Bayside DoubleTree Hotel Expansion

Dorchester, Massachusetts

Expanded Project Notification Form

October 6, 2014

submitted to **Boston Redevelopment Authority**
submitted by **Bayside Club Hotel LLC**
c/o Corcoran Jennison Companies

prepared by **Fort Point Associates, Inc.**
in association with **Arrowstreet**
HW Moore Associates, Inc.
Howard/Stein-Hudson Associates, Inc.
DLA Piper
McPhail Associates, LLC
Feldman Land Surveyors

Fort Point Associates, Inc.
Urban Planning Environmental Consulting Project Permitting

EXPANDED PROJECT NOTIFICATION FORM

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Chapter 1

PROJECT SUMMARY

CHAPTER 1: PROJECT SUMMARY

1.1 PROJECT IDENTIFICATION

Project Name: Bayside DoubleTree Hotel Expansion

Address/Location: 236 Mount Vernon Street[1], Dorchester, MA 02125

Assessor's Parcel Number: 1303448050

1.2 PROJECT SITE

Bayside Club Hotel LLC (the "Proponent") proposes to renovate and expand the existing DoubleTree Club by Hilton Hotel Boston Bayside (the "Project") at 236 Mount Vernon Street on a 91,027 square foot (2.1 acre) parcel (the "Site"). The Site is located in Columbia Point, Dorchester, 0.25 miles from the MBTA's JFK/UMass Station and is bounded by Mount Vernon Street on the southwest; the former Bayside Exposition Center, UMass-Boston, and Mount Vernon Extension on the northwest; and surface parking lots on the northeast and southeast. The UMass-Boston campus lies southeast of the Project Site. See Figure 1-1, Locus Plan and Figure 1-2, Aerial View of Existing Site.

1.3 PROJECT SUMMARY

The Proponent proposes to renovate and expand the existing DoubleTree Hotel by constructing a 63,000 gross square foot (sf) L-shaped addition on its northeast side to add a net new 86 guest rooms to its 197 existing guest rooms. The Project also includes new conference and meeting facilities such as a 4,000 sf dividable large ballroom, a 1,200 sf small boardroom, and two approximately 300 sf meeting rooms. In addition, the Project will add an approximately 3,000 sf restaurant with 100 seats and an approximately 1,000 sf bar/lounge with 60 seats, both on the ground floor. The hotel expansion's footprint will be 18,792 sf and its six-story height will be 53 feet (up to approximately 65 feet with mechanical equipment). See Figure 1-3, Site Plan.

After construction, the hotel will contain 283 rooms, new function spaces, a publicly-accessible restaurant and bar/lounge space fronting Mount Vernon Extension, and an expanded landscaped area at the corner of Mount Vernon Street and Mount Vernon Extension. The expanded landscaped area will add greenspace to the Site, increase

[1] The City of Boston Assessing Department uses 236 Mount Vernon Street for the DoubleTree Hotel property, while the City's Inspectional Services Department uses 240 Mount Vernon Street for the same property. This EPNF will use 236 Mount Vernon Street for the Project Site.

stormwater infiltration, and soften the edges of Mount Vernon Street and Mount Vernon Extension. The landscaped area will be approximately 16,000 sf and include eight-foot wide paved pathways that form around a circular planted area characterized by attractive, drought-tolerant, native plants.

The Project will contribute to the continued revitalization of Columbia Point by creating new commercial spaces situated to take advantage of the Site's excellent transit, bicycle, and pedestrian access to UMass-Boston, downtown Boston, and other area destinations.

Primary vehicular access to the hotel will continue to be provided by Mount Vernon Extension along the northerly side of Mount Vernon Street, approximately 350 feet east of Morrissey Boulevard. Mount Vernon Extension currently provides access to the hotel, the Bayside Office Building, and a parking area for the former Bayside Expo Center. Additional access will be provided to the arrival/drop-off area by way of the proposed curb cut on Mount Vernon Street located approximately 225 feet east of Mount Vernon Extension. Secondary access to the parking area in the rear of the building will be provided by way of an existing driveway on Mount Vernon Street located approximately 375 feet east of Mount Vernon Extension. All driveways will have full access and egress, allowing vehicles to enter and exit to and from both directions along Mount Vernon Street. Pedestrian access to the hotel will be provided through the existing hotel entrance along Mount Vernon Street and through two new entrances facing the rear of the proposed expansion. Loading, deliveries, and trash pick-up will take place in an on-site loading area in the rear of the building located between the existing building and new addition.

Approximately 115 vehicle parking spaces and zero bicycle parking spaces are currently provided on-site for the existing hotel. The Project will reconfigure the existing parking on the Site to provide up to 25 vehicle parking spaces on-site, inclusive of the short-term arrival/drop-off and accessible parking spaces near the front entrance of the hotel. If needed, additional vehicle parking spaces will be available off-site on nearby parking lots owned or controlled by the Proponent or its affiliates.

The Project will also provide 50 bicycle parking spaces split between two racks. One bicycle rack will be in the forecourt and the second rack will be in the parking lot on the east side of the hotel expansion.

1.4 PUBLIC AND COMMUNITY BENEFITS

- Allow for the construction of 86 net new hotel rooms and restaurant and bar/lounge space, which will bring more visitors to the area;
- Improve the urban design characteristics of the area by activating Mount Vernon Extension with ground-level commercial space, opening the building to the street, and eliminating some surface parking;

- Enhance the pedestrian environment along Mount Vernon Extension by activating it with street-level uses and enhancing the environment on Mount Vernon Extension and Mount Vernon Street by expanding the landscaped area;

- Facilitate transit oriented development by increasing commercial development density in close proximity to the multimodal JFK/UMass MBTA Station;

- Support the City's goals for a sustainable future through the development of an energy-efficient and environmentally-friendly building that will be LEED certifiable and will be elevated out of the flood plain;

- Provide approximately 283 construction-related jobs and 47 permanent jobs to stimulate the local and regional economy; and

- Generate approximately $871,000 dollars in annual City tax revenues from real estate taxes and lodging taxes.

1.5 SUMMARY OF ANTICIPATED PERMITS AND APPROVALS

The following table is a list of anticipated approvals for the Project.

Table 1-1: Anticipated Project Approvals

Agency	Approval
Local	
Boston Redevelopment Authority (BRA)	• Article 80B Large Project Review • Cooperation Agreement • Boston Residents Construction Employment Plan • Certificate of Compliance with Article 80
Boston Zoning Board of Appeal	• Request for Zoning Relief
Boston Transportation Department	• Transportation Access Plan Agreement • Construction Management Plan
Boston Conservation Commission	• Order of Conditions
Boston Water and Sewer Commission	• Site Plan Approval
Public Improvement Commission	• Specific Repair Plan Approval
Inspectional Services Department	• Building Permit • Certificate of Occupancy
State	
Massachusetts Department of Environmental Protection	• Notification Prior to Construction or Demolition • Source Registration for Sewer Discharge • Air Quality Plan Approval - Boiler/Generator

Federal	
Environmental Protection Agency	• NPDES Construction/Stormwater General Permit
Federal Emergency Management Agency	• Conditional Letter of Map Revision based on Fill-- CLOMR-F

1.6 PROJECT TEAM

Proponent	Bayside Club Hotel LLC c/o Corcoran Jennison Companies 150 Mount Vernon Street, Suite 500 Boston, MA 02125 Contact: Thomas Devane Project Director 617-822-7222 tdevane@corcoranjennison.com
Planning and Permitting	Fort Point Associates, Inc. 33 Union Street, 3rd Floor Boston, MA 02108 Contact: Robert Ricchi, AICP Planner 617-357-7044 x209 rricchi@fpa-inc.com
Architect	Arrowstreet 10 Post Office Square Suite 700N Boston, MA 02109 Contact: Larry Spang, AIA Principal 617-666-1178 spang@arrowstreet.com
Landscape Architect	Dale Design 147 Cambridge Street Winchester, MA 01890 Contact: Dennis Dale

	781-729-3541 ddale147@gmail.com
Legal	DLA Piper 33 Arch Street 26th Floor Boston, MA 02110 Contact: Bryan Connolly Partner 617-406-6041 bryan.connolly@dlapiper.com
Transportation	Howard/Stein-Hudson Associates, Inc. 38 Chauncy Street, 9th Floor Boston, MA 02111 Contact: Michael Santos, PE Senior Transportation Engineer 617-348-3350 msantos@hshassoc.com
Civil Engineering	H.W. Moore Associates, Inc. 112 Shawmut Avenue Boston, MA 02118 Contact: Jim White, PE Project Manager 617-357-8145 jwhite@hwmoore.com
Geotechnical	McPhail Associates, LLC 2269 Massachusetts Avenue Cambridge, MA 02140 Contact: Chris Erikson, PE Principal 617-349-7318 cerikson@mcphailgeo.com

Survey	Feldman Land Surveyors 112 Shawmut Avenue Boston, MA 02118 Contact: Marc Benedict Project Surveyor 617-357-9740 mbenedict@feldmansurveyors.com

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 1-1
Locus Map
Source: USGS

Bayside DoubleTree Hotel Expansion
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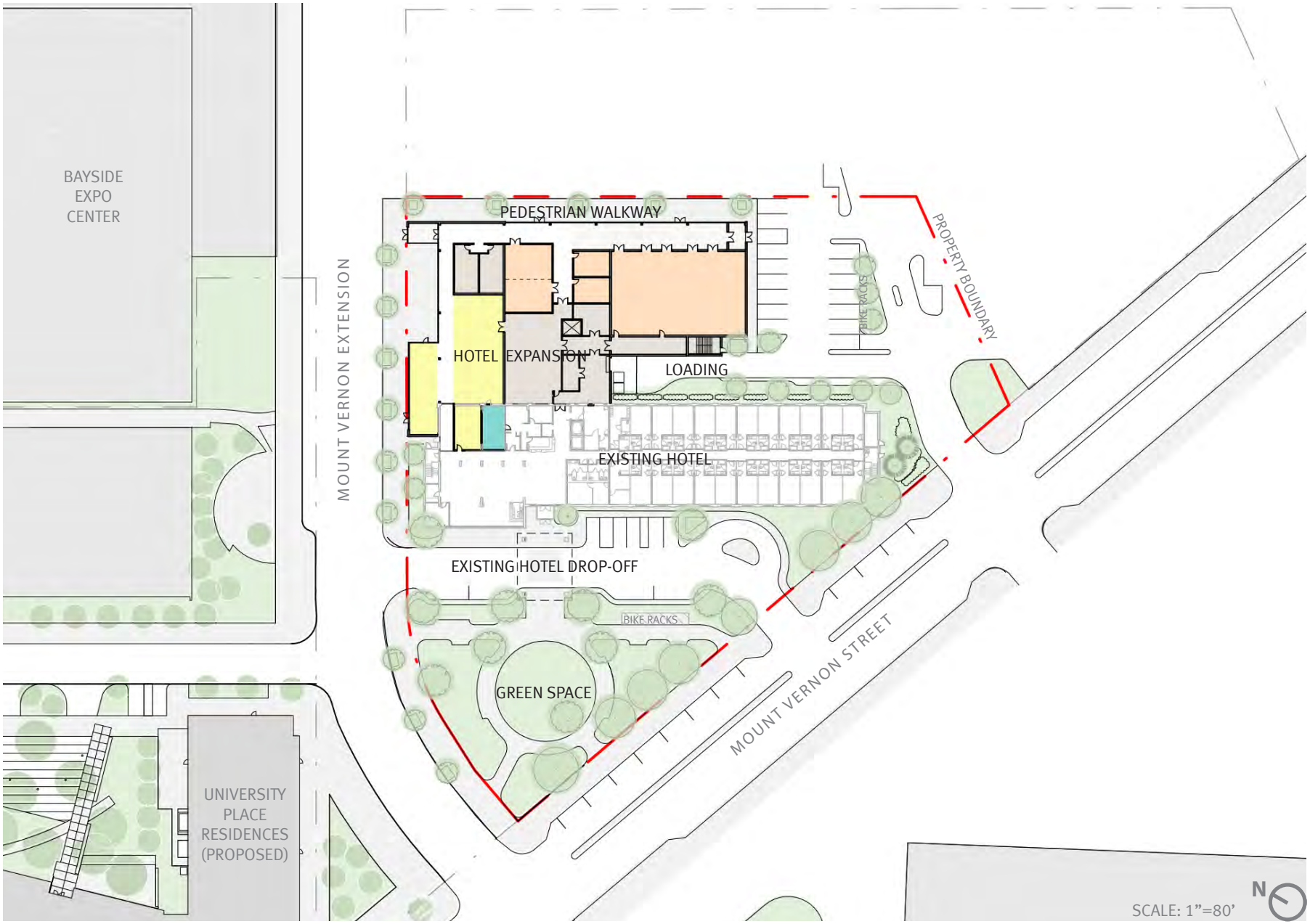
Figure 1-2
Aerial View of Existing Site
Source: Fort Point Associates, Inc., 2014



Bayside DoubleTree Hotel Expansion
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Figure 1-3
Site Plan
Source: Arrowstreet, 2014

Chapter 2

PROJECT DESCRIPTION

CHAPTER 2: PROJECT DESCRIPTION

2.1 PROJECT SITE AND SURROUNDINGS

The Proponent proposes to renovate and expand the existing DoubleTree Hotel on a 91,027 sf parcel bounded by Mount Vernon Street to the southwest; the former Bayside Exposition Center, UMass-Boston, and Mount Vernon Extension to the northwest; and surface parking lots to the northeast and southeast. The core of the UMass-Boston campus lies southeast of the Project Site. See Figure 2-1, Oblique View of Existing Site, Figure 2-2, Existing Conditions Survey, and Figures 2-3 to 2-4, Existing Conditions Photographs.

The Site is located in Columbia Point, Dorchester, 0.25 miles from the MBTA's JFK/UMass Station and in close proximity to Interstate 93. It is primarily accessed from Mount Vernon Extension and has a secondary access from Mount Vernon Street. Nearby open space and recreational resources include Carson Beach and Joe Moakley Park to the north and the Harborwalk around Columbia Point.

Along with the former Bayside Expo Center, the Site was identified in the 2011 Columbia Point Master Plan as an area appropriate for new development, activation through a mix of uses, and improvements to the public realm including additional greenspace.

2.2 PROPOSED PROJECT

The Project entails the expansion of the existing DoubleTree Hotel by constructing an up to approximately 63,000 square foot (sf) of gross floor area, six-story, L-shaped addition on the northeast side of the hotel on a surface parking lot. The addition would add a net new 86 guest rooms to the 197 existing guest rooms and create new function rooms, and a restaurant and bar/lounge area on the ground floor. Vehicular access would continue to be provided on Mount Vernon Extension (former driveway) as the primary entrance. A secondary entrance will be on Mount Vernon Street.

After construction, the hotel will contain 283 rooms, new function spaces, an expanded restaurant and bar/lounge space fronting Mount Vernon Extension, and an expanded landscaped area at the corner of Mount Vernon Street and Mount Vernon Extension.

The Project will contribute to the continued revitalization of Columbia Point by creating new commercial and public spaces situated to take advantage of the Site's excellent transit, bicycle, and pedestrian access to UMass-Boston, downtown Boston, and other area destinations.

The Site is flat and is partially located in a 100-year flood plain. To minimize the likelihood of flooding and in anticipation of future sea level rise, the hotel expansion will be partially

elevated by fill. The existing hotel has been retrofitted with flood-proof gates to be used during major flood events.

The hotel expansion footprint is 18,792 sf and the total gross floor area of the hotel expansion will be up to approximately 63,000 sf. See Table 2-1, Project Program.

Table 2-1: Project Program

Component	Existing Hotel	Proposed Project	Full Build
Site Size	91,027 sf (2.1 acre)	91,027 sf (2.1 acre)	91,027 sf (2.1 acre)
Gross Floor Area (based on Zoning Code)	89,500 sf	63,000 sf	152,500 sf
Floor Area Ratio	1.0	N/A	1.7
Hotel Rooms	197	96 (86 net new)	283
Food/Beverage Space	415 sf	3,321 sf	3,321 sf
Open Space	6,055 sf	16,000 sf	16,000 sf
Bicycle Parking	0 spaces	50 spaces	50 spaces
Vehicle Parking	115 spaces	up to 25 spaces on-site If needed, additional off-site spaces on nearby lots owned or controlled by Proponent or its affiliates.	up to 25 spaces on-site If needed, additional off-site spaces on nearby lots owned or controlled by Proponent or its affiliates.

2.2.1 GROUND FLOOR USES

The ground floor of the hotel expansion will house a full-service restaurant, bar/lounge, a ballroom, various sized meeting rooms and back of house areas including loading, housekeeping, and kitchen areas. The new addition will connect into the existing hotel through an opening from the restaurant area into the hotel lobby. The existing hotel elevators will be utilized to access all of the guest room floors. See Figure 2-5, Ground Floor Plan.

2.2.2 COMMERCIAL USES

A full-service restaurant and a bar/lounge will be located on the ground floor of the hotel expansion. The restaurant will be open to the public as well as serve the hotel and the new function spaces on the ground floor. The meeting and function spaces will be available for guests, businesses, and organizations to utilize. These new facilities will be double height. Floors three through six will contain the 96 new guest rooms. Typical guest rooms will be 365 sf. In addition to guest rooms the third

floor will house a new fitness center and administrative offices. Housekeeping and other back of house operations will occur on each of the guest floors. See Figure 2-6, Second Floor Plan and Figure 2-7, Typical Upper Floor Plans.

2.2.3 PARKING AND ACCESS

The Project will enhance the vehicular and pedestrian access to the Site through connection with the neighborhood circulation systems. The existing forecourt of the hotel will be reconfigured to improve vehicular circulation and pedestrian usage. The existing parking and access drives in front of the hotel will be reduced to create a more landscaped space in front of the hotel.

Vehicular

The existing vehicular circulation through the Site will be improved as a result of the Project. In front of the building, the existing semi-circular drive and parking area near Mount Vernon Street will be eliminated. Per Figure 2-8, Site Access Plan, the pick-up and drop-off drive will be reconfigured along the west (front) side of the building. Vehicles will be able to enter the access drive directly from Mount Vernon Street. This will reduce the impact of vehicles and allow the forecourt to contain more landscaping in front of the building.

Vehicles will also be able to access the hotel from Mount Vernon Extension. Entering along Mount Vernon Extension, vehicles will be able to turn right to reach the porte cochere in front of the building. Vehicles such as taxis can also do a curb-side drop-off in front of the restaurant for patrons headed to the pre-function space and ballroom.

A small parking area at the main hotel entrance and near the entrance to the function space will allow for short-term parking such as guest registration. If needed, additional vehicle parking spaces will be available off-site on nearby parking lots owned or controlled by the Proponent or its affiliates.

Bicycle

The Proponent supports the new on-road bicycle lane currently under consideration by the City along Mount Vernon Street. The Project will provide direct access from the street into the Site where bicycle racks for 50 bicycles will be located.

Pedestrian

Pedestrians have easy access to the Project Site from the nearby JFK/UMass MBTA station as well as the surrounding neighborhood via Mount Vernon Street. Pedestrians will be able to enter the Site through various points along Mount Vernon Street. The reconfigured forecourt contains more landscaped space in front

of the building which will connect pedestrian pathways from Mount Vernon Street to Mount Vernon Extension.

Accessibility

All of the entrances into the building will be located at grade and connected to an accessible route. Accessible parking spaces will be located at the main hotel entrance and near the entrance to the function space.

2.2.4 LANDSCAPING

The redesigned landscaped area at the intersection of Mount Vernon Street and Mount Vernon Extension will include expanded landscaping with pedestrian walkways, seating areas, and plantings. Landscaped spaces will continue down Mount Vernon Extension with planting beds and tree wells along the sidewalk and around the hotel expansion and onto the pedestrian walkway to the east. See Figure 2- 9, Landscape Plan.

2.3 COMPLIANCE WITH BOSTON ZONING CODE

The Project is subject to land use controls contained in the City of Boston Zoning Code (the "Code"). In accordance with Article 80B of the Code, the Project is subject to the requirements of Large Project Review because it exceeds 50,000 square feet of gross floor area.

The Project is located within the Dorchester Bay/Neponset River Waterfront Subdistrict of the Harborpark District governed by Article 42A of the City of Boston Zoning Code and is designated B-1-55, Business District. In connection with the adoption of Harborpark zoning, the Columbia Point area, which includes the Site, was designated as a Special Study Overlay District. The Project is also within the Restricted Parking Overlay District. In the B-1-55 Business District, all of the uses contemplated to be included in the Project are allowed (including hotel, commercial/retail business, restaurant uses, entertainment uses, recreational uses, parking, and accessory uses thereto) except for retail catering uses, for which a conditional use approval will be required.

Zoning relief regarding dimensional and use requirements (for retail catering uses), parking, and loading will be sought from the Boston Zoning Board of Appeal. Based on a preliminary zoning analysis, the hotel (existing hotel plus new expansion) will have a floor area ratio (FAR) of 1.7. This FAR exceeds 1.0, which is the maximum permitted under the current zoning. The Project will have a building height of 53 feet (up to 65 feet including mechanical equipment). See Figure 2-10, Roof Plan. An increase in FAR for the Columbia Point area is encouraged through the stated objectives of recent planning efforts in the area including the Columbia Point Master Plan. In addition, the Project will reduce on-site vehicle parking. If needed, additional vehicle parking spaces will be available off-site on

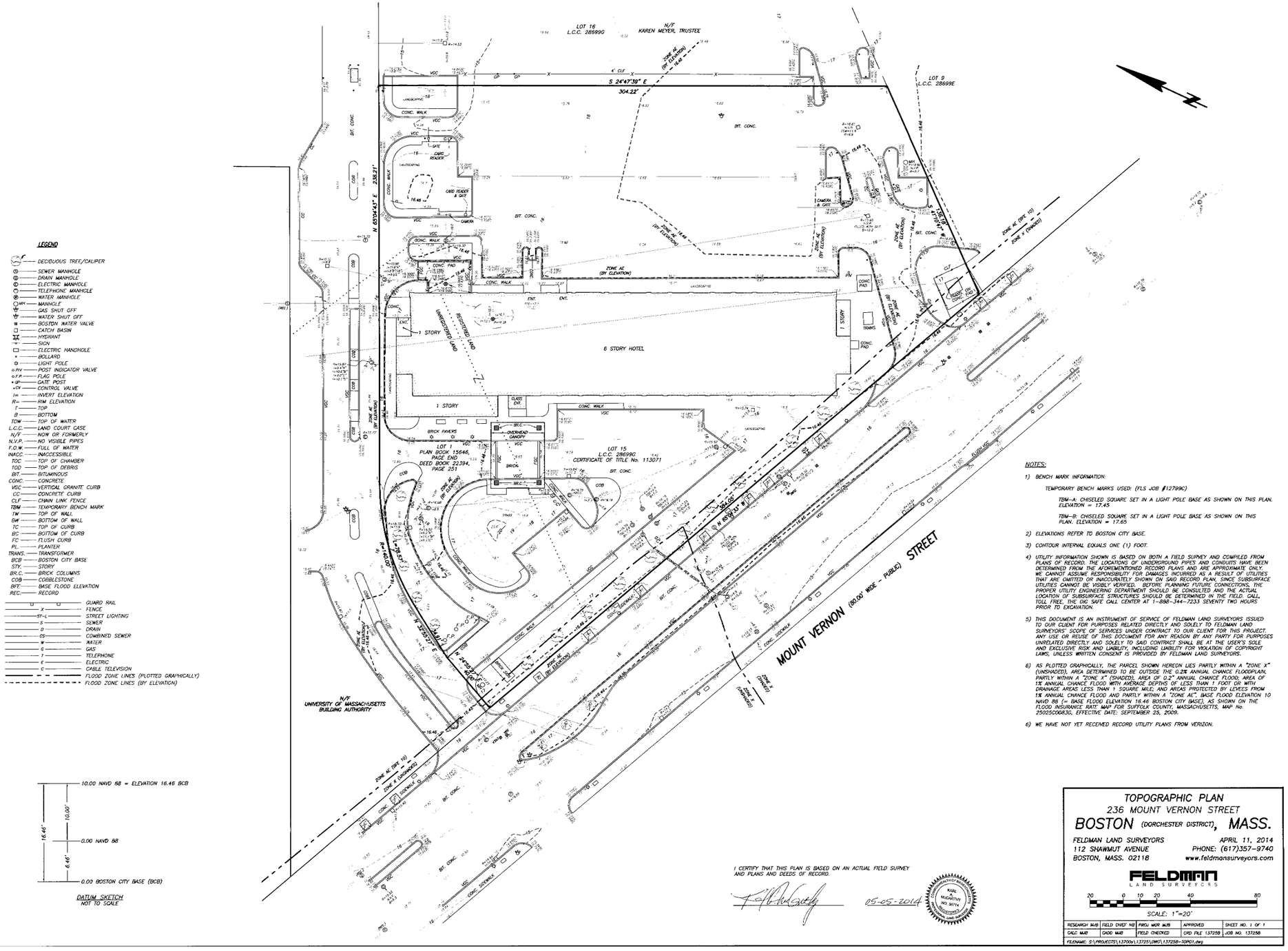
nearby parking lots owned or controlled by the Proponent or its affiliates. The Proponent will comply with the Boston Transportation Department's policies and recommendations.

The Project is subject to Article 25 of the Code because it will be built in a 100-year flood zone. As part of its sustainability strategy, the Project is designed to raise the ground floor out of the flood zone.

Article 37 of the Code applies to the Project as well. It will therefore be designed and constructed to be LEED certifiable. See Chapter 4, Sustainability, for a discussion of the LEED credits the Project intends to achieve.

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 2-1
Oblique View of Existing Site
Source: Arrowstreet, 2014



Bayside DoubleTree Hotel Expansion
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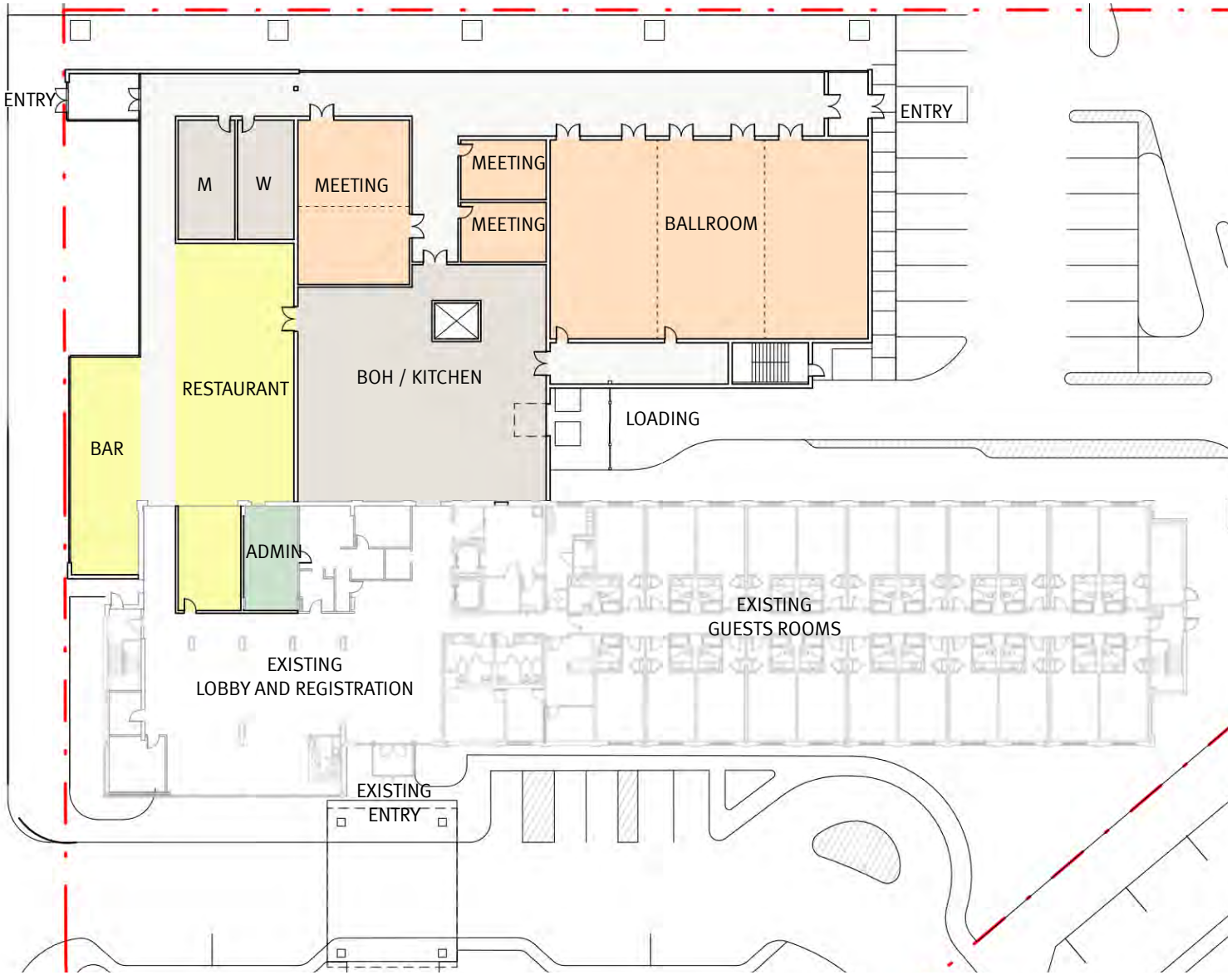
Figure 2-2
Existing Conditions Survey
Source: Feldman Land Surveyors, 2014

View looking east from Mount Vernon Street

View looking north from Mount Vernon Street

View of the Project Site facing southeast from Mount Vernon Extension

View of the Project Site facing south from Mount Vernon Extension



Bayside DoubleTree Hotel Expansion
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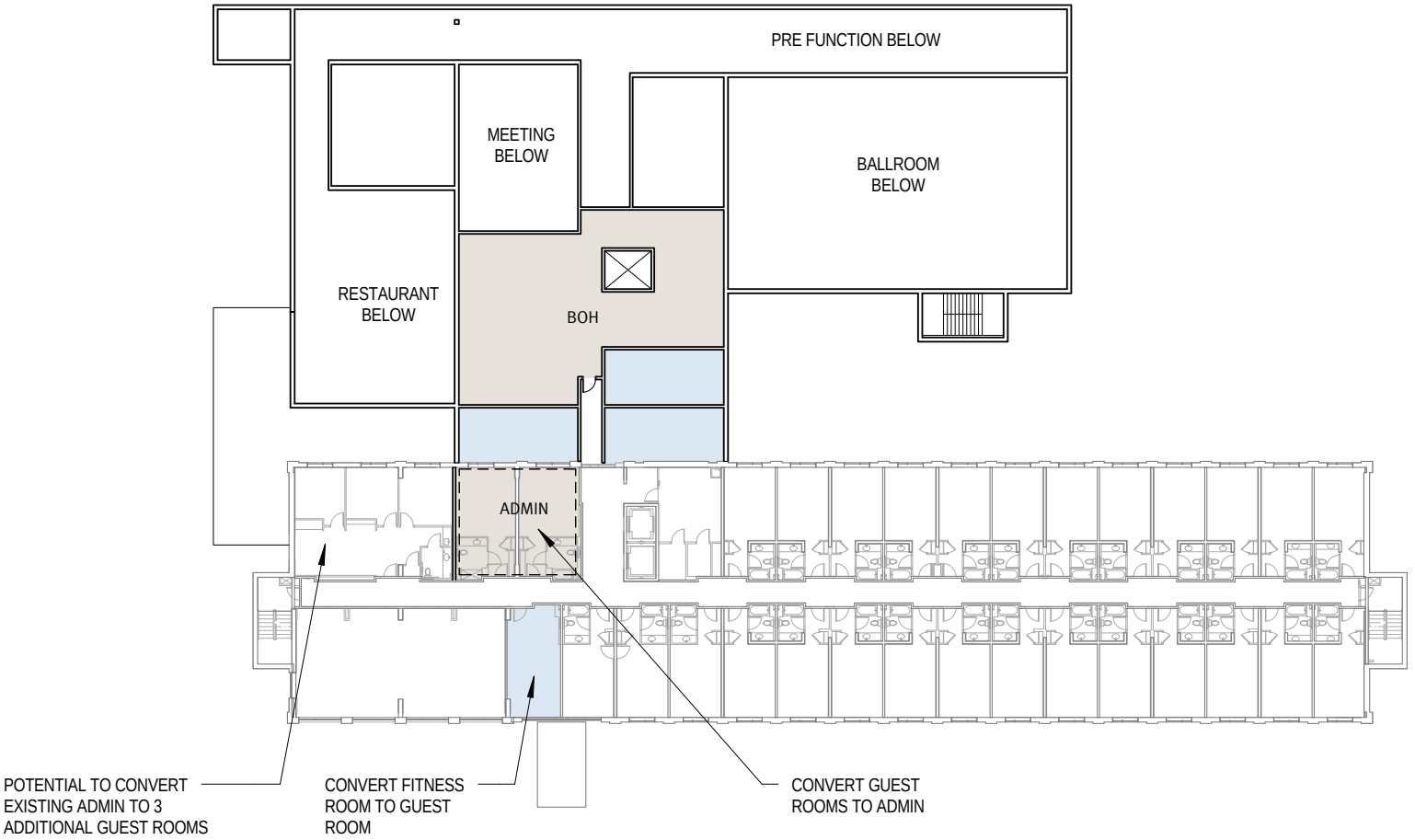
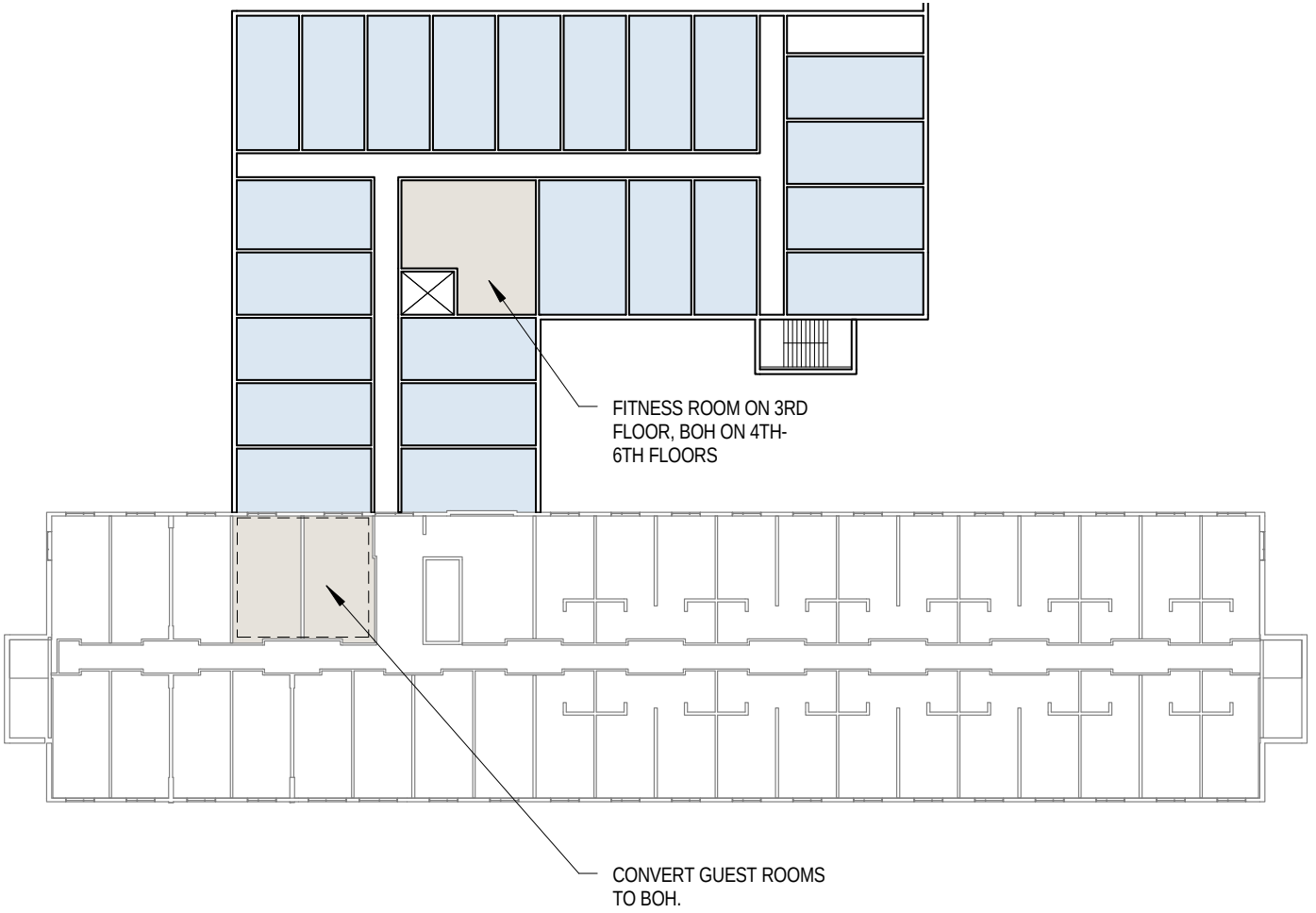
Figure 2-5
Ground Floor Plan
Source: Arrowstreet, 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 2-6
Second Floor Plan
Source: Arrowstreet, 2014



Bayside DoubleTree Hotel Expansion
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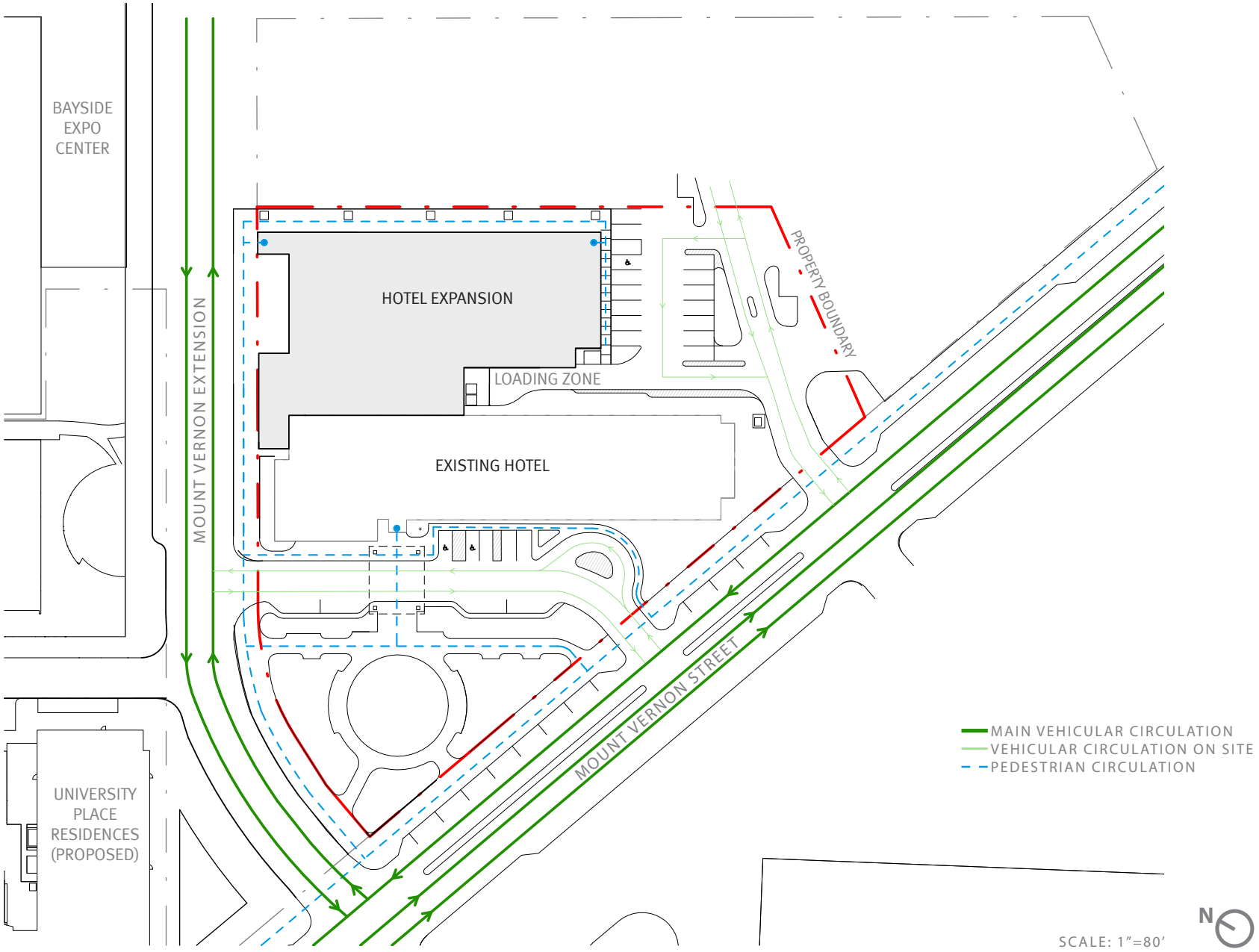
Figure 2-7
Typical Upper Floor Plan
Source: Arrowstreet, 2014



Bayside DoubleTree Hotel Expansion
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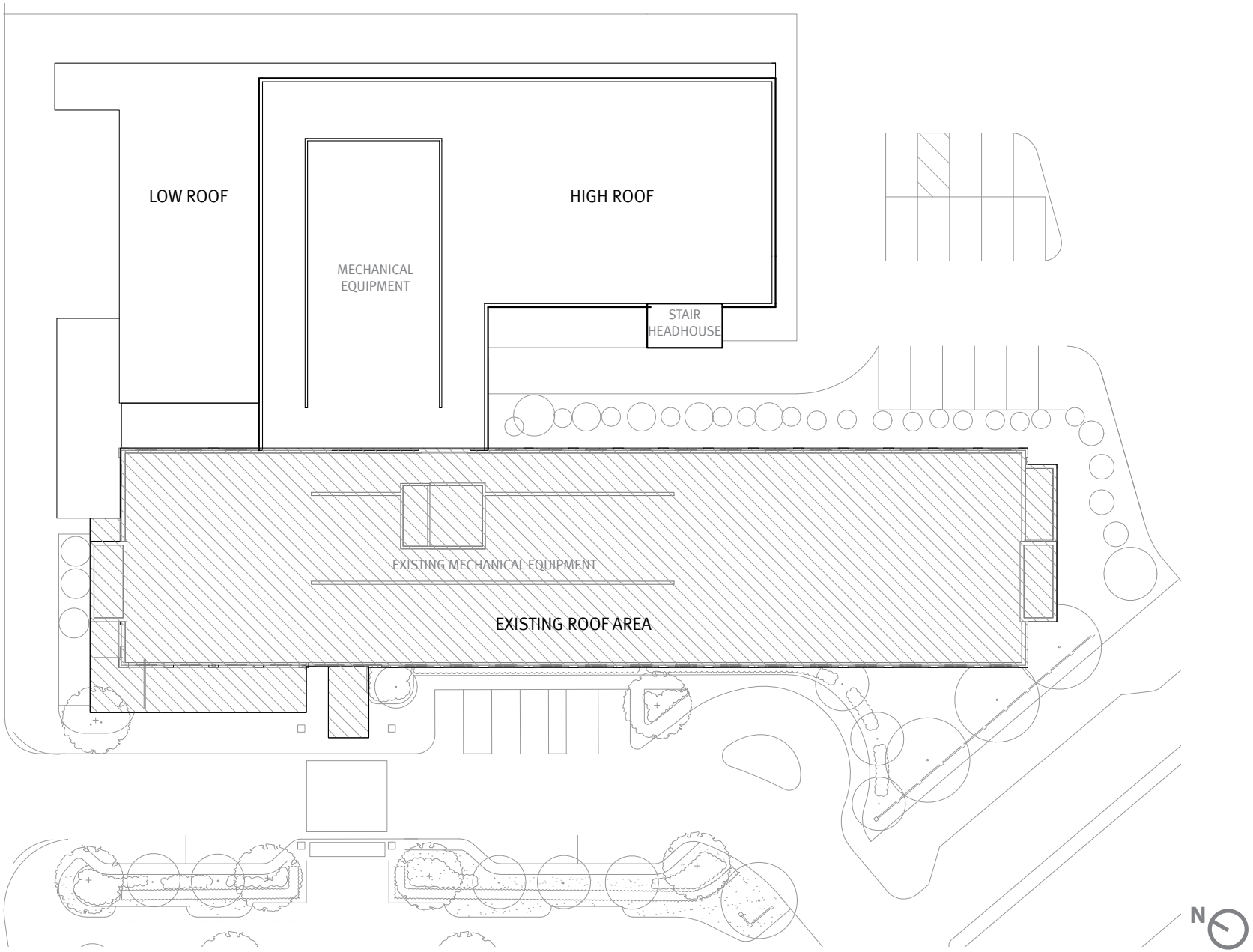
Figure 2-8
Site Access Plan
Source: Arrowstreet, 2014

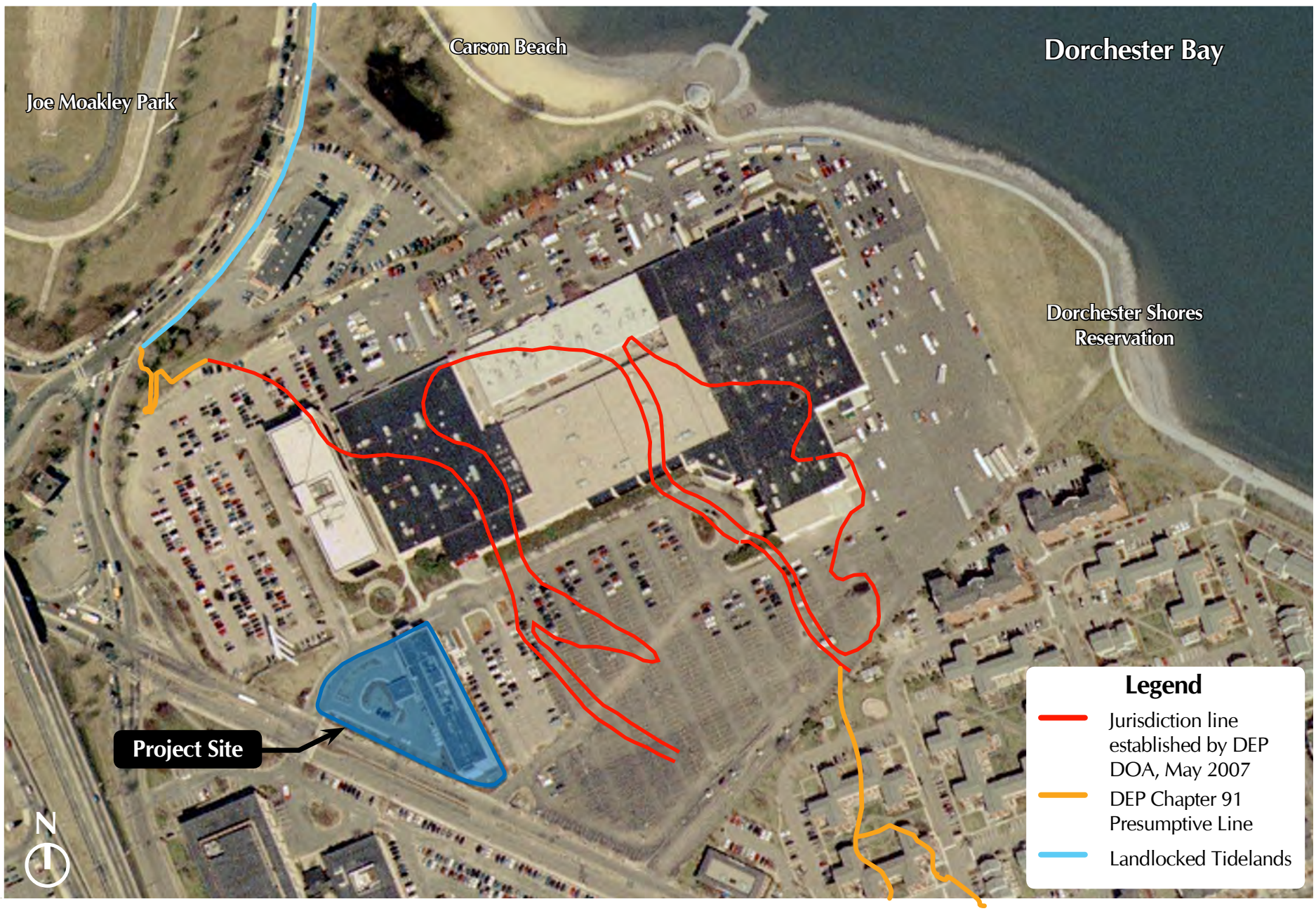
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 2-9
Landscape Plan
Source: Dale Design, 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 2-10
Roof Plan
Source: Arrowstreet, 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 2-11
Chapter 91 Jurisdiction
Source: Fort Point Associates, 2014; MassDEP

Chapter 3

URBAN DESIGN

CHAPTER 3: URBAN DESIGN

3.1 INTRODUCTION

The Bayside DoubleTree Hotel Expansion will build upon and enhance the City of Boston's vision for the Columbia Point Area. The proposed Project realizes the planning goals described in the 2011 Columbia Point Master Plan by creating a mixed-use expansion to the existing DoubleTree Hotel, adding to the density of the area, and developing an urban fabric.

The Project will enhance the street edge of Mount Vernon Extension. The landscaping at the intersection is designed to complement the upcoming University Place Residences project and define the entrance to Mount Vernon Extension. Massing, landscaping, vehicular, and pedestrian access have been designed and strategically located to foster relationships between the different program elements and site context. See Figure 3-1, Site Plan and Figure 3-2, Neighborhood Context.

3.2 MASSING

The proposed expansion will be located on the northeast side of the existing hotel along Mount Vernon Extension. The entrance to the addition will be facing Mount Vernon Extension and the function spaces open up to a pedestrian area along the future development parcel to the east. At the restaurant area, the building steps back to allow an outdoor seating area to open up to the sidewalk. The loading operations take place on the interior of the Site out of view to the public.

The guest room floors are stepped back from the two-story ground floor creating a pedestrian scale along the street edge. The height of the guest room floors align with the existing hotel. See Figure 3-3 Perspective from the West.

3.3 CHARACTER AND MATERIALS

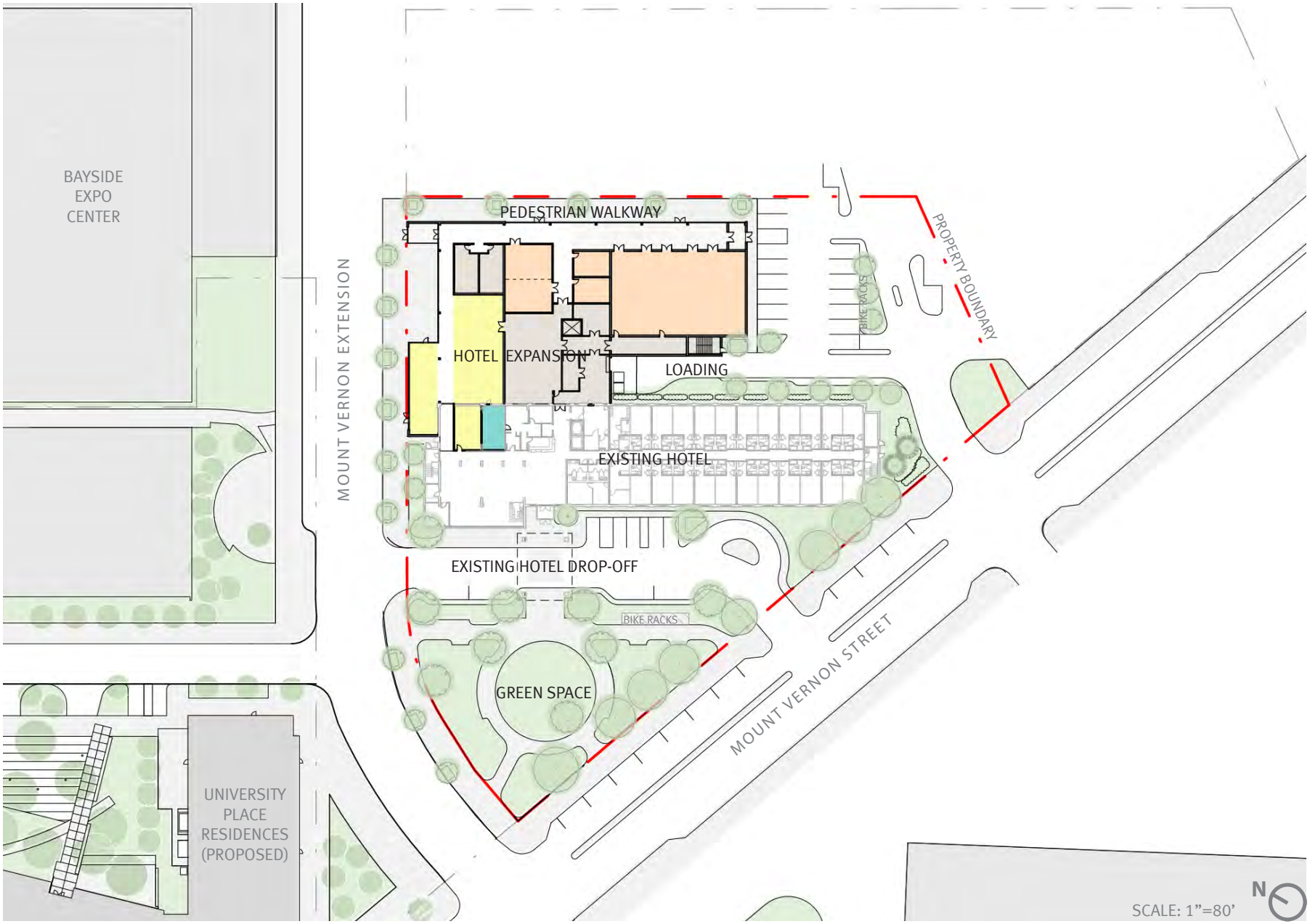
The exterior design of the Project will be integrated into the existing hotel design in order to create a coherent composition consistent with the hotel brand. The guest room wing will be similar to the existing hotel through the opening proportions and use of façade materials including red brick and light-colored stucco finish. At the ground floor, the restaurant and function center entrance will front along the street and incorporate a large glass façade and rainscreen panels. The design of this area will stand out from the other massing of the ground floor to distinguish it from the main hotel guest entrance and create interest from the intersection of Mount Vernon Street and Mount Vernon Extension. See Figures 3-4 to 3-5, Elevations

3.4 LANDSCAPE

The existing forecourt of the hotel will be redesigned to incorporate an expanded landscaped area with pedestrian walkways and seating areas. The plantings will consist of shade trees, ground cover, and lawn. This landscape area will continue down Mount Vernon Extension and around the new building with planting beds and tree wells along the sidewalk and onto the pedestrian walkway along the east side. See Figure 3-6, Landscape Plan.

3.5 VEHICULAR CIRCULATION AND PEDESTRIAN ENVIRONMENT

The existing vehicular drop-off and forecourt will be redesigned to create a more pedestrian-friendly zone and allow an improved connection from the hotel to Mount Vernon Street and Mount Vernon Extension. Vehicular traffic will be simplified through this redesigned drop off and will connect from Mount Vernon Street to Mount Vernon Extension though a linear drive along the front of the existing hotel. Access to the hotel expansion will be along a new sidewalk on Mount Vernon Extension. In addition, a pedestrian walkway will run along the east side of the function rooms. See Figure 3-7, Site Access Plan.



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 3-1
Site Plan
Source: Arrowstreet, 2014

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 3-2
Neighborhood Context
Source: Arrowstreet, 2014

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 3-3
Perspective from West
Source: Arrowstreet, 2014

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

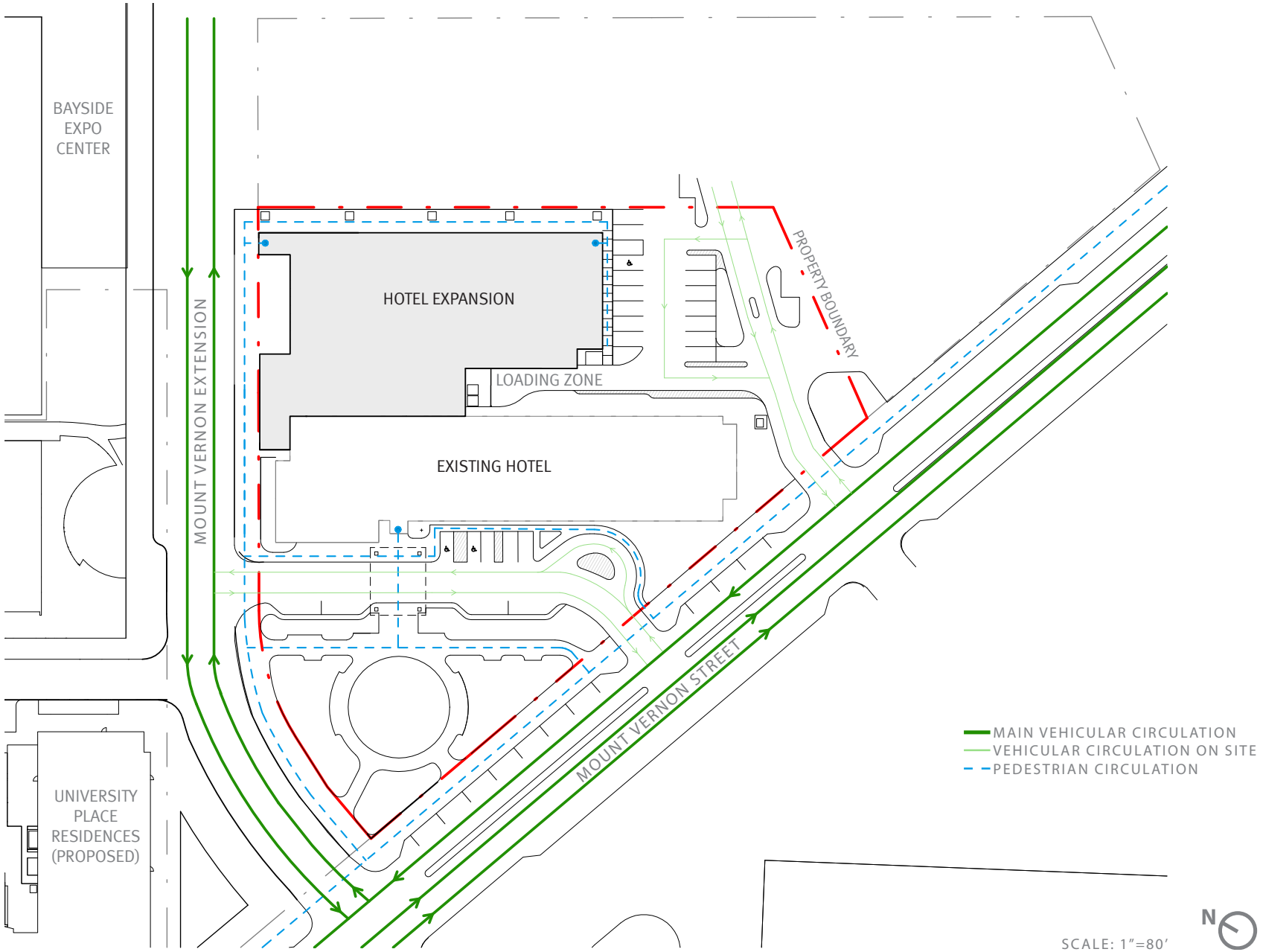
Figure 3-4
North Elevation
Source: Arrowstreet, 2014

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 3-5
East Elevation
Source: Arrowstreet, 2014

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 3-6
Landscape Plan
Source: Dale Design, 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 3-7
Site Access Plan
Source: Arrowstreet, 2014

Chapter 4

SUSTAINABILITY

CHAPTER 4: SUSTAINABILITY

4.1 SUSTAINABLE DESIGN

The Proponent is committed to the advancement of sustainable and environmentally-conscious design and construction. The Project will be LEED-certifiable through the design, construction, and implementation of key sustainable strategies, consistent with the policies of the City of Boston. In addition, the Proponent is taking a multi-disciplinary approach to designing the building and infrastructure for flood resilience, as advocated for in recent studies completed by the City of Boston and The Boston Harbor Association. The proposed addition will be built based on the base flood elevation shown on the 2013 preliminary Federal Emergency Management Agency (FEMA) flood insurance rate map. The Site will be graded and filled to build up the addition to 18 feet Boston City Base (BCB), above the 17.46 foot BCB base flood elevation. The existing building has installed metal hardware for flood gates at building entrances in case of major storm events.

The Project Team has identified a number of sustainable strategies within the LEED for New Construction 2009 rating system that will be developed and refined during the design of the Project. As the Project is in the early design process, some of these strategies are expected to evolve with the design of the building. Ultimately, the Project Team will meet the City of Boston's Article 37 Building Standard to ensure a LEED-certifiable rating is possible for the Project. A broad overview of the points the development will be seeking within each category is described below. A LEED Project Checklist is attached as Figure 4-1.

4.2 ARTICLE 37 / LEED COMPLIANCE

4.2.1 SUSTAINABLE SITES

Prerequisite 1: Construction Activity Pollution Prevention Plan

An Erosion and Sedimentation Control Plan will be created and implemented for all construction activities associated with the Project.

Credit SS 3: Development Density and Community Connectivity

The Project is located in a neighborhood with multiple dense residential communities, as well as parks, schools, a supermarket, a pharmacy, restaurants, and other amenities within walking distance. New developments in the area will bring additional retail amenities including restaurants within the Project Site and surrounding area.

Credit SS 4: Alternative Transportation

The Project seeks to reduce the use of vehicular transportation by providing alternative transportation options for hotel guests and visitors. The Site is 0.25 miles from the JFK/UMass MBTA station and various bus stops, allowing easy access to public transportation. Other alternative transportation measures include proposed bicycle lanes along Mount Vernon Street, bicycle storage on the Project Site and many surrounding sites, and an airport shuttle bus for hotel guests. The Project's mix of uses (restaurant, meeting/function center and hotel) complements and enhances the existing uses in the area, ultimately creating a more pedestrian-friendly environment.

The Site will have up to 25 parking spaces, of which two will be designated for low emissions vehicles. In addition, many guests will utilize public transportation or an airport shuttle. For more detail, refer to Section 5.4, which outlines the Project's alternative transportation measures.

Credit SS6.1: Stormwater Design

The Project will replace an impervious surface parking lot in the rear of the existing hotel with a building surrounded by pedestrian walkways, vegetated areas, and a small parking lot. Landscaping improvements in the front of the existing hotel will replace much of the existing asphalt surface roadways with greenspace. Portions of the hardscape pedestrian areas will have pervious pavements that will improve the existing capability of the Site to infiltrate stormwater. The design team is looking at locations for stormwater retention to achieve Credit 6.1, Stormwater Design, Quantity Control. Section 7.4 outlines additional details of the Project's stormwater design and control systems.

Credit SS7: Heat Island Effect

Reducing the heat island effect has been categorized as a regional priority for Boston. The Project will reduce the amount of existing low albedo asphalt by replacing it with a building designed with a high albedo roof membrane and specifying pedestrian walkways and sidewalks with high albedo materials. Paved parking in front of the existing building will be replaced with 16,000 sf of greenspace.

4.2.2 WATER EFFICIENCY

Credit WEp1, WE3: Water Use Reduction

Water use reduction is an important goal for the Project as there is a potential for large water use in a hotel project type. The Project will specify plumbing fixtures in the building to achieve a minimum 30% reduction in water-use through low-flow water-closets, low-flow showers, and low-flow sinks. The hotel operations will also incorporate a water reduction program into their laundry and cleaning services.

Credit WE2: Water Efficient Landscaping

The Project will attempt to reduce water usage by designing the streetscape, walkway, and green space landscaping to lessen demand for water by a minimum of 50%. This will be accomplished with non-invasive native plants which require low or no irrigation and are known for their ability to withstand adverse conditions, as well as efficient irrigation systems in select areas and no irrigation systems in others.

4.2.3 ENERGY AND ATMOSPHESE

Credit EAp2, EAc1: Energy Performance

The Project will optimize energy efficiency through an integrated approach to the building's envelope design and building systems. As part of the concept design and planning phase, the building's orientation, massing, and materials have been designed to orient to optimal solar orientation, increase daylighting, and manage potential heat gain and loss. For example, the building design minimizes the amount of exterior wall area via a compact design, which organizes the guest rooms into an L-shaped footprint instead of an elongated footprint. Similarly, to minimize heat gain during the warmer months, the high occupancy load program spaces (meeting/function rooms, restaurant) are behind a daylight corridor buffer.

The building massing is shaped to bring daylight into the ground floor via glazing on the north and east facades. These measures, in tandem with energy efficient building systems, will reduce the energy load of the building. The energy-efficient systems will include an energy-efficient elevator, room occupancy sensors for lighting, efficient lighting fixtures, Energy Star equipment and appliances within the restaurant, and energy recovery air handling units. In addition, non-HCFC air-conditioning refrigerant will be selected and tested to ensure the proper performance and minimize contributions to ozone depletion and climate change.

An energy model will be developed during the design phases of the Project to test design assumptions. The Project is currently targeting a 20% site energy reduction below the Massachusetts Building Energy Code ASHRAE Standard 90.1-2007 for the

building, as well as an improvement in the energy cost savings by a minimum of 16%, as outlined by the LEED rating system.

Credit EAp1, EA3: Commissioning of Building Energy Systems

Commissioning will be performed based on the LEED Enhanced Commissioning requirements to ensure the building systems are operating in accordance with the owner's project requirements and design intent. The Project Team will also explore developing a measurement and verification plan and installing controls and equipment to both monitor the performance of these systems over the life of the buildings and ensure the energy savings are being achieved post-occupancy.

Credit EA2: On-Site Renewable Energy

The Project will explore the potential to locate photovoltaic panels on the roofs of the existing and new buildings in order to reduce greenhouse gas emissions by reducing the energy consumption from non-renewable energy sources.

Credit EA5: Measurement and Verification

A Measurement and Verification Plan will be developed and implemented to extend accountability for the performance of building systems over time.

Credit EA6: Green Power

The Project will purchase renewable energy certificates for a percentage of the electricity use to reduce greenhouse gas emissions produced by the building's energy consumption.

4.2.4 MATERIALS AND RESOURCES

Credit MRp1: Storage and Collection of Recycling

The operations of the building will reduce post-occupancy waste by developing a recycling program and providing designated rooms throughout the building for staff and guests to store recyclables.

Credit MR2: Construction Waste Management

The Project will exemplify responsible waste management practices by diverting at least 75% of construction waste from landfills during construction. The Project Team will seek to reduce construction waste generation to a level below the industry standard by investigating local options for recycling, reusing construction waste, and documenting the diversion rate during the construction process.

Credit MR4, 5, 7: Recycled Content, Regional and Certified Wood Materials

Sustainable materials that are recycled, salvaged, responsibly harvested, and locally sourced will be incorporated as much as reasonably possible within the building's design. Building component materials will be evaluated not only by their material content, but by their embodied energy, maintenance needs, and durability, as well.

4.2.5 INDOOR ENVIRONMENTAL QUALITY

Credit IEQp1, p2, 6, 7: Indoor Air Quality Performance, Design, and Controls

The Proponent is deeply committed to designing an indoor environment that provides a healthy quality of life for the building guests, visitors, and staff. Building spaces will be designed to meet appropriate human comfort levels and allow for individual control of the lighting and thermal environment.

Credit IEQ3: Construction IAQ Plan

The Proponent will develop a construction Indoor Air Quality Management Plan during construction and prior to occupancy to insure good air quality for incoming occupants.

Credit IEQ4: Low Emitting Materials

Low-emitting materials will be chosen for the Project, including adhesives, paints, and flooring. Green housekeeping practices will be deployed to support a healthy indoor air quality after building occupancy.

Credit IEQ5: Indoor Chemical and Pollutant Source Control

In order to control the transfer of pollutants from exterior to interior, walk off mats will be provided at main entrances and filters will be installed at fresh air intakes. Within the proposed building expansion, exhaust systems and self-closing doors will control the potential pollutants at housekeeping and janitorial rooms.

Credit IEQ6: Controllability of Systems- Lighting

Occupant controls will be incorporated into the design of the building to help manage the building's overall energy use.

Credit IEQ7: Thermal Comfort- Design

HVAC systems will meet ASHRAE Standard 55-2004.

Credit IEQ8: Daylighting and Views

The Proponent will attempt to achieve the requirements of the Daylight and Views credits and will determine compliance through calculations based on the final design. The building design incorporates large windows with glare control drapes for all hotel guest rooms allowing for ample daylight and views to the surrounding

neighborhood and the waterfront. The ground floor areas also have daylight and views through the north and east glazing.

4.2.6 INNOVATION IN DESIGN

The Project will explore innovative design through exemplary performance in LEED credits for green power and material content as well as through green housekeeping, operations, and education programs.

4.2.7 REGIONAL PRIORITY

Among the sustainable measures that are designated as priorities for the Boston environment the Project will be implementing Stormwater Quantity Control and Reduction of Heat Island Effect Roof and Non-Roof.

4.2.8 BOSTON ARTICLE 37 GREEN CREDITS

Although the Project will not pursue any of the Boston Green Building Credits, the Project will pursue the Boston Public Health Commission prerequisites as noted below.

Credit p1: Retrofit Diesel Construction Vehicles

In order to reduce emissions, all construction vehicles will be retrofitted diesel vehicles.

Credit p2: Outdoor Construction Management Plan

In order to control contaminants and pollutants during construction, the contractor will develop an outdoor construction management plan including at a minimum wheel washing, Site vacuuming, truck covers, and anti-idling signage.

Credit p3: Integrated Pest Management Plan

The Project will employ an Integrated Pest Management Plan to reduce the impacts of rodents and insects.

LEED 2009 for New Construction and Major Renovations
Project Checklist

Y	?	N				
19	5	2	**Sustainable Sites**		**Possible Points:**	**26**
Y			Prereq 1	Construction Activity Pollution Prevention		
		1	Credit 1	Site Selection	1	
5			Credit 2	Development Density and Community Connectivity	5	
		1	RP Credit 3	Brownfield Redevelopment	1	
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6	
	1		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1	
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3	
2			Credit 4.4	Alternative Transportation—Parking Capacity	2	
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1	
	1		Credit 5.2	Site Development—Maximize Open Space	1	
1			RP Credit 6.1	Stormwater Design—Quantity Control	1	
	1		Credit 6.2	Stormwater Design—Quality Control	1	
1			RP Credit 7.1	Heat Island Effect—Non-roof	1	
1			RP Credit 7.2	Heat Island Effect—Roof	1	
	1		Credit 8	Light Pollution Reduction	1	
2	4	4	**Water Efficiency**		**Possible Points:**	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction		
	2	2	Credit 1	Water Efficient Landscaping	2 to 4	
		2	Credit 2	Innovative Wastewater Technologies	2	
2	2		Credit 3	Water Use Reduction	2 to 4	
7	10	18	**Energy and Atmosphere**		**Possible Points:**	**35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems		
Y			Prereq 2	Minimum Energy Performance		
Y			Prereq 3	Fundamental Refrigerant Management		
3	2	14	Credit 1	Optimize Energy Performance	1 to 19	
	3	4	RP Credit 2	On-Site Renewable Energy	1 to 7	
2			Credit 3	Enhanced Commissioning	2	
	2		Credit 4	Enhanced Refrigerant Management	2	
	3		Credit 5	Measurement and Verification	3	
2			Credit 6	Green Power	2	
5	3	6	**Materials and Resources**		**Possible Points:**	**14**
Y			Prereq 1	Storage and Collection of Recyclables		
		3	RP Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3	
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1	
2			Credit 2	Construction Waste Management	1 to 2	
		2	Credit 3	Materials Reuse	1 to 2	
1	1		Credit 4	Recycled Content	1 to 2	
1	1		Credit 5	Regional Materials	1 to 2	
	1		Credit 6	Rapidly Renewable Materials	1	
1			Credit 7	Certified Wood	1	
8	7	0	**Indoor Environmental Quality**		**Possible Points:**	**15**
Y			Prereq 1	Minimum Indoor Air Quality Performance		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control		
	1		Credit 1	Outdoor Air Delivery Monitoring	1	
	1		Credit 2	Increased Ventilation	1	
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1	
	1		Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1	
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1	
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1	
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1	
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1	
1			Credit 5	Indoor Chemical and Pollutant Source Control	1	
1			Credit 6.1	Controllability of Systems—Lighting	1	
	1		Credit 6.2	Controllability of Systems—Thermal Comfort	1	
1			Credit 7.1	Thermal Comfort—Design	1	
	1		Credit 7.2	Thermal Comfort—Verification	1	
	1		Credit 8.1	Daylight and Views—Daylight	1	
	1		Credit 8.2	Daylight and Views—Views	1	
4	2	0	**Innovation and Design Process**		**Possible Points:**	**6**
1			Credit 1.1	Innovation in Design: Exemplary Performance EAc6 Green Power	1	
1			Credit 1.2	Innovation in Design: Green Housekeeping/Cleaning	1	
1			Credit 1.3	Innovation in Design: Green Hotel Operations	1	
	1		Credit 1.4	Innovation in Design: Education Program	1	
	1		Credit 1.5	Innovation in Design: Exemplary Performance MRc4	1	
1			Credit 2	LEED Accredited Professional	1	
3	1	0	**Regional Priority Credits**		**Possible Points:**	**4**
1			Credit 1.1	Regional Priority: SSc6.1 Storwater Design Quantity Control	1	
1			Credit 1.2	Regional Priority: SSc7.1 Heat Island Effect Nonroof	1	
1			Credit 1.3	Regional Priority: SSc7.2 Heat Island Effect Roof	1	
	1		Credit 1.4	Regional Priority: Specific Credit	1	
0	3	1	**Boston Article 37 Green Credits**		**Possible Points:**	**4**
Y			Prereq 1	Retrofit Diesel Construction Vehicles	1	
Y			Prereq 2	Outdoor Construction Management Plan	1	
Y			Prereq 3	Integrated Pest Management Plan	1	
	1		Credit 1.1	Modern Grid	1	
		1	Credit 1.2	Historic Preservation	1	
	1		Credit 1.3	Groundwater Recharge	1	
	1		Credit 1.4	Modern Mobility	1	
48	35	31	**Total**		**Possible Points:**	**110**

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 4-1
LEED Checklist
Source: Arrowstreet, 2014

Chapter 5

TRANSPORTATION

CHAPTER 5: TRANSPORTATION

5.1 INTRODUCTION

Howard/Stein-Hudson Associates, Inc. (HSH) has conducted an evaluation of the transportation impacts of the proposed expansion (the "Project") of the Bayside DoubleTree Hotel in Boston's Columbia Point section of the Dorchester neighborhood. This transportation study adheres to the Boston Transportation Department's (BTD) *Transportation Access Plan Guidelines* and the Boston Redevelopment Authority's (BRA) Article 80 development review process. This study includes an evaluation of the existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian activity.

5.1.1 PROJECT DESCRIPTION

The Bayside DoubleTree Hotel is located at 236 Mount Vernon Street in the Columbia Point section of Dorchester, with access provided by way of an existing driveway located approximately 350 feet east of Morrissey Boulevard. The hotel is currently in operation and contains a total of 197 rooms. The Project will add a net new 86 rooms to the rear of the existing hotel and will also reconfigure the site access by providing an additional full-access curb cut along Mount Vernon Street, approximately 225 feet to the east of the existing driveway. The hotel is situated less than a quarter-mile from the Massachusetts Bay Transportation Authority (MBTA) JFK/UMass Station that provides access to the MBTA Red Line, the Commuter Rail, and several MBTA bus routes. A bicycle sharing station is also provided by Hubway at the JFK/UMass Station. The nearby transit and bicycle facilities provide the hotel customers and employees with alternative modes of transportation to travel to and from the Site.

Approximately 115 vehicle parking spaces and zero bicycle parking spaces are currently provided on-site for the existing hotel. The Project will reconfigure the existing parking on the Site to provide up to 25 vehicle parking spaces on-site, inclusive of the short-term arrival/drop-off and accessible parking spaces near the front entrance of the hotel. If needed, additional vehicle parking spaces will be available off-site on nearby parking lots owned or controlled by the Proponent or its affiliates.

The Project will also provide 50 bicycle parking spaces split between two racks. One bicycle rack will be in the front of the hotel by the expanded landscaped area and the second rack will be in the parking lot on the east side of the hotel expansion.

Primary vehicular access to the hotel will continue to be provided by Mount Vernon Extension along the northerly side of Mount Vernon Street, approximately 350 feet east of Morrissey Boulevard. Mount Vernon Extension currently provides access to the hotel, the Bayside Office Building, and a parking area for the former Bayside Expo Center. Additional access will be provided to the arrival/drop-off area by way of the proposed curb cut on Mount Vernon Street located approximately 225 feet east of Mount Vernon Extension. Secondary access to the parking area in the rear of the building will be provided by way of an existing driveway on Mount Vernon Street located approximately 375 feet east of Mount Vernon Extension. All driveways will have full access and egress, allowing vehicles to enter and exit to and from both directions along Mount Vernon Street. Pedestrian access to the hotel will be provided through the existing hotel entrance along Mount Vernon Street and through two new entrances facing the rear of the proposed expansion. Loading, deliveries, and trash pick-up will take place in the loading area on the south side of the Site between the existing building and the proposed addition.

5.1.2 STUDY AREA

The study area consists of the following three intersections as shown on Figure 5-1:

- Mount Vernon Street/Bayside Driveway/Bank Driveway
- Mount Vernon Street/Old Colony Avenue/Morrissey Boulevard
- Mount Vernon Street/William J. Day Boulevard

5.1.3 STUDY METHODOLOGY

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

The existing conditions analysis includes an inventory of the existing (2014) transportation conditions including traffic characteristics, parking, and curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected in September 2012 at the study area intersections. To account for traffic growth since 2012, a 0.5 percent per year annual traffic growth rate was applied to reflect the 2014 existing conditions. The traffic counts form 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 2019, based on a five-year horizon from the year of the filing of this traffic study. Expected roadway, parking, transit, pedestrian, bicycle accommodation, and loading facilities are identified. This section includes the following scenarios:

- The 2019 No Build conditions scenario includes both general background traffic growth and traffic growth associated with specific developments and transportation improvements that are planned in the vicinity of the Project Site.
- The 2019 Build conditions scenario includes Project-generated traffic volume estimates added to the traffic volumes developed as part of the 2019 No Build conditions scenario.

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.

5.2 EXISTING CONDITIONS

5.2.1 EXISTING ROADWAY CONDITIONS

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

Mount Vernon Street is adjacent to the south side of the Project Site and is classified as an urban minor arterial roadway generally under City of Boston jurisdiction. The portion of Mount Vernon Street between the existing site driveway and Morrissey Boulevard is under jurisdiction of the Department of Conservation and Recreation (DCR). Mount Vernon Street runs in a northwest-southeast direction between Morrissey Boulevard to the northwest and UMass-Boston to the southeast. In the vicinity of the Project Site, Mount Vernon Street consists of two travel lanes in each direction separated by a grassy median with additional turn lanes provided at some driveways. Closer to UMass-Boston, Mount Vernon Street consists of a single travel lane in each direction separated by a double-yellow centerline. Sidewalks are provided along both sides of Mount Vernon Street.

William T. Morrissey Boulevard ("Morrissey Boulevard") is located west of the Project Site and is classified as a principal arterial roadway under DCR jurisdiction. Morrissey Boulevard runs in a north-south direction between Kosciuszko Circle to the north and Neponset Avenue and Hancock Street to the south. In the vicinity of the Project Site, Morrissey Boulevard consists of two to three travel lanes in each direction separated by a raised median of varying width. Morrissey Boulevard functions as a regional roadway that runs parallel to Interstate 93 through

Dorchester. Sidewalks are generally provided along both sides of Morrissey Boulevard.

William J. Day Boulevard ("Day Boulevard") is located northwest of the Project Site and is classified as a principal arterial roadway under DCR jurisdiction. Day Boulevard runs in a general southwest-northeast direction along the waterfront between Kosciuszko Circle to the southwest and Castle Island Park in South Boston to the northeast. In the vicinity of the Project Site, Day Boulevard consists of two lanes in each direction separated by a double-yellow centerline. Sidewalks are provided along both sides of Day Boulevard.

5.2.2 EXISTING INTERSECTION CONDITIONS

Existing conditions at each of the study area intersections are described below.

Mount Vernon Street/Bayside Driveway/Bank Driveway is an unsignalized intersection with four approaches. The Mount Vernon Street eastbound approach consists of an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The Mount Vernon Street westbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The directions of travel along Mount Vernon Street are separated by a grass and concrete median. The Bayside Driveway southbound approach consists of a single lane that accommodates left-turning, through, and right-turning movements. The directions of travel along the driveway are separated by a grassy median. The Santander Bank driveway northbound approach consists of a single lane that accommodates left-turning, through, and right-turning movements, providing access to the Bank property which includes a 637 space employee parking lot and a 41 space customer lot.

Sidewalks are provided along both sides of Mount Vernon Street at the intersection. A crosswalk is provided across the eastern leg of Mount Vernon Street. This crosswalk is interrupted by the median along Mount Vernon Street. MBTA bus stops are provided along both the Mount Vernon Street eastbound and westbound approaches to the intersection.

Mount Vernon Street/William J. Day Boulevard is a stop controlled intersection with three approaches. The Day Boulevard eastbound approach consists of a through lane and a shared through/right-turn lane. The Day Boulevard westbound approach consists of a shared left-turn/through lane and a through lane. West of the intersection, the eastbound and westbound lanes of Day Boulevard are separated by a concrete median. The Mount Vernon Street northbound approach consists of two exclusive right-turn lanes. Left turns are not permitted from this approach. The northbound and southbound lanes of Mount Vernon Street are separated by a concrete median.

Signals are present at the intersection; however, throughout the day they blink yellow for the Day Boulevard approaches and red for the Mount Vernon Street approach, which is also controlled by a stop sign. Push-button actuated pedestrian signals are also present at the intersection. Sidewalks are provided along all approaches to the intersection. Crosswalks with handicapped ramps are provided across the Mount Vernon Street approach and the Day Boulevard eastbound approach.

Mount Vernon Street/Old Colony Avenue/Morrissey Boulevard is a signalized intersection with four approaches. The Old Colony Avenue eastbound approach consists of a shared left-turn/through lane. While striped as a single lane, field observations showed that this approach is used as two lanes during periods of congestion. The Mount Vernon Street westbound approach consists of two through lanes and an exclusive, channelized right-turn lane under yield-control. The eastbound and westbound lanes of Old Colony Avenue and Mount Vernon Street are separated by a raised median on both sides of the intersection. The Morrissey Boulevard northbound approach consists of two exclusive left turn lanes, two through lanes, and a short channelized, exclusive right-turn lane that operates as a free movement. The Morrissey Boulevard southbound approach consists of two exclusive left-turn lanes and a channelized right-turn lane. While striped as a single lane, the right-turn lane operates as two lanes during periods of congestion. Sidewalks, crosswalks with handicapped ramps, and pedestrian signals are provided on all approaches to this intersection.

5.2.3 EXISING TRAFFIC CONDITIONS

Traffic movement data was collected at the study area intersections on Thursday September 9, 2012. Manual turning movement counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively) for the study area intersections.

The vehicle classification counts included car, truck, pedestrian, and bicycle movements. Based on the TMCs, the peak hours of vehicular traffic throughout the study area are 7:45 – 8:45 a.m. and 4:00 – 5:00 p.m. Detailed traffic counts are provided in the Appendix.

The traffic counts were adjusted upward by 0.5 percent per year to reflect 2014 conditions. A more detailed discussion of the traffic volume growth rate is provided in Section 5.3.1.1. The 2014 Existing weekday a.m. and p.m. peak hour traffic volumes are shown in Figure 5-2 and Figure 5-3, respectively.

5.2.4 EXISTING TRAFFIC OPERATIONS

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 6) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM). Field observations were performed by HSH to collect intersection geometry such as number of turning lanes, lane length, and lane width that were then incorporated into the operations analysis.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 5-1 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst (unacceptable) 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 5-1: Level of Service Criteria

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

Source: 2000 Highway Capacity Manual, Transportation Research Board

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

The volume-to-capacity (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.

Table 5-2 and Table 5-3 present the 2014 Existing conditions operational analysis for the study area intersections during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in the Appendix.

Table 5-2: Existing Conditions (2014) Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard	F	>80.0	>1.00	-	-
Old Colony Ave. EB left/thru | thru	B	16.5	0.08	13	24
Mt. Vernon St. WB thru | thru	B	18.5	0.30	66	79
Mt. Vernon St. WB right	A	4.9	0.11	0	16
Morrissey Blvd. NB left | left	F	>80.0	>1.00	~369	#441
Morrissey Blvd. NB thru | thru	F	>80.0	>1.00	~300	#417
Morrissey Blvd. NB right	B	18.6	0.35	37	73
Mt. Vernon St. SB left | left	C	27.1	0.43	77	116
Mt. Vernon St. SB right	B	15.9	0.57	49	75
Unsignalized					
Mt. Vernon Street/Day Boulevard	-	-	-	-	-
Day Blvd. EB thru | thru/right	A	0.0	0.31	-	0
Day Blvd. WB left/thru | thru	A	4.7	0.36	-	41
Mt. Vernon St. NB right | right	F	>50.0	>1.00	-	532
Mt. Vernon Street/Bank Driveway/Bayside Driveway	-	-	-	-	-
Mt. Vernon St. EB left	A	8.0	0.06	-	5
Mt. Vernon St. EB thru | thru/right	A	0.0	0.18	-	0
Mt. Vernon St. WB left/thru	A	0.1	0.01	-	1
Mt. Vernon St. WB thru/right	A	0.3	0.10	-	1
Bank Driveway NB left/thru/right	C	20.8	0.25	-	25
Bayside Driveway SB left/thru/right	B	13.8	0.18	-	17

~ = 50th percentile volume exceeds capacity.
# = 95thpercentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after two cycles.
Grey shading indicates LOS E or LOS F.

Table 5-3: Existing Conditions (2014) Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard	C	22.2	0.81	-	-
Old Colony Ave. EB left/thru | thru	B	15.5	0.16	26	48
Mt. Vernon St. WB thru | thru	B	16.5	0.34	80	139
Mt. Vernon St. WB right	A	6.3	0.12	4	37
Morrissey Blvd. NB left | left	C	33.1	0.62	79	95
Morrissey Blvd. NB thru | thru	C	26.1	0.39	72	83
Morrissey Blvd. NB right	A	5.2	0.26	0	27
Mt. Vernon St. SB left | left	C	32.2	0.55	68	93
Mt. Vernon St. SB right	C	22.4	0.81	127	193
Unsignalized					
Mt. Vernon Street/Day Boulevard	-	-	-	-	-
Day Blvd. EB thru | thru/right	A	0.0	0.24	-	0
Day Blvd. WB left/thru | thru	A	7.0	0.48	-	67
Mt. Vernon St. NB right | right	B	14.8	0.41	-	50
Mt. Vernon Street/Bank Driveway/Bayside Driveway	-	-	-	-	-
Mt. Vernon St. EB left	A	8.3	0.04	-	3
Mt. Vernon St. EB thru | thru/right	A	0.0	0.20	-	0
Mt. Vernon St. WB left/thru	A	0.1	0.13	-	0
Mt. Vernon St. WB thru/right	A	0.0	0.13	-	0
Bank Driveway NB left/thru/right	E	45.5	0.72	-	126
Bayside Driveway SB left/thru/right	B	14.6	0.17	-	15

Grey shading indicates LOS E or LOS F.

As shown in Table 5-2, the signalized intersection of Mount Vernon Street/ Morrissey Boulevard currently operates at an overall LOS of F during the a.m. peak hour. The Morrissey Boulevard northbound movements currently operate at LOS F and are at the operating capacity. Field observations indicate that these movements operate better than what is presented in the analysis and that the queues for these movements generally clear during each traffic signal cycle.

At the unsignalized intersections, all movements operate at LOS C or better during the a.m. peak hour with the exception of the Mount Vernon Street northbound approach to Day Boulevard. Field observations indicate that the actual queues and operations are better than what the analysis presents and that the traffic was efficiently processed through this intersection during the a.m. peak hour. The HCM analysis for unsignalized intersections also assumes more conservative parameters than what is typically experienced in an urban environment, such as the critical

gap[1], which sometimes causes the operations analysis to show poorer results than actual field operations.

As shown in Table 5-4, the signalized intersection of Mount Vernon Street/ Morrissey Boulevard currently operates at an overall LOS of C during the p.m. peak hour. The movements at the unsignalized intersections currently operate at LOS B or better with the exception of the Bank Driveway approach to Mount Vernon Street, which currently operates at LOS E. This is consistent with the high number of vehicles exiting the bank during the evening commuter peak period.

5.2.5 EXISTING PARKING AND CURB USAGE

On-street parking within a quarter-mile of the Project Site generally consists of no parking along Mount Vernon Street, Morrissey Boulevard, and Day Boulevard. Two-hour parking and residential permit parking is provided west of the Project Site and west of I-93. Based on the use and location of the Project, on-street parking will not provide a practical parking supply. The existing on-street parking regulations are shown in Figure 5-4. Off-street public parking is not provided in the vicinity of the Project Site.

5.2.6 EXISTING PUBLIC TRANSPORTATION

The Project Site is located in proximity to the JFK/UMass Station, which provides service to the MBTA Red Line, three commuter rail lines, and four bus routes. These routes are summarized in Table 5-4 and shown graphically in Figure 5-5.

[1] The critical gap is the minimum length of time interval in the major street traffic stream that allows intersection entry for one minor street vehicle.

Table 5-4: Public Transportation Services

Route	Description	Rush hour Headway[1](minutes)
Bus Routes		
5	City Point – McCormack Housing via Andrew Station	60*
8	Harbor Point/UMass - Kenmore Station via B.U. Medical Center & Dudley Station	14
16	Forest Hills Station - Andrew Station or UMass via Columbia Road	15
41	Centre & Eliot Street. - JFK/UMass Station via Dudley Station, Centre St., & Jackson Square Station.	25
Subway Routes		
Red Line	Alewife – Ashmont Station and Alewife – Braintree Station	9
Commuter Rail Routes		
Kingston/Plymouth	Kingston/Plymouth – South Station	47
Middleborough/ Lakeville	Middleborough/Lakeville – South Station	34
Greenbush	Greenbush – South Station	36

1 Headway is the time between trains/buses
* Does not operate AM or PM peak periods – provides service between 9:00 a.m. and 3:00 p.m.
Source: MBTA – April 2014

Red Line Rapid Transit

The MBTA Red Line runs between Alewife Station in Cambridge, Braintree Station in Braintree and Ashmont Station in Dorchester. JFK/UMass is the last station prior to the line splitting into the Braintree and Ashmont branches. Both Ashmont and Braintree trains serve JFK/UMass, making it particularly convenient for transit users. The Red Line provides connections to South Station, downtown Boston, and much of Cambridge in addition to Dorchester, Quincy, and Braintree.

MBTA Bus Service

MBTA bus Route 5 operates along Old Colony Avenue in the Project area and stops at JFK/UMass Station. Route 5 provides a connection between the City Point Bus Terminal, near Castle Island, Andrew Square Station, and JFK/UMass Station, both on the Red Line. Bus Route 8 runs between Kenmore Square Station and the UMass Boston campus. It stops at JFK/UMass on the Red Line and operates on Mt. Vernon Street in the Project area. MBTA bus Route 16 operates between Forest Hills Station and Andrew Square Station. During the a.m. and p.m. commuting peaks, Route 16 is extended and continues on to the UMass Boston bus way via Mt. Vernon Street.

MBTA bus Route 41 provides service between Centre Street/Eliot Street in Jamaica Plain and JFK/UMass. It provides connections to the Orange Line at Jackson Square and the Silver Line at Dudley Square.

MBTA Commuter Rail

The Kingston/Plymouth, Middleborough/Lakeville, and Greenbush MBTA Commuter Rail lines pass through JFK/UMass station. While some trains that run on these lines bypass the JFK/UMass Station, the station is served by enough trains to provide riders an alternative to the Red Line to travel to South Station.

MASCO Longwood Medical Area (LMA) Shuttle

MASCO runs a free shuttle service for employees and students of the Longwood medical and academic area institutions between JFK/UMass Station and the LMA approximately every ten minutes from 6:00-9:35 a.m. and 3:15-8:05 p.m.

JFK/UMass Boston Shuttle Bus Service

UMass Boston runs shuttle services from JFK/UMass Station serving the campus and other attractions on Columbia Point. Two routes are provided:

Route 1 buses run non-stop from JFK/UMass Station to the Campus Center every 5-7 minutes between 6:30-9:30 a.m. and every 10-12 minutes between 9:30-10:30 p.m. from Monday to Thursday. On Fridays, Route 1 operates every 5-7 minutes between 6:30 a.m. and 6:40 p.m. and every 10-12 minutes between 6:40 and 10:00 p.m.

Route 2 buses stop at the Campus Center, the Massachusetts Archives, the JFK Library, the Clark Athletic Center Circle, and the University's Early Learning Center seven days a week every 20 minutes between 8:00 a.m. and 5:45 p.m. on weekdays and Sundays and between 7:30 a.m. and 7:00 p.m. on Saturdays.

5.2.7 EXISTING PEDESTRIAN CONDITIONS

The Project Site is located adjacent to Mount Vernon Street in Dorchester. Sidewalks are provided along all streets within the study area and crosswalks are provided at the study area intersections. The sidewalks along Mount Vernon Street supply adequate capacity for the existing levels of pedestrian activity within the area and are generally in good condition. The crosswalk provided across Mount Vernon Street at the existing Bayside Driveway is currently not up to standards and is interrupted by a raised median with no ramps provided. Mount Vernon Street provides direct pedestrian access to both the JFK/UMass Station and to UMass-Boston.

To estimate the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersections and are presented in Figure 5-6. As shown on Figure 5-6, the heaviest pedestrian movements occur along Mount Vernon Street at Morrissey Boulevard due to the proximity to the JFK/UMass Station.

5.2.8 EXISTING BICYCLE FACILITIES

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project Site is located along Mount Vernon Street and in proximity to the Harborwalk, which is an off-road multi-use path that provides connectivity to the South Boston waterfront to the north and to the Neponset River Path to the south. The BTD is currently in the planning stages of upgrading Mount Vernon Street to include cycle tracks in both directions between the Bayside Driveway and UMass Boston.

Bicycle counts were conducted concurrent with the vehicular TMCs and are presented in Figure 5-7. As shown in Figure 5-7, bicycle volumes are relatively light within the study area with the heaviest movements at the intersection of Mount Vernon Street/Old Colony Avenue/Morrissey Boulevard.

The Project Site is also located in close proximity to a bicycle sharing station provided by Hubway. Hubway is the bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 100 stations and 1,000 bicycles. The nearest Hubway station is located at the JFK/UMass Station as shown on Figure 5-8.

5.2.9 CAR SHARING SERVICES

Car sharing services provide 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.

There are currently three car sharing locations, all provided by Zipcar, with a total of 8 vehicles in proximity to the Project Site:

- Sydney Street/Carson Street (5 vehicles)
- JFK/UMass Station (1 vehicle)
- Harborpoint (2 vehicles)

The nearby Zipcar locations are shown in Figure 5-8.

5.3 FUTURE CONDITIONS

For transportation impact analyses, it is standard practice to evaluate two future conditions: No Build conditions (without the proposed Project) and Build conditions (with the proposed Project). In accordance with BTD guidelines, these conditions are projected to a future date five years from the current year. For the evaluation of this Project, 2019 was selected as the horizon year for the future conditions analyses.

This section presents a description of the 2019 future conditions scenarios and includes an evaluation of the transportation facilities under the No Build and Build conditions.

5.3.1 NO BUILD CONDITIONS

The No Build conditions reflect a future scenario that incorporates any anticipated traffic volume changes independent of the Project, and any planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements. Traffic volume changes are based on two factors: an annual growth rate and growth associated with specific developments near the Project.

Background Traffic Growth

The methodology to account for future traffic growth, independent of the Project, consists of two parts. The first part of the methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. Based on a review of recent and historic traffic data collected for nearby projects and to account for any additional unforeseen traffic growth, a 0.5 percent per year annual traffic growth rate was used to develop the future conditions traffic volumes. This growth rate is higher than the 0.25 percent per year annual traffic growth rate that was used in the Columbia Point Master Plan[2], published by the BRA in 2011.

The second part of the methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon. The following proposed projects are located in the vicinity of the study area:

- **University Place Residences** – This project is located immediately to the northwest of the Project Site along Mount Vernon Street. This project

[2]*Columbia Point Master Plan*; Boston Redevelopment Authority; June 2011.

consists of the construction of 6-story residential building with ground floor commercial space and 184 apartment units. A total of 83 parking spaces will also be provided as part of the project. Traffic volumes associated with this project were accounted for in the future traffic conditions scenarios.

- **25 Morrissey Boulevard** – This project is located along Morrissey Boulevard, southwest of the Project Site. This project consists of the construction of 278 residential units and 143 parking spaces. Traffic volumes associated with this project were accounted for in the future traffic conditions scenarios.

  The 0.5-percent per year annual growth rate was applied to the 2014 Existing Conditions traffic volumes to develop the 2019 No Build conditions traffic volumes. The 2019 No Build a.m. and p.m. peak hour traffic volumes are shown on Figure 5-9 and Figure 5-10, respectively.

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, the following improvements are proposed within the study area:

Mount Vernon Street Design

The BRA and BTD are currently in the process of preparing a roadway design for Mount Vernon Street that will incorporate the recommendations provided in the Columbia Point Master Plan. The proposed redesign will include a cycle track along both sides of the roadway for the majority of the corridor and improved pavement markings and signage. The design is intended to beautify the Mount Vernon Street corridor and enhance safety for vehicles, pedestrians, bicyclists, and transit riders. The project is currently in the 25 percent design stage. The current design of the Mount Vernon Street improvements proposes a cycle track and a single travel lane in both directions of travel. The cycle track will be separated from the vehicular travel lane by pavement markings. The segment of Mount Vernon Street adjacent to the existing DoubleTree Hotel will consist of two travel lanes in the eastbound direction that taper to one lane east of the hotel. The improvements to Mount Vernon Street were accounted for in the future traffic conditions scenarios.

No Build Conditions Traffic Operations

The 2019 No Build conditions scenario analysis uses the same methodology as the 2014 Existing conditions scenario analysis. Table 5-5 and Table 5-6 present the 2019 No Build conditions operations analysis for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in the Appendix.

Table 5-5: No Build Conditions (2019) Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard	F	>80.0	>1.00	-	-
Old Colony Ave. EB left/thru | thru	B	16.5	0.08	14	25
Mt. Vernon St. WB thru | thru	B	18.9	0.34	76	89
Mt. Vernon St. WB right	A	4.7	0.11	0	17
Morrissey Blvd. NB left | left	F	>80.0	>1.00	~385	#456
Morrissey Blvd. NB thru | thru	F	>80.0	>1.00	~313	#432
Morrissey Blvd. NB right	B	19.0	0.36	40	76
Mt. Vernon St. SB left | left	C	27.4	0.45	82	123
Mt. Vernon St. SB right	B	19.6	0.61	65	94
Unsignalized					
Mt. Vernon Street/Day Boulevard	-	-	-	-	-
Day Blvd. EB thru | thru/right	A	0.0	0.32	-	0
Day Blvd. WB left/thru | thru	A	5.1	0.38	-	45
Mt. Vernon St. NB right | right	F	>50.0	>1.00	-	608
Mt. Vernon Street/Bank Driveway/Bayside Driveway	-	-	-	-	-
Mt. Vernon St. EB left/thru	A	0.7	0.08	-	6
Mt. Vernon St. EB thru/right	A	1.8	0.22	-	1
Mt. Vernon St. WB left/thru/right	A	0.3	0.01	-	1
Bank Driveway NB left/thru/right	E	35.2	0.40	-	45
Bayside Driveway SB left/thru/right	B	15.3	0.29	-	30

~ = 50th percentile volume exceeds capacity.
# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after two cycles.
Grey shading indicates a decrease to LOS E or LOS F from Existing Conditions.

As shown in Table 5-5, operations at the signalized intersection of Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard are expected to continue to operate at LOS F under the 2019 No Build conditions during the a.m. peak hour. The addition of background project traffic and growth is not expected to significantly add to the delay or queuing currently experienced at the intersection.

The bank driveway northbound movements at Mount Vernon Street are expected to worsen to LOS E during the a.m. peak hour with the addition of background traffic growth and the implementation of the improvements along Mount Vernon Street. This decrease in LOS will not create a significant increase in the queuing along the approach. The Mount Vernon Street northbound approach to Day Boulevard is expected to continue to operate at LOS F. However, as previously stated, this

approach was observed to operate under better conditions than the analysis indicates.

Table 5-6: No Build Conditions (2019) Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard	C	26.4	0.86	-	-
Old Colony Ave. EB left/thru | thru	B	17.2	0.19	31	53
Mt. Vernon St. WB thru | thru	B	18.8	0.41	97	153
Mt. Vernon St. WB right	A	7.3	0.13	7	41
Morrissey Blvd. NB left | left	D	36.3	0.63	82	97
Morrissey Blvd. NB thru | thru	C	24.5	0.35	69	84
Morrissey Blvd. NB right	A	5.3	0.24	0	28
Mt. Vernon St. SB left | left	D	36.3	0.63	79	106
Mt. Vernon St. SB right	D	36.6	0.86	164	250
Unsignalized					
Mt. Vernon Street/Day Boulevard	-	-	-	-	-
Day Blvd. EB thru | thru/right	A	0.0	0.29	-	0
Day Blvd. WB left/thru | thru	A	9.1	0.55	-	84
Mt. Vernon St. NB right | right	C	16.5	0.46	-	60
Mt. Vernon Street/Bank Driveway/Bayside Driveway	-	-	-	-	-
Mt. Vernon St. EB left/thru	A	0.9	0.09	-	7
Mt. Vernon St. EB thru/right	A	1.5	0.17	-	0
Mt. Vernon St. WB left/thru/right	A	0.1	0.00	-	0
Bank Driveway NB left/thru/right	F	>50.0	>1.00	-	361
Bayside Driveway SB left/thru/right	C	18.2	0.30	-	31

Grey shading indicates a decrease to LOS E or LOS F from Existing Conditions.

As shown in Table 5-6, operations at the signalized intersection of Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard are expected to continue to operate at LOS C under the 2019 No Build conditions during the p.m. peak hour. The addition of background project traffic and growth is not expected to significantly add to the delay or queuing currently experienced at the intersection.

The bank driveway northbound movements at Mount Vernon Street are expected to worsen to LOS F during the p.m. peak hour with the addition of background traffic growth and the implementation of the improvements along Mount Vernon Street. Similar to the existing conditions operations analysis at the unsignalized intersections, the actual operations will most likely be better than what is presented in Table 5-5.

5.3.2 BUILD CONDITIONS

As previously summarized, the Project will expand the existing Bayside DoubleTree Hotel located at 236 Mount Vernon Street from 197 rooms to 283 rooms. Up to 25 parking spaces will be provided on the existing Project Site. If needed, additional vehicle parking spaces will be available off-site on nearby parking lots owned or controlled by the Proponent or its affiliates.

Site Access and Circulation

As shown in the Site Access Plan in Figure 5-11, access will be provided by the existing driveway located along Mount Vernon Street, with additional access to the arrival/drop-off area provided by a new curb cut to be located approximately east of the existing driveway. The existing driveway also provides access to the adjacent property containing the Bayside Office Building and to the large parking area behind the existing hotel. Secondary access to the rear parking area will be provided by an existing curb cut along Mount Vernon Street on the easterly edge of the Project Site. All three driveways will accommodate two-way travel and will provide full access and egress to/from Mount Vernon Street.

Trip Generation Methodology

Trip generation 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*[3] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

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

- **LUC 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 recreational facilities (e.g., pool, fitness room), and/or other

[3] *Trip Generation Manual*, 9th Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

retail services or shops. Trip generation estimates are based on average vehicular rates per room.

Mode Share

The BTD publishes vehicle, transit, and walking/bicycling mode split rates for different areas of Boston. The Project Site is located in the southerly portion of BTD's designated Area 8, which also includes areas of Dorchester along the MBTA Red Line and Dorchester Avenue, north of the Project Site. The mode splits for the Project Site may vary from the overall mode splits for Area 8 due to the proximity of public transportation opportunities. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[4]. The BTD's travel mode share data for Area 8 are shown in Table 5-7.

Table 5-7: Travel Mode Shares

Land Use	Direction	Walk/ Bicycle Share	Transit Share	Auto Share	Vehicle Occupancy Rate
Daily					
Hotel	In	24%	15%	61%	2.20
	Out	24%	15%	61%	2.20
a.m. Peak Hour					
Hotel	In	20%	15%	65%	2.20
	Out	30%	24%	45%	2.20
p.m. Peak Hour					
Hotel	In	30%	24%	45%	2.20
	Out	20%	15%	65%	2.20

Trip Generation

The mode share percentages shown in Table 5-7 were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates. The traffic volumes for the existing hotel uses are included in the existing turning movement counts. Therefore, the trips expected to be generated by the net increase in hotel rooms were calculated. The trip generation for the Project by mode is shown in Table 5-8. The detailed trip generation information is provided in the Appendix.

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

Table 5-8: Project Trip Generation

Land Use		Walk/Bicycle Trips	Transit Trips	Vehicle Trips
Daily				
Hotel[1]	In	185	115	214
42 units	Out	185	115	214
a.m. Peak Hour				
Hotel[1]	In	12	9	18
42 units	Out	11	10	*7*
p.m. Peak Hour				
Hotel[1]	In	17	15	12
42 units	Out	11	8	16

1 Based on ITE LUC 310 – Hotel for 86 additional rooms.

Vehicle Trip Generation

To develop the overall trip generation characteristics, the adjusted vehicular trips associated with the Project were estimated. The Project-generated new vehicle trips are summarized in Table 5-9, with the detailed trip generation information provided in the Appendix.

Table 5-9: Project Vehicle Trip Generation

Time Period	Direction	Existing Hotel[1]	Proposed Hotel[2]	Net Difference
Daily	In	491	705	214
	Out	491	705	214
	Total	**982**	**1,410**	**428**
a.m. Peak Hour	In	40	58	18
	Out	20	27	7
	Total	**60**	**85**	**25**
p.m. Peak Hour	In	27	39	12
	Out	38	54	16
	Total	**65**	**93**	**28**

1 Based on ITE LUC 310 – Hotel for 197 rooms.
2 Based on ITE LUC 310 – Hotel for 283 rooms.

As shown in Table 5-9, the Project is expected to generate approximately 428 new daily vehicle trips (214 entering and 214 exiting), with 25 new vehicle trips (18 entering and 7 exiting) during the a.m. peak hour and 28 new vehicle trips (12 entering and 16 exiting) during the p.m. peak hour.

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. The origin-destination data specifies the percentage of trips traveling between Dorchester and other areas within Boston and the metropolitan area. The trip distribution patterns for the Project are illustrated in Figure 5-12.

The Project-generated vehicle trips were assigned to the study area roadway network based on the trip distribution patterns shown in Figure 5-12, and are shown in Figure 5-13 and Figure 5-14 for the a.m. and p.m. peak hours, respectively. To provide a conservative estimate of traffic operations at the Site driveways, the majority of the Project-related traffic was assigned to the westernmost driveway (the existing curb cut) that currently serves the Project Site. The Project-generated trips were added to the 2019 No Build conditions traffic volumes to develop the 2019 Build conditions peak hour traffic volume networks and are shown in Figure 5-15 and Figure 5-16 for the a.m. and p.m. peak hours, respectively.

Build Conditions Traffic Operations

The 2019 Build conditions scenario analyses use the same methodology as the 2014 Existing and 2019 No Build conditions scenario analyses. The results of the 2019 Build condition traffic analysis at study area intersections are presented in Table 5-10 and Table 5-11 for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in the Appendix.

Table 5-10: Build Conditions (2019) Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard	F	>80.0	>1.00	-	-
Old Colony Ave. EB left/thru | thru	B	16.5	0.09	14	25
Mt. Vernon St. WB thru | thru	B	19.0	0.35	78	91
Mt. Vernon St. WB right	A	4.7	0.12	0	17
Morrissey Blvd. NB left | left	F	>80.0	>1.00	~385	#456
Morrissey Blvd. NB thru | thru	F	>80.0	>1.00	~313	#432
Morrissey Blvd. NB right	B	18.9	0.36	40	76
Mt. Vernon St. SB left | left	C	27.6	0.47	86	127
Mt. Vernon St. SB right	C	20.2	0.62	68	96
Unsignalized					
Mt. Vernon Street/Day Boulevard	-	-	-	-	-
Day Blvd. EB thru | thru/right	A	0.0	0.33	-	0
Day Blvd. WB left/thru | thru	A	5.3	0.39	-	46
Mt. Vernon St. NB right | right	F	>50.0	>1.00	-	621
Mt. Vernon Street/Bank Driveway/Bayside Driveway	-	-	-	-	-
Mt. Vernon St. EB left/thru	A	0.9	0.10	-	8
Mt. Vernon St. EB thru/right	A	2.1	0.22	-	8
Mt. Vernon St. WB left/thru/right	A	0.3	0.01	-	1
Bank Driveway NB left/thru/right	E	43.5	0.46	-	54
Bayside Driveway SB left/thru/right	C	16.1	0.33	-	35
Mt. Vernon Street/East Site Driveway	-	-	-	-	-
Mt. Vernon Street EB thru | thru	A	0.0	0.10	-	0
Mt. Vernon Street WB thru/right	A	0.0	0.19	-	0

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

Table 5-11: Build Conditions (2019) Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized					
Mt. Vernon Street/Old Colony Avenue/Morrissey Boulevard	C	26.5	0.86	-	-
Old Colony Ave. EB left/thru | thru	B	17.3	0.20	32	53
Mt. Vernon St. WB thru | thru	B	19.1	0.42	102	157
Mt. Vernon St. WB right	A	7.6	0.14	8	43
Morrissey Blvd. NB left | left	D	36.1	0.63	81	97
Morrissey Blvd. NB thru | thru	C	24.4	0.35	69	84
Morrissey Blvd. NB right	A	5.2	0.24	0	28
Mt. Vernon St. SB left | left	D	33.7	0.64	81	109
Mt. Vernon St. SB right	D	36.9	0.86	165	252
Unsignalized					
Mt. Vernon Street/Day Boulevard	-	-	-	-	-
Day Blvd. EB thru | thru/right	A	0.0	0.30	-	0
Day Blvd. WB left/thru | thru	A	9.3	0.55	-	86
Mt. Vernon St. NB right | right	C	16.7	0.46	-	61
Mt. Vernon Street/Bank Driveway/Bayside Driveway	-	-	-	-	-
Mt. Vernon St. EB left/thru	A	1.0	0.10	-	9
Mt. Vernon St. EB thru/right	A	1.7	0.17	-	9
Mt. Vernon St. WB left/thru/right	A	0.1	0.00	-	0
Bank Driveway NB left/thru/right	F	>50.0	>1.00	-	401
Bayside Driveway SB left/thru/right	C	19.2	0.35	-	39
Mt. Vernon Street/East Site Driveway	-	-	-	-	-
Mt. Vernon Street EB thru | thru	A	0.0	0.15	-	0
Mt. Vernon Street WB thru | thru/right	A	0.0	0.24	-	0

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

As shown in Table 5-10 and Table 5-11, under the 2019 Build conditions, the study area intersections generally operate at the same LOS as under the 2019 No Build conditions during both the a.m. and p.m. peak hours. Both Site driveways operate with acceptable levels of service. The proposed expansion of the hotel has minimal impact on vehicular traffic operations within the study area and no additional capacity or operational improvements are necessary to accommodate the Project.

Parking

The Project will provide up to 25 parking spaces on the existing Site. If needed, additional vehicle parking spaces will be available off-site on nearby parking lots owned or controlled by the Proponent or its affiliates.

Of the up to 25 parking spaces on the existing Site, a total of 9 parking spaces will be provided in front of the building for arrivals and drop-offs. The remaining parking spaces (the 16 on the existing Site) will be available for patrons of the hotel.

The City of Boston and BTD have established parking ratios by area of the City and by land use through their district based parking goals and guidelines. For this area of Dorchester, there are currently no published guidelines or goals for hotel developments.

Public Transportation

As previously discussed, the Project is ideally situated to take advantage of nearby public transportation opportunities. The JFK/UMass Station is located less than a half-mile from the Project Site and provides access to the MBTA Red Line and the Commuter Rail, providing convenient access to downtown Boston, Cambridge, and Logan Airport via South Station. Several bus lines also serve the JFK/UMass Station. Based on the transit mode shares presented earlier, the future transit trips associated with the Project were estimated and are summarized in Table 5-12.

Table 5-12: Project Transit Trips

Time Period	Direction	Existing Hotel[1]	Proposed Hotel[2]	Net Difference
Daily	In	266	381	115
	Out	266	381	115
	Total	**532**	**762**	**230**
a.m. Peak Hour	In	20	29	9
	Out	24	34	10
	Total	**44**	**63**	**19**
p.m. Peak Hour	In	33	48	15
	Out	19	27	8
	Total	**52**	**75**	**23**

1 Based on ITE LUC 310 – Hotel for 197 rooms.
2 Based on ITE LUC 310 – Hotel for 283 rooms.

As shown in Table 5-12, the Project will generate an estimated 230 new transit trips on a daily basis. Approximately 19 new transit trips (9 alighting and 10 boarding) will occur during the a.m. peak hour and 23 new trips (15 alighting and 8 boarding) will occur during the p.m. peak hour. The majority of these transit trips will be accommodated by the Red Line at the JFK/UMass MBTA Station.

Pedestrians

Based on the walk/bicycle mode shares presented earlier, the future walk/bicycle trips were estimated and are summarized in Table 5-13.

Table 5-13: Project Pedestrian Trips

Time Period	Direction	Existing Hotel[1]	Proposed Hotel[2]	Net Difference
Daily	In	425	610	185
	Out	425	610	185
	Total	**850**	**1,220**	**370**
a.m. Peak Hour	In	27	39	12
	Out	29	40	11
	Total	**56**	**79**	**23**
p.m. Peak Hour	In	40	57	17
	Out	26	37	11
	Total	**66**	**94**	**28**

1 Based on ITE LUC 310 – Hotel for 197 rooms.
2 Based on ITE LUC 310 – Hotel for 283 rooms.

Over the course of a day, the Project will generate an estimated 370 new pedestrian trips and an additional 230 new transit trips that will require a walk to or from the Site. This results in an additional 600 new pedestrian trips per day. Approximately 23 new pedestrian trips will occur during the a.m. peak hour and 28 new pedestrian trips will occur during the p.m. peak hour in addition to the transit trips that will also require a walk from the Site. The pedestrian facilities surrounding the Site have adequate capacity to accommodate the pedestrian trips generated by the Project.

Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements (TAPAs) to provide secure bicycle parking for employees and short-term bicycle racks for visitors. The Project will provide both on-site, secure bicycle storage and exterior bicycle racks for 50 bicycles in accordance with the BTD guidelines.

Loading and Service Activity

Loading and service operations will occur at an on-site loading area on the south side of the Site between the existing building and the proposed addition. Vehicles will access this loading area through the southernmost curb cut that serves the Project Site. Trash and recycling operations will also occur in the loading area.

Delivery trip estimates were based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area report[5]. Deliveries to the Project Site will mostly be limited to SU-36 trucks and smaller

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

delivery vehicles. Hotels generally generate approximately 0.03 light trucks per 1,000 sf of floor area and 0.01 medium/heavy vehicles per 1,000 sf of floor area. A total of approximately 7 truck trips per day will occur at the hotel. The majority of the truck trips will also occur during off-peak hours. The proposed loading area will be sufficient to handle the loading demands of the Project.

5.4 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.

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

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTD. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project. See Section 5.6 for additional information related to the CMP.

5.5 TRANSPORTATION DEMAND MANAGEMENT

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

On-site management will keep a supply of transit information (schedules, maps, and fare information) to be made available to the guests and employees 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 guests and employees 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:

- **Bicycle Accommodation**: The Proponent will provide bicycle storage in secure areas for employees to encourage cycling as an alternative mode of transportation. Subject to necessary approvals, public use bicycle racks for visitors will be placed in landscaped area in the front of the Site and in the rear of the hotel.

- **Transportation Coordinator**: The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries.

- **Website**: The hotel website will include transportation-related information for guests and employees.

- **Vehicle Sharing Program**: The Proponent will explore the feasibility of providing spaces on-site for a car sharing service.

5.6 EVALUATION OF SHORT-TERM CONSTRUCTION IMPACTS

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 (CMP) to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary to accommodate a safe and secure work zone.

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

- Construction workers will be encouraged to use public transportation and/or carpool;

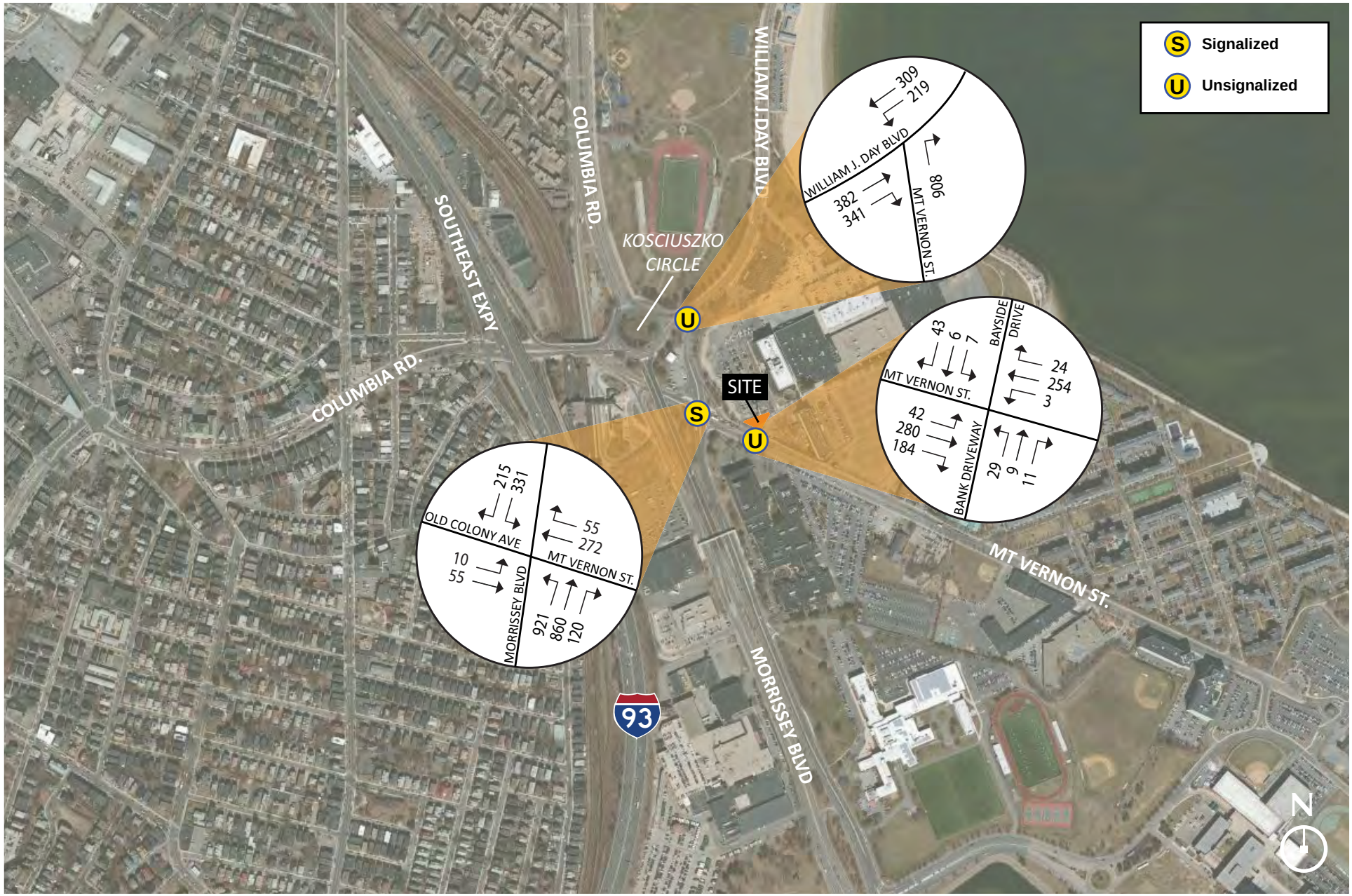
- A subsidy for MBTA passes will be considered for full-time employees; and

- Secure spaces will be provided on-site for workers' supplies and tools so they do not need to be brought to the Site each day.

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

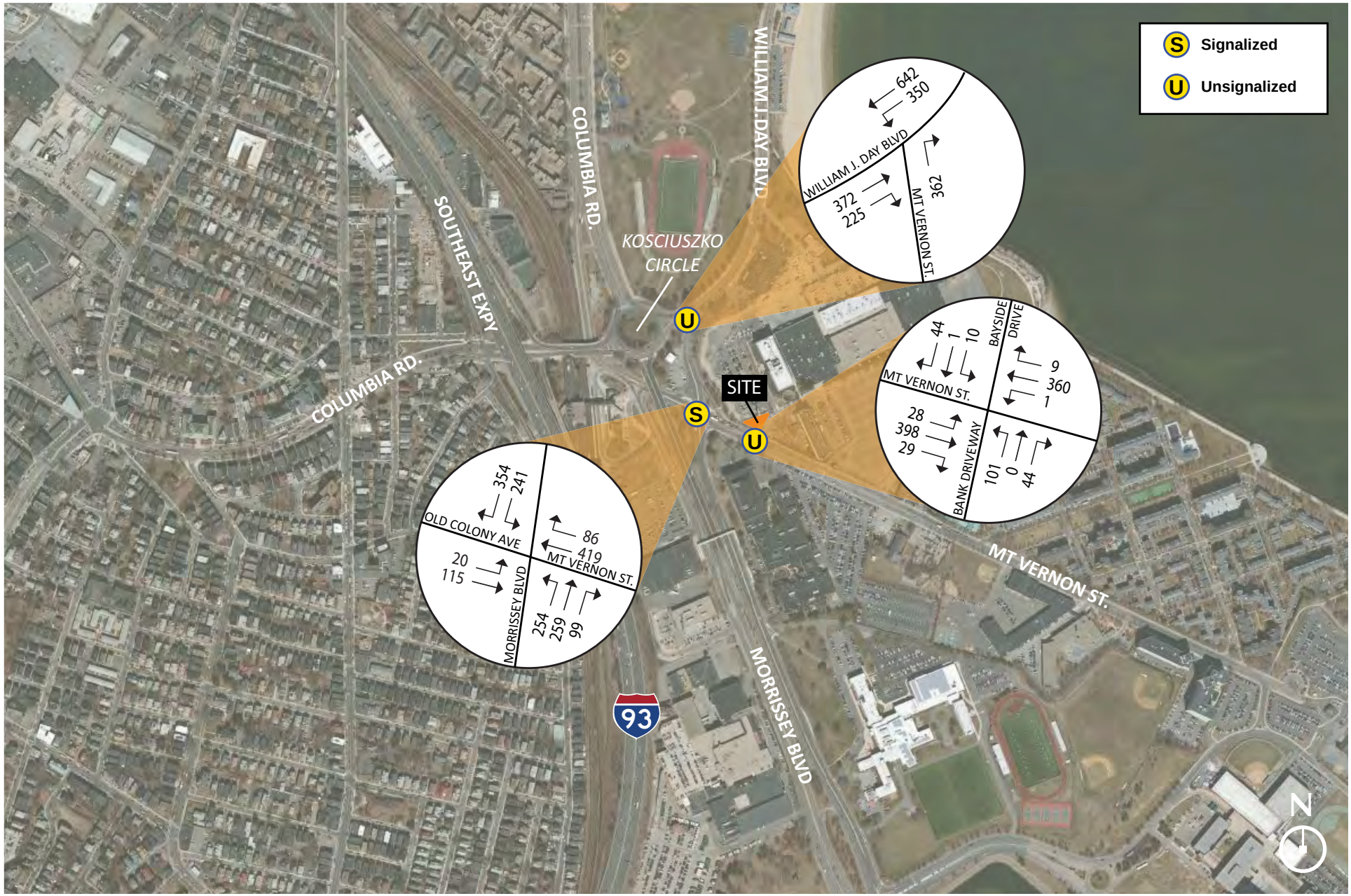
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-1
Study Area Intersections
Source: Howard/Stein-Hudson Associates, Inc. 2014



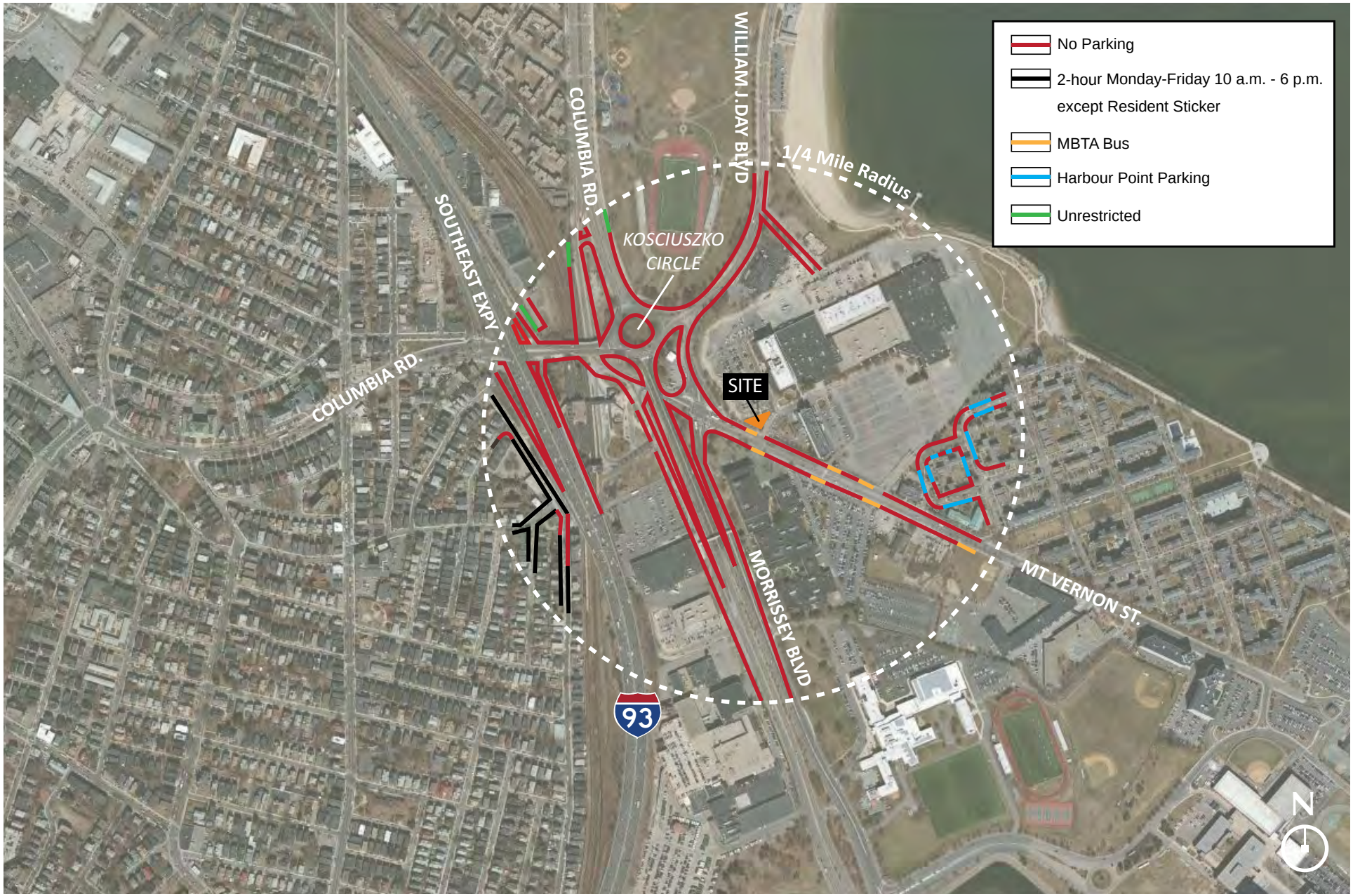
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-2
Existing Conditions (2014) Turning Movement Volumes, a.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-3
Existing Conditions (2014) Turning Movement Volumes, p.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014

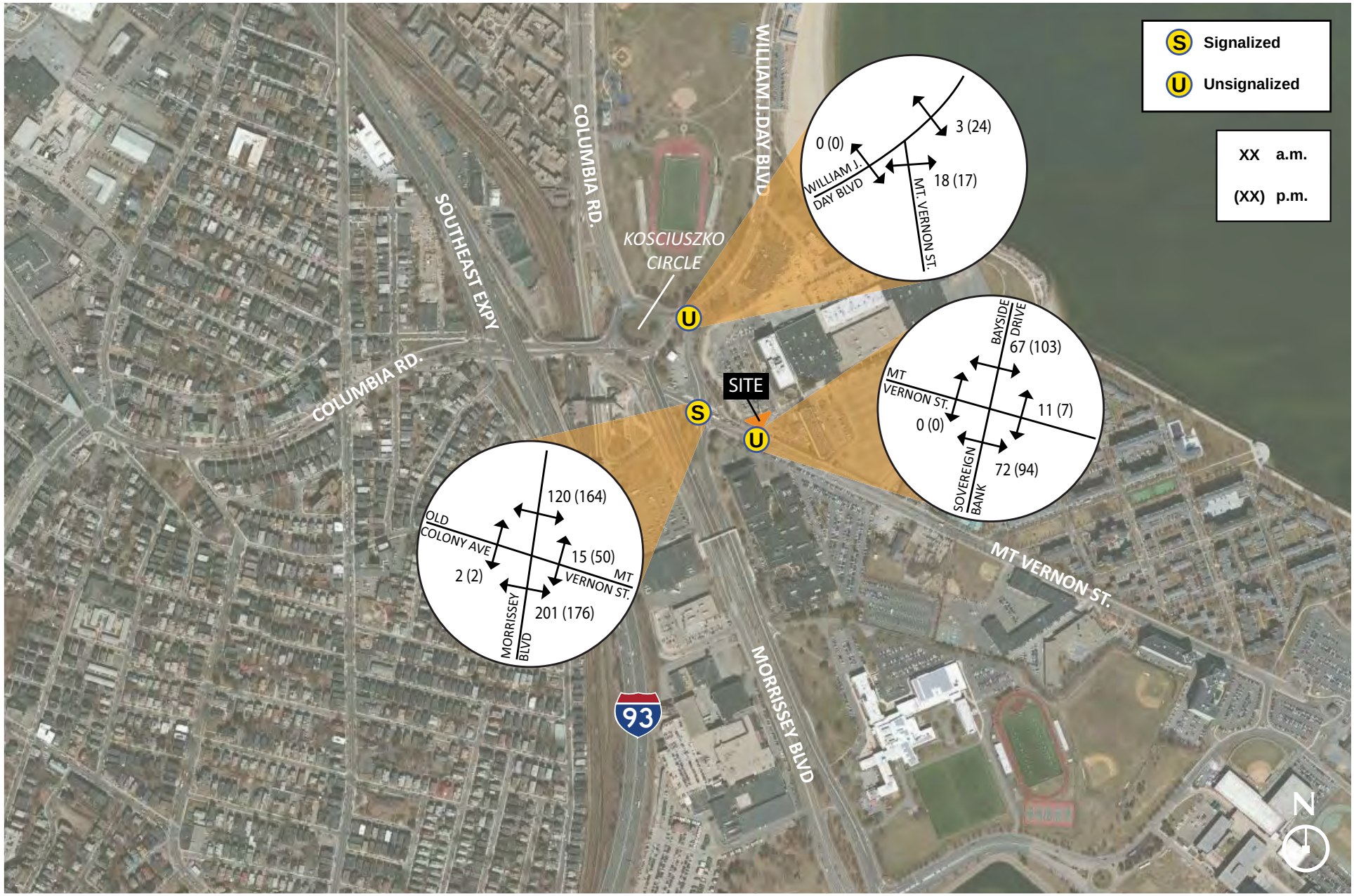


Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-4
On-Street Parking Regulations
Source: Howard/Stein-Hudson Associates, Inc., 2014

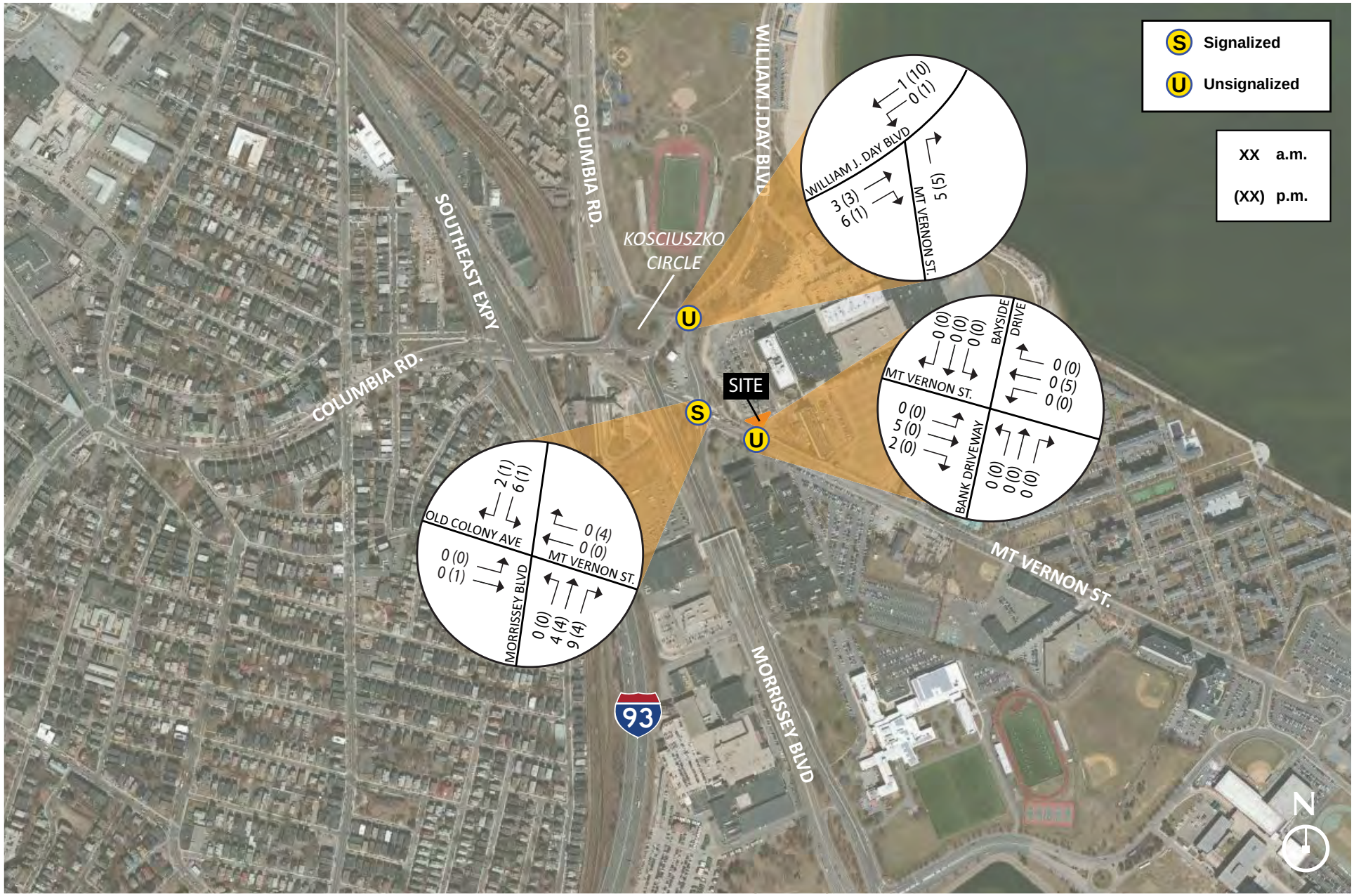
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-5
Public Transportation Facilities
Source: Howard/Stein-Hudson Associates, Inc., 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-6
Existing (2014) Pedestrian Volumes, a.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014

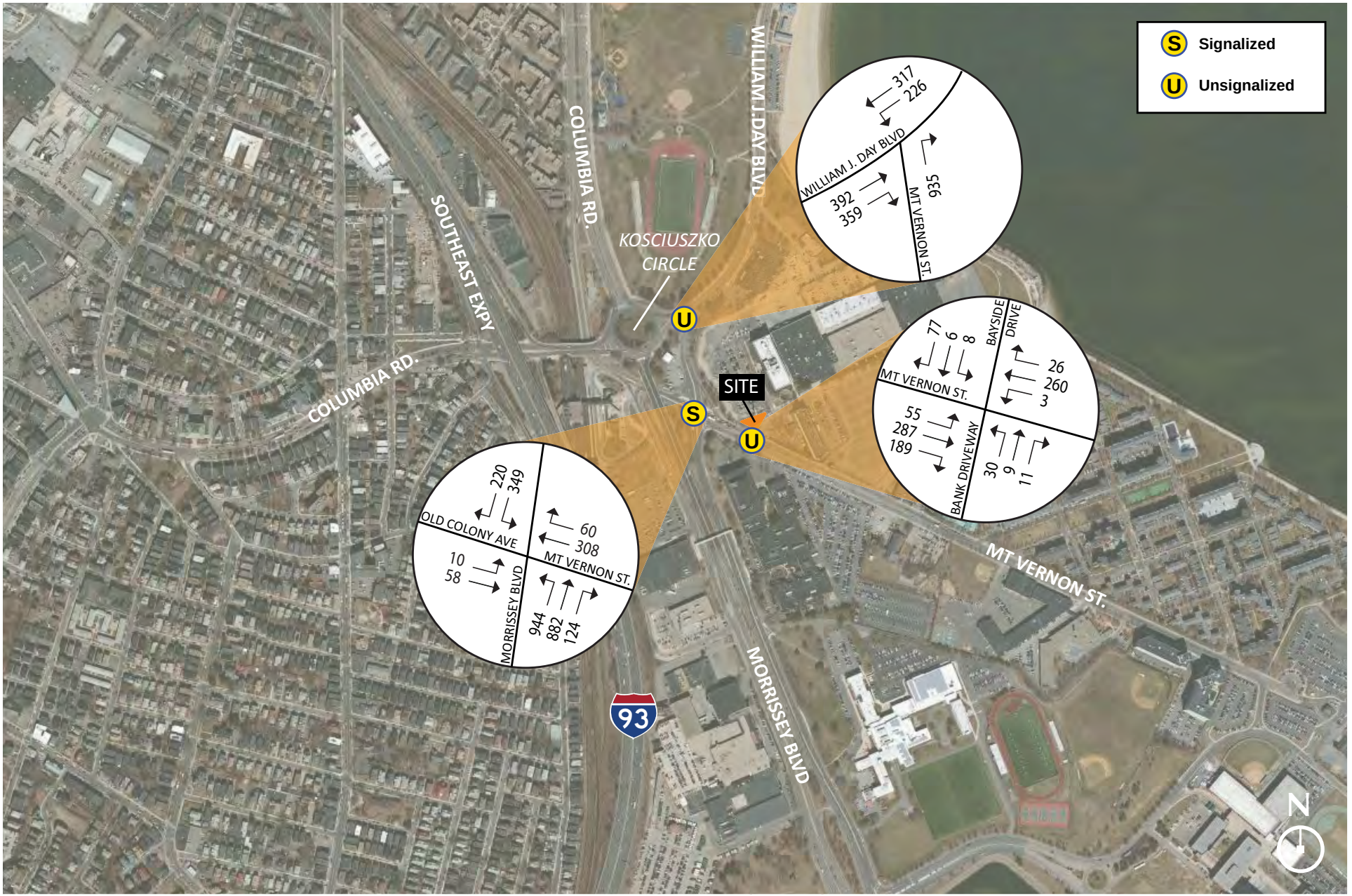


Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-7
Existing (2014) Pedestrian Volumes, p.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014

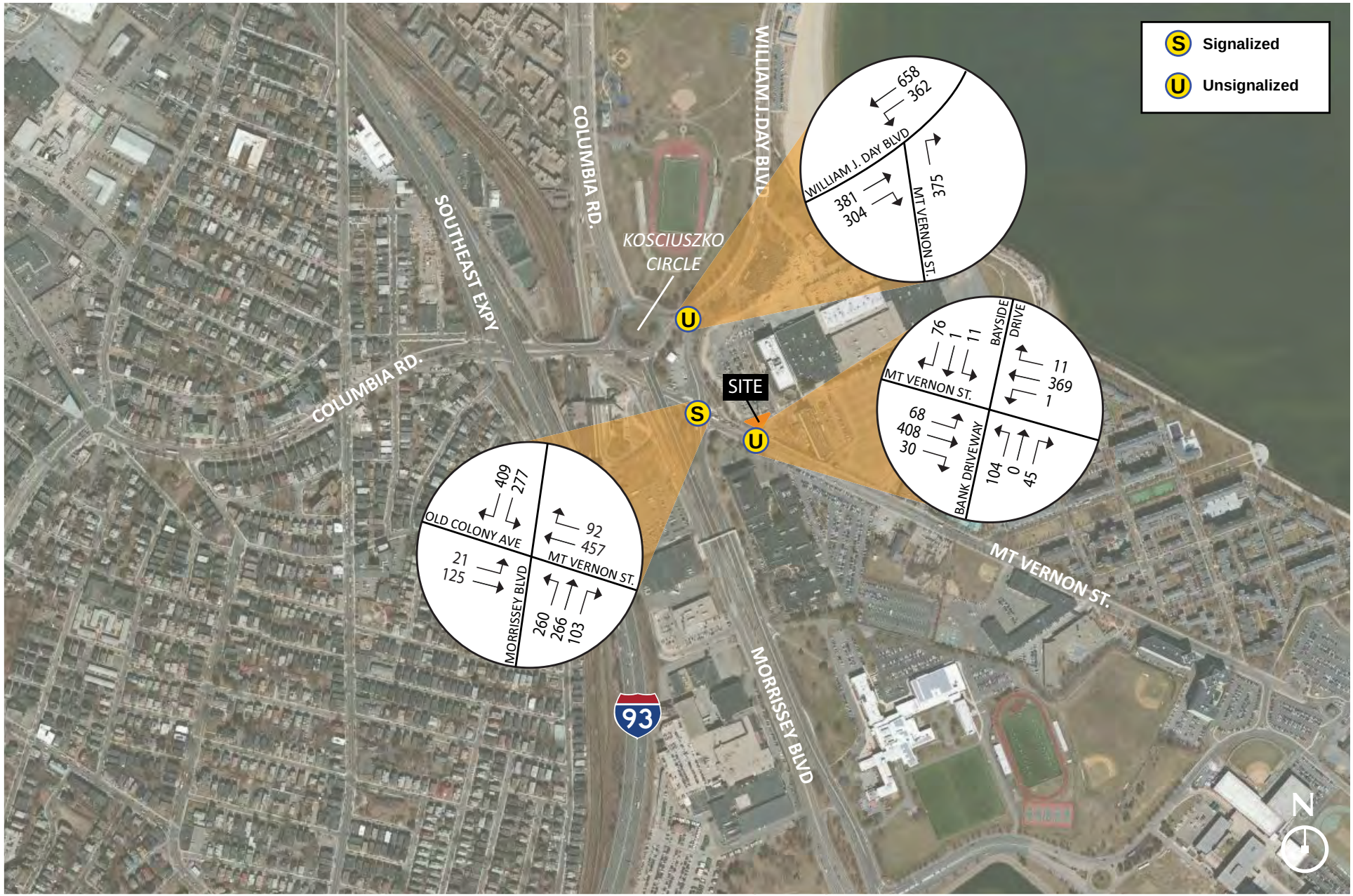
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-8
Car and Bicycle Sharing Services
Source: Howard/Stein-Hudson Associates, Inc., 2014



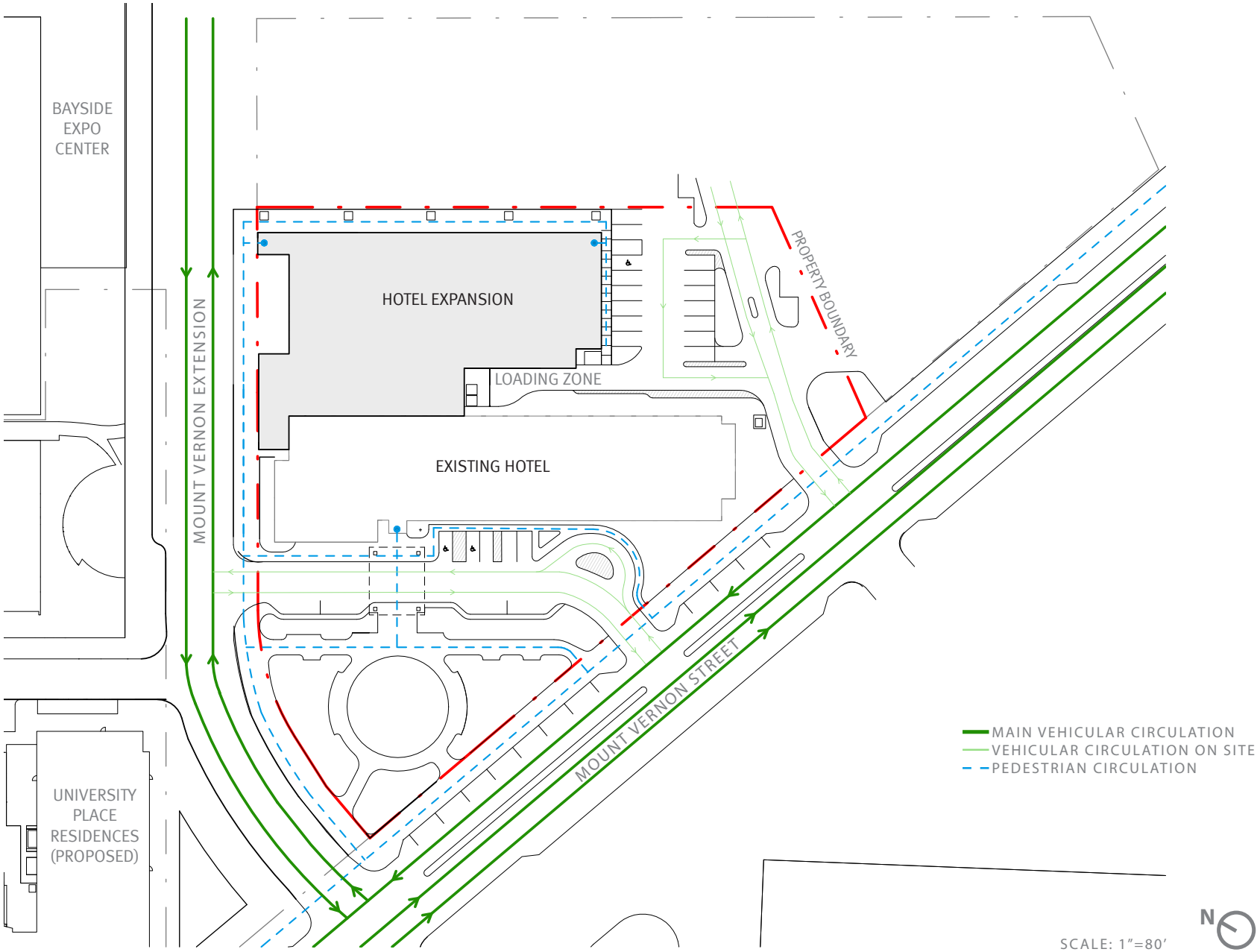
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-9
No Build Conditions (2019) Turning Movement Volumes, a.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014



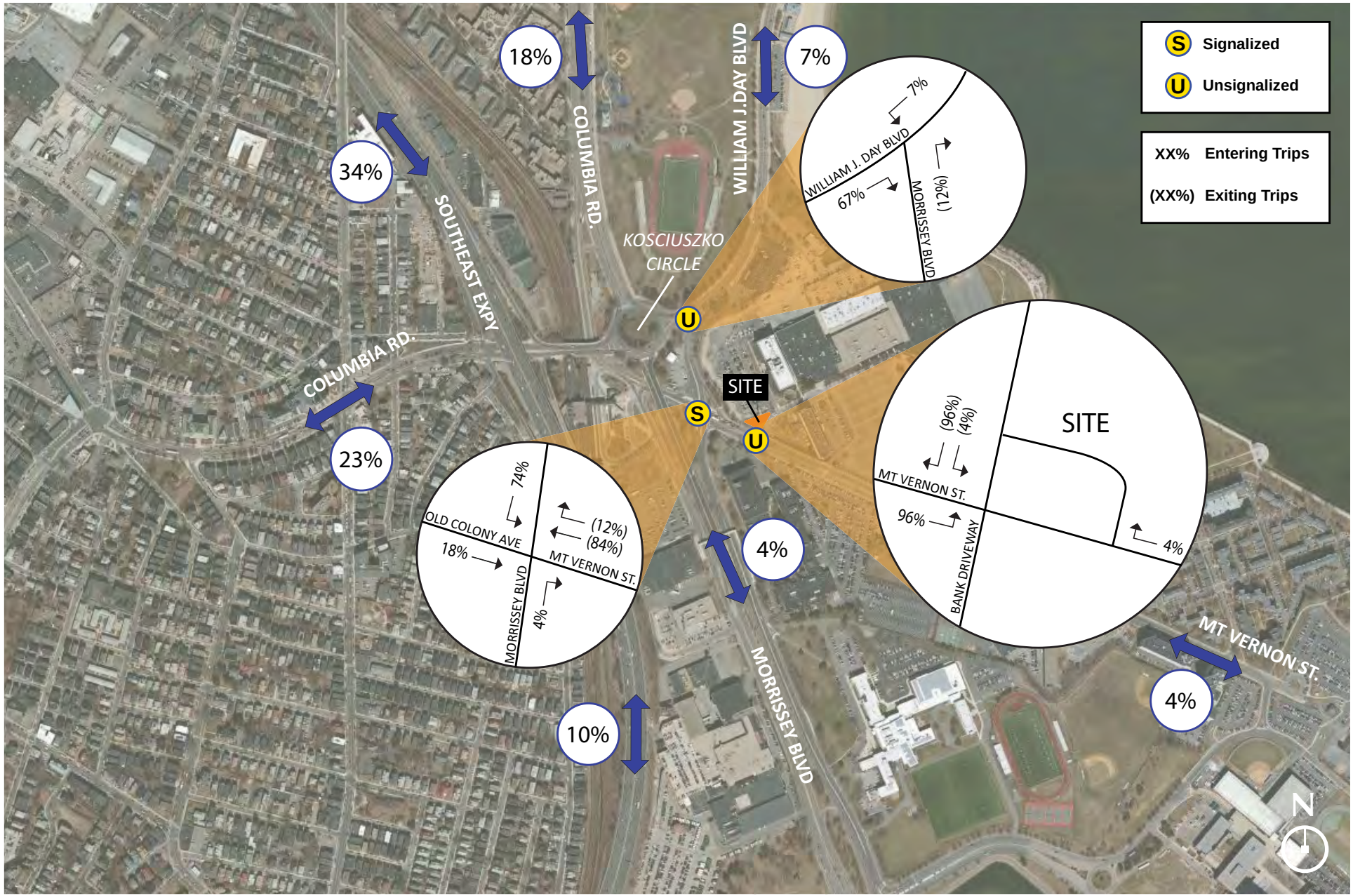
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-10
No Build Conditions (2019) Turning Movement Volumes, p.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014



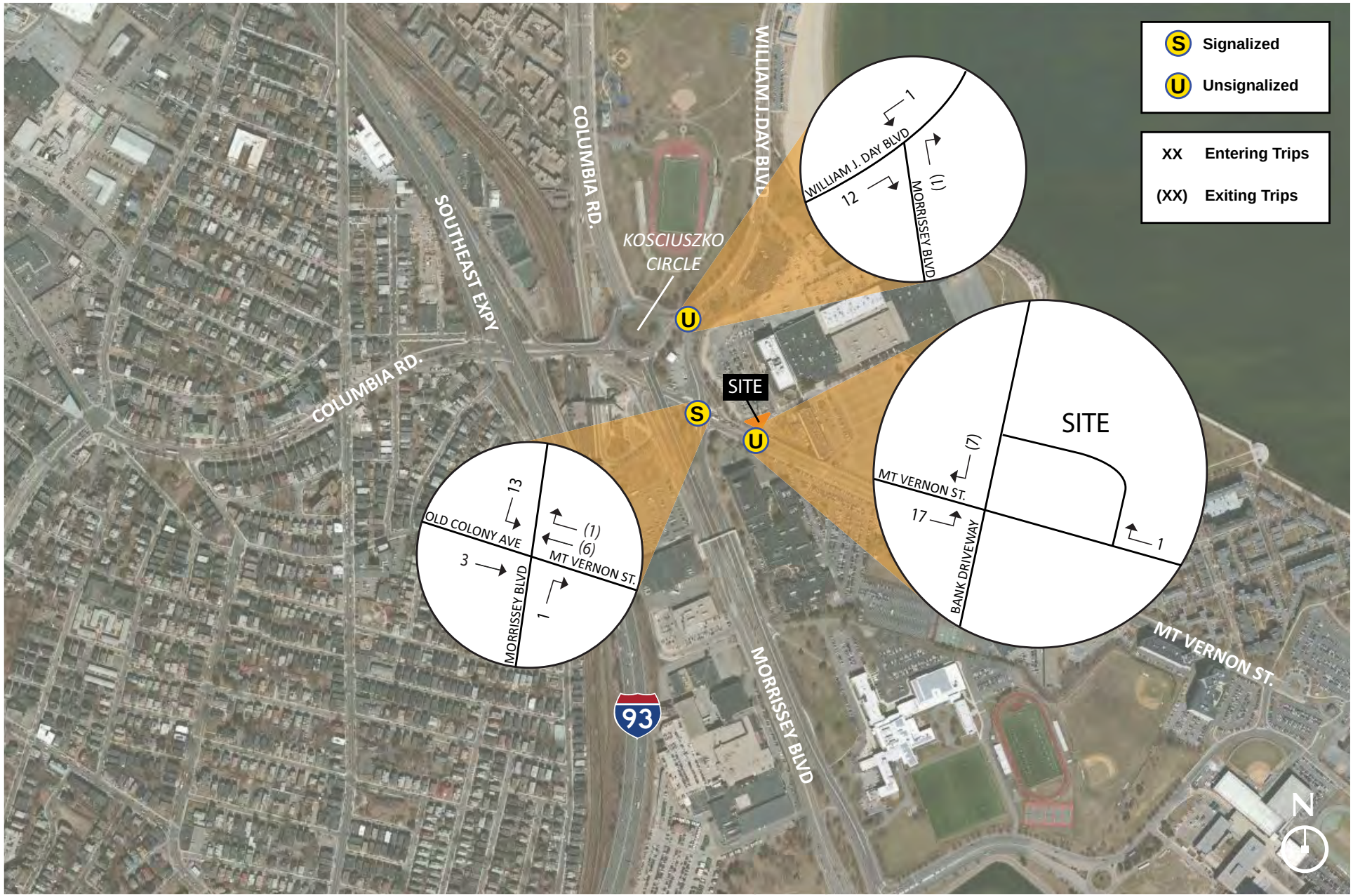
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-11
Site Access Plan
Source: Arrowstreet, 2014



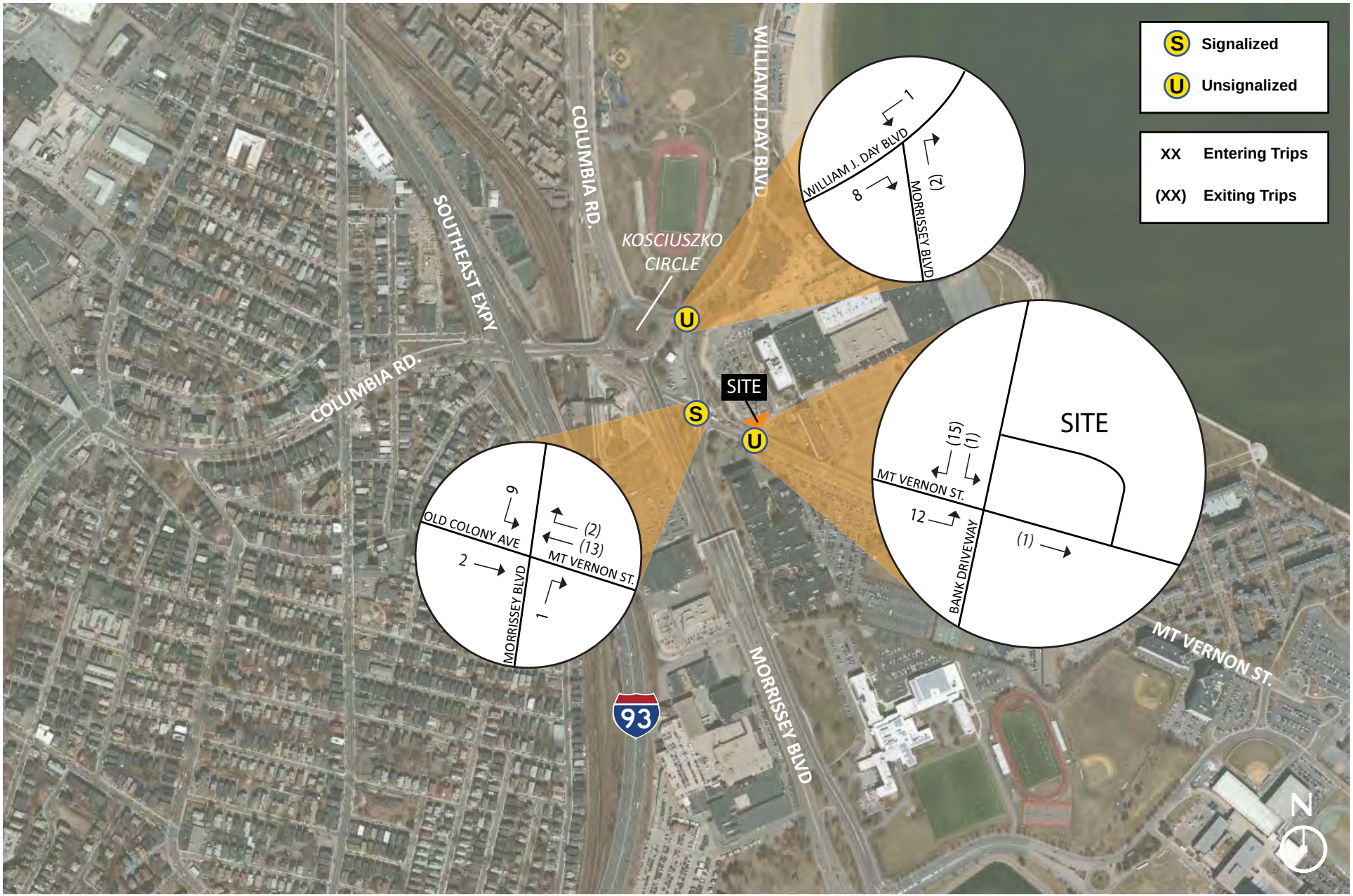
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-12
Vehicle Trip Distribution
Source: Howard/Stein-Hudson Associates, Inc., 2014



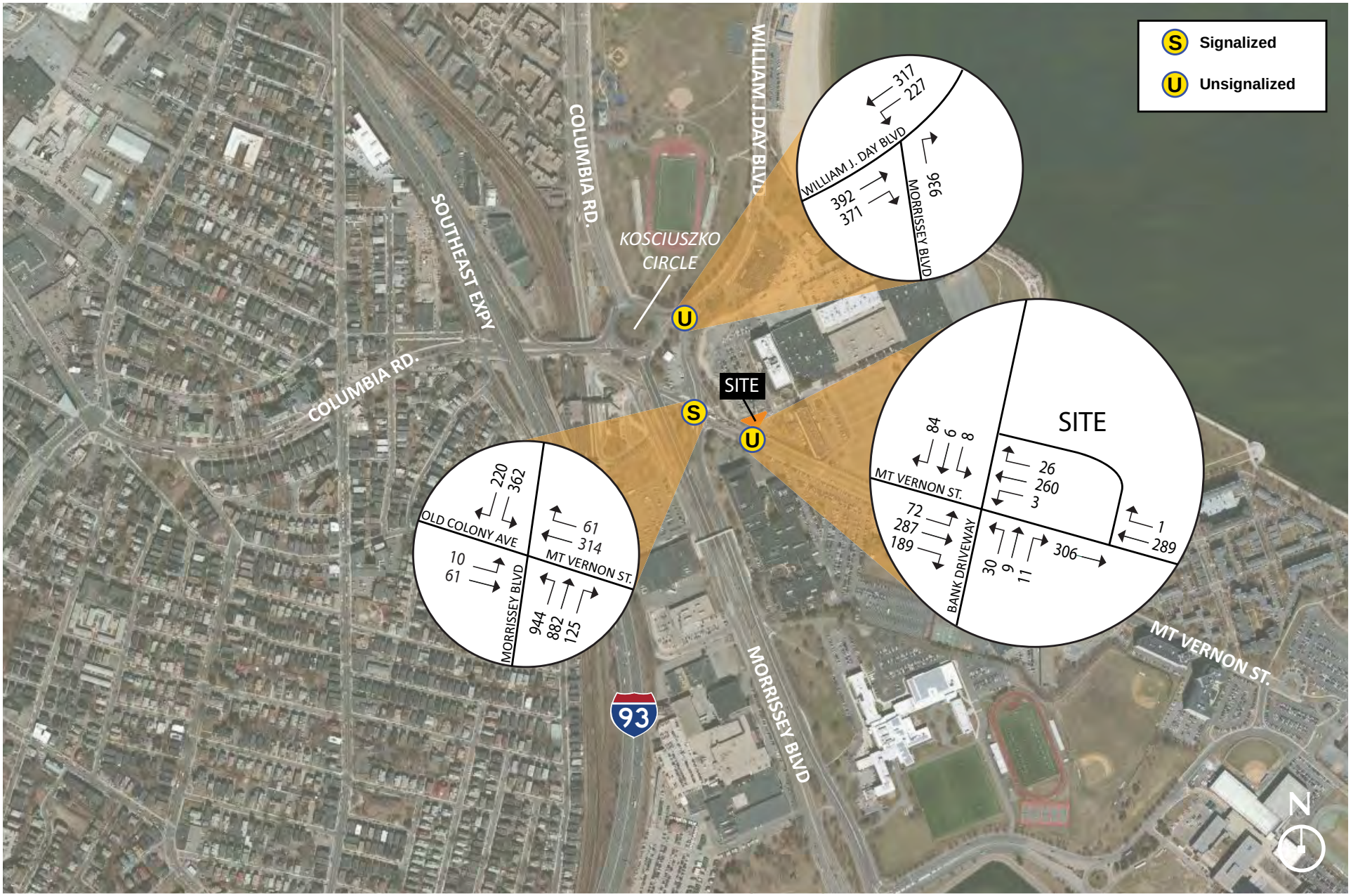
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-13
Projected Generated Trips, a.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014



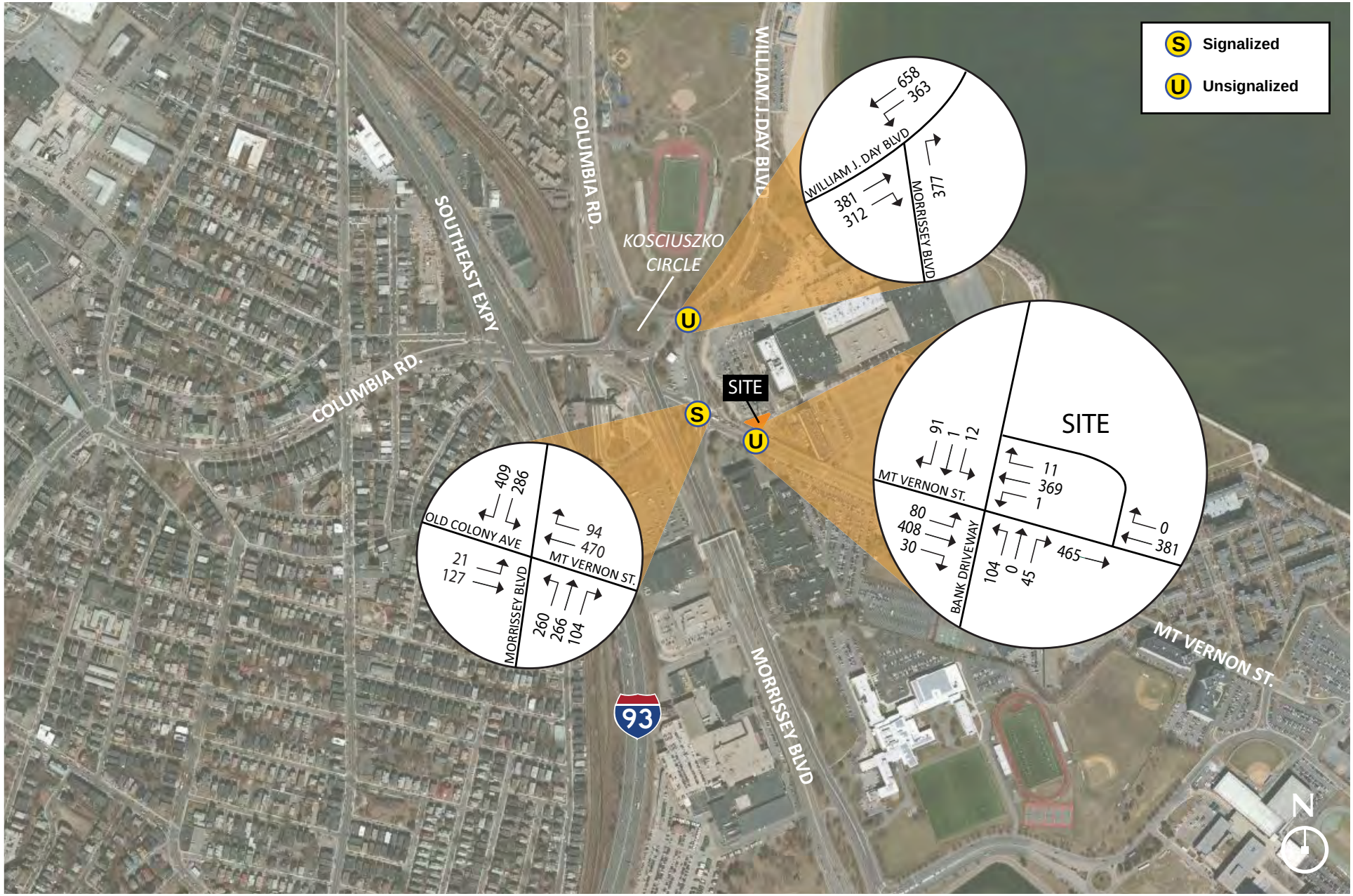
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-14
Projected Generated Trips, p.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-15
Build Conditions (2019) Turning Movement Volumes, a.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 5-16
Build Conditions (2019) Turning Movement Volumes, p.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2014

Chapter 6

ENVIRONMENTAL PROTECTION

CHAPTER 6: ENVIRONMENTAL PROTECTION

6.1 INTRODUCTION

The Bayside DoubleTree Hotel Expansion (the "Project") at 236 Mount Vernon Street will be built in full compliance with local, state, and federal environmental regulations and will substantially improve the environmental conditions of the Site. The Project will not create undue wind, shadow, noise, solar glare, or air quality impacts in the surrounding area. It will follow an appropriate construction management plan to avoid or mitigate construction period impacts. In addition, while partially located within an existing 100-year flood plain, the Project will elevate portions of the Site by fill and incorporate other key measures to protect against sea level rise.

6.2 WIND

The Project will be constructed in the rear of the existing DoubleTree Hotel on the portion of an existing surface parking lot. The Project is not expected to significantly change wind levels in the vicinity due to the low height of the proposed expansion. There will be very few buildings located in close proximity to the new building. Without a tight, urban grid system, the Project will not produce the wind tunnel effect common to more densely built areas.

As a result of the placement of the proposed expansion into the existing, low density context, Pedestrian Level Winds (PLWs) along adjacent sidewalks are not anticipated to exceed the BRA guidelines of wind speeds of 31 miles per hour.

6.3 SHADOW

A shadow analysis was conducted for the Project to ensure the proposed new buildings would not create adverse shadow impacts. Table 6-1, Shadow Study Dates and Times, identifies the dates and times for which shadow conditions have been simulated.

Table 6-1, Shadow Study Dates and Times

Date	Time
Vernal Equinox — March 21st	9:00 a.m., 12:00 p.m., 3:00 p.m.
Summer Solstice — June 21st	9:00 a.m., 12:00 p.m., 3:00 p.m., 6:00 p.m.
Autumnal Equinox — September 21st, EDT	9:00 a.m., 12:00 p.m., 3:00 p.m.
Winter Solstice — December 21st, EST	9:00 a.m., 12:00 p.m., 3:00 p.m.

The following description is in reference to the shadow study images show in Figures 6-1 to 6-4. All net new shadows are shown in light red and existing shadow is shown in orange. Areas where new shadow is captured within existing shadow is shown in dark orange.

Vernal Equinox — March 21st (Figure 6-1)

Minimal new shadow impacts are limited to the east of the Project Site within the boundaries of the adjacent parking lot parcel at 3:00 p.m. on the Vernal Equinox.

Summer Solstice — June 21st (Figure 6-2)

New shadow will be cast on the adjacent parking lot parcel to the east of the Project Site at 3:00 p.m. and 6:00 p.m. on the Summer Solstice.

Autumnal Equinox — September 21st (Figure 6-3)

Minimal new shadow impacts are limited to the east of the Project Site within the boundaries of the adjacent parking lot parcel at 3:00 p.m. on the Autumnal Equinox.

Winter Solstice — December 21st (Figure 6-4)

New shadow will be cast to the north towards the adjacent office building parcel at 9:00 a.m. and 12:00 p.m. on the Winter Solstice. At 3:00 p.m. no significant additional shadow will be cast.

Conclusions

The Project will result in minimal new shadow impacts to the adjacent parcels to the north and east and the roadway to the west. The largest impacts of new shadow will occur typically at the end of the day and in the winter.

6.4 DAYLIGHT

The Project is being constructed in a relatively low-density area for an urban setting. The width of Mount Vernon Street and the absence of a street wall on the other side of it will ensure adequate daylight on the east side of the building.

6.5 SOLAR GLARE

A solar glare analysis is intended to measure potential reflective glare from the buildings onto streets, public open spaces, and sidewalks in order to determine the likelihood of visual impairment or discomfort due to reflective spot glare. As a result of the design and use of generally non-reflective materials and the distance between the new building and

existing buildings, it is not anticipated that the Project will have adverse solar glare impacts or create solar heat buildup in nearby buildings.

6.6 AIR QUALITY

This section provides a qualitative review of air quality sources and impacts as a result of the Project from traffic, parking, and heating and mechanical ventilation systems. Impacts from construction and operations are addressed in Section 6.13, Construction Impacts

6.6.1 TRAFFIC SOURCES

Due to the relatively modest number of new vehicle trips contributed to the local network by the Project, the impact of Project trips on the performance of the transportation study area intersections relative to air quality is minor. The BRA typically requires a future air quality CO analysis for any intersection where the level of service (LOS) is expected to fall to a D or lower and the proposed project causes a 10% increase in traffic; or where the LOS is E or F and the project contributes to a reduction in LOS.

The bank driveway northbound movements at Mount Vernon Street are expected to worsen to LOS E during the a.m. peak hour with the addition of background traffic growth and the implementation of the improvements along Mount Vernon Street. This decrease in LOS will not create a significant increase in the queuing along the approach. The Mount Vernon Street northbound approach to Day Boulevard is expected to continue to operate at LOS F. These approaches were observed to operate under better conditions than this analysis indicates. For this reason, no mesoscale air quality analysis was performed for the Project.

Transportation Demand Management (TDM) strategies are a significant component of this Project and are anticipated to assist in minimizing traffic impacts and, by extension, air quality impacts. The following measures aim to keep traffic levels at acceptable volumes, promoting alternative means of transportation that have lesser impacts on overall air quality for the Project:

- Parking management;
- Promotion of public transit and dissemination of transit information;
- Publicly accessible bicycle storage for Project visitors; and
- Nearby Zipcar parking.

6.6.2 PARKING SOURCES

The Site is currently developed with the existing hotel and a surface parking lot. The Project will result in a reduction from 115 to up to 25 surface parking spaces on the Project Site. This net reduction of approximatley 90 spaces will result in an improvement in existing air quality due to parking sources. This factor will minimize air pollution from parking sources associated with the Project. If needed, additional parking spaces will be available off-site on nearby parking lots owned or controlled by the Proponent or its affiliates.

6.6.3 BUILDING OPERATION SOURCES

An emergency generator will be located on the roof. It will be in compliance with Department of Environmental Protection (DEP) standards. There will be a cooling tower for the heating/cooling system that services the guest room floors on the roof and a heating and cooling unit for the first floor spaces that is located on the second floor. In combination, these building operation factors are not expected to contribute to significant changes in air quality.

6.7 NOISE

The Proponent does not anticipate a significant increase in noise impacts associated with the hotel or commercial uses at the Site. The Boston Air Pollution Control Commission regulates noise in the City of Boston based on zoning and land use classification. The regulations set fixed noise limits for daytime and nighttime use of equipment serving the building (a maximum level of 60 dBA for daytime use, and 50 dBA for nighttime use is required). These levels are limits for equipment sound assessed at the property lines of the Project. The limits apply to equipment which operates on a significant basis to serve the building, such as climate control equipment and fans. In addition to the overall sound level requirements, the regulations list specific octave band frequency limits for daytime and night time periods.

The primary sources of exterior sound for the Project will include rooftop central heating and cooling equipment and a rooftop mounted emergency generator. Based on the current design, this equipment is not expected to produce significant sound levels at the building property lines, though they will have noise control measures provided if required.

Intermittent increases in noise levels will occur in the short-term during construction. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Noise impacts will be controlled during construction, as appropriate, through the use of mufflers on heavy equipment, construction hour restrictions, and other noise mitigation.

6.8 WETLANDS

6.8.1 IMPACTS TO WETLAND RESOURCE AREAS

Land Subject to Coastal Storm Flowage

The Site contains 91,027 square feet (2.1 acres) of Land Subject to Coastal Storm Flowage. The Project will include the alteration of a total of 69,000 square feet (1.6 acres) of Land Subject to Coastal Storm Flowage. Due to this activity, an area of 21,500 square feet (0.5 acres) will be elevated above the flood plain, which is currently set at 16.46 feet Boston City Base (10.00 feet NAVD88).

6.8.2 COMPLIANCE WITH MASSACHUSETTS WETLANDS PROTECTION ACT PERFORMANCE STANDARDS

The Project will be undertaken in a manner that ensures compliance with the Wetlands Protection Act performance standards, as required under 310 CMR 10.00. The only resource area subject to protection under M.G.L. c. 131, § 40 or buffer zone as described in 310 CMR 10.02(1) and (2)(a) through (d) that is applicable to the Project is Land Subject to Coastal Storm Flowage (LSCSF). The regulations do not contain performance standards for LSCSF.

6.8.3 ACCOMMODATIONS TO ADDRESS CLIMATE CHANGE ADAPTATION AND SEA LEVEL RISE

In addition to elevating the building so it is out of the 100-year flood plain, the Project Team will take special caution to account for climate change and accommodate sea level rise. Several aspects of the Project's design will assist in alleviating the potential adverse impacts of flooding. The hotel expansion's entrances will also be located above the 100-year flood elevation. The landscape will slope up towards the entrances to divert water away from the building and will maximize the use of permeable surfaces to enhance water infiltration. The hotel expansion will not have a basement and the emergency generator will be installed on the roof. Greenspace will be added to the front of the existing hotel on Mount Vernon Street in an area currently covered by impervious asphalt.

6.9 FLOOD ZONES

In the past decade, climate change adaptation has gained national attention as a critical environmental factor that must be addressed in new development projects. In Boston, sea level rise has become a serious concern as recent weather patterns and future modeling are demonstrating that storms impacting the city are likely to continue to intensify. A 2013 report released by The Boston Harbor Association, *Preparing for the Rising Tide,* focused on Columbia Point as a case study to demonstrate the need for climate change adaptation

strategies. While not located directly on the shoreline, the proximity of the Site to Boston Harbor and its specific topographical conditions warrant the implementation of measures to protect the Project against flooding.

As part of its administration of the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) publishes flood hazard maps, called Flood Insurance Rate Maps (FIRM). The purpose of a FIRM is to show the areas in a community that are subject to flooding and the risk associated with these flood hazards. The current map in place was published in 2009 and a portion of the Site is in the 100-year (1%) flood zone, which is established as Zone AE, Elevation 10 (NAVD88). However, FEMA is in the process of revising the current maps based on recent storms. The most recent 2013 preliminary FIRM map of the area places the entire Site in the 100-year flood Zone AE, which is at Elevation 11 (NAVD88) or Elevation 17.46 Boston City Base (BCB).

As part of this Project, the Proponent expects to use fill to raise the Site's existing grade of Elevation 16 BCB in the hotel's rear parking lot to Elevation 18 BCB for the ground floor, which would elevate it out of the 100-year flood zone. Several aspects of the building's design will assist in alleviating the potential adverse impacts of flooding. The main entrance will also be located above the 100-year flood elevation. The landscape will slope up towards the different building access points to divert water away from the building and will maximize the use of permeable surfaces across the Site to enhance stormwater infiltration. See Figure 6-5, Flood Elevations.

The existing hotel building will remain in the 100-year flood zone, but it has been fitted with floodproof doors and gates and critical building systems will be above this zone. The elevation of the Site will mean that all habitable spaces and building systems in the hotel expansion will also be above this zone. This will significantly decrease the vulnerability of the Project to flooding, decrease potential damage to the property and, most importantly, increase the safety of employees and guests.

The Proponent expects to file a Conditional Letter of Map Revision Based on Fill (CLOMR-F) with FEMA to reflect the proposed change in elevation and to seek a determination that the Site will be lifted entirely out of the 100-year flood zone.

6.10 WATER QUALITY

During construction, best management practices (BMPs) will be used to limit the transportation of sediment off site. The Contractor will obtain a National Pollution Discharge Elimination System (NPDES) stormwater permit and implement BMPs to minimize pollutant runoff. The Contractor will also use the following water quality related measures:

- Complying with all federal, state, and city codes, ordinances, and regulations governing the on-site discharge of construction dewatering effluent;

- Using hay bales and silt fencing to prevent silt or soil from entering existing catch basins;
- Using temporary wheel wash areas within the site;
- Using temporary gravel entrance berms at the main exits from the Site;
- Isolating and protecting stockpiled materials;
- Monitoring the proper use of tarpaulin covered trucks;
- Preventing/controlling truck spillage; and
- Cleaning the adjacent portions of city streets entering and exiting the Project.

6.11 GEOTECHNICAL

6.11.1 SUBSURFACE SOIL CONDITIONS

Based on borings conducted at the Project Site, the existing bituminous pavement occupying the proposed building addition footprint is underlain by an 8 to 14-foot thick deposit of granular fill consisting of a very loose to dense, brown to black silty sand and gravel containing various amounts of brick fragments, ash, cinders, glass, and wood.

A very soft to firm, gray to brown organic silt and peat was encountered below the fill layer at each of the boring locations. The organic deposit was occasionally interbedded with seams of fine sand and varied from 1.5 to 16.5 feet in thickness.

Underlying the organic deposit is a marine deposit generally comprised of up to three distinct geologic units: a fine-grained marine silt and clay, granular marine sand, and a cohesive marine clay. The surface of the marine deposit was encountered at depths of 12 to 25.5 feet below the existing ground surface. At several boring locations, the upper portion of the marine deposit varies from a marine silt and clay to marine sand. The lower portion of the marine deposit and the entire marine deposit, where the silt and sand are not present, typically consists of cohesive marine clay. The marine clay deposit generally terminated at depths of 70 to 110 feet below the existing ground surface.

Glacial outwash and glacial till deposits were encountered below the marine clay and were underlain by the bedrock surface at depths of approximately 115 to 145 feet below the existing ground surface. The bedrock typically consisted of a medium hard, slightly weathered, moderately fractured gray argillite.

6.11.2 GROUNDWATER CONDITIONS

Groundwater levels in observation wells installed within completed boreholes were measured at depths of 6 to 8 feet below ground surface, corresponding to about Elevation + 8.2 to Elevation + 9.4 BCB. Piezometric levels recorded within the marine sand deposit varied from about Elevation + 6.9 to Elevation + 7.3 BCB. It is anticipated that future groundwater and piezometric levels across the Site may vary from those reported herein due to factors such as normal seasonal changes, periods of heavy precipitation, and alterations of existing drainage patterns.

6.11.3 PROPOSED CONSTRUCTION

The Project is planned to be located along the east side (rear) of the existing 6-story DoubleTree Hotel, which is located south of the existing Bayside Exposition Center, across Mount Vernon Street Extension. The L-shaped hotel expansion will be 2 to 6 stories in height and occupy a footprint of approximately 18,792 square feet. No below-grade space is planned as part of the proposed construction. Currently, the Site consists of a relatively level paved parking lot with landscaped margins.

6.11.4 FOUNDATION DESIGN AND CONSTRUCTION

The existing hotel structure is supported on a foundation system consisting of 16-inch square precast-prestressed concrete piles having a design capacity of 150 tons. The piles were driven to end bearing into the dense to very dense glacial till deposit or to the bedrock surface that underlies the Site at depths of approximately 105 to 145 feet below the existing ground surface.

Based on the anticipated structural loads, the subsurface conditions as encountered in previous borings and the foundation system of the existing hotel, the hotel expansion will also be supported on deep end-bearing piles to transfer the building loads through the unsuitable fill, compressible organic soils and soft marine clay into the dense to very dense glacial till and bedrock that underlies the Project Site. The most economical pile type for support of the proposed expansion is considered to be either a 14-inch or 16-inch square precast-prestressed concrete pile with design capacities of 130 tons and 150 tons, respectively. A wavier of a pile load test for the piles will be submitted to the City of Boston Inspectional Services Department for approval.

In consideration of the presence of the compressible organic deposit that directly underlies the surficial fill deposit across the Project Site; the lowest level floor slab will be designed as a structurally supported or framed slab. All underslab utilities will be hung from the lowest level slab.

The Project does not intend to include any occupied below-grade space and the lowest level slab is planned to be located essentially coincident with the exterior finished grade. Therefore, no perimeter or underslab drains are planned to be installed and little to no impact to the Site groundwater is anticipated.

Noise and ground vibrations will be produced during foundation installation operations. The magnitude of the vibrations typically decreases with increased distance from the vibration source. Therefore, impacts from vibrations during foundation installation are not anticipated to cause damage to adjacent structures, streets, and utilities, however, the noise and vibrations may be of sufficient magnitude to cause annoyance to abutters. It is recommended that vibration monitoring be conducted during foundation installation to document and monitor the potential adverse impacts to adjacent structures, streets, and utilities.

In summary, provisions will be incorporated into the design and contract documents to limit potential impacts to adjacent structures, streets, and utilities. Thus, the impact to adjacent structures, streets, and utilities is anticipated to be minimal.

6.12 SOLID AND HAZARDOUS WASTE

A review of the Massachusetts Department of Environmental Protection (DEP) online release site database indicated that the Site is not a DEP-listed release site. The majority of the Site was undeveloped land until the early to mid-twentieth century when the land was filled as part of the development of the Columbia Point area of Boston.

It is anticipated that the foundation construction will include excavation for pile caps and grade beams in addition to other subsurface structures that will generate excess soil requiring removal from the Site. A plan to conduct a program of soil quality testing prior to construction to determine the options for reuse, recycling, or disposal of excess soil within the limits of excavation will be implemented at the Site. Since the proposed structure will have no below-grade space, it is anticipated that groundwater and/or collected surface water runoff will be managed on-site by means of local sumping and on-site recharge. Accordingly, obtaining a temporary construction dewatering permit for off-site discharge of pumped water during construction is not anticipated.

Should conditions at the Site warrant regulatory notification, notification and reporting to DEP will be conducted in accordance with the provisions of the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000. The Proponent will retain a Licensed Site Professional to manage the environmental aspects of the Project, including proper management and/or off-site reuse, recycling, or disposal of contaminated soil during construction.

Excess soil that may be generated will require characterization to assess its disposition for off-site reuse, disposal, treatment, or recycling in accordance with DEP policy #COMM-97-001 and the MCP. Therefore, a soil characterization program will be implemented to pre-

characterize the soil and a Soil Management Plan will be prepared summarizing the results of chemical testing and providing soil disposal recommendations. The construction contractor will be responsible for proper off-site removal of contaminated soil, and disposal of solid waste and debris.

6.13 CONSTRUCTION IMPACTS

6.13.1 CONSTRUCTION MANAGEMENT PLAN

A Construction Management Plan (CMP), in compliance with the City of Boston's Construction Management Program, will be submitted to the Boston Transportation Department (BTD). The CMP will include detailed information about construction activities, specific construction mitigation measures, and construction materials access and staging area plans to minimize impact on the surrounding neighborhood.

Construction methodologies that ensure public safety and protect nearby residents will be employed. Techniques such as barricades, walkways, and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting, routing plans for trucking and deliveries, and control of noise and dust. Although the design of the new building is in process, the Proponent has begun to develop a plan for how traffic, parking, and construction staging will be managed during construction.

6.13.2 CONSTRUCTION ACTIVITY SCHEDULE

The construction period for the Project is expected to last approximately 20 months, beginning in September 2015 and reaching completion by March 2017. The Project will comply with the City of Boston Noise and Work Ordinance. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions.

6.13.3 CONSTRUCTION TRAFFIC IMPACTS

Designated truck routes will be established to govern where construction trucks access and egress the site. The primary, regional construction truck access will be via Interstate 93 (I-93). Truck traffic to and from the north and south will use I-93.

The suggested local truck route to the Site from the North is I-93 south to Exit 15, left on to Columbia Road, around Kosciuszko Circle to William J. Day Boulevard, right along the roadway adjacent to the State Police Headquarters and to the Site. The route from the south on I-93, would be to take Exit 15, right on to Columbia Road, and would then be the same as the north route.

The egress route would include exiting onto Mount Vernon Street, passing below the Morrissey Boulevard Ramp, making a U-turn onto Old Colony Avenue, passing around ¼ of Kosciuszko Circle onto Columbia Road and from there to the north or southbound ramps to I-93.

Truck traffic will be heaviest during the foundation work. During this period, it is expected that fewer than ten trucks, varying in size from small delivery trucks to 18-wheelers, will arrive and leave the Site each construction day. Thereafter, truck traffic will vary throughout the construction period, depending upon the activity.

The Project will work closely with the BTD in developing a Construction Management Plan that will include more detail on construction phasing, number of trips, haul routes, and hours of operation.

6.13.4 CONSTRUCTION WORKER PARKING AND STAGING

The number of workers required for the construction of the Project will vary depending upon the stage of construction. Construction workers will typically arrive and depart prior to peak traffic conditions and the construction trips are not expected to substantially impact traffic conditions.

The general contractor will be responsible for educating all construction workers about public transit options and encouraging carpooling. All construction workers will be encouraged to utilize mass transit and ridesharing options to access the construction site to minimize vehicle traffic and parking demand. As part of the program to promote public transportation, the following will be implemented:

- Providing on-site secured space for workers' tool storage;
- Posting transit schedules and maps at the Project Site;
- Distributing informational brochures regarding public transportation; and
- Notifying all subcontractors and suppliers of the worker access/parking limitations and options.

The Proponent will submit a Boston Residents Construction Employment Plan in accordance with the Boston Jobs Policy. The Plan will provide that the Proponent make good faith efforts to employ local trades people from the City of Boston. In this effort, the Proponent will meet with local agencies prior to the start of construction to establish a community outreach program.

Construction staging will occur to the east of the Project Site on the adjacent off-site surface parking lot. Limited off-site parking will be provided for certain key workers on this parking lot to the east of the Site.

6.13.5 CONSTRUCTION AIR QUALITY

Short-term air quality impacts from fugitive dust may be expected during the removal of soil materials and during the early phases of the Site preparation activities. The construction contract for the Project will require the contractor to reduce potential emissions and minimize air quality impacts. Mitigation measures are expected to include the use of wetting agents where needed on a scheduled basis, covered trucks, minimizing exposed construction debris stored on-site, monitoring construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized, locating aggregate storage piles away from areas having the greatest pedestrian activity when possible, and periodic cleaning of streets and sidewalks to reduce dust accumulations.

6.13.6 CONSTRUCTION NOISE IMPACTS

Intermittent increases in noise levels will occur in the short term during the construction of the new building. Work will comply with the requirements of the City of Boston Noise Ordinance. Efforts will be made to minimize the noise impact of construction activities, including appropriate mufflers on all equipment such as air compressors and welding generators, maintenance of intake and exhaust mufflers, turning off idling equipment, replacing specific operations and techniques with less noisy ones, and scheduling equipment operations to synchronize the noisiest operations with times of highest ambient noise levels.

6.13.7 SEDIMENT CONTROL MEASURES

During demolition and construction, erosion and sediment control measures will be implemented to minimize the transport of Site soils to off-site areas and BWSC storm drain systems. The existing catch basins will be protected with filter fabric or silt sacks to remove sediment from runoff. These controls will be inspected and maintained throughout the construction phase until all areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

Other sediment controls, which will be implemented as needed during construction, will include the following:

- Stacked hay bales and/or silt fence barriers will be installed at the base of stockpiled soils and at erosion-prone areas throughout the construction phase of the Project;
- Erosion controls will be maintained and replaced as necessary to ensure their effectiveness;
- Where necessary, temporary sedimentation basins will be constructed to prevent the transport of sediment off-site;

- Measures to control dust will be implemented during construction and all debris will be properly contained on the Site; and
- Erosion controls will be maintained and replaced as necessary until the installation of pavement and the establishment of stabilized vegetation at the Site.

6.13.8 RODENT CONTROL

The contractor will file a rodent extermination certificate with the building permit application to the City. Rodent inspection, monitoring, and treatment will be carried out before, during, and at the completion of all construction work for the Project, in compliance with the City's requirements. Rodent extermination prior to commencing work will treat areas throughout the Site, including building interiors. During the construction process, regular service visits will be made to maintain effective rodent control levels.

6.14 WILDLIFE HABITAT

The Site is fully developed with urban landscape materials and the Project will not impact important wildlife habitats. According to the latest Natural Heritage & Endangered Species Program maps, no Priority or Estimated Habitats are located on or near the Project Site.

6.15 HISTORIC RESOURCES

6.15.1 HISTORIC RESOURCES ON THE PROJECT SITE

Over the past 80 years, portions of the tidelands and uplands on what is now the Columbia Point were intermittently filled and redeveloped. In the 1920s, the northern portion of Columbia Point, along Dorchester Bay, area was partially filled to use for sewer line extensions. After the 1930s, this area was used to house prisoners of war during WWII, and in the 1950s, the same units were used for public housing. Later during the 1960s, the majority of the area, not including Project Site, was redeveloped into a shopping center and, in the 1980s, as the Bayside Expo Center. The existing 197-room DoubleTree Hotel was developed in the late 1990s. Due to this history, there are no historic resources on the Site and it is not anticipated that there are any archaeological resources on the Site.

6.15.2 HISTORIC RESOURCES NEAR THE PROJECT SITE

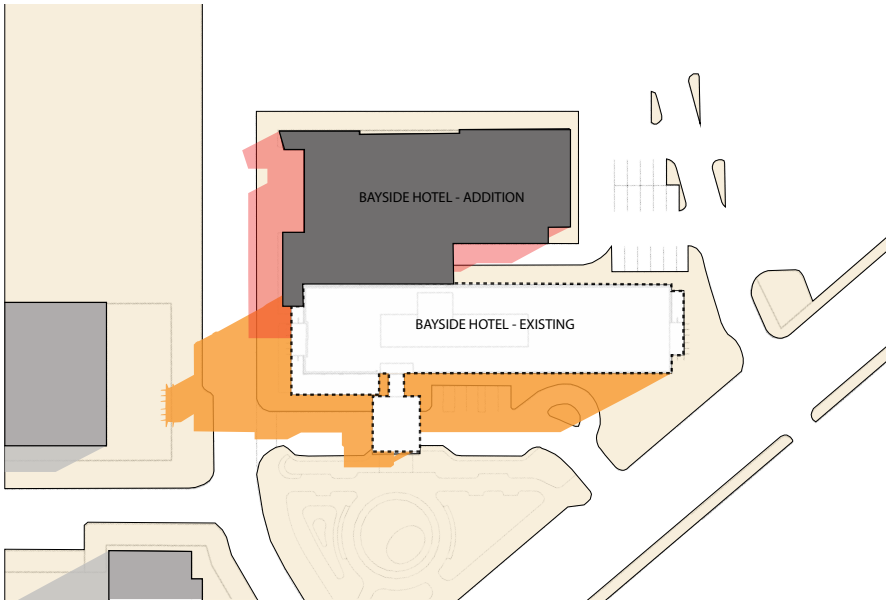
Historic resources listed on the Inventory of Historic and Archaeological Assets of the Commonwealth and located in the immediate vicinity of the Project, within approximately 0.25 miles, are identified on Figure 6-5, Historic Resources. St. Christopher's Church and Rectory are south of the Site on the opposite side of Mount Vernon Street. The remaining seven properties are part of the Metropolitan

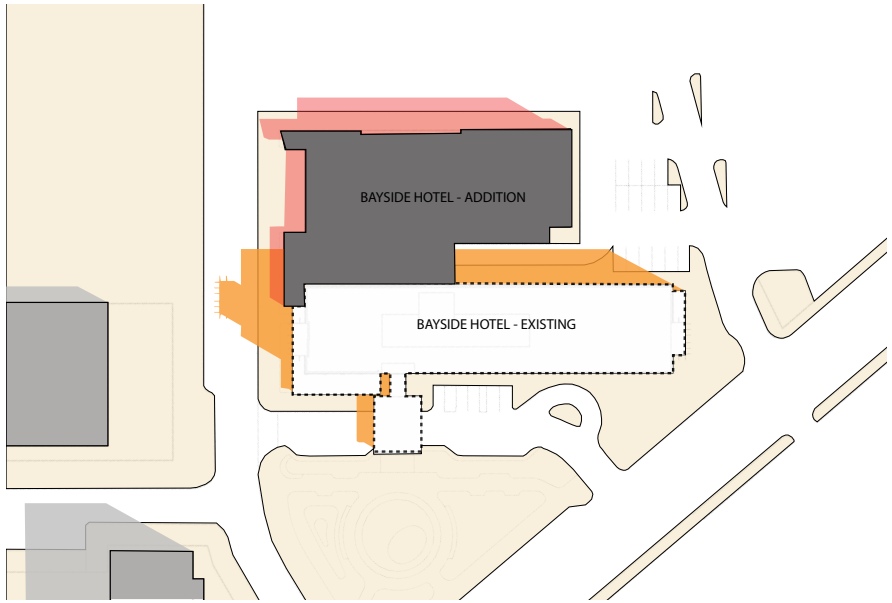
Parkway System and include William J. Day Boulevard, Columbia Boulevard (Columbia Road), Old Colony Boulevard (now Morrissey Boulevard), Carson Beach and the Carson Beach Bath and Field House and Moakley Park. William J. Day Boulevard, Columbia Boulevard, and Old Colony (Morrissey) Boulevards are part of the State's historic parkway system. These three parkways have been determined to be eligible for listing on the National Register of Historic Places. No properties in the vicinity of the Project are listed on the National Register or designated as Local Landmarks.

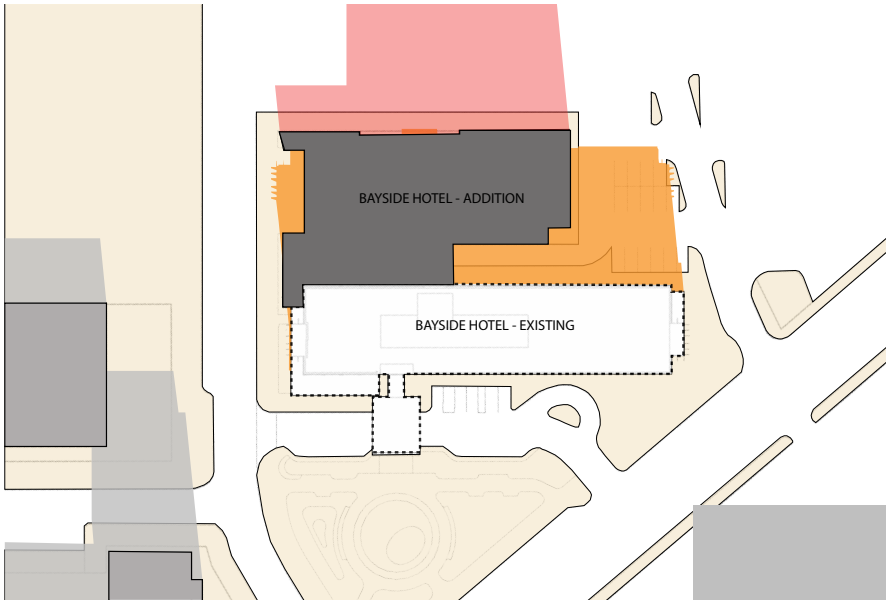
No adverse impacts to the historic resources in the surrounding area will result from the proposed development. The new building design in the rear of the existing building along Mount Vernon Street will not encroach upon existing DCR property. Hotel guests would have direct access to the DCR parkland through its front entrance, providing a seamless connector so that residents can walk to Carson Beach and other nearby amenities. See Figure 6-6, Historic Resources.

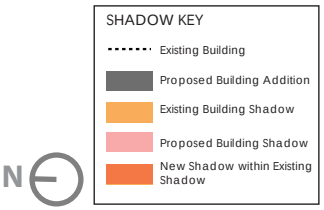
Table 6-2: Historic Resources Listed on the Massachusetts Inventory of Historic and Archaeological Resources

R#	Name	Location	Description of Resource	Impact of Project on Resource
BOS. 15221	St. Christopher's Church	255 Mount Vernon Street	A postwar traditional church also known as Columbia Point Church constructed in 1956	None
BOS. 15222	St. Christopher's Rectory	255 Mount Vernon Street	Roman Catholic rectory constructed c. 1956	None
BOS-VE	Old Colony Parkway	Morrissey Boulevard	Metropolitan Park System	None
	William J. Day Boulevard	William J. Day Boulevard	Metropolitan Park System	Minor
BOS 9253	Joe Moakley Park	William J. Day Boulevard	Metropolitan Park System	None
BOS 9254	Carson Beach	William J. Day Boulevard	Metropolitan Park System	None
BOS 7177	Carson Beach Bath and Field House	William J. Day Boulevard	Metropolitan Park System	None
	Kosciuszko Circle	William J. Day Boulevard / Columbia Road	Metropolitan Park System	None
	Columbia Boulevard	Columbia Road	Metropolitan Park Systems	None



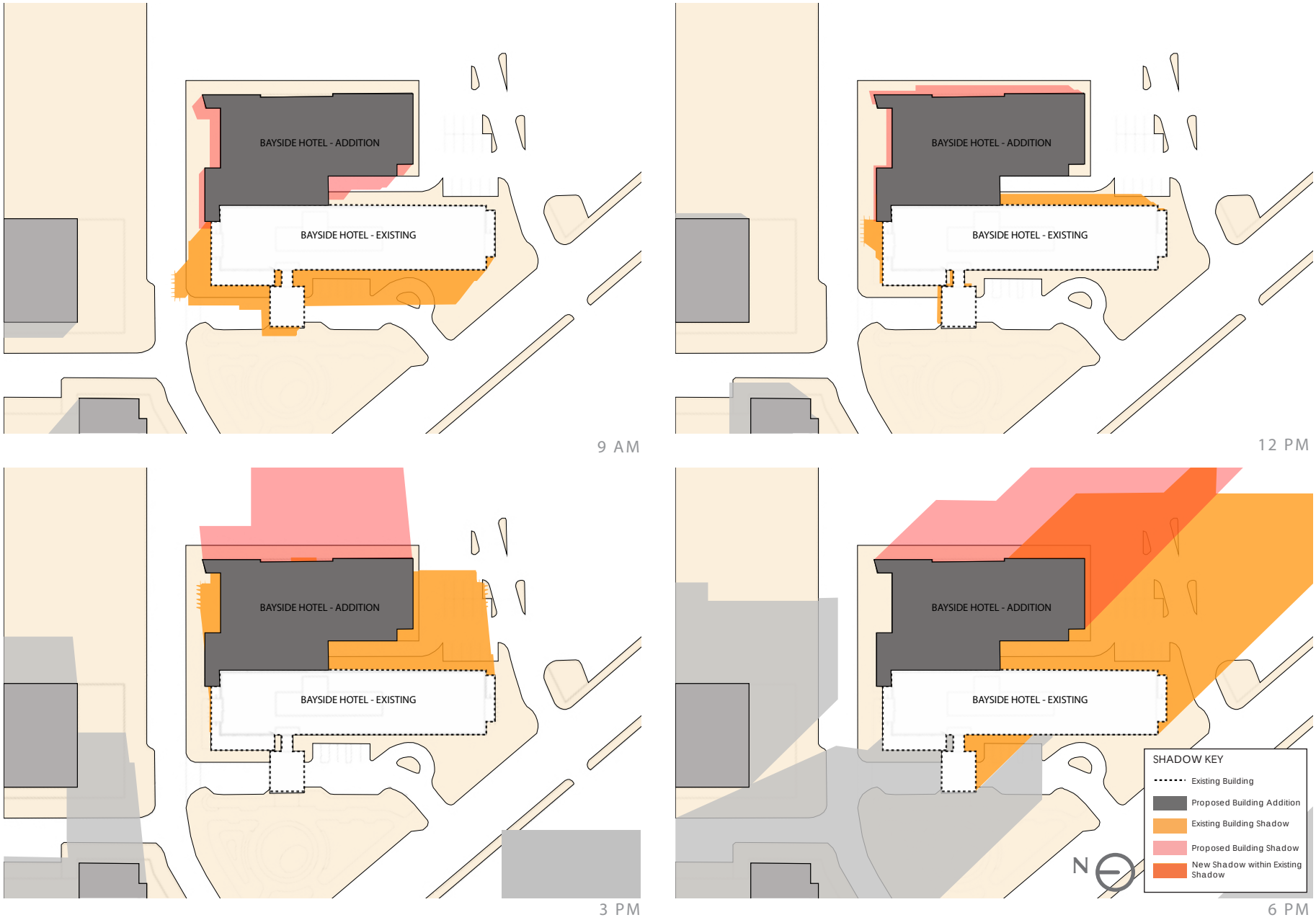






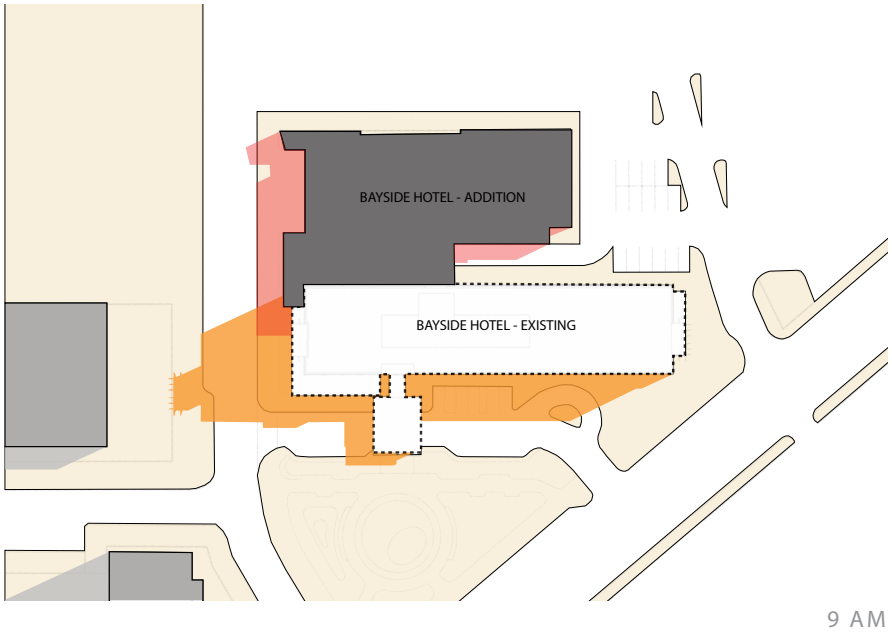
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

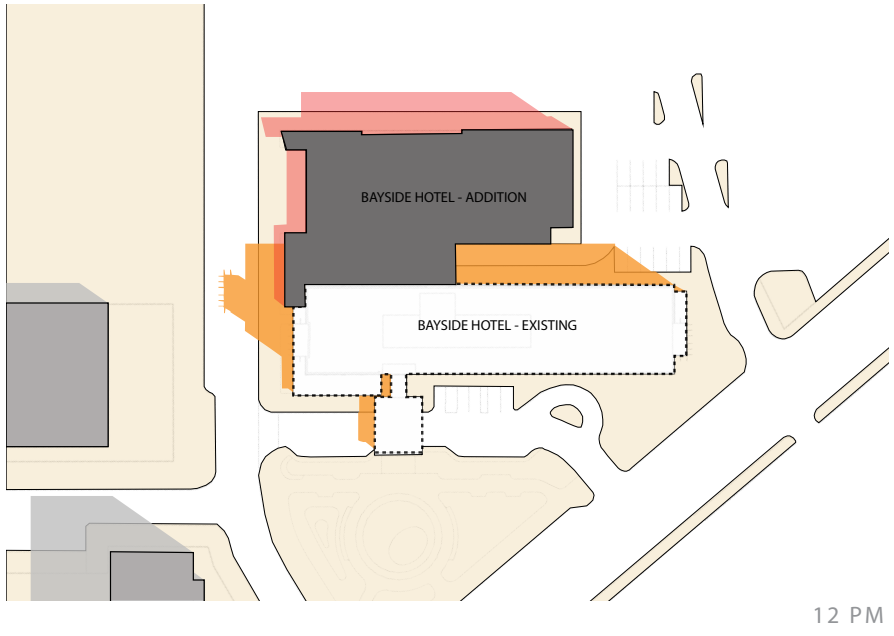
Figure 6-1
Shadow Study, March 21
Source: Arrowstreet, 2014

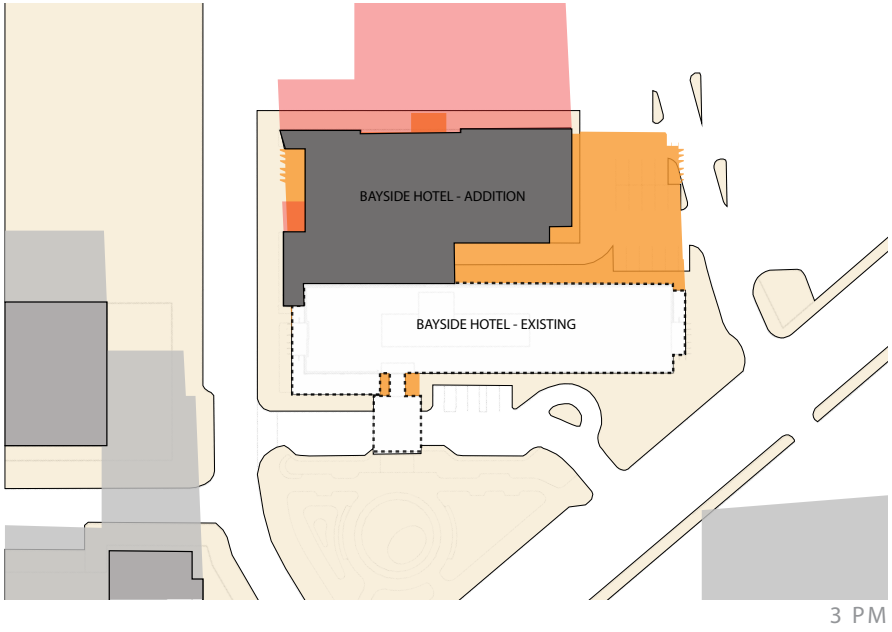


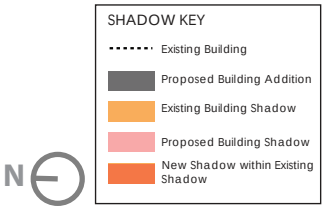
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 6-2
Shadow Study, June 21
Source: Arrowstreet, 2014



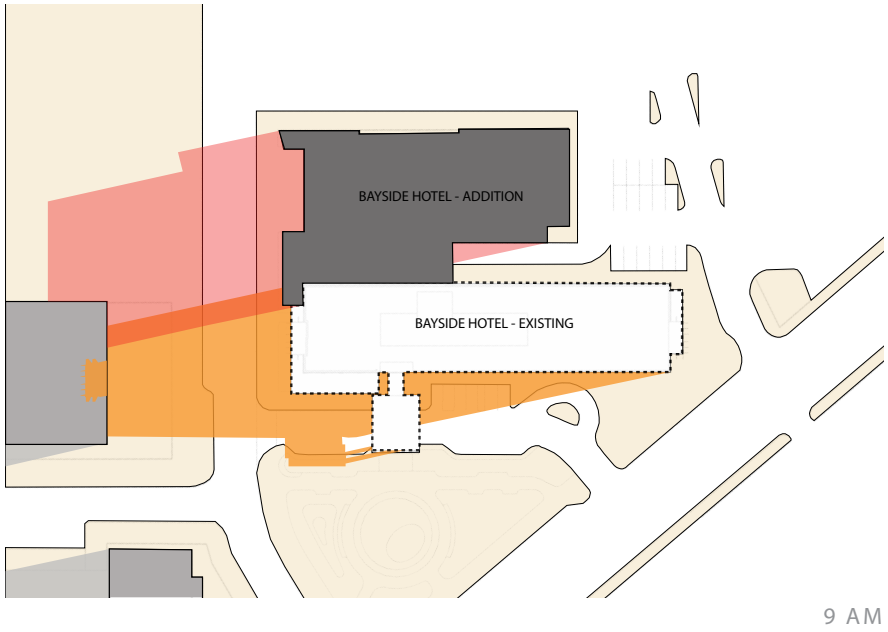


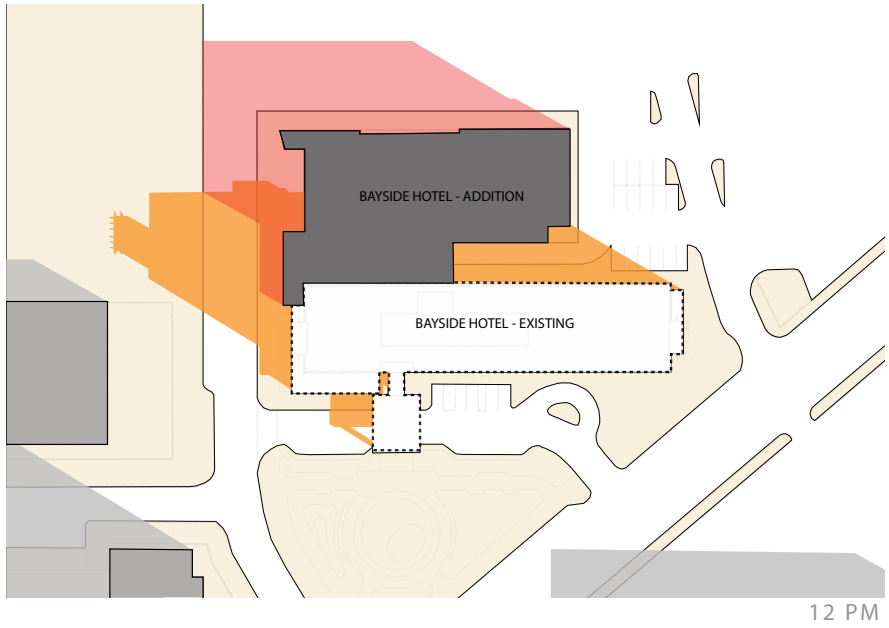


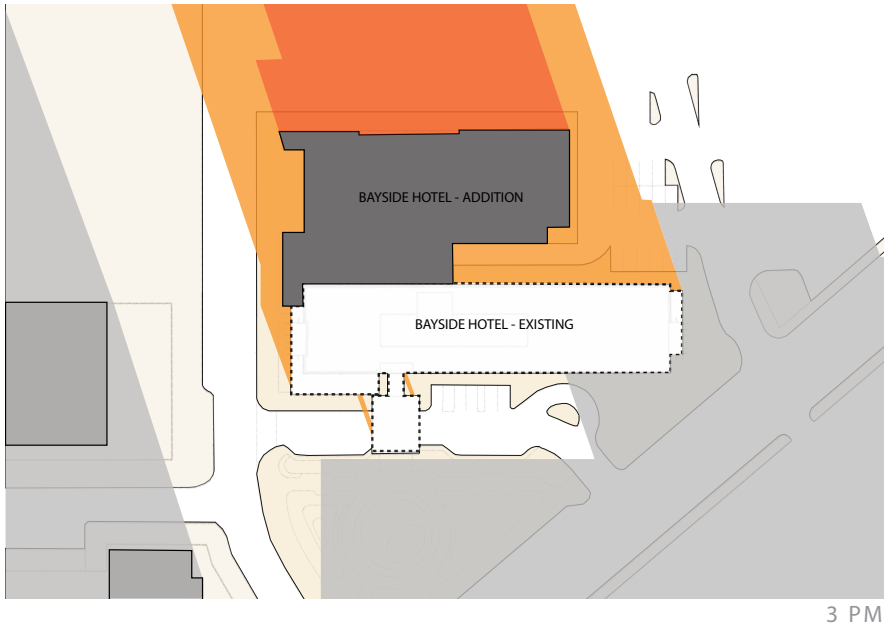


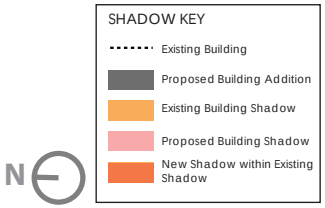
Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 6-3
Shadow Study, September 21
Source: Arrowstreet, 2014



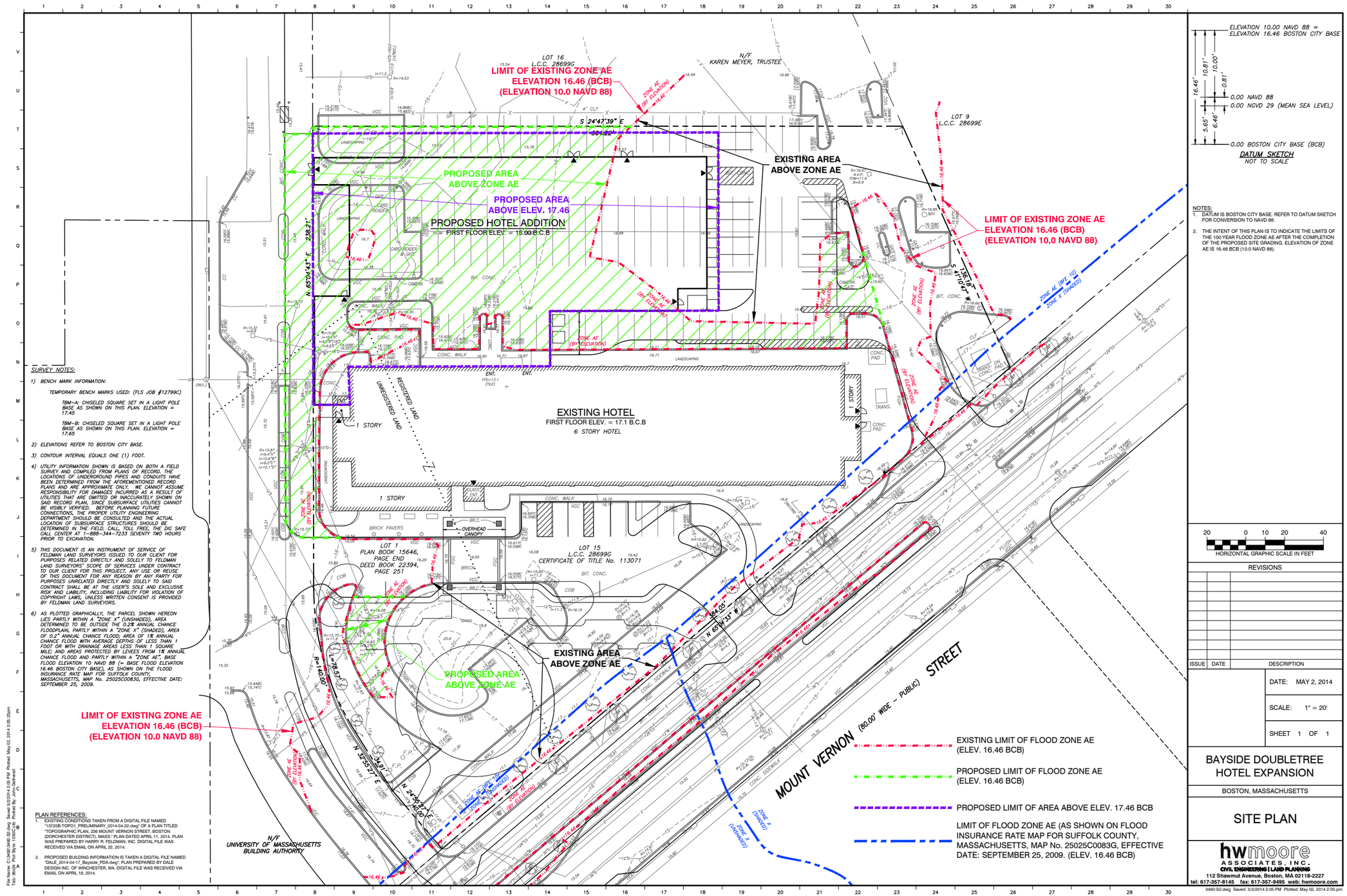






Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 6-4
Shadow Study, December 21
Source: Arrowstreet, 2014



ELEVATION 10.00 NAVD 88 =
ELEVATION 16.46 BOSTON CITY BASE

16.46' = 10.81' + 0.81' + 6.46'
10.00' = 0.00 NAVD 88
0.81' = 0.00 NGVD 29 (MEAN SEA LEVEL)
6.46' = 5.65'
5.65' = 0.00 BOSTON CITY BASE (BCB)

DATUM SKETCH
NOT TO SCALE

NOTES:
1. DATUM IS BOSTON CITY BASE. REFER TO DATUM SKETCH FOR CONVERSION TO NAVD 88.
2. THE INTENT OF THIS PLAN IS TO INDICATE THE LIMITS OF THE 100 YEAR FLOOD ZONE AE AFTER THE COMPLETION OF THE PROPOSED SITE GRADING. ELEVATION OF ZONE AE IS 16.46 BCB (10.0 NAVD 88).

SURVEY NOTES:

1) BENCH MARK INFORMATION:

TEMPORARY BENCH MARKS USED: (FLS JOB #12799C)

TBM–A: CHISELED SQUARE SET IN A LIGHT POLE BASE AS SHOWN ON THIS PLAN. ELEVATION = 17.45

TBM–B: CHISELED SQUARE SET IN A LIGHT POLE BASE AS SHOWN ON THIS PLAN. ELEVATION = 17.65

2) ELEVATIONS REFER TO BOSTON CITY BASE.

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

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

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

6) AS PLOTTED GRAPHICALLY, THE PARCEL SHOWN HEREON LIES PARTLY WITHIN A "ZONE X" (UNSHADED), AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PARTLY WITHIN A "ZONE X" (SHADED), AREA OF 0.2" ANNUAL CHANCE FLOOD; AREA OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND PARTLY WITHIN A "ZONE AE", BASE FLOOD ELEVATION 10 NAVD 88 (= BASE FLOOD ELEVATION 16.46 BOSTON CITY BASE), AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP No. 25025C0083G, EFFECTIVE DATE: SEPTEMBER 25, 2009.

PLAN REFERENCES:

1. EXISTING CONDITIONS TAKEN FROM A DIGITAL FILE NAMED "13725B-TOPO1_PRELIMINARY_2014-04-22.dwg" OF A PLAN TITLED "TOPOGRAPHIC PLAN, 256 MOUNT VERNON STREET, BOSTON, (DORCHESTER DISTRICT), MASS." PLAN DATED APRIL 11, 2014. PLAN WAS PREPARED BY HARRY R. FELDMAN, INC. DIGITAL FILE WAS RECEIVED VIA EMAIL ON APRIL 22, 2014.
2. PROPOSED BUILDING INFORMATION IS TAKEN A DIGITAL FILE NAMED "DALE_2014-04-17_Bayside_PDA.dwg". PLAN PREPARED BY DALE DESIGN INC. OF WINCHESTER, MA. DIGITAL FILE WAS RECEIVED VIA EMAIL ON APRIL 18, 2014.

20 0 10 20 40
HORIZONTAL GRAPHIC SCALE IN FEET

REVISIONS		
ISSUE	DATE	DESCRIPTION

DATE: MAY 2, 2014
SCALE: 1" = 20'
SHEET 1 OF 1

BAYSIDE DOUBLETREE
HOTEL EXPANSION
BOSTON, MASSACHUSETTS

SITE PLAN

hwmoore
ASSOCIATES, INC.
CIVIL ENGINEERING | LAND PLANNING
112 Shawmut Avenue, Boston, MA 02118-2227
tel: 617-357-8145 fax: 617-357-9495 web: hwmoore.com

File Name: C:\MOORE\3492-S2.dwg Saved: 5/2/2014 2:05 PM Plotted: May 02, 2014 2:05:20pm
Tab: 3492-S2 Plot Style: 11X17.ctb Plotted By: John Gerhard
3492-S2.dwg Saved: 5/2/2014 2:05 PM Plotted: May 02, 2014 2:05:20pm

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 6-5
Flood Elevations
Source: H.W. Moore Associates, Inc., 2014

Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 6-6
Historic Resources
Source: MHC, DCR

Chapter 7

INFRASTRUCTURE

CHAPTER 7: INFRASTRUCTURE

7.1 INTRODUCTION

This chapter describes the existing utility systems servicing the Project area, discusses the Project's potential impacts on these utilities, and indentifies mitigation measures to address potential impacts.

7.2 WASTEWATER

7.2.1 EXISTING SEWER SYSTEM

The Boston Water and Sewer Commission (BWSC) owns and maintains the sewer system which services the City of Boston. The BWSC sewer system connects to the Massachusetts Water Resources Authority (MWRA) interceptors for conveyance, treatment, and disposal through the Deer Island Wastewater Treatment Plant.

There is presently a BWSC-owned 36-inch sewer line in Mount Vernon Street adjacent to the Project Site. This sewer line flows westerly to a MWRA 116-inch by 87-inch interceptor conduit in Mount Vernon Street at the Day Boulevard access ramps. This interceptor flows northerly along the west side of Day Boulevard to the Columbus Park Headworks. The sewage is then pumped to the Deer Island Wastewater Treatment Plant (See Figure 7-1, Drain and Wastewater System Map).

7.2.2 PROJECTED SANITARY SEWER FLOW

The proposed Project will include an addition to the existing 197-room Bayside DoubleTree Hotel. The expansion will include 96 one bedroom rooms (net gain of 86 rooms), a 4,000 sf ballroom, with a banquet seating capacity of 266 seats, a junior ballroom with a banquet seating capacity of 80 seats, a 100-seat restaurant, and a 60-seat bar/lounge.

The estimated existing and proposed sewage flow for the Project has been estimated in accordance with 310 CMR 7.15.203: System Sewerage Flow Design Criteria and is summarized in Table 7-1. The total estimated flow from the existing hotel is 21,700 gallons per day. The total proposed flow will be 42,055 gallons per day, shown in Table 7-2. This is an increase of 20,355 gallons per day (gpd) over the existing conditions.

Table 7-1 Estimated Existing Sewage Flow

Proposed Use	Number of Units	Unit Flows (gpd)	Sewerage Flow (gpd)
Hotel	197 bedrooms	110 gpd/bedroom	21,670
Dry Goods	600 sf	5 gpd/100 sf	30
		Total Existing Flow	21,700

Table 7-2 Estimated Proposed Sewage Flow

Proposed Use	Number of Units	Unit Flow (gpd)	Sewerage Flow (gpd)
Hotel	283 bedrooms	110 gpd/bedroom	31,350
Dry Goods	600 sf	5 gpd/100 sf	30
Banquet Facility	346 seats	15 gpd/seat	5,190
Meeting Room	21 seats	5 gpd/seat	105
Restaurant	100 seats	35 gpd/seat	3,500
Bar / Lounge	60 seats	35 gpd/seat	2,100
		Total Proposed Flow	42,055

7.2.3 SANITARY SEWER CONNECTION

The existing building has an 8-inch sewer line, which connects to a 15-inch line on the northerly side of the Site. The 15-inch line flows westerly to the 36-inch sewer main in Mount Vernon Street. The 15-inch sewer line also accepts flows from the Bayside Office Building and the former Bayside Exposition Center.

The proposed Project will abandon the existing connection to the 15-inch line, and will include a new 10-inch sewer connection to the 36-inch sewer main in Mount Vernon Street. The 15-inch line will still be used by UMASS and the Bayside Office Building. An

exterior grease trap conforming to BWSC specifications will be constructed for the restaurant's kitchen wastewater line.

The proposed sewer connection will comply with BWSC requirements. A site plan will be submitted to BWSC for their review and approval. The plan will indicate the invert elevations, slope, connection detail, and material of the proposed sewer connection.

The Proponent will participate in the BWSC infiltration/Inflow (I/I) removal program. This program removes extraneous clean water from the sewer system. BWSC has established a fee based on a 4:1 reduction ratio and the anticipated sewerage generation for the Project. The BWSC I/I removal program conforms to DEP's approach to flow control on the MWRA system.

7.3 WATER SYSTEM

7.3.1 EXISTING WATER SYSTEM

BWSC provides water service to the City of Boston through a well-developed network of pipes. BWSC receives its water supply from the MWRA system.

The existing water service to the hotel is from the recently constructed 16-inch southern low water line in Mount Vernon Street. The 16-inch line was constructed in 2013, and replaced a 1906 12-inch line. The hotel has an 8-inch fire protection service and a 6-inch domestic service (See Figure 7-2, Water Distribution System Map).

7.3.2 ANTICIPATED WATER CONSUMPTION

Water consumption for the Project has been estimated based on 110% of the average daily estimated sewerage flow with the total estimated consumption of 46,260 gallons per day. The existing hotel has an estimated consumption of 23,870 gallons per day, and therefore there will be an increase of 23,390 gallons per day. The actual water usage will be significantly less that the estimated design flow stated above due to the use of water saving devices which are described below.

7.3.3 PROPOSED WATER SERVICE

At this time it appears that the existing 8-inch fire protection and 6-inch domestic water connections are adequate for the proposed Project. This will be further analyzed based on the proposed final fire protection design and the new flow data from the 16-inch water main.

The water service will be metered in accordance with BWSC requirements. Backflow preventer devices will be installed on all fire service where required to protect from cross-connection hazards. Water supply systems servicing the Project will be gated to minimize

public hazard or inconvenience in the event of a water main break. The Proponent will also submit a General Service Application and Site Plan to the BWSC for review and approval.

7.3.4 WATER SUPPLY CONSERVATION AND MITIGATION MEASURES

Conserving water, especially potable water, is an important element to the Project's sustainable design strategy. The State Building Code requires the use of water conserving fixtures. Water conservation measures such as low-flow water closets, low-flow faucet aerators and restricted flow showerheads will be used to reduce the domestic water demand. These systems will be installed consistent with the code requirements

Water demands will be further reduced by the implementation of Low Impact Development (LID) techniques during the site design phase of the Project. These LIDs will include the minimizing of lawn care, planting of native drought-resistant plant and shrubs, limiting irrigation, and using only high efficiency irrigation systems.

7.4 STORM DRAINAGE SYSTEM

7.4.1 EXISTING STORM DRAIN SYSTEM

The Project will replace an existing surface parking lot. Stormwater from the parking area flows to catch basins and the through an 18-inch pipe to a water quality device located adjacent to Mount Vernon Street. Stormwater runoff from a portion of the former Bayside Exposition Center parking area, as well as the hotel roof, also flows to the 18-inch drain. From the water quality device there is an 18-inch connection to the 24-inch storm drain in Mount Vernon Street. This 24-inch storm drain runs easterly in Mount Vernon Street and discharges to Dorchester Bay just south of the Harbor Point Apartments.

7.4.2 PROPOSED DRAINAGE CONDITIONS

The proposed stormwater system will comply with the Department of Environmental Protection's (DEP) Stormwater Management Regulations. Surface stormwater runoff will flow to catch basins with deep sumps and oil trap hoods and then to the existing water quality device prior to discharging to the Mount Vernon Street drain.

The new system will utilize the existing water quality device and the existing connection to the Mount Vernon Street 24-inch drain and will not require new drain connections in Mount Vernon Street. It is anticipated that UMass-Boston will eliminate the flow from the Bayside Expo Center parking area from this drain system. The new drain system will comply with DEP's Stormwater Management Requirements.

7.4.3 MITIGATION MEASURES

The Project presents an opportunity to substantially improve stormwater management on the Site. The Project will reduce peak flow and volume of stormwater runoff from the Project Site, increase stormwater recharge, and improve stormwater quality.

The proposed stormwater system will include Stormwater Best Management Practices (BMP) with consideration given to application of Low Impact Development (LID) techniques to both reduce the quantity of runoff and improve water quality. LIDs minimize adverse water quality impacts by mimicking the Site's natural hydrologic conditions by infiltrating filtering, detaining, and evaporating stormwater runoff close to its source.

The Project will decrease the volume and peak rate of stormwater runoff from the Project Site due to significant decrease in impervious surfaces. Stormwater runoff from pavement areas will be treated to remove 80% of the total suspended solids prior to discharging to the existing drain system. An underground chamber system will capture and infiltrate stormwater on-site.

LID techniques will be used on the Project Site. These techniques may include minimizing lawn areas, reducing impervious surfaces, and utilizing native, drought-tolerant plants. The Proponent will also explore the opportunities for Integrated Management Practices (IMP) which may include bioretention cells, permeable pavement blocks, soil amendments, and below-grade infiltration systems.

A long term Pollution Prevention Plan will be developed for the Project, which will identify suitable practices for source control Stormwater Pollution Prevention as outlined in the DEP Stormwater handbook. The long term Pollution Prevention Plan will address source control measures including street sweeping, snow and salt management, fertilizers, herbicides, pesticides stabilization of eroding surfaces, and maintenance of the stormwater management systems.

A Stormwater Pollution Prevention Plan (SWPPP) will be developed in conformance with the EPA, NPDES, and DEP Guidelines. The SWPPP will address sedimentation and erosion controls as well as material management practices and spill control practices during the construction period.

7.5 ELECTRICAL SERVICES

NSTAR provides electric service in the City of Boston. There are existing electric underground service lines in Mount Vernon Street. All new electric service will be installed underground from Mount Vernon Street. Electric power supply design will be coordinated with NSTAR as the project design process and electric consumption is determined.

The Proponent is committed to taking an integrated and comprehensive approach to energy planning, which is sensitive to high and rising energy prices and growing concern over global climate change. The highest priority, and most cost-effective approach, is to make the Project's buildings energy efficient, exceeding the requirements of the State Building Code. In addition, as the Project's electric load and energy requirements are calculated and assessed, the Proponent will undertake an energy planning process, working closely with the City of Boston and NSTAR. In addition to giving consideration to efficiency strategies, this planning process will evaluate the potential for meeting a portion of the Site's energy demand through green power purchasing and on-site generation.

7.6 TELECOMMUNICATIONS SYSTEM

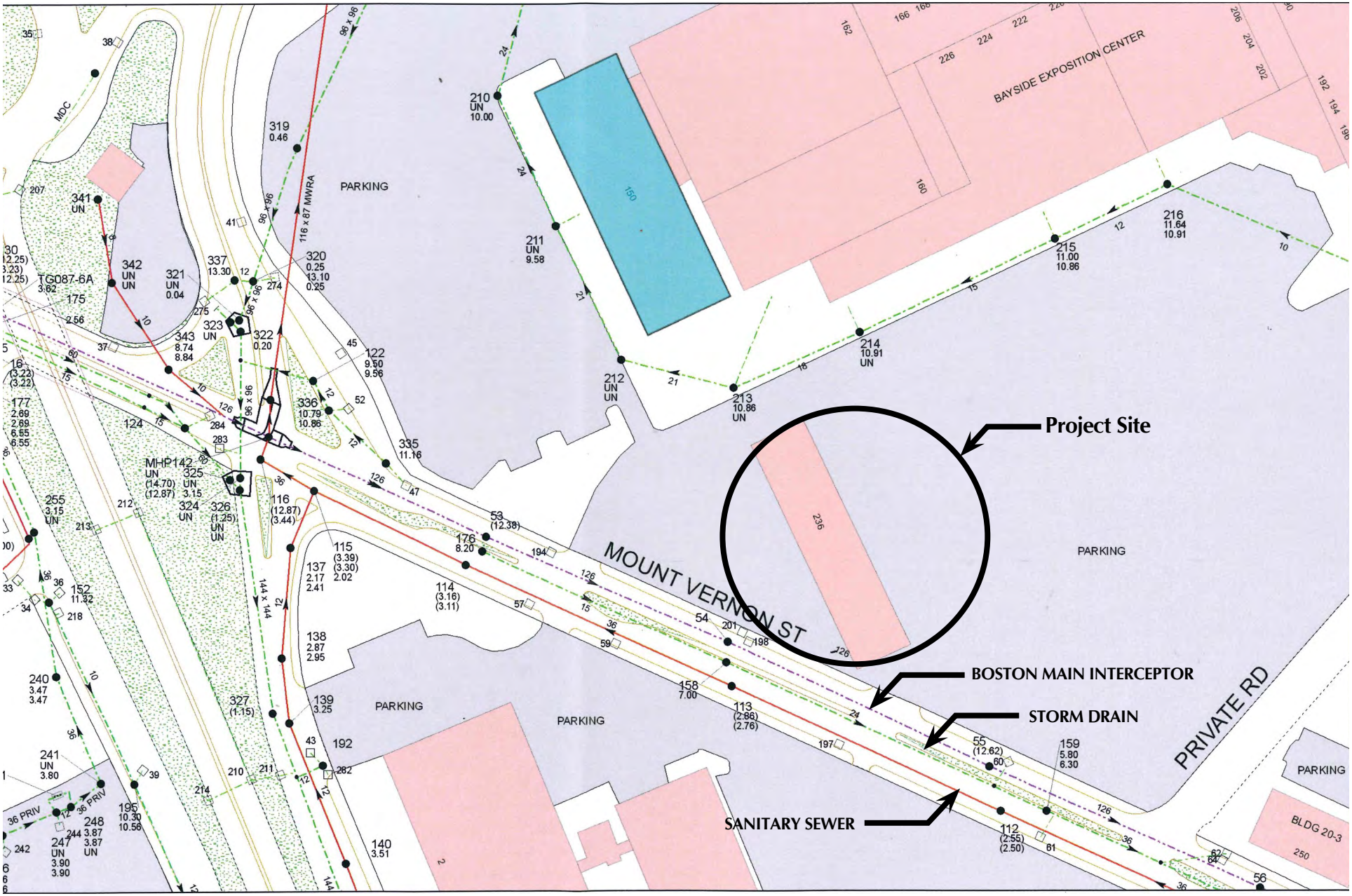
Verizon New England provides telephone service in the Project area. There are underground telephone service lines in Mount Vernon Street. It is anticipated that the new telephone services will be installed underground from Mount Vernon Street. Cable and Internet service may be provided to the Project by Comcast.

7.7 GAS SYSTEMS

KeySpan Energy delivery provides natural gas service in the Project area. There is a 30-inch gas main in Mount Vernon Street. It is anticipated that the new gas services will connect to the main in Mount Vernon Street. As noted above with respect to electricity, the Proponent is committed to integrating a comprehensive approach to energy planning, one which will also include working closely with the City of Boston and KeySpan Energy with respect to natural gas usage. In addition to giving consideration to efficiency strategies, this planning process will evaluate the potential for meeting a portion of the Site's electric and thermal demand through on-site generation.

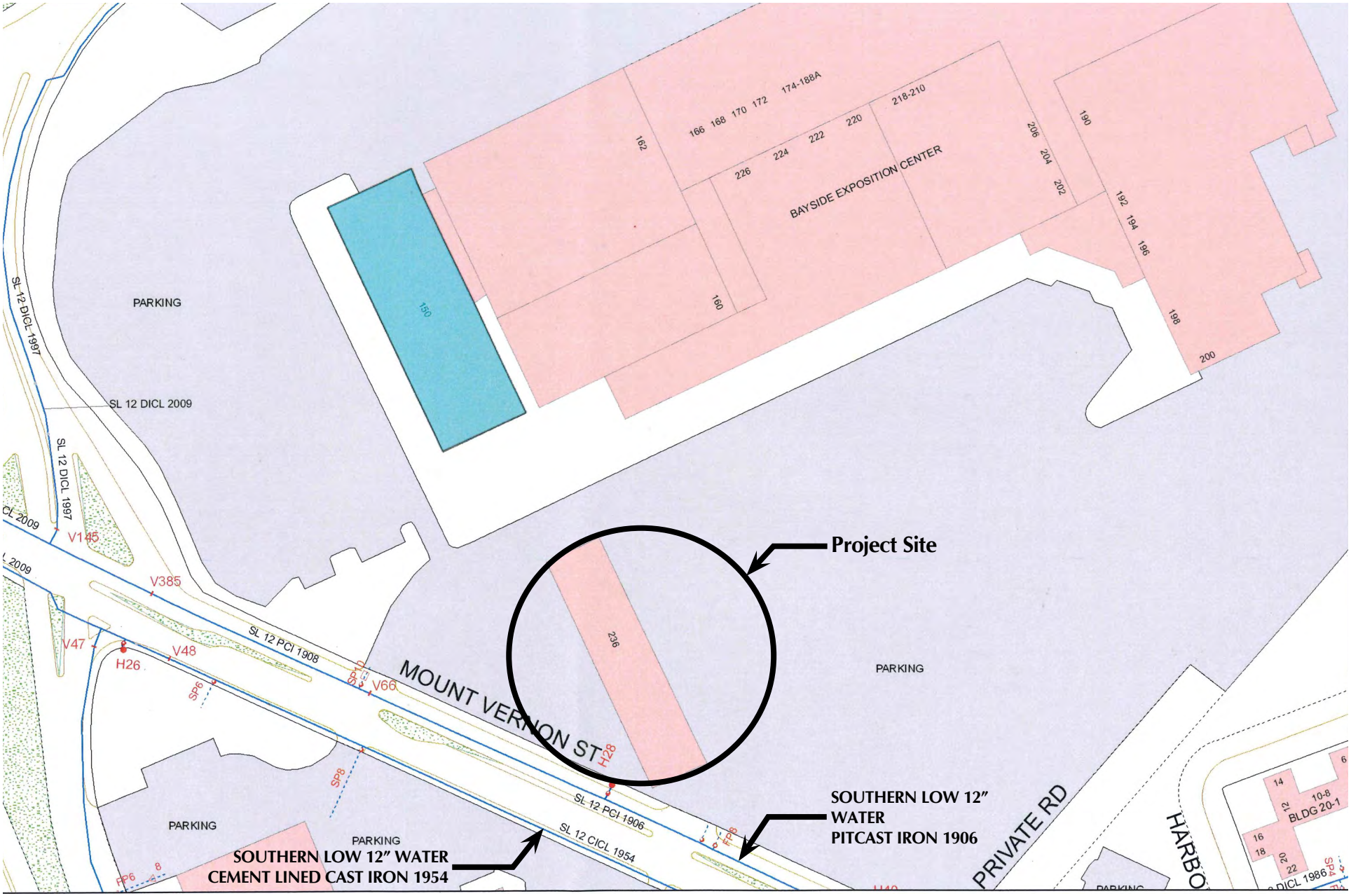
7.8 UTILITY PROTECTION DURING CONSTRUCTION

During construction, infrastructure will be protected using sheeting and shoring, temporary relocations, and construction staging as required. The 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 contractor will also be required to provide adequate notification to the utility owner prior to any work commencing in their utility. In the event a utility cannot be maintained in service during switch over to a temporary or permanent system. The contractor will be required to coordinate the shutdown with the utility owners and Project's abutters to minimize impacts and inconveniences accordingly.



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 7-1
Drain and Wastewater System Map
Source: Boston Water and Sewer Commission, 2012



Bayside DoubleTree Hotel Expansion
Dorchester, Massachusetts

Figure 7-2
Water Distribution System Map
Source: Boston Water and Sewer Commission, 2012

Appendix A

CLIMATE CHANGE PREPAREDNESS AND RESILIENCY CHECKLIST

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	Bayside DoubleTree Hotel Expansion Project
Project Address Primary:	236 Mt Vernon Street, Boston, MA 02125
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Thomas J. Devane, Jr. Project Director, tdevane@corcoranjennison.com Corcoran Jennison Companies, 617-822-7222

A.2 - Team Description

Owner / Developer:	Bayside Club Hotel LLC c/o Corcoran Jennison Company, Inc.
Architect:	Arrowstreet Inc.
Engineer (building systems):	WSP
Sustainability / LEED:	Arrowstreet Inc. / Fort Point Associates, Inc.
Permitting:	Fort Point Associates, Inc.
Construction Management:	
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, Restaurant, Ballroom and Meeting function spaces
List the First Floor Uses:	Hotel, Restaurant, Ballroom and Meeting function spaces

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

Wood Frame	**Masonry**	**Steel Frame**	**Concrete**

Describe the building?

Site Area:	*91,027 SF*	Building Area:	*76,073 SF*
Building Height:	*64 Ft.*	Number of Stories:	*6 Flrs.*
First Floor Elevation (reference Boston City Base):	*18.0' Elev. At Addition only*	Are there below grade spaces/levels, if yes how many:	*No*

A.5 - Green Building

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

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

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

Registered:	*No*	Certified:	*No*

A.6 - Building Energy

What are the base and peak operating energy loads for the building?
Numbers based on comparative building types. Model associated with this project has not been completed yet.

Electric:	*420 (kW)*	Heating:	*1.74 (MMBtu/hr)*
What is the planned building Energy Use Intensity:	*53.9 (kbut/SF)*	Cooling:	*140 (Tons)*

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

Electric:	*40 (kW)*	Heating:	*(MMBtu/hr)*
	Battery life for lighting only	Cooling:	*(Tons/hr)*

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

Electrical Generation:	*Generator for minimal life safety systems*		Fuel Source:	
System Type and Number of Units:	Combustion Engine	Gas Turbine	Combine Heat and Power	*(Units)*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	10 Years	25 Years	**50 Years**	75 Years

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

Select most appropriate:	10 Years	25 Years	**50 Years**	75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	10 Years	25 Years	**50 Years**	75 Years

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

0 / 100 Deg.

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

100 Deg.	*8 Hours*	*7 Events / yr.*

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

45 Days	*1 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?

60 Inches / yr.	*4.5 Inches*	*10 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?

105mph Peak Wind	*3 secs*	*50 year storm*

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:	*5%*	Below ASHRAE 90.1-2010 baseline
How is performance determined:	Energy model (E-Quest)	

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

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

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

Roof:	*R = 25ci*	Walls / Curtain Wall Assembly:	*R = R-13 + R-7.5ci*
Foundation:	*R = 7.5ci*	Basement / Slab:	*R =15 (36" below)*
Windows:	*R = / U =.38*	Doors:	*R = / U =.37*

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 local distributed electrical	Building will be Smart Grid ready	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready

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

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

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

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

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

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

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

Select all appropriate:	On-site retention systems & ponds	Infiltration galleries & areas	vegetated water capture systems	Vegetated roofs
Describe other strategies:	Infiltration system will be designed for 1" of rain fall.			

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

No	By placing the floor level at 18'-0" we believe this will preclude the building from flooding.

Describe site conditions?

Site Elevation – Low/High Points:	*Low 15.1 High 20.6 Boston City Base Elev.(Ft.)*	*Existing ground floor 16.0' BCB, Addition ground floor 18.0'BCB*
Building Proximity to Water:	*900 Ft.*	

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

Coastal Zone:	*Yes (per CZM)*	Velocity Zone:	*No*
Flood Zone:	*Yes (per FEMA)*	Area Prone to Flooding:	*No*

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

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

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

Site is in a FEMA designated flood zone

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:	*1 Ft.*	Frequency of storms:	*1 per 100 years*

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. 18.0 (Ft.)*	First Floor Elevation:	*Boston City Base Elev. 18.0 (Ft.)*

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

	Yes	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*
If Yes, describe:	Existing building is at BCB Elev 17.0' and was retrofitted to allow flood gates to be put in place		

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

Systems located	Water tight utility	Waste water back	Storm water back

above 1st Floor.	conduits	flow prevention	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:

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

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

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:

Rooftop generator	No basement

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** Existing building was retrofitted for temporary flood barricades	Resilient site design, materials and construction

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

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

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

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

Appendix B

ACCESSIBILITY CHECKLIST

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

a. http://www.mbta.com/about_the_mbta/accessibility/

Project Information

Project Name:	**Bayside DoubleTree Hotel Expansion Project**
Project Address Primary:	**236 Mount Vernon Street, Boston, MA 02125**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Thomas J. Devane, Project Director, tdevane@corcoranjennison.com** **Corcoran Jennison Companies, 617-822-7222**

Team Description

Owner / Developer:	**Bayside Club Hotel LLC, c/o Corcoran Jennison Company, Inc.**
Architect:	**Arrowstreet**
Engineer (building systems):	**WSP**
Sustainability / LEED:	**Arrowstreet / Fort Point Associates, Inc.**
Permitting:	**Fort Point Associates, Inc.**
Construction Management:	

Project Permitting and Phase

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

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

Building Classification and Description

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

	Residential – One to Three Unit	Residential - Multi-unit, Four +	Institutional	Education
	Commercial	Office	Retail	**Assembly**
	Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List)	*Hotel, Restaurant, Ballroom and Meeting function spaces*			

What is the Construction Type – select most appropriate type?

	Wood Frame	**Masonry**	**Steel Frame**	Concrete

Describe the building?

Site Area:	*91,027 SF*	Building Area:	*76,073 SF*
Building Height:	*64Ft.*	Number of Stories:	*6 Flrs.*
First Floor Elevation:	*18.0' Elev.* *At addition only*	Are there below grade spaces:	*No*

Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the development neighborhood and identifying characteristics.	The Site is located in Columbia Point, Dorchester, 0.25 miles from the MBTA's JFK/UMass Station and in close proximity to Interstate 93. The Columbia Point neighborhood is home to several large institutions such as UMass Boston, the JFK Presidential Library and the Boston Globe as well as the large Harbor Point

	residential development.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	The JFK/UMASS station which includes subway and bus access is approximately 0.25mi from the project site.
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Nearby schools include Boston College High School, John W McCormack School, Paul A Dever School and UMass-Boston. Health centers include Geiger Gibson Community Health Center and University Health Services at UMass-Boston. Housing includes Harbor Point on the Bay, which is mixed-community housing including market-rate and affordable units and housing for the elderly and disabled.
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	Nearby open space and recreational resources include Carson Beach and Joe Moakley Park to the north and the Harborwalk around Columbia Point to the east. Nearby public facilities include the JFK Presidential Library, UMass-Boston campus, Massachusetts State Archives, and Commonwealth Museum and the Denney Youth Center Boys & Girls Clubs of Dorchester.

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	There are some existing sidewalks along the proposed Mount Vernon Extension within the drop-off area in front of the hotel that are in the project boundary. There are additional existing sidewalks located along Mount Vernon Street, which are either on City property or on private land not controlled by the Proponent.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	All existing sidewalks and pedestrian ramps within the project boundary are to be demolished and/or reconfigured to meet 521 CMR requirements.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	All existing sidewalks and pedestrian ramps within the project boundary are to be demolished and/or reconfigured to meet 521 CMR requirements.

Is the development site within a historic district? **If yes,** please identify.	No

Surrounding Site Conditions – Proposed

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

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	The sidewalks along Mount Vernon Street are on City of Boston land and the sidewalks along Mount Vernon Extension are on private land not controlled by the Proponent. The Proponent does not control these sidewalks and they are not in the scope of the Project. The only sidewalks in the Project are those located with the open space in front of the hotel and the pedestrian walkway along the east edge. The Proponent will determine whether these sidewalks meet the Boston Complete Streets criteria through the design process.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Sidewalk widths vary from 3ft wide to 10ft wide. Most paths are 8-10ft wide and minor paths along the parallel parking are 3ft wide.
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	Materials: concrete and concrete pavers. Private property.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement	N/A

Commission?	
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	

Proposed Accessible Parking:

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

What is the total number of parking spaces provided at the development site parking lot or garage?	Up to 25
What is the total number of accessible spaces provided at the development site?	3
Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	No
Where is accessible visitor parking located?	Both at the main hotel entrance on the west side of the existing hotel and at the entrance to the addition on the east side of the site.
Has a drop-off area been identified? **If yes,** will it be accessible?	Yes, an accessible drop-off will be provided.
Include a diagram of the accessible routes to and from the accessible	See attached diagrams.

parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	See attached diagrams.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	Flush at all three entrances shown on diagram.
Are the accessible entrance and the standard entrance integrated?	Yes
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? **If yes,** include diagram of the accessible route.	No
Has an accessible routes way-finding and signage package been developed? **If yes,** please describe.	No

Accessible Units: (If applicable)

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

What is the total number of proposed units for the development?	N/A

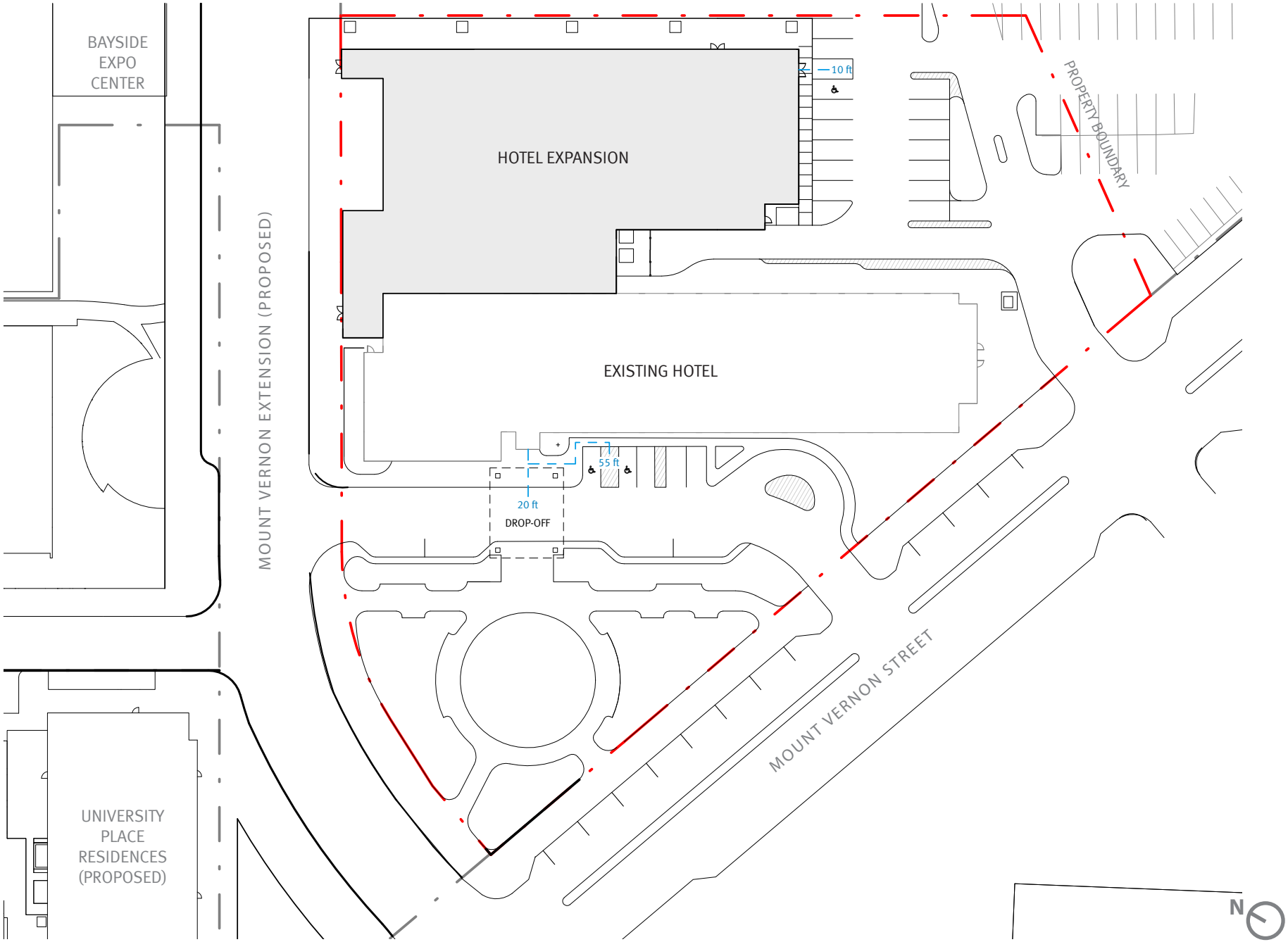
Article 80 | ACCESSIBILTY CHECKLIST

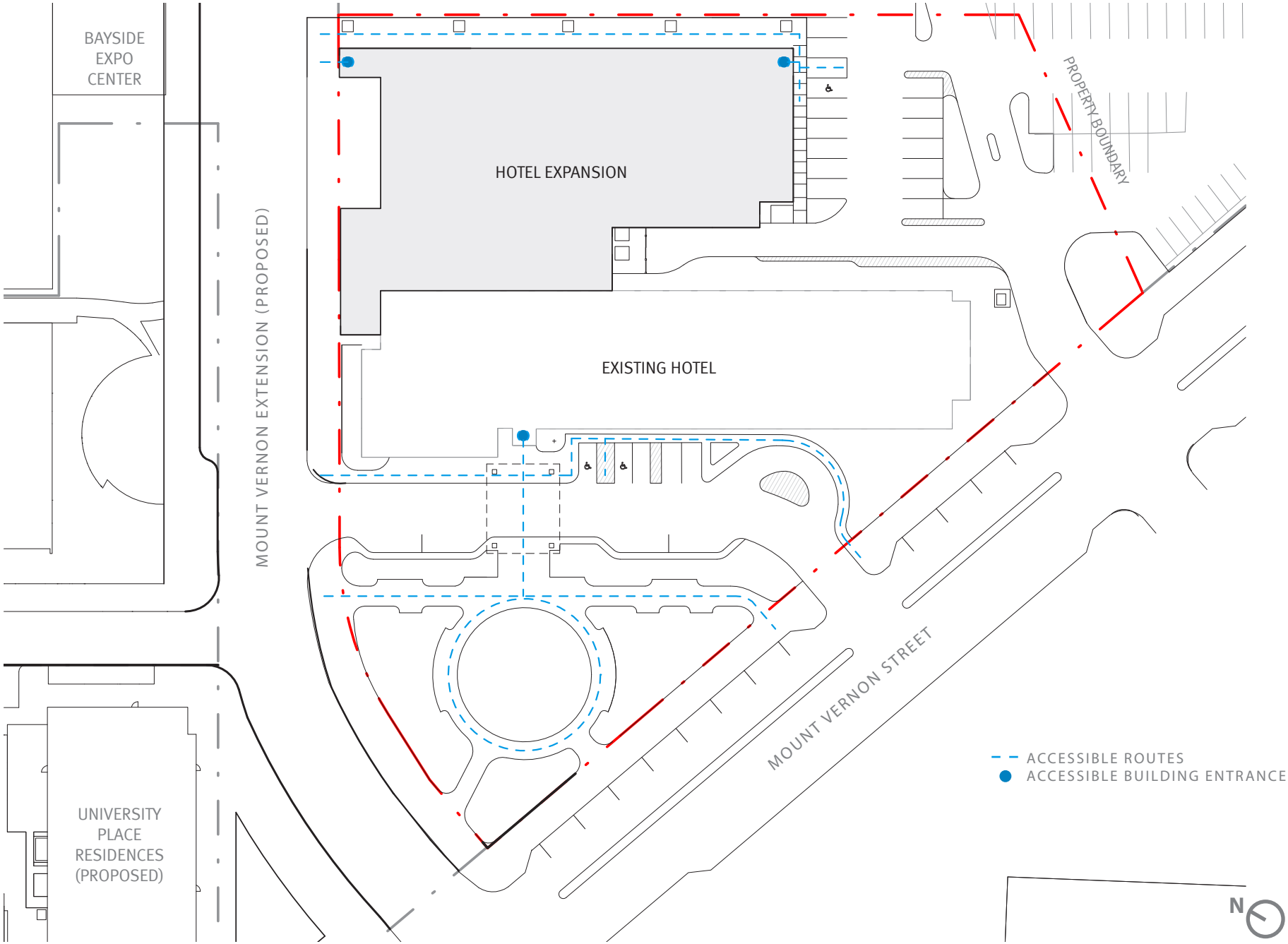
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	
How many accessible units are being proposed?	
Please provide plan and diagram of the accessible units.	
How many accessible units will also be affordable? If none, please describe reason.	
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason.	
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	

Thank you for completing the Accessibility Checklist!

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

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


BAYSIDE EXPO CENTER
MOUNT VERNON EXTENSION (PROPOSED)
HOTEL EXPANSION
EXISTING HOTEL
10 ft
PROPERTY BOUNDARY
55 ft
20 ft
DROP-OFF
MOUNT VERNON STREET
UNIVERSITY PLACE RESIDENCES (PROPOSED)
N


BAYSIDE EXPO CENTER
MOUNT VERNON EXTENSION (PROPOSED)
HOTEL EXPANSION
EXISTING HOTEL
PROPERTY BOUNDARY
MOUNT VERNON STREET
UNIVERSITY PLACE RESIDENCES (PROPOSED)
ACCESSIBLE ROUTES
ACCESSIBLE BUILDING ENTRANCE
N

Appendix C

TRANSPORTATION APPENDIX

TRANSPORTATION TECHNICAL APPENDIX

- TRAFFIC COUNTS
- TRIP GENERATION CALCULATIONS
- INTERSECTION CAPACITY ANALYSIS WORKSHEETS

TRAFFIC COUNTS

S: Day Boulevard Ramp
E/W: Day Boulevard
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

PRECISION
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File Name : 123029 A
Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	93	36	0	153	0	0	93	67	1	443
07:15 AM	96	40	0	218	7	0	75	77	0	513
07:30 AM	117	39	0	230	2	0	79	80	0	547
07:45 AM	86	49	0	201	4	0	83	98	0	521
Total	392	164	0	802	13	0	330	322	1	2024
08:00 AM	75	70	0	245	2	0	85	99	0	576
08:15 AM	81	47	0	231	2	0	79	119	0	559
08:30 AM	64	51	0	222	3	0	91	62	0	493
08:45 AM	57	45	0	205	3	0	77	70	0	457
Total	277	213	0	903	10	0	332	350	0	2085
Grand Total	669	377	0	1705	23	0	662	672	1	4109
Apprch %	64	36	0	98.7	1.3	0	49.6	50.3	0.1	
Total %	16.3	9.2	0	41.5	0.6	0	16.1	16.4	0	
Cars	654	370	0	1682	23	0	585	658	1	3973
% Cars	97.8	98.1	0	98.7	100	0	88.4	97.9	100	96.7
Heavy Vehicles	15	7	0	23	0	0	77	14	0	136
% Heavy Vehicles	2.2	1.9	0	1.3	0	0	11.6	2.1	0	3.3

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**117**	39	0	**156**	230	2	0	232	79	80	0	159	547
07:45 AM	86	49	0	135	201	**4**	0	205	83	98	0	181	521
08:00 AM	75	**70**	0	145	**245**			**247**	**85**	99	0	184	**576**
08:15 AM	81	47	0	128	231	2	0	233	79	**119**	0	**198**	559
Total Volume	359	205	0	564	907	10	0	917	326	396	0	722	2203
% App. Total	63.7	36.3	0		98.9	1.1	0		45.2	54.8	0		
PHF	.767	.732	.000	.904	.926	.625	.000	.928	.959	.832	.000	.912	.956
Cars	352	201	0	553	898	10	0	908	295	390	0	685	2146
% Cars	98.1	98.0	0	98.0	99.0	100	0	99.0	90.5	98.5	0	94.9	97.4
Heavy Vehicles	7	4	0	11	9	0	0	9	31	6	0	37	57
% Heavy Vehicles	1.9	2.0	0	2.0	1.0	0	0	1.0	9.5	1.5	0	5.1	2.6

S: Day Boulevard Ramp
E/W: Day Boulevard
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Groups Printed- Cars

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	93	35	0	148	0	0	64	62	1	403
07:15 AM	94	40	0	212	7	0	67	75	0	495
07:30 AM	115	38	0	227	2	0	72	79	0	533
07:45 AM	84	49	0	199	4	0	75	97	0	508
Total	386	162	0	786	13	0	278	313	1	1939
08:00 AM	74	69	0	244	2	0	76	98	0	563
08:15 AM	79	45	0	228	2	0	72	116	0	542
08:30 AM	61	50	0	220	3	0	86	61	0	481
08:45 AM	54	44	0	204	3	0	73	70	0	448
Total	268	208	0	896	10	0	307	345	0	2034
Grand Total	654	370	0	1682	23	0	585	658	1	3973
Apprch %	63.9	36.1	0	98.7	1.3	0	47	52.9	0.1	
Total %	16.5	9.3	0	42.3	0.6	0	14.7	16.6	0	

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**115**	38	0	**153**	227	2	0	229	72	79	0	151	533
07:45 AM	84	49	0	133	199	**4**	0	203	75	97	0	172	508
08:00 AM	74	**69**	0	143	**244**			**246**	**76**	98	0	174	**563**
08:15 AM	79	45	0	124	228	2	0	230	72	**116**	0	**188**	542
Total Volume	352	201	0	553	898	10	0	908	295	390	0	685	2146
% App. Total	63.7	36.3	0		98.9	1.1	0		43.1	56.9	0		
PHF	.765	.728	.000	.904	.920	.625	.000	.923	.970	.841	.000	.911	.953

S: Day Boulevard Ramp
E/W: Day Boulevard
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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Groups Printed- Heavy Vehicles

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	0	1	0	5	0	0	29	5	0	40
07:15 AM	2	0	0	6	0	0	8	2	0	18
07:30 AM	2	1	0	3	0	0	7	1	0	14
07:45 AM	2	0	0	2	0	0	8	1	0	13
Total	6	2	0	16	0	0	52	9	0	85
08:00 AM	1	1	0	1	0	0	9	1	0	13
08:15 AM	2	2	0	3	0	0	7	3	0	17
08:30 AM	3	1	0	2	0	0	5	1	0	12
08:45 AM	3	1	0	1	0	0	4	0	0	9
Total	9	5	0	7	0	0	25	5	0	51
Grand Total	15	7	0	23	0	0	77	14	0	136
Apprch %	68.2	31.8	0	100	0	0	84.6	15.4	0	
Total %	11	5.1	0	16.9	0	0	56.6	10.3	0	

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	**1**	0	1	5	0	0	5	**29**	**5**	0	**34**	**40**
07:15 AM	**2**	0	0	2	**6**			**6**	8	2	0	10	18
07:30 AM	2	1	0	**3**	3	0	0	3	7	1	0	8	14
07:45 AM	2	0	0	2	2	0	0	2	8	1	0	9	13
Total Volume	6	2	0	8	16	0	0	16	52	9	0	61	85
% App. Total	75	25	0		100	0	0		85.2	14.8	0		
PHF	.750	.500	.000	.667	.667	.000	.000	.667	.448	.450	.000	.449	.531

S: Day Boulevard Ramp
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Groups Printed- Peds and Bikes

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	0	0	0	0	0	5	0	2	3	10
07:15 AM	0	0	0	1	0	2	1	1	2	7
07:30 AM	0	1	0	2	0	8	1	3	2	17
07:45 AM	0	0	0	1	0	5	2	0	1	9
Total	0	1	0	4	0	20	4	6	8	43
08:00 AM	1	0	0	1	0	6	2	3	0	13
08:15 AM	0	0	0	1	0	1	1	0	0	3
08:30 AM	0	0	0	2	0	6	1	1	2	12
08:45 AM	0	0	0	0	0	1	1	0	0	2
Total	1	0	0	4	0	14	5	4	2	30
Grand Total	1	1	0	8	0	34	9	10	10	73
Apprch %	50	50	0	19	0	81	31	34.5	34.5	
Total %	1.4	1.4	0	11	0	46.6	12.3	13.7	13.7	

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	0	0	0	0	1	0	2	3	1	1	**2**	4	7
07:30 AM	0	**1**	0	**1**	**2**		**8**	**10**	1	**3**	2	**6**	**17**
07:45 AM	0	0	0	0	1	0	5	6	**2**	0	1	3	9
08:00 AM	**1**	0	0	1	1	0	6	7	2	3	0	5	13
Total Volume	1	1	0	2	5	0	21	26	6	7	5	18	46
% App. Total	50	50	0		19.2	0	80.8		33.3	38.9	27.8		
PHF	.250	.250	.000	.500	.625	.000	.656	.650	.750	.583	.625	.750	.676

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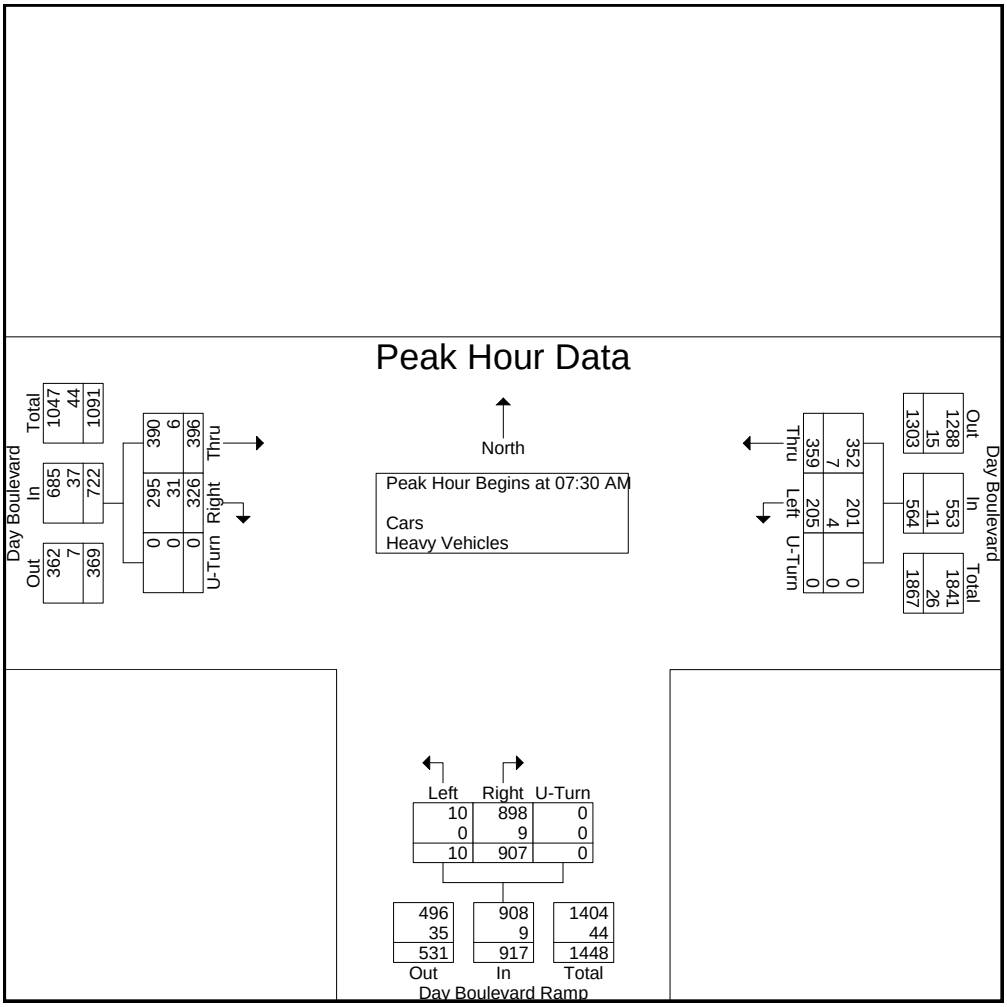
	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**117**	39	0	**156**	230	2	0	232	79	80	0	159	547
07:45 AM	86	49	0	135	201	**4**	0	205	83	98	0	181	521
08:00 AM	75	**70**	0	145	**245**			**247**	**85**	99	0	184	**576**
08:15 AM	81	47	0	128	231	2	0	233	79	**119**	0	**198**	559
Total Volume	359	205	0	564	907	10	0	917	326	396	0	722	2203
% App. Total	63.7	36.3	0		98.9	1.1	0		45.2	54.8	0		
PHF	.767	.732	.000	.904	.926	.625	.000	.928	.959	.832	.000	.912	.956
Cars	352	201	0	553	898	10	0	908	295	390	0	685	2146
% Cars	98.1	98.0	0	98.0	99.0	100	0	99.0	90.5	98.5	0	94.9	97.4
Heavy Vehicles	7	4	0	11	9	0	0	9	31	6	0	37	57
% Heavy Vehicles	1.9	2.0	0	2.0	1.0	0	0	1.0	9.5	1.5	0	5.1	2.6



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Groups Printed- Cars - Heavy Vehicles

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	151	91	0	101	0	0	61	99	0	503
04:15 PM	174	91	0	84	2	0	66	93	0	510
04:30 PM	165	73	0	84	0	0	49	83	1	455
04:45 PM	146	119	0	89	1	0	47	93	0	495
Total	636	374	0	358	3	0	223	368	1	1963
05:00 PM	180	69	0	85	4	0	54	104	0	496
05:15 PM	193	59	0	64	2	0	45	87	0	450
05:30 PM	227	44	0	91	3	0	63	84	1	513
05:45 PM	193	54	0	83	1	0	45	111	0	487
Total	793	226	0	323	10	0	207	386	1	1946
Grand Total	1429	600	0	681	13	0	430	754	2	3909
Apprch %	70.4	29.6	0	98.1	1.9	0	36.3	63.6	0.2	
Total %	36.6	15.3	0	17.4	0.3	0	11	19.3	0.1	
Cars	1415	593	0	669	13	0	385	747	2	3824
% Cars	99	98.8	0	98.2	100	0	89.5	99.1	100	97.8
Heavy Vehicles	14	7	0	12	0	0	45	7	0	85
% Heavy Vehicles	1	1.2	0	1.8	0	0	10.5	0.9	0	2.2

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	151	91	0	242	**101**	**0**	**0**	**101**	61	**99**	0	**160**	503
04:15 PM	**174**	91	0	**265**	84	**2**	0	86	**66**	93	0	159	**510**
04:30 PM	165	73	0	238	84	0	0	84	49	83	**1**	133	455
04:45 PM	146	**119**	0	265	89	1	0	90	47	93	0	140	495
Total Volume	636	374	0	1010	358	3	0	361	223	368	1	592	1963
% App. Total	63	37	0		99.2	0.8	0		37.7	62.2	0.2		
PHF	.914	.786	.000	.953	.886	.375	.000	.894	.845	.929	.250	.925	.962
Cars	632	368	0	1000	351	3	0	354	190	368	1	559	1913
% Cars	99.4	98.4	0	99.0	98.0	100	0	98.1	85.2	100	100	94.4	97.5
Heavy Vehicles	4	6	0	10	7	0	0	7	33	0	0	33	50
% Heavy Vehicles	0.6	1.6	0	1.0	2.0	0	0	1.9	14.8	0	0	5.6	2.5

S: Day Boulevard Ramp
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Groups Printed- Cars

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	151	87	0	99	0	0	55	99	0	491
04:15 PM	172	90	0	84	2	0	58	93	0	499
04:30 PM	164	73	0	84	0	0	40	83	1	445
04:45 PM	145	118	0	84	1	0	37	93	0	478
Total	632	368	0	351	3	0	190	368	1	1913
05:00 PM	175	69	0	83	4	0	50	101	0	482
05:15 PM	191	59	0	63	2	0	42	86	0	443
05:30 PM	226	44	0	90	3	0	60	83	1	507
05:45 PM	191	53	0	82	1	0	43	109	0	479
Total	783	225	0	318	10	0	195	379	1	1911
Grand Total	1415	593	0	669	13	0	385	747	2	3824
Apprch %	70.5	29.5	0	98.1	1.9	0	34	65.9	0.2	
Total %	37	15.5	0	17.5	0.3	0	10.1	19.5	0.1	

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	151	87	0	238	**99**	**0**	**0**	**99**	55	**99**	0	**154**	491
04:15 PM	**172**	90	0	262	84	**2**	0	86	**58**	93	0	151	**499**
04:30 PM	164	73	0	237	84	0	0	84	40	83	**1**	124	445
04:45 PM	145	**118**	0	**263**	84	1	0	85	37	93	0	130	478
Total Volume	632	368	0	1000	351	3	0	354	190	368	1	559	1913
% App. Total	63.2	36.8	0		99.2	0.8	0		34	65.8	0.2		
PHF	.919	.780	.000	.951	.886	.375	.000	.894	.819	.929	.250	.907	.958

S: Day Boulevard Ramp
E/W: Day Boulevard
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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Groups Printed- Heavy Vehicles

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	0	4	0	2	0	0	6	0	0	12
04:15 PM	2	1	0	0	0	0	8	0	0	11
04:30 PM	1	0	0	0	0	0	9	0	0	10
04:45 PM	1	1	0	5	0	0	10	0	0	17
Total	4	6	0	7	0	0	33	0	0	50
05:00 PM	5	0	0	2	0	0	4	3	0	14
05:15 PM	2	0	0	1	0	0	3	1	0	7
05:30 PM	1	0	0	1	0	0	3	1	0	6
05:45 PM	2	1	0	1	0	0	2	2	0	8
Total	10	1	0	5	0	0	12	7	0	35
Grand Total	14	7	0	12	0	0	45	7	0	85
Apprch %	66.7	33.3	0	100	0	0	86.5	13.5	0	
Total %	16.5	8.2	0	14.1	0	0	52.9	8.2	0	

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	2	**1**	0	3	0	0	0	0	8	0	0	8	11
04:30 PM	1	0	0	1	0	0	0	0	9	0	0	9	10
04:45 PM	1	1	0	2	**5**			**5**	**10**	0	0	**10**	**17**
05:00 PM	**5**	0	0	**5**	2	0	0	2	4	**3**	0	7	14
Total Volume	9	2	0	11	7	0	0	7	31	3	0	34	52
% App. Total	81.8	18.2	0		100	0	0		91.2	8.8	0		
PHF	.450	.500	.000	.550	.350	.000	.000	.350	.775	.250	.000	.850	.765

S: Day Boulevard Ramp
E/W: Day Boulevard
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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Groups Printed- Peds and Bikes

	Day Boulevard From East			Day Boulevard Ramp From South			Day Boulevard From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
04:00 PM	1	1	0	1	0	1	1	0	1	6
04:15 PM	1	0	0	0	1	5	0	3	17	27
04:30 PM	5	0	0	2	0	5	0	0	5	17
04:45 PM	3	0	0	3	0	6	0	1	1	14
Total	10	1	0	6	1	17	1	4	24	64
05:00 PM	1	1	0	1	0	4	2	1	0	10
05:15 PM	1	0	0	2	0	8	1	0	1	13
05:30 PM	2	1	0	0	0	4	1	2	0	10
05:45 PM	1	1	0	0	0	7	0	1	1	11
Total	5	3	0	3	0	23	4	4	2	44
Grand Total	15	4	0	9	1	40	5	8	26	108
Apprch %	78.9	21.1	0	18	2	80	12.8	20.5	66.7	
Total %	13.9	3.7	0	8.3	0.9	37	4.6	7.4	24.1	

	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	1	0	0	1	0	**1**	5	6	0	**3**	**17**	**20**	**27**
04:30 PM	**5**	0	0	**5**	2	0	5	7	0	0	5	5	17
04:45 PM	3	0	0	3	**3**		**6**	**9**	0	1	1	2	14
05:00 PM	1	**1**	0	2	1	0	4	5	**2**	1	0	3	10
Total Volume	10	1	0	11	6	1	20	27	2	5	23	30	68
% App. Total	90.9	9.1	0		22.2	3.7	74.1		6.7	16.7	76.7		
PHF	.500	.250	.000	.550	.500	.250	.833	.750	.250	.417	.338	.375	.630

S: Day Boulevard Ramp
E/W: Day Boulevard
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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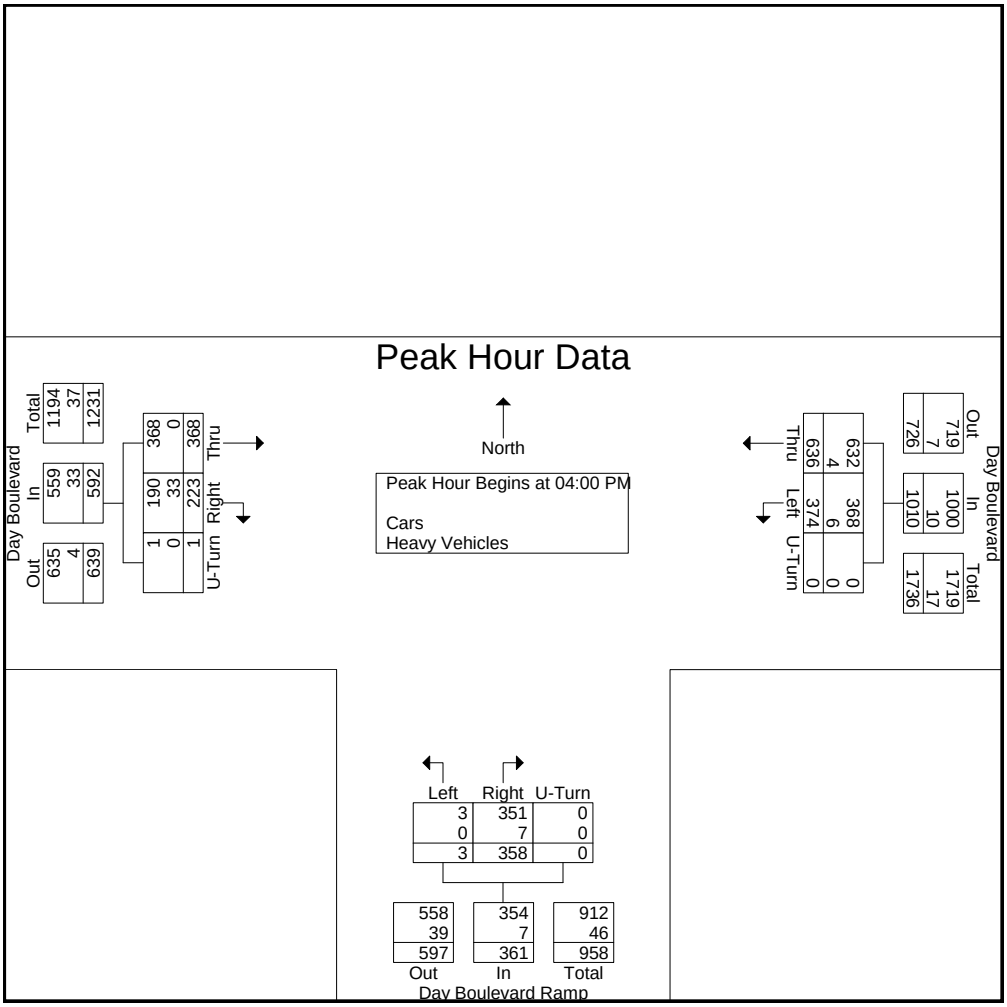
	Day Boulevard From East				Day Boulevard Ramp From South				Day Boulevard From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	151	91	0	242	**101**	**0**	**0**	**101**	61	**99**	0	**160**	503
04:15 PM	**174**	91	0	**265**	84	**2**	0	86	**66**	93	0	159	**510**
04:30 PM	165	73	0	238	84	0	0	84	49	83	**1**	133	455
04:45 PM	146	**119**	0	265	89	1	0	90	47	93	0	140	495
Total Volume	636	374	0	1010	358	3	0	361	223	368	1	592	1963
% App. Total	63	37	0		99.2	0.8	0		37.7	62.2	0.2		
PHF	.914	.786	.000	.953	.886	.375	.000	.894	.845	.929	.250	.925	.962
Cars	632	368	0	1000	351	3	0	354	190	368	1	559	1913
% Cars	99.4	98.4	0	99.0	98.0	100	0	98.1	85.2	100	100	94.4	97.5
Heavy Vehicles	4	6	0	10	7	0	0	7	33	0	0	33	50
% Heavy Vehicles	0.6	1.6	0	1.0	2.0	0	0	1.9	14.8	0	0	5.6	2.5



N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 B
Site Code : TBA
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Groups Printed- Cars - Heavy Vehicles

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	35	0	84	0	10	72	0	0	27	149	184	0	0	16	0	0	577
07:15 AM	47	0	66	2	16	92	0	0	33	198	235	0	0	18	4	0	711
07:30 AM	37	0	85	0	16	88	0	0	37	209	224	0	0	11	1	0	708
07:45 AM	42	0	89	0	17	62	0	0	28	194	196	0	0	17	2	0	647
Total	161	0	324	2	59	314	0	0	125	750	839	0	0	62	7	0	2643
08:00 AM	74	0	76	0	10	58	0	0	26	236	208	0	0	7	3	0	698
08:15 AM	47	0	81	1	18	65	0	0	35	212	270	0	0	16	2	0	747
08:30 AM	50	0	82	1	9	74	0	0	30	209	238	0	0	14	3	0	710
08:45 AM	48	0	80	1	19	53	0	0	36	179	189	0	0	22	0	2	629
Total	219	0	319	3	56	250	0	0	127	836	905	0	0	59	8	2	2784
Grand Total	380	0	643	5	115	564	0	0	252	1586	1744	0	0	121	15	2	5427
Apprch %	37	0	62.5	0.5	16.9	83.1	0	0	7	44.3	48.7	0	0	87.7	10.9	1.4	
Total %	7	0	11.8	0.1	2.1	10.4	0	0	4.6	29.2	32.1	0	0	2.2	0.3	0	
Cars	347	0	593	5	107	497	0	0	246	1576	1659	0	0	103	15	2	5150
% Cars	91.3	0	92.2	100	93	88.1	0	0	97.6	99.4	95.1	0	0	85.1	100	100	94.9
Heavy Vehicles	33	0	50	0	8	67	0	0	6	10	85	0	0	18	0	0	277
% Heavy Vehicles	8.7	0	7.8	0	7	11.9	0	0	2.4	0.6	4.9	0	0	14.9	0	0	5.1

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	42	0	**89**	**0**	**131**	**17**	**62**	**0**	**0**	**79**	**28**	**194**	**196**	**0**	**418**	**0**	**17**	**2**	**0**	**19**	**647**
08:00 AM	**74**	**0**	**76**	**0**	**150**	10	58	0	0	68	26	**236**	208	0	470	0	7	**3**	0	10	698
08:15 AM	47	0	81	**1**		**18**	65	0	0	**83**	**35**		**270**		**517**	0	16	2	0	18	**747**
08:30 AM	**50**	**0**	**82**	**1**	**133**	**9**	**74**	**0**	**0**	**83**	**30**	**209**	**238**	**0**	**477**	**0**	**14**	**3**	**0**	**17**	**710**
Total Volume	213	0	328	2	543	54	259	0	0	313	119	851	912	0	1882	0	54	10	0	64	2802
% App. Total	39.2	0	60.4	0.4		17.3	82.7	0	0		6.3	45.2	48.5	0		0	84.4	15.6	0		
PHF	.720	.000	.921	.500	.905	.750	.875	.000	.000	.943	.850	.901	.844	.000	.910	.000	.794	.833	.000	.842	.938
Cars	195	0	315	2	512	51	238	0	0	289	116	845	868	0	1829	0	49	10	0	59	2689
% Cars	91.5	0	96.0	100	94.3	94.4	91.9	0	0	92.3	97.5	99.3	95.2	0	97.2	0	90.7	100	0	92.2	96.0
Heavy Vehicles	18	0	13	0	31	3	21	0	0	24	3	6	44	0	53	0	5	0	0	5	113
% Heavy Vehicles	8.5	0	4.0	0	5.7	5.6	8.1	0	0	7.7	2.5	0.7	4.8	0	2.8	0	9.3	0	0	7.8	4.0

N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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Site Code : TBA
Start Date : 9/6/2012
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Groups Printed- Cars

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	29	0	60	0	9	56	0	0	26	148	177	0	0	13	0	0	518
07:15 AM	44	0	61	2	14	79	0	0	32	198	224	0	0	15	4	0	673
07:30 AM	33	0	81	0	15	78	0	0	37	208	214	0	0	8	1	0	675
07:45 AM	39	0	84	0	16	54	0	0	28	192	188	0	0	16	2	0	619
Total	145	0	286	2	54	267	0	0	123	746	803	0	0	52	7	0	2485
08:00 AM	70	0	71	0	10	52	0	0	24	236	195	0	0	6	3	0	667
08:15 AM	40	0	80	1	16	61	0	0	34	210	259	0	0	14	2	0	717
08:30 AM	46	0	80	1	9	71	0	0	30	207	226	0	0	13	3	0	686
08:45 AM	46	0	76	1	18	46	0	0	35	177	176	0	0	18	0	2	595
Total	202	0	307	3	53	230	0	0	123	830	856	0	0	51	8	2	2665
Grand Total	347	0	593	5	107	497	0	0	246	1576	1659	0	0	103	15	2	5150
Apprch %	36.7	0	62.8	0.5	17.7	82.3	0	0	7.1	45.3	47.7	0	0	85.8	12.5	1.7	
Total %	6.7	0	11.5	0.1	2.1	9.7	0	0	4.8	30.6	32.2	0	0	2	0.3	0	

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	39	0	**84**	**0**	**123**	**16**	54	0	0	70	28	192	188	0	408	0	**16**	**2**	**0**	**18**	**619**
08:00 AM	**70**	**0**	**71**	**0**	**141**	10	52	0	0	62	24	**236**	195	0	455	0	6	**3**	0	9	667
08:15 AM	40	0	80	**1**							**34**		**259**		**503**	0	14	2	0	16	**717**
08:30 AM	**46**	**0**	**80**	**1**	**127**	**9**	**71**	**0**	**0**	**80**	**30**	**207**	**226**	**0**	**463**	**0**	**13**	**3**	**0**	**16**	**686**
Total Volume	195	0	315	2	512	51	238	0	0	289	116	845	868	0	1829	0	49	10	0	59	2689
% App. Total	38.1	0	61.5	0.4		17.6	82.4	0	0		6.3	46.2	47.5	0		0	83.1	16.9	0		
PHF	.696	.000	.938	.500	.908	.797	.838	.000	.000	.903	.853	.895	.838	.000	.909	.000	.766	.833	.000	.819	.938

N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
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Client:Howard Stein-Hudson/N. Curtis

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Groups Printed- Heavy Vehicles

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	6	0	24	0	1	16	0	0	1	1	7	0	0	3	0	0	59
07:15 AM	3	0	5	0	2	13	0	0	1	0	11	0	0	3	0	0	38
07:30 AM	4	0	4	0	1	10	0	0	0	1	10	0	0	3	0	0	33
07:45 AM	3	0	5	0	1	8	0	0	0	2	8	0	0	1	0	0	28
Total	16	0	38	0	5	47	0	0	2	4	36	0	0	10	0	0	158
08:00 AM	4	0	5	0	0	6	0	0	2	0	13	0	0	1	0	0	31
08:15 AM	7	0	1	0	2	4	0	0	1	2	11	0	0	2	0	0	30
08:30 AM	4	0	2	0	0	3	0	0	0	2	12	0	0	1	0	0	24
08:45 AM	2	0	4	0	1	7	0	0	1	2	13	0	0	4	0	0	34
Total	17	0	12	0	3	20	0	0	4	6	49	0	0	8	0	0	119
Grand Total	33	0	50	0	8	67	0	0	6	10	85	0	0	18	0	0	277
Apprch %	39.8	0	60.2	0	10.7	89.3	0	0	5.9	9.9	84.2	0	0	100	0	0	
Total %	11.9	0	18.1	0	2.9	24.2	0	0	2.2	3.6	30.7	0	0	6.5	0	0	

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	**6**	**0**	**24**	**0**	**30**	1	**16**	**0**	**0**	**17**	**1**	**1**	**7**	**0**	**9**	**0**	**3**	**0**	**0**	**3**	**59**
07:15 AM	**3**	**0**	**5**	**0**	**8**	**2**	13	0	0	15	1	0	**11**	**0**	**12**	0	3	0	0	3	38
07:30 AM	4	0	4	0	8	1	10	0	0	11	0	1	10	0	11	0	3	0	0	3	33
07:45 AM	3	0	5	0	8	1	8	0	0	9	0	**2**	8	0	10	0	1	0	0	1	28
Total Volume	16	0	38	0	54	5	47	0	0	52	2	4	36	0	42	0	10	0	0	10	158
% App. Total	29.6	0	70.4	0		9.6	90.4	0	0		4.8	9.5	85.7	0		0	100	0	0		
PHF	.667	.000	.396	.000	.450	.625	.734	.000	.000	.765	.500	.500	.818	.000	.875	.000	.833	.000	.000	.833	.669

N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
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Groups Printed- Peds and Bikes

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	17	0	0	0	1	0	0	1	37	0	0	0	0	56
07:15 AM	0	0	1	17	0	1	0	0	0	1	2	33	0	0	0	0	55
07:30 AM	1	0	2	27	0	0	0	2	0	2	0	81	0	0	0	0	115
07:45 AM	0	0	2	28	0	0	0	4	0	0	1	54	0	0	0	0	89
Total	1	0	5	89	0	1	0	7	0	3	4	205	0	0	0	0	315
08:00 AM	2	0	2	30	0	0	0	1	0	1	3	51	0	0	0	0	90
08:15 AM	0	0	0	33	0	0	0	8	0	1	2	51	0	0	0	2	97
08:30 AM	0	0	2	29	0	0	0	2	0	2	3	45	0	0	0	0	83
08:45 AM	0	0	1	25	0	0	0	1	0	0	2	50	0	1	0	0	80
Total	2	0	5	117	0	0	0	12	0	4	10	197	0	1	0	2	350
Grand Total	3	0	10	206	0	1	0	19	0	7	14	402	0	1	0	2	665
Apprch %	1.4	0	4.6	94.1	0	5	0	95	0	1.7	3.3	95	0	33.3	0	66.7	
Total %	0.5	0	1.5	31	0	0.2	0	2.9	0	1.1	2.1	60.5	0	0.2	0	0.3	

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	1	0	**2**	**27**	**30**	**0**	**0**	**0**	**2**	**2**	**0**	**2**	0	**81**	**83**	0	0	0	0	0	**115**
07:45 AM	**0**	**0**	**2**	**28**	**30**	**0**	**0**	**0**	**4**	**4**	**0**	**0**	**1**	**54**	**55**	**0**	**0**	**0**	**0**	**0**	**89**
08:00 AM	**2**	**0**	**2**	**30**	**34**	0	0	0	1	1	0	1	**3**	**51**	**55**	**0**	**0**	**0**	**0**	**0**	**90**
08:15 AM	**0**	**0**	**0**	**33**	**33**	**0**	**0**	**0**	**8**	**8**	**0**	**1**	**2**	**51**	**54**	**0**	**0**	**0**	**2**	**2**	**97**
Total Volume	3	0	6	118	127	0	0	0	15	15	0	4	6	237	247	0	0	0	2	2	391
% App. Total	2.4	0	4.7	92.9		0	0	0	100		0	1.6	2.4	96		0	0	0	100		
PHF	.375	.000	.750	.894	.934	.000	.000	.000	.469	.469	.000	.500	.500	.731	.744	.000	.000	.000	.250	.250	.850

N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 B
Site Code : TBA
Start Date : 9/6/2012
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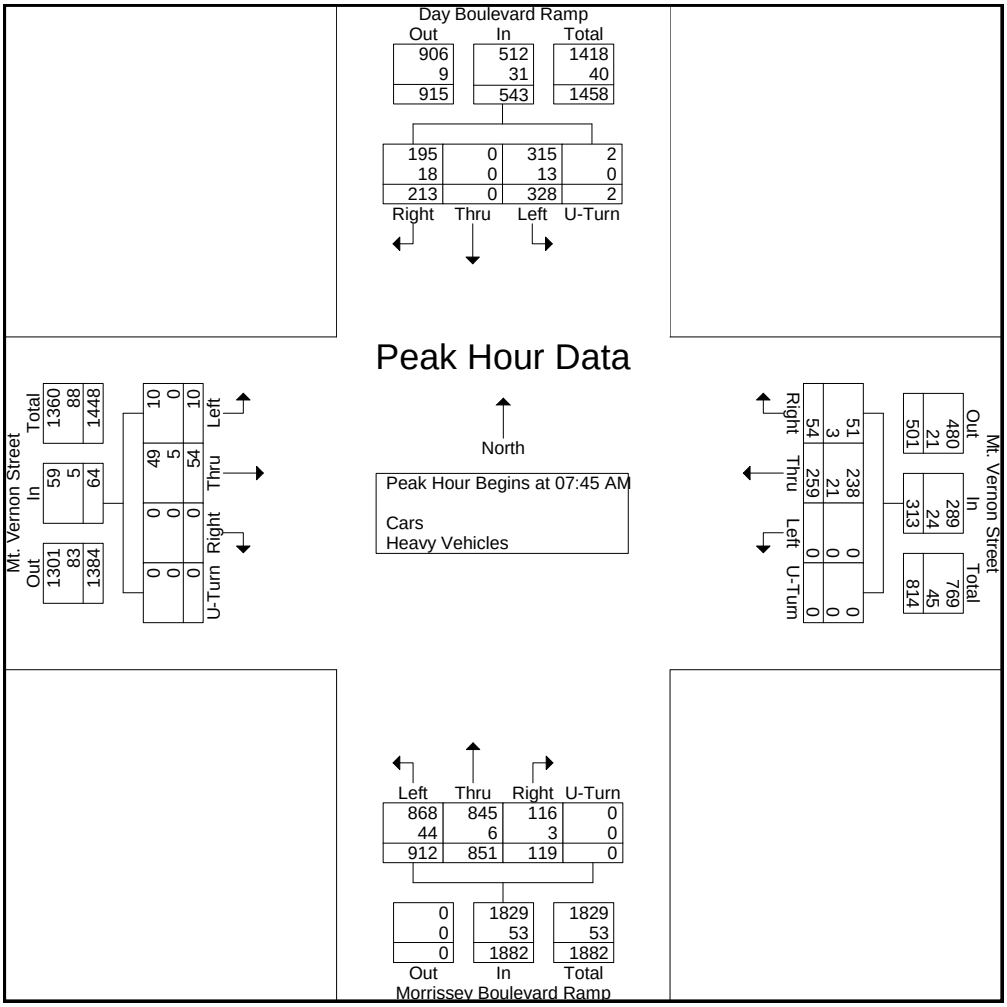
	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	42	0	**89**	**0**	**131**	**17**	**62**	**0**	**0**	**79**	**28**	**194**	**196**	**0**	**418**	**0**	**17**	**2**	**0**	**19**	**647**
08:00 AM	**74**	**0**	**76**	**0**	**150**	10	58	0	0	68	26	**236**	208	0	470	0	7	**3**	0	10	698
08:15 AM	47	0	81	**1**		**18**	65	0	0	**83**	**35**		**270**		**517**	0	16	2	0	18	**747**
08:30 AM	**50**	**0**	**82**	**1**	**133**	**9**	**74**	**0**	**0**	**83**	**30**	**209**	**238**	**0**	**477**	**0**	**14**	**3**	**0**	**17**	**710**
Total Volume	213	0	328	2	543	54	259	0	0	313	119	851	912	0	1882	0	54	10	0	64	2802
% App. Total	39.2	0	60.4	0.4		17.3	82.7	0	0		6.3	45.2	48.5	0		0	84.4	15.6	0		
PHF	.720	.000	.921	.500	.905	.750	.875	.000	.000	.943	.850	.901	.844	.000	.910	.000	.794	.833	.000	.842	.938
Cars	195	0	315	2	512	51	238	0	0	289	116	845	868	0	1829	0	49	10	0	59	2689
% Cars	91.5	0	96.0	100	94.3	94.4	91.9	0	0	92.3	97.5	99.3	95.2	0	97.2	0	90.7	100	0	92.2	96.0
Heavy Vehicles	18	0	13	0	31	3	21	0	0	24	3	6	44	0	53	0	5	0	0	5	113
% Heavy Vehicles	8.5	0	4.0	0	5.7	5.6	8.1	0	0	7.7	2.5	0.7	4.8	0	2.8	0	9.3	0	0	7.8	4.0



N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 BB
Site Code : TBA
Start Date : 9/6/2012
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Groups Printed- Cars - Heavy Vehicles

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	86	0	64	0	24	81	0	0	30	79	82	0	0	37	6	0	489
04:15 PM	90	0	70	0	19	101	0	0	25	52	55	0	0	31	4	0	447
04:30 PM	76	0	42	0	20	122	0	0	25	59	54	0	0	24	3	0	425
04:45 PM	98	0	63	0	22	99	0	0	18	66	60	0	0	17	7	0	450
Total	350	0	239	0	85	403	0	0	98	256	251	0	0	109	20	0	1811
05:00 PM	72	0	60	0	22	125	0	0	28	56	48	0	0	35	4	0	450
05:15 PM	60	0	44	0	16	131	0	0	18	49	74	0	0	22	2	0	416
05:30 PM	53	0	52	0	21	110	0	0	14	61	52	0	0	38	10	0	411
05:45 PM	56	0	44	0	19	96	0	0	11	58	45	0	0	26	5	1	361
Total	241	0	200	0	78	462	0	0	71	224	219	0	0	121	21	1	1638
Grand Total	591	0	439	0	163	865	0	0	169	480	470	0	0	230	41	1	3449
Apprch %	57.4	0	42.6	0	15.9	84.1	0	0	15.1	42.9	42	0	0	84.6	15.1	0.4	
Total %	17.1	0	12.7	0	4.7	25.1	0	0	4.9	13.9	13.6	0	0	6.7	1.2	0	
Cars	577	0	401	0	154	785	0	0	166	478	431	0	0	199	41	1	3233
% Cars	97.6	0	91.3	0	94.5	90.8	0	0	98.2	99.6	91.7	0	0	86.5	100	100	93.7
Heavy Vehicles	14	0	38	0	9	80	0	0	3	2	39	0	0	31	0	0	216
% Heavy Vehicles	2.4	0	8.7	0	5.5	9.2	0	0	1.8	0.4	8.3	0	0	13.5	0	0	6.3

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	86	0	64	0	150	**24**	81	0	0	105	**30**	**79**	**82**	**0**	**191**	0	**37**	**6**	**0**	**43**	**489**
04:15 PM	**90**	**0**	**70**	**0**	**160**	**19**	**101**	**0**	**0**	**120**	**25**	**52**	**55**	**0**	**132**	**0**	**31**	**4**	**0**	**35**	**447**
04:30 PM	**76**	**0**	**42**	**0**	**118**	**20**	**122**	**0**	**0**	**142**	**25**	**59**	**54**	**0**	**138**	**0**	**24**	**3**	**0**	**27**	**425**
04:45 PM	**98**	**0**	**63**	**0**	**161**	22	99	0	0	121	18	66	60	0	144	0	17	**7**	0	24	450
Total Volume	350	0	239	0	589	85	403	0	0	488	98	256	251	0	605	0	109	20	0	129	1811
% App. Total	59.4	0	40.6	0		17.4	82.6	0	0		16.2	42.3	41.5	0		0	84.5	15.5	0		
PHF	.893	.000	.854	.000	.915	.885	.826	.000	.000	.859	.817	.810	.765	.000	.792	.000	.736	.714	.000	.750	.926
Cars	341	0	210	0	551	78	358	0	0	436	95	256	229	0	580	0	92	20	0	112	1679
% Cars	97.4	0	87.9	0	93.5	91.8	88.8	0	0	89.3	96.9	100	91.2	0	95.9	0	84.4	100	0	86.8	92.7
Heavy Vehicles	9	0	29	0	38	7	45	0	0	52	3	0	22	0	25	0	17	0	0	17	132
% Heavy Vehicles	2.6	0	12.1	0	6.5	8.2	11.2	0	0	10.7	3.1	0	8.8	0	4.1	0	15.6	0	0	13.2	7.3

N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 BB
Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Cars

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	83	0	57	0	22	77	0	0	28	79	76	0	0	28	6	0	456
04:15 PM	89	0	62	0	19	93	0	0	25	52	50	0	0	27	4	0	421
04:30 PM	75	0	35	0	20	107	0	0	24	59	50	0	0	24	3	0	397
04:45 PM	94	0	56	0	17	81	0	0	18	66	53	0	0	13	7	0	405
Total	341	0	210	0	78	358	0	0	95	256	229	0	0	92	20	0	1679
05:00 PM	71	0	56	0	22	107	0	0	28	55	44	0	0	29	4	0	416
05:15 PM	59	0	42	0	15	123	0	0	18	49	69	0	0	21	2	0	398
05:30 PM	51	0	51	0	20	106	0	0	14	61	48	0	0	32	10	0	393
05:45 PM	55	0	42	0	19	91	0	0	11	57	41	0	0	25	5	1	347
Total	236	0	191	0	76	427	0	0	71	222	202	0	0	107	21	1	1554
Grand Total	577	0	401	0	154	785	0	0	166	478	431	0	0	199	41	1	3233
Apprch %	59	0	41	0	16.4	83.6	0	0	15.4	44.5	40.1	0	0	82.6	17	0.4	
Total %	17.8	0	12.4	0	4.8	24.3	0	0	5.1	14.8	13.3	0	0	6.2	1.3	0	

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	83	0	57	0	140	**22**	77	0	0	99	**28**	**79**	**76**	**0**	**183**	0	**28**	**6**	**0**	**34**	**456**
04:15 PM	**89**	**0**	**62**	**0**	**151**	19	93	0	0	112	25	52	50	0	127	0	27	4	0	31	421
04:30 PM	75	0	35	0	110	20	**107**			**127**											
04:45 PM	**94**	**0**	**56**	**0**	**150**	**17**	**81**	**0**	**0**	**98**	**18**	**66**	**53**	**0**	**137**	**0**	**13**	**7**	0	20	405
Total Volume	341	0	210	0	551	78	358	0	0	436	95	256	229	0	580	0	92	20	0	112	1679
% App. Total	61.9	0	38.1	0		17.9	82.1	0	0		16.4	44.1	39.5	0		0	82.1	17.9	0		
PHF	.907	.000	.847	.000	.912	.886	.836	.000	.000	.858	.848	.810	.753	.000	.792	.000	.821	.714	.000	.824	.921

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Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Heavy Vehicles

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	3	0	7	0	2	4	0	0	2	0	6	0	0	9	0	0	33
04:15 PM	1	0	8	0	0	8	0	0	0	0	5	0	0	4	0	0	26
04:30 PM	1	0	7	0	0	15	0	0	1	0	4	0	0	0	0	0	28
04:45 PM	4	0	7	0	5	18	0	0	0	0	7	0	0	4	0	0	45
Total	9	0	29	0	7	45	0	0	3	0	22	0	0	17	0	0	132
05:00 PM	1	0	4	0	0	18	0	0	0	1	4	0	0	6	0	0	34
05:15 PM	1	0	2	0	1	8	0	0	0	0	5	0	0	1	0	0	18
05:30 PM	2	0	1	0	1	4	0	0	0	0	4	0	0	6	0	0	18
05:45 PM	1	0	2	0	0	5	0	0	0	1	4	0	0	1	0	0	14
Total	5	0	9	0	2	35	0	0	0	2	17	0	0	14	0	0	84
Grand Total	14	0	38	0	9	80	0	0	3	2	39	0	0	31	0	0	216
Apprch %	26.9	0	73.1	0	10.1	89.9	0	0	6.8	4.5	88.6	0	0	100	0	0	
Total %	6.5	0	17.6	0	4.2	37	0	0	1.4	0.9	18.1	0	0	14.4	0	0	

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	1	0	**8**	**0**	**9**	**0**	**8**	**0**	**0**	**8**	**0**	**0**	**5**	**0**	**5**	**0**	**4**	**0**	**0**	**4**	**26**
04:30 PM	**1**	**0**	**7**	**0**	**8**	**0**	**15**	**0**	**0**	**15**	**1**	**0**	**4**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**28**
04:45 PM	**4**	**0**	**7**	**0**	**11**	**5**	**18**	**0**	**0**	**23**	**0**	**0**	**7**	**0**	**7**	0	4	0	0	4	**45**
05:00 PM	**1**	**0**	**4**	**0**	**5**	**0**	**18**	**0**	**0**	**18**	**0**	**1**	4	0	5	0	**6**	**0**	**0**	**6**	**34**
Total Volume	7	0	26	0	33	5	59	0	0	64	1	1	20	0	22	0	14	0	0	14	133
% App. Total	21.2	0	78.8	0		7.8	92.2	0	0		4.5	4.5	90.9	0		0	100	0	0		
PHF	.438	.000	.813	.000	.750	.250	.819	.000	.000	.696	.250	.250	.714	.000	.786	.000	.583	.000	.000	.583	.739

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Groups Printed- Peds and Bikes

	Day Boulevard Ramp From North				Mt. Vernon Street From East				Morrissey Boulevard Ramp From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	1	0	1	31	0	0	0	23	1	1	0	29	0	1	0	1	89
04:15 PM	0	0	0	41	2	0	0	22	0	0	0	34	0	0	0	0	99
04:30 PM	0	0	0	50	1	0	0	2	0	3	3	79	0	0	0	0	138
04:45 PM	0	0	0	42	1	0	0	3	0	1	1	34	0	0	0	1	83
Total	1	0	1	164	4	0	0	50	1	5	4	176	0	1	0	2	409
05:00 PM	0	0	3	26	2	1	0	5	0	0	1	38	0	0	0	2	78
05:15 PM	0	0	0	37	1	0	0	4	0	1	0	46	0	0	0	3	92
05:30 PM	1	0	1	48	0	1	0	9	0	0	0	44	0	1	0	0	105
05:45 PM	1	0	0	39	0	0	0	2	0	0	0	50	0	0	0	1	93
Total	2	0	4	150	3	2	0	20	0	1	1	178	0	1	0	6	368
Grand Total	3	0	5	314	7	2	0	70	1	6	5	354	0	2	0	8	777
Apprch %	0.9	0	1.6	97.5	8.9	2.5	0	88.6	0.3	1.6	1.4	96.7	0	20	0	80	
Total %	0.4	0	0.6	40.4	0.9	0.3	0	9	0.1	0.8	0.6	45.6	0	0.3	0	1	

	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**1**	**0**	**1**	**31**	**33**	**0**	**0**	**0**	**23**	23	**1**	**1**	**0**	**29**	**31**	**0**	**1**	**0**	**1**	**2**	**89**
04:15 PM	**0**	**0**	**0**	**41**	**41**	**2**	0	0	22	**24**	**0**	**0**	**0**	**34**	**34**	**0**	**0**	**0**	**0**	**0**	**99**
04:30 PM	**0**	**0**	**0**	**50**	**50**	1	0	0	2	3	0	**3**	**3**	**79**	**85**	0	0	0	0	0	**138**
04:45 PM	**0**	**0**	**0**	**42**	**42**	**1**	**0**	**0**	**3**	**4**	**0**	**1**	**1**	**34**	**36**	**0**	**0**	**0**	**1**	**1**	**83**
Total Volume	1	0	1	164	166	4	0	0	50	54	1	5	4	176	186	0	1	0	2	3	409
% App. Total	0.6	0	0.6	98.8		7.4	0	0	92.6		0.5	2.7	2.2	94.6		0	33.3	0	66.7		
PHF	.250	.000	.250	.820	.830	.500	.000	.000	.543	.563	.250	.417	.333	.557	.547	.000	.250	.000	.500	.375	.741

N/S: Day Blvd Ramp/Morrissey Blvd Ramp
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 BB
Site Code : TBA
Start Date : 9/6/2012
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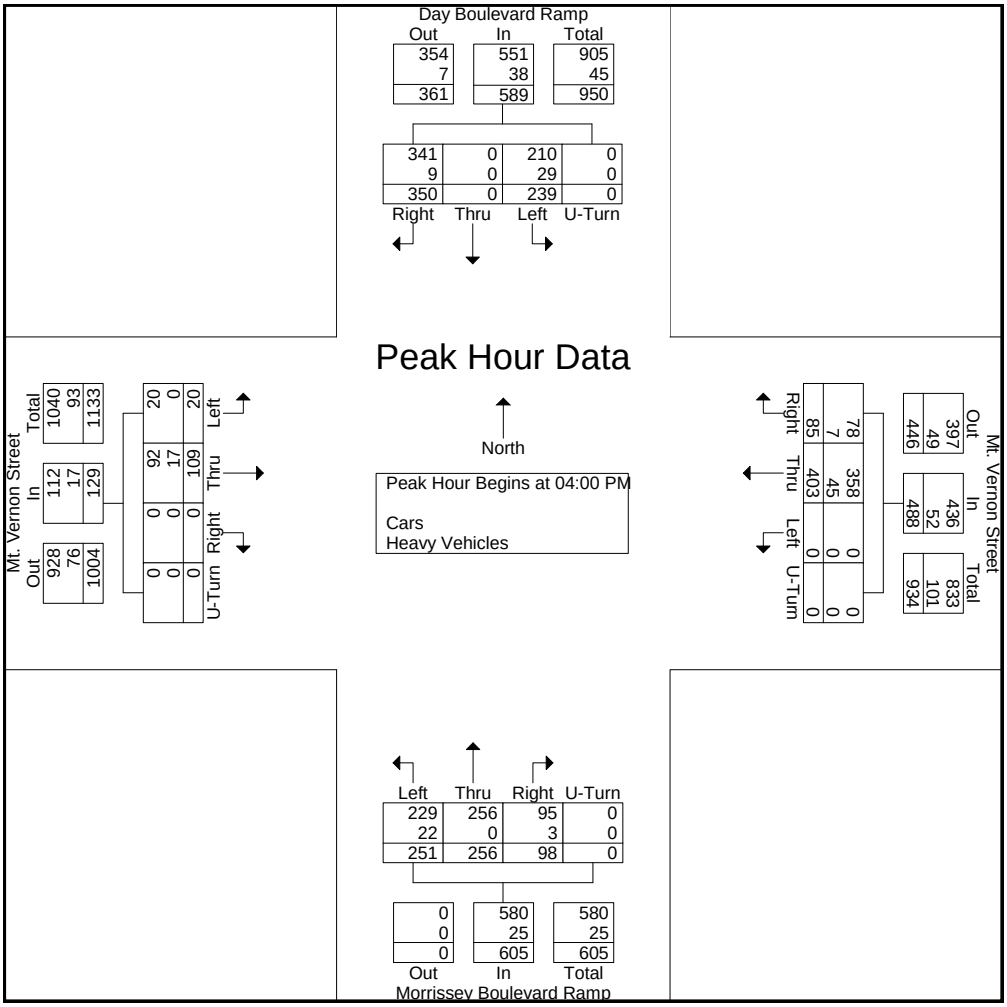
	Day Boulevard Ramp From North					Mt. Vernon Street From East					Morrissey Boulevard Ramp From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	86	0	64	0	150	**24**	81	0	0	105	**30**	**79**	**82**	**0**	**191**	0	**37**	**6**	**0**	**43**	**489**
04:15 PM	**90**	**0**	**70**	**0**	**160**	**19**	**101**	**0**	**0**	**120**	**25**	**52**	**55**	**0**	**132**	**0**	**31**	**4**	**0**	**35**	**447**
04:30 PM	**76**	**0**	**42**	**0**	**118**	**20**	**122**	**0**	**0**	**142**	**25**	**59**	**54**	**0**	**138**	**0**	**24**	**3**	**0**	**27**	**425**
04:45 PM	**98**	**0**	**63**	**0**	**161**	22	99	0	0	121	18	66	60	0	144	0	17	**7**	0	24	450
Total Volume	350	0	239	0	589	85	403	0	0	488	98	256	251	0	605	0	109	20	0	129	1811
% App. Total	59.4	0	40.6	0		17.4	82.6	0	0		16.2	42.3	41.5	0		0	84.5	15.5	0		
PHF	.893	.000	.854	.000	.915	.885	.826	.000	.000	.859	.817	.810	.765	.000	.792	.000	.736	.714	.000	.750	.926
Cars	341	0	210	0	551	78	358	0	0	436	95	256	229	0	580	0	92	20	0	112	1679
% Cars	97.4	0	87.9	0	93.5	91.8	88.8	0	0	89.3	96.9	100	91.2	0	95.9	0	84.4	100	0	86.8	92.7
Heavy Vehicles	9	0	29	0	38	7	45	0	0	52	3	0	22	0	25	0	17	0	0	17	132
% Heavy Vehicles	2.6	0	12.1	0	6.5	8.2	11.2	0	0	10.7	3.1	0	8.8	0	4.1	0	15.6	0	0	13.2	7.3



N/S: Bayside Expo Drive/ Soverign Bank
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

PRECISION DATA INDUSTRIES, LLC
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File Name : 123029 C
Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	4	0	0	0	0	76	1	0	1	0	10	0	30	99	5	0	226
07:15 AM	5	0	0	0	3	96	0	1	2	0	8	0	32	83	2	0	232
07:30 AM	4	0	1	0	7	85	1	1	3	0	20	0	47	75	11	0	255
07:45 AM	16	5	2	0	10	64	0	0	1	1	4	0	42	73	18	0	236
Total	29	5	3	0	20	321	2	2	7	1	42	0	151	330	36	0	949
08:00 AM	8	1	1	0	6	53	1	1	4	4	9	0	42	62	10	0	202
08:15 AM	8	0	2	0	5	66	2	0	2	3	7	0	52	74	6	1	228
08:30 AM	11	0	2	0	3	68	0	0	0	1	9	0	46	65	8	0	213
08:45 AM	4	0	0	0	4	57	2	0	1	1	7	0	43	91	9	0	219
Total	31	1	5	0	18	244	5	1	7	9	32	0	183	292	33	1	862
Grand Total	60	6	8	0	38	565	7	3	14	10	74	0	334	622	69	1	1811
Apprch %	81.1	8.1	10.8	0	6.2	92.2	1.1	0.5	14.3	10.2	75.5	0	32.6	60.6	6.7	0.1	
Total %	3.3	0.3	0.4	0	2.1	31.2	0.4	0.2	0.8	0.6	4.1	0	18.4	34.3	3.8	0.1	
Cars	58	6	8	0	38	496	7	2	13	10	69	0	327	552	69	1	1656
% Cars	96.7	100	100	0	100	87.8	100	66.7	92.9	100	93.2	0	97.9	88.7	100	100	91.4
Heavy Vehicles	2	0	0	0	0	69	0	1	1	0	5	0	7	70	0	0	155
% Heavy Vehicles	3.3	0	0	0	0	12.2	0	33.3	7.1	0	6.8	0	2.1	11.3	0	0	8.6

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	4	0	0	0	4	0	76	**1**	0	77	1	0	10	0	11	30	**99**	**5**	**0**	**134**	**226**
07:15 AM	**5**	**0**	**0**	**0**	**5**	**3**	**96**	**0**	**1**	**100**	**2**	**0**	**8**	**0**	**10**	**32**	**83**	**2**	**0**	**117**	**232**
07:30 AM	**4**	**0**	**1**	**0**	**5**	**7**	**85**	**1**	**1**	**94**	**3**	**0**	**20**	**0**	**23**	**47**	75	11	0	133	**255**
07:45 AM	**16**	**5**	**2**	**0**	**23**	**10**	64	0	0	74	1	**1**	4	0	6	42	73	**18**	0	133	236
Total Volume	29	5	3	0	37	20	321	2	2	345	7	1	42	0	50	151	330	36	0	517	949
% App. Total	78.4	13.5	8.1	0		5.8	93	0.6	0.6		14	2	84	0		29.2	63.8	7	0		
PHF	.453	.250	.375	.000	.402	.500	.836	.500	.500	.863	.583	.250	.525	.000	.543	.803	.833	.500	.000	.965	.930
Cars	28	5	3	0	36	20	271	2	1	294	6	1	39	0	46	148	281	36	0	465	841
% Cars	96.6	100	100	0	97.3	100	84.4	100	50.0	85.2	85.7	100	92.9	0	92.0	98.0	85.2	100	0	89.9	88.6
Heavy Vehicles	1	0	0	0	1	0	50	0	1	51	1	0	3	0	4	3	49	0	0	52	108
% Heavy Vehicles	3.4	0	0	0	2.7	0	15.6	0	50.0	14.8	14.3	0	7.1	0	8.0	2.0	14.8	0	0	10.1	11.4

N/S: Bayside Expo Drive/ Soverign Bank
E/W: Mt. Vernon Street
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Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 C
Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Cars

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	4	0	0	0	0	60	1	0	1	0	9	0	29	70	5	0	179
07:15 AM	5	0	0	0	3	81	0	0	1	0	7	0	31	75	2	0	205
07:30 AM	4	0	1	0	7	74	1	1	3	0	20	0	46	69	11	0	237
07:45 AM	15	5	2	0	10	56	0	0	1	1	3	0	42	67	18	0	220
Total	28	5	3	0	20	271	2	1	6	1	39	0	148	281	36	0	841
08:00 AM	7	1	1	0	6	47	1	1	4	4	9	0	39	56	10	0	186
08:15 AM	8	0	2	0	5	63	2	0	2	3	6	0	52	70	6	1	220
08:30 AM	11	0	2	0	3	66	0	0	0	1	8	0	46	63	8	0	208
08:45 AM	4	0	0	0	4	49	2	0	1	1	7	0	42	82	9	0	201
Total	30	1	5	0	18	225	5	1	7	9	30	0	179	271	33	1	815
Grand Total	58	6	8	0	38	496	7	2	13	10	69	0	327	552	69	1	1656
Apprch %	80.6	8.3	11.1	0	7	91.3	1.3	0.4	14.1	10.9	75	0	34.5	58.2	7.3	0.1	
Total %	3.5	0.4	0.5	0	2.3	30	0.4	0.1	0.8	0.6	4.2	0	19.7	33.3	4.2	0.1	

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	0	1	0	5	7	**74**	**1**	**1**	**83**	**3**	**0**	**20**	**0**	**23**	46	69	11	0	126	**237**
07:45 AM	**15**	**5**	**2**	**0**	**22**	**10**	56	0	0	66	1	1	3	0	5	42	67	**18**	0	127	220
08:00 AM	7	1	1	0	9	6	47	1	1	55	**4**	**4**	9	0	17	39	56	10	0	105	186
08:15 AM	8	0	2	0	10	5	63	**2**	0	70	2	3	6	0	11	**52**	**70**		**1**	**129**	
Total Volume	34	6	6	0	46	28	240	4	2	274	10	8	38	0	56	179	262	45	1	487	863
% App. Total	73.9	13	13	0		10.2	87.6	1.5	0.7		17.9	14.3	67.9	0		36.8	53.8	9.2	0.2		
PHF	.567	.300	.750	.000	.523	.700	.811	.500	.500	.825	.625	.500	.475	.000	.609	.861	.936	.625	.250	.944	.910

N/S: Bayside Expo Drive/ Soverign Bank
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 C
Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Heavy Vehicles

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	16	0	0	0	0	1	0	1	29	0	0	47
07:15 AM	0	0	0	0	0	15	0	1	1	0	1	0	1	8	0	0	27
07:30 AM	0	0	0	0	0	11	0	0	0	0	0	0	1	6	0	0	18
07:45 AM	1	0	0	0	0	8	0	0	0	0	1	0	0	6	0	0	16
Total	1	0	0	0	0	50	0	1	1	0	3	0	3	49	0	0	108
08:00 AM	1	0	0	0	0	6	0	0	0	0	0	0	3	6	0	0	16
08:15 AM	0	0	0	0	0	3	0	0	0	0	1	0	0	4	0	0	8
08:30 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	2	0	0	5
08:45 AM	0	0	0	0	0	8	0	0	0	0	0	0	1	9	0	0	18
Total	1	0	0	0	0	19	0	0	0	0	2	0	4	21	0	0	47
Grand Total	2	0	0	0	0	69	0	1	1	0	5	0	7	70	0	0	155
Apprch %	100	0	0	0	0	98.6	0	1.4	16.7	0	83.3	0	9.1	90.9	0	0	
Total %	1.3	0	0	0	0	44.5	0	0.6	0.6	0	3.2	0	4.5	45.2	0	0	

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	**16**	**0**	**0**	**16**	**0**	**0**	**1**	**0**	**1**	**1**	**29**	**0**	**0**	**30**	**47**
07:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**1**	16	**1**	**0**	**1**	**0**	**2**	1	8	0	0	9	27
07:30 AM	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	1	6	0	0	7	18
07:45 AM	**1**				**1**	0	8	0	0	8	0	0	1	0	1	0	6	0	0	6	16
Total Volume	1	0	0	0	1	0	50	0	1	51	1	0	3	0	4	3	49	0	0	52	108
% App. Total	100	0	0	0		0	98	0	2		25	0	75	0		5.8	94.2	0	0		
PHF	.250	.000	.000	.000	.250	.000	.781	.000	.250	.797	.250	.000	.750	.000	.500	.750	.422	.000	.000	.433	.574

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File Name : 123029 C
Site Code : TBA
Start Date : 9/6/2012
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Groups Printed- Peds and Bikes

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	12	0	0	0	2	0	0	0	29	0	0	0	0	43
07:15 AM	0	0	0	16	0	1	0	3	0	0	0	19	1	0	0	0	40
07:30 AM	0	0	0	15	0	1	0	2	0	0	0	25	1	1	0	0	45
07:45 AM	0	0	0	18	0	0	0	0	0	0	0	20	0	2	0	0	40
Total	0	0	0	61	0	2	0	7	0	0	0	93	2	3	0	0	168
08:00 AM	0	0	0	17	0	0	0	2	0	0	0	22	1	1	0	0	43
08:15 AM	0	0	0	17	0	0	0	5	0	0	0	21	0	1	0	0	44
08:30 AM	0	0	0	15	0	0	0	4	0	0	0	9	1	1	0	0	30
08:45 AM	0	0	0	14	0	1	0	5	0	0	0	13	0	3	0	0	36
Total	0	0	0	63	0	1	0	16	0	0	0	65	2	6	0	0	153
Grand Total	0	0	0	124	0	3	0	23	0	0	0	158	4	9	0	0	321
Apprch %	0	0	0	100	0	11.5	0	88.5	0	0	0	100	30.8	69.2	0	0	
Total %	0	0	0	38.6	0	0.9	0	7.2	0	0	0	49.2	1.2	2.8	0	0	

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	15	15	0	**1**	**0**	**2**	**3**	**0**	**0**	**0**	**25**	**25**	**1**	1	0	0	**2**	**45**
07:45 AM	**0**	**0**	**0**	**18**	**18**	0	0	0	0	0	0	0	0	20	20	0	**2**	**0**	**0**	**2**	**40**
08:00 AM	**0**	**0**	**0**	**17**	**17**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**22**	**1**	**1**	**0**	**0**	**2**	**43**
08:15 AM	**0**	**0**	**0**	**17**	**17**	**0**	**0**	**0**	**5**	**5**	**0**	**0**	**0**	**21**	**21**	**0**	**1**	**0**	**0**	**1**	**44**
Total Volume	0	0	0	67	67	0	1	0	9	10	0	0	0	88	88	2	5	0	0	7	172
% App. Total	0	0	0	100		0	10	0	90		0	0	0	100		28.6	71.4	0	0		
PHF	.000	.000	.000	.931	.931	.000	.250	.000	.450	.500	.000	.000	.000	.880	.880	.500	.625	.000	.000	.875	.956

N/S: Bayside Expo Drive/ Soverign Bank
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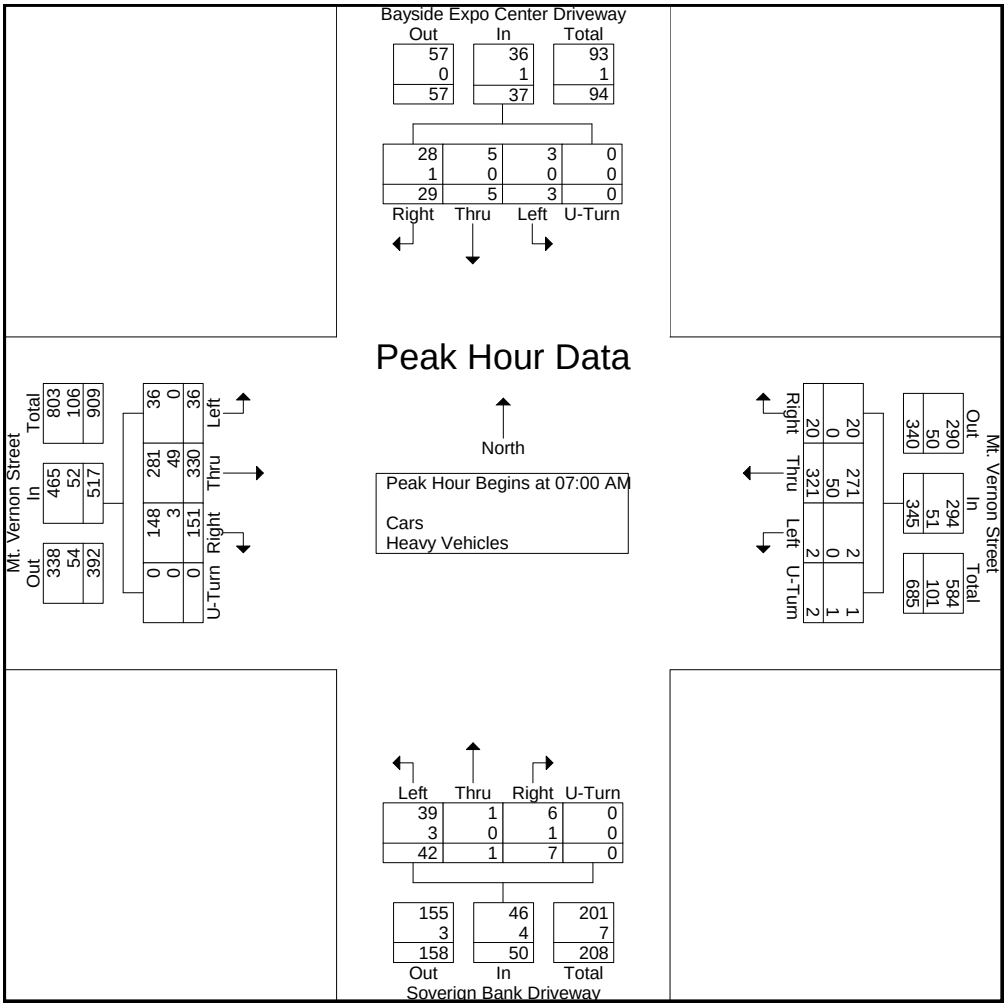
	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	4	0	0	0	4	0	76	**1**	0	77	1	0	10	0	11	30	**99**	**5**	**0**	**134**	**226**
07:15 AM	**5**	**0**	**0**	**0**	**5**	**3**	**96**	**0**	**1**	**100**	**2**	**0**	**8**	**0**	**10**	**32**	**83**	**2**	**0**	**117**	**232**
07:30 AM	**4**	**0**	**1**	**0**	**5**	**7**	**85**	**1**	**1**	**94**	**3**	**0**	**20**	**0**	**23**	**47**	75	11	0	133	**255**
07:45 AM	**16**	**5**	**2**	**0**	**23**	**10**	64	0	0	74	1	**1**	4	0	6	42	73	**18**	0	133	236
Total Volume	29	5	3	0	37	20	321	2	2	345	7	1	42	0	50	151	330	36	0	517	949
% App. Total	78.4	13.5	8.1	0		5.8	93	0.6	0.6		14	2	84	0		29.2	63.8	7	0		
PHF	.453	.250	.375	.000	.402	.500	.836	.500	.500	.863	.583	.250	.525	.000	.543	.803	.833	.500	.000	.965	.930
Cars	28	5	3	0	36	20	271	2	1	294	6	1	39	0	46	148	281	36	0	465	841
% Cars	96.6	100	100	0	97.3	100	84.4	100	50.0	85.2	85.7	100	92.9	0	92.0	98.0	85.2	100	0	89.9	88.6
Heavy Vehicles	1	0	0	0	1	0	50	0	1	51	1	0	3	0	4	3	49	0	0	52	108
% Heavy Vehicles	3.4	0	0	0	2.7	0	15.6	0	50.0	14.8	14.3	0	7.1	0	8.0	2.0	14.8	0	0	10.1	11.4



N/S: Bayside Expo Drive/ Soverign Bank
E/W: Mt. Vernon Street
City, State: South Boston, MA
Client:Howard Stein-Hudson/N. Curtis

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File Name : 123029 CC
Site Code : TBA
Start Date : 9/6/2012
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Groups Printed- Cars - Heavy Vehicles

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	14	0	4	0	4	66	0	0	13	0	26	0	9	123	2	0	261
04:15 PM	13	1	1	0	2	98	0	1	11	0	17	0	6	100	10	0	260
04:30 PM	9	0	4	0	1	95	1	1	14	0	35	0	8	89	8	0	265
04:45 PM	8	0	1	0	2	97	0	0	6	0	22	0	6	82	8	1	233
Total	44	1	10	0	9	356	1	2	44	0	100	0	29	394	28	1	1019
05:00 PM	10	0	5	0	1	107	0	0	17	0	31	0	9	108	6	1	295
05:15 PM	4	1	2	0	1	116	2	0	9	0	25	0	4	73	4	0	241
05:30 PM	12	0	0	0	0	93	1	0	13	0	27	0	9	92	3	0	250
05:45 PM	6	0	2	0	2	86	0	2	10	0	26	0	9	69	1	0	213
Total	32	1	9	0	4	402	3	2	49	0	109	0	31	342	14	1	999
Grand Total	76	2	19	0	13	758	4	4	93	0	209	0	60	736	42	2	2018
Apprch %	78.4	2.1	19.6	0	1.7	97.3	0.5	0.5	30.8	0	69.2	0	7.1	87.6	5	0.2	
Total %	3.8	0.1	0.9	0	0.6	37.6	0.2	0.2	4.6	0	10.4	0	3	36.5	2.1	0.1	
Cars	72	1	19	0	12	676	4	4	90	0	207	0	57	668	39	2	1851
% Cars	94.7	50	100	0	92.3	89.2	100	100	96.8	0	99	0	95	90.8	92.9	100	91.7
Heavy Vehicles	4	1	0	0	1	82	0	0	3	0	2	0	3	68	3	0	167
% Heavy Vehicles	5.3	50	0	0	7.7	10.8	0	0	3.2	0	1	0	5	9.2	7.1	0	8.3

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**13**	**1**	1	0	**15**	**2**	98	0	**1**	101	11	0	17	0	28	6	100	**10**	0	116	260
04:30 PM	9	0	4	0	13	1	95	**1**	1	98	14	0	**35**		**49**	8	89	8	0	105	265
04:45 PM	8	0	1	0	9	2	97	0	0	99	6	0	22	0	28	6	82	8	**1**	97	233
05:00 PM	10	0	**5**				**107**			**108**	**17**					**9**	**108**			**124**	**295**
Total Volume	40	1	11	0	52	6	397	1	2	406	48	0	105	0	153	29	379	32	2	442	1053
% App. Total	76.9	1.9	21.2	0		1.5	97.8	0.2	0.5		31.4	0	68.6	0		6.6	85.7	7.2	0.5		
PHF	.769	.250	.550	.000	.867	.750	.928	.250	.500	.940	.706	.000	.750	.000	.781	.806	.877	.800	.500	.891	.892
Cars	37	1	11	0	49	6	335	1	2	344	47	0	104	0	151	27	340	30	2	399	943
% Cars	92.5	100	100	0	94.2	100	84.4	100	100	84.7	97.9	0	99.0	0	98.7	93.1	89.7	93.8	100	90.3	89.6
Heavy Vehicles	3	0	0	0	3	0	62	0	0	62	1	0	1	0	2	2	39	2	0	43	110
% Heavy Vehicles	7.5	0	0	0	5.8	0	15.6	0	0	15.3	2.1	0	1.0	0	1.3	6.9	10.3	6.3	0	9.7	10.4

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Page No : 1

Groups Printed- Cars

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	14	0	4	0	3	62	0	0	12	0	25	0	8	106	2	0	236
04:15 PM	10	1	1	0	2	90	0	1	10	0	17	0	5	90	8	0	235
04:30 PM	9	0	4	0	1	82	1	1	14	0	35	0	8	80	8	0	243
04:45 PM	8	0	1	0	2	72	0	0	6	0	22	0	5	72	8	1	197
Total	41	1	10	0	8	306	1	2	42	0	99	0	26	348	26	1	911
05:00 PM	10	0	5	0	1	91	0	0	17	0	30	0	9	98	6	1	268
05:15 PM	4	0	2	0	1	108	2	0	9	0	25	0	4	70	4	0	229
05:30 PM	11	0	0	0	0	90	1	0	13	0	27	0	9	86	2	0	239
05:45 PM	6	0	2	0	2	81	0	2	9	0	26	0	9	66	1	0	204
Total	31	0	9	0	4	370	3	2	48	0	108	0	31	320	13	1	940
Grand Total	72	1	19	0	12	676	4	4	90	0	207	0	57	668	39	2	1851
Apprch %	78.3	1.1	20.7	0	1.7	97.1	0.6	0.6	30.3	0	69.7	0	7.4	87.2	5.1	0.3	
Total %	3.9	0.1	1	0	0.6	36.5	0.2	0.2	4.9	0	11.2	0	3.1	36.1	2.1	0.1	

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**10**	**1**	1	0	12	**2**	90	0	**1**	**93**	**10**	**0**	**17**	**0**	**27**	**5**	**90**	**8**	0	103	235
04:30 PM	9	0	4	0	13	1	82	**1**	1	85	14	0	**35**		**49**	8	80	8	0	96	243
04:45 PM	8	0	1	0	9	2	72	0	0	74	6	0	22	0	28	5	72	8	**1**	86	197
05:00 PM	10	0	**5**		**15**	1	**91**				**17**					**9**	**98**			**114**	**268**
Total Volume	37	1	11	0	49	6	335	1	2	344	47	0	104	0	151	27	340	30	2	399	943
% App. Total	75.5	2	22.4	0		1.7	97.4	0.3	0.6		31.1	0	68.9	0		6.8	85.2	7.5	0.5		
PHF	.925	.250	.550	.000	.817	.750	.920	.250	.500	.925	.691	.000	.743	.000	.770	.750	.867	.938	.500	.875	.880

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File Name : 123029 CC
Site Code : TBA
Start Date : 9/6/2012
Page No : 1

Groups Printed- Heavy Vehicles

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	1	4	0	0	1	0	1	0	1	17	0	0	25
04:15 PM	3	0	0	0	0	8	0	0	1	0	0	0	1	10	2	0	25
04:30 PM	0	0	0	0	0	13	0	0	0	0	0	0	0	9	0	0	22
04:45 PM	0	0	0	0	0	25	0	0	0	0	0	0	1	10	0	0	36
Total	3	0	0	0	1	50	0	0	2	0	1	0	3	46	2	0	108
05:00 PM	0	0	0	0	0	16	0	0	0	0	1	0	0	10	0	0	27
05:15 PM	0	1	0	0	0	8	0	0	0	0	0	0	0	3	0	0	12
05:30 PM	1	0	0	0	0	3	0	0	0	0	0	0	0	6	1	0	11
05:45 PM	0	0	0	0	0	5	0	0	1	0	0	0	0	3	0	0	9
Total	1	1	0	0	0	32	0	0	1	0	1	0	0	22	1	0	59
Grand Total	4	1	0	0	1	82	0	0	3	0	2	0	3	68	3	0	167
Apprch %	80	20	0	0	1.2	98.8	0	0	60	0	40	0	4.1	91.9	4.1	0	
Total %	2.4	0.6	0	0	0.6	49.1	0	0	1.8	0	1.2	0	1.8	40.7	1.8	0	

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**3**	**0**	**0**	**0**	**3**	0	8	0	0	8	**1**	**0**	**0**	**0**	**1**	**1**	**10**	**2**	0	**13**	**25**
04:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**9**	**22**
04:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**0**	**0**	**25**	**0**	**0**	**0**	**0**	**0**	**1**	**10**	**0**	**0**	**11**	**36**
05:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**16**	**0**	**0**	**1**	**0**	**1**	**0**	**10**	**0**	**0**	**10**	**27**
Total Volume	3	0	0	0	3	0	62	0	0	62	1	0	1	0	2	2	39	2	0	43	110
% App. Total	100	0	0	0		0	100	0	0		50	0	50	0		4.7	90.7	4.7	0		
PHF	.250	.000	.000	.000	.250	.000	.620	.000	.000	.620	.250	.000	.250	.000	.500	.500	.975	.250	.000	.827	.764

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Groups Printed- Peds and Bikes

	Bayside Expo Center Driveway From North				Mt. Vernon Street From East				Soverign Bank Driveway From South				Mt. Vernon Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	19	0	0	0	3	0	0	0	20	0	0	0	0	42
04:15 PM	0	0	0	24	0	2	0	1	0	0	0	25	0	0	0	0	52
04:30 PM	0	0	0	29	0	1	0	3	0	0	0	45	0	0	0	0	78
04:45 PM	0	0	0	31	0	2	0	0	0	0	0	4	0	0	0	0	37
Total	0	0	0	103	0	5	0	7	0	0	0	94	0	0	0	0	209
05:00 PM	0	0	0	18	0	4	0	4	0	0	0	12	0	3	3	0	44
05:15 PM	0	0	0	21	0	1	0	2	0	0	0	19	0	0	1	0	44
05:30 PM	0	0	0	36	0	3	0	3	0	0	0	16	0	1	1	0	60
05:45 PM	0	0	0	15	0	1	0	10	0	0	1	26	0	0	0	0	53
Total	0	0	0	90	0	9	0	19	0	0	1	73	0	4	5	0	201
Grand Total	0	0	0	193	0	14	0	26	0	0	1	167	0	4	5	0	410
Apprch %	0	0	0	100	0	35	0	65	0	0	0.6	99.4	0	44.4	55.6	0	
Total %	0	0	0	47.1	0	3.4	0	6.3	0	0	0.2	40.7	0	1	1.2	0	

	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	24	24	0	2	0	1	3	0	0	0	25	25	0	0	0	0	0	52
04:30 PM	0	0	0	29	29	0	1	0	3	4	0	0	0	**45**	**45**	0	0	0	0	0	**78**
04:45 PM	**0**	**0**	**0**	**31**	**31**	0	2	0	0	2	0	0	0	4	4	0	0	0	0	0	37
05:00 PM	0	0	0	18	18	0	**4**		**4**	**8**							**3**	**3**	0	**6**	
Total Volume	0	0	0	102	102	0	9	0	8	17	0	0	0	86	86	0	3	3	0	6	211
% App. Total	0	0	0	100		0	52.9	0	47.1		0	0	0	100		0	50	50	0		
PHF	.000	.000	.000	.823	.823	.000	.563	.000	.500	.531	.000	.000	.000	.478	.478	.000	.250	.250	.000	.250	.676

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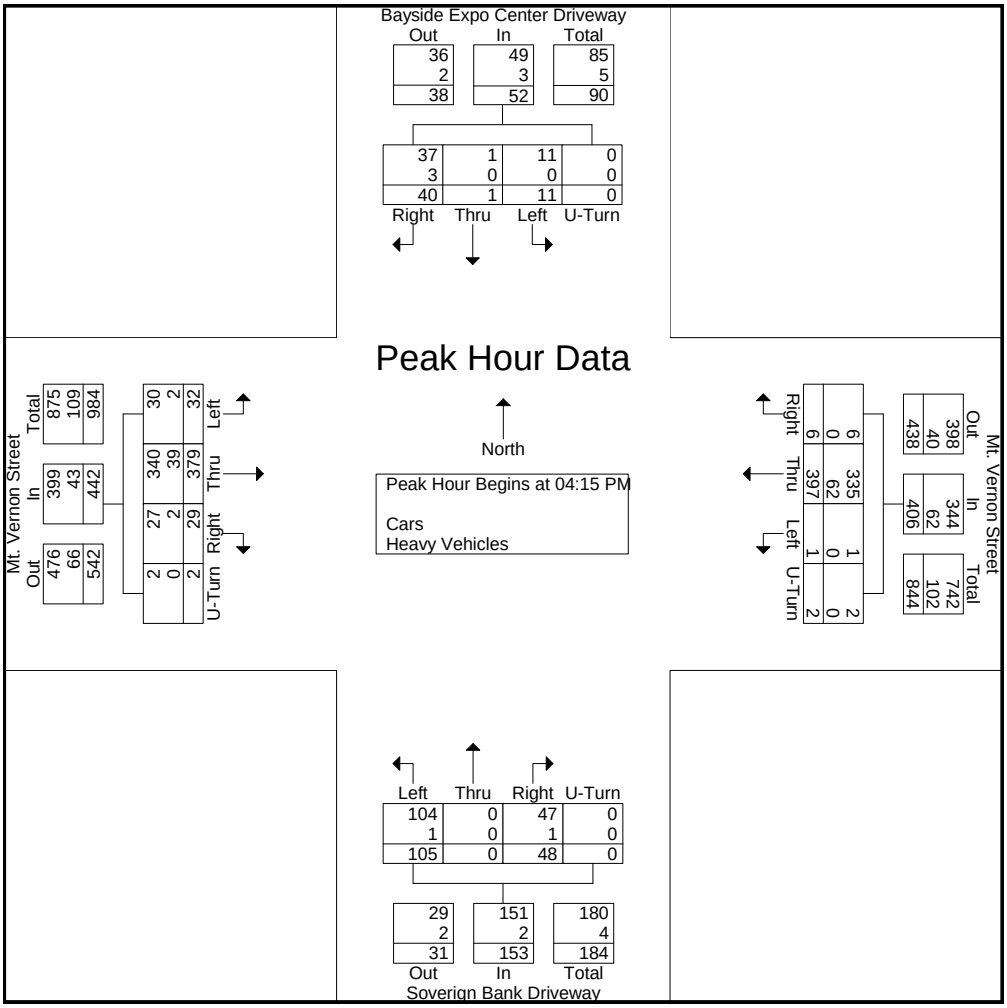
	Bayside Expo Center Driveway From North					Mt. Vernon Street From East					Soverign Bank Driveway From South					Mt. Vernon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**13**	**1**	1	0	**15**	**2**	98	0	**1**	101	11	0	17	0	28	6	100	**10**	0	116	260
04:30 PM	9	0	4	0	13	1	95	**1**	1	98	14	0	**35**		**49**	8	89	8	0	105	265
04:45 PM	8	0	1	0	9	2	97	0	0	99	6	0	22	0	28	6	82	8	**1**	97	233
05:00 PM	10	0	**5**				**107**			**108**	**17**					**9**	**108**			**124**	**295**
Total Volume	40	1	11	0	52	6	397	1	2	406	48	0	105	0	153	29	379	32	2	442	1053
% App. Total	76.9	1.9	21.2	0		1.5	97.8	0.2	0.5		31.4	0	68.6	0		6.6	85.7	7.2	0.5		
PHF	.769	.250	.550	.000	.867	.750	.928	.250	.500	.940	.706	.000	.750	.000	.781	.806	.877	.800	.500	.891	.892
Cars	37	1	11	0	49	6	335	1	2	344	47	0	104	0	151	27	340	30	2	399	943
% Cars	92.5	100	100	0	94.2	100	84.4	100	100	84.7	97.9	0	99.0	0	98.7	93.1	89.7	93.8	100	90.3	89.6
Heavy Vehicles	3	0	0	0	3	0	62	0	0	62	1	0	1	0	2	2	39	2	0	43	110
% Heavy Vehicles	7.5	0	0	0	5.8	0	15.6	0	0	15.3	2.1	0	1.0	0	1.3	6.9	10.3	6.3	0	9.7	10.4



TRIP GENERATION CALCULATIONS

Bayside DoubleTree Hotel Expansion
Trip Generation Assessment--Daily

HOWARD/STEIN-HUDSON ASSOCIATES
24-Apr-14

AVERAGE

Existing Hotel Units	197
Proposed Total Units	283
Net Added Units	86

			Vehicular Trip Generation					Conversion to Person Trips		Mode Share Split								Vehicular Trips		
Land Use	**Size**	**Category**	**Unadjusted Vehicle Trips**	**Internal trips**	**Pass-by %**	**Pass-By Trips**	**Less capture trips**	**Assumed national vehicle occupancy rate[1]**	**Converted to New Person trips**	**Transit Share[2]**	**Transit Trips**	**Walk/Bike/ Other Share[2]**	**Walk/ Bike/ Other Trips**	**Vehicle Share[2]**	**Total Vehicle Person Trips**	**Pass-By vehicle Share**	**Total Vehicle Pass-By Person Trips**	**Assumed local auto occupancy rate for autos[3]**	**Total Adjusted Auto Trips**	**Total Adjusted Auto Trips (Pass-By)**
Daily																				
Hotel	197	Total	1,610	0			1,610	2.20	**3,542**		**532**		**850**		**2,160**			2.20	**982**	
	Units	In	805		0.00		805	2.20	**1,771**	15%	**266**	24%	**425**	61%	**1,080**			2.20	**491**	
		Out	805		0.00		805	2.20	**1,771**	15%	**266**	24%	**425**	61%	**1,080**			2.20	**491**	
AM Peak Hour																				
Hotel	197	Total	104	0			104	2.20	**229**		**44**		**56**		**130**			2.20	**60**	
	Units	In	61		0.00		61	2.20	**134**	15%	**20**	20%	**27**	65%	**87**			2.20	**40**	
		Out	43		0.00		43	2.20	**95**	25%	**24**	30%	**29**	45%	**43**			2.20	**20**	
PM Peak Hour																				
Hotel	197	Total	118	0			118	2.20	**260**		**52**		**66**		**142**			2.20	**65**	
	Units	In	60		0.00		60	2.20	**132**	25%	**33**	30%	**40**	45%	**59**			2.20	**27**	
		Out	58		0.00		58	2.20	**128**	15%	**19**	20%	**26**	65%	**83**			2.20	**38**	

			Vehicular Trip Generation					Conversion to Person Trips		Mode Share Split								Vehicular Trips		
Land Use	**Size**	**Category**	**Unadjusted Vehicle Trips**	**Internal trips**	**Pass-by %**	**Pass-By Trips**	**Less capture trips**	**Assumed national vehicle occupancy rate[1]**	**Converted to New Person trips**	**Transit Share[2]**	**Transit Trips**	**Walk/Bike/ Other Share[2]**	**Walk/ Bike/ Other Trips**	**Vehicle Share[2]**	**Total Vehicle Person Trips**	**Pass-By vehicle Share**	**Total Vehicle Pass-By Person Trips**	**Assumed local auto occupancy rate for autos[3]**	**Total Adjusted Auto Trips**	**Total Adjusted Auto Trips (Pass-By)**
Daily																				
Hotel	283	Total	2,312	0			2,312	2.20	**5,086**		**762**		**1,220**		**3,102**			2.20	**1,410**	
	Units	In	1,156		0.00		1,156	2.20	**2,543**	15%	**381**	24%	**610**	61%	**1,551**			2.20	**705**	
		Out	1,156		0.00		1,156	2.20	**2,543**	15%	**381**	24%	**610**	61%	**1,551**			2.20	**705**	
AM Peak Hour																				
Hotel	283	Total	150	0			150	2.20	**330**		**63**		**79**		**187**			2.20	**85**	
	Units	In	89		0.00		89	2.20	**196**	15%	**29**	20%	**39**	65%	**127**			2.20	**58**	
		Out	61		0.00		61	2.20	**134**	25%	**34**	30%	**40**	45%	**60**			2.20	**27**	
PM Peak Hour																				
Hotel	283	Total	170	0			170	2.20	**374**		**75**		**94**		**205**			2.20	**93**	
	Units	In	87		0.00		87	2.20	**191**	25%	**48**	30%	**57**	45%	**86**			2.20	**39**	
		Out	83		0.00		83	2.20	**183**	15%	**27**	20%	**37**	65%	**119**			2.20	**54**	

INTERSECTION CAPACITY ANALYSIS WORKSHEETS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	382	341	219	309	11	908
Peak Hour Factor	0.79	0.93	0.78	0.89	0.69	0.92
Hourly flow rate (vph)	484	367	281	347	16	987
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			850		1402	425
vC1, stage 1 conf vol					667	
vC2, stage 2 conf vol					735	
vCu, unblocked vol			850		1402	425
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			64		89	0
cM capacity (veh/h)			784		147	580

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	322	528	396	231	345	658
Volume Left	0	0	281	0	16	0
Volume Right	0	367	0	0	329	658
cSH	1700	1700	784	1700	511	580
Volume to Capacity	0.19	0.31	0.36	0.14	0.68	1.13
Queue Length 95th (ft)	0	0	41	0	125	532
Control Delay (s)	0.0	0.0	10.0	0.0	25.5	105.1
Lane LOS			A		D	F
Approach Delay (s)	0.0		6.3		77.7	
Approach LOS					F	

Intersection Summary			
Average Delay	33.0		
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	9	9	12	11	16	12	13	15	12	12	16
Storage Length (ft)	0		0	0		60	0		60	0		60
Storage Lanes	0		0	0		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50	50		50
Trailing Detector (ft)	0	0			0	0	0	0	0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	2996	0	0	3231	1727	3335	3693	1725	3367	0	1695
Flt Permitted		0.900					0.950			0.950		
Satd. Flow (perm)	0	2715	0	0	3231	1727	3335	3693	1725	3367	0	1695
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						73			59			182
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		372			350			246			492	
Travel Time (s)		8.5			8.0			5.6			11.2	
Volume (vph)	10	55	0	0	272	55	921	860	120	331	0	215
Peak Hour Factor	0.83	0.79	0.92	0.74	0.74	0.75	0.84	0.90	0.80	0.92	0.25	0.72
Heavy Vehicles (%)	0%	9%	0%	0%	8%	6%	5%	1%	3%	4%	0%	8%
Adj. Flow (vph)	12	70	0	0	368	73	1096	956	150	360	0	299
Lane Group Flow (vph)	0	82	0	0	368	73	1096	956	150	360	0	299
Turn Type	Perm					Perm	Prot		Perm	Prot		custom
Protected Phases		5			6		2	3		1		4
Permitted Phases	5					6			3			
Detector Phases	5	5			6	6	2	3	3	1		4
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	22.0	22.0			22.0	22.0	9.0	18.0	18.0	13.0		21.0
Total Split (s)	34.0	34.0	0.0	0.0	34.0	34.0	24.0	22.0	22.0	24.0	0.0	22.0
Total Split (%)	42.5%	42.5%	0.0%	0.0%	42.5%	42.5%	30.0%	27.5%	27.5%	30.0%	0.0%	27.5%
Maximum Green (s)	29.0	29.0			29.0	29.0	20.0	18.0	18.0	20.0		18.0
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	2.0	1.0	1.0	1.0	1.0		1.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	C-Min	C-Min			C-Min	C-Min	None	None	None	None		None
Walk Time (s)	7.0	7.0			7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		7.0	7.0	2.0		10.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0		0
Act Effct Green (s)		30.0			30.0	30.0	20.0	18.0	18.0	20.0		18.0
Actuated g/C Ratio		0.38			0.38	0.38	0.25	0.22	0.22	0.25		0.22
v/c Ratio		0.08			0.30	0.11	1.31	1.15	0.35	0.43		0.57
Control Delay		16.5			18.5	4.9	178.2	112.3	18.6	27.1		15.9
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		16.5			18.5	4.9	178.2	112.3	18.6	27.1		15.9
LOS		B			B	A	F	F	B	C		B
Approach Delay		16.5			16.2			138.7				
Approach LOS		B			B			F				
Queue Length 50th (ft)		13			66	0	~369	~300	37	77		49
Queue Length 95th (ft)		24			79	16	#441	#417	73	116		75
Internal Link Dist (ft)		292			270			166			412	
Turn Bay Length (ft)						60			60			60
Base Capacity (vph)		1018			1212	693	834	831	434	842		522
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.08			0.30	0.11	1.31	1.15	0.35	0.43		0.57

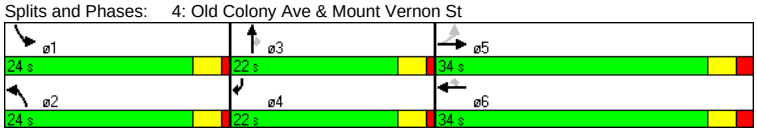
Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 64 (80%), Referenced to phase 5:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 97.1 Intersection LOS: F
Intersection Capacity Utilization 57.1% 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: 4: Old Colony Ave & Mount Vernon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	280	184	3	254	24	29	9	11	7	6	43
Peak Hour Factor	0.58	0.93	0.88	0.38	0.92	0.60	0.81	0.56	0.44	0.88	0.30	0.67
Hourly flow rate (vph)	72	301	209	8	276	40	36	16	25	8	20	64
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		350										
pX, platoon unblocked												
vC, conflicting volume	316			510			778	882	255	640	967	158
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			510			778	882	255	640	967	158
tC, single (s)	4.1			4.1			7.7	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			99			84	94	97	98	92	92
cM capacity (veh/h)	1255			1065			224	269	750	319	240	850

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	72	201	309	146	178	77	92
Volume Left	72	0	0	8	0	36	8
Volume Right	0	0	209	0	40	25	64
cSH	1255	1700	1700	1065	1700	304	501
Volume to Capacity	0.06	0.12	0.18	0.01	0.10	0.25	0.18
Queue Length 95th (ft)	5	0	0	1	0	25	17
Control Delay (s)	8.0	0.0	0.0	0.5	0.0	20.8	13.8
Lane LOS	A			A		C	B
Approach Delay (s)	1.0			0.2		20.8	13.8
Approach LOS						C	B

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	40.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	372	225	350	642	3	362
Peak Hour Factor	0.93	0.84	0.79	0.91	0.38	0.89
Hourly flow rate (vph)	400	268	443	705	8	407
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			668		1773	334
vC1, stage 1 conf vol					534	
vC2, stage 2 conf vol					1239	
vCu, unblocked vol			668		1773	334
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			52		90	39
cM capacity (veh/h)			918		76	662

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	267	401	678	470	143	271
Volume Left	0	0	443	0	8	0
Volume Right	0	268	0	0	136	271
cSH	1700	1700	918	1700	466	662
Volume to Capacity	0.16	0.24	0.48	0.28	0.31	0.41
Queue Length 95th (ft)	0	0	67	0	32	50
Control Delay (s)	0.0	0.0	10.6	0.0	16.1	14.2
Lane LOS			B		C	B
Approach Delay (s)	0.0		6.3		14.8	
Approach LOS					B	

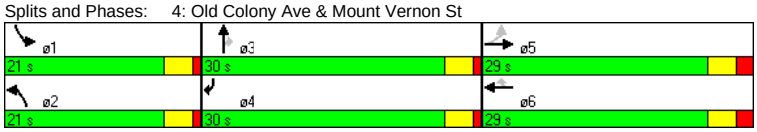
Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	9	9	12	11	16	12	13	15	12	12	16
Storage Length (ft)	0		0	0		60	0		60	0		60
Storage Lanes	0		0	0		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50	50		50
Trailing Detector (ft)	0	0			0	0	0	0	0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	2838	0	0	3144	1695	3213	3730	1725	3127	0	1777
Flt Permitted		0.851					0.950			0.950		
Satd. Flow (perm)	0	2435	0	0	3144	1695	3213	3730	1725	3127	0	1777
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						81			121			134
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		372			350			246			492	
Travel Time (s)		8.5			8.0			5.6			11.2	
Volume (vph)	20	115	0	0	419	86	254	259	99	241	0	354
Peak Hour Factor	0.71	0.74	0.25	0.25	0.83	0.89	0.77	0.81	0.82	0.85	0.25	0.89
Heavy Vehicles (%)	0%	16%	0%	0%	11%	8%	9%	0%	3%	12%	0%	3%
Adj. Flow (vph)	28	155	0	0	505	97	330	320	121	284	0	398
Lane Group Flow (vph)	0	183	0	0	505	97	330	320	121	284	0	398
Turn Type	Perm					Perm	Prot		Perm	Prot		custom
Protected Phases		5			6		2	3		1		4
Permitted Phases	5					6			3			
Detector Phases	5	5			6	6	2	3	3	1		4
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	22.0	22.0			22.0	22.0	9.0	21.0	21.0	13.0		21.0
Total Split (s)	29.0	29.0	0.0	0.0	29.0	29.0	21.0	30.0	30.0	21.0	0.0	30.0
Total Split (%)	36.3%	36.3%	0.0%	0.0%	36.3%	36.3%	26.3%	37.5%	37.5%	26.3%	0.0%	37.5%
Maximum Green (s)	24.0	24.0			24.0	24.0	17.0	26.0	26.0	17.0		26.0
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	2.0	1.0	1.0	1.0	1.0		1.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	C-Min	C-Min			C-Min	C-Min	None	None	None	None		None
Walk Time (s)	7.0	7.0			7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		7.0	7.0	2.0		10.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0		0
Act Effct Green (s)		37.4			37.4	37.4	13.2	17.4	17.4	13.2		17.4
Actuated g/C Ratio		0.47			0.47	0.47	0.16	0.22	0.22	0.16		0.22
v/c Ratio		0.16			0.34	0.12	0.62	0.39	0.26	0.55		0.81
Control Delay		15.5			16.5	6.3	36.2	27.0	5.8	34.5		32.0
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		15.5			16.5	6.3	36.2	27.0	5.8	34.5		32.0
LOS		B			B	A	D	C	A	C		C
Approach Delay		15.5			14.9			27.6				
Approach LOS		B			B			C				
Queue Length 50th (ft)		26			80	4	79	72	0	68		127
Queue Length 95th (ft)		48			139	37	95	83	27	93		193
Internal Link Dist (ft)		292			270			166			412	
Turn Bay Length (ft)						60			60			60
Base Capacity (vph)		1140			1471	836	683	1212	642	664		668
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.16			0.34	0.12	0.48	0.26	0.19	0.43		0.60

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 67 (84%), Referenced to phase 5:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 24.8 Intersection LOS: C
Intersection Capacity Utilization 50.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: Old Colony Ave & Mount Vernon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	28	398	29	1	360	9	101	0	44	10	1	44
Peak Hour Factor	0.70	0.80	0.81	0.25	0.91	0.56	0.71	0.25	0.79	0.63	0.25	0.79
Hourly flow rate (vph)	40	498	36	4	396	16	142	0	56	16	4	56
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		350										
pX, platoon unblocked												
vC, conflicting volume	412			533			859	1015	267	796	1025	206
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412			533			859	1015	267	796	1025	206
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	8.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	5.0	3.3
p0 queue free %	96			100			36	100	92	94	97	93
cM capacity (veh/h)	1123			1045			221	231	738	252	115	797

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	40	332	202	202	214	198	76
Volume Left	40	0	0	4	0	142	16
Volume Right	0	0	36	0	16	56	56
cSH	1123	1700	1700	1045	1700	275	451
Volume to Capacity	0.04	0.20	0.12	0.00	0.13	0.72	0.17
Queue Length 95th (ft)	3	0	0	0	0	126	15
Control Delay (s)	8.3	0.0	0.0	0.2	0.0	45.5	14.6
Lane LOS	A			A		E	B
Approach Delay (s)	0.6			0.1		45.5	14.6
Approach LOS						E	B

Intersection Summary				
Average Delay	8.3			
Intersection Capacity Utilization	44.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	392	359	226	317	11	935
Peak Hour Factor	0.79	0.93	0.78	0.89	0.69	0.92
Hourly flow rate (vph)	496	386	290	356	16	1016
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			882		1447	441
vC1, stage 1 conf vol					689	
vC2, stage 2 conf vol					758	
vCu, unblocked vol			882		1447	441
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			62		89	0
cM capacity (veh/h)			762		139	567

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	331	551	408	237	355	678
Volume Left	0	0	290	0	16	0
Volume Right	0	386	0	0	339	678
cSH	1700	1700	762	1700	498	567
Volume to Capacity	0.19	0.32	0.38	0.14	0.71	1.20
Queue Length 95th (ft)	0	0	45	0	141	608
Control Delay (s)	0.0	0.0	10.4	0.0	28.2	128.6
Lane LOS			B		D	F
Approach Delay (s)	0.0		6.6		94.1	
Approach LOS					F	

Intersection Summary			
Average Delay	39.6		
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	9	9	12	11	16	12	13	15	12	12	16
Storage Length (ft)	0		0	0		60	0		60	0		60
Storage Lanes	0		0	0		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50	50		50
Trailing Detector (ft)	0	0			0	0	0	0	0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	2995	0	0	3231	1727	3335	3693	1725	3367	0	1695
Flt Permitted		0.898					0.950			0.950		
Satd. Flow (perm)	0	2708	0	0	3231	1727	3335	3693	1725	3367	0	1695
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						80			59			153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		372			350			246			492	
Travel Time (s)		8.5			8.0			5.6			11.2	
Volume (vph)	10	58	0	0	308	60	944	882	124	349	0	220
Peak Hour Factor	0.83	0.79	0.92	0.74	0.74	0.75	0.84	0.90	0.80	0.92	0.25	0.72
Heavy Vehicles (%)	0%	9%	0%	0%	8%	6%	5%	1%	3%	4%	0%	8%
Adj. Flow (vph)	12	73	0	0	416	80	1124	980	155	379	0	306
Lane Group Flow (vph)	0	85	0	0	416	80	1124	980	155	379	0	306
Turn Type	Perm					Perm	Prot		Perm	Prot		custom
Protected Phases		5			6		2	3		1		4
Permitted Phases	5					6			3			
Detector Phases	5	5			6	6	2	3	3	1		4
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	22.0	22.0			22.0	22.0	9.0	18.0	18.0	13.0		21.0
Total Split (s)	34.0	34.0	0.0	0.0	34.0	34.0	24.0	22.0	22.0	24.0	0.0	22.0
Total Split (%)	42.5%	42.5%	0.0%	0.0%	42.5%	42.5%	30.0%	27.5%	27.5%	30.0%	0.0%	27.5%
Maximum Green (s)	29.0	29.0			29.0	29.0	20.0	18.0	18.0	20.0		18.0
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	2.0	1.0	1.0	1.0	1.0		1.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	C-Min	C-Min			C-Min	C-Min	None	None	None	None		None
Walk Time (s)	7.0	7.0			7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		7.0	7.0	2.0		10.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0		0
Act Effct Green (s)		30.0			30.0	30.0	20.0	18.0	18.0	20.0		18.0
Actuated g/C Ratio		0.38			0.38	0.38	0.25	0.22	0.22	0.25		0.22
v/c Ratio		0.08			0.34	0.11	1.35	1.18	0.36	0.45		0.61
Control Delay		16.5			18.9	4.7	192.4	123.5	19.0	27.4		19.6
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		16.5			18.9	4.7	192.4	123.5	19.0	27.4		19.6
LOS		B			B	A	F	F	B	C		B
Approach Delay		16.5			16.6			150.6				
Approach LOS		B			B			F				
Queue Length 50th (ft)		14			76	0	~385	~313	40	82		65
Queue Length 95th (ft)		25			89	17	#456	#432	76	123		94
Internal Link Dist (ft)		292			270			166			412	
Turn Bay Length (ft)						60			60			60
Base Capacity (vph)		1016			1212	698	834	831	434	842		500
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.08			0.34	0.11	1.35	1.18	0.36	0.45		0.61

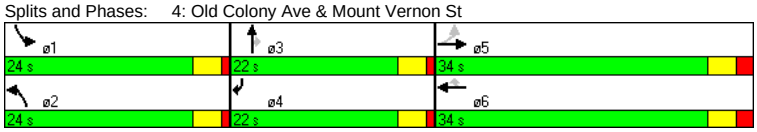
Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 64 (80%), Referenced to phase 5:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 103.9 Intersection LOS: F
Intersection Capacity Utilization 59.1% 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: 4: Old Colony Ave & Mount Vernon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	55	287	189	3	260	26	30	9	11	8	6	77
Peak Hour Factor	0.58	0.93	0.88	0.38	0.92	0.60	0.81	0.56	0.44	0.88	0.30	0.67
Hourly flow rate (vph)	95	309	215	8	283	43	37	16	25	9	20	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		350										
pX, platoon unblocked												
vC, conflicting volume	326			523			1051	947	262	697	1033	304
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	326			523			1051	947	262	697	1033	304
tC, single (s)	4.1			4.1			7.7	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			99			70	93	97	97	91	83
cM capacity (veh/h)	1245			1053			124	241	743	285	215	683

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	249	369	334	78	144
Volume Left	95	0	8	37	9
Volume Right	0	215	43	25	115
cSH	1245	1700	1053	195	491
Volume to Capacity	0.08	0.22	0.01	0.40	0.29
Queue Length 95th (ft)	6	0	1	45	30
Control Delay (s)	3.5	0.0	0.3	35.2	15.3
Lane LOS	A		A	E	C
Approach Delay (s)	1.4		0.3	35.2	15.3
Approach LOS				E	C

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	50.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	381	304	362	658	3	375
Peak Hour Factor	0.93	0.84	0.79	0.91	0.38	0.89
Hourly flow rate (vph)	410	362	458	723	8	421
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			772		1869	386
vC1, stage 1 conf vol					591	
vC2, stage 2 conf vol					1278	
vCu, unblocked vol			772		1869	386
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			45		88	31
cM capacity (veh/h)			839		64	613

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	273	498	699	482	148	281
Volume Left	0	0	458	0	8	0
Volume Right	0	362	0	0	140	281
cSH	1700	1700	839	1700	421	613
Volume to Capacity	0.16	0.29	0.55	0.28	0.35	0.46
Queue Length 95th (ft)	0	0	84	0	39	60
Control Delay (s)	0.0	0.0	12.5	0.0	18.1	15.8
Lane LOS			B		C	C
Approach Delay (s)	0.0		7.4		16.6	
Approach LOS					C	

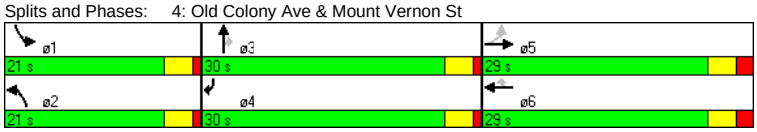
Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	9	9	12	11	16	12	13	15	12	12	16
Storage Length (ft)	0		0	0		60	0		60	0		60
Storage Lanes	0		0	0		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50	50		50
Trailing Detector (ft)	0	0			0	0	0	0	0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	2840	0	0	3144	1695	3213	3730	1725	3127	0	1777
Flt Permitted		0.842					0.950			0.950		
Satd. Flow (perm)	0	2408	0	0	3144	1695	3213	3730	1725	3127	0	1777
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						79			126			118
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		372			350			246			492	
Travel Time (s)		8.5			8.0			5.6			11.2	
Volume (vph)	21	125	0	0	457	92	260	266	103	277	0	409
Peak Hour Factor	0.71	0.74	0.25	0.25	0.83	0.89	0.77	0.81	0.82	0.85	0.25	0.89
Heavy Vehicles (%)	0%	16%	0%	0%	11%	8%	9%	0%	3%	12%	0%	3%
Adj. Flow (vph)	30	169	0	0	551	103	338	328	126	326	0	460
Lane Group Flow (vph)	0	199	0	0	551	103	338	328	126	326	0	460
Turn Type	Perm					Perm	Prot		Perm	Prot		custom
Protected Phases		5			6		2	3		1		4
Permitted Phases	5					6			3			
Detector Phases	5	5			6	6	2	3	3	1		4
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	22.0	22.0			22.0	22.0	9.0	21.0	21.0	13.0		21.0
Total Split (s)	29.0	29.0	0.0	0.0	29.0	29.0	21.0	30.0	30.0	21.0	0.0	30.0
Total Split (%)	36.3%	36.3%	0.0%	0.0%	36.3%	36.3%	26.3%	37.5%	37.5%	26.3%	0.0%	37.5%
Maximum Green (s)	24.0	24.0			24.0	24.0	17.0	26.0	26.0	17.0		26.0
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	2.0	1.0	1.0	1.0	1.0		1.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	C-Min	C-Min			C-Min	C-Min	None	None	None	None		None
Walk Time (s)	7.0	7.0			7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		7.0	7.0	2.0		10.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0		0
Act Effct Green (s)		34.6			34.6	34.6	13.3	20.2	20.2	13.3		20.2
Actuated g/C Ratio		0.43			0.43	0.43	0.17	0.25	0.25	0.17		0.25
v/c Ratio		0.19			0.41	0.13	0.63	0.35	0.24	0.63		0.86
Control Delay		17.2			18.8	7.3	36.3	24.5	5.3	36.3		36.6
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		17.2			18.8	7.3	36.3	24.5	5.3	36.3		36.6
LOS		B			B	A	D	C	A	D		D
Approach Delay		17.2			17.0			26.5				
Approach LOS		B			B			C				
Queue Length 50th (ft)		31			97	7	82	69	0	79		164
Queue Length 95th (ft)		53			153	41	97	84	28	106		250
Internal Link Dist (ft)		292			270			166			412	
Turn Bay Length (ft)						60			60			60
Base Capacity (vph)		1040			1358	777	683	1212	646	664		657
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.19			0.41	0.13	0.49	0.27	0.20	0.49		0.70

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 5:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 26.4 Intersection LOS: C
Intersection Capacity Utilization 55.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Old Colony Ave & Mount Vernon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	68	408	30	1	369	11	104	0	45	11	1	76
Peak Hour Factor	0.70	0.80	0.81	0.25	0.91	0.56	0.71	0.25	0.79	0.63	0.25	0.79
Hourly flow rate (vph)	97	510	37	4	405	20	146	0	57	17	4	96
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		350										
pX, platoon unblocked												
vC, conflicting volume	425			547			1244	1156	274	930	1165	415
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	425			547			1244	1156	274	930	1165	415
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	8.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	5.0	3.3
p0 queue free %	91			100			0	100	92	91	95	84
cM capacity (veh/h)	1110			1032			99	180	730	193	84	583

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	352	292	429	203	118
Volume Left	97	0	4	146	17
Volume Right	0	37	20	57	96
cSH	1110	1700	1032	130	389
Volume to Capacity	0.09	0.17	0.00	1.56	0.30
Queue Length 95th (ft)	7	0	0	361	31
Control Delay (s)	3.0	0.0	0.1	348.0	18.2
Lane LOS	A		A	F	C
Approach Delay (s)	1.6		0.1	348.0	18.2
Approach LOS				F	C

Intersection Summary				
Average Delay	53.1			
Intersection Capacity Utilization	59.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	392	371	227	317	11	936
Peak Hour Factor	0.79	0.93	0.78	0.89	0.69	0.92
Hourly flow rate (vph)	496	399	291	356	16	1017
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			895		1456	448
vC1, stage 1 conf vol					696	
vC2, stage 2 conf vol					760	
vCu, unblocked vol			895		1456	448
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			61		88	0
cM capacity (veh/h)			754		137	561

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	331	564	410	237	355	678
Volume Left	0	0	291	0	16	0
Volume Right	0	399	0	0	339	678
cSH	1700	1700	754	1700	493	561
Volume to Capacity	0.19	0.33	0.39	0.14	0.72	1.21
Queue Length 95th (ft)	0	0	46	0	145	621
Control Delay (s)	0.0	0.0	10.6	0.0	29.0	133.8
Lane LOS			B		D	F
Approach Delay (s)	0.0		6.7		97.7	
Approach LOS					F	

Intersection Summary			
Average Delay	40.9		
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	9	9	12	11	16	12	13	15	12	12	16
Storage Length (ft)	0		0	0		60	0		60	0		60
Storage Lanes	0		0	0		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50	50		50
Trailing Detector (ft)	0	0			0	0	0	0	0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	2993	0	0	3231	1727	3335	3693	1725	3367	0	1695
Flt Permitted		0.899					0.950			0.950		
Satd. Flow (perm)	0	2710	0	0	3231	1727	3335	3693	1725	3367	0	1695
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						81			60			148
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		372			350			246			492	
Travel Time (s)		8.5			8.0			5.6			11.2	
Volume (vph)	10	61	0	0	315	61	944	882	125	362	0	220
Peak Hour Factor	0.83	0.79	0.92	0.74	0.74	0.75	0.84	0.90	0.80	0.92	0.25	0.72
Heavy Vehicles (%)	0%	9%	0%	0%	8%	6%	5%	1%	3%	4%	0%	8%
Adj. Flow (vph)	12	77	0	0	426	81	1124	980	156	393	0	306
Lane Group Flow (vph)	0	89	0	0	426	81	1124	980	156	393	0	306
Turn Type	Perm					Perm	Prot		Perm	Prot		custom
Protected Phases		5			6		2	3		1		4
Permitted Phases	5					6			3			
Detector Phases	5	5			6	6	2	3	3	1		4
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	22.0	22.0			22.0	22.0	9.0	18.0	18.0	13.0		21.0
Total Split (s)	34.0	34.0	0.0	0.0	34.0	34.0	24.0	22.0	22.0	24.0	0.0	22.0
Total Split (%)	42.5%	42.5%	0.0%	0.0%	42.5%	42.5%	30.0%	27.5%	27.5%	30.0%	0.0%	27.5%
Maximum Green (s)	29.0	29.0			29.0	29.0	20.0	18.0	18.0	20.0		18.0
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	2.0	1.0	1.0	1.0	1.0		1.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	C-Min	C-Min			C-Min	C-Min	None	None	None	None		None
Walk Time (s)	7.0	7.0			7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		7.0	7.0	2.0		10.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0		0
Act Effct Green (s)		30.0			30.0	30.0	20.0	18.0	18.0	20.0		18.0
Actuated g/C Ratio		0.38			0.38	0.38	0.25	0.22	0.22	0.25		0.22
v/c Ratio		0.09			0.35	0.12	1.35	1.18	0.36	0.47		0.62
Control Delay		16.5			19.0	4.7	192.4	123.5	18.9	27.6		20.2
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		16.5			19.0	4.7	192.4	123.5	18.9	27.6		20.2
LOS		B			B	A	F	F	B	C		C
Approach Delay		16.5			16.7			150.6				
Approach LOS		B			B			F				
Queue Length 50th (ft)		14			78	0	~385	~313	40	86		68
Queue Length 95th (ft)		25			91	17	#456	#432	76	127		96
Internal Link Dist (ft)		292			270			166			412	
Turn Bay Length (ft)						60			60			60
Base Capacity (vph)		1016			1212	698	834	831	435	842		496
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.09			0.35	0.12	1.35	1.18	0.36	0.47		0.62

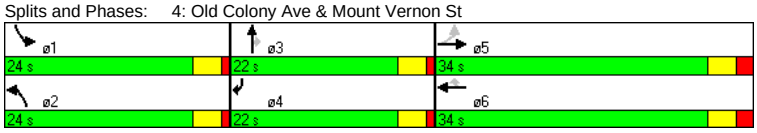
Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 64 (80%), Referenced to phase 5:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 103.3 Intersection LOS: F
Intersection Capacity Utilization 59.3% 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: 4: Old Colony Ave & Mount Vernon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	72	287	189	3	260	26	30	9	11	8	6	85
Peak Hour Factor	0.58	0.93	0.88	0.38	0.92	0.60	0.81	0.56	0.44	0.88	0.30	0.67
Hourly flow rate (vph)	124	309	215	8	283	43	37	16	25	9	20	127
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		350										
pX, platoon unblocked												
vC, conflicting volume	326			523			1121	1006	262	756	1092	304
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	326			523			1121	1006	262	756	1092	304
tC, single (s)	4.1			4.1			7.7	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			99			64	93	97	96	90	81
cM capacity (veh/h)	1245			1053			104	217	743	252	193	683

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	278	369	334	78	156
Volume Left	124	0	8	37	9
Volume Right	0	215	43	25	127
cSH	1245	1700	1053	169	479
Volume to Capacity	0.10	0.22	0.01	0.46	0.33
Queue Length 95th (ft)	8	0	1	54	35
Control Delay (s)	4.2	0.0	0.3	43.5	16.1
Lane LOS	A		A	E	C
Approach Delay (s)	1.8		0.3	43.5	16.1
Approach LOS				E	C

Intersection Summary				
Average Delay	5.9			
Intersection Capacity Utilization	51.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	306	289	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	333	314	1	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		530				
pX, platoon unblocked						
vC, conflicting volume	315				481	315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	315				481	315
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1242				514	681

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	166	166	315
Volume Left	0	0	0
Volume Right	0	0	1
cSH	1700	1700	1700
Volume to Capacity	0.10	0.10	0.19
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		18.6%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	381	312	363	658	3	377
Peak Hour Factor	0.93	0.84	0.79	0.91	0.38	0.89
Hourly flow rate (vph)	410	371	459	723	8	424
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			781		1876	391
vC1, stage 1 conf vol					595	
vC2, stage 2 conf vol					1281	
vCu, unblocked vol			781		1876	391
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			45		87	30
cM capacity (veh/h)			832		63	608

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	273	508	701	482	149	282
Volume Left	0	0	459	0	8	0
Volume Right	0	371	0	0	141	282
cSH	1700	1700	832	1700	417	608
Volume to Capacity	0.16	0.30	0.55	0.28	0.36	0.46
Queue Length 95th (ft)	0	0	86	0	40	61
Control Delay (s)	0.0	0.0	12.7	0.0	18.3	15.9
Lane LOS			B		C	C
Approach Delay (s)	0.0		7.5		16.8	
Approach LOS					C	

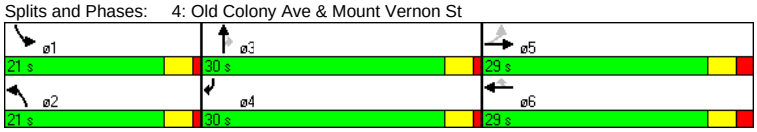
Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	9	9	12	11	16	12	13	15	12	12	16
Storage Length (ft)	0		0	0		60	0		60	0		60
Storage Lanes	0		0	0		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50	50		50
Trailing Detector (ft)	0	0			0	0	0	0	0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	2839	0	0	3144	1695	3213	3730	1725	3127	0	1777
Flt Permitted		0.841					0.950			0.950		
Satd. Flow (perm)	0	2405	0	0	3144	1695	3213	3730	1725	3127	0	1777
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						79			127			114
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		372			350			246			492	
Travel Time (s)		8.5			8.0			5.6			11.2	
Volume (vph)	21	127	0	0	470	94	260	266	104	286	0	409
Peak Hour Factor	0.71	0.74	0.25	0.25	0.83	0.89	0.77	0.81	0.82	0.85	0.25	0.89
Heavy Vehicles (%)	0%	16%	0%	0%	11%	8%	9%	0%	3%	12%	0%	3%
Adj. Flow (vph)	30	172	0	0	566	106	338	328	127	336	0	460
Lane Group Flow (vph)	0	202	0	0	566	106	338	328	127	336	0	460
Turn Type	Perm					Perm	Prot		Perm	Prot		custom
Protected Phases		5			6		2	3		1		4
Permitted Phases	5					6			3			
Detector Phases	5	5			6	6	2	3	3	1		4
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	22.0	22.0			22.0	22.0	9.0	21.0	21.0	13.0		21.0
Total Split (s)	29.0	29.0	0.0	0.0	29.0	29.0	21.0	30.0	30.0	21.0	0.0	30.0
Total Split (%)	36.3%	36.3%	0.0%	0.0%	36.3%	36.3%	26.3%	37.5%	37.5%	26.3%	0.0%	37.5%
Maximum Green (s)	24.0	24.0			24.0	24.0	17.0	26.0	26.0	17.0		26.0
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	2.0	1.0	1.0	1.0	1.0		1.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	C-Min	C-Min			C-Min	C-Min	None	None	None	None		None
Walk Time (s)	7.0	7.0			7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		7.0	7.0	2.0		10.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0		0
Act Effct Green (s)		34.3			34.3	34.3	13.4	20.3	20.3	13.4		20.3
Actuated g/C Ratio		0.43			0.43	0.43	0.17	0.25	0.25	0.17		0.25
v/c Ratio		0.20			0.42	0.14	0.63	0.35	0.24	0.64		0.86
Control Delay		17.3			19.1	7.6	36.1	24.4	5.2	36.7		36.9
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		17.3			19.1	7.6	36.1	24.4	5.2	36.7		36.9
LOS		B			B	A	D	C	A	D		D
Approach Delay		17.3			17.3			26.3				
Approach LOS		B			B			C				
Queue Length 50th (ft)		32			102	8	81	69	0	81		165
Queue Length 95th (ft)		53			157	43	97	84	28	109		252
Internal Link Dist (ft)		292			270			166			412	
Turn Bay Length (ft)						60			60			60
Base Capacity (vph)		1032			1350	773	683	1212	646	664		654
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.20			0.42	0.14	0.49	0.27	0.20	0.51		0.70

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 67 (84%), Referenced to phase 5:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 26.5 Intersection LOS: C
Intersection Capacity Utilization 55.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Old Colony Ave & Mount Vernon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	80	408	30	1	369	11	104	0	45	12	1	91
Peak Hour Factor	0.70	0.80	0.81	0.25	0.91	0.56	0.71	0.25	0.79	0.63	0.25	0.79
Hourly flow rate (vph)	114	510	37	4	405	20	146	0	57	19	4	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		350										
pX, platoon unblocked												
vC, conflicting volume	425			547			1298	1190	274	964	1199	415
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	425			547			1298	1190	274	964	1199	415
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	8.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	5.0	3.3
p0 queue free %	90			100			0	100	92	89	95	80
cM capacity (veh/h)	1110			1032			85	169	730	180	78	583

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	369	292	429	203	138
Volume Left	114	0	4	146	19
Volume Right	0	37	20	57	115
cSH	1110	1700	1032	113	390
Volume to Capacity	0.10	0.17	0.00	1.80	0.35
Queue Length 95th (ft)	9	0	0	401	39
Control Delay (s)	3.4	0.0	0.1	456.8	19.2
Lane LOS	A		A	F	C
Approach Delay (s)	1.9		0.1	456.8	19.2
Approach LOS				F	C

Intersection Summary				
Average Delay	67.7			
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	465	370	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	505	402	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		487				
pX, platoon unblocked						
vC, conflicting volume	402				655	402
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	402				655	402
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1153				399	598

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	253	253	402
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.15	0.15	0.24
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		