0.999			0.993			0.850
Flt Protected	0.957				0.999		0.950				
Satd. Flow (prot)	1785	0	0	0	3402	0	3467	1831	0	0	2842
Flt Permitted	0.957				0.947		0.950				
Satd. Flow (perm)	1785	0	0	0	3224	0	3467	1831	0	0	2842
Right Turn on Red			Yes			No			No		No
Satd. Flow (RTOR)	76										
Link Speed (mph)	30				30			30		30	
Link Distance (ft)	310				770			258		891	
Travel Time (s)	7.0				17.5			5.9		20.3	
Confl. Peds. (#/hr)			7	18		27			18		
Confl. Bikes (#/hr)						4			2		
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	18	1	1	7	402	4	269	325	16	0	1101
Shared Lane Traffic (%)											
Lane Group Flow (vph)	20	0	0	0	413	0	269	341	0	0	1101
Turn Type	Prot			Perm	NA		Prot	NA			Over
Protected Phases	6				5		1	1 5			1
Permitted Phases				5							
Detector Phase	6			5	5		1	1 5			1
Switch Phase											
Minimum Initial (s)	8.0			8.0	8.0		8.0				8.0
Minimum Split (s)	21.0			29.0	29.0		13.0				13.0
Total Split (s)	21.0			29.0	29.0		50.0				50.0
Total Split (%)	21.0%			29.0%	29.0%		50.0%				50.0%
Maximum Green (s)	14.0			24.0	24.0		45.0				45.0
Yellow Time (s)	3.0			3.0	3.0		3.0				3.0
All-Red Time (s)	4.0			2.0	2.0		2.0				2.0
Lost Time Adjust (s)	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.0				5.0		5.0				5.0
Lead/Lag	Lag			Lead	Lead						
Lead-Lag Optimize?	Yes			Yes	Yes						
Vehicle Extension (s)	2.0			2.0	2.0		2.0				2.0
Recall Mode	None			None	None		C-Max				C-Max
Walk Time (s)	7.0			7.0	7.0						
Flash Dont Walk (s)	7.0			17.0	17.0						
Pedestrian Calls (#/hr)	7			27	27						
Act Effct Green (s)	9.2				20.1		59.7	86.8			59.7
Actuated g/C Ratio	0.09				0.20		0.60	0.87			0.60
v/c Ratio	0.09				0.64		0.13	0.21			0.65
Control Delay	0.7				40.7		6.3	4.2			19.1
Queue Delay	0.0				0.4		0.0	0.0			0.0
Total Delay	0.7				41.1		6.3	4.2			19.1
LOS	A				D		A	A			B
Approach Delay	0.7				41.1			5.1		19.1	
Approach LOS	A				D			A		B	
90th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
90th %ile Term Code	Ped			Max	Max		Coord				Coord
70th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
70th %ile Term Code	Min			Ped	Ped		Coord				Coord
50th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
50th %ile Term Code	Min			Ped	Ped		Coord				Coord
30th %ile Green (s)	0.0			16.1	16.1		73.9				73.9
30th %ile Term Code	Skip			Gap	Gap		Coord				Coord
10th %ile Green (s)	0.0			12.4	12.4		77.6				77.6
10th %ile Term Code	Skip			Gap	Gap		Coord				Coord
Queue Length 50th (ft)	0				121		28	72			305
Queue Length 95th (ft)	0				171		65	163			#458
Internal Link Dist (ft)	230				690			178		811	
Turn Bay Length (ft)											
Base Capacity (vph)	315				773		2070	1589			1696
Starvation Cap Reductn	0				0		0	0			0
Spillback Cap Reductn	2				95		0	0			0
Storage Cap Reductn	0				0		0	0			0
Reduced v/c Ratio	0.06				0.61		0.13	0.21			0.65

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 19.2 Intersection LOS: B
Intersection Capacity Utilization 61.9% 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.

Splits and Phases: 1: Dorchester Avenue & Old Colony Road & Milhender Place



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	29	28	1466	556	22
Future Volume (vph)	31	29	28	1466	556	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor	1.00			1.00	1.00	
Frt	0.934				0.994	
Flt Protected	0.975			0.999		
Satd. Flow (prot)	1704	0	0	3534	3484	0
Flt Permitted	0.975			0.935		
Satd. Flow (perm)	1702	0	0	3308	3484	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	35				13	
Link Speed (mph)	30			30	30	
Link Distance (ft)	293			237	502	
Travel Time (s)	6.7			5.4	11.4	
Confl. Peds. (#/hr)	1		15			15
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.83	0.83	0.99	0.99	0.96	0.96
Heavy Vehicles (%)	3%	0%	4%	2%	3%	0%
Adj. Flow (vph)	37	35	28	1481	579	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	0	1509	602	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	3			1	1	
Permitted Phases			1			
Detector Phase	3		1	1	1	
Switch Phase						
Minimum Initial (s)	8.0		8.0	8.0	8.0	
Minimum Split (s)	13.0		13.0	13.0	13.0	
Total Split (s)	17.0		83.0	83.0	83.0	
Total Split (%)	17.0%		83.0%	83.0%	83.0%	
Maximum Green (s)	12.0		78.0	78.0	78.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	C-Max	
Act Effct Green (s)	8.5			85.1	85.1	
Actuated g/C Ratio	0.08			0.85	0.85	
v/c Ratio	0.41			0.54	0.20	
Control Delay	32.3			6.2	0.9	
Queue Delay	0.0			0.6	0.0	
Total Delay	32.3			6.8	0.9	
LOS	C			A	A	
Approach Delay	32.3			6.8	0.9	
Approach LOS	C			A	A	
90th %ile Green (s)	10.5		79.5	79.5	79.5	
90th %ile Term Code	Gap		Coord	Coord	Coord	
70th %ile Green (s)	8.2		81.8	81.8	81.8	
70th %ile Term Code	Gap		Coord	Coord	Coord	
50th %ile Green (s)	8.0		82.0	82.0	82.0	
50th %ile Term Code	Min		Coord	Coord	Coord	
30th %ile Green (s)	8.0		82.0	82.0	82.0	
30th %ile Term Code	Min		Coord	Coord	Coord	
10th %ile Green (s)	0.0		95.0	95.0	95.0	
10th %ile Term Code	Skip		Coord	Coord	Coord	
Queue Length 50th (ft)	23			198	7	
Queue Length 95th (ft)	58			427	m9	
Internal Link Dist (ft)	213			157	422	
Turn Bay Length (ft)						
Base Capacity (vph)	235			2813	2965	
Starvation Cap Reductn	0			806	0	
Spillback Cap Reductn	1			163	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.31			0.75	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 44 (44%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 6.0 Intersection LOS: A
Intersection Capacity Utilization 75.5% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

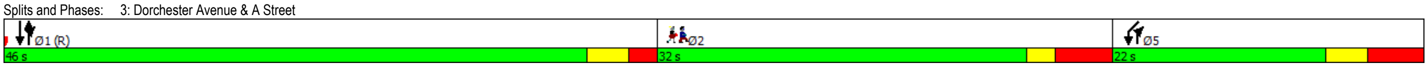
Splits and Phases: 2: Dorchester Avenue & Haul Road

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	Ø2
Lane Configurations							
Traffic Volume (vph)	1211	324	0	340	239	19	
Future Volume (vph)	1211	324	0	340	239	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor							
Frt		0.850			0.990		
Flt Protected					0.956		
Satd. Flow (prot)	3574	1524	0	3471	1734	0	
Flt Permitted					0.956		
Satd. Flow (perm)	3574	1524	0	3471	1734	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		331			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	60			712	224		
Travel Time (s)	1.4			16.2	5.1		
Confl. Bikes (#/hr)		12					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.95	0.95	
Heavy Vehicles (%)	1%	6%	0%	4%	4%	0%	
Adj. Flow (vph)	1236	331	0	347	252	20	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1236	331	0	347	272	0	
Turn Type	NA	pt+ov		NA	Prot		
Protected Phases	1	1 5		1	5		2
Permitted Phases							
Detector Phase	1	1 5		1	5		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		1.0
Minimum Split (s)	13.0			13.0	15.0		32.0
Total Split (s)	46.0			46.0	22.0		32.0
Total Split (%)	46.0%			46.0%	22.0%		32%
Maximum Green (s)	41.0			41.0	15.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	4.0		4.0
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	5.0			5.0	7.0		
Lead/Lag	Lead			Lead			Lag
Lead-Lag Optimize?	Yes			Yes			Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0
Recall Mode	C-Max			C-Max	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							63
Act Effct Green (s)	47.4	70.4		47.4	15.0		
Actuated g/C Ratio	0.47	0.70		0.47	0.15		
v/c Ratio	0.73	0.28		0.21	1.04		
Control Delay	28.5	1.5		18.1	108.4		
Queue Delay	0.1	0.0		0.0	0.0		
Total Delay	28.5	1.5		18.1	108.4		
LOS	C	A		B	F		
Approach Delay	22.8			18.1	108.4		
Approach LOS	C			B	F		
90th %ile Green (s)	41.0			41.0	15.0		26.0
90th %ile Term Code	Coord			Coord	Max		Ped
70th %ile Green (s)	41.0			41.0	15.0		26.0
70th %ile Term Code	Coord			Coord	Max		Ped
50th %ile Green (s)	41.0			41.0	15.0		26.0
50th %ile Term Code	Coord			Coord	Max		Ped
30th %ile Green (s)	41.0			41.0	15.0		26.0
30th %ile Term Code	Coord			Coord	Max		Ped
10th %ile Green (s)	73.0			73.0	15.0		0.0
10th %ile Term Code	Coord			Coord	Max		Skip
Queue Length 50th (ft)	418	15		74	~186		
Queue Length 95th (ft)	512	15		107	#350		
Internal Link Dist (ft)	1			632	144		
Turn Bay Length (ft)							
Base Capacity (vph)	1694	1170		1645	262		
Starvation Cap Reductn	26	0		0	0		
Spillback Cap Reductn	0	0		0	0		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.74	0.28		0.21	1.04		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 80 (80%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 32.7 Intersection LOS: C
Intersection Capacity Utilization 57.9% 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: 3: Dorchester Avenue & A Street



Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	1472	26	0	579	0	63
Future Volume (Veh/h)	1472	26	0	579	0	63
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.97	0.97	0.82	0.82
Hourly flow rate (vph)	1502	27	0	597	0	77
Pedestrians					63	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					6	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	502			60		
pX, platoon unblocked			0.94		0.96	0.94
vC, conflicting volume			1592		1877	577
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1390		1463	305
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			438		110	605

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1
Volume Total	601	601	327	298	298	77
Volume Left	0	0	0	0	0	0
Volume Right	0	0	27	0	0	77
cSH	1700	1700	1700	1700	1700	605
Volume to Capacity	0.35	0.35	0.19	0.18	0.18	0.13
Queue Length 95th (ft)	0	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.8
Lane LOS						B
Approach Delay (s)	0.0			0.0		11.8
Approach LOS						B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	152	19	18	68	40	0	0	0	7	10	8
Future Volume (Veh/h)	23	152	19	18	68	40	0	0	0	7	10	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.25	0.25	0.25	0.78	0.78	0.78
Hourly flow rate (vph)	25	167	21	20	76	44	0	0	0	9	13	10
Pedestrians		11			8			7			9	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	129			195			400	404	192	382	392	118
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	129			195			400	404	192	382	392	118
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			99			100	100	100	98	98	99
cM capacity (veh/h)	1457			1354			525	517	848	553	525	888

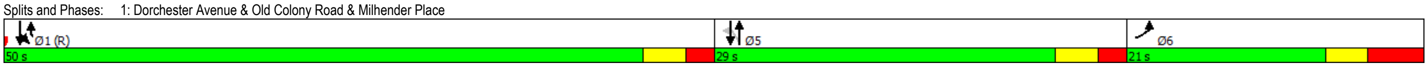
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	213	140	32
Volume Left	25	20	9
Volume Right	21	44	10
cSH	1457	1354	612
Volume to Capacity	0.02	0.01	0.05
Queue Length 95th (ft)	1	1	4
Control Delay (s)	1.0	1.2	11.2
Lane LOS	A	A	B
Approach Delay (s)	1.0	1.2	11.2
Approach LOS			B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	7	1	1	1	589	4	529	668	2	0	514
Future Volume (vph)	7	1	1	1	589	4	529	668	2	0	514
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		110	0		0	0	0
Storage Lanes	1	0		0		1	2		0	0	2
Taper Length (ft)	25			25			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.97	1.00	1.00	1.00	0.88
Ped Bike Factor	0.98				1.00			1.00			
Frt	0.968				0.999						0.850
Flt Protected	0.963						0.950				
Satd. Flow (prot)	1732	0	0	0	3536	0	3467	1881	0	0	2842
Flt Permitted	0.963				0.954		0.950				
Satd. Flow (perm)	1732	0	0	0	3373	0	3467	1881	0	0	2842
Right Turn on Red			Yes			No			No		No
Satd. Flow (RTOR)	76										
Link Speed (mph)	30				30			30		30	
Link Distance (ft)	310				770			258		891	
Travel Time (s)	7.0				17.5			5.9		20.3	
Confl. Peds. (#/hr)			21	15		10			15		
Confl. Bikes (#/hr)						2			17		
Peak Hour Factor	0.56	0.56	0.56	0.94	0.94	0.94	0.95	0.95	0.95	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%
Adj. Flow (vph)	13	2	2	1	627	4	557	703	2	0	553
Shared Lane Traffic (%)											
Lane Group Flow (vph)	17	0	0	0	632	0	557	705	0	0	553
Turn Type	Prot			Perm	NA		Prot	NA			Over
Protected Phases	6				5		1	1 5			1
Permitted Phases				5							
Detector Phase	6			5	5		1	1			1
Switch Phase											
Minimum Initial (s)	8.0			8.0	8.0		8.0				8.0
Minimum Split (s)	21.0			29.0	29.0		13.0				13.0
Total Split (s)	21.0			29.0	29.0		50.0				50.0
Total Split (%)	21.0%			29.0%	29.0%		50.0%				50.0%
Maximum Green (s)	14.0			24.0	24.0		45.0				45.0
Yellow Time (s)	3.0			3.0	3.0		3.0				3.0
All-Red Time (s)	4.0			2.0	2.0		2.0				2.0
Lost Time Adjust (s)	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.0				5.0		5.0				5.0
Lead/Lag	Lag			Lead	Lead						
Lead-Lag Optimize?	Yes			Yes	Yes						
Vehicle Extension (s)	2.0			2.0	2.0		2.0				2.0
Recall Mode	None			None	None		C-Max				C-Max
Walk Time (s)	7.0			7.0	7.0						
Flash Dont Walk (s)	7.0			17.0	17.0						
Pedestrian Calls (#/hr)	21			10	10						
Act Effct Green (s)	10.4				22.0		56.6	85.6			56.6
Actuated g/C Ratio	0.10				0.22		0.57	0.86			0.57
v/c Ratio	0.07				0.85		0.28	0.44			0.34
Control Delay	0.5				49.2		3.5	2.7			14.9
Queue Delay	0.0				0.0		0.0	0.0			0.0
Total Delay	0.5				49.2		3.5	2.8			14.9
LOS	A				D		A	A			B
Approach Delay	0.5				49.2			3.1		14.9	
Approach LOS	A				D			A		B	
90th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
90th %ile Term Code	Ped			Max	Max		Coord				Coord
70th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
70th %ile Term Code	Ped			Max	Max		Coord				Coord
50th %ile Green (s)	8.0			23.8	23.8		51.2				51.2
50th %ile Term Code	Min			Gap	Gap		Coord				Coord
30th %ile Green (s)	0.0			20.8	20.8		69.2				69.2
30th %ile Term Code	Skip			Gap	Gap		Coord				Coord
10th %ile Green (s)	0.0			17.5	17.5		72.5				72.5
10th %ile Term Code	Skip			Gap	Gap		Coord				Coord
Queue Length 50th (ft)	0				199		30	74			115
Queue Length 95th (ft)	0				265		58	88			181
Internal Link Dist (ft)	230				690			178		811	
Turn Bay Length (ft)											
Base Capacity (vph)	307				809		1961	1610			1607
Starvation Cap Reductn	0				0		0	84			0
Spillback Cap Reductn	0				0		0	0			0
Storage Cap Reductn	0				0		0	0			0
Reduced v/c Ratio	0.06				0.78		0.28	0.46			0.34

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 76.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Dorchester Avenue & Old Colony Road & Milhender Place



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	18	17	1051	1181	9
Future Volume (vph)	21	18	17	1051	1181	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor	0.98			1.00	1.00	
Frt	0.937				0.999	
Flt Protected	0.974			0.999		
Satd. Flow (prot)	1698	0	0	3571	3535	0
Flt Permitted	0.974			0.921		
Satd. Flow (perm)	1698	0	0	3292	3535	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	26				2	
Link Speed (mph)	30			30	30	
Link Distance (ft)	293			237	502	
Travel Time (s)	6.7			5.4	11.4	
Confl. Peds. (#/hr)			14			14
Confl. Bikes (#/hr)		18				18
Peak Hour Factor	0.70	0.70	0.97	0.97	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%
Adj. Flow (vph)	30	26	18	1084	1256	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	0	1102	1266	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	3			1	1	
Permitted Phases			1			
Detector Phase	3		1	1	1	
Switch Phase						
Minimum Initial (s)	8.0		8.0	8.0	8.0	
Minimum Split (s)	13.0		13.0	13.0	13.0	
Total Split (s)	17.0		83.0	83.0	83.0	
Total Split (%)	17.0%		83.0%	83.0%	83.0%	
Maximum Green (s)	12.0		78.0	78.0	78.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	C-Max	
Act Effct Green (s)	8.3			85.3	85.3	
Actuated g/C Ratio	0.08			0.85	0.85	
v/c Ratio	0.34			0.39	0.42	
Control Delay	32.9			1.7	3.6	
Queue Delay	0.0			0.1	0.8	
Total Delay	32.9			1.8	4.4	
LOS	C			A	A	
Approach Delay	32.9			1.8	4.4	
Approach LOS	C			A	A	
90th %ile Green (s)	9.6		80.4	80.4	80.4	
90th %ile Term Code	Gap		Coord	Coord	Coord	
70th %ile Green (s)	8.0		82.0	82.0	82.0	
70th %ile Term Code	Min		Coord	Coord	Coord	
50th %ile Green (s)	8.0		82.0	82.0	82.0	
50th %ile Term Code	Min		Coord	Coord	Coord	
30th %ile Green (s)	8.0		82.0	82.0	82.0	
30th %ile Term Code	Min		Coord	Coord	Coord	
10th %ile Green (s)	0.0		95.0	95.0	95.0	
10th %ile Term Code	Skip		Coord	Coord	Coord	
Queue Length 50th (ft)	18			15	107	
Queue Length 95th (ft)	40			58	m138	
Internal Link Dist (ft)	213			157	422	
Turn Bay Length (ft)						
Base Capacity (vph)	226			2807	3015	
Starvation Cap Reductn	0			535	1316	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.25			0.49	0.75	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 2 (2%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 3.9 Intersection LOS: A
Intersection Capacity Utilization 56.1% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Avenue & Haul Road

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	Ø2
Lane Configurations							
Traffic Volume (vph)	764	311	0	737	454	25	
Future Volume (vph)	764	311	0	737	454	25	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor							
Frt		0.850			0.993		
Flt Protected					0.955		
Satd. Flow (prot)	3610	1599	0	3574	1752	0	
Flt Permitted					0.955		
Satd. Flow (perm)	3610	1599	0	3574	1752	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		314			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	60			712	224		
Travel Time (s)	1.4			16.2	5.1		
Confl. Bikes (#/hr)		11					
Peak Hour Factor	0.99	0.99	0.97	0.97	0.92	0.92	
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	
Adj. Flow (vph)	772	314	0	760	493	27	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	772	314	0	760	520	0	
Turn Type	NA	pt+ov		NA	Prot		
Protected Phases	1	1 5		1	5		2
Permitted Phases							
Detector Phase	1	1 5		1	5		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		1.0
Minimum Split (s)	13.0			13.0	15.0		32.0
Total Split (s)	27.0			27.0	41.0		32.0
Total Split (%)	27.0%			27.0%	41.0%		32%
Maximum Green (s)	22.0			22.0	34.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	4.0		4.0
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	5.0			5.0	7.0		
Lead/Lag	Lead			Lead			Lag
Lead-Lag Optimize?	Yes			Yes			Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0
Recall Mode	C-Max			C-Max	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							130
Act Effct Green (s)	24.1	63.0		24.1	31.9		
Actuated g/C Ratio	0.24	0.63		0.24	0.32		
v/c Ratio	0.89	0.28		0.88	0.93		
Control Delay	49.6	3.2		50.7	57.2		
Queue Delay	0.0	0.0		0.0	0.0		
Total Delay	49.6	3.2		50.7	57.2		
LOS	D	A		D	E		
Approach Delay	36.2			50.7	57.2		
Approach LOS	D			D	E		
90th %ile Green (s)	22.0			22.0	34.0		26.0
90th %ile Term Code	Coord			Coord	Max		Ped
70th %ile Green (s)	22.0			22.0	34.0		26.0
70th %ile Term Code	Coord			Coord	Max		Ped
50th %ile Green (s)	22.0			22.0	34.0		26.0
50th %ile Term Code	Coord			Coord	Max		Ped
30th %ile Green (s)	24.5			24.5	31.5		26.0
30th %ile Term Code	Coord			Coord	Gap		Ped
10th %ile Green (s)	30.1			30.1	25.9		26.0
10th %ile Term Code	Coord			Coord	Gap		Ped
Queue Length 50th (ft)	263	16		254	306		
Queue Length 95th (ft)	#377	52		#376	#497		
Internal Link Dist (ft)	1			632	144		
Turn Bay Length (ft)							
Base Capacity (vph)	870	1117		862	597		
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	0.89	0.28		0.88	0.87		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 97 (97%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 45.5 Intersection LOS: D
Intersection Capacity Utilization 57.8% 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.

Splits and Phases: 3: Dorchester Avenue & A Street

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	1035	37	0	1190	0	39
Future Volume (Veh/h)	1035	37	0	1190	0	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.97	0.97	0.78	0.78
Hourly flow rate (vph)	1056	38	0	1227	0	50
Pedestrians					130	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					12	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	502			60		
pX, platoon unblocked			0.99		0.80	0.99
vC, conflicting volume			1224		1818	501
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1205		1478	478
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			510		83	462

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1
Volume Total	422	422	249	614	614	50
Volume Left	0	0	0	0	0	0
Volume Right	0	0	38	0	0	50
cSH	1700	1700	1700	1700	1700	462
Volume to Capacity	0.25	0.25	0.15	0.36	0.36	0.11
Queue Length 95th (ft)	0	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.7
Lane LOS						B
Approach Delay (s)	0.0			0.0		13.7
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	106	10	45	96	26	0	0	0	5	21	11
Future Volume (Veh/h)	13	106	10	45	96	26	0	0	0	5	21	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.25	0.25	0.79	0.79	0.79
Hourly flow rate (vph)	14	112	11	47	101	27	0	0	0	6	27	14
Pedestrians		13			12			17			9	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	137			140			412	394	146	375	386	136
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	137			140			412	394	146	375	386	136
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			100	100	100	99	95	98
cM capacity (veh/h)	1447			1456			498	519	895	552	517	898

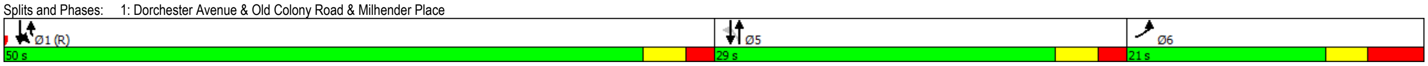
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	137	175	47
Volume Left	14	47	6
Volume Right	11	27	14
cSH	1447	1456	597
Volume to Capacity	0.01	0.03	0.08
Queue Length 95th (ft)	1	3	6
Control Delay (s)	0.8	2.2	11.5
Lane LOS	A	A	B
Approach Delay (s)	0.8	2.2	11.5
Approach LOS			B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	15	1	1	6	377	4	268	317	15	0	1081
Future Volume (vph)	15	1	1	6	377	4	268	317	15	0	1081
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		110	0		0	0	0
Storage Lanes	1	0		0		1	2		0	0	2
Taper Length (ft)	25			25			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.97	1.00	1.00	1.00	0.88
Ped Bike Factor	1.00				1.00			1.00			
Frt	0.986				0.999			0.993			0.850
Flt Protected	0.957				0.999		0.950				
Satd. Flow (prot)	1785	0	0	0	3402	0	3467	1831	0	0	2842
Flt Permitted	0.957				0.947		0.950				
Satd. Flow (perm)	1785	0	0	0	3224	0	3467	1831	0	0	2842
Right Turn on Red			Yes			No			No		No
Satd. Flow (RTOR)	76										
Link Speed (mph)	30				30			30		30	
Link Distance (ft)	310				770			258		891	
Travel Time (s)	7.0				17.5			5.9		20.3	
Confl. Peds. (#/hr)			7	18		27			18		
Confl. Bikes (#/hr)						4			2		
Peak Hour Factor	0.85	0.85	0.85	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	18	1	1	7	410	4	279	330	16	0	1114
Shared Lane Traffic (%)											
Lane Group Flow (vph)	20	0	0	0	421	0	279	346	0	0	1114
Turn Type	Prot			Perm	NA		Prot	NA			Over
Protected Phases	6				5		1	1 5			1
Permitted Phases				5							
Detector Phase	6			5	5		1	1 5			1
Switch Phase											
Minimum Initial (s)	8.0			8.0	8.0		8.0				8.0
Minimum Split (s)	21.0			29.0	29.0		13.0				13.0
Total Split (s)	21.0			29.0	29.0		50.0				50.0
Total Split (%)	21.0%			29.0%	29.0%		50.0%				50.0%
Maximum Green (s)	14.0			24.0	24.0		45.0				45.0
Yellow Time (s)	3.0			3.0	3.0		3.0				3.0
All-Red Time (s)	4.0			2.0	2.0		2.0				2.0
Lost Time Adjust (s)	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.0				5.0		5.0				5.0
Lead/Lag	Lag			Lead	Lead						
Lead-Lag Optimize?	Yes			Yes	Yes						
Vehicle Extension (s)	2.0			2.0	2.0		2.0				2.0
Recall Mode	None			None	None		C-Max				C-Max
Walk Time (s)	7.0			7.0	7.0						
Flash Dont Walk (s)	7.0			17.0	17.0						
Pedestrian Calls (#/hr)	7			27	27						
Act Effct Green (s)	9.2				20.2		59.6	86.8			59.6
Actuated g/C Ratio	0.09				0.20		0.60	0.87			0.60
v/c Ratio	0.09				0.65		0.13	0.22			0.66
Control Delay	0.7				41.0		6.9	4.0			19.4
Queue Delay	0.0				0.5		0.0	0.0			0.0
Total Delay	0.7				41.5		6.9	4.0			19.4
LOS	A				D		A	A			B
Approach Delay	0.7				41.5			5.3		19.4	
Approach LOS	A				D			A		B	
90th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
90th %ile Term Code	Ped			Max	Max		Coord				Coord
70th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
70th %ile Term Code	Min			Ped	Ped		Coord				Coord
50th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
50th %ile Term Code	Min			Ped	Ped		Coord				Coord
30th %ile Green (s)	0.0			16.3	16.3		73.7				73.7
30th %ile Term Code	Skip			Gap	Gap		Coord				Coord
10th %ile Green (s)	0.0			12.5	12.5		77.5				77.5
10th %ile Term Code	Skip			Gap	Gap		Coord				Coord
Queue Length 50th (ft)	0				124		32	70			310
Queue Length 95th (ft)	0				174		69	129			#476
Internal Link Dist (ft)	230				690			178		811	
Turn Bay Length (ft)											
Base Capacity (vph)	315				773		2067	1589			1694
Starvation Cap Reductn	0				0		0	0			0
Spillback Cap Reductn	2				99		0	0			0
Storage Cap Reductn	0				0		0	0			0
Reduced v/c Ratio	0.06				0.62		0.13	0.22			0.66

Intersection Summary
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 19.4 Intersection LOS: B
Intersection Capacity Utilization 62.4% 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.

Splits and Phases: 1: Dorchester Avenue & Old Colony Road & Milhender Place



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	29	28	1486	571	22
Future Volume (vph)	31	29	28	1486	571	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor	1.00			1.00	1.00	
Frt	0.934				0.994	
Flt Protected	0.975			0.999		
Satd. Flow (prot)	1704	0	0	3534	3484	0
Flt Permitted	0.975			0.935		
Satd. Flow (perm)	1702	0	0	3308	3484	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	35				12	
Link Speed (mph)	30			30	30	
Link Distance (ft)	293			237	202	
Travel Time (s)	6.7			5.4	4.6	
Confl. Peds. (#/hr)	1		15			15
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.83	0.83	0.99	0.99	0.96	0.96
Heavy Vehicles (%)	3%	0%	4%	2%	3%	0%
Adj. Flow (vph)	37	35	28	1501	595	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	0	1529	618	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	3			1	1	
Permitted Phases			1			
Detector Phase	3		1	1	1	
Switch Phase						
Minimum Initial (s)	8.0		8.0	8.0	8.0	
Minimum Split (s)	13.0		13.0	13.0	13.0	
Total Split (s)	17.0		83.0	83.0	83.0	
Total Split (%)	17.0%		83.0%	83.0%	83.0%	
Maximum Green (s)	12.0		78.0	78.0	78.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	C-Max	
Act Effct Green (s)	8.5			85.1	85.1	
Actuated g/C Ratio	0.08			0.85	0.85	
v/c Ratio	0.41			0.54	0.21	
Control Delay	32.3			6.3	1.0	
Queue Delay	0.0			0.6	0.0	
Total Delay	32.3			6.9	1.0	
LOS	C			A	A	
Approach Delay	32.3			6.9	1.0	
Approach LOS	C			A	A	
90th %ile Green (s)	10.5		79.5	79.5	79.5	
90th %ile Term Code	Gap		Coord	Coord	Coord	
70th %ile Green (s)	8.2		81.8	81.8	81.8	
70th %ile Term Code	Gap		Coord	Coord	Coord	
50th %ile Green (s)	8.0		82.0	82.0	82.0	
50th %ile Term Code	Min		Coord	Coord	Coord	
30th %ile Green (s)	8.0		82.0	82.0	82.0	
30th %ile Term Code	Min		Coord	Coord	Coord	
10th %ile Green (s)	0.0		95.0	95.0	95.0	
10th %ile Term Code	Skip		Coord	Coord	Coord	
Queue Length 50th (ft)	23			204	16	
Queue Length 95th (ft)	58			442	m18	
Internal Link Dist (ft)	213			157	122	
Turn Bay Length (ft)						
Base Capacity (vph)	235			2813	2965	
Starvation Cap Reductn	0			804	0	
Spillback Cap Reductn	1			158	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.31			0.76	0.21	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 44 (44%), Referenced to phase 1:NBSB, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 76.0%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

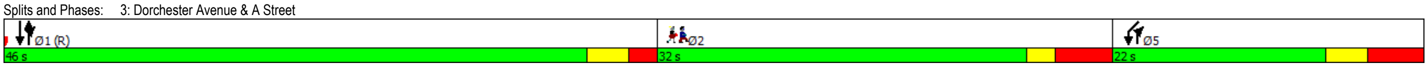
Splits and Phases: 2: Dorchester Avenue & Haul Road

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	Ø2
Lane Configurations							
Traffic Volume (vph)	1225	327	0	354	248	19	
Future Volume (vph)	1225	327	0	354	248	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor							
Frt		0.850			0.990		
Flt Protected					0.956		
Satd. Flow (prot)	3574	1524	0	3471	1734	0	
Flt Permitted					0.956		
Satd. Flow (perm)	3574	1524	0	3471	1734	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		334			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	60			712	224		
Travel Time (s)	1.4			16.2	5.1		
Confl. Bikes (#/hr)		12					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.95	0.95	
Heavy Vehicles (%)	1%	6%	0%	4%	4%	0%	
Adj. Flow (vph)	1250	334	0	361	261	20	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1250	334	0	361	281	0	
Turn Type	NA	pt+ov		NA	Prot		
Protected Phases	1	1 5		1	5		2
Permitted Phases							
Detector Phase	1	1 5		1	5		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		1.0
Minimum Split (s)	13.0			13.0	15.0		32.0
Total Split (s)	46.0			46.0	22.0		32.0
Total Split (%)	46.0%			46.0%	22.0%		32%
Maximum Green (s)	41.0			41.0	15.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	4.0		4.0
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	5.0			5.0	7.0		
Lead/Lag	Lead			Lead			Lag
Lead-Lag Optimize?	Yes			Yes			Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0
Recall Mode	C-Max			C-Max	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							63
Act Effct Green (s)	47.4	70.4		47.4	15.0		
Actuated g/C Ratio	0.47	0.70		0.47	0.15		
v/c Ratio	0.74	0.29		0.22	1.07		
Control Delay	28.5	1.5		18.2	117.7		
Queue Delay	0.1	0.0		0.0	0.0		
Total Delay	28.6	1.5		18.2	117.7		
LOS	C	A		B	F		
Approach Delay	22.9			18.2	117.7		
Approach LOS	C			B	F		
90th %ile Green (s)	41.0			41.0	15.0		26.0
90th %ile Term Code	Coord			Coord	Max		Ped
70th %ile Green (s)	41.0			41.0	15.0		26.0
70th %ile Term Code	Coord			Coord	Max		Ped
50th %ile Green (s)	41.0			41.0	15.0		26.0
50th %ile Term Code	Coord			Coord	Max		Ped
30th %ile Green (s)	41.0			41.0	15.0		26.0
30th %ile Term Code	Coord			Coord	Max		Ped
10th %ile Green (s)	73.0			73.0	15.0		0.0
10th %ile Term Code	Coord			Coord	Max		Skip
Queue Length 50th (ft)	421	13		77	~198		
Queue Length 95th (ft)	516	14		111	#362		
Internal Link Dist (ft)	1			632	144		
Turn Bay Length (ft)							
Base Capacity (vph)	1694	1171		1645	262		
Starvation Cap Reductn	29	0		0	0		
Spillback Cap Reductn	0	0		0	0		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.75	0.29		0.22	1.07		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 80 (80%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 34.1 Intersection LOS: C
Intersection Capacity Utilization 58.8% 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: 3: Dorchester Avenue & A Street



Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	1489	26	0	602	0	63
Future Volume (Veh/h)	1489	26	0	602	0	63
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.97	0.97	0.82	0.82
Hourly flow rate (vph)	1519	27	0	621	0	77
Pedestrians					63	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					6	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	502			60		
pX, platoon unblocked			0.96		0.96	0.96
vC, conflicting volume			1609		1906	583
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1491		1613	423
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			412		87	521

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1
Volume Total	608	608	331	310	310	77
Volume Left	0	0	0	0	0	0
Volume Right	0	0	27	0	0	77
cSH	1700	1700	1700	1700	1700	521
Volume to Capacity	0.36	0.36	0.19	0.18	0.18	0.15
Queue Length 95th (ft)	0	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.1
Lane LOS						B
Approach Delay (s)	0.0			0.0		13.1
Approach LOS						B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	152	19	18	68	40	0	0	0	7	10	8
Future Volume (Veh/h)	23	152	19	18	68	40	0	0	0	7	10	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.25	0.25	0.25	0.78	0.78	0.78
Hourly flow rate (vph)	25	167	21	20	76	44	0	0	0	9	13	10
Pedestrians		11			8			7			9	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	129			195			400	404	192	382	392	118
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	129			195			400	404	192	382	392	118
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			99			100	100	100	98	98	99
cM capacity (veh/h)	1457			1354			525	517	848	553	525	888

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	213	140	32
Volume Left	25	20	9
Volume Right	21	44	10
cSH	1457	1354	612
Volume to Capacity	0.02	0.01	0.05
Queue Length 95th (ft)	1	1	4
Control Delay (s)	1.0	1.2	11.2
Lane LOS	A	A	B
Approach Delay (s)	1.0	1.2	11.2
Approach LOS			B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	17	1497	20	23	578
Future Volume (Veh/h)	15	17	1497	20	23	578
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	18	1627	22	25	628
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			202			360
pX, platoon unblocked	0.89	0.86			0.86	
vC, conflicting volume	2002	824			1649	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1605	478			1434	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	96			94	
cM capacity (veh/h)	80	460			405	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	34	1085	564	234	419
Volume Left	16	0	0	25	0
Volume Right	18	0	22	0	0
cSH	142	1700	1700	405	1700
Volume to Capacity	0.24	0.64	0.33	0.06	0.25
Queue Length 95th (ft)	22	0	0	5	0
Control Delay (s)	38.0	0.0	0.0	2.5	0.0
Lane LOS	E			A	
Approach Delay (s)	38.0	0.0		0.9	
Approach LOS	E				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	7	1	1	1	596	4	541	675	2	0	525
Future Volume (vph)	7	1	1	1	596	4	541	675	2	0	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		110	0		0	0	0
Storage Lanes	1	0		0		1	2		0	0	2
Taper Length (ft)	25			25			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.97	1.00	1.00	1.00	0.88
Ped Bike Factor	0.98				1.00			1.00			
Frt	0.968				0.999						0.850
Flt Protected	0.963						0.950				
Satd. Flow (prot)	1732	0	0	0	3536	0	3467	1881	0	0	2842
Flt Permitted	0.963				0.954		0.950				
Satd. Flow (perm)	1732	0	0	0	3373	0	3467	1881	0	0	2842
Right Turn on Red			Yes			No			No		No
Satd. Flow (RTOR)	76										
Link Speed (mph)	30				30			30		30	
Link Distance (ft)	310				770			258		891	
Travel Time (s)	7.0				17.5			5.9		20.3	
Confl. Peds. (#/hr)			21	15		10			15		
Confl. Bikes (#/hr)						2			17		
Peak Hour Factor	0.56	0.56	0.56	0.94	0.94	0.94	0.95	0.95	0.95	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%
Adj. Flow (vph)	13	2	2	1	634	4	569	711	2	0	565
Shared Lane Traffic (%)											
Lane Group Flow (vph)	17	0	0	0	639	0	569	713	0	0	565
Turn Type	Prot			Perm	NA		Prot	NA			Over
Protected Phases	6				5		1	1 5			1
Permitted Phases				5							
Detector Phase	6			5	5		1	1			1
Switch Phase											
Minimum Initial (s)	8.0			8.0	8.0		8.0				8.0
Minimum Split (s)	21.0			29.0	29.0		13.0				13.0
Total Split (s)	21.0			29.0	29.0		50.0				50.0
Total Split (%)	21.0%			29.0%	29.0%		50.0%				50.0%
Maximum Green (s)	14.0			24.0	24.0		45.0				45.0
Yellow Time (s)	3.0			3.0	3.0		3.0				3.0
All-Red Time (s)	4.0			2.0	2.0		2.0				2.0
Lost Time Adjust (s)	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.0				5.0		5.0				5.0
Lead/Lag	Lag			Lead	Lead						
Lead-Lag Optimize?	Yes			Yes	Yes						
Vehicle Extension (s)	2.0			2.0	2.0		2.0				2.0
Recall Mode	None			None	None		C-Max				C-Max
Walk Time (s)	7.0			7.0	7.0						
Flash Dont Walk (s)	7.0			17.0	17.0						
Pedestrian Calls (#/hr)	21			10	10						
Act Effct Green (s)	10.4				22.1		56.5	85.6			56.5
Actuated g/C Ratio	0.10				0.22		0.56	0.86			0.56
v/c Ratio	0.07				0.86		0.29	0.44			0.35
Control Delay	0.5				49.5		3.8	2.7			15.1
Queue Delay	0.0				0.0		0.0	0.0			0.0
Total Delay	0.5				49.5		3.8	2.7			15.1
LOS	A				D		A	A			B
Approach Delay	0.5				49.5			3.2		15.1	
Approach LOS	A				D			A		B	
90th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
90th %ile Term Code	Ped			Max	Max		Coord				Coord
70th %ile Green (s)	14.0			24.0	24.0		45.0				45.0
70th %ile Term Code	Ped			Max	Max		Coord				Coord
50th %ile Green (s)	8.0			24.0	24.0		51.0				51.0
50th %ile Term Code	Min			Max	Max		Coord				Coord
30th %ile Green (s)	0.0			21.0	21.0		69.0				69.0
30th %ile Term Code	Skip			Gap	Gap		Coord				Coord
10th %ile Green (s)	0.0			17.7	17.7		72.3				72.3
10th %ile Term Code	Skip			Gap	Gap		Coord				Coord
Queue Length 50th (ft)	0				201		35	74			119
Queue Length 95th (ft)	0				267		62	90			186
Internal Link Dist (ft)	230				690			178		811	
Turn Bay Length (ft)											
Base Capacity (vph)	307				809		1957	1610			1604
Starvation Cap Reductn	0				0		0	74			0
Spillback Cap Reductn	0				0		0	0			0
Storage Cap Reductn	0				0		0	0			0
Reduced v/c Ratio	0.06				0.79		0.29	0.46			0.35

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Avenue & Old Colony Road & Milhender Place

Ø1 (R) 50 s | Ø5 29 s | Ø6 21 s

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	18	17	1069	1200	9
Future Volume (vph)	21	18	17	1069	1200	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor	0.98			1.00	1.00	
Frt	0.937				0.999	
Flt Protected	0.974			0.999		
Satd. Flow (prot)	1698	0	0	3571	3535	0
Flt Permitted	0.974			0.921		
Satd. Flow (perm)	1698	0	0	3292	3535	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	26				2	
Link Speed (mph)	30			30	30	
Link Distance (ft)	293			237	182	
Travel Time (s)	6.7			5.4	4.1	
Confl. Peds. (#/hr)			14			14
Confl. Bikes (#/hr)		18				18
Peak Hour Factor	0.70	0.70	0.97	0.97	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%
Adj. Flow (vph)	30	26	18	1102	1277	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	0	1120	1287	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	3			1	1	
Permitted Phases			1			
Detector Phase	3		1	1	1	
Switch Phase						
Minimum Initial (s)	8.0		8.0	8.0	8.0	
Minimum Split (s)	13.0		13.0	13.0	13.0	
Total Split (s)	17.0		83.0	83.0	83.0	
Total Split (%)	17.0%		83.0%	83.0%	83.0%	
Maximum Green (s)	12.0		78.0	78.0	78.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	C-Max	
Act Effct Green (s)	8.3			85.3	85.3	
Actuated g/C Ratio	0.08			0.85	0.85	
v/c Ratio	0.34			0.40	0.43	
Control Delay	32.9			1.7	3.6	
Queue Delay	0.0			0.1	0.8	
Total Delay	32.9			1.8	4.4	
LOS	C			A	A	
Approach Delay	32.9			1.8	4.4	
Approach LOS	C			A	A	
90th %ile Green (s)	9.6		80.4	80.4	80.4	
90th %ile Term Code	Gap		Coord	Coord	Coord	
70th %ile Green (s)	8.0		82.0	82.0	82.0	
70th %ile Term Code	Min		Coord	Coord	Coord	
50th %ile Green (s)	8.0		82.0	82.0	82.0	
50th %ile Term Code	Min		Coord	Coord	Coord	
30th %ile Green (s)	8.0		82.0	82.0	82.0	
30th %ile Term Code	Min		Coord	Coord	Coord	
10th %ile Green (s)	0.0		95.0	95.0	95.0	
10th %ile Term Code	Skip		Coord	Coord	Coord	
Queue Length 50th (ft)	18			15	110	
Queue Length 95th (ft)	40			58	m137	
Internal Link Dist (ft)	213			157	102	
Turn Bay Length (ft)						
Base Capacity (vph)	226			2807	3015	
Starvation Cap Reductn	0			523	1301	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.25			0.49	0.75	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 2 (2%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.43
Intersection Signal Delay: 3.9 Intersection LOS: A
Intersection Capacity Utilization 56.6% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Avenue & Haul Road

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	Ø2
Lane Configurations							
Traffic Volume (vph)	784	315	0	749	461	25	
Future Volume (vph)	784	315	0	749	461	25	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor							
Frt		0.850			0.993		
Flt Protected					0.955		
Satd. Flow (prot)	3610	1599	0	3574	1752	0	
Flt Permitted					0.955		
Satd. Flow (perm)	3610	1599	0	3574	1752	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		318			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	60			712	224		
Travel Time (s)	1.4			16.2	5.1		
Confl. Bikes (#/hr)		11					
Peak Hour Factor	0.99	0.99	0.97	0.97	0.92	0.92	
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	
Adj. Flow (vph)	792	318	0	772	501	27	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	792	318	0	772	528	0	
Turn Type	NA	pt+ov		NA	Prot		
Protected Phases	1	1 5		1	5		2
Permitted Phases							
Detector Phase	1	1 5		1	5		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		1.0
Minimum Split (s)	13.0			13.0	15.0		32.0
Total Split (s)	27.0			27.0	41.0		32.0
Total Split (%)	27.0%			27.0%	41.0%		32%
Maximum Green (s)	22.0			22.0	34.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	4.0		4.0
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	5.0			5.0	7.0		
Lead/Lag	Lead			Lead			Lag
Lead-Lag Optimize?	Yes			Yes			Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0
Recall Mode	C-Max			C-Max	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							130
Act Effct Green (s)	23.8	63.0		23.8	32.2		
Actuated g/C Ratio	0.24	0.63		0.24	0.32		
v/c Ratio	0.92	0.28		0.91	0.93		
Control Delay	53.8	3.2		53.6	58.0		
Queue Delay	0.0	0.0		0.0	0.0		
Total Delay	53.8	3.2		53.6	58.0		
LOS	D	A		D	E		
Approach Delay	39.3			53.6	58.0		
Approach LOS	D			D	E		
90th %ile Green (s)	22.0			22.0	34.0		26.0
90th %ile Term Code	Coord			Coord	Max		Ped
70th %ile Green (s)	22.0			22.0	34.0		26.0
70th %ile Term Code	Coord			Coord	Max		Ped
50th %ile Green (s)	22.0			22.0	34.0		26.0
50th %ile Term Code	Coord			Coord	Max		Ped
30th %ile Green (s)	23.8			23.8	32.2		26.0
30th %ile Term Code	Coord			Coord	Gap		Ped
10th %ile Green (s)	29.4			29.4	26.6		26.0
10th %ile Term Code	Coord			Coord	Gap		Ped
Queue Length 50th (ft)	281	16		258	313		
Queue Length 95th (ft)	#391	50		#384	#509		
Internal Link Dist (ft)	1			632	144		
Turn Bay Length (ft)							
Base Capacity (vph)	860	1117		852	597		
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	0.92	0.28		0.91	0.88		

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 97 (97%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 48.0 Intersection LOS: D
Intersection Capacity Utilization 58.7% 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.

Splits and Phases: 3: Dorchester Avenue & A Street

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	1059	37	0	1209	0	39
Future Volume (Veh/h)	1059	37	0	1209	0	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.97	0.97	0.78	0.78
Hourly flow rate (vph)	1081	38	0	1246	0	50
Pedestrians					130	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					12	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	502			60		
pX, platoon unblocked					0.79	
vC, conflicting volume			1249		1853	509
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1249		1549	509
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			494		74	444

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1
Volume Total	432	432	254	623	623	50
Volume Left	0	0	0	0	0	0
Volume Right	0	0	38	0	0	50
cSH	1700	1700	1700	1700	1700	444
Volume to Capacity	0.25	0.25	0.15	0.37	0.37	0.11
Queue Length 95th (ft)	0	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.1
Lane LOS						B
Approach Delay (s)	0.0			0.0		14.1
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	106	10	45	96	26	0	0	0	5	21	11
Future Volume (Veh/h)	13	106	10	45	96	26	0	0	0	5	21	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.25	0.25	0.79	0.79	0.79
Hourly flow rate (vph)	14	112	11	47	101	27	0	0	0	6	27	14
Pedestrians		13			12			17			9	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	137			140			412	394	146	375	386	136
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	137			140			412	394	146	375	386	136
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			100	100	100	99	95	98
cM capacity (veh/h)	1447			1456			498	519	895	552	517	898

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	137	175	47
Volume Left	14	47	6
Volume Right	11	27	14
cSH	1447	1456	597
Volume to Capacity	0.01	0.03	0.08
Queue Length 95th (ft)	1	3	6
Control Delay (s)	0.8	2.2	11.5
Lane LOS	A	A	B
Approach Delay (s)	0.8	2.2	11.5
Approach LOS			B

Intersection Summary				
Average Delay		2.9		
Intersection Capacity Utilization		29.5%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	24	1072	18	19	1190
Future Volume (Veh/h)	19	24	1072	18	19	1190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	26	1165	20	21	1293
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			182			380
pX, platoon unblocked	0.83	0.92			0.92	
vC, conflicting volume	1864	592			1185	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1208	388			1031	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	95			97	
cM capacity (veh/h)	141	563			617	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	777	408	452	862
Volume Left	21	0	0	21	0
Volume Right	26	0	20	0	0
cSH	241	1700	1700	617	1700
Volume to Capacity	0.20	0.46	0.24	0.03	0.51
Queue Length 95th (ft)	18	0	0	3	0
Control Delay (s)	23.5	0.0	0.0	1.0	0.0
Lane LOS	C			A	
Approach Delay (s)	23.5	0.0		0.3	
Approach LOS	C				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

2017064 - 248 Dorchester Avenue

Trip Generation Assessment

HOWARD STEIN HUDSON

19-Jul-2017

XXX Means Columns U, X, and AA do not sum to Column R; hard code adjustements are needed

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	Transit Share[3]	Transit Person-Trips	Walk/Bike/ Other Share[3]	Walk/ Bike/ Other Trips	Auto Share[3]	Auto Person-Trips	% Taxi[4]	Private Auto Person-Trips	Taxi Person-Trips	Assumed Local Auto Occupancy Rate[5]	Assumed Local Auto Occupancy Rate for Taxis[6]	Total Adjusted Private Auto Trips	Total Adjusted Taxi Trips	Total Adjusted Auto (Private + Taxi) Trips
Daily																					
Hotel[7]	159	Total		8.170	1,300	1.84	**2,392**	15%	**358**	24%	**574**	61%	**1,460**	25%	1,096	730	1.84	1.20	**596**	**608**	**1,204**
	keys	In	50%	4.085	650	1.84	**1,196**	15%	**179**	24%	**287**	61%	**730**	25%	548	365	1.84	1.20	**298**	**304**	**602**
		Out	50%	4.085	650	1.84	**1,196**	15%	**179**	24%	**287**	61%	**730**	25%	548	365	1.84	1.20	**298**	**304**	**602**
AM Peak Hour																					
Hotel[7]	159	Total		0.53	85	1.84	**156**		**29**		**37**		**90**	25%	68	46	1.84	1.20	**37**	**38**	**75**
	keys	In	59%	0.313	50	1.84	**92**	15%	**14**	20%	**18**	65%	**60**	25%	45	23	1.84	1.20	**24**	**19**	**43**
		Out	41%	0.217	35	1.84	**64**	24%	**15**	30%	**19**	46%	**30**	25%	23	23	1.84	1.20	**13**	**19**	**32**
PM Peak Hour																					
Hotel[7]	159	Total		0.60	96	1.84	**176**		**35**		**44**		**97**	25%	73	48	1.84	1.20	**40**	**40**	**80**
	keys	In	51%	0.306	49	1.84	**90**	24%	**22**	30%	**27**	46%	**41**	25%	31	24	1.84	1.20	**17**	**20**	**37**
		Out	49%	0.294	47	1.84	**86**	15%	**13**	20%	**17**	65%	**56**	25%	42	24	1.84	1.20	**23**	**20**	**43**

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 8
4. Vehicle Trips = 75% Private Auto and 25% Taxi. Taxi trip rate based on CTPS Taxi activity rates for Hotel lane use, as adopted by Central Artery/Tunnel Project for fringde neighborhoods
5. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates
6. For taxi cabs, 1.2 passengers per cab. (2.2 minus 1 driver equals 1.2)
7. ITE Trip Generation Manual, 9th Edition, LUC 310 (Hotel), average rate

APPENDIX E – RESPONSE TO CLIMATE CHANGE QUESTIONNAIRE

Climate Change Preparedness and Resiliency Checklist
Performance Criteria

The Climate Change Preparedness and Resiliency Policy, enacted in 2013, requires that all projects subject to Boston Zoning Code Article 80B, Large Project Review, complete a Climate Change Preparedness and Resiliency Checklist (Resiliency Checklist). The Resiliency Checklist provides a framework for considering present and future climate conditions in assessing projects' environmental impacts including building passive survivability, long-term integrity, and the safety of inhabitants. It also offers context for describing actions to mitigate adverse impacts.

The following guidance is provided to assist development teams in project planning and in completing the Resiliency Checklist. This guidance will be updated to reflect the most current climate change information, research, and practices.

Resiliency Checklist, Section B - Extreme Weather and Heat Events

What is the full expected life of the project?
What time span of future Climate Conditions was considered?

The "full expected life" refers to the project's likely physical longevity. The full expected life for a large building in Boston is at least 60 years. The "span of future Climate Conditions" and related analyses should similarly extend at least 60 years and as long as the full expected life of the project. Proponents may present a case for considering a different lifespan.

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

The City of Boston defines three types of high-heat events:

- Heat Advisory: temperature is over 86 degrees F and humidity is greater than 68%
- Heat Wave/Heat Alert: Three consecutive days with temperatures over 90 degrees F
- Heat Emergency: When heat wave temperatures last longer than three days

(Source: City of Boston EMS; MassResources.org)

According to the 2007 report of the Union of Concerned Scientists *Northeast Climate-Change Impacts Assessment* the annual number of days over 90 degrees is likely to increase from the current 10 to between 32 to 64 by the end of the century; the number of days over 100, from 1 to between 6 to 24. See the UCS report for projected values at other times.

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

The Boston Water and Sewer Commission (BWSC) released in 2015 its Wastewater and Storm Drainage System Facility Plan, a technical report describing the BWSC's new capital plan for the storm and wastewater system. The IGBC recommends that project developers rely on the BWSC's projections. However, developers may present a case for considering different numbers.

An example of the BWSC precipitation projections follow in Table 7-15. Developers should consult the full report to identify the storm characteristics appropriate for their projects.

TABLE 7-15
Forecasted 10-year, 24-hour Design Storm Volumes and Peak Hourly Intensities

	Total Storm Volume (inches)			Peak Hourly Intensity (inches per hour)		
Scenario	**2035**	**2060**	**2100**	**2035**	**2060**	**2100**
Medium (B2)	5.55	5.76	6.08	1.76	1.83	1.93
Precautionary (A1FI)	5.60	6.03	6.65	1.78	1.91	2.11

The current BWSC 10-year, 24-hour design storm volume is 4.80 inches and peak intensity is 1.52 inches/hour.

Resiliency Checklist, Section C.2 - Sea-Level Rise and Storms: Analysis

Sea Level Rise

Sea-Level Rise (SLR) will increase with time and increase the frequency and extent of coastal flooding. Projections of sea-level rise are generally stated as ranges, and such projections are likely to change as scientists collect more data and update climate models. The City of Boston currently relies on the 2013 report of the Massachusetts Office of Coastal Zone Management (CZM) Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning, (reference information below). In particular, see page 10, table 3, and page 11, figure 5.

For the purpose of the requirements of Climate Change Workshop, the IGBC recommends that developers prepare for, at least, the CZM intermediate high scenario for most projects and the highest scenario for critical facilities and infrastructure. Proponents may present a case for considering other scenarios.

Scenario	2025		2038		2050		2063		2075		2088		2100	
	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
Highest	0.49	0.15	1.08	0.33	1.81	0.55	2.80	0.85	3.92	1.19	5.33	1.63	6.83	2.08
Intermediate High	0.36	0.11	0.73	0.22	1.19	0.36	1.80	0.55	2.47	0.75	3.32	1.01	4.20	1.28

Referenced Web Links:
Union of Concerned Scientists, Northeast Climate Change Assessment:
http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/pdf/confronting-climate-change-in-the-u-s-northeast.pdf

Boston Water and Sewer Commission
Available from the BWSC, 617-989-7000

Massachusetts Office of Coastal Zone Management, Seal Level Rise guidance:
http://www.mass.gov/eea/docs/czm/stormsmart/slr-guidance-2013.pdf

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	248 Dorchester Avenue
Project Address Primary:	248 Dorchester Avenue
Project Address Additional:	South Boston
Project Contact (name / Title / Company / email / phone):	Jason Cincotta, Managing Partner, Evergreen Property Group jason@dwellproper.com, 508 344 5727

A.2 - Team Description

Owner / Developer:	Jason Cincotta, Managing Partner, Evergreen Property Group
Architect:	Utile
Engineer (building systems):	WSP
Sustainability / LEED:	WSP
Permitting:	MLF Consulting
Construction Management:	TBD
Climate Change Expert:	

A.3 - Project Permitting and Phase

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

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

A.4 - Building Classification and Description

List the principal Building Uses:	Hotel, Retail/Restaurant, Conference
List the First Floor Uses:	Hotel Lobby, Retail/Restaurant, Parking

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

Wood Frame	Masonry	Steel Frame X	Concrete

Describe the building?

Site Area:	22,042 *SF*	Building Area:	92,000 *SF*
Building Height:	98 *Ft.*	Number of Stories:	8 *Flrs.*
First Floor Elevation (reference Boston City Base):	*Elev.*	Are there below grade spaces/levels, if yes how many:	Yes/1 level

A.5 - Green Building

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

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

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

Registered:	*No*	Certified:	*No*

A.6 - Building Energy

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

Electric - base / peak:	135/800 *(kW)*	Heating – base / peak:	1.7/2.3 *(MMBtu/hr)*
What is the planned building Energy Use Intensity:	62 *(kbut/SF or kWh/SF)*	Cooling – base / peak:	125/167 *(Tons/hr)*

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

Electric:	500 *(kW)*	Heating:	20 KW
		Cooling:	10 *(Tons/hr)*

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

Electrical Generation:	500 *(kW)*		Fuel Source:	Diesel
System Type and Number of Units:	**Combustion Engine**	Gas Turbine	Combine Heat and Power	1 *(Units)*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	10 Years	25 Years	**50 Years**	75 Years

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

Select most appropriate:	10 Years	**25 Years**	50 Years	75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	10 Years	25 Years	**50 Years**	75 Years

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

7/96 F	*Deg.*

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

100	*Deg.*	5	*Days*	5	*Events / yr.*

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

30-90	*Days*	0.2	*Events / yr.*

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

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

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

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

B.2 - Mitigation Strategies

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

Building energy use below code:	***10%***
How is performance determined:	E-Quest Energy Model

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

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

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

Roof:	*R* = 20	Walls / Curtain Wall Assembly:	*R* = 8
Foundation:	*R* = 15	Basement / Slab:	*R* = 10
Windows:	*R* = / *U* = 0.39	Doors:	*R* = / *U* = 0.7

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

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

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems? No

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

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

	Yes	If yes, for how long:	2 *Days*
If Yes, is building "Islandable?			
If Yes, describe strategies:	Generator to support minimal lighting and potable water		

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

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

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

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

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

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

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

Not presently but Yes within the 50 year outlook.

Describe site conditions?

Site Elevation – Low/High Points:	*Boston City Base 16'/20.5'Elev.(Ft.)*

Building Proximity to Water: | **1400** *Ft.*

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

Coastal Zone:	*No*	Velocity Zone:	*No*
Flood Zone:	*No*	Area Prone to Flooding:	*Yes. Zone X -0.2%*

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

2013 FEMA Prelim. FIRMs:	*No*	Future floodplain delineation updates:	*No, March 16, 2016*

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

0' Zone X - 0.2%.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	*2.47' CZM.*	Frequency of storms:	*0.1 per year*

C.3 - Building Flood Proofing

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

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

Flood Proof Elevation:	*Boston City Base* Elev 19.5'	First Floor Elevation:	*Boston City Base* 18.33' *Elev. (Ft.)*

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

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

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

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

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

No

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

	Currently Yes at 17.2', 2035y No at 18.22'	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

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

	No
If Yes, describe:	

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

	No	If Yes, for how long:	*days*

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

C.4 - Building Resilience and Adaptability

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

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

Select appropriate:	*Yes*	**Hardened / Resilient Ground Floor Construction**	Temporary shutters and or barricades	**Resilient site design, materials and construction**

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

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

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

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

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

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

APPENDIX F – RESPONSE TO COB ACCESS GUIDELINES

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:	248 Dorchester Avenue, Hotel		
Primary Project Address:	248 Dorchester Avenue, South Boston		
Total Number of Phases/Buildings:	1		
Primary Contact (Name / Title / Company / Email / Phone):	Jason Cincotta, Evergreen Property Group, 508 344 5727, jason@dwellproper.com		
Owner / Developer:	Evergreen Property Group		
Architect:	Utile		
Civil Engineer:	Samiotes		
Landscape Architect:	GroundView		
Permitting:	MLF Consulting, MQM		
Construction Management:	TBD		
At what stage is the project at time of this questionnaire? Select below:			
PNF	**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		
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:	*22,042 SF*	Building Area:	*92,000 GSF*
Building Height:	*98 FT.*	Number of Stories:	*8 Flrs.*

First Floor Elevation:		Is there below grade space:		*Yes*
What is the Construction Type? (Select most appropriate type)				
Steel Frame	Wood Frame	Masonry	**Steel Frame**	Concrete
What are the principal building uses? (IBC definitions are below – select all appropriate that apply)				
Hotel, Retail/Restaurant, Conference	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:	*Hotel Lobby, Retail, Parking*			

3. Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The project is located along Dorchester Avenue in South Boston. There is only minor grade changes on site and at the surrounding street and sidewalk access.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	The project is less than 1000' from the West Broadway Redline station. It is also on the #9 and #11 Bus routes and less than 400' from the #47 bus route. There is ample Hubway and Zipcar access near the site. Broadway Station platform is accessible by elevator.
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	Boston Medical Center, Tufts Medical Center, BU medical Center are all proximate to the site. Marion Manor elderly housing, St. Augustine Elementary School, JF Condon School.
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	The site is proximate to grocery stores, restaurants and other basic services. Most municipal buildings are more than a half mile from the site but are accessible by bus or Broadway redline station which has elevator access to the platforms.

4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a historic district? ***If yes,*** identify which district:	NO
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 project proposes to remove existing and reconstruct all sidewalks, cub cuts and ramps on site to meet all applicable access requirements.
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	No. The project proposes to reconstruct all sidewalks, cub cuts and ramps on site to meet all applicable access requirements.
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. Neighborhood Main
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	Overall 23’: 2’ buffer, 5’ Bike Lane, 4’ planting zone 5’ wide pedestrian zone, 8’ wide active use zone planned. Less than 2% slope. (1.5% typ.)
List the proposed materials for each Zone. Will the proposed materials	Buffer Zone – Granite Curb/Pavers Planting zone – soil/pavers

be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	Bike lane – Cast Concrete Pedestrian zone – Cast concrete Active use zone - pavers
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	Yes. See above.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	Yes.
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	Yes. Approval for curb cuts, tree plantings and sidewalk design.
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?	64 parking spaces all valeted in an open garage.
What is the total number of accessible spaces provided at the development site? How many of these are "Van Accessible" spaces with an 8 foot access aisle?	3 total, at least 1 van accessible.
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	No.

Where is the accessible visitor parking located?	All accessible visitor spaces will be located near the primary entrance to the hotel lobby.
Has a drop-off area been identified? *If yes,* will it be accessible?	Yes.
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 visiability-with neighbors*.	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	All primary public entrances will be a flush condition.
Are the accessible entrances and standard entrance integrated? *If yes, describe. If no*, what is the reason?	Yes.
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	Large Project Review
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?	159 hotel room.
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?	NA
If a residential development, how many accessible Group 2 units are being proposed?	NA

If a residential development, how many accessible Group 2 units will also be IDP units? *If none*, describe reason.	NA
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.	5% of the total number of rooms will be accessible and have wheel-in showers. Yes, TBD.
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:	Yes. The elevators will provide access to all floors and levels of the building.
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 project will provide as much as 20,000 sf of publicly accessible spaces both indoor and out that will be design with universal accessibility as a goal. Among those spaces are restaurants, retail, lobby lounge space, roof terraces and a roof top pool.
What inclusion elements does this development provide for persons with disabilities in common social	All public and common spaces in the project will be designed with universal accessibility in mind. Accessible seating area will be provided at restaurant, lobby and terraces spaces. General seating on the terraces and restaurants

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?	will be movable allowing for adaptability at primary seating locations. Pools will be equipped with "pool lifts" or sloped surfaces for access.
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Yes. We will provide accessible stalls in each bathroom with adequate space for changing stations.
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. We are currently waiting for our BPDA scoping meeting to review these issues.
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?	No. We are awaiting BPDA guidance on this.

10. Attachments

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

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.

Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. • • • •

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

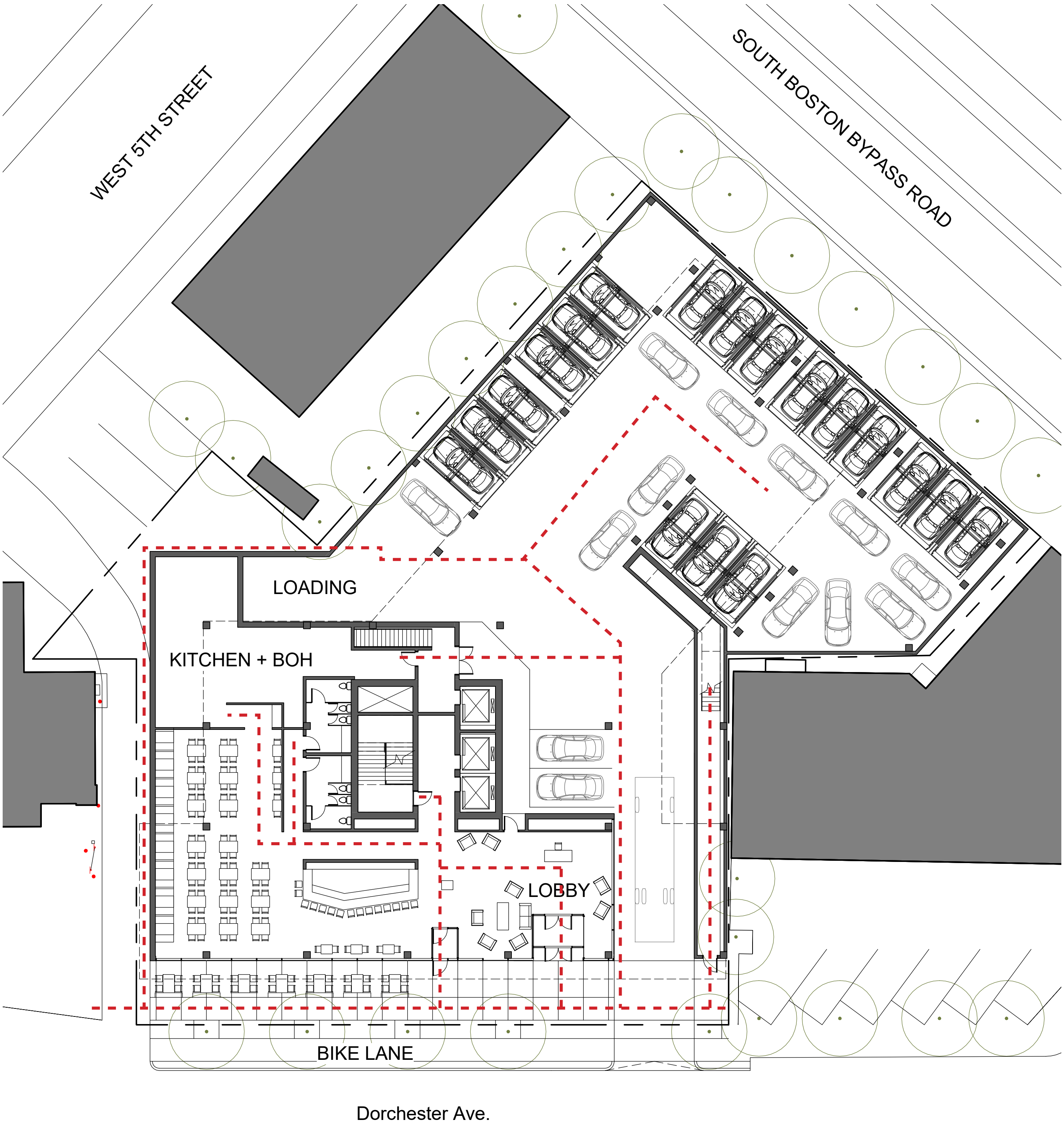


Figure F-1. Level 1 Accessible Route

Accessible Route

1/32" = 1'

0' 10' 20' 50' 100'

utile

Figure F-2. Level 2 Accessible Route

Accessible Route

1/32" = 1'
0' 10' 20' 50' 100'

utile

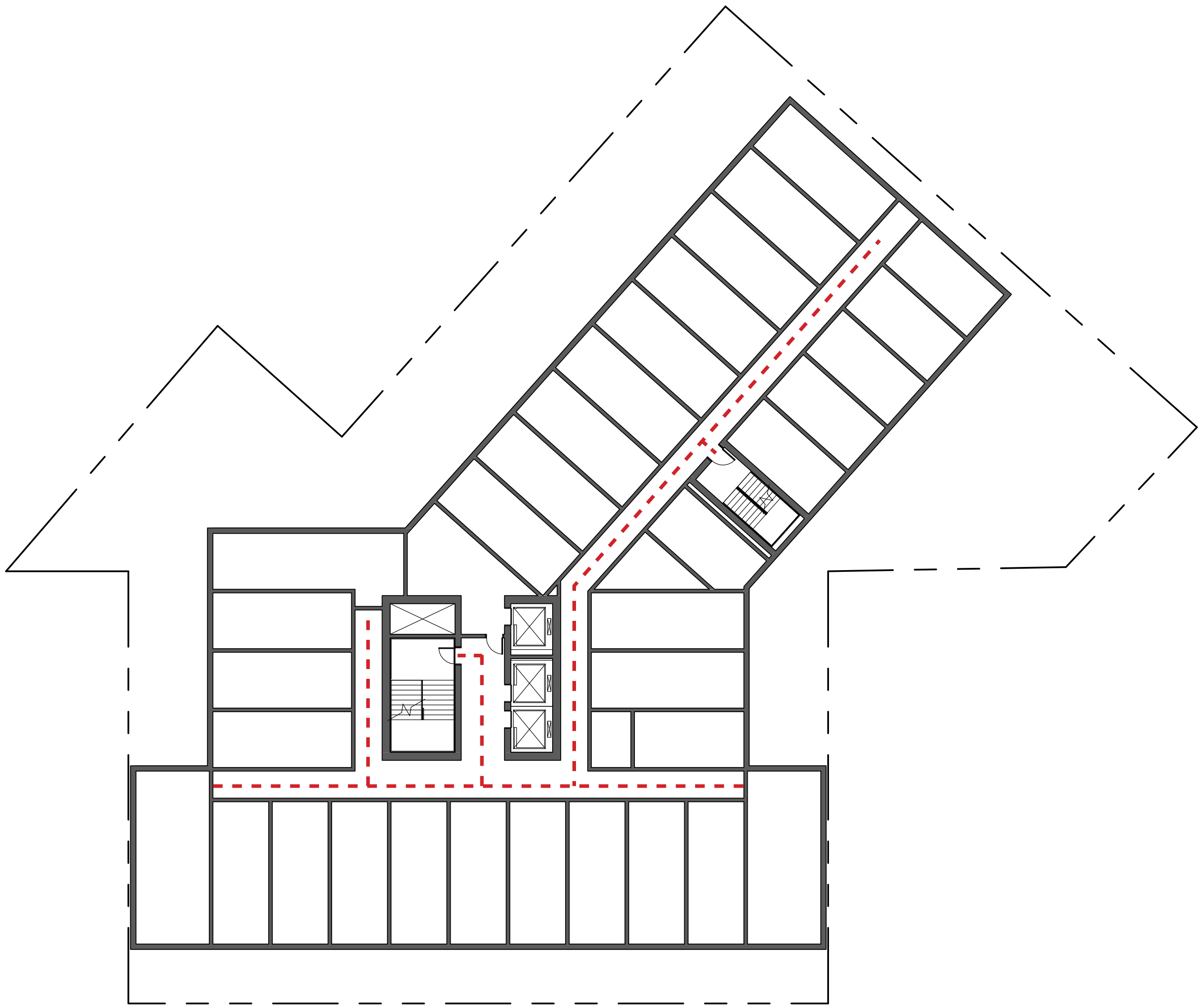


Figure F-3. Levels 3-6 Accessible Route

Accessible Route - - - - - -

1/32" = 1'
0' 10' 20' 50' 100'

utile

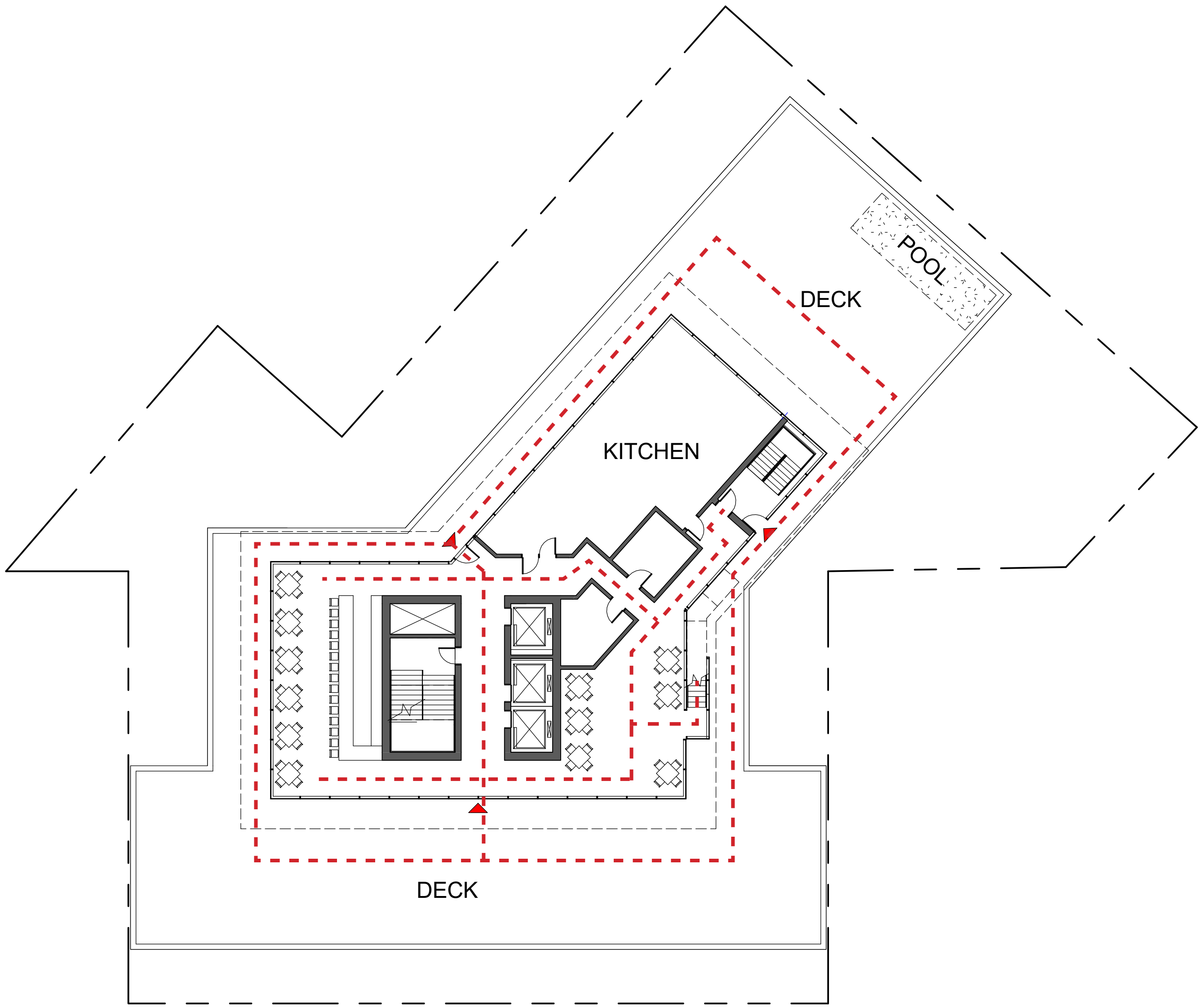


Figure F-4. Level 7 Accessible Route

Accessible Route

1/32" = 1'
0' 10' 20' 50' 100'

utile

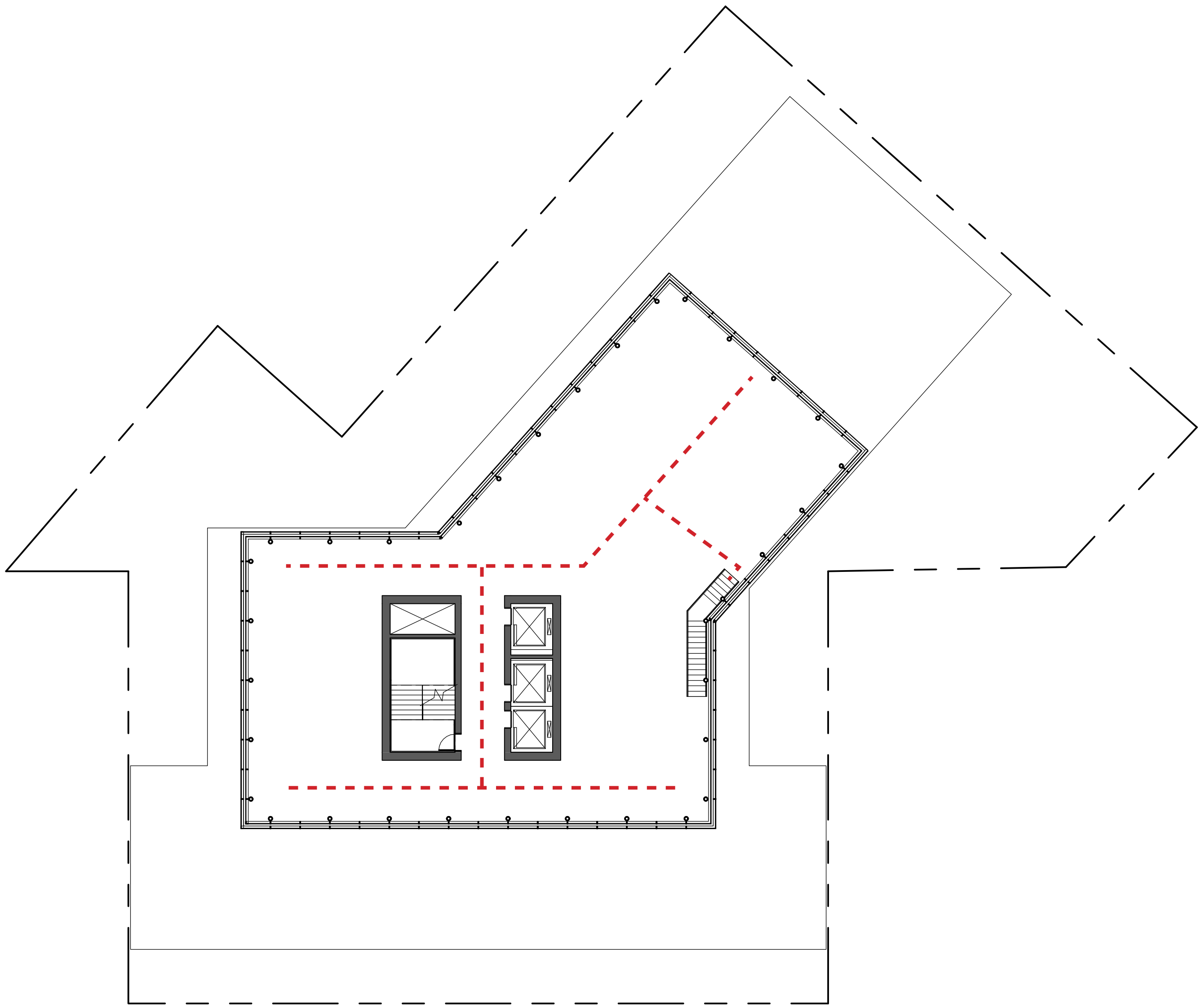


Figure F-5.   Level 8 Accessible Route

Accessible Route

1/32" = 1'
0' 10' 20' 50' 100'

utile

APPENDIX G – PEDESTRIAN WIND ASSESSMENT

REPORT

248 DORCHESTER AVENUE

BOSTON, MA

PEDESTRIAN WIND ASSESSMENT

PROJECT # 1701784

JULY 21, 2017

SUBMITTED TO

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1. INTRODUCTION

RWDI was retained by Dot Ave Property, LLC. to assess the pedestrian level wind impact of the proposed Project at 248 Dorchester Avenue in Boston, MA, in support of the Project application to the Boston Planning and Development Agency (BPDA). This qualitative assessment is based on the following:

- a review of the regional long-term meteorological data from Boston Logan International Airport;
- design drawings and documents received from MLF Consulting, LLC on July 5, 2017;
- wind-tunnel studies undertaken by RWDI for projects in the Boston area;
- our engineering judgment, experience and expert knowledge of wind flows around buildings[1-3]; and,
- use of software developed by RWDI (Windestimator[2]) for estimating the potential wind conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions. Conceptual wind control measures to improve wind comfort are recommended, where necessary. In order to quantify these conditions or refine any conceptual mitigation measures, physical scale-model tests in a boundary-layer wind tunnel would be required.

Note that other wind issues, such as those related to cladding and structural wind loads, door operability, air quality, snow drifting and loading, etc., are not considered in the scope of this assessment.

Image 1: Aerial view of the Project Site

1. C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", 10th International Conference on Wind Engineering, Copenhagen, Denmark.
2. H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", ASCE Structure Congress 2004, Nashville, Tennessee.
3. H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", Journal of Wind Engineering and Industrial Aerodynamics, vol.104-106, pp.397-407.

2. SITE & BUILDING INFORMATION

The Project Site is located east of the Massachusetts Transportation Authority building in the block bound by Dorchester Avenue on the west, West 5th Street on the north and South Boston Bypass on the south (Image 1). The site is currently occupied by one-story Enterprise Rent-A-Car office building and surface parking, which will be demolished for the construction of the Project.

Immediate surroundings comprise low residential and commercial buildings, roads and parking lots in all directions. Building heights increase farther towards the northeast and north. The densely built up downtown area and the high-rise downtown core of Boston is about 0.5 – 1 mile northwest and north (Image 2). Several new buildings are anticipated to be built in the neighborhood in the near future, with several to the north of the site that are of the order of five to eight stories in height (buildings with an Approved or Under Construction status on the BPDA website).

The proposed Project is an eight-storey (98 feet) hotel that will include outdoor terraces, pool, fitness and ballroom space on the upper level roofed area setback from the main five-story building base. Two designs (identified as Scheme 1 and Scheme 3) are being considered for the upper setback portion as shown in Image 3. The Project will be taller than existing as well as other proposed buildings in the vicinity and comparable to relatively taller buildings located a few blocks to the north and northeast. Major pedestrian areas at grade on and around the site include a potential entrance on Dorchester Avenue and sidewalks on all neighboring streets.

Image 2: Aerial view of the existing surroundings (Credit: Google Maps)

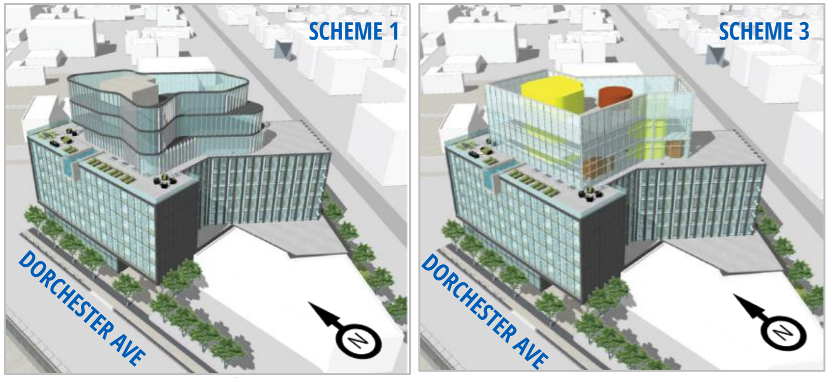
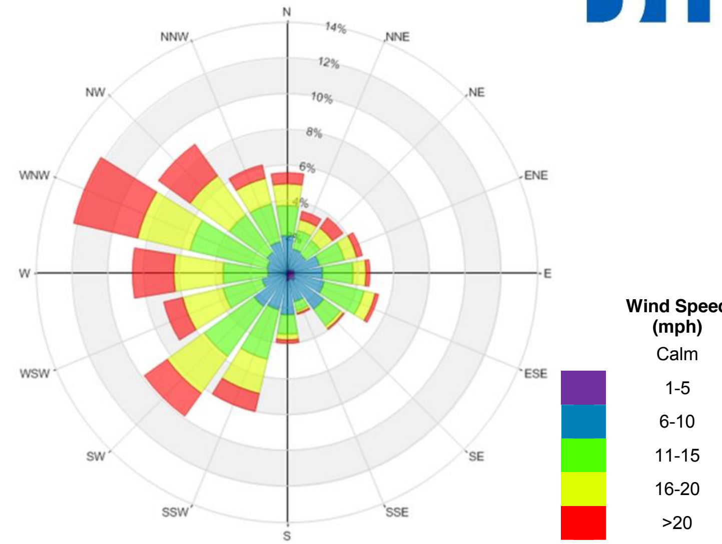


Image 3: Rendering of the proposed Project

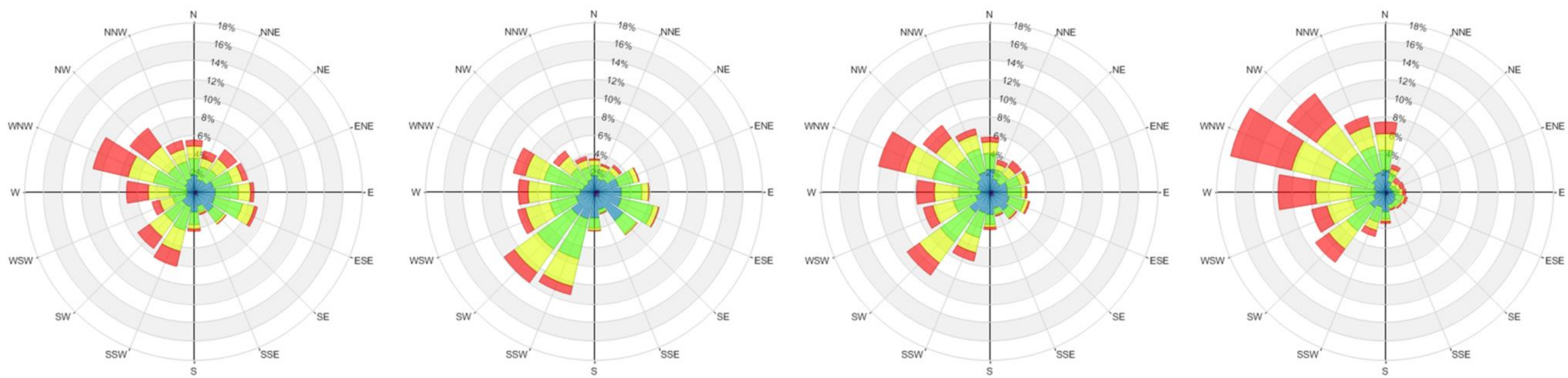
3. METEOROLOGICAL DATA

Wind statistics at Boston Logan International Airport between 1990 and 2015 were analyzed and Image 4 graphically depicts the distributions of wind frequency and directionality for the four seasons and for the annual period. When all winds are considered (regardless of speed), winds from the northwest and southwest quadrants are predominant. Northeasterly winds are also relatively frequent in the spring.

Strong winds with mean speeds greater than 20 mph (red bands in the wind roses) are prevalent from the west-northwest direction throughout the year, while the strong winds from the southwest and northeast are also common. These are critical wind directions focused on in the following discussions.



Annual Winds



Spring (March to May) Summer (June to August) Fall (September to November) Winter (December to February)

Image 4: Directional distribution of winds ~~(%)~~ approaching Boston Logan International Airport (1990 to 2015)

4. PEDESTRIAN WIND CRITERIA

The Boston Planning and Development Agency (BPDA) has adopted two standards for assessing the relative wind comfort of pedestrians.

First, the BPDA wind design guidance criterion states that an effective gust velocity (hourly-mean wind speed + 1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent (1%) of the time. This criterion is hereby referred to as the gust criterion.

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

Table 1 – BPDA Mean Wind Speed Criteria *

Dangerous	> 27 mph
Uncomfortable for Walking	> 19 and ≤ 27 mph
Comfortable for Walking	> 15 and ≤ 19 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Sitting	≤ 12 mph

* Applicable to the mean wind speed exceeded one percent (1%) of the time.

Pedestrians on sidewalks will be active and wind speeds comfortable for walking are appropriate at these locations. Lower wind speeds comfortable for standing are desired for building entrances where people are apt to linger. For any outdoor amenity at and above grade, low wind speeds comfortable for sitting or standing are desired in the summer months when such amenity spaces are typically in use. Wind speeds rated “Uncomfortable for Walking” and/or “Dangerous” are higher than desirable for any pedestrian activity.

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

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

5. PEDESTRIAN WIND CONDITIONS

5.1 Background

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

Wind generally tends to flow over dense arrays of buildings of even height (Image 5a). Buildings taller than their surroundings tend to intercept the stronger winds at higher elevations and redirect them to the ground level. Such a Downwashing Flow (Image 5b) is the main cause for increased wind activity around buildings at the pedestrian level. Stepping the windward facade (Image 5c) is a positive design strategy that is often used for wind control. However, increased wind activity will be created on the lower windward roofs or terraces where low wind speeds are typically desired for amenity use.

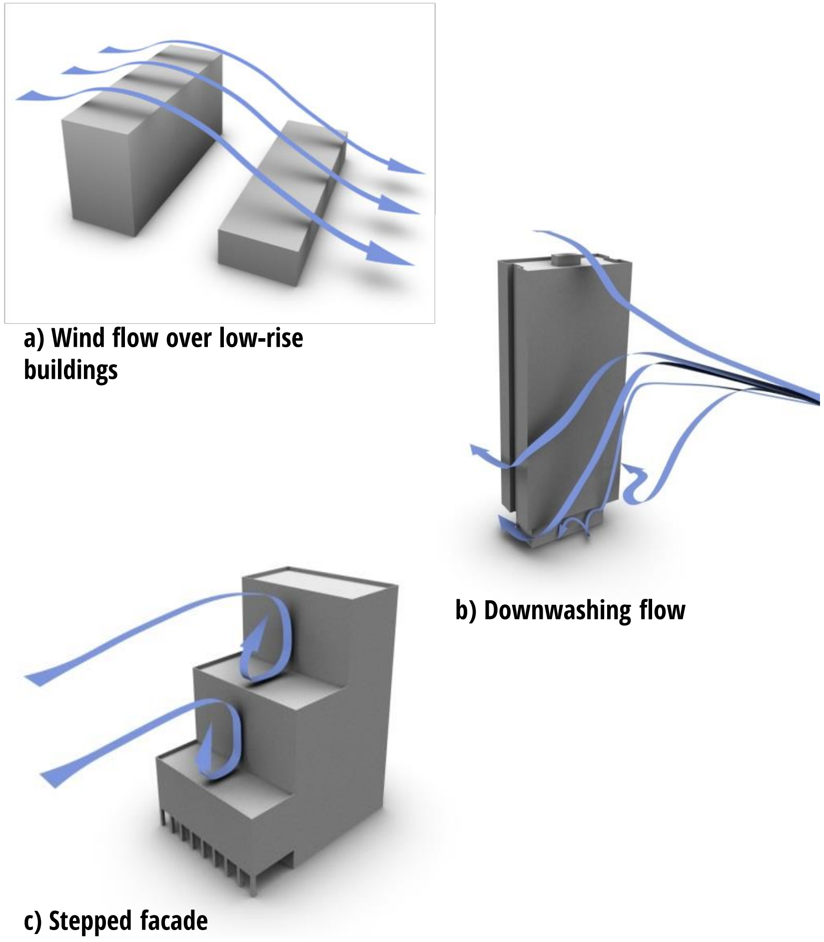


Image 5: General Wind Flow Phenomena around Buildings

5.2 No Build: Effective Gust

Wind conditions on and around the existing Project Site are expected to be in compliance with the effective gust criterion.

The high-rise downtown core located to the north and northwest provide a considerable level of wind sheltering to the Project neighborhood. Additionally, the existing buildings on-site as well as in the immediate surroundings are low in height and therefore will not cause any substantial redirection of the approaching winds.

5.3 No Build: Mean Speed

On an annual basis, wind conditions at most areas around the existing site perimeter are currently predicted to be rated comfortable for sitting, standing or walking and therefore, suitable for pedestrian activities. This is largely due to the uniform height of surrounding buildings in the westerly, north and northeast directions that prevent the redirection of winds to street level (Image 5a).

5.4 Build: Project Features and Wind Flow

The Project will be taller than the majority of its surroundings. Immediate surroundings to the west and southwest are fairly open (low roads and parking lots) in terms of exposing the Project to prevailing winds from those directions. The Project design includes a five-story base, that is comparable in height to several other buildings in the vicinity, particularly to the north and northeast, and other approved projects in the neighbourhood. These buildings and the taller surroundings beyond in those directions would reduce winds approaching the site.

The exposure of the building to winds from the west and southwest, however, subjects the building to wind accelerations at the exposed corners, which could potentially result in higher than desired wind speeds at grade locally around the building on particularly windy days. The top three stories are significantly set back from the main lower facade. This massing setback is positive in that it captures downwashing flow and reduces wind impact at grade level. However, consequently, the rooftop amenity area is likely to be windy, both due to the downwash, as well as exposure to the prevailing winds at a higher elevation.

The predicted wind flow patterns are illustrated in Image 6. These patterns would be similar for the two design schemes and therefore the illustration has been shown only for Scheme 1.

Comparison of Scheme 1 and Scheme 3:
The upper portion of the building in Scheme 1 and 3 are similar in size, but differ in their shape – Scheme 1 is curvilinear and Scheme 3 is rectilinear with sharp corners (see Image 3).

In terms of its wind impact at grade level, both schemes are expected to perform similarly. The upper massing in question is elevated above most surroundings and set back well from the main facade of the Project below, as shown in Image 6. So, wind flows redirected by the upper massing will tend to dissipate on the roof terrace itself and the impact of the upper massing at grade level is expected to be little to none for both schemes.

On the terrace itself, wind flows in the two schemes will be slightly different. Generally, a rectilinear massing will promote wind acceleration at the sharp corners and result in higher wind speeds near the corners compared to a more aerodynamic curved massing. Therefore, it is expected that Scheme 1 would perform better in terms of its wind impact on the terrace.

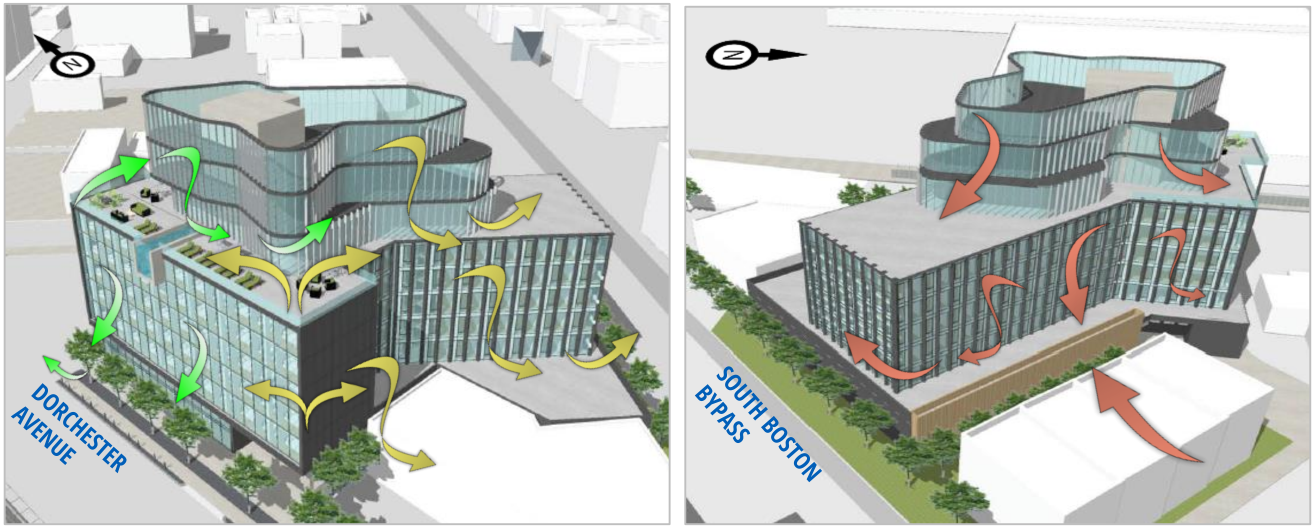


Image 6: Predicted flow patterns for predominant winds on the project

LEGEND
- Winds from NW quadrant
- Winds from SW
- Winds from NE

NOTE:
Winds from the west half of the compass are most important. Although strong winds from the NE occur during the winter, their influence on the Project is less pronounced due to the dense and tall surroundings in the distance in that direction.

5.5 Build: Effective Gust

Considering the aforementioned wind flow patterns, although local wind accelerations are expected at the exposed building corners, wind speeds are expected to meet the effective gust criterion on an annual basis. The proposed Project is not expected to influence gust conditions in the extended surroundings.

5.6 Build: Mean Speed

Grade Level:

With the addition of the Project, it is expected that overall wind conditions at most areas on and around the site will continue to be suitable for pedestrian use - comfortable for standing or walking – similar to existing conditions. During windier days, particularly in the spring and winter, winds on the sidewalks on Dorchester Avenue could be uncomfortable for walking from time to time. It is recommended that the main entrance be located away from these corners. Any entrances on Dorchester Avenue would benefit from being designed with one of the following wind control features (See examples in Image 7):

- Trellis or canopy above;
- Recessed from the main façade; OR
- Wind screens or coniferous landscaping on the south side.

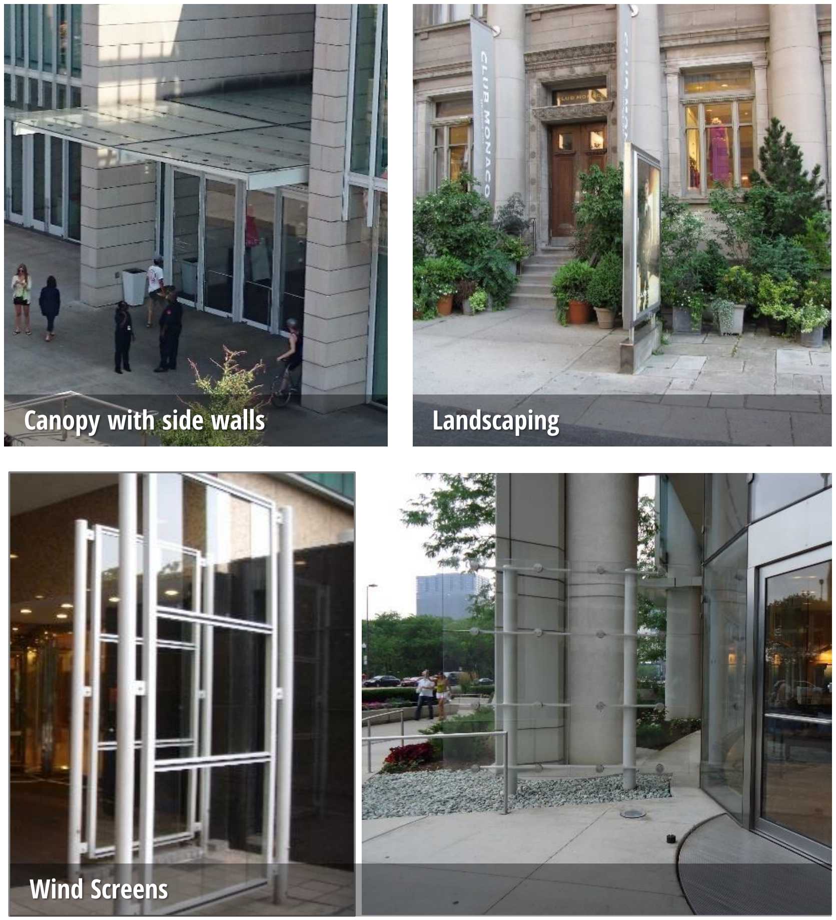
Vestibules and/or lobbies are a good measure to serve as waiting areas for patrons on windy days. Any landscaping proposed on and around the site would enhance wind conditions in the summer. Deciduous trees have reduced wind control efficacy in the winter when they are bare and seasonally stronger winds prevail. Therefore, the design team may consider coniferous or marcescent trees in the landscape design around entrances.

Terrace

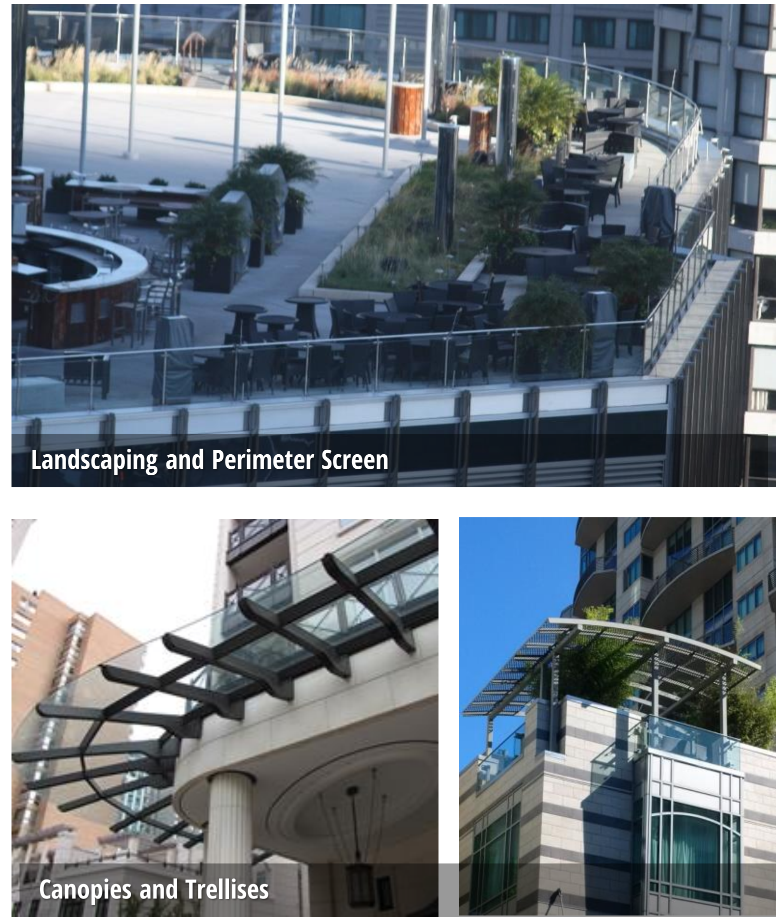
Wind speed increases with height; since the proposed terrace is elevated above most surrounding buildings, it will be exposed to the prevailing winds. The resulting conditions will be windy for passive activities. In order to reduce wind speeds, wind screens (about 30% porous for good wind control efficacy) and/or tall landscaping features, either option at least 7 ft. tall, may be placed along the terrace perimeter to reduce wind exposure. Overhead canopies and trellises along the upper massing facade would be effective in reducing downwashing impacts. Depending on the intended usage of the area, the design team may consider smaller features like planters and partition screens around seating, lounging and dining areas for additional protection. Some examples are shown in Image 7.

As discussed in Section 5.4, Scheme 1 would have a relatively lower impact on the terrace than Scheme 3 due to its curvilinear, aerodynamic shape.

5. PEDESTRIAN WIND CONDITIONS



Main Entrance



Terraces

Image 7: Examples of wind control measures

6. SUMMARY

Based on the Project height and design, its surroundings, local wind data, and our experience with similar projects, it is predicted that wind speeds at most areas around the Project will be suitable for pedestrian activity on an annual basis. Wind conditions with the Project added to the existing surroundings are expected to be similar to those that exist currently in the neighborhood. On particular windy days in the winter and spring however, higher than desired wind speeds may occur occasionally on the adjacent sidewalk on Dorchester Avenue due to the exposure of the Project to the west and and southwest winds and the interaction of winds with the proposed building.

Wind speeds that exceed the effective gust criterion are not expected as a result of the addition of the Project to the existing surroundings. The proposed Project is expected to have little to no impact on wind conditions in the extended surroundings.

Potential entrances on Dorchester Avenue fronting on the sidewalk, and the upper terrace are expected to be windy for the intended use due to their exposure to the prevailing winds. Suggestions for wind control to improve comfort are provided with photo examples.

7. APPLICABILITY OF THE ASSESSMENT

The assessment discussed in this report pertains to the proposed development in accordance with the design drawings and documents received from MLF Consulting, LLC on July 5, 2017. In the event of any significant changes to the design, construction or operation of the building or addition of surroundings in the future, RWDI could provide an assessment of their impact wind conditions discussed in this report. It is the responsibility of others to contact RWDI to initiate this process.

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