DRAFT ENVIRONMENTAL IMPACT REPORT

232 A Street

Boston, Massachusetts

SUBMITTED TO

The Executive Office of Energy and Environmental Affairs—MEPA Office

100 Cambridge Street, Suite 900
Boston, MA 02114

PREPARED BY

vhb

99 High Street, 13th Floor
Boston, MA 02110

PROPONENT

Parcel 3 Owner, LLC

125 High Street
Boston, MA 02110

TISHMAN SPEYER

January 31, 2024

Rebecca Tapper, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: **232 A Street Project – Draft Environmental Impact Report**

Dear Secretary Tapper:

On behalf of Parcel 3 Owner, L.L.C. (the "Proponent"), an affiliate of Tishman Speyer, we are pleased to submit the enclosed Draft Environmental Impact Report ("DEIR") for continued review in accordance with the Massachusetts Environmental Policy Act ("MEPA"), for the construction of the 232 A Street Project (the "Project") located in the Fort Point neighborhood of South Boston (the "Project Site").

As presented in the initial MEPA filing, the Project involves redevelopment of the Project Site to include a new, approximately 335,000 square foot building containing laboratory/R&D and office space, ground floor space with intended retail, restaurant, civic, and/or cultural uses, and below-grade parking, as well as a city street extension, sidewalks, improvements to the Harborwalk and South Bay Harbor Trail, and site grading for improved neighborhood resiliency, contributing approximately 1.5 acres of publicly accessible open space and public realm along the Fort Point Channel waterfront. The Project Site is located within the Restricted Manufacturing subdistrict of the South Boston Neighborhood District established under and governed by Article 68 of the City of Boston Zoning Code (the "Code") and is subject to the Master Plan for Planned Development Area (PDA) No. 69 (as amended, "PDA Master Plan"), and the South Boston Waterfront Municipal Harbor Plan ("SBWMHP").

The Project has been and will continue to be shaped by community and stakeholder engagement, and the Project has further evolved alongside comments and recommendations from the surrounding community, stakeholder groups, BPDA Staff, and City and State agencies since the initial MEPA filing, as summarized in Chapter 1 of this DEIR.

With the submission of the DEIR, we respectfully request the Executive Office of Energy and Environmental Affairs please publish notice of availability of the DEIR for public review in the February 7, 2024 edition of The Environmental Monitor. We understand that public comments will be due by March 8, 2024 and a Certificate is anticipated to be issued on March 15, 2024.

We look forward to working collaboratively with you and your staff, and other city and state agencies and members of the community on review of the Project. Requests for copies of the DEIR should be directed to Michael Rooney at 617-607-2743 or via email at mrooney@vhb.com.

Sincerely,

Jessica Hughes

Managing Director / Regional Director, Boston

Tishman Speyer

232 A Street

Boston, Massachusetts

SUBMITTED TO **Executive Office of Energy and Environmental Affairs**
100 Cambridge Street, Suite 900 (9th Floor)
Attn: MEPA Office
Boston, MA 02114

PROPONENT **Parcel 3 Owner, LLC**
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January 31, 2024

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Project Description and Permitting

Breakthrough Properties, a joint venture between Tishman Speyer and Bellco Capital, on behalf of Parcel 3 Owner, L.L.C. (the "Proponent"), is pleased to submit this Draft Environmental Impact Report ("DEIR"), in accordance with the Massachusetts Environmental Policy Act ("MEPA"), Massachusetts General Law ("MGL") Chapter 30, Section 61-62I and the regulations promulgated thereunder set forth at 301 CMR 11.00, for the redevelopment of an approximately 2.4-acre site located at 232 A Street in the Fort Point neighborhood of South Boston (the "Project Site"). Refer to Figure 1.1 for the Site Location Map.

The Project Site will be redeveloped to contain approximately 335,000 square feet (SF) of Gross Floor Area (as such term is used in the definition of "Floor Area Ratio" in the Boston Zoning Code [the "Code"], "GFA") in a single building that will have a Building Height (as defined in the Code) that is no greater than 150 feet, with uses that include laboratory/R&D and office space, ground floor space with intended retail, restaurant, civic, and/or cultural uses, and below-grade parking, and with other planned improvements that include a city street extension, sidewalks, improvements to the Harborwalk and South Bay Harbor Trail, site grading for improved neighborhood resiliency, and approximately 1.5-acres of public realm including publicly accessible open space along the Fort Point Channel waterfront (collectively, the "Project").

The Project Site is included in "The Fort Point District 100 Acres Master Plan," adopted by the Boston Redevelopment Authority, d/b/a the Boston Planning and Development Agency ("BPDA") in September 2006 ("100 Acres Master Plan"), and the Master Plan for Planned Development Area (PDA) No. 69, approved by the BPDA and the Boston Zoning Commission in January 2007, as amended by that certain First Amendment dated as of June 12, 2012, that certain Second Amendment dated as of December 24, 2012, that certain Third Amendment dated as of November 1, 2016, that certain Fourth Amendment dated as of February 18, 2018, that certain Fifth Amendment dated as of September 10, 2020, and that certain Sixth Amendment dated as of October 13, 2022 (as amended, "PDA Master Plan"). The Project proposes to significantly enhance the public realm offering by converting approximately 1.1-acres of the Project Site previously planned as building footprint under the approved 100 Acres Master Plan and PDA Master Plan to public realm, allowing for the creation of a waterfront park approximately three times the size originally planned for the Project Site.

This chapter provided an overview of the existing and proposed site conditions, describes the Project and Project Site, summarizes Project-related public benefits, and identifies the anticipated permits and approvals. Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Project Description and Permitting' section of the DEIR Scope with references to specific DEIR sections in **bold**:

- Detailed site plans for existing and post-development conditions depicting buildings, interior and exterior public areas, impervious areas, pedestrian and bicycle accommodations, and stormwater and utility infrastructure. **(Figures 1.4 and 1.6)**
- A description of the project and changes since the filing of the ENF. **(Sections 1.2 and 1.3)**
- A description of state, federal and local permitting requirements associated with the Project and an update on the status of pending actions. **(Section 1.5.1)**
- A description of applicable statutory and regulatory standards and requirements and the Project's consistency with those standards. **(Sections 1.5.2 through 1.5.4)**

1.1 Site Context and Existing Conditions

1.1.1 Site Context

The immediate context of the Fort Point neighborhood reflects a wide assortment of uses and architecture. The Project Site is located along the eastern shore of the Fort Point Channel in the Fort Point Neighborhood of South Boston. The Project Site is within close proximity to some of the City's most active areas, including the Seaport District to the northeast, downtown Boston to the northwest, and the West Broadway Neighborhood of South Boston to the south. South Station is within one-half mile of the Project Site, providing convenient access to the MBTA Red and Silver lines, Commuter Rail, Amtrak, regional bus lines, and a BlueBike station.

The Project Site is bounded by Fort Point Channel to the west, Binford Street to the north, A Street to the east, and the abutting P&G/Gillette complex to the south.

1.1.2 Existing Conditions

As shown in Figure 1.2, the Project Site consists of a single legal parcel that extends west from A Street to the Fort Point Channel waterfront. The 100 Acres Master Plan, as illustrated in Figure 1.3, segments the Project Site into two separate parcel designations—the western portion as Parcel G7 ("G7") and the eastern portion as Parcel G8 ("G8"). The G7 parcel is currently predominantly paved and used for parking and truck access associated with P&G/Gillette materials handling; it also contains a section of the Harborwalk and South Bay Harbor Trail and the existing approximately 0.25-acre publicly accessible open space area that is part of the Project Site. The G8 parcel is currently improved with a surface parking lot and related improvements. See Figure 1.4 for existing site conditions.

Figure 1.5 identifies the environmental and site constraints of the Project. The Project Site has historically been used for vehicular ingress, egress and parking, and is currently improved with impermeable surface improvements that provide limited public benefits and do not align with resiliency objectives. A portion of the Project Site, near the intersection of Binford and Necco Streets, includes an existing emergency access structure that serves the Massachusetts Department of Transportation ("MassDOT") Central Artery tunnel system, including a significant emergency/ maintenance vehicle access easement and adjacent standpipe array. Though a portion of Binford Street in the area west of Necco Street is planned to be vacated as a public right-of-way (thereby discontinuing general vehicular access) and improved with green-scaped areas and pedestrian and bicycle lanes in connection with the approved development of 244-284 A Street (the "244-284 A Street Project"), there is a continuing requirement to maintain limited vehicular access to and from the P&G/Gillette pump house property located to the north of the Project Site, along Fort Point

Channel, which pump house property itself falls outside the Project Site. The small existing 0.25 acre publicly-accessible open space area known as Binford Street Park that is part of the Project Site as noted above, located at the western tip of the Project Site along Fort Point Channel. This area is a valued asset in the neighborhood, and expanding upon its offerings with a larger and further activated waterfront open space area is a key goal for the Project.

A large portion of the Project Site sits atop the Central Artery tunnel extension to the Ted Williams tunnel (the "I-90 Tunnel") (Figure 1.5). Therefore, any development on top and adjacent to this infrastructure will require sophisticated below-grade foundation systems and structural support developed in close coordination with MassDOT.

1.2 Project Changes Since ENF

Since the ENF was filed on July 28, 2023, no changes have been made to the development program, but the Proponent has made updates to the Project in response to comments from State and City agencies, community residents, and other various stakeholder, including the following:

Site Plan

- More of the Project Site has been raised to 21.5 BCB, resulting in enhanced flood resilience.
- The Project proposes to widen the Harborwalk – South Bay Harbor Trail component on the Project Site, providing for an additional 4 feet for a total width of 22 feet.
- The Project modified its design of Necco Street interim condition to provide up to three additional public on-street parking spaces along the Necco Street; once Necco Street is fully extended to the south, additional public on-street parking spaces are anticipated to be accommodated.
- The Project will promote watersheet activation by providing ancillary support services for public enjoyment of the waterfront which will include public restrooms, drinking water station, and storage for Dragon Boats, a prominent use on the Fort Point Channel, in a to be determined location in the below grade garage, and providing necessities for watersheet users including public restrooms and a drinking fountain station.
- Updates to the site plan have been made to help enhance the view corridors and connections to the waterfront throughout the Project Site; landscape design has evolved to incorporate a stronger connection between the park and the arcade, to create a continuous path and view corridor to the waterfront from A Street.
- In response to public comment and further analysis of the physical constraints of the Project Site, the Project has removed from its conceptual design the concept of a "touch the water moment" or "dock."
- In acknowledgement of the importance of the 0.25-acre Binford Street Park that exists on the Project Site today to the immediate surrounding neighborhood, the Project has modified its original design concept of an "urban beach" in this area to instead carry forward green space in this portion of the larger and improved waterfront park as exists today as Binford Street Park.

Greenhouse Gas/Energy Conservation

- The Project will provide a 13 percent reduction in energy use and 27.6 percent reduction in 2050 GHG emissions (5.5 percent decrease using current MEPA emission factors) relative to Stretch Code.

- The Project will Incorporate EV charging stations for 25 percent of the total proposed parking spaces and install EV charging infrastructure into the remaining 75 percent of the parking spaces, or "EV-ready" spaces.
- The Proponent is committed to the installation of a solar array system, producing 181,603 KWH per year, offsetting 59 tons of GHG per year.
- The Project continued to progress and evolve the façade design, achieving a reduction in the percentage of façade area that is vision glass.

Climate Change Adaptation and Resiliency

- The main entrance lobby on the corner of Necco and Binford Streets has been raised from elevation 19 to 21.5 Boston City Base (BCB) for enhanced resiliency to match most of the ground floor, including critical infrastructure spaces.
- The end of Necco Street extension is proposed to gradually slope up to 21 BCB to further integrate the building and terrace edge with sidewalk and streetscape compared to sloping up to 18 BCB as proposed in the ENF. Doing so will not only help improve future district wide resiliency measures, but it will also tie the South Arcade seamlessly to the park beyond and will provide a 24-hour fully accessible public access route to the park and waterfront from A Street and the surrounding neighborhood.
- The Project will reduce heat exposure by replacing an asphalt parking lot with a sustainable, energy-efficient building and 1.5 acres of public realm, much of which will be vegetated. The Project introduced additional vegetated area since the ENF, converting the area closest to the channel from an "urban beach" to green space, reminiscent of the 0.25-acre Binford Street Park that exists today.
- The Project will increase the Project Site's pervious cover by 0.45 acres (a 189 percent increase), helping to reduce urban heat island effect and allowing for improved stormwater management.
- A partially cantilevered rooftop canopy which support the rooftop solar PV array will also act as a solar veil and provide protection from the sun for a potential rooftop terrace at the West side of the mechanical level.
- The Project team will continue to coordinate and collaborate with both the City of Boston and its engineering design consultant as the design advances with the goal of providing a flood protection system at the Project Site that is consistent and compatible with the "The Resilient Fort Point Channel Infrastructure Project" (RFPCI project).

1.3 Project Description

The Project consists of an approximately 335,000 SF of GFA building with uses that include laboratory/R&D and office space, and ground floor space with intended retail, restaurant, civic, and/or cultural uses, with below-grade parking. The Project's ground floor areas will include active uses, including Facilities of Public Accommodation ("FPA") consistent with the requirements of Chapter 91 and the SBMHP. The Project will further provide, on a voluntary basis, additional publicly accessible interior spaces on the ground floor in excess of what is required under Chapter 91 and the SBMHP. The upper eight floors of the proposed building are planned to be constructed with flexibility to accommodate office, laboratory, and research uses. A mezzanine space is planned to be incorporated between the first and second stories to house mechanical equipment to allow for

greater share of publicly accessible spaces on the ground floor and ensure long-term resiliency. The primary entrance, particularly for building occupants of the proposed building is planned to be oriented towards the corner of Binford and Necco Street, while loading is planned to take place at a loading dock along Binford Street, which is consistent with the neighboring 244-284 A Street Project to minimize impact. In addition, there will be welcoming entrances on all sides of the building. The arcade space along the southern edge of the building, reminiscent of existing arcade spaces signature to Fort Point, will create a unique exterior space that retail/civic/cultural uses could spill out into, opportunities for displays of multidimensional art, improve accessibility across grade changes inherent to the Project Site, serve as a protected pedestrian connection from A Street to the Fort Point Channel, and open up views of the Channel from A Street.

Table 1-1 below presents the proposed development program and Figure 1.6 illustrates the proposed conditions site plan. Project renderings are included as Figures 1.7a-c.

Table 1-1 Proposed Development Program

Project Use/Element	Size
Total Building Size[1]	335,000 GFA[2]
Parking (below-grade)	125 spaces
Building Height [3]	Up to 150 feet
Project Site Area	Approximately 104,771 SF (2.41 acres)
FAR	3.2

1 Includes Lab/Office uses, and ground floor Retail/Restaurant/Civic/Community uses.
2 Unless labeled otherwise, all areas provided herein are described in gross floor area, as such term is used in the definition of "Floor Area Ratio" in the Boston Zoning Code; provided further that such areas devoted to garage use, whether or not within the basement of a building or serving residential uses, mechanical equipment, storage, service and loading areas, wherever located, are specifically excluded for the purposes of determining Gross Floor Area.
3 Building Height is as defined by Article 2A of the Boston Zoning Code, as the vertical distance from grade to the top of the structure of the last occupied floor.
Note: all measurements are approximate.

1.4 Summary of Project Benefits

The Project will provide a significant number of public and community benefits to promote neighborhood enrichment, enhancements to the public realm, access to the waterfront, workforce development and economic opportunities, and sustainability and resiliency goals. Some of the public and community benefits of the Project are described below:

Urban Design/Public Realm

- Single building development of 335,000 SF, which is significantly less dense than the 485,610 SF allocated to the Project Site per the existing PDA Master Plan across two buildings;
- Development of approximately 1.5 acres of public realm including publicly accessible open space along the Fort Point Channel waterfront, which is approximately three times the public realm previously planned for the Project Site under existing PDA Master Plan;
- The Project will promote public use and enjoyment of the Project Site and the waterfront through FPAs on the ground floor and additional publicly accessible interior spaces on the ground floor in excess of what is required under Chapter 91 and the SBMHP;

- The site plan was also revised since PNF-ENF filing to accommodate additional street parking spaces in response to community feedback – increasing by approximately three spaces under the interim condition of Necco Street and additional on-street parking spaces will be available in this segment of Necco Street through the Project Site when the extension is connected through to the adjacent property;
- The Project will be designed to honor and complement the existing neighborhood and its history and culture both in materiality and use as a center for innovation;
- The building and public realm will both be designed to integrate with the planned extension of Necco Street and grading of the City of Boston's RFPCI project;
- The Project will also contribute new public sidewalks and bike lanes and deliver improvements to the Harborwalk which will enhance pedestrian and cyclist connectivity throughout the Project Site and better integrate into the City's greater Harborwalk system and the South Bay Harbor Trail, which will connect the existing Fort Point Channel waterfront resources and new public spaces within the Project Site to other neighborhoods outside of South Boston. In response to community feedback, the Proponent has widened the total width of the Harborwalk + South Bay Harbor Trail from 18 feet to approximately 22 feet wide at its greatest width to provide for additional pedestrian and cyclist passageway;
- The arcade space along the southern edge of the building, reminiscent of existing arcade spaces signature to Fort Point, will create a unique exterior space that retail/civic/cultural uses could spill out into, opportunities for displays of multidimensional art, improve accessibility across grade changes inherent to the Project Site, serve as a protected pedestrian connection from A Street to the Fort Point Channel, and open up views of the Channel from A Street. The Project will provide ancillary support for public enjoyment of the waterfront which will include public restrooms, drinking water station, and storage for Dragon Boats, a prominent use on the Fort Point Channel, in a to-be-determined location in the below grade garage; and
- The Project's Facilities of Public Accommodation and other publicly accessible interior spaces on the ground floor will promote public use and enjoyment of the waterfront, with any civic/cultural uses to be vetted through a transparent public process, which will include the BPDA Staff, City and State agencies, elected officials, abutting owners, neighborhood groups, community leaders, business owners, area residents, and other stakeholders.

Sustainability/Environmental/Resiliency

- The Proponent is pursuing a less dense building scheme from what is currently contemplated in the existing PDA Master Plan by eliminating the development of a second building and its associated carbon and materials impacts;
- The proposed lab/office building will employ a high-performance building enclosure and mechanical systems, which is estimated to result in an estimated 13 percent energy usage savings and resulting in a reduction of approximately 5.5 percent in stationary source GHG emissions, using current MEPA emission factors, compared to a code-baseline design;
- The Proponent is committed to delivering a building targeting a Gold level Leadership in Energy and Environmental Design ("LEED") certifiable project as well as a Fitwel certifiable project;
- The Project will comply with the City's pending proposed energy code as well as its opt-in provisions, minimizing its operational carbon footprint;

- The height of the Project Site grades up to elevation 21.5 BCB at its peak , ensuring consistency with the recommended flood-resilient height per Boston's 2070 100-year storm elevation projections and with the Climate Ready South Boston Plan;
- The Project includes a vegetated berm, which is assumed to be backed by a retaining wall or impermeable clay membrane, complementary to the Harborwalk and South Bay Harbor Trail along Fort Point Channel. This planted flood barrier will help reduce the urban heat island effect, improve wildlife habitat, and improve air quality along the waterfront;
- Compliance with the City of Boston's EV Readiness Standards with regards to the Project's below-grade parking as well as inclusion of bicycle parking;
- Exploring flood resiliency measures to account for street front retail at grade on A Street, which may include deployable flood barrier systems;
- The Proponent is committed to the installation of a solar array system, producing 181,603 KWH per year, offsetting 59 tons of GHG per year; and
- Creation of permeable ground conditions in an area that is currently paved and, in large part, was previously proposed for vertical building construction under the existing PDA Master Plan.

Social and Economic

- The Project will abide by a DE&I framework ensuring diverse and inclusive employment, mentorship, and access through all phases of the Project's lifecycle;
- The Project Site is accessible by a variety of public transit options that provide numerous connections to most other MBTA public transit services, allowing the Project Site to be reached by subway and commuter rail from many locations within the City of Boston and the surrounding suburbs. Development of the Project Site will further improve these conditions;
- The Project significantly enhances the public realm by developing approximately 1.1-acres of the Project Site that had been previously planned as building footprint under the existing PDA Master Plan as open space and public realm allowing for the creation of a waterfront park approximately three times the size originally planned for the Project Site. This open space benefits the community by providing equitable access to the waterfront, recreational spaces to promote physical and mental wellbeing;
- The Proponent is committed to creating an equitable waterfront space that functions as a community gateway to the Harborwalk, South Bay Harbor Trail, and Fort Point Channel. The vegetated berm and gently graded Site will allow accessible and multimodal movement across the flood protection barrier. Open green areas provide recreational opportunities to promote physical wellness, and shaded gardens provide a respite for mental wellbeing;
- The Project is expected to create approximately 500 construction jobs and approximately 900 permanent jobs following delivery and occupancy; and
- The Project will drive increased tax revenues compared to its current improvement as a surface parking lot. In addition, the Project will generate a monetary contribution to Linkage funds for the City of Boston.

1.5 Consistency with Regulatory Requirements

This section lists the anticipated permits and approvals, as well as the local planning and zoning regulatory controls applicable to the Project.

1.5.1 Anticipated Permits and Approvals

Table 1-2 presents a preliminary list of anticipated reviews and approvals of the Project by governmental agencies based on currently available information and their status. It is possible that some of the listed reviews and approvals will not be required, or that additional reviews or approvals that will be required are not listed.

Table 1-2 Anticipated Permits and Approvals

Agency	Permit/Approval	Status
City of Boston		
Boston Planning & Development Agency	› Article 80 Large Project Review	› In Process
	› PDA Master Plan No. 69 Amendment Approval	› To be obtained
	› PDA Development Plan Approval	› To be obtained
	› Cooperation Agreement	› To be obtained
	› Development Impact Project Agreement	› To be obtained
	› Certifications of Compliance and Consistency	› To be obtained
Boston Civic Design Commission	› Design Review pursuant to Article 28 of the Boston Zoning Code	› In Process
Boston Zoning Commission	› PDA Master Plan Amendment Approval	› In Process
	› PDA Development Plan Approval	› In Process
Boston Transportation Department	› Transportation Access Plan Agreement	› To be obtained
	› Construction Management Plan	› To be obtained
	› Street opening/closing and signalization permits	› To be obtained
Boston Water and Sewer Commission	› Site Plan Approval	› To be obtained
	› Stormwater Connection and Recharge, Cross Connection/Backflow Prevention Permit Hydrant Meter Permit (if required)	› To be obtained
	› Water Permit (if required)	› To be obtained
	› Modification/relocation of water and sewer easement	› To be obtained
Interagency Green Building Committee	› Article 37 Compliance/BPDA Climate Checklist	› To be obtained
Boston Conservation Commission	› Order of Conditions	› To be obtained
Boston Fire Department	› Permit for Storage of Inflammables	› To be obtained
	› Fuel Storage Tank Permit (to the extent required for fuel burning boilers and generators, if any); approval of life safety systems	› To be obtained
Boston Air Pollution Control Commission	› South Boston Parking Freeze Permit	› To be obtained
Inspectional Services Department	› Building permits	› To be obtained
	› Occupancy permit	› To be obtained

Agency	Permit/Approval	Status
Boston Public Improvement Commission	› Canopy Licenses	› To be obtained
	› Approval of Necco Street extension and conveyance of public rights of way	› To be obtained
	› Street Opening Permit(s)	› To be obtained
	› Sidewalk repairs and improvements	› To be obtained
	› License for earth retention system (all as applicable)	› To be obtained
Boston Department of Public Works	› Curb cut permit(s), as applicable	› To be obtained
Boston Inspectional Services Department, Committee on Licenses	› Fuel Storage License, Garage Permit	› To be obtained
Commonwealth of Massachusetts		
Executive Office of Energy and Environmental Affairs	› Massachusetts Environmental Policy Act Review	› In process - ENF filed 7/28/23; DEIR submitted herein
	› Determination for Public Benefit review for landlocked tidelands	
Massachusetts Historical Commission	› Determination of No Adverse Effect (if required)	› To be obtained (as and if required)
Massachusetts Department of Environmental Protection	› Chapter 91 License	› To be obtained
	› Sewer Extension and Connection Permit (if required for proposed building sewer service connections, where anticipated lab use is expected to produce industrial waste)	› To be obtained
Massachusetts Department of Transportation (MassDOT)	› Review under Memorandum of Agreement (MOA)	› To be obtained
	› Access Permit[1]	› To be obtained
Massachusetts Water Resources Authority	› MWRA Sewer Use Discharge Permit (if required for specific waste discharges by future tenant/users)	› To be obtained
	› Construction Site Dewatering Discharge Permit (if required)	› To be obtained
Federal		
Federal Aviation Administration	› Determination of no hazard to air navigation (building and cranes)	› To be obtained
Environmental Protection Agency	› National Pollution Emission Discharge System General Permit (NPDES) (construction dewatering and runoff)	› To be obtained

1: A non-vehicular Access Permit will be required in accordance with the Memorandum of Understanding (MOU) between MassDOT and The Gillette Company LLC.

Note: This list is subject to change based upon the evolution of the Project's design.

1.5.2 City of Boston

On July 28, 2023, the Proponent filed a Project Notification Form (PNF) with the BPDA, commencing a public review process. The extended comment period ended on September 29, 2023, during which the BPDA held a public meeting and an Impact Advisory Group (IAG) meeting. The BPDA issued a Request

for Supplemental Information (RSI) on December 1, 2023. The proponent will submit a Supplemental Information Document (SID) to the BPDA in response to the RSI. In addition, the Project commenced review with BCDC with meetings open to the public on November 14, 2023 and January 16, 2024. The Project Team has continued frequent coordination meetings with BPDA staff and will continue to coordinate and collaborate with the City of Boston. The Proponent has also requested an "all-hands" meeting with abutting ownership groups, the BPDA, MassDOT, and the BPDA's engineering design consultant for the Resilient Fort Point Channel Infrastructure Project. The Project Team looks forward to an "all hands" meeting as requested to aid in further design coordination.

1.5.3 Commonwealth of Massachusetts

1.5.3.1 MEPA Review

MEPA and the regulations promulgated thereunder set forth impact reporting requirements for projects undertaken by agencies, departments, boards, commissions or authorities of the Commonwealth, projects seeking financial assistance from or the issuance of a permit by an agency of the Commonwealth and projects otherwise subject to the reporting requirements of MEPA. The Project is subject to MEPA review because it requires one or more permits from state agencies and because it exceeds a review threshold pursuant to:

- **301 CMR 11.03(3)(a)(5)** – Project requires a new Chapter 91 license for a non-water dependent use which occupies more than one acre of tidelands; and
- **310 CMR 11.03(3)(b)1.f.** – Provided that a Permit is required, alteration of 0.5 or more acres of any other wetlands.
- **310 CMR 11.03(3)(b)5.** – Provided that a Chapter 91 License is required, New or existing unlicensed non-water dependent use of waterways or tidelands, unless the Project is an overhead utility line, a structure of 1,000 or less SF base area accessory to a single family dwelling, a temporary use in a designated port area, or an existing unlicensed structure in use prior to January 1, 1984.
- **301 CMR 11.03(6)(a)(6)** – Generation of 3,000 or more new ADT on roadways providing access to a single location.

The Project Site contains historically-filled former tidelands that are subject to the Massachusetts Public Tidelands Act (M.G.L Chapter 91), and DEP has previously concluded that portions of the Project Site constitute "Landlocked Tidelands", which are not subject to any requirement for a Chapter 91 license or the use and dimensional regulations otherwise applicable under Chapter 91. For such Landlocked Tidelands, the Secretary of EEA is required to make a "public benefits determination," which finds that the proposed project has substantial public benefits. At the conclusion of MEPA review for the Project, the Secretary of EEA will need to issue a separate public benefits determination finding that the Project will have positive public benefits. Section 3.7 of Chapter 3, *Chapter 91 and Tidelands*, describes how the Project provides appropriate public benefits and is adequately protective of the Public Trust rights inherent in tidelands.

1.5.3.2 Massachusetts Department of Environmental Protection

Chapter 91 License

Pursuant to M.G.L. c. 91 and the regulations promulgated thereunder (collectively, "Chapter 91"), MassDEP is authorized to license and prescribe the terms for the filling of tidelands, the construction

of structures in and on tidelands, and the use of such fill or structures. Chapter 91 imposes certain dimensional and use restrictions on projects to be located within tidelands, including, particularly, the use of ground floor space, as well as open space and maximum height restrictions, and accordingly the Project will need to comply with design and open space guidelines set forth in Chapter 91.

The term "tidelands" is defined by Chapter 91 to include present and former submerged lands and tidal flats lying between the present or historic high-water mark, whichever is farther landward, and the seaward limit of state jurisdiction. There are two categories of tidelands subject to Chapter 91 jurisdiction: Private tidelands and Commonwealth tidelands. Commonwealth tidelands are tidelands held by a state or local government or held by a private person pursuant to a grant or license containing a condition that the tidelands must be used for a public purpose, or those tidelands that lie seaward of a line running 100 rods (1,650 feet) seaward of the historic high water mark. Commonwealth tidelands are subject to more rigorous regulatory requirements than Private tidelands. The Project Site is comprised partially of filled Commonwealth, Private, and Landlocked tidelands, the latter being defined as filled tidelands located landward of a public way existing on January 1, 1984, or 250 feet from the shoreline, whichever is further. Landlocked tidelands are not subject to licensing under Chapter 91 but which, as noted above, are subject to the requirement of a public benefits determination finding that the Project will have positive public benefits.

South Boston Municipal Harbor Plan

Chapter 91 permits a municipality to vary the dimensional and use regulations applicable to tidelands by obtaining approval of a Municipal Harbor Plan. In 2002, the City of Boston obtained approval by the Massachusetts Secretary of Energy and Environmental Affairs for a portion of the South Boston Waterfront and in 2009 the Secretary approved an amendment of the South Boston Waterfront Municipal Harbor Plan (as so amended, the "SBWMHP") for the area within PDA No. 69. The SBWMHP provides for an expanded Water-Dependent Use Zone (which can only be used for water-dependent uses, including publicly accessible open space), a wider pedestrian pathway within the Water-Dependent Use Zone, and revised building height limits that allow for varied building heights taller than the otherwise applicable height limit in certain locations and lower than the otherwise applicable limit in other locations. The SBWMHP, consistent with the PDA No. 69, identifies the maximum building height of Parcel G8 to be 150 feet and the maximum building height for Parcel G7 to be 100 feet.

The SBWMHP does not eliminate the requirements under the Chapter 91 regulations for (i) Facilities of Public Accommodation located at the ground level of buildings containing nonwater-dependent facilities of private tenancy, except where there has been a determination that an alternative location would more effectively promote public use and enjoyment of the project site or is appropriate to make ground level space available for water-dependent use or upper floor accessory services and (ii) exterior open space at least equal to the area of the building footprints on tidelands.

1.5.3.3 Massachusetts Department of Transportation

Memorandum of Understanding

There is a Memorandum of Understanding ("MOU") dated May 13, 2019, between P&G/Gillette and MassDOT that requires compliance with various engineering requirements as well as review and approval of plans for the Project by MassDOT. The proponent is the successor to P&G/Gillette respecting the MOU as the same applies to the Project Site and will comply with the MOU.

Access Permit

A non-vehicular Access Permit will be required in accordance with the Memorandum of Understanding (MOU) between MassDOT and The Gillette Company LLC, dated May 13, 2019. The access permit shall be issued prior to construction activity over the Seaport Access Highway (the "Tunnel"), which is a portion of the Ted Williams Tunnel as defined in Section 1 of Chapter 6C of the Massachusetts General Laws. The Proponent shall submit to MassDOT the design and construction documents consistent with the Overbuild Manual that is included in the May 13, 2019, MOU.

1.5.4 Federal

1.5.4.1 Federal Aviation Administration

The FAA Obstruction Analysis is conducted for any object that may affect national airspace, navigation facilities, or airport capacity. The Proponent will follow all rules and regulations necessary to remain consistent with this required approval.

1.5.4.2 Environmental Protection Agency

The EPA NPDES Construction General Permit provides permit coverage to eligible construction stormwater discharges in Massachusetts. The Project will comply with this regulatory standard through the implementation of Stormwater Pollution Prevention Plan, along with additional requirements.

The EPA NPDES Construction General Permit contains requirements related to EPA's Construction and Development Effluent Limitations Guideline and New Source Performance Standards. These standards include Erosion and Sediment Controls; Soil Stabilization; Dewatering; Pollution Prevention Measures; Prohibited Discharges; and Surface Outlets. To comply with these standards during the construction period, the Project will include installation of erosion and sedimentation controls to protect against discharge of any sediment material into on-site drainage systems. Erosion and sedimentation controls, which may include including silt fence and hay bales will be installed along appropriate downgrade portions of the perimeter of the excavated areas to help prevent construction materials from contaminating the storm drainage system. Additionally, in accordance with EPA requirements, a construction phase SWPPP will be developed to minimize impacts on nearby resource areas from the construction as well as the operation of the Project.

1.6 Project Schedule

Construction is anticipated to commence 6-12 months following entitlements with completion within four years of start. Anticipated schedule subject to change based upon market conditions.

Figure 1.1: Site Location USGS Map (Locus Map)

232 A Street | Boston, Massachusetts

Source: USGS Boston South, MA 2021

Figure 1.2: Project Site Context

232 A Street | Boston, Massachusetts

Source: Bing Aerial, ESRI World Topo Base

Figure 1.3: 100 Acres Master Plan PDA Sixth Amendment dated October 13, 2022 (Heights)

232 A Street | Boston, Massachusetts

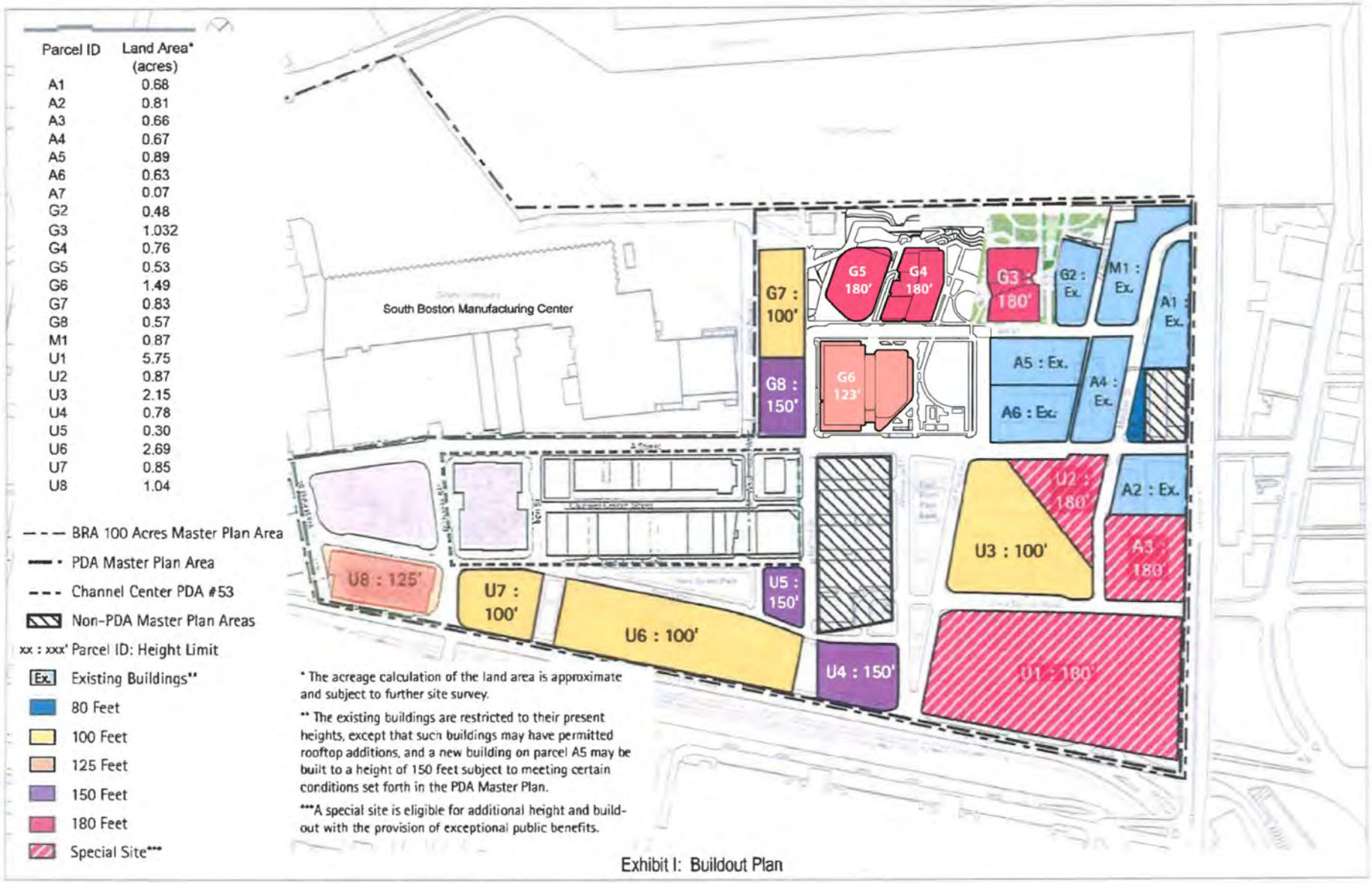


Figure 1.4: Existing Site Conditions

232 A Street | Boston, Massachusetts

Figure 1.4 Aerial View - Existing Conditions

Figure 1.5: Environmental Constraints Map

232 A Street | Boston, Massachusetts

Figure 1.5 Environmental Constraints Map. Source: Mikyoung Kim Design (left)

Preliminary plans and subject to change

Figure 1.6: Proposed Conditions

232 A Street | Boston, Massachusetts

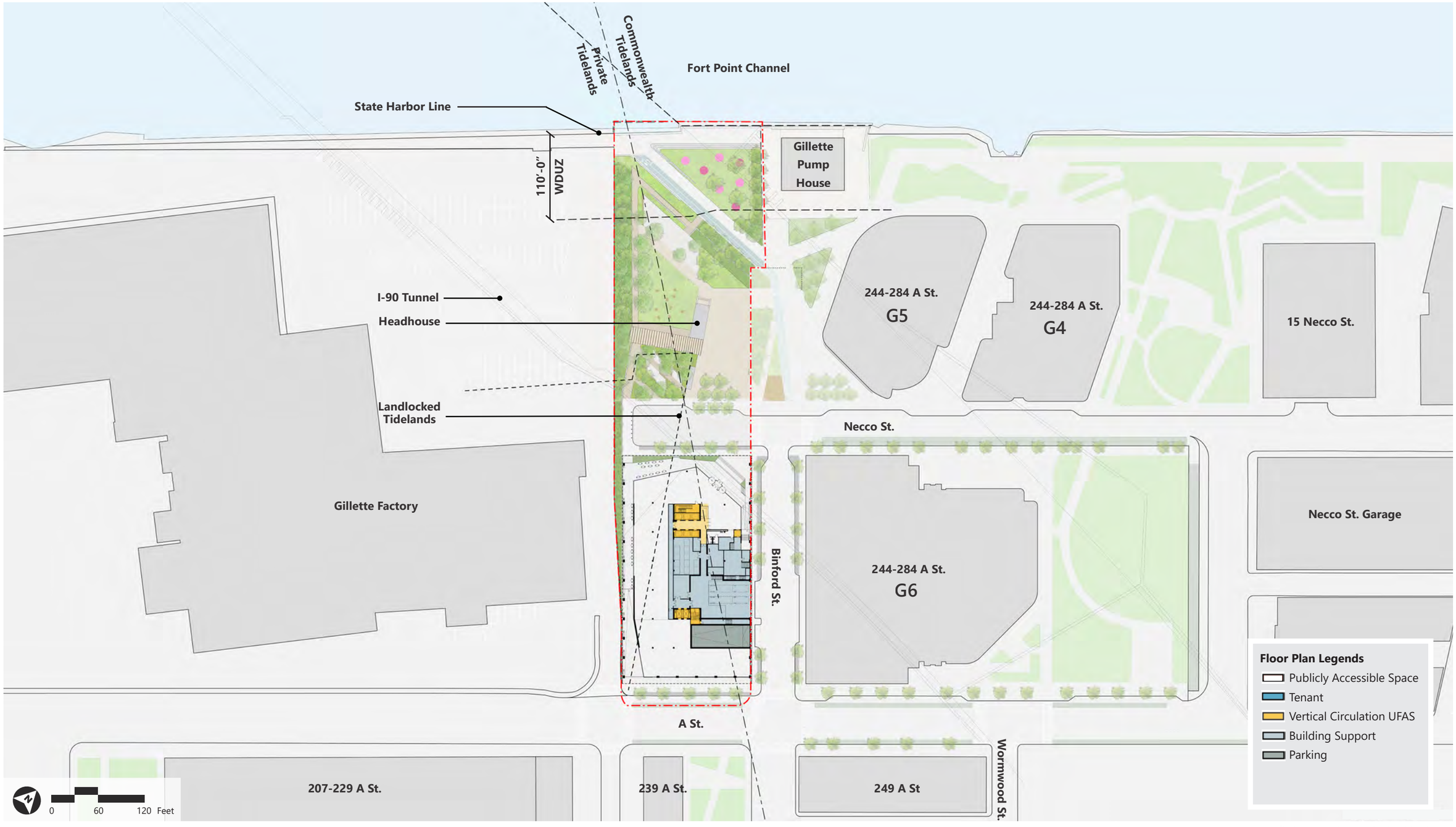


Figure 3.2 Proposed Conditions Site Plan

Preliminary plans and subject to change

Figure 1.7a: Project Renderings

Figure 1.7a Perspective - Project Renderings: View from Harbor Walk looking North

Figure 1.7b: Project Renderings

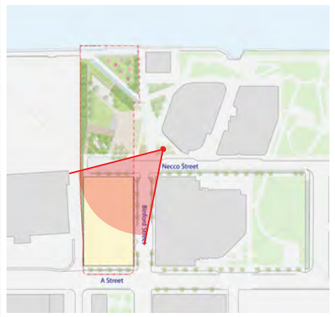


Figure 1.7b Perspective - Project Renderings: View from Binford Street Extension looking Southeast

Figure 1.7c: Project Renderings

232 A Street | Boston, Massachusetts

Figure 1.7c Perspective - Project Renderings: View of public arcade and public facilities along A Street

2

Environmental Justice

This chapter supplements the initial assessment of the Project's potential impacts on surrounding Environmental Justice ("EJ") populations (Figure 2.1) that was included in the ENF. Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Environmental Justice' section of the DEIR Scope with references to specific DEIR sections in **bold**:

- An updated "EJ Reference List" from MEPA that lists the applicable EJ CBOs and tribes/indigenous organizations and distribution of the DEIR to the current contacts for review **(Section 2.2.3 and Appendix A)**
- Description of the proposed public involvement plan for enhanced public outreach, including EJ populations within the DGA for the DEIR, including a pre-filing public meeting and remainder of the MEPA review process; an update on any public meetings held prior to filing of the DEIR. **(Section 2.2)**
- An update on the availability of a project website or other online resource made available. **(Section 2.2.1, Table 2-1)**
- A description of the census tract data for vulnerable health EJ criteria and sources of pollution present within the DGA (one mile from the Project Site). **(Section 2.3.1)**
- An assessment of Project-related air emissions consistent with the MassDEP Guidelines for the traffic study area. **(Section 2.3.3 and Section 7.5.3 of Chapter 7, *Climate Change*)**
- Confirmation that any impacted traffic intersections within the traffic study area for the Project and adjacent to EJ populations will be adequately mitigated. **(Section 2.3.2.1)**
- A narrative description of whether air quality will be impacted by Project-related traffic at locations near other EJ populations within the DGA. **(Section 2.3.3)**

2.1 Key Findings

- The Project is not likely to create negative impacts on the neighboring EJ populations;
- The Project will not exacerbate any potential environmental risks posed by the potential sources of pollution within the 1-mile DGA around the Project Site; and
- The Project has continued its outreach efforts; since filing the ENF in July, the Project has introduced a project website, and participated in nine meetings open to the public to discuss the proposed development at 232 A Street, including a pre-file Community Information Meeting to preview the upcoming DEIR filing. The Project team has conducted outreach to a variety of community and government organizations in Spanish and Chinese.

2.2 Community Engagement

The Proponent has a strong track record of community engagement and inclusion and will continue these efforts as part of the public review process for the Project. The Proponent will continue to examine potential Project impacts, participate in public meetings, and engage with the surrounding EJ communities, as the Project advances through the MEPA process, including providing translation and interpretation, as requested.

The Proponent has, and will continue, to meet with key stakeholders and community groups in an effort to ensure an inclusive process, and to effectively reach and engage EJ populations proximate to the Project. Outreach measures include, but will not be limited to, the following:

- Prior to filing this DEIR, the Proponent held a Community Information Meeting on January 10, 2024. The meeting notice was widely distributed within the surrounding EJ neighborhoods to solicit feedback on the Project and provided interpretation services upon request;
- Creation of a Project website to serve as a public online resource: https://232astreet.com/
- Continue to engage with the community and EJ populations throughout the MEPA and Article 80 public review processes. Since filing the ENF, the Project has participated in 9 meetings open to the public to discuss the proposed development at 232 A Street, as listed below:
  - August 22, 2023 - MEPA Virtual Meeting
  - August 23, 2023 - MEPA In-person Site Visit
  - September 5, 2023 - IAG Meeting
  - September 11, 2023 - BPDA Public Meeting
  - September 13, 2023 - BPDA Scoping Session
  - November 14, 2023 - BCDC Committee Meeting
  - January 10, 2024 - Pre file DEIR Community Information Meeting
  - January 16, 2024 - BCDC Subcommittee Meeting
  - January 24, 2024 - Boston Harbor Now Use Public Forum
- Provide translated documents and interpretation services, as required/requested;
- Distribute electronic copies of all MEPA filings (and hard copies, if requested) to the EJ CBO List; and
- Make hard copies of all MEPA filings available at the Boston Public Library ("BPL") branch locations within approximately 1-mile of the Project Site, which includes the Chinatown and South Boston Branches.

2.2.1 Public Engagement Plan

Table 2-1 below presents a summary of the proposed outreach plan that will be implemented during the MEPA review process. This plan was developed through guidance provided in the Public Involvement Protocol.

Table 2-1 Public Engagement Outreach Plan

Outreach Type	Timing	Action
Dissemination of a written project summary with basic project details	Prior to filing the ENF/PNF	› Distributed the EJ Screening Form on May 1, 2023 to the EJ CBO List translated into Chinese and Spanish
Hold community meetings during weekend or evening hours, at accessible locations near public transportation, and/or through zoom	Prior to filing the ENF/PNF	› Held multiple community meetings through zoom, and during weekend and evening hours. Please refer to the Project Website: https://232astreet.com/
Launch Project website	Prior to DEIR Filing	› Includes links to project materials. › Includes opportunity to submit contact information for receiving development updates. › Entire website translated to Spanish and Chinese through a drop-down selection on the home page. › Includes the URL for other outreach materials. › Includes upcoming meetings and events
Hold community meetings during weekend or evening hours, at accessible locations near public transportation, and/or through zoom	Pre- and Post-filing DEIR	› Held multiple community meetings through zoom, and during weekend and evening hours. Please refer to the Project Website: https://232astreet.com/Offered translation services prior to meetings upon request
Provide oral interpretation at public meetings	Pre- and Post-filing DEIR	› Upon request
Distribution of MEPA filings	Pre- and Post-filing DEIR	› Distribute electronic copies of all MEPA filings (and hard copies, if requested) to the EJ CBO List; and › Make hard copies of all MEPA filings available at the Boston Public Library ("BPL") branch locations within approximately 1-mile of the Project Site, which includes the Chinatown and South Boston Branches.
Engage in creative outreach	Prior to DEIR filing	› Posted project flyers in different public spaces within EJ communities. Held an "open house" event at the Proponent's nearby 105 West First Street project which included activities for children, make your own flower bouquet station, catering from local, Vester, and interactive idea boards to spur community thoughts and feedback on the project. Created a project website which allows for the opportunity to submit contact information to receive development updates. Participated in Boston Harbor Now's Public Forum in an effort to reach a different/expanded audience. Closely follow and participate in public meetings for nearby projects along the Channel to the maximum extent practicable.
Job Training and Career Center outreach	Ongoing	› Continue close coordination with organizations.
Ensure outreach to the public is communicated in clear, understandable language and in a user-friendly format	Ongoing	› Project website and Project summary flyer to support this effort.

Outreach Type	Timing	Action
Disseminate information through social media channels	Ongoing	› Project website to support this effort.
Establish a local information repository that is convenient and accessible for the EJ Population where information related to the Project can be obtained	Ongoing	› Project website to support this effort.

2.2.2 Public Engagement for the ENF/PNF

As per the requirements stated under Section II of the Public Involvement Protocol, "Measures to Enhance Public Involvement Prior to Filing ENF", the Proponent has made meaningful efforts to engage with the community through expanded outreach prior to the joint ENF/PNF filing. As recommended in the protocol to ensure enhanced public outreach, prior to filing the joint ENF/PNF, the Proponent took measures including:

- The Proponent has met with BPDA Staff, City and State agencies, elected officials, abutting owners, neighborhood groups, members of the local arts community, community leaders, business owners, and other stakeholders regularly since acquiring the site in September 2021.
- Building on this outreach, held two public listening sessions – one at Binford Street Park on August 2, 2022, and one at The 105 on May 13, 2023, to discuss the development of the Project Site and solicit feedback;
- Held a voluntary pre-PNF public meeting through the BPDA on April 12, 2023, as a forum to discuss the Letter of Intent (LOI) filing;
- Formation of the Impact Advisory Group (IAG), a group of community members (residents, business owners, community organization leaders, and other local area stakeholders) designated to represent the local community, as part of the Article 80 review process;
- Launched a project website to publicly broadcast project information and provide another location to make public filings available to various stakeholders;
- Provided advanced notification of the Project and forthcoming ENF filing in the form of the MEPA EJ Screening Form to the EJ CBO List, translated into Spanish and Chinese, on May 1, 2023;
- Provided a Project Fact Sheet translated into Chinese, as required by the Article 80 review process and Project Language Access Plan (PLAP);
- Published the ENF public notice in the Boston Herald, El Mundo Boston, and Sampan publications in English, Spanish, and Chinese (the languages spoken within a 1-mile radius of the Project Site), respectively;
- Provided a hard copy of the ENF/PNF filing at BPL branch locations within approximately 1-mile of the Project Site, including the Chinatown Branch located at 2 Boylston Street and South Boston Branch located at 646 East Broadway.

Since the filing of the joint ENF/PNF, the Project has participated in nine meetings open to the public to discuss the proposed development at 232 A Street; including a Virtual Public Consultation on August 22, 2023, and an in person Public Site Consultation on August 23, 2023, to present the Project to the MEPA Office, state agencies, and the public. The presentation provided the attendees with the opportunity to ask questions about the Project. It also provided members of the public with direct access to the Proponent and Project team, allowing them to inquire about Project specifics and better

understand how impacts will be mitigated. As there are Census Tracts within one mile of the Project Site in which there are, "Languages other than English spoken by 5 percent or more of the population who do not speak English very well," the Proponent offered to provide translation services if languages are spoken by more than 10 percent of the population, on an as-requested basis.

2.2.3 Public Engagement for the DEIR and Remainder of the MEPA Review Process

Since the filing of the joint ENF/PNF and leading up to the filing of the DEIR, the Project has participated in nine meetings open to the public to discuss the proposed development at 232 A Street. These include holding a Community Information Meeting on January 10, 2024, intended to preview the upcoming DEIR filing and provide a forum for questions and feedback and participated in Boston Harbor Now's Public Forum on January 24, 2024. The meeting notice was widely distributed within the surrounding EJ neighborhoods to solicit feedback on the Project and provided interpretation services upon request.

An electronic copy of the full DEIR filing will be distributed to the list of EJ CBOs and tribes/indigenous organizations provided by MEPA on January 10, 2024 (see Appendix A). As with the ENF/PNF, the Proponent will provide a hard copy of the DEIR at BPL branch locations within approximately one mile of the Project Site, including the Chinatown Branch located at 2 Boylston Street and South Boston Branch located at 646 East Broadway.

The Proponent looks forward to continuing frequent outreach with stakeholders and other interested parties throughout the review process and will continue to interface and consult with such parties during development of the Project.

2.3 Enhanced Analysis of Project Impacts to EJ Populations

This section provides additional public health data, as required by the DEIR Scope, and includes an assessment of whether the Project is anticipated to cause unfair or inequitable harm to vulnerable communities.

2.3.1 DPH Tool Analysis

The City of Boston exceeds the criteria for Low Birth Weight and Childhood Asthma. However, the DPH EJ Tool does not show Low birth weight and childhood asthma data for the vulnerable health EJ criteria in the census tract where the Project is located.

2.3.1.1 Potential Sources of Pollution

The DPH EJ Tool was also consulted to identify potential sources of pollution that might currently pose a risk to public health within 1 mile of the Project Site. Relevant sources of pollution that were evaluated include major air and waste facilities and hazardous material sources. These include:

- M.G.L. c. 21E sites - 53
- "Tier II" Toxics Release Inventory Site – 60
- MassDEP sites with AULs – 54
- MassDEP groundwater discharge permits - 0

- Wastewater treatment plants - 3
- MassDEP public water suppliers - 0
- Underground storage tanks - 44
- EPA facilities - 3
- Road infrastructure – MassDOT roads (Route 90) and bike lanes
- MBTA bus and rapid transit – 59 MBTA bus stops and 35 MBTA rapid transit stops
- Other transportation infrastructure – Railroad tracks and water taxis
- Regional transit agencies – 11 RTA stops and MBTA service areas
- Energy generation and supply - 5

The potential sources of pollution identified above are not located on the Project Site. The Project will not exacerbate any potential environmental risks posed by the facilities above.

2.3.2 Assessment of Project Impacts to EJ Populations

2.3.2.1 Traffic Generation

Much of the Boston region is designated as Environmental Justice communities. The regional trip distribution for Project-generated traffic will primarily use the major routes including Interstate 93 and the Massachusetts Turnpike/I-90. Table 2-2 shows the Project trip distribution and anticipated daily trips oriented to the regional highways and local roadways.

Table 2-2 Regional Trip Distribution

Regional Roadway	Trip Distribution[1]	Daily Vehicle Trips[2]	Daily Truck Trips[3]
I-93 to/from North	32%	405	11
I-93 to/from South	40%	506	14
I-90 to/from West	25%	316	9
I-90/Route 1A to/from East	1%	13	0
Local Routes within 1 Miles	2%	25	0
Total	**100%**	**1,265**	**34**

1 Based on trip distribution presented in Chapter 6, Transportation
2 Based on trip generation estimates presented in Chapter 6, Transportation inclusive of both passenger vehicles and trucks
3 Based on truck trip generation rates using ITE LUC 710, General Office Building. Truck trip generation rates are not provided for ITE LUC 760 – Research and Development

The Project's impacts to EJ communities will mostly be limited to traffic on the regional highway system that carries hundreds of thousands of vehicles per day. The Project's impacts are not expected to have a measurable impact on EJ populations within a 1-mile radius of the Project Site. The Project-generated truck traffic is also expected to be minimal. The regional highways that serve the Project Site also have restrictions for trucks carrying hazardous materials during certain hours of the day. Specific routes are designated by MassDOT for trucks containing hazardous materials.

Refer to Table 9-1 in Section 9.1 of Chapter 9, *Mitigation and Draft Section 61 Findings*, for more information regarding the proposed transportation-related mitigation measures.

2.3.2.2 Air Quality

A review of the intersections included in the transportation analysis shows that only two intersections are within or border EJ areas. The intersection of Congress Street, Thompson Street, and A Street is completely within Block Group 2, Census Tract 606.04 in Suffolk County while the intersection of Congress Street, West Service Road, and Boston Wharf Road abuts the tract.

The analysis shows that free flowing project-generated traffic is expected only along the main roads. Given the building is primarily for office/lab use, project-related traffic is not generally expected to use local roadways outside the roads immediately adjacent to the Project leading to major arterial roads. Additionally, the studied roadways that abut the EJ areas generally have commercial, industrial, or planned development zoned properties along them. While the interstates are adjacent to EJ areas, the increment of Project-generated traffic trips traveling on the interstates is negligible relative to the existing traffic volumes and is not expected to meaningfully increase air emissions. An analysis of air emissions from Project-related traffic including NOx, PM2.5, PM10, and Diesel Particulate Matter (DPM), anticipated to extend near EJ populations within the DGA, is included in Section 7.5.3 of Chapter 7, *Climate Change Adaptation and Resiliency*. It can be concluded that the local EJ populations will not be significantly affected by Project-generated traffic air emissions.

2.3.2.3 Temporary Construction Period

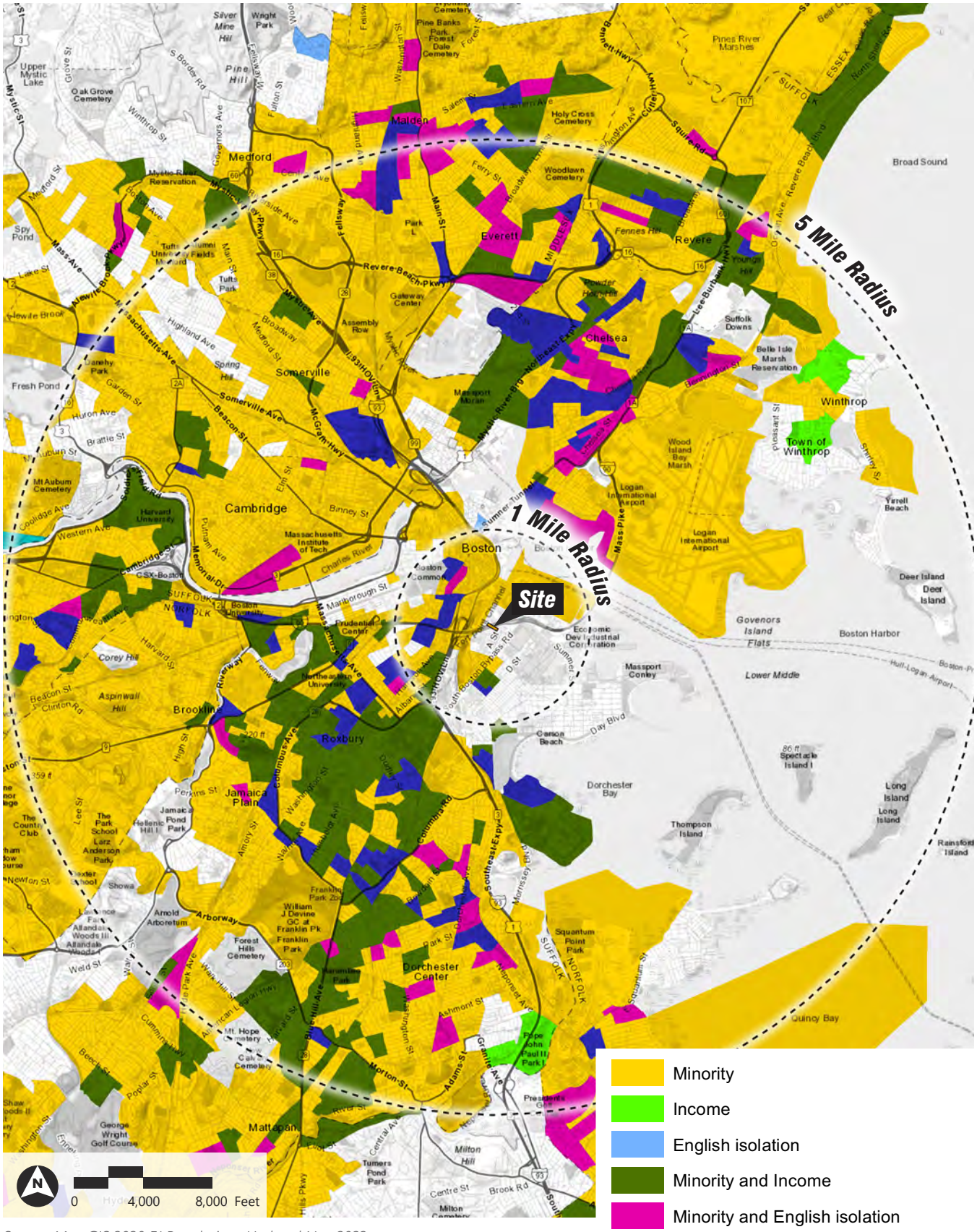
The Proponent will develop a plan to control construction-related impacts including erosion, sedimentation, and other pollutant sources during construction and any land disturbance activities. The addition of construction-related traffic to the regional highway system will be negligible compared to the prevailing traffic conditions and will not have a measurable impact to EJ communities. The Project is not located within a community with an EJ population and as such, the construction period impacts to EJ communities will be limited to those communities that contain or are adjacent to a regional highway route. EJ populations will experience the same temporary construction period impacts as the public surrounding the Project Site. Mitigation measures during construction will be implemented to minimize impacts to EJ communities. Further details are described in Section 8.12 of Chapter 8, *Construction Period Impacts*.

2.3.2.4 Climate Impact Mitigation

The Project will help mitigate the impacts to nearby EJ communities by implementing a portion of the district scale flood resilience measures consistent with the RFPCI project, which will help protect the neighborhood landward of the Site from current and future flooding up to elevations associated with the projected 2070 1 percent annual chance flood event. In addition, a suite of site and building measures are proposed to mitigate the impacts of extreme heat events, including increasing the Project Site's pervious cover by 0.45 acres (a 189 percent increase); adding approximately 0.25 acres of net new vegetation, including shade trees; and specifying high Solar Reflective Index (SRI) surface materials on the building and grounds to reduce the heat island effect. The Project will help the community adapt to heat by providing shady gathering places including new tree canopy, a pergola shade structure and an arcade that runs the length of the building's south side; offering climate controlled interior spaces on the ground floor that are open to the public; and supplying a publicly accessible water fountain/bottle filling station to promote hydration.

Figure 2.1: Environmental Justice Populations in the Vicinity of the Project

232 A Street | Boston, Massachusetts



Source: MassGIS 2020 EJ Populations Updated Nov 2022
https://www.mass.gov/info-details/massgis-data-2020-environmental-justice-populations

3

Chapter 91 and Tidelands

The Project Site includes filled and flowed tidelands regulated under The Massachusetts Public Waterfront Act, M.G.L.c. 91, and its implementing regulations at 310 CMR 9.00 (together, "Chapter 91"). This Chapter details the Project's regulatory context and demonstrates compliance with applicable Chapter 91 regulations.

Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Project Description and Permitting' section of the DEIR Scope with references to specific DEIR sections in **bold**:

- Information and analyses as requested by the MassDEP Waterways Program, including detailed plans showing all aspects relative to Chapter 91 jurisdictional boundaries and above- and below-ground building elements **(Sections 3.3 through 3.7, Figures 3.2-3.6)**
- A tabular breakdown and graphical depiction of the proposed ground floor uses located on Landlocked, filled former tidelands and Private and Commonwealth Tidelands. **(Section 3.2, Table 3-1, Figure 3.3)**
- A description confirming that Facilities of Public Accommodation ("FPA") space will be provided for at least 75 percent of the interior ground floor of a nonwater-dependent building located on filled Commonwealth Tidelands and clarifying if any outdoor dining, public restrooms, or parking/loading areas of any kind at or above-grade are proposed on any filled Commonwealth Tidelands within the Project Site. **(Section 3.3.4)**
- A description confirming compliance with the baseline Chapter 91 building height setbacks showing building height in relation to the setback distance from the high-water mark. **(Section 3.3.5, Figure 3.4)**
- A description confirming compliance with Chapter 91 open space requirements through calculations of the overall Project Site subject to licensing, the footprint of buildings for non-water dependent use and proposed open space, presented in square feet with corresponding area percentages. **(Section 3.3.6, Figure 3.5)**
- A description and detailed plans of the proposed open space and quantification of each open space by its character and proposed use. **(Section 3.3.6, Figure 3.5)**
- A discussion of pertinent negotiations with the City of Boston Parks Department related to long-term ownership and management of the proposed open space. **(Section 3.3.7)**
- A comprehensive and detailed review of the South Boston Waterfront Municipal Harbor Plan ("SBWMHP") and related zoning and planning documents such as the 100 Acres Master Plan and Fort Point Channel Watersheet Activation Plan ("FPCWAP") describing all requirements pertinent

to the Project Site such as the height and WDUZ substitutions and amplifications. **(Section 3.3.3, Tables 3-4 and 3-5, Figure 3.6)**

- A draft management plan for the publicly accessible interior and exterior FPA space to be provided as part of the Project. **(Section 3.3.7)**
- Additional information regarding the plans for any proposed dock, including its intended uses, size, location, structure, and interaction with the SBWMHP. **(Section 3.1)**
- Analysis of why a Public Benefit Determination ("PBD") is appropriate, including a description of the Project's public benefits. **(Section 3.7)**
- Detailed analysis of the Project's groundwater impacts and impacts on groundwater levels, and a description of proposed mitigation measures. **(Section 3.7.9)**
- A description of how sea level rise and climate change will be considered as part of the project, including resiliency measures for interior and exterior spaces, public benefits, public access and adaptability, which will be reviewed as part the Proponent's application for an extended term Chapter 91 license. **(Sections 3.6.1 and 3.7)**

3.1 Key Findings

Key findings related to Waterways include:

- The Project Site includes Private, Commonwealth, and Landlocked tidelands. Approximately 1.96 acres of the 2.41-acre Project Site comprise jurisdictional filled tidelands.
- The Project includes construction of a new mixed-use building with laboratory/R&D and office uses, and publicly accessible waterfront open space, and other public realm improvements.
- The Project is designed to meet the baseline requirements of the Chapter 91 regulations, 310 CMR 9.00, and of the SBWMHP and the FPCWAP by:
  - Providing the required amount of space devoted to Facilities of Public Accommodation ("FPAs"), per 9.53(c)1, which will be located within both Commonwealth and Private tidelands.
  - Providing, on a voluntary basis, additional publicly accessible interior spaces in excess of that required under Chapter 91 and the SBWMHP.
  - Providing approximately 54,962 SF of open space, wherein approximately 30,625 SF is required, the Project is planned to provide approximately 79 percent more on-site open space than required by Chapter 91 and the SBWMHP.
  - The entire approximately 18,700-SF Water Dependent Use Zone ("WDUZ") will consist of publicly accessible waterfront open space.
- The Project complies with applicable environmental protection regulations and is consistent with planning and zoning.
- The Project will provide substantial flood protection to upland areas and will supply significant public benefits. As such, the Proponent is requesting an extended term license.
- The potential future dock/pier facility that was referenced in the ENF has been eliminated from the Project due to site constraints and in response to comments on the ENF and is no longer proposed.

3.2 Jurisdiction

As shown in Figure 3.1 the approximately 2.41-acre Project Site is comprised entirely of filled and flowed tidelands. It does not have a history of ownership by the Commonwealth, its political subdivisions, or a quasi-public agency or authority. However, a portion of the Project Site lies seaward of a line running 100 rods (1,650 feet) seaward of the historic high-water mark and, as such, is designated as Commonwealth Tidelands. This includes approximately 1,309 SF of watersheet. The remaining jurisdictional tidelands on the Project Site are designated as Private Tidelands. In total, approximately 1.96 acres are within filled tidelands subject to licensure. The Project Site also includes approximately 0.4 acres of landlocked former tidelands that are not subject to any requirement for a Chapter 91 license or the use and dimensional regulations otherwise applicable under Chapter 91. Table 3-1 below lists the jurisdictional tidelands and their associated areas by proposed use.

A portion of an existing 72-inch BWSC drain/CSO that is located within jurisdictional filled tidelands conflicts with the proposed building footprint. Prior to starting construction on the Project, this portion of the drain/CSO pipe will need to be rerouted, which will require significant coordination with BWSC. The Proponent is committed to working with BWSC to determine a feasible route and a sequencing plan that will maintain service during construction. This work is anticipated to require a minor modification issued by MassDEP under Chapter 91.

Table 3-1 Jurisdictional Filled Tidelands

	Site Area		Building Footprint			Open Space		
	SF	Acres	SF	Acres	% of Tidelands	SF	Acres	% of Tidelands
Filled Commonwealth Tidelands	49,732	1.14	11,124	0.26	13	38,608	0.89	45
Filled Private Tidelands	35,856	0.82	19,501	0.45	23	16,355	0.38	19
Total	**85,587**	**1.96**	**30,625**	**0.70**	**36**	**54,962**	**1.26**	**64**

NOTE: All areas are approximate.

The Project Site is not within a Designated Port Area. The Project Site is subject to the SBWMHP (which was approved December 6, 2000, and was amended October 22, 2009, and December 21, 2016). The Project is required to comply with the approved substitutions, offsetting measures and amplifications for the SBWMHP as per 310 CMR 9.34(2)(a).

The Project proposes both water-dependent and nonwater-dependent uses. As confirmed by MassDEP in its comment letter on the ENF it is therefore regulated as a nonwater-dependent use project as per 310 CMR 9.12(2)(f) and is subject to review under the nonwater-dependent performance standards at 310 CMR 9.31(2)(b).

3.2.1.1 Existing Licenses

The following Legislative Authorizations and Chapter 91 licenses have been identified for the Project Site:

- **Chapter 239 of the Acts of 1845** – An Act to authorize the Boston Wharf Company to extend their Wharf.
- **Chapter 246 of the Acts of 1850** – An Act to authorize the Boston Wharf Company to extend their Wharf.
- **Chapter 171 of the Acts of 1852** – An Act concerning the Boston Wharf Company.

- **Chapter 218 of the Acts of 1854** – An Act Authorizing The Boston Wharf Company To Construct Their Wharf To The Commissioners' Line.
- **Chapter 455 of the Acts of 1855** – An Act concerning the Boston Wharf Company.
- **DEP 4793** – Issued December 5, 1995, to dredge, excavate, fill, construct and maintain permanent structures including slurry walls and an outfall, etc., for the Central Artery Tunnel project.
- **DEP 9342a** – Issued September 30, 1996, revised May 29, 2003, to maintain existing fill, structures, office buildings, roads, site drives and parking at 5 and 6 Necco Court.
- **DEP 9342b** – Issued September 30, 1996, revised August 16, 2002, and February 25, 2003, to Maintain existing fill, structures, office buildings, roads, site drives and parking at 11-13 Sleeper Street; 288 A Street; 11, 27, 29, 45, 51, 63 Melcher Street; 253, 263, 273 Summer Street.
- **DEP 6544** – Issued June 6, 1997, to restore parking area and install headhouse for the Central Artery Tunnel project.
- **DEP 10048B** – Issued August 4, 2004, to restore certain areas disturbed as part of the Central Artery Tunnel project in compliance with CWD No. W91-1000.

3.3 Regulatory Compliance

This section demonstrates the Project's compliance with the applicable requirements under 310 CMR 9.00. Basic requirements (310 CMR 9.31(a)) are addressed in Table 3-2. Proper Public Purpose requirements are addressed (310 CMR 9.31(b)) are addressed in Table 3-3. As a non-water dependent use Project, it has specifically been designed to comply with the applicable provisions of the following:

- 310 CMR 9.51 – Conservation of Capacity for Water Dependent Use,
- 310 CMR 9.52 – Utilization of Shoreline for Water-dependent Purposes,
- 310 CMR 9.53 – Activation of Commonwealth for Public Use, and
- 310 CMR 9.54 – Consistency with Coastal Zone Management Policies.

The Project has also been designed in compliance with the provisions related to the SBWMHP at 310 CMR 9.57(e) (Tables 3-4 and 3-5). Finally, compliance with the Massachusetts Coastal Zone policies is demonstrated in Table 3-6. Figure 3.2 shows proposed conditions.

3.3.1 Basic Requirements

The waterways regulations at 310 CMR 9.31(1) require MassDEP to determine that all projects requiring a license comply with the basic requirements for license eligibility. Table 3-2 lists the related regulatory standards, states why certain standards are not applicable to the Project and demonstrates the Project's compliance with applicable standards.

Table 3-2 Basic Licensing Requirements

310 CMR 9.00	Requirement Description	Applicable?	Standard	Project Compliance
9.32(1)	Categorical	Yes	The following project-related	The Project fully complies with this standard. The

310 CMR 9.00	Requirement Description	Applicable?	Standard	Project Compliance
(a)	restrictions on fill and structures within Tidelands outside of ACECs and DPAs		uses are categorically permitted: Fill and structures for any use on filled tidelands; Fill or structures for water-dependent use located below the high-water mark…; and Structures to accommodate public pedestrian access on flowed tidelands….	following proposed fill, structure, and uses are categorically allowed, subject to compliance with applicable provisions of 310 CMR 9.00: › New construction and fill for the purpose of providing flood-resilient grades on previously filled private tidelands; and › Structures associated with the proposed dock facility to provide public access to flowed tidelands.
9.33	Environmental protection standards	Yes	Projects must comply with all applicable state environmental protection and permitting requirements.	The Project fully complies with this standard. It has been designed to comply with all applicable state environmental standards including MEPA, the Wetlands Protection Act and the Massachusetts Clean Waters Act, as demonstrated in Section 3.4 below.
9.34(1)	Conformance with municipal zoning	Yes	Projects must comply with applicable local zoning.	The Project complies with local zoning as demonstrated in Section 3.5 below.
9.34(2)	Conformance with municipal harbor plan	Yes	Projects must comply with applicable Municipal Harbor Plans.	The Project complies with the SBWMHP as described in Section 3.3.3 below.
9.35(2)	Standards to preserve water-related public rights	Yes	This standard prohibits projects from significantly interfering with: Public rights of navigation which exist in all waterways; Free passage over and through the water; and Access to town landings.	The Project fully complies with this standard. The Project does not extend seaward of any state harbor line, require the alteration of any established course of vessels, interfere with access to adjoining areas, generate water-born traffic that would interfere with other water-borne traffic, alter tidal action, adversely affect the depth or width of an existing channel, or impair the ability of the public to pass freely upon the waterways. There are no town landings within the vicinity of the Project Site.
9.35(3)	Public Rights Applicable to Tidelands and Great Ponds	Yes	This regulation includes the following applicable provisions: Projects "shall not significantly interfere with public rights of fishing and fowling which exist in	The Project fully complies with this standard and will enhance, rather than interfere with, public rights of fishing and fowling and on-foot passage through the construction of a publicly accessible dock, open space, and pedestrian pathways. The Project provides lateral passage to the public above the high water mark through improving the

310 CMR 9.00	Requirement Description	Applicable?	Standard	Project Compliance
			tidelands…" Projects "shall not significantly interfere with on-foot passage and in the case of nonwater-dependent use projects shall include accommodations for public access across the site."	Harborwalk and constructing additional other public access ways in compliance with Sections 9.52 and 9.57. This will result in substantial improvements to on-foot passage along the shoreline and across filled tidelands.
9.35(4)	Compensation for Interference with Public Rights in Commonwealth Tidelands and Great Ponds	Yes	Any water dependent use projects which include fill or structures for private use of Commonwealth Tidelands shall provide compensation to the public for interfering with its broad rights to use such lands for any lawful purpose.	The Project will fully comply with this standard and will result in a net benefit to the public use of tidelands. It will provide new public access to filled and flowed tidelands. This will be accomplished by constructing approximately 1.26 acres of publicly accessible waterfront open space within Chapter 91 Jurisdiction on what is currently largely being used as a surface parking lot. The Project will provide lateral passage to the public above the high water mark through improving the Harborwalk and constructing additional public access ways in compliance with Sections 9.52 and 9.57. This will result in substantial improvements to on-foot passage along the shoreline and across filled tidelands.
9.35(5)	Management of Areas Accessible to the Public	Yes	Projects must provide for the long-term management of tidelands that are accessible to the public related to hours, activities, signage and physical restrictions.	The Project will fully comply with this standard. The new exterior open spaces within the Project Site will be privately maintained and managed by the Proponent or its successor in accordance with an established management plan. Such spaces shall be accessible to the public in compliance with 9.35(5) and 9.52(1), including provision and maintenance of adequate signage, and avoidance of any gates, fences or other structures that would discourage the free flow of pedestrian movement within publicly accessible areas, except to protect public health, safety, or the environment as specified by MassDEP in the License conditions. See Section 3.3.8 for details.
9.36	Standards to protect water-dependent uses	Yes	Projects must protect private access to littoral property, avoid disrupting operations of proximate and recently operating on-site water-	The Project will fully comply with this standard. It will not adversely impact access to abutting properties from the watersheet; disrupt nearby water-dependent uses; displace on-site water dependent uses (there currently being none); or

310 CMR 9.00	Requirement Description	Applicable?	Standard	Project Compliance
			dependent uses, and avoid pre-empting water-dependent use within a DPA.	occupy DPA tidelands.
9.37	Engineering and construction standards	Yes	Projects shall comply with all applicable engineering and construction standards.	The Project will fully comply with this standard. All fill and structures will be certified by a Registered Professional Engineer and comply with state requirements for construction in flood plains where applicable and will not restrict potential channel dredging.
9.38	Use standards for recreational boating facilities;	No	This regulation establishes standards for the construction and operation of recreational boating facilities.	This standard is not applicable because the Project Site does not include any existing or proposed recreational boating facilities.
9.39	Use standards for marinas, boats yards and boat ramps	No	This regulation establishes standards for the construction and operation of marinas, boatyards and boat ramps.	This standard is not applicable because the Project Site does not include any existing or proposed marinas, boatyards or boat ramps.
9.40	Standards for dredging and dredged material disposal	No	This regulation governs the requirements for dredging in flowed tidelands and dredged material disposal.	This standard is not applicable because the Project is not expected to include any dredging or dredged material disposal.
9.31(1)(i)	Prohibition on Discrimination	Yes	This regulation prohibits discrimination in the access to services and facilities.	The Project will fully comply with this requirement.

3.3.2 Proper Public Purpose Requirements

The waterways regulations at 310 CMR 9.31(2) require MassDEP to determine that all projects requiring a license meet a proper public purpose which provides a greater benefit than detriment to the rights of the public in said tidelands. Table 3-3 lists the related regulatory standards, states why certain standards are not applicable to the Project, and demonstrates its compliance with applicable standards.

Table 3-3 Proper Public Purpose Requirements

Regulation 310 CMR	Requirement Description	Applicable?	Standard	Project Compliance
9.31 (2)(a)	Presumes 310 CMR 9.32 is	No	All water dependent use projects are presumed to comply with the	This standard is not applicable because the Project is characterized as a nonwater-

Regulation 310 CMR	Requirement Description	Applicable?	Standard	Project Compliance
	met by water-dependent projects		requirements of 310 CMR 9.51 through 9.55.	dependent use project because it includes both water dependent and nonwater-dependent elements.
9.31 (2) (b)(1)	Standards for conserving and utilizing the capacity of the project site to accommodate water-dependent use	Yes	Projects must comply with the standards for conserving and utilizing the capacity of the project site to accommodate water-dependent use, according to the applicable provisions of 310 CMR 9.51 through 9.52, and with the additional standard for activating Commonwealth tidelands for public use, according to the applicable provisions of 310 CMR 9.53.	The Project complies with the portion of this standard related to 9.51 through 9.53, as demonstrated within this table and the sections that follow.
9.31 (2) (b)(2)	Consistency with Massachusetts CZM Program policies	Yes	Projects located in the coastal zone must comply with the standard governing consistency with the policies of the Massachusetts CZM Program, according to 310 CMR 9.54.	The Project fully complies with this standard as demonstrated in Table 3-6 below.
9.51 (1)	Prevention of significant conflict in use for Facilities of Private Tenancy	Yes	Projects including nonwater-dependent facilities of private tenancy (FPTs) must avoid significant conflict with users of any potential water dependent use that could reasonably be expected to locate on or near the project.	The Project fully complies with this standard as detailed in Section 3.3.4 below. Ground floor uses will include public and private uses. Water-dependent uses include public access and activation of the waterfront, which is not expected to be impacted negatively by ground floor FPTs.
9.51 (2)	Prevention of significant conflict in design	Yes	Nonwater-dependent use projects must be developed in a manner that protects the utility and adaptability of the site for water-dependent purposes by preventing significant conflict with structures or spaces which can reasonably be located on or adjacent to the site.	The Project will fully comply with this standard. Approximately 36 percent of filled tidelands within the Project Site will be occupied by non-water dependent buildings/structures, allowing the remaining 64 percent of the Project Site to serve water-dependent uses. The building is planned to be located at the landward edge of the Project Site's Chapter 91 jurisdictional areas. The Project will result in improved public views of and access to the water. Pedestrian level wind and shadow studies will be conducted as part of the municipal design review process, and no significant conflicts with structures or spaces are anticipated. The Project's landscaping is designed to encourage effective pedestrian

Regulation 310 CMR	Requirement Description	Applicable?	Standard	Project Compliance
				circulation within and to areas of water-dependent activity.
9.51 (3)(a)	Restriction on new pile supported structures for nonwater-dependent use	No	This regulation restricts the footprint of new pile supported structures for nonwater-dependent uses within existing flowed tidelands (i.e., seaward of mean low water).	This standard is not applicable because the Project does not include any new pile supported structures for nonwater-dependent uses within flowed tidelands.
9.51 (3)(b)	Restrictions on the location of facilities of private tenancy	Yes	This standard prohibits locating non-water dependent facilities of private tenancy at the ground floor of any building on filled tidelands within 100 feet of a project shoreline.	The Project fully complies with this standard because it does not propose any non-water dependent ground level facilities of private tenancy within 100 feet of the Project Site shoreline.
9.51 (3)(c)	Restrictions within the WDUZ	Yes	This standard prohibits nonwater-dependent uses and parking at or above grade within a Water-Dependent Use Zone.	The Project fully complies with this standard because it does not include any buildings containing non-water dependent uses or parking facilities at or above grade within the 110' WDUZ. The approximately 18,700-SF WDUZ area will consist of a publicly accessible waterfront open space.
9.51 (3)(d)	Site coverage standards	Yes	Nonwater-dependent use projects must reserve one square foot of open space for every square foot of buildings containing a nonwater-dependent use.	The Project will fully comply with this standard as follows: › Nonwater-dependent Use Building Footprint: 30,625 SF › Open Space Required: 30,625 SF › Open Space Provided: 54,962 SF See Section 3.3.6 and Figure 3.5 for details.
9.51 (3)(e)	Building height limitations	Yes	This regulation establishes maximum building heights within filled tidelands starting at 55 feet within 100 feet of MHW and increasing one-half foot for every one foot of additional setback from MHW.	The Project will fully comply with the applicable Chapter 91 building height limitations as described in Section 3.3.5 and demonstrated in Figure 3.4.
9.52	Utilization of the shoreline for water-dependent purposes	Yes	All nonwater-dependent use projects on filled tidelands must devote a reasonable portion of such lands to water dependent uses.	The Project will fully comply with this standard. It has been designed to promote active use of the Project Site shoreline by improving the Harborwalk, constructing additional networked pedestrian walkways that provide off-site connections, and significant publicly accessible open space areas for active and passive waterfront recreational use within the approximately

Regulation 310 CMR	Requirement Description	Applicable?	Standard	Project Compliance
				18,000-SF WDUZ area.
9.53 (1)	Activation of Commonwealth Tidelands for Public Use	Yes	This regulation prohibits fill or structures for nonwater-dependent use which the Department determines to be necessary to accommodate a public agency which intends to pursue a water-dependent use project on such lands.	The Project fully complies with this standard. To date, no agency has identified an intent to pursue a water-dependent project on the Project Site.
9.53 (2)	Activation of Commonwealth Tidelands for Public Use	Yes	This regulation requires the project to attract and maintain substantial public activity on the site on a year-round basis, through the provision of appropriate water-related public benefits.	The Project fully complies with this standard. The Project includes approximately 1.26 acres of publicly accessible open space at/near the water as described in Section 3.3.6. It provides land-side view corridors to the water as well as a waterfront vista (overlook area). Interior FPAs will be provided in accordance with Chapter 91 requirements on the proposed building's ground floor as described in Section 3.3.4; A management plan will be drafted as described in Section 3.3.8. The Proponent will also provide on-site boat storage that is accessible by the boating public.
9.53 (3)	Activation of Commonwealth Tidelands for Public Use	Yes	This regulation requires the project to promote other development policies of the Commonwealth, through the provision of nonwater-related benefits in accordance with applicable governmental plans and programs and in a manner that does not detract from the provision of water-related public benefits.	The Project will fully comply with this standard. It is consistent with the applicable municipal, state, and federal plans as described in Section 3.5, and provides direct public benefits including creating a large number of permanent jobs on-site and reutilizing an idle waterfront property.
9.54	Massachusetts CZM Program policies	Yes	The project must comply with the regulatory policies and management principles established by 301 CMR 22.99	The Project will fully comply with this Standard because it meets the requirements of the Massachusetts CZM Program as demonstrated in Table 3-6.
9.55	Standards for infrastructure-only projects	No	This standard establishes standards for nonwater-dependent use infrastructure projects on filled tidelands and Great Ponds.	This standard is not applicable because the Project is not limited to nonwater-dependent public infrastructure.

3.3.3 South Boston Waterfront Municipal Harbor Plan Compliance

In 2000, the Massachusetts Secretary of the EEA approved the SBWMHP, which includes all areas subject to Chapter 91 extending from West 4th Street at the end of the Fort Point Channel to Pier 4 along the inner harbor. Historically, the general public has had inadequate public access to the waterfront in the Fort Point Channel because the area was primarily given over to railroads and shipping. Now that the area is undergoing redevelopment, there is the opportunity to ensure that workers, residents, and visitors enjoy the benefits of public access to the waterfront. Specific goals of the SBWMHP include promotion of public access to Boston Harbor, the development of South Boston as a vital mixed-use neighborhood and seeking to ensure that residents of all of Boston's neighborhoods share in the benefits of new private investment.

The plan approved in 2000 located the Project Site within the Fort Point Historic Subdistrict South. In 2009, the BPDA proposed amendments to the SBWMHP for a portion of the South Boston Waterfront including the Project Site. The resulting amendment was approved by the EEA Secretary in 2009. That plan revised the subdistrict boundaries so that the Project Site is now located within the 100 Acres Subdistrict. Tables 3-4 and 3-5 below identify the substitution provisions and amplifications at 310 CMR 9.57(e) related to the 100 Acres Subdistrict.

Table 3-4 Substitution Provisions at 310 CMR 9.57(e) 100 Acres (2009)

Regulatory Provision	Chapter 91 Standard	Approved Substitution	Approved Offsetting Measures	Project Compliance
310 CMR 9.51(3)(c): Conservation of Capacity for Water-dependent Use (Water-dependent use zone)	"New or expanded buildings for non waterdependent use…shall not be located within a water dependent use zone". The WDUZ in the MHP area includes a setback for non-water dependent uses that would vary from 80 to 100 feet, depending upon location and characteristics of projects that may be proposed."	An alternative WDUZ will be established that generally increases the minimum setback to 110 feet from the project shoreline, except for that portion of the planning area between the Fort Point Channel and 60 Necco Court which will have a setback of 18 feet.	The reconfigured WDUZ will provide at least the same land area as would occur under the standard provisions. The WDUZ is larger throughout most of the planning area and will enhance public access and enjoyment of this area of the waterfront. No net loss of WDUZ will occur.	The Project provides the alternative WDUZ that increases the minimum building setback from 100 feet to 110 feet from the Project Site shoreline, creating an approximately 18,700-SF WDUZ. The building on the Project Site is set back approximately 385 feet from the Project Site's shoreline, and therefore complies with the approved substitution for the setback requirement at 310 CMR 9.51(3)l.
310 CMR 9.52(1)(b)1.: Utilization of Shoreline for Water-dependent Purposes (Pedestrian access network)	"…walkways and related facilities along the entire length of the Water- Dependent Use Zone; wherever feasible, such walkways shall be adjacent to the project shoreline and, except as otherwise provided in a municipal harbor plan, shall be no less than ten feet in width…"	The minimum width will be widened to 18 feet clear in areas where the WDUZ is at least 100 feet wide and 12 feet clear along the remainder of the shoreline.	The substitution directly benefits the public through enhanced access (open 24 hours/7 days per week); no offsetting public benefit is required.	The Project will exceed the approved substitution for the requirement at 310 CMR 9.52(1)(b)1. to provide a minimum 18-ft- wide pathway by providing an approximately 22-ft-wide pathway along the Project Site shoreline. See Sections 3.3.6 and 3.5.3 for details.
310 CMR 9.51(3)(e): Conservation of Capacity for Water-Dependent Use (Building height)	New or expanded buildings for nonwater-dependent use shall not exceed 55 feet in height if located over the water or within 100 feet landward of the high water mark; at greater landward distances, the height of such buildings shall not exceed 55 feet plus ½ foot for every additional foot of separation from the high water mark.	Allow non water-dependent buildings ranging in height from 80 feet to 180 feet.	The substitution results in a required offset for net new shadow. The proposed offset is additional public open space. This offset is permitted on a 1:2 ratio of additional open space to net new shadow.	The Project complies with the height restrictions at 310 CMR 9.51(3)(e), which are depicted in more detail in the 2009 SBWMHP Amendment (Figure 6.3), by proposing a 150-ft-tall building at a location that allows for a building up to 150 ft tall. The building height is below the Chapter 91 baseline height limit, does not contribute to net new shadow as demonstrated in Appendix 2 of the SBWMHP, and is therefore not subject to the requirement to offset shadow impacts.

[1] Building Height as such term is used in the definition of "Building Height" in Article 80B of the City of Boston Zoning Code.

Table 3-5 Amplification Provisions at 310 CMR 9.57(e) 100 Acres (2009)

Regulatory Provision	Chapter 91 Standard	Approved Amplification	Implementation Mechanism	Project Compliance
310 CMR 9.52: Utilization of Shoreline for Water dependent Purposes	"A facility that promotes active use of the project shoreline and requires the provision of a pedestrian network of a kind and to a degree appropriate for the project site."	The amplification of these requirements directs the implementation of these regulations to the provision of the boating dock facility and pedestrian network envisioned in the Fort Point Channel Watersheet Activation Plan. Additional activation of the Harborwalk and waterfront open space will be provided through the use of historic interpretive elements and displays. The particular type and location of exhibits will be appropriate to this particular location in the harbor and will follow guidance provided in Section 9 and Appendix 1 of the Plan.	FPCWAP and SBWMHP (Section 9 and Appendix 1)	The FPCWAP and SBWMHP require implementation of a land-side view corridor, a water vista, the Harborwalk, and the South Bay Harbor Trail on the Project Site. The Project will provide these required elements as described in Section 3.5.3 below.
310 CMR 9.53: Activation of Commonwealth Tidelands for Public Use	Nonwater-dependent use projects located on Commonwealth Tidelands must promote public use and enjoyment of such lands to a degree that is fully commensurate with the proprietary rights of the Commonwealth and that ensures that private advantages of use are not primary merely incidental to the achievement of public purposes.	The amplification of this requirement will provide public benefits recommended by the Fort Point Channel Watersheet Activation Plan (FPCWAP) in the WDUZ and adjacent watersheet to promote public uses and enjoyment of Commonwealth tidelands.	FPCWAP	Appendix 1, Section 6.4.1 of the SBWMHP identifies a menu of seven types of uses and interior spaces. The Project will provide several of these facilities as described in Section 3.5.3 below.

3.3.4 Use Requirements

The new building footprint will be located within Commonwealth tidelands (approximately 10,490 SF), Private tidelands (approximately 19,501 SF), and Landlocked tidelands (approximately 8,513 SF) as shown in Table 3-6 and depicted in Figure 3.3. (In addition, the existing approximately 634-SF I-93 Tunnel Headhouse, which is not considered a FPT, is located in Commonwealth tidelands). The portion of the new building within Commonwealth tidelands is a wedge-shaped area on its north side that primarily fronts Binford Street. Binford Street will be utilized by both the Project and the adjacent 244-284 A Street project for loading activities. The right-of-way will remain fully accessible to the public, and it will include streetscape amenities and public art to make it a welcoming way to the waterfront. Approximately 43 percent of the building footprint within Commonwealth tidelands will necessarily be devoted to loading and back-of-house operations accessed on Binford Street, as this location is the only feasible solution. Further, consolidating loading and back of house operations along Binford Street preserves valuable waterfront park frontage along Necco Street and minimizes traffic impacts on the A Street frontage.

The Proponent respectfully requests that the Department exercise its discretion to allow this configuration as per 310 CMR 9.51(3)(b), which states "The Department may allow any portion of the equivalent area of a Facility of Public Accommodation to be relocated within the building footprint, or in other buildings owned, controlled or proposed for development by the applicant within the Development Site if the Department determines the alternative location would more effectively promote public use and enjoyment of the project site."

In accordance with 310 CMR 9.53(2)(c), the Project is required to devote space within the building footprint (identified in the regulations as "interior space") to FPAs at the ground level of the building in an amount equal to the square footage of all Commonwealth tidelands on the Project Site within the footprint of buildings containing FPTs, of which 25 percent may be devoted to Upper Floor Accessory Services (UFAS). Based on the building footprint (10,490 SF), the Project must provide at least 7,868 SF of FPA space. The Project will exceed this requirement by providing a total of 17,341 SF of space devoted to FPAs. As discussed with DEP, approximately 6,012 SF of the required FPA space will be provided within Commonwealth tidelands, while the remainder (1,856 SF) will be provided within Private tidelands. On a voluntary basis the Project will provide an additional approximately 9,473 SF of FPAs within Private tidelands (see Table 3-6). The entirety of the building footprint within Landlocked Tidelands (8,513 SF) will consist of publicly accessible areas.

Table 3-6 FPA Compliance

	Building Footprint (SF)	Required/ Allowed Use (SF)		Provided Use (SF)		FPA Delta (SF)
		FPA	UFAS	FPA	UFAS	
Commonwealth Tidelands	10,490	7,868	2,623	6,012	4,478	-1,856
Private Tidelands	19,501	0	0	11,329	8,172	+11,329
Total	**29,991**	**7,862**	**2,623**	**17,341**	**12,650**	**+9,473**

Notes: All areas are approximate. Refer to Figure 3.3.
FPA = Facility of Public Accommodation
UFAS = Upper Floor Accessory Services as defined in 310 CMR 9.02.

3.3.5 Dimensional Requirements

As depicted in Figure 3.4, the Project complies with the baseline Chapter 91 building height limits at 310 CMR 9.51(3)(e). The 150-foot-tall building is set back approximately 385 feet from the high-water mark, wherein the maximum height would range from 197.5 to 330 feet. The Project complies with the SBWMHP, which limits the building height at this location to 150 feet.

As per the SBWMHP, the building façade is required to be set back at least 110 feet from the Project Site shoreline. It will be set back by approximately 385 feet.

3.3.6 Open Space Requirements

The Project's open space is depicted in Figure 3.5. As per 310 CMR 9.51(3)(d), nonwater-dependent use projects must reserve one square foot of open space for every square foot of buildings containing a nonwater-dependent use. The Project is required to provide 30,625 SF of open space. It will provide approximately 54,962 SF of open space – an exceedance of the requirement by 79 percent. Table 3-7 identifies each ground plane coverage type by tideland type.

Table 3-7 Ground Plane Coverage Calculations

Ground Plane Cover	SF	Acres	%
Commonwealth Tidelands	**50,281**	**1.15**	
Existing Headhouse Footprint	634	0.01	1
New Building Footprint	10,490	0.24	21
Total Open Space	38,608	0.89	78
› *Vegetated*	› *13,772*	› *0.32*	› *28*
› *Hardscaped Pedestrian*	› *21,894*	› *0.50*	› *44*
› *Vehicular Access*	› *2,942*	› *0.07*	› *6*
Private Tidelands	**35,856**	**0.82**	
New Building Footprint	19,501	0.45	54%
Total Open Space	16,355	0.38	46%
› *Vegetated*	› *8,156*	› *0.19*	› *23*
› *Hardscaped Pedestrian*	› *5,881*	› *0.14*	› *16*
› *Vehicular Access*	› *2,318*	› *0.05*	› *6*

This open space will be designed to provide the following:

- Opportunities for passive recreation, shade, gathering, and taking in the waterfront views;
- Approximately 360 linear feet of approximately 22-ft-wide Harborwalk along the Fort Point Channel and a cycle track component of the South Bay Harbor Trail;
- Connectivity to the waterfront both along and through the Project Site,
- New wayfinding and signage;
- Artistic lighting;
- Space for programmed publicly accessible events;

- Public art in multiple locations on the Project Site provided in concert with the Fort Point Arts community; and
- Improved water quality through stormwater best management practices integrated into the landscape.

Since the Proponent's acquisition of the Project Site from P&G in September 2021, the Proponent has sought to coordinate with P&G regarding various operational and planning matters relating to the Project Site and the remaining land owned by P&G, including its manufacturing campus site and the site of its pump house located to the north of the Project Site on Fort Point Channel. As part of such coordination and planning, and at P&G's request, the Proponent has agreed that to the extent that there are new additional open space areas owned by the Proponent in excess of what is required to comply with Boston zoning requirements, Chapter 91, and the SBWMHP respecting the Project, the Proponent will work with P&G to assign rights in the same for potential use by P&G, including in connection with the creation of additional open space or public accommodations which benefit the community. The Proponent intends to further evaluate this potential assignment of open space rights during the remaining permitting process and Chapter 91 licensing process for the Project. Any such assignment will not delay the creation of the open space areas proposed for the Project or their availability to the public.

Additional details about open space are included in Section 3.5.3 below.

3.3.7 Draft Management Plan

It is anticipated that the Proponent will enter into agreements with the City of Boston and/or the BPDA regarding dedication of open space areas for public use and for maintenance of exterior open space areas and facilities constructed, pursuant to the Chapter 91 License, following completion of construction, in accordance with the PDA Master Plan, the PDA Development Plan for the Project, the 100 Acres MOA and the Chapter 91 License and other applicable requirements, including the Management Plan. The Management Plan will be further developed from the outline below in connection with the application for the Chapter 91 License, and the final Management Plan will be subject to City of Boston/BPDA review and compliance with City/BPDA requirements.

- **Introduction** – This section will identify the entities involved and general assumptions.
- **Goals and Objectives** – This section will list goals and objectives for the Project, which are anticipated to be consistent with the goals and objectives described in this DEIR filing.
- **Public Realm Components** – This section will include narratives describing the public realm components of the Project, as approved through MEPA and other permitting processes.
- **Management Areas** – This section will describe the different areas which are subject to the management plan, such as publicly accessible open spaces, retail and restaurant spaces, public restrooms, and parking areas. It will also address signage and landscaping.
- **Organizational Management and Responsibilities** – This section will describe the entities responsible for the management of the various public areas provided by the Project and the scope of such entities' obligations.
- **Management of Public Areas** – This Section is expected to address issues related to the management of integral components of the public realm, such as hours of operation, rules and

regulations, safety and security, special events, maintenance, marketing of site events, snow removal plan, and stormwater operations and maintenance.

- **Flood Monitoring** – This Section will identify how on-site flooding will be monitored, flood damage will be remediated, and additional adaptation measures will be deployed if needed. This section will include information about the duration of that the public is prevented from using various site areas due to flooding and/or flood damage.

3.3.8 CZM Compliance

The Project Site is located within the Massachusetts Coastal Zone and, as the Project is a nonwater-dependent project, it must demonstrate consistency with the regulatory policies established by CZM under the federally approved Massachusetts CZM Program. Table 3-8 lists the CZM policies that are applicable to the Project and assesses its consistency with those policies.

Table 3-8 Consistency with Applicable Massachusetts Coastal Zone Management Policies

CZM Policy	Summary of Policy	Summary of Consistency Statement
Coastal Hazards Policy # 1	Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms.	The new elevated fill landward of the seawall will improve the bank's ability to provide storm damage prevention and flood control. The Project Site's Land Subject to Coastal Storm Flowage area is previously developed, highly degraded, and completely impervious. The Project is expected to result in a net decrease in impervious area and an increase in vegetation, particularly in the vicinity of the waterfront.
Coastal Hazards Policy # 2	Ensure that construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport.	No in-water work is currently proposed. Proposed fill within filled tidelands will have no impact on littoral processes. There are no estuaries or embayments proximate to the Project Site.
Coastal Hazards Policy # 3	Ensure that state and federally funded public works projects would be safe from flood and erosion-related damage.	Portions of the Project that comprise a public works project and that may receive federal funding or reimbursement (i.e., the flood protection berm) will not exacerbate existing hazards or damage natural resources. Rather, the infrastructure will be designed to reduce hazards and protect upland areas from flooding.
Coastal Hazards Policy #4	Prioritize acquisition of hazardous coastal areas that have high conservation and/or recreation values.	No public agency has sought to acquire or obtain easements on the Project Site. The Project Site will include a total of 1.5 acres of public realm including publicly accessible open space, 1.26 acres of which are in Chapter 91 jurisdiction.
Energy Policy # 1	For coastally dependent energy facilities, assess siting in alternative coastal locations.	This policy does not apply. The Project is not an energy facility.
Energy Policy # 2	Encourage energy conservation and use of renewable sources.	The Project will incorporate energy conservation measures that are expected to result in an estimated energy use reduction of approximately 13 percent, which equates to an approximately 28 percent overall reduction in stationary source CO_2 emissions upon grid electrification when

CZM Policy	Summary of Policy	Summary of Consistency Statement
		compared to the Base Case relative to the Stretch Code. The Project will be designed for compliance with the new MA Stretch Code and Specialized Municipal Opt-In Code. As part of the Boston Article 80 Large Project Review process, the building will be subject to a Carbon Neutral Building Assessment.
Growth Management Policy #1	Encourage sustainable development that is consistent with state, regional, and local plans.	The Project is an urban redevelopment project that will create a pedestrian-friendly public realm and transit-oriented commercial space. It will be designed and operated consistent with the State's Greenhouse Gas (GHG) policy and the City of Boston's GHG and energy use reduction goals and applicable polices.
Growth Management Policy #2	Ensure that state and federally funded infrastructure projects serve developed urban areas.	Portions of the Project that comprise a public works project and that may receive federal funding (i.e., the flood protection berm) will exclusively serve an existing developed area and will meet the needs of an urban center.
Growth Management Policy #3	Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.	The Project redevelops a defunct former industrial site that is currently used primarily for surface parking. It does not preempt maritime-dependent uses of waterfront land in compliance with the applicable portions of 310 CMR 9.51. The redevelopment will comply with the Massachusetts Stormwater Management Standards.
Habitat Policy # 1	Protect coastal, estuarine, and marine habitats to preserve wildlife habitats.	The Project Site includes wetland resource areas that are jurisdictional under the Massachusetts Wetlands Protection Act ("WPA"). All work within these areas will be subject to Order of Conditions ("OOCs") issued by the Boston Conservation Commission. The Project complies with all applicable regulations at 310 CMR 9.00 and Sections 401 and 404 of the CWA.
Habitat Policy # 2	Advance the restoration of degraded or former habitats in coastal areas.	The Project does not include ecological restoration activities; However, it will provide naturally vegetated areas of waterfront which will provide improved habitat conditions for species likely to occur within the urban setting.
Ocean Resources Policies # 1-3	Policies related to sustainable aquaculture; oil, natural gas, and marine mineral extraction; and offshore sand and gravel extraction.	These policies do not apply to the Project because the activities to which they apply are not being proposed.
Ports and Harbors Policy # 1-2	Policies related to dredging.	These policies do not apply to the Project because the activities to which they apply are not being proposed.
Ports and Harbors Policy #3	Preserve and enhance the capacity of Designated Port Areas ("DPA") to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts	This policy does not apply because the Project Site is not within a DPA.

CZM Policy	Summary of Policy	Summary of Consistency Statement
	control by virtue of ownership or other legal authority.	
Ports and Harbors Policy #4	For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.	There are no water-based vessel activities currently at the Project Site. The Project complies with the Chapter 91 regulatory provisions designed to conserve tideland capacity to accommodate future water-dependent uses (310 CMR 9.35, 9.51, 9.52).
Ports and Harbors Policy #5	Encourage, through technical and financial assistance, expansion of water-dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of physical and visual access.	This policy does not apply because the Project Site is not within a DPA.
Protected Areas Policy # 1-2	Preserve, restore, and enhance coastal Areas of Critical Environmental Concern ("ACEC"); Protect state designated scenic rivers in the coastal zone.	The Project Site is not within or proximate to any ACECs or designated scenic rivers.
Protected Areas Policy # 3	Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.	There are no inventoried or designated historic resources on the Project Site. However, it is adjacent to the Fort Point Channel Landmark District (BOS.ZG)/Fort Point Channel Historic District (BOS.WZ). The character of the Project's conceptual building design is rooted in complementing and highlighting Fort Point's history and character as a hub for arts, culture, innovation, and industry. Impacts related to wind and shadow have been studied and will be mitigated to the maximum extent practicable.
Public Access Policy # 1	Ensure that development would promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.	The Project provides approximately 1.5 acres of public realm including publicly accessible open space, approximately 1.26 acres of which are in Chapter 91 jurisdiction and promotes active use of the Project Site shoreline by improving the Harborwalk, constructing additional networked pedestrian walkways that provide off-site connections, and creating significant areas for active and passive waterfront recreational use in place of the Project Site's current predominant use as a surface parking lot.
Public Access Policy # 2	Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities….	The Project does not impact access to other coastal recreation facilities located within the Fort Point Channel. The Project creates new publicly accessible coastal recreation facilities and connections to the Harborwalk.

CZM Policy	Summary of Policy	Summary of Consistency Statement
Public Access Policy # 3	Expand coastal recreational facilities and develop new public areas for recreational activities.	The Project expands coastal recreational facilities and provides approximately 1.5 acres of public realm including publicly accessible open space, 1.26 acres of which are in Chapter 91 jurisdiction, open space and promotes active use of the Project Site shoreline.
Water Quality Policy # 1	Ensure that point-source discharges do not comprise water quality standards.	The Project is compliant with both the MassDEP Stormwater Management Policy and Boston Water and Sewer Commission requirements and is anticipated to improve water quality.
Water Quality Policy # 2	Implement nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.	Stormwater at the Project Site will be collected and treated in appropriate stormwater management structures designed in accordance with federal stormwater management standards, MassDEP Stormwater Management Policy and Boston Water and Sewer Commission requirements. Water quality is anticipated to be improved on the Project Site.
Water Quality Policy # 3	Ensure that subsurface waste discharges conform to applicable standards.	The policy does not apply as the Project does not propose subsurface waste discharges.

3.4 Environmental Protection

The Project complies with the requirements of the WPA and the Boston Wetlands Ordinance ("BWO") as described below. The Project Site contains coastal wetland resource areas under the jurisdiction of the WPA and the BWO, and their implementing regulations. These resource areas include Coastal Bank, Land Subject to Coastal Storm Flowage (LSCSF), and Waterfront Area (BWO only). Activities within resource areas or their buffer zones require the filing of a Notice of Intent (NOI) with the Boston Conservation Commission (the "Commission") and the issuance of an OOC. Details of compliance with the resource area performance standards can be found in Chapter 4.

3.5 Consistency with Zoning and Planning

This section describes the Project's consistency with the 100 Acres Master Plan, the PDA Master Plan, the SBWMHP, the Fort Point Channel Watersheet Activation Plan and the City of Boston's Resilient Fort Point Channel Infrastructure Project. Additional details can be found in Chapter 1 of the ENF.

3.5.1 100 Acres Master Plan

The Project Site is located within the area subject to the 100 Acres Master Plan and PDA Master Plan. Development of the Project Site is expected to complete the development of the PDA Master Plan parcels located along the Fort Point Channel waterfront. The 100 Acres Master Plan and PDA Master Plan reflect a multi-year planning process, involving landowners, developers, City of Boston agencies, members of the South Boston/Fort Point community, elected officials, and other interested parties. These planning documents have been prepared and updated to develop a plan for growth and development within the 100 Acres area, accounting for existing and planned infrastructure capacity such as utilities, open spaces, streets, and public transit facilities.

The 100 Acres Master Plan and PDA Master Plan serve as the planning basis for dimensional and use regulations, public realm improvements, and design guidelines for the Project Site and other portions of the area governed by the PDA Master Plan. They both envision the Fort Point Channel area as a lively, dense urban neighborhood, inclusive of activated public space and public realm areas and supporting arts and culture as well as waterfront activation, located between the Downtown, the South Boston Waterfront and other nearby areas. The 100 Acres Master Plan and PDA Master Plan's public realm plans seek to strengthen connectivity within the immediate area as well as broader access to the waterfront.

3.5.2 PDA Master Plan

As described in Chapter 1 of the ENF, the Project Site is included in the "Boston Redevelopment Authority Master Plan for Planned Development Area No. 69, South Boston/The 100 Acres," (the "PDA Master Plan"), approved January 10, 2007, and amended six times. The PDA Master Plan sets forth the permitted uses, maximum density (floor area ratio), maximum building heights, and other development regulations for the Project Site. It identifies permitted uses at the Project Site as "Industrial/Commercial Mixed Use," which allows uses that include office, research and development, retail, service, entertainment, restaurant and recreational, cultural, community, and banking uses. The underlying zoning at the Project Site is the Restricted Manufacturing subdistrict of the South Boston Neighborhood District (the "District"), which District is established under and governed by Article 68 of the Boston Zoning Code and is modified by the PDA Master Plan.

The PDA Master Plan allows for an aggregate floor area ratio (FAR) of 3.7 across the portions of the PDA Master Plan site comprising Parcels G1 through G8, i.e., the G Parcels, which include the Project Site, the site of the 15 Necco Street project, which has been permitted for up to 316,100 SF of GFA, and the 244-284 A Street project, which has been permitted for up to 1,098,292 SF of GFA, allowing up to 485,610 SF of GFA for development on the Project Site. The PDA Master Plan identifies the maximum height of Parcel G8 to be 150 feet and the maximum height for Parcel G7 to be 100 feet, which Building Height limits are also in accordance with the SBWMHP. The PDA Master Plan also contemplates that ground floor uses at the Project Site will contain publicly accessible uses and identifies certain open space and infrastructure requirements.

The Proposed Project complies with the zoning requirements. It will contain approximately 150,610 fewer square feet of GFA (approximately 31 percent less area) than is allowed under the currently existing PDA Master Plan, while proposing a building solely on Parcel G8 with a maximum Building Height of 150 feet, and foregoing building development on Parcel G7. Instead, Parcel G7 will comprise approximately 1.5 acres of public realm including publicly accessible open space, providing an activated amenity area along the Fort Point Channel waterfront that is in excess of the 0.43-acre open space and public realm requirement per the approved PDA No. 69. An amendment to the PDA Master Plan and approval of a PDA Development Plan for the Project are anticipated to be completed concurrent with Article 80 Large Project Review.

3.5.3 Fort Point Channel Watersheet Activation Plan

The BPDA's 2002 FPCWAP envisioned a Fort Point Channel the provides truly public and enjoyable destinations for families and residents in the Boston area. The plan provides a blueprint for the development of new uses and public structures that will make the Fort Point Channel a great civic space. It is specifically identified in the SBWMHP as a reference to be used for implementing the

required amplifications, and the SBWMHP includes a section (Appendix 1, Section 6.4) that provides more detailed information.

The FPCWAP divides the channel into three areas for planning purposes. The Project Site is within the "Seawall Basin," which extends from the Summer Street Bridge south to the Dorchester Avenue Bridge. The Seawall Basin is identified as a well-protected waterway that can support a wide variety of recreational small boat activities including rowing, canoeing, kayaking, paddleboats, model boat activities, special events including races, and other cultural and artistic programming. Over the past twenty-plus years since the plan was drafted, much of it has been implemented. Figure 3.6 depicts the SBWMHP Amendment Composite Watersheet Implementation Plan.

3.5.3.1 Open Space Network Elements

As noted in Table 3-5 above, the FPCWAP and SBWMHP require implementation of four specific open space network elements on the Project Site. The Project includes all four of these elements as described below. Please note that boating dock locations are identified at other properties within the channel.

View Corridor

The Project should preserve the view of the watersheet from A Street along the south side of the Project Site.

The Project establishes two view corridors to the watersheet. Binford Street, which is located on the north side of the Project Site and is shared with the adjacent redevelopment at 244-248 A Street, is currently used by the adjacent neighborhood to access the waterfront. It will be a pedestrian-friendly street hosting public art and shade trees, segueing into a plaza and connecting to the Harborwalk. A second view corridor, also referred to herein as the "arcade," will be provided on the Project Site's south side from Necco Street across the publicly accessible open space.

Water Vista

A vista of the channel should be provided at the end of the view corridor.

The northern section of the Harborwalk on the Project Site will be 4-feet wider than the required 18 feet and will be designed as a viewing area providing a water vista. The landscape design incorporates a meandering path from the arcade to the Harborwalk and waterfront, preserving an unencumbered view corridor.

Harborwalk

The Harborwalk should connect effortlessly to other pedestrian systems and be universally accessible from other public ways, bridges, adjacent land uses and redevelopment sites; provide unobstructed access along the Fort Point Channel and to adjoining open space; universally accessible and connected to vertical access to the watersheet and docking facilities at key points along the Fort Point District South; embrace the universal design principles to not only meet accessibility code requirement but also to create an environment that welcomes people of all ages and abilities throughout individual Harborwalk sections and at the water's edge; and Incorporate the City's standards and Harborwalk signage requirements.

The Harborwalk portion of the Project has been designed to connect to the segment proposed on the adjacent parcel at 244-248 A Street by traversing the Project Site landward on the diagonal at an

elevation of 18.5 BCB, wrapping around P&G/Gillette's pump house property directly on the waterfront adjacent to the Project Site (Figure 3.2). On the 232 A Street site, the minimum width of 18 feet will be provided at the southern and northern ends to tie into adjacent dimensions and an increased width will be provided across the Project Site. This diagonal segment will be 22 feet wide, consisting of a 10-foot cycle track and a 12-foot pedestrian way. The Harborwalk will also extend up to the off-site pump house, so that if it were removed in the future, a Harborwalk connection directly along the waterfront could be constructed.

South Bay Harbor Trail

The Project Site should accommodate this trail system, which is a 3.5-mile pedestrian and bicycle trail connecting Ruggles Station, Lower Roxbury and the South End to Fort Point Channel and ultimately out to Fan Pier.

The Project accommodates and improves the South Bay Harbor Trail by constructing a segment of multiuse path as well as a segment of cycle track landward of the multiuse path along and near the waterfront. The proposed on-site cycle track will connect to Necco Street, where the adjacent redevelopment is planning to include a cycle track.

3.5.3.2 Landside Public Realm Uses

The Project also contributes to the implementation of the FPCWAP by creating landside public realm uses that support many of the watersheet activation objectives. The types of uses and interior space needs envisioned in the FPCWAP include:

1. Locations to support and provide services associated with boat landings;
2. Storage space for seasonal or year-round needs for water-based activities;
3. Restaurants or active uses that attract people to the waterfront;
4. Interpretive or wayfinding facilities;
5. Rental locations for kayaks or small boats;
6. Changing rooms for the South Bay Harbor Trail network; and
7. Other watersheet or public access network amenities.

Of these, the Project will include:

- Publicly accessible restrooms for use by boaters, cyclists and the transient public;
- Interior dragon boat storage (exact storage locations to be confirmed as design progresses);
- FPAs that will attract people to the waterfront;
- Wayfinding facilities;
- A drinking fountain station; and
- Spaces for public art.

3.5.4 City of Boston's Resilient Fort Point Channel Infrastructure Project

The City of Boston's *Coastal Resilience Solutions for South Boston* identified the need for district-scale flood protection measures along the Fort Point Channel to reduce current and future flood damage and provide protection to nearby populations, infrastructure, utilities, and structures in the 100 Acres

Master Plan area. In response, the BPDA has developed a preliminary design for "The Resilient Fort Point Channel Infrastructure Project," (the "Infrastructure Project") which was subject to MEPA review under EEA No. 16514 (a final certificate on the Environmental Notification Form issued on March 4, 2022). The Infrastructure Project involves the planned construction of approximately 2,090 linear feet of mixed berm and floodwall structures along the portion of the Fort Point Channel between Necco Street and Dorchester Avenue, as well as installation of outfall backflow prevention flap gates, and installation of interim deployable flood protection barriers within public ways. The BPDA has secured a FEMA FY18 Pre-Disaster Mitigation Grant to design and construct portions of the proposed berm. Preliminary design is complete and the Infrastructure Project is moving into the design development phase.

The Project Site falls within the area of a section of the proposed berm (Segment 2 and a small portion of Segment 1), and as such is being designed to incorporate measures consistent with the level of protection specified in the FEMA grant application and tie into the elevations of the adjacent properties using the Project Site's associated share of the Federal funding. The grant application identifies the segment of the berm that traverses the Project Site as having a minimum design elevation of 14.6 feet NAVD88 (21.1 BCB), which is based on the modeled elevation of the BH-FRM's 100-year flood event in 2070 plus 1.3 feet of freeboard.

The Project will functionally construct Segment 2 of the Infrastructure Project by creating a continuous line of protection at elevation of 15.0' NAVD88 by elevating land and creating a berm along the waterfront.

3.6 License Term Request

The Applicant respectfully requests extended terms of 65 years. The Applicant believes that an extended term is warranted given the expected useful life of the facilities intended to be licensed, bolstered by the robust flood resilience and adaptive capacity measures that will be incorporated, and the significant public benefits that the Project will deliver.

3.6.1 Resilient Development

Resilience to future flooding due to sea level rise has been a driving factor in the design of the Project. The existing Project Site is low-lying, with elevations ranging from 9.2 to 15.0 NAVD88 (15.7 to 21.5 BCB). As described in Section 3.5.4 above, the City has identified the need for continuous flood protection along the Fort Point Channel shoreline at elevation 14.6 NAVD88 (21.1 BCB), with the ability to increase protection to elevation 16 NAVD88 (22.5 BCB), thereby providing freeboard (i.e., a margin of safety) above the base flood elevation of 19.5' associated with the 4.2 feet of sea level rise anticipated to occur by 2070. The Project Site is also long and narrow, with only approximately 170 linear feet of shoreline. In addition, the Project Site is constrained by the below-grade I-90 tunnel, an emergency vehicular access easement and associated tunnel headhouse structure, and the presence of P&G/Gillette's pump house directly on the waterfront adjacent to the Project Site.

The Project meets these challenges by immediately raising the Project Site to create a continuous line of protection at elevation 15.0 NAVD88 (21.5 BCB) behind the Harborwalk, which will range in elevation from 10.0 NAVD88 (16.5 BCB) to 12 NAVD88 (18.5 BCB). The small triangle of land seaward of the Harborwalk (the approximate site of the existing Binford Street Park) will be at elevation 12 NAVD88 (18.5 BCB), which will protect it from coastal flooding up to the 2030 0.2 percent annual chance flood event as well as from tidal flooding beyond 2050. Behind the line of protection, the

Project Site grades will remain at 15.0 NAVD88 (21.5 BCB) before sloping down to meet A Street, which is at an average elevation of 9 NAVD88 (15.5 BCB).

The Project Site includes areas within the City of Boston's Zoning Article 25A *Coastal Flood Resilience Overlay District* (CFROD). In compliance with zoning, the proposed building will be designed with occupied floors and critical building infrastructure at least one foot above the SLR-BFE for non-residential uses (i.e., 20.5' BCB), with a target elevation of 21.5'. All critical infrastructure will also be raised above the SLR-DFE to provide additional protection against the future 2070 1 percent annual chance flood event.

3.6.2 Significant Public Benefits

The Project provides significant public and community benefits within filled tidelands. The Project will:

- Provide significant new open space exceeding the Chapter 91 requirements by approximately 79 percent;
- Enhance waterfront access by creating publicly accessible connections to and through the Project Site to the Fort Point Channel;
- Provide publicly accessible restrooms and a drinking water station;
- Provide additional amenities to the boating public including interior dragon boat storage;
- Provide FPAs in excess of the Chapter 91 requirements;
- Provide resilience to changing climate conditions not only related to flooding as described above, but also to extreme heat. The Project will replace impermeable site surfaces that contribute to the heat island effect with resilient landscaping, including new shade elements that will provide respite from the heat and more generally through the elimination of the second building planned for the Project Site per the PDA and SBWMHP;
- Install new sidewalks, bike lane connections, and a cycle track where none currently exist;
- Improve the Harborwalk and South Bay Harbor Trail;
- Provide opportunities for public art installations;
- Increase street grid connectivity by extending Necco Street through the Project Site; and
- Improve the quality and quantity of stormwater.

3.6.3 Implementation of the Fort Point Channel Watersheet Activation Plan

The Project will serve as a vehicle for implementing the FPCWAP as facilitated by the SBWMHP. It will construct specific open space network elements as well as desired landside public realm uses as described in detail in Section 3.5.3 above.

3.7 Public Benefit Determination

The Project is subject to the 2007 statute "An Act Relative to Licensing Requirements for Certain Tidelands" (2007 Mass. Acts Ch. 168, sec 8) because it includes historically filled former tidelands and requires the filing of an Environmental Impact Report. The filled former tidelands constitute "Landlocked Tidelands," which are not subject to any requirement for a Chapter 91 license or the use and dimensional regulations otherwise applicable under Chapter 91. For such Landlocked Tidelands,

the Secretary of EEA is required to make a "public benefits determination", which finds that the proposed project has substantial public benefits. At the conclusion of MEPA review for the Project, the Secretary of EEA will need to issue a separate public benefits determination finding that the Project will have positive public benefits. The act requires the Secretary to consider the following when making a Public Benefit Determination:

- Purpose and effect of the development;
- The impact on abutters and the surrounding community;
- Enhancement of the property;
- Benefits to the public trust rights in tidelands or other associated rights;
- Community activities on the development site;
- Environmental protection and preservation;
- Public health and safety; and
- General welfare.

The following sections describe how the Project provides appropriate public benefits and is adequately protective of the Public Trust rights inherent in tidelands.

3.7.1 Purpose and Effect of the Development

The purpose of the Project is to redevelop a surface parking lot and small open space located on the waterfront into a large publicly accessible waterfront open space with a new building including ground floor FPAs and upper floors available for office, laboratory, and research uses.

The Project will provide substantial direct and indirect public benefits. The anticipated effects of the development include the addition of substantial passive and programmed open space, improved accessibility and multi-modal access, greater resiliency to climate change impacts, and architecture and landscape architecture that is sensitive to the surrounding context.

3.7.2 Impact on Abutters and Community

The Project will result in a substantial net benefit to the community by converting a waterfront surface parking lot into publicly accessible open space and FPAs, that will be fully integrated into the surrounding community.

The Project's planning principles and design goals fundamentally focus on building community among the existing and future resident population and the surrounding South Boston community by knitting the neighborhood back together, creating a vibrant and safe walkable environment, introducing new public spaces and amenities, and providing opportunities for community gathering and programming.

Abutters and the community will also benefit from the Project as it will help complete the district scale flood protection measures that will protect the area from the impacts of sea level rise, and it will provide interior space for civic uses.

3.7.3 Enhancement of the Property

The Project will enhance the property by providing improvements to the street network, streetscape, landscaping, appearance, functionality, stormwater management system, and resiliency, both on the Project Site and in the adjacent upland neighborhood. The planned improvements will contribute to the neighborhood with a pedestrian scale and a welcoming, vibrant atmosphere. The Project Site will be visually attractive, safe, clean and well-kept, enhancing all of these elements when compared to the existing conditions.

3.7.4 Benefits to the Public Trust Rights in Tidelands or Other Associated Rights

The Project will improve the public realm within filled tidelands. The traditional public trust rights in tidelands – the rights to fish, fowl, and navigate – have not previously been supported throughout the Project Site, as it has primarily served as a parking lot. The modern expression of these traditional public trust rights will be realized by improving public access to and enjoyment of the Project Site and the adjacent Fort Point Channel.

3.7.5 Community Activities on the Project Site

The Project will result in a substantial net improvement to community activity at the Project Site through the provision of approximately 1.5 acres of public realm including publicly accessible open space and other public realm improvements within filled tidelands for passive enjoyment that complements nearby existing and proposed open spaces. It will also result in approximately 17,341 SF of FPAs within jurisdictional filled tidelands, and an additional approximately 8,513 SF of other publicly accessible areas within landlocked tidelands, that will draw the community to the Project Site (Figure 3.3).

3.7.6 Environmental Protection/Preservation

The Proponent is committed to redeveloping the Project Site in accordance with all applicable local, state, and federal environmental protection regulations. Table 1-2 in Chapter 1 provides a list of the local, state, and federal permits or approvals anticipated to be required.

The Project includes a variety of measures intended to mitigate potential environmental impacts, including reducing stormwater runoff and improving water quality, mitigating net new wastewater flows, installing fixtures to reduce water usage, implementing a robust Transportation Demand Management program, reducing energy consumption and greenhouse gas emissions, and mitigating construction period impacts. It will also provide protection from current and future flooding both on the Project Site and in the adjacent neighborhood.

3.7.7 Public Health and Safety

The Project will promote public health and safety through implementing a site design which provides safe and accessible facilities. Improvements include improved open space, landscaping, accessible pathways, and appropriate lighting to provide a safe well-lit environment for workers, visitors, and patrons. To mitigate air quality impacts that could impact public health, the Project will aim to reduce vehicular trips through implementation of a Transportation Demand Management program.

The Proponent is committed to delivering a building targeting a Gold level Leadership in Energy and Environmental Design ("LEED") certifiable project as well as a Fitwel certifiable project. The Project will comply with the City's pending proposed energy code as well as its opt-in provisions, minimizing its operational carbon footprint. Compliance with the City of Boston's EV Readiness Standards with regards to the Project's below-grade parking as well as inclusion of bicycle parking.

In the context of carbon emissions reduction and energy efficiency, the building will employ high-efficiency air-handling units, heating plant, and cooling plant equipment. The building will be ventilated by air-handling units and exhaust air-handling units with hydronic energy recovery. Ventilation for office spaces will be decoupled from heating & cooling for these spaces. Plant equipment generating hot water for heating will be electrified using air source heat pumps. Space will be allocated for additional air source heat pumps to allow for progressive electrification. Backup heating will be provided with high efficiency gas boilers. Cooling will be provided by water-cooled chillers producing chilled water.

3.7.8 General Welfare

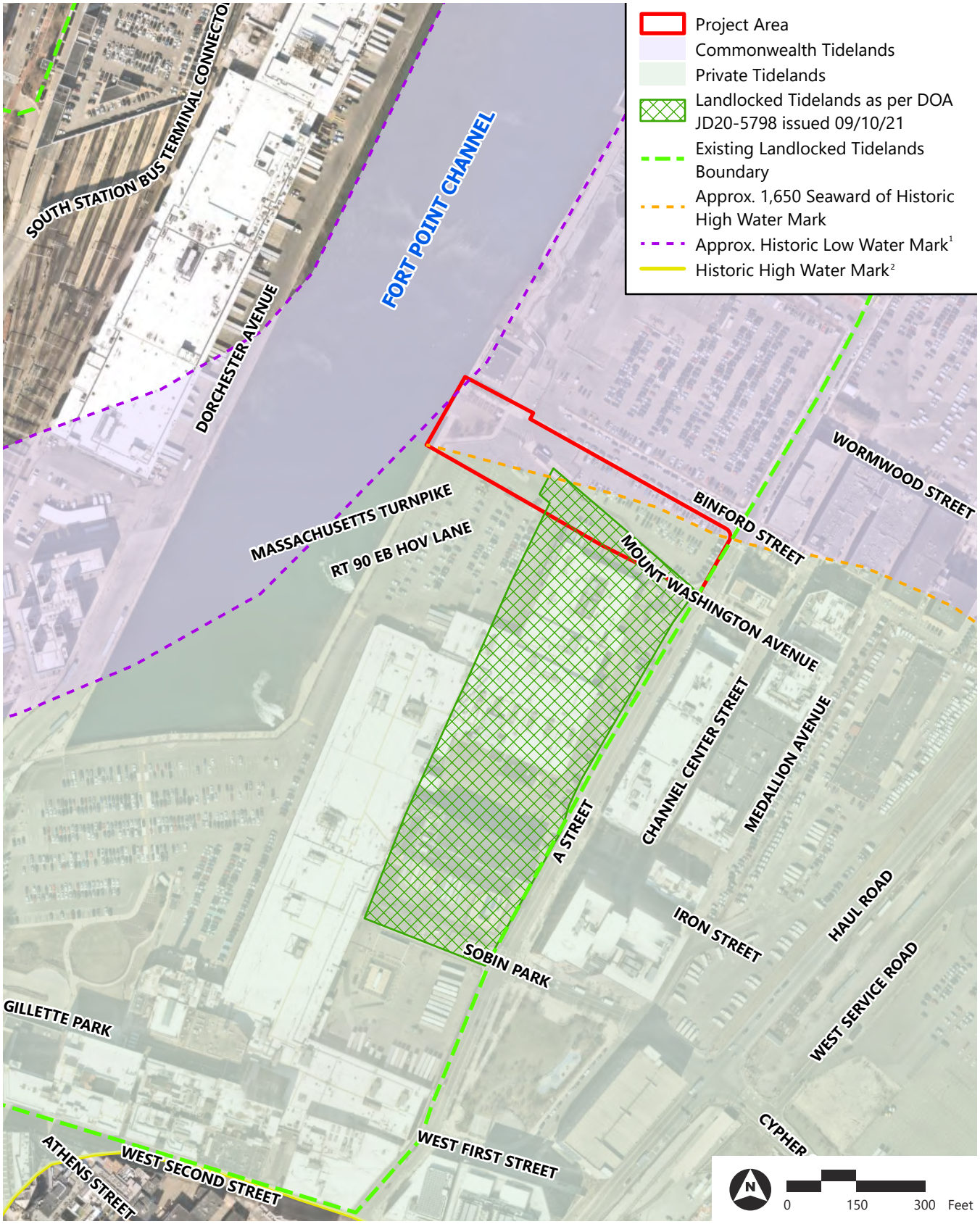
The Project will protect the general welfare by creating a development that benefits the entire Boston community. It will help meet the community need for usable open space, improve connections to the waterfront, and incorporate sustainable measures that reduce environmental impacts.

3.7.9 Protection of Groundwater

The Project Site is located in the Boston Groundwater Conservation Overlay District and is therefore subject to, and will comply with, the City of Boston's Zoning Code Article 32. Construction of the Project is not expected to have adverse short- or long-term impacts on groundwater conditions.

Figure 3.1: Existing Conditions

232 A Street | Boston, Massachusetts



Source: VHB, MassGIS, MapJunction

1: 1817 Boston Harbor Chart Wadsworth via Mapjunction.com, Accessed 7/6/2023

2: MassGIS Data: Tidelands Jurisdiction (M.G.L. c.91) Database, Accessed 7/6/2023

Figure 3.2: Proposed Conditions

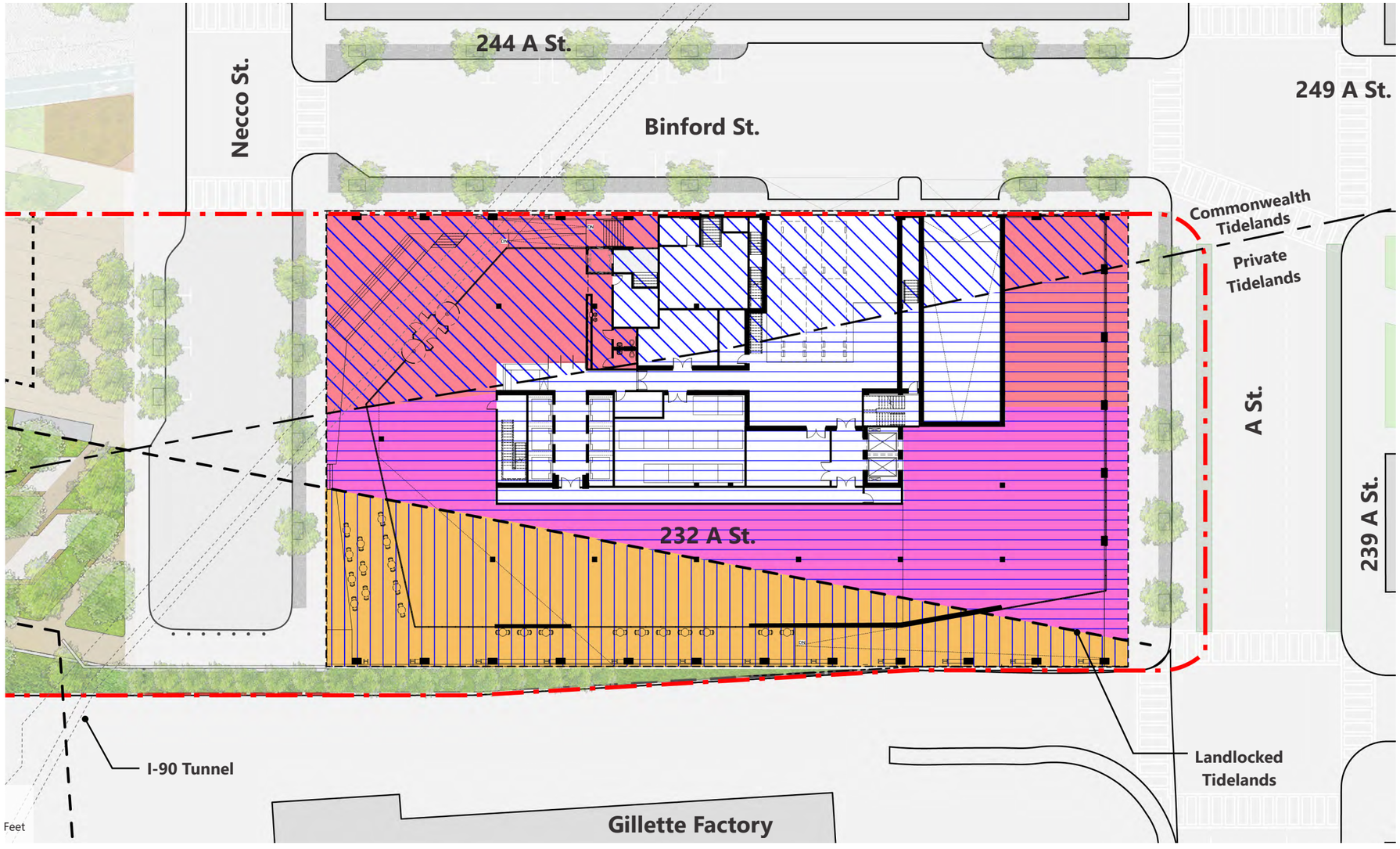
232 A Street | Boston, Massachusetts

Figure 3.2 Proposed Conditions Site Plan

Preliminary plans and subject to change

Figure 3.3: FPA Compliance Pathway

232 A Street | Boston, Massachusetts



This is a graphical representation of tidelands jurisdiction and pathway to compliance, actual locations of the committed square footage might differ to promote user viability and maximize layout.

Floor Plan Legends

Tidelands Legend

- Building footprint within Commonwealth Tideland
- Building footprint within Private Tidelands
- Building footprint within Landlocked Tidelands

- UFAS
- Required FPA
- Voluntary FPA
- Other Publicly Accessible Areas

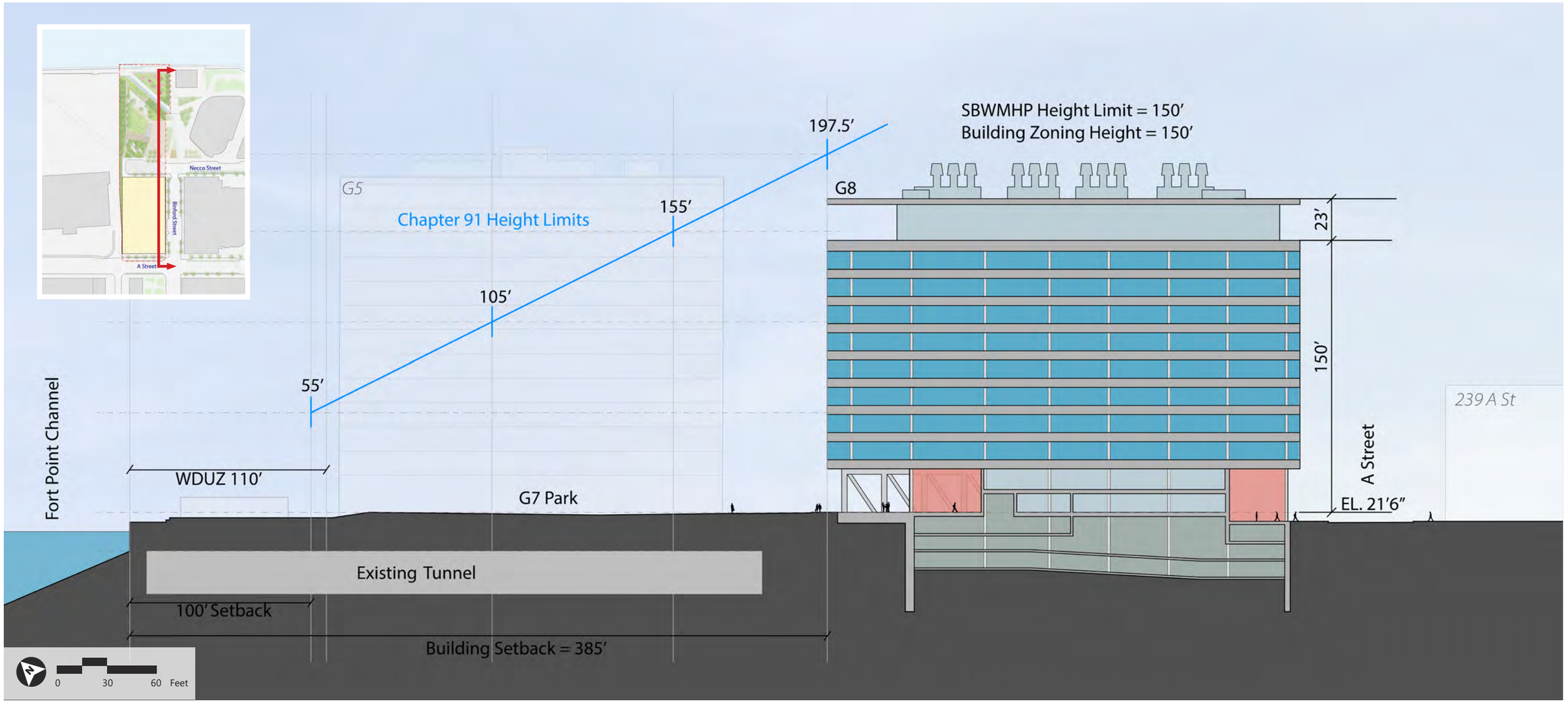
Figure 3.3: Ground Floor Use Plan

	Building Footprint (SF)	Required/ Allowed Use (SF)		Provided Use (SF)		FPA Delta (SF)
		FPA	UFAS	FPA	UFAS	
Commonwealth Tidelands	10,490	7,868	2,623	6,012	4,478	-1,856
Private Tidelands	19,501	0	0	11,329	8,172	+11,329
Total	**29,991**	**7,862**	**2,623**	**17,341**	**12,650**	**+9,473**

Notes: All areas are approximate. Refer to Figure 3.3.
FPA = Facility of Public Accommodation
UFAS = Upper Floor Accessory Services as defined in 310 CMR 9.02.

Figure 3.4: Cross Section

232 A Street | Boston, Massachusetts



Floor Plan Legends

- FPA
- Tenant
- Building Support
- Parking

Figure 3.4 Cross Section (EW cut) through lobby

Figure 3.5: Open Space Plan

232 A Street | Boston, Massachusetts

Figure 3.6: SBMHP Amendment Composite Watersheet Implementation Plan

232 A Street | Boston, Massachusetts

Source: South Boston Municipal Harbor Plan Amendment Figure A1-1.

4

Wetlands and Stormwater

This chapter describes the Project's potential impacts and mitigation measures to be considered for work in wetland resource areas and stormwater management. This chapter also describes compliance with performance standards under 310 CMR 10.25(3) through (7) and 10.30(3) through (8). Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Wetlands and Stormwater' section of the EEA Secretary's Certificate on the ENF with references to specific DEIR sections in **bold**:

Wetlands

- A detailed description of impacts on wetland resource areas and the floodplain, and how the project will comply with the relevant performance standards in the Wetlands Regulations. **(Section 4.3)**
- Provide cross-sections showing where the wetlands boundaries are located, proposed wetland alteration, or grading and drainage plan(s) with details. **(Figures 4.1 - 4.3)**
- Clarification as to whether the proposed alteration to Land Subject to Coastal Storm Flowage (LSCSF) involves filling or temporary alteration. **(Section 4.3.2)**
- A narrative description of the existing and proposed flow of floodwaters at the Project Site based on the existing topography, and proposed site grading and filling, respectively. **(Section 4.4)**
- An explanation of how the Project will not increase the elevation or velocity of floodwaters, and/or cause floodwater to be displaced, deflected, or reflected onto adjacent properties or public and private ways. **(Section 4.4)**
- A description of work proposed in Land Under the Ocean (LUO) and Coastal Bank and quantification of the alteration proposed (and restored, if applicable) for each, including a description of how the project will comply with performance standards of the Wetland Regulations. **(Section 4.3.1 and 4.3.2)**

Stormwater

- A copy of the Project Stormwater Management Report and supporting computations, including a draft of the Operation and Maintenance ("O&M") Plan. **(Appendix B)**
- An expanded narrative explaining the stormwater treatment train(s) design in compliance with Stormwater Standards and the highest level of treatment possible. **(Sections 4.5.2 and 4.5.6 and Appendix B)**

- Provide clarification as to how groundwater recharge will be achieved given the Project Site is partially within several Massachusetts Contingency Plan (MCP) sites with designated MassDEP Release Tracking Numbers (RTNs). **(Section 4.6)**

4.1 Key Findings

The key impact assessment findings related to wetlands and stormwater systems include:

- The Project will impact wetland resource areas, including Coastal Bank, Land Subject to Coastal Storm Flowage, and Waterfront Area that are jurisdictional under the Wetlands Protection Act (WPA) and the Boston Wetlands Ordinance, and requires an Order of Conditions (OOC) from the Boston Conservation Commission, which will define mitigation requirements;
- The Project will comply with applicable performance standards;
- The Project will improve the stormwater management capacity of the Project Site to provide storm damage prevention and flood control;
- The Project will implement a portion of the BPDA's proposed Resilient Fort Point Channel Infrastructure Project and will tie into flood protection infrastructure on adjacent shoreline properties to create a consistent line of flood protection on the east side of the Channel;
- The Project will incorporate on-site stormwater best management practices (BMPs) and treatment systems, which will significantly improve the overall quality of stormwater runoff, reduce runoff volumes, and control peak rates of runoff in comparison to existing conditions. The Project is proposing to improve on site permeable conditions by replacing existing impermeable surface parking with permeable green space;
- The Project will include the construction of green infrastructure and infiltration systems that will be used to provide storage and promote infiltration via groundwater recharge. The Proponent will work with Boston Water Sewer Commission (BWSC) to evaluate green infrastructure elements capable of retaining the required 1.25 inches over the impervious area of the Project Site;
- The Project will comply with the applicable MassDEP Stormwater Management Policy and Standards to the maximum extent practicable and will improve both the quality and quantity of stormwater runoff from the Project Site compared to existing conditions; and
- The Project is not expected to result in any increased peak flows, pollutants, or sediments that would potentially impact the local storm drainage systems.

4.2 Regulatory Context

4.2.1 Wetlands Protection Act

The Project Site includes wetland resource areas under the jurisdiction of the Wetlands Protection Act ("WPA") and the regulations at 310 CMR 10.00, including areas constituting Coastal Bank, and Land Subject to Coastal Storm Flowage (LSCSF). Work to be performed within resource areas must be performed in compliance with an OOC issued by the Boston Conservation Commission. Work is not being proposed within LUO areas; in response to public comment and further review of physical site constraints, the dock element proposed at initial filing has since been removed.

4.2.2 Boston Wetlands Ordinance

In addition to the resource areas protected under the WPA, the Project Site impacts additional resource areas protected under Boston's Wetland Ordinance and Regulations at Chapter VII-I.IV, including the 25-foot Waterfront Area. A description of impacts to these resource areas as well as compliance with any performance standards must be included in the Notice of Intent (NOI).

4.2.3 EPA National Pollutant Discharge Elimination

The United States Environmental Protection Agency (EPA) requires that all projects that disturb greater than one acre of land obtain a permit for stormwater discharges through the EPA's 2017 National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) for Stormwater Discharges from Construction Activity. The Project's compliance with the CGP will be achieved by the following:

- Developing and implementing a Stormwater Pollution Prevention Plan (SWPPP);
- Completing, certifying, and submitting a Notice of Intent (NOI) to the EPA; and
- Complying with the requirements contained in the CGP.

Compliance with the CGP and its Standard Permit Conditions will be required of the site contractor and/or site operator.

4.2.4 MassDEP Stormwater Standards

In March 1997, MassDEP adopted the current Stormwater Management Policy to address non-point source pollution and published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was subsequently revised in February 2008. The Stormwater Management Standards are regulated under the Wetlands Protection Act Regulations at 310 CMR 10.05(6)(k) through (q). The Stormwater Management Policy prescribes specific stormwater management standards for redevelopment projects, including urban pollutant removal criteria for projects that may impact environmental resource areas.

4.2.5 Boston Water and Sewer Commission Site Plan Review and Coordination

All improvements and connections to BWSC infrastructure will be reviewed by BWSC as part of its Site Plan Review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts for water, sewer, and stormwater systems. In addition, as discussed further below, an existing BWSC-owned 72-inch drain/CSO within the Project Site conflicts with the proposed building footprint east of the I-90 Tunnel, and this portion of the drain/CSO pipe will need to be rerouted, which will require significant coordination with BWSC. The Proponent is committed to working with BWSC to determine a feasible route and a sequencing plan which will maintain service during construction.

4.2.6 Groundwater Conservation Overlay District (GCOD)

The City of Boston adopted a Groundwater Conservation Overlay District (GCOD), which is memorialized in Article 32 of the Boston Zoning Code, and is applicable within sections of the City in

order to protect wood pile foundations of buildings from being damaged by lowered groundwater levels. The purposes of the applicable zoning code article are to:

- Prevent the deterioration of and, where necessary, promote the restoration of, groundwater levels in the City of Boston;
- Protect and enhance the City's historic neighborhoods and structures, and otherwise conserve the value of its land and buildings;
- Reduce surface water runoff and water pollution; and
- Maintain public safety.

4.3 Wetlands

This section describes the wetland resource areas that are jurisdictional under the WPA, and the anticipated impacts to those resource areas as a result of the Project.

4.3.1 Coastal Bank

According to 310 CMR 10.30, coastal bank means the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland. Coastal banks are likely to be significant to storm damage prevention and flood control. Coastal banks that supply sediment to coastal beaches, coastal dunes and barrier beaches are per se significant to storm damage prevention and flood control. Coastal banks that, because of their height, provide a buffer to upland areas from storm waters are significant to storm damage prevention and flood control.

A Guide to the Coastal Wetlands Regulations, prepared by the Massachusetts Coastal Zone Management Office, indicates that the seaward boundary of the bank at the Project Site would be the landward edge of Land Under Ocean. It states that the landward boundary of a coastal bank is "the top of, or first major break in, the face of the coastal bank." At the Project Site, this point would be located directly behind the landward edge of the seawall.

The Project will permanently impact approximately 170 linear feet of coastal bank, which lies directly behind the existing seawall, through the reconstruction of the Harborwalk.

As per 310 CMR 10.30(6), when a coastal bank is determined to be significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, any project on such a coastal bank or within 100 feet landward of the top of such coastal bank shall have no adverse effects on the stability of the coastal bank. As per 310 CMR 10.30(1), the stability of the bank is defined as "the natural resistance of the bank to erosion caused by wind and rain runoff." Because the entire face of the bank is clad by the existing seawall, it is not subject to erosion caused by wind and rain runoff. The Project will not impact this existing condition.

4.3.2 Land Subject to Coastal Storm Flowage

According to 310 CMR 10.04, LSCSF means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater. As per the Federal Emergency Management Agency's (FEMA) currently effective Flood Insurance Rate Map (FIRM) panel 25025C0081J, the Project Site is within an AE Zone with a base

flood elevation (BFE) of 10 NAVD88 (16.5 BCB). As such, it is currently subject to flooding from the 1 percent annual chance coastal flood event.

A recent survey completed in 2023 shows that approximately 88,573 SF of the land within the Project Site is at or below elevation 10 NAVD88 and is therefore characterized as LSCSF (Figure 4.1). All of the LSCSF on the Project Site will be permanently impacted by the Project by replacing the existing paved parking lot with fill supporting pervious vegetated surfaces, impervious pedestrian and vehicular surfaces, and the proposed building.

The WPA regulations at 310 CMR 10.00 do not currently include performance standards for work in LSCSF. However, draft regulations are currently under consideration, and the City of Boston provides performance standards for this resource area in its Wetlands Regulations in the Code or Ordinances, Chapter VII-I.IV, Section XVII, F. *Redevelopment Within Previously Developed LSCSF*, wherein the Boston Conservation Commission may permit work or activity that constitutes a Redevelopment (i.e., work or activity within previously developed or degraded areas prior to December 19, 2019), provided it conforms to the following criteria:

- At a minimum, proposed work or activity shall result in an improvement over existing conditions of the capacity of LSCSF to protect at least one of the Resource Area Values described in Section XVII(A) (i.e., storm damage prevention, flood control, protection of wildlife and wildlife habitat, prevention of pollution, erosion and sedimentation control, and to mitigate the impacts of climate change) and adaptations to or mitigation against the impacts of SLR on the project and the area of the proposed work or activity;
  - The Project will improve the capacity of the Project Site to provide storm damage prevention and flood control, and to mitigate the impacts of climate change. It will do this by placing fill within LSCSF, thereby raising site elevations to reduce the area of land subject to the 1 percent annual chance flood event through 2070 and increasing pervious area on the Project Site.
- Stormwater management at the Project Site will be provided according to the performance standards established in 310 CMR 10.05(6)(k), as applicable to the proposed work or activity, including such performance standards as are applicable to proposed Redevelopment; and
  - Stormwater management will be provided in compliance with the DEP Stormwater Standards as described in Section 4.5.3 below.
- The proposed work or activity shall not inhibit any planned flood resilience, adaptation, or mitigation solutions and shall not inhibit the ability to enact such solutions in a timely and practical manner as referenced by Climate Ready Boston or any successor initiative of the City.
  - The proposed work at the Project Site will implement the flood resilience concepts that are planned for the Fort Point Channel (i.e., as part of the BPDA's *Resilient Fort Point Channel Infrastructure Project*), and also promote adaptation to future flooding through compliance with Article 25A of the Boston Zoning Code. When this solution is implemented along within the other planned resiliency solutions within South Boston, the Project Site will no longer be characterized as LCSF. The Project intends to further promote coastal resiliency by raising the elevation of a large portion of the Project Site.

The Project will protect the resource area values of LSCSF, i.e., storm damage prevention and flood control. However, the Project will result in the elimination of the resource area itself within the Project Site, as the Project Site's elevation will be raised, and it will no longer be subject to flooding during the current or future (2070) 1 percent annual chance flood event. Flood waters will be

controlled by confining them to the Fort Point Channel, which will prevent storm damage in the adjacent upland areas. This is consistent with the Resource Area Value described in Section XVII(A) of mitigating the impacts of climate change.

4.4 Flow Path Impacts

As described in the ENF for the *Resilient Fort Point Channel Infrastructure Project* (EEA No. 16514), while the planned improvements and raising of elevations will elevate the Project Site above the floodplain and block certain flow paths into a large area of the Fort Point/South Boston neighborhood, it is not expected to change the flood extent or depth, but will have minimal incremental impacts on the velocity of coastal flooding on adjacent properties that remain unprotected by these planned improvements. The Project Site is located within a highly developed, highly impervious, dense urban area, where floodplain functions are extremely limited. The proposed project will provide significantly greater storm damage prevention and flood control functions for the benefit of both the built environment and wetland resource areas than the existing floodplain would without the Project. A complete flood path analysis is provided in Chapter 7, Section 7.4.

4.5 Stormwater Management System

The Project is subject to the MassDEP Stormwater Management Standards regulated under the WPA Regulations and requires BWSC Site Plan Review and approval. Additionally, the Project is subject to the Green Infrastructure requirements of the BPDA Smart Utilities Policy, which requires 1.25 inches of stormwater runoff from proposed impervious area to be retained on-site.

The following section describes the existing storm drain infrastructure around the Project Site and describes how this infrastructure will service the Project in the future and how the Project will be designed to comply with the stormwater standards to the maximum extent practicable.

4.5.1 Existing Drainage Conditions

Under existing conditions, the Project Site is occupied by impervious parking areas, the headhouse for emergency access to the I-90 Tunnel, and a small porous landscaped park (Binford Street Park) at the west end of the Project Site. The existing Project Site is approximately 90 percent impervious. The Project Site is bordered by Fort Point Channel to the west, additional paved parking areas associated with the P&G/Gillette facility to the south, and by public concrete sidewalks and concrete pedestrian ramps on Binford Street and A Street to the north and east. The I-90 tunnel crosses under a large portion of the Project Site.

Based on the existing conditions survey and available record information, there is no evidence of existing stormwater quality treatment best management practices (BMPs) or infiltration/detention on the Project Site.

The majority of on-site surface runoff from the Project Site sheet flows to catch basins on-site which discharge to BWSC-owned infrastructure. Most of these catch basins connect to the existing 72-inch drain/combined sewer overflow (CSO) which runs west across the Project Site from a point near its southeast corner on A Street to an outfall in Fort Point Channel. A catch basin within the landscaped area near the Fort Point Channel connects to existing drain infrastructure within Binford Street, which

drains north to a second drainage outfall on Fort Point Channel. A small portion of the Project Site along the waterfront sheet flows directly into the Channel.

Per record information, as shown in Figure 4.2, the existing BWSC storm drain infrastructure adjacent to the Project Site includes the following:

- An existing 54-inch drain within A Street. This drain line flows in a southerly direction and turns west at the intersection of A Street and Mt. Washington Way, combining with an additional 42-inch x 36-inch drainage/CSO pipe to become the main 72-inch drain/CSO line.
- The aforementioned 72-inch drain/CSO which flows from a manhole within the entrance to the P&G/Gillette property across from Mt. Washington Way, northwest across the Project Site, within a BWSC easement. A regulator manhole and tide gate within A Street at Mt. Washington Way connect the 24-inch BWSC combined sewer line in A Street to the 72-inch CSO, where the sewer overflows during high intensity rainfall events. In normal conditions, sanitary sewage flows bypass the 72-inch CSO and continue south within the 24-inch combined sewer in A Street.
- An existing 12-inch drain within Binford Street which flows in a westerly direction. This eventually discharges into Fort Point Channel.

Groundwater level measurements obtained from instruments installed in the general area of the Project Site and monitored by the Boston Groundwater Trust have ranged from about 5 to 10 ft below Project Site grades, which corresponds to about El. 6 to El. 11 BCB in the Fill soils. Instrumentation installed by others in the deeper Glacial Deposits and Bedrock indicate groundwater levels in the range of about 10 to 11 ft below site grades, corresponding to about El. 5 to El. 6 BCB. For reference, the adjacent Fort Point Channel is a tidal water body with daily tides typically ranging from about El. 1 to El. 10 BCB.

4.5.2 Proposed Drainage Conditions

In order to address the City's stormwater management requirements and MassDEP's stormwater guidelines, the Proponent plans to incorporate on-site stormwater management and treatment systems which collectively are expected to improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to existing conditions. Additionally, the Project is expected to reduce peak runoff rates and volumes for various design storm events for the post-development condition as compared to the pre-development condition, including the 2-, 10-, 25- and 100-year design storms, as well as the 2070 100-year design storm as projected by the Resilient Massachusetts Action Team's (RMAT) Climate Resilience Design Standards Tool.

Stormwater runoff from proposed and modified impervious surface areas is expected to be treated using new infrastructure such as deep-sump, hooded catch basins and proprietary treatment devices to reduce the Total Suspended Solids ("TSS") concentrations to the maximum extent practicable, targeting 80 percent. The I-90 Tunnel beneath the Project Site limits the Project's ability to install infiltration systems; however, the Project intends to install groundwater injection wells in the limited area outside of the tunnel and building footprints in order to reduce peak runoff rates.

The Proponent will coordinate with BWSC on the design of any proposed connections and to ensure there is adequate capacity in the existing storm drain systems or combined sewer systems. A capacity analysis of the existing public infrastructure will be conducted as part of the BWSC Site Plan Review. Mitigation measures to be provided by the Proponent will also be agreed upon with BWSC once the

proposed design for the Project reaches an appropriate level of detail. The Project will also evaluate the use of Best Management Practices ("BMPs") during the BWSC Site Plan Review process.

The existing 72-inch drain/CSO conflicts with the proposed building footprint east of the I-90 Tunnel. This portion of the pipe will need to be rerouted, which will require significant coordination with BWSC. The Proponent is committed to working with BWSC to determine a feasible route and a sequencing plan which will maintain service during construction.

4.5.3 Preliminary Hydrologic Analysis

For the preliminary hydrologic analysis in both the existing and proposed condition, Fort Point Channel is designated as Design Point 1L. It is anticipated that all runoff from the Project Site will be routed to the Fort Point Channel.

Existing and proposed preliminary hydrologic data is provided in Tables 4-1 and 4-2 below.

4.5.3.1 Existing Conditions

In existing conditions, stormwater runoff from the majority of the on-site impervious areas within the Project Site flow overland and untreated to catch basins, which ultimately flow to the Design Point.

Table 4-1 Existing Conditions Hydrologic Data

Drainage Area	Discharge Location	Design Point	Area (Acres)	Curve Number	Time of Concentration (min)
EX1	Fort Point Channel	1L	0.170	89	5
EX2	Fort Point Channel	1L	0.276	91	5
EX3	Fort Point Channel	1L	1.932	98	5

4.5.3.2 Proposed Conditions

The Project will decrease the total impervious area on site by eliminating the existing surface parking lot and installing an additional landscaped open space area on the western portion of the Project Site, converting approximately 1.1-acres of the Project Site previously planned as building coverage under the approved PDA Master Plan and South Boston Municipal Harbor Plan to open space area. Existing site constraints, particularly the I-90 Tunnel below portions of the Project Site, prevent the use of infiltration BMPs across the majority of the Project Site. However, the Project proposes to utilize Stormceptor 900 (or approved equal) stormwater treatment cells in these areas (subcatchments PR2 and PR3 on Figure 4.3) where it is feasible to install them above the tunnel, in order to improve stormwater quality before discharging into the 72-inch CSO. The Project will review the feasibility of installing injection wells along the Project Site's A Street frontage. These injection wells will infiltrate stormwater runoff from the proposed building roof (subcatchment PR4), which will be collected in an approximately 42,000-gallon watertight storage tank located in the building basement. The tank will have pumps to control peak rates and an overflow connection to the 54-inch drainage main in A Street. The remaining proposed subcatchments on the perimeter of the Project Site will have flow patterns generally unchanged from existing conditions. Due to the Harborwalk and proposed berm, the area directly adjacent to the Channel (subcatchment PR1) will continue to sheet

flow into the Channel as in the current condition. However, the proposed increase in pervious cover results in lower peak flow rates across the Project Site compared to existing conditions.

Table 4-2 Proposed Conditions Hydrologic Data

Drainage Area	Discharge Location	Design Point	Area (Acres)	Curve Number	Time of Concentration (min)
PR1	Fort Point Channel	1L	0.088	98	5
PR2	Fort Point Channel	1L	0.477	93	5
PR3	Fort Point Channel	1L	0.632	93	5
PR4	Fort Point Channel	1L	0.842	98	5
PR5	Fort Point Channel	1L	0.078	96	5
PR6	Fort Point Channel	1L	0.164	80	5

4.5.3.3 Preliminary Hydrologic Results

The rainfall-runoff response of the Project Site under existing and proposed conditions was evaluated for storm events with recurrence intervals of 2, 10, 25, and 100 years. Rainfall volumes used for this analysis were based on the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 10.3, 24-hour storm event for Boston Logan International Airport Station; they were 3.14, 4.98, 6.12, and 7.88 inches, respectively. The Project Site was also analyzed under the 2070 100-year storm projection from the RMAT tool, which is 10.9 inches. Runoff coefficients for the pre- and post-development conditions, as previously shown in Tables 4-1 and 4-2 respectively, were determined using NRCS Technical Release 55 (TR-55) methodology as provided in HydroCAD.

Drainage areas used in the analyses were described in previous sections and shown on Figures 4.2 and 4.3. The HydroCAD model is based on the NRCS Technical Release 20 (TR-20) Model for Project Formulation Hydrology. Detailed printouts of the HydroCAD analyses are attached in Appendix B. Table 4-3 presents a summary of the existing and proposed conditions peak discharge rates.

Table 4-3 Peak Discharge Rates (cfs*)

Design Point	2-year	10-year	25-year	100-year	RMAT 100-year
Design Point: 1L					
Existing	7.19	11.69	14.47	18.75	26.07
Proposed	4.41	7.77	11.81	17.27	23.94

4.5.4 Preliminary Infiltration Calculations

The Project will be subject to the Green Infrastructure requirements of the City of Boston's Smart Utilities Policy, as it exceeds 100,000 square feet of proposed floor area. The Project plans to comply with the Smart Utilities Policy to the maximum extent practicable by infiltrating stormwater via injection wells where possible and using stormwater quality units to treat runoff over the I-90 tunnel where infiltration cannot be achieved.

The Project Site is approximately 2.41 acres and will be increased impervious cover by 0.45 acres (a 189 percent increase) as a result of the Project. 1.25 inches of stormwater over the proposed

impervious area yields a minimum infiltration volume of 8,291 CF per BWSC standards. As much of this stormwater volume as possible will be routed to injection wells on the east side of the Project Site. The exact design and infiltration rate of these wells will be determined as the design advances and once a full geotechnical study of the Project Site has been completed. In order to be conservative, the hydrologic analysis described above was conducted assuming that all runoff would be routed to Fort Point Channel, with zero infiltration through these injection wells. Actual peak flow rate reductions will likely be greater than reported in Table 4-3 when the injection wells are designed and taken into account.

Figure 4.3 shows a preliminary illustration of proposed stormwater systems on the Project Site. Note, the exact location and configuration of these systems will be determined as the design advances.

4.5.5 Low Impact Development/Green Infrastructure Measures

In accordance with the Smart Utilities Policy, the Proponent will work with BWSC to evaluate the potential for integrating green infrastructure elements with the goal of retaining a greater volume of stormwater runoff and increasing infiltration capacity for the Project. The existing I-90 Tunnel below the Project Site limits the Project Site's capacity to install green infrastructure. To be conservative, no Green Infrastructure measures were accounted for in the hydrologic analysis described above. However, the Project is working to maximize the pervious cover provided on the Project Site to reduce peak runoff rates in a low-impact fashion. The Project is considering the potential for pervious pavement on some portions of the Project Site, but a specific layout has not yet been determined, and this may not be included as design advances.

4.5.6 Compliance with DEP Stormwater Standards

Standard #1: *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

Compliance: The proposed designs are intended to comply with this Standard. No new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the proposed Projects.

The Proponent is exploring stormwater treatment cells, detention tanks and stormwater injection wells as potential stormwater control measures. It is the Proponent's intention to treat runoff through the options listed above prior to discharge into the public storm drain system.

Standard #2: *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

Compliance: The Project will be designed to comply with this Standard. The implementation of detention tanks and stormwater injection wells, as well as a reduction in impervious area, will help achieve rate reductions for the proposed Project.

Standard #3: *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types.*

Compliance: The Project will explore the use of recharge to the maximum extent feasible. The loss of annual recharge to groundwater by the Project will be limited, as the Project Site is significantly more impervious in the existing condition. To compensate for possible annual recharge loss, and to meet City stormwater requirements, recharge to groundwater will be a major component of the stormwater mitigation strategy.

Standard #4: *For new development, stormwater management systems must be designed to remove 80 percent of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when: Suitable nonstructural practices for source control and pollution prevention are implemented; Stormwater management best management practices (BMPs) are sized to capture the prescribed runoff volume; and Stormwater management BMPs are maintained as designed.*

Compliance: The Project will include BMPs intended to remove TSS. The Proponent intends to direct runoff from any paved areas on the Project Site that would contribute unwanted sediments or pollutants to the existing storm drain system to either deep sump, hooded catch basins before discharging into the City's stormwater system or a subsurface infiltration system. The Proponent is also exploring stormwater management systems, such as subsurface infiltration systems, that have the potential to remove 80 percent of TSS.

Standard #5: *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If, through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L.c. 21, §§ 26-53 and the regulations promulgated there under at 314 CMR3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Compliance: The Project Site will be occupied by a building and landscaping not associated with land uses with higher potential pollutant loads. The Project is expected to reduce pollutant loads when compared to existing conditions, which is generally surface parking.

Standard #6: *Stormwater discharge to critical areas must utilize certain stormwater management BMPs approved for critical areas. Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.*

Compliance: The Project does not discharge to a critical area.

Standard #7: *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

Compliance: The Project is considered a redevelopment project as it has been used primarily as surface parking lot and corresponding vehicular access prior to redevelopment.

Standard #8: *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

Compliance: Sedimentation and erosion controls will be incorporated as part of the design of the Project and employed during the various phases of construction. The contractor will be required to implement the measures.

Standard 9: *A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

Compliance: A draft of the Stormwater O&M Plan is included in Appendix B.

Standard 10: *All illicit discharges to the stormwater management system are prohibited.*

Compliance: There are no currently known illicit discharges. All proposed discharges will be reviewed by the BWSC to ensure consistency with this standard.

4.6 Potential Impacts to Groundwater

The Project falls within the Boston GCOD, governed by Article 32 of the Boston Zoning Code, which requires the Project to meet or exceed certain Article 32 requirements. As part of Article 32 compliance, the Project anticipates providing a groundwater recharge system designed to capture 1.25" of precipitation over the impervious area of the Project Site to the maximum extent possible, reviewed and approved by BWSC. The I-90 Tunnel beneath the Project Site limits the Project's ability to install infiltration systems; however, the Project intends to install groundwater injection wells in the limited area outside of the tunnel and building footprints in order to reduce peak runoff rates. The amount of impervious area infiltrated over the I-90 Tunnel will be dependent on their review. In addition to the recharge system, the Project will provide a Certification of "No Harm" letter, which will result in no negative impact on groundwater levels within the Project Site or adjacent lots. The Project is also proposing to reduce impervious area.

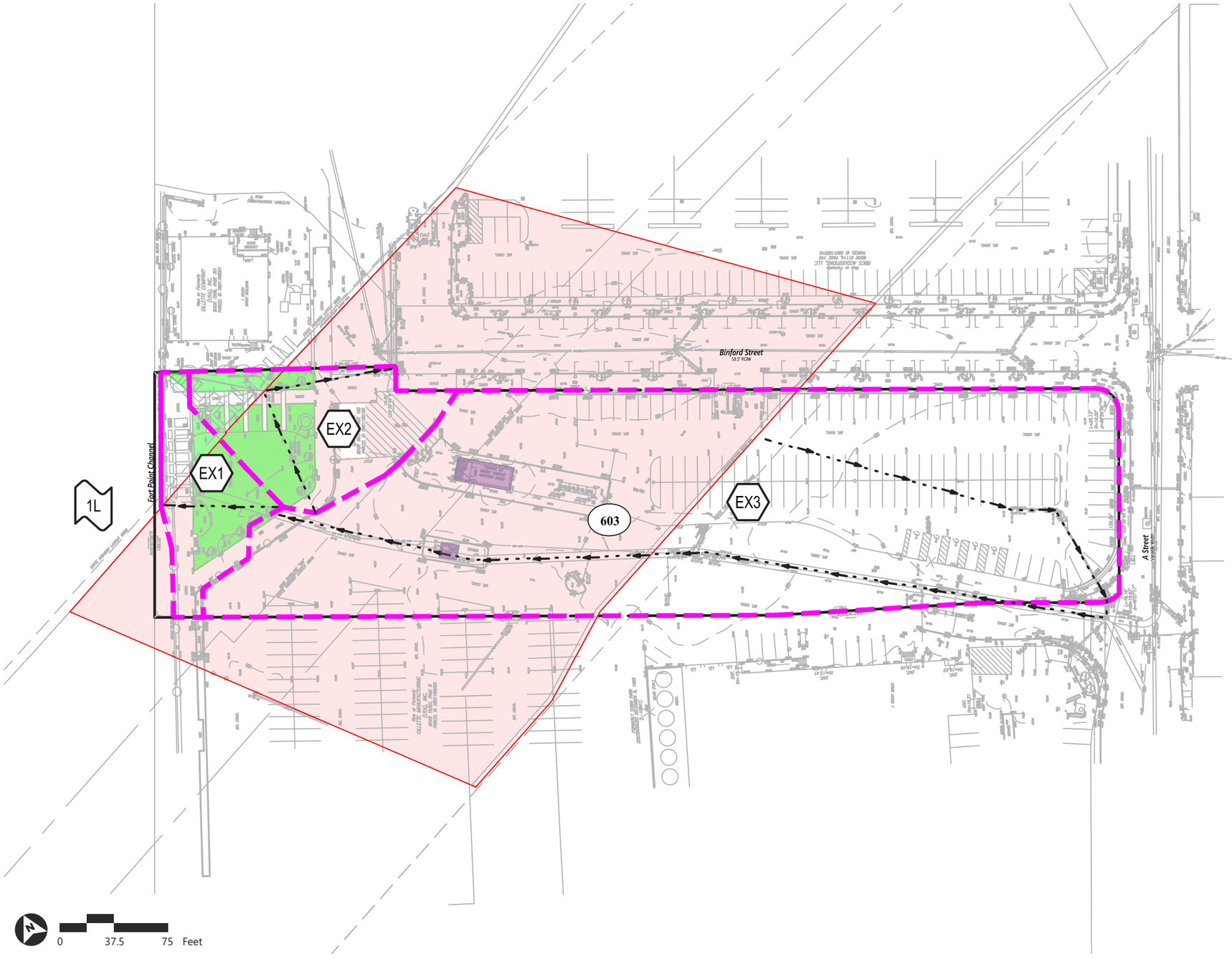
Figure 4.1: Land Subject to Coastal Storm Flowage

232 A Street | Boston, Massachusetts

Source: Nearmap Aerial 10/02/2023

Figure 4.2: Existing Drainage

232 A Street | Boston, Massachusetts



SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SOIL TYPE BOUNDARY

SCS SOIL CLASSIFICATIONS

- 603 — URBAN LAND, WET SUBSTRATUM

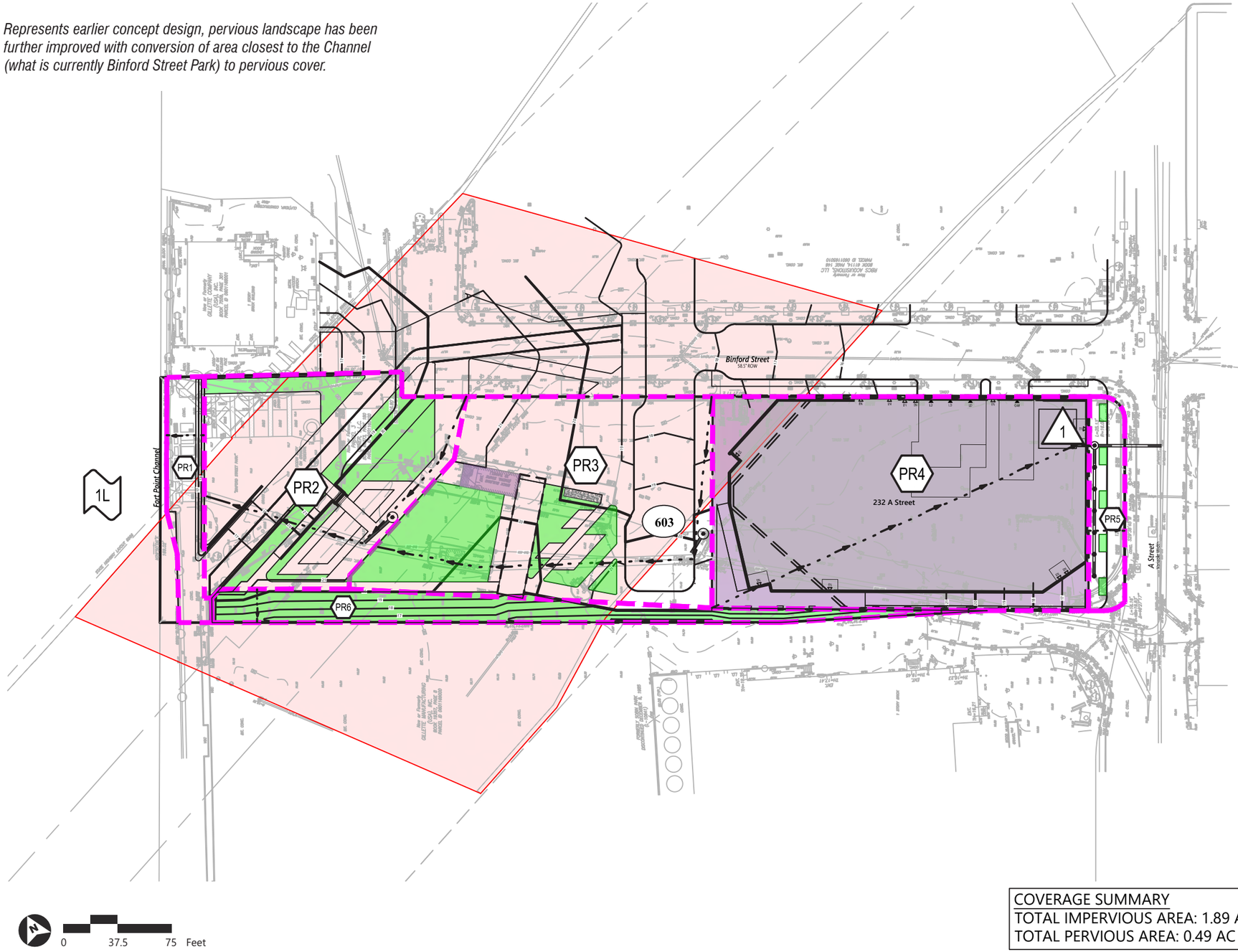
COVER

- PERVIOUS LANDSCAPE
- BUILDING COVER
- APPROXIMATE LIMIT OF MASSDOT TUNNEL BENEATH

Figure 4.3: Proposed Drainage

232 A Street | Boston, Massachusetts

Represents earlier concept design, pervious landscape has been further improved with conversion of area closest to the Channel (what is currently Binford Street Park) to pervious cover.



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COVER

- PERVIOUS LANDSCAPE
- BUILDING COVER
- APPROXIMATE LIMIT OF MASSDOT TUNNEL BENEATH

COVERAGE SUMMARY
TOTAL IMPERVIOUS AREA: 1.89 AC
TOTAL PERVIOUS AREA: 0.49 AC

0 37.5 75 Feet

5

Water and Wastewater

This chapter describes the Project's potential impacts and mitigation measures to be considered for wastewater generation and water use. The following utilities are discussed: sanitary sewage, domestic water and fire protection. Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Water and Wastewater' section of the EEA Secretary's Certificate on the ENF with references to specific DEIR sections in **bold**:

- A commitment to infiltration and inflow (I/I) removal and identify any mitigation projects or monetary contribution by the Proponent. **(Section 5.5.1)**
- Review of requirements associated with MWRA's permit and commitment to use oil/gas separators in the parking drainage systems. **(Section 5.2.3)**
- A description of the proposed infrastructure and connections to the BWSC's water and sewer systems and discussion on adequacy of the water and sewer capacity to serve the Project Site. **(Section 5.4)**
- A description of the proposed water conservation measures, including the feasibility of incorporating low-flow fixtures and/or the use of rainwater/gray water for irrigation and other purposes. **(Section 5.5.3)**

5.1 Key Findings

The key impact assessment findings related to infrastructure systems include:

- The water and wastewater utility systems that serve the Project Site are owned or managed by the Boston Water and Sewer Commission (BWSC); the Project is expected to connect to these existing systems, which are available in public streets adjacent to the Project Site in coordination with BWSC;
- Based on the current development program, the Project is estimated to generate a total of approximately 25,125 gallons per day (GPD) of sanitary sewage and will require approximately 27,638 GPD of potable water; and
- The existing city utility infrastructure systems are believed to be adequately sized to accept the demand associated with the development and operation of the Project.

5.2 Regulatory Context

5.2.1 Boston Water and Sewer Commission Site Plan Review

All improvements and connections to BWSC infrastructure will be reviewed by BWSC as part of the Site Plan Review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts for water, sewer, and stormwater systems.

5.2.2 Massachusetts Water Resources Authority Industrial Pretreatment Program

To reduce toxic discharges at their source, MWRA's Toxic Reduction and Control (TRAC) Department administers MWRA's Industrial Pretreatment Program under the Federal Clean Water Act. TRAC regulates industrial discharges in accordance with its Sewer Rules and Regulations and works with industries to encourage voluntary reductions in their toxic chemical use.

MWRA's regulations govern what can be discharged into the sewer system. The regulations must be approved by EPA, and published in the Massachusetts register.

5.2.3 Gas/Oil Separator Installation

The Massachusetts Uniform State Plumbing Code, 248 CMR § 10.00, and the Massachusetts Water Resources Authority (MWRA) Sewer Use Regulations, 360 CMR 10.016, require that the MWRA be notified of the installation of a new gas/oil separator in the MWRA Sewer District so that it may be inspected and approved prior to backfilling. The separator installation is subject to approval by both the municipal plumbing inspector and the MWRA.

5.3 Existing Infrastructure

5.3.1 Existing Sewer System

The BWSC owns and maintains sanitary sewer lines near the Project Site. As shown in Figure 5.1, this infrastructure includes:

- An existing 24-inch combined sewer line within A Street. This sewer line runs south and discharges to the 40-inch x 60-inch South Boston Interceptor which runs west through the P&G/Gillette property towards Gillette Park and Dorchester Avenue. However, at the intersection of A Street and Mt. Washington Avenue, the 24-inch combined sewer also connects to the 72-inch CSO by way of a tide gate in A Street;
- The existing 72-inch drain/CSO conflicts with the proposed building footprint east of the I-90 Tunnel. This portion of the pipe will need to be rerouted, which will require significant coordination with BWSC. The Proponent is committed to working with BWSC to determine a feasible route and a sequencing plan which will maintain service during construction; and
- Two existing 12-inch sewer lines within the BWSC easement through the south side of the property both of which appear to discharge into the 24-inch combined sewer within A Street.

No sewer connections to structures on the Project Site currently exist; existing sewage flow is considered to be 0 GPD.

5.3.2 Existing Water Supply System

The BWSC owns and maintains water mains near the Project Site. As shown in Figure 5.1, the infrastructure includes:

- An existing 12-inch high service water main on the west side of A Street, which feeds:
  - An existing 12-inch high service water line within the BWSC easement through the south side of the Project Site. This water line serves the adjacent P&G/Gillette building; and
  - An existing 12-inch high service water line within Binford Street.
- An existing 16-inch low service water main on the east side of A Street, which feeds:
  - An existing 16-inch low service water line within the BWSC easement through the south side of the Project Site. This water line serves the adjacent P&G/Gillette building; and
  - An existing 8-inch low-service water line within Binford Street.

There is an existing fire service line to the hydrant adjacent to the I-90 headhouse on the Project Site from the 12-inch main in Binford Street. There is an existing sprinkler line to Binford Street Park on the Project Site from the 8-inch water line within Binford Street. In addition, there is one existing hydrant within the Project's frontage along Binford Street.

5.4 Proposed Connections

5.4.1 Proposed Sewerage Flow and Connection

Table 5-1 below summarizes the proposed estimated sewer generation based on Massachusetts State Environmental Code (Title 5) generation rates. Based on the anticipated development program, the Proposed Project is estimated to generate approximately 25,125 GPD of new sanitary sewage flow.

Table 5-1 Project Sewage Generation

Proposed Use	Gross Floor Area	Generation Rate	Estimated Sewage Generation
Office/Lab	335,000 SF	75 GPD / 1,000 SF	25,125 GPD
		Total	**25,125 GPD**

Source: Generation Rates based on Title 5, 310 CMR 15.203 guidelines, and existing and proposed areas are approximate and assumed numbers. Lab uses have no identified sewer generation rate – as such office generation rate has been used for office/lab space.
GPD = Gallons per Day
SF = square feet
NOTE: All measurements are approximate

Changes to the proposed building program will vary the anticipated sanitary flow. Final flow estimates will be determined as the Project's design advances.

New sewer connections to BWSC infrastructure will be designed in accordance with BWSC design standards and requirements. Sewer services to the new building will be in accordance with BWSC's Site Plan Requirements and Site Review Process. Proposed utilities are depicted in Figure 5.2.

5.4.2 Proposed Water Demand and Connection

Domestic water demand is based on estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other use. Based upon standard sewage generation rates outlined in the MassDEP System Sewage Flow Design Criteria, 310 CMR 15.203, the Project will require approximately 27,638 GPD of water. The Proponent will continue to consider and evaluate methods to conserve water as building design evolves.

New water connections to BWSC infrastructure will be designed in accordance with BWSC design standards and requirements. Water services to the new building will be metered in accordance with BWSC's Site Plan Requirements and Site Review Process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and fire department connections to ensure conformity with BWSC and Boston Fire Department (BFD) requirements. The Proponent will provide for the connection of the meter to BWSC's automatic meter reading system. Fire protection connections on the Project Site will also need approval of the BFD.

5.5 Proposed Mitigation

5.5.1 Inflow and Infiltration (I/I) Mitigation

Following DEP and BWSC policy, projects that generate flows greater than the 15,000-gallon threshold are responsible for mitigating infiltration (I/I) at a ratio of 4:1 relative to the net-new wastewater generated. Since the Project is expected to generate an increase of net new sanitary flows of approximately 25,125 GPD, the Project must mitigate the impacts of the development by removing 100,500 GPD of I/I present in the existing sanitary sewer system. I/I is the component of flows in sanitary sewer systems that does not come from wastewater generated by building uses. I/I includes groundwater infiltration from leaking/broken sewer infrastructure as well as illicit stormwater connections from roof leaders and drainage infrastructure.

As design is advanced and approval is sought, BWSC will review and confirm appropriate mitigation volume and value of compensation to be paid to the I/I mitigation fund, or provided through alternative mitigation mechanisms, such as individual improvement projects. The Proponent is committed to working with BWSC to define appropriate I/I mitigation.

5.5.2 Sewer Discharge Mitigation

Laboratory discharges require a Sewer Use Discharge Permit from the MWRA's Toxic Reduction and Control (TRAC) Department. The Project is committed to filing appropriate documentation for a Sewer Use Discharge Permit as information of potential toxic discharges is available.

Oil/gas separators are required by the Massachusetts Uniform State Plumbing Code and the MWRA in parking garages and loading docks. The Project is committed to using oil/gas separators as

required and will notify the MWRA of the installation of a new oil/gas separator so that it may be inspected and approved prior to backfilling.

5.5.3 Water Conservation Measures

The Project will reduce potable water use for both sewage conveyance and irrigation needs. The development team plans to specify low-flow/high-efficiency domestic and commercial plumbing fixtures, including the following:

- 1.28 gallons per flush (gpf) water closet;
- 0.125 gpf urinal;
- 0.35 gallon per minute (gpm) lavatory faucet; and
- 1.5 gpm shower head.

Through the use of low-flow and high-efficiency plumbing fixtures, the proposed building is expected to reduce interior potable water use and sewage conveyance. WaterSense labeled fixtures will be specified where applicable. The flush and flow rates listed above are estimated to yield a 30 to 35 percent annual potable water use reduction.

The Project's at-grade landscape design and the vegetated areas will use a mixture of drought tolerant trees, shrubs, and groundcover that grow well in an urban environment. The irrigation system will be designed to be efficient and use significantly less potable water when compared to a conventional irrigation system.

Figure 5.1: Existing Utilities

232 A Street | Boston, Massachusetts

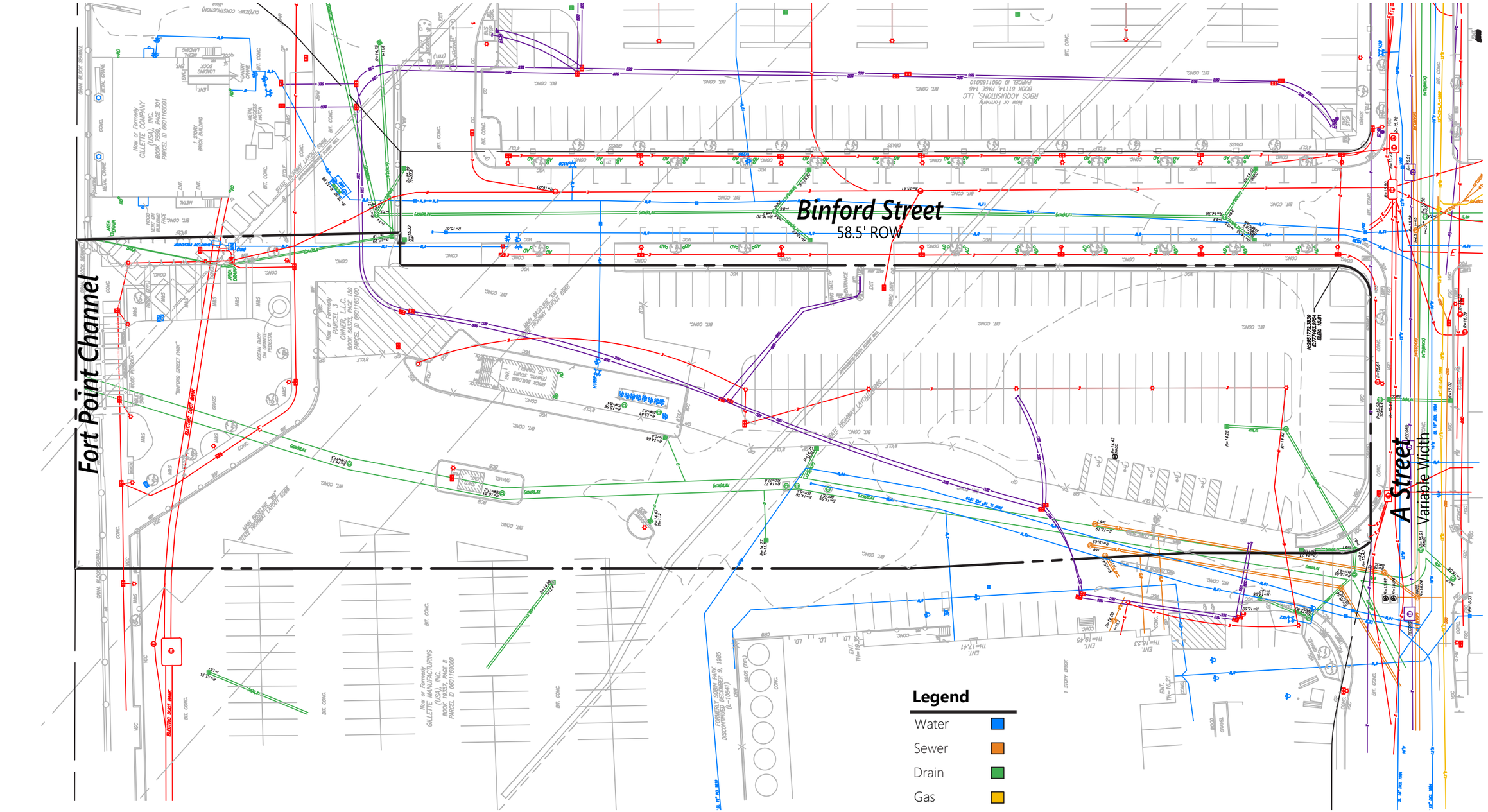
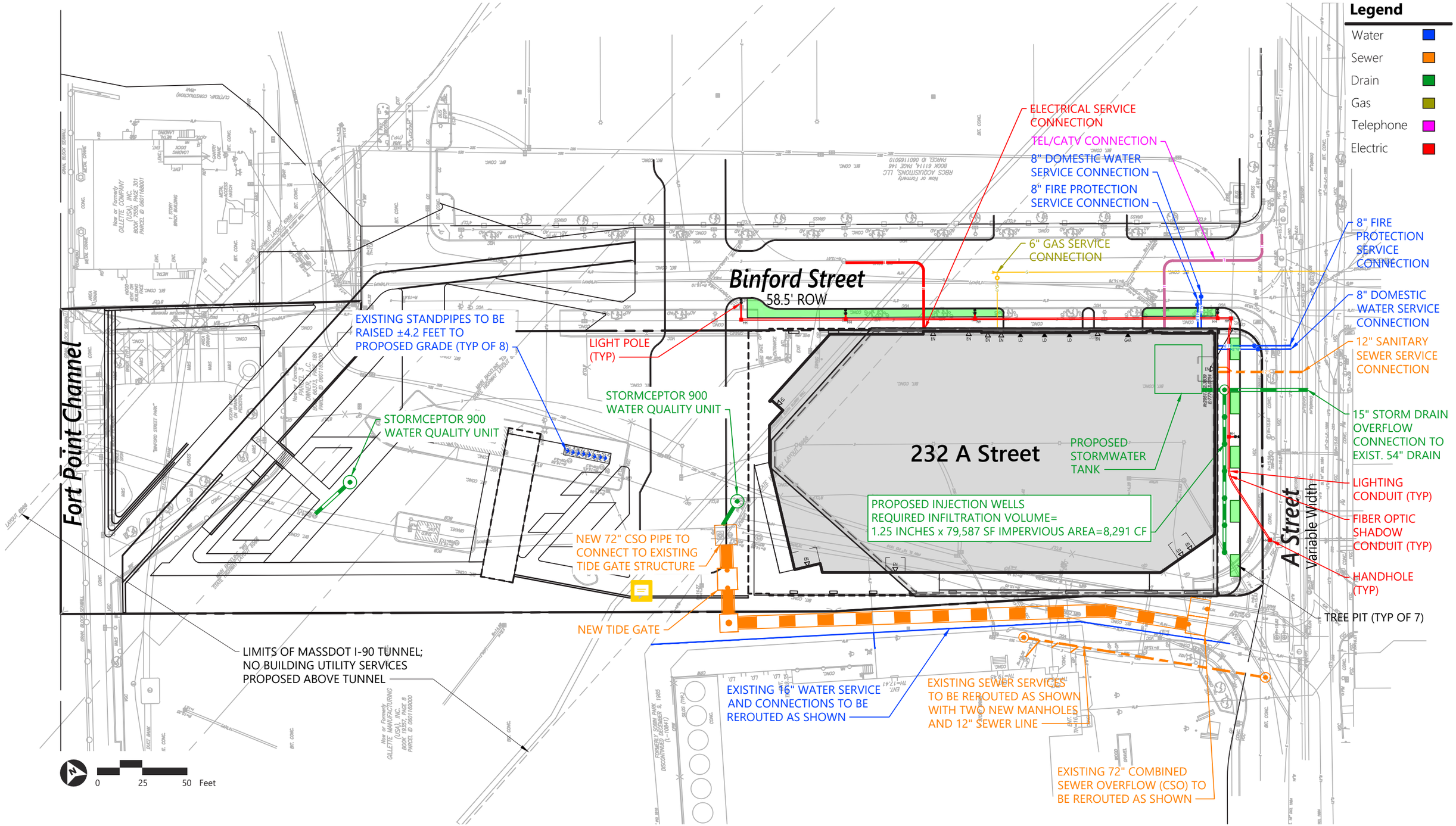


Figure 5.2: Proposed Utilities

232 A Street | Boston, Massachusetts



6

Traffic and Transportation

This chapter summarizes the Traffic Impact and Access Study (TIAS) that has been prepared for the Project. This TIAS incorporates comments received from the City of Boston, MEPA, and MassDOT on the previous PNF and ENF submissions for the Project.

Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Traffic and Transportation' section of the EEA Secretary's Certificate on the ENF with references to specific DEIR sections in **bold**:

- A comprehensive assessment of the transportation impacts of the Project. **(Sections 6.5 and 6.6)**
- Discussion on an integrated multimodal mitigation package intended to improve vehicular traffic operations while supporting other modes of transportations. **(Section 6.4.7)**
- An inventory and description of quality and condition of existing sidewalks and crosswalks within the TIAS study area ("Study Area") with a commitment to improvements in areas that are structurally deficient or not in compliance with current codes for accessibility. **(Section 6.3.2)**
- A detailed inventory of the bicycle network and likely travel routes for bicyclists within the Study Area considering the feasibility of expanding some of the existing routes or considering new routes to encourage bicycle travel in and around the Project Site. **(Section 6.3.6)**
- Crash analyses for all intersections in the Study Area and review of intersections identified as HSIP clusters to determine whether RSAs are required or if any further actions may be taken to improve safety. **(Section 6.3.8)**
- Analyses of total daily net new and unadjusted daily vehicle trips. **(Section 6.4.4)**
- Clarification as to whether the mode split figures represent appropriate transit trip generation and trip assignments for the Project. **(Section 6.4.4)**
- Trip distribution for the Project based on a gravity model or similar model with backup documentation to verify how the different percentages were calculated and assigned to the roadway network and the transit system. **(Section 6.4.5)**
- A parking analysis along with a commitment to electric vehicle charging accommodations. **(Section 6.4.6)**
- Methodology used to determine total parking needs of the Project. **(Section 6.4.6)**

- Recommendations with respect to the design and operation of the Project Site access and internal circulation to allow for safe ingress and egress to the Project Site. **(Section 6.4.7)**
- Capacity analyses of existing, future No-Build, and future Build conditions, particularly at state highway locations. **(Section 6.5.1)**
- Analysis of operations for future Build conditions with and without any improvements suggested to mitigate Project impacts. **(Section 6.6)**
- Operational analysis of existing traffic conditions at the intersections and roadways included in the Study Area. **(Section 6.6)**
- Illustrations depicting the peak hour 50th (average), 95th percentile queue lengths, and LOS for each lane group/turning movement at each Study Area intersection, for all analysis scenarios. **(Section 6.6.1)**
- Capacity analyses for the weekday morning and evening peak hours for existing and future conditions at the Project Site and Build with mitigation conditions for all intersections in the Study Area. **(Section 6.6.2)**
- Analysis of interactions and roadways where site traffic exceeds 100 vehicle trips per hour or 5% of existing volume. **(Table 6-8, Section 6.6.2)**
- Mitigation proposed to reduce the number of crashes along high crash corridors as well as any identified risks. **(Section 6.7)**
- A detailed TDM Plan with specific commitments. **(Section 6.7.4)**
- Proposed TMP for the Project with the goal of evaluating the adequacy of the mitigation measures and the effectiveness of the TDM program. **(Section 6.7.5)**

6.1 Key Finding and Benefits

Some of the major highlights and findings of the transportation study are outlined below. Each of these items is covered in more detail within the rest of the chapter.

- The scope and methodology of the study in this chapter is consistent with the proposed scope that was presented in the PNF and ENF submitted for the Project, is consistent with traffic studies prepared for other nearby projects, and incorporates comments received from City and State agencies on both submissions;
- The Project will provide a total of 125 off-street parking spaces in a structured garage on the Project Site;
- Existing conditions analyses were developed by conducting new traffic data at the Study Area intersections. The traffic counts were conducted in May 2023;
- Future conditions analyses included in the study take into consideration traffic volumes and improvements associated with other planned and/or approved developments in the vicinity of the Project Site throughout the Fort Point, Seaport, and South Boston neighborhoods;
- Trip generation estimates were developed based on data from the Institute of Transportation Engineers (ITE) Trip Generation Manual. The trip generation estimates were then adjusted to account for mode share (e.g. transit, walking, bicycling, vehicle,

etc.). The Project is expected to generate approximately 95 new vehicle trips during the weekday morning peak hour and approximately 100 new vehicle trips during the weekday evening peak hour when compared to the existing uses on the Project Site;

- The Project is expected to generate approximately 240 new transit trips during the weekday morning peak hour and approximately 235 new transit trips during the weekday evening peak hour;
- Intersection operations analyses show that construction of the Project will not trigger the need for any additional mitigation at the study locations;
- A traffic signal warrants analysis was conducted for the intersection of A Street at Binford Street to determine if anticipated traffic volumes warrant signalization. Based on the results of this analysis, it was determined that the future Build conditions traffic volumes are not anticipated to exceed the thresholds to warrant the installation of a traffic signal;
- A transit analysis was conducted and indicates that the existing public transportation services that serve the Project Site have sufficient capacity to handle the expected transit-related trips generated by the Project;
- The Project will upgrade the surrounding pedestrian infrastructure, including approximately 1.5 acres of publicly available open space and other public realm improvements on the Project Site that will l enhance pedestrian and bicycle connections to the South Bay Harbor Trail/Harborwalk and the surrounding roadway and bicycle infrastructure along Binford Street and A Street;
- The Proponent will incorporate TDM measures to help reduce the number of automobile trips to and from the Project Site;
- The Proponent will conduct a Transportation Monitoring Program (TMP) to evaluate whether post-development impacts of the Project are consistent with the forecast estimates and to track completion and maintenance of required mitigation measures;
- The Proponent will be required to obtain an Access Permit from MassDOT to satisfy the requirements of the Memorandum of Understanding (MOU) between MassDOT and The Gillette Company LLC for construction activity on the Project Site and over the Seaport Access Highway tunnel; and
- The Proponent will be required to prepare a Transportation Access Plan Agreement (TAPA) with the Boston Transportation Department (BTD) and a Construction Management Plan (CMP).

6.2 Study Methodology

The Study Area was developed based on an understanding of the area roadway system and the characteristics of the Project. The Study Area is consistent with the proposed scope that was presented in the ENF and PNF that was prepared for the Project and includes intersections along A Street, Congress Street, and Cypher Street. The study was conducted in accordance with the City of Boston and the Massachusetts Department of Transportation (MassDOT) Traffic Impact Assessment guidelines.

The study framework can be broken down into the following four stages:

- The first stage involved a preliminary review to understand the Project's transportation characteristics to develop the Study Area;
- The second stage involved an assessment of existing traffic conditions in the Study Area and included an inventory of roadway geometry, observations of traffic flow, and collection of daily and peak period traffic counts;
- The third stage involved developing future traffic conditions with and without the Project and were projected to a seven-year planning horizon and analyzed. The future traffic conditions consider a general background growth rate and traffic expected to be generated by planned development projects in the area. Specific travel demand forecasts were evaluated for the Project along with future traffic demands due to expected traffic growth independent of the Project. The traffic analysis identifies existing and projected future roadway capacities; and
- The final stage of the study evaluated the impacts of the Project to identify mitigation measures to address deficiencies.

6.3 Existing Conditions

Evaluation of the transportation impacts associated with the Project requires a thorough understanding of the existing transportation conditions in the Study Area including roadway geometry, traffic controls, daily and peak hour traffic flow, and traffic safety data.

As shown in Figure 6.1, the Project Site is bounded by Binford Street to the north, A Street east, the Fort Point Channel to the west, and commercial properties to the south. The Project will upgrade the surrounding pedestrian infrastructure, including approximately 1.5 acres of publicly available open space and other public realm improvements adjacent to Fort Point Channel that will enhance pedestrian and bicycle connections to the South Bay Harbor Trail/Harborwalk and the surrounding roadway and bicycle infrastructure along Binford Street and A Street.

The Project Site is located within a half-mile from both South Station and Broadway Station, providing access to the MBTA Red Line and bus lines at both locations and numerous Commuter Rail Lines and Amtrak service at South Station. The Project is situated to take advantage of excellent public transportation access to limit the need for vehicular travel to/from the Project Site.

The Project Site has excellent regional and local highway access, with easy access to I-90 and I-93 ramps and connections to Seaport Boulevard, Congress Street, Summer Street, and Dorchester Avenue.

6.3.1 Study Area

The Study Area includes the following 9 intersections, as shown in Figure 6.2. The intersections listed below are included in the analysis.

1. Congress Street at B Street (signalized)
2. Congress Street at Pier 4 Boulevard (signalized)

3. Congress Street at West Service Road Extension/Boston Wharf Road (signalized)
4. Congress Street at A Street (signalized)
5. A Street at Melcher Street (signalized)
6. A Street at Necco Street (unsignalized)
7. A Street at Binford Street (unsignalized)
8. A Street at Richards Street/Sobin Park (signalized)
9. Cypher Street at the South Boston Bypass Road (signalized)

The existing conditions evaluation consisted of an inventory of the traffic control, roadway, driveway, and intersection geometry in the Study Area and at the intersections listed above, the collection of daily and peak hour traffic volumes (from record sources, as well as new counts), and a review of recent crash history.

6.3.2 Roadway Geometry

Descriptions of the Sstudy Area roadways are included below. Figure 6.3 shows lane configuration and traffic control at the study intersections. The following sections describe the primary roadways that serve the Project Site.

6.3.2.1 Roadways

A Street is a two-way roadway connecting Dorchester Avenue in the south to Congress Street in the north. One travel lane per direction is provided with occasional exclusive turn lanes on intersections. Bike lanes are provided on most segments along the roadways, and it alternates from sharrow markings to bike lanes between street segments. On segments of A Street with sharrow markings, on-street parking is provided. Crosswalks are provided at all intersections along A Street and sidewalks are provided on both sides of the street.

Binford Street is classified as a local roadway that runs in an east-west direction between the Project Site and Wormwood Street. Binford Street is a two-lane roadway with no center line. West of A Street, on-street parking is allowed along both sides with a resident permit. East of A Street, on-street parallel parking is provided along the south side and 90-degree angle parking is provided along the north side. A sidewalk is provided along the south side of Binford Street east of A Street. There are no bicycle facilities on Binford Street.

Necco Street is classified as a local private roadway that runs in a general north-south direction with a bend in the road past the Necco Street lot entrance which changes the orientation to an east-west direction. Necco Street connects Melcher Street to the north and A Street to the south. Necco Street is a two-lane roadway with no center line and private parking on both sides. Sidewalks are provided on both sides. There are no bicycle facilities on Necco Street.

6.3.3 Study Area Curb Usage and Regulations

The curb usage throughout the Study Area varies and includes segments of on-street parking, handicap accessible spaces, areas where parking is not allowed, and several other types of regulations. The segment of A Street in the vicinity of the Project Site has both

metered and resident permit parking along the east side of the roadway, with parking restricted on the west side. Binford Street is also signed for residential permit parking. The parking and curbside regulations are shown on Figure 6.4 for a quarter-mile radius surrounding the Project Site.

6.3.4 Car and Bicycle Sharing Services

As shown in Figure 6.5, car-sharing spaces (*e.g.*, Zipcar) and bike-sharing (Bluebikes) stations are available within walking distance of the Project Site. The nearest Bluebikes stations are located at Channel Center and the Boston Convention and Exhibition Center.

6.3.5 Existing Conditions Traffic Volumes

Turning movement counts (TMCs) were conducted at the Study Area intersections during the weekday morning (7:00 – 9:00 AM) and weekday evening (4:00 – 6:00 PM) peak periods in June 2023. Traffic volumes within the month of June are higher than the average month conditions and were not adjusted to reflect seasonal variation. The traffic volumes were also balanced between intersections where appropriate. The 2023 Existing conditions weekday morning and evening peak hour traffic volume networks are presented in Figures 6.6 and 6.7.

6.3.6 Bicycle Facilities

The Project Site is served by bicycle lanes on many of the surrounding roadways. The City recently implemented buffered bicycle lanes along A Street between Binford Street and West 2nd Street.

Bicycle volumes were collected in coordination with the vehicle turning movement volumes and are shown in Figures 6.8 and 6.9 for the morning and evening peak hours, respectively. The peak hour bicycle volumes were around 100 bicycles per hour along A Street near the Project Site during the count period in June.

The Project is also served by the South Bay Harbor Trail and the Harborwalk, which are served by the same facility along the Fort Point Channel waterfront along the west side of the Project Site. The South Bay Harbor Trail is a 3.5-mile long pedestrian friendly urban bicycle trail that connects Fan Pier, Fort Point, Chinatown, the South End, and Roxbury. The Harborwalk is a larger system of trails and shared-use paths that will connect various piers, beaches, and shorelines around Boston Harbor between East Boston and the Neponset River when it is fully completed.

6.3.7 Pedestrian Facilities

The Project Site is served by sidewalks along most of the surrounding roadways and crosswalks at all Study Area intersections. Crosswalks and pedestrian signals are provided at all Study Area signalized intersections. Pedestrian volumes were collected in coordination with the vehicle turning movement volumes and are shown in Figures 6.10 and 6.11 for the morning and evening peak hours, respectively.

During peak times, the Study Area intersections experienced high volumes of pedestrians. The intersection of Congress Street at A Street and Thomson Place experienced the highest pedestrian volumes with 526 crossings during the weekday morning peak hour and 748 crossings during the weekday evening peak hour. Most other Study Area intersections also experienced well over a hundred pedestrian crossings during both peak hours.

6.3.8 Crash History

To identify vehicle crash trends in the Study Area, reported vehicular crash data for the Study Area intersections was obtained from MassDOT for the years 2015 through 2019. A summary of the MassDOT vehicle crash history is presented in Table 6-1.

The average crash rate for unsignalized intersections both in MassDOT District 6 is 0.52 crashes per million entering vehicles (MEV) and the statewide average crash rate is 0.57 crashes per mev. The average crash rate for signalized intersections for District 6 is 0.71 crashes per mev and the statewide average crash rate is 0.78 crashes per mev.

Using the data from the MassDOT database only, the calculated crash rates at the Study Area intersections were compared to the District 6 crash rates. The crash rates at all study intersections are well below the District 6 and state averages.

Additionally, the Study Area intersections were compared to the MassDOT Highway Safety Improvement Plan ("HSIP") map of the Commonwealth's top crash locations. The MassDOT data indicated that none of the Study Area intersections were identified as HSIP-eligible locations.

Table 6-1 2015-2019 Vehicle Crash Summary

	Congress Street at B Street	Congress Street at Pier 4 Blvd.	Congress Street at West Service Rd. Ext. and Boston Wharf Rd.	Congress Street at A Street	A Street at Melcher Street	A Street at Necco Street	A Street at Binford Street	A Street at Richards Street/ Sobin Park	Cypher Street at South Boston Bypass
Signalized?	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
MassDOT D6 Average Crash Rate	0.71	0.71	0.71	0.71	0.71	0.52	0.52	0.71	0.71
Calculated Crash Rate	0.22	0.00	0.04	0.00	0.03	0.00	0.00	0.05	0.07
Exceeds Average?	No	No	No	No	No	No	No	No	No
Year									
2015	2	0	1	0	0	0	0	0	0
2016	2	0	0	0	0	0	0	0	0
2017	4	0	0	0	0	0	0	0	1
2018	5	0	1	0	0	0	0	1	3
2019	4	0	0	0	1	0	0	1	1
Total	**17**	**0**	**2**	**0**	**1**	**0**	**0**	**2**	**5**
2020	1	0	0	0	0	0	0	0	0
Collision Type									
Angle	1	0	0	0	1	0	0	0	2
Head-on	1	0	0	0	0	0	0	1	0
Rear-end	3	0	1	0	0	0	0	1	1
Sideswipe, opposite direction	0	0	0	0	0	0	0	0	0
Sideswipe, same direction	7	0	1	0	0	0	0	0	2
Single Vehicle Crash	5	0	0	0	0	0	0	0	0
Not reported	0	0	0	0	0	0	0	0	0
Severity									
Fatal Injury	0	0	0	0	0	0	0	0	0
Non-Fatal Injury	6	0	0	0	1	0	0	1	1
Property Damage Only	11	0	2	0	0	0	0	1	4
Not Reported	0	0	0	0	0	0	0	0	0

Table 6-1 2015-2019 Vehicle Crash Summary (Continued)

	Congress Street at B Street	Congress Street at Pier 4 Blvd.	Congress Street at West Service Rd. Ext. and Boston Wharf Rd.	Congress Street at A Street	A Street at Melcher Street	A Street at Necco Street	A Street at Binford Street	A Street at Richards Street/ Sobin Park	Cypher Street at South Boston Bypass
Time of Day									
Weekday, 7:00 AM – 9:00 AM	0	0	0	0	0	0	0	0	0
Weekday, 4:00 – 6:00 PM	0	0	1	0	1	0	0	0	0
Saturday 11:00 AM – 2:00 PM	0	0	0	0	0	0	0	0	0
Weekday, other time	14	0	1	0	0	0	0	2	4
Weekend, other time	3	0	0	0	0	0	0	0	1
Pavement Conditions									
Dry	15	0	2	0	1	0	0	1	4
Wet	1	0	0	0	0	0	0	1	1
Snow	1	0	0	0	0	0	0	0	0
Not reported	0	0	0	0	0	0	0	0	0
Non-Motorist (Bike, Pedestrian)	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**

6.3.9 Public Transportation Service

The Project Site is easily accessible by a variety of public transit options and is within walking distance to South Station. Nearby public transportation services provide numerous connections to most other MBTA public transit services, allowing the Project Site to be reached by bus, subway, commuter rail, and Amtrak services.

The transit services that are available to the Project Site and their peak period frequencies/headways are summarized in Table 6-2. Transit services are presented graphically in Figure 6.12.

Table 6-2 Transit Services

Transit Line/Route	Origin/Destination	Approximate Peak-Hour Headway (min.)(mins)
Red Line	Alewife – Braintree/Ashmont	6
Silver Line 1 (SL1)	Logan Airport – South Station	9-17
Silver Line 2 (SL2)	Design Center – South Station	7-17
Silver Line 4 (SL4)	Nubian Station – South Station	11-20
Bus Route 4	North Station – Tide Street	30-40
Bus Route 7	City Point – Otis and Summer Street	6-11
Bus Route 11	City Point – Downtown Bay View	12-21
Commuter Rail Routes		
Framingham/ Worcester Line	South Station – Worcester	30
Needham Line	South Station – Needham Heights	60
Providence/ Stoughton Line	South Station – Wickford Junction/Stoughton	20
Franklin Line	South Station – Forge Park/Route 495	30
Middleborough/ Lakeview Line	South Station – Middleborough/Lakeview	60
Kingston Line	South Station – Kingston	60
Greenbush Line	South Station – Greenbush	60
Amtrak Routes		
Northeast Regional	Boston – Providence/Springfield – Hartford – New York – Washington – Roanoke/Richmond – Norfolk/Newport News – Virginia Beach	Varies
Acela	Boston – New Haven – New York – Philadelphia – Wilmington – Washington	Varies
Lake Shore Limited	Boston – Albany – Chicago	Varies

Source: MBTA Summer 2023 Schedule; Amtrak 2023 Schedule

6.4 Future Conditions

Traffic volumes in the Study Area were projected to the year 2030, which reflects a seven-year traffic-planning horizon. Independent of the Project, volumes on the roadway network under year 2030 No-Build conditions were assumed to include existing traffic and new traffic resulting from background traffic growth and proposed roadway and intersection improvements within the Study Area. The No-Build conditions were developed by applying an annual growth rate and incorporating traffic volumes from proposed projects in the vicinity of the Project Site.

6.4.1 Background Traffic Growth

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Multiple methods are generally used to estimate this growth. One method frequently employed is to identify estimated traffic generated by planned new major developments that would be expected to impact the project Study Area roadways and add them to the future conditions traffic network. An alternative procedure is to estimate an annual percentage increase and apply that increase to Study Area future condition traffic volumes. In this study, a half-percent annual growth rate was incorporated as part of the future analysis scenarios. This is consistent with the traffic study[1] conducted for the 244-284 A Street project, the site for which is located immediately north of the Project Site.

6.4.1.1 Site-Specific Growth

The traffic associated with other planned and/or approved developments near the Project Site was considered. Based on information from available BPDA and MEPA documents, the following proposed projects were identified in the area and are also shown in Figure 6.13:

- **244-284 A Street** - This project consists of the redevelopment of the existing Channelside parking lot into a three-building mixed-use development totaling approximately 1,098,292 SF including 370 residential units, 304,530 SF of office space, 389,371 SF of R&D space, and 60,319 SF of commercial space. Project-generated traffic volumes were obtained from the traffic study[2] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.
- **7 Channel Center** – This project consists of the construction of a new 99,500 SF office/R&D building. Parking for this project will be provided at the existing Channel

[1] *Draft Project Impact Report/Draft Environmental Impact Report EEA #16250 – 244-284 A Street*; Epsilon Associates, Inc., Howard Stein Hudson; May 17, 2021.

[2] *Draft Project Impact Report/Draft Environmental Impact Report EEA #16250 – 244-284 A Street*; Epsilon Associates, Inc., Howard Stein Hudson; May 17, 2021.

Center Garage. Site-generated traffic volumes were obtained from the traffic study[3] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.

- **2 Harbor Phase I & II –** This phase project is located at the intersection of Northern Avenue and Massport Haul Road on Parcels T and T1 of the RLFMP. The Phase I project consists of the demolition of the existing and abandoned warehouse on-site and construction of a ten-story, approximately 381,000 square foot building that will include laboratory, research and development, office, and supporting uses. The site will be supported by 325 vehicle parking spaces. Phase I of this project is currently under construction. Phase II of the project is currently in the planning stages and a definitive development program is not available at this time. Phase I of the project is currently under construction.
- **15 Necco Street** – This project consists of the construction of 316,100 SF of office/R&D space. Site-generated traffic volumes were obtained from the traffic study[4] prepared for this project and added to the future conditions traffic volume networks. This project is currently under construction.
- **80 West Broadway** – This project consists of the rehabilitation of the existing building on the site and the construction of a new eight-story office/R&D building. The project will contain approximately 114,900 SF of office/R&D space, six residential units, and approximately 10,200 SF of ground floor commercial space with 25 parking spaces provided in a below-grade garage. Site-generated traffic volumes were obtained from the traffic study[5] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.
- **87-93 West Broadway** – This project consists of the demolition of an existing gas station and the construction of a new building containing approximately 65 residential units, 88 parking spaces, and 9,000 SF of ground floor retail space. Site-generated traffic volumes were obtained from the traffic study[6] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.
- **99 A Street** – This project consists of the development of an approximately 210,000 SF life science building with 76 below-grade parking spaces. Site-generated traffic volumes were obtained from the traffic study[7] prepared for this project and added to the future conditions traffic volume networks. This project is currently under BPDA review.
- **246-248 Dorchester Avenue** – This project consists of the construction of a 159-room hotel with up to 20,000 SF of amenity space. Site-generated traffic volumes were

[3] *Notice of Project Change – 7 Channel Center*; Epsilon Associates, Inc., Howard Stein Hudson; June 2, 2022.

[4] *Notice of Project Change – 15 Necco Street*; VHB, Inc.; November 2019.

[5] *Expanded Project Notification Form – 80 West Broadway*; Epsilon Associates, Inc., Howard Stein Hudson; October 8, 2020.

[6] *Project Notification Form – 87-93 West Broadway*; MLF Consulting LLC, Howard Stein Hudson; June 21, 2017.

[7] *Project Notification Form – 99 A Street*; Epsilon Associates, Inc., VHB; March 21, 2019.

obtained from the traffic study[8] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.

- **270 Dorchester Avenue** – This project consists of the construction of 150 residential units and 6,590 SF of retail space. A total of 120 parking spaces will be provided on the site. Site-generated traffic volumes were obtained from the traffic study[9] prepared for this project and added to the future conditions traffic volume networks. This project is currently under BPDA review.
- **51 Melcher Street** – This project consists of the conversion of an existing 97,000 SF office building to life science use. Site-generated traffic volumes were obtained from the traffic study[10] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.
- **17 Farnsworth Street** – This project consists of the construction of a new 78,252 SF office/R&D building. Site-generated traffic volumes were obtained from the traffic study[11] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.
- **401 Congress Street** – This proposed project is located adjacent to Massport's South Boston Waterfront Transportation Center and MBTA's Silver Line Station. It is comprised of two separate buildings totaling 675,000 square feet: an 18-story office, retail, and public use building; and a two-story public use building. The proposed development will not have any on-site parking spaces. Site-generated traffic volumes were obtained from the traffic study[12] prepared for this project and added to the future conditions traffic volume networks. This project is currently under construction.
- **Commonwealth Pier –** This proposed project at 200 Seaport Boulevard involves the demolition of the existing building and constructing a new building in its place. The new building will remove the current exhibition space and reduce the amount of event space to approximately 56,400 square feet. The new building will contain 635,920 square feet of office space, an increase of 134,020 square feet from the existing building, and 45,240 square feet of retail space, an increase of 33,140 square feet. It will not create additional parking spaces. Site-generated traffic volumes were obtained from the traffic study[13] prepared for this project and added to the future conditions traffic volume networks. This project is currently under construction. This project has been approved by the BPDA.
- **Seaport Square (Blocks D, F, L-3, L-6, G, N)** – Seaport Square is a large planned development area that has been substantially completed, with a few remaining parcels

[8] *Project Notification Form – 248 Dorchester Avenue*; MLF Consulting LLC, Howard Stein Hudson; October 2, 2017.

[9] *Expanded Project Notification Form – 270 Dorchester Avenue*; VHB; October 2016.

[10] *Expanded Project Notification Form – 51 Melcher Street*; VHB; December 3, 2021.

[11] *Project Notification Form – 17 Farnsworth Street*; Epsilon Associates, Inc., Howard Stein Hudson; May 25, 2022.

[12] *Draft Environmental Impact Report/Draft Project Impact Report – 401 Congress Street*; VHB; February 18, 2020.

[13] *Environmental Notification Form/Project Notification Form – Commonwealth Pier Revitalization*; VHB; February 2019.

to be developed. Block D will consist of 425,000 SF of office space, 60,000 SF of retail space, and 5,000 SF of civic/cultural space; Block F will consist of 2,000 SF of civic use; Block G will consist of 620,000 SF of office/R&D space and 30,000 SF of retail/public civic space; Block L-3 will consist of 150,000 SF of office/R&D space, 260,000 SF of residential space, and 15,000 SF of retail space; Block L-6 will consist of 130,000 SF of office/R&D space, 210,000 SF of residential space, and 15,000 SF of retail space; and Block N will consist of 38,000 SF of retail/entertainment uses and 384,000 SF of office/R&D space. Site-generated traffic volumes were obtained from the traffic studies[14,15] prepared for this project and added to the future conditions traffic volume networks. These parcels within Seaport Square have been approved by the BPDA.

- **South Station Air Rights Project** – This phased project will consist of approximately 1.2 million SF of office space, 19,000 SF of retail space, up to 550 residential units, and a 360-room hotel located at South Station. Site-generated traffic volumes were obtained from the traffic study[16] prepared for this project and added to the future conditions traffic volume networks. This project is currently under construction.
- **L Street Station –** This proposed project, located at 776 Summer Street includes the redevelopment of a site formerly occupied by the Boston Edison L Street Power Station. The redevelopment is currently planned to be a 1.78 million square foot mixed-use development featuring residential, office, research and development, hotel, retail, and civic and cultural spaces. The current plans call for residential and hotel components with 750 units and 344 keys, respectively. This project will also add 750 parking spaces, 120 of which will be available to area residents on evenings and weekends. Site-generated traffic volumes were obtained from the traffic study[17] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.
- **601 Congress Street** – conversion of a 470,000 square foot existing office building to a combined life sciences laboratory/office building. The ground floor will be renovated and include a 3,000 square foot retail/restaurant space. Site-generated traffic volumes were obtained from the traffic study[18] prepared for this project and added to the future conditions traffic volume networks. This project has been approved by the BPDA.

[14] *Seaport Square 2022 NPC*; Howard Stein Hudson; March 2022.

[15] *Seaport Square 2019 NPC*; Howard Stein Hudson; September 9, 2019.

[16] *Notice of Project Change – South Station Air Rights*; Epsilon Associates, Inc,, Vanasse & Associates, Inc.; July 29, 2016.

[17] *Project Notification Form for Design Review – 776 Summer Street-Phase 1*; VHB; June 21, 2022.

[18] *Project Notification Form – 601 Congress Street*; Epsilon Associates, Inc., Howard Stein Hudson; May 17, 2021.

6.4.2 Proposed Infrastructure Improvements

The following projects have been identified as short to mid-term infrastructure improvements within the Study Area:

- **A Street Improvements** – As part of the 244-284 A Street project, the right-of-way along A Street will be widened to include wider sidewalks, protected bicycle lanes, on-street parking, and 11-foot travel lanes.
- **Necco Street** – As part of the 244-284 A Street Project, a segment of Necco Street will be constructed through that site and will intersect with the north side of Binford Street. The Necco Street segment through the 244-284 is proposed to have on-street parking and a two-way bicycle lane along the south side that will connect to the Project Site.
- **Cypher Street Extension/E Street Connection** – MassDOT is proposing to extend Cypher Street from D Street to E Street that will create an alternative heavy vehicle route that avoids using D Street and Summer Street. This project was identified in the Raymond L. Flynn Marine Park (RLFMP) master plan to be implemented as part of the long-term buildout of the South Boston Waterfront. This project is currently in the design stage. This project will not have a material impact on traffic volume patterns at the Study Area intersections. No additional traffic adjustments were incorporated into the future conditions analyses to account for this project.
- **Pier 10 Ferry Terminal Revitalization and Service Improvements** – This project will revitalize the Pier 10 ferry terminal with new service from Fan Pier or extend existing service between Fan Pier and Lovejoy Wharf.
- **Summer Street Bus Lanes Pilot Program** – The City of Boston recently commenced a pilot program that created bus lanes along Summer Street through the Seaport district. This project is currently ongoing and in operation.
- **South Boston Seaport Strategic Transit Plan** – The BPDA is currently in the process of conducting a comprehensive planning study to improve transit throughout the Seaport. The planning study is intended to develop specific recommendations for implementation to serve the future needs of the Fort Point, Seaport, and South Boston areas. A list of final recommendations has not yet been developed as part of this study. However, as part of the public outreach process, many potential recommendations have been presented in draft form. Additional information related to the planning study is provided later in this Chapter in Section 6.6. Specifically, the plan calls for increased bus and shuttle service and creating a dedicated transit corridor along A Street.
- **MBTA Bus Network Redesign** – The MBTA is in the process of optimizing the bus network to improve system efficiencies. The redesign of the bus network will impact Routes 4, 7, and 11. Routes 4 and 7 will be replaced by the proposed MBTA Bus Routes T7 and T12. MBTA Bus Route 11 will be realigned and will no longer travel along A Street.

6.4.3 No-Build Conditions Traffic Volumes

The 2030 No-Build Conditions traffic volumes were calculated using the aforementioned methodology. The resulting traffic volume networks are shown on Figures 6.14 and 6.15 for the weekday morning and evening peak hours, respectively.

6.4.4 Project Generated Traffic Volumes

Design year 2030 Build traffic volumes at the Study Area intersections were determined by estimated Project-generated traffic volumes and distributing these volumes throughout the Study Area. The estimated Project-generated volumes were added to the 2030 No-Build traffic volumes to develop the year 2030 Build traffic volume networks. The following sections describe the procedures used to develop the Build condition traffic volume networks.

6.4.4.1 Unadjusted Trip Generation

The rate at which any development generates traffic is dependent upon a number of factors such as size, location, and nature of the use. To estimate the trip-generating characteristics for a project, traffic projections are typically derived from trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. The trip generation estimates are then adjusted based on expected mode share to account for non-vehicular uses.

The Project involves the construction of an approximately 335,000 SF building with office/R&D uses and ancillary ground floor space for retail, restaurant, civic, and/or cultural uses.

Trip generation estimates were developed for the Project using ITE Land Use Codes (LUCs) 710 – General Office Building and LUC 760 – Research and Development. For the purpose of developing potential trip generation characteristics for the Project in this filing, and consistent with the estimates in the ENF, a split of 60 percent lab and 40 percent office uses was used.

6.4.4.2 Vehicle Occupancy Assumptions

Vehicle occupancy (the number of persons in a vehicle) are based on the Federal Highway Administration (FHWA) Summary of Travel Trends: 2017 National Household Travel Survey, which provides a national Average Vehicle Occupancy (AVO) typically used to convert unadjusted ITE trips into person trips. An AVO of 1.18 persons/vehicle for peak hour work-based trips (office and office/research trips) was used. A summary of estimated person trips for the weekday daily and peak-hour (AM and PM) periods is presented in Appendix C.

A similar methodology will be used later in the trip estimating process to convert adjusted vehicle person trips (the number of persons traveling in vehicles) to vehicle trips by applying local AVO characteristics to derive adjusted Project trips.

6.4.4.3 Mode Share and Vehicle Occupancy Assumptions

The anticipated mode shares for use by this Project are presented in Table 6-3. The mode shares were developed based on 2014 American Community Survey (ACS) census data and adjusted to align with the Go Boston 2030 aspirational mode shares.

Table 6-3 Anticipated Project Mode Shares

Use (Direction)	Vehicle	Transit	Walk/Bike/Other
Office/R&D	37%	53%	10%

6.4.4.4 Adjusted Trip Generation

To distribute trips among all the available modes of transportation, mode shares, outlined in Table 6-3, were applied to the external person trips. The resulting projected peak hour Project trips by mode are summarized in Table 6-4, which reflects the Project's mixed-use characteristics in an urban environment with proximate access to multiple transit options. As mentioned previously, the AVOs outlined above were used to convert person trips by vehicle into vehicle trips.

Table 6-4 Anticipated Adjusted Trip Generation

Time Period	Unadjusted Trips[1]	Person Trips[2]	Vehicle Trips[3]	Transit Trips[4]	Walk/Bike/ Other Trips[5]
AM Peak Hour					
In	330	390	120	205	40
Out	60	70	20	35	5
Total	***390***	***460***	***140***	***240***	***45***
PM Peak Hour					
In	60	75	25	40	5
Out	315	370	115	195	35
Total	***375***	***445***	***140***	***235***	***40***

1 Based ITE LUC 710 – Office and LUC 760 – Research and Development
2 Unadjusted trips converted to person trips based on 1.18 average vehicle occupancy rate
3 Based on a 37 percent vehicle mode share and adjusted with a 1.18 average vehicle occupancy rate
4 Based on a 53 percent transit mode share
5 Based on a 10 percent walk/bike/other mode share

6.4.4.5 Net New Vehicle Trips

The existing trips currently generated by the existing uses on the Project Site will be eliminated with the construction of the Project, and as a result the net increase in vehicle trips associated with the Project will be referenced accordingly with a credit calculation. Traffic counts were conducted at the existing driveway that serves the parking lot on the Project Site on Wednesday May 31 and Thursday June 1, 2023 to determine the number of trips currently being generated by the 125 existing parking spaces on the Project Site. Table 6-5 presents the existing and proposed Project-generated trip generation for the Project Site.

Table 6-5 Anticipated Vehicular Trip Generation

Time Period	Existing Vehicle Trips	Project-generated Vehicle Trips	Net New Vehicle Trips
AM Peak Hour			
In	45	120	+75
Out	0	20	+20
Total	***45***	***140***	***+95***
PM Peak Hour			
In	0	25	+25
Out	40	115	+75
Total	***40***	***140***	***+100***

The Project is expected to generate approximately 95 new vehicle trips occurring during the weekday morning peak hour and approximately 100 new vehicle trips occurring during the weekday evening peak hour. The Project is also expected to generate approximately 240 transit trips occurring in the weekday morning peak hour and approximately 235 transit trips in the weekday evening peak hour.

6.4.5 Trip Distribution

The directional distribution of the vehicular traffic approaching and departing the Project Site is a function of the land use, population densities, the location of employment, existing travel patterns, and the efficiency of the existing roadway system. The trip distribution was based on BTD's guidelines for South Boston, as categorized by the Access Boston 2000-2010[19] report. The trip distribution rates are based on the 2000 Census data based on place of employment. The Project-generated vehicle trips were assigned to the roadway network accordingly. Additionally, the trip distribution patterns are consistent with the traffic study prepared for the 244-284 A Street project.

A summary of the regional trip distribution patterns is presented in Table 6-6 and shown graphically in Figure 6.16.

Table 6-6 Anticipated Project Trip Distribution

		AM Peak Hour	
Route	**Direction**	**Enter**	**Exit**
Summer Street (via Melcher Street)	West	29%	50%
Summer Street (via Melcher Street)	East	3%	
Congress Street	West	2%	1%
I-90 (from points east)	East	1%	1%
I-90 (via South Boston Bypass)	West	22%	
I-93 (via South Boston Bypass)	South	22%	
Cypher Street (to/from points south)	East	4%	10%
A Street (to/from points west and south)	South	17%	39%
Total		**100%**	**100%**

Source: BTD Area 8 Trip Distribution

The Project-generated vehicle trips were added to the 2030 No-Build Condition traffic networks using the trip distribution patterns described above. The Project-generated trips are shown in Figures 6.17 and 6.18 for the weekday morning and evening peak hours, respectively. The 2030 Build Condition vehicle volumes are shown in Figures 6.19 and 6.20 for the weekday morning and evening peak hours, respectively.

[19] https://www.boston.gov/departments/transportation/access-boston

6.4.6 Parking

As the Project is a transit-oriented development, parking supply will be constrained to minimize dependence on auto travel and encourage the use of alternative means of accessing the Project Site, consistent with the City's recently published parking policies. The Proponent will coordinate with BPDA and BTD to determine final parking ratios for the Project that are aligned with the City's guidelines and goals. The proposed parking ratios for each land use are as follows:

› Office/Lab: 0.4 spaces per 1,000 SF

A total of 125 parking spaces will be located in a below-grade garage accessed off the south side of Binford Street, approximately 125 feet west of A Street. The Proponent intends to provide twenty-five (25) percent on-site vehicle ("EV") EV charging spaces in the garage, with an additional seventy-five (75) percent of the parking spaces constructed as EV-ready to expand over time as the demand grows. This is a relatively recent change in City policy, and the Proponent looks forward to further discussions with the City regarding EV parking supply.

Due to the nearby availability of transit options, as well as amenities within the Project Site that will promote use of public transportation, walking and cycling transportation, the need for parking will be reduced. Additional alternate means of travel such as taxi and TNCs will also help to limit the parking needs for this Project. As noted previously, the area is currently undergoing a comprehensive transit evaluation by the BPDA to find ways to better meet the needs of commuters throughout South Boston and the Seaport. With improved transit options and reliability, these changes are expected to help reduce the Project's demand for on-site parking in the future.

6.4.6.1 On-Street Parking

The south side of Binford Street currently accommodates 18 on-street parking spaces for residents of South Boston. The curb cuts that will serve the Project will remove some of the on-street parking, resulting in capacity for approximately 6 on-street parking spaces along the south side of Binford Street. Additionally, the Project will extend Necco Street into the Project Site to provide a vehicular turnaround and three additional on-street parking spaces.

6.4.7 Site Access and Loading

The Project Site Plan is shown on Figure 6.21. Vehicular access to a below-grade parking structure will be provided by a new curb cut along the south side of Binford Street.

6.4.7.1 Loading, Service and Deliveries

The loading docks will be located along the north side of the building and will be accessed by a new curb cut along the south side of Binford Street, west of the proposed parking garage entrance. The loading docks on the Project Site will accommodate vehicles up to the size of WB-40 trailer trucks.

6.4.7.2 Pedestrian Access

The Project is located along A Street and Binford Street, which both provide good sidewalk connectivity to the Project Site. Additionally, the South Bay Harbor Trail/Harborwalk is a shared-use path that connects to the Project Site along the Fort Point Channel to other points throughout the City of Boston.

Primary pedestrian access will be provided to the building lobby near the western end of Binford Street at the intersection with Necco Street. Additional points of access to the building will be located at various points along each side of the building.

The Project will also develop approximately 1.5-acres of publicly accessible open space and other public realm improvements along the Fort Point Channel waterfront, including pedestrian paths that will connect the waterfront to A Street and the Fort Point neighborhood. Additional pedestrian improvements will include new sidewalks along the planned extension of Necco Street and connections to the South Bay Harbor Trail/Harborwalk.

6.4.7.3 Bicycle Access

The Project will provide covered and secured bicycle spaces within the building as well as outdoor, public bicycle racks around the building for visitors to the Project Site. Bicycle parking will conform to the City of Boston's Bicycle Parking Guidelines. A total of 126 long-term bicycle parking spaces will be provided inside of the building and 20 outdoor bicycle for visitors will be provided on the Project Site.

As previously discussed, the Project will also create and improve connections to the South Bay Harbor Trail/Harborwalk that will benefit the surrounding neighborhood.

6.5 Transit Analysis

This section provides an overview of existing and future conditions on the public transportation services available to people traveling to and from the Project Site, with a focus on local MBTA bus routes and Red Line service. Inbound bus routes refer to travel toward South Station or Downtown from areas outside of the core City area. In the reverse direction, outbound bus routes refer to travel that originates at South Station or Downtown and continues to locations outside of the core City area.

The Project Site is served by public transportation and benefits from nearby Red Line and Commuter rail services at South Station and Broadway Station as well as MBTA bus routes that operate within a quarter mile of the Project Site. The following sections provide an analysis of transit conditions with and without the Project to identify any passenger capacity concerns associated with the existing MBTA services and facilities that would be expected to handle increased passenger demands.

As previously discussed, the MBTA is in the process of optimizing the bus network to improve system efficiencies. As part of the Bus Network Redesign Project, Route 1 will be replaced by the proposed bus routes T7 and T12. Bus Route 11 will be realigned and will no longer travel along A Street. The specific timeline for implementation for these changes has not yet been determined. The following analyses are based on the existing bus routes, as

there is no available ridership data for proposed routes to analyze. However, the future bus routes should be planned to accommodate anticipated ridership growth from planned developments. Additionally, a Seaport circulator shuttle bus is being contemplated as part of the South Boston Seaport Strategic Transit Plan that will likely travel along A Street adjacent to the Project Site. A discussion of the Transit Plan is included later in this section.

6.5.1 Passenger Crowding Evaluation: General Analysis Method

The capacity analysis results in a comparison of the expected demand for transit to the capacity of the service. The analysis provided in this section was conducted in accordance with the methodologies outlined in MassDOT's Office of Performance Management and Innovation's (OPMI) *Bus Crowding Estimation Procedures*[20] Thus, for service routes, the first step is to identify the service segments that are expected to be used by riders generated by the proposed development project. For each service, the peak passenger load point is identified along the service segment that is most crowded based on existing ridership for each bus trip and half-hour service period on rapid transit. These passenger loads are compared against the service capacity.

The capacity threshold of the transit services are based on the MBTA's *Service Delivery Policy (SDP)*.[21] For the passenger comfort standard, which is based on vehicle capacity and riders, the SDP sets the level of passenger crowding that is acceptable by transit mode and period (or trip). Generally, the vehicle load assumes all seats on the vehicle will be occupied and some passengers may stand, too, before the condition is determined to be "overcrowded." The standard varies by service period: generally, high-volume (peak periods) have a higher threshold than low volume (off-peak) periods. (In other words, the standard "accepts" more crowding during rush hour service than at other service periods during the day.)

The intent of applying this method is to identify segments of the MBTA system that may need additional service (more trips) to address overcrowding. These transit capacity analyses have been performed consistent with MassDOT Office of Performance Management and Innovation (OPMI) and MBTA analysis methods used since the issuance of the SDP.

To estimate the expected growth in transit ridership between the Existing condition and the future No-Build condition, an average annual passenger growth rate is applied based on the Boston MPO's CTPS Regional Travel Demand Model projections for daily ridership by transit service. The calculated average annual growth rates are applied to existing ridership (data provided by the MBTA). The details of the existing and future transit capacity analyses are provided in the following sections for each of the types of service.

[20] *OPMI/MBTA's Bus Crowding Estimation Procedures*; MassDOT; January 14, 2019.

[21] *Service Delivery Policy*; Massachusetts Bay Transportation Authority (MBTA); June 7, 2021.

6.5.2 MBTA Bus Services (Existing Conditions)

6.5.2.1 Passenger Comfort Metric

The MBTA's goal is to have passengers travel in relatively comfortable conditions. The MBTA's SDP defines a passenger comfort standard as a percent of passenger travel time experienced in comfortable conditions. The SDP standard sets a minimum of 92 percent of travel time per bus passenger and targets 96 percent of travel time per bus passenger experienced in comfortable conditions.[22] In other words, recognizing that some passengers may have to stand for a portion of their bus trip, the MBTA has established that at least 92 percent of passengers' travel times should be in comfortable conditions. Ideally, at least 96 percent should be in comfortable conditions. Comfortable conditions are 140 percent or less of seated capacity during high volume (peak) periods and 125 percent or less during other periods (e.g. midday or nighttime).

The passenger comfort values for the area's bus services are as follows:

MBTA Bus Route 7

Route 7 passengers experienced comfortable conditions 82 percent of the time on weekdays based on the SDP metric (Fall 2018), which is below both the minimum and target standards.[23]

Closest stop(s) to the Project Site: Summer Street at Melcher Street (approx. 1/3 mile)

MBTA Bus Route 7 will be replaced with a the new MBTA Bus Route T7 and will provide service between Sullivan Square in Charlestown and City Point in South Boston as part of the MBTA's Bus Network Redesign project. MBTA Bus Route T7 will provide all-day high frequency service under the future conditions.

MBTA Bus Route 11

Route 11 passengers were 92 percent comfortable based on the SDP metric (fall 2018) on weekdays.[24]

Closest stop(s): A Street at Mount Washington Avenue, adjacent to the Project Site

MBTA Bus Route 11 will be rerouted from its current alignment along A Street as part of the MBTA's Bus Network Redesign project. Route 11 will no longer travel along A Street and is

[22] The passenger comfort metric for each route is calculated and provided by the MBTA through MassDOT's Office of Performance Management and Innovation (OPMI). This metric is used to represent existing conditions but is not a metric calculated for possible future conditions. (For an assessment of passenger comfort on future conditions, a different method is used that estimates the number of bus trips that are expected to experience passenger crowding conditions above an established threshold.)

[23] MBTA, Route 7 Better Bus Project Route Profile, December 2018, and MassDOT OPMI.

[24] MBTA, Route 11 Better Bus Project Route Profile, December 2018, and MassDOT OPMI.

expected to be replaced by a proposed Seaport circulator bus route, which is proposed as part of the South Boston Seaport Strategic Transit Plan.

6.5.2.2 Reliability

As defined by the MBTA, reliability is a measure of service dependability. This rating is determined by operating characteristics and data for each bus route and is reported as a performance measure. Reliability considers the number of dropped trips on a route. A dropped trip occurs when a trip listed on a published schedule is not completed, and this could be due to mechanical issues or other unforeseen events.

MBTA Bus Route 7

Route 7 has more reliability compared to the MBTA system, with an overall weekday reliability of 83 percent, which is above the MBTA's Local route minimum standard of 70 percent.[25] Approximately 1.8 percent of trips on Route 7 are dropped. Route 7 trips run up to five minutes longer than scheduled for most morning trips and up to three minutes longer for the afternoon trips. Since the most recent reliability data was published, the MBTA has updated the Route 7 schedules to reflect actual running times.

MBTA Bus Route 11

Route 11 has more reliability compared to the MBTA system, with an overall weekday reliability of 77 percent, which is above the MBTA's Local route minimum standard of 70 percent.[26] Approximately 1.4 percent of trips on Route 7 are dropped. Route 11 trips run up to ten minutes longer than scheduled for most morning trips and up to 15 minutes longer for the afternoon trips. Since the most recent reliability data was published, the MBTA has updated the Route 11 schedules to reflect actual running times.

6.5.3 Evaluation of Bus Passenger Crowding

For this study, the MBTA Route 7 and Route 11 local bus service were evaluated to determine the degree, if any, of Project impacts on passenger capacity. The evaluated routes are expected to carry additional riders generated by the Project.

The capacity analysis results in a comparison of the expected passenger demand for transit to the existing and planned capacity of the service. For the bus lines, the service segments that are expected to be used by riders generated by the proposed development project were identified first. For each service, the peak passenger load point was determined. This is the service segment that is most crowded, based on existing ridership, by time of day. These passenger loads were compared against the service's passenger capacity. Future No-Build and Build conditions were compared with existing conditions. The analysis identifies which

[25] MBTA, Route 7 Better Bus Project Route Profile, December 2018.

[26] MBTA, Route 11 Better Bus Project Route Profile, December 2018.

trips (or service periods) operate (or are expected to operate) over capacity (i.e., exceeding the MBTA's Service Delivery Policy passenger crowding threshold).

As noted above, the capacity threshold of the transit services is based on the MBTA's Service Delivery Policy (SDP).[27] For the passenger comfort standard, which is based on vehicle capacity and riders, the standard sets the level of passenger crowding that is acceptable by transit mode and time period (or trip). Generally, the vehicle load assumes all seats on the vehicle are occupied and some passengers stand, before the condition is determined to be "overcrowded." The standard varies by service period: generally, high-volume (peak periods) have a higher threshold than low-volume (off-peak periods). (In other words, the standard "accepts" more crowding during rush hour service than at other service periods of the day.)

The intent of applying this analysis method is to identify segments in the MBTA system that may need additional service (more trips) to address overcrowding. The transit capacity analyses contained in this study were performed based on MBTA/MassDOT Office of Performance Management and Innovation (OPMI) analysis method and data sources.

6.5.3.1 MBTA Bus Service Capacity

For the passenger crowding analysis, the vehicle load standard dictated by MBTA's Service Delivery Policy[28] was used. The MBTA's average bus has a seated capacity of 38 passengers, resulting in a policy capacity (hereafter referred to as the passenger crowding threshold) equal to 53 passengers during the peak periods and equal to 47 passengers during off-peak periods.[29]

MBTA estimates that passenger levels on its transit services may remain below pre-COVID19 pandemic levels for the next few years. The most recent data from 2022 is used to represent baseline conditions.

6.5.4 Existing Conditions Transit Analysis

VHB reviewed the MBTA's data reflecting fall 2022 Passenger Load Profiles to perform the transit capacity (line haul) analysis, representing existing (base year) conditions. The capacity analysis is based on the maximum load point on the service's analysis segment: the maximum load point is defined as the point along the service route that carries the greatest number of passengers, as shown in the following series of charts. The passenger loads represent the average condition for the fall weekday activity, as reported by the MBTA.

[27] *Service Delivery Policy*; Massachusetts Bay Transportation Authority (MBTA); Approved June 7, 2021.

[28] MBTA, *Service Delivery Policy, 2021 Update*, Approved June 7, 2021, pp. 26-28.

[29] MBTA, Average Fleet Seating – CY2021. Note that the capacities displayed are rounded down to the nearest whole number and maximum loads reported in the analysis are rounded to the nearest whole number. Seated capacity on MBTA buses ranges from 37 to 40 seats for its fleet of 40-foot vehicles. The off-peak load standard is 125 percent of seated capacity, whereas the peak load standard is 140 percent of seated capacity.

Figures 6-21 and 6-22 present average passenger levels at the peak load point for the study's analysis segments for each of the bus services and are compared against the crowding threshold. MBTA Bus Routes 7 and 11 did not experience peak passenger loads that exceed the MBTA's SDP passenger crowding threshold.

6.5.5 Future Conditions Transit Analysis

The future condition transit capacity analysis is intended to estimate the impacts of both background growth plus the additional Project-generated transit trips on the Silver Line and MBTA local bus services. The intention is to help identify potential capacity constraints in the existing public transportation system serving the Project Site. The analysis required estimating future passenger activity (with and without Project-generated trips) and establishing assumptions for future transit service levels.

The MBTA's ongoing Bus Network Redesign initiative plans to reconfigure Routes 7 and 11; however, a timeline for implementation is not known at this time. The evaluation included here assumes same bus operations (number of trips, schedule) in the future for the area's bus services as those in place at the time of this filing, under baseline conditions.

6.5.5.1 Background Growth in Transit Riders

The future condition transit analyses are based on the Build year 2030 (seven years from the baseline conditions). A growth in passengers of 0.88 percent annually is expected for the MBTA system based on the projections established by the CTPS travel demand model and reported in the MPO's long-range transportation plan. Between the model's 2019 baseline and future 2050 conditions, an average annual growth rate of 0.34 percent was projected for local bus service. To create a future 2030 No-Build Condition, the 0.34 percent annual growth rate was applied to the local buses (Routes 7 and 11) evaluated in this analysis.

For the 2030 Build Condition, the Project-generated transit trips were added to those future expected riders of the MBTA buses. The Project-generated trips on each route were distributed throughout the course of the day based on activity patterns exhibited by the route's passengers (loads, by time of day). The transit trips generated by the Project were added to the No-Build condition average peak passenger loads.

6.5.5.2 Project-Generated Transit Riders

The Project is expected to add transit riders primarily on the MBTA Bus Routes 7 and 11, which provide access to the Red Line and Commuter Rail service at South Station. Based on the expected local and regional connections, the estimated Project-generated transit trips were assigned to the transit services as follows: 60 percent on Bus Route 11 and 40 percent on Bus Route 7. Route 11 primarily serves trips oriented to/from South Station and riders that are transferring to/from the Red Line and Commuter Rail. Bus Route 7 primarily serves riders throughout South Boston. Additionally, there will be some riders that choose to walk from South Station or Broadway Station. For purposes of this study, these trips are being considered walk trips to/from the Project Site.

Project-generated passengers were distributed among scheduled bus trips using the existing pattern of time-of-day passenger activity, accounting for directionality (inbound or outbound trips). The analysis shows conservative projections by routing all Project-generated passengers through the service's peak passenger load point.

6.5.5.3 Future Service Levels

For the purposes of analyzing future conditions, the same level of service was assumed (frequency, trips, and service span) as what was provided in Fall 2022 (base year of analysis for all bus routes).

6.5.5.4 Bus Passenger Crowding Results

A summary of bus passenger crowding is presented in Table 6-7.

Table 6-7 Route-Level Summary of Passenger Crowding

	Route 7		Route 11	
	Inbound	Outbound	Inbound	Outbound
Existing Conditions				
Maximum Load on Line	43	35	33	28
# Trips Exceeding Threshold	0	0	0	0
Total Passengers Over Threshold	0	0	0	0
No-Build Conditions				
Maximum Load on Line	44	36	34	29
# Trips Exceeding Threshold	0	0	0	0
Total Passengers Over Threshold	0	0	0	0
Build Conditions				
Maximum Load on Line	45	38	42	32
# Trips Exceeding Threshold	0	0	0	0
Total Passengers Over Threshold	0	0	0	0

With increases in transit passengers from background activity (reflected in the growth rate) and the added Project transit riders, the average passenger loads at the peak load points are not expected to reach capacity for any of these services and their trips.

Figures 2-22 through 2-31 show the 2030 No-Build and Build ridership levels in peak 15-minute loads for the Route 7 and Route 11 buses in comparison to the available policy capacity within that time period as well as the fall 2022 ridership levels. This demonstrates the added demand on the routes for the future conditions.

6.5.6 Seaport Transit Planning

The BPDA is leading a multi-agency effort to develop a South Boston Seaport Strategic Transit Plan, taking a comprehensive look at the travel needs of the developing district.30 The planning study is evaluating the transit needs of the Seaport district through a travel demand model and using that tool to test various transit and mobility strategies. The planning effort is currently ongoing and has developed a draft list of short, mid, and long-term strategies to improve transit options throughout South Boston, the Fort Point neighborhood, and the Seaport. Some of the shorter-term strategies being explored are listed below. The following list is not an exhaustive list of every strategy being explored by the planning study and is intended to represent the various types of measures that are being considered at this stage of the study.

- New bus routes to/from the Seaport
- Enhanced private shuttle services on A Street and Broadway
- New circulator bus route throughout Fort Point and the Seaport
- Extend MBTA and Regional Transit Express bus service to the Seaport
- Expanded off-peak bus service
- New bus service connections
- New bus lanes
- Dedicated transit corridors
- Improvements to bicycle, pedestrian, and multimodal connections

The last update on the planning study is dated March 2022. When complete, the South Boston Seaport Strategic Transit Plan will identify specific recommendations to improve the operations and capacity of the transit network serving Boston's Seaport District and the Fort Point neighborhood. The Plan will recommend specific improvements in the short-term and those needed in the next 15 years and beyond. The Proponent looks forward to the completion of this study and the identification of specific public transportation improvement actions which it can support, such as the Seaport circulator bus concept.

6.6 Traffic Operations Analysis

Measuring existing traffic volumes and projecting future traffic volumes quantifies traffic flow within the Study Area. To assess quality of flow, intersection operations analyses were conducted with respect to Existing and projected No-Build and Build traffic volumes. The operations analyses were conducted using the Synchro traffic engineering software. Traffic signal timing and phasing plans for the signalized Study Area intersections were obtained from traffic signal plans, previous traffic studies conducted for nearby projects, and field

[30] www.bostonplans.org/planning/planning-initiatives/south-boston-seaport-strategic-transit-plan

observations to develop the Synchro models that form the basis of the operations analysis. The operations analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels of service.

6.6.1 Level-of-Service Criteria

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. LOS is a qualitative measure of a number of factors including roadway geometrics, speed, travel delay and freedom to maneuver. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level-of-service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing congested operating conditions.

Level-of-service designation is reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of each lane or lane group entering the intersection and the LOS designation is for overall conditions at the intersection. For unsignalized intersections, the analysis assumes that traffic on the mainline is not affected by traffic on side streets. The LOS is only determined for left turns from the main street and all movements from the minor street. The evaluation criteria used to analyze intersections is based on the *Highway Capacity Manual* (HCM). The LOS criteria are summarized in Table 6-8.

Table 6-8 Level-of-Service Criteria

Level of Service	Unsignalized Intersections Delay	Signalized Intersections Delay
A	0 - 10 seconds	0 - 10 seconds
B	10 - 15 seconds	10 - 20 seconds
C	15 - 25 seconds	20 - 35 seconds
D	25 - 35 seconds	35 - 55 seconds
E	35 - 50 seconds	55 - 80 seconds
F	>50 seconds	>80 seconds

Source: Highway Capacity Manual

The Study Area intersections were also evaluated with respect to vehicle queuing. For signalized intersections, the quantitative measures of vehicle queue length are defined as the 50th and the 95th percentile queues. The 50th percentile queue represents the average queue length and the 95th percentile queue represents the calculated maximum back of queue that has a probability of five percent or less of being exceeded during the peak hour.

For unsignalized intersections, the quantitative measure of vehicle queue length is defined as the 95th percentile queue. The 95th percentile queue represents the percent of time during the peak period being analyzed that the calculated maximum back of queue would be equal to or less than the percentile estimate (i.e., the maximum queue length that would be exceeded only five percent of the time). The traffic analysis methodologies for unsignalized intersections also use default values for the assumed critical gap for vehicles making a

turning maneuver from a stop condition on a side street to another roadway. The critical gap is the assumed amount of time between vehicles traveling along a roadway that is needed for another driver to comfortably make a turning maneuver (e.g. the headway between vehicles traveling on a roadway). The traffic analysis uses conservatively high values for critical gaps, often resulting in reported delays and queues that may be higher than real-world conditions, especially in urban areas.

6.6.2 Intersection Operations Analysis

Intersection operations analyses were conducted for the Study Area intersections and are summarized in Table 6-9. The operations analyses were conducted for 2023 Existing, 2030 No-Build, and 2030 Build conditions. The detailed operations analysis worksheets are provided in Appendix C.

The analysis summary tables show that in general, the Project will have minimal impact on the operations of the Study Area intersections. The Project is expected to have the most impact on the intersection of A Street at Binford Street, as this intersection serves as the primary vehicular entrance point to the Project Site. This intersection was identified in the original PDA prepared as part of the 100 Acres Master Plan as a location that may require traffic signalization. As such, a traffic signal warrants analysis (TSWA) was conducted at the intersection, which is presented in more detail in the next section of this chapter. Based on the TSWA, the traffic volumes are not expected to meet the thresholds for signalization under the 2030 Build conditions at this intersection.

Additionally, the traffic along A Street at the intersection with Binford Street will be partially metered by the traffic signals located to the north at Melcher Street and to the south at Richards Street. The metering of the traffic along A Street will provide gaps in the through traffic flow along A Street to allow maneuvers from Binford Street onto A Street.

Based on the analysis, additional off-site mitigation related to intersection capacity and operations is not necessary to accommodate the increase in Project-generated traffic volumes.

Table 6-9 Intersection Operations Analysis

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
Congress Street at B Street and the I-90 Ramps															
Weekday Morning															
Congress St EB L/T	0.36	31.2	C	75	109	0.56	34.2	C	115	169	0.56	34.2	C	115	169
Congress St EB R	0.07	33.9	C	14	m54	0.09	24.5	C	17	m31	0.09	24.5	C	17	m31
Congress St WB L	0.58	41.4	D	132	210	0.67	45.7	D	156	242	0.67	45.7	D	156	242
Congress St WB L/T/R	0.52	36.3	D	120	165	0.61	38.6	D	145	195	0.61	38.6	D	145	195
I-90 Off-Ramp NB L	0.56	31.6	C	135	211	0.65	34.1	C	163	249	0.65	34.1	C	163	249
I-90 Off-Ramp NB T	0.35	25.9	C	105	168	0.37	26.0	C	115	182	0.37	26.0	C	115	182
I-90 Off-Ramp NB R	0.73	34.7	C	233	352	0.84	43.0	D	289	#467	0.84	43.0	D	289	#467
B St SB L/T	0.67	54.9	D	50	#89	0.85	76.7	E	63	#126	0.85	76.7	E	63	#126
B St SB R	0.05	26.3	C	0	15	0.05	26.0	C	0	15	0.05	26.0	C	0	15
OVERALL	**0.62**	**35.0**	**C**			**0.75**	**39.3**	**D**			**0.75**	**39.3**	**D**		
Weekday Evening															
Congress St EB L/T	0.35	29.7	C	74	114	0.44	29.6	C	97	144	0.44	29.6	C	97	144
Congress St EB R	0.21	25.6	C	64	132	0.30	22.6	C	104	186	0.30	22.6	C	104	186
Congress St WB L	0.65	44.3	D	162	261	1.00	87.4	F	280	#493	1.00	87.4	F	280	#493
Congress St WB L/T/R	0.55	37.1	D	139	194	>1.20	45.0	D	219	292	>1.20	45.0	D	219	292
I-90 WB Off-Ramp NB L	0.65	33.8	C	144	223	0.72	36.6	D	161	248	0.72	36.6	D	161	248
I-90 WB Off-Ramp NB T	0.19	24.0	C	56	99	0.21	24.1	C	62	107	0.21	24.1	C	62	107
I-90 WB Off-Ramp NB R	0.75	35.5	D	265	392	0.80	38.8	D	289	#455	0.80	38.8	D	289	#455
B St SB L/T	1.06	>120	F	~106	#180	1.10	>120	F	~115	#188	1.10	>120	F	~115	#188
B St SB R	0.07	26.2	C	0	17	0.08	26.2	C	0	17	0.08	26.2	C	0	17
OVERALL	**0.66**	**44.1**	**D**			**0.82**	**52.2**	**D**			**0.82**	**52.2**	**D**		

a volume to capacity ratio
b delay, measured in seconds
c level of service
d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
Congress Street at I-90 EB and I-93 Off Ramps and Pier 4 Boulevard															
Weekday Morning															
Congress St EB L	0.23	28.2	C	37	m59	0.29	31.0	C	38	m49	0.29	31.0	C	38	m49
Congress St EB T	0.28	28.0	C	115	m149	0.40	32.0	C	152	m178	0.40	32.0	C	152	m178
Congress ST WB T/R	0.32	14.1	B	95	166	0.42	17.6	B	116	206	0.42	17.6	B	116	206
I-90 EB Off-Ramp NB L	0.09	31.8	C	20	41	0.14	29.3	C	33	61	0.15	29.3	C	33	62
I-90 EB Off-Ramp NB T/R	0.83	52.0	D	226	302	0.88	54.6	D	270	366	0.88	54.6	D	270	366
I-93 Off-Ramp NB L/T	0.65	48.3	D	104	152	0.68	49.1	D	118	173	0.68	49.1	D	118	173
I-93 Off-Ramp NB T	0.69	51.6	D	102	153	0.73	54.0	D	115	174	0.73	54.0	D	115	174
I-93 NB Off-Ramp NB R	0.40	42.5	D	55	92	0.59	45.1	D	88	136	0.59	45.1	D	88	136
OVERALL	**0.54**	**35.2**	**D**			**0.64**	**37.9**	**D**			**0.64**	**37.9**	**D**		
Weekday Evening															
Congress St EB L	0.28	23.6	C	51	m92	0.34	23.1	C	52	m72	0.34	23.1	C	52	m72
Congress St EB T	0.35	23.9	C	155	m226	0.49	24.8	C	203	m290	0.49	24.8	C	203	m290
Congress ST WB T/R	0.31	10.3	B	93	172	0.38	12.9	B	111	m213	0.38	12.9	B	111	m213
I-90 EB Off-Ramp NB L	0.12	36.1	D	22	42	0.15	35.0	C	29	50	0.15	35.0	C	29	50
I-90 EB Off-Ramp NB T/R	0.79	52.8	D	173	210	0.80	52.7	D	190	225	0.80	52.7	D	190	225
I-93 Off-Ramp NB L/T	0.57	46.6	D	82	122	0.59	47.2	D	87	127	0.59	47.2	D	87	127
I-93 Off-Ramp NB T	0.61	48.2	D	83	125	0.62	49.0	D	86	129	0.62	49.0	D	86	129
I-93 NB Off-Ramp NB R	0.49	44.4	D	65	101	0.54	45.6	D	72	111	0.54	45.6	D	72	111
OVERALL	**0.50**	**30.1**	**C**			**0.59**	**30.5**	**C**			**0.59**	**30.5**	**C**		

a volume to capacity ratio
b delay, measured in seconds
c level of service
d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
Congress Street at West Service Road and Boston Wharf Road															
Weekday Morning															
Congress St EB L/T	0.43	12.2	B	37	49	0.70	24.7	C	52	69	0.70	24.9	C	52	69
Congress St EB R	0.11	9.5	A	0	9	0.13	11.7	B	1	14	0.13	11.7	B	1	14
Congress St WB L	0.12	14.6	B	13	25	0.16	14.6	B	18	32	0.16	14.6	B	18	32
Congress St WB T/R	0.70	28.7	C	265	141	0.87	39.5	D	369	#563	0.87	39.6	D	370	#561
W Service Rd NB L	0.52	35.3	D	82	140	0.56	36.4	D	89	150	0.56	36.4	D	89	150
W Service Rd NB T/R	0.96	91.2	F	164	#327	1.11	>120	F	~219	#392	1.11	>120	F	~219	#392
Boston Wharf Rd SB L/T	0.32	33.9	C	55	89	0.52	36.2	D	73	112	0.52	36.2	D	73	112
Boston Wharf Rd SB R	0.04	37.2	D	0	0	0.04	37.1	D	0	0	0.04	37.1	D	0	0
OVERALL	**0.67**	**37.1**	**D**			**0.81**	**50.4**	**D**			**0.81**	**50.4**	**D**		
Weekday Evening															
Congress St EB L/T	0.52	12.1	B	71	m98	0.69	16.1	B	110	m139	0.69	16.1	B	110	m139
Congress St EB R	0.24	19.4	B	25	m49	0.35	19.5	B	67	m81	0.35	19.5	B	67	m81
Congress St WB L	0.49	14.8	B	58	50	0.63	20.8	C	68	62	0.63	20.8	C	68	62
Congress St WB T/R	0.58	23.9	C	201	91	0.68	25.6	C	234	107	0.68	25.6	C	234	107
W Service Rd NB L	0.35	33.7	C	49	91	0.44	33.8	C	58	105	0.44	33.8	C	58	105
W Service Rd NB T/R	0.57	43.2	D	81	157	0.82	62.1	E	132	#271	0.82	62.1	E	132	#271
Boston Wharf Rd SB L/T	0.84	54.8	D	190	#285	>1.20	>120	F	~305	#468	>1.20	>120	F	~305	#468
Boston Wharf Rd SB R	0.07	37.7	D	0	0	0.09	37.4	D	0	0	0.09	37.4	D	0	0
OVERALL	**0.63**	**28.7**	**C**			**0.85**	**56.3**	**E**			**0.85**	**56.3**	**E**		

a volume to capacity ratio
b delay, measured in seconds
c level of service
d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
Congress Street at A Street and Thomson Place															
Weekday Morning															
Congress St EB L/T	0.34	30.9	C	74	90	0.38	31.5	C	85	101	0.38	31.5	C	85	101
Congress St EB R	0.41	33.6	C	90	122	0.44	34.4	C	98	132	0.45	34.6	C	100	134
Congress St WB L	0.37	17.1	B	44	m94	0.57	19.6	B	80	m116	0.57	19.6	B	80	m116
Congress St WB T/R	0.61	19.8	B	108	208	0.66	23.1	C	147	m203	0.66	23.1	C	147	m203
A St NB L/T	1.01	104.9	F	~183	#351	1.07	>120	F	~212	#377	1.07	>120	F	~212	#377
A St NB R	0.30	41.1	D	40	82	0.40	42.0	D	53	103	0.40	42.0	D	53	103
OVERALL	**0.55**	**40.7**	**D**			**0.59**	**44.1**	**D**			**0.59**	**44.1**	**D**		
Weekday Evening															
Congress St EB L/T	0.60	35.2	D	152	210	0.70	39.5	D	165	228	0.70	39.5	D	165	228
Congress St EB R	0.43	33.2	C	99	166	0.48	35.2	D	106	177	0.48	35.3	D	107	178
Congress St WB L	0.43	13.9	B	41	65	0.55	17.5	B	56	93	0.55	17.5	B	56	93
Congress St WB T/R	0.47	15.1	B	77	117	0.55	18.7	B	101	160	0.55	18.7	B	101	160
A St NB L/T	0.90	76.0	E	155	#241	0.93	83.6	F	170	#270	0.94	84.4	F	171	#272
A St NB R	0.81	64.1	E	114	#186	>1.20	>120	F	~242	#351	>1.20	>120	F	~242	#351
OVERALL	**0.50**	**37.4**	**D**			**0.63**	**61.9**	**E**			**0.63**	**62.0**	**E**		

a volume to capacity ratio
b delay, measured in seconds
c level of service
d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
A Street at Melcher Street															
Weekday Morning															
Melcher St EB L/R	0.32	41.1	D	14	72	0.40	41.3	D	22	82	0.43	41.3	D	22	86
A St NB L/T	0.45	4.2	A	29	131	0.50	4.8	A	29	173	0.50	4.7	A	28	182
A St SB T/R	0.24	3.3	A	32	79	0.32	3.9	A	45	119	0.33	4.0	A	46	130
OVERALL	0.43	11.4	B			0.48	11.6	B			0.49	12.7	B		
Weekday Evening															
Melcher St EB L/R	0.36	39.7	D	21	88	0.80	58.6	E	92	#179	0.81	59.5	E	94	#194
A St NB L/T	0.43	4.5	A	59	102	0.52	6.5	A	90	159	0.53	6.8	A	97	166
A St SB T/R	0.27	4.0	A	61	90	0.33	5.3	A	74	127	0.33	5.4	A	76	128
OVERALL	0.42	10.9	B			0.57	16.7	B			0.58	17.3	B		
A Street at Necco Street															
Weekday Morning															
Necco St EB L/R	0.16	23.6	C	--	13	0.35	40.0	E	--	35	0.38	44.5	E	--	40
A St NB L/T	0.10	9.9	A	--	8	0.16	10.7	B	--	15	0.17	11.0	B	--	15
A St SB T/R	0.00	0.0	A	--	0	0.00	0.0	A	--	0	0.00	0.0	A	--	0
Weekday Evening															
Necco St EB L/R	0.42	27.5	D	--	50	0.76	53.8	F	--	138	0.77	55.5	F	--	140
A St NB L/T	0.01	9.7	A	--	0	0.03	10.0	A	--	3	0.03	10.0	A	--	3
A St SB T/R	0.00	0.0	A	--	0	0.00	0.0	A	--	0	0.00	0.0	A	--	0

a volume to capacity ratio
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d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
A Street at Binford Street*															
Weekday Morning															
Binford St EB L/T/R	0.18	42.2	E	--	15	0.43	57.0	F	--	45	0.72	>80	F	--	90
Binford St WB L/T/R	0.37	53.5	F	--	38	0.76	>80	F	--	80	>1.20	>80	F	--	123
A St NB L/T/R	0.11	9.2	A	--	10	0.22	10.1	B	--	23	0.34	11.2	B	--	38
A St SB L/T/R	0.03	10.6	B	--	3	0.03	10.9	B	--	3	0.03	10.9	B	--	3
Weekday Evening															
Binford St EB L/T/R	0.89	>80	F	--	175	>1.20	>80	F	--	433	>1.20	>80	F	--	608
Binford St WB L/T/R	0.25	27.0	D	--	23	0.53	75.8	F	--	60	1.04	>80	F	--	115
A St NB L/T/R	0.02	9.1	A	--	3	0.07	9.6	A	--	5	0.09	9.7	A	--	8
A St SB L/T/R	0.04	9.7	A	--	3	0.04	9.9	A	--	3	0.04	9.9	A	--	3

a volume to capacity ratio
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d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.
* A Traffic Signal Warrant Analysis was conducted for the intersection of A Street at Binford Street and the future conditions traffic volumes will not meet the requirements for signalization.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
A Street at Richards Street															
Weekday Morning															
Richards St EB L	0.04	33.1	C	2	4	0.05	31.7	C	2	4	0.04	27.6	C	1	3
Richards St EB T/R	0.02	32.9	C	2	4	0.02	31.4	C	2	4	0.02	27.3	C	1	3
Richards St WB L	0.74	49.5	D	90	141	0.74	47.5	D	100	150	0.59	34.4	C	92	135
Richards St WB T/R	0.68	43.3	D	98	157	0.92	71.4	E	159	224	0.92	63.2	E	195	260
A St NB L/T/R	0.53	8.8	A	136	230	0.66	12.2	B	206	344	0.73	17.5	B	267	423
A St SB L/T/R	0.34	7.7	A	76	168	0.42	9.6	A	110	225	0.47	12.6	B	136	259
OVERALL	**0.58**	**19.1**	**B**			**0.72**	**26.1**	**C**			**0.79**	**27.4**	**C**		
Weekday Evening															
Richards St EB L	V	31.7	C	1	4	0.02	30.9	C	1	4	0.02	30.9	C	1	4
Richards St EB T/R	0.00	31.6	C	0	0	0.00	30.8	C	0	0	0.00	30.8	C	0	0
Richards St WB L	0.76	48.7	D	110	167	0.76	48.4	D	117	174	0.76	48.4	D	117	174
Richards St WB T/R	0.06	32.1	C	0	27	0.20	32.3	C	19	59	0.24	32.7	C	26	69
A St NB L/T/R	0.35	7.2	A	68	149	0.42	8.4	A	91	195	0.42	8.4	A	93	200
A St SB L/T/R	0.46	9.8	A	156	257	0.64	13.1	B	224	413	0.72	15.2	B	265	476
OVERALL	**0.53**	**17.3**	**B**			**0.67**	**18.5**	**B**			**0.73**	**19.4**	**B**		

a volume to capacity ratio
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~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

Table 6-9 Intersection Operations Analysis (Continued)

	2023 Existing Conditions					2030 No-Build Conditions[f]					2030 Build Conditions				
	v/c[a]	Del[b]	LOS[c]	50Q[d]	95Q[e]	v/c	Del	LOS	50Q	95Q	v/c	Del	LOS	50Q	95Q
South Boston Bypass at Richards Street and Cypher Street															
Weekday Morning															
Richards St EB L/T/R	0.61	26.0	C	55	109	0.64	26.9	C	60	117	0.64	26.8	C	61	118
Cypher St WB L/T	0.62	26.2	C	59	111	0.66	28.0	C	66	122	0.67	28.3	C	69	126
Cypher St WB R	0.10	20.7	C	0	37	0.10	20.6	C	0	38	0.10	20.5	C	0	38
S Boston Bypass NB L/T	1.00	46.1	D	235	#499	>1.20	>120	F	~418	#623	>1.20	>120	F	~460	#665
S Boston Bypass NB R	0.19	6.1	A	0	22	0.19	6.4	A	0	22	0.19	6.5	A	0	22
S Boston Bypass SB L/T/R	0.73	16.6	B	80	#293	1.07	73.6	E	~233	#422	1.20	>120	F	~270	#273
OVERALL	**0.90**	**28.2**	**C**			**1.09**	**78.1**	**E**			**1.17**	**110.4**	**F**		
Weekday Evening															
Richards St EB L/T/R	1.15	>120	F	~195	#292	>1.20	>120	F	~256	#353	>1.20	>120	F	~269	#367
Cypher St WB L/T	0.71	29.3	C	79	#167	0.76	33.9	C	85	#184	0.78	35.9	D	86	#188
Cypher St WB R	0.10	19.1	B	0	37	0.10	19.2	B	0	38	0.10	19.2	B	0	38
S Boston Bypass NB L/T	0.65	15.2	B	133	225	0.78	20.5	C	166	#314	0.80	22.1	C	171	#351
S Boston Bypass NB R	0.10	7.6	A	0	20	0.11	7.6	A	0	21	0.11	7.6	A	0	21
S Boston Bypass SB L/T/R	>1.20	>120	F	~456	#664	>1.20	>120	F	~541	#755	>1.20	>120	F	~548	#763
OVERALL	**>1.20**	**97.7**	**F**			**>1.20**	**>120**	**F**			**>1.20**	**>120**	**F**		

a volume to capacity ratio
b delay, measured in seconds
c level of service
d 50th percentile queue
e 95th percentile queue
f future conditions analyses adjusts PHF upward to 0.92 for all movements in accordance with MassDOT guidelines
~ volume to capacity ratio exceeds 1.0 and queues may be longer.
# 95th percentile volume exceeds capacity and queues may be longer.

6.7 Proposed Mitigation Measures

The preceding analyses of traffic conditions within the Study Area indicate that the Project will not have any major impacts to roadway or intersection capacity and operations. The Proponent will work with the City to develop a transportation environment within and surrounding the Project that promotes multiple modes of transportation, encourages non-vehicular modes of transportation, and improves the pedestrian environment. The proposed roadway modifications will be designed in accordance with the City of Boston's Complete Streets guidelines.

The Proponent will work with BTD to identify specific and appropriate transportation mitigation for the Project. The Proponent will construct pedestrian and bicycle connections in compliance with the Americans with Disabilities Act (ADA) through new and upgraded sidewalks and shared-use paths through the rear end of the Project Site.

The mitigation measures listed below focus on enhancing pedestrian connections and coordination with the City of Boston on the implementation of improvements.

6.7.1 Physical and Operational Transportation Improvements

The Proponent is proposing to work with the City to incorporate appropriate design improvements along Binford Street, A Street, and the Necco Street extension. The Project is proposing to construct an interim extension of Necco Street south of Binford Street that will terminate within the Project Site. The long-term vision for Necco Street is to connect to future development south of the Project Site. The interim improvements will be constructed to allow for future connections to be made when additional development takes place south of the Project Site and there is a need to extend Necco Street further south.

The Proponent will also improve the streetscape along Binford Street by upgrading the sidewalks, street trees, and lighting adjacent to the Project Site. The Project is proposing to use Binford Street to access both the parking garage and the loading docks that serve the Project Site, resulting in a need to reconfigure the on-street parking spaces on the south side of the roadway. The Project is also proposing to create approximately 1.5 acres of public realm including approximately 1.2 acres of publicly accessible open space between the building and the Fort Point Channel. The open space will contain pedestrian and bicycle connections between the South Bay Harbor Trail/Harborwalk and the City's roadway infrastructure at Binford Street and Necco Street. The improvements will continue to evolve through the City's design review process and through coordination with City agencies and departments.

6.7.2 Traffic Signal Warrants Analysis

As part of this Project, a traffic signal warrants analysis (TSWA) was conducted that incorporates new traffic volumes along A Street and Binford Street and additional traffic volume projections from the Project and other planned developments in the area.

The TSWA was conducted in accordance with the guidelines in the Manual on Uniform Traffic Control Devices (MUTCD). The TSWA used traffic volumes for the 2030 Build conditions, which incorporates the 0.5 percent growth rate previously discussed, traffic volumes from other nearby planned projects (including the 244-284 A Street Project), and traffic volumes expected to be generated by the Project. Based on the TSWA, the traffic volumes at the intersection are not expected to meet the thresholds for signalization upon full occupancy of the Project Site. The detailed TSWA is provided in Appendix C.

The Proponent will continue to work with BTD to develop potential mitigation measures to reduce delays and provide additional capacity, if it is determined that additional measures are necessary.

6.7.3 Support for the Ongoing South Boston Seaport Strategic Transit Plan

The Proponent acknowledges the timely and important planning work currently underway by the Boston Transportation Department on the South Boston Seaport Strategic Transit Plan. This planning study is considering a wide array of actions and improvement alternatives that could be implemented to help improve mobility and connectivity throughout South Boston including the Fort Point neighborhood and the Seaport District.

Improving connectivity to both South Station (which serves communities to the west and south) and Broadway Station are important. Both stations serve the MBTA Red Line and South Station serves many Commuter Rail lines and provides Amtrak service. The Project's low parking ratio, the proximity of the Project Site to available public transportation (i.e. the Red Line and MBTA bus service), and the City's desire for implementing meaningful public transportation improvements will all help to shift site users travel patterns away from private cars and towards public transportation. The Proponent views the Project as a true transit-oriented development.

Since the BPDA's study is ongoing and a formal set of recommendations has not yet been developed, the Proponent is prepared to work with the City as it completes the study and moves toward implementation of its findings. The Proponent expects to be a beneficiary of the improvements that will come from the planning study and looks forward to taking the appropriate next steps with the City.

6.7.4 Transportation Demand Management (TDM)

Consistent with the City's goals to reduce auto-dependency, the Proponent will explore TDM measures to encourage employees to use public transportation, bikes or walking to travel to/from the Project Site.

Various TDM measures being considered as part of the Project include:

- The Proponent will designate an on-site Transportation Coordinator. In addition to other building-related duties, the Transportation Coordinator will be responsible for:
  - Overseeing parking operations;
  - Serving as the point person for managing, communicating, and promoting the use of alternative transportation measures with building employees and staff;

- Developing an orientation packet to inform new employees at the Project Site about the available transportation options;
- Designating an individual whose responsibilities include serving as loading dock manager responsible for overseeing loading/delivery operations; and
- Providing annual events to promote multimodal travel

› Building management will provide transit information (through a live transit screen containing schedules, maps, and fare information in the building lobby.

› Approximately 20 short-term public bicycle parking spaces will be provided. In addition, the Proponent intends to provide 126 long-term bicycle parking spaces for building employees/staff.

› The Proponent will encourage its tenants to establish Bluebikes corporate memberships.

› The Proponent will encourage employers' participation in MBTA Perq Program to facilitate the purchase of transit passes.

› Amenities for employee commuters who walk and bike to work in the building will include on-site lockers and showers.

› The Proponent will work with the City to contribute funding toward Bluebikes operations.

› The Proponent is committed to providing 25 percent on-site vehicle ("EV") EV charging spaces in the garage, with an additional 75 percent of the parking spaces constructed as EV-ready to expand over time as the demand grows.

› The Proponent will charge market rates for on-site parking.

› Additional TDM measures will be reviewed with BTD and codified in the Transportation Access Plan Agreement (TAPA).

6.7.5 Transportation Monitoring Program

The Proponent is committed to conducting a Transportation Monitoring Program (TMP) and producing annual reports at the direction of MassDOT and the City of Boston. The specific details of the Transportation Monitoring Program will be developed in consultation with the BTD to determine the specific count locations and time periods that should be evaluated. The purpose of the TMP and annual reporting is to provide MassDOT and the Boston Transportation Department regular updates on transportation-related issues, such as the Project's performance on TDM measures. Elements of the TMP would typically include counts or surveys to determine peak period travel patterns. This would typically include people who walk, use transit, and are picked up or dropped off; those who drive and park on-site; and those who drive and park off-site. The Proponent would also be expected to report on parking patterns and other issues that are relevant to the Project's transportation plan. The results of the TMP will be summarized and reported to the City of Boston and MassDOT until a period of five years after full development of the Project or when all parties are satisfied that the monitoring efforts are no longer necessary (whichever comes first).

6.7.6 Transportation Access Plan Agreement (TAPA)

The Proponent will enter into a Transportation Access Plan Agreement (TAPA) with the BTD. The TAPA will codify and document each of the Project's transportation mitigation commitments.

The Project's mitigation commitments are the result of the detailed transportation analyses and identification of Project impacts, as documented in this chapter, and specific agreements made between the Proponent and the City of Boston. Upon the City's review and acceptance of the findings and conclusions of this transportation analysis and assessment of Project impacts, and its acceptance of the Project's commitments and TDM actions, the TAPA will be executed.

6.7.7 MassDOT Access Permit

A non-vehicular Access Permit will be required in accordance with the Memorandum of Understanding (MOU) between MassDOT and The Gillette Company LLC, dated May 13, 2019. The access permit shall be issued prior to construction activity over the Seaport Access Highway (the "Tunnel"), which is a portion of the Ted Williams Tunnel as defined in Section 1 of Chapter 6C of the Massachusetts General Laws. The Proponent shall submit to MassDOT the design and construction documents consistent with the Overbuild Manual that is included in the May 13, 2019 MOU.

6.7.8 Construction Management Plan (CMP)

The Proponent will develop a detailed evaluation of potential short-term construction-related transportation impacts including construction vehicle traffic, parking supply and demand, and pedestrian access. Detailed Construction Management Plans ("CMPs") will be developed and submitted to the BTD for their approval. These plans will detail construction vehicle routing, staging, and roadway occupancy that will require BTD approval.

Construction vehicles will be necessary to move construction materials to and from the Project Site. Every effort will be made to reduce noise, control fugitive dust, and minimize other disturbances associated with construction traffic. Truck staging and laydown areas for the Project will be carefully planned. The need for specific street occupancy (lane closures) along A Street, Binford Street, or any of the other roadways adjacent to the Project Site is not known at this time.

Contractors will be encouraged to devise access plans for their personnel that de-emphasize auto use (such as seeking off-site parking, provide transit subsidies, on-site lockers for tools and equipment, etc.). Construction workers will also be encouraged to use public transportation to access the Project Site, as no new parking will be provided for them.

During the construction period, pedestrian activity adjacent to the Project Site may be affected by sidewalk closures. A variety of measures will be considered and implemented to protect the safety of pedestrians. Temporary walkways, appropriate lighting, and new directional and informational signage to direct pedestrians around the construction sites will be provided. After construction is complete, finished pedestrian sidewalks will be

permanently reconstructed to meet ADA standards.

6.8 Conclusions

The Project involves the construction of an approximately 335,000 SF laboratory/R&D and office building with additional ground floor commercial and amenity space at 232 A Street in the Fort Point neighborhood of Boston, Massachusetts. The Project will provide a total of 125 off-street structured parking spaces on the Project Site. The existing uses on the Project Site consist of a 125 surface parking lot currently used by commuters. The number of on-site parking spaces will not change, although the Project's parking spaces will be dedicated for Project uses. In addition, the Project will provide both short and long-term bicycle storage for employees and visitors and will dedicate a portion of the parking supply to electric-vehicle (EV) spaces, with the potential for expanding the number of EV spaces.

The traffic study contained in this chapter quantifies existing traffic conditions in the Study Area, estimates traffic that would be generated independent of the Project, and estimates traffic generation associated with the Project. Based on analysis presented in this report, the Project is expected to generate 95 new vehicle trips during the weekday morning peak hour and 100 new vehicle trips during the weekday evening peak hour after accounting for the trips currently being generated by the existing uses on the Project Site. The Project will also generate 240 new transit trips during the weekday morning peak hour and 235 new transit trips during the weekday evening peak hour.

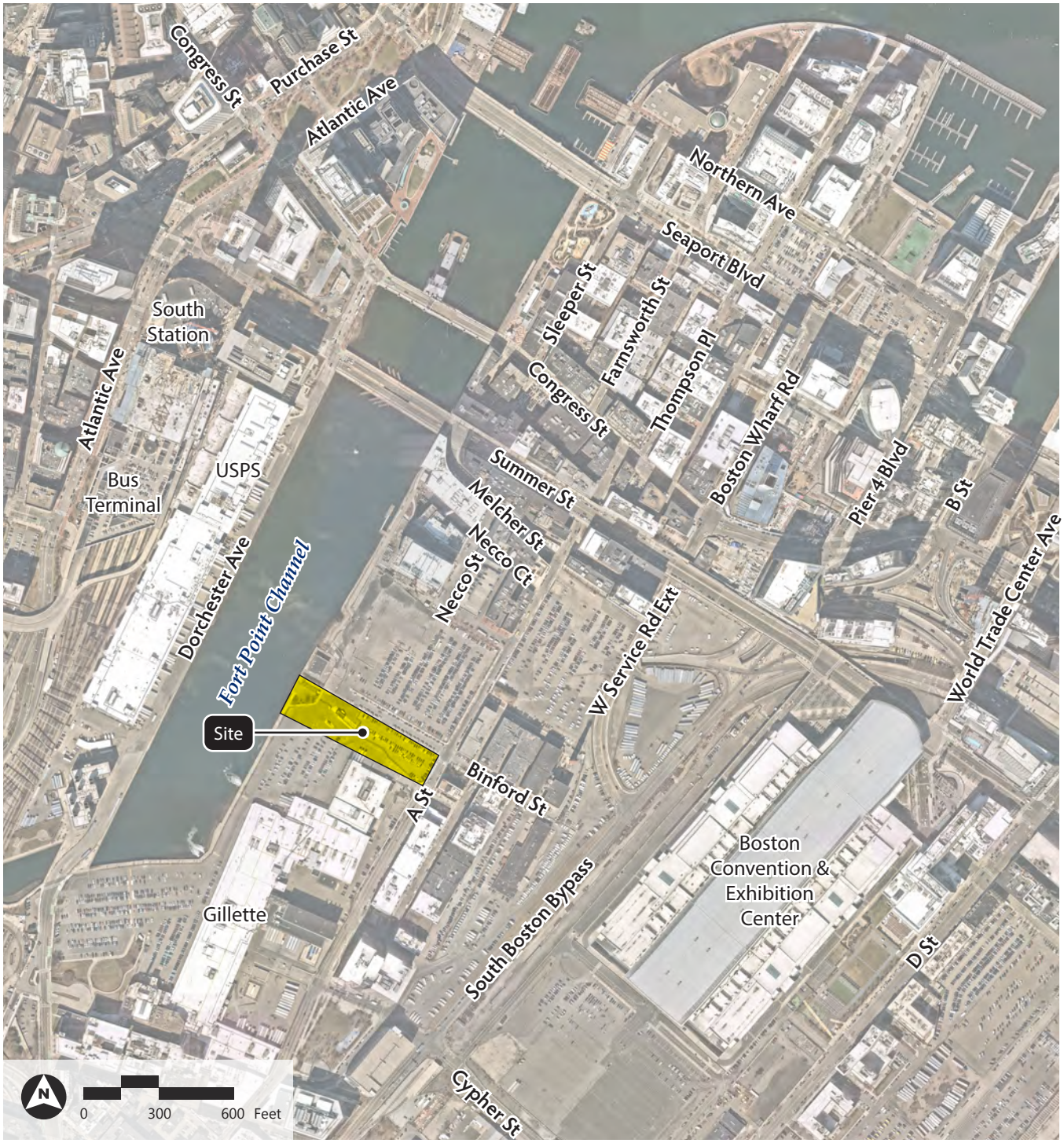
Intersection operations analyses were conducted for the existing and future No-Build and Build development scenarios for the weekday morning and evening peak hours. The analyses show that the Project is not expected to have major impacts to the study area intersections that will require new mitigation measures. The intersection of A Street at Binford Street will experience the most impacts from the Project-generated traffic. A traffic signal warrants analysis was conducted at this intersection to determine if the installation of a traffic signal is warranted by the projected future traffic volumes. Based on the results of this analysis, signalization will not be warranted under the 2030 Build conditions.

The Proponent will work with BTD and the BPDA to identify specific and appropriate transportation mitigation for the Project, if deemed necessary.

The Proponent will implement transportation demand management measures to reduce the number of automobile trips generated by the Project, as well as reduce travel during peak hours, and reduce single occupant vehicles. Finally, the Proponent will prepare a Transportation Access Plan Agreement and a Construction Management Plan as part of the requirements for coordination with the City of Boston and BTD.

Figure 6.1 Site Location Map

232 A Street | Boston, Massachusetts

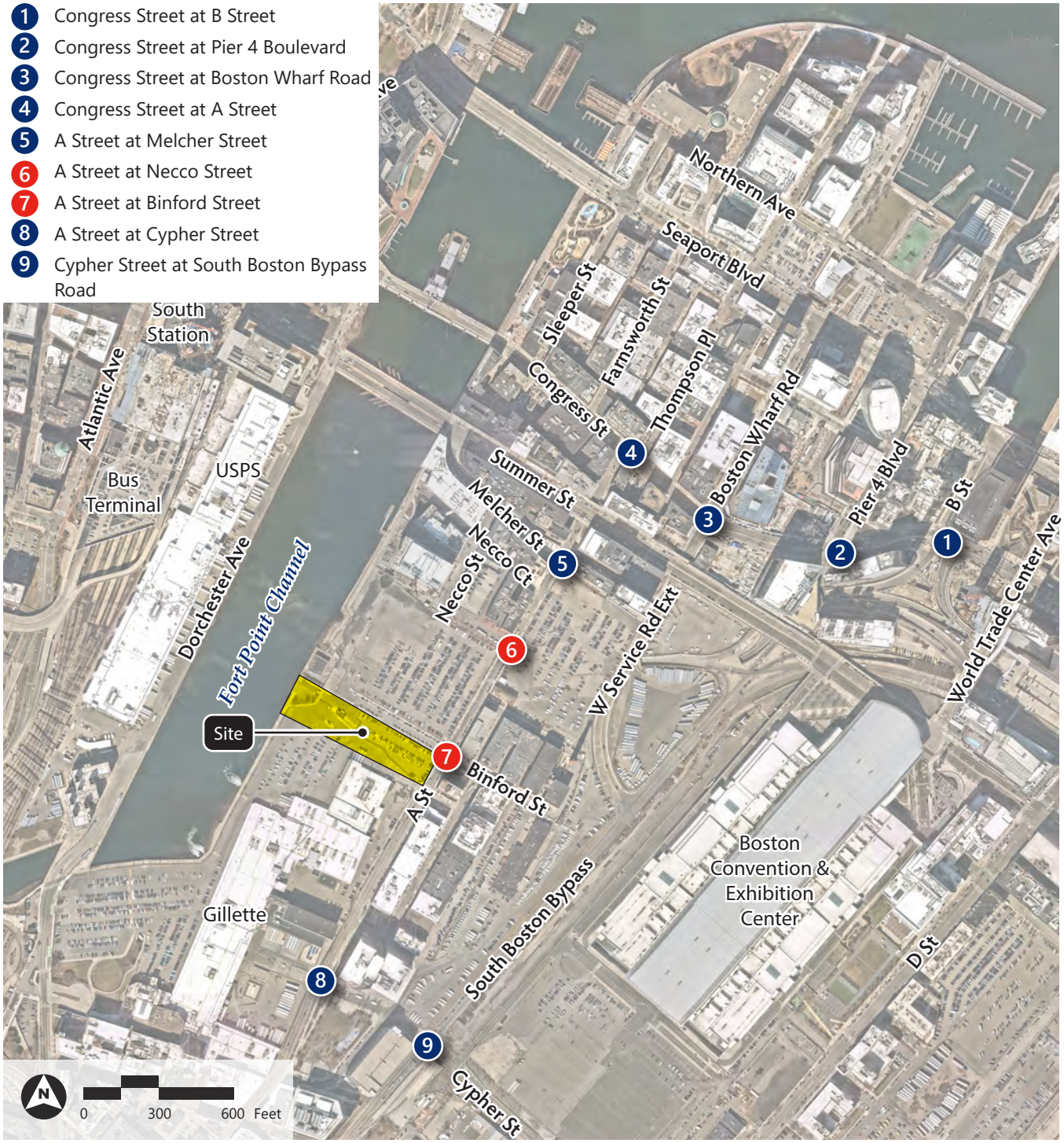


Source: NearMap Aerial

Figure 6.2 Study Area Intersections

232 A Street | Boston, Massachusetts

1. Congress Street at B Street
2. Congress Street at Pier 4 Boulevard
3. Congress Street at Boston Wharf Road
4. Congress Street at A Street
5. A Street at Melcher Street
6. A Street at Necco Street
7. A Street at Binford Street
8. A Street at Cypher Street
9. Cypher Street at South Boston Bypass Road



Signalized Intersection

Unsignalized Intersection

Source: NearMap Aerial

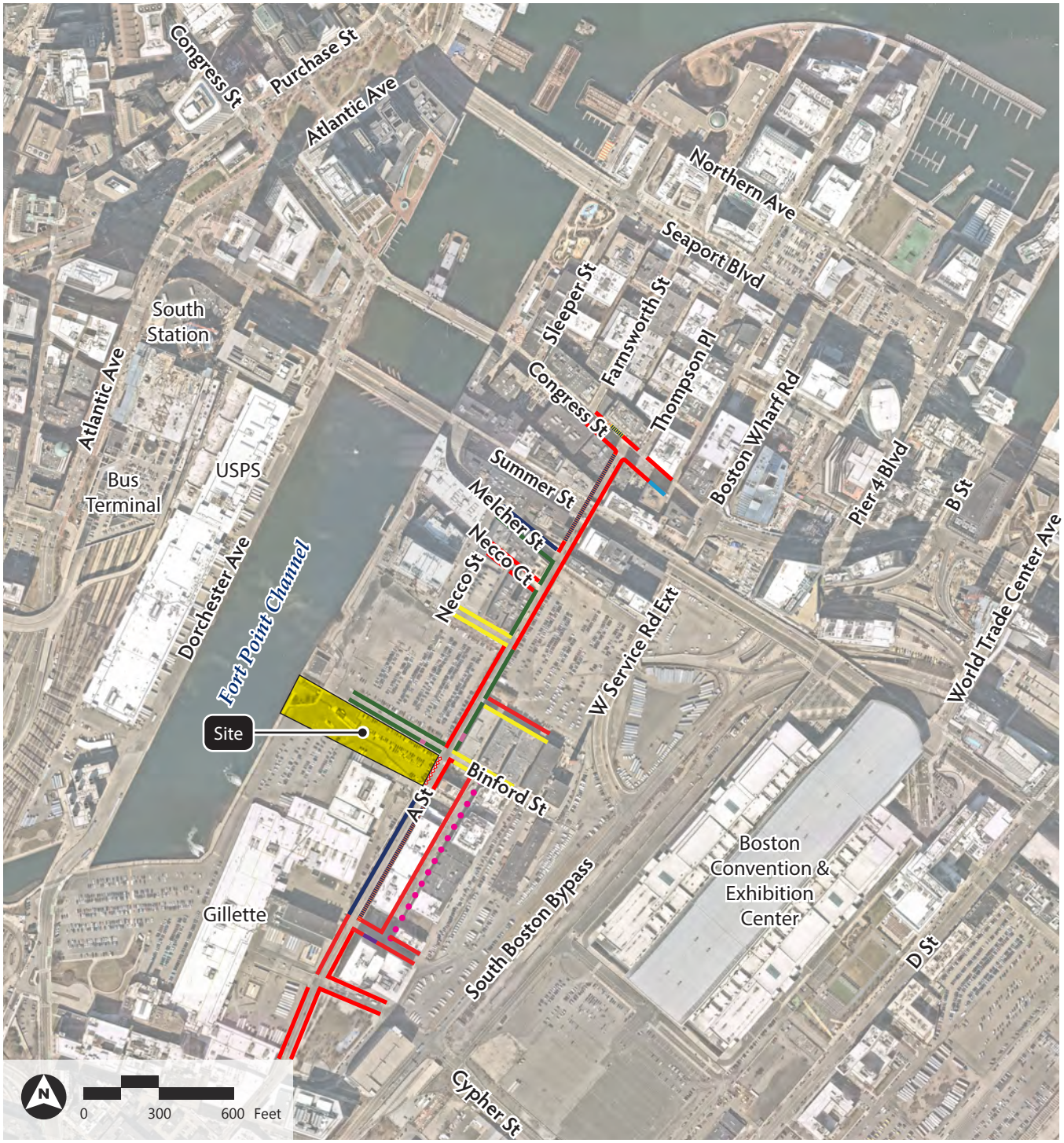
Figure 6.3 Traffic Control and Lane Geometry

232 A Street | Boston, Massachusetts

Not to Scale

Figure 6.4 On-Street Curbside Regulations

232 A Street | Boston, Massachusetts

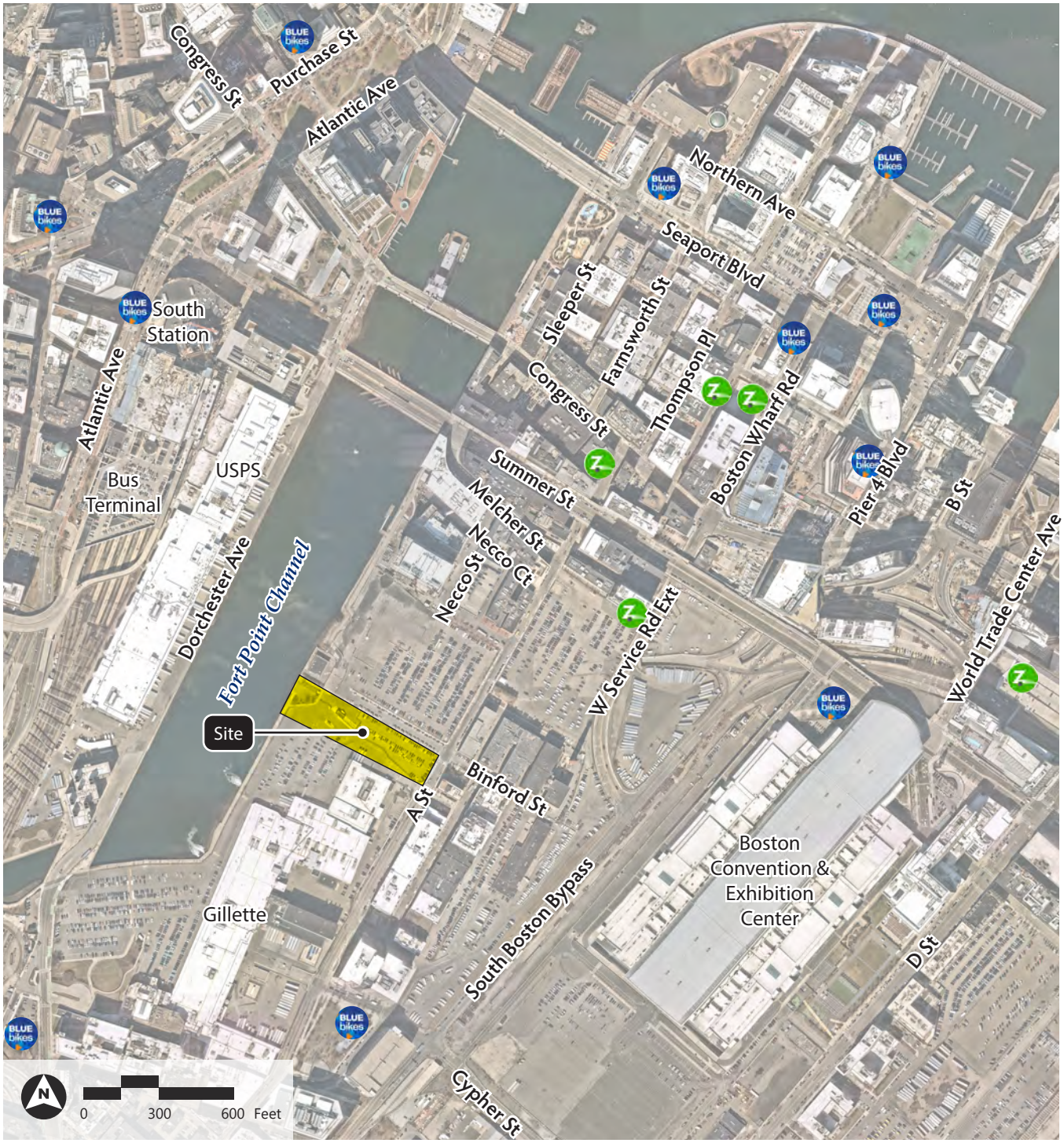


- No Stopping Anytime/No Parking
- Metered
- Resident Permit
- Private Permit
- Accessible Parking
- Commercial Vehicles 30-Minute Limit
- Pick-Up/Drop-Off 10-Minute Limit
- 15-Minute Limit
- Resident Parking 6PM-10AM
- Vallet Parking 5PM-1AM
- Bus Stop

Source: NearMap Aerial

Figure 6.5 Bicycle and Car Sharing Locations

232 A Street | Boston, Massachusetts



Source: NearMap Aerial, Bluebikes, Zipcar

Figure 6.6 2023 Existing Condition - Weekday Morning Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

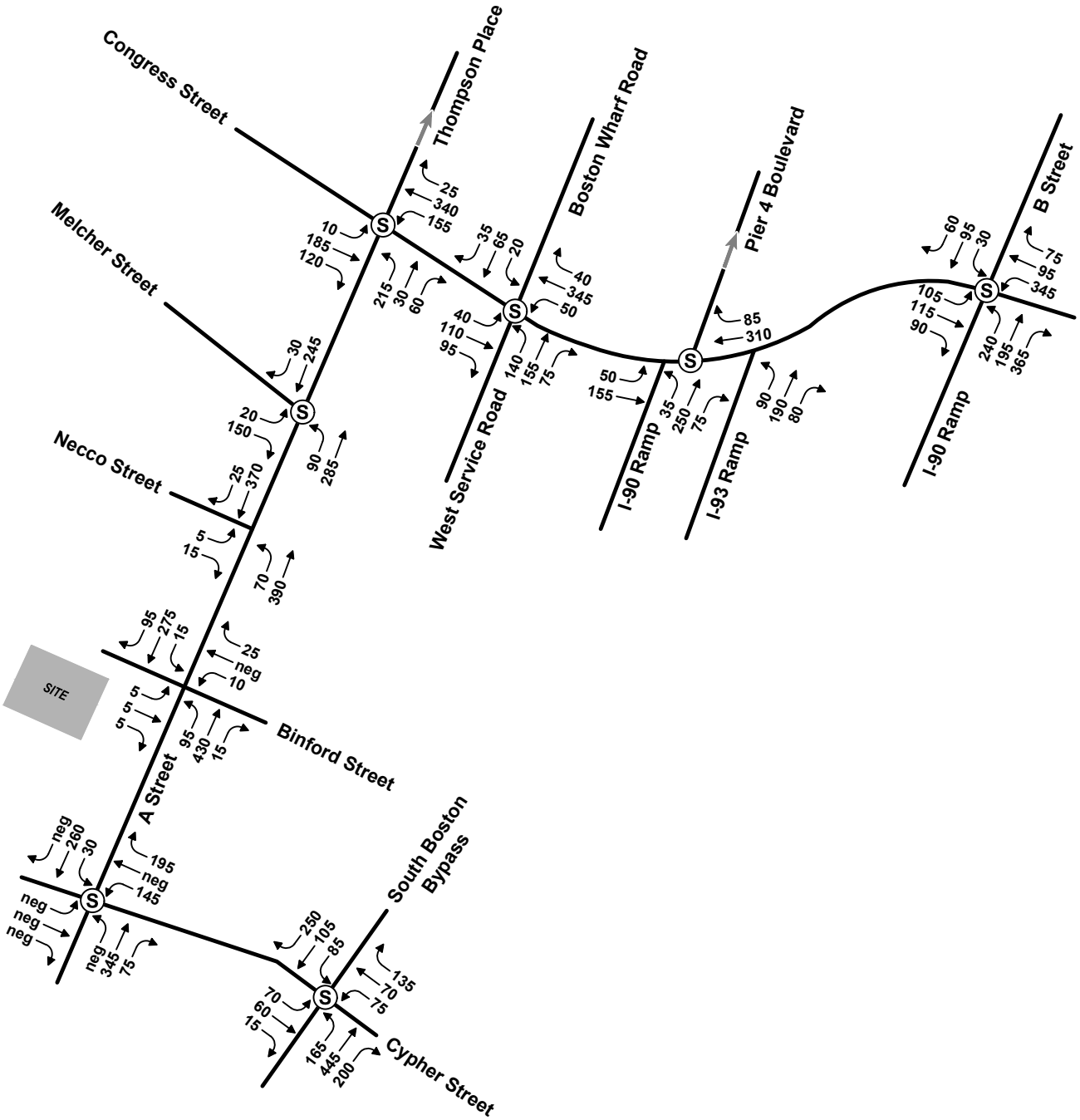


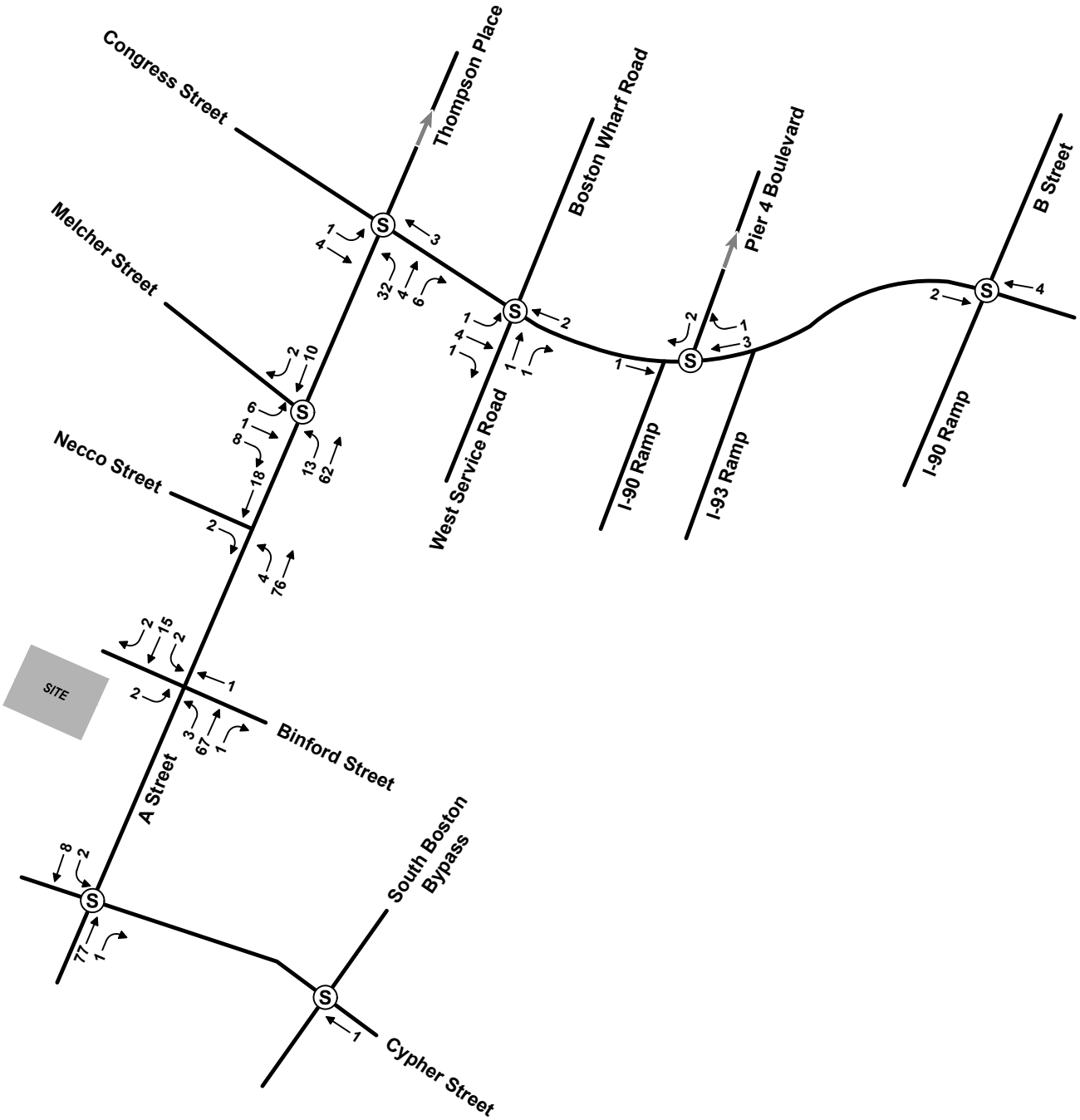
Figure 6.7 2023 Existing Condition - Weekday Evening Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

Not to Scale

Figure 6.8 2023 Existing Condition - Weekday Morning Peak Hour Bicycle Volumes

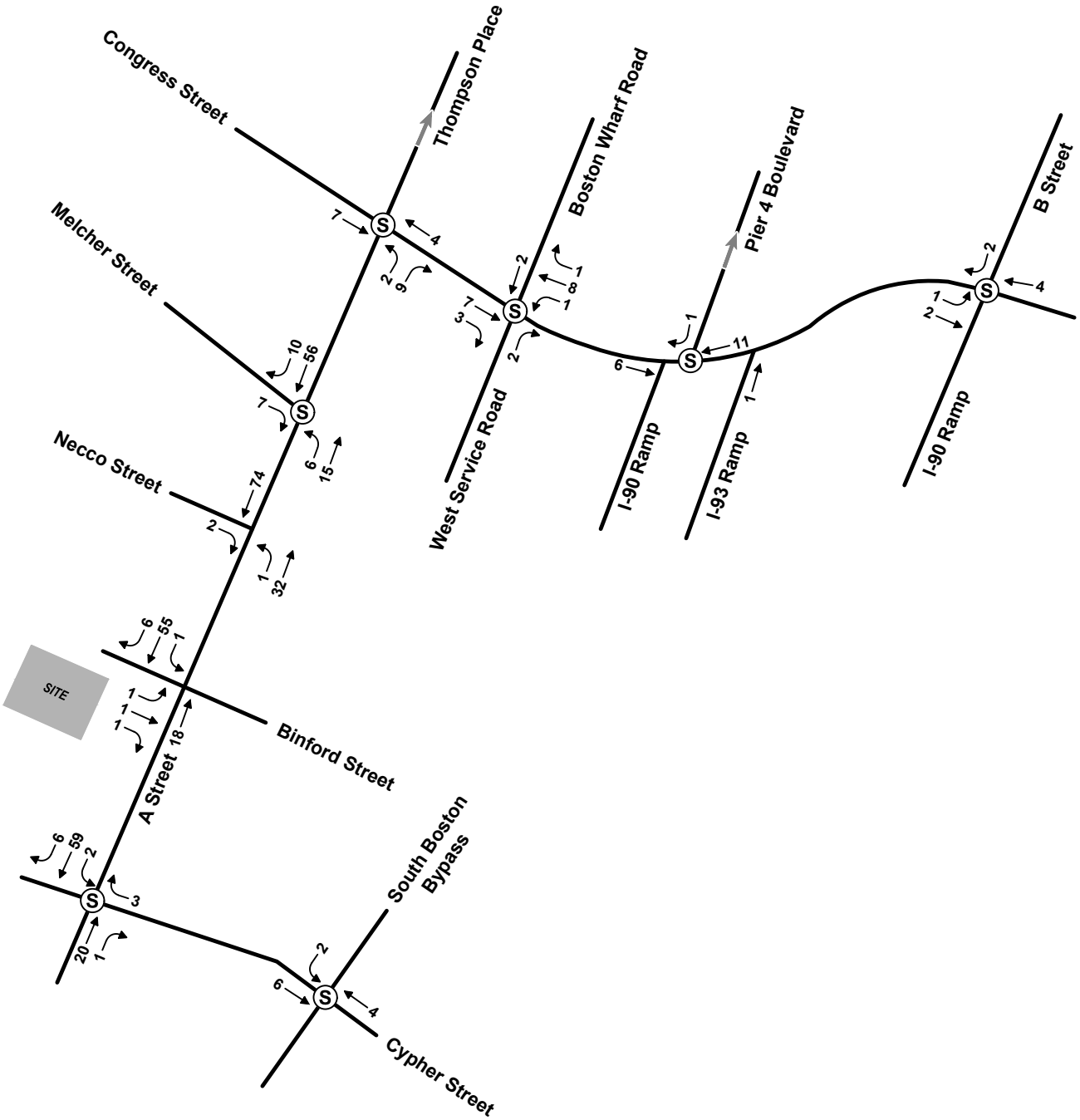
232 A Street | Boston, Massachusetts



Not to Scale

Figure 6.9 2023 Existing Condition - Weekday Evening Peak Hour Bicycle Volumes

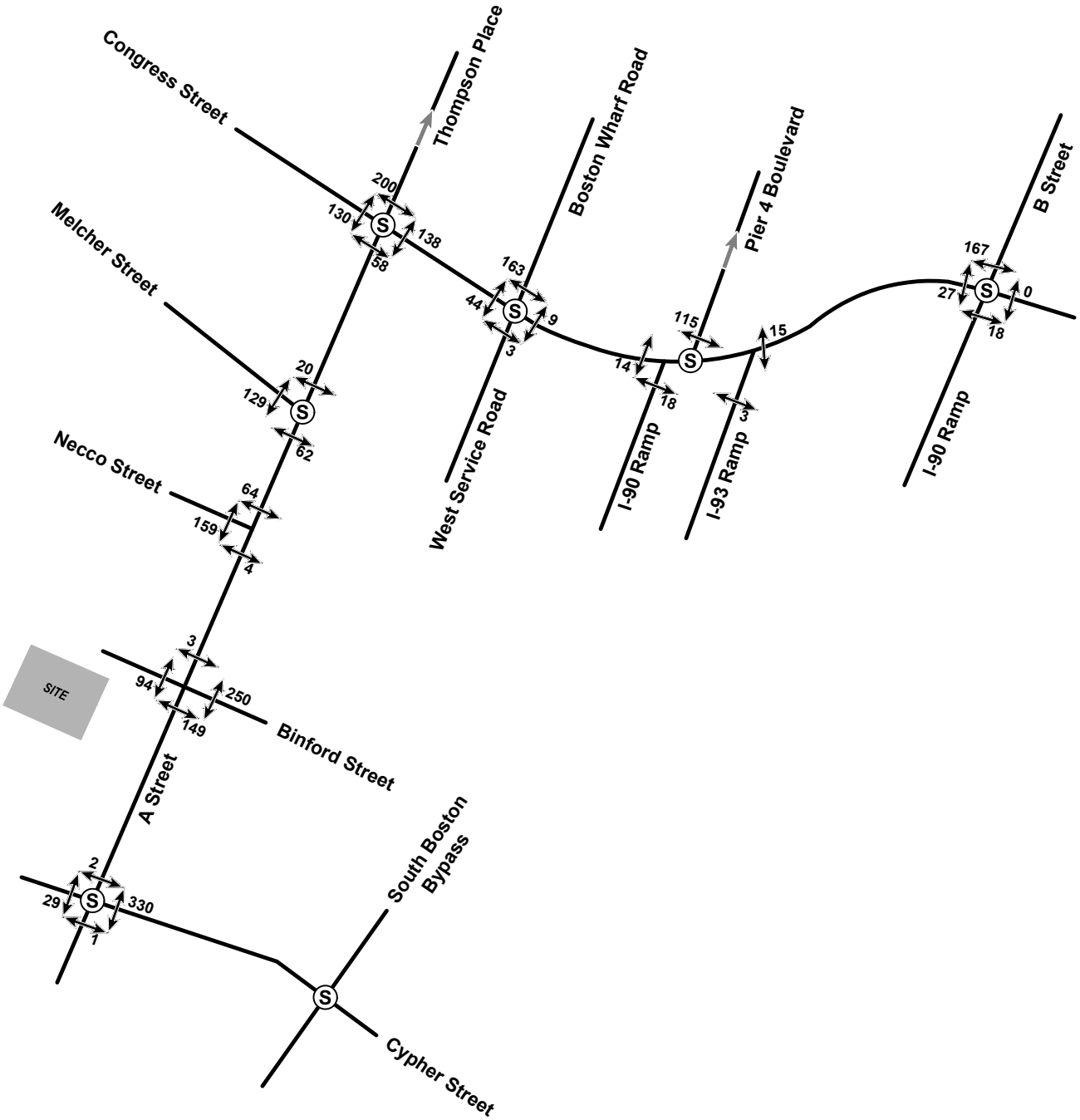
232 A Street | Boston, Massachusetts



Not to Scale

Figure 6.10 Existing Condition - Weekday Morning Peak Hour Pedestrian Volumes

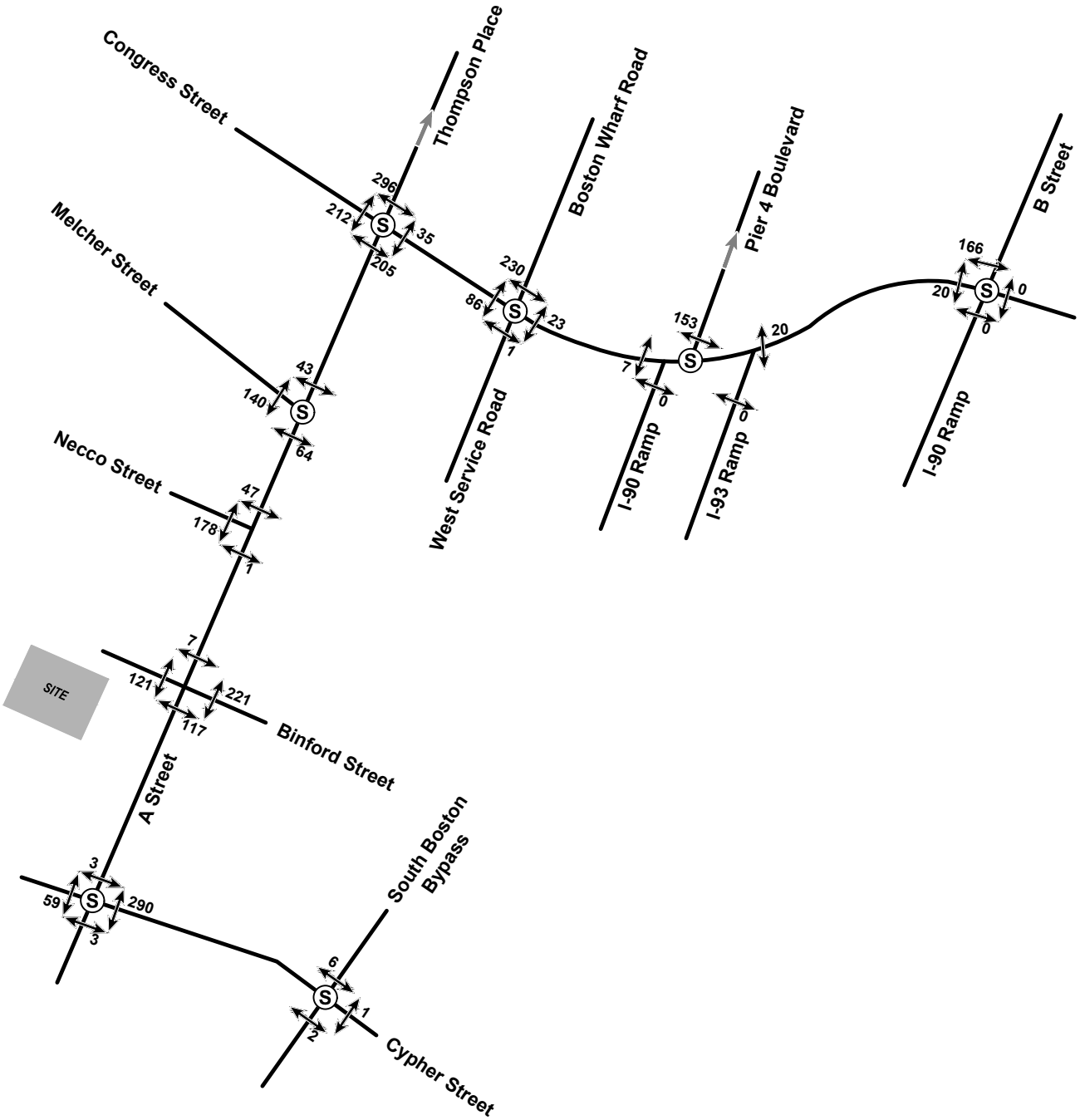
232 A Street | Boston, Massachusetts



Not to Scale

Figure 6.11 2023 Existing Condition - Weekday Evening Peak Hour Pedestrian Volumes

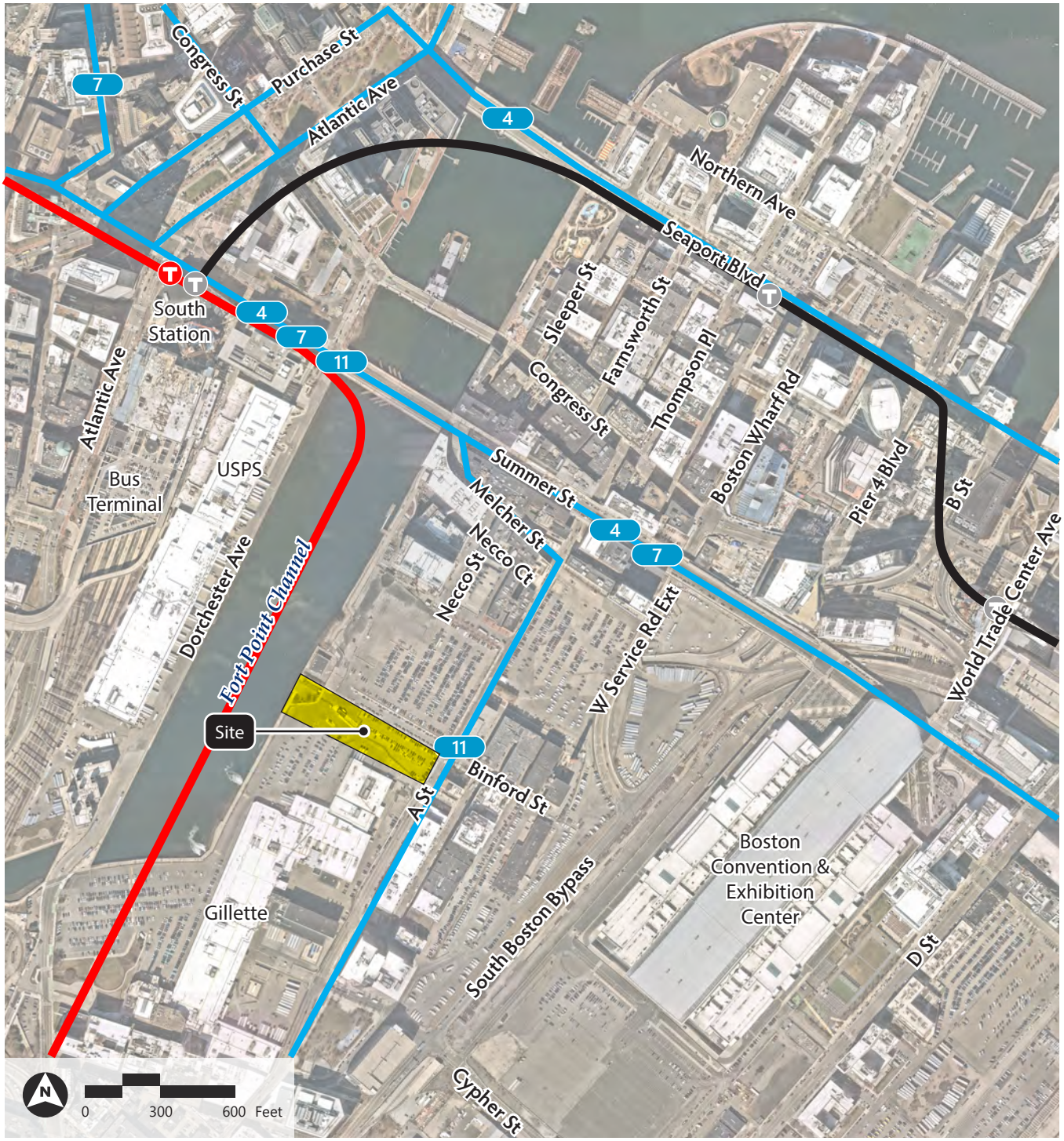
232 A Street | Boston, Massachusetts



Not to Scale

Figure 6.12 Public Transportation

232 A Street | Boston, Massachusetts



MBTA Bus Route

MBTA Red Line

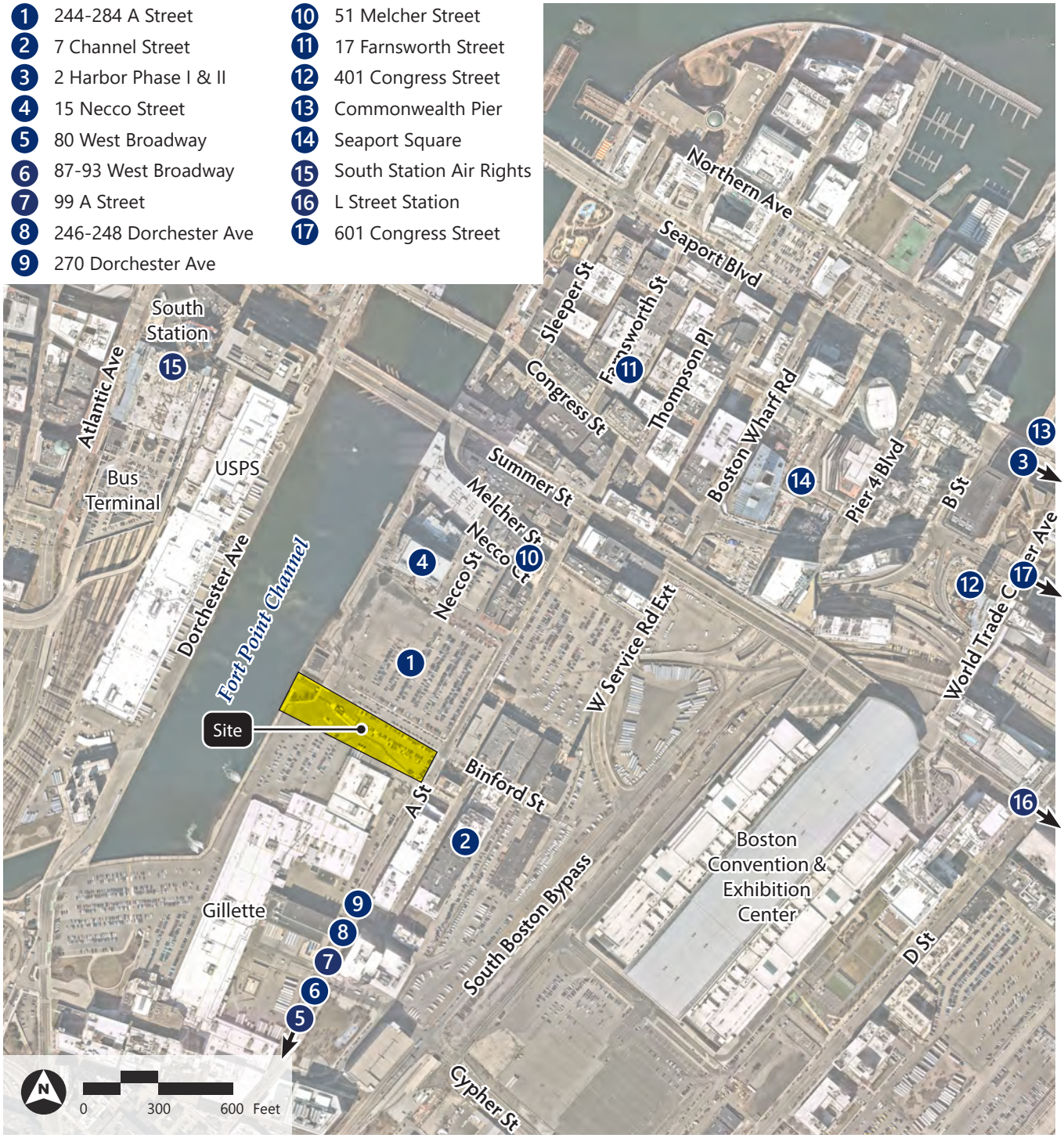
MBTA Silver Line (SL1/SL2/SL3)

Source: NearMap Aerial, MBTA 2023 Service Map

Figure 6.13 Nearby Development Projects

232 A Street | Boston, Massachusetts

1. 244-284 A Street
2. 7 Channel Street
3. 2 Harbor Phase I & II
4. 15 Necco Street
5. 80 West Broadway
6. 87-93 West Broadway
7. 99 A Street
8. 246-248 Dorchester Ave
9. 270 Dorchester Ave
10. 51 Melcher Street
11. 17 Farnsworth Street
12. 401 Congress Street
13. Commonwealth Pier
14. Seaport Square
15. South Station Air Rights
16. L Street Station
17. 601 Congress Street



Source: NearMap Aerial

Figure 6.14 2030 No Build Condition - Weekday Morning Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

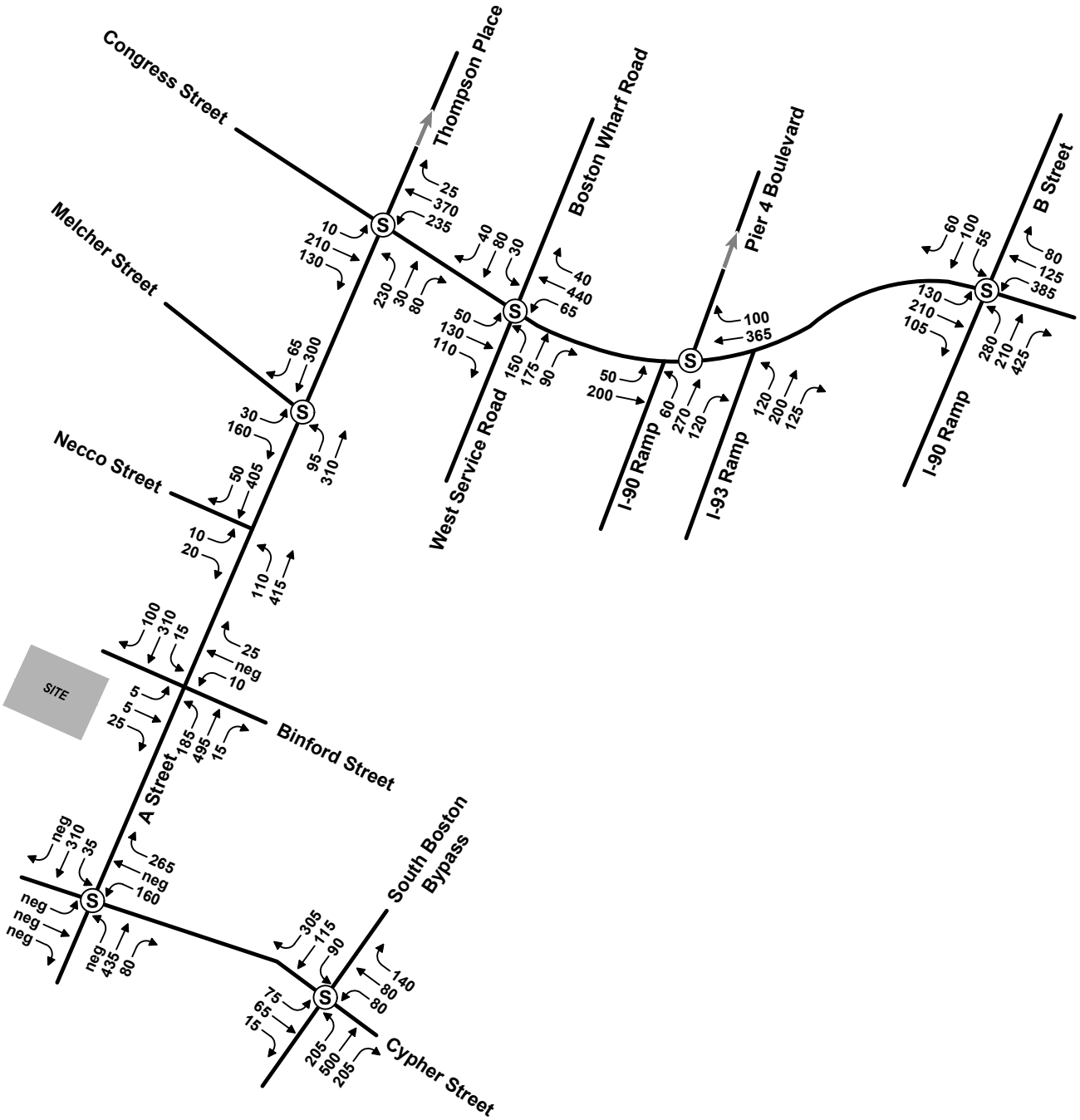
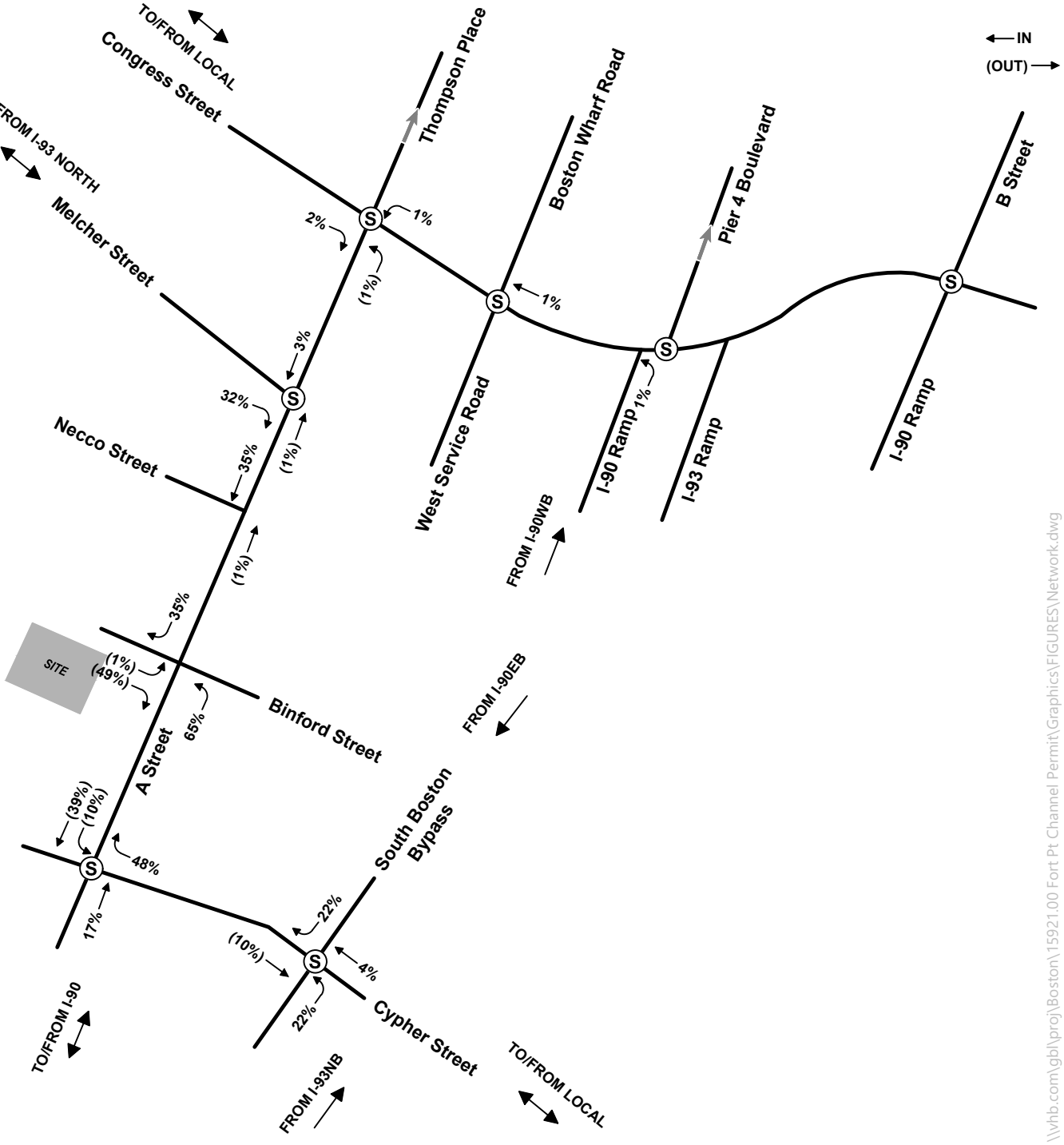


Figure 6.15 2030 No Build Condition - Weekday Evening Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

Figure 6.16 Trip Distribution

232 A Street | Boston, Massachusetts



Not to Scale

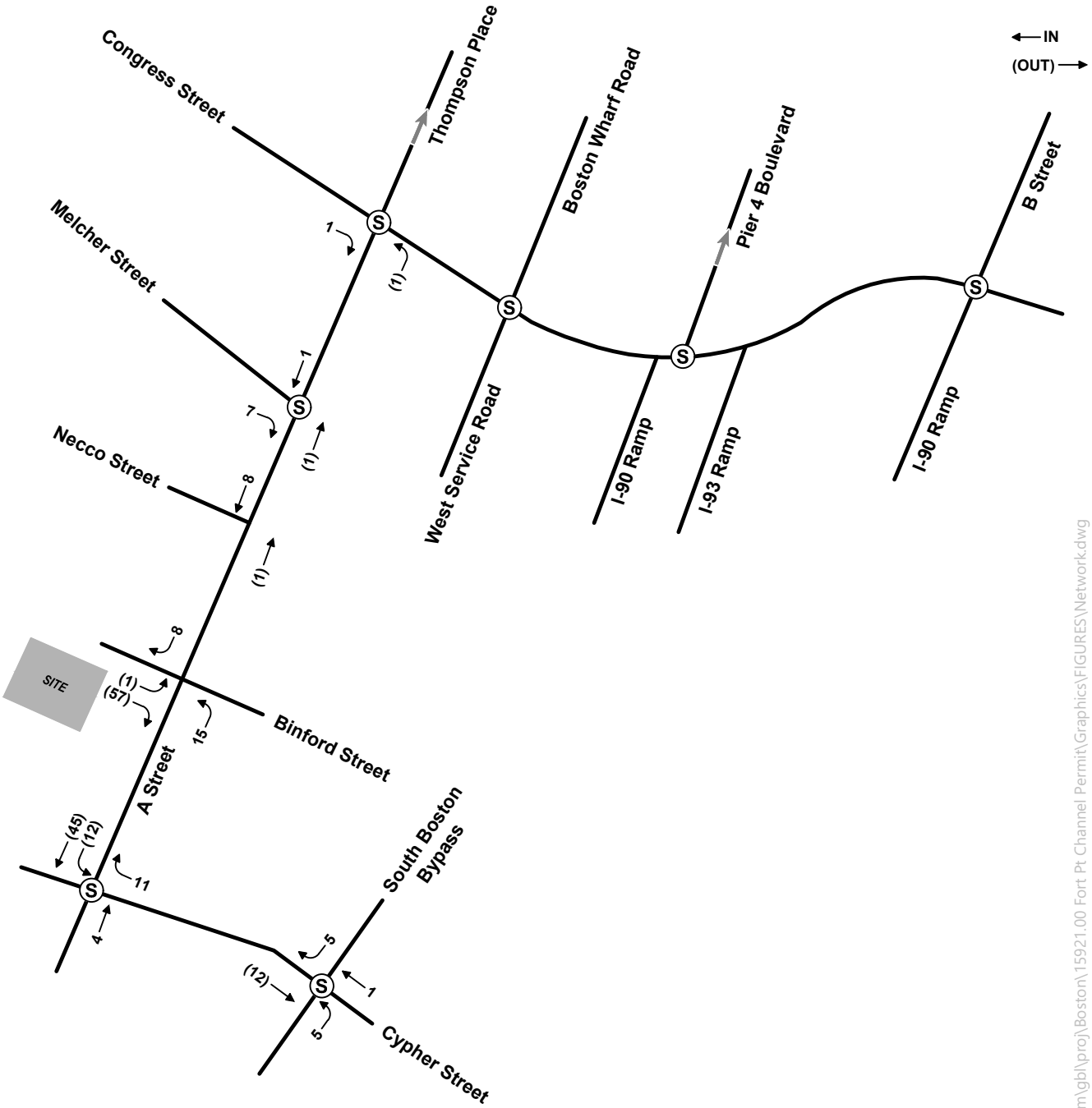
Figure 6.17 Project Generated - Weekday Morning Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

Not to Scale

Figure 6.18 Project Generated - Weekday Evening Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts



Not to Scale

Figure 6.19 2030 Build Condition - Weekday Morning Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

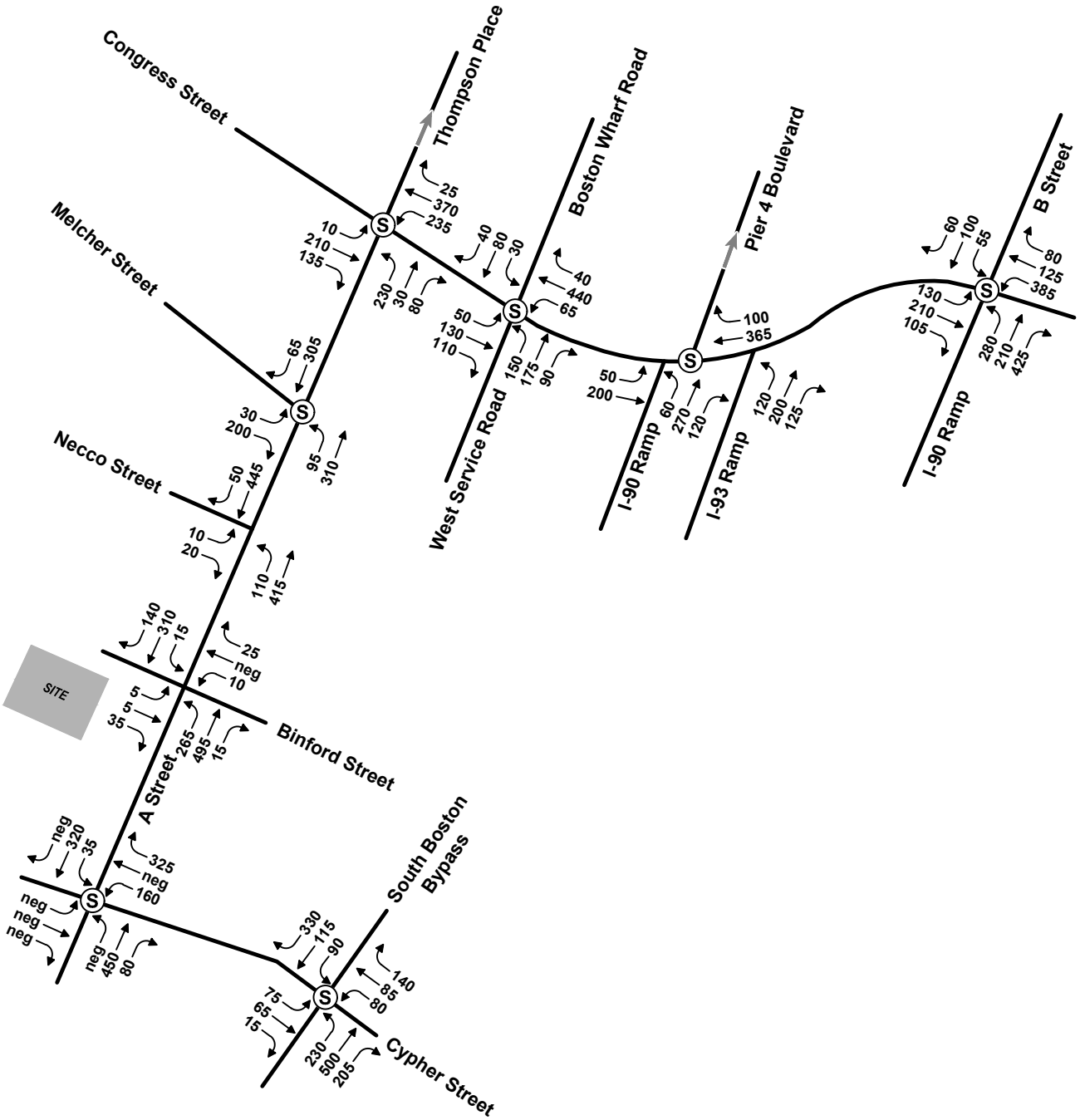
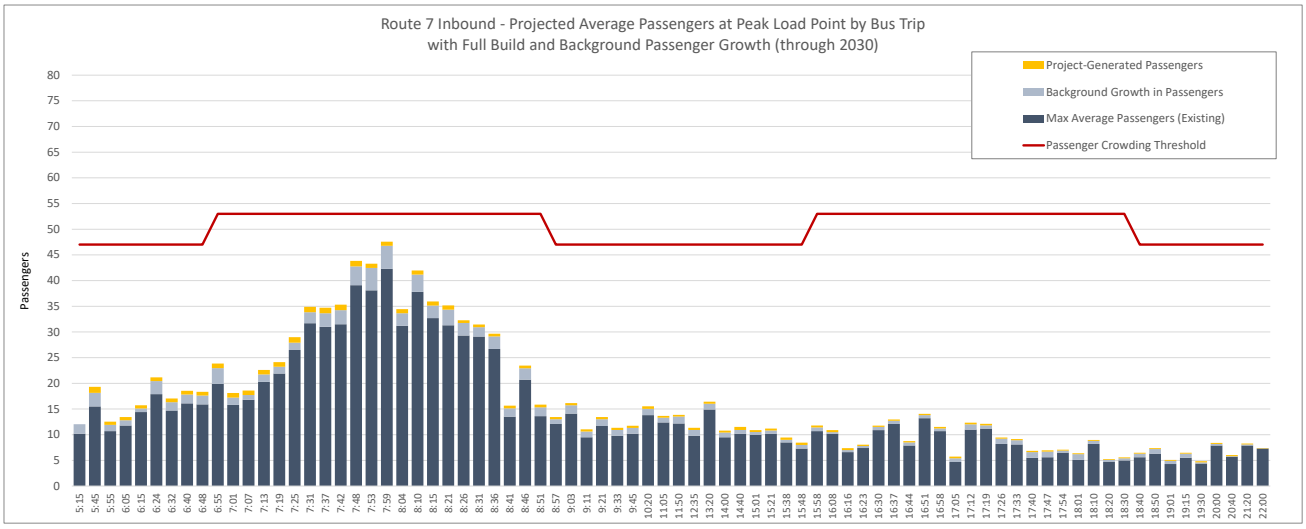


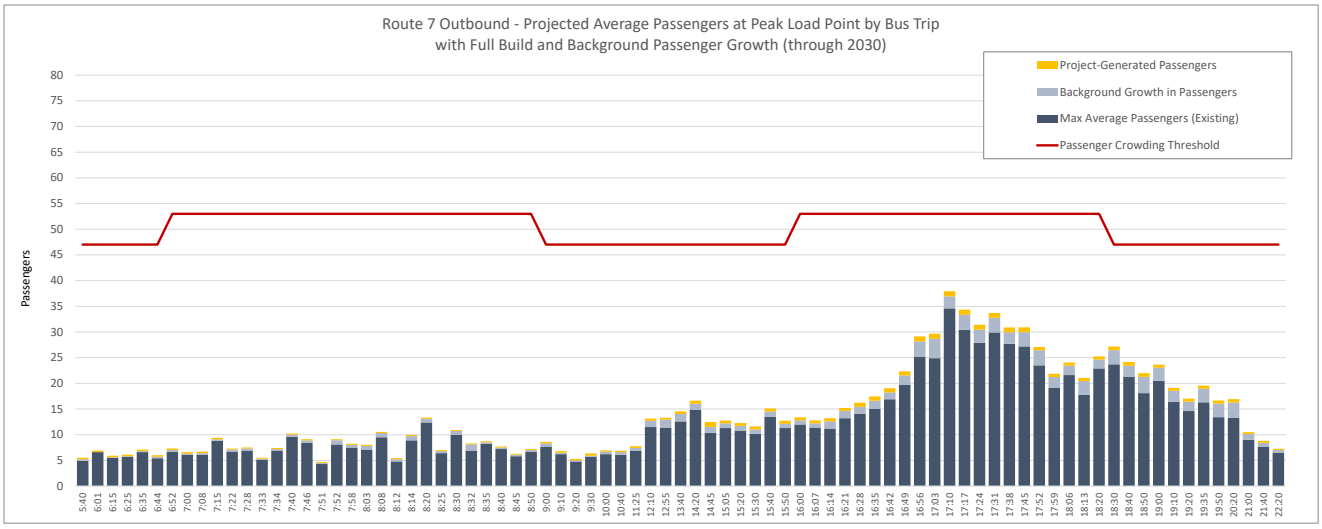
Figure 6.20 2030 Build Condition - Weekday Evening Peak Hour Vehicle Volumes

232 A Street | Boston, Massachusetts

Figure 6.21 Route 7 Peak Passenger Load Point Capacity Analysis - 2030 Condition

232 A Street | Boston, Massachusetts

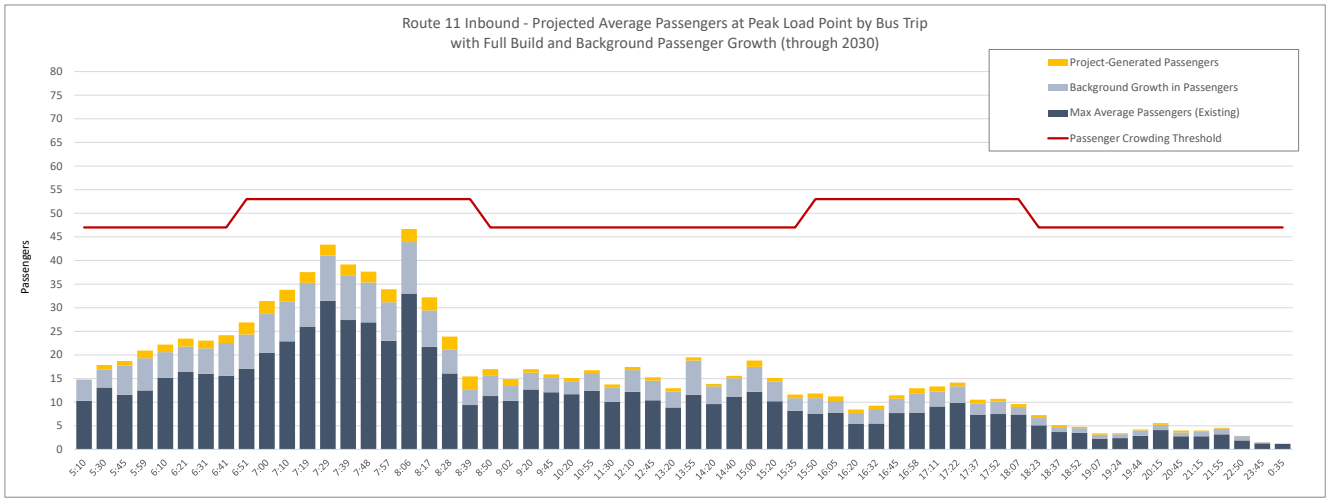


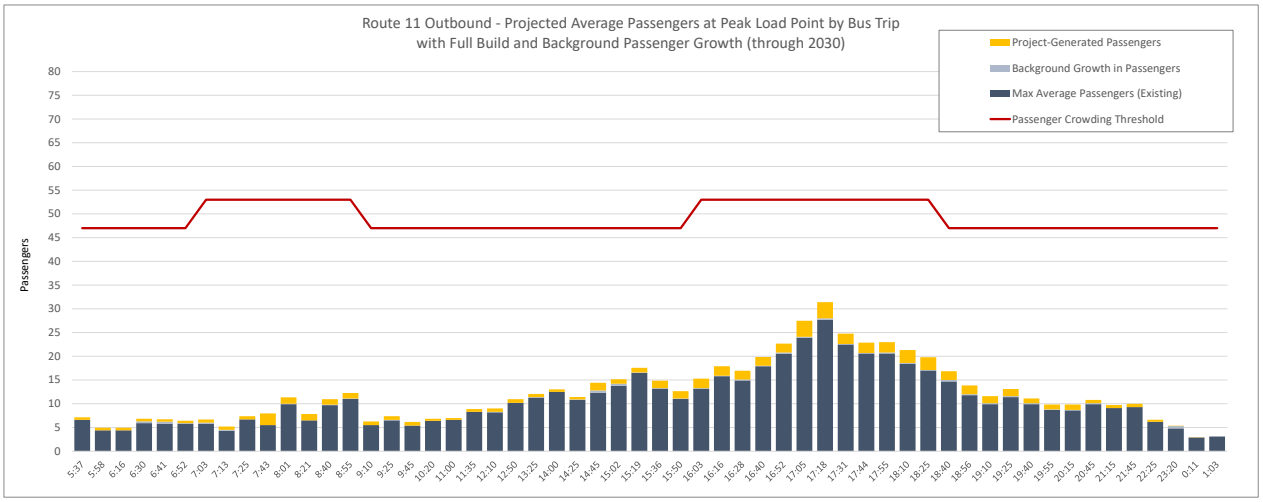


Source: NearMap Aerial

Figure 6.22 Route 11 Peak Passenger Load Point Capacity Analysis - 2030 Condition

232 A Street | Boston, Massachusetts





Source: NearMap Aerial

7

Climate Change Adaptation and Resiliency

This chapter identifies the Project Site's vulnerability to the effects of climate change, describes the applicable climate change adaptation planning context, and details proposed adaptation and resiliency measures at the building and site levels.

Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Climate Change' section of the DEIR Scope with references to specific DEIR sections in **bold**:

Adaptation and Resiliency

- A discussion on the feasibility of further elevating the Project Site to the recommended 500-year storm conditions and how it would interact with the planned Resilient Fort Point Channel Infrastructure Project. **(Section 7.3.2)**
- Provide clarification of whether the planned berm will be designed, constructed, and maintained by the City and/or the Proponent, and whether public funds will be required for its design and construction. **(Section 7.3.4)**
- A description of the effect of raising the Project Site and construction of the berm on adjacent roadways, sections of the Harborwalk, and infrastructure on or adjacent to the Project Site. **(Section 7.3.2)**
- Provide clarification that FEMA has reviewed/commented on the current design of the berm. **(Section 7.3.4.2)**
- A discussion on how flood protection will be provided if the berm is not constructed in a manner that aligns with the timing of construction of the project and if interim measures are being considered. **(Section 7.3.4.3)**
- An analysis of how the proposed fill, grading, and solid project components proposed within the coastal floodplain will affect coastal floodwater flow and drainage patters within and adjacent to the site during predicted rain and coastal storm events. **(Section 7.4)**
- Provide a narrative description and plans/graphics of depicting topography and the sources, flow direction, and pathways of existing and proposed coastal and inland flooding onto, through, and off the site during a coastal storm event; demonstrate how coastal floodwater will flow onto and off the Project Site and surrounding area under existing and proposed conditions; include a description about potential impacts if the proposed berm changes, reduces, and/or eliminates any flood pathways. **(Sections 7.4.2 and 7.4.3 and Figures 7.2 through 7.14)**
- An analysis of any changes in velocity, direction, depth, and extent of coastal floodwater in the event the flow is channelized due to the project. **(Sections 7.4.2 and 7.4.3)**

- An analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities. **(Section 7.4.4)**
- Provide cross-sections through the Project Site depicting existing grades, proposed grades, proposed buildings, structures and FEMA flood zone elevations. **(Figure 7.1)**
- A discussion of how the flow path analysis would be affected if the regional berm were not constructed and any off-site flood impacts anticipated under this scenario. **(Sections 7.4.2 and 7.4.3)**
- A description of proposed measures to improve the project's resiliency to predicted climate change impacts. **(Section 7.3)**
- A discussion on stormwater sizing consistency with 24-hour rainfall volumes for the 2070 1 percent annual chance flood event. **(Section 7.3.5)**
- A description of proposed strategies for adaptation to extreme heat conditions and use of low-impact design strategies for stormwater management. **(Sections 7.3.6 and 7.3.7)**

Greenhouse Gas Emissions/Air Quality

- An assessment of stationary source GHG emissions, in accordance with the MEPA GHG Policy and Protocol and in response to DOER's comment letter, including a description of the methodology used to estimate energy usage and associated stationary source GHG emissions related to the project. **(Section 7.7.1)**
- A description of the building energy model assumptions, including the specific stationary source GHG emissions reduction measures that were modeled, and clarification on whether certain building design or operational GHG reduction measures will be mandated by the Proponent to future occupants or encouraged for adoption and implementation. **(Section 7.5.1.1)**
- Provide building energy model results for each alternative considered and emissions tables that compare base case emissions with the Preferred Alternative. **(Appendix D)**
- An evaluation of potential mobile source GHG emissions associated with project-generated vehicular traffic. **(Section 7.7.2)**
- A narrative description of construction truck loading and staging activities and estimated GHG emissions from idling. **(Section 7.5.2.7)**
- A description of measures to reduce mobile source GHG emissions, such as installation of EV charging stations and TDM measures. **(Section 7.5.2.7**
- An analysis of air quality impacts associated with project-generated vehicular traffic, in accordance with the MassDEP Guidelines, for the Existing, No-Build, and Build Conditions, including VOCs, NOx, PM2.5, PM10, and DPM, as well as mobile source GHG emissions. **(Section 7.5.2)**
- A description of feasible measures proposed to avoid, minimize and mitigate traffic and air quality impacts, and to avoid disproportionate adverse effects on EJ populations. **(Section 7.5.3)**

7.1 Key Findings

The key findings related to climate change adaptation include:

- The Project will implement a portion of the district scale flood resilience measures consistent with the Resilient Fort Point Channel Infrastructure (RFPCI) project (potentially utilizing FEMA funding) that is mutually agreed upon by the City of Boston and the Proponent;

- This will protect the Project Site and upland areas from the projected 2070 1 percent annual chance flood event.
- These measures will tie into similar measures on the adjacent sites;
- The stormwater management system is being designed to manage future extreme precipitation events;
- A suite of site and building measures are proposed to mitigate the impacts of extreme heat events;
- The building is being designed in compliance with Boston's Coastal Flood Resilience Overlay District by elevating the first floor to the sea level rise design flood elevation; and

The key findings related to the flowpath analysis include:

- The velocities of floodwaters will be approximately 0.4 to 3 feet/second (ft/sec) within the area surrounding the Project Site under no-build conditions (Scenario #1);
- Under the modified no-build conditions (Scenario #2) flood velocities reach approximately 6 ft/sec within the Project Site at the maximum peak of the event due to fill proposed as part of the 244-284284 A Street and 15 Necco Street projects;
- For post-development conditions (Scenario #3) incoming flood velocities will be approximately 4 ft/sec to the south of the Project Site along the Gillette driveway at the maximum peak of the event. These velocities are non-erosive and lower than those developed under Scenario #2 under the no-build conditions with 244-284 A Street and 15 Necco Street projects;
- The post-development conditions with the 244-284284 A Street and 15 Necco Street sites (Scenario #4) cause a restricted flowpath to the south of the Project Site, along the Gillette driveway, with floodwaters reaching approximately 8 to 9 ft/sec at the peak of the event without the RFPCI project constructed at the Gillette property;
- Under the post-development condition that includes the 244-284 A Street and 15 Necco Street projects, and implementation of the RFPCI at the Gillette property (Scenario #5), velocities to the south of the Project Site at the Gillette driveway are approximately 4 to 5 ft/sec at the peak of the event as floodwaters move westerly from A Street; and
- Flooding depths and water surface elevations near the Project Site will not be affected by the Project. This is due to flooding being the result of coastal stillwater flooding, which is driven by the astronomical tide and storm surge rather than a storage volume.

The key findings related to GHG mitigation include:

- The Project is committed to the following building energy measures that are beyond code requirements:
  - 13 percent reduction in energy use and 27.6 percent reduction in 2050 GHG emissions (5.5 percent decrease using current MEPA emission factors), relative to Stretch Code;
  - 25 percent EV charging stations in spaces;
  - 75 percent total EV Readiness in spaces (better than Stretch Code minimums); and
  - Transportation demand management program.

7.2 Regulatory Context

This section discusses regulations, policies and protocols related to climate change adaptation and mitigation.

7.2.1 Climate Adaptation

The BPDA requires projects subject to Boston Zoning Article 80 Large Project Review to complete a Resiliency Checklist to assess potential adverse impacts that might arise under future climate conditions, and identify any Project resiliency, preparedness, and/or mitigation measures identified early in the design stage.

The Project Site is also within the Article 25A *Coastal Flood Resilience Overlay District* (CFROD), which requires non-residential buildings to be floodproofed or elevated at least one foot above the sea level rise base flood elevation (SLR-BFE), which is calculated based on the Boston Harbor Flood Risk Model (BH-FRM).

The Project is also subject to the *MEPA Interim Protocol on Climate Change Adaptation and Resiliency* (the "MEPA Interim Protocol"), which requires addressing the output report from the Resilient Massachusetts Action Team (RMAT) Climate Resilience Design Standards Tool, which utilizes the Massachusetts Coast Flood Risk Model (MC-FRM).

7.2.2 MEPA Greenhouse Gas Emissions Policy and Protocol

The Executive Office of Energy and Environmental Affairs (EEA) has developed the "MEPA GHG Policy," which requires project proponents to identify and describe feasible measures to minimize both mobile and stationary source GHG emissions generated by their proposed project(s). Mobile sources include vehicles traveling to and from a project, while stationary sources include on-site boilers, heaters, and/or internal combustion engines (direct sources) as well as the consumption of energy in the form of electricity (indirect sources). Greenhouse gases include several air pollutants, such as carbon dioxide (CO_2), methane, hydrofluorocarbons, and perfluorocarbons. The MEPA GHG Policy calls for the evaluation of CO_2 emissions for a land development project because CO_2 is the predominant man-made contributor to global warming. This evaluation makes use of the terms CO_2 and GHG interchangeably.

The MEPA GHG Policy states that all projects undergoing or previously undergone MEPA review requiring the submission of an Environmental Impact Report (EIR) or NPC's previously requiring an EIR, must quantify the project's GHG emissions and identify measures to avoid, minimize, or mitigate such emissions. In addition to quantifying project related GHG emissions, the MEPA GHG Policy requires proponents to quantify the effectiveness of proposed improvements in terms of energy savings, and therefore, potential emissions reductions. The goal of the MEPA GHG Policy is to identify and implement measures to minimize or reduce the total GHG emissions anticipated to be generated by that respective project.

7.2.3 State Stretch Energy Code

As part of the Green Communities Act of 2008, Massachusetts developed an elective building code, known as the "Stretch Energy Code," that gives cities and towns the ability to choose stronger energy performance in buildings than otherwise required under the state building code. The 2023 Stretch

Energy Code is overseen by DOER in 225 CMR 22.00 and 225 CMR 23.00 and provides amendments to the 2021 International Energy Conservation Code (IECC) and American Society of Heating and Air Conditioning Engineers (ASHRAE) guideline 90.1-2019. The Stretch Energy Code increases the energy efficiency code requirements for new construction and major residential renovations or additions in municipalities that adopt it.

The Project is subject to the updated 2023 Stretch Energy Code. Due to the proposed use, the Project is using the "Relative Performance" compliance pathway under the 2023 Stretch Code. The Relative Performance path requires that Proponents demonstrate that proposed designs will perform better than a baseline model. A baseline model set according to ASHRAE 90.1-2019 Appendix G has been considered and is included in the following analysis. The 2023 Stretch Energy Code requires the Project meet or exceed a "Performance Energy Index Target" that is set using the baseline model. Under the Relative Performance path, the Project is subject to additional amendments under code sections C401.3, C402.1.5, C402.2.8, C402.3 through C402.7, C405.2.4, C405.13, C406, C407.2, and C408. These sections include additional energy efficiency measures such as thermal envelope certification, building envelope requirements, daylight-responsive controls, electric vehicle charging, additional efficiency requirements, and commissioning.

7.2.4 City of Boston Specialized Energy Code

In addition to the state Stretch Energy Code, the Project is also subject to the 2023 Specialized Code, which has been adopted by the City of Boston. Also referred to as the "net-zero code," this code layers on top of the Stretch Code to require additional energy efficiency requirements in order to make a building net-zero or net-zero ready. Under the Specialized Code, buildings must choose between the Mixed Fuel or All-Electric pathway to comply. The Mixed Fuel pathway for buildings with planned fossil fuel consumption requires that a certain amount of on-site PV be installed and certain provisions and infrastructure to accommodate for future electrification. The All-Electric pathway for buildings with no fossil fuel consumption states buildings comply without any additional efficiency measures.

7.3 Adaptation and Resiliency

7.3.1 Flood Resiliency Context

The Project is taking all practicable measures to protect the Project Site from damage during a variety of current and future tidal and coastal storm flooding events. These include measures that have both site-specific and neighborhood benefits. As noted in the City's C*oastal Resilience Design Strategies for South Boston*, collective action is required across the waterfront throughout South Boston to achieve resilience goals, and no single property can achieve adequate resilience on its own.

For this reason, as described in the ENF, the BPDA has developed a preliminary design for "The Resilient Fort Point Channel Infrastructure Project," (RFPCI project) which was subject to MEPA review under EEA No. 16514. The RFPCI project involves the design and construction of approximately 2,090 linear feet of mixed berm and floodwall structures along the portion of the Fort Point Channel between Necco Street and Dorchester Avenue, as well as installation of outfall backflow prevention flap gates and interim deployable flood protection barriers within public ways. The BPDA has secured a FEMA FY18 Pre-Disaster Mitigation Grant to design and construct portions of the proposed berm. According to the ENF, the proposed design flood elevation (DFE) for the berm of 14.6 ft NAVD88 is

an average of two RMAT recommended DFEs based on MC-FRM projections. Additional details regarding coordination with the RFPCI project are included in Section 7.3.4 below.

7.3.2 Site Elevations

The Proponent has selected a protection elevation that is consistent with and strives to further improve upon that contemplated in the RFPCI project, which is the elevation anticipated to be replicated all along the east side of the Channel. The RFPCI project calls for elevation of the berm above 14.6 NAVD88; the Project design is planning for 15.0 NAVD88. The RMAT Report for the Project identified a Projected Wave Height elevation for the 2070 0.2 percent annual chance flood evening of 16.6 NAVD88 (area weighted average).

Table 7-1 below identifies current and future land and water elevations that inform and reflect the design of the Project Site, including the existing elevation of the adjacent roadway.

Table 7-1 Current and Future Land and Water Elevations

	Information Source	Feet NAVD88	Feet BCB
Current[a] MHHW	NOAA	4.8	11.3
Current[a] HAT	NOAA	6.8	13.5
2050 MHHW	MC-FRM (RMAT)	7.8	14.3
A Street (average)	Survey	9.0	15.5
Current Site Grades	Survey	9.2 – 15.0	15.7 – 21.5
2070 MHHW	MC-FRM (RMAT)	9.7	16.2
Existing Top of Seawall	Survey	9.7 – 10.1	16.2 – 16.6
2030 0.2% ACE Water Surface	MC-FRM	11.6	18.1
2070 HAT	NOAA + MC-FRM	11.8	18.3
2070 1% ACE BFE	BH-FRM	13.0	19.5
2050 0.2% ACE Water Surface[b]	MC-FRM (RMAT)	13.4	19.9
Minimum Required Flood Proofing Elevation	Article 25A	14.0	20.5
Fort Point Channel Flood Protection Berm	BPDA	14.6	21.1
2050 0.2% ACE Wave Action[b]	MC-FRM (RMAT)	14.9	21.4
On-Site Proposed Line of Protection		15.0	21.5
Target First Floor & Critical Building Infrastructure Elevation		15.0	21.5
2070 0.2% ACE Water Surface[b]	MC-FRM (RMAT)	15.1	21.6
2070 0.2% ACE Wave Action[b]	MC-FRM (RMAT)	16.6	23.1

a. Epoch centered on 1992
b. Area weighted average
MHHW = Mean Higher High Water
HAT = Highest Astronomical Tide
ACE = Annual Chance Event
BFE = Base Flood Elevation

In addition to utilizing site grading to protect against current and future flooding from the projected 2070 1 percent annual chance flood event (both on-site and within the adjacent neighborhood), the site grading approach needs to accommodate a variety of constraints and purposes:

- Avoid excessive loading over the I-90 tunnel, which crosses underneath a large portion of the Project Site;
- Maintain vehicular access to the existing Pump House located adjacent to the Project Site (owned by Others) directly on the waterfront;
- Maintain vehicular access to the MassDOT Headhouse located on Project Site;
- Meet the approved ground and Harborwalk elevations of the adjacent redevelopment at 244–284 A Street;
- Meet existing adjacent elevations at A Street;
- Maintain accessible grades across the Project Site;
- Maintain an accessible building frontage at A Street;
- Promote drainage and provide sufficient stormwater management; and
- Maintain sight lines to the water in accordance with the Fort Point Channel Watersheet Activation Plan.

Since the Project Site will be implementing a portion of the district-scale flood protection measure, increasing the elevation of the berm above 15.0 NAVD88 would not provide increased protection, as water would flow onto the Project Site from the adjacent properties in an extreme future coastal storm event. The proposed grading plan maintains access to adjacent roadways, sections of the Harborwalk, and infrastructure on and adjacent to the Project Site. These considerations, along with conversations with the BPDA, have resulted in the preferred line of protection at 21.5' BCB. Elevating the Project Site further is not practicable given the constraints listed above.

7.3.3 Surrounding Elevations

The Project grading is informed by a variety of existing and proposed elevations on adjacent land as well as those on the Project Site itself. As per the materials included in the Waterways License Application for 244-284 A Street (submitted July 11, 2023), and as approved by the BPDA, that project has committed to constructing a berm with an elevation of 15.0 feet NAVD88 (21.5 feet BCB). The Resilient Fort Point Infrastructure Project sets forth an elevation above 14.6 NAVD88 for the berm extent located at the adjacent property to the south (the Gillette site) As described above, the Project is designed to tie into those elevations across the western side of the Project Site.

The eastern side of the Project Site borders A Street. This street is owned by the City of Boston, which does not have any plans to change the elevation of the roadway. The northern side of the Project Site borders Binford Street, which will be elevated as part of the approved 244-284284 A Street Project to slope up from A Street toward the Channel. Construction of the Project will not impact the surrounding streets (or the utilities therein) because the Project Site will meet existing adjacent street grades.

7.3.4 Resilient Fort Point Channel Infrastructure Project Coordination

This section describes coordination related to the RFPCI project related to environmental review, design, funding and construction and maintenance.

7.3.4.1 Environmental Review

As noted in the Secretary's Certificate on the ENF for EEA No. 16514, the BPDA is required to submit a Notice of Project Change when engineered project plans are available for review. The NPC must describe any refinements in the project design, indicate how the City is coordinating with nearby development projects whose property the project transects, and include plans and modeling to support assertions related to the absence of flood impacts on adjacent properties.

7.3.4.2 Design Coordination

The City of Boston, in conjunction with their engineering design consultant, is currently advancing the design of the RFPCI project. The Project team met with the BPDA's Climate and Environmental Planning group on September 27, 2023, and a broader BPDA group to discuss site planning on October 25, 2023, to discuss the Project's proposed resilience measures and how it fits into the RFPCI project. RFPCI coordination has been a frequent topic on several Urban Design focused meetings with the BPDA as well. As of the writing of this DEIR, RFPCI engineering details have not yet been made available to the Proponent. The Proponent has also requested an "all-hands" meeting with abutting ownership groups, the BPDA, MassDOT, and the BPDA's engineering design consultant. The Project team has completed a conceptual plan and cross-section of the flood protection system that is consistent with the City's conceptual design principles of the RFPCI project. The Project team is committed to continued coordination with, and making refinements to the design in response to feedback from, the BPDA.

The Project team will continue to coordinate and collaborate with both the City of Boston and its engineering design consultant as the design of both projects advances with the goal of providing a flood protection system at the Project Site that is consistent and compatible with the RFPCI project. This includes coordination on design criteria details related to freeboard, closures, embankment protection, embankment and foundation stability, settlement and interior drainage. The Project will incorporate such details as it advances into the final design of the flood protection system and looks forward to an "all hands" meeting as requested to aid in further design coordination. As the grant recipient, the City is responsible for direct coordination with FEMA and the final engineering details of the berm.

7.3.4.3 Funding and Construction

Depending on the timing of the City's design process, the portion of the berm that is on the Project Site may be constructed and initially financed by the Proponent as part of the Project. The Project will not be constructed without the inclusion of district scale flood protection measures. If the on-site portion of the berm is initially constructed without the use of public funds, the Proponent will seek reimbursement through the City of Boston and associated FEMA grant.

7.3.4.4 Maintenance

For levee systems to be accredited by FEMA, evidence that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection from the base flood exists must be provided as described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR 65.10). As the berm will be constructed as part of a district scale flood protection measure, the Proponent anticipates that maintenance of this infrastructure will be conducted on a district-wide scale. It is also anticipated that the City will seek FEMA accreditation for

the levee system, which they will be required to submit an officially adopted maintenance plan to FEMA. The Proponent anticipates coordinating with the City during the design process and providing documentation requested by the City as it seeks it's levee system approval.

7.3.5 Stormwater Management Resiliency Measures

The RMAT Tool provided the projected total precipitation depth and peak intensity for the 24-hr design storm in 2070 with a 25-year return period (1 percent annual chance event) of 10.9 inches. The recommended Tier 3 methodology was used to assess the capacity of the stormwater management to handle future precipitation events.

Table 7-2 Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)
Building	2070	100-year (1%)	10.9

The Project will result in a significant reduction of impervious area, creating new pervious area that will allow stormwater infiltration. The Project will incorporate green infrastructure approaches into the design, such as rain gardens, permeable pavers, and increased landscaping. Subsurface infiltration systems will be used to further promote stormwater infiltration.

The Project Site will be protected from coastal storm inundation through 2070 as described in Sections 7.3.2 and 7.4.

7.3.6 Site Resiliency Measures to Address Extreme Heat

As described in the ENF, the City of Boston's April 2022 *Heat Resilience Solutions for Boston* report identifies three main goals for reducing heat vulnerability for Bostonians:

- **Reduce Heat Exposure:** Reduce indoor and outdoor urban heat exposure, intensity, and duration by enhancing the capacity of the built environment to recover from daytime heat.
- **Adapt to Heat:** Expand choices for staying cool during heat waves and improve awareness of actions residents can take to stay safe and cool.
- **Reduce Sensitivity and Foster Healthy, Connected Communities:** Create healthier, more connected neighborhoods that help reduce underlying social determinants of health that increase heat risk.

The Project will contribute to creating a cooler community by replacing an asphalt parking lot with 1.5 acres of public realm including publicly accessible open space alongside a single sustainable, energy-efficient building (versus the two buildings that were planned for the Project Site under the PDA and SBMHP) .

Specifically, the Project will reduce heat exposure by:

- Increasing the Project Site's pervious cover by 0.45 acres (a 189 percent increase);
- Adding approximately 0.25 acres of net new vegetation, including shade trees; and
- Specifying high Solar Reflective Index (SRI) surface materials on the building and grounds.

The Project will help the community adapt to heat by:

- Providing shady gathering places including new tree canopy, a pergola shade structure and an arcade that runs the length of the building's south side;
- Offering climate controlled interior spaces on the ground floor that are open to the public; and
- Supplying a publicly accessible water fountain/bottle filling station to promote hydration.

The Project will foster a healthy, connected community by:

- Adding to the neighborhood's urban forest by installing streetscaping along A Street, Binford Street, and the new Necco Street extension to provide shady paths to the waterfront; and
- Implementing the open space plan associated with the 100 Acres Master Plan in conjunction with neighboring sites, and further improving upon it by providing a park approximately three times the size of what was planned for the site in the 100 Acres Master Plan.

7.3.7 Building Resiliency Measures

As previously noted, the building is being designed in compliance with Article 25A, which requires non-residential buildings to be floodproofed or elevated at least one foot above the sea level rise base flood elevation (SLR-BFE) as calculated based on the Boston Harbor Flood Risk Model (BH-FRM). As such, much of the building's ground floor elevation, inclusive of the critical infrastructural spaces, is raised to 21.5 BCB to protect from potential future flooding.

The building is being designed to mitigate extreme heat impacts through envelope design. The building's fenestration has been updated to limit the vision glass area of the façade to approximately 38 percent. Approximately 49.5 percent of vertical surfaces are opaque wall construction and 12.5 percent are opaque spandrel. The Project is trending to provide the code required Aggregate U-value targets for the vertical wall systems. The project utilizes triple glazed insulated glazing units to reduce solar heat gain and maximize the insulating value of the glazed wall systems throughout. As the design progresses, the Proponent will strive to improve this value to the extent practicable.

Building mechanicals will be located on the rooftop within a screened/louvered penthouse enclosure wall that is capped by a partially cantilevered canopy which supports the rooftop solar PV array (a.k.a., the "solar veil"). The solar veil provides protection from the sun for a potential rooftop terrace at the west side of the mechanical level to provide additional heat mitigation.

7.4 Land Subject to Coastal Storm Flowage and Flow Path Analysis

7.4.1 Land Subject to Coastal Storm Flowage

As discussed in Chapter 4, Section 4.3.2, the Project Site is within the FEMA AE Zone with a Base Flood Elevation (BFE) of 10' NAVD88 (16.46' BCB) and is regulated under the Massachusetts Wetlands Protection Act as Land Subject to Coastal Storm Flowage (LSCSF). The extents of LSCSF within the Project Site were delineated using the FEMA BFE and site-specific topography completed in 2023 and are shown in Figure 7.1.

According to the CZM and MassDEP *Coastal Manual: Applying the Massachusetts Coastal Wetland Regulations*, LSCSF can:

- "Slow down flood waters and allow them to flow across a natural landform surface, providing frictional resistance and reducing their energy and destruction potential;
- Allow flood waters to spread over a wide area without obstructions (Obstructions can cause the channelization of flood waters and storm-wave overwash and an increase in the velocity and volume of flow to adjacent or landward areas.);
- Allow flood waters to be detained, absorbed into the ground, or evaporated into the atmosphere; and
- Protect the land from storm erosion by providing a substrate for vegetation that helps to stabilize sediments and slow down flood waters."

Under existing conditions, approximately 90 percent of the Project Site is impervious, primarily consisting of a surface parking lot. There is some vegetation within the area known as Binford Street Park abutting Fort Point Channel. The existing site conditions provide minimal ability to slow, detain or absorb floodwaters, or provide a substrate for vegetation.

This Project intends to promote coastal resiliency with the development of a flood barrier as described in Section 7.3. When this solution is implemented along with other resiliency solutions within South Boston, the Project Site will no longer be characterized as LSCSF. The Project intends to further promote coastal resiliency by raising the elevation of a large portion of the Project Site. The flow path analysis described below evaluated the potential redirection or channelization of coastal flood waters due to the flood barrier and proposed project fill. The project is proposing an increase of 0.45 acres of pervious area over existing conditions which further provides flood related benefits.

7.4.2 Flowpath Analysis - Hydraulic and Alternatives Modeling

The Project Team conducted numerical hydraulic modeling using the United States Army Corps of Engineers (USACE) Hydraulic Engineering Center River Analysis System (HEC-RAS) Program (version 6.4.1) to quantify the potential changes to floodwater flowpaths and velocities under proposed conditions. A 2-dimensional (2D) overland flow model was developed for the Fort Point Channel waterfront and abutting neighborhood to model the incoming storm surge during a 1 percent annual chance flood event under current and projected 2070 sea level conditions. The modeling was run in an "unsteady" analysis, which allows the numerical model to calculate hydraulic properties throughout the storm surge event as it rises and recedes into the Project Site and surrounding neighborhoods. The model calculates the flood extent, depth, and velocities of floodwaters as they move across the Project Site and abutting public and privately-owned properties throughout the duration of the storm event.

The pre-development HEC-RAS model geometry (Scenarios #1 and 2 listed below) was developed using existing land use and structure information and a detailed topography survey supplemented with the most recent available large-scale topo bathymetric United States Geological Survey (USGS) LiDAR data available through the NOAA data access viewer for Eastern Massachusetts (2021). The pre-development model was then modified using proposed site grading and land cover at the Project Site to create the post-development model (Scenarios #3-5 listed below).

The 2D overland flow HEC-RAS model was developed with a 2D mesh and unsteady boundary condition to simulate the incoming coastal storm surge under current and future climate conditions. The initial 2D computation mesh was developed using a relatively large grid resolution at 100 feet x 100 feet. The grid was then refined with break lines, refinement regions, and the mesh editing tools for the

Project Site and nearby areas of importance. Within the Project Site and other refinement areas, the cells are sized at approximately 10 feet x 10 feet to capture the detailed topography more accurately.

Roughness values (Manning's "n") for the 2D flow area mesh were assigned based on land cover areas from the NOAA Coastal Change Analysis Program (C-CAP) Land Cover 2016 data and MassGIS building structures data. Land cover data was downloaded from MassGIS and was refined based on aerial imagery. The Manning's "n" values assigned to land cover within the model limits are listed in Table 7-3. A value of 10 was used to represent existing buildings/structures, as they would be able to flood (because many existing off-site buildings are below the current and future flood elevations) but would not see active conveyance.

Table 7-3 Manning's "n" Values

Land Cover	Manning's "n"
Bare Land	0.022
Beach	0.030
Deciduous Forest	0.100
Developed Open Space	0.035
Estuarine Aquatic Bed	0.035
Estuarine Emergent Wetland	0.035
Evergreen Forest	0.150
Grass	0.040
Grassland	0.040
Impervious	0.011
Palustrine Aquatic Bed	0.035
Palustrine Emergent Wetland	0.035
Palustrine Forested Wetland	0.070
Palustrine Scrub Shrub Wetland	0.045
Scrub Shrub	0.050
Structure	10.00
Unconsolidated Shore	0.040
Water	0.035

The tidal boundary condition was located just beyond the South Boston Waterfront coastline and was defined as a stage hydrograph using NOAA tide gauge data from station 843970 for the record 1 percent annual chance flood, Winter Storm Grayson, which occurred on January 1, 2018. To model the future 1 percent annual chance flood event projections for 2070, the stage hydrograph was scaled so that the maximum water surface elevation matched the 2070 1 percent annual chance flood event water surface elevation of the Massachusetts Coast Flood Risk Model (MC-FRM) Table 7-4 summarizes the maximum water surface elevations associated with each of the scenarios.

Table 7-4 Summary of Maximum Floodwater Elevations (Datum Boston City Base)

Scenario	Present Day 1% Annual Chance Flood Event	Future (2070) 1% Annual Chance Flood Event (Based on MC-FRM)

Maximum Stage (ft BCB)	16.3	20.5

7.4.3 Flow Path Analysis – Modeled Scenarios and Results

The Project team completed hydrologic and hydraulic numerical modeling under various scenarios to provide a comparison of a "no-build" scenario and "post-development" conditions, both with and without the currently approved and under constructionimprovements to the north (244-284284 A Street and 15 Necco Street projects) and south of the Project Site (resiliency solution along the Gillette property). These scenarios are as described below:

- **Scenario #1**: A no-build condition, which represents the current condition of the Project Site and abutting neighborhood.
- **Scenario #2:** A modified no-build condition which represents the current conditions of the Project Site and abutting neighborhood, and the approved but not constructed 244-284284 A Street and under construction 15 Necco Street projects to the north of the Project Site.
- **Scenario #3:** Post-development conditions on the Project Site with the current conditions of the abutting properties and neighborhood (identical to Scenario #1 outside of the Project Site).
- **Scenario #4:** Post-development conditions on the Project Site, with the 244-284 A Street and 15 Necco Street projects, and the current conditions of the remainder of the abutting neighborhood (Identical to Scenario #2 outside of the Project Site)
- **Scenario #5:** Post-development conditions on the Project Site, with the 244-284 A Street and 15 Necco Street projects, the current conditions of the remainder of the abutting neighborhood, and the proposed resiliency solution at the Gillette property.

7.4.3.1 Scenario #1 - No Build – 2070 1% Annual Chance Event

This scenario assessed the flow of floodwaters under current physical conditions at the Project Site and abutting neighborhood. Under a no-build condition, floodwaters from Fort Point Channel will begin to enter the western side of the Project Site by first overtopping the 244-284 A Street property to the north when the flood elevation reaches approximately 15' BCB, then moving southerly, inundating the Project Site.

Shortly after, flooding begins to overtop the seawall along the seaward edge of the property and begins to move west to east towards A street, while flow also overtops the Gillette property moving landward. As floodwater rises in elevation, it will accumulate in the parking lot area of vicinity buildings, north and south of the Project Site, and in the eastern portion of the Project Site, across A Street. Floodwaters will flow easterly while beginning to build-up and inundate non-floodproof existing buildings located to the south, north and east of the Project Site at approximately 20.5'± BCB as the maximum peak of the 2070 100-year event. Incoming floodwater flows across the Project Site and abutting properties with non-erosive velocities of approximately 3 ft/sec.

Floodwaters will retreat from the Project Site via similar flow paths as the incoming floodwaters. Floodwaters will leave the Project Site via overland flow and flow in a westerly direction towards Fort Point Channel. The area surrounding the Project Site has relatively flat topography so as flood depths become shallower, some floodwater will not be able to retreat via overland flow and will leave the Project Site via the closed drainage system located within the existing parking lot and along Binford

Street, Mount Washington Ave, and A Street. Outgoing floodwater flows across the Project Site and abutting properties with non-erosive velocities of less than 2 ft/sec.

Figures 7.2 to 7.14 illustrate incoming and outgoing flow paths, velocities, and extents of floodwaters through the Project Site and abutting properties for this scenario during a 2070 1 percent annual chance flood event.

7.4.3.2 Scenario #2 – Modified No Build – 2070 1% Annual Chance Event

This scenario assessed the flow of floodwaters under current physical conditions at the Project Site and abutting neighborhood, along with the approved but not constructed 244-284 A Street and under construction 15 Necco Street projects to the north of the Project Site.

As in the no-build condition, floodwaters from Fort Point Channel will begin to enter the area along Fort Point Channel. In this scenario, floodwaters are prevented from flowing onto the proposed 244-284 A Street and 15 Necco Street project sites due to the raised site conditions. When the flood elevation reaches approximately 15' BCB, flooding begins to overtop the seawall along Fort Point Channel and begins to move west to east inundating the Project Site, the area to the north of the 15 Necco Street Project, and the Gillette property. As floodwater rises in elevation, it will accumulate in the parking lot area to the south of the Project Site, and in the eastern portion of the Project Site, across A Street. Floodwaters will flow easterly while beginning to build up and inundate non-floodproofed existing buildings located to the south, north and east of the Project Site up to elevation 20.5'± BCB at the maximum peak of the 2070 100-year event. Incoming flood velocities reach approximately 6 ft/sec at the Project Site at the maximum peak of the event as a result of channelization due to fill proposed as part of the 244-284 A Street and 15 Necco Street projects.

Floodwaters will retreat from the Project Site via similar flow paths as the incoming floodwaters. Floodwaters will leave the Project Site via overland flow in a westerly direction towards Fort Point Channel. Similar to the no-build scenario (Scenario #1), as flood depths become shallower, some floodwater will not be able to retreat via overland flow and will leave the Project Site via the closed drainage system located within the existing parking lot and surrounding streets. Outgoing floodwater flows across the Project Site and abutting properties with non-erosive velocities of less than 1 ft/sec.

Figures 7.2, 7.3, 7.6 and 7.7 illustrate the incoming and outgoing flow paths for this scenario and highlight the velocity and extent of floodwaters through the Project Site during a 2070 1 percent annual chance flood event.

7.4.3.3 Scenario #3 – Post-Development Conditions – 2070 1% Annual Chance Event

This scenario assessed the flow of flood waters at the Project Site with the proposed development, with the current physical condition of the abutting properties and neighborhood. This Scenario #3 model was developed using the no-build condition model (Scenario #1) as a base. It was then revised within the Project Site to account for the proposed changes to topography and land cover (*i.e.,* raising the site as required, retaining walls at certain portions of the property edges, pervious and impervious surfaces, and proposed buildings).

Under post-development conditions, floodwaters from Fort Point Channel will begin to enter the area along the western side by first overtopping the 244-284 A Street property to the north when flood elevations reach approximately 15' BCB (similar to the no build condition Scenario #1). In this proposed scenario, floodwaters are prevented from flowing onto the Project Site due to proposed

raised site conditions and flow around the proposed development. Floodwaters to the north and south of the Project Site move easterly towards A street, inundating non-floodproof existing buildings located to the south, north and east of the Project Site. Incoming flood velocities reach an approximate 4 feet/second around the Project Site and the northeastern corner of the Gillette building, at the maximum peak of the event.

Floodwaters will retreat from the vicinities of the Project Site via similar flow paths as the incoming floodwaters. Floodwaters will leave via overland flow in a westerly direction towards Fort Point Channel. As in the previous scenarios, as flood depths become shallower, some floodwater will not be able to retreat via overland flow and will leave the Project Site via the closed drainage system located within the existing parking lot and surrounding streets. Outgoing floodwater flows across the Project Site and abutting properties with non-erosive velocities of less than 2 ft/sec.

Figures 7.2, 7.3, 7.8 and 7.9 illustrate the incoming and outgoing flow paths for this scenario and highlight the velocity and extent of floodwaters through the Project Site during a 2070 1 percent annual chance flood event. See Chapter 4, Section 4.5.2 for a description of proposed improvements to the closed drainage system.

7.4.3.4 Scenario #4 – Post Development Conditions with 244-284 A Street and 15 Necco Street Projects – 2070 1% Annual Chance Event:

This scenario assessed the flow of floodwaters at the Project Site with the proposed development, and the 244-284 A Street and 15 Necco Street projects, with the current physical condition of the other abutting properties and neighborhood. This Scenario #4 model was developed using the post-development condition model (Scenario #3) as a base and adding the 244-284 A Street and 15 Necco Street projects.

Under this scenario, floodwaters will begin to enter the area along the Fort Point Channel when the flood elevation reaches approximately 15' BCB. In this scenario, floodwaters are prevented from flowing onto the Project Site, 244-284 A Street, and 15 Necco Street sites due to proposed raised site conditions, which results in flows moving around the proposed developments to the north and south. This includes a restricted flowpath to the south of the Project Site along the Gillette driveway, with floodwaters flowing at approximately 8 to 9 ft/sec at the peak of the event. Floodwaters will continue to flow easterly while inundating non-floodproofed existing buildings located to the south, north and east of the Project Site.

Floodwaters will retreat from the vicinity of the Project Site via similar flow paths as the incoming floodwaters. Floodwaters will leave via overland flow in a westerly direction towards Fort Point Channel. As in Scenarios #1 through 3, as flood depths become shallower, some floodwater will not be able to retreat via overland flow and will leave the Project Site via the closed drainage system located within existing abutting parking lots and surrounding streets. Outgoing floodwater flows across the Project Site and abutting properties with non-erosive velocities of less than 2 ft/sec. Outgoing velocities north of the 15 Necco Street can reach up to 4 ft/sec.

Figures 7.2, 7.3, 7.10 and 7.11 illustrate the incoming and outgoing flow paths for this scenario and highlight the velocity and extent of floodwaters through the Project Site scenario during a 2070 1 percent annual chance flood event.

7.4.3.5 Scenario #5 – Post Development Conditions with 244-284 A Street and 15 Necco Street Projects and the Proposed Resiliency Solution at the Gillette Property – 2070 1% Annual Chance Event

This scenario assessed the flow of water onto and off of the Project Site with the proposed development, the 244-284 A Street and 15 Necco Street projects and the proposed resiliency solution seaward of the Gillette property, with the current physical conditions of the other abutting properties and neighborhood. This Scenario #5 model was developed using the Post Development Conditions with 244-284 A Street and 15 Necco Street projects model (Scenario #4) as a base and adding the proposed resiliency solution seaward of the Gillette property.

In this scenario, the proposed resiliency wall seaward of the Gillette property restricts the flowpath from the southwestern side of Fort Point Channel where the resiliency solution is proposed. As in Scenario #4, floodwaters are prevented from flowing on the Project Site and 244-284 A Street and 15 Necco Street sites, due to proposed raised site conditions, which results in flows moving around the proposed developments to the north. There are several other potential flowpaths in South Boston outside of the directly abutting properties, which will inundate A Street and then flow westerly along the southern edge of the property along the Gillette driveway with velocities of 4-5 feet per second.

Floodwaters will retreat from the vicinities of the Project Site via overland flow in a northerly and westerly direction towards Fort Point Channel through properties to the north of the 15 Necco Street project. As in Scenarios #1 through 4, as flood depths become shallower, some floodwater will not be able to retreat via overland flow and will leave the Project Site via the closed drainage system located within existing abutting parking lots and surrounding streets. Outgoing floodwater flows across the Project Site and abutting properties with non-erosive velocities of less than 2 ft/sec.

Figures 7.2, 7.3, 7.12 and 7.13 illustrate incoming and outgoing flow paths for this scenario and highlight the velocity and extent of floodwaters through the Project Site during a 2070 1 percent annual chance flood event.

7.4.4 Discussion

According to the modeling described above, under Scenarios #1, 2, 3, and 5, floodwater velocities would remain non-erosive. Only Scenario #4 (post-development conditions at the Project Site, 244-284 A Street and 15 Necco Street, and no flood protection measures implemented at the Gillette property) results in flowpath restrictions with potentially erosive velocities The post-development conditions with the 244-284 A Street and 15 Necco Street sites (Scenario #4) cause a restricted flowpath to the south of the Project Site, along the Gillette driveway, with floodwaters reaching approximately 8 to 9 ft/sec at the peak of the event without the RFPCI project constructed at the Gillette propertyFlooding depths and water surface elevations near the Project Site will not be affected by the Project. This is due to flooding being the result of coastal stillwater flooding, which is driven by the astronomical tide and storm surge rather than a storage volume.

7.5 Greenhouse Gas Emissions/Air Quality

The following sections present the stationary and mobile source GHG emissions analysis conducted for the Project.

7.5.1 Stationary Source GHG Emissions Assessment

The following presents the results of the stationary source GHG emissions assessment, in accordance with the MEPA GHG Policy. The stationary source analysis reflects the most recent design plans for the Project building as of this filing. The Project has been designed to meet the requirements of the MEPA GHG Policy in that it will incorporate reasonable and feasible energy conservation measures to reduce energy consumption. The Project will also meet the requirements of the updated Stretch Energy Code and incorporate sustainable and high-performance building design, including energy conservation measures.

7.5.1.1 Methodology

To provide for energy efficiency and reduced stationary source GHG emissions, the Proponent has evaluated the following key planning and design criteria:

- Methods to reduce overall energy demand through improved envelope construction;
- Methods to reduce overall energy demand through appropriate design and sizing of systems; and
- Methods to incorporate cost-effective energy-optimizing and energy recovery systems.

The building was modeled with the proposed building geometry, HVAC system type, occupancy schedule, and ventilation rates as defined by the current design plans.

Direct stationary source CO_2 emissions include those emissions from the facility itself, such as boilers, heaters, and internal combustion engines. Indirect stationary source CO_2 emissions are derived from the consumption of electricity, heat, or cooling from off-site sources, such as electrical utility or district heating and cooling systems. The direct and indirect stationary source CO_2 emissions from the proposed building sources are calculated through an energy and GHG analysis procedure that combines the energy model with Excel spreadsheets for pre and post-processing based on assumptions for the Project's building elements, such as (but not limited to) the specific type of use(s) and users of the buildings, building configuration and architecture type, building envelope (walls/windows), interior fit-out (where known), and HVAC equipment efficiency ratings.

The GHG mitigation measures can be divided into the buildings' construction materials, architecture, and the heating and cooling processes. The following presents the proposed building improvements (and their correlating energy modeling parameters for reference, where applicable) that are assumed to be included as part of the Project for the purpose of this analysis. The specific proposed improvements will likely be subject to design modifications as necessary to achieve the GHG emissions reduction based on the final building program, tenants and design.

7.5.1.2 Energy Model and Analysis Conditions

The energy analysis was conducted using Design Builder/Energy Plus model. This model uses the DOE2 simulation engine to estimate annual energy consumption by simulating a year of building operations based on a typical weather year and user inputs. The model estimates each buildings' electricity and gas usage based on building design and system assumptions using Appendix G of ASHRAE 90.1-2019.[1] The amount of consumed energy is then converted into the amount of CO_2

[1] American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., ASHRAE 90.1-2019-Energy Standard for Buildings Except Low-Rise Residential Buildings, Appendix G, 2019.

emitted using the standardized conversion factors.[2] CO_2 emissions were quantified for (1) the Stretch Code Base corresponding to the minimum requirements of ASHRAE 90.1-2019 Appendix G with Massachusetts's Stretch Code amendments and (2) the Design Case, which includes all energy saving measures that were deemed to be reasonable and feasible. The stationary source assessment calculated CO_2 emissions for the following build conditions:

- **Build Condition with MA Building Code (the "Stretch Code Base")**: The Project, assuming typical construction materials and building equipment/systems that meet the minimum requirements of the 2023 Stretch Energy Code. This baseline is established by the energy code as being defined by ASHRAE 90.1–2019 Appendix G according to the Massachusetts amendments. The Stretch Code Base modifies the ASHRAE 2019 Appendix G baseline to reflect a building performance factor. Electricity and Natural Gas usage are also reduced using the modeled scenario that results in a PEI equal to the target PEI; and
- **Build Condition with Energy Conservation Measures (the "Design Case")**: The Project, assuming building design and system improvements that meet the MEPA GHG Policy and 2023 Stretch Energy Code. The Design Case includes Section C406 energy efficiency measures. Based on the current design and preliminary building modeling results, the Project will meet the MEPA GHG Policy requirement for energy reduction savings and the Stretch Energy Code.

7.5.1.3 Future Stationary Source Analysis

As described in Chapter 1, *Project Description*, the Project is proposing the construction of a new laboratory/R&D and officenine-story, 335,000 SF laboratory/R&D and office building in Boston. The space program includes mixed use on the ground floor (potential retail/civic/cultural uses and lobby) but the primary program is shell space for future laboratory/R&D and office tenants. The building was modeled assuming 60 percent would be laboratory/R&D and 40 percent would be office space.

The Section C406 measures included in the Design Case for laboratory/R&D and office buildings are 10 percent reduction in lighting power density reduction per C406.3 (7 points) and on-site renewable energy per C406.5 (9 points). Together, these two efficiency measures combine for more than the required 15 points to comply with C406.

Table 7-5 provides a summary of the proposed building improvements assumed for the laboratory/R&D and office building. Key energy savings features include a high-efficiency envelope complying with the backstop requirement, improved HVAC equipment, including partial electrification of space heating (i.e., 25 percent of peak demand) with heat pumps, and an improved energy recovery system. Note the Baseline represents the minimum requirements of the Stretch Energy code iterated to achieve the required PEI target determined using an ASHRAE 90.1-2019 baseline. The additional prescriptive option added to all other Stretch Code requirements to achieve the PEI target was demand control ventilation. Further information on the modeled scenarios is presented in Appendix D.

[2] Electricity converted using 654 lbs CO_2 per MWh (2020 ISO New England Electric Generator Air Emissions Report). Natural Gas converted using 117 lbs CO_2 per MMBtu (US Energy Information Administration). Future 2050 electricity emissions converted using 200 lbs/MWh as provided by DOER.

Table 7-5 Office Key Model Assumptions

Building Component	Stretch Code Baseline[1]	Design Case
Building Usage and Size	60/40 Laboratory/R&D and office, totaling approximately 335,000 sf; 76F Cooling, 72F Heating, 67F Unoccupied Heating, 81F Unoccupied Cooling	
Building Exterior Envelope (Construction Assemblies)		
Roof Assembly	U-0.032	U-0.032
Wall Assembly	U-0.055	U-0.042
Window-to-Wall Ratio	50.5%	50.5%
Windows and Glazing	U-0.25	U-0.25
Air Infiltration	0.35 cfm/SF @ 75pa	0.35 cfm/SF @ 75pa
HVAC Systems and Controls		
Primary HVAC System	Laboratory: System 7 - VAV with reheat Office (per floor): System 7 - VAV with reheat	DOAS + hydronic terminal units
Cooling Efficiency	Chiller: 4 x 2943 Tons 0.56 kW/ton (6.28 COP)	Chiller: 3 x 985 Tons 0.55 kW/Ton (6.4 COP) Heat Recovery Chiller: 300 Ton 2.7 COP (cooling) AWHP: 8,400 mbh Cooling 4.4 COP Cooling
Heating Efficiency	Boilers: 2 x 33211 mbh 95%	Heat recovery chillers Air-to-water heat pumps: 5,500 mbh Heating 2.2 COP Heating (Annual Effective) Boilers: 8 x 5000 mbh 95%
Ventilation Energy Recovery	Laboratory: System 7 - 50% Sensible Office (per floor): System 7 - 70% Enthalpy	50% Sensible
Demand Control Ventilation	Laboratory VAV: Not required per C403.7.1; Included to achieve par with PEIt	Included
Service Hot Water		
HW System Type	AWHP Storage 2 COP	AWHP Storage 4 COP
Interior Loads		
Lighting LPD	Per C406.3 Lab: 1.2 W/SF Office: 0.5 W/SF	Per C406.3 Lab: 1.2 W/SF Office: 0.5 W/SF
Equipment	Lab: 6 W/SF Office: 1.5 W/SF	Lab: 6 W/SF Office: 1.5 W/SF

1. This Case represents minimum Stretch Code requirements with modifications to meet the performance energy index target. The ASHRAE baseline is presented in Appendix D.

The total estimated annual electricity and natural gas consumption, and associated emissions for the Project are presented in Table 7-6, using the MEPA required GHG emission factors. Under the Stretch Code Base, the CO_2 emissions for the entire Project are 4,649 tons per year. Resulting GHG emissions savings will vary depending on the ratio of gas vs. electricity savings and the relative emissions of each energy source. Because of the electrification requirements of the Stretch Energy

Code (i.e. 25 percent electrification), the design case has a modest electricity penalty compared to the Appendix G baseline due to fuel switching, but a significant fossil fuel reduction. Because current electric emissions factors are higher (per unit energy) than natural gas, day one GHG emissions may not be favorable compared the corresponding energy reduction. With the currently proposed building design and system improvements, the estimated energy use reduction for the building is 13 percent, which equates to a 5.5 percent decrease in stationary source CO_2 emissions when compared to the Stretch Code Base. This is a marked improvement when considering the stringency of the 2023 Stretch Code. The Performance Energy Index was 0.504 which complies with the target value of 0.579 and thus the 2023 Stretch Energy Code.

Table 7-6 Laboratory/R&D and Office Stationary Source CO_2 Emissions with MEPA Factors

		Energy Consumption				CO_2 Emissions		
		Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Total (MMBtu/yr)	Performance Energy Index	Electricity (tons/yr)	Natural Gas (tons/yr)	Total (tons/yr)
232 A St	ASHRAE App. G[1]	12,568	48,231	91,113	-	4,110	2,822	6,931
	Stretch Code Base[2]	12,257	10,955	52,776	0.579	4,008	641	4,649
	Design Case	13,397	203	45,914	0.504	4,381	12	4,393
	End-Use Savings	-1,140	10,753	6,863	0.075	-373	629	256
	Percent Savings				**13.0%**			**5.5%**

tons/yr = short tons per year; MWh = Megawatt hour; MMBtu = million British Thermal Units

1. This case represents ASHRAE 90.1-2019 Appendix G conditions.
2. This case includes 2023 MA Stretch Code amendments with minimum Building Performance Factors yielding a PEI equal to the PEIt.

Due to the current mix of fuel sources supplying the electricity, the Project is expected to result in a 5.5 percent decrease in emissions relative to the Stretch Code Base. When future emissions factors reflecting a decarbonized electric grid (or renewable energy applied to the Project) are used, the Project demonstrates significant GHG savings with electrification. At the request of DOER, the Proponent also estimated GHG emissions from the buildings using a 2050 electricity emissions factor of 200 pounds per megawatt-hour in Table 7-7. When using the 2050 emission factors, the Project is expected to result in a 27.6 percent reduction in GHG emissions relative to the Stretch Code Base.

Table 7-7 Laboratory/R&D and office Stationary Source CO_2 Emissions with 2050 Factors

	2050 CO_2 Emissions		
232 A Street	**Electricity (tons/yr)**	**Natural Gas (tons/yr)**	**Total (tons/yr)**
ASHRAE App. G[1]	1,257	2,822	4,078
Stretch Code Base[2]	1,226	641	1,867
Design Case	1,340	12	1,352
End-Use Savings	-114	629	515
Percent Savings			**27.6%**

tons/yr = short tons per year

1. This case represents ASHRAE 90.1-2019 Appendix G conditions.
2. This case includes 2023 MA Stretch Code amendments with minimum Building Performance Factors.

7.5.1.4 Heat Pump Hot Water

The Proponent evaluated incorporating air source heat pump domestic hot water heaters in the Project and has concluded that their inclusion is feasible. Their use is reflected in the energy modeling results presented above.

7.5.1.5 Envelope and Air Infiltration

The Proponent reviewed the currently proposed envelope design and summarized the elements as requested by DOER in Table 7-8. Values presented in the table are subject to change as the design progresses and as input is received from the Public and City Agencies. The table presents the target U-values the Proponent intends to meet or improve upon in the final design of the building, though the various final values are subject to change as the building design progresses.

Table 7-8 Envelope Insulation Summary

Component	Percent of Above-Grade Vertical Area	Target U-Value
Wall (framed, insulated)	49.5%	0.042
Glazed wall system	50.5%	-
Opaque spandrel portion	12.6%	0.25
Vision portion	37.9%	0.25
Punched window vision glass	N/A	N/A

The DOER also requested that the Proponent commit to C406.9, the additional energy conservation measure that requires reduced air infiltration. The Proponent cannot make a commitment to C406.9 due to limited data on feasibility and corresponding risk. Achieving the C406.9 infiltration rate is highly dependent upon both contractor and product manufacturer's capabilities that are beyond the control and scope of the designer. For example, a recent passive house-certified, large commercial building in Boston using comparable levels of unitized systems was only able to achieve measured infiltration on the order of 0.36 cfm/SF. This illustrates the stringency and difficulty of the current stretch code air leakage requirement, which will require market adaptation beyond the levels achievable as recent as 2023. Infiltration loads are extremely small in a laboratory building when compared to total building loads, particularly mechanical ventilation. Finally, laboratory operations will require the building to maintain positive pressurization 24/7/365, which will effectively eliminate most infiltration loads.

7.5.1.6 2023 Specialized Code Considerations

The Project is subject to the 2023 Specialized Code and is proposing compliance through the Mixed Fuel Pathway.

Specialized Code - Solar Requirement

Under code section CC150.2 on-site renewable energy is required at a rate of 1.5 W/SF of the sum of the gross conditioned floor area of the three largest floors. If a building cannot meet this requirement, it is required to install a partial system sized to not less than 75 percent of the Potential Solar Zone Area. The team has calculated that a 162-kW system is required to comply with the code

based on the three largest floorplates (approximate conditioned area of each 36,000 SF). The assessment of this system and a conceptual plan is included in Appendix D.

The solar array estimated to cover the required area was sized at 10,800 SF, yielding a system capacity of 162 kW. Such a system is estimated to produce 181,602 kWH per year, offsetting 59 tons of GHG per year. A simple payback of this system is estimated to be 17 years. This duration is significantly beyond typical financial investment thresholds, but the Proponent is committed to the installation of such a system as required by the Specialized Code. The net available capacity of the solar array in the current design may change if design progressions alter the required solar capacity of the Stretch Code.

Specialized Code – Electric Readiness Requirement

Under code section CC106, the Proponent is required to provide readiness for future electrification in the day one building design. As a high-ventilation building, the Project must comply with CC106.1.6. Under this section, the Project is required to have an all-electric design alternative and must include electric infrastructure and space set-aside sufficient to accommodate a future all-electric retrofit from day one. Given the Specialized Code also offers an All-Electric compliance pathway, the Proponent went through an exercise of reviewing an all-electric design alternative for the building before selecting the proposed design. The Proponent has provided examples of preliminary plans and an HVAC narrative of an all-electric alternative as examples for compliance with CC106 in Appendix D.

The Proponent will comply with CC106, which requires readiness for future electrification requirements of the code. Specific aspects of the alternative all-electric design may change between now and the building permit application as new technologies are brought to market and additional examples of code compliant designs become available.

7.5.1.7 All-Electric Considerations

Given the Project's requirement to meet the Specialized Code, it is worth considering whether compliance under the All-Electric Pathway would be more beneficial to the Project. The All-Electric pathway for buildings with no fossil fuel consumption states buildings comply without any additional requirement for on-site renewables or readiness for future electrification.

The Proponent had gone through the exercise of reviewing an all-electric design alternative before selecting the proposed design. During this exercise, the Proponent compared the estimated additional costs of an all-electric scenario against the estimated costs for on-site renewable energy and readiness for future electrification required under the Mixed Fuel Pathway. The result of this analysis is summarized in Table 7-9. The all-electric design was not chosen due to its substantial cost premium compared to the proposed design with the specialized code requirements.

Table 7-9 All-Electric Cost Comparison

Parameter	Proposed Design	All-Electric Design
Scenario Base System Costs	$7,954,000	$19,669,000
CC106: Electrification Readiness	$1,973,000	Not Required
CC105: Required Solar Array	$567,000	Not Required
Scenario Total	**$10,494,000**	**$19,669,000**
All-Electric Additional Cost		***$9,175,000***

7.5.2 Mobile Source GHG Emissions Assessment/Air Quality

This section presents an overview of the air quality and GHG assessment conducted for the Project, the purpose of which is to demonstrate that the Project will not result in a violation of applicable local, state, and federal air quality standards and to demonstrate there are mitigation measures that will reduce the Project's VOC and NO_X emissions. The GHG emissions are estimated to comply with the MEPA GHG Policy.

7.5.2.1 Background

The purpose of the air quality mesoscale analysis is to estimate the area-wide emissions of VOC and NO_X during a typical day in the peak ozone season (summer), consistent with the requirements of the SIP. The mesoscale analysis evaluates the change in VOC and NO_X emissions from the average daily traffic volumes and vehicle emission rates. To demonstrate compliance with the SIP criteria, the air quality study must show the Project's change in daily (24-hour period) VOC and NO_X emissions.

MassDEP has established guidelines that define the modeling and review criteria for air quality studies prepared under MEPA. These guidelines recommend that mesoscale analyses be prepared for proposed development projects to determine the change in Project-related ozone precursor emissions. The predominant source of ozone precursor emissions anticipated from the Project is emissions from Project-related traffic. Ozone is not directly emitted by motor vehicles but is generated when VOC and NO_X emissions from motor vehicles, stationary sources, and area sources react in the atmosphere with sunlight and heat. Project-related ozone impacts are determined by assessing the changes in VOC and NO_X emissions of motor vehicles. MassDEP criteria require that proposed development projects include all reasonable and feasible emission reduction mitigation measures if the ozone emissions from the Build Condition are greater than the No-Build Condition. Massachusetts has incorporated this criterion into the SIP.

Boston is in Suffolk County which is in attainment for all National Ambient Air Quality Standards (NAAQS) criteria pollutants except for the 8-hour (1997 Revoked) and 1-hour (1979 Revoked) Ozone standards. As such, the air quality analysis calculated emission inventories of the two pollutants that contribute to the violation of the Ozone NAAQS from mobile sources: VOC and NO_X.

Other criteria pollutants are generally not of concern for the area and are not required to be quantified, per the MassDEP guidelines. However, the Certificate on the ENF for this Project specifically requests data for Particulate Matter less than 2.5 µm in diameter (PM2.5), Particulate Matter less than 10 µm in diameter (PM10), and diesel particulate matter (DPM). Emissions of these pollutants from mobile sources were calculated to respond to this requirement.

7.5.2.2 Methodology

The MassDEP mesoscale analysis evaluates the change in emissions with and without the Project: specifically, daily (24-hour period) VOC and NO_X emissions from the average daily traffic volumes and vehicle emission rates. MassDEP guidelines recommend that the air quality study utilize traffic and emissions data for existing and future (No-Build and Build) conditions. The traffic and emissions data are incorporated into the Environmental Protection Agency (EPA) and MassDEP air quality models to generate emission's estimates that demonstrate whether the Project will have air quality impacts. For this Project, the traffic study extends roughly one-half mile from the Project Site on A Street to the intersection of Congress Street, B Street and I-90.

The mesoscale air quality analysis utilizes developed traffic data (volumes, speeds, and roadway geometry) and emission factor data for Existing, No-Build, Build, and Build with Mitigation Conditions. The mesoscale study area includes all links studied by the traffic analysis. Some of the roadways that were included in the mesoscale analysis include Congress Street, A Street, and multiple roads branching off of these streets. The mesoscale traffic and emission factor data were incorporated into the air quality model to evaluate the changes in VOC and NO_X emissions.

Mobile source GHG emissions are based upon the traffic volumes, the distance vehicles travel and GHG emission rates. The mobile source emissions are calculated by performing a mesoscale analysis to evaluate the changes in CO_2 emissions for the existing and future conditions within the traffic study area. The GHG mobile source analysis estimates the area-wide CO_2 emissions from vehicle traffic for a period of one year. Mobile source emissions were calculated by performing an annual GHG emissions mesoscale analysis to evaluate the estimated change in CO_2 emissions for the existing and future conditions within the study area. Emissions of particulate matter are calculated using the same methodology.

7.5.2.3 Emission Factor Modeling

EPA's Office of Transportation and Air Quality (OTAQ) has developed the Motor Vehicle Emission Simulator (MOVES).[3] MOVES3 is EPA's motor vehicle emissions model for state and local agencies to estimate VOCs, NO_X, CO_2 and other pollutant emissions from cars, trucks, buses, and motorcycles.

All the vehicle emission factors used in the mesoscale analysis were obtained using EPA's MOVES3 emissions model. MOVES3 calculates emission factors from motor vehicles in mass per distance format (often grams per mile) for existing and future conditions and applies these factors to Vehicle Miles Travelled (VMT) data to obtain emissions inventories. The emissions calculated for this air quality assessment include Tier 3 emission standards, which is an EPA program that sets new vehicle emissions standards, including lowering the sulfur content of gasoline, heavy-duty engine, and the second phase of light-duty vehicle GHG regulations. It also includes Massachusetts-specific conditions, such as the state vehicle registration age distribution and the statewide Inspection and Maintenance (I/M) Program. These stringent emissions regulation programs often result in lower emissions inventories with the passage of time when comparing similar scenarios.

The MOVES3 model was run at a project-level to obtain emission factors for each link of the mesoscale analysis. The model was set to calculate the emissions burden by choosing to model emissions processes that are specifically related to on-road travel. Links were created that used the appropriate speeds and grades for each roadway segment.

Diesel particulate matter is a product of diesel combustion. The vehicle volume counts do not separate diesel-fueled vehicles from gasoline. Since the percentage of overall diesel traffic is not explicitly stated in the traffic analysis, it is conservatively assumed that all exhaust particulate matter (EPM) is diesel exhaust particulate. The actual amount of diesel particulate matter would be less.

7.5.2.4 Traffic Data

The air quality study used traffic data (volumes) developed for each analysis condition. The mesoscale analysis uses typical daily peak and off-peak traffic volumes for the ozone summer season.

10 MOVES3 (Motor Vehicles Emission Simulator), September 2021, US EPA, Office of Mobile Sources, Ann Arbor, MI.

The VMT data used in the air quality analysis were developed based on the traffic data analyzed in Chapter 6, *Traffic and Transportation*. The traffic analysis included estimates of existing and future years. Existing conditions assessed the year 2023 volumes, while future year conditions assessed 2030 volumes.

7.5.2.5 Existing Mesoscale Emissions

The mesoscale analysis calculated the existing Particulate, VOC, and NO_X emissions for the Project inventory. These emissions, estimated to be 2.3 short tons per year (tpy) of NO_X and 5.8 tpy of VOC, establish an Existing Condition to which future emissions can be compared. The GHG emissions were estimated to be 6,127 tpy. Particulate emissions are estimated to be 0.7 tpy of PM10, 0.2 tpy of PM2.5 and less than 0.1 tpy of EPM.

7.5.2.6 Future Mesoscale Emissions

Future Project-related emission calculations are based upon changes in traffic and emission factor data. The traffic data includes traffic volumes that were used to calculate VMT on the study network. The emission factor data included emission reduction programs, shifts in vehicle populations, and other factors. Under the No-Build Condition, NO_X emissions were estimated to be 1.6 tpy and VOC emissions were estimated to be 5.3 tpy. CO_2 emissions were estimated to be 7,175 tpy. Particulate emissions are estimated to be 0.8 tpy of PM10, 0.2 tpy of PM2.5 and less than 0.1 tpy of EPM.

Under the Full Build condition, as presented in Table 7-8, the NO_X emissions are estimated to 1.8 tpy and the VOC emissions are estimated to be 5.6 tpy. CO_2 emissions were estimated to be 7,823 tpy. Particulate emissions are estimated to be 0.8 tpy of PM10, 0.2 tpy of PM2.5 and less than 0.1 tpy of EPM.

The Build emissions inventory was developed by considering the effects of the Project generated trips on the No-Build network. The SIP and MEPA GHG Policy require that proposed projects with VOC, NO_X, and CO_2 emissions under the Build Condition that are greater than the No-Build Condition include all reasonable and feasible emission reduction measures.

Table 7-10 Mesoscale Analysis Results

Pollutant	Existing Conditions	No-Build Conditions	Full Build Conditions	Project-Related Emissions[1]
Oxides of Nitrogen (tpy)	2.3	1.6	1.8	0.16
Volatile Organic Compounds (tpy)	5.8	5.3	5.6	0.20
Carbon Dioxide (tpy)	6,127	7,175	7,823	649
Particulate Matter < 10 µm (tpy)	0.7	0.8	0.8	0.02
Particulate Matter < 2.5 µm (tpy)	0.2	0.2	0.2	0.01
Exhaust Particulate Matter (tpy)	<0.1	<0.1	<0.1	<0.01

1 Represents the difference in pollutant emissions between the Build and No-Build Conditions.

7.5.2.7 Proposed Mitigation Measures

The Proponent is committed to implementing a comprehensive TDM program which will include multiple demand reduction measures to mitigate the impacts of the Build Condition. The Project benefits from a transit-oriented location that will help to reduce vehicle mode share. A full description of the updated TDM program is detailed in Section 6.7.4 of Chapter 6, *Traffic and*

Transportation. Implementation of the TDM program is expected to improve air quality in the study area by promoting the use of alternative forms of transportation over the use of single-occupant motor vehicle ("SOV") trips to the Project Site. This modal shift results in lower Project-related VMT which consequentially reduces indirect Project emissions. Previous estimates of similar TDM programs have ranged on the order of a two percent reduction in vehicles miles traveled (VMT), which is assumed to result in comparable pollutant emission savings. As such, the TDM plan is expected to provide a 0.003 tpy reduction of NO_X, a 0.004 tpy reduction of VOCs and a 13 tpy reduction of GHG in the Full Build conditions. All PM reductions due to TDM are less than 0.001 tpy.

Table 7-11 shows the emissions savings estimated due to TDM measures. Post-mitigation emissions result in an increase of 0.24 tpy of NOx, 0.30 tpy of VOC, and 699 tpy of CO_2 from No-Build to Full Build.

Table 7-11 Mitigation Analysis Results

Pollutant	Project-related Emissions[1]	Savings Due to TDM Measures[2]	Mitigated Project-related Emissions
Oxides of Nitrogen (tpy)	0.16	-0.003	0.16
Volatile Organic Compounds (tpy)	0.20	-0.004	0.20
Carbon Dioxide (tpy)	649	-13	636
Particulate Matter < 10 µm (tpy)	0.02	<0.001	0.02
Particulate Matter < 2.5 µm (tpy)	0.01	<0.001	0.01
Exhaust Particulate Matter (tpy)	<0.01	<0.001	<0.01

1 Represents the difference in pollutant emissions between the Build and No-Build Conditions.
2 Mitigation from TDM Measures.

Electric Vehicles

The Project will provide preferred parking for low-emitting fuel-efficient vehicles and/or electric vehicle charging stations. The Proponent is proposing to install 25 percent of new spaces with electric vehicle charging and the remaining 75 percent of new spaces as EV-Ready spaces in compliance with the City of Boston policy. EV-Ready spaces include the construction of the appropriate infrastructure to facilitate the future installation of a charging station. Employees or visitors with electric vehicles can receive an electric charge, which will also help the Proponent continue its commitment to clean energy and alternative transportation solutions. Fully electric vehicles do not have any tailpipe emissions (such as NOx or particulates-both of which contribute to respiratory illness) and emit practically no engine heat, thereby helping to reduce the high temperature in congested corridors.

Truck Emissions

Since this is a laboratory/R&D and office building, Project-generated truck traffic will be minimal. It is expected that peak truck trips will be roughly 35 per day. The exact sizes and fuels of the trucks are undetermined. As a conservative estimate for emissions calculations, all trucks are assumed to be diesel-fueled and a mixture of light commercial, single-unit, and combination unit trucks, based on the county fleet mix. As required per MGL Title XIV, Chapter 90, Section 16A, vehicles (with some exceptions) are limited to no more than 5 minutes of idling time. Given this data, it is expected that truck idling at the Project Site will produce 5.9 tpy of greenhouse gases and minimal amounts of other pollutants, as presented in Table 7-12.

Table 7-12 Truck Emissions Results

Pollutant	Project-Related Emissions
Oxides of Nitrogen (tpy)	0.03
Volatile Organic Compounds (tpy)	<0.01
Carbon Dioxide (tpy)	5.9
Particulate Matter < 10 µm (tpy)	<0.01
Particulate Matter < 2.5 µm (tpy)	<0.01
Exhaust Particulate Matter (tpy)	<0.01

7.5.3 Air Quality and Environmental Justice

A mesoscale analysis of emissions, in accordance with MassDEP guidelines, was performed and is presented in Section 7.7.2. The analysis shows emissions from No-Build to Build scenarios within the traffic study area (roughly one-half mile from the Project Site). The mesoscale analysis presents emissions of NOx, VOC, CO2e, as well as PM10, PM25, and exhaust particulate (assumed all diesel exhaust particulate).

Results of the mesoscale analysis showed that there is a less than 1 tpy increase in emissions of health-based pollutants (all except CO2e). Although CO2e is a greenhouse gas, it is not an air pollutant which will directly affect a person's health if inhaled at atmospheric concentrations. Table 7-13 presents the increase from No-Build to Build conditions for all pollutants from both the mesoscale and truck idling analysis. Since increases of health-based air pollutants are well under 1 tpy, additional mitigation measures should not be required.

Table 7-13 Emissions Increases

Pollutant	Mitigated Project-Related Emissions
Oxides of Nitrogen (tpy)	0.19
Volatile Organic Compounds (tpy)	0.20
Carbon Dioxide (tpy)	642
Particulate Matter < 10 µm (tpy)	0.02
Particulate Matter < 2.5 µm (tpy)	0.01
Exhaust Particulate Matter (tpy)	<0.01

7.5.3.1 Intersections with EJ Areas

A review of the intersections included in the transportation analysis shows that only two intersections are within or border EJ areas. The intersection of Congress Street, Thompson Street, and A Street is completely within Block Group 2, Census Tract 606.04 in Suffolk County while the intersection of Congress Street, West Service Road, and Boston Wharf Road abuts the tract. This tract meets the minority population criteria at 25 percent. It has a median household income of $176,000 (209 percent the statewide average), and 0 percent households meeting the language isolation criteria.[4] The traffic analysis for these two intersections shows that their level of service (LOS) remains unchanged from No-Build to Build conditions, in both the AM and PM peak hours (See Chapter 6,

[4] These data were obtained from https://www.mass.gov/info-details/massgis-data-2020-environmental-justice-populations.

Traffic and Transportation). Since there is no change to LOS of the intersections, further mitigation is not necessary per the Secretary's Certificate.

7.5.3.2 Emissions from Traffic Between the Traffic Study Area and the 1-Mile Radius

A review of the Massachusetts EJ Population shows the following EJ census tracts within 1 mile of the Project Site is shown in Table 7-14. Environmental Justice neighborhoods are defined in Chapter 8 of the Acts of 2021, An Act Creating a Next Generation Roadmap for MA Climate Policy. Refer to Figure 2.1 for the location of EJ populations within one mile of the Project Site.

Table 7-14 Environmental Justice Areas Within 1-Mile of Project Site

Block Group	Census Tract	County	City/Town	2020 Population	Households	EJ Criteria
3	106	Suffolk	Boston	625	537	Minority
1	303.02	Suffolk	Boston	1844 (p)	887	Minority
2	606.04	Suffolk	Boston	989	544	Minority
1	607	Suffolk	Boston	997	412	Minority and Income
2	607	Suffolk	Boston	692	662	Minority, Income and English isolation
2	610	Suffolk	Boston	535	378	Minority and Income
1	612.03	Suffolk	Boston	2686	1006	Minority
2	701.02	Suffolk	Boston	2202	604	Minority
3	701.02	Suffolk	Boston	588	136	Minority
1	701.03	Suffolk	Boston	751	209	Minority
1	702.01	Suffolk	Boston	932	382	Minority, Income and English isolation
2	702.01	Suffolk	Boston	3058	569	Minority
1	702.02	Suffolk	Boston	4325	1531	Minority, Income and English isolation
2	702.02	Suffolk	Boston	1135	350	Minority, Income and English isolation
2	703.01	Suffolk	Boston	1165 (p)	679	Minority
1	703.02	Suffolk	Boston	806	455	Minority
2	704.02	Suffolk	Boston	1512	675	Minority, Income and English isolation
2	705.01	Suffolk	Boston	1074 (p)	458	Minority
1	705.02	Suffolk	Boston	1067 (p)	570	Minority
2	712.01	Suffolk	Boston	1231 (p)	355	Minority and Income
3	712.01	Suffolk	Boston	192	86	Minority
4	712.01	Suffolk	Boston	1078	662	Minority, Income and English isolation
1	712.01	Suffolk	Boston	1013 (p)	506	Minority
1	606.04	Suffolk	Boston	1814 (p)	541	Minority
1	701.04	Suffolk	Boston	890	499	Minority
2	701.04	Suffolk	Boston	610	209	Minority
3	701.04	Suffolk	Boston	1362	438	Minority and English isolation
1	701.02	Suffolk	Boston	897	374	Minority, Income and English isolation
3	703.02	Suffolk	Boston	669 (p)	414	Minority
1	704.02	Suffolk	Boston	2049	877	Minority
1	707	Suffolk	Boston	1236	581	Minority and Income
			Sum:	**40,024**	**16,586**	

Source: https://www.mass.gov/info-details/massgis-data-2020-us-census-environmental-justice-populations.
(p) Census tract is partially within the 1-mile radius from the Project Site.

Of these thirty-one (31) census tracts, twenty-three (23) fall completely within the 1-mile radius of the Project Site. The other tracts are partially within the 1-mile radius area. Therefore, the total population shown in Table 5-7 is overestimated for the 1-mile radius area.

Reviewing the traffic analysis presented in Chapter 6, *Traffic* and *Transportation*, shows that the analyzed roads of Congress Street, A Street, and Thompson Place either abut or go through the nearest EJ areas. The analysis shows that the Project is not expected to have any additional LOS impacts to the study area intersections and free flowing Project-generated traffic is expected only along the main roads. Given the building is primarily for office/lab use, Project-related traffic is not generally expected to use local roadways outside the roads immediately adjacent to the Project Site leading to major arterial roads. Additionally, the studied roadways that abut the EJ areas generally have commercial, industrial, or planned development zoned properties along them.

Trip generation beyond the TIA study area up to the one-mile DGA was also reviewed. The traffic study showed that the majority of Project-generated trips travel to the closest entry to/exit from I-90 or I-93 and travel on these interstates to the extent of the one-mile radius. While the interstates are adjacent to EJ areas, the increment of Project-trips traveling on the interstates is negligible relative to the existing traffic volumes and is not expected to meaningfully increase air emissions.

Trips travelling to and from I-90 westbound would use the ramps on South Bost Bypass Road and off of Traveler St. Trips traveling to and from I-90 EB would use the ramps on South Boston Bypass Road and Congress Street. The majority of this travel is captured in the mesoscale analysis which demonstrated that increases in emissions due to Project-generated trips would not be substantial.

Trips traveling to I-93 NB would do so using Summer Street and Atlantic Avenue/Purchase Street. This travel route is located in an EJ area but is primarily adjacent to commercial buildings or over Fort Point Chanel. Approximately 367 daily trips are expected to travel by this route. Trips traveling to I-93 SB would do so using A Street, Fourth Street, Frontage Road and SBBR. Portions of these routes along SBBR, Fourth Street, and Frontage Road would traverse EJ areas. It is expected that 455 daily trips would take these routes. All the roadways identified are primary routes of travel into and out of South Boston and to and from the interstates. As such, the addition of the Project-generated daily traffic is not expected to the meaningfully increase emissions on these roadways. The majority of daily trips to and from the Project Site on these roads will be done using passenger vehicles which are not a substantial source of particulate matter and truck generation by the Project is expected to be limited.

Therefore, it can be safely stated that the local EJ populations will not be significantly affected by emissions generated by traffic related to the Project.

Figure 7.1: Proposed Site Elevations Cross Section

232 A Street | Boston, Massachusetts

Building Use Legend

- Lobby
- Retail/Amenity
- Tenant
- Building Support
- Parking

Figure 7.1 Proposed Site Elevations Cross Section

Figure 7.2: 2070 – 100 Year Event Incoming Storm Surge – Summary Comparison

232 A Street| Boston, Massachusetts

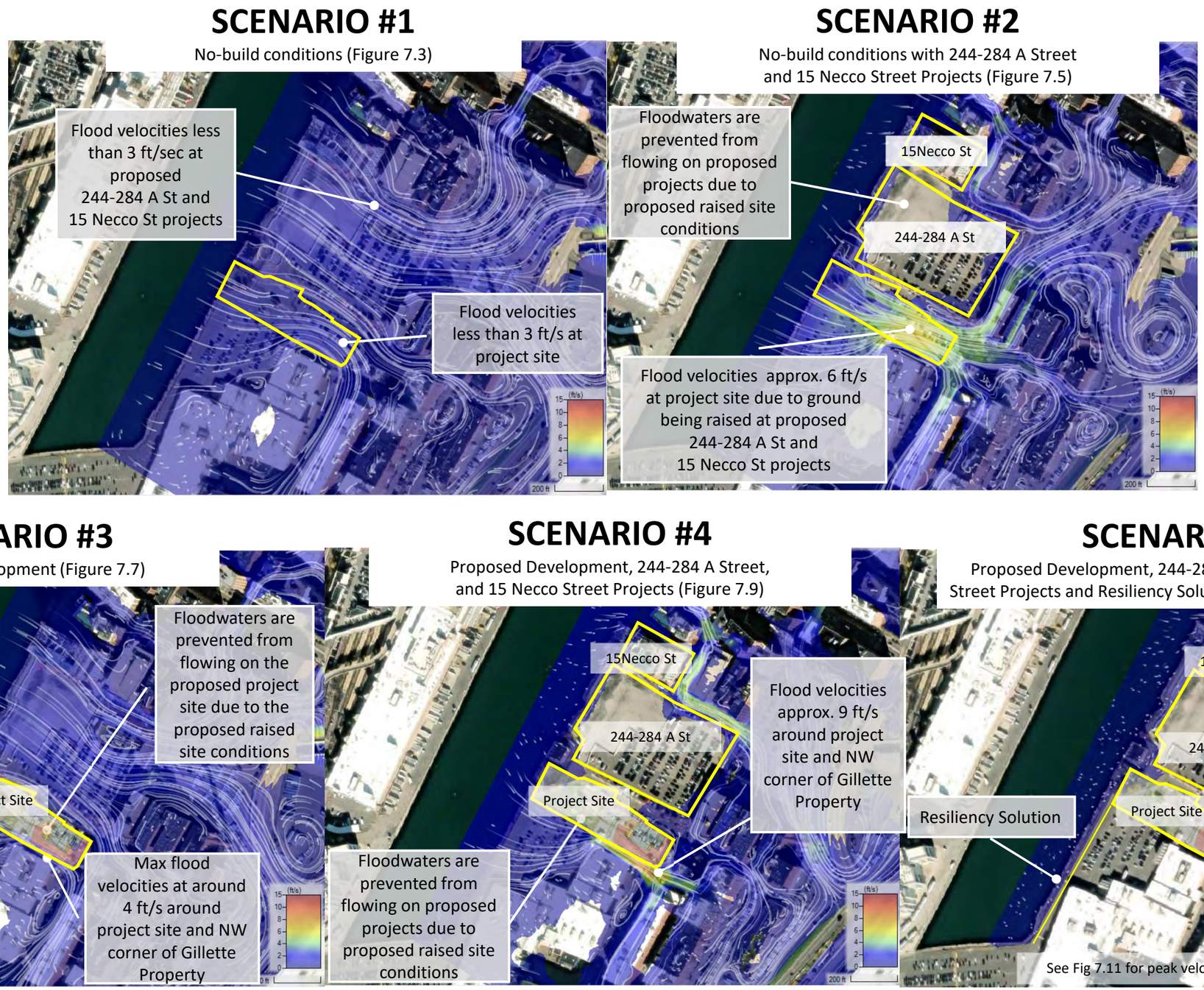
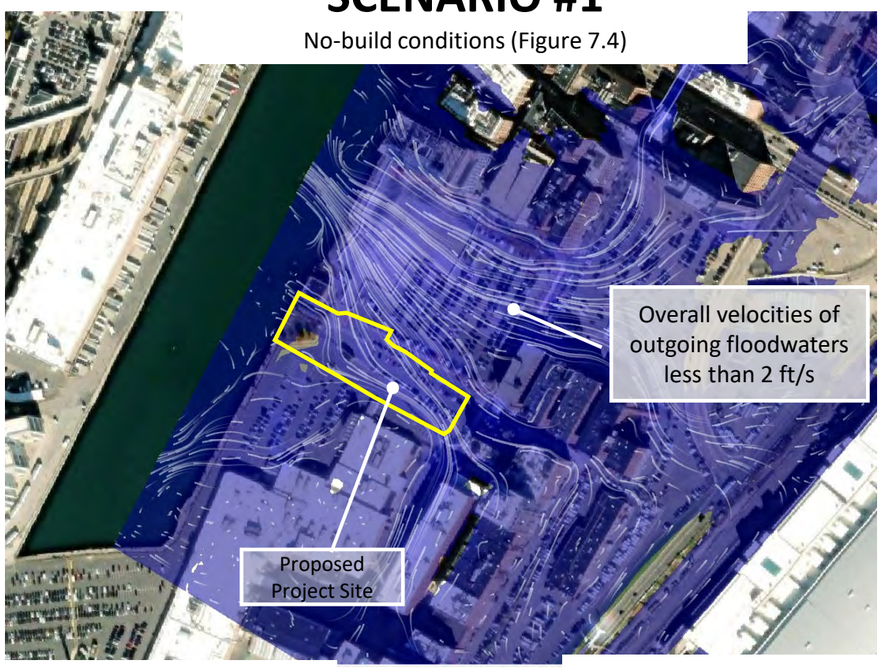


Figure 7.3: 2070 – 100 Year Event Outgoing Storm Surge - Summary Comparison

232 A Street| Boston, Massachusetts

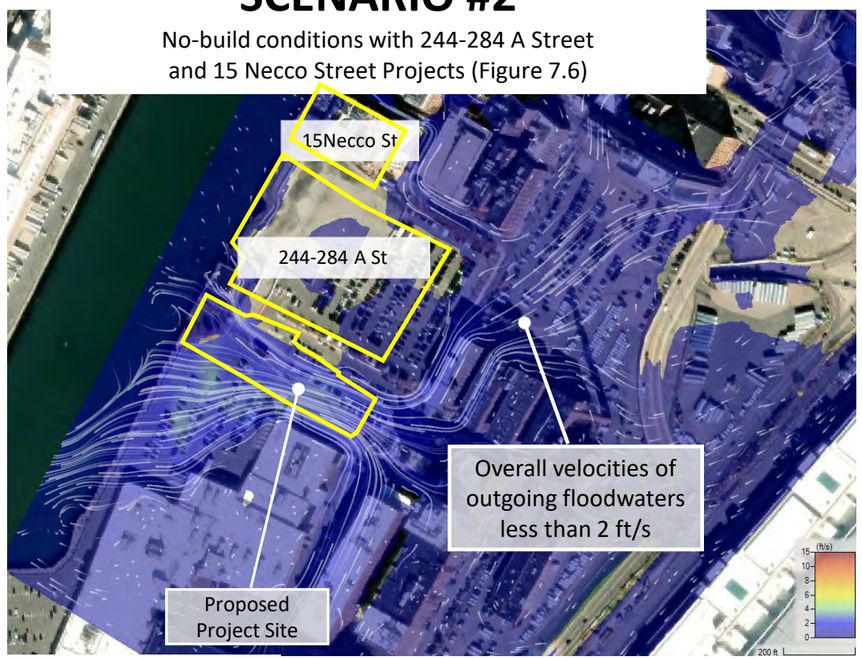
SCENARIO #1

No-build conditions (Figure 7.4)



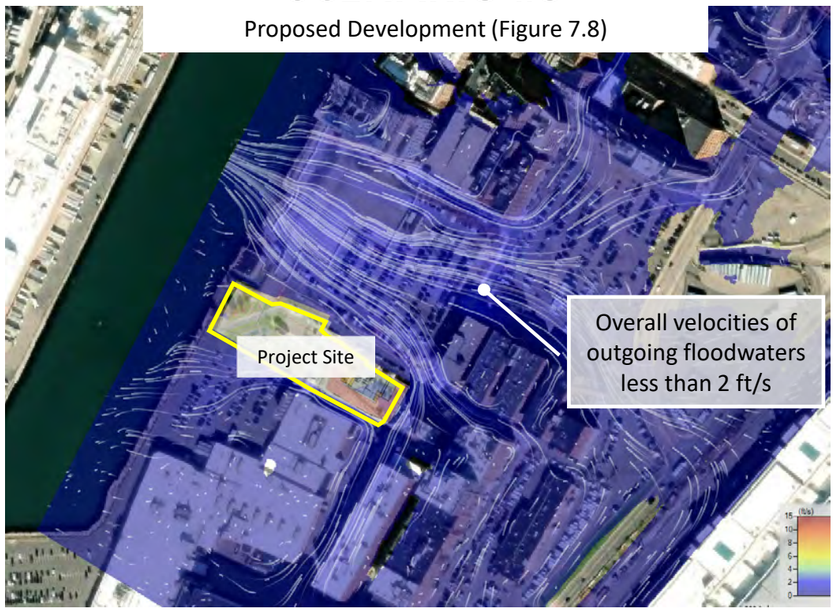
SCENARIO #2

No-build conditions with 244-284 A Street and 15 Necco Street Projects (Figure 7.6)



SCENARIO #3

Proposed Development (Figure 7.8)



SCENARIO #4

Proposed Development, 244-284 A Street, and 15 Necco Street Projects (Figure 7.10)

SCENARIO #5

Proposed Development, 244-284 A Street, and 15 Necco Street Projects and Resiliency Solution (Figure 7.12)

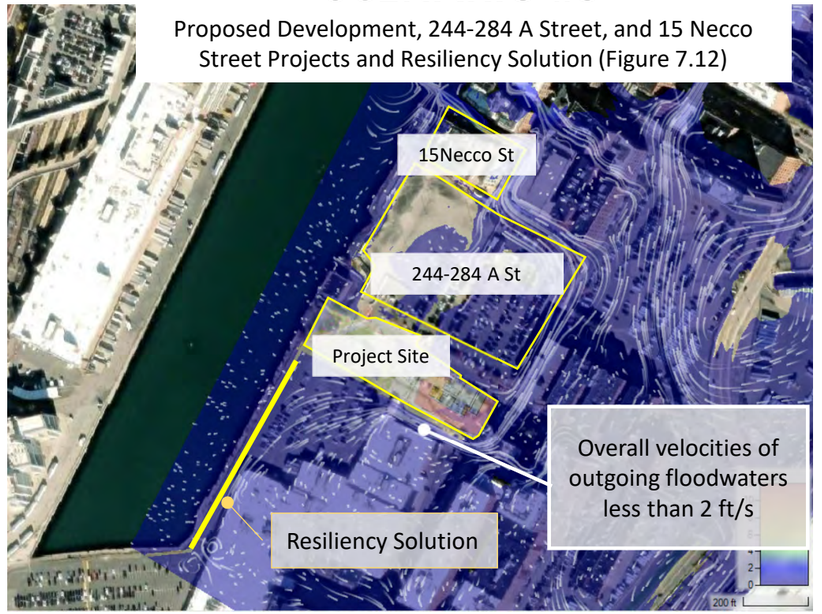


Figure 7.4: Scenario #1: 2070 – 100 Year Event Incoming Storm Surge at Peak Velocities

232 A Street| Boston, Massachusetts

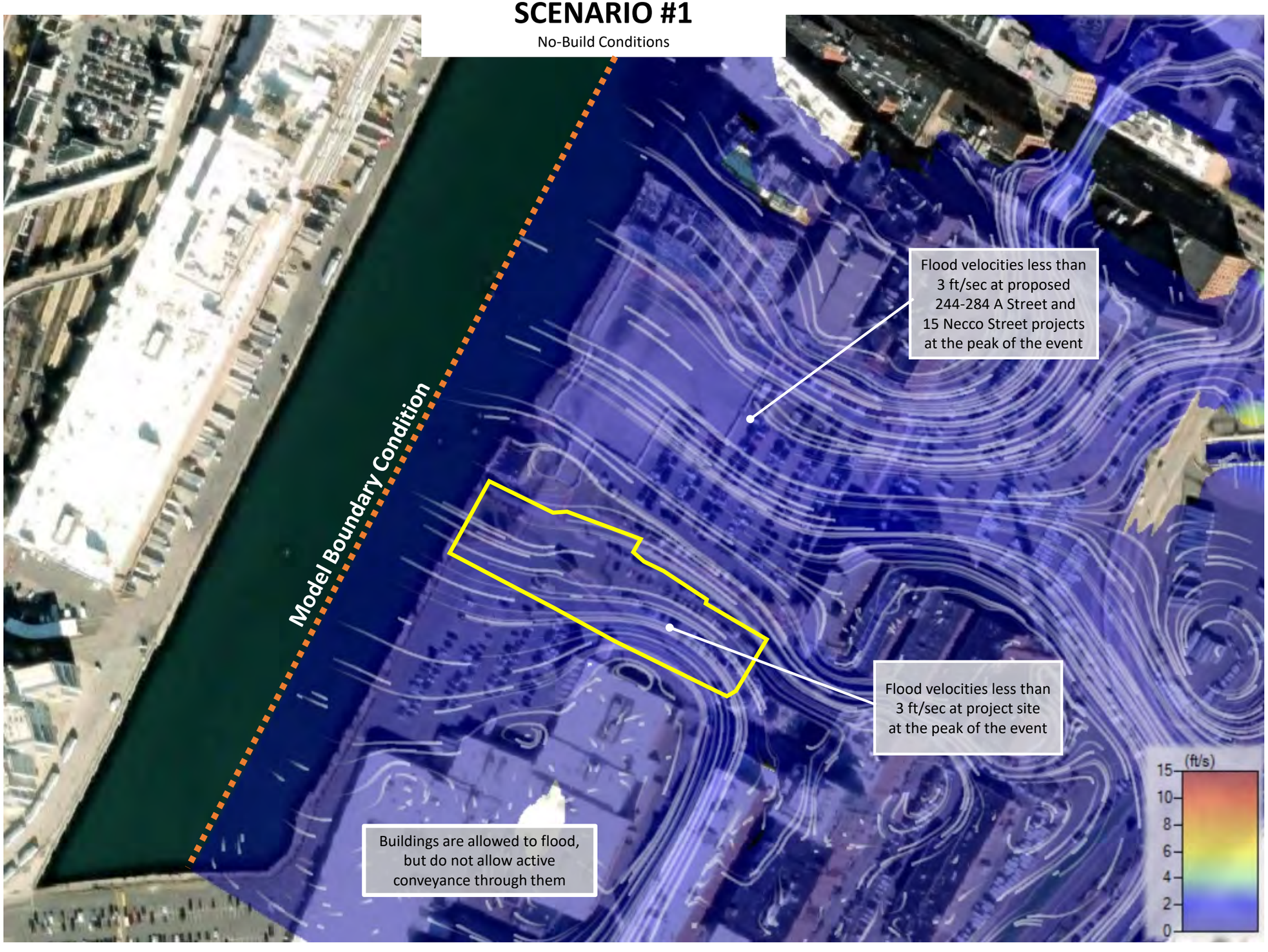


Figure 7.5: Scenario #1: 2070 – 100 Year Event Outgoing Storm Surge

232 A Street| Boston, Massachusetts

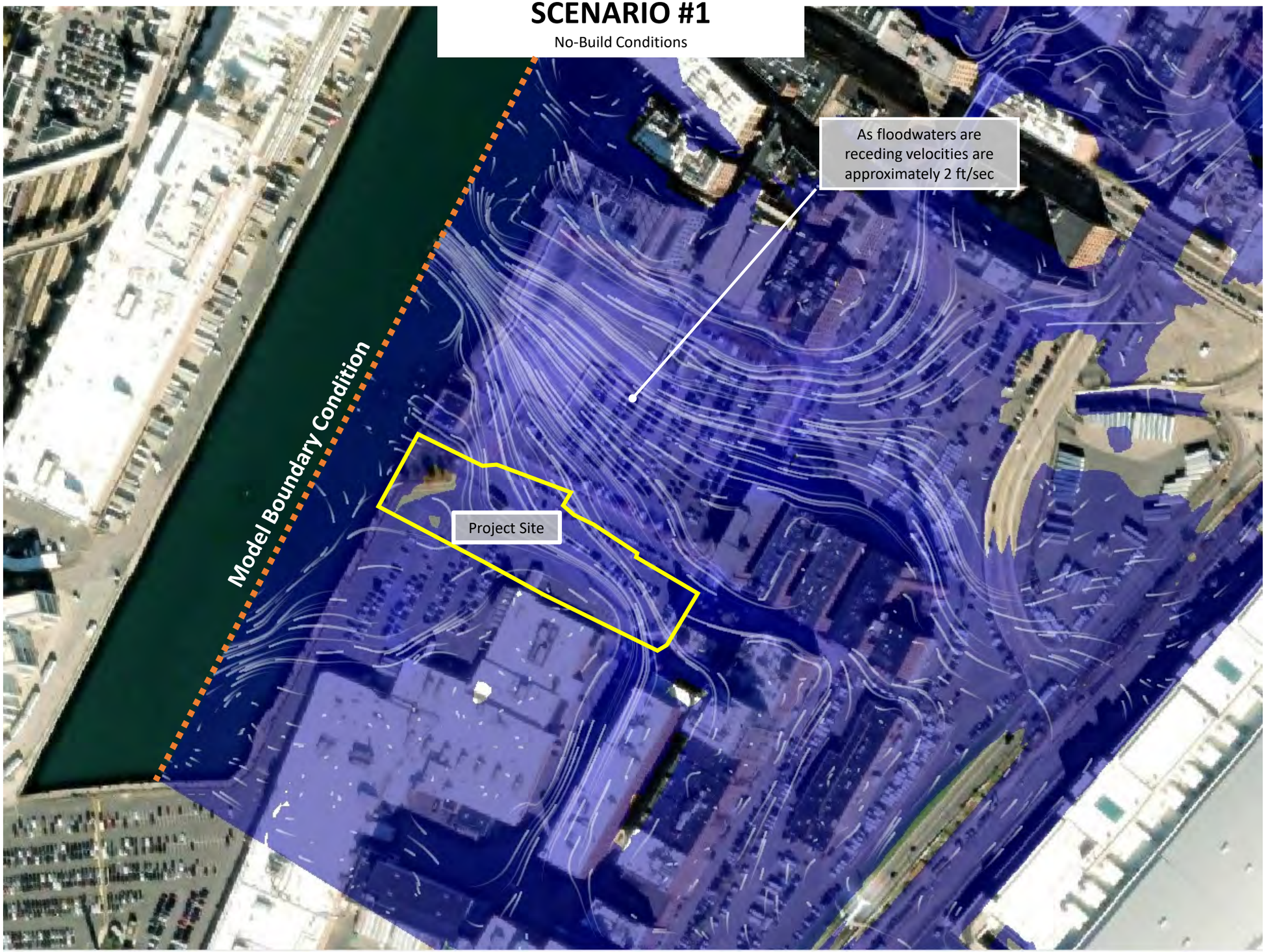


Figure 7.6: Scenario #2: 2070 – 100 Year Event Incoming Storm Surge at Peak Velocities

232 A Street| Boston, Massachusetts

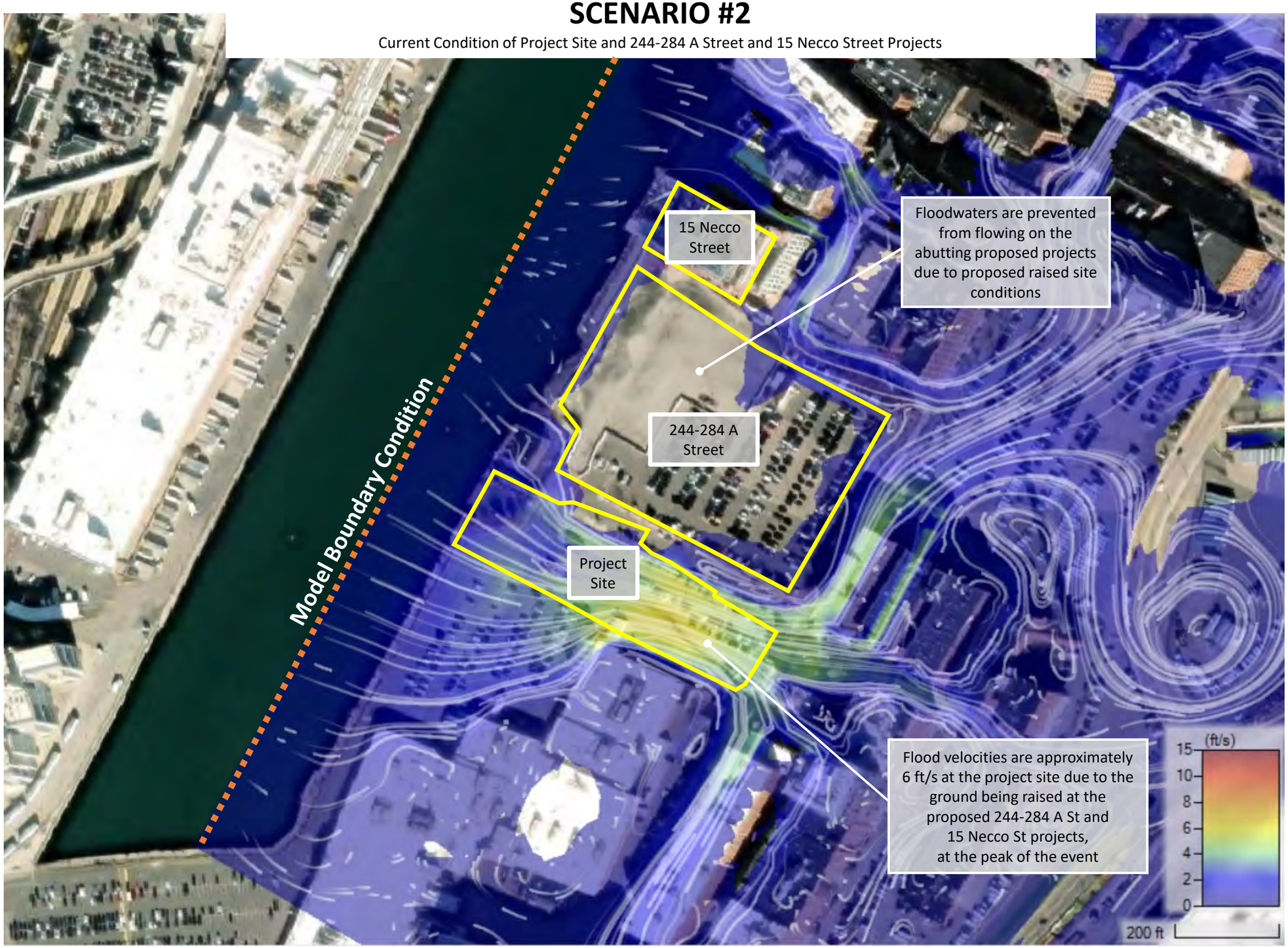


Figure 7.7: Scenario #2: 2070 – 100 Year Event Outgoing Storm Surge

232 A Street| Boston, Massachusetts

Figure 7.8: Scenario #3: 2070 – 100 Year Event Incoming Storm Surge at Peak Velocities

232 A Street| Boston, Massachusetts

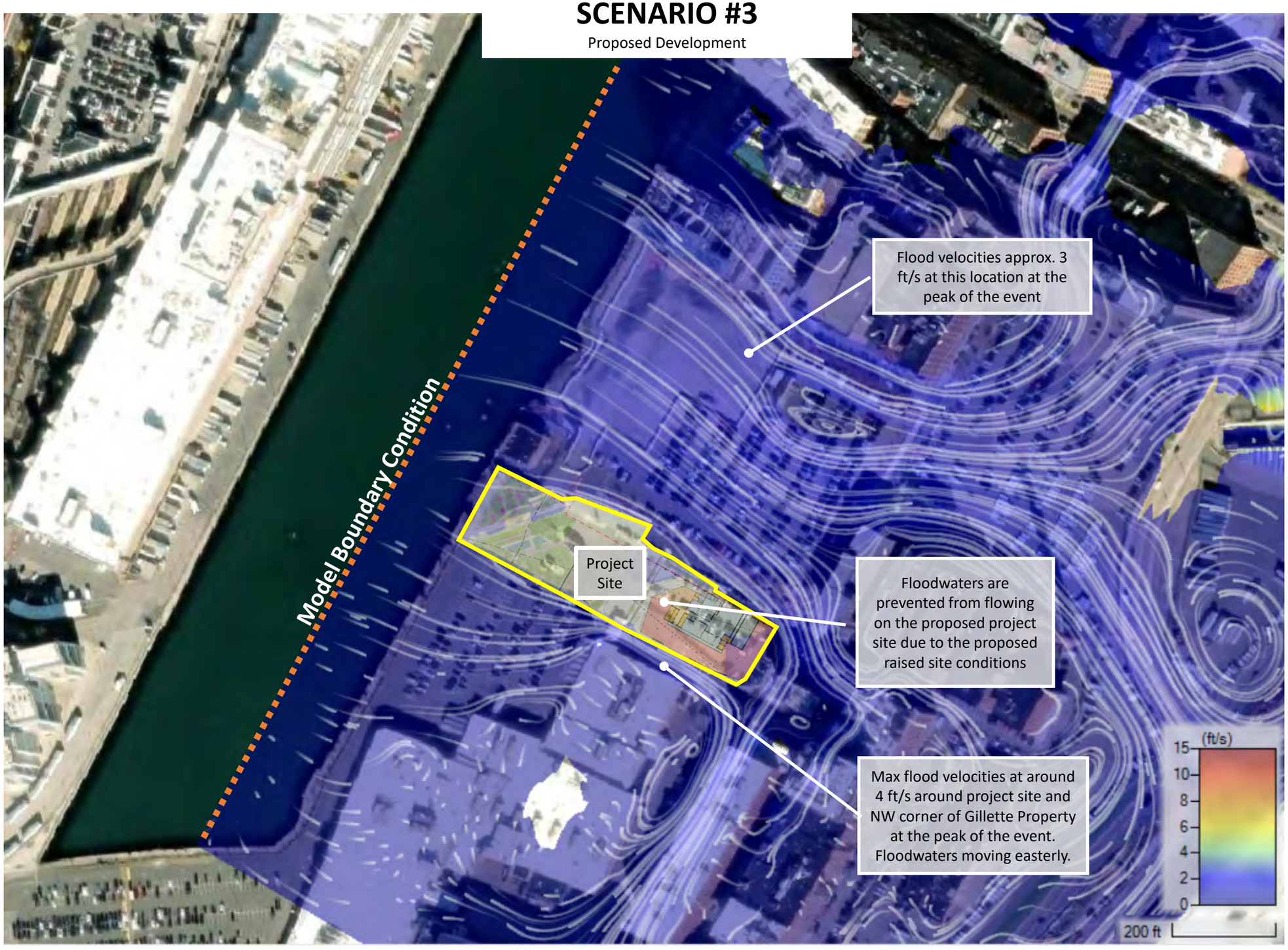


Figure 7.9: Scenario #3: 2070 – 100 Year Event Outgoing Storm Surge

232 A Street| Boston, Massachusetts

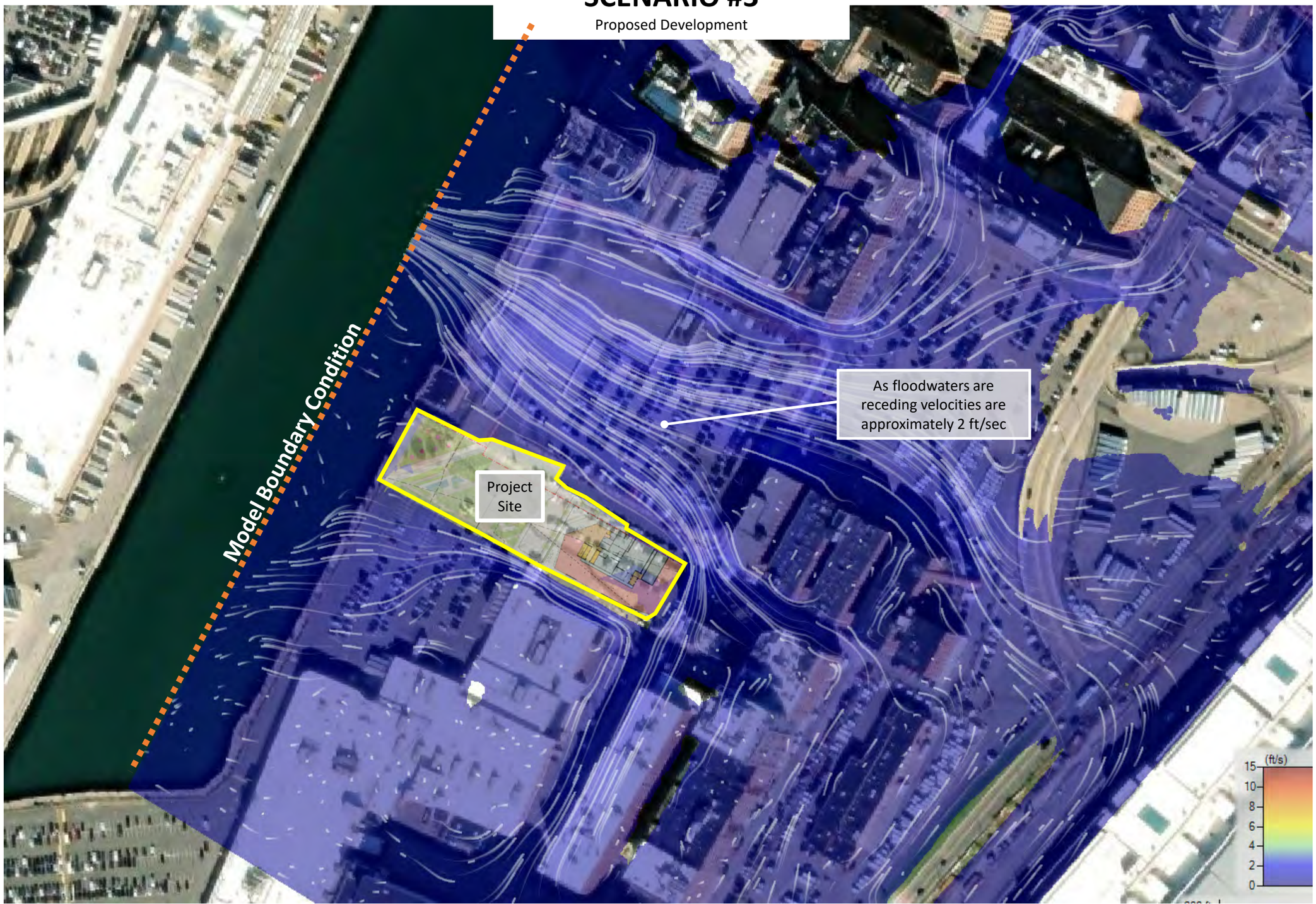


Figure 7.10: Scenario #4: 2070 – 100 Year Event Incoming Storm Surge at Peak Velocities

232 A Street| Boston, Massachusetts

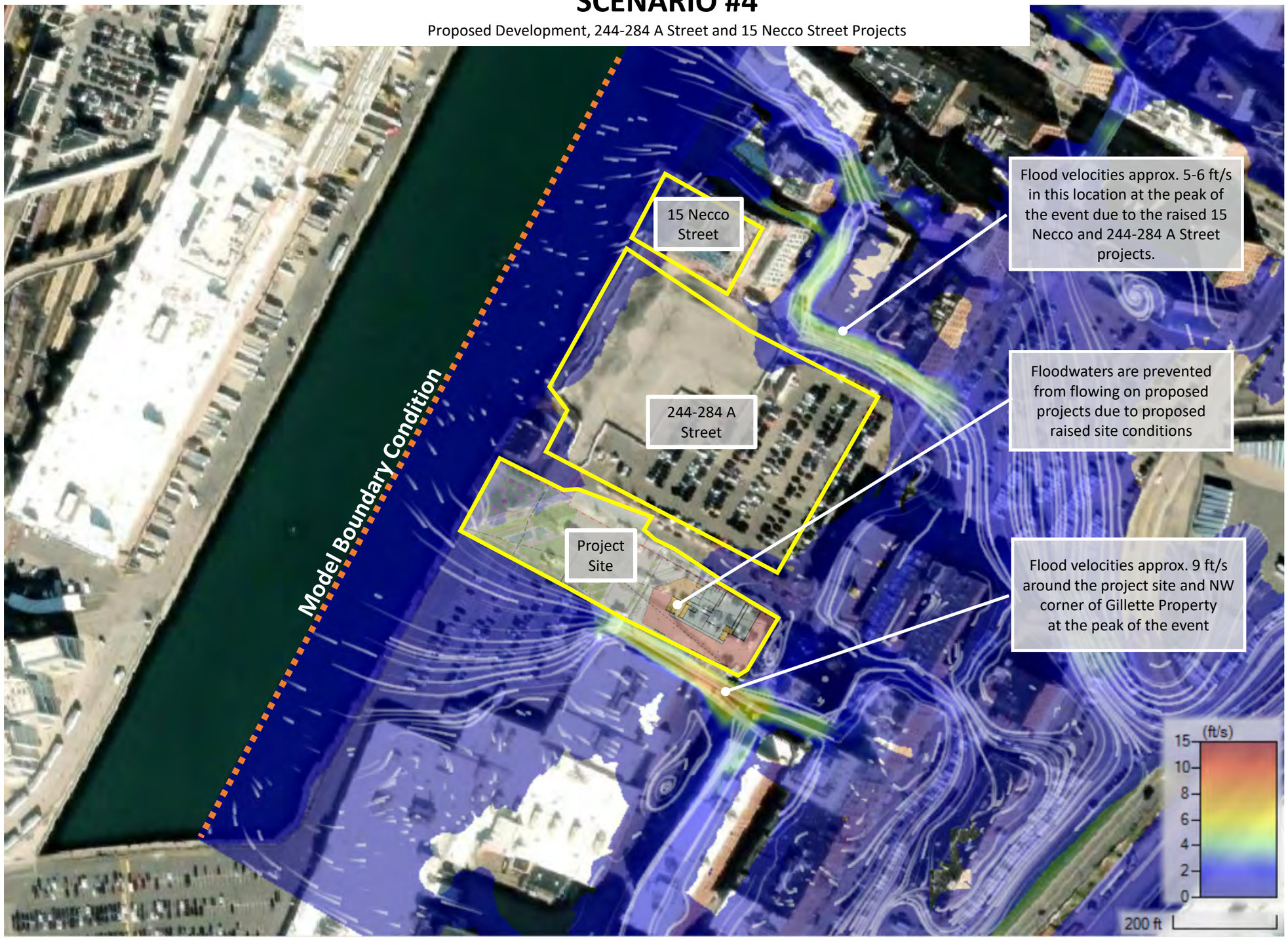


Figure 7.11: Scenario #4: 2070 – 100 Year Event Outgoing Storm Surge

232 A Street| Boston, Massachusetts

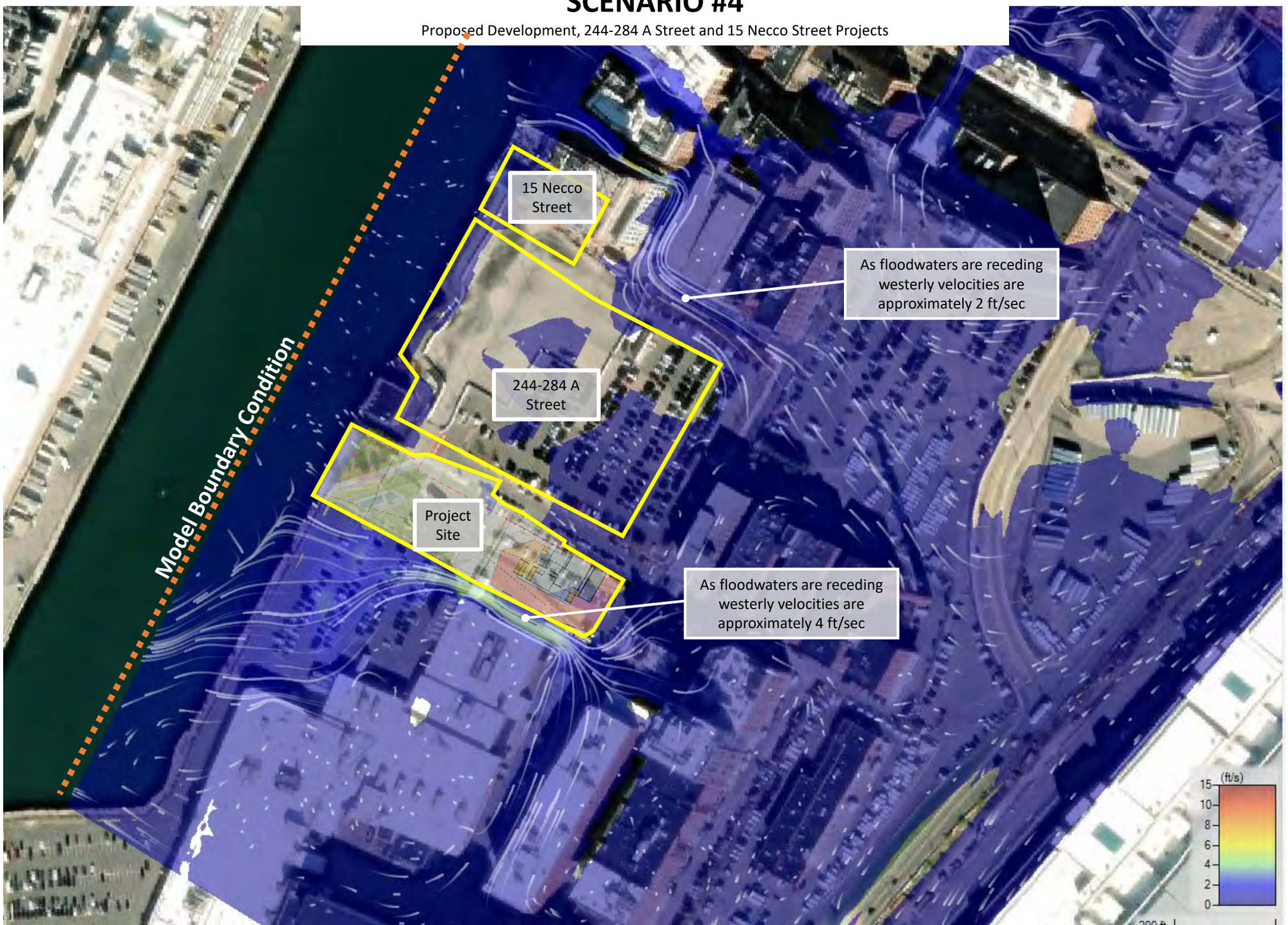


Figure 7.12: Scenario #5: 2070 – 100 Year Event Incoming Storm Surge at Peak Velocities

232 A Street| Boston, Massachusetts

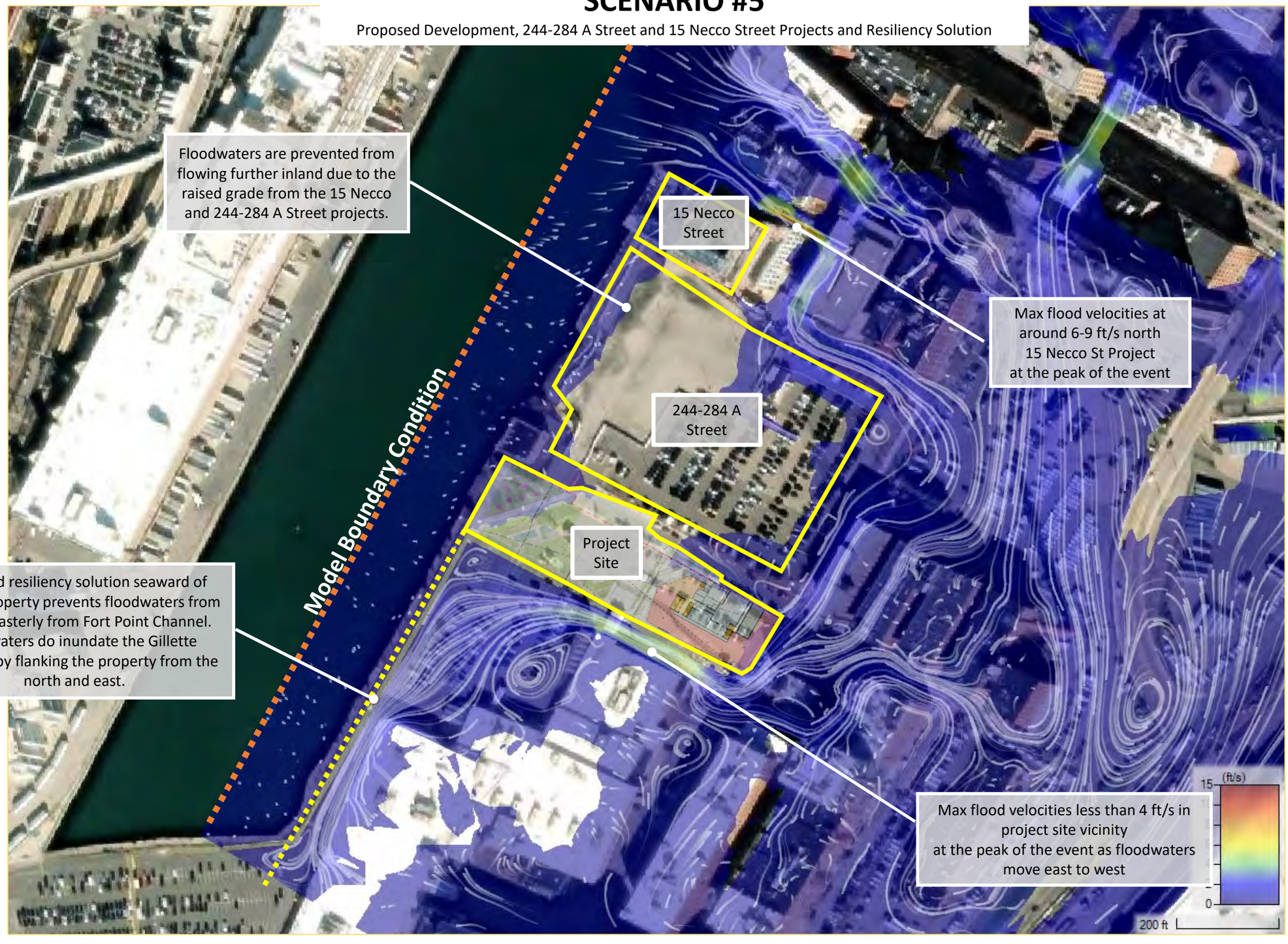
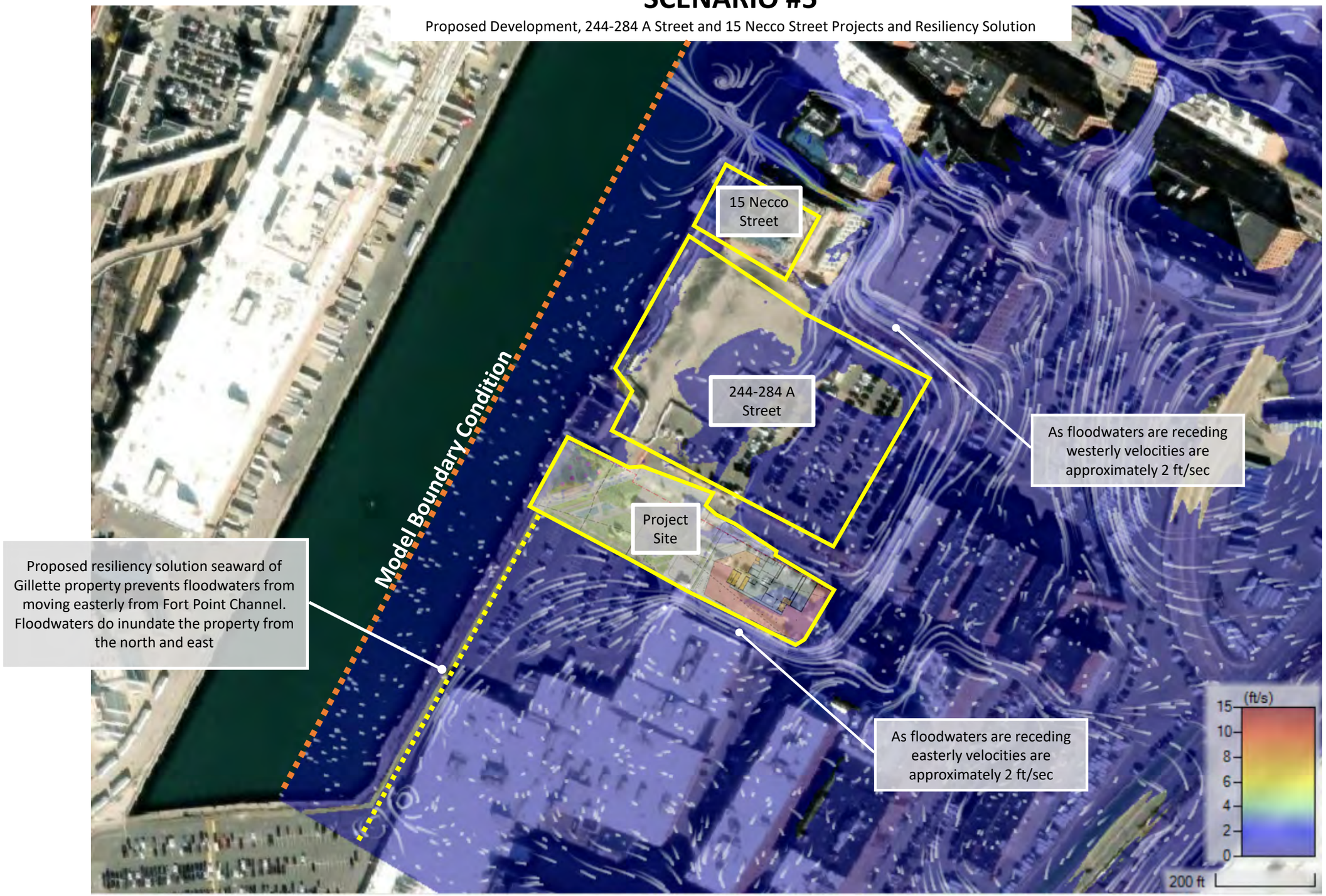


Figure 7.13: Scenario #5: 2070 – 100 Year Event Outgoing Storm Surge

232 A Street| Boston, Massachusetts



8

Construction Period Impacts

This chapter discusses potential construction period impacts and identifies appropriate mitigation measures. Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Construction Period' section of the DEIR Scope with references to specific DEIR sections in **bold**:

- An update on construction staging and timing. **(Section 8.3)**
- A draft Construction Management Plan (CMP), if available. **(Section 8.4)**
- A comprehensive discussion of construction period impacts on surrounding areas (including for EJ populations), specifically an estimate of total duration, the extent of construction period traffic, and measures to minimize construction-related impacts. **(Sections 8.12)**
- An evaluation of if construction truck traffic routes will extend into areas near EJ populations, an estimate of the extent of truck traffic at those locations, and mitigation measures. **(Section 8.12)**
- A description of how construction and demolition (C&D) activities will be managed in accordance with applicable MassDEP regulations regarding air pollution control and waste ban provision. **(Section 8.11)**
- A description of measures to reduce construction period impacts and emissions of air pollutants from equipment, including anti-idling measures, the use of construction equipment manufactured to Tier 4 federal emission standards or that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions from diesel-powered equipment, and the use of ultra-low sulfur diesel fuel (ULSD) in off-road vehicles **(Section 8.8)**
- Notification to MassDEP in accordance with the MCP if oil and/or hazardous materials are found during construction of the Project. **(Section 8.11)**
- A description of the reuse or recycling of C&D debris to the maximum extent. **(Section 8.11)**

8.1 Key Findings

Key findings related to construction period impacts include the following:

- Impacts associated with the Project construction activities are temporary in nature and are typically related to truck traffic, air (dust), noise, stormwater runoff, solid waste, and vibration,
- The Proponent will develop a detailed Construction Management Plan (CMP) for approval by the Boston Transportation Department (BTD) prior to construction,
- The Proponent will take an active role regarding the reprocessing and recycling of construction waste,

- Construction staging areas will be located to minimize impacts to pedestrian and vehicular flow,
- Plans for controlling fugitive dust during demolition, excavation, and construction include mechanical street sweeping, wetting portions of the Project Site during periods of high wind, and careful removal of debris by covered trucks,
- The Project will enforce anti-idling measures consistent with MGL Chapter 90 Section 16A and all diesel construction machinery will be fitted with oxidation catalysts to reduce emissions,
- Construction work will comply with the requirements of the City of Boston Noise Ordinance, and every reasonable effort will be made to minimize the noise impact of construction activities, and
- A Stormwater Pollution Prevention Program will be submitted to the EPA to obtain a NPDES Construction General Permit.

8.2 Regulatory Context

The Project will submit applicable documentation and comply with the following construction-related permits and approvals:

- Massachusetts Department of Environmental Protection (MassDEP) – Notification Prior to Construction or Demolition
- Boston Transportation Department (BTD) – Construction Management Plan (CMP)
- Boston Water and Sewer Commission (BWSC) – Site Plan Approval, Water/Sewer Connection Permits, Construction Dewatering Permit

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.

8.3 Construction Schedule

Construction is anticipated to commence 6-12 months following entitlements with completion within four years of start. Anticipated schedule subject to change based upon market conditions.

8.4 Construction Management Plan

Impacts associated with the Project's construction activities are temporary in nature and are typically related to truck traffic, air (dust), noise, stormwater runoff, solid waste, and vibration. The CMP will be developed to reflect the input of the regulatory authorities having jurisdiction over such plans, including the Boston Fire Department and BTD. The CMP will include detailed information on construction activities, specific construction mitigation measures, and vehicle routing and staging to minimize impact on the surrounding neighborhood.

8.5 Site Preparation, Demolition, and Excavation

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance

with the Massachusetts Water Resources Authority (MWRA), the Boston Water and Sewer Commission ("BWSC"), Boston Public Works, Dig Safe, and the governing utility company requirements. All necessary permits will be obtained before the commencement of the specific utility installation. Specific methods for the installation of proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by the BWSC as part of their Site plan review. An existing 72-inch drain/CSO conflicts with the proposed building footprint east of the I-90 Tunnel. This portion of the drain/CSO pipe will need to be rerouted, which will require significant coordination with BWSC. The Proponent is committed to working with BWSC to determine a feasible route and a sequencing plan which will maintain service through the main during construction.

Plans for controlling fugitive dust during demolition, excavation, and construction include mechanical street sweeping, wetting portions of the Project Site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for a number of strictly enforced measures to be employed by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- Using wetting agents on areas of exposed soil;
- Using covered trucks;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Washing vehicle wheels before leaving the Project Site, as necessary, with provisions for runoff control;
- Minimizing storage of debris on the Project Site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

8.6 Pedestrian Safety and Access

Access to the Project Site and construction staging areas will be provided in the CMP. Although specific construction and staging detail have not been finalized, the Project team will work to ensure that staging areas are situated to minimize impacts to pedestrian and vehicular flow. A variety of measures will be considered and implemented to protect the safety of pedestrians. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the Project Site. Temporary walkways, appropriate lighting, and new directional and informational signage to direct pedestrians around the construction sites will be provided. Construction procedures will be designed to meet all OSHA safety standards for specific Site construction activities.

8.7 Construction Traffic and Parking

Detailed CMPs will be developed and submitted to the BTD for their approval. These plans will detail construction vehicle routing, staging, and roadway occupancy that will require BTD approval.

Construction vehicles will be necessary to move construction materials to and from the Project Site. Every effort will be made to reduce noise, control fugitive dust, and minimize other disturbances associated with construction traffic. Truck staging and laydown areas for the Project will be carefully

planned. The need for specific street occupancy (lane closures) along A Street, Binford Street, or any of the other roadways adjacent to the Project Site is not known at this time.

Contractors will be encouraged to devise access plans for their personnel that de-emphasize auto use (such as seeking off-site parking, provide transit subsidies, on-site lockers for tools and equipment, etc.). Construction workers will also be encouraged to use public transportation to access the Project Site, as no new parking will be provided for them.

8.8 Air Quality/Dust

The Project will comply with air quality regulations at 310 CMR 7.01, 7.09-7.10. Retrofitted diesel construction vehicles, or vehicles that use alternate fuels, will be used. The Project will implement an outdoor construction management plan that includes provisions for wheel washing, Project Site vacuuming, and truck covers. The Commonwealth of Massachusetts' anti-idling law will be enforced during the construction phase of the Project with the installation of on-site anti-idling signage.

The Project will comply with the requirements of the Clean Construction Equipment Initiative aimed at reducing air emissions from diesel-powered construction equipment. Oxidation catalysts and catalyzed particulate filters will be utilized on all construction vehicles and equipment to reduce air quality degradation caused by emissions from heavy-duty, diesel-powered construction equipment. All pre-2007 diesel construction vehicles working on the Project will be retrofitted using retrofit technologies approved by the United States Environmental Protection Agency (EPA). Additionally, ultra-low-sulfur diesel (ULSD) fuel (15 parts per million) will be used for all off-road diesel equipment.

8.9 Construction Noise

The Proponent is committed to mitigating noise impacts from the construction of the Project. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Conforming to City of Boston work hour regulations;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment, and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

Intermittent increases in noise levels will occur in the short term during the construction of the new buildings. Work will comply with the requirements of the City of Boston Noise Ordinance.

8.10 Stormwater Runoff/Erosion Control

Prior to the beginning of construction, the Construction Manager will produce a Stormwater Pollution Prevention Program (SWPPP) to be submitted to the EPA to obtain a NPDES Construction General Permit (CGS).

Existing catch basins on and adjacent to the Project Site will be protected with silt sacks. Should dewatering be required, it will be conducted in accordance with Massachusetts Water Resources Authority (MWRA) Sewer Use Regulations at 360 C.M.R. §§ 10.007, 10.052, 10.072, and 10.092 as applicable. A Sewer Use Discharge Permit Application will be filed with MWRA, the City of Boston, and the Boston Water and Sewer Commission (BWSC), if necessary.

The entire perimeter of the construction site will be protected with a construction fence with debris net and erosion control measured to separate the construction activities and general public. Vehicular gates with wheel wash stations will be provided for construction traffic in alignment with the flow of traffic on perimeter roads to allow safe entrance and exiting for construction vehicles.

8.11 Construction & Demolition Waste Management

All solid waste generated will be recycled off-site or disposed of in accordance with federal, state, and city regulations. The Construction Manager will implement a waste management plan that seeks to divert at least 75 percent of construction and demolition waste material removed from the Project Site from landfills through recycling and salvaging. All demolition debris waste will be separated and legally disposed of in regional landfills. During construction, wood, metals, gypsum, cardboard and plastic will be sent to a solid waste sorting facility for separation of any recyclable materials.

8.12 Construction Period Impacts on EJ Populations

EJ populations will experience the same temporary construction period impacts as described in this chapter. Mitigation measures during construction will be implemented to minimize impacts to EJ communities. The Proponent will develop a plan to control construction-related impacts including erosion, sedimentation, and other pollutant sources during construction and any land disturbance activities. A Construction Manager will be designated to develop a construction phasing and staging plan for coordinating construction activities with all appropriate utility companies and regulatory agencies. The construction-period mitigation measures will be developed with consideration of control on demolition phase impacts, noise, air quality/dust control, water quality, pedestrian safety and waste management.

The Project is not located within a community with an EJ population and as such, the construction period impacts to EJ communities will be limited to those communities that contain or are adjacent to a regional highway route. During construction, it is expected that the majority of construction vehicles will use the regional highway system (e.g. I-93 and the Massachusetts Turnpike) to travel to/from the Project Site. There may also be a small number of construction vehicles that use local roadways in South Boston and other areas of the City if materials and equipment are sourced from within the City of Boston. More details will be provided when the contractor is selected and a detailed Construction Management Plan is prepared. Construction period impacts on the local transportation system, including access points, truck routes, and hours of construction and deliveries, will be minimized by coordination with the City of Boston. Additionally, measures will be evaluated

and reviewed with the appropriate city agencies to ensure utilities are protected and fire access is maintained. Construction management and scheduling, such as identifying truck and materials delivery routes, and controlling noise, vibration and dust will minimize impacts on the surrounding environment.

The Proponent will develop a detailed Construction Management Plan (CMP) for approval by BTD prior to construction. Each CMP will be developed to reflect the input of the regulatory authorities having jurisdiction over such plans, including the Boston Fire Department and BTD. The CMP will include detailed information on construction activities, specific construction mitigation measures, and vehicle routing, work hours and staging to minimize impact on the surrounding neighborhood and the Turnpike.

9

Draft Section 61 Findings and Proposed Mitigation

This chapter includes a summary of proposed mitigation measures to avoid, minimize and mitigate environmental impacts, Draft Section 61 Findings for all State Permits, and a draft GHG self-certification to the MEPA Office.

Specifically, as requested in the EEA Secretary's Certificate on the ENF, this chapter provides the following documentation in response to the 'Mitigation and Draft Section 61 Findings' and 'Hazardous Waste' sections of the DEIR Scope with references to specific DEIR sections in **bold:**

Mitigation and Draft Section 61 Findings

- A comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts associated with the Project, including an indication as to which mitigation measures will be constructed or implemented based upon proposed project phasing. **(Section 9.1, Table 9-1)**
- A separate section outlining mitigation commitments relative to EJ populations. **(Section 9.2)**
- Draft Section 61 Findings for each Agency Action to be taken on the Project. **(Section 9.3)**

Hazardous Waste

- A description of procedure for the testing, handling, and disposal of any hazardous waste encountered at the Project Site. **(Section 9.2.1)**

9.1 Proposed Mitigation

The Project will avoid, minimize, or mitigate damage to the environment to the maximum extent practicable. The Proponent commits to the measures summarized in Table 9-1 below. Since the Project is proposed to be constructed in a single development phase, all mitigation measures will be implemented as part of the full build condition.

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Table 9-1 Summary of Project Benefits and Mitigation Measures

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
Overall Project Benefits				
Eliminate a second building on-site, as previously envisioned in the approved PDA, allowing for the creation of a waterfront park approximately three times the size of what was originally planned for the Project Site.	Proponent	Included in Project Costs	Design, Construction	None
Construct approximately 1.5 acres of public realm space, including approximately 1.26 acres of publicly accessible open space, as well as sidewalk and streetscape improvements and Necco Street extension.	Proponent	Included in Project Costs	Design, Construction	None
Provide new connections and improvements to the Harborwalk and South Bay Harbor Trail, including widening it to 22 feet.	Proponent	Included in Project Costs	Design, Construction	None
Activate the public realm through ground floor retail/civic/cultural suites and opportunities for displays of public art.	Proponent	Included in Project Costs	Design, Construction	None
Provide ground level building activation, including FPA in excess of what is required by Chapter 91 and the SBWMHP.	Proponent	Included in Project Costs	Design, Construction	Mass DEP Chapter 91 License
Provide on-site publicly accessible open space in excess of what is required by Chapter 91 and the SBWMHP.	Proponent	Included in Project Costs	Design, Construction	Mass DEP Chapter 91 License
Provide site-wide resiliency improvements, including raising the site grade to protect from future flooding, incorporating the proposed berm along Fort Point Channel into the proposed site design, and creating permeable area.	Proponent, with potential FEMA funding	Included in Project Costs	Design, Construction	None
Provide ancillary support for public enjoyment of the waterfront, including public restrooms, drinking water station, and storage for Dragon Boats as a prominent use on the Fort Point Channel (location within the below-grade garage to be determined).	Proponent	Included in Project Costs	Design, Construction	Mass DEP Chapter 91 License
Create temporary construction jobs and permanent jobs.	Proponent	Not Applicable	Construction, Operation	None
Contribute housing and jobs linkage payments.	Proponent	To Be Determined	Payment begins with issuance of Building Permit	None

9-3 Draft Section 61 Findings and Proposed Mitigation

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
Generate new property tax revenue for the City of Boston.	Proponent	NA	Operation	None
Stormwater Management				
Reduce impervious area on-site and commit to retaining the first 1.25 inches of stormwater over site impervious areas.	Proponent	Included in Project Cost	Design, Construction	None
Underground stormwater recharge systems will be used to the maximum extent practicable over the tunnel to passively infiltrate runoff.	Proponent	Included in Project Cost	Design, Construction	None
Water and Wastewater				
Water Use				
Incorporate low-flow plumbing fixtures into building design to minimize water consumption. Equipment selections will be optimized to ensure that infrastructure is right-sized to control water usage.	Proponent	Included in Project Cost	Design, Construction	None
Wastewater				
Mitigate inflow and infiltration at a ratio of 4:1 relative to the net-new wastewater generated.	Proponent	To Be Determined	Design, Construction	None
Committed to filing appropriate documentation for a Sewer Use Discharge Permit, as required.	Proponent	Included in Project Cost	Design, Construction	MWRA Sewer Use Discharge Permit or MassDEP Sewer Extension and Connection Permit (if required)
Install oil/gas separators, as required to meet the Massachusetts Uniform State Plumbing Code.	Proponent	To Be Determined	Design, Construction	None
Traffic and Transportation				
Construct new sidewalks adjacent to the Project Site, in accordance with Boston Complete Streets Guidelines and requirements of the Americans with Disabilities Act, including streetscape improvements (i.e., street trees, improved lighting) along Binford Street and A Street.	Proponent	Included in Project Cost	Design, Construction	None

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
Construct the Necco Street extension.	Proponent	Included in Project Cost	Design, Construction	None
Reconstruct A Street along Project Site frontage, which will include widening the right-of-way by setting back G8 from the property line. This widened right-of-way will be accommodate wider sidewalks, including enhanced pedestrian areas and a furnishing zone, protected bicycle lanes, on street parking, and 11-foot wide travel lanes.	Proponent	Included in Project Cost	Design, Construction	None
Provide enhanced bicycle and pedestrian connections between the South Bay Harbor Trail, the Harborwalk, and the surrounding roadway network, including a protected, two-way cycle track for the South Bay Harbor Trail and a dedicated pedestrian zone at a total width of 22 feet.	Proponent	Included in Project Cost	Design, Construction	None
Submit to MassDOT the design and construction documents consistent with the Overbuild Manual, per the May 13, 2019, MOU.	Proponent	Included in Project Cost	Design, Construction	MassDOT Access Permit
Implement a Transportation Demand Management program, including: › Provide on-site vehicle ("EV") EV charging stations for 25% of the below-grade parking spaces and construct the remaining 75% as EV-ready spaces to expand EV charging as the demand grows. › Hire an on-site transportation coordinator who will oversee parking operations help coordinate: › Provide orientation packets to building tenants promoting public transit options; › Oversee loading/delivery operations to minimize impact; › Raise awareness of public transportation, bicycling, and walking opportunities; › Publish a newsletter or bulletin summarizing alternate modes of transportation; › Host on-site events to encourage active transportation options; › Provide information to employees and visitors on the internet and in the building lobby. › Contribute funding toward Bluebike operations, in coordination with the City of Boston. › Provide covered, secure bicycle storage for employees. › Provide Lockers and showers for employees. › Provide external bike racks for visitors.	Proponent	Included in Project Costs	Design, Construction, Operations	None

9-5 Draft Section 61 Findings and Proposed Mitigation

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
› Provide real-time transit information in building lobby. › Encourage employers to subsidize on-site full-time employees' purchase of monthly transit passes.				
Implement a Traffic Monitoring Program to be developed in consultation with BTD. Produce and submit annual reports to the City of Boston and MassDOT for a period of five years, or until all parties are satisfied, whichever comes first.	Proponent	Included in Project Cost	Operations (to start six months following COO)	None
Air Quality/Greenhouse Gas Emissions				
Design and construct the proposed lab/office building to have a high-performance building enclosure and mechanical systems, which is estimated to result in an estimated 13 percent energy usage savings resulting in a reduction of approximately 5.5 percent in stationary source GHG emissions, using current MEPA emission factors, compared to a code-baseline design. This will be achieved by the following measures based on current design: › High Performance Building Envelope › Heat or energy recovery › Demand-controlled ventilation › Reduced lighting power densities › High-efficiency HVAC equipment › Energy Star appliances	Proponent	Included in Project Cost	Design, Construction	None
Install a 162-kW PV system, in compliance with the current building code based on the three largest floorplates (approximate conditioned area of each 36,000 SF). If through final building design this cannot be achieved, a partial system sized to not less than 75 percent of the Potential Solar Zone Area will be installed.	Proponent	Included in Project Cost	Design, Construction	None
Provide EV charging stations on-site for 25% of the below-grade parking spaces and construct the remaining 75% as EV-ready spaces to expand EV charging as the demand grows.	Proponent	Included in Project Cost	Design, Construction	None
Provide transportation improvements, as described above under 'Traffic and Transportation', which seek to minimize single-occupancy vehicle use resulting in reduced mobile source GHG emissions associated with Project-generated vehicle traffic.	Proponent	Included in Project Cost	Prior to COO, Operations	None

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
Climate Change Adaptation and Resiliency				
Set the building's ground floor elevation, inclusive of the critical infrastructural spaces, to 21.5 BCB to protect from potential future flooding in compliance with the requirements of Article 25A, *Coastal Flood Resilience Overlay District*.	Proponent	Included in Project Costs	Design, Construction	None
Incorporate the proposed berm along Fort Point Channel into the site design.	Proponent (with potential FEMA funding)	Ancillary costs included in Project Cost	Design, Construction	None
Target Leadership in Energy and Environmental Design (LEED) Gold level certification.	Proponent	Included in Project Costs	Design, Construction	None
Reduce impervious area by replacing portions of the existing parking lot with permeable open space.	Proponent	Included in Project Cost	Design	None
Minimize the urban heat island effect through the incorporation of vegetated open space and landscaping.				
Construction Period				
Develop and implement a Construction Management Plan (CMP) for submission to BTD once final plans are developed and the corresponding construction schedule is determined., in compliance with the City's Construction Management Program. The construction contractor will be required to comply with the details and conditions of the approved CMP.	General Contractor	Included in Project Costs	Construction	None
Include plans in the construction management and scheduling for construction worker commuting and parking, routing plans for trucking and deliveries, and the control of noise and dust (see below for details).	General Contractor	Included in Project Costs	Construction	None
Implement measures, as required by the City of Boston, to protect the safety of pedestrians, such as secure fencing and barricades around the Project Site to isolate construction areas from pedestrian traffic and temporary walkways with appropriate lighting, and new directional and informational signage to direct pedestrians around the construction sites will be provided.	General Contractor	Included in Project Costs	Construction	None

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
Employ measures to reduce and control construction air emissions and dust from temporary construction activities, including: › Enforce anti-idling measures consistent with state requirements (MGL Chapter 90 Section 16A); › Designate tire cleaning areas at construction vehicle entrances and exits; › Spray water, as needed, during excavation, stockpiling, and loading of demolition and soil materials for removal; › Sweep streets of adjacent local roadways to remove sediment accumulation, as needed; › Cover on-site piles of excavated materials; › Properly secured covers on truck cargos during materials transport; and › Minimize the free drop height of excavated or aggregate material during earthwork operations.	Proponent/ General Contractor	Included in Project Costs	Construction	None
Employ measures, as reasonable and feasible, to minimize noise from temporary construction activities, including, but are not limited to: › All Construction activities will conform with City of Boston work hour regulations › Install appropriate noise muffler systems on all construction equipment and ensure it is operating properly; › Require that construction vehicles and equipment maintain their original engine noise control equipment; › Implement appropriate traffic management techniques to mitigate roadway traffic noise impacts; › Employ proper operation and maintenance of construction equipment; › Prohibit excessive idling of construction equipment engines, as required by MassDEP regulation 310 CMR 7.11; › Use quieter-type (i.e., manually adjustable or ambient-sensitive) backup alarms on construction vehicles; › Evaluate and consider additional noise control options during the design process for effectiveness and feasibility; and › Incorporate appropriate operational specifications and performance standards into the construction contract documents.	General Contractor	Included in Project Costs	Construction	None

Impact Category	Responsible Party	Estimated Cost	Timing	State Agency Action
Implement a Construction Waste Management Plan to reduce construction waste from entering the landfill.	General Contractor	Included in Project Costs	Construction	None
Design and implement all construction procedures in accordance with OSHA safety standards.	General Contractor	Included in Project Costs	Construction	None

9.2 Mitigation Related to EJ Populations

The Project's impacts on EJ communities will mostly be limited to traffic on the regional highway system that carries hundreds of thousands of vehicles per day. The Project's impacts are not expected to have a measurable impact on EJ populations within a 5-mile radius. The Project-generated operational truck traffic is also expected to be minimal. The regional highways that serve the Project Site also have restrictions for trucks carrying hazardous materials during certain hours of the day. A review of the intersections included in the transportation analysis shows that only two intersections are within or border EJ areas. The analysis shows that free flowing project-generated traffic is expected only along the main roads. Given the building is primarily for office/lab use, project-related traffic is not generally expected to use local roadways outside the roads immediately adjacent to the Project leading to major arterial roads. Additionally, the studied roadways that abut the EJ areas generally have commercial, industrial, or planned development zoned properties along them. While the interstates are adjacent to EJ areas, the increment of Project-generated traffic trips traveling on the interstates is negligible relative to the existing traffic volumes and is not expected to meaningfully increase air emissions. Therefore, it can be safely stated that the local EJ populations will not be significantly affected by emissions generated by traffic related to the Project.

9.2.1 Hazardous Materials

The Project Site is partially within several Massachusetts Consistency Plan ("MCP") sites; specifically, MassDEP Release Tracking Numbers ("RTNs") 3-2966, 3-4365, and 3-11312. The MCP site identified by RTN 3-2966 has achieved regulatory closure; the remaining two sites identified by RTNs 3-4365 and 3-11312 are in Phase V of MCP response actions. The primary constituents of concern (COCs) associated with these MCP sites are volatile organic compounds (VOCs), particularly trichloroethylene (TCE) in groundwater under RTN 3-4365 and petroleum compounds and metals in soil under RTN 3-11312. On-going Phase V MCP response actions for RTN 3-4365 and RTN 3-11312 include operation of a groundwater treatment system and a sub-slab depressurization system in Z Building at the Gillette South Boston Manufacturing Center.

Considering the historic fill placement and previous site development, the potential exists that the Project Site soils could contain concentrations of chemical constituents that may exceed applicable threshold values and require new reporting to MassDEP under the MCP. If a new reporting condition is encountered, MassDEP will be notified, and the appropriate studies performed as required under the MCP. Management of soil and groundwater within the boundaries of existing RTNs and potential new reporting condition(s) will be performed in accordance with applicable local, state, and federal laws and regulations.

Characterization of the soil and groundwater at the Project Site will be conducted by the Proponent, and laboratory testing of soil and groundwater to be generated as a result of construction activity will be performed at the appropriate stage of the design process to further evaluate Project Site environmental conditions.

Subsurface explorations (test borings and test pits) will be conducted to obtain soil samples that will be submitted for analytical testing to characterize and document soil quality within the limits of the proposed Project for on-site reuse and off-site reuse, disposal, recycling and/or treatment. Classification of the soil to be excavated and removed from the site will be based on comparison to

Massachusetts Department of Environmental Protection (MassDEP) and facility-specific criteria. Groundwater samples obtained from observation wells installed in completed test borings will be submitted for analytical testing to characterize groundwater quality for construction dewatering effluent to be generated within the limits of the proposed Project for on-site recharge and off-site discharge under a National Pollution Discharge Elimination System (NPDES) Dewatering and Remediation General Permit (DRGP) issued by the US EPA.

9.3 Draft Section 61 Findings

Each agency of the Commonwealth that is taking an Agency Action (e.g., issuing a permit, financial assistance) must make a finding, pursuant to MGL Chapter 30, Section 61, that all feasible measures have been taken by the Proponent to avoid damage to the environment, or, to the extent damage to the environment cannot be avoided, to minimize and mitigate damage to the environment to the maximum extent practicable. These Section 61 Findings specify the entity responsible for funding and implementing any such mitigation measures, and the anticipated mitigation implementation schedule.

The proposed mitigation measures for the 232 A Street Project (the "Project") are described in the Draft Environmental Impact Report (DEIR), which was filed on January 31, 2024. The following sections provide a summary of possible impacts expected as a result of the Project. The proposed impact avoidance, minimization, and mitigation measures are the basis upon which Section 61 Findings may be made by the MassDOT and MassDEP. All impact minimization measures and mitigation measures outlined herein will be funded or implemented by Parcel 3 Owner, L.L.C. (the "Proponent").

9.3.1 MassDOT Access Permit

D R A F T O N L Y

Findings Pursuant to
MGL Chapter 30, Section 61

PROJECT NAME: 232 A Street
PROJECT LOCATION: 232 A Street, Boston, MA
PROJECT PROPONENT: Parcel 3 Owner, LLC
EEA NUMBER: 16746

Project Description

The Project will replace an existing 125-space surface parking lot fronting on the Fort Point Channel with 1.5 acres of site-wide publicly accessible waterfront open space and other public realm improvements along with a new 335,000-SF building containing uses that include upper-floor laboratory/R&D and office space, and ground floor space with intended retail, restaurant, civic, and/or cultural uses, with below-grade parking.. The proposed development has eliminated the second building on site as envisioned in the approved PDA, allowing for the creation of a waterfront park approximately three times larger than what was originally planned for the Site. The Project Site includes Private, Commonwealth, and Landlocked tidelands. Approximately 1.96 acres of the 2.41-acre Site comprise jurisdictional filled tidelands.

Project Impacts and Mitigation

The Project will not result in impacts to transportation infrastructure under Commonwealth of Massachusetts jurisdiction that require mitigation related to capacity or operational improvements. An Access Permit will be required for non-vehicular impacts, in accordance with the Memorandum of Understanding (MOU) between MassDOT and The Gillette Company LLC, dated May 13, 2019. The Access Permit shall be issued prior to construction activity over the Seaport Access Highway (the "Tunnel"), which is a portion of the Ted Williams Tunnel as defined in Section 1 of Chapter 6C of the Massachusetts General Laws. The Proponent shall submit to MassDOT, the design and construction documents consistent with the Overbuild Manual that is included in the May 13, 2019, MOU.

During the construction period, construction workers will be encouraged to car/vanpool and parking will be to provide on-site to minimize impacts to off-site roadways and neighborhoods. Staging areas will be coordinated with the Proponent, Contactor, and MassDOT to minimize impacts to the Tunnel. The Proponent will work with MassDOT to identify the appropriate measures to be taken during the construction phase to protect the Tunnel.

Section 61 Findings

The potential impacts of the Project on the Tunnel, as identified in the EIR, are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review processes the Proponent has developed measures to mitigate impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, MassDOT finds that there are no significant unmitigated impacts.

For the reasons stated above, MassDOT hereby finds that pursuant to MGL c. 30, § 61, the construction of the Project as described above, and with the implementation by the Proponent of the noted mitigation measures, all practicable means and measures will be taken to avoid or minimize adverse environmental impacts related to the Project.

Agency: _____

Commissioner: _____

Date: _____

9.3.2 DEP Waterways

D R A F T O N L Y

Findings Pursuant to
MGL Chapter 30, Section 61

PROJECT NAME: 232 A Street
PROJECT LOCATION: 232 A Street, Boston, MA
PROJECT PROPONENT: Parcel 3 Owner, LLC
EEA NUMBER: 16746

Project Description

The Project will replace an existing 125-space surface parking lot fronting on the Fort Point Channel with 1.5 acres of site-wide publicly accessible waterfront open space and other public realm improvements along with a new 335,000-SF building containing uses that include upper-floor laboratory/R&D and office space, and ground floor space with intended retail, restaurant, civic, and/or cultural uses, with below-grade parking. The proposed development has eliminated the second building on site as envisioned in the approved PDA, allowing for the creation of a waterfront park approximately three times larger than what was originally planned for the Site. The Project Site includes Private, Commonwealth, and Landlocked tidelands. Approximately 1.96 acres of the 2.41-acre Site comprise jurisdictional filled tidelands.

Project Impacts

The Project will impact approximately 88,573 SF of Land Subject to Coastal Storm Flowage (LSCSF). The proposed work at the Project Site will implement the flood resilience concepts that are planned for the Fort Point Channel (as part of the BPDA's Resilient Fort Point Channel Infrastructure Project). The Project will improve the capacity of the Project Site to provide storm damage prevention and flood control, and to mitigate the impacts of climate change. It will do this by placing fill within LSCSF, thereby raising site elevations to reduce the area of land subject to the 1% annual chance flood event through 2070 and increasing pervious area on the Project Site by approximately 189 percent. These elevation changes are not expected to change the flood extent or depth but will have minimal incremental impacts on the velocity of coastal flooding on adjacent properties that remain unprotected by these planned improvements. The Project will comply with Article 25A of the Boston Zoning Code and stormwater management will be provided in compliance with the DEP Stormwater Standards.

Mitigation

The Project is designed to meet the requirements of the Chapter 91 regulations at 310 CMR 9.00 as well as the requirements of the South Boston Waterfront Municipal Harbor Plan (SBWMHP) and the Fort Point Channel Watersheet Activation plan (FPCWAP). The Project is required to provide a minimum of 7,868 SF of space devoted to Facilities of Public Accommodation (FPA) within Commonwealth tidelands. In exceedance of this requirement, the Project will provide 17,341 SF of FPA space in both Commonwealth and Private tidelands. On a voluntary basis, the Project will also provide additional publicly accessible interior spaces within Private and Landlocked tidelands. By providing approximately 54,962 SF of open space, wherein approximately 30,625 SF is required, the Project is planned to provide approximately 79 percent more on-site open space than required by Chapter 91 and the SBWMHP. The entire approximately 18,700-SF Water Dependent Use Zone (WDUZ) will consist of publicly accessible waterfront open space.

A suite of mitigation measures is proposed to prevent short- and long-term impacts to wetland resource areas during construction including an erosion and sedimentation control program, which will include structural and non-structural practices.

Section 61 Findings

The potential environmental impacts of the Project quantified in the EIR are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review processes the Proponent has developed measures to mitigate impacts of the Project. With the mitigation proposed

and carried out in cooperation with state agencies, the Department of Environmental Protection finds that there are no significant unmitigated impacts.

For the reasons stated above, the Department of Environmental Protection hereby finds that pursuant to MGL c. 30, § 61, the construction of the Project as described above, and with the implementation by the Proponent of the noted mitigation measures, all practicable means and measures will be taken to avoid or minimize adverse environmental impacts related to the Project.

Agency: _____

Commissioner: _____

Date: _____

9.4 GHG Self-Certification

In accordance with the MEPA GHG Policy, the Proponent will provide a Self-Certification to the MEPA Office signed by an appropriate professional following the completion of construction of the building to demonstrate that all the required mitigation measures, or their equivalent, have been completed. A draft Letter of Commitment for the future GHG Self-Certifications for the Project is provided below.

D R A F T

Secretary Rebecca Teppper
Executive Office of Energy & Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

ATTN: Director Tori Kim, MEPA Office

Re: Letter of Commitment for Greenhouse Gas Emissions Self-Certification
EA No. 16746 – 232 A St, Boston, MA

On behalf of Parcel 3 Owner, L.L.C. (the "Proponent"), VHB has prepared a summary of the estimated reduction in overall energy use and stationary source Greenhouse Gas ("GHG") emissions for the 232 A Street project in Boston (the "Project").

In accordance with the current MEPA Greenhouse Gas Emissions Policy and Protocol (the "GHG Policy") dated May 2010, the stationary source GHG assessment was provided to the MEPA Office as part of the Draft Environmental Impact Report (DEIR). The design case assumed building design and system improvements that would result in energy reductions, in accordance with the GHG Policy.

Building energy modeling based on early stages of design estimate that the energy conservation measures across the Project could reduce overall energy usage by 13 percent resulting in a 5.5 percent reduction in stationary source CO_2 emissions, using current MEPA emissions factors, when compared to the Stretch Code baseline. The following table presents the estimated energy savings and CO_2 emissions reductions by building.

	Energy Consumption				CO_2 Emissions		
	Electricity (MWh/yr)	**Natural Gas (MMBtu/yr)**	**Total (MMBtu/yr)**	**Performance Energy Index**	**Electricity (tons/yr)**	**Natural Gas (tons/yr)**	**Total (tons/yr)**
ASHRAE App. G[1]	12,568	48,231	91,113	-	4,110	2,822	6,931
Stretch Code Base[2]	12,257	10,955	52,776	0.579	4,008	641	4,649
Design Case	13,397	203	45,914	0.504	4,381	12	4,393
End-Use Savings	-1,140	10,753	6,863	0.075	-373	629	256
Percent Savings				**13.0%**			**5.5%**

tons/yr = short tons per year; MWh = Megawatt hour; MMBtu = million British Thermal Units

1. This case represents ASHRAE 90.1-2019 Appendix G conditions.
2. This case includes 2023 MA Stretch Code amendments with minimum Building Performance Factors yielding a PEI equal to the PEIt.

The building energy model results presented above are preliminary based on current building design. Following completion of construction of each building, the Proponent will submit a Self-Certification to the MEPA Office, signed by an appropriate professional, which identifies the as-built energy conservation measures and documents the associated stationary source GHG emissions reductions from the baseline case.

If you have any questions, please contact me via e-mail at mrooney@vhb.com.

Very truly yours,

VANASSE HANGEN BRUSTLIN, INC.

Michael Rooney, Senior Environmental Planner

10

Response to Comments

This chapter includes responses to the ENF Certificate issued September 29, 2023. Copies of the ENF Certificate and each comment letter received during the public review period are included in Appendix E.

10.1 List of Comment Letters

The ENF Certificate is assigned a letter and all other comment letters are assigned a number, as listed below in Table 8-1 below.

Table 8-1 List of DEIR Comment Letters

Letter No.	Commenter	Affiliation	Date Received
C	Secretary Bethany A. Card	Executive Office of Energy and Environmental Affairs/MEPA Office	September 29, 2023
1	David J. Mohler	Massachusetts Department of Transportation	September 5, 2023
2	Susan You	Massachusetts Department of Environmental Protection Waterways	September 19, 2023
3	John D. Viola	Massachusetts Department of Environmental Protection - NERO	September 19, 2023
4	Lisa Berry Engler	Massachusetts Office of Coastal Zone Management	September 19, 2023
5	Vandana Rao	Water Resources Commission	September 18, 2023
6	Colleen Rizzi	Massachusetts Water Resources Authority	September 21, 2023
7	Paul F. Ormond	Department of Energy Resources	September 27, 2023
8	John P. Sullivan	Boston Water and Sewer Commission	August 10, 2023
9	Carrie M. Dixon	Boston Parks and Recreation Department	September 22, 2023
10	Margaret L. Sullivan	Conservation Law Foundation	September 5, 2023
11	Kathy Abbott	Boston Harbor Now	September 5, 2023
12	Steve Hollinger	Public	September 19, 2023

10.2 Agency Comment Letters

MEPA Certificate

Comment C.1

The DEIR should provide a comprehensive description of all mitigation commitments for the project, including those related to stationary- and mobile-source GHG emissions and any environmental justice impacts.

Response

The proposed mitigation measures for the Project are described in detail in Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*.

Comment C.2

The DEIR should include detailed site plans for existing and post-development conditions at a legible scale. Plans should clearly identify buildings, interior and exterior public areas, impervious areas, pedestrian and bicycle accommodations, and stormwater and utility infrastructure.

Response

Updated landscape and architectural site plans are included as Figures 1.4 and 1.6. Updated exhibits showing impervious and pervious areas along with stormwater drainage areas and proposed utilities are shown on Figures 4.2 and 5.2.

Comment C.3

The DEIR should describe the project and identify any changes since the filing of the ENF.

Response

Project description and changes since the filing of the ENF are included in Sections 1.2 and 1.3 of Chapter 1, *Project Description and Permitting*.

Comment C.4

It should identify and describe State, federal and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions.

Response

The state, federal and local permitting and review requirements associated with the Project with an update on the status of each of the pending actions, are included in Section 1.5 of Chapter 1, *Project Description and Permitting*.

Comment C.5

The DEIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards.

Response

The applicable statutory and regulatory standards and requirements and a discussion of the Project's consistency with those standards, are included in Section 1.5 of Chapter 1, *Project Description and Permitting*.

Comment C.6

The DEIR, or a summary thereof, should be distributed to all CBOs and tribes/indigenous organizations included in the "EJ Reference List" that was utilized to provide notice of the ENF, and an updated list should be obtained from the MEPA Office to ensure that contact information is up to date.

Response

The DEIR will be circulated and distributed to ENF commenters, applicable state and local agencies, an expanded list to include EJ CBOs and tribes, and all other appropriate parties as listed in the Distribution List provided in Appendix A.

Comment C.7

The DEIR should describe the public involvement plan that the project intends to follow for EJ Populations within the DGA for the remainder of the MEPA review process.

Response

An electronic copy of the full DEIR filing will be distributed to the updated list of EJ CBOs and tribes/indigenous organizations provided by MEPA and a hard copy will be made available at BPL branch locations within approximately 1-mile of the Project Site, including the Chinatown Branch located at 2 Boylston Street and South Boston Branch located at 646 East Broadway. Further details on public involvement plan for the remainder of the MEPA review process, are included in Section 2.2.3 of Chapter 2, *Environmental Justice*.

Comment C.8

The Proponent should hold at least one public meeting prior to filing the DEIR, and should demonstrate in the DEIR and notice of the meeting was distributed widely within the surrounding EJ neighborhoods with translations in Spanish and Chinese, including through alternative language media.

Response

Prior to filing this DEIR, the Proponent held a Community Information Meeting on January 10, 2024. The meeting notice was widely distributed within the surrounding EJ neighborhoods to solicit feedback on the Project and provided interpretation services upon request.

Comment C.9

The DEIR should indicate whether a project website or other online resource will be made available.

Response

The cover letter included with this DEIR, and Chapter 2, *Environmental Justice*, provides information regarding the Project website and web address of the online version of the DEIR.

Comment C.10

According to the ENF, the data surveyed indicate that the City of Boston exceeds the criteria for Low Birth Weight and Childhood Asthma. The ENF did not include census tract data for vulnerable health EJ criteria. The DEIR should provide this information.

Response

The City of Boston exceeds the criteria for Low Birth Weight and Childhood Asthma. However, the DPH EJ Tool does not show low birth weight and childhood asthma data for the vulnerable health EJ criteria in the census tract where the Project is located.

Comment C.11

The DEIR should fully analyze the data available in the DPH tool including sources of pollution not identified in the ENF but present within the 1-mile DGA around the project site. These include:

- *M.G.L. c. 21E sites*
- *"Tier II" Toxics Release Inventory Site*
- *MassDEP sites with AULs*
- *MassDEP groundwater discharge permits*
- *Wastewater treatment plants*
- *MassDEP public water suppliers*
- *Underground storage tanks*
- *EPA facilities*
- *Road infrastructure*
- *MBTA bus and rapid transit*
- *Other transportation infrastructure*

- *Regional transit agencies*
- *Energy generation and supply*

Response

The DPH EJ Tool was consulted to identify potential sources of pollution that might currently pose a risk to public health within 1 mile of the Project Site and are listed in Section 2.3.1.1 of Chapter 2, *Environmental Justice*.

Comment C.12

As discussed below, the DEIR should provide an air quality analysis using the MOVES model, consistent with the MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources, for the study area used for the traffic study performed for the project, and should clarify how wide the traffic study area extends around the project site (e.g., ½ mile). Data on NOx, PM2.5, PM10, and DPM should be provided to the extent they are available.

Response

The Proponent has provided a mesoscale air quality analysis in accordance with the MassDEP guidance in Section 7.5.2 of Chapter 7, *Climate Change*. The requested pollutants were included in the mobile source emissions analysis. The analysis shows emissions within the traffic study area (roughly one-half mile from the Project Site).

Comment C.13

The DEIR should provide a comparison of GHG emissions and air pollutants from Existing (current) conditions to future No Build, future Build, and future Build with Mitigation conditions.

Response

The mobile source emissions analysis in Section 7.5.2 of Chapter 7, *Climate Change* presents emissions associated with the requested scenarios.

Comment C.14

Where a substantial increase from No Build to future Build conditions is shown (e.g., above 1 ton per year), the DEIR should consider mitigation measures.

Response

The mobile source emissions analysis in Section 7.5.2 of Chapter 7, *Climate Change* shows that an increase of 1 ton per year of health-based air pollutants (NOx, VOC, PM10, PM2.5, and DPM) in not expected, so no mitigation measures are required per the comment. A TDM program and electric vehicle infrastructure are proposed as mitigation to comply with the MEPA GHG Policy to mitigate GHG emissions.

Comment C.15

The DEIR should confirm that any impacted intersections within the study area (where Level of Service (LOS) was shown to degrade from No Build to Build conditions) and adjacent to EJ Populations will be adequately mitigated.

Response

Only two studied intersections were shown to be in or adjacent to EJ Populations: Congress Street at A Street/Thompson Place and Congress Street at West Service Road/Boston Wharf Road. Neither intersection was anticipated to have LOS degrading from the No Build to Build Conditions so mitigation is not required per the comment.

Comment C.16

The DEIR should discuss whether project related traffic is anticipated to extend near other EJ Populations within the DGA, and provide a narrative description of whether air quality will be impacted at those locations.

Response

The Proponent has analyzed the potential for air quality impact due to project-related traffic at EJ Populations located beyond the TIS study area but within the one-mile DGA radius. This analysis required the Proponent to estimate traffic flows for trip generations out to the one-mile DGA. This assessment is presented in Section 7.5.3 of Chapter 7, *Climate Change*.

Comment C.17

The DEIR should provide the information and analyses requested in the detailed comment letter submitted by the MassDEP Waterways Program, which is incorporated by reference herein.

Response

Responses to DEP comment letter are provided herein.

Comment C.18

In particular, the DEIR should provide detailed plans, including profiles and cross-sections as necessary, showing all aspects relative to c.91 jurisdictional boundaries (historic high water, mean high water, Landlocked Tidelands, WDUZ, etc.) including above ground and below-ground building elements.

Response

The requested information is provided in Chapter 3, *Chapter 91 and Tidelands,* and in Figures 3.2, 3.3, 3.4 and 3.5.

Comment C.19

The DEIR should include a tabular breakdown and graphical depiction of the proposed ground floor uses located on Landlocked Tidelands, filled Private Tidelands, and on filled Commonwealth Tidelands.

Response

The tabular breakdown is included as Table 3-6 in Chapter 3, *Chapter 91 and Tidelands,* and the graphical representation of the proposed ground floor uses is included as Figure 3.3.

Comment C.20

The DEIR should specifically demonstrate compliance with 310 CMR 9.53(2)(c), which requires at least 75% of the interior ground floor of a nonwater-dependent building located on filled Commonwealth Tidelands to include FPAs.

Response

Compliance with 310 CMR 9.53(2(c) is demonstrated in Section 3.3.4 of Chapter 3, *Chapter 91 and Tidelands*. In accordance with 310 CMR 9.53(2)(c), the Project is required to devote space within the building footprint (identified in the regulations as "interior space") to FPAs at the ground level of the building in an amount equal to the square footage of all Commonwealth tidelands on the Project Site within the footprint of buildings containing FPTs, of which 25 percent may be devoted to Upper Floor Accessory Services (UFAS). Based on the building footprint (10,490 SF), the Project is required to provide at least 7,868 SF of FPA space. By providing FPAs in both Commonwealth and Private tidelands, it will provide 17,350 SF of such space within Chapter 91 jurisdiction, which is 66% more than required.

Comment C.21

It should clarify if any outdoor dining, public restrooms, and/or parking or loading areas of any kind at or above grade are proposed on any filled Commonwealth Tidelands on the project site.

Response

Approximately 42% of the building footprint within Commonwealth tidelands will necessarily be devoted to loading and back-of-house operations accessed on Binford Street as this location is the only feasible solution. Public restrooms, along with a water station, will be provided within Commonwealth tidelands. Further clarifications and details regarding filled Commonwealth tidelands are provided in Section 3.3.4 of Chapter 3, *Chapter 91 and Tidelands.*

Comment C.22

The DEIR should demonstrate compliance with the baseline Chapter 91 building height setbacks at 310 CMR 9.51(3)(e) by updating figures (specifically Figure 4.5) showing building height in relation to the setback distance from the high-water mark.

Response

The Project complies with the SBWMHP, which limits the building height at this location to 150 feet, as explained in detail in Section 3.3.5 of Chapter 3, *Chapter 91 and Tidelands*.

Comment C.23

The DEIR should demonstrate compliance with the open space requirements at 310 CMR 9.51(3)(d) by providing calculations of the overall project site subject to licensing, the footprint of buildings for non-water dependent use and proposed open space, presented in square feet with corresponding area percentages.

Response

The Project's open space is depicted in Figure 3.5 and compliance with 310 CMR 9.51(3)(d) is described in Section 3.3.6 of Chapter 3, *Chapter 91 and Tidelands*.

Comment C.24

The DEIR should describe and provide detailed plans of the open space, and quantify each open space by its character and proposed use, such as landscaped, hardscaped plaza, sidewalks, etc.

Response

The Project's open space is depicted in Figure 3.5.

Comment C.25

In addition, the DEIR should include a discussion of pertinent negotiations with the City of Boston Parks Department related to the long-term ownership and management of the proposed open space.

Response

Refer to Section 3.3.7 of Chapter 3, *Chapter 91 and Tidelands,* for details on discussion with the City of Boston Parks Department.

Comment C.26

The DEIR should provide a comprehensive and detailed review of the South Boston MHP and related zoning and planning documents, such as the 100 Acres Master Plan and FPCWAP.

Response

Refer to Section 3.3.3 of Chapter 3, *Chapter 91 and Tidelands,* and Figure 3.6 for a detailed review of the SBWMHP, Section 3.5.2 for a detailed review of the 100 Acres Master Plan, and Section 3.6.2 for a detailed review of the FPCWAP.

Comment C.27

It should describe all requirements of the approved South Boston MHP that are pertinent to the site, such as the height and WDUZ substitutions and amplifications requiring measures to enhance the public's access to and use of the Fort Point waterfront.

Response

Refer to Section 3.3.3 of Chapter 3, *Chapter 91 and Tidelands,* and Figure 3.6 for a detailed review of all requirements of the SBWMHP pertinent to the Project Site including height and WDUZ substitutions and amplifications.

Comment C.28

It should provide a draft management plan for the publicly accessible interior and exterior facilities to be provided by the project.

Response

Refer to Section 3.3.7 of Chapter 3, *Chapter 91 and Tidelands,* for an outline of a draft management plan.

Comment C.29

The DEIR should include a detailed analysis of the project's compliance with the c. 91 regulations and approved South Boston MHP.

Response

Refer to Section 3.3.3 of Chapter 3, *Chapter 91 and Tidelands,* and Figure 3.6 for a detailed review of all requirements of the SBWMHP pertinent to the Project Site.

Comment C.30

The DEIR should provide additional information regarding the plans for the dock, including its intended uses, size, location, structure, and interaction with the South Boston Municipal Harbor Plan.

Response

The potential future dock/pier facility that was referenced in the ENF has been eliminated from the Project due to site constraints and in response to comments on the ENF and is no longer proposed as mentioned in Section 1.2 of Chapter 1, *Project Description and Permitting* , and Section 3.1 of Chapter 3, *Chapter 91 and Tidelands.*

Comment C.31

The DEIR should include a review of the PBD regulations and describe how the project will have a public benefit.

Response

Details on PBD regulations and public benefits of the Project are provided in Section 3.7 of Chapter 3, *Chapter 91 and Tidelands*.

Comment C.32

The ENF did not include a detailed analysis of the project's groundwater impacts or mitigation measures; therefore, this information should be provided in the DEIR.

Response

The Project falls within the Boston Groundwater Conservation Overlay District (GCOD), which requires it to meet local Article 32 requirements. As part of the Article 32 compliance, the Project is expected to recharge 1.25 inches of precipitation over the impervious area and provide a Certification of No Harm letter which will result in no negative impact on groundwater. Please note that much of the Project's open space is located above existing MassDOT tunnels. To prevent water infiltration into the tunnel, MassDOT may not allow infiltration in the area above and immediately adjacent to the tunnel. If that is the case, the Project is still expected to have a benefit to adjacent groundwater elevations. Refer to Section 4.6 of Chapter 4, *Wetlands and Stormwater*, for more information.

Comment C.33

It should address the project's impacts on groundwater levels and identify measures to avoid, minimize and mitigate these impacts.

Response

The Project falls within the Boston Groundwater Conservation Overlay District (GCOD), which requires it to meet local Article 32 requirements. As part of the Article 32 compliance, the Project is expected to recharge 1.25 inches of precipitation over the impervious area and provide a Certification of No Harm letter which will result in no negative impact on groundwater. Refer to Section 4.6 of Chapter 4, *Wetlands and Stormwater,* for more information.

Comment C.34

The DEIR should include a detailed description of the project's impacts on wetland resource areas and the floodplain and review how the project will comply with the relevant performance standards in the Wetlands Regulations (310 CMR 10.00).

Response

Refer to Section 4.3 of Chapter 4, *Wetlands and Stormwater*, for a detailed description of the Project's impacts on wetland resource areas and the floodplain.

Comment C.35

It should provide a cross-sections showing where the wetlands boundaries are landlocked, proposed wetland alteration, or grading and drainage plan(s) with details.

Response

Refer to Figures 4.1, 4.2 and 4.3.

Comment C.36

Comments from MassDEP state that the DEIR should provide clarification as to whether the proposed alteration to LSCSF involves filling or temporary alteration to this wetland resource area.

Response

Refer to Section 4.3.2 of Chapter 4, *Wetlands and Stormwater*, for clarification as to whether the proposed alteration to Land Subject to Coastal Storm Flowage (LSCSF) involves filling or temporary alteration.

Comment C.37

If filling is proposed, comments from MassDEP state that the DEIR should provide a narrative of how the floodwaters currently flow on the site based on the existing topography, and how they are expected to flow under the proposed grading.

Response

Refer to Chapter 4, *Wetlands and Stormwater,* for a narrative on existing flow and expected flow of floodwaters at the Project Site.

Comment C.38

Comments go on to say that the DEIR should explain whether and how the proposed project will increase the elevation or velocity of floodwaters, and/or cause floodwater to be displaced, deflected, or reflected onto adjacent properties or public and private ways.

Response

Refer to Section 4.4 of Chapter 4, *Wetlands and Stormwater,* fora detailed narrative.

Comment C.39

Comments from MassDEP state that the DEIR should clarify what work involving the potential dock or other aspects of the project is proposed in LUO and Coastal Bank and notate this on the plans, quantify the amount of alteration proposed (and restored, if applicable) for each of the wetland resource area; and, explain how the project will meet the performance standards under 310 CMR 10.25(3) through (7) and 10.30(3) through (8), respectively. This information should be provided in the DEIR.

Response

Refer to Sections 4.3.1 and 4.3.2 of Chapter 4, *Wetlands and Stormwater,* for a description of work proposed in Land Under the Ocean (LUO) and Coastal Bank and quantification of the alteration proposed (and restored, if applicable) for each, including a description of how the project will comply with performance standards of the Wetland Regulations. As noted above, the potential future dock facility that was referenced in the ENF has been eliminated from the Project due to site constraints and in response to comments on the ENF and is no longer proposed as mentioned in Section 1.2 of Chapter 1, *Project Description and Permitting*, Section 3.1 of Chapter 3, *Chapter 91 and Tidelands*.

Comment C.40

The DEIR should include a Stormwater Report and supporting computations, including an Operation and Maintenance Plan.

Response

Please refer to Chapter 4, *Wetlands and Stormwater*, for the stormwater narrative outlining the findings of hydrological analyses. Computations and a preliminary Operation and Maintenance Plan are provided in Appendix B.

Comment C.41

The DEIR should include a more detailed stormwater narrative that explains how the stormwater treatment train(s) have been designed to meet the Stormwater Standards fully and if not, that the highest level of treatment possible is being proposed (Standard 7).

Response

An expanded narrative explaining the stormwater treatment trains design in compliance with Stormwater Standards and the highest level of treatment possible is provided in Sections 4.5.2 and 4.5.6 of Chapter 4, *Wetlands and Stormwater,* and further details are provided in Appendix B.

Comment C.42

Since the site is partially within several Massachusetts Contingency Plan (MCP) sites with designated MassDEP Release Tracking Numbers, it is not clear how the groundwater recharge will be achieved or if it's even appropriate to do so. This should be clarified in the DEIR.

Response

The Project's geotechnical/geo-environmental consultant is aware of the need to provide groundwater discharge. At this time, it is believed to be feasible in areas on and adjacent to the Project Site that are not above or immediately adjacent to the I-90 tunnels. The Project will be conducting required site explorations to confirm feasibility. All final analyses will be presented to BWSC and Boston Conservation Commission for review and approval prior to construction.

Comment C.43

As noted in comments from MWRA, the Proponent should consult with the BWSC to develop a plan for ensuring a 4:1 offset of the project's wastewater flow. The DEIR should include a commitment to I/I removal and identify any mitigation projects or monetary contribution by the Proponent.

Response

The Proponent is committed to working with BWSC to define the appropriate I/I mitigation. Refer to Section 5.5.1 of Chapter 5, *Water and Wastewater*, for more information.

Comment C.44

Discharges from laboratory uses require a Sewer Use Discharge Permit from the MWRA's Toxic Reduction and Control (TRAC) Department. The DEIR should review any requirements associated with the MWRA's permit and should include a commitment to use oil/gas separators in the parking garage drainage systems.

Response

The Proponent is committed to meeting requirements from the MWRA for sewer discharge use and using oil/gas separators in the parking garage drainage systems. Refer to Chapter 5, *Water and Wastewater,* for more information.

Comment C.45

The DEIR should describe the location and size of infrastructure and connections to the BWSC's water and sewer systems. It should document that adequate water and sewer capacity exist to serve the site.

Response

Refer to Figure 5.2 for location and size of infrastructure connecting to BWSC's water and sewer systems. The Project is not expected to exceed the capacity of the existing infrastructures' capacity which will be reviewed by BWSC during the Site Plan Review.

Comment C.46

The DEIR should identify and describe water conservation measures that will be incorporated into design and operations. At a minimum, the DEIR should review the feasibility of installing low-flow fixtures and using rainwater or gray water for irrigation and other purposes.

Response

Please refer to Section 5.5.3 of Chapter 5, *Water and Wastewater*.

Comment C.47

The DEIR should include a Transportation Impact Analysis (TIA) developed in accordance with MassDOT/EOEEA's Transportation Impact Assessment Guidelines. The study should include a comprehensive assessment of the transportation impacts of the project.

Response

A TIA is included in Chapter 6, *Traffic and Transportation*, of the DEIR and was developed in accordance with MassDOT/EOEEA's Transportation Impact Assessment Guidelines.

Comment C.48

The TIA should provide capacity analyses of existing conditions, future No-Build conditions, and future Build conditions, particularly at state highway locations.

Response

The TIA in Chapter 6, *Traffic and Transportation,* of the DEIR includes a capacity analysis of existing, No-Build, and Build conditions.

Comment C.49

The future Build conditions should include an analysis of operations both with and without any improvements suggested to mitigate project impacts.

Response

The future Build conditions analysis is presented in Chapter 6, *Traffic and Transportation,* of the DEIR. The Project is not proposing specific capacity or operational improvements at the study area intersections.

Comment C.50

The study should propose an integrated multimodal mitigation package intended to improve vehicular traffic operations while supporting increased use of walking, bicycling, and transit by employees and residents.

Response

A Transportation Demand Management (TDM) program will be implemented as part of the Project to reduce dependency on automobiles and to promote usage of walking, bicycling, and transit. The specific TDM measures being considered are presented in Chapter 6, *Traffic and Transportation*.

Comment C.51

Comments from MassDOT indicate that the TIA should include an analysis of intersections and roadways where site traffic exceeds 100 vehicle trips per hour or 5% of existing volume.

Response

Intersections that are expected to experience an increase in 100 vehicle trips per hour or 5% increases are included in the study area evaluated in Chapter 6, *Traffic and Transportation*.

Comment C.52

Comments from MassDOT note that total daily net new and unadjusted daily vehicle trips should be indicated separately within the TIA. The DEIR should present analysis consistent with this recommendation.

Response

Both unadjusted and mode share adjusted trip generation estimates are presented in Chapter 6, *Traffic and Transportation*.

Comment C.53

Comments from MassDOT state that the Proponent should verify with the Massachusetts Bay Transportation Authority (MBTA) Service Planning Department that the mode split figures represent appropriate transit trip generation and trip assignments for the project prior to conducting a transit capacity analysis. The DEIR should provide this clarification.

Response

Refer to Section 6.4.4 of Chapter 6, *Traffic and Transportation*, for clarification as to whether the mode split figures represent appropriate transit trip generation and trip assignments for the Project.

Comment C.54

Comments from MassDOT state that the TIA should provide a trip distribution for the project based on a gravity model or similar model that uses factors such as census data, origin destination, travel time, and distance to determine trip characteristics for visitors and employees of the Project. The DEIR should provide all appropriate backup documentation to verify how the different percentages are calculated and assigned to the roadway network and the transit system.

Response

The trip distribution patterns developed for the Project are based on United States Census Journey-to-Work data. The trip distribution patterns were also compared to the analyses presented in the traffic study prepared for the 244-284 A Street project to ensure that the patterns presented in Chapter 6, *Traffic and Transportation,* are consistent with similar projects in the area.

Comment C.55

The TIA should include crash analyses for all intersections in the study area using the MassDOT crash database for the most recent five years of accepted/available data. The study area intersections that are identified as Highway Safety Improvement Program (HSIP) clusters should be reviewed to determine

whether Road Safety Audits (RSAs) are required or if any further actions may be taken to improve safety.

Response

A motor vehicle crash analysis is presented in Chapter 6, *Traffic and Transportation,* for the study area intersections. The study area does not include any locations that are identified as an HSIP cluster.

Comment C.56

Additionally, the Fort Point neighborhood corridor should be reviewed in the MassDOT Impact portal and specifically look at the crash based and risk-based screening tools. The mitigation proposed should reduce the number of crashes along high crash corridors as well as address any risks identified.

Response

The TIA in Chapter 6, *Traffic and Transportation,* of the DEIR includes an evaluation of motor vehicle crashes. This assessment includes the study area for the Project including the A Street corridor between Congress Street and Richards Street. This segment of roadway was not identified as a high crash corridor through MassDOT's Highway Safety Improvement Program.

Comment C.57

The TIA should include an operational analysis of existing traffic conditions at the intersections and roadways included in the study area identified above.

Response

The TIA in Chapter 6*, Traffic and Transportation*, of the DEIR includes a capacity analysis of existing, No-Build, and Build conditions at the study area intersections for the weekday morning and evening peak hours.

Comment C.58

The TIA should include capacity analyses for the weekday morning and evening peak hours for both existing and future conditions for the project.

Response

The TIA in Chapter 6, *Traffic and Transportation*, of the DEIR includes a capacity analysis of existing, No-Build, and Build conditions at the study area intersections for the weekday morning and evening peak hours.

Comment C.59

In addition, capacity analyses for Build with mitigation conditions should be provided for all intersections, particularly those with impacts to the state highway system.

Response

Please refer to Chapter 6, *Traffic and Transportation*, of the DEIR.

Comment C.60

The TIA should provide illustrations depicting the peak hour 50th (average) and 95th percentile queue lengths for each lane group/turning movement at each study area intersection, for all analysis scenarios. The level-of-service (LOS) for each lane group/turning movement should be clearly indicated for each condition. The information contained in these illustrations should clearly demonstrate that the project would not result in any extended queues that would block vehicle movements to/from study area intersections, particularly those involving state highways. Appropriate mitigation should be identified if necessary to address these concerns.

Response

Queue diagrams are provided in Appendix C.

Comment C.61

Comments from MassDOT state that the TIA should offer recommendations with respect to the design and operation of the project site access and internal circulation to allow for safe ingress and egress to the site. The DEIR should address this comment and offer recommendations as requested by MassDOT.

Response

Please refer to Chapter 6, *Traffic and Transportation*, of the DEIR..

Comment C.62

Comments from MassDOT state that the TIA should provide an inventory of existing sidewalks and crosswalks within the study area and should address the quality and condition of those facilities. Comments go on to say that the TIA should include a commitment to improvements in any areas that are structurally deficient or not meeting current codes for accessibility, including sidewalks, crosswalks, ramps, and pedestrian equipment. Special attention should be given to linking the proposed development to adjacent complementary land uses and transit facilities.

Response

An inventory of the existing sidewalks and crosswalks is provided in the Roadway descriptions section of Chapter 6, *Traffic and Transportation*. The Project is proposing to reconstruct the sidewalks along the building frontage on Binford Street and A Street in accordance with Boston Complete Streets guidelines and requirements of the Americans with Disabilities Act and Massachusetts Architectural Access Board. The Project is also proposing new pedestrian and multi-modal facilities through the Site to enhance existing connections between the public right of way on Binford Street and Necco Street and the South Bay Harbor Trail and Harborwalk.

Comment C.63

Consistent with MassDOT comments, the TIA should include a detailed inventory of the bicycle network to include bikeway types, bikeway widths, and bicycle volumes and speeds. The Proponent should identify the likely travel routes for bicyclists within the study area. The degree to which these routes can safely support bicycle travel should also be examined. The TIA should reevaluate these routes based on the origin-destination of potential employees and visitors. Based on this analysis, the Proponent should consider the feasibility of expanding some of these existing routes or considering new routes to encourage bicycle travel in and around the site.

Response

The TIA in Chapter 6, *Traffic and Transportation,* describes the existing bicycle network and bicycle volumes throughout the study area. A Street currently has buffered bicycle lanes on both sides of the street south of the Project Site to West Second Street. South of West Second Street, the bicycle lanes continue without a buffer to provide connections to the West Broadway area of South Boston. Additionally, the segment of A Street north of Binford Street will be upgraded to include buffered bicycle lanes on both sides as part of the 244-284 A Street project, where they will connect to other on street facilities toward Melcher Street. The Proponent is currently coordinating with the City of Boston on revising the cross section of A Street along the site frontage to accommodate a connection between the existing buffered bicycle lanes south of the Project Site and the proposed buffered bicycle lanes north of Binford Street. A new cycletrack will also be constructed along the east side of Necco Street as part of the 244-284 A Street project.

The Project will also develop new bicycle connections within the 1.5 acres of publicly accessible open space and public realm along the Fort Point Channel waterfront. The Project will establish new bicycle connections to the proposed cycletrack along Necco Street (part of the 244-284 A Street project) and to the South Bay Harbor Trail and Boston's Harborwalk.

Comment C.64

The DEIR should include a parking analysis along with a commitment to electric vehicle charging accommodations. The total vehicle parking supply currently envisioned for the project is 125 spaces.

Response

The Project will supply 125 parking spaces on the Project Site, consistent with City of Boston parking ratios for the building usage and area of the City. The Project will equip 25 percent of the parking spaces with electric vehicle charging stations, with the remaining 75 percent of the spaces being constructed as EV-ready to allow for expansion over time as the demand grows.

Comment C.65

As stated in comments from MassDOT, the TIA should clarify how the parking needs of the project were determined and explain the methodology used to determine the total parking required. This information should be provided in the DEIR.

Response

See Response to Comment C.64.

Comment C.66

The DEIR should include a detailed TDM Plan with specific commitments.

Response

Chapter 6, *Traffic and Transportation* presents a TDM Plan with specific measures being considered.

Comment C.67

The goals of the monitoring program will be to evaluate the assumptions made in the EIR and the adequacy of the mitigation measures, as well as to determine the effectiveness of the TDM program. The DEIR should provide the details of the proposed TMP for the project.

Response

Chapter 6, *Traffic and Transportation,* outlines the proposed transportation monitoring program.

Comment C.68

The DEIR should include a description of the procedure for the testing, handling and disposal of any hazardous waste encountered at the site.

Response

Refer to Section 9.2.1. of Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, for a description of procedure for the testing, handling, and disposal of any hazardous waste encountered at the Project Site.

Comment C.69

The DEIR should discuss the feasibility of further elevating the site to the recommended 500-year storm conditions given the proximity of the site to the coastline, and how a higher elevation would interact with ongoing planning regarding the Resilient Fort Point Channel Infrastructure Project, discussed below.

Response

The Project is working closely with the City of Boston to understand proposed berm alignments and elevations. The Project is designing a line of protection at 21.5 feet BCB. Elevating the Project Site further is not practicable given the constraints described in Section 7.3.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.70

Comments from MassDEP Waterways indicate that sea level rise and climate change will be considered when evaluating the Proponent's application for an extended term c. 91 license. The DEIR should discuss the project's resilience to future sea level rise, as indicated in MassDEP's letter.

Response

The Project's resiliency measure against future sea level rise are described in Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.71

As requested by MassDEP, the DEIR should consider interior and exterior spaces, public benefits, public access and planned adaptability in the event predicted water elevations continue to increase.

Response

Please refer to Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.72

Comments state that the DEIR should specify any design elements of the project (such as added elevation or adjacent roadway designs) that are not being pursued in favor of these long term regional solutions. The DEIR should provide the information requested by CZM, and should clarify whether the berm will be designed, constructed and maintained by the City and/or the Proponent, and whether public funds will be required for its design and construction.

Response

The Project will implement a portion of the district scale flood resilience measures consistent with the Resilient Fort Point Channel Infrastructure Project in such manner that is mutually agreed upon by the City of Boston and the Proponent. Please refer to Sections 7.3.4.3 and 7.3.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency*. for additional details on Funding, Construction, and Maintenance.

Comment C.73

The DEIR should describe how raising the site and constructing the berm will affect access to adjacent roadways, sections of the Harborwalk and infrastructure on or adjacent to the site.

Response

Please refer to the landscape grading plan and additional detail provided in Chapter 1, *Project Description and Permitting*.

Comment C.74

The DEIR should clarify if FEMA6 has commented on the current design of the berm.

Response

Please refer to Section 7.3.4.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.75

The DEIR should discuss how flood protection will be provided if the berm were not constructed in a manner that aligns with the timing of construction of this project, and whether interim measures have been considered.

Response

Please refer to Section 7.3.4.3 of Chapter 7, *Climate Change Adaptation and Resiliency*. In addition to the planned berm, the Project includes raising the elevation of the Site as detailed in Section 3.6.1 of Chapter 3, *Chapter 91 and Tidelands*.

Comment C.76

The DEIR should provide further analysis in accordance with CZM comments, which request a detailed analysis specific to how the proposed fill, grading, and solid project components (e.g., berm, buildings, pavement) proposed in the coastal floodplain will affect coastal floodwater flow and drainage patterns within and adjacent to the site, both during rain events and coastal storm events where there is a combination of rain and coastal flooding.

Response

A complete flood path analysis is provided in Section 7.4 of Chapter 7, *Climate Change Adaptation and Resiliency.*

Comment C.77

Comments go on to state that the DEIR should provide a detailed description in the form of a narrative as well as plans of depicting topography and the sources, flow direction, and pathways of existing and proposed coastal and inland flooding onto, through, and off the site during a coastal storm event. The analysis should demonstrate, using flow arrows and a narrative, how coastal floodwater will flow onto and off the project site and surrounding area under existing and proposed conditions. This analysis should also include a description about potential impacts if the proposed berm changes, reduces and/or eliminates any flood pathways.

Response

A complete flood path analysis is provided in Section 7.4 of Chapter 7, *Climate Change Adaptation and Resiliency.*

Comment C.78

If the project will channelize flow, the DEIR should include an analysis of any changes in velocity, direction, depth, and extent of coastal floodwater.

Response

A complete flood path analysis is provided in Section 7.4 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.79

An analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities should be included in the DEIR.

Response

Refer to Section 7.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency,* for an analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities.

Comment C.80

In addition to plan views, the DEIR should include cross-sections through the site that show the existing grades, proposed grades, proposed buildings, structures and FEMA flood zone elevations.

Response

Refer to Figure 7.1 for cross-sections through the site that show the requested building and elevation information.

Comment C.81

The DEIR should also discuss how the flow path analysis would be affected, if the regional berm were not constructed and whether off-site flood impacts are anticipated under that scenario.

Response

A complete flood path analysis is provided in Section 7.4 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.82

The DEIR should provide a full explanation of what measures will be taken to improve the project's resiliency to climate change.

Response

The proposed measures for the Project's resiliency to climate change are described in Sections 7.3.5, 7.3.6, and 7.3.7 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.83

The DEIR should address the recommendations from the MA Resilience Design Tool, and specifically indicate whether stormwater sizing is consistent with 24-hour rainfall volumes for the 2070 100-year storm event as shown in the climate output report.

Response

Chapter 4, *Wetlands and Stormwater*, provides a hydrological analysis outlining how the Project site would respond to the RMAT 100-year storm under existing and proposed site conditions.

Comment C.84

The DEIR should demonstrate that the Proponent is developing appropriate strategies for to adapt to extreme heat conditions throughout the useful life of the project. The DEIR should document all efforts taken to maximize the use of low-impact design (LID) strategies for stormwater management, including rain gardens, bioretention areas, tree box filters, water quality swales and green roofs.

Response

A description of proposed strategies for adaptation to extreme heat conditions and use of low-impact design strategies for stormwater management can be found in Sections 7.3.6 and 7.3.7 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.85

The DEIR should include a GHG analysis for stationary sources prepared in accordance with the GHG Policy. The GHG analysis should clearly demonstrate consistency with the key objective of MEPA review, which is to document how Damage to the Environment can be avoided, minimized and mitigated to the maximum extent feasible.

Response

The Proponent has provided a GHG analysis consistent with the MEPA GHG Policy in Section 7.5 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.86

The DEIR should identify the model used to analyze GHG emissions, clearly state modeling assumptions, explicitly note which GHG reduction measures have been modeled, and identify whether certain building design or operational GHG reduction measures will be mandated by the Proponent to future occupants or merely encouraged for adoption and implementation.

Response

Please refer to Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency,* and Appendix D.

Comment C.87

The DEIR should include the modeling printouts for each alternative and emission tables that compare base case emissions in tons per year (tpy) with the Preferred Alternative showing the anticipated reduction in tpy and percentage by emissions source.

Response

The Proponent has provided a summary of the energy modeling results and corresponding GHG emissions in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency*, and Appendix D.

Comment C.88

The DEIR should provide data and analysis in the format requested in DOER's letter.

Response

Responses to DOER's letter are provided under Letter 7 of this chapter.

Comment C.89

The DEIR should provide the information and analyses requested in the detailed comment letter submitted by DOER, which is incorporated by reference herein. In particular, the DEIR should include the following:

- *Additional information to better characterize proposed vertical envelope performance.*

Response

Please see the response to Comment 7.1 below.

Comment C.90

Provide more details on proposed strategy to satisfy C406 requirements.

Response

Please see the response to Comment 7.2 below.

Comment C.91

Commit to C406.9, reduced air leakage.

Response

Please see the response to Comment 7.3 below.

Comment C.92

Evaluate air source heat pump service water heating.

Response

Please see the response to Comment 7.4 below.

Comment C.93

Provide the following table, populating the gray cells. At least three scenarios need to be created as follows: (A) a "Reference Baseline" scenario that conforms to ASHRAE 90.12019 Appendix G, (B) a "Code Minimum" scenario that results in a performance energy index that is equal to the target performance energy index, and (C) a "Proposed" scenario that is improved from the code minimum.

Response

Please see the response to Comment 7.5 below.

Comment C.94

Provide a table summary (similar to the "Appendix A" table in Zero Carbon Building Assessment" part of the report) of envelope characteristics, proposed efficiency, proposed equipment, etc to characterize each of the (A), (B), and (C) scenarios above. It's important to understand what the difference is between the (B) and (C) scenarios, as those differences are the above-code mitigation. Be sure to include C406 and other mandatory measures in scenario (B), Code Minimum.

Response

Please see the response to Comment 7.6 below.

Comment C.95

The project will be pursuing the mixed fuel pathway of the code (CC101.3 part 3).

Provide the following additional details:

- *Calculations and scale plan of roof showing PV necessary to conform with CC105.2.*
- *Calculations of the electric capacity, interior and exterior space requirements, and electric infrastructure necessary to conform with CC106.1.6. Scale plans showing interior and exterior location(s) to be set aside for future electric equipment.*

Response

Please see the response to Comment 7.7 below.

Comment C.96

An evaluation of an all-electric option should be included in the DEIR. This evaluation should include an evaluation of the costs/benefits, and key considerations, of the proposed mixed-fuel option (with installed PV and electric readiness) compared to all electric (without the installed PV and electric readiness) option.

Response

Please see the response to Comment 7.8 below.

Comment C.97

The GHG analysis should include an evaluation of potential GHG emissions associated with mobile emissions sources. The DEIR should follow the guidance provided in the GHG Policy for Indirect Emissions from Transportation to determine mobile emissions for Existing Conditions, Build Conditions, and Build Conditions with Mitigation

Response

The Proponent has provided a mobile source GHG analysis consistent with the MEPA GHG Policy in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.98

The DEIR should describe truck loading and staging activities and estimate GHG emissions from idling.

Response

The Proponent has estimated GHG emissions from on-site truck idling as part of the mobile source analysis presented in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency* . Truck loading and staging activities are described in Section 6.4.7 of Chapter 6, *Traffic and Transportation*.

Comment C.99

The Proponent should thoroughly explore means to reduce overall single occupancy vehicle trips and to minimize air emissions from diesel vehicle traffic.

Response

A robust transportation demand management program will be implemented as part of the Project. The Project is well situated to take advantage of alternative modes of transportation due to its proximity to the MBTA Red Line and several bus routes. Additionally, the MBTA is upgrading their bus network to enhance bus service through the area. The City of Boston is also undertaking the South Boston Seaport Strategic Transit Plan, which will identify additional upgrades to the public transportation throughout South Boston including the Fort Point neighborhood and the Seaport District. Mitigation measures have been analyzed in the mobile source emissions analysis in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.100

The DEIR should also review measures to promote the use of low-emissions vehicles, including installing electric vehicle charging stations and providing designated parking spaces for these vehicles.

Response

The Project will equip 25 percent of the total parking supply with electric vehicle charging stations, with the remaining 75 percent being EV-ready to accommodate future expansion as demand grows.

Comment C.101

The Build with Mitigation model should incorporate TDM measures, and any roadway improvements implemented by the project, and document the associated reductions in GHG emissions.

Response

The Proponent has assessed mitigation measures as part of the mobile source emissions analysis in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.102

As stated above, the DEIR should conduct an air quality analysis in accordance with the MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources (1991).

Response

The Proponent has provided a mesoscale air quality analysis in accordance with the MassDEP guidance in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.103

Data on NOx, PM2.5, PM10, and DPM, in addition to GHG and VOCs, should be provided to the extent they are available for roadway segments included within the traffic study area used for the TIA.

Response

The requested pollutants were included in the mobile source emissions analysis presented in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.104

The DEIR should clearly indicate the radius of the traffic study utilized for the air quality analysis, and quantify the level of air pollutants for Existing, No Build, Build and Buil with Mitigation scenarios.

Response

The mobile source emissions analysis in Section 7.5.2 of Chapter 7, *Climate Change Adaptation and Resiliency,* presents emissions associated with the requested scenarios. The analysis shows emissions within the traffic study area (roughly one-half mile from the project site).

Comment C.105

Additional analysis of air quality at intersections near EJ populations should be conducted in accordance with the Environmental Justice Scope above.

Response

Air quality analysis associated with the EJ scope is provided in Section 7.5.3 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Comment C.106

The DEIR should demonstrate that all feasible measures will be taken to avoid, minimize and mitigate traffic impacts, and to avoid disproportionate adverse effects on EJ populations.

Response

Refer to Section 7.5.3 of Chapter 7, *Climate Change Adaptation and Resiliency* and Section 2.2.3 of Chapter 2, *Environmental Justice*. The Proponent will implement a comprehensive TDM plan and electric vehicle infrastructure to mitigate project-related mobile source emissions.

Comment C.107

The DEIR should provide an update on construction staging and timing, and should provide a construction management plan to the extent it is available.

Response

Details regarding construction staging and timing and construction management plan are included in Sections 8.3 and 8.4, respectively, in Chapter 8, *Construction Period Impacts.*

Comment C.108

The DEIR should include a comprehensive discussion of construction period impacts on surrounding areas, including for EJ Populations, including an estimate of total duration, extent of construction period traffic, and ways to minimize impacts.

Response

A discussion of construction period impacts on surrounding EJ populations is included in Section 2.3.2.3 of Chapter 2, *Environmental Justice*.

Comment C.109

If truck routes for construction vehicles will extend near EJ Populations, the DEIR should quantify the extent of traffic at those locations and discuss mitigation measures.

Response

A summary of the vehicular and truck impacts to EJ communities is provided in Chapter 2, *Environmental Justice*.

Comment C.110

All construction and demolition (C&D) activities should be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017).

Response

All construction and demolition (C&D) activities will be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017).

Comment C.111

The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management, etc.) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11).

Response

Measures to reduce construction period impacts are included in Chapter 8, *Construction Period Impacts*.

Comment C.112

I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment.

Response

The Proponent will require contractors use construction equipment meeting Tier 4 emissions standards retrofit with control devices to reduce air pollutant emissions. Refer to Section 8.8 of Chapter 8, *Construction Period Impacts*, for additional detail.

Comment C.113

Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD).

Response

The Proponent will work with the general contractor to ensure all off-road vehicles will use ULSD. Refer to Section 8.8 of Chapter 8, *Construction Period Impacts,* for additional detail.

Comment C.114

If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000).

Response

Refer to Section 9.2.1 of Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, for details on hazardous materials review.

Comment C.115

All construction activities should be undertaken in compliance with the conditions of all State and local permits.

Response

All construction activities will be conducted in compliance with the conditions of all State and local permits as described in Section 8.2 of Chapter 8, *Construction Period Impacts*.

Comment C.116

I encourage the Proponent to reuse or recycle C&D debris to the maximum extent.

Response

The Construction Manager will implement a waste management plan that seeks to divert at least 75 percent of construction and demolition waste material removed from the Project Site from landfills through recycling and salvaging, as described in Section 8.11 of Chapter 8, *Construction Period Impacts*.

Comment C.117

The DEIR should include a separate chapter updating all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ Populations. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties

responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact.

Response

This DEIR includes a separate chapter, Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, that provides an updated list of proposed mitigation measures including a comprehensive list of all commitments made by the Proponent and identified responsible parties and schedule for implementation of the proposed mitigation measures.

Comment C.118

Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.

Response

Draft Section 61 Findings are included in Section 9.3 of Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*.

Comment C.119

The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

Response

Table 9-1 included in Chapter 9, *Draft Section 61 Findings and Proposed Mitigation,* indicates the schedule for implementation of the proposed mitigation measures based upon Project phasing.

Comment C.120

The DEIR should contain a copy of this Certificate and a copy of each comment letter received.

Response

A copy of the Certificate and a copy of each comment letter received on the PNF, is included in Appendix B (Certificate and Comment Letters).

Comment C.121

The Proponent should circulate the DEIR to each Person or Agency who previously commented on the ENF, each Agency from which the project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope.

Response

The DEIR will be circulated and distributed to ENF commenters, applicable state and local agencies, an expanded list to include EJ CBOs and tribes, and all other appropriate parties as listed in the Distribution List included in Appendix A.

Comment C.122

A copy of the DEIR should be made available for review at the Boston Public Library Chinatown and South Boston branches and other appropriate Boston Public Library branches.

Response

A copy of the DEIR will be made available at the Chinatown and South Boston branches of the Boston Public Library.

Letter 1: Massachusetts Department of Transportation

Comment 1.1

The Draft EIR (DEIR) should include a Transportation Impact Analysis (TIA) developed in accordance with MassDOT/EOEEA's Transportation Impact Assessment Guidelines.

Response

See response to Comment C.47.

Comment 1.2

The study should include a comprehensive assessment of the transportation impacts of the project.

Response

See response to Comment C.47.

Comment 1.3

The TIA should provide capacity analyses of existing conditions, future No-Build conditions, and future Build conditions, particularly at state highway locations.

Response

See Response to Comment C.48.

Comment 1.4

The future Build conditions should include an analysis of operations both with and without any improvements suggested to mitigate project impacts.

Response

See response to Comment C.49.

Comment 1.5

The study should propose an integrated multimodal mitigation package intended to improve vehicular traffic operations while supporting increased use of walking, bicycling, and transit by employees and residents.

Response

See response to Comment C.50.

Comment 1.6

MassDOT additionally notes that The TIA should include an analysis of intersections and roadways where site traffic exceeds 100 vehicle trips per hour or 5% of existing volume.

Response

See response to Comment C.51.

Comment 1.7

MassDOT notes that total daily net new and unadjusted daily vehicle trips should be acknowledged within the TIA.

Response

See response to Comment C.52.

Comment 1.8

The TIA should provide a trip distribution for the project based on a gravity model or similar model that uses factors such as census data, origin-destination, travel time, and distance to determine trip characteristics for visitors and employees of the Project.

Response

See response to Comment C.54.

Comment 1.9

The DEIR should provide all appropriate backup documentation to verify how the different percentages are calculated and assigned to the roadway network and the transit system.

Response

See response to Comment C.54.

Comment 1.10

The TIA should include crash analyses for all intersections in the study area using the MassDOT crash database for the most recent five years of accepted/available data.

Response

See response to Comment C.55.

Comment 1.11

The study area intersections that are identified as Highway Safety Improvement Program (HSIP) clusters should be reviewed to determine whether Road Safety Audits (RSAs) are required or if any further actions may be taken to improve safety.

Response

See response to Comment C.55.

Comment 1.12

Additionally, the Fort Point neighborhood corridor should be reviewed in the MassDOT Impact portal and specifically look at the crash based and risk-based screening tools.

Response

See response to Comment C.56.

Comment 1.13

The mitigation proposed should reduce the number of crashes along high crash corridors as well as address any risks identified.

Response

See response to Comment C.56.

Comment 1.14

The TIA should include an operational analysis of existing traffic conditions at the intersections and roadways included in the study area as identified above.

Response

See response to Comment C.57.

Comment 1.15

The TIA should include capacity analyses for the weekday morning and evening peak hours for both existing and future conditions for the Project.

Response

See response to Comment C.58.

Comment 1.16

In addition, capacity analyses for Build with mitigation conditions should be provided for all intersections, particularly those with impacts to the state highway system.

Response

See response to Comment C.59.

Comment 1.17

The TIA should provide illustrations depicting the peak hour 50th (average) and 95th percentile queue lengths for each lane group/turning movement at each study area intersection, for all analysis scenarios. The information contained in these illustrations should clearly demonstrate that the Project would not result in any extended queues that would block vehicle movements to/from study area intersections, particularly those involving state highways. Appropriate mitigation should be identified if necessary to address these concerns.

Response

See response to Comment C.60.

Comment 1.18

The TIA should offer recommendations with respect to the design and operation of the Project site access and internal circulation to allow for safe ingress and egress to the site.

Response

See response to Comment C.61.

Comment 1.19

The TIA should provide an inventory of existing sidewalks and crosswalks within the study area and should address the quality and condition of those facilities.

Response

See response to Comment C.62.

Comment 1.20

The TIA should include a commitment to improvements in any areas that are structurally deficient or not meeting current codes for accessibility, including sidewalks, crosswalks, ramps, and pedestrian equipment.

Response

See response to Comment C.62.

Comment 1.21

Special attention should be given to linking the proposed development to adjacent complementary land uses and transit facilities.

Response

See response to Comment C.62.

Comment 1.22

The TIA should include a detailed inventory of the bicycle network to include bikeway types, bikeway widths, and bicycle volumes and speeds.

Response

See response to Comment C.63.

Comment 1.23

The Proponent should identify the likely travel routes for bicyclists within the study area. The degree to which these routes can safely support bicycle travel should also be examined.

Response

See response to Comment C.63.

Comment 1.24

The TIA should reevaluate these routes based on the origin-destination of potential employees and visitors. Based on this analysis, the Proponent should consider the feasibility of expanding some of these existing routes or considering new routes to encourage bicycle travel in and around the site.

Response

See response to Comment C.63.

Comment 1.25

The Proponent should verify with the Massachusetts Bay Transportation Authority (MBTA) Service Planning Department that the mode split figures represent appropriate transit trip generation and trip assignments for the project prior to conducting a transit capacity analysis.

Response

See response to Comment C.53.

Comment 1.26

The Proponent will coordinate with BPDA and BTD to determine final parking ratios for the Project that are aligned with the City's guidelines and goals. The DEIR will include a parking analysis along with a commitment to electric vehicle charging accommodations.

Response

Agreed. Please refer to Chapter 6, Traffic and Transportation.

Comment 1.27

The TIA should clarify how the parking needs of the project were determined and explain the methodology used to determine the total parking required.

Response

See response to Comment C.64.

Letter 2: Massachusetts Department of Environmental Protection-Waterways

Comment 2.1

The Department has determined that the proposed project is nonwater-dependent pursuant to 310 CMR 9.12(2)(f) and subject to review under the nonwater-dependent performance standards at 310 CMR 9.31(2)(b). Such projects must demonstrate compliance with the applicable provision of 310 CMR 9.51 – Conservation of Capacity for Water Dependent Use, 310 CMR 9.52 - Utilization of Shoreline for Water-dependent Purposes, 310 CMR 9.53 – Activation of Commonwealth for Public Use and 310 CMR 9.54 – Consistency with Coastal Zone Management Policies.

Response

Refer to Section 3.3 of Chapter 3, *Chapter 91 and Tidelands*, for details on the Project's compliance with the applicable provision of 310 CMR 9.51.

Comment 2.2

The Draft EIR should describe the location of all project elements relative to c.91 jurisdiction jurisdictional boundaries (historic high water, mean high water, Landlocked Tidelands, WDUZ, etc.) including above-ground and below-ground building elements.

Response

Refer to Tables 3-2, 3-3, 3-4 and 3-5 in Chapter 3, *Chapter 91 and Tidelands,* to see Project's compliance with all applicable standards under 310 CMR 9.00.

Comment 2.3

Preliminary review by the Waterways Program appears to confirm that the project meets the building height requirements, however the Draft EIR should demonstrate compliance with this standard by updating Figure 4.5 to include the building height and corresponding setback distance from the high water mark.

Response

Refer to Sections 3.3 through 3.7 of Chapter 3, *Chapter 91 and Tidelands,* and Figures 3.2 through 3.6 for a demonstration of Project's compliance with MassDEP Waterways Program standards.

Comment 2.4

The Draft EIR should demonstrate compliance with the open space requirements at 310 CMR 9.51(3)(d) by providing calculations of the overall project site subject to licensing, the footprint of buildings for non-water dependent use and proposed open space, presented in square feet with corresponding area percentages.

Response

Section 3.3.6 of Chapter 3, *Chapter 91 and Tidelands,* demonstrates compliance with the open space requirements at 310 CMR 9.51(3)(d).

Comment 2.5

When submitting the DEIR, please provide more specific information regarding the public amenities to be provided by the project and programming of the site so that the Department can further evaluate the project elements to ensure the proposed project includes the appropriate measures to satisfy the Secretary's amplifications to 310 CMR 9.52 and 9.53 and to promote the FPCWAP.

Response

The Project will serve as a vehicle for promoting the FPCWAP and construct specific open space network elements as well as desired landside public realm uses as described in detail in Section 3.5.3 of Chapter 3, *Chapter 91 and Tidelands.*

Comment 2.6

Please be advised that the proposed bike parking room can only count as an FPA if it is open/available to the public at large on at least an equal basis with any private organization, group, company etc. A private bike storage room would be regulated under c.91 as an UFAS.

Response

Refer to Section 3.3.4 of Chapter 3, *Chapter 91 and Tidelands,* for a description of FPAs provided by the Project.

Comment 2.7

The DEIR should include a tabular breakdown and graphical depiction of the proposed ground floor uses located on Landlocked Tidelands, filled Private Tidelands, and on filled Commonwealth Tidelands. The DEIR should specifically demonstrate compliance with 310 CMR 9.53(2)(c).

Response

Refer to Section 3.2 and Figure 3.3 of Chapter 3, *Chapter 91 and Tidelands,* for a tabular breakdown and graphical depiction of the proposed ground floor uses located on Landlocked, filled former tidelands and Private and Commonwealth Tidelands.

Comment 2.8

Please clarify if any outdoor dining, public restrooms, and/or parking or loading areas of any kind at or above grade are proposed on any filled Commonwealth Tidelands on the project site.

Response

Refer to Section 3.3.4 of Chapter 3, *Chapter 91 and Tidelands,* for a description of Project elements designed to be constructed within filled Commonwealth Tidelands.

Comment 2.9

The Proponent will be required to develop a Management Plan in accordance with 310 CMR 9.53(2)(d) during licensing for any publicly accessible space (internal and external) located within 100 feet of the project shoreline on filled Private Tidelands subject to licensing and at any distance from the project shoreline on filled Commonwealth Tidelands subject to licensing.

Response

Outline of a draft management plan are included in Section 3.3.7 of Chapter 3, *Chapter 91 and Tidelands.* The Management Plan will be further developed during licensing.

Comment 2.10

The DEIR should include an analysis of potential impacts from sea level rise based on the modeling presented at ResilientMass.gov. This assessment should consider interior and exterior spaces, public benefits, public access and planned adaptability in the event predicted water elevations continue to increase.

Response

Resilience to future flooding due to sea level rise has been a driving factor in the design of the Project as described in detail in Section 3.6.1 of Chapter 3, *Chapter 91 and Tidelands.*

Comment 2.11

When submitting DEIR, please specify the license term the Proponent plans to seek. This is of particular importance with respect to public benefits required in association with NWD use projects, particularly amenities at or near the project shoreline. Any proposed extended-term license application will need to include details on projected sea level rise and justify how the project site will address those potential impacts for the full term of the requested license.

Response

The Applicant respectfully requests extended terms of 65 years. Refer to Section 3.6 of Chapter 3, *Chapter 91 and Tidelands,* for details on projected sea level rise and the Project's proposed resiliency measures to address potential impacts for the full term of the requested license.

Comment 2.12

In order for the Waterways Program staff to evaluate the appropriateness of proposed fill and structures within c.91 jurisdiction as they relate to projected sea level rise, the Proponent should identify

anticipated sea level rise over the term of license using the best available data as determined by the Department.

Response

Refer to Section 3.6 of Chapter 3, *Chapter 91 and Tidelands,* for anticipated sea level rise over the term of license.

Comment 2.13

The Proponent should provide details on resiliency and the potential to retrofit or improve any areas that may become regularly impacted and/or inundated. This information and assessment of potential future impacts is specifically relevant to requests for extended-term licenses.

Response

Refer to Section 3.6 of Chapter 3, *Chapter 91 and Tidelands,* for details on Project's resiliency towards potential future impacts.

Comment 2.14

If an extended license term will be requested, the Department suggests that the Proponent submit all necessary items listed in 310 CMR 9.15(1)(b)(2) including the strategies specifically for making the exterior publicly accessible facilities resilient to sea level rise and flooding during licensing to warrant an extended license term.

Response

Refer to Section 3.6 of Chapter 3, *Chapter 91 and Tidelands,* for strategies specifically for making the exterior publicly accessible facilities resilient to sea level rise and flooding.

Comment 2.15

If the Department determines that additional public benefits are required for the requested extended term, the South Boston MHP states that such benefits should be consistent with the FPCWAP and/or the Boston Inner Harbor Passenger Water Transportation Plan (BIHPWTP). The South Boston MHP also states that the Department should consult with the BPDA regarding implementation of the FPCWAP or BIHPWTP as the basis for additional public benefits required to justify an extended license term. The DEIR should demonstrate compliance with these documents and the referenced amplification.

Response

The Project will serve as a vehicle for implementing the FPCWAP as facilitated by the SBWMHP. It will construct specific open space network elements as well as desired landside public realm uses as described in detail in Section 3.5.3 of Chapter 3, *Chapter 91 and Tidelands.*

Comment 2.16

Please be advised, any license application for fill or structures to be located seaward of the State Harbor Line must demonstrate compliance with Chapter 204 of the Acts of 2010.

Response

The Project does not extend seaward of any state harbor line.

Comment 2.17

In the event that a docking facility is proposed over the State Harbor Line, please include the State Harbor line on all applicable Project Plans and coordinate the licensing of any such structure with the BPDA in advance of filing a c.91 Waterway License Application with the Department, to ensure the Proponent meets said legislative act to permit an incursion over the State Harbor Line.

Response

The Project does not extend seaward of any state harbor line.

Comment 2.18

When submitting a license application, please include the proposed and existing easements described in metes & bounds on a plan, along with the recording information at the Suffolk County Registry of Deeds for each.

Response

Acknowledged.

Comment 2.19

The DEIR should include a discussion of pertinent negotiations with the City of Boston Parks Department related to the long-term ownership and management of the proposed open space.

Response

Refer to Sections 3.3.6 and 3.5.3 of Chapter 3, *Chapter 91 and Tidelands*.

Comment 2.20

The Department expects to receive a DEIR that includes a Chapter dedicated for the compliance analysis supported by the above-mentioned information for its review.

Response

Refer to Chapter 3, *Chapter 91 and Tidelands,* for detailed analyses of Project's compliance with applicable standards.

Comment 2.21

With regards to the eventual filing of an application for a nonwater-dependent use Waterways License, the proponent should demonstrate the application is in compliance with (i) all applicable provisions of the Waterways Regulations, (ii) the Secretary's Decision on the 2009 South Boston MHP, (iii) meets the minimum filing standards as set forth in 310 CMR 9.11(3) including the Secretary's Certificate concluding the MEPA review process, project plans prepared in accordance with the Chapter 91 Waterways Plan Template (upon request), copy of a Wetlands Notice of Intent Applications and associated plans, and a list of state environmental regulatory programs with which the project must comply, in accordance with the applicable provisions of 310 CMR 9.33.

Response

The Project has been designed to comply with all applicable state environmental standards including MEPA, the Wetlands Protection Act and the Massachusetts Clean Waters Act, as demonstrated in Section 3.4 of Chapter 3, *Chapter 91 and Tidelands*.

Letter 3: Massachusetts Department of Environmental Protection-NERO

Comment 3.1

Further clarification should be provided that explains if 104,771 of alteration to Land Subject to Coastal Storm Flowage (LSCSF) involves filling this resource area or if its temporary alteration to this wetland resource area.

Response

Refer to Section 4.3.2 of Chapter 4, *Wetlands and Stormwater*, for clarification as to whether the proposed alteration to Land Subject to Coastal Storm Flowage (LSCSF) involves filling or temporary alteration.

Comment 3.2

If filling is proposed, the proponent should explain how the floodwaters currently flow on the site based on the existing topography, or how they are expected to flow under the proposed grading.

Response

Refer to Section 4.4 of Chapter 4, *Wetlands and Stormwater*, for a narrative description of the existing and proposed flow of floodwaters at the Project Site based on the existing topography, and proposed site grading and filling, respectively.

Comment 3.3

Although there are no performance standards for LSCSF under the MA Wetlands Protection Regulations, the proponent should explain how the proposed project will not increase the elevation or velocity of floodwaters; how the project will not cause floodwater to be displaced, deflected, or reflected onto adjacent properties or public and private ways; and, ensure that no other wetland resource area will be impacted.

Response

Refer to Section 4.4 of Chapter 4, *Wetlands and Stormwater*, for an explanation of how the Project will not increase the elevation or velocity of floodwaters, and/or cause floodwater to be displaced, deflected, or reflected onto adjacent properties or public and private ways.

Comment 3.4

The proponent should clarify what work is proposed in these wetland resource areas and notate this on the plans, quantify the amount of alteration proposed (and restored, if applicable) for each of the wetland resource area; and, explain how the project will meet the performance standards under 310 CMR 10.25(3) through (7) and 10.30(3) through (8), respectively.

Response

Refer to Sections 4.3.1 and 4.3.2 of Chapter 4, *Wetlands and Stormwater*, for a detailed description of work proposed in wetland resource areas.

Comment 3.5

Although the proponent acknowledged that the project would be designed to meet the Stormwater Standards to the maximum extent possible and provided a brief explanation of how each of the Stormwater Standards are going to be met, a Stormwater Report and supporting computations, including an Operation and Maintenance Plan should be submitted (310 CMR 10.05(6)(k)).

Response

Please refer to Chapter 4, *Wetlands and Stormwater*, for the narrative and refer to the Appendices for calculations and a draft Operations and Maintenance plan.

Comment 3.6

A more detailed stormwater narrative should be provided that explains how the stormwater treatment train(s) have been designed to meet the Stormwater Standards fully and if not, that the highest level of treatment possible is being proposed (Standard 7).

Response

Please refer to Chapter 4, Wetlands and Stormwater, for the narrative and refer to the Appendix B for calculations and a draft Operations and Maintenance plan.

Comment 3.7

Since the site is partially within several Massachusetts Contingency Plan (MCP) sites with designated MassDEP Release Tracking Numbers, it is not clear how the groundwater recharge will be achieved or if it's even appropriate to do so. Additionally, the redevelopment of this site is expected to generate approximately 1,014 vehicle trips per day, which would classify this project as a Land Use with Higher Potential Pollutant Load (LUHPPL). Therefore, the stormwater design must comply with Standard 5, including but not limited to providing 44% Total Suspended Solids (TSS) treatment prior to the discharge to an infiltration unit, and stormwater structures must be equipped with an emergency shut off valve.

Response

The Project's geotechnical/geoenvironmental consultant is aware of the need to provide groundwater discharge. At this time, it is understood to be feasible in areas on and adjacent to the site that are not above or immediately adjacent to the I-90 tunnels. The Project will be conducting required site explorations to confirm feasibility. All final analyses will be presented to Boston Water and Sewer Commission (BWSC) and Boston Conservation Commission for review and approval prior to construction. The Project will propose to use proprietary treatment devices to reduce Total Suspended Solids (TSS) in advance of any on-site recharge.

Letter 4: Massachusetts Office of Coastal Zone Management

Comment 4.1

This project should assess the potential impacts on Land Subject to Coastal Storm Flowage if the berm is not ultimately constructed.

Response

Refer to Sections 7.4.2 and 7.4.3 of Chapter 7, *Climate Change Adaptation and Resiliency*, for a discussion on how the flow path analysis would be affected if the regional berm were not constructed and any off-site flood impacts anticipated under this scenario.

Comment 4.2

The EIR should include detailed information regarding the proposed berm, including the design elevation and the basis for it, cross-sections, composition, a monitoring and maintenance plan, as well as information regarding what storms might overtop the berm and how floodwater that gets over the berm will drain.

Response

Refer to Section 7.3.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for details associated with the construction of the berm.

Comment 4.3

The EIR should also clarify the relationship between the proponent, which owns the project site on which the berm would be constructed, and the City, which is seeking public funds for the proposed berm.

Response

Refer to Section 7.3.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for additional detail on the Fort Point Channel Infrastructure Project.

Comment 4.4

The EIR should include a detailed analysis specific to how the proposed fill, grading, and solid project components (e.g., berm, buildings, pavement) proposed in the coastal floodplain will affect coastal floodwater flow and drainage patterns within and adjacent to the site, both during rain events and coastal storm events where there is a combination of rain and coastal flooding.

Response

Refer to Sections 7.4.2 through 7.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for a detailed flowpath analysis. Stormwater resiliency is addressed in Section 7.3.5.

Comment 4.5

The EIR should provide a detailed description in the form of a narrative as well as plans of depicting topography and the sources, flow direction, and pathways of existing and proposed coastal and inland flooding onto, through, and off the site during a coastal storm event.

Response

Sections 7.4.2 through 7.4.4 and Figures 7.2 through 7.14 of Chapter 7, *Climate Change Adaptation and Resiliency*, provide a detailed description and plans depicting topography and the sources, flow direction, and pathways of existing and proposed coastal and inland flooding onto, through, and off the Project Site during a coastal storm event.

Comment 4.6

The analysis should demonstrate, using flow arrows and a narrative, how coastal floodwater will flow onto and off the project site and surrounding area under existing and proposed conditions. This analysis should also include a description about potential impacts if the proposed berm changes, reduces and/or eliminates any flood pathways.

Response

Sections 7.4.2 through 7.4.4 and Figures 7.2 through 7.14 of Chapter 7, *Climate Change Adaptation and Resiliency*, demonstrate how coastal floodwater will flow onto and off the Project Site and surrounding area under existing and proposed conditions. This analysis also includes a description about potential impacts if the proposed berm changes, reduces and/or eliminates any flood pathways.

Comment 4.7

If the project will channelize flow, the EIR should include an analysis of any changes in velocity, direction, depth, and extent of coastal floodwater.

Response

Sections 7.4.2 through 7.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, include an analysis of any changes in velocity, direction, depth, and extent of coastal floodwater.

Comment 4.8

An analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities should be included in the EIR.

Response

Refer to Sections 7.4.2 through 7.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for an analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities.

Comment 4.9

In addition to plan views, the EIR should include cross-sections through the site that show the existing grades, proposed grades, proposed buildings, structures and FEMA flood zone elevations.

Response

Refer to Figure 7.1 for a cross-section depicting the requested building and site elevation information.

Comment 4.10

The DEIR should include an updated figure depicting the boundary of the WDUZ, as well as the Chapter 91 jurisdictional area.

Response

See Figure 3.6 for an updated figure depicting the boundary of the WDUZ, as well as the Chapter 91 jurisdictional area.

Comment 4.11

While the proposed height of the project appears to meet the building height requirements approved in the Secretary's Decision on the MHP Amendment, the proponent should demonstrate compliance with the building height substitute provision by updating figures showing building height in relation to the setback distance from the high-water mark in the DEIR.

Response

Refer to Figure 3.4 depicting the building height in relation to the setback distance from the high-water mark.

Comment 4.12

The proponent should coordinate with the Department of Environmental Protection (DEP) on any special considerations regarding licensing for this project.

Response

The Proponent will coordinate with the Department of Environmental Protection (DEP) on any special considerations regarding licensing for this Project.

Comment 4.13

The DEIR should also include additional information outlining compliance with the Secretary's Decision on the 2009 South Boston MHP as well as compliance with the Chapter 91 Waterways Regulations.

Response

Refer to Section 3.3.3 of Chapter 3, *Chapter 91 and Tidelands*, for additional information outlining compliance with the Secretary's Decision on the SBWMHP as well as compliance with the Chapter 91 Waterways Regulations.

Comment 4.14

The proposed project may be subject to CZM federal consistency review, and if so, must be found to be consistent with CZM's enforceable program policies.

Response

Refer to Section 3.3.8 of Chapter 3, *Chapter 91 and Tidelands,* for details regarding Project's compliance with applicable CZM policies.

Letter 5: Water Resources Commission

Comment 5.1

Proposed structures located in the floodplain will be required to meet the standards of applicable sections of the State Building Code for construction in floodplains. For nonresidential structures, these sections include Section 1612, Flood Loads, and ASCE 24-14, Flood Resistant Design and Construction.

Response

Confirmed.

Comment 5.2

Any enclosures that are below-grade within floodplains, are required to be dry-floodproofed. Designs for structures in floodplains must be certified by a registered design professional. Designs for dry-floodproofing must comply with ASCE 24-14, Chapter 6.

Response

Confirmed.

Comment 5.3

Additionally, projects within the 100-year floodplain involving any federal action (e.g., permit, funding) must also comply with federal Executive Order 11988, Floodplain Management, as amended by Executive Orders 13690 and 14030. This executive order requires an eight-step decision-making process which includes analysis of alternatives, avoiding impacts when possible, and minimizing impacts when avoidance is not possible. Because this project requires multiple federal actions, compliance with this process is necessary.

Response

Acknowledged.

Comment 5.4

Also, the proponent should be aware that climate change can bring further impacts to the proposed development. Changes to the state's precipitation regime are ongoing with further predicted changes to the amount and timing of rainfall. This may increase the potential for flooding to properties located in the 100-year floodplain.

Response

Chapter 4, *Wetlands and Stormwater*, presents a hydrologic analysis that demonstrates stormwater runoff from the Site under various storm events in existing and future conditions.

Letter 6: Massachusetts Water Resources Authority

Comment 6.1

To ensure that the Project's wastewater flow does not increase system surcharging or overflows in large storms, the Proponent should continue to work with BWSC to develop a plan for ensuring a 4:1 offset of the Project's wastewater flow as required by Massachusetts Department of Environmental Protection (MassDEP) regulation. Four gallons of stormwater and/or infiltration and inflow (I/I) should be removed from a hydraulically related sewer system(s) for every gallon of new wastewater flow.

Response

The Proponent is committed to working with BWSC to define the appropriate I/I mitigation. Refer to Section 5.5.1 of Chapter 5, *Water and Wastewater*, for more information.

Comment 6.2

The EENF noted that an MWRA Construction Site Dewatering Permit may be required for the Project. However, the Project site has access to separate sewer and storm drain systems. Therefore, the discharge of groundwater or stormwater to the sanitary sewer system associated with this Project is prohibited and an MWRA Construction Site Dewatering Permit would not be issued for the Project.

Response

Acknowledged.

Comment 6.3

A Sewer Use Discharge Permit is required prior to discharging industrial process wastewater, laboratory wastewater, or photo processing wastewater from office, high-tech, R&D, laboratory or commercial space associated with the Project into the MWRA sanitary sewer system.

Response

The Proponent is committed to meeting requirements from the MWRA for sewer discharge use. Refer to Chapter 5, *Water and Wastewater*, for more information.

Comment 6.4

Any gas/oil separators in parking garages associated with the Project must comply with 360 C.M.R. 10.016 and State Plumbing Code. Installation of gas/oil separator(s) may not be back filled until inspected and approved by the MWRA and the Local Plumbing Inspector..

Response

The Proponent is committed to meeting requirements from the MWRA for sewer discharge use. Refer to Chapter 5, *Water and Wastewater*, for more information.

Letter 7: Department of Energy Resources

Comment 7.1

Provide the additional information below to better characterize proposed vertical envelope performance (add rows as needed):

Response

The requested information is provided in the following table.

Envelope Insulation Summary

Component	Percent of Above-Grade Vertical Area	Target Derated U-Value
Wall (framed, insulated)	49.5	0.042
Glazed wall system	50.5	see below
Opaque spandrel portion	*12.6*	*0.25*
Vision portion	*37.9*	*0.25*
Punched Window	N/A	N/A

Comment 7.2

Provide more details on proposed strategy to satisfy C406 requirements.

Response

The Proponent is proposing to meet the Reduced Lighting Power Density (C406.3) credit for 9 points and the On-Site Renewable Energy (C406.5) credit for 7 points to meet the minimum requirement of 15 points under the Stretch Energy Code. Further information is provided in in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency*, and Appendix D.

Comment 7.3

Commit to C406.9, reduced air leakage.

Response

The Proponent cannot make a commitment to C406.9 at this time due to limited data on feasibility and corresponding risk. Achieving the C406.9 infiltration rate is highly dependent upon both the contractor's and product manufacturer's capabilities that are beyond the control and scope of the designer. For example, a recent passive house-certified, large commercial building in Boston using comparable levels of unitized systems was only able to achieve measured infiltration on the order of 0.36 cfm/SF. This illustrates the stringency and difficulty of the current stretch code air leakage requirement, which will require market adaptation beyond the levels achievable as recent as 2023. Infiltration loads are extremely small in a laboratory building when compared to total building loads,

particularly mechanical ventilation. Finally, laboratory operations will require the building to maintain positive pressurization 24/7/365, which will effectively eliminate most infiltration loads.

Comment 7.4

Evaluate air source heat pump service water heating.

Response

The Proponent is committed to air source heat pump service water heating.

Comment 7.5

Provide the following table, populating the gray cells. At least three scenarios need to be created as follows: (A) a "Reference Baseline" scenario that conforms to ASHRAE 90.1-2019 Appendix G, (B) a "Code Minimum" scenario that results in a performance energy index that is equal to the target performance energy index, and (C) a "Proposed" scenario that is improved from the code minimum.

Response

The Proponent has prepared the energy modeling analysis with the scenarios as requested. The analysis is presented in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency* and Appendix D.

Comment 7.6

Provide a table summary (similar to the "Appendix A" table in Zero Carbon Building Assessment" part of the report) of envelope characteristics, proposed efficiency, proposed equipment, etc to characterize each of the (A), (B), and (C) scenarios above. It's important to understand what the difference is between the (B) and (C) scenarios, as those differences are the above-code mitigation. Be sure to include C406 and other mandatory measures in scenario (B), Code Minimum.

Response

The Proponent has prepared the energy modeling analysis with the scenarios as requested. The analysis is presented in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency* and Appendix D.

Comment 7.7

It appears that the project will be pursuing the mixed fuel pathway of the code (CC101.3 part 3). Provide the following additional details:

a. Calculations and scale plan of roof showing PV necessary to conform with CC105.2.

b. Calculations of the electric capacity, interior and exterior space requirements, and electric infrastructure necessary to conform with CC106.1.6. Scale plans showing interior and exterior location(s) to be set aside for future electric equipment.

Response

The Proponent is pursuing the Mixed Fuel Pathway of the Opt-In Code.

For Part A, the Proponent has calculated that a 162 kW system (approximately 10,800 SF array) is required to conform to CC105.2 under the current building design. This calculation was determined by taking the overall area of three largest floorplates (each 36,000 SF) as currently designed. Final square footage subject to change as design progresses. The plan showing this array is provided in Appendix D. Further description is provided in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency* .

For Part B, the Proponent has reviewed an all-electric alternative of the building in compliance with CC106.1.6. The HVAC narrative and plans showing the all-electric equipment set aside area are provided in Appendix D. Further description is provided in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency* .

Comment 7.8

We also recommend evaluating an all-electric option. This evaluation should include an evaluation of the costs/benefits, and key considerations, of the proposed mixed-fuel option (with installed PV and electric readiness) compared to all electric (without the installed PV and electric readiness) option.

Response

The Proponent had evaluated an all-electric option when designing the proposed building systems when determining potential compliance pathways with the opt-in code. As part of this evaluation, the Proponent compared the potential cost implications of going with an all-electric system from day one versus adopting the Mixed Fuel Pathway requirements of electric readiness and installation of a solar array. The result of this analysis is summarized in Section 7.5.1 of Chapter 7, *Climate Change Adaptation and Resiliency*.

Letter 8: Boston Water and Sewer Commission

Comment 8.1

Prior to the initial phase of the site plan development, Parcel 3 Owner, LLC should meet with the Commission's Design and Engineering Customer Services to review water main, sewer and storm drainage system availability and potential upgrades that could impact the development.

Response

The Proponent is committed to meeting with BWSC prior to the initial phase of the site plan development.

Comment 8.2

All new or relocated water mains, sewers and storm drains must be designed and constructed at Parcel 3 Owner, LLC's expense. They must be designed and constructed in conformance with the Commission's design standards, Water Distribution System and Sewer Use regulations, and Requirements for Site Plans.

Response

The Proponent understands the requirements noted.

Comment 8.3

The site plan should include the locations of new, relocated and existing water mains, sewers and drains which serve the site, proposed service connections, water meter locations, as well as back flow prevention devices in the facilities that will require inspection.

Response

The Site Plan presented to BWSC during Site Plan Review will include the locations of the infrastructure noted.

Comment 8.4

A General Service Application must also be submitted to the Commission with the site plan.

Response

The Contractor will apply for a GSA prior to construction and after the Site Plan has been approved.

Comment 8.5

Currently, a minimum ratio of 4: 1 for 1/1 removal to new wastewater flow added is used. The Commission supports the policy and will require proponent to develop a consistent inflow reduction

plan. The 4: 1 requirement should be addressed at least 90 days prior to activation of water service and will be based on the estimated sewage generation provided on the project site plan.

Response

The Proponent is committed to working with BWSC to define the appropriate I/I mitigation. Refer to Section 5.5.1 of Chapter 5, *Water and Wastewater*, for more information.

Comment 8.6

The design of the project should comply with the City of Boston's Complete Streets Initiative, which requires incorporation of "green infrastructure" into street designs. Green infrastructure includes greenscapes, such as trees, shrubs, grasses and other landscape plantings, as well as rain gardens and vegetative swales, infiltration basins, and paving materials and permeable surfaces.

Response

The Project is proposing to reduce the existing impervious area. The Project will comply with the City of Boston's Complete Streets Initiative where applicable.

Comment 8.7

The proponent must develop a maintenance plan for the proposed green infrastructure.

Response

The maintenance for the proposed green infrastructure will be included in the O&M.

Comment 8.8

The Commission owns and maintains an outfall within the vicinity of the project site. It is located at Fort Point Channel. The Commission requests that Parcel 3 Owner, LLC take appropriate measures to ensure that the outfall is not damaged during construction.

Response

The Proponent is committed to protecting the outfall throughout the project.

Comment 8.9

Parcel 3 Owner, LLC should be aware that the US Environmental Protection Agency issued the Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If groundwater contaminated with petroleum products, for example, is encountered, Parcel 3 Owner, LLC will be required to apply for a RGP to cover these discharges.

Response

The Project's Geotechnical Engineer is aware of the regulations and will apply for an RGP if required.

Comment 8.10

Parcel 3 Owner, LLC is advised that the Commission will not allow buildings to be constructed over any of its water lines. Also, any plans to build over Commission sewer facilities are subject to review and approval by the Commission. The project must be designed so that access, including vehicular access, to the Commission's water and sewer lines for the purpose of operation and maintenance is not inhibited.

Response

The Proponent acknowledges these requirements.

Comment 8.11

It is Parcel 3 Owner, LLC's responsibility to evaluate the capacity of the water, sewer and storm drain systems serving the project site to determine if the systems are adequate to meet future project demands. With the site plan, Parcel 3 Owner, LLC must include a detailed capacity analysis for the water. sewer and storm drain systems serving the project site, as well as an analysis of the impacts the proposed project will have on the Commission's water, sewer and storm drainage systems.

Response

The Project will submit calculations during the Site Plan Review process.

Comment 8.12

The laboratory may require that the project proponent or owner of the facility complete and submit a Sewer Use Discharge Permit Application with the MWRA.

Response

The Proponent is committed to meeting the requirements from the MWRA for sewer discharge use. Refer to Chapter 5, *Water and Wastewater,* for more information.

Comment 8.13

Parcel 3 Owner, LLC must provide separate estimates of peak and continuous maximum water demand for residential, commercial, industrial, irrigation of landscaped areas, and air-conditioning make-up water for the project with the site plan. Estimates should be based on full-site build-out of the proposed project. Parcel 3 Owner, LLC should also provide the methodology used to estimate water demand for the proposed project.

Response

The Project will submit calculations during the Site Plan Review process.

Comment 8.14

Parcel 3 Owner, LLC should explore opportunities for implementing water conservation measures in addition to those required by the State Plumbing Code. In particular, Parcel 3 Owner, LLC should consider outdoor landscaping which requires minimal use of water to maintain.

Response

Refer to Section 5.5.3 of Chapter 5, *Water and Wastewater*, for a description of water conservation measures proposed for the Project.

Comment 8.15

If Parcel 3 Owner, LLC plans to install in-ground sprinkler systems, the Commission recommends that timers, soil moisture indicators and rainfall sensors be installed.

Response

The Proponent acknowledges this comment. Refer to Section 5.5.3 of Chapter 5, *Water and Wastewater,* for further details on other water conservation measures proposed for the Project.

Comment 8.16

The use of sensor-operated faucets and toilets in common areas of buildings should be considered.

Response

The Proponent proposes to use WaterSense labeled fixtures where applicable as explained in Section 5.5.3 of Chapter 5, *Water and Wastewater*.

Comment 8.17

Parcel 3 Owner, LLC is required to obtain a Hydrant Permit for use of any hydrant during the construction phase of this project. The water used from the hydrant must be metered. Parcel 3 Owner, LLC should contact the Commission's Meter Department for information on and to obtain a Hydrant Permit.

Response

The Proponent will obtain the Hydrant Permit if required.

Comment 8.18

Parcel 3 Owner, LLC will be required to install approved backflow prevention devices on the water services for fire protection, mechanical and any irrigation systems. Parcel 3 Owner, LLC is advised to consult with Mr. Larry Healy, Manager of Engineering Code Enforcement, with regards to backflow prevention.

Response

Backflow preventer details and documentation will be provided during the Site Plan Review.

Comment 8.19

The Commission is utilizing a Fixed Radio Meter Reading System to obtain water meter readings. For new water meters, the Commission will provide a Meter Transmitter Unit (MTU) and connect the device to the meter. For information regarding the installation of MTUs, Parcel 3 Owner, LLC should contact the Commission's Meter Department.

Response

The Proponent will contact the Commission's Meter Department for new water meters.

Comment 8.20

In conjunction with the Site Plan and the General Service Application Parcel 3 Owner, LLC will be required to submit a Stormwater Pollution Prevention Plan. The plan must:

- *Identify specific best management measures for controlling erosion and preventing the discharge of sediment, contaminated stormwater or construction debris to the Commission's drainage system when construction is underway.*
- *Include a site map which shows, at a minimum, existing drainage patterns and areas used for storage or treatment of contaminated soils, groundwater or stormwater, and the location of major control structures or treatment structures to be utilized during the construction.*
- *Specifically identify how the project will comply with the Department of Environmental Protection's Performance Standards for Stormwater Management both during construction and after construction is complete.*

Response

A SWPPP will be submitted in conjunction with the Site Plan Review and General Service Application.

Comment 8.21

Developers of projects involving disturbances of land of one acre or more will be required to obtain an NPDES General Permit for Construction from the Environmental Protection Agency and the Massachusetts Department of Environmental Protection. Parcel 3 Owner, LLC is responsible for determining if such a permit is required and for obtaining the permit. If such a permit is required, it is required that a copy of the permit and any pollution prevention plan prepared pursuant to the permit be provided to the Commission's Engineering Services Department, prior to the commencement of construction. The pollution prevention plan submitted pursuant to a NPDES Permit may be submitted in place of the pollution prevention plan required by the Commission provided the Plan addresses the same components identified in item 1 above.

Response

A CGP will be obtained and submitted to BWSC as required.

Comment 8.22

The Commission encourages Parcel 3 Owner, LLC to explore additional opportunities for protecting stormwater quality on site by minimizing sanding and the use of deicing chemicals, pesticides, and fertilizers.

Response

An O&M will be submitted during the Site Plan Review process including these items.

Comment 8.23

Parcel 3 Owner, LLC is advised that the discharge of any dewatering drainage to the storm drainage system requires a Drainage Discharge Permit from the Commission. If the dewatering drainage is contaminated with petroleum products, Parcel 3 Owner, LLC will be required to obtain a Remediation General Permit from the Environmental Protection Agency (EPA) for the discharge.

Response

The Project's Geotechnical Engineer is aware of this requirement. An RGP will be obtained if required.

Comment 8.24

Parcel 3 Owner, LLC must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. The site plan should indicate how storm drainage from roof drains will be handled and the feasibility of retaining their stormwater discharge on-site. All projects at or above I 00,000 square feet of floor area are to retain, on site, a volume of runoff equal to 1.25 inches of rainfall times the impervious area. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer.

Response

The Proponent intends to fully investigate methods for retaining stormwater on site and acknowledges the above requirements.

Comment 8.25

In addition to Commission standards, Parcel 3 Owner, LLC will be required to meet MassDEP Stormwater Management Standards.

Response

The Proponent intends to meet MassDEP standards.

Comment 8.26

The Commission requests that Parcel 3 Owner, LLC install a permanent casting stating "Don't Dump: Drains to Boston Harbor" next to any catch basin created or modified as part of this project. Parcel 3 Owner, LLC should contact the Commission's Operations Division for information regarding the purchase of the castings.

Response

Don't Dump Drain plaques will be included in the Site Plan Review.

Comment 8.27

If a cafeteria or food service facility is built as part of this project, grease traps will be required in accordance with the Commission's Sewer Use Regulations. Parcel 3 Owner, LLC is advised to consult with the Commission's Operations Department with regards to grease traps.

Response

Grease traps will be included in the building if required.

Comment 8.28

The enclosed floors of a parking garage must drain through oil separators into the sewer system in accordance with the Commission's Sewer Use Regulations. The Commission's Requirements for Site Plans, available by contacting the Engineering Services Department, include requirements for separators.

Response

Oil/Gas separators will be installed in accordance with the Commission's Sewer Use Regulations.

Letter 9: Boston Parks and Recreation Department

Comment 9.1

Much of the open space at 232 A Street is not in the PDA Master Plan or the Draft Fort Point Open Space Concept Plan. However, it should be designed in manner that responds to the Open Space Concept Plan as it will serve as a significant piece of the green infrastructure system.

Response

The Project is intended to be complementary and additive to the adjacent and proposed open spaces within Fort Point and promote the goals of the PDA Master Plan and Draft Fort Point Open Space Concept Plan.

Comment 9.2

The final design of the open space at 232 A Street should be created through a public process that incorporates the input of stakeholders in the community, the BPDA and BPRD.

Response

The Proponent is committed to designing the open space incorporating input of community stakeholders and is continuing to provide opportunities for feedback.

Comment 9.3

The final design should minimize the impacts of existing infrastructure on the site (such as the tunnel emergency egress). It should maximize the connection to adjacent open space and the Harborwalk.

Response

Existing infrastructure and associated tunnel emergency access to be woven into the day-to-day activities of the site while also accommodating the realities of the coastal resiliency goals. The overall site and landscape are being designed to allow these spaces to accommodate multiple uses and functions with the goal of providing a cohesive and accessible public open space.

Comment 9.4

The raised grade and resiliency buffer should be engineered so that it does not detract from the overall use of the open space.

Response

The Proponent and the Design Team have made this a priority with the overall open space design. The grading and resiliency buffer are intended to be seamlessly integrated to provide a cohesive open space that encourages access to the waterfront.

Comment 9.5

The site should be designed in a flexible manner that can be adapted when/if the adjacent pump house (and required access) becomes obsolete.

Response

The current site plan has been designed with flexibility in mind to accommodate potential future revisions to the abutting properties and connections.

Comment 9.6

The wind and shadow impacts (from dawn to dusk) of the full height of the proposed building on the adjacent open space network should be evaluated in order to mitigate the impacts on the natural landscape and the desirability of year-round use of the open spaces.

Response

Shadow and wind analysis was submitted with the ENF-PNF. Current proposed site configuration and existing site conditions maximizes light exposure to the open space, with special consideration along the Southern & West Edges.

Letter 10: Conservation Law Foundation

Comment 10.1

The Proponent plans to implement a transportation demand management ("TDM") plan that will minimize single-occupant vehicle trips to the site and lists a number of potential elements of the TDM that the Proponent is considering but has not yet committed to implementing, such as providing transit information on screens in the building lobby, participating in a program that facilitates the purchase of transit passes for employees, subsidizing half the cost of monthly MBTA passes, and other amenities to encourage the use of bicycles and public transportation. ENF at 20, 6-2. CLF encourages the Proponent to commit to adopting these measures to encourage public transit and bicycle travel. CLF encourages the Proponent to commit to adopting these measures to encourage public transit and bicycle travel.

Response

Refer to Section 6.7.4 of Chapter 6, *Traffic and Transportation*, for all TDM measures proposed for the Project.

Comment 10.2

CLF urges the Proponent to provide an analysis of pedestrian safety on the streets leading onto the site and any alterations that might be required to the surrounding thoroughfares in order to make the site safely approachable on foot.

Response

The Project will upgrade the surrounding pedestrian and cyclist infrastructure, including enhancing pedestrian and bicycle connections to the South Bay Harbor Trail/Harborwalk and the surrounding sidewalk, roadway and bicycle infrastructure along Binford Street and A Street. Please refer to Chapter 6, *Traffic and Transportation,* for additional detail on Transportation, including analyses performed, and Chapter 1, *Project Description and Permitting*, and 3, *Chapter 91 and Tidelands*, for additional detail on public realm improvements.

Comment 10.3

The Proponent should clarify how the berm will be funded in the event that the cost exceeds what the federal grant covers, as well as whether FEMA has expressed an opinion about the berm design as it currently stands.

Response

Please refer to Sections 7.3.4.3 and 7.3.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for additional detail on funding, construction, and maintenance of the Fort Point Channel Infrastructure Project.

Comment 10.4

Similarly, the Proponent should explain how and by whom the berm will be maintained and provide greater transparency about how the project is being coordinated with the City, given that it is the federal grant applicant.

Response

Please refer to Sections 7.3.4.3 and 7.3.4.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for additional detail on funding, construction, and maintenance of the Fort Point Channel Infrastructure Project.

Comment 10.5

CLF is also concerned about the potential for the Harborwalk to flood. If the structure is landward of the Harborwalk, it will not protect the Harborwalk from flooding. The Proponent must make every effort to protect this pathway from flooding in order to attain the level of public access to the lateral shoreline the law requires.

Response

The proposed grading plan maintains access to adjacent roadways, sections of the Harborwalk, and infrastructure on and adjacent to the Project Site. These considerations, along with conversations with the BPDA, have resulted in the commitment to construct a berm with an elevation of 15.0 feet NAVD88 (21.5 feet BCB). Refer to Section 7.3.2 of Chapter 7, *Climate Change Adaptation and Resiliency,* for more information.

Comment 10.6

Finally, CLF appreciates the Proponent's plans to include rain gardens, permeable pavers, and landscaping to improve the site's water management infrastructure and asks the Proponent to provide more detail about where those infrastructural improvements will be added.

Response

The Project will incorporate green infrastructure approaches into the design, such as rain gardens, permeable pavers, and increased landscaping. Subsurface infiltration systems will be used to further promote stormwater infiltration. Details on other water conservation measures are described in Section 5.5.3 of Chapter 5, *Water and Wastewater*.

Comment 10.7

The Proponent should provide additional information about its plans for the dock, including its intended uses, size, location, structure, and interaction with the South Boston Municipal Harbor Plan, in order to show compliance with Chapter 91 regulations.

Response

The potential future dock/pier facility that was referenced in the ENF has been eliminated from the Project due to site constraints and in response to comments on the ENF and is no longer proposed.

Letter 11: Boston Harbor Now

Comment 11.1

We are in full support of the change to a proposed berm design, as it will create a higher quality waterfront experience for people to travel and relax while still maintaining a continuous line of defense from sea level rise and storm surge. In the event that weather conditions at high tide temporarily disrupt use of the Harborwalk, we recommend an alternative elevated path of travel be provided so that people can still navigate across the site even if the area immediately adjacent to the channel is temporarily under water.

Response

Refer to Section 7.4 of Chapter 7, *Climate Change Adaptation and Resiliency*, for a detailed flow path analysis and associated alternatives modeling.

Comment 11.2

In this same vein, we recommend that the proponents use materials that weather the potential damage from storms and coastal flooding at the lowest elevation so that they can bounce back quickly.

Response

Refer to Table 9-1 in Chapter 9, *Draft Section 61 Findings and Proposed Mitigation,* for proposed mitigation measures to prevent and mitigate impact from storms and coastal flooding.

Comment 11.3

Should the proponent pursue the model set by the neighboring Channelside development, we suggest they coordinate the processes with Related Beal to ensure they incorporate best practices and lessons learned from their experience.

Response

Acknowledged.

Comment 11.4

Notably, Channelside has engaged with a DEI consultant to help ensure the RFI/RFP process is accessible to a range of potential tenants and further plans to offer technical and financial assistance to those groups that may not have the in-house capacity or expertise to apply to an RFI/RFP, a practice that the proponent may want to implement here as well.

Response

The Proponent is committed to promoting diversity, equity, and inclusion at all levels of the development lifecycle and the Proponent's commitment to a transparent, public process for any

civic/cultural space will be no exception. Both the Proponent and its DEI consultant are committed to ensuring the process is accessible to a range of potential tenants.

Comment 11.5

Should the proponent's RFP process begin after the completion of the Channelside project, the proponent may also want to encourage unselected applicants to apply for their FPA space.

Response

The Proponent will absolutely encourage any and all applicants to apply.

Comment 11.6

The proponent may want to explore additional wayfinding and activation along the Gillette side of the building, and the arcaded design suggests they have begun to explore strategies to ensure that the pathway feels inviting.

Response

The Proponent is committed to creating multiple inviting pathways to the waterfront. The arcade space along the Gillette side of the building, reminiscent of existing arcade spaces signature to Fort Point, will create a unique exterior space that retail/civic/cultural uses could spill out into, opportunities for displays of multidimensional art, improve accessibility across grade changes inherent to the site, serve as a protected pedestrian connection from A Street to the Fort Point Channel, and open up views of the Channel from A Street. Refer to Section 3.7 of Chapter 3, *Chapter 91 and Tidelands*, for a detailed description of public benefits being offered by the Project.

Letter 12: Public Comment Letter – Steve Hollinger

Comment 12.1

Given the close proximity of the Project to a dense residential community including a director abutter, a zoning amendment (to PDA #69) must restrict lab use to Biosafety Level 1 and 2, with an expressed prohibition on Biosafety Levels 3 and 4.

Response

This information will be shared with the BPDA. The Proponent has no intention of pursuing the Project as a BSL-3 or BSL-4 facility. In addition, any laboratory use exceeding BSL-1 or BSL-2 levels would fall under an additional and separate regulatory regime.

Comment 12.2

I do support the community's call to consider reasonable changes to the design, for example using setbacks or other modifications, to improve sunlight availability at the abutting 249 A Street artist co-op.

Response

The Proponent has taken the community's thoughtful comments on the design concept at ENF-PNF into account as the design has progressed with BPDA and BCDC and will continue to take all feedback into consideration. Refer to Section 3.5, *Consistency with Zoning and Planning*, of Chapter 3 for more information.

Comment 12.3

I'd encourage the Proponent to deliver a building with mechanicals that are either seamlessly integrated into the design (see 400 Summer Street) or mechanicals that are visible (complementing Fort Point's industrial heritage), as opposed to employing highly contrasting materials to screen rooftop mechanicals (see 15 Necco).

Response

The mechanicals will be creatively incorporated into the building design in accordance with the BPDA's Life Science Design Guidelines in order to minimize their impact on the surrounding context and public realm.

Comment 12.4

A minimum of 10,000 square feet of ground floor FPA space must be provided rent-free, for civic/cultural space, tenanted through a City-led process. This minimum footage is consistent with prior permitting at Fan Pier Pier 4 and Atlantic Wharf. It is also consistent with the requirement during

General Electric campus permitting at 5-15 Necco (which provided a 13,400sf cultural space in 15 Necco alone).

Response

The Proponent will take the comment under consideration. Refer to Section 3.6.2 of Chapter 3, *Chapter 91 and Tidelands*, and Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, for more information on the Project's Public Benefits.

Comment 12.5

Provision for such civic/cultural FPA space(s) is consistent with the Fort Point 100 Acres Master Plan Final Draft, notwithstanding BPDA's failure to require the drafting of legally binding obligations within PDA #69, as the agency had achieved prior in Fan Pier, Pier 4 and Atlantic Wharf PDAs.

Response

The Proponent will take the comment under consideration. Refer to Sections 3.3, 3.4, and 3.5 of Chapter 3, *Chapter 91 and Tidelands*, for more information on Facilities of Public Accommodation.

Comment 12.6

I recommend distinguishing rent-free civic/cultural space as a SPDF under Chapter 91.

Response

The Proponent will take the comment under consideration.

Comment 12.7

Floorplans depicting (and differentiating) the rent-free civic/cultural space, commercial retail and lobby spaces must be required prior to BPDA Board approval.

Response

The Proponent will take the comment under consideration.

Comment 12.8

A minimum contribution of $200 psf toward fit-out of the 10 ksf civic/cultural space is required, a conservative estimate considering Grub Street's recent example.

Response

The Proponent will take the comment under consideration. Refer to Section 3.6.2 of Chapter 3, *Chapter 91 and Tidelands*, and Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, for more information on the Project's Public Benefits.

Comment 12.9

Civic/Cultural FPA space(s) should be located along the southeast and east (Channel facing) facades of the building, allowing for interaction with park users. In no configuration should frontage along A Street be dedicated to civic/cultural FPA space, given projected flooding issues at 16.9' elevation and long-term costs associated with future grade changes necessary to protect against foreseeable flooding.

Response

The Proponent is committed to designing a resilient ground floor in its entirety.

Comment 12.10

Funds for capital investment in waterside infrastructure to serve as a means to activate the Fort Point Channel watersheet must be identified by coordinating required contributions from the Proponent (Tishman Speyer), Related Beal and National Development, the three successors to Gillette's former 9.5 acres under the 100 Acres Plan.

Response

Refer to Section 3.6.2 of Chapter 3, *Chapter 91 and Tidelands*, and Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, for more information on the Project's Public Benefits.

Comment 12.11

A process must be convened that will identify one or more signature waterside elements, funded by all three (3) landowners, that will create a monumental waterside feature dedicated to watersheet activation. I would suggest revising the 2003 Watersheet Activation Plan..

Response

Refer to Section 3.6.2 of Chapter 3, *Chapter 91 and Tidelands*, and Chapter 9, *Draft Section 61 Findings and Proposed Mitigation*, for more information on the Project's Public Benefits.

Comment 12.12

Minimum Harborwalk area for pedestrians must be 12' wide, not 8' wide.

Response

The Proponent has widened the Harborwalk-South Bay Harbor Trail by 4 feet, providing for a total width of 22 feet.

Comment 12.13

Pedestrians must walk along the Fort Point Channel, not inland of cycle lanes. Cycle lanes should run along the inland edge of the pedestrian area of the Harborwalk.

Response

The Project has modified its design to incorporate a cycle lane on the inland portion of the Harborwalk-South Bay Harbor Trail.

Comment 12.14

The Proponent must commence a reasonable public park design process to secure input.

Response

The Proponent is committed to designing the open space incorporating input of community stakeholders and is continuing to provide opportunities for feedback.

Comment 12.15

As has been achieved with the 100 Acres Plan at A Street Park and Fort Point Park (244-284 A Street), the waterfront park created at 232 A Street should be controlled by the City of Boston Parks Department, with construction and maintenance funded in perpetuity by the Proponent and/or the 100 Acres Owners Association.

Response

The Proponent remains committed to dedicating the waterfront park for public use to the City of Boston Parks Department with its initial construction funded by the Proponent and maintenance funded by the 100 Acres Owners Association in accordance with the MOA for PDA No. 69.

Comment 12.16

No enclosed structures such as pavilions or tents (aside from the existing headhouse) on the public park should be approved in zoning.

Response

Current project site plan includes an open-air landscape trellis structure, reminiscent of the trellis structure that exists at Binford Street Park today, but does not propose any enclosed structures within the open space (aside from the existing headhouse).

Comment 12.17

No reference to the BPDA Fort Point "Open Space Concept Plan" should be included in any zoning or regulatory permitting document associated with the Project, particularly an amendment to 100 Acres Plan PDA #69. Any such reference could be misconstrued as legal codification of the Open Space Concept Plan.

Response

Comment is noted.

Appendix A: MEPA Distribution List

MEPA Distribution List

Below is a list of all agencies and persons to whom the Proponent circulated the DEIR, in accordance with 301 CMR 11.16(3) and the Public Involvement Protocol.

State and Regional Agencies and Officials

Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114
mepa@mass.gov

Department of Environmental Protection
Attn: Commissioner's Office
One Winter Street
Boston, MA 02108
helena.boccadoro@mass.gov

Massachusetts Department of Transportation
Public/Private Development Unit
Attn: J. Lionel Lucien
10 Park Plaza Suite #4150
Boston, MA 02116
MassDOTPPDU@dot.state.ma.us

DEP/Northeast Regional Office
Attn: John D. Viola
205B Lowell Street
Wilmington, MA 01887
john.d.viola@mass.gov
kristin.divris@mass.gov

Massachusetts Historical Commission
Attn: Brona Simon
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125
brona.simon@state.ma.us

Massachusetts DOT District #6
Attn: MEPA Coordinator
185 Kneeland Street
Boston, MA 02111
michael.garrity@dot.state.ma.us

Department of Energy Resources
Attention: MEPA Coordinator
100 Cambridge Street, Suite 1020
Boston, MA 02114
paul.ormond@mass.gov

Massachusetts Water Resource Authority
Attn: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129
katherine.ronan@mwra.com
colleen.rizzi@mwra.com

MEPA Office
Attn: EEA EJ Director
100 Cambridge Street, Suite 900
Boston, MA 02144
MEPA-EJ@mass.gov

Metropolitan Area Planning Council
Attn: Executive Director
60 Temple Place
Boston, MA 02111
mpillsbury@mapc.org
afelix@mapc.org

MA Water Resources Commission
Attn: Vandana Rao, PhD
251 Causeway Street, Suite 700
Boston, MA 02114
Vandana.rao@state.ma.us

Massachusetts Department of Transportation
Office of Transportation Planning
Attn: David J. Mohler
10 Park Plaza Suite #4160
Boston, MA 02116

eric.carlson@mass.gov

david.mohler@dot.state.ma.us
wimmiam.m.simon@dot.ma.us

Massachusetts Department of Environmental Protection (MassDEP)
Waterways Regulation Program
Attn: Susan You
One Winter Street
Boston, MA 02108
dep.waterways@mass.gov
susan.you@mass.gov

Massachusetts Office of Coastal Zone Management
Attn: Project Review Coordinator
100 Cambridge Street, Suite 900
Boston, MA 02144
sean.duffey@mass.gov
patrice.bordonaro@mass.gov
lisa.engler@mass.gov

City of Boston

Boston Planning and Development Agency
Attn: Nick Carter, Project Manager
One City Hall Square, 9th Floor
Boston, MA 02201
James.Jemison@boston.gov
nick.carter@boston.gov

City Council President; City Councilor, District 2
1 City Hall Square, Room 550
Boston, MA 02201-2043
ed.flynn@boston.gov

Boston Conservation Commission
1 City Hall Square, Room 709
Boston, MA 02201
nicholas.moreno@boston.gov

Boston Public Health Commission
1010 Massachusetts Ave, 2nd Floor
Boston, MA 02118
info@bphc.org

Boston Water and Sewer Commission
Attn: John P. Sullivan
980 Harrison Avenue
Boston, MA 02119
sullivanjp@bwsc.org

Boston Parks and Recreation Commission
Attn: Carrie M. Dixon
1010 Massachusetts Ave, 3rd Floor
Boston, MA 02118
carrie.marsh@boston.gov
parks@boston.gov

Libraries

Boston Public Library
Chinatown Branch
2 Boylston Street
Boston, MA 02116

Boston Public Library
South Boston Branch
646 E Broadway
South Boston, MA 02127

Statewide Environmental Justice Community Based Organizations

Mass Rivers Alliance
Neighbor to Neighbor
Environment Massachusetts

The Trust for Public Land
Browning the GreenSpace
Environmental League of MA

Unitarian Universalist Mass Action Network	Ocean River Institute
Clean Water Action	Mass Land Trust Coalition
Sierra Club MA	Conservation Law Foundation
Appalachian Mountain Club	Community Action Works
Mass Audubon	

Indigenous Organizations

Chappaquiddick Tribe of the Wampanoag Nation	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan
Nipmuc Nation (Hassanamisco Nipmucs)	North American Indian Center of Boston
Massachusetts Commission on Indian Affairs (MCIA)	Pocassett Wampanoag Tribe
Chaubunagungamaug Nipmuck Indian Council	Massachusetts Tribe at Ponkapoag
Herring Pond Wampanoag Tribe	

Federally Recognized Tribes

Mashpee Wampanoag Tribe	Wampanoag Tribe of Gay Head (Aquinnah)

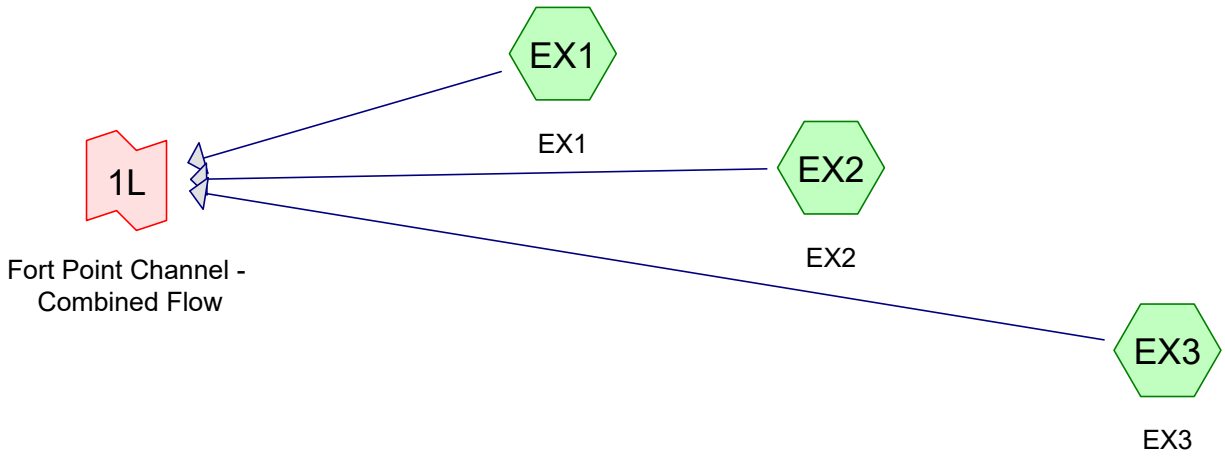
Local Community Based Organizations

Boston Farms Community Land Trust	Coalition for Social Justice
Boston Harbor Now	Asian Community Development Corporation
Chinese Progressive Association	Charles River Conservancy
Mass Community Labor United	Charles River Watershed Assoc.
Save the Harbor/Save the Bay	Chinatown Resident Association
Chinatown Community Land Trust	Alternatives for Community & Environment
New England United for Justice	Nuestra Comunidad CDC

Appendix B: Stormwater Supporting Documentation

Contents –

- HydroCAD Report
- Operations and Maintenance Plan



Subcat Reach Pond Link

Routing Diagram for 15921.00-EX
Prepared by VHB, Inc, Printed 11/27/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.14	2
2	10--Year	Type III 24-hr		Default	24.00	1	4.98	2
3	25--Year	Type III 24-hr		Default	24.00	1	6.12	2
4	100--Year	Type III 24-hr		Default	24.00	1	7.88	2
5	RMAT Extreme Precipitation	Type III 24-hr		Default	24.00	1	10.90	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.191	80	>75% Grass cover, Good, HSG D (EX1, EX2, EX3)
2.168	98	Paved parking, HSG D (EX1, EX2, EX3)
0.018	98	Unconnected roofs, HSG D (EX3)
2.377	**97**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.377	HSG D	EX1, EX2, EX3
0.000	Other	
2.377		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.191	0.000	0.191	>75% Grass cover, Good	EX1, EX2, EX3
0.000	0.000	0.000	2.168	0.000	2.168	Paved parking	EX1, EX2, EX3
0.000	0.000	0.000	0.018	0.000	0.018	Unconnected roofs	EX3
0.000	**0.000**	**0.000**	**2.377**	**0.000**	**2.377**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 Runoff Area=7,385 sf 52.19% Impervious Runoff Depth=2.03"
Tc=5.0 min CN=89 Runoff=0.41 cfs 0.029 af

Subcatchment EX2: EX2 Runoff Area=12,001 sf 60.84% Impervious Runoff Depth=2.20"
Tc=5.0 min CN=91 Runoff=0.72 cfs 0.051 af

Subcatchment EX3: EX3 Runoff Area=84,161 sf 99.87% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=6.06 cfs 0.468 af

Link 1L: Fort Point Channel - Combined Flow Inflow=7.19 cfs 0.547 af
Primary=7.19 cfs 0.547 af

Total Runoff Area = 2.377 ac Runoff Volume = 0.547 af Average Runoff Depth = 2.76"
8.05% Pervious = 0.191 ac 91.95% Impervious = 2.186 ac

Summary for Subcatchment EX1: EX1

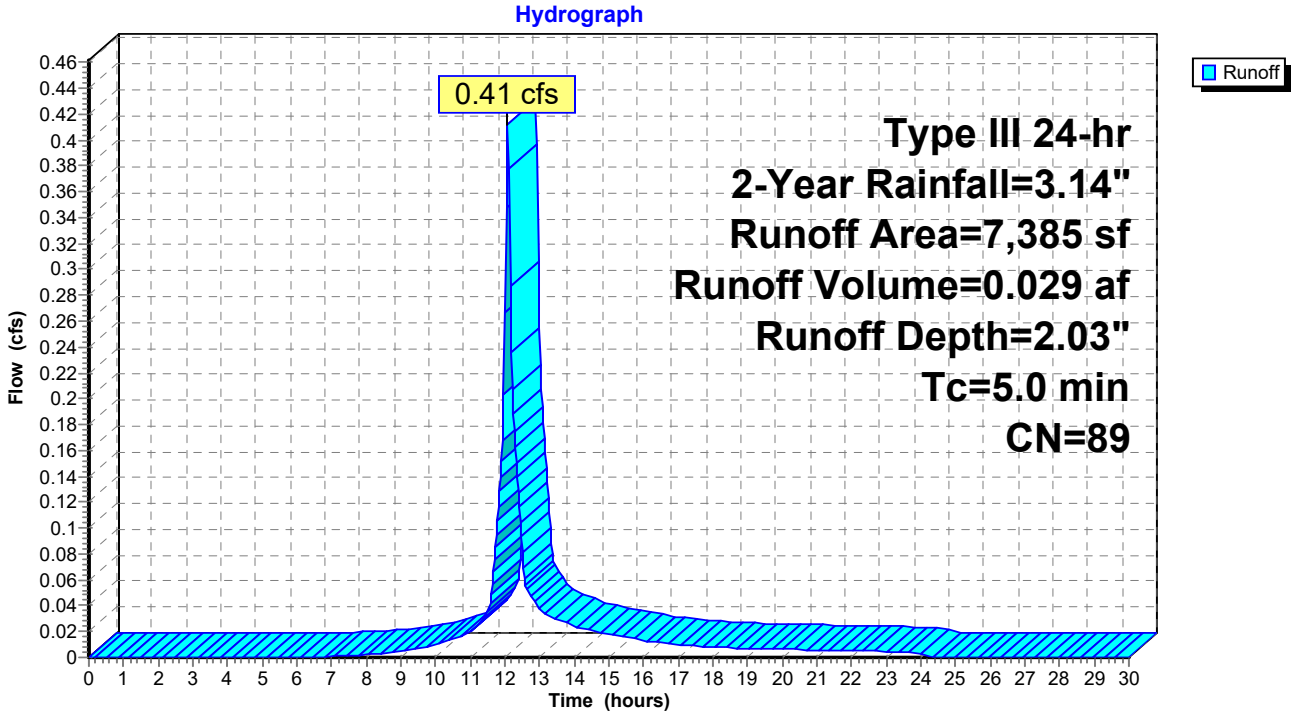
Runoff = 0.41 cfs @ 12.07 hrs, Volume= 0.029 af, Depth= 2.03"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
3,531	80	>75% Grass cover, Good, HSG D
3,854	98	Paved parking, HSG D
7,385	89	Weighted Average
3,531		47.81% Pervious Area
3,854		52.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX1: EX1



Summary for Subcatchment EX2: EX2

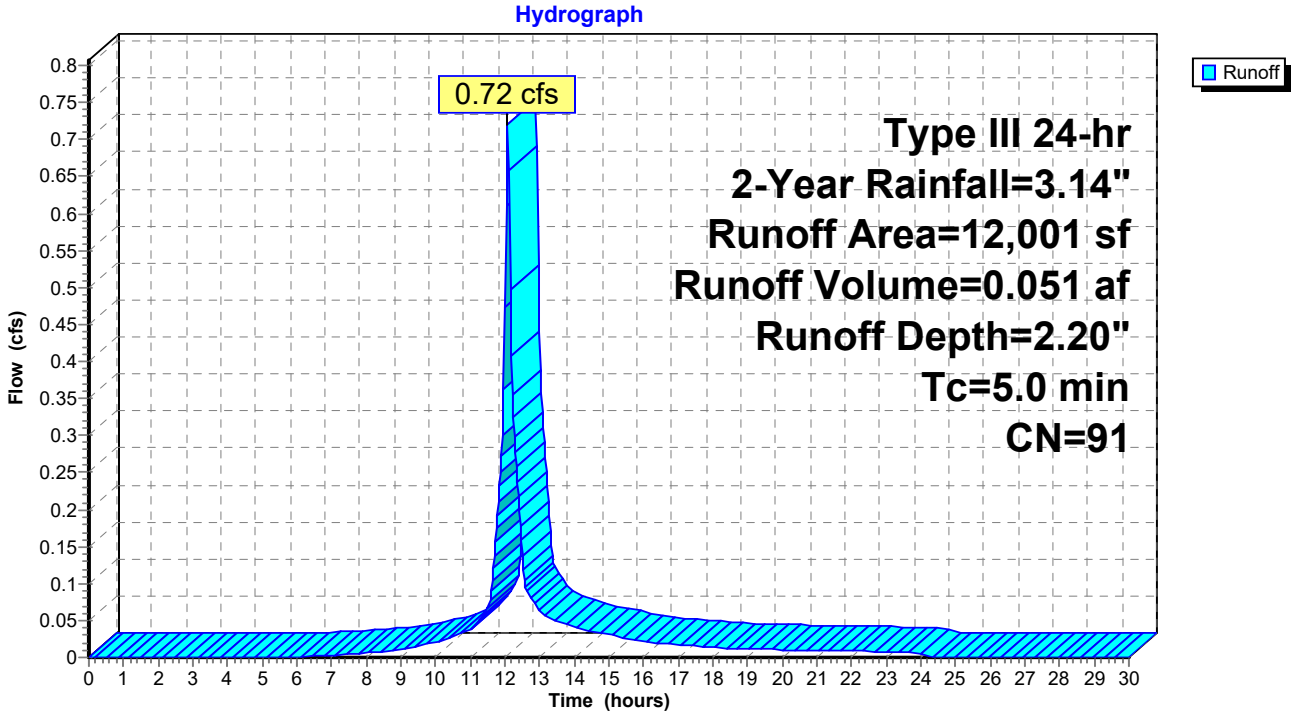
Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 2.20"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
4,699	80	>75% Grass cover, Good, HSG D
7,302	98	Paved parking, HSG D
12,001	91	Weighted Average
4,699		39.16% Pervious Area
7,302		60.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX2: EX2



Summary for Subcatchment EX3: EX3

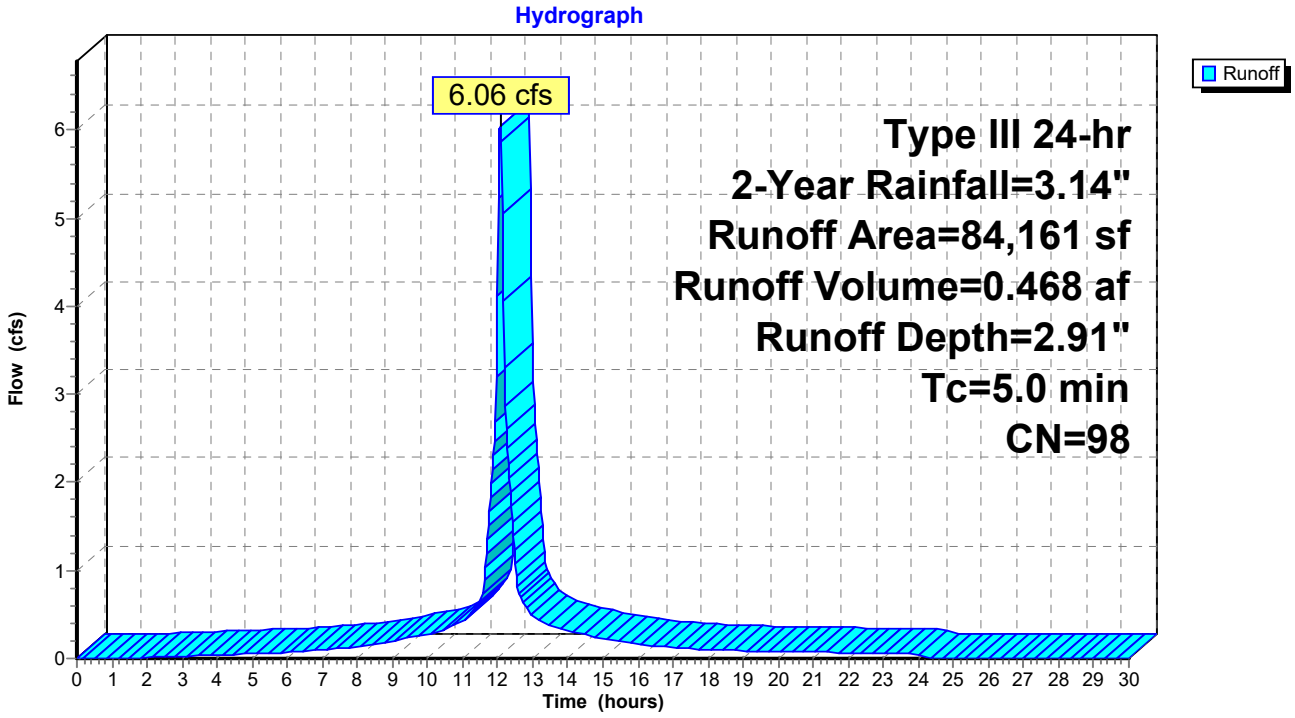
Runoff = 6.06 cfs @ 12.07 hrs, Volume= 0.468 af, Depth= 2.91"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
108	80	>75% Grass cover, Good, HSG D
83,290	98	Paved parking, HSG D
763	98	Unconnected roofs, HSG D
84,161	98	Weighted Average
108		0.13% Pervious Area
84,053		99.87% Impervious Area
763		0.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX3: EX3

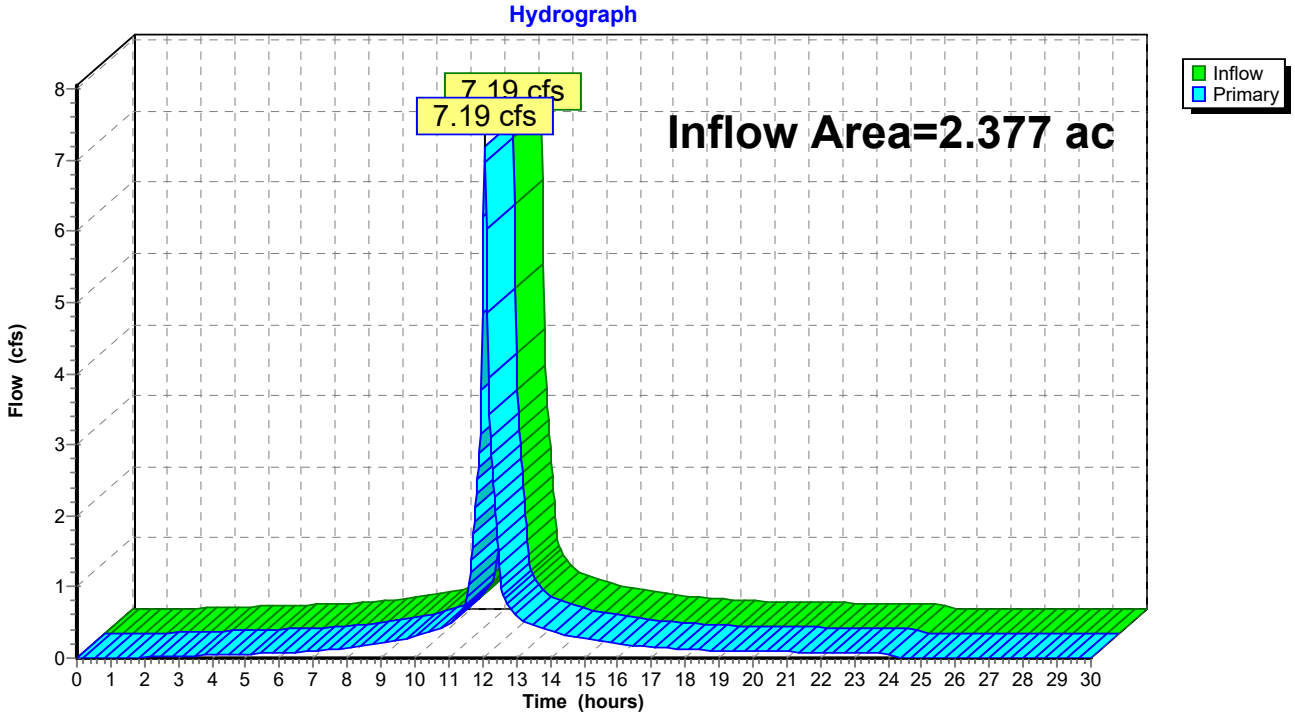


Summary for Link 1L: Fort Point Channel - Combined Flow

Inflow Area = 2.377 ac, 91.95% Impervious, Inflow Depth = 2.76" for 2-Year event
Inflow = 7.19 cfs @ 12.07 hrs, Volume= 0.547 af
Primary = 7.19 cfs @ 12.07 hrs, Volume= 0.547 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 1L: Fort Point Channel - Combined Flow



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 Runoff Area=7,385 sf 52.19% Impervious Runoff Depth=3.75"
Tc=5.0 min CN=89 Runoff=0.75 cfs 0.053 af

Subcatchment EX2: EX2 Runoff Area=12,001 sf 60.84% Impervious Runoff Depth=3.96"
Tc=5.0 min CN=91 Runoff=1.26 cfs 0.091 af

Subcatchment EX3: EX3 Runoff Area=84,161 sf 99.87% Impervious Runoff Depth=4.74"
Tc=5.0 min CN=98 Runoff=9.69 cfs 0.764 af

Link 1L: Fort Point Channel - Combined Flow Inflow=11.69 cfs 0.908 af
Primary=11.69 cfs 0.908 af

Total Runoff Area = 2.377 ac Runoff Volume = 0.908 af Average Runoff Depth = 4.58"
8.05% Pervious = 0.191 ac 91.95% Impervious = 2.186 ac

Summary for Subcatchment EX1: EX1

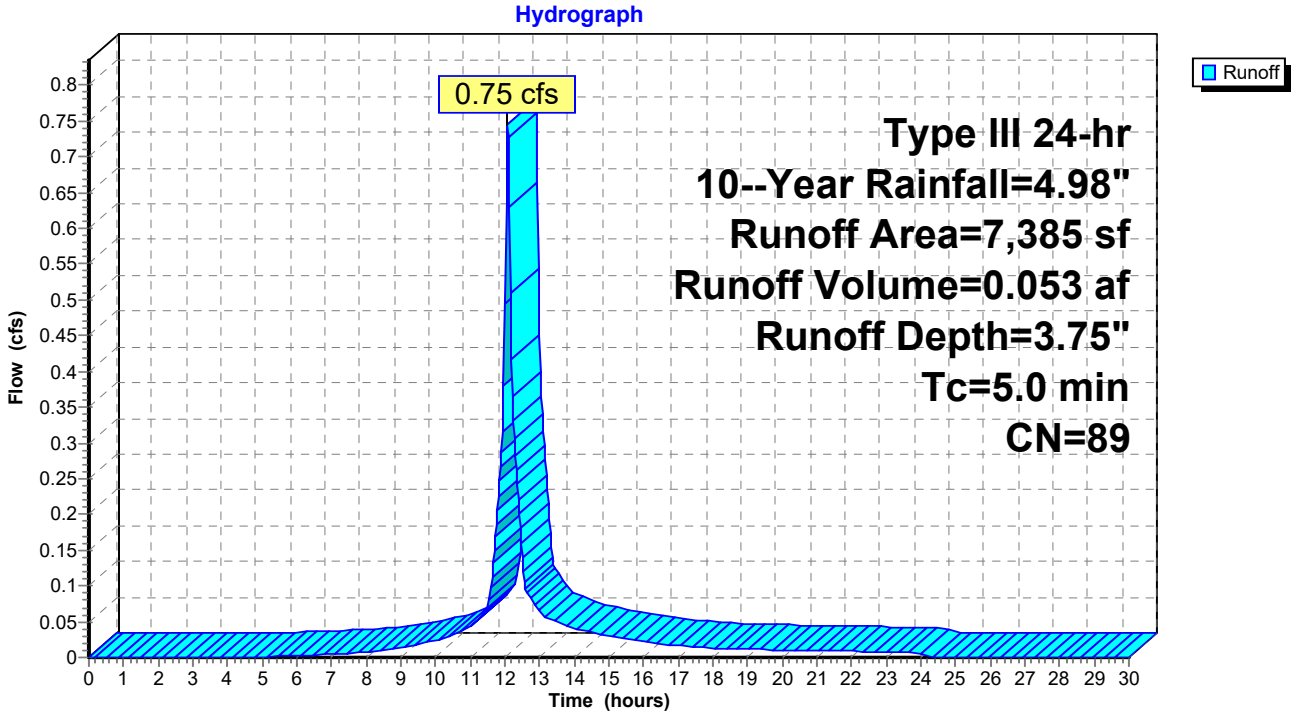
Runoff = 0.75 cfs @ 12.07 hrs, Volume= 0.053 af, Depth= 3.75"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
3,531	80	>75% Grass cover, Good, HSG D
3,854	98	Paved parking, HSG D
7,385	89	Weighted Average
3,531		47.81% Pervious Area
3,854		52.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX1: EX1



Summary for Subcatchment EX2: EX2

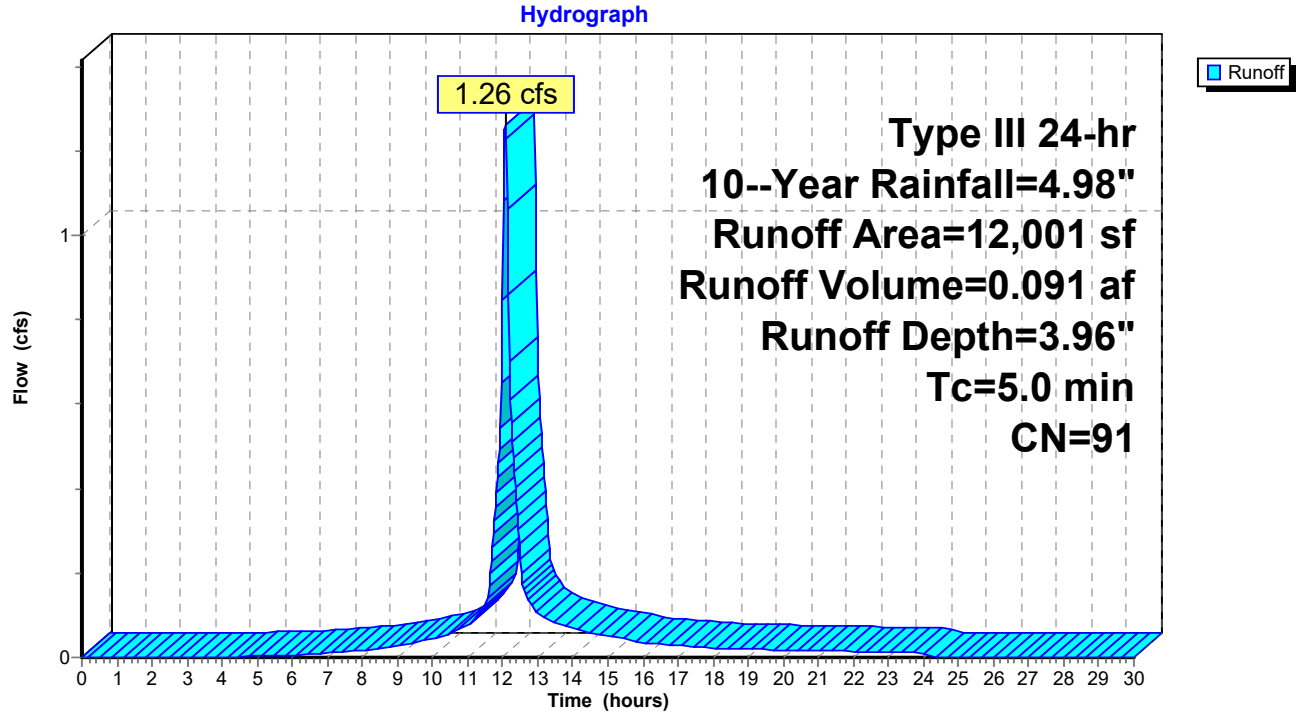
Runoff = 1.26 cfs @ 12.07 hrs, Volume= 0.091 af, Depth= 3.96"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
4,699	80	>75% Grass cover, Good, HSG D
7,302	98	Paved parking, HSG D
12,001	91	Weighted Average
4,699		39.16% Pervious Area
7,302		60.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX2: EX2



Summary for Subcatchment EX3: EX3

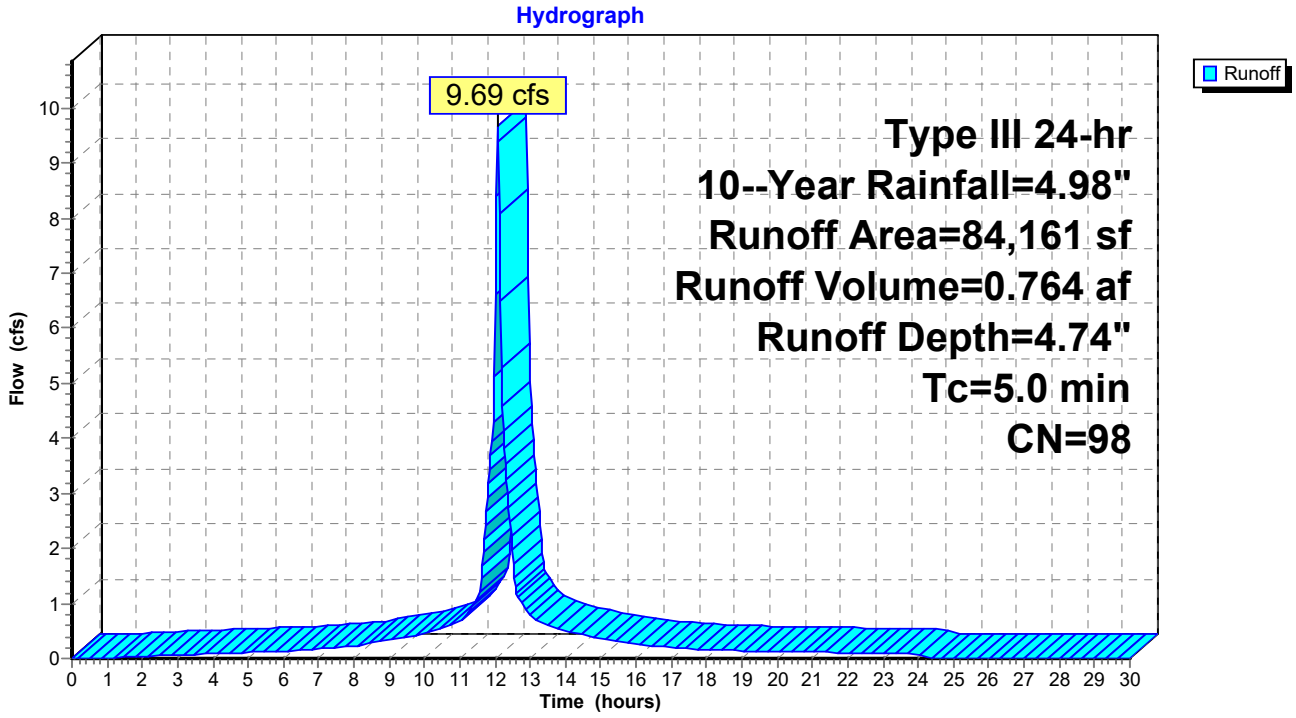
Runoff = 9.69 cfs @ 12.07 hrs, Volume= 0.764 af, Depth= 4.74"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
108	80	>75% Grass cover, Good, HSG D
83,290	98	Paved parking, HSG D
763	98	Unconnected roofs, HSG D
84,161	98	Weighted Average
108		0.13% Pervious Area
84,053		99.87% Impervious Area
763		0.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX3: EX3

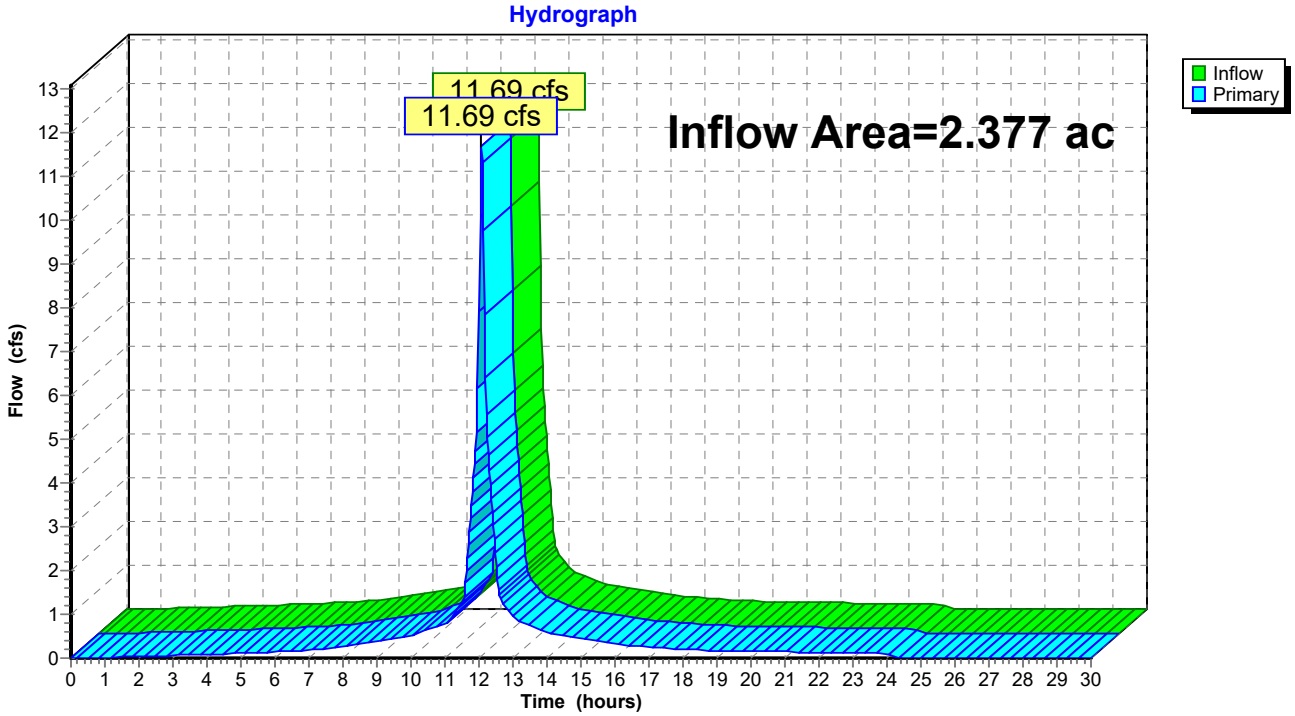


Summary for Link 1L: Fort Point Channel - Combined Flow

Inflow Area = 2.377 ac, 91.95% Impervious, Inflow Depth = 4.58" for 10--Year event
Inflow = 11.69 cfs @ 12.07 hrs, Volume= 0.908 af
Primary = 11.69 cfs @ 12.07 hrs, Volume= 0.908 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 1L: Fort Point Channel - Combined Flow



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 Runoff Area=7,385 sf 52.19% Impervious Runoff Depth=4.85"
Tc=5.0 min CN=89 Runoff=0.95 cfs 0.069 af

Subcatchment EX2: EX2 Runoff Area=12,001 sf 60.84% Impervious Runoff Depth=5.07"
Tc=5.0 min CN=91 Runoff=1.59 cfs 0.117 af

Subcatchment EX3: EX3 Runoff Area=84,161 sf 99.87% Impervious Runoff Depth=5.88"
Tc=5.0 min CN=98 Runoff=11.93 cfs 0.947 af

Link 1L: Fort Point Channel - Combined Flow Inflow=14.47 cfs 1.132 af
Primary=14.47 cfs 1.132 af

Total Runoff Area = 2.377 ac Runoff Volume = 1.132 af Average Runoff Depth = 5.71"
8.05% Pervious = 0.191 ac 91.95% Impervious = 2.186 ac

Summary for Subcatchment EX1: EX1

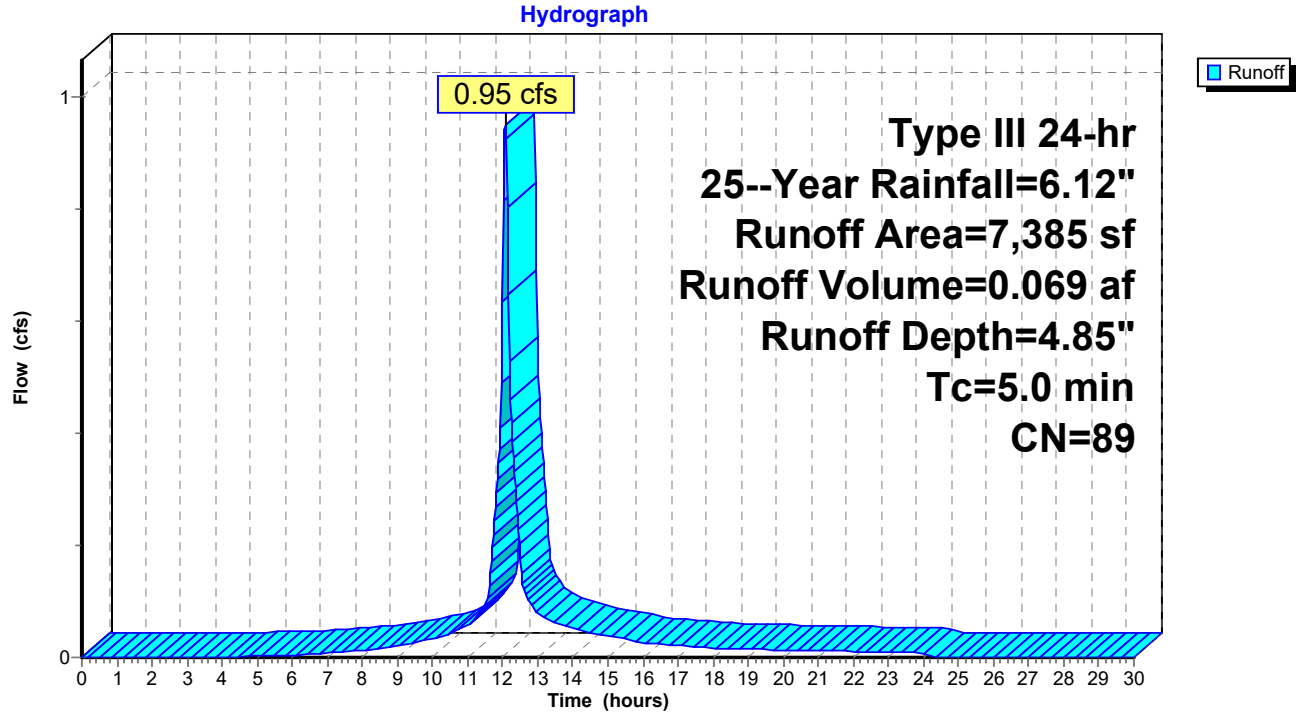
Runoff = 0.95 cfs @ 12.07 hrs, Volume= 0.069 af, Depth= 4.85"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
3,531	80	>75% Grass cover, Good, HSG D
3,854	98	Paved parking, HSG D
7,385	89	Weighted Average
3,531		47.81% Pervious Area
3,854		52.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX1: EX1



Summary for Subcatchment EX2: EX2

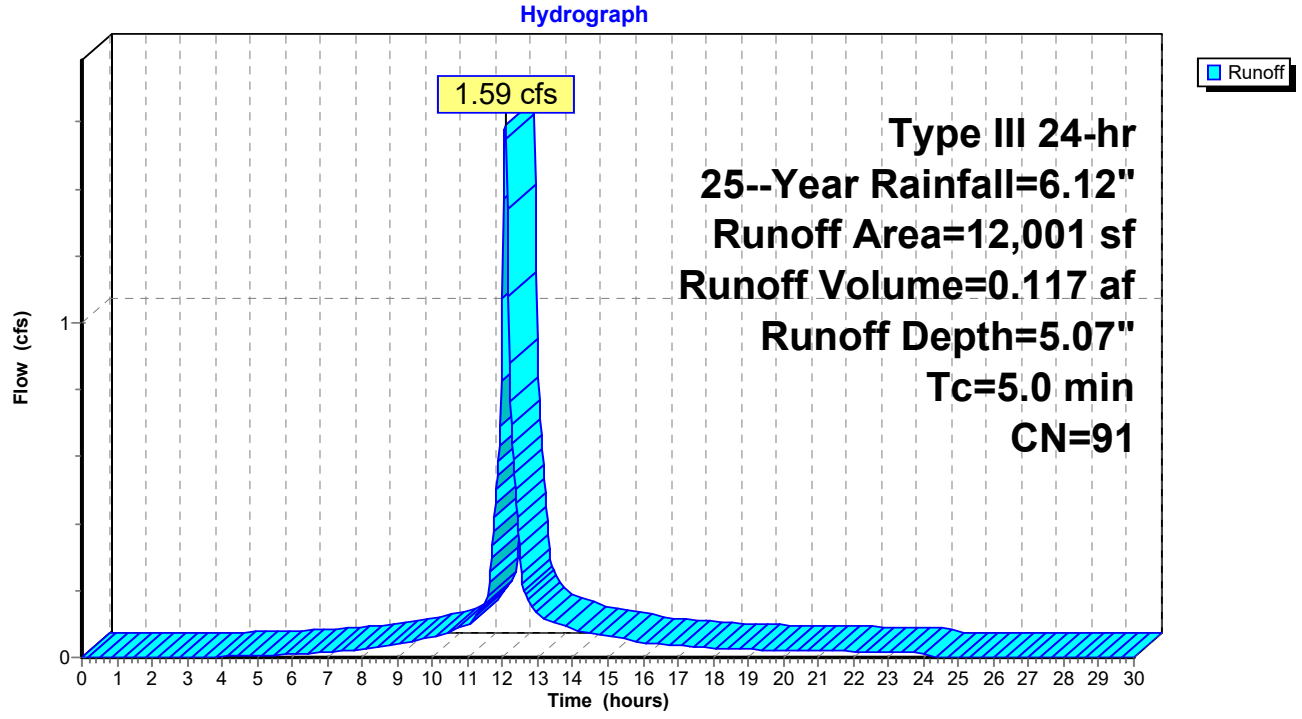
Runoff = 1.59 cfs @ 12.07 hrs, Volume= 0.117 af, Depth= 5.07"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
4,699	80	>75% Grass cover, Good, HSG D
7,302	98	Paved parking, HSG D
12,001	91	Weighted Average
4,699		39.16% Pervious Area
7,302		60.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX2: EX2



Summary for Subcatchment EX3: EX3

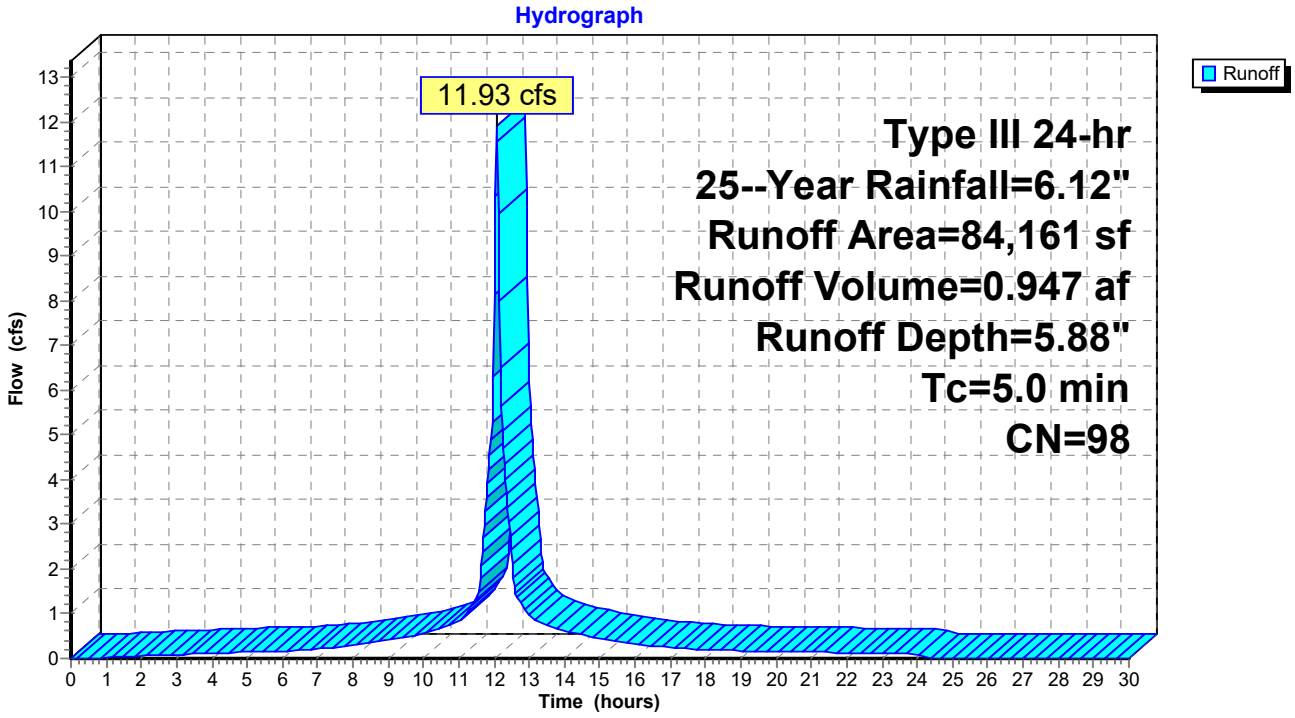
Runoff = 11.93 cfs @ 12.07 hrs, Volume= 0.947 af, Depth= 5.88"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
108	80	>75% Grass cover, Good, HSG D
83,290	98	Paved parking, HSG D
763	98	Unconnected roofs, HSG D
84,161	98	Weighted Average
108		0.13% Pervious Area
84,053		99.87% Impervious Area
763		0.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX3: EX3

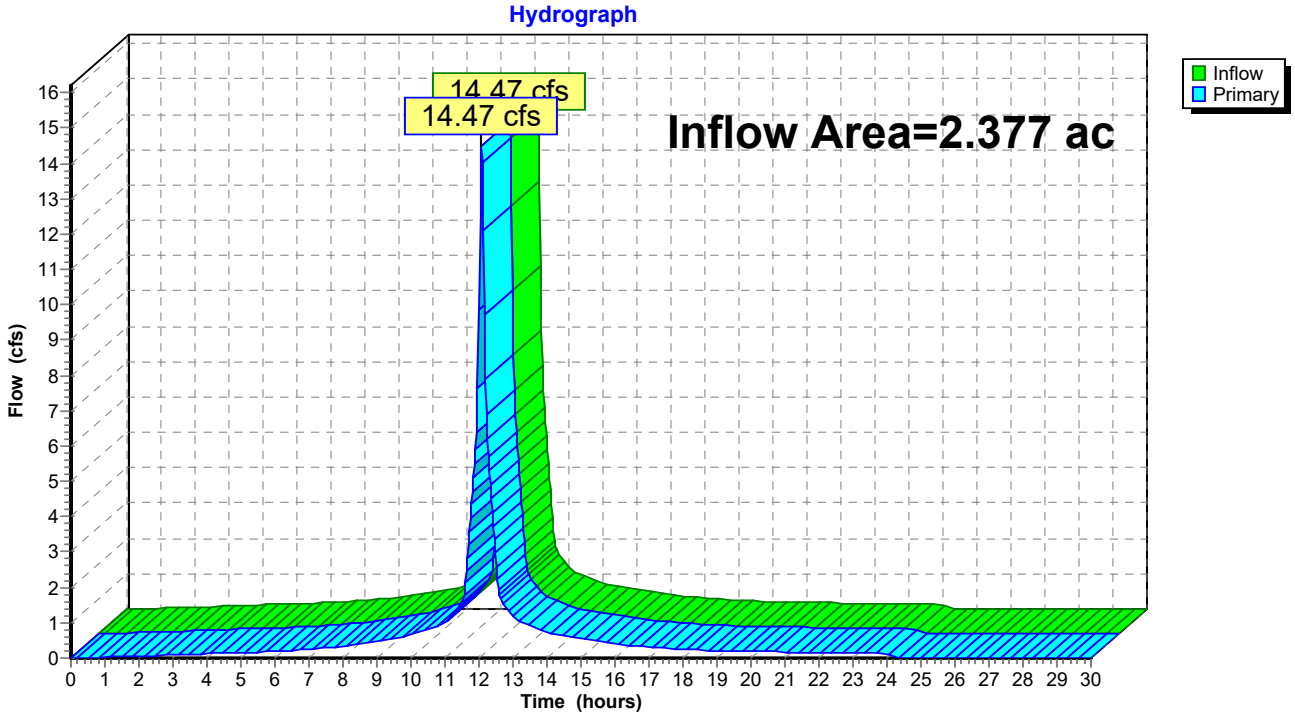


Summary for Link 1L: Fort Point Channel - Combined Flow

Inflow Area = 2.377 ac, 91.95% Impervious, Inflow Depth = 5.71" for 25--Year event
Inflow = 14.47 cfs @ 12.07 hrs, Volume= 1.132 af
Primary = 14.47 cfs @ 12.07 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 1L: Fort Point Channel - Combined Flow



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 Runoff Area=7,385 sf 52.19% Impervious Runoff Depth=6.57"
Tc=5.0 min CN=89 Runoff=1.27 cfs 0.093 af

Subcatchment EX2: EX2 Runoff Area=12,001 sf 60.84% Impervious Runoff Depth=6.81"
Tc=5.0 min CN=91 Runoff=2.10 cfs 0.156 af

Subcatchment EX3: EX3 Runoff Area=84,161 sf 99.87% Impervious Runoff Depth=7.64"
Tc=5.0 min CN=98 Runoff=15.38 cfs 1.230 af

Link 1L: Fort Point Channel - Combined Flow Inflow=18.75 cfs 1.479 af
Primary=18.75 cfs 1.479 af

Total Runoff Area = 2.377 ac Runoff Volume = 1.479 af Average Runoff Depth = 7.47"
8.05% Pervious = 0.191 ac 91.95% Impervious = 2.186 ac

Summary for Subcatchment EX1: EX1

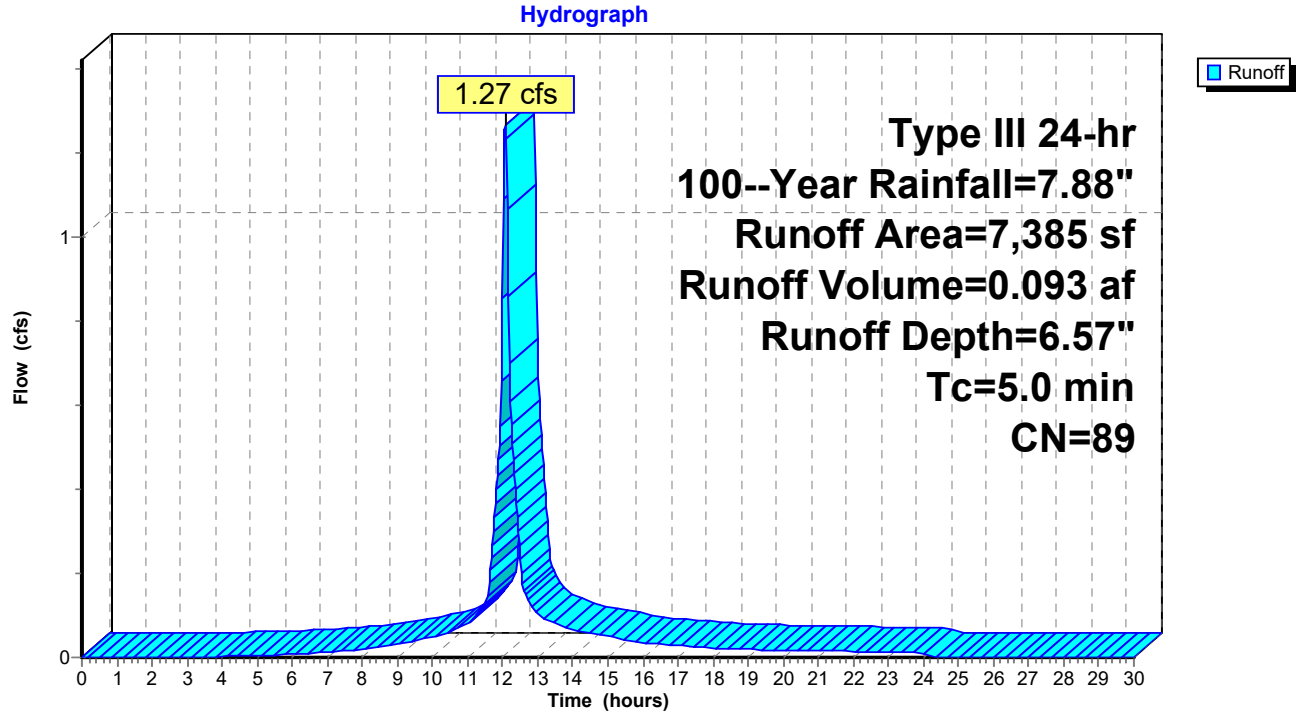
Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.093 af, Depth= 6.57"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
3,531	80	>75% Grass cover, Good, HSG D
3,854	98	Paved parking, HSG D
7,385	89	Weighted Average
3,531		47.81% Pervious Area
3,854		52.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX1: EX1



Summary for Subcatchment EX2: EX2

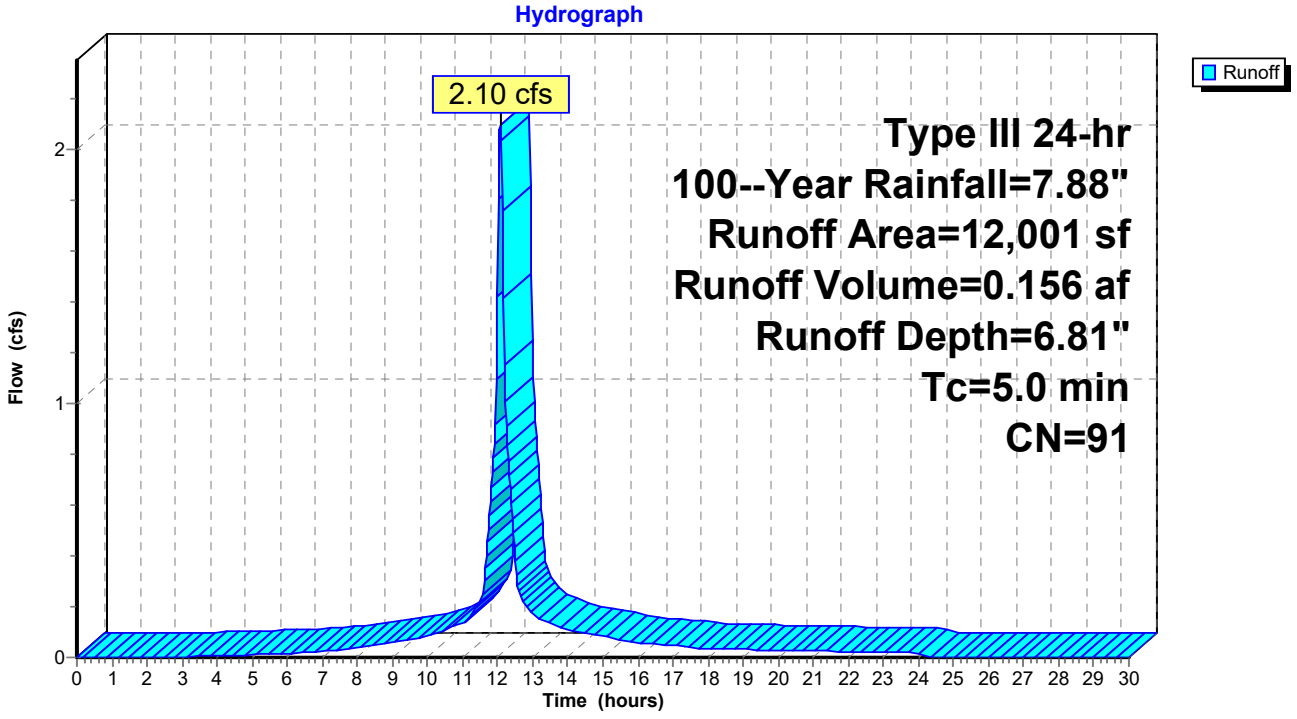
Runoff = 2.10 cfs @ 12.07 hrs, Volume= 0.156 af, Depth= 6.81"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
4,699	80	>75% Grass cover, Good, HSG D
7,302	98	Paved parking, HSG D
12,001	91	Weighted Average
4,699		39.16% Pervious Area
7,302		60.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX2: EX2



Summary for Subcatchment EX3: EX3

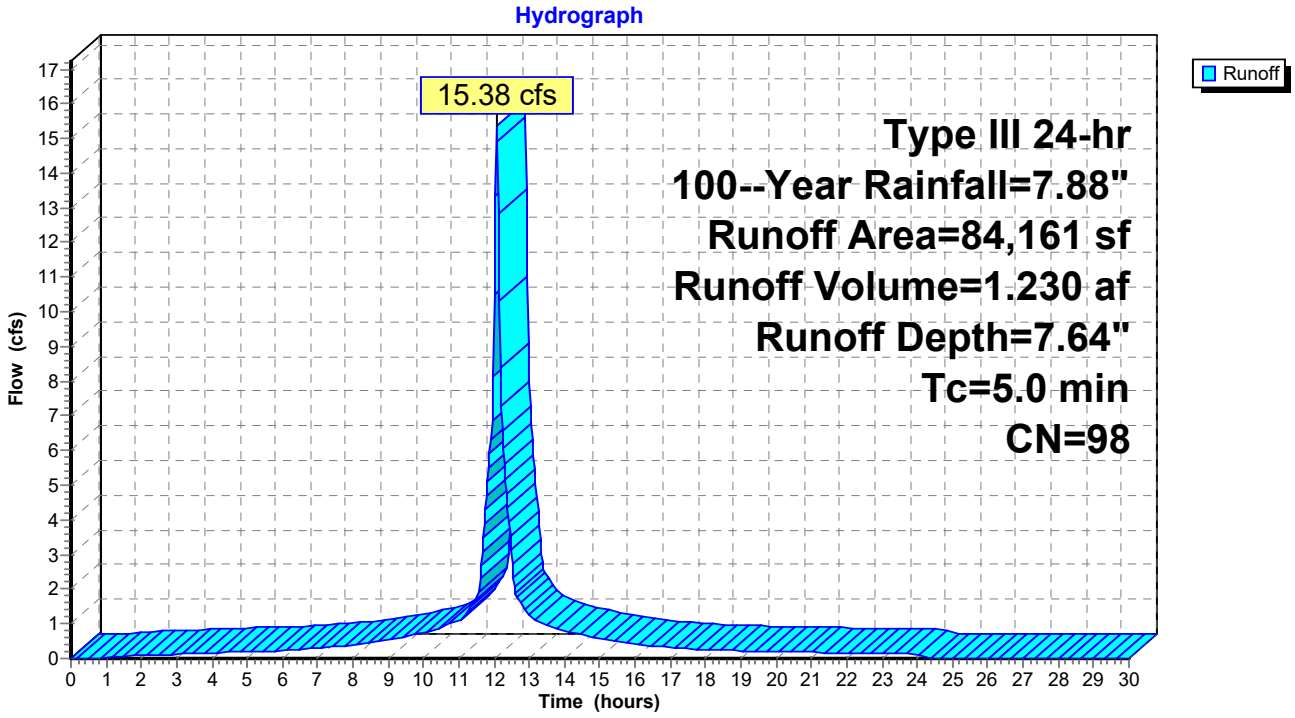
Runoff = 15.38 cfs @ 12.07 hrs, Volume= 1.230 af, Depth= 7.64"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
108	80	>75% Grass cover, Good, HSG D
83,290	98	Paved parking, HSG D
763	98	Unconnected roofs, HSG D
84,161	98	Weighted Average
108		0.13% Pervious Area
84,053		99.87% Impervious Area
763		0.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX3: EX3

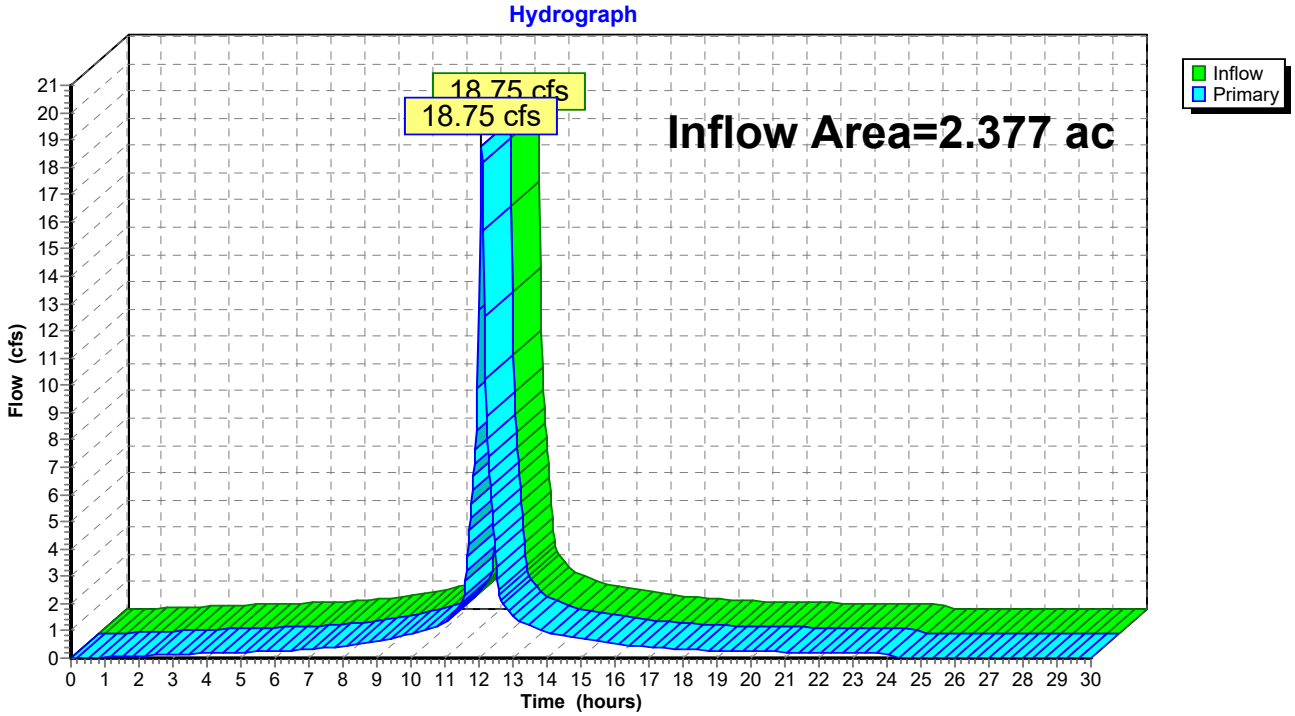


Summary for Link 1L: Fort Point Channel - Combined Flow

Inflow Area = 2.377 ac, 91.95% Impervious, Inflow Depth = 7.47" for 100--Year event
Inflow = 18.75 cfs @ 12.07 hrs, Volume= 1.479 af
Primary = 18.75 cfs @ 12.07 hrs, Volume= 1.479 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 1L: Fort Point Channel - Combined Flow



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 Runoff Area=7,385 sf 52.19% Impervious Runoff Depth=9.55"
Tc=5.0 min CN=89 Runoff=1.80 cfs 0.135 af

Subcatchment EX2: EX2 Runoff Area=12,001 sf 60.84% Impervious Runoff Depth=9.80"
Tc=5.0 min CN=91 Runoff=2.96 cfs 0.225 af

Subcatchment EX3: EX3 Runoff Area=84,161 sf 99.87% Impervious Runoff Depth=10.66"
Tc=5.0 min CN=98 Runoff=21.30 cfs 1.716 af

Link 1L: Fort Point Channel - Combined Flow Inflow=26.07 cfs 2.076 af
Primary=26.07 cfs 2.076 af

Total Runoff Area = 2.377 ac Runoff Volume = 2.076 af Average Runoff Depth = 10.48"
8.05% Pervious = 0.191 ac 91.95% Impervious = 2.186 ac

Summary for Subcatchment EX1: EX1

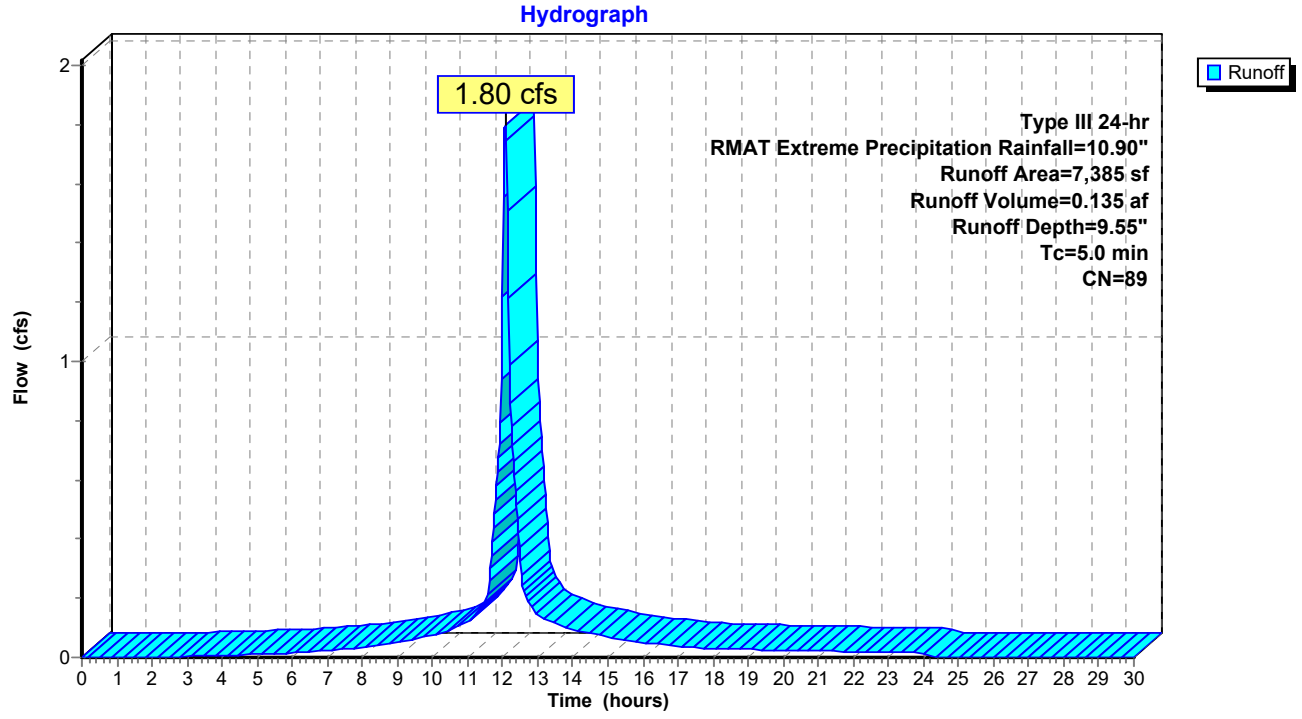
Runoff = 1.80 cfs @ 12.07 hrs, Volume= 0.135 af, Depth= 9.55"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
3,531	80	>75% Grass cover, Good, HSG D
3,854	98	Paved parking, HSG D
7,385	89	Weighted Average
3,531		47.81% Pervious Area
3,854		52.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX1: EX1



Summary for Subcatchment EX2: EX2

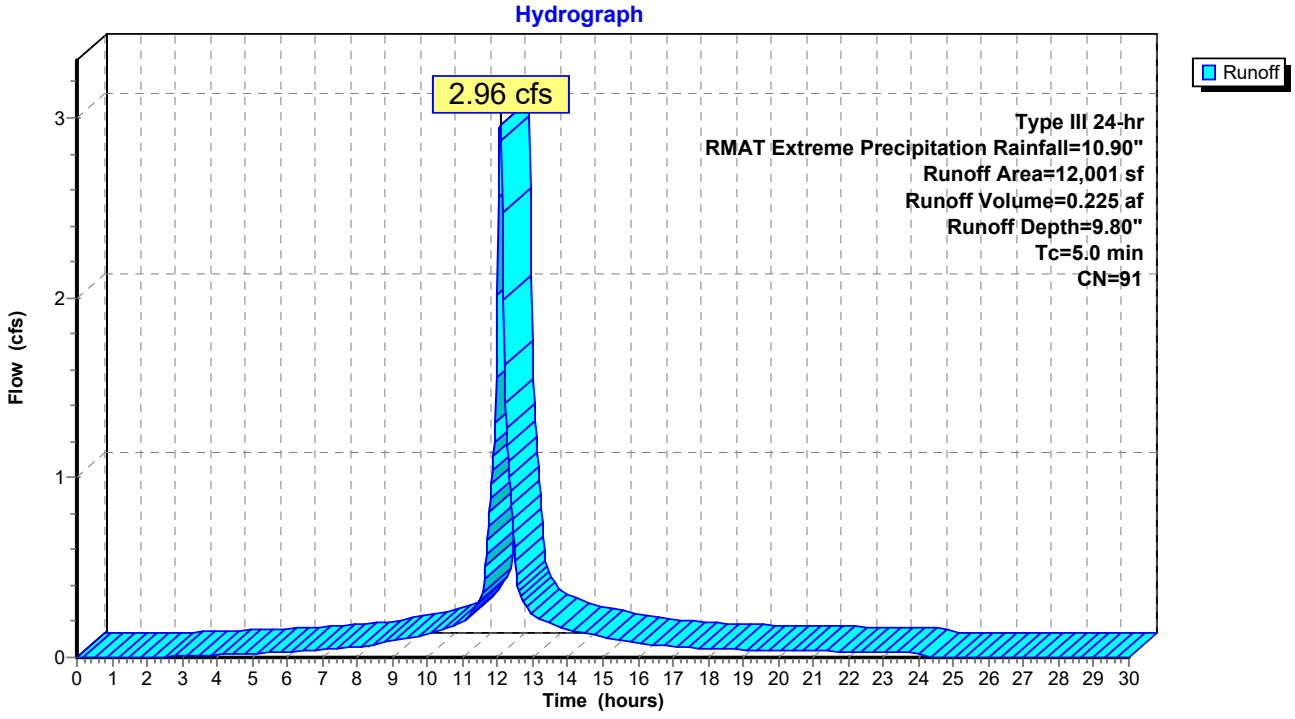
Runoff = 2.96 cfs @ 12.07 hrs, Volume= 0.225 af, Depth= 9.80"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
4,699	80	>75% Grass cover, Good, HSG D
7,302	98	Paved parking, HSG D
12,001	91	Weighted Average
4,699		39.16% Pervious Area
7,302		60.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX2: EX2



Summary for Subcatchment EX3: EX3

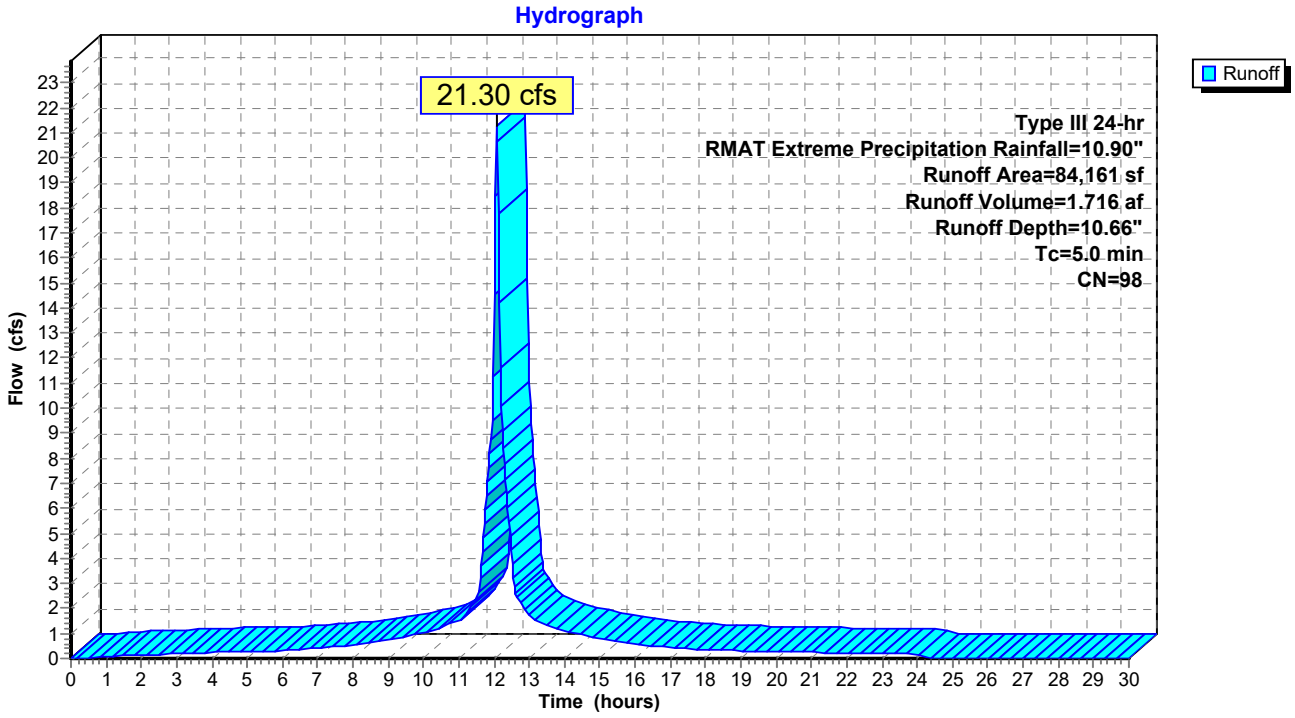
Runoff = 21.30 cfs @ 12.07 hrs, Volume= 1.716 af, Depth=10.66"
Routed to Link 1L : Fort Point Channel - Combined Flow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
108	80	>75% Grass cover, Good, HSG D
83,290	98	Paved parking, HSG D
763	98	Unconnected roofs, HSG D
84,161	98	Weighted Average
108		0.13% Pervious Area
84,053		99.87% Impervious Area
763		0.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment EX3: EX3

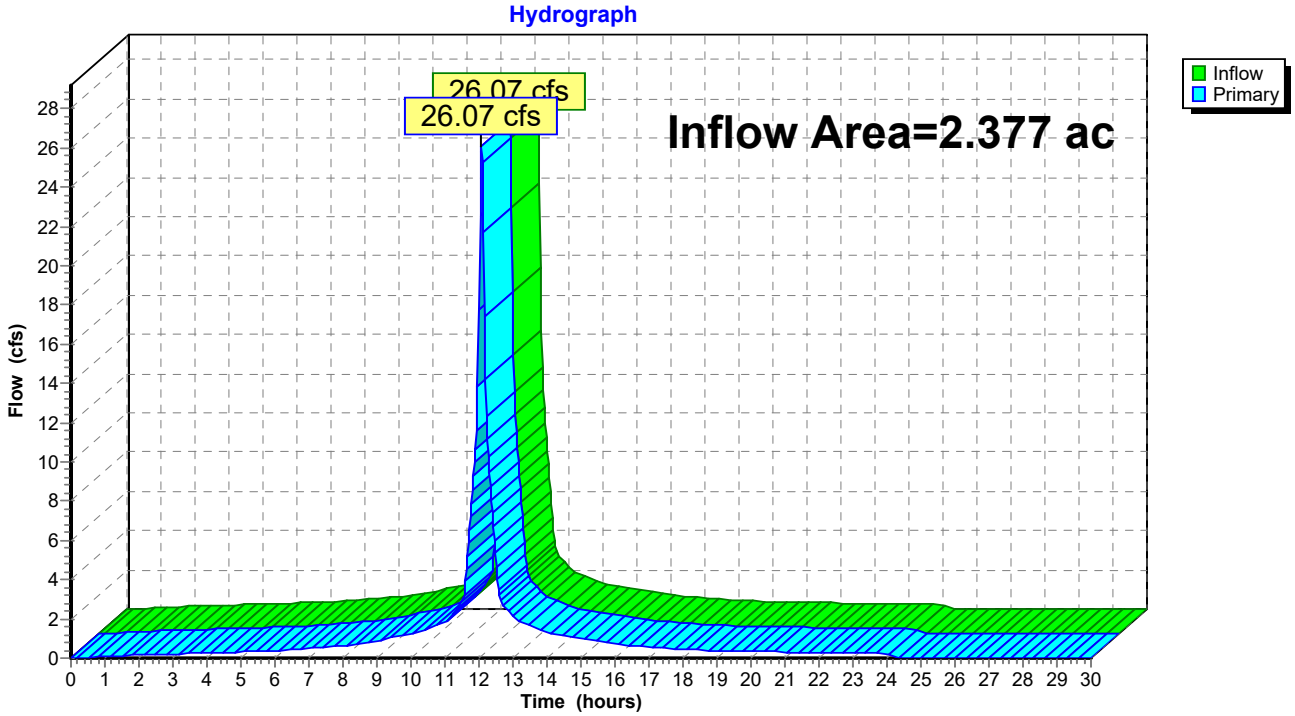


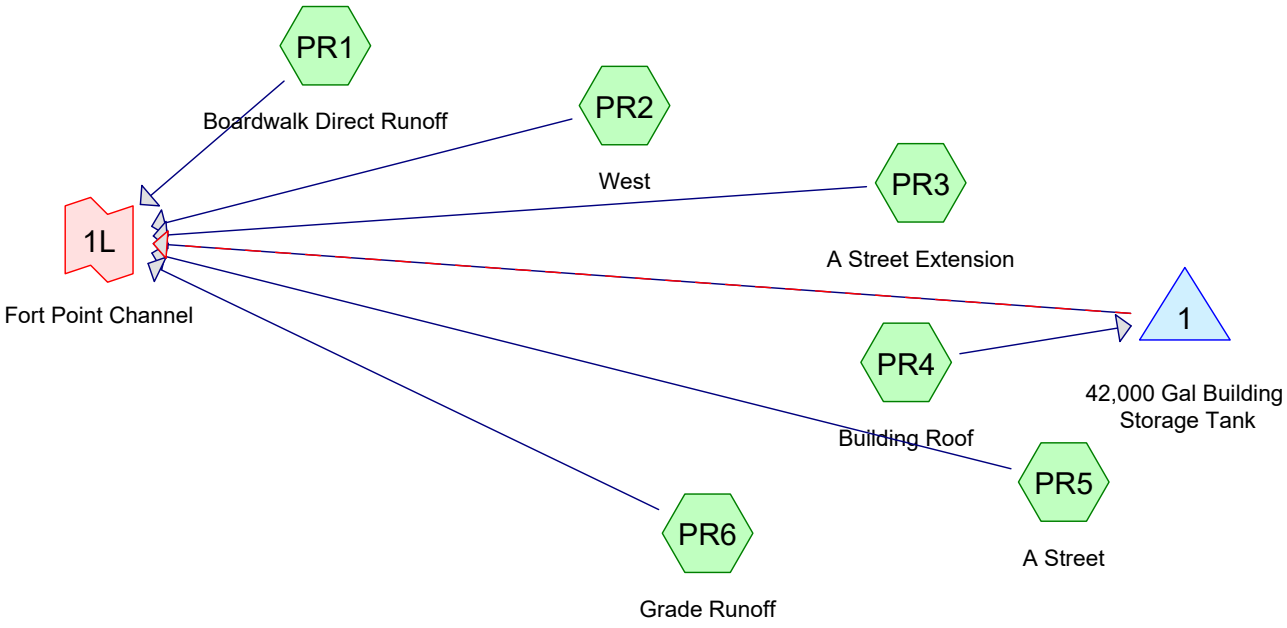
Summary for Link 1L: Fort Point Channel - Combined Flow

Inflow Area = 2.377 ac, 91.95% Impervious, Inflow Depth = 10.48" for RMAT Extreme Precipitation event
Inflow = 26.07 cfs @ 12.07 hrs, Volume= 2.076 af
Primary = 26.07 cfs @ 12.07 hrs, Volume= 2.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 1L: Fort Point Channel - Combined Flow





Subcat Reach Pond Link

Routing Diagram for 15921.00-PR
Prepared by VHB, Inc, Printed 1/9/2024

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.14	2
2	10--Year	Type III 24-hr		Default	24.00	1	4.98	2
3	25--Year	Type III 24-hr		Default	24.00	1	6.12	2
4	100--Year	Type III 24-hr		Default	24.00	1	7.88	2
5	RMAT Extreme Precipitation	Type III 24-hr		Default	24.00	1	10.90	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.487	80	>75% Grass cover, Good, HSG D (PR2, PR3, PR5, PR6)
0.998	98	Paved parking, HSG D (PR1, PR2, PR3, PR5)
0.892	98	Roofs, HSG D (PR3, PR4)
2.377	**94**	**TOTAL AREA**

Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR1: Boardwalk Direct Runoff Area=4,013 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.29 cfs 0.022 af

Subcatchment PR2: West Runoff Area=21,646 sf 71.05% Impervious Runoff Depth=2.39"
Tc=5.0 min CN=93 Runoff=1.39 cfs 0.099 af

Subcatchment PR3: A Street Extension Runoff Area=28,675 sf 74.86% Impervious Runoff Depth=2.39"
Tc=5.0 min CN=93 Runoff=1.85 cfs 0.131 af

Subcatchment PR4: Building Roof Runoff Area=38,217 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=2.76 cfs 0.213 af

Subcatchment PR5: A Street Runoff Area=3,560 sf 91.57% Impervious Runoff Depth=2.69"
Tc=5.0 min CN=96 Runoff=0.25 cfs 0.018 af

Subcatchment PR6: Grade Runoff Runoff Area=7,436 sf 0.00% Impervious Runoff Depth=1.36"
Tc=5.0 min CN=80 Runoff=0.28 cfs 0.019 af

Pond 1: 42,000 Gal Building Storage Tank Peak Elev=3.80' Storage=3,370 cf Inflow=2.76 cfs 0.213 af
Primary=0.78 cfs 0.188 af Secondary=0.00 cfs 0.000 af Outflow=0.78 cfs 0.188 af

Link 1L: Fort Point Channel Inflow=4.41 cfs 0.478 af
Primary=4.41 cfs 0.478 af

Total Runoff Area = 2.377 ac Runoff Volume = 0.502 af Average Runoff Depth = 2.54"
20.49% Pervious = 0.487 ac 79.51% Impervious = 1.890 ac

Summary for Subcatchment PR1: Boardwalk Direct Runoff

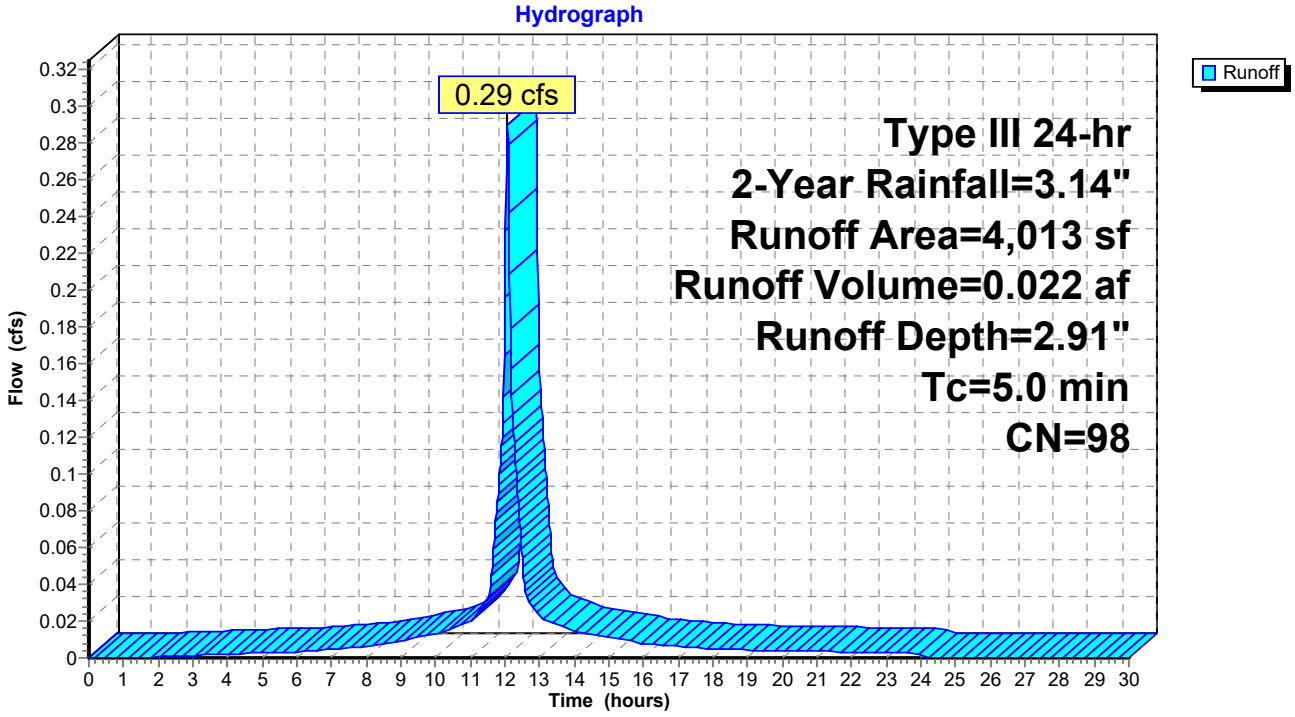
Runoff = 0.29 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.91"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
4,013	98	Paved parking, HSG D
4,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR1: Boardwalk Direct Runoff



Summary for Subcatchment PR2: West

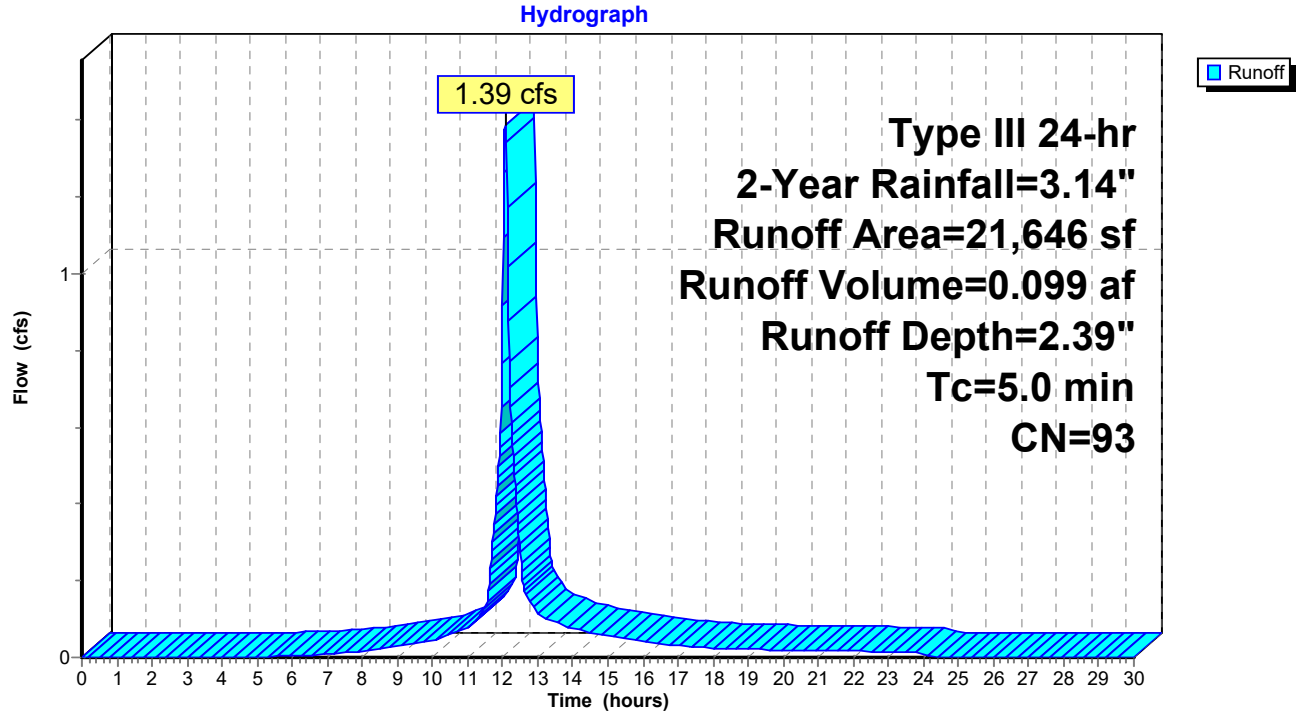
Runoff = 1.39 cfs @ 12.07 hrs, Volume= 0.099 af, Depth= 2.39"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
6,267	80	>75% Grass cover, Good, HSG D
15,379	98	Paved parking, HSG D
21,646	93	Weighted Average
6,267		28.95% Pervious Area
15,379		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR2: West



Summary for Subcatchment PR3: A Street Extension

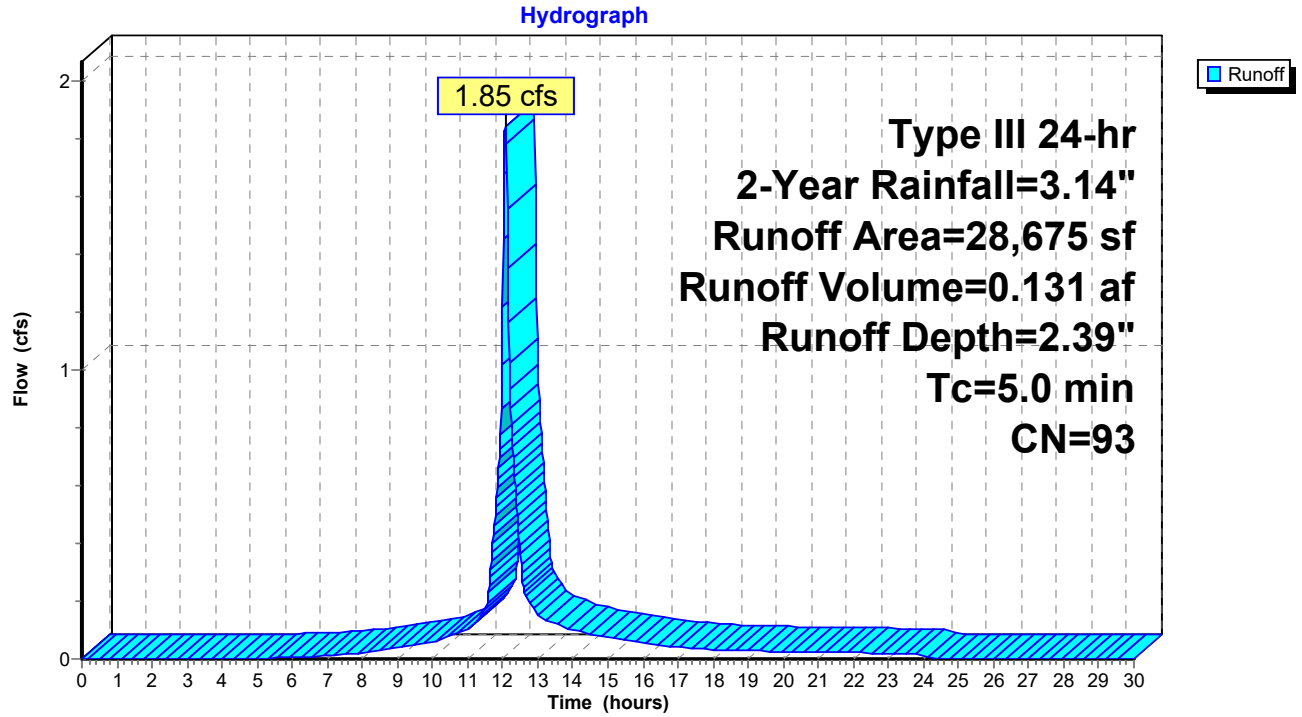
Runoff = 1.85 cfs @ 12.07 hrs, Volume= 0.131 af, Depth= 2.39"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
7,209	80	>75% Grass cover, Good, HSG D
20,831	98	Paved parking, HSG D
635	98	Roofs, HSG D
28,675	93	Weighted Average
7,209		25.14% Pervious Area
21,466		74.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 5**

Subcatchment PR3: A Street Extension



Summary for Subcatchment PR4: Building Roof

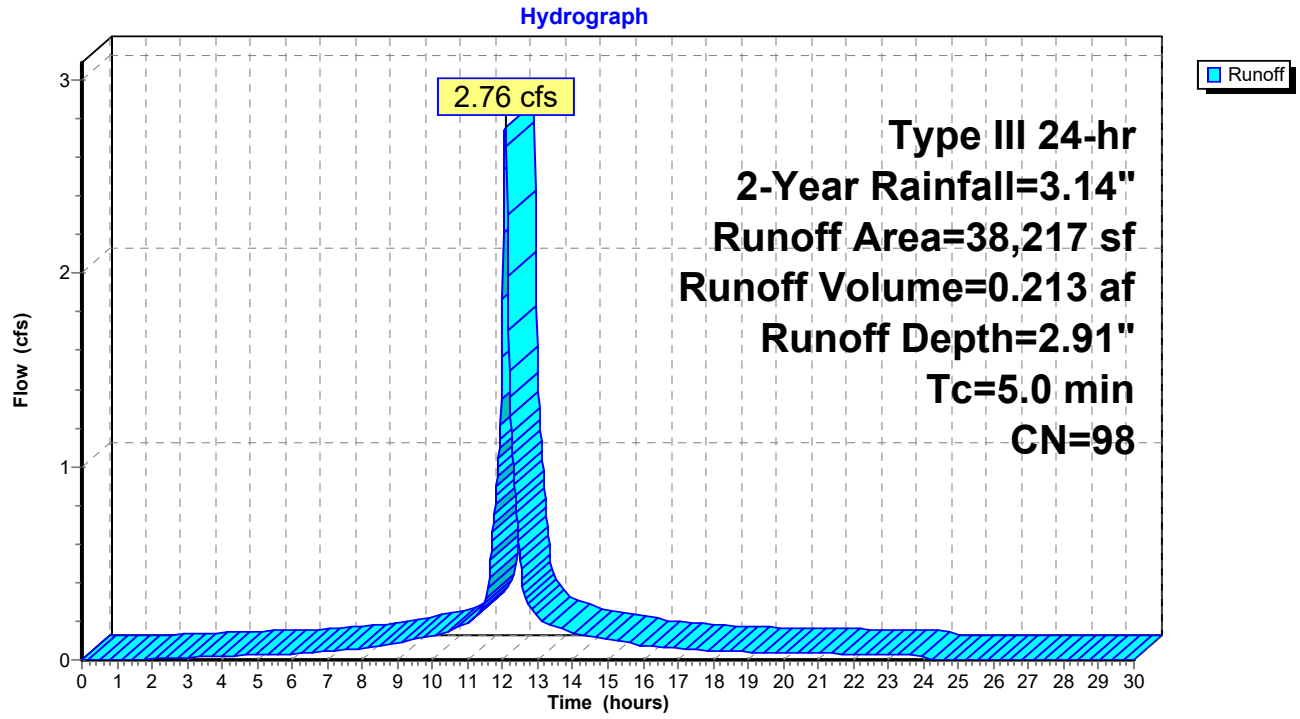
Runoff = 2.76 cfs @ 12.07 hrs, Volume= 0.213 af, Depth= 2.91"
Routed to Pond 1 : 42,000 Gal Building Storage Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
38,217	98	Roofs, HSG D
38,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR4: Building Roof



Summary for Subcatchment PR5: A Street

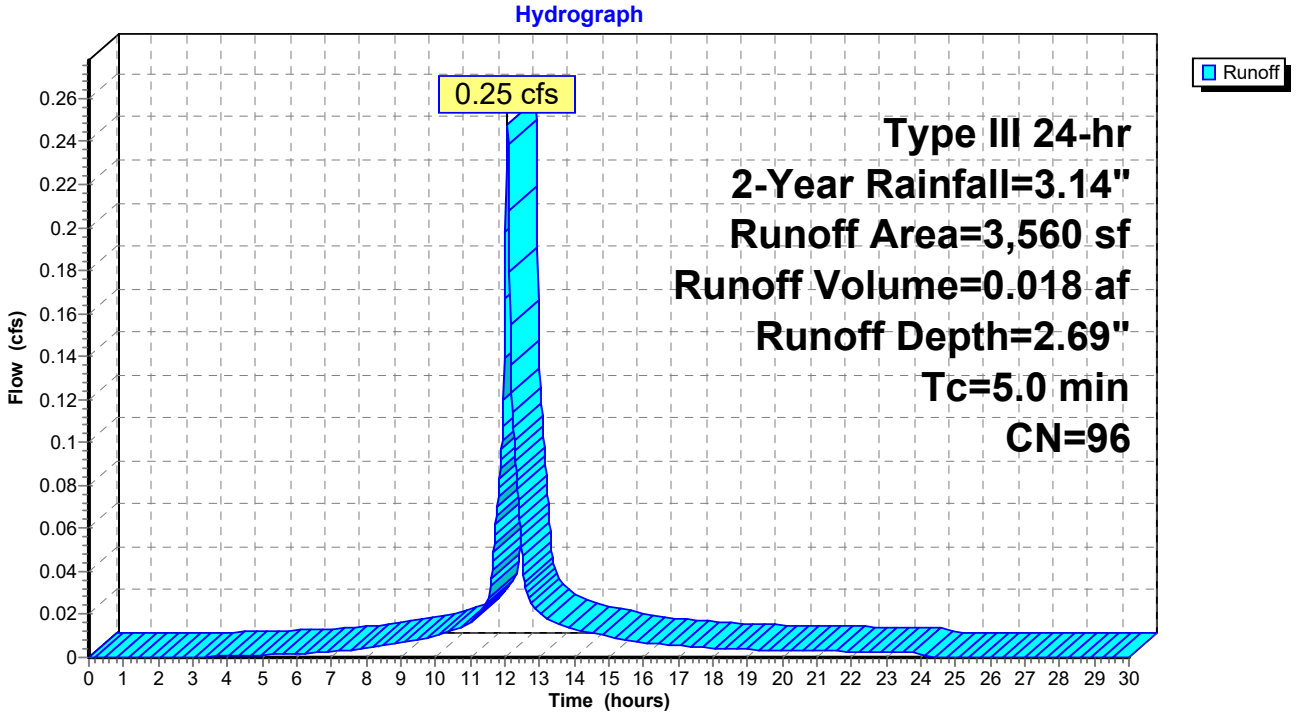
Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.018 af, Depth= 2.69"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG D
300	80	>75% Grass cover, Good, HSG D
3,560	96	Weighted Average
300		8.43% Pervious Area
3,260		91.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR5: A Street



Summary for Subcatchment PR6: Grade Runoff

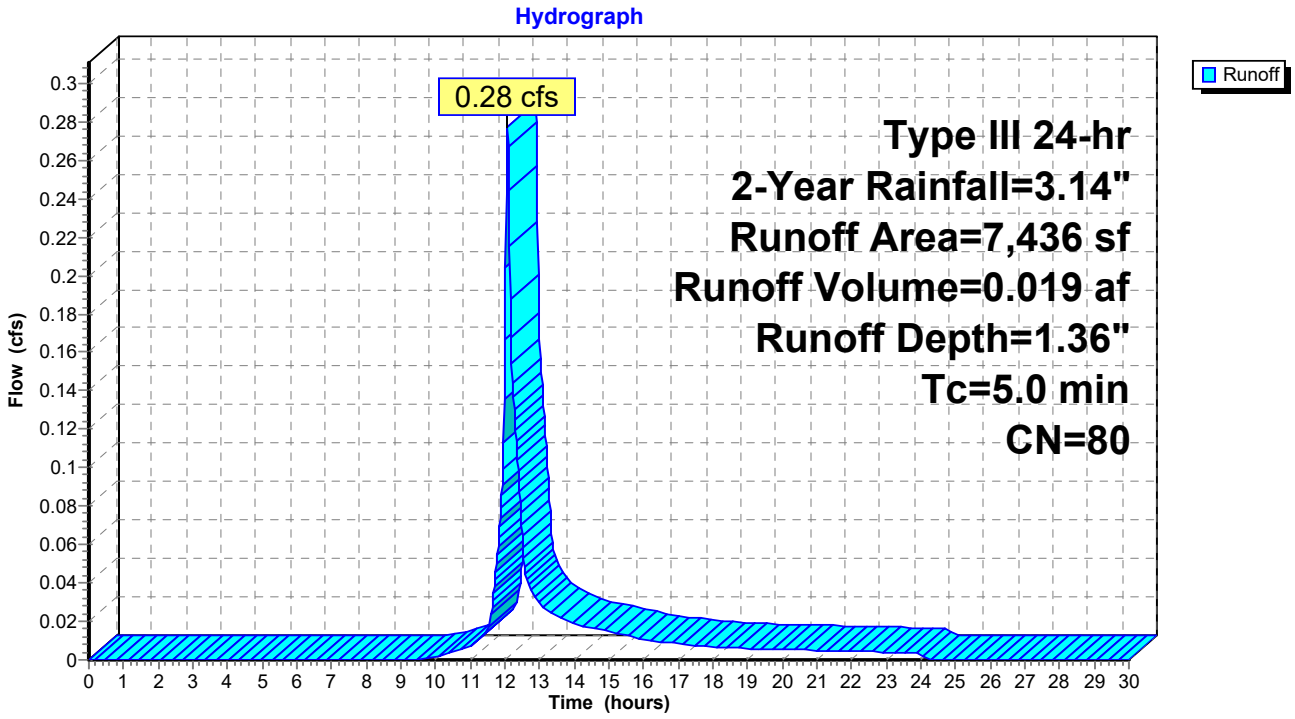
Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 1.36"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.14"

Area (sf)	CN	Description
7,436	80	>75% Grass cover, Good, HSG D
7,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR6: Grade Runoff



Summary for Pond 1: 42,000 Gal Building Storage Tank

Inflow Area = 0.877 ac,100.00% Impervious, Inflow Depth = 2.91" for 2-Year event
Inflow = 2.76 cfs @ 12.07 hrs, Volume= 0.213 af
Outflow = 0.78 cfs @ 12.39 hrs, Volume= 0.188 af, Atten= 72%, Lag= 19.2 min
Primary = 0.78 cfs @ 12.39 hrs, Volume= 0.188 af
Routed to Link 1L : Fort Point Channel
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : Fort Point Channel

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 3.80' @ 12.39 hrs Surf.Area= 702 sf Storage= 3,370 cf

Plug-Flow detention time= 129.3 min calculated for 0.188 af (88% of inflow)
Center-of-Mass det. time= 75.3 min (831.2 - 755.9)

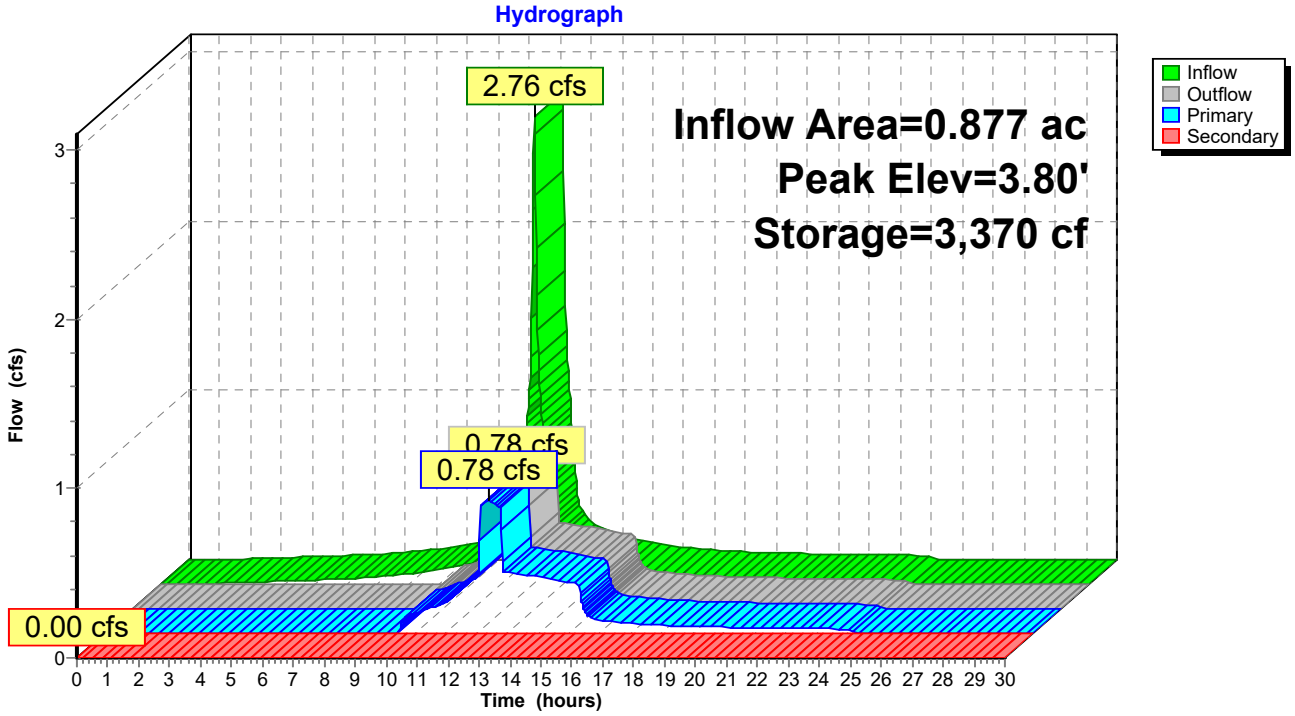
Volume	Invert	Avail.Storage	Storage Description
#1	-1.00'	5,616 cf	**26.00'W x 27.00'L x 8.00'H 42000 gal Storage Tank**

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	0.50'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18
#3	Primary	3.00'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18

Primary OutFlow Max=0.78 cfs @ 12.39 hrs HW=3.80' (Free Discharge)
└**2=Zoeller 611 Pump** (Pump Controls 0.39 cfs)
└**3=Zoeller 611 Pump** (Pump Controls 0.39 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=-1.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 1: 42,000 Gal Building Storage Tank

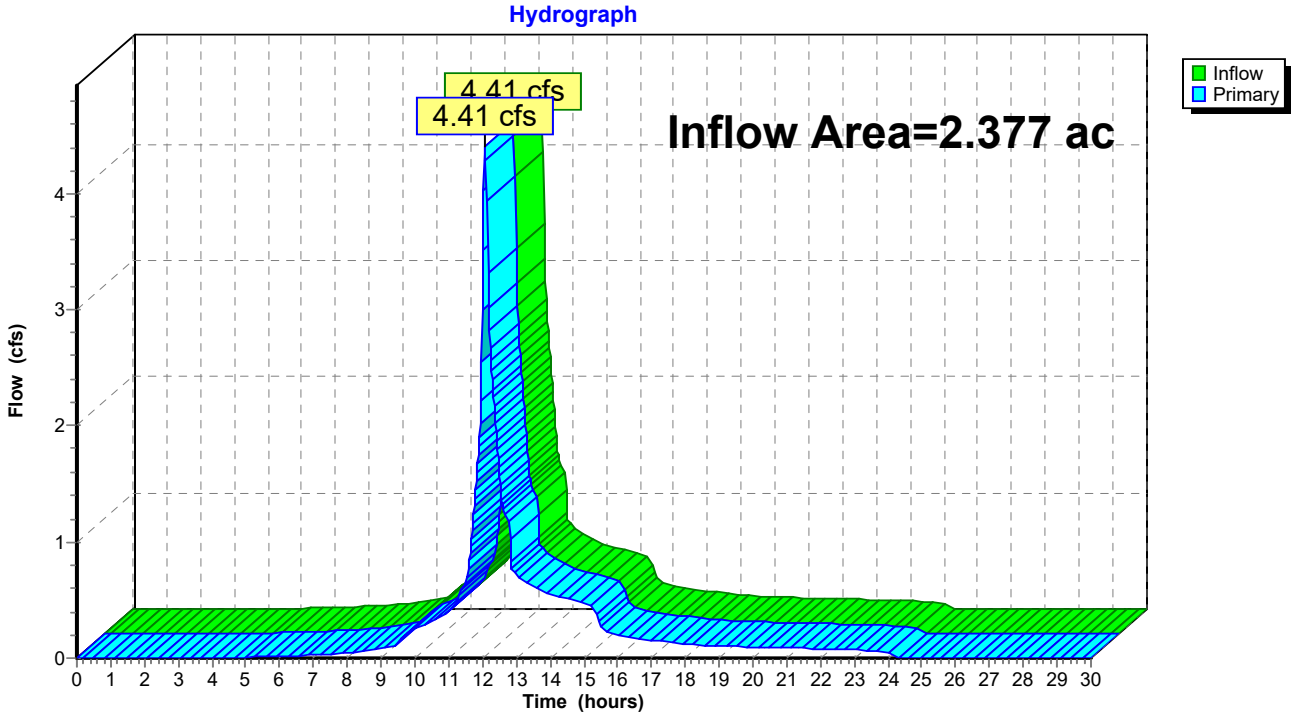


Summary for Link 1L: Fort Point Channel

Inflow Area = 2.377 ac, 79.51% Impervious, Inflow Depth = 2.41" for 2-Year event
Inflow = 4.41 cfs @ 12.07 hrs, Volume= 0.478 af
Primary = 4.41 cfs @ 12.07 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs

Link 1L: Fort Point Channel



Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR1: Boardwalk Direct Runoff Area=4,013 sf 100.00% Impervious Runoff Depth=4.74"
Tc=5.0 min CN=98 Runoff=0.46 cfs 0.036 af

Subcatchment PR2: West Runoff Area=21,646 sf 71.05% Impervious Runoff Depth=4.18"
Tc=5.0 min CN=93 Runoff=2.36 cfs 0.173 af

Subcatchment PR3: A Street Extension Runoff Area=28,675 sf 74.86% Impervious Runoff Depth=4.18"
Tc=5.0 min CN=93 Runoff=3.13 cfs 0.229 af

Subcatchment PR4: Building Roof Runoff Area=38,217 sf 100.00% Impervious Runoff Depth=4.74"
Tc=5.0 min CN=98 Runoff=4.41 cfs 0.347 af

Subcatchment PR5: A Street Runoff Area=3,560 sf 91.57% Impervious Runoff Depth=4.51"
Tc=5.0 min CN=96 Runoff=0.40 cfs 0.031 af

Subcatchment PR6: Grade Runoff Runoff Area=7,436 sf 0.00% Impervious Runoff Depth=2.88"
Tc=5.0 min CN=80 Runoff=0.59 cfs 0.041 af

Pond 1: 42,000 Gal Building Storage Tank Peak Elev=5.56' Storage=4,602 cf Inflow=4.41 cfs 0.347 af
Primary=0.88 cfs 0.296 af Secondary=1.35 cfs 0.027 af Outflow=2.23 cfs 0.323 af

Link 1L: Fort Point Channel Inflow=7.77 cfs 0.833 af
Primary=7.77 cfs 0.833 af

Total Runoff Area = 2.377 ac Runoff Volume = 0.857 af Average Runoff Depth = 4.33"
20.49% Pervious = 0.487 ac 79.51% Impervious = 1.890 ac

Summary for Subcatchment PR1: Boardwalk Direct Runoff

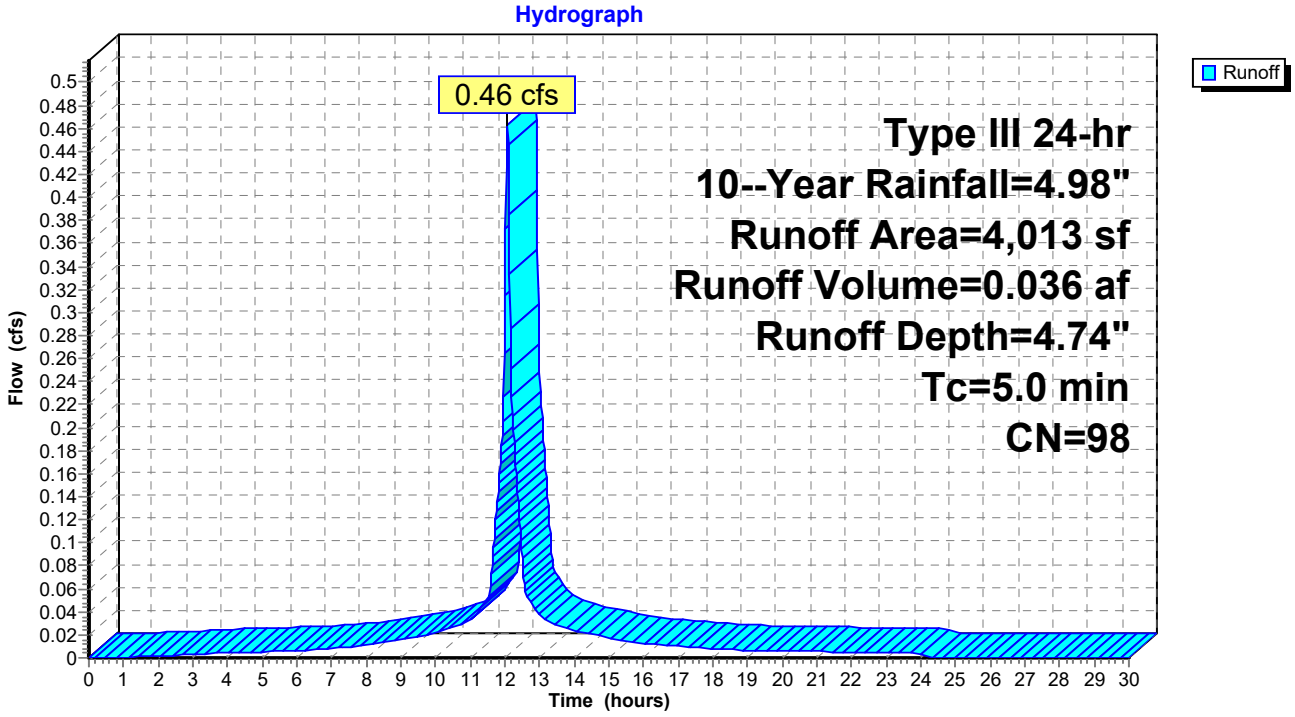
Runoff = 0.46 cfs @ 12.07 hrs, Volume= 0.036 af, Depth= 4.74"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
4,013	98	Paved parking, HSG D
4,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR1: Boardwalk Direct Runoff



Summary for Subcatchment PR2: West

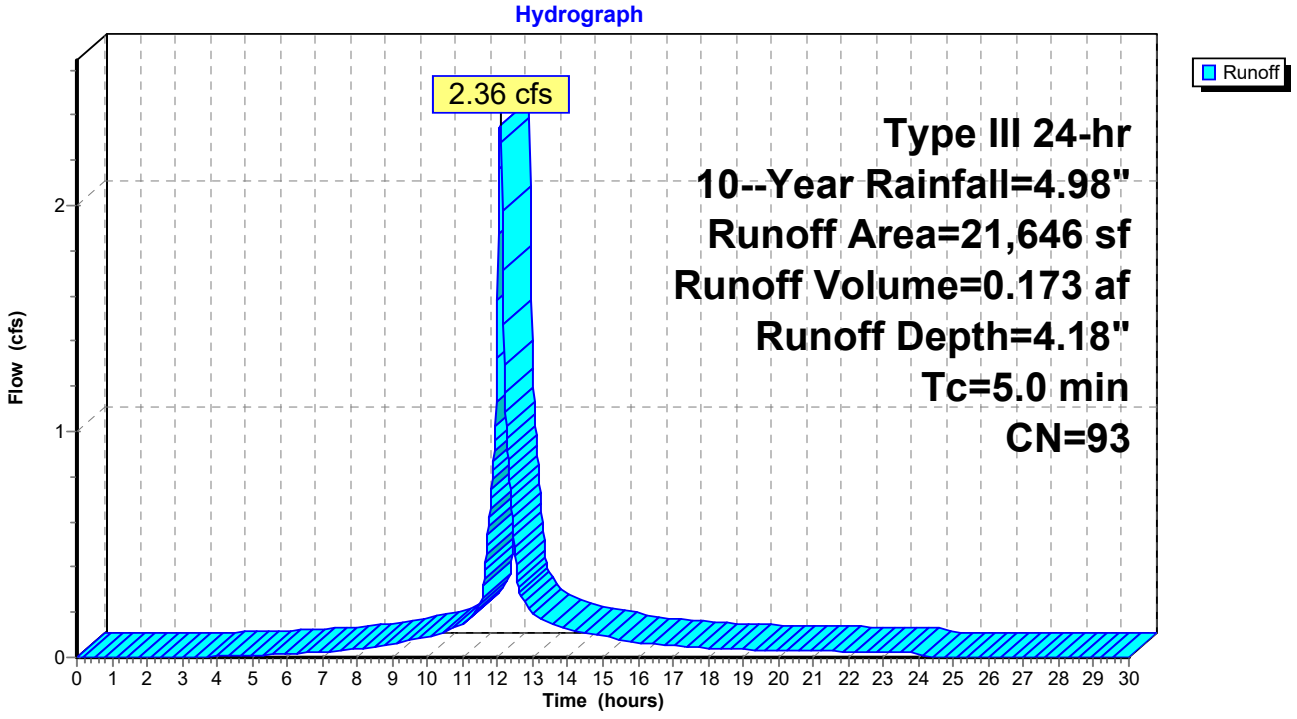
Runoff = 2.36 cfs @ 12.07 hrs, Volume= 0.173 af, Depth= 4.18"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
6,267	80	>75% Grass cover, Good, HSG D
15,379	98	Paved parking, HSG D
21,646	93	Weighted Average
6,267		28.95% Pervious Area
15,379		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR2: West



Summary for Subcatchment PR3: A Street Extension

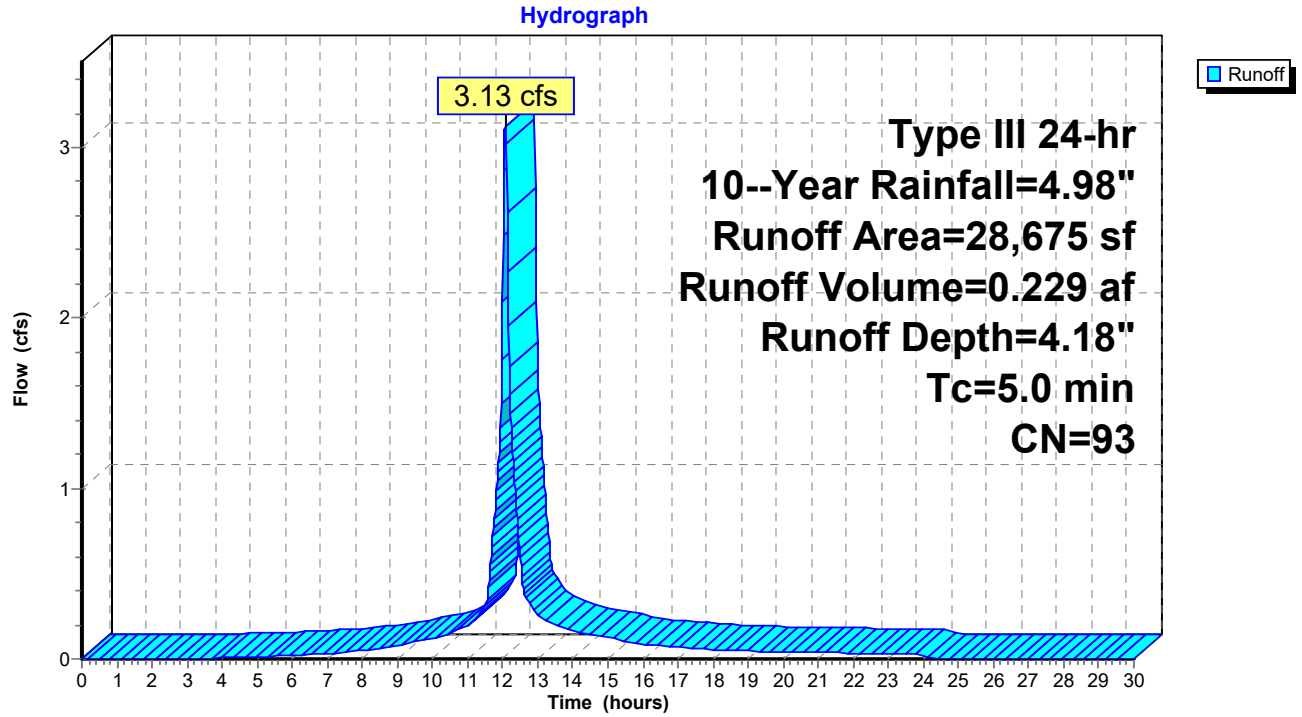
Runoff = 3.13 cfs @ 12.07 hrs, Volume= 0.229 af, Depth= 4.18"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
7,209	80	>75% Grass cover, Good, HSG D
20,831	98	Paved parking, HSG D
635	98	Roofs, HSG D
28,675	93	Weighted Average
7,209		25.14% Pervious Area
21,466		74.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 5**

Subcatchment PR3: A Street Extension



Summary for Subcatchment PR4: Building Roof

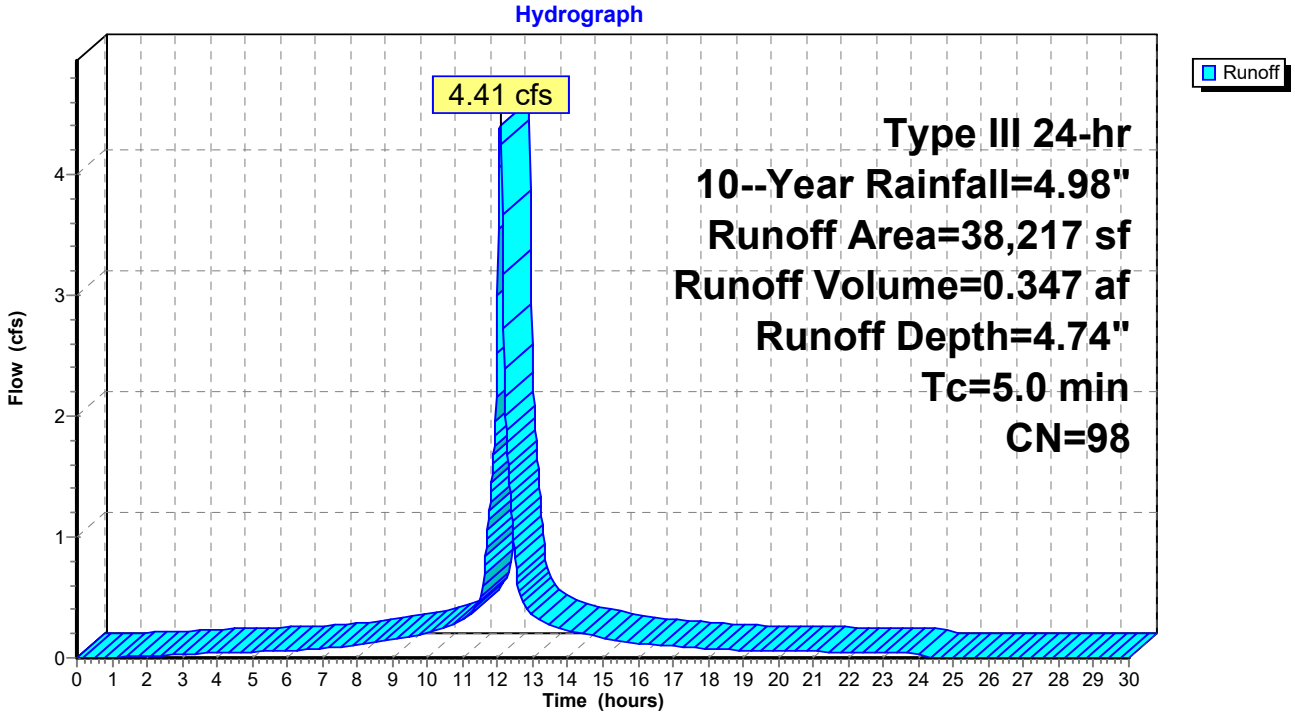
Runoff = 4.41 cfs @ 12.07 hrs, Volume= 0.347 af, Depth= 4.74"
Routed to Pond 1 : 42,000 Gal Building Storage Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
38,217	98	Roofs, HSG D
38,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR4: Building Roof



Summary for Subcatchment PR5: A Street

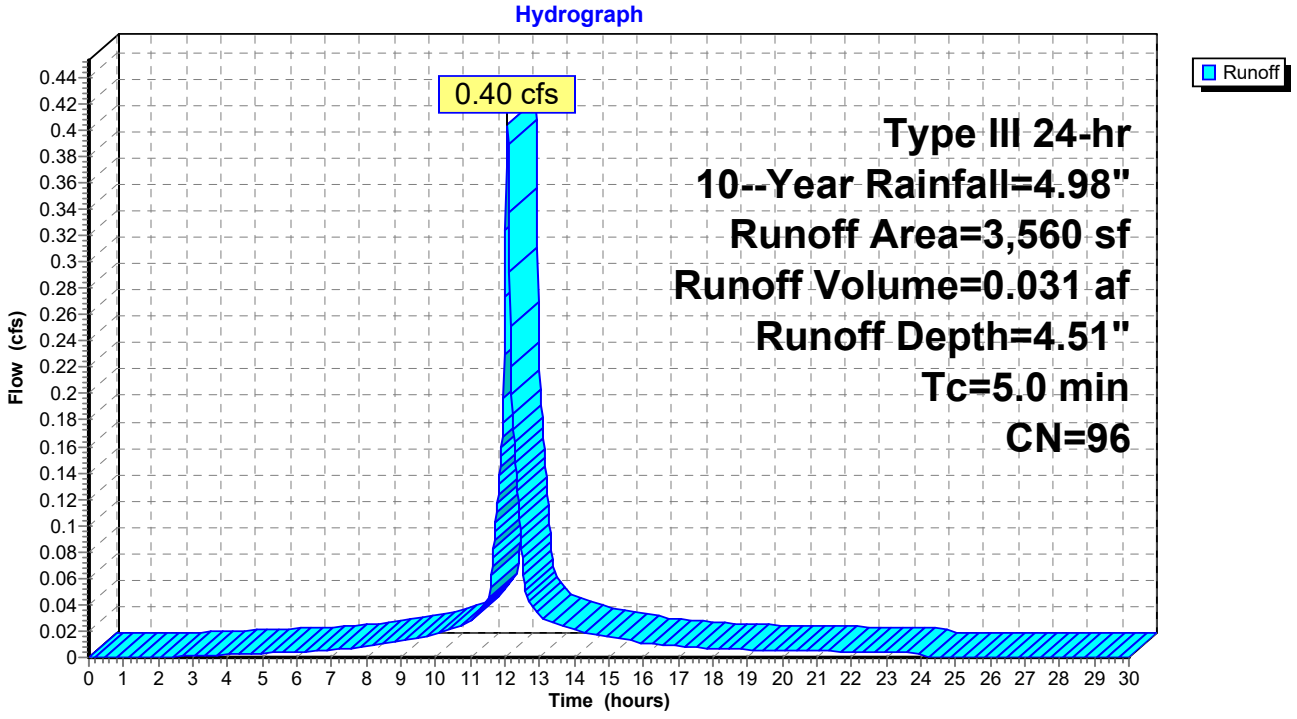
Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 4.51"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG D
300	80	>75% Grass cover, Good, HSG D
3,560	96	Weighted Average
300		8.43% Pervious Area
3,260		91.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR5: A Street



Summary for Subcatchment PR6: Grade Runoff

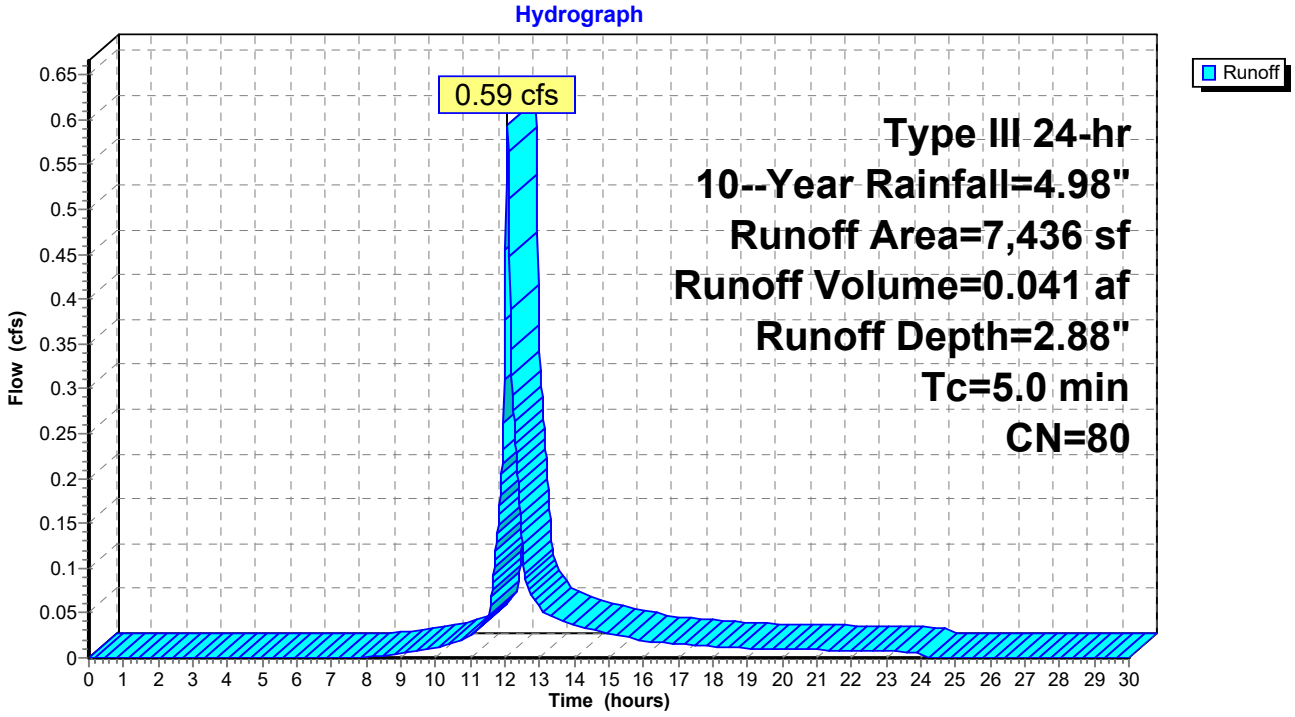
Runoff = 0.59 cfs @ 12.08 hrs, Volume= 0.041 af, Depth= 2.88"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 10--Year Rainfall=4.98"

Area (sf)	CN	Description
7,436	80	>75% Grass cover, Good, HSG D
7,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR6: Grade Runoff



Summary for Pond 1: 42,000 Gal Building Storage Tank

Inflow Area = 0.877 ac,100.00% Impervious, Inflow Depth = 4.74" for 10--Year event
Inflow = 4.41 cfs @ 12.07 hrs, Volume= 0.347 af
Outflow = 2.23 cfs @ 12.20 hrs, Volume= 0.323 af, Atten= 49%, Lag= 7.5 min
Primary = 0.88 cfs @ 12.20 hrs, Volume= 0.296 af
Routed to Link 1L : Fort Point Channel
Secondary = 1.35 cfs @ 12.20 hrs, Volume= 0.027 af
Routed to Link 1L : Fort Point Channel

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 5.56' @ 12.20 hrs Surf.Area= 702 sf Storage= 4,602 cf

Plug-Flow detention time= 104.3 min calculated for 0.322 af (93% of inflow)
Center-of-Mass det. time= 66.2 min (813.4 - 747.2)

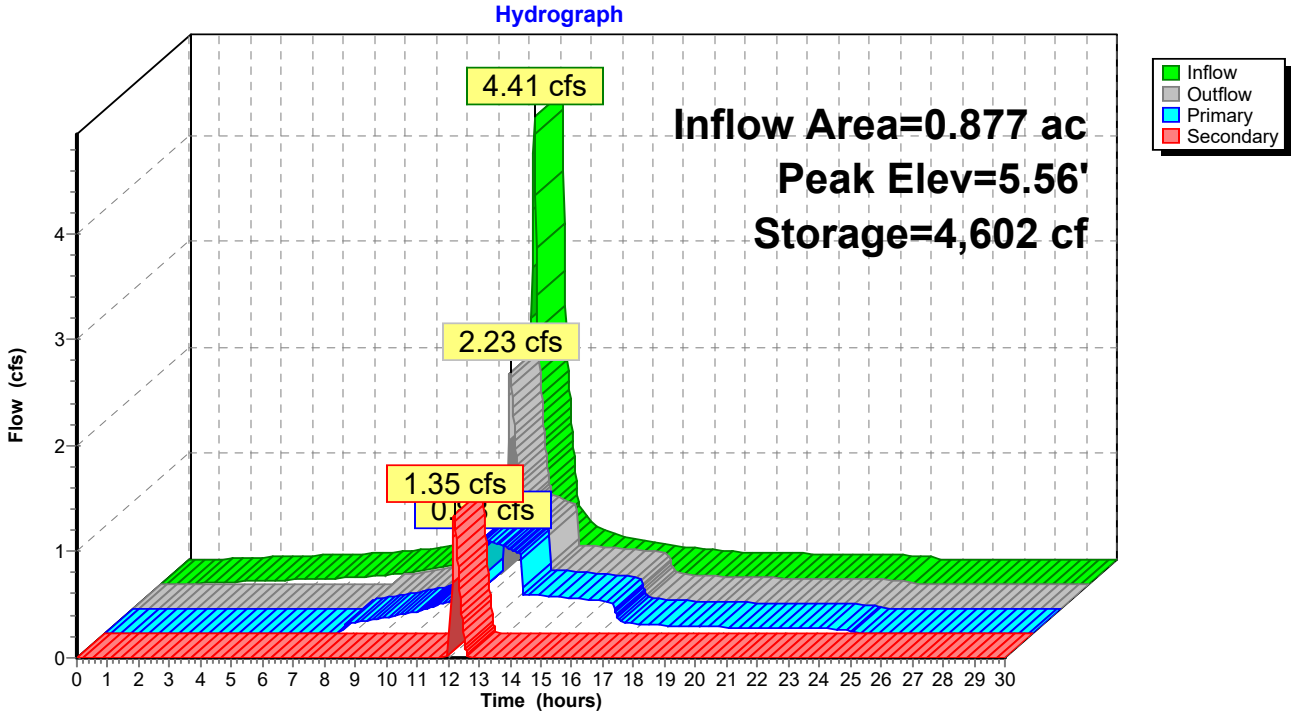
Volume	Invert	Avail.Storage	Storage Description
#1	-1.00'	5,616 cf	**26.00'W x 27.00'L x 8.00'H 42000 gal Storage Tank**

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	0.50'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18
#3	Primary	3.00'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18

Primary OutFlow Max=0.88 cfs @ 12.20 hrs HW=5.55' (Free Discharge)
2=Zoeller 611 Pump (Pump Controls 0.44 cfs)
3=Zoeller 611 Pump (Pump Controls 0.44 cfs)

Secondary OutFlow Max=1.33 cfs @ 12.20 hrs HW=5.55' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.33 cfs @ 2.53 fps)

Pond 1: 42,000 Gal Building Storage Tank

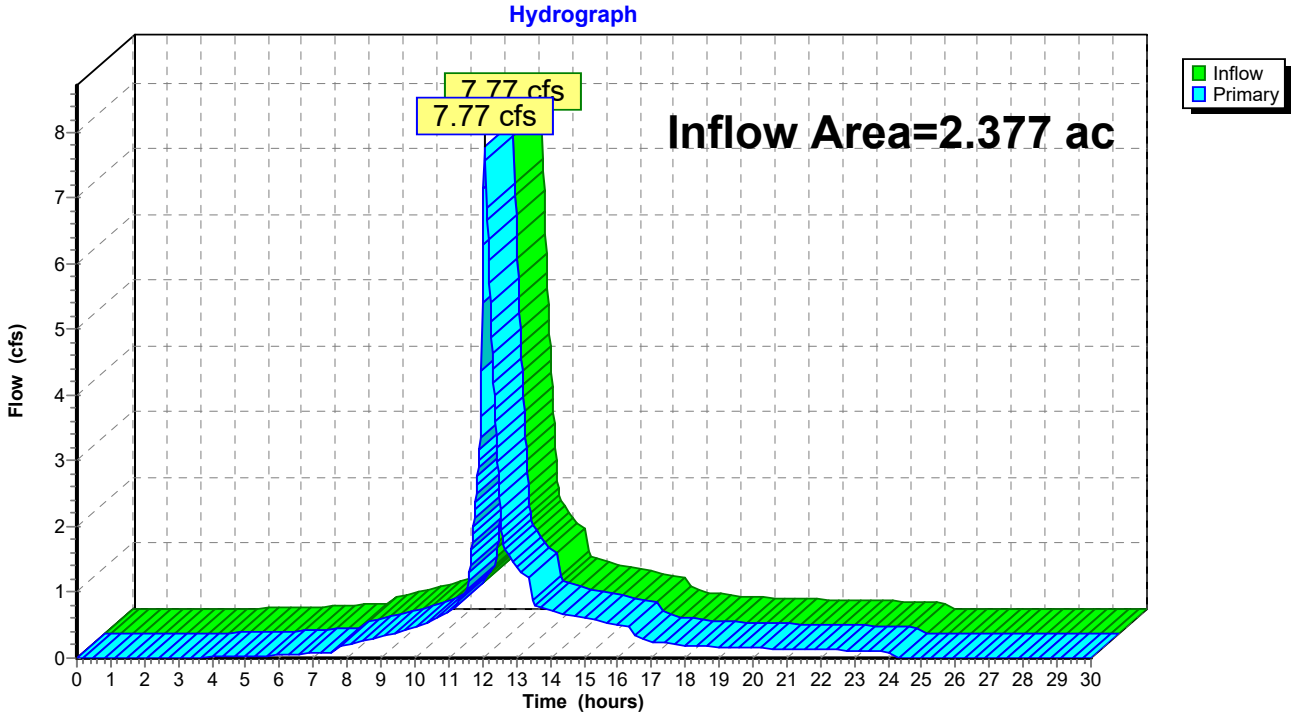


Summary for Link 1L: Fort Point Channel

Inflow Area = 2.377 ac, 79.51% Impervious, Inflow Depth = 4.20" for 10--Year event
Inflow = 7.77 cfs @ 12.07 hrs, Volume= 0.833 af
Primary = 7.77 cfs @ 12.07 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs

Link 1L: Fort Point Channel



Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR1: Boardwalk Direct Runoff Area=4,013 sf 100.00% Impervious Runoff Depth=5.88"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment PR2: West Runoff Area=21,646 sf 71.05% Impervious Runoff Depth=5.30"
Tc=5.0 min CN=93 Runoff=2.96 cfs 0.220 af

Subcatchment PR3: A Street Extension Runoff Area=28,675 sf 74.86% Impervious Runoff Depth=5.30"
Tc=5.0 min CN=93 Runoff=3.92 cfs 0.291 af

Subcatchment PR4: Building Roof Runoff Area=38,217 sf 100.00% Impervious Runoff Depth=5.88"
Tc=5.0 min CN=98 Runoff=5.43 cfs 0.430 af

Subcatchment PR5: A Street Runoff Area=3,560 sf 91.57% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=96 Runoff=0.50 cfs 0.038 af

Subcatchment PR6: Grade Runoff Runoff Area=7,436 sf 0.00% Impervious Runoff Depth=3.89"
Tc=5.0 min CN=80 Runoff=0.80 cfs 0.055 af

Pond 1: 42,000 Gal Building Storage Tank Peak Elev=5.94' Storage=4,871 cf Inflow=5.43 cfs 0.430 af
Primary=0.90 cfs 0.344 af Secondary=3.26 cfs 0.061 af Outflow=4.16 cfs 0.406 af

Link 1L: Fort Point Channel Inflow=11.81 cfs 1.055 af
Primary=11.81 cfs 1.055 af

Total Runoff Area = 2.377 ac Runoff Volume = 1.079 af Average Runoff Depth = 5.45"
20.49% Pervious = 0.487 ac 79.51% Impervious = 1.890 ac

Summary for Subcatchment PR1: Boardwalk Direct Runoff

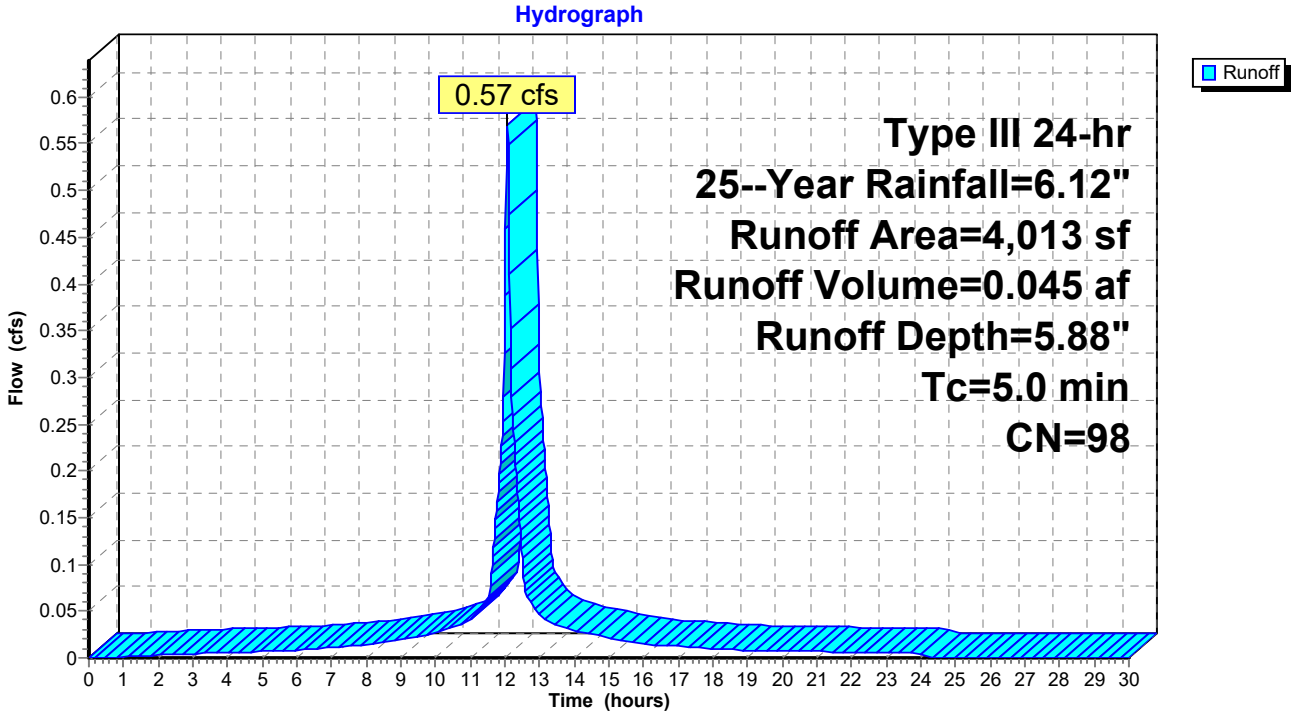
Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth= 5.88"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
4,013	98	Paved parking, HSG D
4,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR1: Boardwalk Direct Runoff



Summary for Subcatchment PR2: West

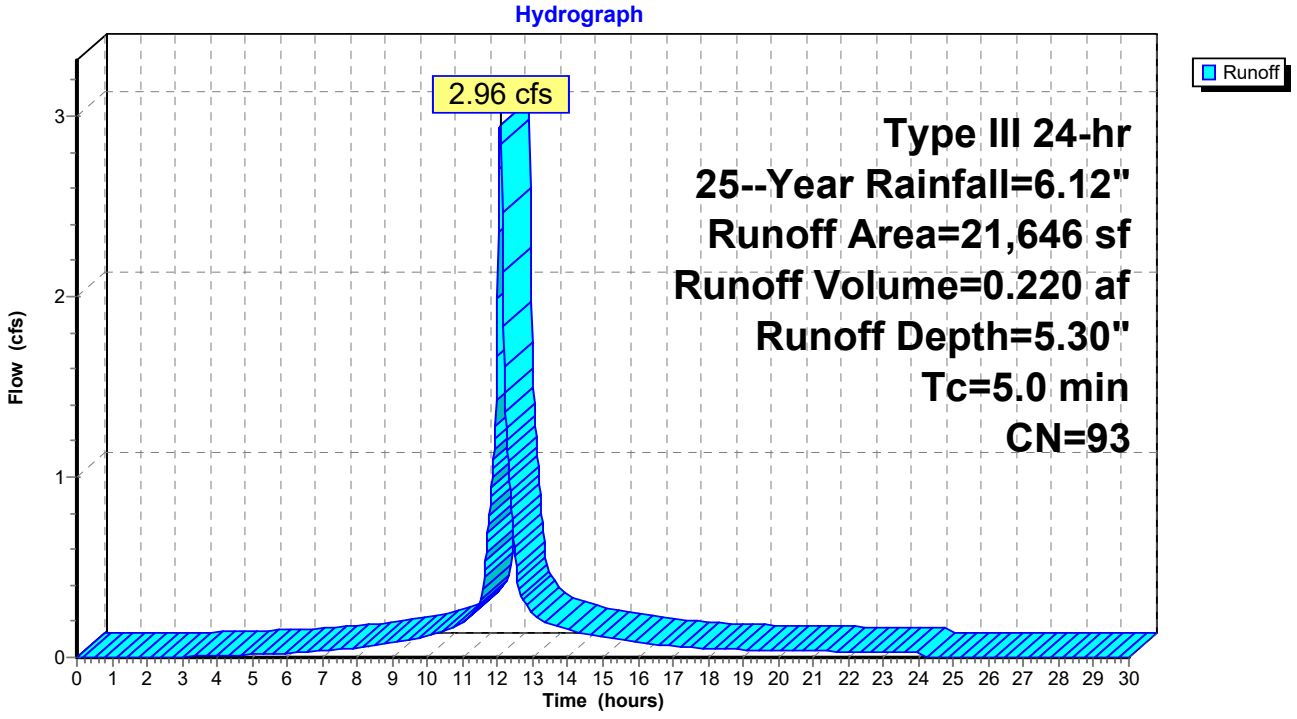
Runoff = 2.96 cfs @ 12.07 hrs, Volume= 0.220 af, Depth= 5.30"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
6,267	80	>75% Grass cover, Good, HSG D
15,379	98	Paved parking, HSG D
21,646	93	Weighted Average
6,267		28.95% Pervious Area
15,379		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR2: West



Summary for Subcatchment PR3: A Street Extension

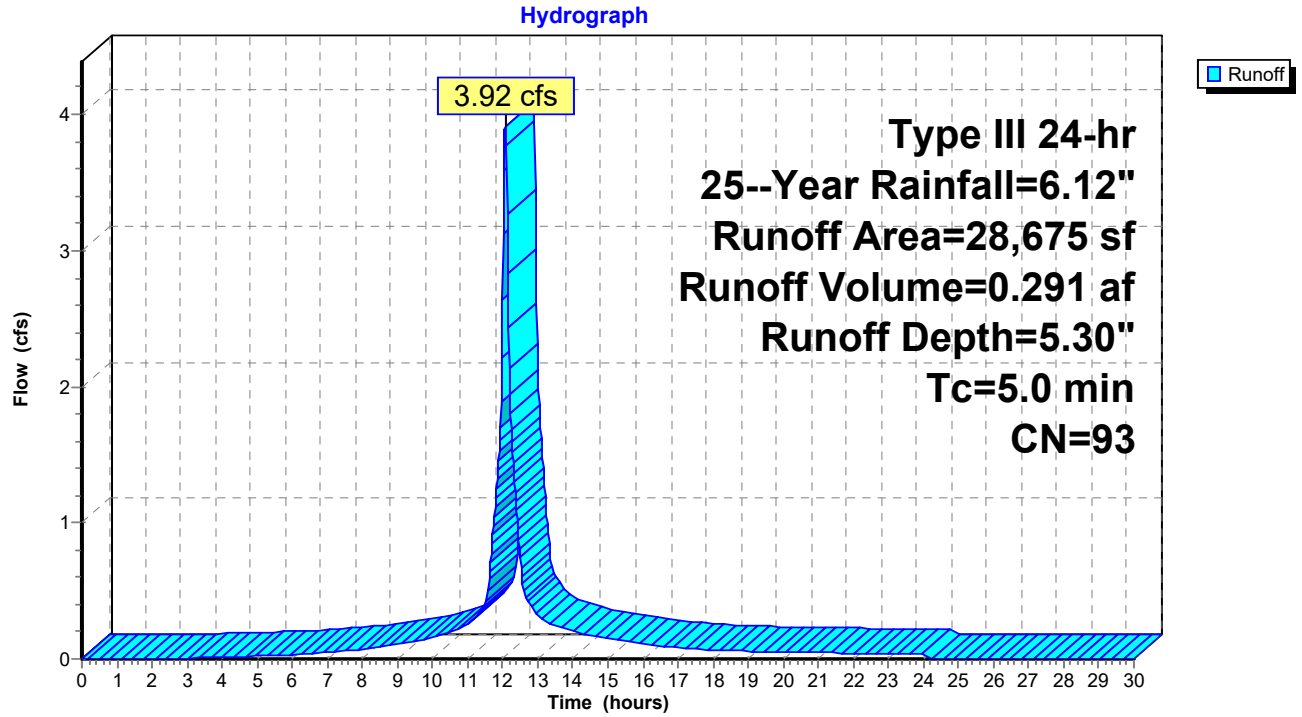
Runoff = 3.92 cfs @ 12.07 hrs, Volume= 0.291 af, Depth= 5.30"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
7,209	80	>75% Grass cover, Good, HSG D
20,831	98	Paved parking, HSG D
635	98	Roofs, HSG D
28,675	93	Weighted Average
7,209		25.14% Pervious Area
21,466		74.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 5**

Subcatchment PR3: A Street Extension



Summary for Subcatchment PR4: Building Roof

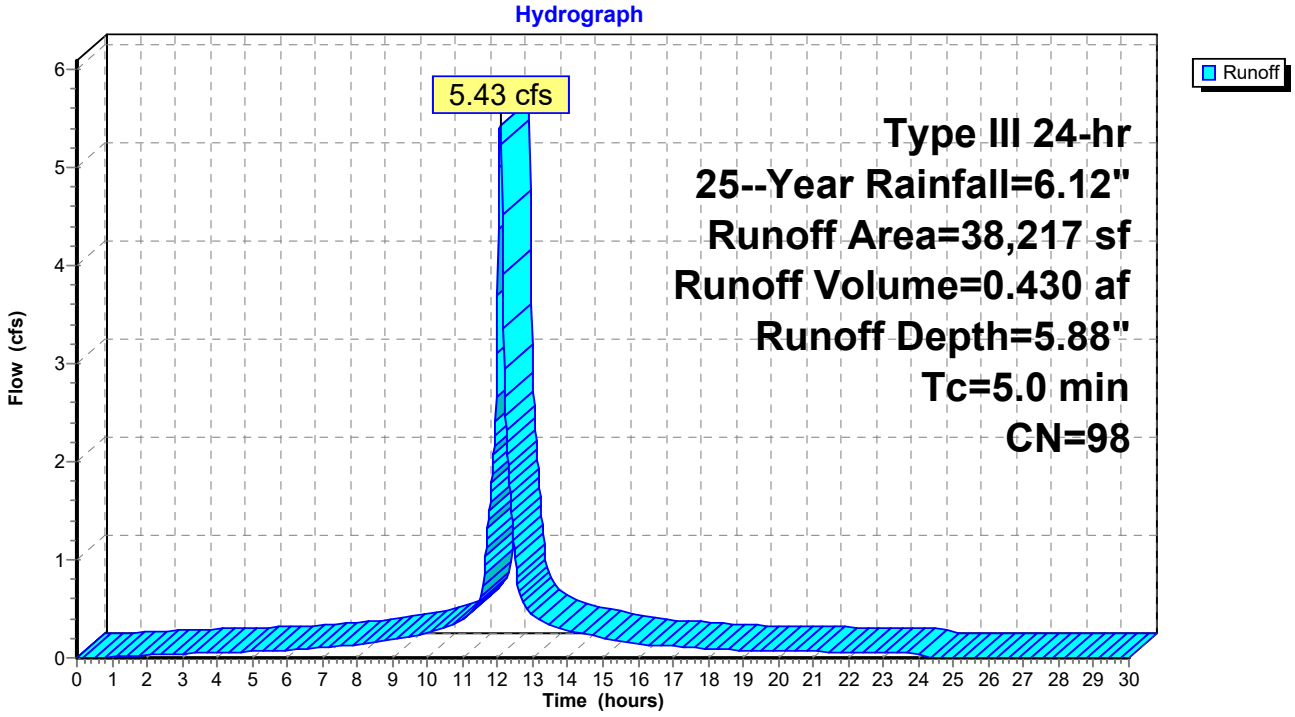
Runoff = 5.43 cfs @ 12.07 hrs, Volume= 0.430 af, Depth= 5.88"
Routed to Pond 1 : 42,000 Gal Building Storage Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
38,217	98	Roofs, HSG D
38,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR4: Building Roof



Summary for Subcatchment PR5: A Street

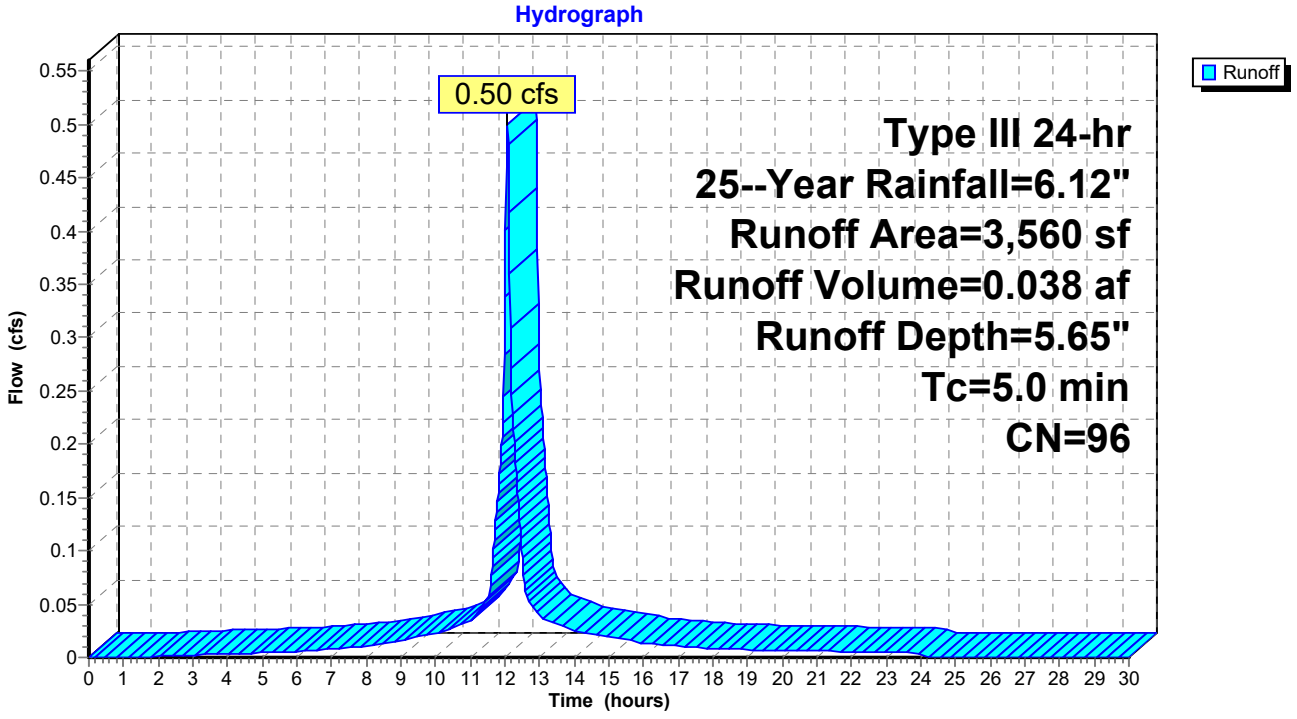
Runoff = 0.50 cfs @ 12.07 hrs, Volume= 0.038 af, Depth= 5.65"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG D
300	80	>75% Grass cover, Good, HSG D
3,560	96	Weighted Average
300		8.43% Pervious Area
3,260		91.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR5: A Street



Summary for Subcatchment PR6: Grade Runoff

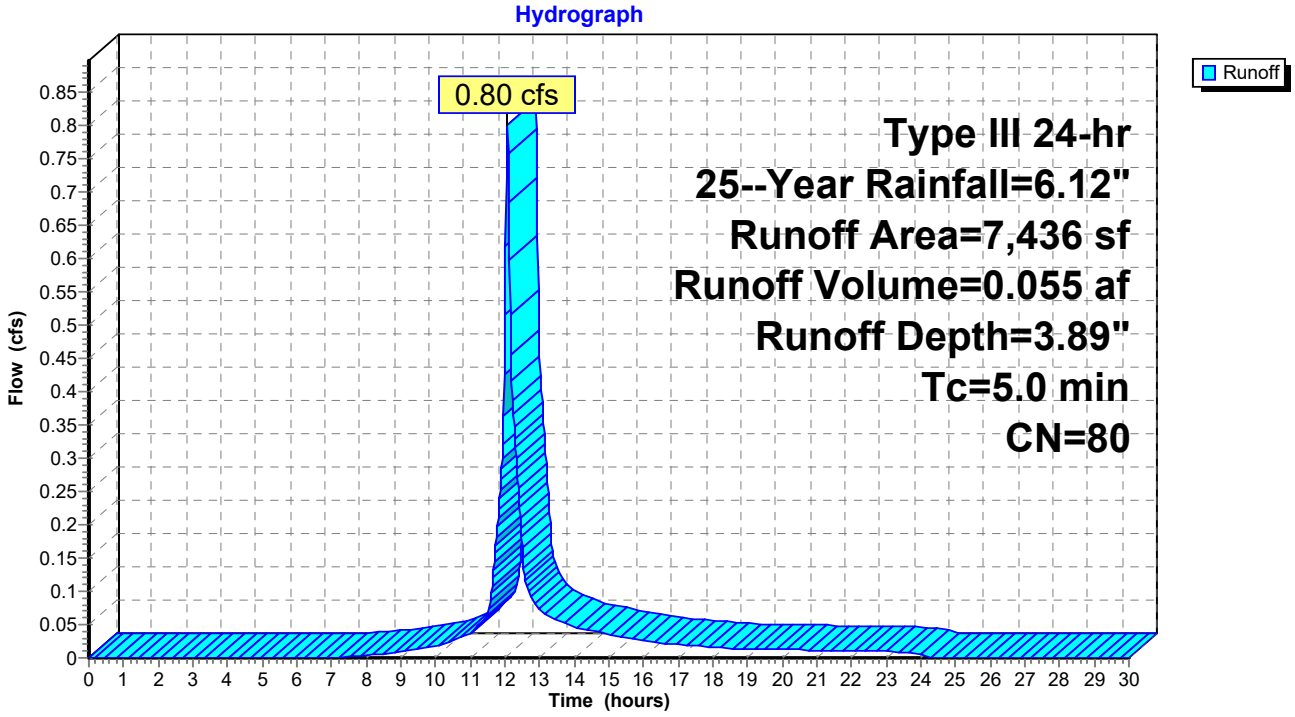
Runoff = 0.80 cfs @ 12.07 hrs, Volume= 0.055 af, Depth= 3.89"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 25--Year Rainfall=6.12"

Area (sf)	CN	Description
7,436	80	>75% Grass cover, Good, HSG D
7,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR6: Grade Runoff



Summary for Pond 1: 42,000 Gal Building Storage Tank

Inflow Area = 0.877 ac,100.00% Impervious, Inflow Depth = 5.88" for 25--Year event
Inflow = 5.43 cfs @ 12.07 hrs, Volume= 0.430 af
Outflow = 4.16 cfs @ 12.13 hrs, Volume= 0.406 af, Atten= 23%, Lag= 3.8 min
Primary = 0.90 cfs @ 12.13 hrs, Volume= 0.344 af
Routed to Link 1L : Fort Point Channel
Secondary = 3.26 cfs @ 12.13 hrs, Volume= 0.061 af
Routed to Link 1L : Fort Point Channel

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 5.94' @ 12.13 hrs Surf.Area= 702 sf Storage= 4,871 cf

Plug-Flow detention time= 92.6 min calculated for 0.405 af (94% of inflow)
Center-of-Mass det. time= 60.3 min (804.3 - 743.9)

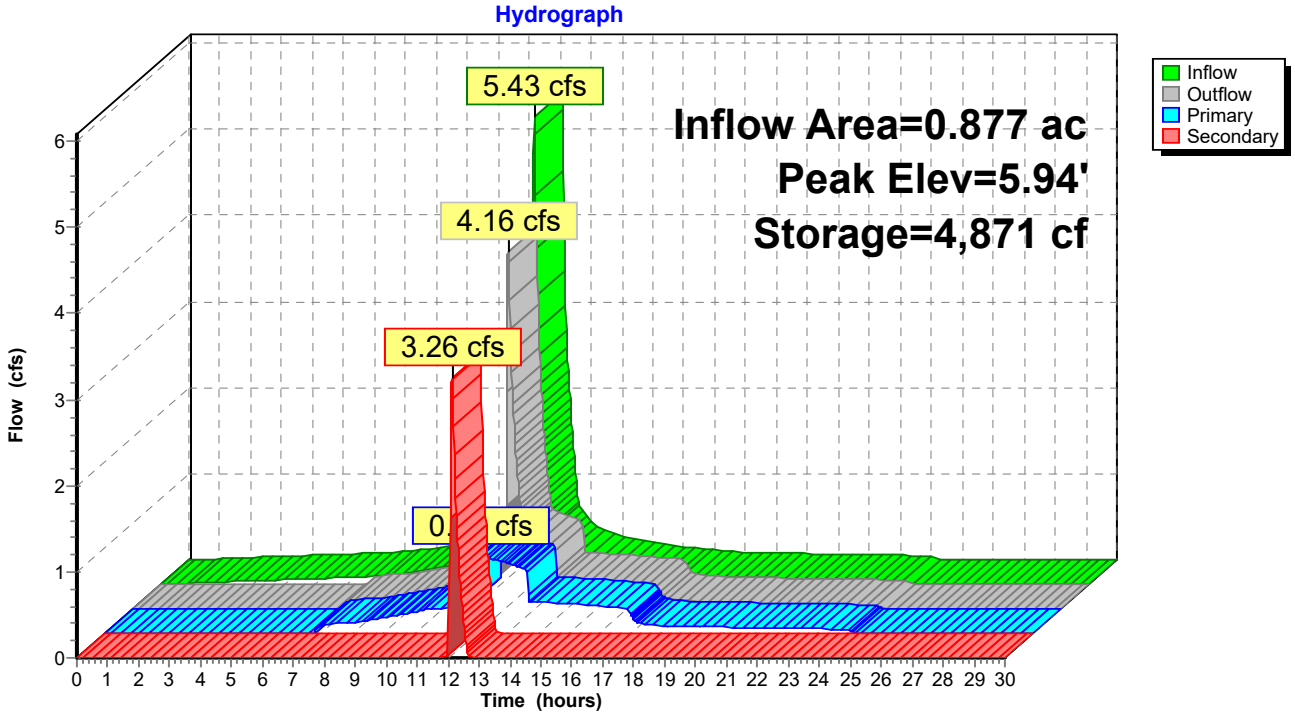
Volume	Invert	Avail.Storage	Storage Description
#1	-1.00'	5,616 cf	**26.00'W x 27.00'L x 8.00'H 42000 gal Storage Tank**

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	0.50'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18
#3	Primary	3.00'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18

Primary OutFlow Max=0.90 cfs @ 12.13 hrs HW=5.93' (Free Discharge)
└**2=Zoeller 611 Pump** (Pump Controls 0.45 cfs)
└**3=Zoeller 611 Pump** (Pump Controls 0.45 cfs)

Secondary OutFlow Max=3.23 cfs @ 12.13 hrs HW=5.93' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 3.23 cfs @ 3.29 fps)

Pond 1: 42,000 Gal Building Storage Tank

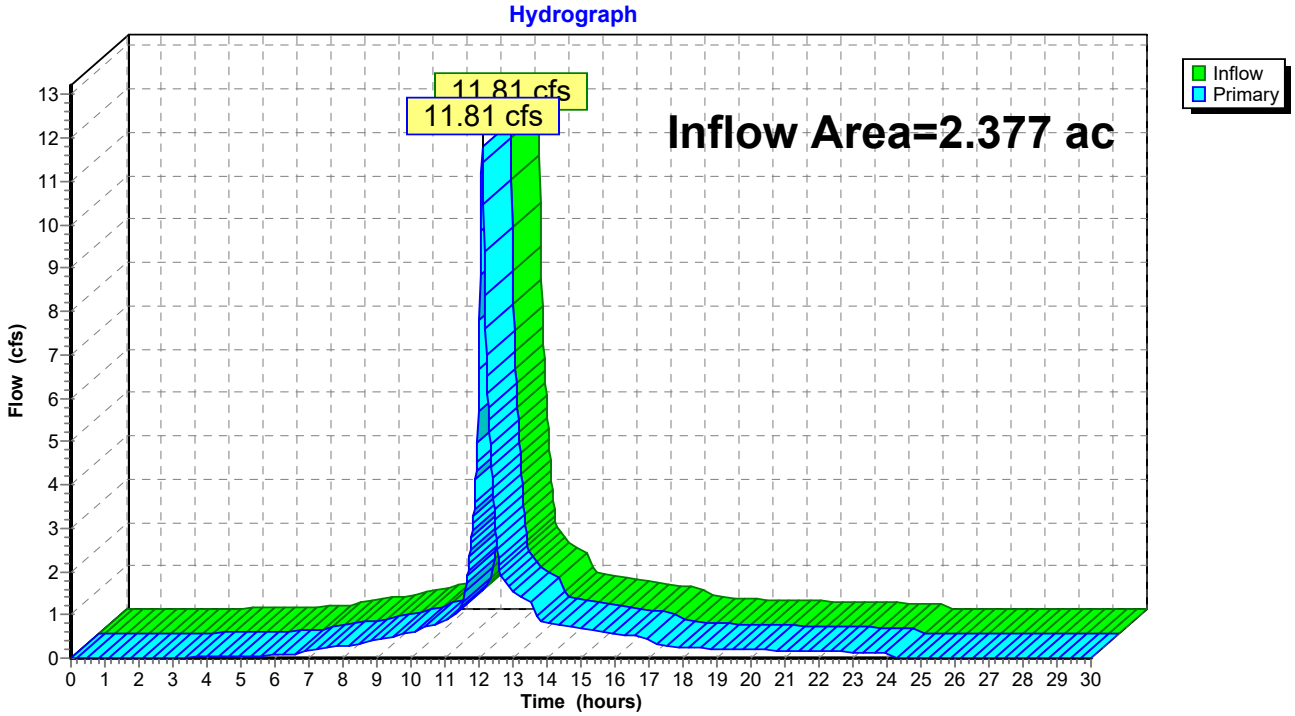


Summary for Link 1L: Fort Point Channel

Inflow Area = 2.377 ac, 79.51% Impervious, Inflow Depth = 5.33" for 25--Year event
Inflow = 11.81 cfs @ 12.10 hrs, Volume= 1.055 af
Primary = 11.81 cfs @ 12.10 hrs, Volume= 1.055 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs

Link 1L: Fort Point Channel



Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR1: Boardwalk Direct Runoff Area=4,013 sf 100.00% Impervious Runoff Depth=7.64"
Tc=5.0 min CN=98 Runoff=0.74 cfs 0.059 af

Subcatchment PR2: West Runoff Area=21,646 sf 71.05% Impervious Runoff Depth=7.04"
Tc=5.0 min CN=93 Runoff=3.87 cfs 0.292 af

Subcatchment PR3: A Street Extension Runoff Area=28,675 sf 74.86% Impervious Runoff Depth=7.04"
Tc=5.0 min CN=93 Runoff=5.12 cfs 0.386 af

Subcatchment PR4: Building Roof Runoff Area=38,217 sf 100.00% Impervious Runoff Depth=7.64"
Tc=5.0 min CN=98 Runoff=7.01 cfs 0.559 af

Subcatchment PR5: A Street Runoff Area=3,560 sf 91.57% Impervious Runoff Depth=7.40"
Tc=5.0 min CN=96 Runoff=0.65 cfs 0.050 af

Subcatchment PR6: Grade Runoff Runoff Area=7,436 sf 0.00% Impervious Runoff Depth=5.51"
Tc=5.0 min CN=80 Runoff=1.12 cfs 0.078 af

Pond 1: 42,000 Gal Building Storage Tank Peak Elev=6.41' Storage=5,199 cf Inflow=7.01 cfs 0.559 af
Primary=0.93 cfs 0.414 af Secondary=5.22 cfs 0.120 af Outflow=6.14 cfs 0.534 af

Link 1L: Fort Point Channel Inflow=17.27 cfs 1.400 af
Primary=17.27 cfs 1.400 af

Total Runoff Area = 2.377 ac Runoff Volume = 1.424 af Average Runoff Depth = 7.19"
20.49% Pervious = 0.487 ac 79.51% Impervious = 1.890 ac

Summary for Subcatchment PR1: Boardwalk Direct Runoff

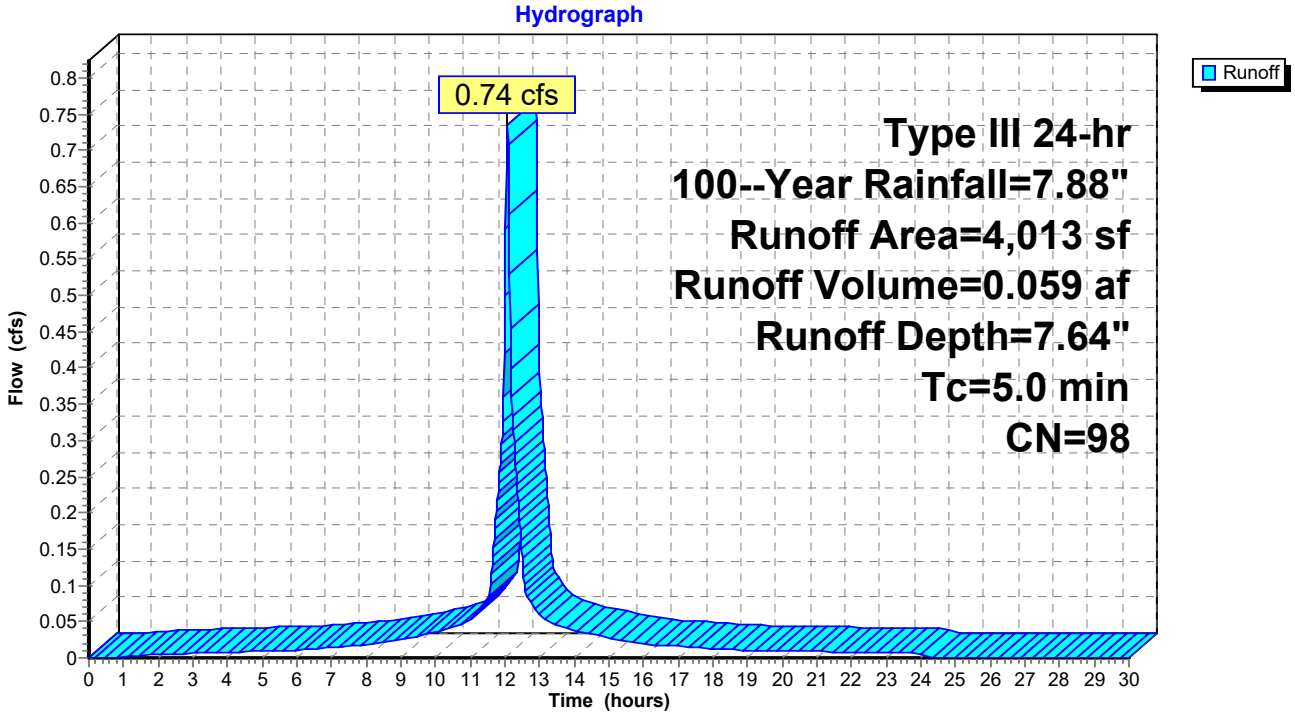
Runoff = 0.74 cfs @ 12.07 hrs, Volume= 0.059 af, Depth= 7.64"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
4,013	98	Paved parking, HSG D
4,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR1: Boardwalk Direct Runoff



Summary for Subcatchment PR2: West

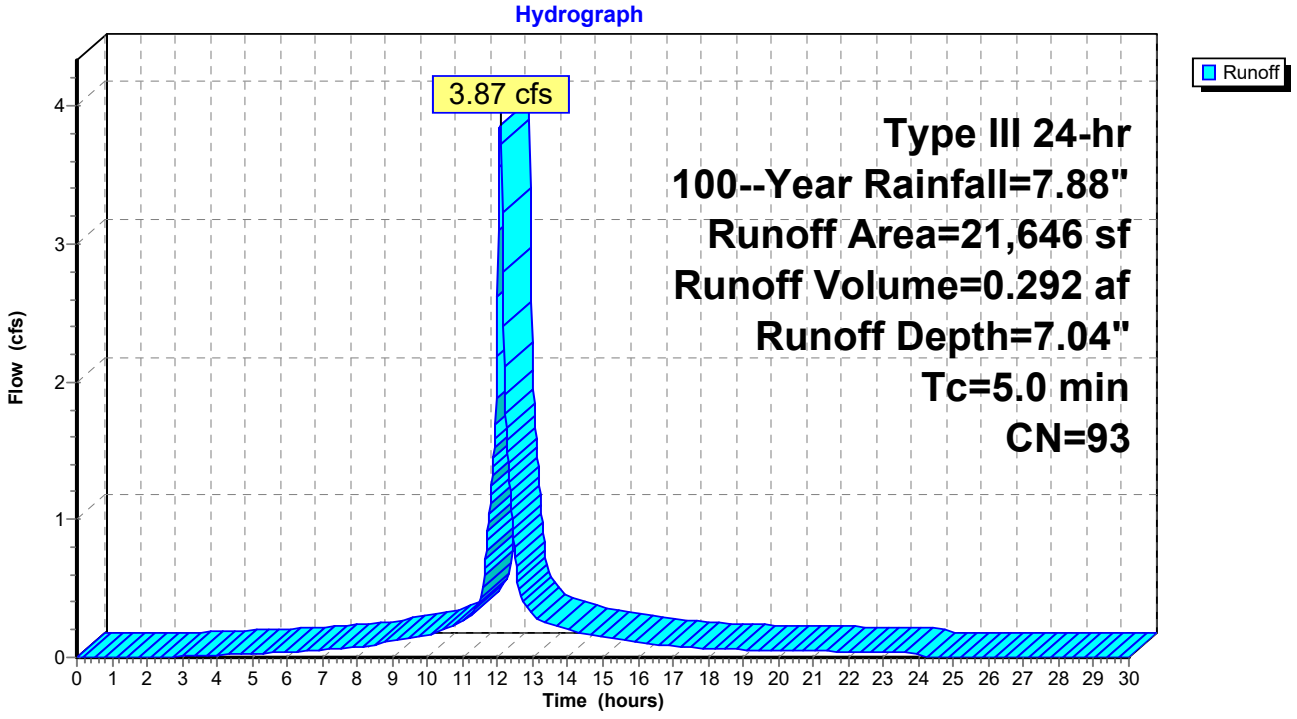
Runoff = 3.87 cfs @ 12.07 hrs, Volume= 0.292 af, Depth= 7.04"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
6,267	80	>75% Grass cover, Good, HSG D
15,379	98	Paved parking, HSG D
21,646	93	Weighted Average
6,267		28.95% Pervious Area
15,379		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR2: West



Summary for Subcatchment PR3: A Street Extension

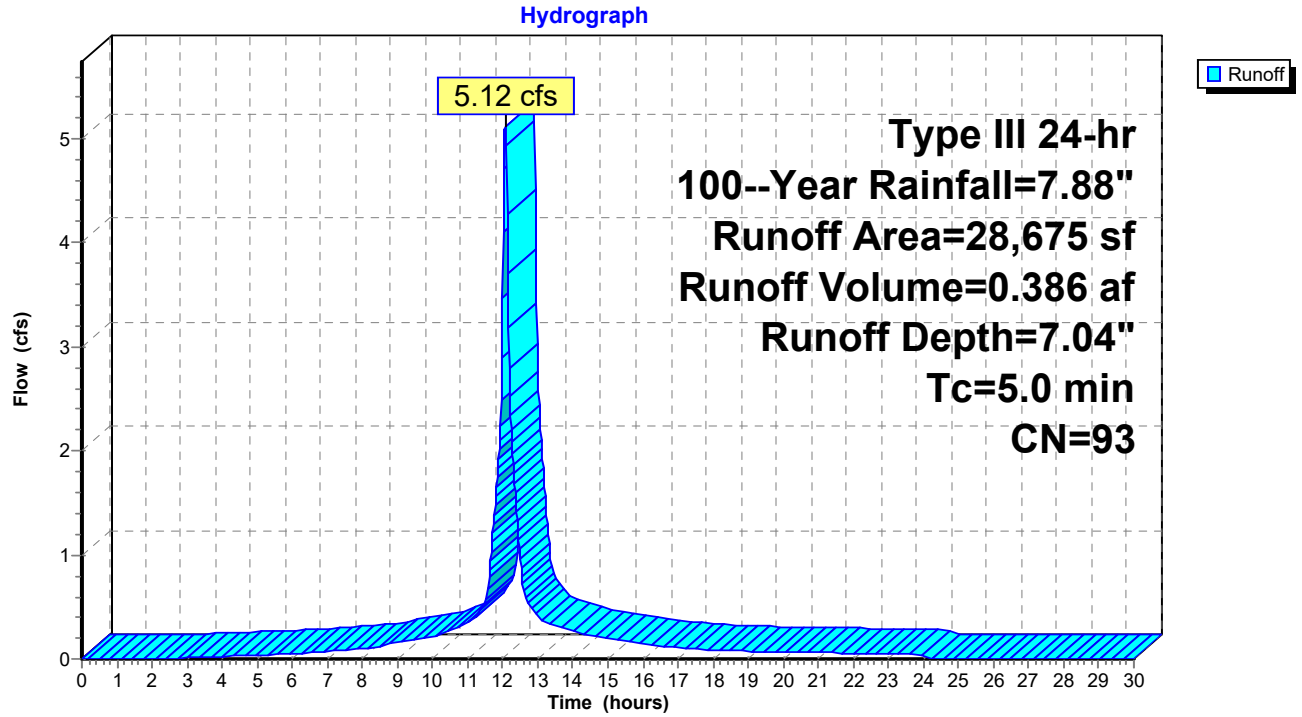
Runoff = 5.12 cfs @ 12.07 hrs, Volume= 0.386 af, Depth= 7.04"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
7,209	80	>75% Grass cover, Good, HSG D
20,831	98	Paved parking, HSG D
635	98	Roofs, HSG D
28,675	93	Weighted Average
7,209		25.14% Pervious Area
21,466		74.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 5**

Subcatchment PR3: A Street Extension



Summary for Subcatchment PR4: Building Roof

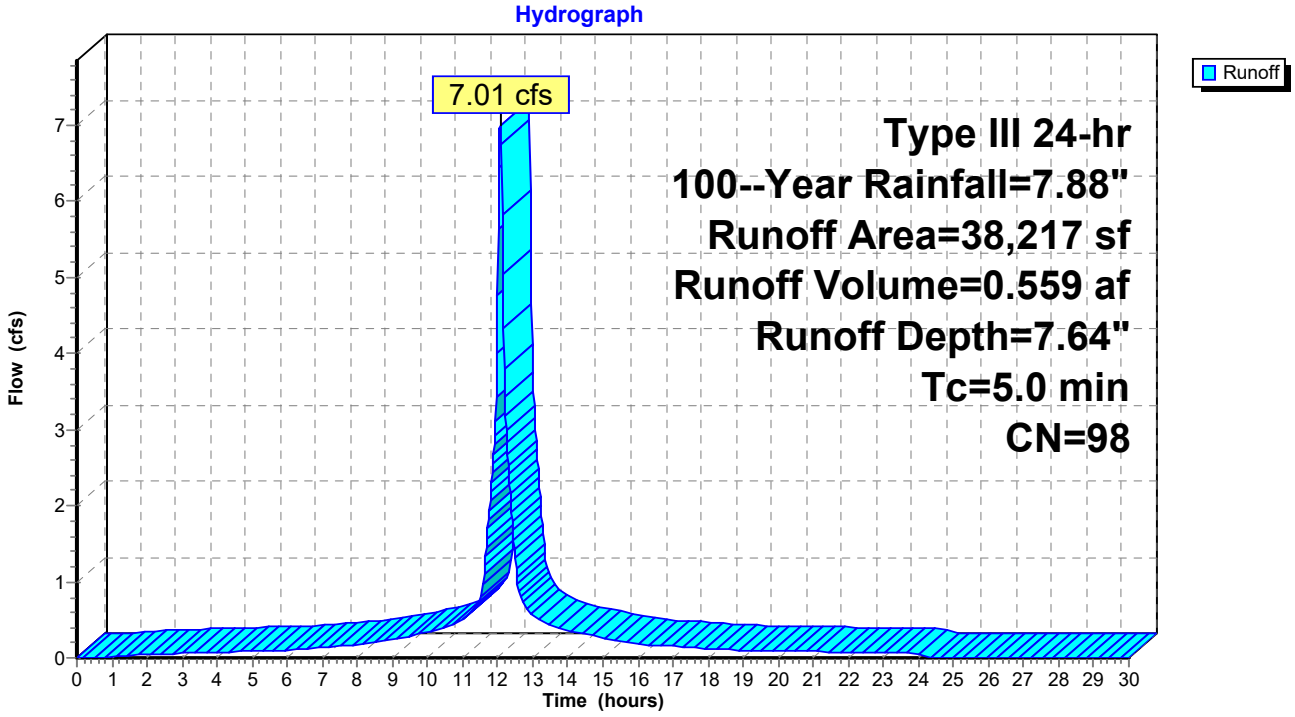
Runoff = 7.01 cfs @ 12.07 hrs, Volume= 0.559 af, Depth= 7.64"
Routed to Pond 1 : 42,000 Gal Building Storage Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
38,217	98	Roofs, HSG D
38,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR4: Building Roof



Summary for Subcatchment PR5: A Street

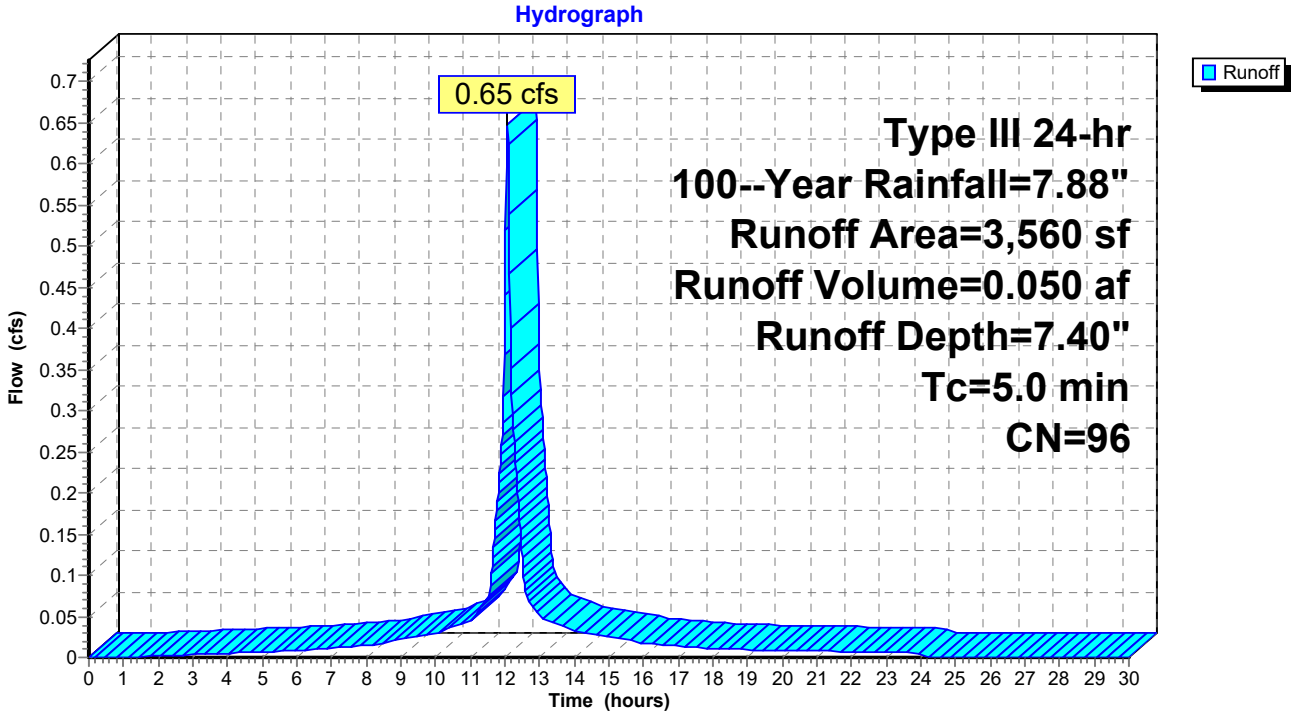
Runoff = 0.65 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 7.40"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG D
300	80	>75% Grass cover, Good, HSG D
3,560	96	Weighted Average
300		8.43% Pervious Area
3,260		91.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR5: A Street



Summary for Subcatchment PR6: Grade Runoff

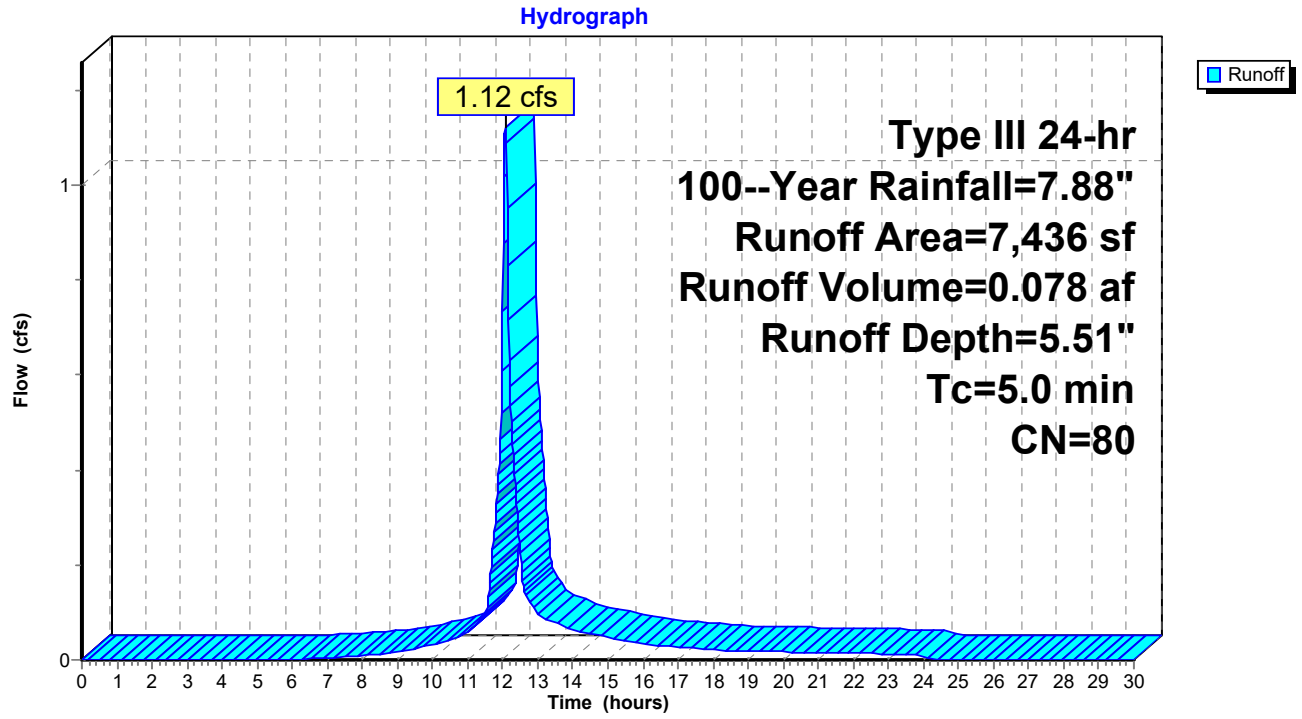
Runoff = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af, Depth= 5.51"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr 100--Year Rainfall=7.88"

Area (sf)	CN	Description
7,436	80	>75% Grass cover, Good, HSG D
7,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR6: Grade Runoff



Summary for Pond 1: 42,000 Gal Building Storage Tank

Inflow Area = 0.877 ac,100.00% Impervious, Inflow Depth = 7.64" for 100--Year event
Inflow = 7.01 cfs @ 12.07 hrs, Volume= 0.559 af
Outflow = 6.14 cfs @ 12.11 hrs, Volume= 0.534 af, Atten= 12%, Lag= 2.5 min
Primary = 0.93 cfs @ 12.11 hrs, Volume= 0.414 af
Routed to Link 1L : Fort Point Channel
Secondary = 5.22 cfs @ 12.11 hrs, Volume= 0.120 af
Routed to Link 1L : Fort Point Channel

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 6.41' @ 12.11 hrs Surf.Area= 702 sf Storage= 5,199 cf

Plug-Flow detention time= 80.6 min calculated for 0.534 af (96% of inflow)
Center-of-Mass det. time= 54.6 min (795.1 - 740.5)

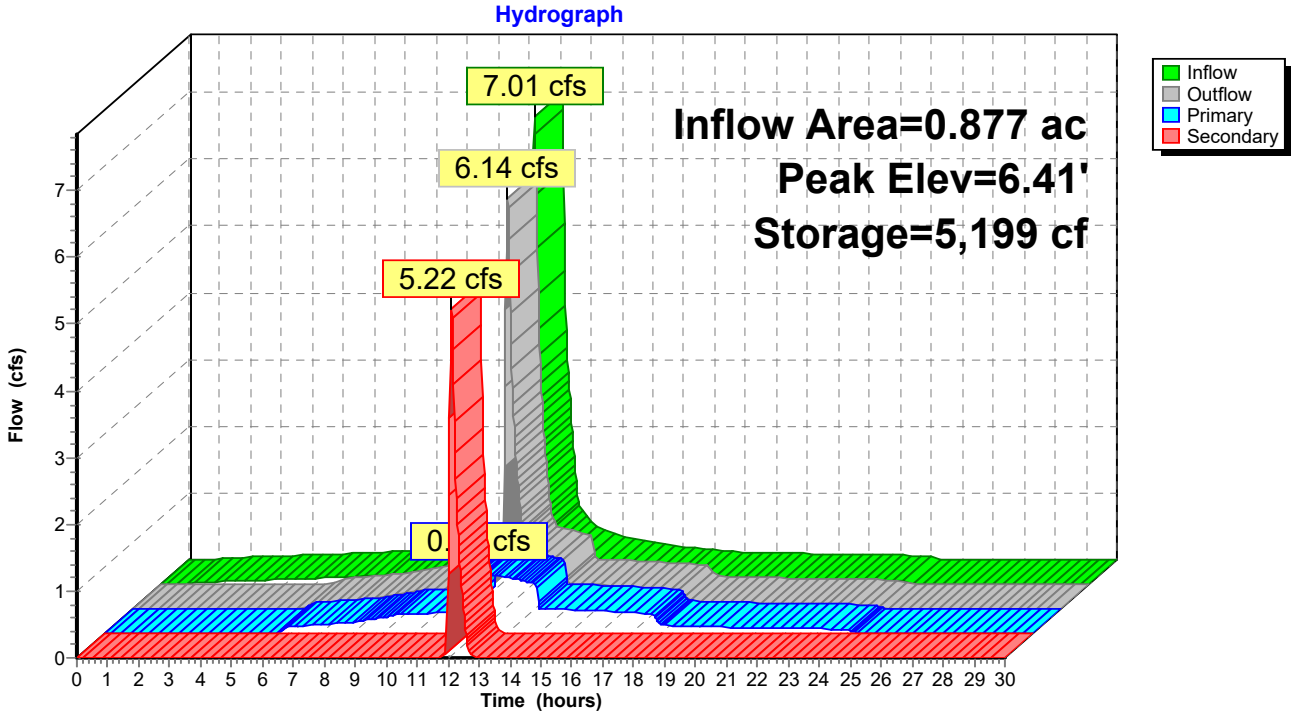
Volume	Invert	Avail.Storage	Storage Description
#1	-1.00'	5,616 cf	**26.00'W x 27.00'L x 8.00'H 42000 gal Storage Tank**

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	0.50'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18
#3	Primary	3.00'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18

Primary OutFlow Max=0.93 cfs @ 12.11 hrs HW=6.40' (Free Discharge)
└**2=Zoeller 611 Pump** (Pump Controls 0.46 cfs)
└**3=Zoeller 611 Pump** (Pump Controls 0.46 cfs)

Secondary OutFlow Max=5.19 cfs @ 12.11 hrs HW=6.40' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 5.19 cfs @ 4.23 fps)

Pond 1: 42,000 Gal Building Storage Tank

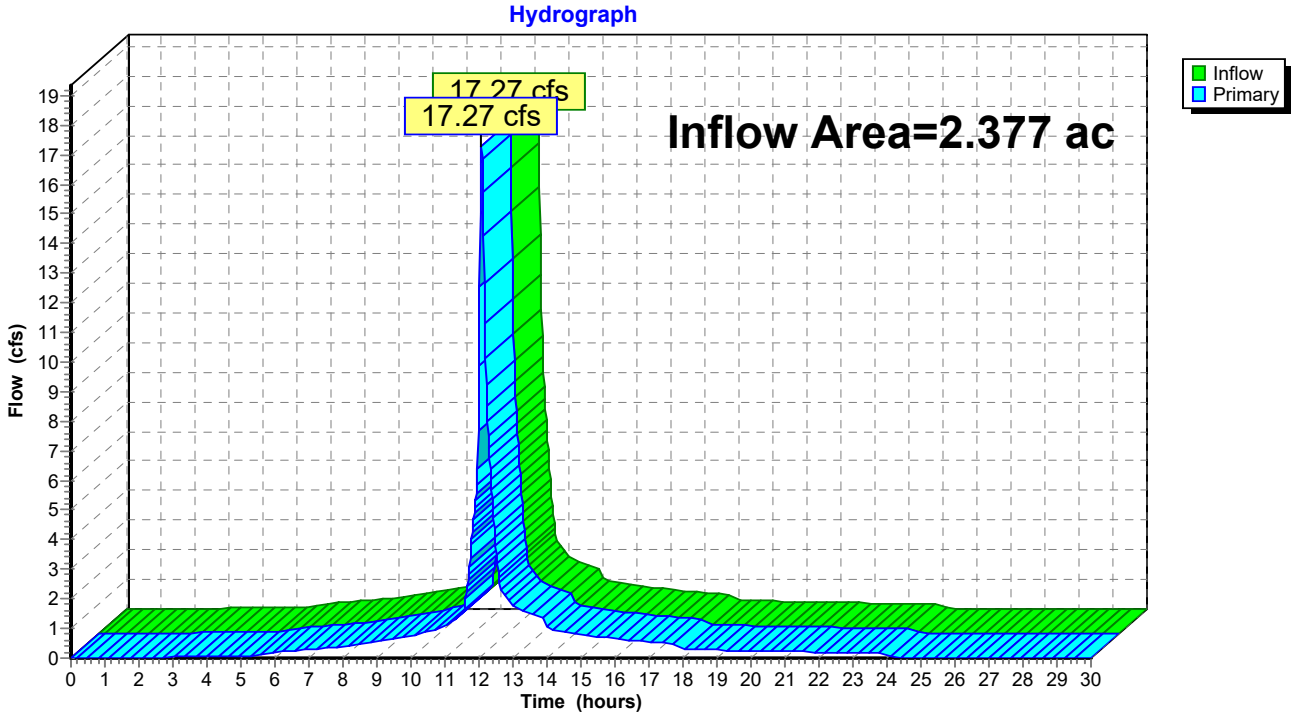


Summary for Link 1L: Fort Point Channel

Inflow Area = 2.377 ac, 79.51% Impervious, Inflow Depth = 7.07" for 100--Year event
Inflow = 17.27 cfs @ 12.08 hrs, Volume= 1.400 af
Primary = 17.27 cfs @ 12.08 hrs, Volume= 1.400 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs

Link 1L: Fort Point Channel



Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR1: Boardwalk Direct Runoff Area=4,013 sf 100.00% Impervious Runoff Depth=10.66"
Tc=5.0 min CN=98 Runoff=1.02 cfs 0.082 af

Subcatchment PR2: West Runoff Area=21,646 sf 71.05% Impervious Runoff Depth=10.05"
Tc=5.0 min CN=93 Runoff=5.42 cfs 0.416 af

Subcatchment PR3: A Street Extension Runoff Area=28,675 sf 74.86% Impervious Runoff Depth=10.05"
Tc=5.0 min CN=93 Runoff=7.18 cfs 0.551 af

Subcatchment PR4: Building Roof Runoff Area=38,217 sf 100.00% Impervious Runoff Depth=10.66"
Tc=5.0 min CN=98 Runoff=9.70 cfs 0.779 af

Subcatchment PR5: A Street Runoff Area=3,560 sf 91.57% Impervious Runoff Depth=10.42"
Tc=5.0 min CN=96 Runoff=0.90 cfs 0.071 af

Subcatchment PR6: Grade Runoff Runoff Area=7,436 sf 0.00% Impervious Runoff Depth=8.38"
Tc=5.0 min CN=80 Runoff=1.68 cfs 0.119 af

Pond 1: 42,000 Gal Building Storage Tank Peak Elev=7.00' Storage=5,614 cf Inflow=9.70 cfs 0.779 af
Primary=0.96 cfs 0.529 af Secondary=6.92 cfs 0.222 af Outflow=7.88 cfs 0.751 af

Link 1L: Fort Point Channel Inflow=23.94 cfs 1.991 af
Primary=23.94 cfs 1.991 af

Total Runoff Area = 2.377 ac Runoff Volume = 2.018 af Average Runoff Depth = 10.19"
20.49% Pervious = 0.487 ac 79.51% Impervious = 1.890 ac

Summary for Subcatchment PR1: Boardwalk Direct Runoff

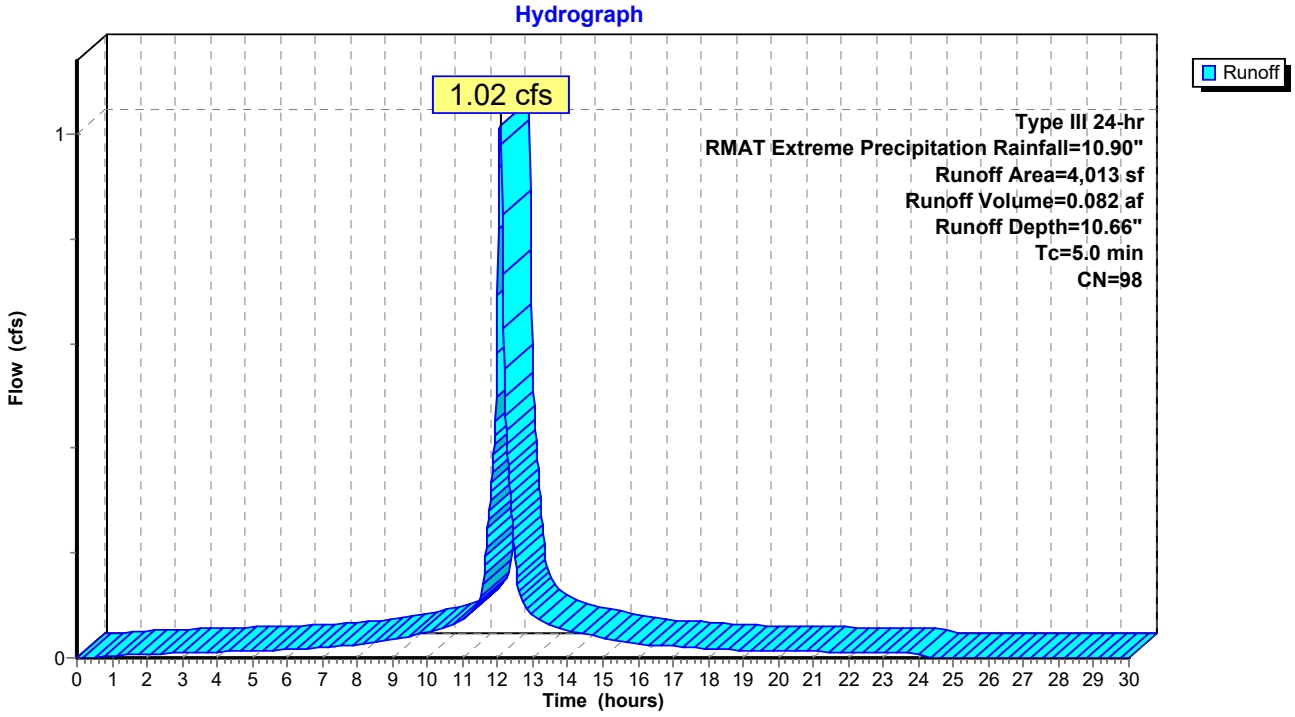
Runoff = 1.02 cfs @ 12.07 hrs, Volume= 0.082 af, Depth=10.66"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
4,013	98	Paved parking, HSG D
4,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR1: Boardwalk Direct Runoff



Summary for Subcatchment PR2: West

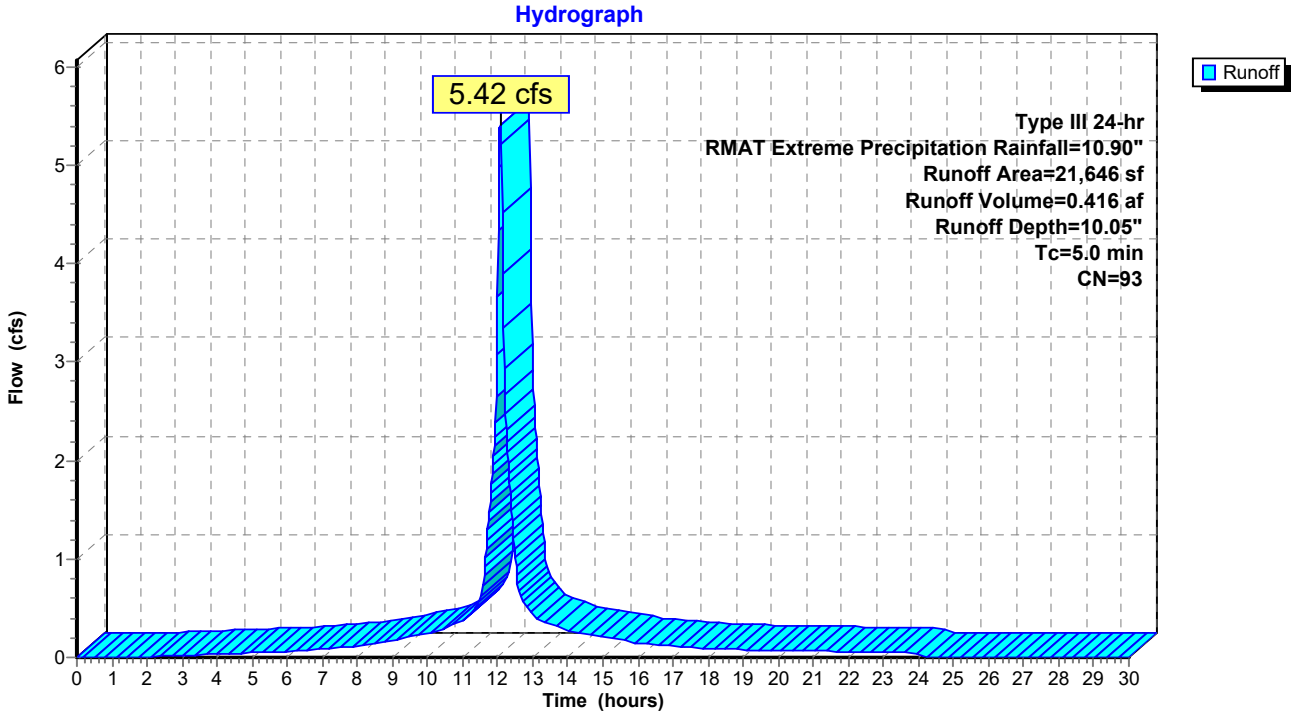
Runoff = 5.42 cfs @ 12.07 hrs, Volume= 0.416 af, Depth=10.05"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
6,267	80	>75% Grass cover, Good, HSG D
15,379	98	Paved parking, HSG D
21,646	93	Weighted Average
6,267		28.95% Pervious Area
15,379		71.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR2: West



Summary for Subcatchment PR3: A Street Extension

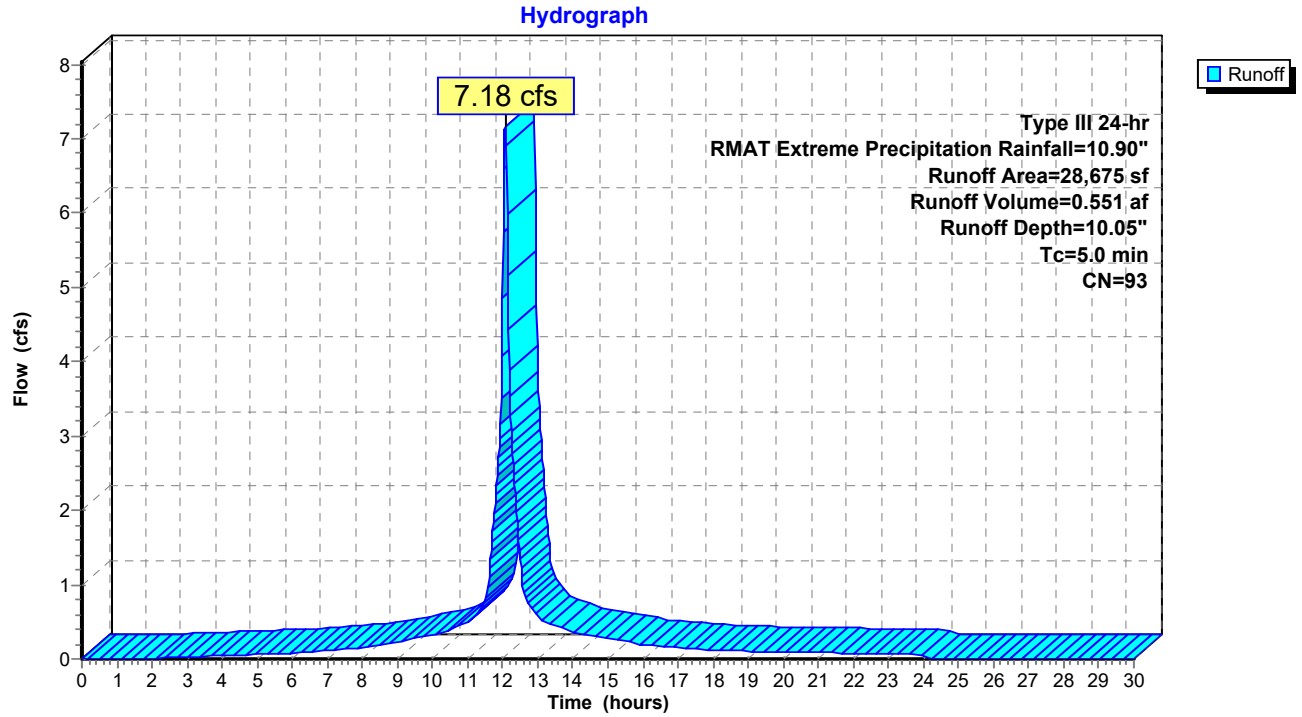
Runoff = 7.18 cfs @ 12.07 hrs, Volume= 0.551 af, Depth=10.05"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
7,209	80	>75% Grass cover, Good, HSG D
20,831	98	Paved parking, HSG D
635	98	Roofs, HSG D
28,675	93	Weighted Average
7,209		25.14% Pervious Area
21,466		74.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 5**

Subcatchment PR3: A Street Extension



Summary for Subcatchment PR4: Building Roof

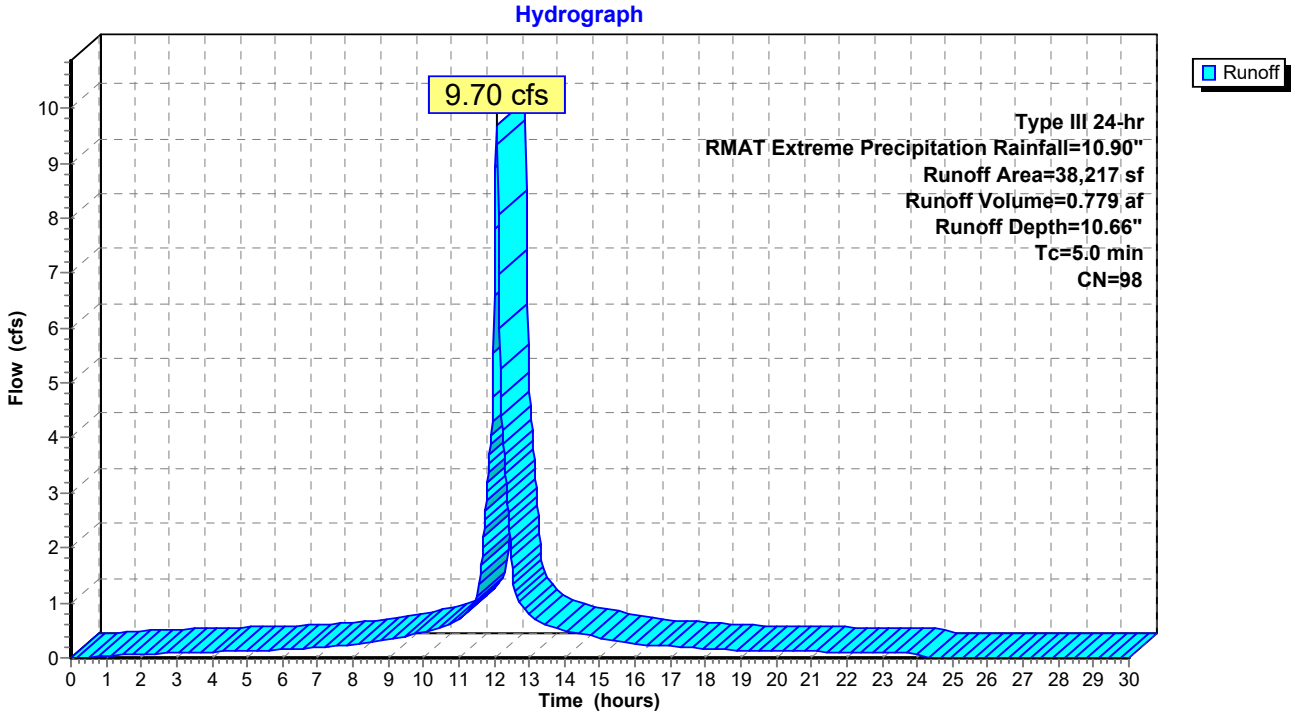
Runoff = 9.70 cfs @ 12.07 hrs, Volume= 0.779 af, Depth=10.66"
Routed to Pond 1 : 42,000 Gal Building Storage Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
38,217	98	Roofs, HSG D
38,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR4: Building Roof



Summary for Subcatchment PR5: A Street

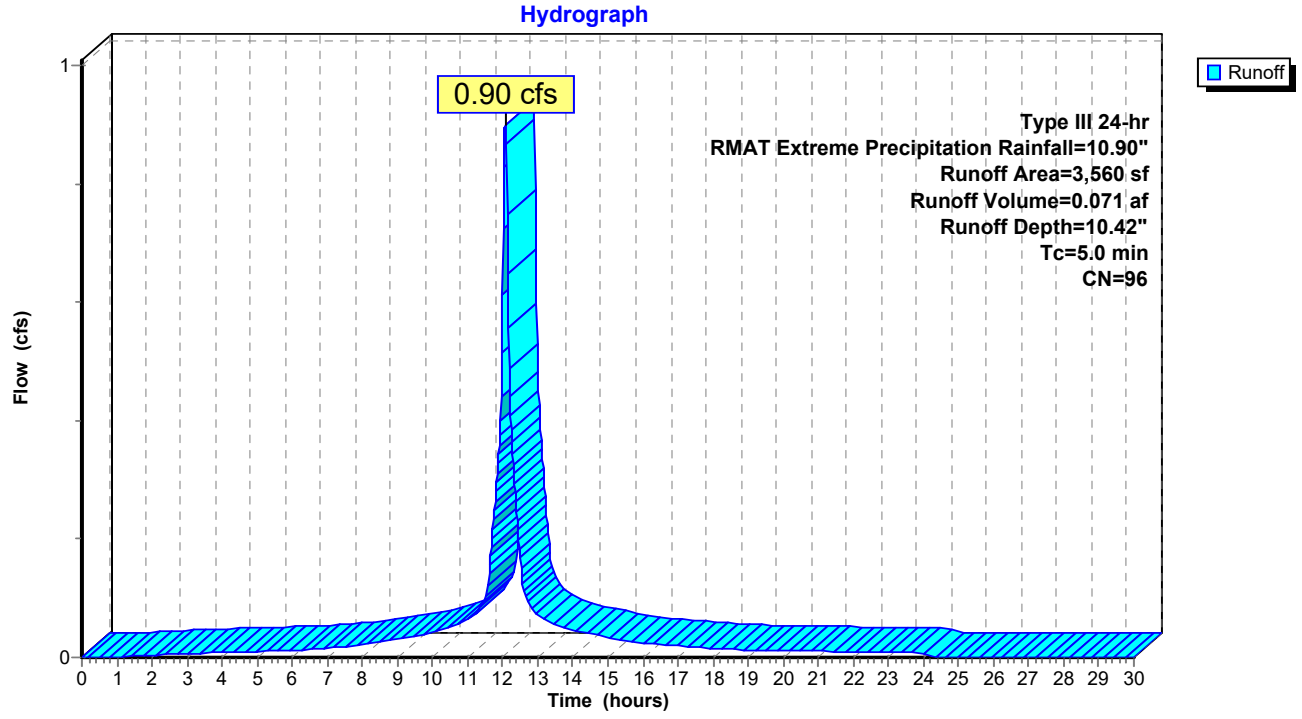
Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.071 af, Depth=10.42"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG D
300	80	>75% Grass cover, Good, HSG D
3,560	96	Weighted Average
300		8.43% Pervious Area
3,260		91.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR5: A Street



Summary for Subcatchment PR6: Grade Runoff

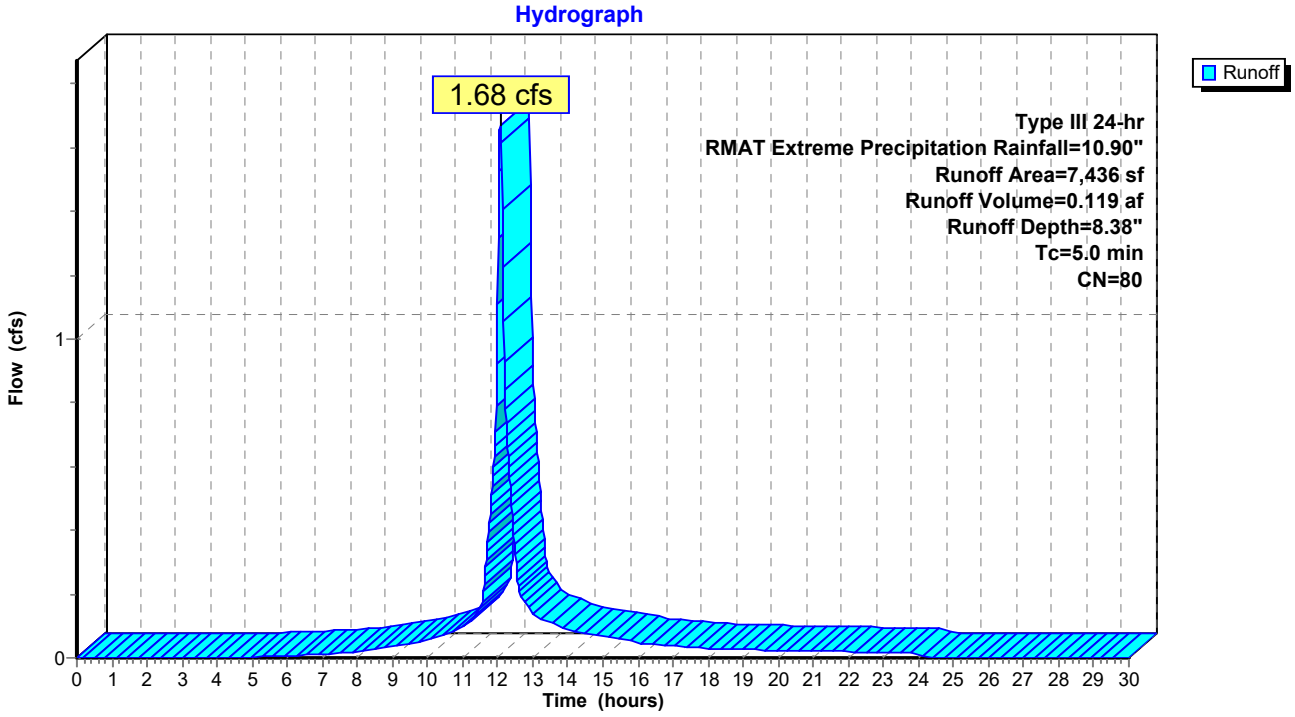
Runoff = 1.68 cfs @ 12.07 hrs, Volume= 0.119 af, Depth= 8.38"
Routed to Link 1L : Fort Point Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs
Type III 24-hr RMAT Extreme Precipitation Rainfall=10.90"

Area (sf)	CN	Description
7,436	80	>75% Grass cover, Good, HSG D
7,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PR6: Grade Runoff



Summary for Pond 1: 42,000 Gal Building Storage Tank

Inflow Area = 0.877 ac,100.00% Impervious, Inflow Depth = 10.66" for RMAT Extreme Precipitation event
Inflow = 9.70 cfs @ 12.07 hrs, Volume= 0.779 af
Outflow = 7.88 cfs @ 12.10 hrs, Volume= 0.751 af, Atten= 19%, Lag= 1.6 min
Primary = 0.96 cfs @ 12.10 hrs, Volume= 0.529 af
Routed to Link 1L : Fort Point Channel
Secondary = 6.92 cfs @ 12.10 hrs, Volume= 0.222 af
Routed to Link 1L : Fort Point Channel

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 7.00' @ 12.10 hrs Surf.Area= 702 sf Storage= 5,614 cf

Plug-Flow detention time= 71.1 min calculated for 0.751 af (96% of inflow)
Center-of-Mass det. time= 49.1 min (785.9 - 736.8)

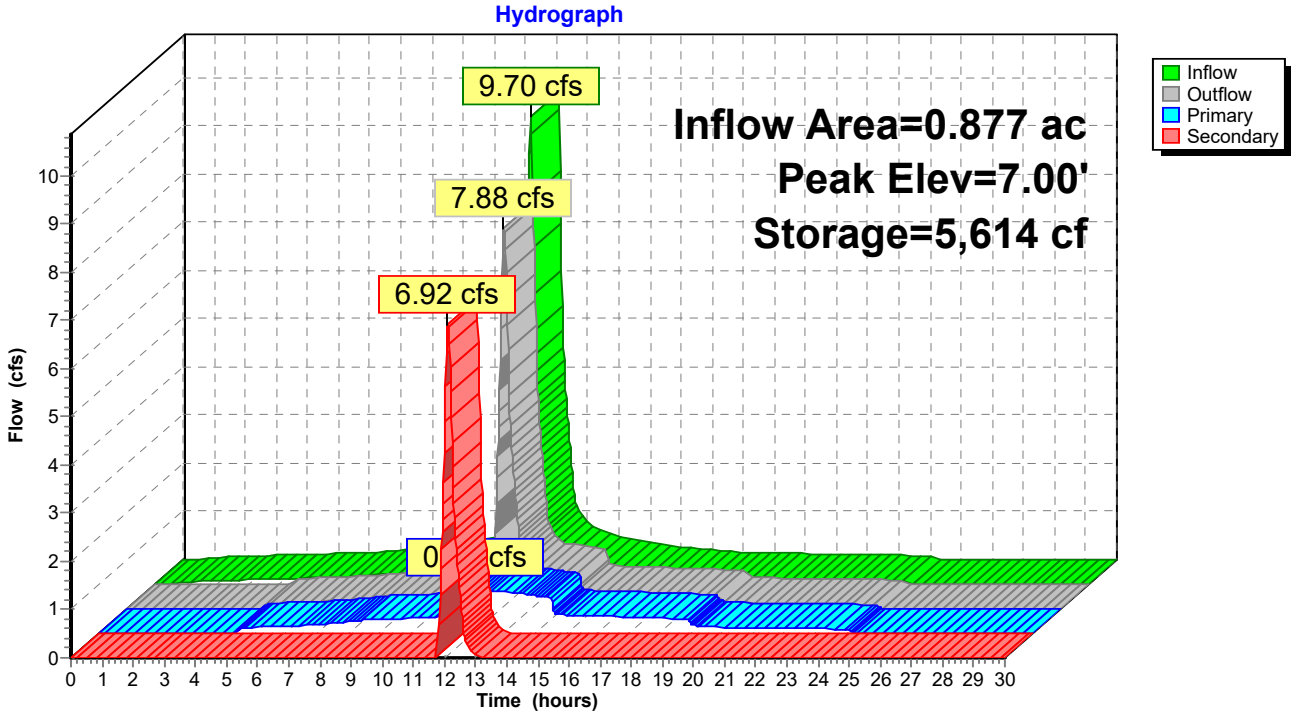
Volume	Invert	Avail.Storage	Storage Description
#1	-1.00'	5,616 cf	**26.00'W x 27.00'L x 8.00'H 42000 gal Storage Tank**

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	0.50'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18
#3	Primary	3.00'	**Zoeller 611 Pump** Discharges@14.00' 4.0" Diam. x 20.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 35.0 110.0 185.0 250.0 Head (feet)= 20.00 15.00 10.00 5.00 -Loss (feet)= 0.02 0.18 0.47 0.82 =Lift (feet)= 19.98 14.82 9.53 4.18

Primary OutFlow Max=0.96 cfs @ 12.10 hrs HW=7.00' (Free Discharge)
2=Zoeller 611 Pump (Pump Controls 0.48 cfs)
3=Zoeller 611 Pump (Pump Controls 0.48 cfs)

Secondary OutFlow Max=6.92 cfs @ 12.10 hrs HW=7.00' (Free Discharge)
1=Orifice/Grate (Orifice Controls 6.92 cfs @ 5.64 fps)

Pond 1: 42,000 Gal Building Storage Tank

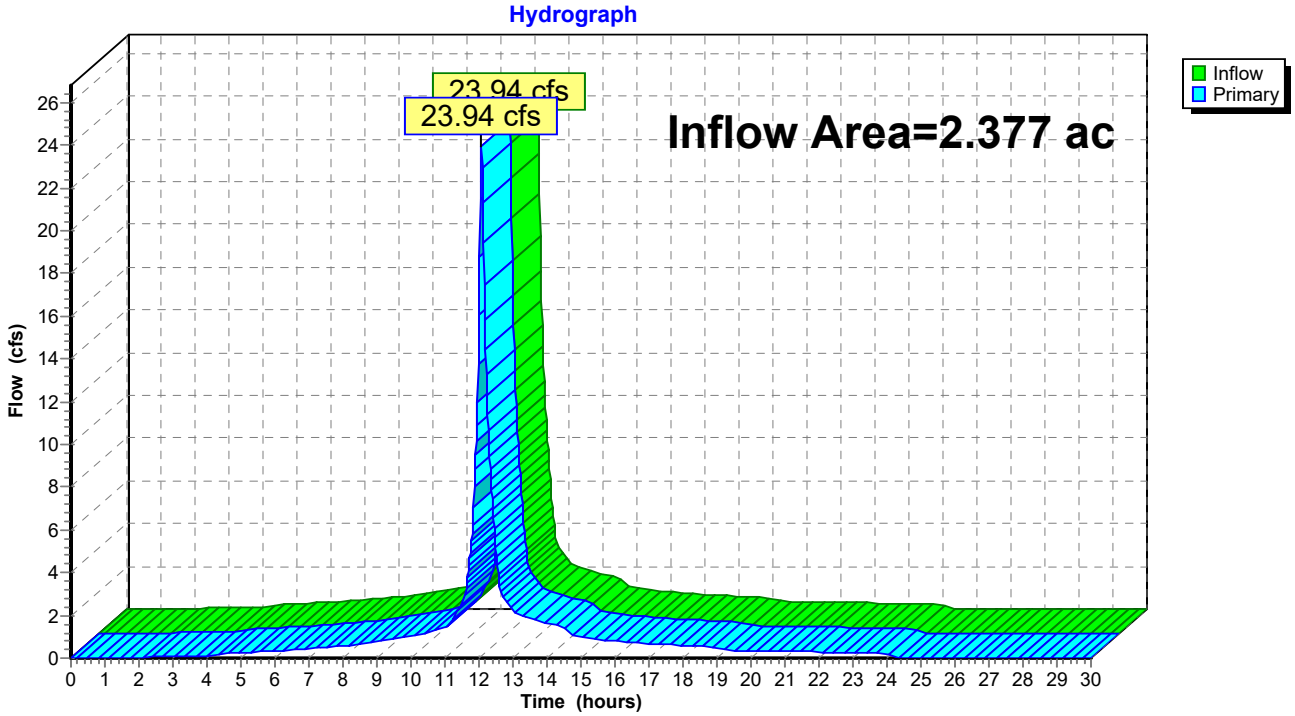


Summary for Link 1L: Fort Point Channel

Inflow Area = 2.377 ac, 79.51% Impervious, Inflow Depth = 10.05" for RMAT Extreme Precipitation event
Inflow = 23.94 cfs @ 12.08 hrs, Volume= 1.991 af
Primary = 23.94 cfs @ 12.08 hrs, Volume= 1.991 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs

Link 1L: Fort Point Channel



232 A Street

Boston, MA

PREPARED FOR

Tishman Speyer
125 High Street
Boston, MA 02110

PREPARED BY

99 High Street
13th Floor
Boston, MA 02110
617.607.2619

November 21, 2023

Table of Contents

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Project Information

Site

232 A Street
Boston, MA 02210

Developer

Tishman Speyer
125 High Street
Boston, MA 02110

Site Supervisor

TBD

Site Contact

Name: TBD

Telephone: TBD

Cell phone: TBD

Email: TBD

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Section A: Source Control

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A Source Control

A comprehensive source control program will be implemented at 232 A Street, which includes the following components:

- Regular pavement sweeping in the public way (standard asphalt section)
- Pavement vacuuming in the private way (pervious pavement section)
- Catch basin cleaning
- Clearing litter from the site
- Enclosure and regular maintenance of all dumpsters
- Spill Prevention training

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Section B: Spill Prevention

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B Spill Prevention

Spill prevention equipment and training will be provided by the property management company.

B.1 Initial Notification

In the event of a spill the facility and/or construction manager or supervisor will be notified immediately.

Facility Manager (name):	TBD
Facility Manager (phone):	TBD
Construction Manager (name) :	TBD
Construction Manager (phone):	TBD

The supervisor will first contact the Fire Department and then notify the Police Department, the Public Health Commission and the Conservation Commission. The Fire Department is ultimately responsible for matters of public health and safety and should be notified immediately.

B.2 Further Notification

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The Massachusetts Department of Environmental Protection (DEP) and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees. A hazardous waste spill report shall be completed as necessary using the attached form.

Emergency Notification Phone Numbers

1. FACILITY MANAGER		
Name:	Phone:	
	Beeper/Cell:	
	Home Phone:	
Alternate Contact:	Phone:	
	Beeper/Cell:	
	Home Phone:	
2. FIRE & POLICE DEPARTMENT	Emergency:	911
3. CLEANUP CONTRACTOR		
Address:	Phone:	
4. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)	Emergency:	(888)-304-1133
5. NATIONAL RESPONSE CENTER	Phone:	(800) 424-8802
Alternate: U.S. Environmental Protection Agency	Emergency:	(800) 424-8802
	Business:	
6. BOSTON PUBLIC HEALTH COMMISSION	Phone:	(617) 534-5395
Boston Conservation Commission:	Phone:	(617)-635-3850

Hazardous Waste & Oil Spill Report

Date: _____ **Time:** _____ **AM / PM**

Exact location (Transformer #): _____

Type of equipment: _____ **Make:** _____ **Size:** _____

S / N: _____ **Weather Conditions:** _____

On or near water? ☐ Yes ☐ No **If yes, name of body of water:** _____

Type of chemical / oil spilled: _____

Amount of chemical / oil spilled: _____

Cause of spill: _____

Measures taken to contain or clean up spill: _____

Amount of chemical / oil recovered: _____ **Method:** _____

Material collected as a result of cleanup:

_____ drums containing _____

_____ drums containing _____

_____ drums containing _____

Location and method of debris disposal: _____

Name and address of any person, firm, or corporation suffering charges: _____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring: _____

Spill reported by General Office by: _____ **Time:** _____ **AM / PM**

Spill reported to DEP / National Response Center by: _____

DEP Date: _____ **Time:** _____ **AM / PM** **Inspector:** _____

NRC Date: _____ **Time:** _____ **AM / PM** **Inspector:** _____

Additional comments: _____

B.3 Assessment – Initial Containment

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. A list of recommended spill equipment to be kept on site is included on the following page.

Fire / Police Department: 911

Boston Public Health Commission (617) 534-5395

Municipality Conservation Commission: (617)-635-3850

Emergency Response Equipment

The following equipment and materials shall be maintained at all times and stored in a secure area for long-term emergency response need.

Supplies	Quantity	Recommended Suppliers
› Sorbent Pillows/"Pigs"	2	http://www.newpig.com Item # KIT276 — mobile container with two pigs
› Sorbent Boom/Sock	25 feet	http://www.forestry-suppliers.com
› Sorbent Pads	50	
› Lite-Dri® Absorbent	5 pounds	
› Shovel	1	Item # 33934 — Shovel (or equivalent)
› Pry Bar	1	Item # 43210 — Manhole cover pick (or equivalent)
› Goggles	1 pair	Item # 23334 — Goggles (or equivalent)
› Gloves – Heavy	1 pair	Item # 90926 — Gloves (or equivalent)

Section C: Snow Management

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C Snow Management

Snow storage areas are shown on the attached Map.

- Snow storage areas will be managed to prevent blockage of storm drain catch basins and stormwater drainage swales. Snow combined with sand and debris may block a storm drainage system, diminishing the infiltration capacity of the system and causing localized flooding.
- Sand and debris deposited on vegetated or paved areas shall be cleared from the site and properly disposed of at the end of the snow season, no later than May 15.
- Snow shall not be dumped into any waterbody, pond, or wetland resource area.
- No sand or grit shall be used on porous pavement systems and other deicers are to be used only to the extent necessary to protect public safety. Operators shall be instructed to monitor deicer application rates, as porous pavements tend to require less deicer due to their operational characteristics.
- Removal of sediments tracked onto porous pavement surfaces is a high-priority maintenance item and will protect the pavement from premature clogging.
- Parking areas paved with permeable asphalt pavement should be plowed carefully. Plow blades should be set approximately 1" higher than usual to avoid scarring the pavement and loosening material that could potentially clog surface pores.

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Section D: Maintenance of Stormwater Management Systems

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D Maintenance of Stormwater Management Systems

D.1 Pavement Systems

D.1.1 Standard Asphalt Pavement

- Sweep or vacuum standard asphalt pavement areas at least four times per year with a rotary brush sweeper, vacuum or regenerative air sweeper and properly dispose of removed material.
- Recommended sweeping schedule:
- Oct/Nov
- Feb/Mar
- Apr/May
- Aug/Sep
- More frequent sweeping of paved surfaces will result in less accumulation in catch basins, less cleaning of subsurface structures, and less disposal costs.
- Check loading docks and dumpster areas frequently for spillage and/or pavement staining and clean as necessary.

D.1.2 Permeable Asphalt Pavement

Regular maintenance of the porous pavement will prevent premature failure of the drainage and water quality treatment benefits of the system. Any areas that drain to the porous pavement must be free from erosion. Heavy sediment loads in these areas can clog the pavement surface and result in premature failure.

Preventing Clogging of Permeable Pavement Surfaces

- Vacuum pavement at least four times per year with a commercial cleaning unit (Schwarze Industries "A" series regenerative air sweeper or equivalent) and properly dispose of removed material.
- The use of pavement washing systems or compressed air units is not recommended as it may result in diminished permeability.

- Maintain vegetated areas adjacent to permeable asphalt pavement to prevent washout of soil onto surface.
- Do not allow construction staging, soil/mulch storage, etc. on unprotected pavement surface. If necessary, place tarp or other impermeable material beneath the stockpiled materials and do not allow to runoff onto pavement.
- Do not apply any type of sealant to porous asphalt pavement.

Snow and Ice Removal

- Do not stockpile snow on pavement surface. Sand and grit in snow will clog pavement.
- Plow parking areas paved with permeable asphalt pavement carefully. Plow blades should be set approximately 1" higher than usual to avoid scarring the pavement and loosening material that could potentially clog surface pores.
- Do not apply abrasives such as sand or grit on or adjacent to porous asphalt pavement.
- Monitor application rates of deicing materials and reduce application rate accordingly. Porous pavements tend to require less deicer per unit area because the water is not required to remain liquid over the entire parking surface area before discharge.

Inspecting the System

- Inspect areas paved with permeable asphalt pavement monthly during the first three months following installation and annually thereafter.
- Inspect the porous pavement surface annually for deterioration or spalling. Annual inspections should take place after large storms, when puddles will make any clogging obvious

Repairing Damages

- Do not apply any type of sealant to porous asphalt pavement.
- Spot-clogging may be fixed by drilling 1.3 centimeter (half-inch) holes through the porous pavement layer every few feet.
- Damaged areas less than 50 square feet may be patched with porous or standard asphalt.
- Larger areas will be patched with approved porous asphalt.
- Repairs of drainage structures shall be completed promptly to ensure continued proper functioning of the system.

D.1.3 Permeable Pavers

The primary maintenance requirement for permeable pavers is to clean the surface drainage voids. Fine debris and dirt accumulate in the drainage openings and reduce the pavement's flow capacity. Even though some irreplaceable loss in permeability should be expected over the paver's lifetime, you can increase the longevity of the system by following the maintenance schedule for vacuum sweeping and high-pressure washing, restricting the area's use by heavy vehicles, limiting the use of de-icing chemicals and sand, and implementing a stringent sediment control plan.

Preventing Clogging of Permeable Paver Surface Areas

- Patio areas and/or other areas with permeable pavers shall be cleaned annually with vacuums or washed with high pressure washers.
- Do not allow construction staging, soil/mulch storage, etc. on unprotected pavement surface.
- Maintain vegetated areas adjacent to areas with permeable pavers to prevent washout of soil onto surface.
- Do not apply any type of sealant to permeable pavers.

Removing Snow and Ice

- Shovel snow off permeable pavers as necessary.
- Do not apply abrasives such as sand or grit on or adjacent to permeable pavers.
- Avoid plowing of areas with permeable pavers.

Inspecting the System

- Inspect areas paved with permeable pavers monthly for the first three months after construction to ensure proper functioning and correct any areas that have settled or experienced washouts.
- Inspect areas paved with permeable pavers annually after initial three-month period. Annual inspections should take place after large storms, when puddles will make any clogging obvious.

Repairing Damages

- Do not apply any type of sealant to permeable pavers.
- If necessary, add additional aggregate fill material made up of clean sand or gravel.
- Damaged interlocking paving blocks should be replaced.

D.2 Structural Stormwater Management Devices

D.2.1 Catch Basins

The proper removal of sediments and associated pollutants and trash occurs only when catch basin inlets and sumps are cleaned out regularly. The more frequent the cleaning, the less likely sediments will be re-suspended and subsequently discharged. In addition, frequent cleaning also results in more volume available for future deposition and enhances the overall performance. As noted in the pavement Operation and Maintenance (O&M) section, more frequent sweeping of paved surfaces will result in less accumulation in catch basins, less cleaning of subsurface structures, and less disposal costs.

Catch basins at the Project Site are constructed with sumps (minimum 4 feet) and hooded outlets to trap debris, sediments, and floating contaminants. Disposal of all sediments must be in accordance with applicable local, state, and federal guidelines.

Inspections and Cleaning

- All catch basins shall be inspected at least four times per year and cleaned a minimum of at least once per year.
- Sediment (if more than six inches deep) and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary
- During colder periods, the catch basin grates must be kept free of snow and ice.
- During warmer periods, the catch basin grates must be kept free of leaves, litter, sand, and debris.

D.2.2 Structural Water Quality Devices

The stormwater drainage system has structural water quality devices. These are Stormceptor 900 Standard Treatment Cells, which efficiently remove sediment and hydrocarbons from stormwater runoff.

- Inspect devices monthly for the first three months after construction.
- After initial three-month period, all water quality units are to be inspected at least four times per year and cleaned a minimum of at least once per year (when sediment reaches 8" in depth).
- Remove oil through 6" inspection/oil port.
- Remove sediment through 24" outlet riser pipe.
- Follow manufacturer instructions and contact manufacturer if system is malfunctioning.

D.2.3 Groundwater Injection Wells

The groundwater injection wells infiltrate rooftop runoff once it has been collected in the building stormwater detention tank.

- Inspect wells at least once per year; verify no significant iron staining is present and road boxes are watertight and in good working condition.

D.2.4 Roof Drain Leaders & Stormwater Detention Tank

Roof runoff from the building at 232 A Street is directed to the stormwater detention tank in the building basement.

- Perform routine roof inspections quarterly.
- Keep roofs clean and free of debris.

- Keep roof drainage systems clear.
- Keep roof access limited to authorized personnel.
- Clean inlets twice per year or as necessary.
- Inspect detention tank at least twice per year for sediment levels and removal as necessary (when >6 inches).
- Follow manufacturer instructions for operation and maintenance of detention tank pumps, and contact manufacturer if system is malfunctioning.

Section E: Operations and Maintenance Plan Summary

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E Operations and Maintenance Plan Summary

This Operation and Maintenance Plan has been prepared in accordance with the Stormwater Management Policy developed by the DEP and CZM and Boston DPW regulations as applicable. It specifies operational practices and drainage system maintenance requirements for the 232 A Street development. Requirements should be adjusted by the site manager as necessary to ensure successful functioning of system components.

E.1 Routine Maintenance Checklists

Routine required maintenance is described in Sections A – D. The following checklists are to be used by the property manager to implement and document the required maintenance and inspection tasks.

E.2 Reporting and Documentation

The site supervisor shall be responsible for ensuring that the scheduled tasks as described in this plan are appropriately completed and recorded in the Maintenance Log. Accurate records of all inspections, routine maintenance and repairs shall be documented and these records shall be available for inspection by members of the Boston Conservation Commission or other designated body, or their designated agent, upon request.

The Maintenance Log shall:

- Document the completion of required maintenance tasks.
- Identify the person responsible for the completion of tasks.
- Identify any outstanding problems, malfunctions or inconsistencies identified during the course of routine maintenance.
- Document specific repairs or replacements.

E.3 Construction Practices Maintenance/ Evaluation Checklist

232 A Street – Boston, Massachusetts

Best Management Practice	Inspection Frequency	Date Inspected	Inspector Initials	Minimum Maintenance and Key Items to Check	Cleaning or Repair Needed ☐Yes/No (List Items)	Date of Cleaning or Repair	Performed by:
Hay Bales/ Silt Fencing	Weekly and after any rainfall			Sediment build up, broken bales or stakes			
Gravel Construction Entrance	Weekly and after any rainfall			Filled voids, runoff/sediments into street			
Catch Basin Protection	Weekly and after any rainfall			Clogged or sediment build-up at surface or in basin			
Diversion Channels	Weekly and after any rainfall			Maintained, moved as necessary to correct locations, Check for erosion or breakout			
Temporary Sedimentation Basins	Weekly and after any rainfall			Cracking, erosion, breakout, sediment buildup, contaminants			

Stormwater Control Manager: _____

E.4 Long-term Maintenance/Evaluation Checklist

Project Name – City, State

Best Management Practice	Minimum Maintenance and Key Items to Check	Inspection Frequency	Date Inspected	Inspector Initials	Cleaning Frequency	Cleaning or Repair Needed ☐Yes/No	Date of Cleaning or Repair	Performed by:
Street Sweeping	Vacuum sweeper	4X per year			4X per year* minimum			
Permeable Pavement	Vacuum sweeper	4X per year			4X per year* minimum			
Permeable Pavers	Vacuum sweep or pressure wash	1X per year			as necessary			
Deep Sump and Hooded Catch basins	Remove sediment 1X per year or if >6 inches	4X per year			1X per year or as necessary			
Stormceptor Treatment Cells	Remove sediment and oil 1X per year or if sediment >8 inches	4X per year			1X per year or as necessary			
Groundwater Injection Wells	Verify no significant iron staining is present and road boxes are watertight and in good working condition	1X per year						
Roof Drains	Remove debris, clean inlets draining to subsurface bed	4x per year roof inspection			2x per year inlet cleaning, roof debris as necessary			
Stormwater Detention Tank	Inspect and remove sediment 1x per year or if >6 inches	2x per year			2x per year minimum			

* Recommend sweeping Oct/Nov, Feb/Mar, Apr/May Jul/Aug with late winter most important

Stormwater Control Manager: _____

E.5 Maintenance Checklists and Device Location Maps

These checklists are provided for the maintenance crew to photocopy and use when conducting inspections and cleaning activities to the stormwater management systems.

Maintenance Checklists

Catchbasins – Inspect 4 times per year, clean when sediment depth >6 inches or at least once per year.

Catch Basin	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
CB 1				/ /	
CB 2				/ /	

Outfalls – Inspect 4 times per year, replace any dislodged rip-rap, remove excess vegetation, remove any debris.

Outfall	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
OF 1				/ /	
OF 2				/ /	
OF 3				/ /	
				/ /	
				/ /	

Water Quality Units – Inspect 4 times per year, clean at least once per year or when sediment reaches a depth of 8 inches.

Water Quality Unit	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
WQU 1				/ /	
WQU 2				/ /	
WQU 3				/ /	
				/ /	
				/ /	

Infiltration/Detention Basins – Inspect once per year, remove sediment if more than 6 inches has accumulated in sediment forebay or sediment collection row.

Basin	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
IB 1				/ /	
IB 2				/ /	
				/ /	

Rain Gardens/Bioretention Basins – Inspect twice during first year and annually thereafter for sediment buildup, erosion, vegetative conditions, etc. If sediment build-up is found, core aeration or cultivating of unvegetated areas may be required to ensure adequate filtration. The overflow should be inspected annually to ensure that it is functioning.

Rain Garden	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
RG 1				/ /	
RG 2				/ /	
				/ /	
				/ /	

Permeable Asphalt Pavement Areas – Vacuum pavement as needed up to four times per year with a commercial cleaning unit and dispose of removed materials, inspect once per year, remove sediment if more than 6 inches has accumulated in sediment forebay or sediment collection row

Street Name	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
Main Street				/ /	
				/ /	

Roof Runoff Downspouts – Inspect roof drains monthly, clean inlets draining to the subsurface bed twice per year.

Bldg #	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
Bldg 1				/ /	
Bldg 2				/ /	
				/ /	

Device Location Maps

To be developed during design and permitting

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Snow Storage Areas Map

To be developed

Section F: Product Literature

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F Product Literature

TO BE INCLUDED UPON FINAL SELECTION

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Appendix C: Transportation Supporting Documentation

Contents –

- Traffic Count Data
- Crash Data
- Trip Generation
- Transit Analysis Worksheets
- Traffic Operations Analysis

Appendix

- Traffic Count Data
- Crash Data
- Trip Generation
- Transit Analysis Worksheets
- Traffic Operations Analysis

Traffic Count Data

Flex Lot Driveway
south of Binford Street
City, State: Boston, MA
Client: VHB/ M. Santos
Site Code: 15921

PDI File # **239422 ATR-A**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Count Date: **Wednesday, May 31, 2023**
Direction: **NB**

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	0	0	0	0
5:30 AM	0	0	0	0
5:45 AM	0	0	0	0
6:00 AM	0	0	0	0
6:15 AM	0	0	0	0
6:30 AM	0	0	0	0
6:45 AM	0	0	0	0
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	1	0	0	1
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
9:00 AM	0	0	0	0
9:15 AM	1	0	0	1
9:30 AM	0	0	0	0
9:45 AM	0	0	0	0
10:00 AM	0	0	0	0
10:15 AM	0	0	0	0
10:30 AM	0	0	0	0
10:45 AM	0	0	0	0
11:00 AM	0	0	0	0
11:15 AM	0	0	0	0
11:30 AM	0	0	0	0
11:45 AM	1	0	0	1
AM Total	**3**	**0**	**0**	**3**
Percentage	**100.00%**	**0.00%**	**0.00%**	
AM Peak	**7:15 AM**	**12:00 AM**	**12:00 AM**	**7:15 AM**
Volume	**1**	**0**	**0**	**1**

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	0	0
12:15 PM	0	0	0	0
12:30 PM	0	0	0	0
12:45 PM	1	0	0	1
1:00 PM	0	0	0	0
1:15 PM	0	0	0	0
1:30 PM	3	0	0	3
1:45 PM	1	0	0	1
2:00 PM	1	0	0	1
2:15 PM	1	0	0	1
2:30 PM	1	0	0	1
2:45 PM	2	0	0	2
3:00 PM	2	0	0	2
3:15 PM	5	0	0	5
3:30 PM	8	0	0	8
3:45 PM	1	0	0	1
4:00 PM	5	0	0	5
4:15 PM	4	0	0	4
4:30 PM	9	0	0	9
4:45 PM	8	0	0	8
5:00 PM	12	0	0	12
5:15 PM	11	0	0	11
5:30 PM	8	0	0	8
5:45 PM	3	0	0	3
6:00 PM	1	0	0	1
6:15 PM	4	0	0	4
6:30 PM	3	0	0	3
6:45 PM	4	0	0	4
7:00 PM	4	0	0	4
7:15 PM	3	0	0	3
7:30 PM	3	0	0	3
7:45 PM	2	0	0	2
8:00 PM	3	0	0	3
8:15 PM	2	0	0	2
8:30 PM	0	0	0	0
8:45 PM	0	0	0	0
9:00 PM	2	0	0	2
9:15 PM	0	0	0	0
9:30 PM	1	0	0	1
9:45 PM	3	0	0	3
10:00 PM	0	0	0	0
10:15 PM	2	0	0	2
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	1	0	0	1
11:15 PM	0	0	0	0
11:30 PM	1	0	0	1
11:45 PM	0	0	0	0
PM Total	**125**	**0**	**0**	**125**
Percentage	**100.00%**	**0.00%**	**0.00%**	
PM Peak	**4:30 PM**	**12:00 PM**	**12:00 PM**	**4:30 PM**
Volume	**40**	**0**	**0**	**40**
Day Total	**128**	**0**	**0**	**128**
Percentage	**100.00%**	**0.00%**	**0.00%**	

Flex Lot Driveway
south of Binford Street
City, State: Boston, MA
Client: VHB/ M. Santos
Site Code: 15921

PDI File # **239422 ATR-A**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Count Date: **Thursday, June 1, 2023**
Direction: **NB**

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	0	0	0	0
5:30 AM	0	0	0	0
5:45 AM	0	0	0	0
6:00 AM	0	0	0	0
6:15 AM	0	0	0	0
6:30 AM	0	0	0	0
6:45 AM	0	0	0	0
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
9:00 AM	0	0	0	0
9:15 AM	0	0	0	0
9:30 AM	0	0	0	0
9:45 AM	0	0	0	0
10:00 AM	0	0	0	0
10:15 AM	0	0	0	0
10:30 AM	0	0	0	0
10:45 AM	0	0	0	0
11:00 AM	0	0	0	0
11:15 AM	1	0	0	1
11:30 AM	0	0	0	0
11:45 AM	0	0	0	0
AM Total	**1**	**0**	**0**	**1**
Percentage	**100.00%**	**0.00%**	**0.00%**	
AM Peak	**10:30 AM**	**12:00 AM**	**12:00 AM**	**10:30 AM**
Volume	**1**	**0**	**0**	**1**

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	0	0
12:15 PM	1	0	0	1
12:30 PM	0	0	0	0
12:45 PM	0	0	0	0
1:00 PM	0	0	0	0
1:15 PM	0	0	0	0
1:30 PM	0	0	0	0
1:45 PM	1	0	0	1
2:00 PM	6	0	0	6
2:15 PM	2	0	0	2
2:30 PM	2	0	0	2
2:45 PM	2	0	0	2
3:00 PM	3	0	0	3
3:15 PM	2	0	0	2
3:30 PM	5	0	0	5
3:45 PM	5	0	0	5
4:00 PM	1	0	0	1
4:15 PM	1	0	0	1
4:30 PM	4	0	0	4
4:45 PM	6	0	0	6
5:00 PM	6	0	0	6
5:15 PM	7	0	0	7
5:30 PM	3	0	0	3
5:45 PM	12	0	0	12
6:00 PM	6	0	0	6
6:15 PM	4	0	0	4
6:30 PM	6	0	0	6
6:45 PM	3	0	0	3
7:00 PM	3	0	0	3
7:15 PM	5	0	0	5
7:30 PM	2	0	0	2
7:45 PM	1	0	0	1
8:00 PM	2	0	0	2
8:15 PM	5	0	0	5
8:30 PM	1	0	0	1
8:45 PM	2	0	0	2
9:00 PM	1	0	0	1
9:15 PM	4	0	0	4
9:30 PM	2	0	0	2
9:45 PM	0	0	0	0
10:00 PM	0	0	0	0
10:15 PM	0	0	0	0
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	0	0	0	0
11:15 PM	0	0	0	0
11:30 PM	2	0	0	2
11:45 PM	1	0	0	1
PM Total	**119**	**0**	**0**	**119**
Percentage	**100.00%**	**0.00%**	**0.00%**	
PM Peak	**5:00 PM**	**12:00 PM**	**12:00 PM**	**5:00 PM**
Volume	**28**	**0**	**0**	**28**
Day Total	**120**	**0**	**0**	**120**
Percentage	**100.00%**	**0.00%**	**0.00%**	

Flex Lot Driveway
south of Binford Street
City, State: Boston, MA
Client: VHB/ M. Santos
Site Code: 15921

PDI File # **239422 ATR-A**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Count Date: **Wednesday, May 31, 2023**
Direction: **SB**

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	1	0	0	1
5:30 AM	1	0	0	1
5:45 AM	1	0	0	1
6:00 AM	0	0	0	0
6:15 AM	3	0	0	3
6:30 AM	4	0	0	4
6:45 AM	4	0	0	4
7:00 AM	5	0	0	5
7:15 AM	1	0	0	1
7:30 AM	4	0	0	4
7:45 AM	3	0	0	3
8:00 AM	6	0	0	6
8:15 AM	7	0	0	7
8:30 AM	14	0	0	14
8:45 AM	9	0	0	9
9:00 AM	12	0	0	12
9:15 AM	8	0	0	8
9:30 AM	8	0	0	8
9:45 AM	1	0	0	1
10:00 AM	2	0	0	2
10:15 AM	3	0	0	3
10:30 AM	2	0	0	2
10:45 AM	4	0	0	4
11:00 AM	1	0	0	1
11:15 AM	3	0	0	3
11:30 AM	0	0	0	0
11:45 AM	1	0	0	1
AM Total	**108**	**0**	**0**	**108**
Percentage	**100.00%**	**0.00%**	**0.00%**	
AM Peak	**8:30 AM**	**12:00 AM**	**12:00 AM**	**8:30 AM**
Volume	**43**	**0**	**0**	**43**

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	3	0	0	3
12:15 PM	0	0	0	0
12:30 PM	0	0	0	0
12:45 PM	0	0	0	0
1:00 PM	0	0	0	0
1:15 PM	0	0	0	0
1:30 PM	1	0	0	1
1:45 PM	0	0	0	0
2:00 PM	1	0	0	1
2:15 PM	1	0	0	1
2:30 PM	0	0	0	0
2:45 PM	0	0	0	0
3:00 PM	0	0	0	0
3:15 PM	1	0	0	1
3:30 PM	0	0	0	0
3:45 PM	1	0	0	1
4:00 PM	1	0	0	1
4:15 PM	1	0	0	1
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	1	0	0	1
5:30 PM	0	0	0	0
5:45 PM	1	0	0	1
6:00 PM	2	0	0	2
6:15 PM	0	0	0	0
6:30 PM	0	0	0	0
6:45 PM	1	0	0	1
7:00 PM	0	0	0	0
7:15 PM	0	0	0	0
7:30 PM	0	0	0	0
7:45 PM	0	0	0	0
8:00 PM	0	0	0	0
8:15 PM	0	0	0	0
8:30 PM	0	0	0	0
8:45 PM	0	0	0	0
9:00 PM	0	0	0	0
9:15 PM	0	0	0	0
9:30 PM	0	0	0	0
9:45 PM	0	0	0	0
10:00 PM	0	0	0	0
10:15 PM	1	0	0	1
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	0	0	0	0
11:15 PM	0	0	0	0
11:30 PM	0	0	0	0
11:45 PM	0	0	0	0
PM Total	**16**	**0**	**0**	**16**
Percentage	**100.00%**	**0.00%**	**0.00%**	
PM Peak	**5:15 PM**	**12:00 PM**	**12:00 PM**	**5:15 PM**
Volume	**4**	**0**	**0**	**4**
Day Total	**124**	**0**	**0**	**124**
Percentage	**100.00%**	**0.00%**	**0.00%**	

Flex Lot Driveway
south of Binford Street
City, State: Boston, MA
Client: VHB/ M. Santos
Site Code: 15921

PDI File # **239422 ATR-A**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Count Date: **Thursday, June 1, 2023**
Direction: **SB**

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	0	0	0	0
5:30 AM	0	0	0	0
5:45 AM	2	0	0	2
6:00 AM	0	0	0	0
6:15 AM	2	0	0	2
6:30 AM	2	0	0	2
6:45 AM	4	0	0	4
7:00 AM	3	0	0	3
7:15 AM	2	0	0	2
7:30 AM	3	0	0	3
7:45 AM	6	0	0	6
8:00 AM	9	0	0	9
8:15 AM	6	0	0	6
8:30 AM	10	0	0	10
8:45 AM	11	0	0	11
9:00 AM	6	0	0	6
9:15 AM	5	0	0	5
9:30 AM	7	0	0	7
9:45 AM	8	0	0	8
10:00 AM	5	0	0	5
10:15 AM	1	0	0	1
10:30 AM	2	0	0	2
10:45 AM	1	0	0	1
11:00 AM	2	0	0	2
11:15 AM	4	0	0	4
11:30 AM	1	0	0	1
11:45 AM	0	0	0	0
AM Total	**102**	**0**	**0**	**102**
Percentage	**100.00%**	**0.00%**	**0.00%**	
AM Peak	**8:00 AM**	**12:00 AM**	**12:00 AM**	**8:00 AM**
Volume	**36**	**0**	**0**	**36**

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	0	0
12:15 PM	0	0	0	0
12:30 PM	0	0	0	0
12:45 PM	0	0	0	0
1:00 PM	1	0	0	1
1:15 PM	1	0	0	1
1:30 PM	1	0	0	1
1:45 PM	1	0	0	1
2:00 PM	0	0	0	0
2:15 PM	0	0	0	0
2:30 PM	1	0	0	1
2:45 PM	0	0	0	0
3:00 PM	0	0	0	0
3:15 PM	0	0	0	0
3:30 PM	0	0	0	0
3:45 PM	2	0	0	2
4:00 PM	0	0	0	0
4:15 PM	3	0	0	3
4:30 PM	0	0	0	0
4:45 PM	2	0	0	2
5:00 PM	0	0	0	0
5:15 PM	1	0	0	1
5:30 PM	0	0	0	0
5:45 PM	2	0	0	2
6:00 PM	0	0	0	0
6:15 PM	0	0	0	0
6:30 PM	0	0	0	0
6:45 PM	0	0	0	0
7:00 PM	1	0	0	1
7:15 PM	0	0	0	0
7:30 PM	0	0	0	0
7:45 PM	0	0	0	0
8:00 PM	0	0	0	0
8:15 PM	0	0	0	0
8:30 PM	0	0	0	0
8:45 PM	0	0	0	0
9:00 PM	0	0	0	0
9:15 PM	0	0	0	0
9:30 PM	1	0	0	1
9:45 PM	0	0	0	0
10:00 PM	0	0	0	0
10:15 PM	0	0	0	0
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	0	0	0	0
11:15 PM	0	0	0	0
11:30 PM	0	0	0	0
11:45 PM	0	0	0	0
PM Total	**17**	**0**	**0**	**17**
Percentage	**100.00%**	**0.00%**	**0.00%**	
PM Peak	**3:30 PM**	**12:00 PM**	**12:00 PM**	**3:30 PM**
Volume	**5**	**0**	**0**	**5**
Day Total	**119**	**0**	**0**	**119**
Percentage	**100.00%**	**0.00%**	**0.00%**	

Flex Lot Driveway
south of Binford Street
City, State: Boston, MA
Client: VHB/ M. Santos
Site Code: 15921

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

PDI File #)422 ATI

Direction: NB

Weekly Report

Day	Wednesday		Thursday											
Date	05/31/23		06/01/23											
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0
1:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0
2:00	0	1	0	6	0	0	0	0	0	0	0	0	0	0
2:15	0	1	0	2	0	0	0	0	0	0	0	0	0	0
2:30	0	1	0	2	0	0	0	0	0	0	0	0	0	0
2:45	0	2	0	2	0	0	0	0	0	0	0	0	0	0
3:00	0	2	0	3	0	0	0	0	0	0	0	0	0	0
3:15	0	5	0	2	0	0	0	0	0	0	0	0	0	0
3:30	0	8	0	5	0	0	0	0	0	0	0	0	0	0
3:45	0	1	0	5	0	0	0	0	0	0	0	0	0	0
4:00	0	5	0	1	0	0	0	0	0	0	0	0	0	0
4:15	0	4	0	1	0	0	0	0	0	0	0	0	0	0
4:30	0	9	0	4	0	0	0	0	0	0	0	0	0	0
4:45	0	8	0	6	0	0	0	0	0	0	0	0	0	0
5:00	0	12	0	6	0	0	0	0	0	0	0	0	0	0
5:15	0	11	0	7	0	0	0	0	0	0	0	0	0	0
5:30	0	8	0	3	0	0	0	0	0	0	0	0	0	0
5:45	0	3	0	12	0	0	0	0	0	0	0	0	0	0
6:00	0	1	0	6	0	0	0	0	0	0	0	0	0	0
6:15	0	4	0	4	0	0	0	0	0	0	0	0	0	0
6:30	0	3	0	6	0	0	0	0	0	0	0	0	0	0
6:45	0	4	0	3	0	0	0	0	0	0	0	0	0	0
7:00	0	4	0	3	0	0	0	0	0	0	0	0	0	0
7:15	0	3	0	5	0	0	0	0	0	0	0	0	0	0
7:30	0	3	0	2	0	0	0	0	0	0	0	0	0	0
7:45	0	2	0	1	0	0	0	0	0	0	0	0	0	0
8:00	1	3	0	2	0	0	0	0	0	0	0	0	0	0
8:15	0	2	0	5	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0
9:00	0	2	0	1	0	0	0	0	0	0	0	0	0	0
9:15	1	0	0	4	0	0	0	0	0	0	0	0	0	0
9:30	0	1	0	2	0	0	0	0	0	0	0	0	0	0
9:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0
11:30	0	1	0	2	0	0	0	0	0	0	0	0	0	0
11:45	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Total	**3**	**125**	**1**	**119**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Day Total	**128**		**120**		**0**		**0**		**0**		**0**		**0**	
Peak HR	**7:15 AM**	**4:30 PM**	**10:30 AM**	**5:00 PM**										
Volume	**1**	**40**	**1**	**28**										

Flex Lot Driveway
south of Binford Street
City, State: Boston, MA
Client: VHB/ M. Santos
Site Code: 15921

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

PDI File #)422 ATI

Direction: SB

Weekly Report

Day	Wednesday		Thursday											
Date	05/31/23		06/01/23											
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0
1:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	1	0	2	0	0	0	0	0	0	0	0	0	0
4:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:15	0	1	0	3	0	0	0	0	0	0	0	0	0	0
4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	1	1	0	1	0	0	0	0	0	0	0	0	0	0
5:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	1	1	2	2	0	0	0	0	0	0	0	0	0	0
6:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0
6:15	3	0	2	0	0	0	0	0	0	0	0	0	0	0
6:30	4	0	2	0	0	0	0	0	0	0	0	0	0	0
6:45	4	1	4	0	0	0	0	0	0	0	0	0	0	0
7:00	5	0	3	1	0	0	0	0	0	0	0	0	0	0
7:15	1	0	2	0	0	0	0	0	0	0	0	0	0	0
7:30	4	0	3	0	0	0	0	0	0	0	0	0	0	0
7:45	3	0	6	0	0	0	0	0	0	0	0	0	0	0
8:00	6	0	9	0	0	0	0	0	0	0	0	0	0	0
8:15	7	0	6	0	0	0	0	0	0	0	0	0	0	0
8:30	14	0	10	0	0	0	0	0	0	0	0	0	0	0
8:45	9	0	11	0	0	0	0	0	0	0	0	0	0	0
9:00	12	0	6	0	0	0	0	0	0	0	0	0	0	0
9:15	8	0	5	0	0	0	0	0	0	0	0	0	0	0
9:30	8	0	7	1	0	0	0	0	0	0	0	0	0	0
9:45	1	0	8	0	0	0	0	0	0	0	0	0	0	0
10:00	2	0	5	0	0	0	0	0	0	0	0	0	0	0
10:15	3	1	1	0	0	0	0	0	0	0	0	0	0	0
10:30	2	0	2	0	0	0	0	0	0	0	0	0	0	0
10:45	4	0	1	0	0	0	0	0	0	0	0	0	0	0
11:00	1	0	2	0	0	0	0	0	0	0	0	0	0	0
11:15	3	0	4	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0
11:45	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**108**	**16**	**102**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Day Total	**124**		**119**		**0**		**0**		**0**		**0**		**0**	
Peak HR	**8:30 AM**	**5:15 PM**	**8:00 AM**	**3:30 PM**										
Volume	**43**	**4**	**36**	**5**										

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	B Street from North					Congress Street from East					I-90 Ramps from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	10	16	3	1	30	8	8	65	0	81	92	27	39	0	158	15	21	18	0	54	323
7:15 AM	8	29	6	0	43	14	15	63	1	93	94	33	51	1	179	19	26	26	0	71	386
7:30 AM	11	15	7	0	33	8	22	78	0	108	83	33	49	1	166	17	25	29	0	71	378
7:45 AM	16	9	4	1	30	15	27	91	0	133	98	43	52	0	193	21	28	29	0	78	434
Total	45	69	20	2	136	45	72	297	1	415	367	136	191	2	696	72	100	102	0	274	1521
8:00 AM	11	26	12	1	50	17	20	77	0	114	95	50	56	0	201	24	24	24	0	72	437
8:15 AM	16	26	9	0	51	13	30	103	0	146	78	40	50	1	169	33	24	28	0	85	451
8:30 AM	21	21	6	0	48	18	17	73	0	108	88	56	63	0	207	20	20	26	0	66	429
8:45 AM	10	23	4	0	37	26	28	94	0	148	103	47	59	0	209	15	31	28	0	74	468
Total	58	96	31	1	186	74	95	347	0	516	364	193	228	1	786	92	99	106	0	297	1785
Grand Total	103	165	51	3	322	119	167	644	1	931	731	329	419	3	1482	164	199	208	0	571	3306
Approach %	32.0	51.2	15.8	0.9		12.8	17.9	69.2	0.1		49.3	22.2	28.3	0.2		28.7	34.9	36.4	0.0		
Total %	3.1	5.0	1.5	0.1	9.7	3.6	5.1	19.5	0.0	28.2	22.1	10.0	12.7	0.1	44.8	5.0	6.0	6.3	0.0	17.3	
Exiting Leg Total					659					982					976					689	3306
Cars	95	148	45	3	291	108	155	586	1	850	664	317	408	3	1392	157	177	204	0	538	3071
% Cars	92.2	89.7	88.2	100.0	90.4	90.8	92.8	91.0	100.0	91.3	90.8	96.4	97.4	100.0	93.9	95.7	88.9	98.1	0.0	94.2	92.9
Exiting Leg Total					632					887					894					658	3071
Heavy Vehicles	8	17	6	0	31	11	12	58	0	81	67	12	11	0	90	7	22	4	0	33	235
% Heavy Vehicles	7.8	10.3	11.8	0.0	9.6	9.2	7.2	9.0	0.0	8.7	9.2	3.6	2.6	0.0	6.1	4.3	11.1	1.9	0.0	5.8	7.1
Exiting Leg Total					27					95					82					31	235

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	B Street from North					Congress Street from East					I-90 Ramps from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	11	26	12	1	50	17	20	77	0	114	95	50	56	0	201	24	24	24	0	72	437
8:15 AM	16	26	9	0	51	13	30	103	0	146	78	40	50	1	169	33	24	28	0	85	451
8:30 AM	21	21	6	0	48	18	17	73	0	108	88	56	63	0	207	20	20	26	0	66	429
8:45 AM	10	23	4	0	37	26	28	94	0	148	103	47	59	0	209	15	31	28	0	74	468
Total Volume	58	96	31	1	186	74	95	347	0	516	364	193	228	1	786	92	99	106	0	297	1785
% Approach Total	31.2	51.6	16.7	0.5		14.3	18.4	67.2	0.0		46.3	24.6	29.0	0.1		31.0	33.3	35.7	0.0		
PHF	0.690	0.923	0.646	0.250	0.912	0.712	0.792	0.842	0.000	0.872	0.883	0.862	0.905	0.250	0.940	0.697	0.798	0.946	0.000	0.874	0.954
Cars	57	86	27	1	171	68	87	307	0	462	325	186	224	1	736	89	93	105	0	287	1656
Cars %	98.3	89.6	87.1	100.0	91.9	91.9	91.6	88.5	0.0	89.5	89.3	96.4	98.2	100.0	93.6	96.7	93.9	99.1	0.0	96.6	92.8
Heavy Vehicles	1	10	4	0	15	6	8	40	0	54	39	7	4	0	50	3	6	1	0	10	129
Heavy Vehicles %	1.7	10.4	12.9	0.0	8.1	8.1	8.4	11.5	0.0	10.5	10.7	3.6	1.8	0.0	6.4	3.3	6.1	0.9	0.0	3.4	7.2
Cars Enter Leg	57	86	27	1	171	68	87	307	0	462	325	186	224	1	736	89	93	105	0	287	1656
Heavy Enter Leg	1	10	4	0	15	6	8	40	0	54	39	7	4	0	50	3	6	1	0	10	129
Total Entering Leg	58	96	31	1	186	74	95	347	0	516	364	193	228	1	786	92	99	106	0	297	1785
Cars Exiting Leg					360					445					483					368	1656
Heavy Exiting Leg					14					49					53					13	129
Total Exiting Leg					374					494					536					381	1785

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	8	16	3	1	28	7	8	62	0	77	86	27	36	0	149	15	15	18	0	48	302
7:15 AM	5	23	5	0	33	12	14	59	1	86	83	31	49	1	164	18	21	26	0	65	348
7:30 AM	10	14	6	0	30	6	20	73	0	99	77	32	47	1	157	17	22	28	0	67	353
7:45 AM	15	9	4	1	29	15	26	85	0	126	93	41	52	0	186	18	26	27	0	71	412
Total	38	62	18	2	120	40	68	279	1	388	339	131	184	2	656	68	84	99	0	251	1415
8:00 AM	11	23	10	1	45	17	19	68	0	104	85	50	56	0	191	23	23	23	0	69	409
8:15 AM	16	22	8	0	46	11	28	95	0	134	68	36	50	1	155	32	24	28	0	84	419
8:30 AM	20	20	5	0	45	17	14	66	0	97	80	54	61	0	195	19	16	26	0	61	398
8:45 AM	10	21	4	0	35	23	26	78	0	127	92	46	57	0	195	15	30	28	0	73	430
Total	57	86	27	1	171	68	87	307	0	462	325	186	224	1	736	89	93	105	0	287	1656
Grand Total	95	148	45	3	291	108	155	586	1	850	664	317	408	3	1392	157	177	204	0	538	3071
Approach %	32.6	50.9	15.5	1.0		12.7	18.2	68.9	0.1		47.7	22.8	29.3	0.2		29.2	32.9	37.9	0.0		
Total %	3.1	4.8	1.5	0.1	9.5	3.5	5.0	19.1	0.0	27.7	21.6	10.3	13.3	0.1	45.3	5.1	5.8	6.6	0.0	17.5	
Exiting Leg Total					632					887					894					658	3071

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	11	23	10	1	45	17	19	68	0	104	85	50	56	0	191	23	23	23	0	69	409
8:15 AM	16	22	8	0	46	11	28	95	0	134	68	36	50	1	155	32	24	28	0	84	419
8:30 AM	20	20	5	0	45	17	14	66	0	97	80	54	61	0	195	19	16	26	0	61	398
8:45 AM	10	21	4	0	35	23	26	78	0	127	92	46	57	0	195	15	30	28	0	73	430
Total Volume	57	86	27	1	171	68	87	307	0	462	325	186	224	1	736	89	93	105	0	287	1656
% Approach Total	33.3	50.3	15.8	0.6		14.7	18.8	66.5	0.0		44.2	25.3	30.4	0.1		31.0	32.4	36.6	0.0		
PHF	0.713	0.935	0.675	0.250	0.929	0.739	0.777	0.808	0.000	0.862	0.883	0.861	0.918	0.250	0.944	0.695	0.775	0.938	0.000	0.854	0.963
Entering Leg	57	86	27	1	171	68	87	307	0	462	325	186	224	1	736	89	93	105	0	287	1656
Exiting Leg					360					445					483					368	1656
Total					531					907					1219					655	3312

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	0	0	0	2	1	0	3	0	4	6	0	3	0	9	0	6	0	0	6	21
7:15 AM	3	6	1	0	10	2	1	4	0	7	11	2	2	0	15	1	5	0	0	6	38
7:30 AM	1	1	1	0	3	2	2	5	0	9	6	1	2	0	9	0	3	1	0	4	25
7:45 AM	1	0	0	0	1	0	1	6	0	7	5	2	0	0	7	3	2	2	0	7	22
Total	7	7	2	0	16	5	4	18	0	27	28	5	7	0	40	4	16	3	0	23	106
8:00 AM	0	3	2	0	5	0	1	9	0	10	10	0	0	0	10	1	1	1	0	3	28
8:15 AM	0	4	1	0	5	2	2	8	0	12	10	4	0	0	14	1	0	0	0	1	32
8:30 AM	1	1	1	0	3	1	3	7	0	11	8	2	2	0	12	1	4	0	0	5	31
8:45 AM	0	2	0	0	2	3	2	16	0	21	11	1	2	0	14	0	1	0	0	1	38
Total	1	10	4	0	15	6	8	40	0	54	39	7	4	0	50	3	6	1	0	10	129
Grand Total	8	17	6	0	31	11	12	58	0	81	67	12	11	0	90	7	22	4	0	33	235
Approach %	25.8	54.8	19.4	0.0		13.6	14.8	71.6	0.0		74.4	13.3	12.2	0.0		21.2	66.7	12.1	0.0		
Total %	3.4	7.2	2.6	0.0	13.2	4.7	5.1	24.7	0.0	34.5	28.5	5.1	4.7	0.0	38.3	3.0	9.4	1.7	0.0	14.0	
Exiting Leg Total					27					95					82					31	235
Buses	3	2	0	0	5	0	1	16	0	17	23	0	1	0	24	1	4	1	0	6	52
% Buses	37.5	11.8	0.0	0.0	16.1	0.0	8.3	27.6	0.0	21.0	34.3	0.0	9.1	0.0	26.7	14.3	18.2	25.0	0.0	18.2	22.1
Exiting Leg Total					1					27					19					5	52
Single-Unit Trucks	5	13	6	0	24	10	11	18	0	39	26	11	8	0	45	5	17	3	0	25	133
% Single-Unit	62.5	76.5	100.0	0.0	77.4	90.9	91.7	31.0	0.0	48.1	38.8	91.7	72.7	0.0	50.0	71.4	77.3	75.0	0.0	75.8	56.6
Exiting Leg Total					24					49					36					24	133
Articulated Trucks	0	2	0	0	2	1	0	24	0	25	18	1	2	0	21	1	1	0	0	2	50
% Articulated	0.0	11.8	0.0	0.0	6.5	9.1	0.0	41.4	0.0	30.9	26.9	8.3	18.2	0.0	23.3	14.3	4.5	0.0	0.0	6.1	21.3
Exiting Leg Total					2					19					27					2	50

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	3	2	0	5	0	1	9	0	10	10	0	0	0	10	1	1	1	0	3	28
8:15 AM	0	4	1	0	5	2	2	8	0	12	10	4	0	0	14	1	0	0	0	1	32
8:30 AM	1	1	1	0	3	1	3	7	0	11	8	2	2	0	12	1	4	0	0	5	31
8:45 AM	0	2	0	0	2	3	2	16	0	21	11	1	2	0	14	0	1	0	0	1	38
Total Volume	1	10	4	0	15	6	8	40	0	54	39	7	4	0	50	3	6	1	0	10	129
% Approach Total	6.7	66.7	26.7	0.0		11.1	14.8	74.1	0.0		78.0	14.0	8.0	0.0		30.0	60.0	10.0	0.0		
PHF	0.250	0.625	0.500	0.000	0.750	0.500	0.667	0.625	0.000	0.643	0.886	0.438	0.500	0.000	0.893	0.750	0.375	0.250	0.000	0.500	0.849
Buses	0	2	0	0	2	0	1	11	0	12	13	0	0	0	13	1	1	0	0	2	29
Buses %	0.0	20.0	0.0	0.0	13.3	0.0	12.5	27.5	0.0	22.2	33.3	0.0	0.0	0.0	26.0	33.3	16.7	0.0	0.0	20.0	22.5
Single-Unit Trucks	1	8	4	0	13	6	7	10	0	23	12	7	4	0	23	1	4	1	0	6	65
Single-Unit %	100.0	80.0	100.0	0.0	86.7	100.0	87.5	25.0	0.0	42.6	30.8	100.0	100.0	0.0	46.0	33.3	66.7	100.0	0.0	60.0	50.4
Articulated Trucks	0	0	0	0	0	0	0	19	0	19	14	0	0	0	14	1	1	0	0	2	35
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.5	0.0	35.2	35.9	0.0	0.0	0.0	28.0	33.3	16.7	0.0	0.0	20.0	27.1
Buses	0	2	0	0	2	0	1	11	0	12	13	0	0	0	13	1	1	0	0	2	29
Single-Unit Trucks	1	8	4	0	13	6	7	10	0	23	12	7	4	0	23	1	4	1	0	6	65
Articulated Trucks	0	0	0	0	0	0	0	19	0	19	14	0	0	0	14	1	1	0	0	2	35
Total Entering Leg	1	10	4	0	15	6	8	40	0	54	39	7	4	0	50	3	6	1	0	10	129
Buses					0					14					14					1	29
Single-Unit Trucks					14					20					19					12	65
Articulated Trucks					0					15					20					0	35
Total Exiting Leg					14					49					53					13	129

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	0	0	2	0	2	2	0	1	0	3	0	1	0	0	1	7
7:15 AM	1	0	0	0	1	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	4
7:30 AM	0	0	0	0	0	0	0	2	0	2	4	0	0	0	4	0	2	0	0	2	8
7:45 AM	1	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	1	0	1	4
Total	3	0	0	0	3	0	0	5	0	5	10	0	1	0	11	0	3	1	0	4	23
8:00 AM	0	0	0	0	0	0	0	6	0	6	3	0	0	0	3	1	0	0	0	1	10
8:15 AM	0	1	0	0	1	0	1	2	0	3	4	0	0	0	4	0	0	0	0	0	8
8:30 AM	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	0	1	0	0	1	5
8:45 AM	0	1	0	0	1	0	0	2	0	2	3	0	0	0	3	0	0	0	0	0	6
Total	0	2	0	0	2	0	1	11	0	12	13	0	0	0	13	1	1	0	0	2	29
Grand Total	3	2	0	0	5	0	1	16	0	17	23	0	1	0	24	1	4	1	0	6	52
Approach %	60.0	40.0	0.0	0.0		0.0	5.9	94.1	0.0		95.8	0.0	4.2	0.0		16.7	66.7	16.7	0.0		
Total %	5.8	3.8	0.0	0.0	9.6	0.0	1.9	30.8	0.0	32.7	44.2	0.0	1.9	0.0	46.2	1.9	7.7	1.9	0.0	11.5	
Exiting Leg Total					1					27					19					5	52

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	0	0	0	0	0	0	2	0	2	4	0	0	0	4	0	2	0	0	2	8
7:45 AM	1	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	1	0	1	4
8:00 AM	0	0	0	0	0	0	0	6	0	6	3	0	0	0	3	1	0	0	0	1	10
8:15 AM	0	1	0	0	1	0	1	2	0	3	4	0	0	0	4	0	0	0	0	0	8
Total Volume	1	1	0	0	2	0	1	11	0	12	12	0	0	0	12	1	2	1	0	4	30
% Approach Total	50.0	50.0	0.0	0.0		0.0	8.3	91.7	0.0		100.0	0.0	0.0	0.0		25.0	50.0	25.0	0.0		
PHF	0.250	0.250	0.000	0.000	0.500	0.000	0.250	0.458	0.000	0.500	0.750	0.000	0.000	0.000	0.750	0.250	0.250	0.250	0.000	0.500	0.750
Entering Leg	1	1	0	0	2	0	1	11	0	12	12	0	0	0	12	1	2	1	0	4	30
Exiting Leg					1					14					13					2	30
Total					3					26					25					6	60

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	1	0	1	0	2	2	0	2	0	4	0	5	0	0	5	12
7:15 AM	2	4	1	0	7	1	1	1	0	3	7	1	1	0	9	1	5	0	0	6	25
7:30 AM	1	1	1	0	3	2	2	3	0	7	2	1	1	0	4	0	1	1	0	2	16
7:45 AM	0	0	0	0	0	0	1	3	0	4	3	2	0	0	5	3	2	1	0	6	15
Total	4	5	2	0	11	4	4	8	0	16	14	4	4	0	22	4	13	2	0	19	68
8:00 AM	0	3	2	0	5	0	1	3	0	4	3	0	0	0	3	0	1	1	0	2	14
8:15 AM	0	3	1	0	4	2	1	3	0	6	2	4	0	0	6	1	0	0	0	1	17
8:30 AM	1	1	1	0	3	1	3	1	0	5	3	2	2	0	7	0	3	0	0	3	18
8:45 AM	0	1	0	0	1	3	2	3	0	8	4	1	2	0	7	0	0	0	0	0	16
Total	1	8	4	0	13	6	7	10	0	23	12	7	4	0	23	1	4	1	0	6	65
Grand Total	5	13	6	0	24	10	11	18	0	39	26	11	8	0	45	5	17	3	0	25	133
Approach %	20.8	54.2	25.0	0.0		25.6	28.2	46.2	0.0		57.8	24.4	17.8	0.0		20.0	68.0	12.0	0.0		
Total %	3.8	9.8	4.5	0.0	18.0	7.5	8.3	13.5	0.0	29.3	19.5	8.3	6.0	0.0	33.8	3.8	12.8	2.3	0.0	18.8	
Exiting Leg Total					24					49					36					24	133

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	2	4	1	0	7	1	1	1	0	3	7	1	1	0	9	1	5	0	0	6	25
7:30 AM	1	1	1	0	3	2	2	3	0	7	2	1	1	0	4	0	1	1	0	2	16
7:45 AM	0	0	0	0	0	0	1	3	0	4	3	2	0	0	5	3	2	1	0	6	15
8:00 AM	0	3	2	0	5	0	1	3	0	4	3	0	0	0	3	0	1	1	0	2	14
Total Volume	3	8	4	0	15	3	5	10	0	18	15	4	2	0	21	4	9	3	0	16	70
% Approach Total	20.0	53.3	26.7	0.0		16.7	27.8	55.6	0.0		71.4	19.0	9.5	0.0		25.0	56.3	18.8	0.0		
PHF	0.375	0.500	0.500	0.000	0.536	0.375	0.625	0.833	0.000	0.643	0.536	0.500	0.500	0.000	0.583	0.333	0.450	0.750	0.000	0.667	0.700
Entering Leg	3	8	4	0	15	3	5	10	0	18	15	4	2	0	21	4	9	3	0	16	70
Exiting Leg					10					28					22					10	70
Total					25					46					43					26	140

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
7:15 AM	0	2	0	0	2	1	0	3	0	4	1	1	1	0	3	0	0	0	0	0	9
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	3
Total	0	2	0	0	2	1	0	5	0	6	4	1	2	0	7	0	0	0	0	0	15
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	4
8:15 AM	0	0	0	0	0	0	0	3	0	3	4	0	0	0	4	0	0	0	0	0	7
8:30 AM	0	0	0	0	0	0	0	5	0	5	2	0	0	0	2	1	0	0	0	1	8
8:45 AM	0	0	0	0	0	0	0	11	0	11	4	0	0	0	4	0	1	0	0	1	16
Total	0	0	0	0	0	0	0	19	0	19	14	0	0	0	14	1	1	0	0	2	35
Grand Total	0	2	0	0	2	1	0	24	0	25	18	1	2	0	21	1	1	0	0	2	50
Approach %	0.0	100.0	0.0	0.0		4.0	0.0	96.0	0.0		85.7	4.8	9.5	0.0		50.0	50.0	0.0	0.0		
Total %	0.0	4.0	0.0	0.0	4.0	2.0	0.0	48.0	0.0	50.0	36.0	2.0	4.0	0.0	42.0	2.0	2.0	0.0	0.0	4.0	
Exiting Leg Total					2					19					27					2	50

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	4
8:15 AM	0	0	0	0	0	0	0	3	0	3	4	0	0	0	4	0	0	0	0	0	7
8:30 AM	0	0	0	0	0	0	0	5	0	5	2	0	0	0	2	1	0	0	0	1	8
8:45 AM	0	0	0	0	0	0	0	11	0	11	4	0	0	0	4	0	1	0	0	1	16
Total Volume	0	0	0	0	0	0	0	19	0	19	14	0	0	0	14	1	1	0	0	2	35
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		100.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.432	0.000	0.432	0.875	0.000	0.000	0.000	0.875	0.250	0.250	0.000	0.000	0.500	0.547
Entering Leg	0	0	0	0	0	0	0	19	0	19	14	0	0	0	14	1	1	0	0	2	35
Exiting Leg					0					15					20					0	35
Total					0					34					34					2	70

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	B Street							Congress Street							I-90 Ramps							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
Total	0	0	0	0	2	1	3	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	0	0	0	3	7
8:00 AM	0	0	0	0	0	2	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	3	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:30 AM	0	0	0	0	1	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	3	2	5	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	8
Total	0	0	0	0	7	5	12	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	18
Grand Total	0	0	0	0	9	6	15	1	4	0	0	0	0	5	0	0	0	0	0	0	0	0	3	2	0	0	0	5	25
Approach %	0.0	0.0	0.0	0.0	60.0	40.0		20.0	80.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	60.0	40.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	36.0	24.0	60.0	4.0	16.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	8.0	0.0	0.0	0.0	20.0	
Exiting Leg Total							18							3							0							4	25

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	B Street							Congress Street							I-90 Ramps							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	2	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	3	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:30 AM	0	0	0	0	1	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	3	2	5	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	8
Total Volume	0	0	0	0	7	5	12	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	18
% Approach Total	0.0	0.0	0.0	0.0	58.3	41.7		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.583	0.625	0.600	0.000	1.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.563
Entering Leg	0	0	0	0	7	5	12	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	18
Exiting Leg							12							2							0							4	18
Total							24							6							0							6	36

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	B Street from North							Congress Street from East							I-90 Ramps from South							Congress Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	13	16	29	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	3	1	4	35
7:15 AM	0	0	0	0	15	14	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	34
7:30 AM	0	0	0	0	12	19	31	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	2	1	3	38
7:45 AM	0	0	0	0	15	21	36	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	1	4	41
Total	0	0	0	0	55	70	125	0	0	0	0	1	1	2	0	0	0	0	3	2	5	0	0	0	0	12	4	16	148
8:00 AM	0	0	0	0	19	14	33	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	1	2	3	39
8:15 AM	0	0	0	0	13	33	46	0	0	0	0	0	0	0	0	0	0	0	4	4	8	0	0	0	0	7	4	11	65
8:30 AM	0	0	0	0	19	23	42	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	4	4	8	52
8:45 AM	0	0	0	0	19	27	46	0	0	0	0	0	0	0	0	0	0	0	2	3	5	0	0	0	0	2	3	5	56
Total	0	0	0	0	70	97	167	0	0	0	0	0	0	0	0	0	0	0	10	8	18	0	0	0	0	14	13	27	212
Grand Total	0	0	0	0	125	167	292	0	0	0	0	1	1	2	0	0	0	0	13	10	23	0	0	0	0	26	17	43	360
Approach %	0	0	0	0	42.8	57.2		0	0	0	0	50	50		0	0	0	0	56.5	43.5		0	0	0	0	60.5	39.5		
Total %	0	0	0	0	34.7	46.4	81.1	0	0	0	0	0.28	0.28	0.56	0	0	0	0	3.61	2.78	6.39	0	0	0	0	7.22	4.72	11.9	
Exiting Leg Total							292							2							23							43	360

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	B Street from North							Congress Street from East							I-90 Ramps from South							Congress Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	19	14	33	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	1	2	3	39
8:15 AM	0	0	0	0	13	33	46	0	0	0	0	0	0	0	0	0	0	0	4	4	8	0	0	0	0	7	4	11	65
8:30 AM	0	0	0	0	19	23	42	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	4	4	8	52
8:45 AM	0	0	0	0	19	27	46	0	0	0	0	0	0	0	0	0	0	0	2	3	5	0	0	0	0	2	3	5	56
Total Volume	0	0	0	0	70	97	167	0	0	0	0	0	0	0	0	0	0	0	10	8	18	0	0	0	0	14	13	27	212
% Approach Total	0.0	0.0	0.0	0.0	41.9	58.1		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	55.6	44.4		0.0	0.0	0.0	0.0	51.9	48.1		
PHF	0.000	0.000	0.000	0.000	0.921	0.735	0.908	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.500	0.563	0.000	0.000	0.000	0.000	0.500	0.813	0.614	0.815
Entering Leg	0	0	0	0	70	97	167	0	0	0	0	0	0	0	0	0	0	0	10	8	18	0	0	0	0	14	13	27	212
Exiting Leg							167							0							18							27	212
Total							334							0							36							54	424

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	15	46	4	0	65	16	22	108	0	146	86	26	68	0	180	34	47	12	0	93	484
4:15 PM	18	47	7	1	73	13	14	100	0	127	86	22	39	1	148	37	31	17	0	85	433
4:30 PM	10	50	11	0	71	9	21	92	0	122	96	27	48	0	171	44	46	11	0	101	465
4:45 PM	25	48	17	2	92	22	21	104	0	147	107	29	53	3	192	44	39	15	0	98	529
Total	68	191	39	3	301	60	78	404	0	542	375	104	208	4	691	159	163	55	0	377	1911
5:00 PM	19	59	5	0	83	15	29	122	0	166	114	29	58	0	201	49	31	13	1	94	544
5:15 PM	19	40	2	1	62	11	27	98	0	136	92	21	57	1	171	43	51	16	1	111	480
5:30 PM	23	50	5	0	78	23	27	111	0	161	77	28	53	1	159	41	42	15	2	100	498
5:45 PM	20	55	8	4	87	18	12	104	0	134	93	33	57	0	183	49	50	12	2	113	517
Total	81	204	20	5	310	67	95	435	0	597	376	111	225	2	714	182	174	56	6	418	2039
Grand Total	149	395	59	8	611	127	173	839	0	1139	751	215	433	6	1405	341	337	111	6	795	3950
Approach %	24.4	64.6	9.7	1.3		11.2	15.2	73.7	0.0		53.5	15.3	30.8	0.4		42.9	42.4	14.0	0.8		
Total %	3.8	10.0	1.5	0.2	15.5	3.2	4.4	21.2	0.0	28.8	19.0	5.4	11.0	0.2	35.6	8.6	8.5	2.8	0.2	20.1	
Exiting Leg Total					461					1147					1581					761	3950
Cars	144	382	59	8	593	125	169	790	0	1084	712	212	413	6	1343	335	321	107	6	769	3789
% Cars	96.6	96.7	100.0	100.0	97.1	98.4	97.7	94.2	0.0	95.2	94.8	98.6	95.4	100.0	95.6	98.2	95.3	96.4	100.0	96.7	95.9
Exiting Leg Total					452					1092					1513					732	3789
Heavy Vehicles	5	13	0	0	18	2	4	49	0	55	39	3	20	0	62	6	16	4	0	26	161
% Heavy Vehicles	3.4	3.3	0.0	0.0	2.9	1.6	2.3	5.8	0.0	4.8	5.2	1.4	4.6	0.0	4.4	1.8	4.7	3.6	0.0	3.3	4.1
Exiting Leg Total					9					55					68					29	161

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	25	48	17	2	92	22	21	104	0	147	107	29	53	3	192	44	39	15	0	98	529
5:00 PM	19	59	5	0	83	15	29	122	0	166	114	29	58	0	201	49	31	13	1	94	544
5:15 PM	19	40	2	1	62	11	27	98	0	136	92	21	57	1	171	43	51	16	1	111	480
5:30 PM	23	50	5	0	78	23	27	111	0	161	77	28	53	1	159	41	42	15	2	100	498
Total Volume	86	197	29	3	315	71	104	435	0	610	390	107	221	5	723	177	163	59	4	403	2051
% Approach Total	27.3	62.5	9.2	1.0		11.6	17.0	71.3	0.0		53.9	14.8	30.6	0.7		43.9	40.4	14.6	1.0		
PHF	0.860	0.835	0.426	0.375	0.856	0.772	0.897	0.891	0.000	0.919	0.855	0.922	0.953	0.417	0.899	0.903	0.799	0.922	0.500	0.908	0.943
Cars	85	191	29	3	308	70	101	418	0	589	372	107	212	5	696	174	157	57	4	392	1985
Cars %	98.8	97.0	100.0	100.0	97.8	98.6	97.1	96.1	0.0	96.6	95.4	100.0	95.9	100.0	96.3	98.3	96.3	96.6	100.0	97.3	96.8
Heavy Vehicles	1	6	0	0	7	1	3	17	0	21	18	0	9	0	27	3	6	2	0	11	66
Heavy Vehicles %	1.2	3.0	0.0	0.0	2.2	1.4	2.9	3.9	0.0	3.4	4.6	0.0	4.1	0.0	3.7	1.7	3.7	3.4	0.0	2.7	3.2
Cars Enter Leg	85	191	29	3	308	70	101	418	0	589	372	107	212	5	696	174	157	57	4	392	1985
Heavy Enter Leg	1	6	0	0	7	1	3	17	0	21	18	0	9	0	27	3	6	2	0	11	66
Total Entering Leg	86	197	29	3	315	71	104	435	0	610	390	107	221	5	723	177	163	59	4	403	2051
Cars Exiting Leg					237					558					788					402	1985
Heavy Exiting Leg					3					24					26					13	66
Total Exiting Leg					240					582					814					415	2051

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	B Street from North					Congress Street from East					I-90 Ramps from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	15	43	4	0	62	16	22	95	0	133	82	24	66	0	172	33	40	12	0	85	452
4:15 PM	16	45	7	1	69	12	14	92	0	118	80	22	36	1	139	36	31	15	0	82	408
4:30 PM	9	48	11	0	68	9	20	83	0	112	90	27	46	0	163	44	43	11	0	98	441
4:45 PM	25	48	17	2	92	22	21	101	0	144	102	29	50	3	184	44	37	14	0	95	515
Total	65	184	39	3	291	59	77	371	0	507	354	102	198	4	658	157	151	52	0	360	1816
5:00 PM	18	56	5	0	79	15	28	117	0	160	108	29	56	0	193	47	31	13	1	92	524
5:15 PM	19	39	2	1	61	10	26	93	0	129	89	21	55	1	166	43	47	15	1	106	462
5:30 PM	23	48	5	0	76	23	26	107	0	156	73	28	51	1	153	40	42	15	2	99	484
5:45 PM	19	55	8	4	86	18	12	102	0	132	88	32	53	0	173	48	50	12	2	112	503
Total	79	198	20	5	302	66	92	419	0	577	358	110	215	2	685	178	170	55	6	409	1973
Grand Total	144	382	59	8	593	125	169	790	0	1084	712	212	413	6	1343	335	321	107	6	769	3789
Approach %	24.3	64.4	9.9	1.3		11.5	15.6	72.9	0.0		53.0	15.8	30.8	0.4		43.6	41.7	13.9	0.8		
Total %	3.8	10.1	1.6	0.2	15.7	3.3	4.5	20.8	0.0	28.6	18.8	5.6	10.9	0.2	35.4	8.8	8.5	2.8	0.2	20.3	
Exiting Leg Total					452					1092					1513					732	3789

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	B Street from North					Congress Street from East					I-90 Ramps from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	25	48	17	2	92	22	21	101	0	144	102	29	50	3	184	44	37	14	0	95	515
5:00 PM	18	56	5	0	79	15	28	117	0	160	108	29	56	0	193	47	31	13	1	92	524
5:15 PM	19	39	2	1	61	10	26	93	0	129	89	21	55	1	166	43	47	15	1	106	462
5:30 PM	23	48	5	0	76	23	26	107	0	156	73	28	51	1	153	40	42	15	2	99	484
Total Volume	85	191	29	3	308	70	101	418	0	589	372	107	212	5	696	174	157	57	4	392	1985
% Approach Total	27.6	62.0	9.4	1.0		11.9	17.1	71.0	0.0		53.4	15.4	30.5	0.7		44.4	40.1	14.5	1.0		
PHF	0.850	0.853	0.426	0.375	0.837	0.761	0.902	0.893	0.000	0.920	0.861	0.922	0.946	0.417	0.902	0.926	0.835	0.950	0.500	0.925	0.947
Entering Leg	85	191	29	3	308	70	101	418	0	589	372	107	212	5	696	174	157	57	4	392	1985
Exiting Leg					237					558					788					402	1985
Total					545					1147					1484					794	3970

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	3	0	0	3	0	0	13	0	13	4	2	2	0	8	1	7	0	0	8	32
4:15 PM	2	2	0	0	4	1	0	8	0	9	6	0	3	0	9	1	0	2	0	3	25
4:30 PM	1	2	0	0	3	0	1	9	0	10	6	0	2	0	8	0	3	0	0	3	24
4:45 PM	0	0	0	0	0	0	0	3	0	3	5	0	3	0	8	0	2	1	0	3	14
Total	3	7	0	0	10	1	1	33	0	35	21	2	10	0	33	2	12	3	0	17	95
5:00 PM	1	3	0	0	4	0	1	5	0	6	6	0	2	0	8	2	0	0	0	2	20
5:15 PM	0	1	0	0	1	1	1	5	0	7	3	0	2	0	5	0	4	1	0	5	18
5:30 PM	0	2	0	0	2	0	1	4	0	5	4	0	2	0	6	1	0	0	0	1	14
5:45 PM	1	0	0	0	1	0	0	2	0	2	5	1	4	0	10	1	0	0	0	1	14
Total	2	6	0	0	8	1	3	16	0	20	18	1	10	0	29	4	4	1	0	9	66
Grand Total	5	13	0	0	18	2	4	49	0	55	39	3	20	0	62	6	16	4	0	26	161
Approach %	27.8	72.2	0.0	0.0		3.6	7.3	89.1	0.0		62.9	4.8	32.3	0.0		23.1	61.5	15.4	0.0		
Total %	3.1	8.1	0.0	0.0	11.2	1.2	2.5	30.4	0.0	34.2	24.2	1.9	12.4	0.0	38.5	3.7	9.9	2.5	0.0	16.1	
Exiting Leg Total					9					55					68					29	161
Buses	3	0	0	0	3	0	0	20	0	20	30	0	13	0	43	2	8	2	0	12	78
% Buses	60.0	0.0	0.0	0.0	16.7	0.0	0.0	40.8	0.0	36.4	76.9	0.0	65.0	0.0	69.4	33.3	50.0	50.0	0.0	46.2	48.4
Exiting Leg Total					2					38					22					16	78
Single-Unit Trucks	2	6	0	0	8	2	4	11	0	17	9	3	7	0	19	4	5	2	0	11	55
% Single-Unit	40.0	46.2	0.0	0.0	44.4	100.0	100.0	22.4	0.0	30.9	23.1	100.0	35.0	0.0	30.6	66.7	31.3	50.0	0.0	42.3	34.2
Exiting Leg Total					7					14					21					13	55
Articulated Trucks	0	7	0	0	7	0	0	18	0	18	0	0	0	0	0	0	3	0	0	3	28
% Articulated	0.0	53.8	0.0	0.0	38.9	0.0	0.0	36.7	0.0	32.7	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	11.5	17.4
Exiting Leg Total					0					3					25					0	28

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	3	0	0	3	0	0	13	0	13	4	2	2	0	8	1	7	0	0	8	32
4:15 PM	2	2	0	0	4	1	0	8	0	9	6	0	3	0	9	1	0	2	0	3	25
4:30 PM	1	2	0	0	3	0	1	9	0	10	6	0	2	0	8	0	3	0	0	3	24
4:45 PM	0	0	0	0	0	0	0	3	0	3	5	0	3	0	8	0	2	1	0	3	14
Total Volume	3	7	0	0	10	1	1	33	0	35	21	2	10	0	33	2	12	3	0	17	95
% Approach Total	30.0	70.0	0.0	0.0		2.9	2.9	94.3	0.0		63.6	6.1	30.3	0.0		11.8	70.6	17.6	0.0		
PHF	0.375	0.583	0.000	0.000	0.625	0.250	0.250	0.635	0.000	0.673	0.875	0.250	0.833	0.000	0.917	0.500	0.429	0.375	0.000	0.531	0.742
Buses	2	0	0	0	2	0	0	9	0	9	14	0	8	0	22	1	5	2	0	8	41
Buses %	66.7	0.0	0.0	0.0	20.0	0.0	0.0	27.3	0.0	25.7	66.7	0.0	80.0	0.0	66.7	50.0	41.7	66.7	0.0	47.1	43.2
Single-Unit Trucks	1	2	0	0	3	1	1	8	0	10	7	2	2	0	11	1	4	1	0	6	30
Single-Unit %	33.3	28.6	0.0	0.0	30.0	100.0	100.0	24.2	0.0	28.6	33.3	100.0	20.0	0.0	33.3	50.0	33.3	33.3	0.0	35.3	31.6
Articulated Trucks	0	5	0	0	5	0	0	16	0	16	0	0	0	0	0	0	3	0	0	3	24
Articulated %	0.0	71.4	0.0	0.0	50.0	0.0	0.0	48.5	0.0	45.7	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	17.6	25.3
Buses	2	0	0	0	2	0	0	9	0	9	14	0	8	0	22	1	5	2	0	8	41
Single-Unit Trucks	1	2	0	0	3	1	1	8	0	10	7	2	2	0	11	1	4	1	0	6	30
Articulated Trucks	0	5	0	0	5	0	0	16	0	16	0	0	0	0	0	0	3	0	0	3	24
Total Entering Leg	3	7	0	0	10	1	1	33	0	35	21	2	10	0	33	2	12	3	0	17	95
Buses					2					19					10					10	41
Single-Unit Trucks					4					11					11					4	30
Articulated Trucks					0					3					21					0	24
Total Exiting Leg					6					33					42					14	95

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	3	0	3	3	0	2	0	5	1	2	0	0	3	11
4:15 PM	2	0	0	0	2	0	0	2	0	2	3	0	2	0	5	0	0	1	0	1	10
4:30 PM	0	0	0	0	0	0	0	4	0	4	5	0	1	0	6	0	2	0	0	2	12
4:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	3	0	6	0	1	1	0	2	8
Total	2	0	0	0	2	0	0	9	0	9	14	0	8	0	22	1	5	2	0	8	41
5:00 PM	0	0	0	0	0	0	0	3	0	3	5	0	1	0	6	1	0	0	0	1	10
5:15 PM	0	0	0	0	0	0	0	4	0	4	3	0	1	0	4	0	3	0	0	3	11
5:30 PM	0	0	0	0	0	0	0	3	0	3	3	0	1	0	4	0	0	0	0	0	7
5:45 PM	1	0	0	0	1	0	0	1	0	1	5	0	2	0	7	0	0	0	0	0	9
Total	1	0	0	0	1	0	0	11	0	11	16	0	5	0	21	1	3	0	0	4	37
Grand Total	3	0	0	0	3	0	0	20	0	20	30	0	13	0	43	2	8	2	0	12	78
Approach %	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		69.8	0.0	30.2	0.0		16.7	66.7	16.7	0.0		
Total %	3.8	0.0	0.0	0.0	3.8	0.0	0.0	25.6	0.0	25.6	38.5	0.0	16.7	0.0	55.1	2.6	10.3	2.6	0.0	15.4	
Exiting Leg Total					2					38					22					16	78

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	3	0	3	3	0	2	0	5	1	2	0	0	3	11
4:15 PM	2	0	0	0	2	0	0	2	0	2	3	0	2	0	5	0	0	1	0	1	10
4:30 PM	0	0	0	0	0	0	0	4	0	4	5	0	1	0	6	0	2	0	0	2	12
4:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	3	0	6	0	1	1	0	2	8
Total Volume	2	0	0	0	2	0	0	9	0	9	14	0	8	0	22	1	5	2	0	8	41
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		63.6	0.0	36.4	0.0		12.5	62.5	25.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.563	0.000	0.563	0.700	0.000	0.667	0.000	0.917	0.250	0.625	0.500	0.000	0.667	0.854
Entering Leg	2	0	0	0	2	0	0	9	0	9	14	0	8	0	22	1	5	2	0	8	41
Exiting Leg					2					19					10					10	41
Total					4					28					32					18	82

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	1	0	1	1	2	0	0	3	0	3	0	0	3	9
4:15 PM	0	0	0	0	0	1	0	3	0	4	3	0	1	0	4	1	0	1	0	2	10
4:30 PM	1	0	0	0	1	0	1	2	0	3	1	0	1	0	2	0	0	0	0	0	6
4:45 PM	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	0	1	0	0	1	5
Total	1	2	0	0	3	1	1	8	0	10	7	2	2	0	11	1	4	1	0	6	30
5:00 PM	1	3	0	0	4	0	1	1	0	2	1	0	1	0	2	1	0	0	0	1	9
5:15 PM	0	0	0	0	0	1	1	1	0	3	0	0	1	0	1	0	1	1	0	2	6
5:30 PM	0	1	0	0	1	0	1	1	0	2	1	0	1	0	2	1	0	0	0	1	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	4
Total	1	4	0	0	5	1	3	3	0	7	2	1	5	0	8	3	1	1	0	5	25
Grand Total	2	6	0	0	8	2	4	11	0	17	9	3	7	0	19	4	5	2	0	11	55
Approach %	25.0	75.0	0.0	0.0		11.8	23.5	64.7	0.0		47.4	15.8	36.8	0.0		36.4	45.5	18.2	0.0		
Total %	3.6	10.9	0.0	0.0	14.5	3.6	7.3	20.0	0.0	30.9	16.4	5.5	12.7	0.0	34.5	7.3	9.1	3.6	0.0	20.0	
Exiting Leg Total					7					14					21					13	55

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	1	0	1	1	2	0	0	3	0	3	0	0	3	9
4:15 PM	0	0	0	0	0	1	0	3	0	4	3	0	1	0	4	1	0	1	0	2	10
4:30 PM	1	0	0	0	1	0	1	2	0	3	1	0	1	0	2	0	0	0	0	0	6
4:45 PM	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	0	1	0	0	1	5
Total Volume	1	2	0	0	3	1	1	8	0	10	7	2	2	0	11	1	4	1	0	6	30
% Approach Total	33.3	66.7	0.0	0.0		10.0	10.0	80.0	0.0		63.6	18.2	18.2	0.0		16.7	66.7	16.7	0.0		
PHF	0.250	0.250	0.000	0.000	0.375	0.250	0.250	0.667	0.000	0.625	0.583	0.250	0.500	0.000	0.688	0.250	0.333	0.250	0.000	0.500	0.750
Entering Leg	1	2	0	0	3	1	1	8	0	10	7	2	2	0	11	1	4	1	0	6	30
Exiting Leg					4					11					11					4	30
Total					7					21					22					10	60

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	9	0	9	0	0	0	0	0	0	2	0	0	2	12
4:15 PM	0	2	0	0	2	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	5
4:30 PM	0	2	0	0	2	0	0	3	0	3	0	0	0	0	0	0	1	0	0	1	6
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	5	0	0	5	0	0	16	0	16	0	0	0	0	0	0	3	0	0	3	24
5:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	4
Grand Total	0	7	0	0	7	0	0	18	0	18	0	0	0	0	0	0	3	0	0	3	28
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	25.0	0.0	0.0	25.0	0.0	0.0	64.3	0.0	64.3	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0	10.7	
Exiting Leg Total					0					3					25					0	28

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	B Street					Congress Street					I-90 Ramps					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	9	0	9	0	0	0	0	0	0	2	0	0	2	12
4:15 PM	0	2	0	0	2	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	5
4:30 PM	0	2	0	0	2	0	0	3	0	3	0	0	0	0	0	0	1	0	0	1	6
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	5	0	0	5	0	0	16	0	16	0	0	0	0	0	0	3	0	0	3	24
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.444	0.000	0.444	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.375	0.500
Entering Leg	0	5	0	0	5	0	0	16	0	16	0	0	0	0	0	0	3	0	0	3	24
Exiting Leg					0					3					21					0	24
Total					5					19					21					3	48

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	B Street from North							Congress Street from East							I-90 Ramps from South							Congress Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	1	0	1	2	4	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7
4:45 PM	0	0	0	0	0	2	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	1	0	3	6	10	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	1	14
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	2	3
5:15 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	1	0	0	0	1	0	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	2	6
5:45 PM	1	0	0	0	1	0	2	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	4
Total	3	0	0	0	2	0	5	0	4	0	0	0	0	4	1	0	0	0	0	0	1	0	2	1	0	1	0	4	14
Grand Total	3	0	1	0	5	6	15	0	7	0	0	0	0	7	1	0	0	0	0	0	1	0	2	2	0	1	0	5	28
Approach %	20.0	0.0	6.7	0.0	33.3	40.0		0.0	100.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	40.0	40.0	0.0	20.0	0.0		
Total %	10.7	0.0	3.6	0.0	17.9	21.4	53.6	0.0	25.0	0.0	0.0	0.0	0.0	25.0	3.6	0.0	0.0	0.0	0.0	0.0	3.6	0.0	7.1	7.1	0.0	3.6	0.0	17.9	
Exiting Leg Total							13							4							0							11	28

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	B Street from North							Congress Street from East							I-90 Ramps from South							Congress Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:15 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	1	0	1	2	4	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7
4:45 PM	0	0	0	0	0	2	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	2	3
Total Volume	0	0	1	0	2	5	8	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	1	1	0	1	0	3	15
% Approach Total	0.0	0.0	12.5	0.0	25.0	62.5		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	33.3	33.3	0.0	33.3	0.0		
PHF	0.000	0.000	0.250	0.000	0.500	0.625	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.250	0.000	0.375	0.536
Entering Leg	0	0	1	0	2	5	8	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	1	1	0	1	0	3	15
Exiting Leg							8							2							0							5	15
Total							16							6							0							8	30

PDI File #: **239422 A**
Location: **N: B Street S: I-90 Ramps**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	B Street							Congress Street							I-90 Ramps							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	16	13	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	31
4:15 PM	0	0	0	0	24	9	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
4:30 PM	0	0	0	0	20	20	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	42
4:45 PM	0	0	0	0	29	23	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	54
Total	0	0	0	0	89	65	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	6	160
5:00 PM	0	0	0	0	23	11	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	9	43
5:15 PM	0	0	0	0	24	18	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	46
5:30 PM	0	0	0	0	30	8	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5	43
5:45 PM	0	0	0	0	61	13	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	76
Total	0	0	0	0	138	50	188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	8	20	208
Grand Total	0	0	0	0	227	115	342	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	9	26	368
Approach %	0	0	0	0	66.4	33.6		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	65.4	34.6		
Total %	0	0	0	0	61.7	31.3	92.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.62	2.45	7.07	
Exiting Leg Total							342							0							0							26	368

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	B Street							Congress Street							I-90 Ramps							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	23	11	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	9	43
5:15 PM	0	0	0	0	24	18	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	46
5:30 PM	0	0	0	0	30	8	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5	43
5:45 PM	0	0	0	0	61	13	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	76
Total Volume	0	0	0	0	138	50	188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	8	20	208
% Approach Total	0.0	0.0	0.0	0.0	73.4	26.6		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	60.0	40.0		
PHF	0.000	0.000	0.000	0.000	0.566	0.694	0.635	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.500	0.556	0.684
Entering Leg	0	0	0	0	138	50	188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	8	20	208
Exiting Leg							188							0							0							20	208
Total							376							0							0							40	416

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	13	49	0	0	62	27	79	26	0	132	0	27	12	0	39	233
7:15 AM	0	0	0	0	0	14	52	0	1	67	41	95	23	0	159	0	31	12	0	43	269
7:30 AM	0	0	0	0	0	15	70	0	0	85	42	102	28	0	172	0	28	5	0	33	290
7:45 AM	0	0	0	0	0	22	67	0	0	89	36	119	28	1	184	1	27	20	2	50	323
Total	0	0	0	0	0	64	238	0	1	303	146	395	105	1	647	1	113	49	2	165	1115
8:00 AM	0	0	0	0	0	18	75	0	0	93	37	112	32	0	181	0	30	5	0	35	309
8:15 AM	0	0	0	0	0	28	74	0	0	102	44	105	27	0	176	0	44	11	0	55	333
8:30 AM	0	0	0	0	0	20	75	0	0	95	34	108	41	0	183	0	33	13	0	46	324
8:45 AM	0	0	0	0	0	20	80	0	0	100	39	117	25	0	181	0	35	23	0	58	339
Total	0	0	0	0	0	86	304	0	0	390	154	442	125	0	721	0	142	52	0	194	1305
Grand Total	0	0	0	0	0	150	542	0	1	693	300	837	230	1	1368	1	255	101	2	359	2420
Approach %	0.0	0.0	0.0	0.0		21.6	78.2	0.0	0.1		21.9	61.2	16.8	0.1		0.3	71.0	28.1	0.6		
Total %	0.0	0.0	0.0	0.0	0.0	6.2	22.4	0.0	0.0	28.6	12.4	34.6	9.5	0.0	56.5	0.0	10.5	4.2	0.1	14.8	
Exiting Leg Total					1088					556					2					774	2420
Cars	0	0	0	0	0	144	516	0	0	660	286	825	224	1	1336	1	232	92	2	327	2323
% Cars	0.0	0.0	0.0	0.0	0.0	96.0	95.2	0.0	0.0	95.2	95.3	98.6	97.4	100.0	97.7	100.0	91.0	91.1	100.0	91.1	96.0
Exiting Leg Total					1061					518					2					742	2323
Heavy Vehicles	0	0	0	0	0	6	26	0	1	33	14	12	6	0	32	0	23	9	0	32	97
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	4.0	4.8	0.0	100.0	4.8	4.7	1.4	2.6	0.0	2.3	0.0	9.0	8.9	0.0	8.9	4.0
Exiting Leg Total					27					38					0					32	97

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	18	75	0	0	93	37	112	32	0	181	0	30	5	0	35	309
8:15 AM	0	0	0	0	0	28	74	0	0	102	44	105	27	0	176	0	44	11	0	55	333
8:30 AM	0	0	0	0	0	20	75	0	0	95	34	108	41	0	183	0	33	13	0	46	324
8:45 AM	0	0	0	0	0	20	80	0	0	100	39	117	25	0	181	0	35	23	0	58	339
Total Volume	0	0	0	0	0	86	304	0	0	390	154	442	125	0	721	0	142	52	0	194	1305
% Approach Total	0.0	0.0	0.0	0.0		22.1	77.9	0.0	0.0		21.4	61.3	17.3	0.0		0.0	73.2	26.8	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.768	0.950	0.000	0.000	0.956	0.875	0.944	0.762	0.000	0.985	0.000	0.807	0.565	0.000	0.836	0.962
Cars	0	0	0	0	0	83	294	0	0	377	148	438	123	0	709	0	136	45	0	181	1267
Cars %	0.0	0.0	0.0	0.0	0.0	96.5	96.7	0.0	0.0	96.7	96.1	99.1	98.4	0.0	98.3	0.0	95.8	86.5	0.0	93.3	97.1
Heavy Vehicles	0	0	0	0	0	3	10	0	0	13	6	4	2	0	12	0	6	7	0	13	38
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	3.5	3.3	0.0	0.0	3.3	3.9	0.9	1.6	0.0	1.7	0.0	4.2	13.5	0.0	6.7	2.9
Cars Enter Leg	0	0	0	0	0	83	294	0	0	377	148	438	123	0	709	0	136	45	0	181	1267
Heavy Enter Leg	0	0	0	0	0	3	10	0	0	13	6	4	2	0	12	0	6	7	0	13	38
Total Entering Leg	0	0	0	0	0	86	304	0	0	390	154	442	125	0	721	0	142	52	0	194	1305
Cars Exiting Leg					566					284					0					417	1267
Heavy Exiting Leg					14					12					0					12	38
Total Exiting Leg					580					296					0					429	1305

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	12	44	0	0	56	26	78	24	0	128	0	22	11	0	33	217
7:15 AM	0	0	0	0	0	13	47	0	0	60	39	91	22	0	152	0	25	12	0	37	249
7:30 AM	0	0	0	0	0	15	65	0	0	80	38	101	28	0	167	0	28	5	0	33	280
7:45 AM	0	0	0	0	0	21	66	0	0	87	35	117	27	1	180	1	21	19	2	43	310
Total	0	0	0	0	0	61	222	0	0	283	138	387	101	1	627	1	96	47	2	146	1056
8:00 AM	0	0	0	0	0	18	74	0	0	92	37	110	32	0	179	0	28	2	0	30	301
8:15 AM	0	0	0	0	0	27	72	0	0	99	43	105	26	0	174	0	42	7	0	49	322
8:30 AM	0	0	0	0	0	18	71	0	0	89	31	107	40	0	178	0	32	13	0	45	312
8:45 AM	0	0	0	0	0	20	77	0	0	97	37	116	25	0	178	0	34	23	0	57	332
Total	0	0	0	0	0	83	294	0	0	377	148	438	123	0	709	0	136	45	0	181	1267
Grand Total	0	0	0	0	0	144	516	0	0	660	286	825	224	1	1336	1	232	92	2	327	2323
Approach %	0.0	0.0	0.0	0.0		21.8	78.2	0.0	0.0		21.4	61.8	16.8	0.1		0.3	70.9	28.1	0.6		
Total %	0.0	0.0	0.0	0.0	0.0	6.2	22.2	0.0	0.0	28.4	12.3	35.5	9.6	0.0	57.5	0.0	10.0	4.0	0.1	14.1	
Exiting Leg Total					1061					518					2					742	2323

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	18	74	0	0	92	37	110	32	0	179	0	28	2	0	30	301
8:15 AM	0	0	0	0	0	27	72	0	0	99	43	105	26	0	174	0	42	7	0	49	322
8:30 AM	0	0	0	0	0	18	71	0	0	89	31	107	40	0	178	0	32	13	0	45	312
8:45 AM	0	0	0	0	0	20	77	0	0	97	37	116	25	0	178	0	34	23	0	57	332
Total Volume	0	0	0	0	0	83	294	0	0	377	148	438	123	0	709	0	136	45	0	181	1267
% Approach Total	0.0	0.0	0.0	0.0		22.0	78.0	0.0	0.0		20.9	61.8	17.3	0.0		0.0	75.1	24.9	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.769	0.955	0.000	0.000	0.952	0.860	0.944	0.769	0.000	0.990	0.000	0.810	0.489	0.000	0.794	0.954
Entering Leg	0	0	0	0	0	83	294	0	0	377	148	438	123	0	709	0	136	45	0	181	1267
Exiting Leg					566					284					0					417	1267
Total					566					661					709					598	2534

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Pier 4 Boulevard from North					Congress Street from East					I-90 Offramp from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	5	0	0	6	1	1	2	0	4	0	5	1	0	6	16
7:15 AM	0	0	0	0	0	1	5	0	1	7	2	4	1	0	7	0	6	0	0	6	20
7:30 AM	0	0	0	0	0	0	5	0	0	5	4	1	0	0	5	0	0	0	0	0	10
7:45 AM	0	0	0	0	0	1	1	0	0	2	1	2	1	0	4	0	6	1	0	7	13
Total	0	0	0	0	0	3	16	0	1	20	8	8	4	0	20	0	17	2	0	19	59
8:00 AM	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	2	3	0	5	8
8:15 AM	0	0	0	0	0	1	2	0	0	3	1	0	1	0	2	0	2	4	0	6	11
8:30 AM	0	0	0	0	0	2	4	0	0	6	3	1	1	0	5	0	1	0	0	1	12
8:45 AM	0	0	0	0	0	0	3	0	0	3	2	1	0	0	3	0	1	0	0	1	7
Total	0	0	0	0	0	3	10	0	0	13	6	4	2	0	12	0	6	7	0	13	38
Grand Total	0	0	0	0	0	6	26	0	1	33	14	12	6	0	32	0	23	9	0	32	97
Approach %	0.0	0.0	0.0	0.0		18.2	78.8	0.0	3.0		43.8	37.5	18.8	0.0		0.0	71.9	28.1	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	6.2	26.8	0.0	1.0	34.0	14.4	12.4	6.2	0.0	33.0	0.0	23.7	9.3	0.0	33.0	
Exiting Leg Total					27					38					0					32	97
Buses	0	0	0	0	0	0	5	0	0	5	2	0	1	0	3	0	2	1	0	3	11
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	19.2	0.0	0.0	15.2	14.3	0.0	16.7	0.0	9.4	0.0	8.7	11.1	0.0	9.4	11.3
Exiting Leg Total					1					4					0					6	11
Single-Unit Trucks	0	0	0	0	0	6	17	0	1	24	10	12	4	0	26	0	19	8	0	27	77
% Single-Unit	0.0	0.0	0.0	0.0	0.0	100.0	65.4	0.0	100.0	72.7	71.4	100.0	66.7	0.0	81.3	0.0	82.6	88.9	0.0	84.4	79.4
Exiting Leg Total					26					30					0					21	77
Articulated Trucks	0	0	0	0	0	0	4	0	0	4	2	0	1	0	3	0	2	0	0	2	9
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	12.1	14.3	0.0	16.7	0.0	9.4	0.0	8.7	0.0	0.0	6.3	9.3
Exiting Leg Total					0					4					0					5	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Pier 4 Boulevard from North					Congress Street from East					I-90 Offramp from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	5	0	0	6	1	1	2	0	4	0	5	1	0	6	16
7:15 AM	0	0	0	0	0	1	5	0	1	7	2	4	1	0	7	0	6	0	0	6	20
7:30 AM	0	0	0	0	0	0	5	0	0	5	4	1	0	0	5	0	0	0	0	0	10
7:45 AM	0	0	0	0	0	1	1	0	0	2	1	2	1	0	4	0	6	1	0	7	13
Total Volume	0	0	0	0	0	3	16	0	1	20	8	8	4	0	20	0	17	2	0	19	59
% Approach Total	0.0	0.0	0.0	0.0		15.0	80.0	0.0	5.0		40.0	40.0	20.0	0.0		0.0	89.5	10.5	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.750	0.800	0.000	0.250	0.714	0.500	0.500	0.500	0.000	0.714	0.000	0.708	0.500	0.000	0.679	0.738
Buses	0	0	0	0	0	0	4	0	0	4	2	0	0	0	2	0	2	1	0	3	9
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	20.0	25.0	0.0	0.0	0.0	10.0	0.0	11.8	50.0	0.0	15.8	15.3
Single-Unit Trucks	0	0	0	0	0	3	9	0	1	13	6	8	4	0	18	0	14	1	0	15	46
Single-Unit %	0.0	0.0	0.0	0.0	0.0	100.0	56.3	0.0	100.0	65.0	75.0	100.0	100.0	0.0	90.0	0.0	82.4	50.0	0.0	78.9	78.0
Articulated Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.3	6.8
Buses	0	0	0	0	0	0	4	0	0	4	2	0	0	0	2	0	2	1	0	3	9
Single-Unit Trucks	0	0	0	0	0	3	9	0	1	13	6	8	4	0	18	0	14	1	0	15	46
Articulated Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
Total Entering Leg	0	0	0	0	0	3	16	0	1	20	8	8	4	0	20	0	17	2	0	19	59
Buses					1					4					0					4	9
Single-Unit Trucks					12					21					0					13	46
Articulated Trucks					0					1					0					3	4
Total Exiting Leg					13					26					0					20	59

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	4
7:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total	0	0	0	0	0	0	4	0	0	4	2	0	0	0	2	0	2	1	0	3	9
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	5	0	0	5	2	0	1	0	3	0	2	1	0	3	11
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		66.7	0.0	33.3	0.0		0.0	66.7	33.3	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	45.5	0.0	0.0	45.5	18.2	0.0	9.1	0.0	27.3	0.0	18.2	9.1	0.0	27.3	
Exiting Leg Total					1					4					0					6	11

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	4
7:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total Volume	0	0	0	0	0	0	4	0	0	4	2	0	0	0	2	0	2	1	0	3	9
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.500	0.250	0.000	0.375	0.563
Entering Leg	0	0	0	0	0	0	4	0	0	4	2	0	0	0	2	0	2	1	0	3	9
Exiting Leg					1					4					0					4	9
Total					1					8					2					7	18

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	3	0	0	4	1	1	2	0	4	0	4	0	0	4	12
7:15 AM	0	0	0	0	0	1	2	0	1	4	2	4	1	0	7	0	6	0	0	6	17
7:30 AM	0	0	0	0	0	0	4	0	0	4	2	1	0	0	3	0	0	0	0	0	7
7:45 AM	0	0	0	0	0	1	0	0	0	1	1	2	1	0	4	0	4	1	0	5	10
Total	0	0	0	0	0	3	9	0	1	13	6	8	4	0	18	0	14	1	0	15	46
8:00 AM	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	2	3	0	5	8
8:15 AM	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	0	2	4	0	6	9
8:30 AM	0	0	0	0	0	2	4	0	0	6	2	1	0	0	3	0	1	0	0	1	10
8:45 AM	0	0	0	0	0	0	2	0	0	2	1	1	0	0	2	0	0	0	0	0	4
Total	0	0	0	0	0	3	8	0	0	11	4	4	0	0	8	0	5	7	0	12	31
Grand Total	0	0	0	0	0	6	17	0	1	24	10	12	4	0	26	0	19	8	0	27	77
Approach %	0.0	0.0	0.0	0.0		25.0	70.8	0.0	4.2		38.5	46.2	15.4	0.0		0.0	70.4	29.6	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	7.8	22.1	0.0	1.3	31.2	13.0	15.6	5.2	0.0	33.8	0.0	24.7	10.4	0.0	35.1	
Exiting Leg Total					26					30					0					21	77

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	3	0	0	4	1	1	2	0	4	0	4	0	0	4	12
7:15 AM	0	0	0	0	0	1	2	0	1	4	2	4	1	0	7	0	6	0	0	6	17
7:30 AM	0	0	0	0	0	0	4	0	0	4	2	1	0	0	3	0	0	0	0	0	7
7:45 AM	0	0	0	0	0	1	0	0	0	1	1	2	1	0	4	0	4	1	0	5	10
Total Volume	0	0	0	0	0	3	9	0	1	13	6	8	4	0	18	0	14	1	0	15	46
% Approach Total	0.0	0.0	0.0	0.0		23.1	69.2	0.0	7.7		33.3	44.4	22.2	0.0		0.0	93.3	6.7	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.750	0.563	0.000	0.250	0.813	0.750	0.500	0.500	0.000	0.643	0.000	0.583	0.250	0.000	0.625	0.676
Entering Leg	0	0	0	0	0	3	9	0	1	13	6	8	4	0	18	0	14	1	0	15	46
Exiting Leg					12					21					0					13	46
Total					12					34					18					28	92

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	3
Total	0	0	0	0	0	0	1	0	0	1	2	0	1	0	3	0	1	0	0	1	5
Grand Total	0	0	0	0	0	0	4	0	0	4	2	0	1	0	3	0	2	0	0	2	9
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		66.7	0.0	33.3	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	44.4	0.0	0.0	44.4	22.2	0.0	11.1	0.0	33.3	0.0	22.2	0.0	0.0	22.2	
Exiting Leg Total					0					4					0					5	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	3
Total Volume	0	0	0	0	0	0	1	0	0	1	2	0	1	0	3	0	1	0	0	1	5
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		66.7	0.0	33.3	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.500	0.000	0.250	0.000	0.375	0.000	0.250	0.000	0.000	0.250	0.417
Entering Leg	0	0	0	0	0	0	1	0	0	1	2	0	1	0	3	0	1	0	0	1	5
Exiting Leg					0					3					0					2	5
Total					0					4					3					3	10

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	2	4
7:45 AM	1	0	0	0	0	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	5
Total	2	0	0	0	1	2	5	0	3	0	0	0	0	3	0	0	0	0	0	0	0	1	3	0	0	1	0	5	13
8:00 AM	1	0	0	0	0	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
8:15 AM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3
Total	2	0	0	0	1	3	6	1	3	0	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	12
Grand Total	4	0	0	0	2	5	11	1	6	0	0	0	0	7	0	0	0	0	0	0	0	1	5	0	0	1	0	7	25
Approach %	36.4	0.0	0.0	0.0	18.2	45.5		14.3	85.7	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		14.3	71.4	0.0	0.0	14.3	0.0		
Total %	16.0	0.0	0.0	0.0	8.0	20.0	44.0	4.0	24.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	20.0	0.0	0.0	4.0	0.0	28.0	
Exiting Leg Total							8							5							1							11	25

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:30 AM	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	2	4
7:45 AM	1	0	0	0	0	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	5
8:00 AM	1	0	0	0	0	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
8:15 AM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total Volume	2	0	0	0	1	3	6	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	4	0	0	1	0	5	16
% Approach Total	33.3	0.0	0.0	0.0	16.7	50.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	80.0	0.0	0.0	20.0	0.0		
PHF	0.500	0.000	0.000	0.000	0.250	0.750	0.750	0.000	0.625	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.625	0.800
Entering Leg	2	0	0	0	1	3	6	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	4	0	0	1	0	5	16
Exiting Leg							4							4							0							8	16
Total							10							9							0							13	32

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	7	12	19	0	0	0	0	2	2	4	0	0	0	0	0	1	1	0	0	0	0	1	0	1	25
7:15 AM	0	0	0	0	5	10	15	0	0	0	0	0	1	1	0	0	0	0	3	3	6	0	0	0	0	0	3	3	25
7:30 AM	0	0	0	0	4	13	17	0	0	0	0	0	1	1	0	0	0	0	0	2	2	0	0	0	0	1	1	2	22
7:45 AM	0	0	0	0	10	22	32	0	0	0	0	3	1	4	0	0	0	0	0	2	2	0	0	0	0	2	0	2	40
Total	0	0	0	0	26	57	83	0	0	0	0	5	5	10	0	0	0	0	3	8	11	0	0	0	0	4	4	8	112
8:00 AM	0	0	0	0	11	12	23	0	0	0	0	0	3	3	0	0	0	0	1	2	3	0	0	0	0	3	0	3	32
8:15 AM	0	0	0	0	6	18	24	0	0	0	0	2	6	8	0	0	0	0	2	2	4	0	0	0	0	1	2	3	39
8:30 AM	0	0	0	0	16	15	31	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	2	0	2	35
8:45 AM	0	0	0	0	23	23	46	0	0	0	0	3	3	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	53
Total	0	0	0	0	56	68	124	0	0	0	0	6	12	18	0	0	0	0	4	4	8	0	0	0	0	6	3	9	159
Grand Total	0	0	0	0	82	125	207	0	0	0	0	11	17	28	0	0	0	0	7	12	19	0	0	0	0	10	7	17	271
Approach %	0	0	0	0	39.6	60.4		0	0	0	0	39.3	60.7		0	0	0	0	36.8	63.2		0	0	0	0	58.8	41.2		
Total %	0	0	0	0	30.3	46.1	76.4	0	0	0	0	4.06	6.27	10.3	0	0	0	0	2.58	4.43	7.01	0	0	0	0	3.69	2.58	6.27	
Exiting Leg Total							207							28							19							17	271

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	11	12	23	0	0	0	0	0	3	3	0	0	0	0	1	2	3	0	0	0	0	3	0	3	32
8:15 AM	0	0	0	0	6	18	24	0	0	0	0	2	6	8	0	0	0	0	2	2	4	0	0	0	0	1	2	3	39
8:30 AM	0	0	0	0	16	15	31	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	2	0	2	35
8:45 AM	0	0	0	0	23	23	46	0	0	0	0	3	3	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	53
Total Volume	0	0	0	0	56	68	124	0	0	0	0	6	12	18	0	0	0	0	4	4	8	0	0	0	0	6	3	9	159
% Approach Total	0.0	0.0	0.0	0.0	45.2	54.8		0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	66.7	33.3		
PHF	0.000	0.000	0.000	0.000	0.609	0.739	0.674	0.000	0.000	0.000	0.000	0.500	0.500	0.563	0.000	0.000	0.000	0.000	0.500	0.500	0.500	0.000	0.000	0.000	0.000	0.500	0.375	0.750	0.750
Entering Leg	0	0	0	0	56	68	124	0	0	0	0	6	12	18	0	0	0	0	4	4	8	0	0	0	0	6	3	9	159
Exiting Leg							124							18							8							9	159
Total							248							36							16							18	318

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	24	84	0	0	108	35	53	31	0	119	0	55	17	1	73	301
4:15 PM	0	0	0	0	0	12	56	0	0	68	23	62	20	0	105	0	52	15	0	67	240
4:30 PM	1	0	0	0	1	12	67	0	0	79	32	63	16	0	111	0	71	22	1	94	285
4:45 PM	0	0	0	0	0	20	74	0	1	95	23	71	19	0	113	0	70	22	2	94	302
Total	2	0	0	0	2	68	281	0	1	350	113	249	86	0	448	0	248	76	4	328	1128
5:00 PM	0	0	0	0	0	21	90	0	0	111	18	80	24	0	122	0	63	22	1	86	319
5:15 PM	0	0	0	0	0	22	78	0	1	101	37	65	29	0	131	0	75	19	2	96	328
5:30 PM	0	0	0	0	0	23	81	0	0	104	34	91	28	0	153	0	55	29	1	85	342
5:45 PM	0	0	0	0	0	13	64	0	0	77	29	78	30	0	137	0	77	22	1	100	314
Total	0	0	0	0	0	79	313	0	1	393	118	314	111	0	543	0	270	92	5	367	1303
Grand Total	2	0	0	0	2	147	594	0	2	743	231	563	197	0	991	0	518	168	9	695	2431
Approach %	100.0	0.0	0.0	0.0		19.8	79.9	0.0	0.3		23.3	56.8	19.9	0.0		0.0	74.5	24.2	1.3		
Total %	0.1	0.0	0.0	0.0	0.1	6.0	24.4	0.0	0.1	30.6	9.5	23.2	8.1	0.0	40.8	0.0	21.3	6.9	0.4	28.6	
Exiting Leg Total					878					751					0					802	2431
Cars	0	0	0	0	0	143	570	0	2	715	226	559	193	0	978	0	499	165	8	672	2365
% Cars	0.0	0.0	0.0	0.0	0.0	97.3	96.0	0.0	100.0	96.2	97.8	99.3	98.0	0.0	98.7	0.0	96.3	98.2	88.9	96.7	97.3
Exiting Leg Total					867					727					0					771	2365
Heavy Vehicles	2	0	0	0	2	4	24	0	0	28	5	4	4	0	13	0	19	3	1	23	66
% Heavy Vehicles	100.0	0.0	0.0	0.0	100.0	2.7	4.0	0.0	0.0	3.8	2.2	0.7	2.0	0.0	1.3	0.0	3.7	1.8	11.1	3.3	2.7
Exiting Leg Total					11					24					0					31	66

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	0	0	0	0	0	21	90	0	0	111	18	80	24	0	122	0	63	22	1	86	319
5:15 PM	0	0	0	0	0	22	78	0	1	101	37	65	29	0	131	0	75	19	2	96	328
5:30 PM	0	0	0	0	0	23	81	0	0	104	34	91	28	0	153	0	55	29	1	85	342
5:45 PM	0	0	0	0	0	13	64	0	0	77	29	78	30	0	137	0	77	22	1	100	314
Total Volume	0	0	0	0	0	79	313	0	1	393	118	314	111	0	543	0	270	92	5	367	1303
% Approach Total	0.0	0.0	0.0	0.0		20.1	79.6	0.0	0.3		21.7	57.8	20.4	0.0		0.0	73.6	25.1	1.4		
PHF	0.000	0.000	0.000	0.000	0.000	0.859	0.869	0.000	0.250	0.885	0.797	0.863	0.925	0.000	0.887	0.000	0.877	0.793	0.625	0.918	0.952
Cars	0	0	0	0	0	76	303	0	1	380	117	312	109	0	538	0	262	91	4	357	1275
Cars %	0.0	0.0	0.0	0.0	0.0	96.2	96.8	0.0	100.0	96.7	99.2	99.4	98.2	0.0	99.1	0.0	97.0	98.9	80.0	97.3	97.9
Heavy Vehicles	0	0	0	0	0	3	10	0	0	13	1	2	2	0	5	0	8	1	1	10	28
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	3.8	3.2	0.0	0.0	3.3	0.8	0.6	1.8	0.0	0.9	0.0	3.0	1.1	20.0	2.7	2.1
Cars Enter Leg	0	0	0	0	0	76	303	0	1	380	117	312	109	0	538	0	262	91	4	357	1275
Heavy Enter Leg	0	0	0	0	0	3	10	0	0	13	1	2	2	0	5	0	8	1	1	10	28
Total Entering Leg	0	0	0	0	0	79	313	0	1	393	118	314	111	0	543	0	270	92	5	367	1303
Cars Exiting Leg					479					380					0					416	1275
Heavy Exiting Leg					6					9					0					13	28
Total Exiting Leg					485					389					0					429	1303

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	24	82	0	0	106	33	52	31	0	116	0	51	17	1	69	291
4:15 PM	0	0	0	0	0	11	51	0	0	62	23	62	19	0	104	0	49	14	0	63	229
4:30 PM	0	0	0	0	0	12	63	0	0	75	31	63	15	0	109	0	68	21	1	90	274
4:45 PM	0	0	0	0	0	20	71	0	1	92	22	70	19	0	111	0	69	22	2	93	296
Total	0	0	0	0	0	67	267	0	1	335	109	247	84	0	440	0	237	74	4	315	1090
5:00 PM	0	0	0	0	0	19	88	0	0	107	18	79	23	0	120	0	61	22	0	83	310
5:15 PM	0	0	0	0	0	21	76	0	1	98	36	65	28	0	129	0	70	19	2	91	318
5:30 PM	0	0	0	0	0	23	78	0	0	101	34	91	28	0	153	0	55	29	1	85	339
5:45 PM	0	0	0	0	0	13	61	0	0	74	29	77	30	0	136	0	76	21	1	98	308
Total	0	0	0	0	0	76	303	0	1	380	117	312	109	0	538	0	262	91	4	357	1275
Grand Total	0	0	0	0	0	143	570	0	2	715	226	559	193	0	978	0	499	165	8	672	2365
Approach %	0.0	0.0	0.0	0.0		20.0	79.7	0.0	0.3		23.1	57.2	19.7	0.0		0.0	74.3	24.6	1.2		
Total %	0.0	0.0	0.0	0.0	0.0	6.0	24.1	0.0	0.1	30.2	9.6	23.6	8.2	0.0	41.4	0.0	21.1	7.0	0.3	28.4	
Exiting Leg Total					867					727					0					771	2365

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	0	0	0	0	0	19	88	0	0	107	18	79	23	0	120	0	61	22	0	83	310
5:15 PM	0	0	0	0	0	21	76	0	1	98	36	65	28	0	129	0	70	19	2	91	318
5:30 PM	0	0	0	0	0	23	78	0	0	101	34	91	28	0	153	0	55	29	1	85	339
5:45 PM	0	0	0	0	0	13	61	0	0	74	29	77	30	0	136	0	76	21	1	98	308
Total Volume	0	0	0	0	0	76	303	0	1	380	117	312	109	0	538	0	262	91	4	357	1275
% Approach Total	0.0	0.0	0.0	0.0		20.0	79.7	0.0	0.3		21.7	58.0	20.3	0.0		0.0	73.4	25.5	1.1		
PHF	0.000	0.000	0.000	0.000	0.000	0.826	0.861	0.000	0.250	0.888	0.813	0.857	0.908	0.000	0.879	0.000	0.862	0.784	0.500	0.911	0.940
Entering Leg	0	0	0	0	0	76	303	0	1	380	117	312	109	0	538	0	262	91	4	357	1275
Exiting Leg					479					380					0					416	1275
Total					479					760					538					773	2550

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	0	2	0	0	2	2	1	0	0	3	0	4	0	0	4	10
4:15 PM	0	0	0	0	0	1	5	0	0	6	0	0	1	0	1	0	3	1	0	4	11
4:30 PM	1	0	0	0	1	0	4	0	0	4	1	0	1	0	2	0	3	1	0	4	11
4:45 PM	0	0	0	0	0	0	3	0	0	3	1	1	0	0	2	0	1	0	0	1	6
Total	2	0	0	0	2	1	14	0	0	15	4	2	2	0	8	0	11	2	0	13	38
5:00 PM	0	0	0	0	0	2	2	0	0	4	0	1	1	0	2	0	2	0	1	3	9
5:15 PM	0	0	0	0	0	1	2	0	0	3	1	0	1	0	2	0	5	0	0	5	10
5:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	0	1	1	0	2	6
Total	0	0	0	0	0	3	10	0	0	13	1	2	2	0	5	0	8	1	1	10	28
Grand Total	2	0	0	0	2	4	24	0	0	28	5	4	4	0	13	0	19	3	1	23	66
Approach %	100.0	0.0	0.0	0.0		14.3	85.7	0.0	0.0		38.5	30.8	30.8	0.0		0.0	82.6	13.0	4.3		
Total %	3.0	0.0	0.0	0.0	3.0	6.1	36.4	0.0	0.0	42.4	7.6	6.1	6.1	0.0	19.7	0.0	28.8	4.5	1.5	34.8	
Exiting Leg Total					11					24					0					31	66
Buses	0	0	0	0	0	1	15	0	0	16	0	2	0	0	2	0	11	1	0	12	30
% Buses	0.0	0.0	0.0	0.0	0.0	25.0	62.5	0.0	0.0	57.1	0.0	50.0	0.0	0.0	15.4	0.0	57.9	33.3	0.0	52.2	45.5
Exiting Leg Total					4					11					0					15	30
Single-Unit Trucks	0	0	0	0	0	3	9	0	0	12	3	2	4	0	9	0	7	2	1	10	31
% Single-Unit	0.0	0.0	0.0	0.0	0.0	75.0	37.5	0.0	0.0	42.9	60.0	50.0	100.0	0.0	69.2	0.0	36.8	66.7	100.0	43.5	47.0
Exiting Leg Total					7					10					0					14	31
Articulated Trucks	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
% Articulated	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	15.4	0.0	5.3	0.0	0.0	4.3	7.6
Exiting Leg Total					0					3					0					2	5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	0	2	0	0	2	2	1	0	0	3	0	4	0	0	4	10
4:15 PM	0	0	0	0	0	1	5	0	0	6	0	0	1	0	1	0	3	1	0	4	11
4:30 PM	1	0	0	0	1	0	4	0	0	4	1	0	1	0	2	0	3	1	0	4	11
4:45 PM	0	0	0	0	0	0	3	0	0	3	1	1	0	0	2	0	1	0	0	1	6
Total Volume	2	0	0	0	2	1	14	0	0	15	4	2	2	0	8	0	11	2	0	13	38
% Approach Total	100.0	0.0	0.0	0.0		6.7	93.3	0.0	0.0		50.0	25.0	25.0	0.0		0.0	84.6	15.4	0.0		
PHF	0.500	0.000	0.000	0.000	0.500	0.250	0.700	0.000	0.000	0.625	0.500	0.500	0.500	0.000	0.667	0.000	0.688	0.500	0.000	0.813	0.864
Buses	0	0	0	0	0	1	10	0	0	11	0	1	0	0	1	0	6	0	0	6	18
Buses %	0.0	0.0	0.0	0.0	0.0	100.0	71.4	0.0	0.0	73.3	0.0	50.0	0.0	0.0	12.5	0.0	54.5	0.0	0.0	46.2	47.4
Single-Unit Trucks	0	0	0	0	0	0	4	0	0	4	2	1	2	0	5	0	4	2	0	6	15
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	26.7	50.0	50.0	100.0	0.0	62.5	0.0	36.4	100.0	0.0	46.2	39.5
Articulated Trucks	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
Articulated %	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	25.0	0.0	9.1	0.0	0.0	7.7	13.2
Buses	0	0	0	0	0	1	10	0	0	11	0	1	0	0	1	0	6	0	0	6	18
Single-Unit Trucks	0	0	0	0	0	0	4	0	0	4	2	1	2	0	5	0	4	2	0	6	15
Articulated Trucks	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
Total Entering Leg	2	0	0	0	2	1	14	0	0	15	4	2	2	0	8	0	11	2	0	13	38
Buses					2					6					0					10	18
Single-Unit Trucks					3					6					0					6	15
Articulated Trucks					0					3					0					2	5
Total Exiting Leg					5					15					0					18	38

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	4
4:15 PM	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	0	1	0	0	1	6
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
4:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
Total	0	0	0	0	0	1	10	0	0	11	0	1	0	0	1	0	6	0	0	6	18
5:00 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	3
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	5
5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	3
Total	0	0	0	0	0	0	5	0	0	5	0	1	0	0	1	0	5	1	0	6	12
Grand Total	0	0	0	0	0	1	15	0	0	16	0	2	0	0	2	0	11	1	0	12	30
Approach %	0.0	0.0	0.0	0.0		6.3	93.8	0.0	0.0		0.0	100.0	0.0	0.0		0.0	91.7	8.3	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	3.3	50.0	0.0	0.0	53.3	0.0	6.7	0.0	0.0	6.7	0.0	36.7	3.3	0.0	40.0	
Exiting Leg Total					4					11					0					15	30

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	4
4:15 PM	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	0	1	0	0	1	6
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
4:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
Total Volume	0	0	0	0	0	1	10	0	0	11	0	1	0	0	1	0	6	0	0	6	18
% Approach Total	0.0	0.0	0.0	0.0		9.1	90.9	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.625	0.000	0.000	0.550	0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.500	0.750
Entering Leg	0	0	0	0	0	1	10	0	0	11	0	1	0	0	1	0	6	0	0	6	18
Exiting Leg					2					6					0					10	18
Total					2					17					1					16	36

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	Pier 4 Boulevard from North					Congress Street from East					I-90 Offramp from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	0	2	3
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	2	1	0	3	5
4:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	0	0	1	0	1	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
Total	0	0	0	0	0	0	4	0	0	4	2	1	2	0	5	0	4	2	0	6	15
5:00 PM	0	0	0	0	0	2	1	0	0	3	0	0	1	0	1	0	1	0	1	2	6
5:15 PM	0	0	0	0	0	1	1	0	0	2	1	0	1	0	2	0	1	0	0	1	5
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	3
Total	0	0	0	0	0	3	5	0	0	8	1	1	2	0	4	0	3	0	1	4	16
Grand Total	0	0	0	0	0	3	9	0	0	12	3	2	4	0	9	0	7	2	1	10	31
Approach %	0.0	0.0	0.0	0.0		25.0	75.0	0.0	0.0		33.3	22.2	44.4	0.0		0.0	70.0	20.0	10.0		
Total %	0.0	0.0	0.0	0.0	0.0	9.7	29.0	0.0	0.0	38.7	9.7	6.5	12.9	0.0	29.0	0.0	22.6	6.5	3.2	32.3	
Exiting Leg Total					7					10					0					14	31

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Pier 4 Boulevard from North					Congress Street from East					I-90 Offramp from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	2	1	0	3	5
4:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	0	0	1	0	1	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	2	1	0	0	3	0	0	1	0	1	0	1	0	1	2	6
Total Volume	0	0	0	0	0	2	5	0	0	7	1	1	3	0	5	0	3	2	1	6	18
% Approach Total	0.0	0.0	0.0	0.0		28.6	71.4	0.0	0.0		20.0	20.0	60.0	0.0		0.0	50.0	33.3	16.7		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.417	0.000	0.000	0.583	0.250	0.250	0.750	0.000	0.625	0.000	0.375	0.500	0.250	0.500	0.750
Entering Leg	0	0	0	0	0	2	5	0	0	7	1	1	3	0	5	0	3	2	1	6	18
Exiting Leg					5					4					0					9	18
Total					5					11					5					15	36

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
Approach %	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	40.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	40.0	0.0	20.0	0.0	0.0	20.0	
Exiting Leg Total					0					3					0					2	5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Pier 4 Boulevard					Congress Street					I-90 Offramp					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.250	0.417
Entering Leg	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	5
Exiting Leg					0					3					0					2	5
Total					2					3					2					3	10

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	1	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	3
4:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4
4:45 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	1	0	0	0	0	0	1	0	7	0	0	0	0	7	1	0	0	0	0	0	1	0	2	1	0	0	0	3	12
5:00 PM	0	0	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	1	0	4	6
5:15 PM	0	0	0	0	2	1	3	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	1	0	0	1	0	2	9
5:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	1	1	0	1	0	0	0	0	1	5
5:45 PM	0	0	0	0	1	2	3	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
Total	0	0	0	0	3	4	7	1	8	0	0	1	0	10	0	0	0	0	0	1	1	0	5	0	0	3	0	8	26
Grand Total	1	0	0	0	3	4	8	1	15	0	0	1	0	17	1	0	0	0	0	1	2	0	7	1	0	3	0	11	38
Approach %	12.5	0.0	0.0	0.0	37.5	50.0		5.9	88.2	0.0	0.0	5.9	0.0		50.0	0.0	0.0	0.0	0.0	50.0		0.0	63.6	9.1	0.0	27.3	0.0		
Total %	2.6	0.0	0.0	0.0	7.9	10.5	21.1	2.6	39.5	0.0	0.0	2.6	0.0	44.7	2.6	0.0	0.0	0.0	0.0	2.6	5.3	0.0	18.4	2.6	0.0	7.9	0.0	28.9	
Exiting Leg Total							9							9							1							19	38

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	1	0	4	6
5:15 PM	0	0	0	0	2	1	3	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	1	0	0	1	0	2	9
5:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	1	1	0	1	0	0	0	0	1	5
5:45 PM	0	0	0	0	1	2	3	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
Total Volume	0	0	0	0	3	4	7	1	8	0	0	1	0	10	0	0	0	0	0	1	1	0	5	0	0	3	0	8	26
% Approach Total	0.0	0.0	0.0	0.0	42.9	57.1		10.0	80.0	0.0	0.0	10.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	62.5	0.0	0.0	37.5	0.0		
PHF	0.000	0.000	0.000	0.000	0.375	0.500	0.583	0.250	0.667	0.000	0.000	0.250	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.417	0.000	0.000	0.750	0.000	0.500	0.722
Entering Leg	0	0	0	0	3	4	7	1	8	0	0	1	0	10	0	0	0	0	0	1	1	0	5	0	0	3	0	8	26
Exiting Leg							8							6							1							11	26
Total							15							16							2							19	52

PDI File #: **239422 B**
Location: **N: Pier 4 Boulevard S: I-90 Offramp**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	14	15	29	0	0	0	0	4	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
4:15 PM	0	0	0	0	26	7	33	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	5	1	6	40
4:30 PM	0	0	0	0	27	21	48	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
4:45 PM	0	0	0	0	17	16	33	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	5	5	42
Total	0	0	0	0	84	59	143	0	0	0	0	8	5	13	0	0	0	0	0	0	0	0	0	0	0	5	6	11	167
5:00 PM	0	0	0	0	23	11	34	0	0	0	0	4	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
5:15 PM	0	0	0	0	24	13	37	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
5:30 PM	0	0	0	0	28	15	43	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48
5:45 PM	0	0	0	0	43	11	54	0	0	0	0	3	2	5	0	0	0	0	1	1	2	0	0	0	0	1	0	1	62
Total	0	0	0	0	118	50	168	0	0	0	0	15	5	20	0	0	0	0	1	1	2	0	0	0	0	1	0	1	191
Grand Total	0	0	0	0	202	109	311	0	0	0	0	23	10	33	0	0	0	0	1	1	2	0	0	0	0	6	6	12	358
Approach %	0	0	0	0	65	35		0	0	0	0	69.7	30.3		0	0	0	0	50	50		0	0	0	0	50	50		
Total %	0	0	0	0	56.4	30.4	86.9	0	0	0	0	6.42	2.79	9.22	0	0	0	0	0.28	0.28	0.56	0	0	0	0	1.68	1.68	3.35	
Exiting Leg Total							311							33							2							12	358

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Pier 4 Boulevard							Congress Street							I-90 Offramp							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	23	11	34	0	0	0	0	4	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
5:15 PM	0	0	0	0	24	13	37	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
5:30 PM	0	0	0	0	28	15	43	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48
5:45 PM	0	0	0	0	43	11	54	0	0	0	0	3	2	5	0	0	0	0	1	1	2	0	0	0	0	1	0	1	62
Total Volume	0	0	0	0	118	50	168	0	0	0	0	15	5	20	0	0	0	0	1	1	2	0	0	0	0	1	0	1	191
% Approach Total	0.0	0.0	0.0	0.0	70.2	29.8		0.0	0.0	0.0	0.0	75.0	25.0		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.686	0.833	0.778	0.000	0.000	0.000	0.000	0.750	0.417	0.714	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.770
Entering Leg	0	0	0	0	118	50	168	0	0	0	0	15	5	20	0	0	0	0	1	1	2	0	0	0	0	1	0	1	191
Exiting Leg							168							20							2							1	191
Total							336							40							4							2	382

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	4	10	6	0	20	4	59	10	2	75	14	19	21	0	54	28	16	4	0	48	197
7:15 AM	11	13	1	0	25	4	62	10	0	76	12	9	20	0	41	21	23	9	0	53	195
7:30 AM	8	11	4	0	23	10	78	10	2	100	18	21	21	0	60	18	17	9	0	44	227
7:45 AM	7	16	6	0	29	6	75	13	2	96	11	27	28	0	66	16	25	8	0	49	240
Total	30	50	17	0	97	24	274	43	6	347	55	76	90	0	221	83	81	30	0	194	859
8:00 AM	7	8	5	0	20	12	88	12	0	112	12	39	41	0	92	26	12	5	0	43	267
8:15 AM	7	16	7	0	30	9	75	9	1	94	27	36	38	0	101	23	25	6	0	54	279
8:30 AM	12	18	2	1	33	9	99	14	0	122	17	42	36	0	95	22	24	9	0	55	305
8:45 AM	10	21	6	0	37	10	84	15	0	109	21	38	23	0	82	24	28	18	1	71	299
Total	36	63	20	1	120	40	346	50	1	437	77	155	138	0	370	95	89	38	1	223	1150
Grand Total	66	113	37	1	217	64	620	93	7	784	132	231	228	0	591	178	170	68	1	417	2009
Approach %	30.4	52.1	17.1	0.5		8.2	79.1	11.9	0.9		22.3	39.1	38.6	0.0		42.7	40.8	16.3	0.2		
Total %	3.3	5.6	1.8	0.0	10.8	3.2	30.9	4.6	0.3	39.0	6.6	11.5	11.3	0.0	29.4	8.9	8.5	3.4	0.0	20.8	
Exiting Leg Total					364					346					384					915	2009
Cars	57	105	24	1	187	62	595	88	7	752	119	220	205	0	544	146	156	60	1	363	1846
% Cars	86.4	92.9	64.9	100.0	86.2	96.9	96.0	94.6	100.0	95.9	90.2	95.2	89.9	0.0	92.0	82.0	91.8	88.2	100.0	87.1	91.9
Exiting Leg Total					343					306					339					858	1846
Heavy Vehicles	9	8	13	0	30	2	25	5	0	32	13	11	23	0	47	32	14	8	0	54	163
% Heavy Vehicles	13.6	7.1	35.1	0.0	13.8	3.1	4.0	5.4	0.0	4.1	9.8	4.8	10.1	0.0	8.0	18.0	8.2	11.8	0.0	12.9	8.1
Exiting Leg Total					21					40					45					57	163

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	7	8	5	0	20	12	88	12	0	112	12	39	41	0	92	26	12	5	0	43	267
8:15 AM	7	16	7	0	30	9	75	9	1	94	27	36	38	0	101	23	25	6	0	54	279
8:30 AM	12	18	2	1	33	9	99	14	0	122	17	42	36	0	95	22	24	9	0	55	305
8:45 AM	10	21	6	0	37	10	84	15	0	109	21	38	23	0	82	24	28	18	1	71	299
Total Volume	36	63	20	1	120	40	346	50	1	437	77	155	138	0	370	95	89	38	1	223	1150
% Approach Total	30.0	52.5	16.7	0.8		9.2	79.2	11.4	0.2		20.8	41.9	37.3	0.0		42.6	39.9	17.0	0.4		
PHF	0.750	0.750	0.714	0.250	0.811	0.833	0.874	0.833	0.250	0.895	0.713	0.923	0.841	0.000	0.916	0.913	0.795	0.528	0.250	0.785	0.943
Cars	32	61	14	1	108	39	337	47	1	424	73	151	130	0	354	76	86	34	1	197	1083
Cars %	88.9	96.8	70.0	100.0	90.0	97.5	97.4	94.0	100.0	97.0	94.8	97.4	94.2	0.0	95.7	80.0	96.6	89.5	100.0	88.3	94.2
Heavy Vehicles	4	2	6	0	12	1	9	3	0	13	4	4	8	0	16	19	3	4	0	26	67
Heavy Vehicles %	11.1	3.2	30.0	0.0	10.0	2.5	2.6	6.0	0.0	3.0	5.2	2.6	5.8	0.0	4.3	20.0	3.4	10.5	0.0	11.7	5.8
Cars Enter Leg	32	61	14	1	108	39	337	47	1	424	73	151	130	0	354	76	86	34	1	197	1083
Heavy Enter Leg	4	2	6	0	12	1	9	3	0	13	4	4	8	0	16	19	3	4	0	26	67
Total Entering Leg	36	63	20	1	120	40	346	50	1	437	77	155	138	0	370	95	89	38	1	223	1150
Cars Exiting Leg					225					174					184					500	1083
Heavy Exiting Leg					9					13					24					21	67
Total Exiting Leg					234					187					208					521	1150

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	3	10	5	0	18	4	54	9	2	69	12	15	14	0	41	23	14	3	0	40	168
7:15 AM	7	12	1	0	20	3	58	9	0	70	9	7	15	0	31	19	19	6	0	44	165
7:30 AM	8	10	2	0	20	10	73	10	2	95	16	20	20	0	56	14	16	9	0	39	210
7:45 AM	7	12	2	0	21	6	73	13	2	94	9	27	26	0	62	14	21	8	0	43	220
Total	25	44	10	0	79	23	258	41	6	328	46	69	75	0	190	70	70	26	0	166	763
8:00 AM	4	8	4	0	16	12	87	12	0	111	11	38	37	0	86	20	11	5	0	36	249
8:15 AM	7	16	3	0	26	9	73	9	1	92	26	34	37	0	97	18	23	6	0	47	262
8:30 AM	11	16	2	1	30	8	96	12	0	116	17	42	33	0	92	15	24	8	0	47	285
8:45 AM	10	21	5	0	36	10	81	14	0	105	19	37	23	0	79	23	28	15	1	67	287
Total	32	61	14	1	108	39	337	47	1	424	73	151	130	0	354	76	86	34	1	197	1083
Grand Total	57	105	24	1	187	62	595	88	7	752	119	220	205	0	544	146	156	60	1	363	1846
Approach %	30.5	56.1	12.8	0.5		8.2	79.1	11.7	0.9		21.9	40.4	37.7	0.0		40.2	43.0	16.5	0.3		
Total %	3.1	5.7	1.3	0.1	10.1	3.4	32.2	4.8	0.4	40.7	6.4	11.9	11.1	0.0	29.5	7.9	8.5	3.3	0.1	19.7	
Exiting Leg Total					343					306					339					858	1846

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	4	8	4	0	16	12	87	12	0	111	11	38	37	0	86	20	11	5	0	36	249
8:15 AM	7	16	3	0	26	9	73	9	1	92	26	34	37	0	97	18	23	6	0	47	262
8:30 AM	11	16	2	1	30	8	96	12	0	116	17	42	33	0	92	15	24	8	0	47	285
8:45 AM	10	21	5	0	36	10	81	14	0	105	19	37	23	0	79	23	28	15	1	67	287
Total Volume	32	61	14	1	108	39	337	47	1	424	73	151	130	0	354	76	86	34	1	197	1083
% Approach Total	29.6	56.5	13.0	0.9		9.2	79.5	11.1	0.2		20.6	42.7	36.7	0.0		38.6	43.7	17.3	0.5		
PHF	0.727	0.726	0.700	0.250	0.750	0.813	0.878	0.839	0.250	0.914	0.702	0.899	0.878	0.000	0.912	0.826	0.768	0.567	0.250	0.735	0.943
Entering Leg	32	61	14	1	108	39	337	47	1	424	73	151	130	0	354	76	86	34	1	197	1083
Exiting Leg					225					174					184					500	1083
Total					333					598					538					697	2166

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	1	0	2	0	5	1	0	6	2	4	7	0	13	5	2	1	0	8	29
7:15 AM	4	1	0	0	5	1	4	1	0	6	3	2	5	0	10	2	4	3	0	9	30
7:30 AM	0	1	2	0	3	0	5	0	0	5	2	1	1	0	4	4	1	0	0	5	17
7:45 AM	0	4	4	0	8	0	2	0	0	2	2	0	2	0	4	2	4	0	0	6	20
Total	5	6	7	0	18	1	16	2	0	19	9	7	15	0	31	13	11	4	0	28	96
8:00 AM	3	0	1	0	4	0	1	0	0	1	1	1	4	0	6	6	1	0	0	7	18
8:15 AM	0	0	4	0	4	0	2	0	0	2	1	2	1	0	4	5	2	0	0	7	17
8:30 AM	1	2	0	0	3	1	3	2	0	6	0	0	3	0	3	7	0	1	0	8	20
8:45 AM	0	0	1	0	1	0	3	1	0	4	2	1	0	0	3	1	0	3	0	4	12
Total	4	2	6	0	12	1	9	3	0	13	4	4	8	0	16	19	3	4	0	26	67
Grand Total	9	8	13	0	30	2	25	5	0	32	13	11	23	0	47	32	14	8	0	54	163
Approach %	30.0	26.7	43.3	0.0		6.3	78.1	15.6	0.0		27.7	23.4	48.9	0.0		59.3	25.9	14.8	0.0		
Total %	5.5	4.9	8.0	0.0	18.4	1.2	15.3	3.1	0.0	19.6	8.0	6.7	14.1	0.0	28.8	19.6	8.6	4.9	0.0	33.1	
Exiting Leg Total					21					40					45					57	163
Buses	1	0	0	0	1	0	5	0	0	5	0	0	2	0	2	22	5	2	0	29	37
% Buses	11.1	0.0	0.0	0.0	3.3	0.0	20.0	0.0	0.0	15.6	0.0	0.0	8.7	0.0	4.3	68.8	35.7	25.0	0.0	53.7	22.7
Exiting Leg Total					2					5					22					8	37
Single-Unit Trucks	7	3	13	0	23	1	19	4	0	24	11	11	19	0	41	9	9	5	0	23	111
% Single-Unit	77.8	37.5	100.0	0.0	76.7	50.0	76.0	80.0	0.0	75.0	84.6	100.0	82.6	0.0	87.2	28.1	64.3	62.5	0.0	42.6	68.1
Exiting Leg Total					17					33					16					45	111
Articulated Trucks	1	5	0	0	6	1	1	1	0	3	2	0	2	0	4	1	0	1	0	2	15
% Articulated	11.1	62.5	0.0	0.0	20.0	50.0	4.0	20.0	0.0	9.4	15.4	0.0	8.7	0.0	8.5	3.1	0.0	12.5	0.0	3.7	9.2
Exiting Leg Total					2					2					7					4	15

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	1	0	2	0	5	1	0	6	2	4	7	0	13	5	2	1	0	8	29
7:15 AM	4	1	0	0	5	1	4	1	0	6	3	2	5	0	10	2	4	3	0	9	30
7:30 AM	0	1	2	0	3	0	5	0	0	5	2	1	1	0	4	4	1	0	0	5	17
7:45 AM	0	4	4	0	8	0	2	0	0	2	2	0	2	0	4	2	4	0	0	6	20
Total Volume	5	6	7	0	18	1	16	2	0	19	9	7	15	0	31	13	11	4	0	28	96
% Approach Total	27.8	33.3	38.9	0.0		5.3	84.2	10.5	0.0		29.0	22.6	48.4	0.0		46.4	39.3	14.3	0.0		
PHF	0.313	0.375	0.438	0.000	0.563	0.250	0.800	0.500	0.000	0.792	0.750	0.438	0.536	0.000	0.596	0.650	0.688	0.333	0.000	0.778	0.800
Buses	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	10	5	1	0	16	20
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	15.8	0.0	0.0	6.7	0.0	3.2	76.9	45.5	25.0	0.0	57.1	20.8
Single-Unit Trucks	4	1	7	0	12	1	13	1	0	15	8	7	13	0	28	2	6	2	0	10	65
Single-Unit %	80.0	16.7	100.0	0.0	66.7	100.0	81.3	50.0	0.0	78.9	88.9	100.0	86.7	0.0	90.3	15.4	54.5	50.0	0.0	35.7	67.7
Articulated Trucks	1	5	0	0	6	0	0	1	0	1	1	0	1	0	2	1	0	1	0	2	11
Articulated %	20.0	83.3	0.0	0.0	33.3	0.0	0.0	50.0	0.0	5.3	11.1	0.0	6.7	0.0	6.5	7.7	0.0	25.0	0.0	7.1	11.5
Buses	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	10	5	1	0	16	20
Single-Unit Trucks	4	1	7	0	12	1	13	1	0	15	8	7	13	0	28	2	6	2	0	10	65
Articulated Trucks	1	5	0	0	6	0	0	1	0	1	1	0	1	0	2	1	0	1	0	2	11
Total Entering Leg	5	6	7	0	18	1	16	2	0	19	9	7	15	0	31	13	11	4	0	28	96
Buses					1					5					10					4	20
Single-Unit Trucks					10					21					4					30	65
Articulated Trucks					1					1					7					2	11
Total Exiting Leg					12					27					21					36	96

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	1	0	0	4	5
7:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0	1	0	3	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	5	5
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	3	0	0	4	6
Total	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	10	5	1	0	16	20
8:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	5
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	0	0	0	3	4
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5	0	0	0	5	6
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2
Total	1	0	0	0	1	0	2	0	0	2	0	0	1	0	1	12	0	1	0	13	17
Grand Total	1	0	0	0	1	0	5	0	0	5	0	0	2	0	2	22	5	2	0	29	37
Approach %	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		75.9	17.2	6.9	0.0		
Total %	2.7	0.0	0.0	0.0	2.7	0.0	13.5	0.0	0.0	13.5	0.0	0.0	5.4	0.0	5.4	59.5	13.5	5.4	0.0	78.4	
Exiting Leg Total					2					5					22					8	37

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	3	0	0	4	6
8:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	5
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	0	0	0	3	4
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5	0	0	0	5	6
Total Volume	1	0	0	0	1	0	3	0	0	3	0	0	2	0	2	12	3	0	0	15	21
% Approach Total	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		80.0	20.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.500	0.000	0.500	0.600	0.250	0.000	0.000	0.750	0.875
Entering Leg	1	0	0	0	1	0	3	0	0	3	0	0	2	0	2	12	3	0	0	15	21
Exiting Leg					0					3					12					6	21
Total					1					6					14					21	42

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	1	0	2	0	4	1	0	5	2	4	7	0	13	1	1	1	0	3	23
7:15 AM	3	1	0	0	4	1	3	0	0	4	2	2	5	0	9	0	4	1	0	5	22
7:30 AM	0	0	2	0	2	0	5	0	0	5	2	1	0	0	3	0	0	0	0	0	10
7:45 AM	0	0	4	0	4	0	1	0	0	1	2	0	1	0	3	1	1	0	0	2	10
Total	4	1	7	0	12	1	13	1	0	15	8	7	13	0	28	2	6	2	0	10	65
8:00 AM	2	0	1	0	3	0	1	0	0	1	1	1	3	0	5	3	1	0	0	4	13
8:15 AM	0	0	4	0	4	0	1	0	0	1	1	2	1	0	4	2	2	0	0	4	13
8:30 AM	1	2	0	0	3	0	2	2	0	4	0	0	2	0	2	2	0	1	0	3	12
8:45 AM	0	0	1	0	1	0	2	1	0	3	1	1	0	0	2	0	0	2	0	2	8
Total	3	2	6	0	11	0	6	3	0	9	3	4	6	0	13	7	3	3	0	13	46
Grand Total	7	3	13	0	23	1	19	4	0	24	11	11	19	0	41	9	9	5	0	23	111
Approach %	30.4	13.0	56.5	0.0		4.2	79.2	16.7	0.0		26.8	26.8	46.3	0.0		39.1	39.1	21.7	0.0		
Total %	6.3	2.7	11.7	0.0	20.7	0.9	17.1	3.6	0.0	21.6	9.9	9.9	17.1	0.0	36.9	8.1	8.1	4.5	0.0	20.7	
Exiting Leg Total					17					33					16					45	111

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	1	0	2	0	4	1	0	5	2	4	7	0	13	1	1	1	0	3	23
7:15 AM	3	1	0	0	4	1	3	0	0	4	2	2	5	0	9	0	4	1	0	5	22
7:30 AM	0	0	2	0	2	0	5	0	0	5	2	1	0	0	3	0	0	0	0	0	10
7:45 AM	0	0	4	0	4	0	1	0	0	1	2	0	1	0	3	1	1	0	0	2	10
Total Volume	4	1	7	0	12	1	13	1	0	15	8	7	13	0	28	2	6	2	0	10	65
% Approach Total	33.3	8.3	58.3	0.0		6.7	86.7	6.7	0.0		28.6	25.0	46.4	0.0		20.0	60.0	20.0	0.0		
PHF	0.333	0.250	0.438	0.000	0.750	0.250	0.650	0.250	0.000	0.750	1.000	0.438	0.464	0.000	0.538	0.500	0.375	0.500	0.000	0.500	0.707
Entering Leg	4	1	7	0	12	1	13	1	0	15	8	7	13	0	28	2	6	2	0	10	65
Exiting Leg					10					21					4					30	65
Total					22					36					32					40	130

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
7:15 AM	1	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	1	0	1	4
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
7:45 AM	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	1	5	0	0	6	0	0	1	0	1	1	0	1	0	2	1	0	1	0	2	11
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	2
Total	0	0	0	0	0	1	1	0	0	2	1	0	1	0	2	0	0	0	0	0	4
Grand Total	1	5	0	0	6	1	1	1	0	3	2	0	2	0	4	1	0	1	0	2	15
Approach %	16.7	83.3	0.0	0.0		33.3	33.3	33.3	0.0		50.0	0.0	50.0	0.0		50.0	0.0	50.0	0.0		
Total %	6.7	33.3	0.0	0.0	40.0	6.7	6.7	6.7	0.0	20.0	13.3	0.0	13.3	0.0	26.7	6.7	0.0	6.7	0.0	13.3	
Exiting Leg Total					2					2					7					4	15

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
7:15 AM	1	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	1	0	1	4
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
7:45 AM	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total Volume	1	5	0	0	6	0	0	1	0	1	1	0	1	0	2	1	0	1	0	2	11
% Approach Total	16.7	83.3	0.0	0.0		0.0	0.0	100.0	0.0		50.0	0.0	50.0	0.0		50.0	0.0	50.0	0.0		
PHF	0.250	0.313	0.000	0.000	0.375	0.000	0.000	0.250	0.000	0.250	0.250	0.000	0.250	0.000	0.500	0.250	0.000	0.250	0.000	0.500	0.688
Entering Leg	1	5	0	0	6	0	0	1	0	1	1	0	1	0	2	1	0	1	0	2	11
Exiting Leg					1					1					7					2	11
Total					7					2					9					4	22

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
7:45 AM	1	0	0	0	0	0	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	3	6
Total	1	0	0	0	0	0	1	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	6	0	0	0	0	6	10
8:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3
8:15 AM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	1	0	0	0	0	1	2	1	2	1	0	0	2	6	11
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	3
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	1	0	5	1	0	0	0	6	1	1	0	0	0	1	3	1	4	1	0	0	2	8	18
Grand Total	1	0	0	0	0	1	2	0	8	1	0	0	0	9	1	1	0	0	0	1	3	1	10	1	0	0	2	14	28
Approach %	50.0	0.0	0.0	0.0	0.0	50.0		0.0	88.9	11.1	0.0	0.0	0.0		33.3	33.3	0.0	0.0	0.0	33.3		7.1	71.4	7.1	0.0	0.0	14.3		
Total %	3.6	0.0	0.0	0.0	0.0	3.6	7.1	0.0	28.6	3.6	0.0	0.0	0.0	32.1	3.6	3.6	0.0	0.0	0.0	3.6	10.7	3.6	35.7	3.6	0.0	0.0	7.1	50.0	
Exiting Leg Total							3							11							3							11	28

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	1	0	0	0	0	0	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	3	6
8:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3
8:15 AM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	1	0	0	0	0	1	2	1	2	1	0	0	2	6	11
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	3
Total Volume	1	0	0	0	0	1	2	0	6	1	0	0	0	7	1	1	0	0	0	1	3	1	7	1	0	0	2	11	23
% Approach Total	50.0	0.0	0.0	0.0	0.0	50.0		0.0	85.7	14.3	0.0	0.0	0.0		33.3	33.3	0.0	0.0	0.0	33.3		9.1	63.6	9.1	0.0	0.0	18.2		
PHF	0.250	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.750	0.250	0.000	0.000	0.000	0.875	0.250	0.250	0.000	0.000	0.000	0.250	0.375	0.250	0.583	0.250	0.000	0.000	0.250	0.458	0.523
Entering Leg	1	0	0	0	0	1	2	0	6	1	0	0	0	7	1	1	0	0	0	1	3	1	7	1	0	0	2	11	23
Exiting Leg							3							8							3							9	23
Total							5							15							6							20	46

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	4	7	11	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	3	2	5	18
7:15 AM	0	0	0	0	4	8	12	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	3	2	5	21
7:30 AM	0	0	0	0	9	11	20	0	0	0	0	1	3	4	0	0	0	0	0	2	2	0	0	0	0	5	4	9	35
7:45 AM	0	0	0	0	14	22	36	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	4	1	5	43
Total	0	0	0	0	31	48	79	0	0	0	0	7	5	12	0	0	0	0	0	2	2	0	0	0	0	15	9	24	117
8:00 AM	0	0	0	0	20	18	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	5	12	50
8:15 AM	0	0	0	0	14	22	36	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	6	2	8	47
8:30 AM	0	0	0	0	28	20	48	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	6	3	9	59
8:45 AM	0	0	0	0	24	17	41	0	0	0	0	1	5	6	0	0	0	0	1	0	1	0	0	0	0	12	3	15	63
Total	0	0	0	0	86	77	163	0	0	0	0	2	7	9	0	0	0	0	3	0	3	0	0	0	0	31	13	44	219
Grand Total	0	0	0	0	117	125	242	0	0	0	0	9	12	21	0	0	0	0	3	2	5	0	0	0	0	46	22	68	336
Approach %	0	0	0	0	48.3	51.7		0	0	0	0	42.9	57.1		0	0	0	0	60	40		0	0	0	0	67.6	32.4		
Total %	0	0	0	0	34.8	37.2	72	0	0	0	0	2.68	3.57	6.25	0	0	0	0	0.89	0.6	1.49	0	0	0	0	13.7	6.55	20.2	
Exiting Leg Total							242							21							5							68	336

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	20	18	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	5	12	50
8:15 AM	0	0	0	0	14	22	36	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	6	2	8	47
8:30 AM	0	0	0	0	28	20	48	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	6	3	9	59
8:45 AM	0	0	0	0	24	17	41	0	0	0	0	1	5	6	0	0	0	0	1	0	1	0	0	0	0	12	3	15	63
Total Volume	0	0	0	0	86	77	163	0	0	0	0	2	7	9	0	0	0	0	3	0	3	0	0	0	0	31	13	44	219
% Approach Total	0.0	0.0	0.0	0.0	52.8	47.2		0.0	0.0	0.0	0.0	22.2	77.8		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	70.5	29.5		
PHF	0.000	0.000	0.000	0.000	0.768	0.875	0.849	0.000	0.000	0.000	0.000	0.500	0.350	0.375	0.000	0.000	0.000	0.000	0.375	0.000	0.375	0.000	0.000	0.000	0.000	0.646	0.650	0.733	0.869
Entering Leg	0	0	0	0	86	77	163	0	0	0	0	2	7	9	0	0	0	0	3	0	3	0	0	0	0	31	13	44	219
Exiting Leg							163							9							3							44	219
Total							326							18							6							88	438

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Boston Warf Road from North					Congress Street from East					Bypass Road from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	17	53	8	0	78	7	63	41	0	111	16	14	23	0	53	56	46	2	0	104	346
4:15 PM	9	61	6	0	76	4	50	26	0	80	20	17	20	0	57	59	44	2	0	105	318
4:30 PM	21	44	12	0	77	6	41	32	3	82	28	13	14	0	55	65	49	3	0	117	331
4:45 PM	21	42	10	0	73	5	62	32	1	100	25	18	24	0	67	54	62	12	0	128	368
Total	68	200	36	0	304	22	216	131	4	373	89	62	81	0	232	234	201	19	0	454	1363
5:00 PM	10	57	9	0	76	7	54	36	0	97	20	17	25	0	62	73	51	1	0	125	360
5:15 PM	8	75	12	0	95	6	50	48	0	104	20	20	16	0	56	70	60	7	0	137	392
5:30 PM	18	49	10	0	77	6	77	49	0	132	18	17	22	0	57	69	62	13	1	145	411
5:45 PM	19	67	10	0	96	7	46	28	1	82	17	26	17	0	60	59	63	6	0	128	366
Total	55	248	41	0	344	26	227	161	1	415	75	80	80	0	235	271	236	27	1	535	1529
Grand Total	123	448	77	0	648	48	443	292	5	788	164	142	161	0	467	505	437	46	1	989	2892
Approach %	19.0	69.1	11.9	0.0		6.1	56.2	37.1	0.6		35.1	30.4	34.5	0.0		51.1	44.2	4.7	0.1		
Total %	4.3	15.5	2.7	0.0	22.4	1.7	15.3	10.1	0.2	27.2	5.7	4.9	5.6	0.0	16.1	17.5	15.1	1.6	0.0	34.2	
Exiting Leg Total					236					683					1245					728	2892
Cars	121	443	77	0	641	47	432	272	5	756	159	141	156	0	456	483	419	38	1	941	2794
% Cars	98.4	98.9	100.0	0.0	98.9	97.9	97.5	93.2	100.0	95.9	97.0	99.3	96.9	0.0	97.6	95.6	95.9	82.6	100.0	95.1	96.6
Exiting Leg Total					226					660					1198					710	2794
Heavy Vehicles	2	5	0	0	7	1	11	20	0	32	5	1	5	0	11	22	18	8	0	48	98
% Heavy Vehicles	1.6	1.1	0.0	0.0	1.1	2.1	2.5	6.8	0.0	4.1	3.0	0.7	3.1	0.0	2.4	4.4	4.1	17.4	0.0	4.9	3.4
Exiting Leg Total					10					23					47					18	98

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Boston Warf Road from North					Congress Street from East					Bypass Road from South					Congress Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	21	42	10	0	73	5	62	32	1	100	25	18	24	0	67	54	62	12	0	128	368
5:00 PM	10	57	9	0	76	7	54	36	0	97	20	17	25	0	62	73	51	1	0	125	360
5:15 PM	8	75	12	0	95	6	50	48	0	104	20	20	16	0	56	70	60	7	0	137	392
5:30 PM	18	49	10	0	77	6	77	49	0	132	18	17	22	0	57	69	62	13	1	145	411
Total Volume	57	223	41	0	321	24	243	165	1	433	83	72	87	0	242	266	235	33	1	535	1531
% Approach Total	17.8	69.5	12.8	0.0		5.5	56.1	38.1	0.2		34.3	29.8	36.0	0.0		49.7	43.9	6.2	0.2		
PHF	0.679	0.743	0.854	0.000	0.845	0.857	0.789	0.842	0.250	0.820	0.830	0.900	0.870	0.000	0.903	0.911	0.948	0.635	0.250	0.922	0.931
Cars	56	222	41	0	319	24	236	157	1	418	81	72	84	0	237	253	228	27	1	509	1483
Cars %	98.2	99.6	100.0	0.0	99.4	100.0	97.1	95.2	100.0	96.5	97.6	100.0	96.6	0.0	97.9	95.1	97.0	81.8	100.0	95.1	96.9
Heavy Vehicles	1	1	0	0	2	0	7	8	0	15	2	0	3	0	5	13	7	6	0	26	48
Heavy Vehicles %	1.8	0.4	0.0	0.0	0.6	0.0	2.9	4.8	0.0	3.5	2.4	0.0	3.4	0.0	2.1	4.9	3.0	18.2	0.0	4.9	3.1
Cars Enter Leg	56	222	41	0	319	24	236	157	1	418	81	72	84	0	237	253	228	27	1	509	1483
Heavy Enter Leg	1	1	0	0	2	0	7	8	0	15	2	0	3	0	5	13	7	6	0	26	48
Total Entering Leg	57	223	41	0	321	24	243	165	1	433	83	72	87	0	242	266	235	33	1	535	1531
Cars Exiting Leg					123					351					632					377	1483
Heavy Exiting Leg					6					9					22					11	48
Total Exiting Leg					129					360					654					388	1531

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	17	51	8	0	76	7	63	38	0	108	16	14	23	0	53	54	42	1	0	97	334
4:15 PM	9	59	6	0	74	4	47	24	0	75	18	16	20	0	54	59	42	2	0	103	306
4:30 PM	20	44	12	0	76	5	41	27	3	76	28	13	12	0	53	61	45	3	0	109	314
4:45 PM	21	42	10	0	73	5	61	28	1	95	25	18	21	0	64	49	61	10	0	120	352
Total	67	196	36	0	299	21	212	117	4	354	87	61	76	0	224	223	190	16	0	429	1306
5:00 PM	9	56	9	0	74	7	53	35	0	95	19	17	25	0	61	70	49	0	0	119	349
5:15 PM	8	75	12	0	95	6	48	46	0	100	19	20	16	0	55	69	56	6	0	131	381
5:30 PM	18	49	10	0	77	6	74	48	0	128	18	17	22	0	57	65	62	11	1	139	401
5:45 PM	19	67	10	0	96	7	45	26	1	79	16	26	17	0	59	56	62	5	0	123	357
Total	54	247	41	0	342	26	220	155	1	402	72	80	80	0	232	260	229	22	1	512	1488
Grand Total	121	443	77	0	641	47	432	272	5	756	159	141	156	0	456	483	419	38	1	941	2794
Approach %	18.9	69.1	12.0	0.0		6.2	57.1	36.0	0.7		34.9	30.9	34.2	0.0		51.3	44.5	4.0	0.1		
Total %	4.3	15.9	2.8	0.0	22.9	1.7	15.5	9.7	0.2	27.1	5.7	5.0	5.6	0.0	16.3	17.3	15.0	1.4	0.0	33.7	
Exiting Leg Total					226					660					1198					710	2794

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	9	56	9	0	74	7	53	35	0	95	19	17	25	0	61	70	49	0	0	119	349
5:15 PM	8	75	12	0	95	6	48	46	0	100	19	20	16	0	55	69	56	6	0	131	381
5:30 PM	18	49	10	0	77	6	74	48	0	128	18	17	22	0	57	65	62	11	1	139	401
5:45 PM	19	67	10	0	96	7	45	26	1	79	16	26	17	0	59	56	62	5	0	123	357
Total Volume	54	247	41	0	342	26	220	155	1	402	72	80	80	0	232	260	229	22	1	512	1488
% Approach Total	15.8	72.2	12.0	0.0		6.5	54.7	38.6	0.2		31.0	34.5	34.5	0.0		50.8	44.7	4.3	0.2		
PHF	0.711	0.823	0.854	0.000	0.891	0.929	0.743	0.807	0.250	0.785	0.947	0.769	0.800	0.000	0.951	0.929	0.923	0.500	0.250	0.921	0.928
Entering Leg	54	247	41	0	342	26	220	155	1	402	72	80	80	0	232	260	229	22	1	512	1488
Exiting Leg					128					343					662					355	1488
Total					470					745					894					867	2976

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	3	0	3	0	0	0	0	0	2	4	1	0	7	12
4:15 PM	0	2	0	0	2	0	3	2	0	5	2	1	0	0	3	0	2	0	0	2	12
4:30 PM	1	0	0	0	1	1	0	5	0	6	0	0	2	0	2	4	4	0	0	8	17
4:45 PM	0	0	0	0	0	0	1	4	0	5	0	0	3	0	3	5	1	2	0	8	16
Total	1	4	0	0	5	1	4	14	0	19	2	1	5	0	8	11	11	3	0	25	57
5:00 PM	1	1	0	0	2	0	1	1	0	2	1	0	0	0	1	3	2	1	0	6	11
5:15 PM	0	0	0	0	0	0	2	2	0	4	1	0	0	0	1	1	4	1	0	6	11
5:30 PM	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	4	0	2	0	6	10
5:45 PM	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	3	1	1	0	5	9
Total	1	1	0	0	2	0	7	6	0	13	3	0	0	0	3	11	7	5	0	23	41
Grand Total	2	5	0	0	7	1	11	20	0	32	5	1	5	0	11	22	18	8	0	48	98
Approach %	28.6	71.4	0.0	0.0		3.1	34.4	62.5	0.0		45.5	9.1	45.5	0.0		45.8	37.5	16.7	0.0		
Total %	2.0	5.1	0.0	0.0	7.1	1.0	11.2	20.4	0.0	32.7	5.1	1.0	5.1	0.0	11.2	22.4	18.4	8.2	0.0	49.0	
Exiting Leg Total					10					23					47					18	98
Buses	0	0	0	0	0	0	7	10	0	17	0	0	2	0	2	14	11	6	0	31	50
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	63.6	50.0	0.0	53.1	0.0	0.0	40.0	0.0	18.2	63.6	61.1	75.0	0.0	64.6	51.0
Exiting Leg Total					6					11					24					9	50
Single-Unit Trucks	2	3	0	0	5	0	4	8	0	12	5	1	2	0	8	7	6	2	0	15	40
% Single-Unit	100.0	60.0	0.0	0.0	71.4	0.0	36.4	40.0	0.0	37.5	100.0	100.0	40.0	0.0	72.7	31.8	33.3	25.0	0.0	31.3	40.8
Exiting Leg Total					3					11					18					8	40
Articulated Trucks	0	2	0	0	2	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	8
% Articulated	0.0	40.0	0.0	0.0	28.6	100.0	0.0	10.0	0.0	9.4	0.0	0.0	20.0	0.0	9.1	4.5	5.6	0.0	0.0	4.2	8.2
Exiting Leg Total					1					1					5					1	8

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	3	0	3	0	0	0	0	0	2	4	1	0	7	12
4:15 PM	0	2	0	0	2	0	3	2	0	5	2	1	0	0	3	0	2	0	0	2	12
4:30 PM	1	0	0	0	1	1	0	5	0	6	0	0	2	0	2	4	4	0	0	8	17
4:45 PM	0	0	0	0	0	0	1	4	0	5	0	0	3	0	3	5	1	2	0	8	16
Total Volume	1	4	0	0	5	1	4	14	0	19	2	1	5	0	8	11	11	3	0	25	57
% Approach Total	20.0	80.0	0.0	0.0		5.3	21.1	73.7	0.0		25.0	12.5	62.5	0.0		44.0	44.0	12.0	0.0		
PHF	0.250	0.500	0.000	0.000	0.625	0.250	0.333	0.700	0.000	0.792	0.250	0.250	0.417	0.000	0.667	0.550	0.688	0.375	0.000	0.781	0.838
Buses	0	0	0	0	0	0	4	7	0	11	0	0	2	0	2	5	6	3	0	14	27
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	50.0	0.0	57.9	0.0	0.0	40.0	0.0	25.0	45.5	54.5	100.0	0.0	56.0	47.4
Single-Unit Trucks	1	3	0	0	4	0	0	5	0	5	2	1	2	0	5	5	4	0	0	9	23
Single-Unit %	100.0	75.0	0.0	0.0	80.0	0.0	0.0	35.7	0.0	26.3	100.0	100.0	40.0	0.0	62.5	45.5	36.4	0.0	0.0	36.0	40.4
Articulated Trucks	0	1	0	0	1	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	7
Articulated %	0.0	25.0	0.0	0.0	20.0	100.0	0.0	14.3	0.0	15.8	0.0	0.0	20.0	0.0	12.5	9.1	9.1	0.0	0.0	8.0	12.3
Buses	0	0	0	0	0	0	4	7	0	11	0	0	2	0	2	5	6	3	0	14	27
Single-Unit Trucks	1	3	0	0	4	0	0	5	0	5	2	1	2	0	5	5	4	0	0	9	23
Articulated Trucks	0	1	0	0	1	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	7
Total Entering Leg	1	4	0	0	5	1	4	14	0	19	2	1	5	0	8	11	11	3	0	25	57
Buses					3					6					12					6	27
Single-Unit Trucks					1					6					13					3	23
Articulated Trucks					1					1					4					1	7
Total Exiting Leg					5					13					29					10	57

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	1	0	2	4
4:15 PM	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	5
4:30 PM	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	3	3	0	0	6	9
4:45 PM	0	0	0	0	0	0	1	2	0	3	0	0	1	0	1	2	1	2	0	5	9
Total	0	0	0	0	0	0	4	7	0	11	0	0	2	0	2	5	6	3	0	14	27
5:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	1	0	0	4	5
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	1	0	5	6
5:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	3	0	2	0	5	7
5:45 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2	1	0	0	3	5
Total	0	0	0	0	0	0	3	3	0	6	0	0	0	0	0	9	5	3	0	17	23
Grand Total	0	0	0	0	0	0	7	10	0	17	0	0	2	0	2	14	11	6	0	31	50
Approach %	0.0	0.0	0.0	0.0		0.0	41.2	58.8	0.0		0.0	0.0	100.0	0.0		45.2	35.5	19.4	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	14.0	20.0	0.0	34.0	0.0	0.0	4.0	0.0	4.0	28.0	22.0	12.0	0.0	62.0	
Exiting Leg Total					6					11					24					9	50

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	3	3	0	0	6	9
4:45 PM	0	0	0	0	0	0	1	2	0	3	0	0	1	0	1	2	1	2	0	5	9
5:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	1	0	0	4	5
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	1	0	5	6
Total Volume	0	0	0	0	0	0	2	5	0	7	0	0	2	0	2	9	8	3	0	20	29
% Approach Total	0.0	0.0	0.0	0.0		0.0	28.6	71.4	0.0		0.0	0.0	100.0	0.0		45.0	40.0	15.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.625	0.000	0.583	0.000	0.000	0.500	0.000	0.500	0.750	0.667	0.375	0.000	0.833	0.806
Entering Leg	0	0	0	0	0	0	2	5	0	7	0	0	2	0	2	9	8	3	0	20	29
Exiting Leg					3					8					14					4	29
Total					3					15					16					24	58

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	5
4:15 PM	0	1	0	0	1	0	0	1	0	1	2	1	0	0	3	0	1	0	0	1	6
4:30 PM	1	0	0	0	1	0	0	3	0	3	0	0	0	0	0	1	1	0	0	2	6
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	3	0	0	0	3	6
Total	1	3	0	0	4	0	0	5	0	5	2	1	2	0	5	5	4	0	0	9	23
5:00 PM	1	0	0	0	1	0	1	0	0	1	1	0	0	0	1	0	1	1	0	2	5
5:15 PM	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	0	1	0	0	1	5
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	1	0	1	0	2	4
Total	1	0	0	0	1	0	4	3	0	7	3	0	0	0	3	2	2	2	0	6	17
Grand Total	2	3	0	0	5	0	4	8	0	12	5	1	2	0	8	7	6	2	0	15	40
Approach %	40.0	60.0	0.0	0.0		0.0	33.3	66.7	0.0		62.5	12.5	25.0	0.0		46.7	40.0	13.3	0.0		
Total %	5.0	7.5	0.0	0.0	12.5	0.0	10.0	20.0	0.0	30.0	12.5	2.5	5.0	0.0	20.0	17.5	15.0	5.0	0.0	37.5	
Exiting Leg Total					3					11					18					8	40

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	5
4:15 PM	0	1	0	0	1	0	0	1	0	1	2	1	0	0	3	0	1	0	0	1	6
4:30 PM	1	0	0	0	1	0	0	3	0	3	0	0	0	0	0	1	1	0	0	2	6
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	3	0	0	0	3	6
Total Volume	1	3	0	0	4	0	0	5	0	5	2	1	2	0	5	5	4	0	0	9	23
% Approach Total	25.0	75.0	0.0	0.0		0.0	0.0	100.0	0.0		40.0	20.0	40.0	0.0		55.6	44.4	0.0	0.0		
PHF	0.250	0.375	0.000	0.000	0.500	0.000	0.000	0.417	0.000	0.417	0.250	0.250	0.250	0.000	0.417	0.417	0.500	0.000	0.000	0.750	0.958
Entering Leg	1	3	0	0	4	0	0	5	0	5	2	1	2	0	5	5	4	0	0	9	23
Exiting Leg					1					6					13					3	23
Total					5					11					18					12	46

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	2	3
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	7
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	2	0	0	2	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	8
Approach %	0.0	100.0	0.0	0.0		33.3	0.0	66.7	0.0		0.0	0.0	100.0	0.0		50.0	50.0	0.0	0.0		
Total %	0.0	25.0	0.0	0.0	25.0	12.5	0.0	25.0	0.0	37.5	0.0	0.0	12.5	0.0	12.5	12.5	12.5	0.0	0.0	25.0	
Exiting Leg Total					1					1					5					1	8

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Boston Warf Road					Congress Street					Bypass Road					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	2	3
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	0	1	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	7
% Approach Total	0.0	100.0	0.0	0.0		33.3	0.0	66.7	0.0		0.0	0.0	100.0	0.0		50.0	50.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.500	0.000	0.750	0.000	0.000	0.250	0.000	0.250	0.250	0.250	0.000	0.000	0.250	0.583
Entering Leg	0	1	0	0	1	1	0	2	0	3	0	0	1	0	1	1	1	0	0	2	7
Exiting Leg					1					1					4					1	7
Total					2					4					5					3	14

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	1	1	0	0	0	0	2	6
4:15 PM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
4:30 PM	0	0	0	0	0	2	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	2	5
4:45 PM	0	1	0	0	0	0	1	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	2	5
Total	0	1	0	0	0	3	4	1	8	0	0	0	0	9	0	0	0	0	0	0	0	2	5	0	0	0	0	7	20
5:00 PM	0	0	0	0	0	2	2	0	1	1	0	0	0	2	1	0	0	0	0	1	2	0	3	0	0	0	1	4	10
5:15 PM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	1	0	0	0	0	0	1	1	1	0	0	0	0	2	6
5:30 PM	0	1	0	0	1	0	2	0	4	0	0	1	0	5	0	0	0	0	0	1	1	2	1	0	0	0	0	3	11
5:45 PM	0	1	0	0	1	0	2	0	1	0	0	0	0	1	1	0	0	0	0	1	2	2	1	0	0	1	0	4	9
Total	0	2	0	0	2	3	7	0	8	1	0	1	0	10	3	0	0	0	0	3	6	5	6	0	0	1	1	13	36
Grand Total	0	3	0	0	2	6	11	1	16	1	0	1	0	19	3	0	0	0	0	3	6	7	11	0	0	1	1	20	56
Approach %	0.0	27.3	0.0	0.0	18.2	54.5		5.3	84.2	5.3	0.0	5.3	0.0		50.0	0.0	0.0	0.0	0.0	50.0		35.0	55.0	0.0	0.0	5.0	5.0		
Total %	0.0	5.4	0.0	0.0	3.6	10.7	19.6	1.8	28.6	1.8	0.0	1.8	0.0	33.9	5.4	0.0	0.0	0.0	0.0	5.4	10.7	12.5	19.6	0.0	0.0	1.8	1.8	35.7	
Exiting Leg Total							9							15							14							18	56

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	2	2	0	1	1	0	0	0	2	1	0	0	0	0	1	2	0	3	0	0	0	1	4	10
5:15 PM	0	0	0	0	0	1	1	0	2	0	0	0	0	2	1	0	0	0	0	0	1	1	1	0	0	0	0	2	6
5:30 PM	0	1	0	0	1	0	2	0	4	0	0	1	0	5	0	0	0	0	0	1	1	2	1	0	0	0	0	3	11
5:45 PM	0	1	0	0	1	0	2	0	1	0	0	0	0	1	1	0	0	0	0	1	2	2	1	0	0	1	0	4	9
Total Volume	0	2	0	0	2	3	7	0	8	1	0	1	0	10	3	0	0	0	0	3	6	5	6	0	0	1	1	13	36
% Approach Total	0.0	28.6	0.0	0.0	28.6	42.9		0.0	80.0	10.0	0.0	10.0	0.0		50.0	0.0	0.0	0.0	0.0	50.0		38.5	46.2	0.0	0.0	7.7	7.7		
PHF	0.000	0.500	0.000	0.000	0.500	0.375	0.875	0.000	0.500	0.250	0.000	0.250	0.000	0.500	0.750	0.000	0.000	0.000	0.000	0.750	0.750	0.625	0.500	0.000	0.000	0.250	0.250	0.813	0.818
Entering Leg	0	2	0	0	2	3	7	0	8	1	0	1	0	10	3	0	0	0	0	3	6	5	6	0	0	1	1	13	36
Exiting Leg							5							10							11							10	36
Total							12							20							17							23	72

PDI File #: **239422 C**
Location: **N: Boston Warf Road S: Bypass Road**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
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Email: datarequests@pdillc.com

Pedestrians

	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	17	25	42	0	0	0	0	1	7	8	0	0	0	0	1	2	3	0	0	0	0	13	4	17	70
4:15 PM	0	0	0	0	22	14	36	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	8	6	14	52
4:30 PM	0	0	0	0	24	22	46	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	12	12	24	71
4:45 PM	0	0	0	0	14	32	46	0	0	0	0	4	0	4	0	0	0	0	1	0	1	0	0	0	0	16	4	20	71
Total	0	0	0	0	77	93	170	0	0	0	0	6	9	15	0	0	0	0	2	2	4	0	0	0	0	49	26	75	264
5:00 PM	0	0	0	0	23	31	54	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	14	6	20	76
5:15 PM	0	0	0	0	21	43	64	0	0	0	0	4	5	9	0	0	0	0	0	0	0	0	0	0	0	15	4	19	92
5:30 PM	0	0	0	0	36	30	66	0	0	0	0	3	5	8	0	0	0	0	0	0	0	0	0	0	0	15	12	27	101
5:45 PM	0	0	0	0	25	25	50	0	0	0	0	6	6	12	0	0	0	0	3	1	4	0	0	0	0	24	11	35	101
Total	0	0	0	0	105	129	234	0	0	0	0	13	18	31	0	0	0	0	3	1	4	0	0	0	0	68	33	101	370
Grand Total	0	0	0	0	182	222	404	0	0	0	0	19	27	46	0	0	0	0	5	3	8	0	0	0	0	117	59	176	634
Approach %	0	0	0	0	45	55		0	0	0	0	41.3	58.7		0	0	0	0	62.5	37.5		0	0	0	0	66.5	33.5		
Total %	0	0	0	0	28.7	35	63.7	0	0	0	0	3	4.26	7.26	0	0	0	0	0.79	0.47	1.26	0	0	0	0	18.5	9.31	27.8	
Exiting Leg Total							404							46							8							176	634

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Boston Warf Road							Congress Street							Bypass Road							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	23	31	54	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	14	6	20	76
5:15 PM	0	0	0	0	21	43	64	0	0	0	0	4	5	9	0	0	0	0	0	0	0	0	0	0	0	15	4	19	92
5:30 PM	0	0	0	0	36	30	66	0	0	0	0	3	5	8	0	0	0	0	0	0	0	0	0	0	0	15	12	27	101
5:45 PM	0	0	0	0	25	25	50	0	0	0	0	6	6	12	0	0	0	0	3	1	4	0	0	0	0	24	11	35	101
Total Volume	0	0	0	0	105	129	234	0	0	0	0	13	18	31	0	0	0	0	3	1	4	0	0	0	0	68	33	101	370
% Approach Total	0.0	0.0	0.0	0.0	44.9	55.1		0.0	0.0	0.0	0.0	41.9	58.1		0.0	0.0	0.0	0.0	75.0	25.0		0.0	0.0	0.0	0.0	67.3	32.7		
PHF	0.000	0.000	0.000	0.000	0.729	0.750	0.886	0.000	0.000	0.000	0.000	0.542	0.750	0.646	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.708	0.688	0.721	0.916
Entering Leg	0	0	0	0	105	129	234	0	0	0	0	13	18	31	0	0	0	0	3	1	4	0	0	0	0	68	33	101	370
Exiting Leg							234							31							4							101	370
Total							468							62							8							202	740

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	3	52	27	0	82	11	6	24	0	41	13	40	3	1	57	180
7:15 AM	0	0	0	0	0	5	53	33	0	91	14	2	27	0	43	11	51	3	0	65	199
7:30 AM	0	0	0	0	0	8	64	35	1	108	7	7	16	0	30	19	39	2	0	60	198
7:45 AM	0	0	0	0	0	9	62	27	0	98	16	5	30	0	51	25	33	2	0	60	209
Total	0	0	0	0	0	25	231	122	1	379	48	20	97	0	165	68	163	10	1	242	786
8:00 AM	0	0	0	0	0	3	92	34	0	129	14	4	56	0	74	20	33	1	0	54	257
8:15 AM	0	0	0	0	0	3	78	26	1	108	14	6	59	0	79	29	38	2	0	69	256
8:30 AM	0	0	0	0	0	11	89	31	0	131	14	9	54	0	77	33	48	4	0	85	293
8:45 AM	0	0	0	0	0	7	65	27	0	99	16	12	45	0	73	36	64	3	0	103	275
Total	0	0	0	0	0	24	324	118	1	467	58	31	214	0	303	118	183	10	0	311	1081
Grand Total	0	0	0	0	0	49	555	240	2	846	106	51	311	0	468	186	346	20	1	553	1867
Approach %	0.0	0.0	0.0	0.0		5.8	65.6	28.4	0.2		22.6	10.9	66.5	0.0		33.6	62.6	3.6	0.2		
Total %	0.0	0.0	0.0	0.0	0.0	2.6	29.7	12.9	0.1	45.3	5.7	2.7	16.7	0.0	25.1	10.0	18.5	1.1	0.1	29.6	
Exiting Leg Total					120					454					426					867	1867
Cars	0	0	0	0	0	48	513	225	2	788	98	50	294	0	442	175	299	16	1	491	1721
% Cars	0.0	0.0	0.0	0.0	0.0	98.0	92.4	93.8	100.0	93.1	92.5	98.0	94.5	0.0	94.4	94.1	86.4	80.0	100.0	88.8	92.2
Exiting Leg Total					114					399					400					808	1721
Heavy Vehicles	0	0	0	0	0	1	42	15	0	58	8	1	17	0	26	11	47	4	0	62	146
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	2.0	7.6	6.3	0.0	6.9	7.5	2.0	5.5	0.0	5.6	5.9	13.6	20.0	0.0	11.2	7.8
Exiting Leg Total					6					55					26					59	146

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	3	92	34	0	129	14	4	56	0	74	20	33	1	0	54	257
8:15 AM	0	0	0	0	0	3	78	26	1	108	14	6	59	0	79	29	38	2	0	69	256
8:30 AM	0	0	0	0	0	11	89	31	0	131	14	9	54	0	77	33	48	4	0	85	293
8:45 AM	0	0	0	0	0	7	65	27	0	99	16	12	45	0	73	36	64	3	0	103	275
Total Volume	0	0	0	0	0	24	324	118	1	467	58	31	214	0	303	118	183	10	0	311	1081
% Approach Total	0.0	0.0	0.0	0.0		5.1	69.4	25.3	0.2		19.1	10.2	70.6	0.0		37.9	58.8	3.2	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.545	0.880	0.868	0.250	0.891	0.906	0.646	0.907	0.000	0.959	0.819	0.715	0.625	0.000	0.755	0.922
Cars	0	0	0	0	0	23	311	113	1	448	56	31	207	0	294	111	155	9	0	275	1017
Cars %	0.0	0.0	0.0	0.0	0.0	95.8	96.0	95.8	100.0	95.9	96.6	100.0	96.7	0.0	97.0	94.1	84.7	90.0	0.0	88.4	94.1
Heavy Vehicles	0	0	0	0	0	1	13	5	0	19	2	0	7	0	9	7	28	1	0	36	64
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	4.2	4.0	4.2	0.0	4.1	3.4	0.0	3.3	0.0	3.0	5.9	15.3	10.0	0.0	11.6	5.9
Cars Enter Leg	0	0	0	0	0	23	311	113	1	448	56	31	207	0	294	111	155	9	0	275	1017
Heavy Enter Leg	0	0	0	0	0	1	13	5	0	19	2	0	7	0	9	7	28	1	0	36	64
Total Entering Leg	0	0	0	0	0	24	324	118	1	467	58	31	214	0	303	118	183	10	0	311	1081
Cars Exiting Leg					63					212					224					518	1017
Heavy Exiting Leg					2					30					12					20	64
Total Exiting Leg					65					242					236					538	1081

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	3	38	25	0	66	10	5	20	0	35	12	35	3	1	51	152
7:15 AM	0	0	0	0	0	5	44	28	0	77	12	2	24	0	38	10	44	2	0	56	171
7:30 AM	0	0	0	0	0	8	60	33	1	102	7	7	14	0	28	19	35	1	0	55	185
7:45 AM	0	0	0	0	0	9	60	26	0	95	13	5	29	0	47	23	30	1	0	54	196
Total	0	0	0	0	0	25	202	112	1	340	42	19	87	0	148	64	144	7	1	216	704
8:00 AM	0	0	0	0	0	3	87	32	0	122	13	4	55	0	72	18	27	1	0	46	240
8:15 AM	0	0	0	0	0	3	75	25	1	104	14	6	56	0	76	27	30	2	0	59	239
8:30 AM	0	0	0	0	0	10	85	30	0	125	14	9	53	0	76	32	39	4	0	75	276
8:45 AM	0	0	0	0	0	7	64	26	0	97	15	12	43	0	70	34	59	2	0	95	262
Total	0	0	0	0	0	23	311	113	1	448	56	31	207	0	294	111	155	9	0	275	1017
Grand Total	0	0	0	0	0	48	513	225	2	788	98	50	294	0	442	175	299	16	1	491	1721
Approach %	0.0	0.0	0.0	0.0		6.1	65.1	28.6	0.3		22.2	11.3	66.5	0.0		35.6	60.9	3.3	0.2		
Total %	0.0	0.0	0.0	0.0	0.0	2.8	29.8	13.1	0.1	45.8	5.7	2.9	17.1	0.0	25.7	10.2	17.4	0.9	0.1	28.5	
Exiting Leg Total					114					399					400					808	1721

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	3	87	32	0	122	13	4	55	0	72	18	27	1	0	46	240
8:15 AM	0	0	0	0	0	3	75	25	1	104	14	6	56	0	76	27	30	2	0	59	239
8:30 AM	0	0	0	0	0	10	85	30	0	125	14	9	53	0	76	32	39	4	0	75	276
8:45 AM	0	0	0	0	0	7	64	26	0	97	15	12	43	0	70	34	59	2	0	95	262
Total Volume	0	0	0	0	0	23	311	113	1	448	56	31	207	0	294	111	155	9	0	275	1017
% Approach Total	0.0	0.0	0.0	0.0		5.1	69.4	25.2	0.2		19.0	10.5	70.4	0.0		40.4	56.4	3.3	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.575	0.894	0.883	0.250	0.896	0.933	0.646	0.924	0.000	0.967	0.816	0.657	0.563	0.000	0.724	0.921
Entering Leg	0	0	0	0	0	23	311	113	1	448	56	31	207	0	294	111	155	9	0	275	1017
Exiting Leg					63					212					224					518	1017
Total					63					660					518					793	2034

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	14	2	0	16	1	1	4	0	6	1	5	0	0	6	28
7:15 AM	0	0	0	0	0	0	9	5	0	14	2	0	3	0	5	1	7	1	0	9	28
7:30 AM	0	0	0	0	0	0	4	2	0	6	0	0	2	0	2	0	4	1	0	5	13
7:45 AM	0	0	0	0	0	0	2	1	0	3	3	0	1	0	4	2	3	1	0	6	13
Total	0	0	0	0	0	0	29	10	0	39	6	1	10	0	17	4	19	3	0	26	82
8:00 AM	0	0	0	0	0	0	5	2	0	7	1	0	1	0	2	2	6	0	0	8	17
8:15 AM	0	0	0	0	0	0	3	1	0	4	0	0	3	0	3	2	8	0	0	10	17
8:30 AM	0	0	0	0	0	1	4	1	0	6	0	0	1	0	1	1	9	0	0	10	17
8:45 AM	0	0	0	0	0	0	1	1	0	2	1	0	2	0	3	2	5	1	0	8	13
Total	0	0	0	0	0	1	13	5	0	19	2	0	7	0	9	7	28	1	0	36	64
Grand Total	0	0	0	0	0	1	42	15	0	58	8	1	17	0	26	11	47	4	0	62	146
Approach %	0.0	0.0	0.0	0.0		1.7	72.4	25.9	0.0		30.8	3.8	65.4	0.0		17.7	75.8	6.5	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.7	28.8	10.3	0.0	39.7	5.5	0.7	11.6	0.0	17.8	7.5	32.2	2.7	0.0	42.5	
Exiting Leg Total					6					55					26					59	146
Buses	0	0	0	0	0	0	4	5	0	9	3	0	1	0	4	5	28	2	0	35	48
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	9.5	33.3	0.0	15.5	37.5	0.0	5.9	0.0	15.4	45.5	59.6	50.0	0.0	56.5	32.9
Exiting Leg Total					2					31					10					5	48
Single-Unit Trucks	0	0	0	0	0	1	36	10	0	47	4	1	14	0	19	6	17	2	0	25	91
% Single-Unit	0.0	0.0	0.0	0.0	0.0	100.0	85.7	66.7	0.0	81.0	50.0	100.0	82.4	0.0	73.1	54.5	36.2	50.0	0.0	40.3	62.3
Exiting Leg Total					4					21					16					50	91
Articulated Trucks	0	0	0	0	0	0	2	0	0	2	1	0	2	0	3	0	2	0	0	2	7
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	3.4	12.5	0.0	11.8	0.0	11.5	0.0	4.3	0.0	0.0	3.2	4.8
Exiting Leg Total					0					3					0					4	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	14	2	0	16	1	1	4	0	6	1	5	0	0	6	28
7:15 AM	0	0	0	0	0	0	9	5	0	14	2	0	3	0	5	1	7	1	0	9	28
7:30 AM	0	0	0	0	0	0	4	2	0	6	0	0	2	0	2	0	4	1	0	5	13
7:45 AM	0	0	0	0	0	0	2	1	0	3	3	0	1	0	4	2	3	1	0	6	13
Total Volume	0	0	0	0	0	0	29	10	0	39	6	1	10	0	17	4	19	3	0	26	82
% Approach Total	0.0	0.0	0.0	0.0		0.0	74.4	25.6	0.0		35.3	5.9	58.8	0.0		15.4	73.1	11.5	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.518	0.500	0.000	0.609	0.500	0.250	0.625	0.000	0.708	0.500	0.679	0.750	0.000	0.722	0.732
Buses	0	0	0	0	0	0	2	3	0	5	2	0	0	0	2	3	12	2	0	17	24
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	6.9	30.0	0.0	12.8	33.3	0.0	0.0	0.0	11.8	75.0	63.2	66.7	0.0	65.4	29.3
Single-Unit Trucks	0	0	0	0	0	0	27	7	0	34	4	1	8	0	13	1	6	1	0	8	55
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	93.1	70.0	0.0	87.2	66.7	100.0	80.0	0.0	76.5	25.0	31.6	33.3	0.0	30.8	67.1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	3
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	11.8	0.0	5.3	0.0	0.0	3.8	3.7
Buses	0	0	0	0	0	0	2	3	0	5	2	0	0	0	2	3	12	2	0	17	24
Single-Unit Trucks	0	0	0	0	0	0	27	7	0	34	4	1	8	0	13	1	6	1	0	8	55
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	3
Total Entering Leg	0	0	0	0	0	0	29	10	0	39	6	1	10	0	17	4	19	3	0	26	82
Buses					2					14					6					2	24
Single-Unit Trucks					2					10					8					35	55
Articulated Trucks					0					1					0					2	3
Total Exiting Leg					4					25					14					39	82

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	3	0	0	4	5
7:15 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	4	1	0	5	7
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
7:45 AM	0	0	0	0	0	0	1	1	0	2	2	0	0	0	2	2	1	1	0	4	8
Total	0	0	0	0	0	0	2	3	0	5	2	0	0	0	2	3	12	2	0	17	24
8:00 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2	3	0	0	5	7
8:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	4	0	0	4	6
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	7
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	0	0	3	4
Total	0	0	0	0	0	0	2	2	0	4	1	0	1	0	2	2	16	0	0	18	24
Grand Total	0	0	0	0	0	0	4	5	0	9	3	0	1	0	4	5	28	2	0	35	48
Approach %	0.0	0.0	0.0	0.0		0.0	44.4	55.6	0.0		75.0	0.0	25.0	0.0		14.3	80.0	5.7	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	8.3	10.4	0.0	18.8	6.3	0.0	2.1	0.0	8.3	10.4	58.3	4.2	0.0	72.9	
Exiting Leg Total					2					31					10					5	48

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	0	1	1	0	2	2	0	0	0	2	2	1	1	0	4	8
8:00 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2	3	0	0	5	7
8:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	4	0	0	4	6
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	7
Total Volume	0	0	0	0	0	0	3	3	0	6	2	0	1	0	3	4	14	1	0	19	28
% Approach Total	0.0	0.0	0.0	0.0		0.0	50.0	50.0	0.0		66.7	0.0	33.3	0.0		21.1	73.7	5.3	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.750	0.000	0.750	0.250	0.000	0.250	0.000	0.375	0.500	0.583	0.250	0.000	0.792	0.875
Entering Leg	0	0	0	0	0	0	3	3	0	6	2	0	1	0	3	4	14	1	0	19	28
Exiting Leg					1					16					7					4	28
Total					1					22					10					23	56

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	14	1	0	15	1	1	3	0	5	0	1	0	0	1	21
7:15 AM	0	0	0	0	0	0	8	4	0	12	2	0	3	0	5	1	3	0	0	4	21
7:30 AM	0	0	0	0	0	0	4	2	0	6	0	0	2	0	2	0	0	1	0	1	9
7:45 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	2	0	0	2	4
Total	0	0	0	0	0	0	27	7	0	34	4	1	8	0	13	1	6	1	0	8	55
8:00 AM	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	0	2	0	0	2	8
8:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	2	0	2	2	4	0	0	6	11
8:30 AM	0	0	0	0	0	1	2	1	0	4	0	0	1	0	1	1	3	0	0	4	9
8:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	2	2	1	0	5	8
Total	0	0	0	0	0	1	9	3	0	13	0	0	6	0	6	5	11	1	0	17	36
Grand Total	0	0	0	0	0	1	36	10	0	47	4	1	14	0	19	6	17	2	0	25	91
Approach %	0.0	0.0	0.0	0.0		2.1	76.6	21.3	0.0		21.1	5.3	73.7	0.0		24.0	68.0	8.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	1.1	39.6	11.0	0.0	51.6	4.4	1.1	15.4	0.0	20.9	6.6	18.7	2.2	0.0	27.5	
Exiting Leg Total					4					21					16					50	91

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	14	1	0	15	1	1	3	0	5	0	1	0	0	1	21
7:15 AM	0	0	0	0	0	0	8	4	0	12	2	0	3	0	5	1	3	0	0	4	21
7:30 AM	0	0	0	0	0	0	4	2	0	6	0	0	2	0	2	0	0	1	0	1	9
7:45 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	2	0	0	2	4
Total Volume	0	0	0	0	0	0	27	7	0	34	4	1	8	0	13	1	6	1	0	8	55
% Approach Total	0.0	0.0	0.0	0.0		0.0	79.4	20.6	0.0		30.8	7.7	61.5	0.0		12.5	75.0	12.5	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.482	0.438	0.000	0.567	0.500	0.250	0.667	0.000	0.650	0.250	0.500	0.250	0.000	0.500	0.655
Entering Leg	0	0	0	0	0	0	27	7	0	34	4	1	8	0	13	1	6	1	0	8	55
Exiting Leg					2					10					8					35	55
Total					2					44					21					43	110

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	4
Grand Total	0	0	0	0	0	0	2	0	0	2	1	0	2	0	3	0	2	0	0	2	7
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		33.3	0.0	66.7	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	28.6	14.3	0.0	28.6	0.0	42.9	0.0	28.6	0.0	0.0	28.6	
Exiting Leg Total					0					3					0					4	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	0	0	1	1	0	1	0	2	0	1	0	0	1	4
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		50.0	0.0	50.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.250	0.000	0.500	0.000	0.250	0.000	0.000	0.250	0.500
Entering Leg	0	0	0	0	0	0	1	0	0	1	1	0	1	0	2	0	1	0	0	1	4
Exiting Leg					0					2					0					2	4
Total					0					3					2					3	8

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3	0	0	0	5	0	0	0	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	3	0	0	1	6	1	0	0	0	0	0	1	8
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	2	3	3	3	0	0	2	11	0	1	0	0	0	0	1	14
7:45 AM	0	0	0	0	0	0	0	0	2	0	0	0	1	3	1	1	9	0	0	1	12	0	2	0	0	0	1	3	18
Total	0	0	0	0	0	0	0	0	4	1	0	0	2	7	5	7	18	0	0	4	34	1	3	0	0	0	1	5	46
8:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	7	0	1	0	9	0	1	0	0	0	0	1	11
8:15 AM	0	0	0	0	1	1	2	0	1	0	0	0	2	3	1	1	10	0	0	0	12	0	2	0	0	0	2	4	21
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3	1	3	0	1	0	8	0	0	1	0	0	0	1	11
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	2	12	0	0	0	15	0	0	0	0	0	0	0	17
Total	0	0	0	0	1	1	2	0	3	0	0	0	5	8	6	4	32	0	2	0	44	0	3	1	0	0	2	6	60
Grand Total	0	0	0	0	1	1	2	0	7	1	0	0	7	15	11	11	50	0	2	4	78	1	6	1	0	0	3	11	106
Approach %	0.0	0.0	0.0	0.0	50.0	50.0		0.0	46.7	6.7	0.0	0.0	46.7		14.1	14.1	64.1	0.0	2.6	5.1		9.1	54.5	9.1	0.0	0.0	27.3		
Total %	0.0	0.0	0.0	0.0	0.9	0.9	1.9	0.0	6.6	0.9	0.0	0.0	6.6	14.2	10.4	10.4	47.2	0.0	1.9	3.8	73.6	0.9	5.7	0.9	0.0	0.0	2.8	10.4	
Exiting Leg Total							14							24							8							60	106

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	2	3	3	3	0	0	2	11	0	1	0	0	0	0	1	14
7:45 AM	0	0	0	0	0	0	0	0	2	0	0	0	1	3	1	1	9	0	0	1	12	0	2	0	0	0	1	3	18
8:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	7	0	1	0	9	0	1	0	0	0	0	1	11
8:15 AM	0	0	0	0	1	1	2	0	1	0	0	0	2	3	1	1	10	0	0	0	12	0	2	0	0	0	2	4	21
Total Volume	0	0	0	0	1	1	2	0	5	0	0	0	4	9	6	5	29	0	1	3	44	0	6	0	0	0	3	9	64
% Approach Total	0.0	0.0	0.0	0.0	50.0	50.0		0.0	55.6	0.0	0.0	0.0	44.4		13.6	11.4	65.9	0.0	2.3	6.8		0.0	66.7	0.0	0.0	0.0	33.3		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.625	0.000	0.000	0.000	0.500	0.750	0.500	0.417	0.725	0.000	0.250	0.375	0.917	0.000	0.750	0.000	0.000	0.000	0.375	0.563	0.762
Entering Leg	0	0	0	0	1	1	2	0	5	0	0	0	4	9	6	5	29	0	1	3	44	0	6	0	0	0	3	9	64
Exiting Leg							7							16							4							37	64
Total							9							25							48							46	128

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	10	12	22	0	0	0	0	3	2	5	0	0	0	0	1	1	2	0	0	0	0	14	6	20	49
7:15 AM	0	0	0	0	8	8	16	0	0	0	0	3	8	11	0	0	0	0	6	3	9	0	0	0	0	9	8	17	53
7:30 AM	0	0	0	0	23	14	37	0	0	0	0	8	11	19	0	0	0	0	13	4	17	0	0	0	0	20	5	25	98
7:45 AM	0	0	0	0	23	26	49	0	0	0	0	8	17	25	0	0	0	0	8	8	16	0	0	0	0	10	9	19	109
Total	0	0	0	0	64	60	124	0	0	0	0	22	38	60	0	0	0	0	28	16	44	0	0	0	0	53	28	81	309
8:00 AM	0	0	0	0	40	17	57	0	0	0	0	8	19	27	0	0	0	0	4	5	9	0	0	0	0	15	13	28	121
8:15 AM	0	0	0	0	19	16	35	0	0	0	0	7	24	31	0	0	0	0	12	4	16	0	0	0	0	15	12	27	109
8:30 AM	0	0	0	0	41	13	54	0	0	0	0	22	29	51	0	0	0	0	9	14	23	0	0	0	0	30	14	44	172
8:45 AM	0	0	0	0	33	21	54	0	0	0	0	8	21	29	0	0	0	0	6	4	10	0	0	0	0	19	12	31	124
Total	0	0	0	0	133	67	200	0	0	0	0	45	93	138	0	0	0	0	31	27	58	0	0	0	0	79	51	130	526
Grand Total	0	0	0	0	197	127	324	0	0	0	0	67	131	198	0	0	0	0	59	43	102	0	0	0	0	132	79	211	835
Approach %	0	0	0	0	60.8	39.2		0	0	0	0	33.8	66.2		0	0	0	0	57.8	42.2		0	0	0	0	62.6	37.4		
Total %	0	0	0	0	23.6	15.2	38.8	0	0	0	0	8.02	15.7	23.7	0	0	0	0	7.07	5.15	12.2	0	0	0	0	15.8	9.46	25.3	
Exiting Leg Total							324							198							102							211	835

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	40	17	57	0	0	0	0	8	19	27	0	0	0	0	4	5	9	0	0	0	0	15	13	28	121
8:15 AM	0	0	0	0	19	16	35	0	0	0	0	7	24	31	0	0	0	0	12	4	16	0	0	0	0	15	12	27	109
8:30 AM	0	0	0	0	41	13	54	0	0	0	0	22	29	51	0	0	0	0	9	14	23	0	0	0	0	30	14	44	172
8:45 AM	0	0	0	0	33	21	54	0	0	0	0	8	21	29	0	0	0	0	6	4	10	0	0	0	0	19	12	31	124
Total Volume	0	0	0	0	133	67	200	0	0	0	0	45	93	138	0	0	0	0	31	27	58	0	0	0	0	79	51	130	526
% Approach Total	0.0	0.0	0.0	0.0	66.5	33.5		0.0	0.0	0.0	0.0	32.6	67.4		0.0	0.0	0.0	0.0	53.4	46.6		0.0	0.0	0.0	0.0	60.8	39.2		
PHF	0.000	0.000	0.000	0.000	0.811	0.798	0.877	0.000	0.000	0.000	0.000	0.511	0.802	0.676	0.000	0.000	0.000	0.000	0.646	0.482	0.630	0.000	0.000	0.000	0.000	0.658	0.911	0.739	0.765
Entering Leg	0	0	0	0	133	67	200	0	0	0	0	45	93	138	0	0	0	0	31	27	58	0	0	0	0	79	51	130	526
Exiting Leg							200							138							58							130	526
Total							400							276							116							260	1052

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	17	60	36	0	113	17	6	27	0	50	59	88	2	0	149	312
4:15 PM	0	0	0	0	0	6	50	35	0	91	27	10	28	0	65	38	62	6	0	106	262
4:30 PM	0	0	0	0	0	7	50	33	0	90	27	4	29	0	60	36	83	6	0	125	275
4:45 PM	0	0	0	0	0	17	49	33	3	102	30	8	28	1	67	57	88	5	0	150	319
Total	0	0	0	0	0	47	209	137	3	396	101	28	112	1	242	190	321	19	0	530	1168
5:00 PM	0	0	0	0	0	14	50	35	0	99	24	11	34	0	69	47	80	9	0	136	304
5:15 PM	0	0	0	0	0	5	58	24	0	87	26	6	36	0	68	24	101	8	0	133	288
5:30 PM	0	0	0	1	1	23	56	41	0	120	35	16	40	0	91	32	87	16	0	135	347
5:45 PM	0	0	0	1	1	23	39	29	0	91	28	9	28	0	65	26	86	12	0	124	281
Total	0	0	0	2	2	65	203	129	0	397	113	42	138	0	293	129	354	45	0	528	1220
Grand Total	0	0	0	2	2	112	412	266	3	793	214	70	250	1	535	319	675	64	0	1058	2388
Approach %	0.0	0.0	0.0	100.0		14.1	52.0	33.5	0.4		40.0	13.1	46.7	0.2		30.2	63.8	6.0	0.0		
Total %	0.0	0.0	0.0	0.1	0.1	4.7	17.3	11.1	0.1	33.2	9.0	2.9	10.5	0.0	22.4	13.4	28.3	2.7	0.0	44.3	
Exiting Leg Total					248					892					586					662	2388
Cars	0	0	0	2	2	110	403	261	3	777	211	68	248	1	528	302	634	61	0	997	2304
% Cars	0.0	0.0	0.0	100.0	100.0	98.2	97.8	98.1	100.0	98.0	98.6	97.1	99.2	100.0	98.7	94.7	93.9	95.3	0.0	94.2	96.5
Exiting Leg Total					241					848					564					651	2304
Heavy Vehicles	0	0	0	0	0	2	9	5	0	16	3	2	2	0	7	17	41	3	0	61	84
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	1.8	2.2	1.9	0.0	2.0	1.4	2.9	0.8	0.0	1.3	5.3	6.1	4.7	0.0	5.8	3.5
Exiting Leg Total					7					44					22					11	84

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	0	0	0	0	17	49	33	3	102	30	8	28	1	67	57	88	5	0	150	319
5:00 PM	0	0	0	0	0	14	50	35	0	99	24	11	34	0	69	47	80	9	0	136	304
5:15 PM	0	0	0	0	0	5	58	24	0	87	26	6	36	0	68	24	101	8	0	133	288
5:30 PM	0	0	0	1	1	23	56	41	0	120	35	16	40	0	91	32	87	16	0	135	347
Total Volume	0	0	0	1	1	59	213	133	3	408	115	41	138	1	295	160	356	38	0	554	1258
% Approach Total	0.0	0.0	0.0	100.0		14.5	52.2	32.6	0.7		39.0	13.9	46.8	0.3		28.9	64.3	6.9	0.0		
PHF	0.000	0.000	0.000	0.250	0.250	0.641	0.918	0.811	0.250	0.850	0.821	0.641	0.863	0.250	0.810	0.702	0.881	0.594	0.000	0.923	0.906
Cars	0	0	0	1	1	57	209	130	3	399	115	40	136	1	292	151	332	36	0	519	1211
Cars %	0.0	0.0	0.0	100.0	100.0	96.6	98.1	97.7	100.0	97.8	100.0	97.6	98.6	100.0	99.0	94.4	93.3	94.7	0.0	93.7	96.3
Heavy Vehicles	0	0	0	0	0	2	4	3	0	9	0	1	2	0	3	9	24	2	0	35	47
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	3.4	1.9	2.3	0.0	2.2	0.0	2.4	1.4	0.0	1.0	5.6	6.7	5.3	0.0	6.3	3.7
Cars Enter Leg	0	0	0	1	1	57	209	130	3	399	115	40	136	1	292	151	332	36	0	519	1211
Heavy Enter Leg	0	0	0	0	0	2	4	3	0	9	0	1	2	0	3	9	24	2	0	35	47
Total Entering Leg	0	0	0	1	1	59	213	133	3	408	115	41	138	1	295	160	356	38	0	554	1258
Cars Exiting Leg					134					450					282					345	1211
Heavy Exiting Leg					5					24					12					6	47
Total Exiting Leg					139					474					294					351	1258

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	17	60	36	0	113	16	5	27	0	48	55	81	2	0	138	299
4:15 PM	0	0	0	0	0	6	48	34	0	88	27	10	28	0	65	37	60	6	0	103	256
4:30 PM	0	0	0	0	0	7	47	33	0	87	26	4	29	0	59	34	76	6	0	116	262
4:45 PM	0	0	0	0	0	17	47	32	3	99	30	8	27	1	66	52	81	5	0	138	303
Total	0	0	0	0	0	47	202	135	3	387	99	27	111	1	238	178	298	19	0	495	1120
5:00 PM	0	0	0	0	0	14	50	35	0	99	24	11	34	0	69	47	76	9	0	132	300
5:15 PM	0	0	0	0	0	5	57	22	0	84	26	6	35	0	67	21	96	8	0	125	276
5:30 PM	0	0	0	1	1	21	55	41	0	117	35	15	40	0	90	31	79	14	0	124	332
5:45 PM	0	0	0	1	1	23	39	28	0	90	27	9	28	0	64	25	85	11	0	121	276
Total	0	0	0	2	2	63	201	126	0	390	112	41	137	0	290	124	336	42	0	502	1184
Grand Total	0	0	0	2	2	110	403	261	3	777	211	68	248	1	528	302	634	61	0	997	2304
Approach %	0.0	0.0	0.0	100.0		14.2	51.9	33.6	0.4		40.0	12.9	47.0	0.2		30.3	63.6	6.1	0.0		
Total %	0.0	0.0	0.0	0.1	0.1	4.8	17.5	11.3	0.1	33.7	9.2	3.0	10.8	0.0	22.9	13.1	27.5	2.6	0.0	43.3	
Exiting Leg Total					241					848					564					651	2304

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	0	0	0	0	17	47	32	3	99	30	8	27	1	66	52	81	5	0	138	303
5:00 PM	0	0	0	0	0	14	50	35	0	99	24	11	34	0	69	47	76	9	0	132	300
5:15 PM	0	0	0	0	0	5	57	22	0	84	26	6	35	0	67	21	96	8	0	125	276
5:30 PM	0	0	0	1	1	21	55	41	0	117	35	15	40	0	90	31	79	14	0	124	332
Total Volume	0	0	0	1	1	57	209	130	3	399	115	40	136	1	292	151	332	36	0	519	1211
% Approach Total	0.0	0.0	0.0	100.0		14.3	52.4	32.6	0.8		39.4	13.7	46.6	0.3		29.1	64.0	6.9	0.0		
PHF	0.000	0.000	0.000	0.250	0.250	0.679	0.917	0.793	0.250	0.853	0.821	0.667	0.850	0.250	0.811	0.726	0.865	0.643	0.000	0.940	0.912
Entering Leg	0	0	0	1	1	57	209	130	3	399	115	40	136	1	292	151	332	36	0	519	1211
Exiting Leg					134					450					282					345	1211
Total					135					849					574					864	2422

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	7	0	0	11	13
4:15 PM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	1	2	0	0	3	6
4:30 PM	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	2	7	0	0	9	13
4:45 PM	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	5	7	0	0	12	16
Total	0	0	0	0	0	0	7	2	0	9	2	1	1	0	4	12	23	0	0	35	48
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
5:15 PM	0	0	0	0	0	0	1	2	0	3	0	0	1	0	1	3	5	0	0	8	12
5:30 PM	0	0	0	0	0	2	1	0	0	3	0	1	0	0	1	1	8	2	0	11	15
5:45 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	1	1	1	0	3	5
Total	0	0	0	0	0	2	2	3	0	7	1	1	1	0	3	5	18	3	0	26	36
Grand Total	0	0	0	0	0	2	9	5	0	16	3	2	2	0	7	17	41	3	0	61	84
Approach %	0.0	0.0	0.0	0.0		12.5	56.3	31.3	0.0		42.9	28.6	28.6	0.0		27.9	67.2	4.9	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	2.4	10.7	6.0	0.0	19.0	3.6	2.4	2.4	0.0	8.3	20.2	48.8	3.6	0.0	72.6	
Exiting Leg Total					7					44					22					11	84
Buses	0	0	0	0	0	0	4	4	0	8	3	2	0	0	5	13	29	0	0	42	55
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	44.4	80.0	0.0	50.0	100.0	100.0	0.0	0.0	71.4	76.5	70.7	0.0	0.0	68.9	65.5
Exiting Leg Total					2					32					17					4	55
Single-Unit Trucks	0	0	0	0	0	2	4	1	0	7	0	0	2	0	2	4	10	3	0	17	26
% Single-Unit	0.0	0.0	0.0	0.0	0.0	100.0	44.4	20.0	0.0	43.8	0.0	0.0	100.0	0.0	28.6	23.5	24.4	100.0	0.0	27.9	31.0
Exiting Leg Total					5					10					5					6	26
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	3.3	3.6
Exiting Leg Total					0					2					0					1	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	7	0	0	11	13
4:15 PM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	1	2	0	0	3	6
4:30 PM	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	2	7	0	0	9	13
4:45 PM	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	5	7	0	0	12	16
Total Volume	0	0	0	0	0	0	7	2	0	9	2	1	1	0	4	12	23	0	0	35	48
% Approach Total	0.0	0.0	0.0	0.0		0.0	77.8	22.2	0.0		50.0	25.0	25.0	0.0		34.3	65.7	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.500	0.000	0.750	0.500	0.250	0.250	0.000	0.500	0.600	0.821	0.000	0.000	0.729	0.750
Buses	0	0	0	0	0	0	4	2	0	6	2	1	0	0	3	11	14	0	0	25	34
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	57.1	100.0	0.0	66.7	100.0	100.0	0.0	0.0	75.0	91.7	60.9	0.0	0.0	71.4	70.8
Single-Unit Trucks	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	1	7	0	0	8	11
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	22.2	0.0	0.0	100.0	0.0	25.0	8.3	30.4	0.0	0.0	22.9	22.9
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0	5.7	6.3
Buses	0	0	0	0	0	0	4	2	0	6	2	1	0	0	3	11	14	0	0	25	34
Single-Unit Trucks	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	1	7	0	0	8	11
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total Entering Leg	0	0	0	0	0	0	7	2	0	9	2	1	1	0	4	12	23	0	0	35	48
Buses					1					16					13					4	34
Single-Unit Trucks					0					7					1					3	11
Articulated Trucks					0					2					0					1	3
Total Exiting Leg					1					25					14					8	48

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	2	0	0	6	8
4:15 PM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	1	1	0	0	2	5
4:30 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2	6	0	0	8	10
4:45 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4	5	0	0	9	11
Total	0	0	0	0	0	0	4	2	0	6	2	1	0	0	3	11	14	0	0	25	34
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
5:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	5	0	0	5	6
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	7	0	0	8	9
5:45 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	1	0	0	0	1	3
Total	0	0	0	0	0	0	0	2	0	2	1	1	0	0	2	2	15	0	0	17	21
Grand Total	0	0	0	0	0	0	4	4	0	8	3	2	0	0	5	13	29	0	0	42	55
Approach %	0.0	0.0	0.0	0.0		0.0	50.0	50.0	0.0		60.0	40.0	0.0	0.0		31.0	69.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	7.3	7.3	0.0	14.5	5.5	3.6	0.0	0.0	9.1	23.6	52.7	0.0	0.0	76.4	
Exiting Leg Total					2					32					17					4	55

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	2	0	0	6	8
4:15 PM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	1	1	0	0	2	5
4:30 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2	6	0	0	8	10
4:45 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4	5	0	0	9	11
Total Volume	0	0	0	0	0	0	4	2	0	6	2	1	0	0	3	11	14	0	0	25	34
% Approach Total	0.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0		66.7	33.3	0.0	0.0		44.0	56.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.500	0.500	0.250	0.000	0.000	0.375	0.688	0.583	0.000	0.000	0.694	0.773
Entering Leg	0	0	0	0	0	0	4	2	0	6	2	1	0	0	3	11	14	0	0	25	34
Exiting Leg					1					16					13					4	34
Total					1					22					16					29	68

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	2	0	0	3	5
Total	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	1	7	0	0	8	11
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:15 PM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	3	0	0	0	3	6
5:30 PM	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	1	2	0	3	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
Total	0	0	0	0	0	2	2	1	0	5	0	0	1	0	1	3	3	3	0	9	15
Grand Total	0	0	0	0	0	2	4	1	0	7	0	0	2	0	2	4	10	3	0	17	26
Approach %	0.0	0.0	0.0	0.0		28.6	57.1	14.3	0.0		0.0	0.0	100.0	0.0		23.5	58.8	17.6	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	7.7	15.4	3.8	0.0	26.9	0.0	0.0	7.7	0.0	7.7	15.4	38.5	11.5	0.0	65.4	
Exiting Leg Total					5					10					5					6	26

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	2	0	0	3	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:15 PM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	3	0	0	0	3	6
5:30 PM	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	1	2	0	3	6
Total Volume	0	0	0	0	0	2	3	1	0	6	0	0	2	0	2	4	4	2	0	10	18
% Approach Total	0.0	0.0	0.0	0.0		33.3	50.0	16.7	0.0		0.0	0.0	100.0	0.0		40.0	40.0	20.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.750	0.250	0.000	0.500	0.000	0.000	0.500	0.000	0.500	0.333	0.500	0.250	0.000	0.833	0.750
Entering Leg	0	0	0	0	0	2	3	1	0	6	0	0	2	0	2	4	4	2	0	10	18
Exiting Leg					4					4					5					5	18
Total					4					10					7					15	36

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	66.7	
Exiting Leg Total					0					2					0					1	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Thomson Place					Congress Street					A Street					Congress Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.375
Entering Leg	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Exiting Leg					0					2					0					1	3
Total					0					3					0					3	6

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	2	0	0	1	3	0	1	0	0	1	0	2	8
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	3	1	1	2	0	0	0	4	0	2	0	0	0	0	2	9
4:30 PM	0	0	0	0	2	0	2	0	0	2	0	0	0	2	0	1	1	0	2	1	5	0	1	0	0	0	1	2	11
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	3	0	0	1	5	0	1	0	0	0	1	2	8
Total	0	0	0	0	2	0	2	0	4	4	0	0	1	9	2	2	8	0	2	3	17	0	5	0	0	1	2	8	36
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	3	0	0	0	0	3	5
5:15 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0	2	0	0	0	3	0	1	0	0	0	1	2	7
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	2	0	0	0	0	2	5
5:45 PM	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	1	0	1	0	2	0	1	0	0	0	0	1	7
Total	0	0	0	0	0	0	0	0	7	0	0	0	0	7	1	0	7	0	1	0	9	0	7	0	0	0	1	8	24
Grand Total	0	0	0	0	2	0	2	0	11	4	0	0	1	16	3	2	15	0	3	3	26	0	12	0	0	1	3	16	60
Approach %	0.0	0.0	0.0	0.0	100.0	0.0		0.0	68.8	25.0	0.0	0.0	6.3		11.5	7.7	57.7	0.0	11.5	11.5		0.0	75.0	0.0	0.0	6.3	18.8		
Total %	0.0	0.0	0.0	0.0	3.3	0.0	3.3	0.0	18.3	6.7	0.0	0.0	1.7	26.7	5.0	3.3	25.0	0.0	5.0	5.0	43.3	0.0	20.0	0.0	0.0	1.7	5.0	26.7	
Exiting Leg Total							4							16							10							30	60

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	2	0	0	1	3	0	1	0	0	1	0	2	8
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	3	1	1	2	0	0	0	4	0	2	0	0	0	0	2	9
4:30 PM	0	0	0	0	2	0	2	0	0	2	0	0	0	2	0	1	1	0	2	1	5	0	1	0	0	0	1	2	11
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	3	0	0	1	5	0	1	0	0	0	1	2	8
Total Volume	0	0	0	0	2	0	2	0	4	4	0	0	1	9	2	2	8	0	2	3	17	0	5	0	0	1	2	8	36
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	44.4	44.4	0.0	0.0	11.1		11.8	11.8	47.1	0.0	11.8	17.6		0.0	62.5	0.0	0.0	12.5	25.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.333	0.500	0.000	0.000	0.250	0.750	0.500	0.500	0.667	0.000	0.250	0.750	0.850	0.000	0.625	0.000	0.000	0.250	0.500	1.000	0.818
Entering Leg	0	0	0	0	2	0	2	0	4	4	0	0	1	9	2	2	8	0	2	3	17	0	5	0	0	1	2	8	36
Exiting Leg							4							8							9							15	36
Total							6							17							26							23	72

PDI File #: **239422 D**
Location: **N: Thomson Place S: A Street**
Location: **E: Congress Street W: Congress Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	21	34	55	0	0	0	0	13	30	43	0	0	0	0	7	24	31	0	0	0	0	13	21	34	163
4:15 PM	0	0	0	0	37	20	57	0	0	0	0	14	11	25	0	0	0	0	7	46	53	0	0	0	0	12	20	32	167
4:30 PM	0	0	0	0	29	31	60	0	0	0	0	8	14	22	0	0	0	0	3	31	34	0	0	0	0	9	28	37	153
4:45 PM	0	0	0	0	41	32	73	0	0	0	0	10	25	35	0	0	0	0	13	29	42	0	0	0	0	30	21	51	201
Total	0	0	0	0	128	117	245	0	0	0	0	45	80	125	0	0	0	0	30	130	160	0	0	0	0	64	90	154	684
5:00 PM	0	0	0	0	51	37	88	0	0	0	0	0	0	0	0	0	0	0	25	21	46	0	0	0	0	28	28	56	190
5:15 PM	0	0	0	0	42	33	75	0	0	0	0	0	0	0	0	0	0	0	30	33	63	0	0	0	0	27	21	48	186
5:30 PM	0	0	0	0	33	27	60	0	0	0	0	0	0	0	0	0	0	0	27	27	54	0	0	0	0	31	26	57	171
5:45 PM	0	0	0	0	28	32	60	0	0	0	0	0	0	0	0	0	0	0	9	26	35	0	0	0	0	22	23	45	140
Total	0	0	0	0	154	129	283	0	0	0	0	0	0	0	0	0	0	0	91	107	198	0	0	0	0	108	98	206	687
Grand Total	0	0	0	0	282	246	528	0	0	0	0	45	80	125	0	0	0	0	121	237	358	0	0	0	0	172	188	360	1371
Approach %	0	0	0	0	53.4	46.6		0	0	0	0	36	64		0	0	0	0	33.8	66.2		0	0	0	0	47.8	52.2		
Total %	0	0	0	0	20.6	17.9	38.5	0	0	0	0	3.28	5.84	9.12	0	0	0	0	8.83	17.3	26.1	0	0	0	0	12.5	13.7	26.3	
Exiting Leg Total							528							125							358							360	1371

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Thomson Place							Congress Street							A Street							Congress Street							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	0	0	0	0	41	32	73	0	0	0	0	10	25	35	0	0	0	0	13	29	42	0	0	0	0	30	21	51	201
5:00 PM	0	0	0	0	51	37	88	0	0	0	0	0	0	0	0	0	0	0	25	21	46	0	0	0	0	28	28	56	190
5:15 PM	0	0	0	0	42	33	75	0	0	0	0	0	0	0	0	0	0	0	30	33	63	0	0	0	0	27	21	48	186
5:30 PM	0	0	0	0	33	27	60	0	0	0	0	0	0	0	0	0	0	0	27	27	54	0	0	0	0	31	26	57	171
Total Volume	0	0	0	0	167	129	296	0	0	0	0	10	25	35	0	0	0	0	95	110	205	0	0	0	0	116	96	212	748
% Approach Total	0.0	0.0	0.0	0.0	56.4	43.6		0.0	0.0	0.0	0.0	28.6	71.4		0.0	0.0	0.0	0.0	46.3	53.7		0.0	0.0	0.0	0.0	54.7	45.3		
PHF	0.000	0.000	0.000	0.000	0.819	0.872	0.841	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.792	0.833	0.813	0.000	0.000	0.000	0.000	0.935	0.857	0.930	0.930
Entering Leg	0	0	0	0	167	129	296	0	0	0	0	10	25	35	0	0	0	0	95	110	205	0	0	0	0	116	96	212	748
Exiting Leg							296							35							205							212	748
Total							592							70							410							424	1496

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Cars and Heavy Vehicles (Combined)

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	8	32	0	0	40	0	0	0	0	0	0	35	7	0	42	34	0	7	0	41	123
7:15 AM	5	45	0	0	50	0	0	0	0	0	0	41	11	0	52	32	0	3	0	35	137
7:30 AM	4	49	0	0	53	0	0	0	0	0	0	32	14	1	47	34	0	3	0	37	137
7:45 AM	9	43	0	0	52	0	0	0	0	0	0	46	9	0	55	33	0	4	0	37	144
Total	26	169	0	0	195	0	0	0	0	0	0	154	41	1	196	133	0	17	0	150	541
8:00 AM	5	56	0	0	61	0	0	0	0	0	0	73	22	0	95	35	0	4	0	39	195
8:15 AM	5	55	0	0	60	0	0	0	0	0	0	77	33	0	110	37	0	6	0	43	213
8:30 AM	14	60	0	0	74	0	0	0	0	0	0	83	25	0	108	31	0	7	0	38	220
8:45 AM	8	74	0	0	82	0	0	0	0	0	0	51	11	0	62	47	0	2	0	49	193
Total	32	245	0	0	277	0	0	0	0	0	0	284	91	0	375	150	0	19	0	169	821
Grand Total	58	414	0	0	472	0	0	0	0	0	0	438	132	1	571	283	0	36	0	319	1362
Approach %	12.3	87.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	76.7	23.1	0.2		88.7	0.0	11.3	0.0		
Total %	4.3	30.4	0.0	0.0	34.7	0.0	0.0	0.0	0.0	0.0	0.0	32.2	9.7	0.1	41.9	20.8	0.0	2.6	0.0	23.4	
Exiting Leg Total					474					0					698					190	1362
Cars	48	393	0	0	441	0	0	0	0	0	0	414	116	1	531	268	0	35	0	303	1275
% Cars	82.8	94.9	0.0	0.0	93.4	0.0	0.0	0.0	0.0	0.0	0.0	94.5	87.9	100.0	93.0	94.7	0.0	97.2	0.0	95.0	93.6
Exiting Leg Total					449					0					662					164	1275
Heavy Vehicles	10	21	0	0	31	0	0	0	0	0	0	24	16	0	40	15	0	1	0	16	87
% Heavy Vehicles	17.2	5.1	0.0	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	5.5	12.1	0.0	7.0	5.3	0.0	2.8	0.0	5.0	6.4
Exiting Leg Total					25					0					36					26	87

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	5	56	0	0	61	0	0	0	0	0	0	73	22	0	95	35	0	4	0	39	195
8:15 AM	5	55	0	0	60	0	0	0	0	0	0	77	33	0	110	37	0	6	0	43	213
8:30 AM	14	60	0	0	74	0	0	0	0	0	0	83	25	0	108	31	0	7	0	38	220
8:45 AM	8	74	0	0	82	0	0	0	0	0	0	51	11	0	62	47	0	2	0	49	193
Total Volume	32	245	0	0	277	0	0	0	0	0	0	284	91	0	375	150	0	19	0	169	821
% Approach Total	11.6	88.4	0.0	0.0		0.0	0.0	0.0	0.0		0.0	75.7	24.3	0.0		88.8	0.0	11.2	0.0		
PHF	0.571	0.828	0.000	0.000	0.845	0.000	0.000	0.000	0.000	0.000	0.000	0.855	0.689	0.000	0.852	0.798	0.000	0.679	0.000	0.862	0.933
Cars	29	234	0	0	263	0	0	0	0	0	0	276	84	0	360	143	0	19	0	162	785
Cars %	90.6	95.5	0.0	0.0	94.9	0.0	0.0	0.0	0.0	0.0	0.0	97.2	92.3	0.0	96.0	95.3	0.0	100.0	0.0	95.9	95.6
Heavy Vehicles	3	11	0	0	14	0	0	0	0	0	0	8	7	0	15	7	0	0	0	7	36
Heavy Vehicles %	9.4	4.5	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	2.8	7.7	0.0	4.0	4.7	0.0	0.0	0.0	4.1	4.4
Cars Enter Leg	29	234	0	0	263	0	0	0	0	0	0	276	84	0	360	143	0	19	0	162	785
Heavy Enter Leg	3	11	0	0	14	0	0	0	0	0	0	8	7	0	15	7	0	0	0	7	36
Total Entering Leg	32	245	0	0	277	0	0	0	0	0	0	284	91	0	375	150	0	19	0	169	821
Cars Exiting Leg					295					0					377					113	785
Heavy Exiting Leg					8					0					18					10	36
Total Exiting Leg					303					0					395					123	821

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	6	30	0	0	36	0	0	0	0	0	0	29	3	0	32	32	0	6	0	38	106
7:15 AM	2	41	0	0	43	0	0	0	0	0	0	38	9	0	47	29	0	3	0	32	122
7:30 AM	4	47	0	0	51	0	0	0	0	0	0	30	12	1	43	33	0	3	0	36	130
7:45 AM	7	41	0	0	48	0	0	0	0	0	0	41	8	0	49	31	0	4	0	35	132
Total	19	159	0	0	178	0	0	0	0	0	0	138	32	1	171	125	0	16	0	141	490
8:00 AM	4	54	0	0	58	0	0	0	0	0	0	71	19	0	90	35	0	4	0	39	187
8:15 AM	5	53	0	0	58	0	0	0	0	0	0	75	31	0	106	33	0	6	0	39	203
8:30 AM	14	57	0	0	71	0	0	0	0	0	0	81	24	0	105	29	0	7	0	36	212
8:45 AM	6	70	0	0	76	0	0	0	0	0	0	49	10	0	59	46	0	2	0	48	183
Total	29	234	0	0	263	0	0	0	0	0	0	276	84	0	360	143	0	19	0	162	785
Grand Total	48	393	0	0	441	0	0	0	0	0	0	414	116	1	531	268	0	35	0	303	1275
Approach %	10.9	89.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	78.0	21.8	0.2		88.4	0.0	11.6	0.0		
Total %	3.8	30.8	0.0	0.0	34.6	0.0	0.0	0.0	0.0	0.0	0.0	32.5	9.1	0.1	41.6	21.0	0.0	2.7	0.0	23.8	
Exiting Leg Total					449					0					662					164	1275

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	4	54	0	0	58	0	0	0	0	0	0	71	19	0	90	35	0	4	0	39	187
8:15 AM	5	53	0	0	58	0	0	0	0	0	0	75	31	0	106	33	0	6	0	39	203
8:30 AM	14	57	0	0	71	0	0	0	0	0	0	81	24	0	105	29	0	7	0	36	212
8:45 AM	6	70	0	0	76	0	0	0	0	0	0	49	10	0	59	46	0	2	0	48	183
Total Volume	29	234	0	0	263	0	0	0	0	0	0	276	84	0	360	143	0	19	0	162	785
% Approach Total	11.0	89.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	76.7	23.3	0.0		88.3	0.0	11.7	0.0		
PHF	0.518	0.836	0.000	0.000	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.852	0.677	0.000	0.849	0.777	0.000	0.679	0.000	0.844	0.926
Entering Leg	29	234	0	0	263	0	0	0	0	0	0	276	84	0	360	143	0	19	0	162	785
Exiting Leg					295					0					377					113	785
Total					558					0					737					275	1570

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	2	0	0	4	0	0	0	0	0	0	6	4	0	10	2	0	1	0	3	17
7:15 AM	3	4	0	0	7	0	0	0	0	0	0	3	2	0	5	3	0	0	0	3	15
7:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	2	0	4	1	0	0	0	1	7
7:45 AM	2	2	0	0	4	0	0	0	0	0	0	5	1	0	6	2	0	0	0	2	12
Total	7	10	0	0	17	0	0	0	0	0	0	16	9	0	25	8	0	1	0	9	51
8:00 AM	1	2	0	0	3	0	0	0	0	0	0	2	3	0	5	0	0	0	0	0	8
8:15 AM	0	2	0	0	2	0	0	0	0	0	0	2	2	0	4	4	0	0	0	4	10
8:30 AM	0	3	0	0	3	0	0	0	0	0	0	2	1	0	3	2	0	0	0	2	8
8:45 AM	2	4	0	0	6	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	10
Total	3	11	0	0	14	0	0	0	0	0	0	8	7	0	15	7	0	0	0	7	36
Grand Total	10	21	0	0	31	0	0	0	0	0	0	24	16	0	40	15	0	1	0	16	87
Approach %	32.3	67.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	60.0	40.0	0.0		93.8	0.0	6.3	0.0		
Total %	11.5	24.1	0.0	0.0	35.6	0.0	0.0	0.0	0.0	0.0	0.0	27.6	18.4	0.0	46.0	17.2	0.0	1.1	0.0	18.4	
Exiting Leg Total					25					0					36					26	87
Buses	5	7	0	0	12	0	0	0	0	0	0	4	11	0	15	7	0	0	0	7	34
% Buses	50.0	33.3	0.0	0.0	38.7	0.0	0.0	0.0	0.0	0.0	0.0	16.7	68.8	0.0	37.5	46.7	0.0	0.0	0.0	43.8	39.1
Exiting Leg Total					4					0					14					16	34
Single-Unit Trucks	5	14	0	0	19	0	0	0	0	0	0	19	5	0	24	8	0	1	0	9	52
% Single-Unit	50.0	66.7	0.0	0.0	61.3	0.0	0.0	0.0	0.0	0.0	0.0	79.2	31.3	0.0	60.0	53.3	0.0	100.0	0.0	56.3	59.8
Exiting Leg Total					20					0					22					10	52
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	1.1
Exiting Leg Total					1					0					0					0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	2	0	0	4	0	0	0	0	0	0	6	4	0	10	2	0	1	0	3	17
7:15 AM	3	4	0	0	7	0	0	0	0	0	0	3	2	0	5	3	0	0	0	3	15
7:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	2	0	4	1	0	0	0	1	7
7:45 AM	2	2	0	0	4	0	0	0	0	0	0	5	1	0	6	2	0	0	0	2	12
Total Volume	7	10	0	0	17	0	0	0	0	0	0	16	9	0	25	8	0	1	0	9	51
% Approach Total	41.2	58.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	64.0	36.0	0.0		88.9	0.0	11.1	0.0		
PHF	0.583	0.625	0.000	0.000	0.607	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.563	0.000	0.625	0.667	0.000	0.250	0.000	0.750	0.750
Buses	3	3	0	0	6	0	0	0	0	0	0	2	5	0	7	4	0	0	0	4	17
Buses %	42.9	30.0	0.0	0.0	35.3	0.0	0.0	0.0	0.0	0.0	0.0	12.5	55.6	0.0	28.0	50.0	0.0	0.0	0.0	44.4	33.3
Single-Unit Trucks	4	7	0	0	11	0	0	0	0	0	0	13	4	0	17	4	0	1	0	5	33
Single-Unit %	57.1	70.0	0.0	0.0	64.7	0.0	0.0	0.0	0.0	0.0	0.0	81.3	44.4	0.0	68.0	50.0	0.0	100.0	0.0	55.6	64.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	2.0
Buses	3	3	0	0	6	0	0	0	0	0	0	2	5	0	7	4	0	0	0	4	17
Single-Unit Trucks	4	7	0	0	11	0	0	0	0	0	0	13	4	0	17	4	0	1	0	5	33
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Entering Leg	7	10	0	0	17	0	0	0	0	0	0	16	9	0	25	8	0	1	0	9	51
Buses					2					0					7					8	17
Single-Unit Trucks					14					0					11					8	33
Articulated Trucks					1					0					0					0	1
Total Exiting Leg					17					0					18					16	51

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	A Street					Driveway					A Street					Melcher Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	5
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
7:45 AM	1	2	0	0	3	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	7
Total	3	3	0	0	6	0	0	0	0	0	0	2	5	0	7	4	0	0	0	4	17
8:00 AM	1	2	0	0	3	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	5
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	5
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
8:45 AM	1	1	0	0	2	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	5
Total	2	4	0	0	6	0	0	0	0	0	0	2	6	0	8	3	0	0	0	3	17
Grand Total	5	7	0	0	12	0	0	0	0	0	0	4	11	0	15	7	0	0	0	7	34
Approach %	41.7	58.3	0.0	0.0		0.0	0.0	0.0	0.0		0.0	26.7	73.3	0.0		100.0	0.0	0.0	0.0		
Total %	14.7	20.6	0.0	0.0	35.3	0.0	0.0	0.0	0.0	0.0	0.0	11.8	32.4	0.0	44.1	20.6	0.0	0.0	0.0	20.6	
Exiting Leg Total					4					0					14					16	34

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	A Street					Driveway					A Street					Melcher Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
7:45 AM	1	2	0	0	3	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	7
8:00 AM	1	2	0	0	3	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	5
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	5
Total Volume	2	5	0	0	7	0	0	0	0	0	0	3	6	0	9	3	0	0	0	3	19
% Approach Total	28.6	71.4	0.0	0.0		0.0	0.0	0.0	0.0		0.0	33.3	66.7	0.0		100.0	0.0	0.0	0.0		
PHF	0.500	0.625	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.750	0.000	0.750	0.750	0.000	0.000	0.000	0.750	0.679
Entering Leg	2	5	0	0	7	0	0	0	0	0	0	3	6	0	9	3	0	0	0	3	19
Exiting Leg					3					0					8					8	19
Total					10					0					17					11	38

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	1	0	0	2	0	0	0	0	0	0	5	2	0	7	1	0	1	0	2	11
7:15 AM	2	4	0	0	6	0	0	0	0	0	0	3	1	0	4	2	0	0	0	2	12
7:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	5
7:45 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	5
Total	4	7	0	0	11	0	0	0	0	0	0	13	4	0	17	4	0	1	0	5	33
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	3
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3	0	0	0	3	5
8:30 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	6
8:45 AM	1	3	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
Total	1	7	0	0	8	0	0	0	0	0	0	6	1	0	7	4	0	0	0	4	19
Grand Total	5	14	0	0	19	0	0	0	0	0	0	19	5	0	24	8	0	1	0	9	52
Approach %	26.3	73.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	79.2	20.8	0.0		88.9	0.0	11.1	0.0		
Total %	9.6	26.9	0.0	0.0	36.5	0.0	0.0	0.0	0.0	0.0	0.0	36.5	9.6	0.0	46.2	15.4	0.0	1.9	0.0	17.3	
Exiting Leg Total					20					0					22					10	52

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	1	0	0	2	0	0	0	0	0	0	5	2	0	7	1	0	1	0	2	11
7:15 AM	2	4	0	0	6	0	0	0	0	0	0	3	1	0	4	2	0	0	0	2	12
7:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	5
7:45 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	5
Total Volume	4	7	0	0	11	0	0	0	0	0	0	13	4	0	17	4	0	1	0	5	33
% Approach Total	36.4	63.6	0.0	0.0		0.0	0.0	0.0	0.0		0.0	76.5	23.5	0.0		80.0	0.0	20.0	0.0		
PHF	0.500	0.438	0.000	0.000	0.458	0.000	0.000	0.000	0.000	0.000	0.000	0.650	0.500	0.000	0.607	0.500	0.000	0.250	0.000	0.625	0.688
Entering Leg	4	7	0	0	11	0	0	0	0	0	0	13	4	0	17	4	0	1	0	5	33
Exiting Leg					14					0					11					8	33
Total					25					0					28					13	66

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					0					0					0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Exiting Leg					1					0					0					0	1
Total					1					0					1					0	2

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	1	0	0	0	5	1	0	0	0	0	0	1	7
7:15 AM	0	1	0	0	0	2	3	0	0	0	0	0	0	0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	8
7:30 AM	0	1	0	0	0	0	1	0	0	0	0	0	1	1	0	7	0	0	0	0	7	0	0	1	0	0	0	1	10
7:45 AM	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	15	3	0	0	0	18	0	0	4	0	0	0	4	27
Total	0	8	0	0	0	2	10	0	0	0	0	0	1	1	0	30	5	0	0	0	35	1	0	5	0	0	0	6	52
8:00 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	16	3	0	0	0	19	2	0	2	0	0	0	4	26
8:15 AM	1	2	0	0	0	0	3	0	0	0	0	0	1	1	0	19	6	0	0	0	25	4	0	0	0	0	0	4	33
8:30 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	12	2	0	0	0	14	0	0	2	0	0	0	2	19
8:45 AM	1	2	0	0	0	1	4	0	0	0	0	0	0	0	0	15	2	0	0	0	17	2	1	2	0	0	0	5	26
Total	2	10	0	0	0	1	13	0	0	0	0	0	1	1	0	62	13	0	0	0	75	8	1	6	0	0	0	15	104
Grand Total	2	18	0	0	0	3	23	0	0	0	0	0	2	2	0	92	18	0	0	0	110	9	1	11	0	0	0	21	156
Approach %	8.7	78.3	0.0	0.0	0.0	13.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	83.6	16.4	0.0	0.0	0.0		42.9	4.8	52.4	0.0	0.0	0.0		
Total %	1.3	11.5	0.0	0.0	0.0	1.9	14.7	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.0	59.0	11.5	0.0	0.0	0.0	70.5	5.8	0.6	7.1	0.0	0.0	0.0	13.5	
Exiting Leg Total							106							3							27							20	156

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	15	3	0	0	0	18	0	0	4	0	0	0	4	27
8:00 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	16	3	0	0	0	19	2	0	2	0	0	0	4	26
8:15 AM	1	2	0	0	0	0	3	0	0	0	0	0	1	1	0	19	6	0	0	0	25	4	0	0	0	0	0	4	33
8:30 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	12	2	0	0	0	14	0	0	2	0	0	0	2	19
Total Volume	1	13	0	0	0	0	14	0	0	0	0	0	1	1	0	62	14	0	0	0	76	6	0	8	0	0	0	14	105
% Approach Total	7.1	92.9	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	81.6	18.4	0.0	0.0	0.0		42.9	0.0	57.1	0.0	0.0	0.0		
PHF	0.250	0.650	0.000	0.000	0.000	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.816	0.583	0.000	0.000	0.000	0.760	0.375	0.000	0.500	0.000	0.000	0.000	0.875	0.795
Entering Leg	1	13	0	0	0	0	14	0	0	0	0	0	1	1	0	62	14	0	0	0	76	6	0	8	0	0	0	14	105
Exiting Leg							70							1							19							15	105
Total							84							2							95							29	210

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	2	3	5	0	0	0	0	6	10	16	0	0	0	0	12	11	23	0	0	0	0	9	0	9	53
7:15 AM	0	0	0	0	0	1	1	0	0	0	0	5	23	28	0	0	0	0	3	6	9	0	0	0	0	8	4	12	50
7:30 AM	0	0	0	0	1	2	3	0	0	0	0	9	20	29	0	0	0	0	6	15	21	0	0	0	0	20	1	21	74
7:45 AM	0	0	0	0	2	4	6	0	0	0	0	8	36	44	0	0	0	0	4	5	9	0	0	0	0	23	9	32	91
Total	0	0	0	0	5	10	15	0	0	0	0	28	89	117	0	0	0	0	25	37	62	0	0	0	0	60	14	74	268
8:00 AM	0	0	0	0	0	2	2	0	0	0	0	10	37	47	0	0	0	0	6	9	15	0	0	0	0	13	9	22	86
8:15 AM	0	0	0	0	1	6	7	0	0	0	0	11	39	50	0	0	0	0	11	5	16	0	0	0	0	23	9	32	105
8:30 AM	0	0	0	0	0	6	6	0	0	0	0	17	26	43	0	0	0	0	13	3	16	0	0	0	0	26	13	39	104
8:45 AM	0	0	0	0	0	5	5	0	0	0	0	11	21	32	0	0	0	0	8	7	15	0	0	0	0	28	8	36	88
Total	0	0	0	0	1	19	20	0	0	0	0	49	123	172	0	0	0	0	38	24	62	0	0	0	0	90	39	129	383
Grand Total	0	0	0	0	6	29	35	0	0	0	0	77	212	289	0	0	0	0	63	61	124	0	0	0	0	150	53	203	651
Approach %	0	0	0	0	17.1	82.9		0	0	0	0	26.6	73.4		0	0	0	0	50.8	49.2		0	0	0	0	73.9	26.1		
Total %	0	0	0	0	0.92	4.45	5.38	0	0	0	0	11.8	32.6	44.4	0	0	0	0	9.68	9.37	19	0	0	0	0	23	8.14	31.2	
Exiting Leg Total							35							289							124							203	651

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	0	0	0	0	2	4	6	0	0	0	0	8	36	44	0	0	0	0	4	5	9	0	0	0	0	23	9	32	91
8:00 AM	0	0	0	0	0	2	2	0	0	0	0	10	37	47	0	0	0	0	6	9	15	0	0	0	0	13	9	22	86
8:15 AM	0	0	0	0	1	6	7	0	0	0	0	11	39	50	0	0	0	0	11	5	16	0	0	0	0	23	9	32	105
8:30 AM	0	0	0	0	0	6	6	0	0	0	0	17	26	43	0	0	0	0	13	3	16	0	0	0	0	26	13	39	104
Total Volume	0	0	0	0	3	18	21	0	0	0	0	46	138	184	0	0	0	0	34	22	56	0	0	0	0	85	40	125	386
% Approach Total	0.0	0.0	0.0	0.0	14.3	85.7		0.0	0.0	0.0	0.0	25.0	75.0		0.0	0.0	0.0	0.0	60.7	39.3		0.0	0.0	0.0	0.0	68.0	32.0		
PHF	0.000	0.000	0.000	0.000	0.375	0.750	0.750	0.000	0.000	0.000	0.000	0.676	0.885	0.920	0.000	0.000	0.000	0.000	0.654	0.611	0.875	0.000	0.000	0.000	0.000	0.817	0.769	0.801	0.919
Entering Leg	0	0	0	0	3	18	21	0	0	0	0	46	138	184	0	0	0	0	34	22	56	0	0	0	0	85	40	125	386
Exiting Leg							21							184							56							125	386
Total							42							368							112							250	772

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Cars and Heavy Vehicles (Combined)

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	14	84	0	0	98	0	0	0	0	0	0	47	18	0	65	36	0	5	0	41	204
4:15 PM	15	66	0	0	81	0	0	0	0	0	0	54	19	0	73	28	0	15	0	43	197
4:30 PM	12	62	0	0	74	0	0	0	0	0	0	59	28	0	87	26	0	6	0	32	193
4:45 PM	16	81	0	0	97	0	0	0	0	0	0	59	27	0	86	28	0	8	0	36	219
Total	57	293	0	0	350	0	0	0	0	0	0	219	92	0	311	118	0	34	0	152	813
5:00 PM	9	72	0	0	81	0	0	0	0	0	0	68	24	0	92	35	0	10	0	45	218
5:15 PM	7	54	0	0	61	0	0	0	0	0	0	60	22	0	82	32	0	12	0	44	187
5:30 PM	25	67	0	0	92	0	0	0	0	0	0	76	22	0	98	32	0	7	0	39	229
5:45 PM	22	56	0	0	78	0	0	0	0	0	0	57	21	0	78	23	0	12	0	35	191
Total	63	249	0	0	312	0	0	0	0	0	0	261	89	0	350	122	0	41	0	163	825
Grand Total	120	542	0	0	662	0	0	0	0	0	0	480	181	0	661	240	0	75	0	315	1638
Approach %	18.1	81.9	0.0	0.0		0.0	0.0	0.0	0.0		0.0	72.6	27.4	0.0		76.2	0.0	23.8	0.0		
Total %	7.3	33.1	0.0	0.0	40.4	0.0	0.0	0.0	0.0	0.0	0.0	29.3	11.1	0.0	40.4	14.7	0.0	4.6	0.0	19.2	
Exiting Leg Total					555					0					782					301	1638
Cars	113	525	0	0	638	0	0	0	0	0	0	472	164	0	636	219	0	72	0	291	1565
% Cars	94.2	96.9	0.0	0.0	96.4	0.0	0.0	0.0	0.0	0.0	0.0	98.3	90.6	0.0	96.2	91.3	0.0	96.0	0.0	92.4	95.5
Exiting Leg Total					544					0					744					277	1565
Heavy Vehicles	7	17	0	0	24	0	0	0	0	0	0	8	17	0	25	21	0	3	0	24	73
% Heavy Vehicles	5.8	3.1	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	1.7	9.4	0.0	3.8	8.8	0.0	4.0	0.0	7.6	4.5
Exiting Leg Total					11					0					38					24	73

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	16	81	0	0	97	0	0	0	0	0	0	59	27	0	86	28	0	8	0	36	219
5:00 PM	9	72	0	0	81	0	0	0	0	0	0	68	24	0	92	35	0	10	0	45	218
5:15 PM	7	54	0	0	61	0	0	0	0	0	0	60	22	0	82	32	0	12	0	44	187
5:30 PM	25	67	0	0	92	0	0	0	0	0	0	76	22	0	98	32	0	7	0	39	229
Total Volume	57	274	0	0	331	0	0	0	0	0	0	263	95	0	358	127	0	37	0	164	853
% Approach Total	17.2	82.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	73.5	26.5	0.0		77.4	0.0	22.6	0.0		
PHF	0.570	0.846	0.000	0.000	0.853	0.000	0.000	0.000	0.000	0.000	0.000	0.865	0.880	0.000	0.913	0.907	0.000	0.771	0.000	0.911	0.931
Cars	55	263	0	0	318	0	0	0	0	0	0	259	86	0	345	116	0	35	0	151	814
Cars %	96.5	96.0	0.0	0.0	96.1	0.0	0.0	0.0	0.0	0.0	0.0	98.5	90.5	0.0	96.4	91.3	0.0	94.6	0.0	92.1	95.4
Heavy Vehicles	2	11	0	0	13	0	0	0	0	0	0	4	9	0	13	11	0	2	0	13	39
Heavy Vehicles %	3.5	4.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	1.5	9.5	0.0	3.6	8.7	0.0	5.4	0.0	7.9	4.6
Cars Enter Leg	55	263	0	0	318	0	0	0	0	0	0	259	86	0	345	116	0	35	0	151	814
Heavy Enter Leg	2	11	0	0	13	0	0	0	0	0	0	4	9	0	13	11	0	2	0	13	39
Total Entering Leg	57	274	0	0	331	0	0	0	0	0	0	263	95	0	358	127	0	37	0	164	853
Cars Exiting Leg					294					0					379					141	814
Heavy Exiting Leg					6					0					22					11	39
Total Exiting Leg					300					0					401					152	853

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	12	83	0	0	95	0	0	0	0	0	0	45	14	0	59	34	0	5	0	39	193
4:15 PM	13	65	0	0	78	0	0	0	0	0	0	54	17	0	71	25	0	14	0	39	188
4:30 PM	12	60	0	0	72	0	0	0	0	0	0	58	26	0	84	24	0	6	0	30	186
4:45 PM	16	77	0	0	93	0	0	0	0	0	0	58	25	0	83	26	0	8	0	34	210
Total	53	285	0	0	338	0	0	0	0	0	0	215	82	0	297	109	0	33	0	142	777
5:00 PM	9	71	0	0	80	0	0	0	0	0	0	66	22	0	88	32	0	9	0	41	209
5:15 PM	6	51	0	0	57	0	0	0	0	0	0	59	21	0	80	26	0	11	0	37	174
5:30 PM	24	64	0	0	88	0	0	0	0	0	0	76	18	0	94	32	0	7	0	39	221
5:45 PM	21	54	0	0	75	0	0	0	0	0	0	56	21	0	77	20	0	12	0	32	184
Total	60	240	0	0	300	0	0	0	0	0	0	257	82	0	339	110	0	39	0	149	788
Grand Total	113	525	0	0	638	0	0	0	0	0	0	472	164	0	636	219	0	72	0	291	1565
Approach %	17.7	82.3	0.0	0.0		0.0	0.0	0.0	0.0		0.0	74.2	25.8	0.0		75.3	0.0	24.7	0.0		
Total %	7.2	33.5	0.0	0.0	40.8	0.0	0.0	0.0	0.0	0.0	0.0	30.2	10.5	0.0	40.6	14.0	0.0	4.6	0.0	18.6	
Exiting Leg Total					544					0					744					277	1565

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	16	77	0	0	93	0	0	0	0	0	0	58	25	0	83	26	0	8	0	34	210
5:00 PM	9	71	0	0	80	0	0	0	0	0	0	66	22	0	88	32	0	9	0	41	209
5:15 PM	6	51	0	0	57	0	0	0	0	0	0	59	21	0	80	26	0	11	0	37	174
5:30 PM	24	64	0	0	88	0	0	0	0	0	0	76	18	0	94	32	0	7	0	39	221
Total Volume	55	263	0	0	318	0	0	0	0	0	0	259	86	0	345	116	0	35	0	151	814
% Approach Total	17.3	82.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	75.1	24.9	0.0		76.8	0.0	23.2	0.0		
PHF	0.573	0.854	0.000	0.000	0.855	0.000	0.000	0.000	0.000	0.000	0.000	0.852	0.860	0.000	0.918	0.906	0.000	0.795	0.000	0.921	0.921
Entering Leg	55	263	0	0	318	0	0	0	0	0	0	259	86	0	345	116	0	35	0	151	814
Exiting Leg					294					0					379					141	814
Total					612					0					724					292	1628

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	2	1	0	0	3	0	0	0	0	0	0	2	4	0	6	2	0	0	0	2	11
4:15 PM	2	1	0	0	3	0	0	0	0	0	0	0	2	0	2	3	0	1	0	4	9
4:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	2	0	3	2	0	0	0	2	7
4:45 PM	0	4	0	0	4	0	0	0	0	0	0	1	2	0	3	2	0	0	0	2	9
Total	4	8	0	0	12	0	0	0	0	0	0	4	10	0	14	9	0	1	0	10	36
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	2	0	4	3	0	1	0	4	9
5:15 PM	1	3	0	0	4	0	0	0	0	0	0	1	1	0	2	6	0	1	0	7	13
5:30 PM	1	3	0	0	4	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	8
5:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	3	0	0	0	3	7
Total	3	9	0	0	12	0	0	0	0	0	0	4	7	0	11	12	0	2	0	14	37
Grand Total	7	17	0	0	24	0	0	0	0	0	0	8	17	0	25	21	0	3	0	24	73
Approach %	29.2	70.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	32.0	68.0	0.0		87.5	0.0	12.5	0.0		
Total %	9.6	23.3	0.0	0.0	32.9	0.0	0.0	0.0	0.0	0.0	0.0	11.0	23.3	0.0	34.2	28.8	0.0	4.1	0.0	32.9	
Exiting Leg Total					11					0					38					24	73
Buses	7	13	0	0	20	0	0	0	0	0	0	5	10	0	15	15	0	1	0	16	51
% Buses	100.0	76.5	0.0	0.0	83.3	0.0	0.0	0.0	0.0	0.0	0.0	62.5	58.8	0.0	60.0	71.4	0.0	33.3	0.0	66.7	69.9
Exiting Leg Total					6					0					28					17	51
Single-Unit Trucks	0	3	0	0	3	0	0	0	0	0	0	3	7	0	10	6	0	2	0	8	21
% Single-Unit	0.0	17.6	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	41.2	0.0	40.0	28.6	0.0	66.7	0.0	33.3	28.8
Exiting Leg Total					5					0					9					7	21
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Articulated	0.0	5.9	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Exiting Leg Total					0					0					1					0	1

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	4	0	0	4	0	0	0	0	0	0	1	2	0	3	2	0	0	0	2	9
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	2	0	4	3	0	1	0	4	9
5:15 PM	1	3	0	0	4	0	0	0	0	0	0	1	1	0	2	6	0	1	0	7	13
5:30 PM	1	3	0	0	4	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	8
Total Volume	2	11	0	0	13	0	0	0	0	0	0	4	9	0	13	11	0	2	0	13	39
% Approach Total	15.4	84.6	0.0	0.0		0.0	0.0	0.0	0.0		0.0	30.8	69.2	0.0		84.6	0.0	15.4	0.0		
PHF	0.500	0.688	0.000	0.000	0.813	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.563	0.000	0.813	0.458	0.000	0.500	0.000	0.464	0.750
Buses	2	8	0	0	10	0	0	0	0	0	0	1	6	0	7	7	0	1	0	8	25
Buses %	100.0	72.7	0.0	0.0	76.9	0.0	0.0	0.0	0.0	0.0	0.0	25.0	66.7	0.0	53.8	63.6	0.0	50.0	0.0	61.5	64.1
Single-Unit Trucks	0	3	0	0	3	0	0	0	0	0	0	3	3	0	6	4	0	1	0	5	14
Single-Unit %	0.0	27.3	0.0	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.0	75.0	33.3	0.0	46.2	36.4	0.0	50.0	0.0	38.5	35.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	2	8	0	0	10	0	0	0	0	0	0	1	6	0	7	7	0	1	0	8	25
Single-Unit Trucks	0	3	0	0	3	0	0	0	0	0	0	3	3	0	6	4	0	1	0	5	14
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	2	11	0	0	13	0	0	0	0	0	0	4	9	0	13	11	0	2	0	13	39
Buses					2					0					15					8	25
Single-Unit Trucks					4					0					7					3	14
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					6					0					22					11	39

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	2	1	0	0	3	0	0	0	0	0	0	2	2	0	4	1	0	0	0	1	8
4:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	6
4:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	2	0	0	0	2	6
4:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	5
Total	4	6	0	0	10	0	0	0	0	0	0	3	4	0	7	8	0	0	0	8	25
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	2	0	1	0	3	6
5:15 PM	1	2	0	0	3	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	7
5:30 PM	1	2	0	0	3	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	7
5:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	6
Total	3	7	0	0	10	0	0	0	0	0	0	2	6	0	8	7	0	1	0	8	26
Grand Total	7	13	0	0	20	0	0	0	0	0	0	5	10	0	15	15	0	1	0	16	51
Approach %	35.0	65.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	33.3	66.7	0.0		93.8	0.0	6.3	0.0		
Total %	13.7	25.5	0.0	0.0	39.2	0.0	0.0	0.0	0.0	0.0	0.0	9.8	19.6	0.0	29.4	29.4	0.0	2.0	0.0	31.4	
Exiting Leg Total					6					0					28					17	51

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	2	0	1	0	3	6
5:15 PM	1	2	0	0	3	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	7
5:30 PM	1	2	0	0	3	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	7
5:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	6
Total Volume	3	7	0	0	10	0	0	0	0	0	0	2	6	0	8	7	0	1	0	8	26
% Approach Total	30.0	70.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	25.0	75.0	0.0		87.5	0.0	12.5	0.0		
PHF	0.750	0.875	0.000	0.000	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.375	0.000	0.500	0.583	0.000	0.250	0.000	0.667	0.929
Entering Leg	3	7	0	0	10	0	0	0	0	0	0	2	6	0	8	7	0	1	0	8	26
Exiting Leg					3					0					14					9	26
Total					13					0					22					17	52

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	4
Total	0	1	0	0	1	0	0	0	0	0	0	1	6	0	7	1	0	1	0	2	10
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3	0	1	0	4	6
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	2	0	0	2	0	0	0	0	0	0	2	1	0	3	5	0	1	0	6	11
Grand Total	0	3	0	0	3	0	0	0	0	0	0	3	7	0	10	6	0	2	0	8	21
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	30.0	70.0	0.0		75.0	0.0	25.0	0.0		
Total %	0.0	14.3	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	14.3	33.3	0.0	47.6	28.6	0.0	9.5	0.0	38.1	
Exiting Leg Total					5					0					9					7	21

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3	0	1	0	4	6
Total Volume	0	2	0	0	2	0	0	0	0	0	0	3	4	0	7	4	0	1	0	5	14
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	42.9	57.1	0.0		80.0	0.0	20.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.500	0.000	0.583	0.333	0.000	0.250	0.000	0.313	0.583
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	3	4	0	7	4	0	1	0	5	14
Exiting Leg					4					0					6					4	14
Total					6					0					13					9	28

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					1					0	1

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North					Driveway from East					A Street from South					Melcher Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg					0					0					1					0	1
Total					1					0					1					0	2

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	1	7	0	0	0	0	8	0	0	0	0	0	0	0	0	2	2	0	0	0	4	1	0	2	0	0	0	3	15
4:15 PM	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0	4	2	0	0	0	6	2	0	0	0	0	0	2	16
4:30 PM	0	11	0	0	0	0	11	0	0	0	0	0	0	0	1	2	1	0	0	0	4	1	0	1	0	0	0	2	17
4:45 PM	5	14	0	0	0	0	19	0	0	0	0	0	0	0	0	5	2	0	0	0	7	3	0	0	0	0	1	4	30
Total	6	40	0	0	0	0	46	0	0	0	0	0	0	0	1	13	7	0	0	0	21	7	0	3	0	0	1	11	78
5:00 PM	2	13	0	0	0	0	15	0	0	0	0	0	2	2	0	5	3	0	0	0	8	3	0	0	0	0	0	3	28
5:15 PM	1	12	0	0	0	0	13	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	15
5:30 PM	2	17	0	0	0	0	19	0	0	0	0	0	0	0	0	4	0	0	0	0	4	1	0	0	0	0	0	1	24
5:45 PM	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	2	0	0	0	2	14
Total	5	51	0	0	0	0	56	0	0	0	0	0	2	2	0	12	5	0	0	0	17	4	0	2	0	0	0	6	81
Grand Total	11	91	0	0	0	0	102	0	0	0	0	0	2	2	1	25	12	0	0	0	38	11	0	5	0	0	1	17	159
Approach %	10.8	89.2	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		2.6	65.8	31.6	0.0	0.0	0.0		64.7	0.0	29.4	0.0	0.0	5.9		
Total %	6.9	57.2	0.0	0.0	0.0	0.0	64.2	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.6	15.7	7.5	0.0	0.0	0.0	23.9	6.9	0.0	3.1	0.0	0.0	0.6	10.7	
Exiting Leg Total							30							3							102							24	159

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	5	14	0	0	0	0	19	0	0	0	0	0	0	0	0	5	2	0	0	0	7	3	0	0	0	0	1	4	30
5:00 PM	2	13	0	0	0	0	15	0	0	0	0	0	2	2	0	5	3	0	0	0	8	3	0	0	0	0	0	3	28
5:15 PM	1	12	0	0	0	0	13	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	15
5:30 PM	2	17	0	0	0	0	19	0	0	0	0	0	0	0	0	4	0	0	0	0	4	1	0	0	0	0	0	1	24
Total Volume	10	56	0	0	0	0	66	0	0	0	0	0	2	2	0	15	6	0	0	0	21	7	0	0	0	0	1	8	97
% Approach Total	15.2	84.8	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	71.4	28.6	0.0	0.0	0.0		87.5	0.0	0.0	0.0	0.0	12.5		
PHF	0.500	0.824	0.000	0.000	0.000	0.000	0.868	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.750	0.500	0.000	0.000	0.000	0.656	0.583	0.000	0.000	0.000	0.000	0.250	0.500	0.808
Entering Leg	10	56	0	0	0	0	66	0	0	0	0	0	2	2	0	15	6	0	0	0	21	7	0	0	0	0	1	8	97
Exiting Leg							15							2							63							17	97
Total							81							4							84							25	194

PDI File #: **239422 E**
Location: **N: A Street S: A Street**
Location: **E: Driveway W: Melcher Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	4	3	7	0	0	0	0	13	13	26	0	0	0	0	5	13	18	0	0	0	0	8	8	16	67
4:15 PM	0	0	0	0	2	3	5	0	0	0	0	13	9	22	0	0	0	0	15	3	18	0	0	0	0	9	18	27	72
4:30 PM	0	0	0	0	2	1	3	0	0	0	0	19	24	43	0	0	0	0	4	8	12	0	0	0	0	2	16	18	76
4:45 PM	0	0	0	0	3	3	6	0	0	0	0	22	41	63	0	0	0	0	10	4	14	0	0	0	0	10	16	26	109
Total	0	0	0	0	11	10	21	0	0	0	0	67	87	154	0	0	0	0	34	28	62	0	0	0	0	29	58	87	324
5:00 PM	0	0	0	0	6	3	9	0	0	0	0	21	34	55	0	0	0	0	9	7	16	0	0	0	0	13	31	44	124
5:15 PM	0	0	0	0	8	2	10	0	0	0	0	40	36	76	0	0	0	0	5	7	12	0	0	0	0	14	25	39	137
5:30 PM	0	0	0	0	10	8	18	0	0	0	0	22	31	53	0	0	0	0	10	12	22	0	0	0	0	10	21	31	124
5:45 PM	0	0	0	0	6	1	7	0	0	0	0	39	22	61	0	0	0	0	7	6	13	0	0	0	0	13	30	43	124
Total	0	0	0	0	30	14	44	0	0	0	0	122	123	245	0	0	0	0	31	32	63	0	0	0	0	50	107	157	509
Grand Total	0	0	0	0	41	24	65	0	0	0	0	189	210	399	0	0	0	0	65	60	125	0	0	0	0	79	165	244	833
Approach %	0	0	0	0	63.1	36.9		0	0	0	0	47.4	52.6		0	0	0	0	52	48		0	0	0	0	32.4	67.6		
Total %	0	0	0	0	4.92	2.88	7.8	0	0	0	0	22.7	25.2	47.9	0	0	0	0	7.8	7.2	15	0	0	0	0	9.48	19.8	29.3	
Exiting Leg Total							65							399							125							244	833

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	A Street from North							Driveway from East							A Street from South							Melcher Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	6	3	9	0	0	0	0	21	34	55	0	0	0	0	9	7	16	0	0	0	0	13	31	44	124
5:15 PM	0	0	0	0	8	2	10	0	0	0	0	40	36	76	0	0	0	0	5	7	12	0	0	0	0	14	25	39	137
5:30 PM	0	0	0	0	10	8	18	0	0	0	0	22	31	53	0	0	0	0	10	12	22	0	0	0	0	10	21	31	124
5:45 PM	0	0	0	0	6	1	7	0	0	0	0	39	22	61	0	0	0	0	7	6	13	0	0	0	0	13	30	43	124
Total Volume	0	0	0	0	30	14	44	0	0	0	0	122	123	245	0	0	0	0	31	32	63	0	0	0	0	50	107	157	509
% Approach Total	0.0	0.0	0.0	0.0	68.2	31.8		0.0	0.0	0.0	0.0	49.8	50.2		0.0	0.0	0.0	0.0	49.2	50.8		0.0	0.0	0.0	0.0	31.8	68.2		
PHF	0.000	0.000	0.000	0.000	0.750	0.438	0.611	0.000	0.000	0.000	0.000	0.763	0.854	0.806	0.000	0.000	0.000	0.000	0.775	0.667	0.716	0.000	0.000	0.000	0.000	0.893	0.863	0.892	0.929
Entering Leg	0	0	0	0	30	14	44	0	0	0	0	122	123	245	0	0	0	0	31	32	63	0	0	0	0	50	107	157	509
Exiting Leg							44							245							63							157	509
Total							88							490							126							314	1018

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars and Heavy Vehicles (Combined)**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	7	53	0	60	58	11	0	69	4	1	0	5	134
7:15 AM	14	63	0	77	51	13	0	64	5	2	0	7	148
7:30 AM	6	76	0	82	49	6	0	55	5	1	0	6	143
7:45 AM	4	69	0	73	56	11	0	67	1	3	0	4	144
Total	31	261	0	292	214	41	0	255	15	7	0	22	569
8:00 AM	9	83	0	92	100	11	0	111	4	1	0	5	208
8:15 AM	3	89	0	92	115	14	0	129	7	2	0	9	230
8:30 AM	5	86	0	91	102	24	0	126	2	0	0	2	219
8:45 AM	8	110	0	118	70	19	0	89	3	1	0	4	211
Total	25	368	0	393	387	68	0	455	16	4	0	20	868
Grand Total	56	629	0	685	601	109	0	710	31	11	0	42	1437
Approach %	8.2	91.8	0.0		84.6	15.4	0.0		73.8	26.2	0.0		
Total %	3.9	43.8	0.0	47.7	41.8	7.6	0.0	49.4	2.2	0.8	0.0	2.9	
Exiting Leg Total				612				660				165	1437
Cars	54	594	0	648	560	102	0	662	21	8	0	29	1339
% Cars	96.4	94.4	0.0	94.6	93.2	93.6	0.0	93.2	67.7	72.7	0.0	69.0	93.2
Exiting Leg Total				568				615				156	1339
Heavy Vehicles	2	35	0	37	41	7	0	48	10	3	0	13	98
% Heavy Vehicles	3.6	5.6	0.0	5.4	6.8	6.4	0.0	6.8	32.3	27.3	0.0	31.0	6.8
Exiting Leg Total				44				45				9	98

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	9	83	0	92	100	11	0	111	4	1	0	5	208
8:15 AM	3	89	0	92	115	14	0	129	7	2	0	9	230
8:30 AM	5	86	0	91	102	24	0	126	2	0	0	2	219
8:45 AM	8	110	0	118	70	19	0	89	3	1	0	4	211
Total Volume	25	368	0	393	387	68	0	455	16	4	0	20	868
% Approach Total	6.4	93.6	0.0		85.1	14.9	0.0		80.0	20.0	0.0		
PHF	0.694	0.836	0.000	0.833	0.841	0.708	0.000	0.882	0.571	0.500	0.000	0.556	0.943
Cars	24	350	0	374	370	65	0	435	12	3	0	15	824
Cars %	96.0	95.1	0.0	95.2	95.6	95.6	0.0	95.6	75.0	75.0	0.0	75.0	94.9
Heavy Vehicles	1	18	0	19	17	3	0	20	4	1	0	5	44
Heavy Vehicles %	4.0	4.9	0.0	4.8	4.4	4.4	0.0	4.4	25.0	25.0	0.0	25.0	5.1
Cars Enter Leg	24	350	0	374	370	65	0	435	12	3	0	15	824
Heavy Enter Leg	1	18	0	19	17	3	0	20	4	1	0	5	44
Total Entering Leg	25	368	0	393	387	68	0	455	16	4	0	20	868
Cars Exiting Leg				373				362				89	824
Heavy Exiting Leg				18				22				4	44
Total Exiting Leg				391				384				93	868

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	7	48	0	55	47	11	0	58	2	0	0	2	115
7:15 AM	13	58	0	71	48	9	0	57	3	2	0	5	133
7:30 AM	6	73	0	79	45	6	0	51	3	1	0	4	134
7:45 AM	4	65	0	69	50	11	0	61	1	2	0	3	133
Total	30	244	0	274	190	37	0	227	9	5	0	14	515
8:00 AM	9	81	0	90	96	11	0	107	4	0	0	4	201
8:15 AM	3	83	0	86	110	14	0	124	5	2	0	7	217
8:30 AM	5	81	0	86	98	24	0	122	0	0	0	0	208
8:45 AM	7	105	0	112	66	16	0	82	3	1	0	4	198
Total	24	350	0	374	370	65	0	435	12	3	0	15	824
Grand Total	54	594	0	648	560	102	0	662	21	8	0	29	1339
Approach %	8.3	91.7	0.0		84.6	15.4	0.0		72.4	27.6	0.0		
Total %	4.0	44.4	0.0	48.4	41.8	7.6	0.0	49.4	1.6	0.6	0.0	2.2	
Exiting Leg Total				568				615				156	1339

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	9	81	0	90	96	11	0	107	4	0	0	4	201
8:15 AM	3	83	0	86	110	14	0	124	5	2	0	7	217
8:30 AM	5	81	0	86	98	24	0	122	0	0	0	0	208
8:45 AM	7	105	0	112	66	16	0	82	3	1	0	4	198
Total Volume	24	350	0	374	370	65	0	435	12	3	0	15	824
% Approach Total	6.4	93.6	0.0		85.1	14.9	0.0		80.0	20.0	0.0		
PHF	0.667	0.833	0.000	0.835	0.841	0.677	0.000	0.877	0.600	0.375	0.000	0.536	0.949
Entering Leg	24	350	0	374	370	65	0	435	12	3	0	15	824
Exiting Leg				373				362				89	824
Total				747				797				104	1648

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	5	0	5	11	0	0	11	2	1	0	3	19
7:15 AM	1	5	0	6	3	4	0	7	2	0	0	2	15
7:30 AM	0	3	0	3	4	0	0	4	2	0	0	2	9
7:45 AM	0	4	0	4	6	0	0	6	0	1	0	1	11
Total	1	17	0	18	24	4	0	28	6	2	0	8	54
8:00 AM	0	2	0	2	4	0	0	4	0	1	0	1	7
8:15 AM	0	6	0	6	5	0	0	5	2	0	0	2	13
8:30 AM	0	5	0	5	4	0	0	4	2	0	0	2	11
8:45 AM	1	5	0	6	4	3	0	7	0	0	0	0	13
Total	1	18	0	19	17	3	0	20	4	1	0	5	44
Grand Total	2	35	0	37	41	7	0	48	10	3	0	13	98
Approach %	5.4	94.6	0.0		85.4	14.6	0.0		76.9	23.1	0.0		
Total %	2.0	35.7	0.0	37.8	41.8	7.1	0.0	49.0	10.2	3.1	0.0	13.3	
Exiting Leg Total				44				45				9	98
Buses	0	14	0	14	17	1	0	18	0	0	0	0	32
% Buses	0.0	40.0	0.0	37.8	41.5	14.3	0.0	37.5	0.0	0.0	0.0	0.0	32.7
Exiting Leg Total				17				14				1	32
Single-Unit Trucks	2	21	0	23	23	4	0	27	10	3	0	13	63
% Single-Unit	100.0	60.0	0.0	62.2	56.1	57.1	0.0	56.3	100.0	100.0	0.0	100.0	64.3
Exiting Leg Total				26				31				6	63
Articulated Trucks	0	0	0	0	1	2	0	3	0	0	0	0	3
% Articulated	0.0	0.0	0.0	0.0	2.4	28.6	0.0	6.3	0.0	0.0	0.0	0.0	3.1
Exiting Leg Total				1				0				2	3

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	5	0	5	11	0	0	11	2	1	0	3	19
7:15 AM	1	5	0	6	3	4	0	7	2	0	0	2	15
7:30 AM	0	3	0	3	4	0	0	4	2	0	0	2	9
7:45 AM	0	4	0	4	6	0	0	6	0	1	0	1	11
Total Volume	1	17	0	18	24	4	0	28	6	2	0	8	54
% Approach Total	5.6	94.4	0.0		85.7	14.3	0.0		75.0	25.0	0.0		
PHF	0.250	0.850	0.000	0.750	0.545	0.250	0.000	0.636	0.750	0.500	0.000	0.667	0.711
Buses	0	7	0	7	8	0	0	8	0	0	0	0	15
Buses %	0.0	41.2	0.0	38.9	33.3	0.0	0.0	28.6	0.0	0.0	0.0	0.0	27.8
Single-Unit Trucks	1	10	0	11	15	3	0	18	6	2	0	8	37
Single-Unit %	100.0	58.8	0.0	61.1	62.5	75.0	0.0	64.3	100.0	100.0	0.0	100.0	68.5
Articulated Trucks	0	0	0	0	1	1	0	2	0	0	0	0	2
Articulated %	0.0	0.0	0.0	0.0	4.2	25.0	0.0	7.1	0.0	0.0	0.0	0.0	3.7
Buses	0	7	0	7	8	0	0	8	0	0	0	0	15
Single-Unit Trucks	1	10	0	11	15	3	0	18	6	2	0	8	37
Articulated Trucks	0	0	0	0	1	1	0	2	0	0	0	0	2
Total Entering Leg	1	17	0	18	24	4	0	28	6	2	0	8	54
Buses				8				7				0	15
Single-Unit Trucks				17				16				4	37
Articulated Trucks				1				0				1	2
Total Exiting Leg				26				23				5	54

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
7:45 AM	0	3	0	3	4	0	0	4	0	0	0	0	7
Total	0	7	0	7	8	0	0	8	0	0	0	0	15
8:00 AM	0	2	0	2	2	0	0	2	0	0	0	0	4
8:15 AM	0	2	0	2	4	0	0	4	0	0	0	0	6
8:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
8:45 AM	0	2	0	2	2	1	0	3	0	0	0	0	5
Total	0	7	0	7	9	1	0	10	0	0	0	0	17
Grand Total	0	14	0	14	17	1	0	18	0	0	0	0	32
Approach %	0.0	100.0	0.0		94.4	5.6	0.0		0.0	0.0	0.0		
Total %	0.0	43.8	0.0	43.8	53.1	3.1	0.0	56.3	0.0	0.0	0.0	0.0	
Exiting Leg Total				17				14				1	32

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
7:45 AM	0	3	0	3	4	0	0	4	0	0	0	0	7
8:00 AM	0	2	0	2	2	0	0	2	0	0	0	0	4
8:15 AM	0	2	0	2	4	0	0	4	0	0	0	0	6
Total Volume	0	8	0	8	11	0	0	11	0	0	0	0	19
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.667	0.000	0.667	0.688	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.679
Entering Leg	0	8	0	8	11	0	0	11	0	0	0	0	19
Exiting Leg				11				8				0	19
Total				19				19				0	38

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	3	0	3	7	0	0	7	2	1	0	3	13
7:15 AM	1	4	0	5	3	3	0	6	2	0	0	2	13
7:30 AM	0	2	0	2	3	0	0	3	2	0	0	2	7
7:45 AM	0	1	0	1	2	0	0	2	0	1	0	1	4
Total	1	10	0	11	15	3	0	18	6	2	0	8	37
8:00 AM	0	0	0	0	2	0	0	2	0	1	0	1	3
8:15 AM	0	4	0	4	1	0	0	1	2	0	0	2	7
8:30 AM	0	4	0	4	3	0	0	3	2	0	0	2	9
8:45 AM	1	3	0	4	2	1	0	3	0	0	0	0	7
Total	1	11	0	12	8	1	0	9	4	1	0	5	26
Grand Total	2	21	0	23	23	4	0	27	10	3	0	13	63
Approach %	8.7	91.3	0.0		85.2	14.8	0.0		76.9	23.1	0.0		
Total %	3.2	33.3	0.0	36.5	36.5	6.3	0.0	42.9	15.9	4.8	0.0	20.6	
Exiting Leg Total				26				31				6	63

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	3	0	3	7	0	0	7	2	1	0	3	13
7:15 AM	1	4	0	5	3	3	0	6	2	0	0	2	13
7:30 AM	0	2	0	2	3	0	0	3	2	0	0	2	7
7:45 AM	0	1	0	1	2	0	0	2	0	1	0	1	4
Total Volume	1	10	0	11	15	3	0	18	6	2	0	8	37
% Approach Total	9.1	90.9	0.0		83.3	16.7	0.0		75.0	25.0	0.0		
PHF	0.250	0.625	0.000	0.550	0.536	0.250	0.000	0.643	0.750	0.500	0.000	0.667	0.712
Entering Leg	1	10	0	11	15	3	0	18	6	2	0	8	37
Exiting Leg				17				16				4	37
Total				28				34				12	74

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	2	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	1
Grand Total	0	0	0	0	1	2	0	3	0	0	0	0	3
Approach %	0.0	0.0	0.0		33.3	66.7	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	33.3	66.7	0.0	100.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				1				0				2	3

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	1	0	2	0	0	0	0	2
% Approach Total	0.0	0.0	0.0		50.0	50.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	1	1	0	2	0	0	0	0	2
Exiting Leg				1				0				1	2
Total				1				2				1	4

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	1	0	0	0	1	6	0	0	0	0	6	0	0	0	0	0	0	7
7:15 AM	0	2	0	0	0	2	10	0	0	0	0	10	0	0	0	0	0	0	12
7:30 AM	0	1	0	0	0	1	9	2	0	0	0	11	0	0	0	0	0	0	12
7:45 AM	0	5	0	0	0	5	16	0	0	0	0	16	0	0	0	0	0	0	21
Total	0	9	0	0	0	9	41	2	0	0	0	43	0	0	0	0	0	0	52
8:00 AM	0	4	0	0	0	4	18	0	0	0	0	18	0	0	0	0	0	0	22
8:15 AM	0	7	0	0	0	7	25	0	0	0	0	25	0	0	0	0	0	0	32
8:30 AM	0	4	0	0	0	4	15	3	0	0	0	18	1	0	0	0	0	1	23
8:45 AM	0	3	0	0	0	3	18	1	0	0	0	19	1	0	0	0	0	1	23
Total	0	18	0	0	0	18	76	4	0	0	0	80	2	0	0	0	0	2	100
Grand Total	0	27	0	0	0	27	117	6	0	0	0	123	2	0	0	0	0	2	152
Approach %	0.0	100.0	0.0	0.0	0.0		95.1	4.9	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		
Total %	0.0	17.8	0.0	0.0	0.0	17.8	77.0	3.9	0.0	0.0	0.0	80.9	1.3	0.0	0.0	0.0	0.0	1.3	
Exiting Leg Total						117						29						6	152

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	4	0	0	0	4	18	0	0	0	0	18	0	0	0	0	0	0	22
8:15 AM	0	7	0	0	0	7	25	0	0	0	0	25	0	0	0	0	0	0	32
8:30 AM	0	4	0	0	0	4	15	3	0	0	0	18	1	0	0	0	0	1	23
8:45 AM	0	3	0	0	0	3	18	1	0	0	0	19	1	0	0	0	0	1	23
Total Volume	0	18	0	0	0	18	76	4	0	0	0	80	2	0	0	0	0	2	100
% Approach Total	0.0	100.0	0.0	0.0	0.0		95.0	5.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.643	0.000	0.000	0.000	0.643	0.760	0.333	0.000	0.000	0.000	0.800	0.500	0.000	0.000	0.000	0.000	0.500	0.781
Entering Leg	0	18	0	0	0	18	76	4	0	0	0	80	2	0	0	0	0	2	100
Exiting Leg						76						20						4	100
Total						94						100						6	200

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	3	3	0	0	0	1	0	1	0	0	0	7	2	9	13
7:15 AM	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	16	3	19	24
7:30 AM	0	0	0	3	7	10	0	0	0	0	0	0	0	0	0	12	6	18	28
7:45 AM	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	33	8	41	44
Total	0	0	0	7	14	21	0	0	0	1	0	1	0	0	0	68	19	87	109
8:00 AM	0	0	0	1	12	13	0	0	0	0	0	0	0	0	0	15	11	26	39
8:15 AM	0	0	0	3	11	14	0	0	0	0	0	0	0	0	0	40	14	54	68
8:30 AM	0	0	0	11	11	22	0	0	0	2	1	3	0	0	0	24	11	35	60
8:45 AM	0	0	0	7	8	15	0	0	0	0	1	1	0	0	0	30	14	44	60
Total	0	0	0	22	42	64	0	0	0	2	2	4	0	0	0	109	50	159	227
Grand Total	0	0	0	29	56	85	0	0	0	3	2	5	0	0	0	177	69	246	336
Approach %	0	0	0	34.118	65.882		0	0	0	60	40		0	0	0	71.951	28.049		
Total %	0	0	0	8.631	16.667	25.298	0	0	0	0.8929	0.5952	1.4881	0	0	0	52.679	20.536	73.214	
Exiting Leg Total						85						5						246	336

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	1	12	13	0	0	0	0	0	0	0	0	0	15	11	26	39
8:15 AM	0	0	0	3	11	14	0	0	0	0	0	0	0	0	0	40	14	54	68
8:30 AM	0	0	0	11	11	22	0	0	0	2	1	3	0	0	0	24	11	35	60
8:45 AM	0	0	0	7	8	15	0	0	0	0	1	1	0	0	0	30	14	44	60
Total Volume	0	0	0	22	42	64	0	0	0	2	2	4	0	0	0	109	50	159	227
% Approach Total	0.0	0.0	0.0	34.4	65.6		0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	68.6	31.4		
PHF	0.000	0.000	0.000	0.500	0.875	0.727	0.000	0.000	0.000	0.250	0.500	0.333	0.000	0.000	0.000	0.681	0.893	0.736	0.835
Entering Leg	0	0	0	22	42	64	0	0	0	2	2	4	0	0	0	109	50	159	227
Exiting Leg						64						4						159	227
Total						128						8						318	454

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars and Heavy Vehicles (Combined)**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	2	126	0	128	64	3	0	67	8	6	0	14	209
4:15 PM	2	88	0	90	74	2	0	76	16	9	0	25	191
4:30 PM	4	80	0	84	86	6	0	92	9	6	0	15	191
4:45 PM	4	98	0	102	85	1	0	86	15	6	0	21	209
Total	12	392	0	404	309	12	0	321	48	27	0	75	800
5:00 PM	4	95	0	99	83	4	0	87	15	14	0	29	215
5:15 PM	3	81	0	84	74	3	0	77	16	12	0	28	189
5:30 PM	4	87	0	91	89	3	0	92	8	13	1	22	205
5:45 PM	5	72	1	78	70	2	1	73	13	9	0	22	173
Total	16	335	1	352	316	12	1	329	52	48	1	101	782
Grand Total	28	727	1	756	625	24	1	650	100	75	1	176	1582
Approach %	3.7	96.2	0.1		96.2	3.7	0.2		56.8	42.6	0.6		
Total %	1.8	46.0	0.1	47.8	39.5	1.5	0.1	41.1	6.3	4.7	0.1	11.1	
Exiting Leg Total				701				828				53	1582
Cars	26	696	1	723	598	20	1	619	94	74	1	169	1511
% Cars	92.9	95.7	100.0	95.6	95.7	83.3	100.0	95.2	94.0	98.7	100.0	96.0	95.5
Exiting Leg Total				673				791				47	1511
Heavy Vehicles	2	31	0	33	27	4	0	31	6	1	0	7	71
% Heavy Vehicles	7.1	4.3	0.0	4.4	4.3	16.7	0.0	4.8	6.0	1.3	0.0	4.0	4.5
Exiting Leg Total				28				37				6	71

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:45 PM	4	98	0	102	85	1	0	86	15	6	0	21	209
5:00 PM	4	95	0	99	83	4	0	87	15	14	0	29	215
5:15 PM	3	81	0	84	74	3	0	77	16	12	0	28	189
5:30 PM	4	87	0	91	89	3	0	92	8	13	1	22	205
Total Volume	15	361	0	376	331	11	0	342	54	45	1	100	818
% Approach Total	4.0	96.0	0.0		96.8	3.2	0.0		54.0	45.0	1.0		
PHF	0.938	0.921	0.000	0.922	0.930	0.688	0.000	0.929	0.844	0.804	0.250	0.862	0.951
Cars	14	344	0	358	318	9	0	327	51	45	1	97	782
Cars %	93.3	95.3	0.0	95.2	96.1	81.8	0.0	95.6	94.4	100.0	100.0	97.0	95.6
Heavy Vehicles	1	17	0	18	13	2	0	15	3	0	0	3	36
Heavy Vehicles %	6.7	4.7	0.0	4.8	3.9	18.2	0.0	4.4	5.6	0.0	0.0	3.0	4.4
Cars Enter Leg	14	344	0	358	318	9	0	327	51	45	1	97	782
Heavy Enter Leg	1	17	0	18	13	2	0	15	3	0	0	3	36
Total Entering Leg	15	361	0	376	331	11	0	342	54	45	1	100	818
Cars Exiting Leg				363				395				24	782
Heavy Exiting Leg				13				20				3	36
Total Exiting Leg				376				415				27	818

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	2	123	0	125	57	2	0	59	8	6	0	14	198
4:15 PM	2	86	0	88	70	2	0	72	15	9	0	24	184
4:30 PM	3	76	0	79	83	5	0	88	8	6	0	14	181
4:45 PM	3	94	0	97	82	0	0	82	14	6	0	20	199
Total	10	379	0	389	292	9	0	301	45	27	0	72	762
5:00 PM	4	91	0	95	79	3	0	82	15	14	0	29	206
5:15 PM	3	75	0	78	72	3	0	75	14	12	0	26	179
5:30 PM	4	84	0	88	85	3	0	88	8	13	1	22	198
5:45 PM	5	67	1	73	70	2	1	73	12	8	0	20	166
Total	16	317	1	334	306	11	1	318	49	47	1	97	749
Grand Total	26	696	1	723	598	20	1	619	94	74	1	169	1511
Approach %	3.6	96.3	0.1		96.6	3.2	0.2		55.6	43.8	0.6		
Total %	1.7	46.1	0.1	47.8	39.6	1.3	0.1	41.0	6.2	4.9	0.1	11.2	
Exiting Leg Total				673				791				47	1511

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:45 PM	3	94	0	97	82	0	0	82	14	6	0	20	199
5:00 PM	4	91	0	95	79	3	0	82	15	14	0	29	206
5:15 PM	3	75	0	78	72	3	0	75	14	12	0	26	179
5:30 PM	4	84	0	88	85	3	0	88	8	13	1	22	198
Total Volume	14	344	0	358	318	9	0	327	51	45	1	97	782
% Approach Total	3.9	96.1	0.0		97.2	2.8	0.0		52.6	46.4	1.0		
PHF	0.875	0.915	0.000	0.923	0.935	0.750	0.000	0.929	0.850	0.804	0.250	0.836	0.949
Entering Leg	14	344	0	358	318	9	0	327	51	45	1	97	782
Exiting Leg				363				395				24	782
Total				721				722				121	1564

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	3	0	3	7	1	0	8	0	0	0	0	11
4:15 PM	0	2	0	2	4	0	0	4	1	0	0	1	7
4:30 PM	1	4	0	5	3	1	0	4	1	0	0	1	10
4:45 PM	1	4	0	5	3	1	0	4	1	0	0	1	10
Total	2	13	0	15	17	3	0	20	3	0	0	3	38
5:00 PM	0	4	0	4	4	1	0	5	0	0	0	0	9
5:15 PM	0	6	0	6	2	0	0	2	2	0	0	2	10
5:30 PM	0	3	0	3	4	0	0	4	0	0	0	0	7
5:45 PM	0	5	0	5	0	0	0	0	1	1	0	2	7
Total	0	18	0	18	10	1	0	11	3	1	0	4	33
Grand Total	2	31	0	33	27	4	0	31	6	1	0	7	71
Approach %	6.1	93.9	0.0		87.1	12.9	0.0		85.7	14.3	0.0		
Total %	2.8	43.7	0.0	46.5	38.0	5.6	0.0	43.7	8.5	1.4	0.0	9.9	
Exiting Leg Total				28				37				6	71
Buses	2	25	0	27	18	4	0	22	4	1	0	5	54
% Buses	100.0	80.6	0.0	81.8	66.7	100.0	0.0	71.0	66.7	100.0	0.0	71.4	76.1
Exiting Leg Total				19				29				6	54
Single-Unit Trucks	0	6	0	6	9	0	0	9	2	0	0	2	17
% Single-Unit	0.0	19.4	0.0	18.2	33.3	0.0	0.0	29.0	33.3	0.0	0.0	28.6	23.9
Exiting Leg Total				9				8				0	17
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:30 PM	1	4	0	5	3	1	0	4	1	0	0	1	10
4:45 PM	1	4	0	5	3	1	0	4	1	0	0	1	10
5:00 PM	0	4	0	4	4	1	0	5	0	0	0	0	9
5:15 PM	0	6	0	6	2	0	0	2	2	0	0	2	10
Total Volume	2	18	0	20	12	3	0	15	4	0	0	4	39
% Approach Total	10.0	90.0	0.0		80.0	20.0	0.0		100.0	0.0	0.0		
PHF	0.500	0.750	0.000	0.833	0.750	0.750	0.000	0.750	0.500	0.000	0.000	0.500	0.975
Buses	2	15	0	17	6	3	0	9	2	0	0	2	28
Buses %	100.0	83.3	0.0	85.0	50.0	100.0	0.0	60.0	50.0	0.0	0.0	50.0	71.8
Single-Unit Trucks	0	3	0	3	6	0	0	6	2	0	0	2	11
Single-Unit %	0.0	16.7	0.0	15.0	50.0	0.0	0.0	40.0	50.0	0.0	0.0	50.0	28.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	2	15	0	17	6	3	0	9	2	0	0	2	28
Single-Unit Trucks	0	3	0	3	6	0	0	6	2	0	0	2	11
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	2	18	0	20	12	3	0	15	4	0	0	4	39
Buses				6				17				5	28
Single-Unit Trucks				6				5				0	11
Articulated Trucks				0				0				0	0
Total Exiting Leg				12				22				5	39

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	2	0	2	6	1	0	7	0	0	0	0	9
4:15 PM	0	2	0	2	2	0	0	2	1	0	0	1	5
4:30 PM	1	4	0	5	2	1	0	3	0	0	0	0	8
4:45 PM	1	3	0	4	1	1	0	2	1	0	0	1	7
Total	2	11	0	13	11	3	0	14	2	0	0	2	29
5:00 PM	0	4	0	4	2	1	0	3	0	0	0	0	7
5:15 PM	0	4	0	4	1	0	0	1	1	0	0	1	6
5:30 PM	0	2	0	2	4	0	0	4	0	0	0	0	6
5:45 PM	0	4	0	4	0	0	0	0	1	1	0	2	6
Total	0	14	0	14	7	1	0	8	2	1	0	3	25
Grand Total	2	25	0	27	18	4	0	22	4	1	0	5	54
Approach %	7.4	92.6	0.0		81.8	18.2	0.0		80.0	20.0	0.0		
Total %	3.7	46.3	0.0	50.0	33.3	7.4	0.0	40.7	7.4	1.9	0.0	9.3	
Exiting Leg Total				19				29				6	54

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	2	0	2	6	1	0	7	0	0	0	0	9
4:15 PM	0	2	0	2	2	0	0	2	1	0	0	1	5
4:30 PM	1	4	0	5	2	1	0	3	0	0	0	0	8
4:45 PM	1	3	0	4	1	1	0	2	1	0	0	1	7
Total Volume	2	11	0	13	11	3	0	14	2	0	0	2	29
% Approach Total	15.4	84.6	0.0		78.6	21.4	0.0		100.0	0.0	0.0		
PHF	0.500	0.688	0.000	0.650	0.458	0.750	0.000	0.500	0.500	0.000	0.000	0.500	0.806
Entering Leg	2	11	0	13	11	3	0	14	2	0	0	2	29
Exiting Leg				11				13				5	29
Total				24				27				7	58

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
4:15 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
4:30 PM	0	0	0	0	1	0	0	1	1	0	0	1	2
4:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	2	0	2	6	0	0	6	1	0	0	1	9
5:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
5:15 PM	0	2	0	2	1	0	0	1	1	0	0	1	4
5:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	4	0	4	3	0	0	3	1	0	0	1	8
Grand Total	0	6	0	6	9	0	0	9	2	0	0	2	17
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
Total %	0.0	35.3	0.0	35.3	52.9	0.0	0.0	52.9	11.8	0.0	0.0	11.8	
Exiting Leg Total				9				8				0	17

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:30 PM	0	0	0	0	1	0	0	1	1	0	0	1	2
4:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
5:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
5:15 PM	0	2	0	2	1	0	0	1	1	0	0	1	4
Total Volume	0	3	0	3	6	0	0	6	2	0	0	2	11
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.375	0.000	0.375	0.750	0.000	0.000	0.750	0.500	0.000	0.000	0.500	0.688
Entering Leg	0	3	0	3	6	0	0	6	2	0	0	2	11
Exiting Leg				6				5				0	11
Total				9				11				2	22

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North				A Street from South				Necco Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	9	0	0	0	9	6	0	0	0	0	6	0	0	0	0	0	0	15
4:15 PM	0	10	0	0	0	10	4	0	0	0	0	4	0	1	0	1	0	2	16
4:30 PM	0	12	0	0	0	12	5	0	0	0	0	5	0	0	0	0	0	0	17
4:45 PM	0	17	0	0	0	17	8	1	0	0	0	9	0	1	0	1	1	3	29
Total	0	48	0	0	0	48	23	1	0	0	0	24	0	2	0	2	1	5	77
5:00 PM	0	18	0	0	0	18	9	0	0	0	0	9	0	0	0	0	0	0	27
5:15 PM	0	16	0	0	0	16	8	0	0	0	0	8	0	1	0	0	0	1	25
5:30 PM	0	23	0	0	0	23	7	0	0	0	0	7	0	0	0	0	0	0	30
5:45 PM	1	12	0	0	0	13	8	0	0	0	0	8	0	0	0	0	0	0	21
Total	1	69	0	0	0	70	32	0	0	0	0	32	0	1	0	0	0	1	103
Grand Total	1	117	0	0	0	118	55	1	0	0	0	56	0	3	0	2	1	6	180
Approach %	0.8	99.2	0.0	0.0	0.0		98.2	1.8	0.0	0.0	0.0		0.0	50.0	0.0	33.3	16.7		
Total %	0.6	65.0	0.0	0.0	0.0	65.6	30.6	0.6	0.0	0.0	0.0	31.1	0.0	1.7	0.0	1.1	0.6	3.3	
Exiting Leg Total						58						117						5	180

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	0	17	0	0	0	17	8	1	0	0	0	9	0	1	0	1	1	3	29
5:00 PM	0	18	0	0	0	18	9	0	0	0	0	9	0	0	0	0	0	0	27
5:15 PM	0	16	0	0	0	16	8	0	0	0	0	8	0	1	0	0	0	1	25
5:30 PM	0	23	0	0	0	23	7	0	0	0	0	7	0	0	0	0	0	0	30
Total Volume	0	74	0	0	0	74	32	1	0	0	0	33	0	2	0	1	1	4	111
% Approach Total	0.0	100.0	0.0	0.0	0.0		97.0	3.0	0.0	0.0	0.0		0.0	50.0	0.0	25.0	25.0		
PHF	0.000	0.804	0.000	0.000	0.000	0.804	0.889	0.250	0.000	0.000	0.000	0.917	0.000	0.500	0.000	0.250	0.250	0.333	0.925
Entering Leg	0	74	0	0	0	74	32	1	0	0	0	33	0	2	0	1	1	4	111
Exiting Leg						34						74						3	111
Total						108						107						7	222

PDI File #: **239422 F**
Location: **N: A Street S: A Street**
Location: **W: Necco Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	3	7	10	0	0	0	1	0	1	0	0	0	8	9	17	28
4:15 PM	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	11	18	29	31
4:30 PM	0	0	0	3	7	10	0	0	0	0	0	0	0	0	0	9	21	30	40
4:45 PM	0	0	0	3	11	14	0	0	0	0	0	0	0	0	0	12	29	41	55
Total	0	0	0	9	27	36	0	0	0	1	0	1	0	0	0	40	77	117	154
5:00 PM	0	0	0	4	7	11	0	0	0	0	0	0	0	0	0	13	37	50	61
5:15 PM	0	0	0	3	9	12	0	0	0	0	0	0	0	0	0	16	36	52	64
5:30 PM	0	0	0	0	10	10	0	0	0	1	0	1	0	0	0	8	27	35	46
5:45 PM	0	0	0	1	11	12	0	0	0	0	0	0	0	0	0	10	44	54	66
Total	0	0	0	8	37	45	0	0	0	1	0	1	0	0	0	47	144	191	237
Grand Total	0	0	0	17	64	81	0	0	0	2	0	2	0	0	0	87	221	308	391
Approach %	0	0	0	20.988	79.012		0	0	0	100	0		0	0	0	28.247	71.753		
Total %	0	0	0	4.3478	16.368	20.716	0	0	0	0.5115	0	0.5115	0	0	0	22.251	56.522	78.772	
Exiting Leg Total						81						2						308	391

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	A Street from North						A Street from South						Necco Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	4	7	11	0	0	0	0	0	0	0	0	0	13	37	50	61
5:15 PM	0	0	0	3	9	12	0	0	0	0	0	0	0	0	0	16	36	52	64
5:30 PM	0	0	0	0	10	10	0	0	0	1	0	1	0	0	0	8	27	35	46
5:45 PM	0	0	0	1	11	12	0	0	0	0	0	0	0	0	0	10	44	54	66
Total Volume	0	0	0	8	37	45	0	0	0	1	0	1	0	0	0	47	144	191	237
% Approach Total	0.0	0.0	0.0	17.8	82.2		0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	24.6	75.4		
PHF	0.000	0.000	0.000	0.500	0.841	0.938	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.734	0.818	0.884	0.898
Entering Leg	0	0	0	8	37	45	0	0	0	1	0	1	0	0	0	47	144	191	237
Exiting Leg						45						1						191	237
Total						90						2						382	474

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	12	46	0	0	58	2	1	3	0	6	5	69	11	0	85	2	1	1	0	4	153
7:15 AM	15	53	0	0	68	6	0	2	0	8	2	58	14	0	74	0	0	1	0	1	151
7:30 AM	14	62	1	0	77	3	0	9	0	12	8	53	14	1	76	2	0	0	0	2	167
7:45 AM	11	59	1	0	71	7	0	3	0	10	3	62	15	0	80	0	0	1	0	1	162
Total	52	220	2	0	274	18	1	17	0	36	18	242	54	1	315	4	1	3	0	8	633
8:00 AM	13	69	1	0	83	6	0	3	0	9	3	112	24	0	139	1	0	1	0	2	233
8:15 AM	28	67	4	0	99	8	0	2	0	10	3	127	21	0	151	1	3	1	0	5	265
8:30 AM	22	53	5	1	81	3	0	2	0	5	5	112	31	0	148	0	3	1	0	4	238
8:45 AM	30	78	6	0	114	6	1	3	0	10	3	81	21	0	105	1	1	1	0	3	232
Total	93	267	16	1	377	23	1	10	0	34	14	432	97	0	543	3	7	4	0	14	968
Grand Total	145	487	18	1	651	41	2	27	0	70	32	674	151	1	858	7	8	7	0	22	1601
Approach %	22.3	74.8	2.8	0.2		58.6	2.9	38.6	0.0		3.7	78.6	17.6	0.1		31.8	36.4	31.8	0.0		
Total %	9.1	30.4	1.1	0.1	40.7	2.6	0.1	1.7	0.0	4.4	2.0	42.1	9.4	0.1	53.6	0.4	0.5	0.4	0.0	1.4	
Exiting Leg Total					723					58					522					298	1601
Cars	145	445	18	1	609	37	2	25	0	64	31	630	151	1	813	7	8	7	0	22	1508
% Cars	100.0	91.4	100.0	100.0	93.5	90.2	100.0	92.6	0.0	91.4	96.9	93.5	100.0	100.0	94.8	100.0	100.0	100.0	0.0	100.0	94.2
Exiting Leg Total					675					57					478					298	1508
Heavy Vehicles	0	42	0	0	42	4	0	2	0	6	1	44	0	0	45	0	0	0	0	0	93
% Heavy Vehicles	0.0	8.6	0.0	0.0	6.5	9.8	0.0	7.4	0.0	8.6	3.1	6.5	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.8
Exiting Leg Total					48					1					44					0	93

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	13	69	1	0	83	6	0	3	0	9	3	112	24	0	139	1	0	1	0	2	233
8:15 AM	28	67	4	0	99	8	0	2	0	10	3	127	21	0	151	1	3	1	0	5	265
8:30 AM	22	53	5	1	81	3	0	2	0	5	5	112	31	0	148	0	3	1	0	4	238
8:45 AM	30	78	6	0	114	6	1	3	0	10	3	81	21	0	105	1	1	1	0	3	232
Total Volume	93	267	16	1	377	23	1	10	0	34	14	432	97	0	543	3	7	4	0	14	968
% Approach Total	24.7	70.8	4.2	0.3		67.6	2.9	29.4	0.0		2.6	79.6	17.9	0.0		21.4	50.0	28.6	0.0		
PHF	0.775	0.856	0.667	0.250	0.827	0.719	0.250	0.833	0.000	0.850	0.700	0.850	0.782	0.000	0.899	0.750	0.583	1.000	0.000	0.700	0.913
Cars	93	250	16	1	360	21	1	9	0	31	13	412	97	0	522	3	7	4	0	14	927
Cars %	100.0	93.6	100.0	100.0	95.5	91.3	100.0	90.0	0.0	91.2	92.9	95.4	100.0	0.0	96.1	100.0	100.0	100.0	0.0	100.0	95.8
Heavy Vehicles	0	17	0	0	17	2	0	1	0	3	1	20	0	0	21	0	0	0	0	0	41
Heavy Vehicles %	0.0	6.4	0.0	0.0	4.5	8.7	0.0	10.0	0.0	8.8	7.1	4.6	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	4.2
Cars Enter Leg	93	250	16	1	360	21	1	9	0	31	13	412	97	0	522	3	7	4	0	14	927
Heavy Enter Leg	0	17	0	0	17	2	0	1	0	3	1	20	0	0	21	0	0	0	0	0	41
Total Entering Leg	93	267	16	1	377	23	1	10	0	34	14	432	97	0	543	3	7	4	0	14	968
Cars Exiting Leg					438					36					262					191	927
Heavy Exiting Leg					22					1					18					0	41
Total Exiting Leg					460					37					280					191	968

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street					Binford Street					A Street					Binford Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	12	38	0	0	50	1	1	3	0	5	5	60	11	0	76	2	1	1	0	4	135
7:15 AM	15	46	0	0	61	6	0	2	0	8	2	51	14	0	67	0	0	1	0	1	137
7:30 AM	14	57	1	0	72	3	0	8	0	11	8	49	14	1	72	2	0	0	0	2	157
7:45 AM	11	54	1	0	66	6	0	3	0	9	3	58	15	0	76	0	0	1	0	1	152
Total	52	195	2	0	249	16	1	16	0	33	18	218	54	1	291	4	1	3	0	8	581
8:00 AM	13	68	1	0	82	5	0	3	0	8	3	107	24	0	134	1	0	1	0	2	226
8:15 AM	28	59	4	0	91	8	0	2	0	10	3	122	21	0	146	1	3	1	0	5	252
8:30 AM	22	47	5	1	75	3	0	2	0	5	5	108	31	0	144	0	3	1	0	4	228
8:45 AM	30	76	6	0	112	5	1	2	0	8	2	75	21	0	98	1	1	1	0	3	221
Total	93	250	16	1	360	21	1	9	0	31	13	412	97	0	522	3	7	4	0	14	927
Grand Total	145	445	18	1	609	37	2	25	0	64	31	630	151	1	813	7	8	7	0	22	1508
Approach %	23.8	73.1	3.0	0.2		57.8	3.1	39.1	0.0		3.8	77.5	18.6	0.1		31.8	36.4	31.8	0.0		
Total %	9.6	29.5	1.2	0.1	40.4	2.5	0.1	1.7	0.0	4.2	2.1	41.8	10.0	0.1	53.9	0.5	0.5	0.5	0.0	1.5	
Exiting Leg Total					675					57					478					298	1508

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street					Binford Street					A Street					Binford Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	13	68	1	0	82	5	0	3	0	8	3	107	24	0	134	1	0	1	0	2	226
8:15 AM	28	59	4	0	91	8	0	2	0	10	3	122	21	0	146	1	3	1	0	5	252
8:30 AM	22	47	5	1	75	3	0	2	0	5	5	108	31	0	144	0	3	1	0	4	228
8:45 AM	30	76	6	0	112	5	1	2	0	8	2	75	21	0	98	1	1	1	0	3	221
Total Volume	93	250	16	1	360	21	1	9	0	31	13	412	97	0	522	3	7	4	0	14	927
% Approach Total	25.8	69.4	4.4	0.3		67.7	3.2	29.0	0.0		2.5	78.9	18.6	0.0		21.4	50.0	28.6	0.0		
PHF	0.775	0.822	0.667	0.250	0.804	0.656	0.250	0.750	0.000	0.775	0.650	0.844	0.782	0.000	0.894	0.750	0.583	1.000	0.000	0.700	0.920
Entering Leg	93	250	16	1	360	21	1	9	0	31	13	412	97	0	522	3	7	4	0	14	927
Exiting Leg					438					36					262					191	927
Total					798					67					784					205	1854

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	8	0	0	8	1	0	0	0	1	0	9	0	0	9	0	0	0	0	0	18
7:15 AM	0	7	0	0	7	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	14
7:30 AM	0	5	0	0	5	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	10
7:45 AM	0	5	0	0	5	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	10
Total	0	25	0	0	25	2	0	1	0	3	0	24	0	0	24	0	0	0	0	0	52
8:00 AM	0	1	0	0	1	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	7
8:15 AM	0	8	0	0	8	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	13
8:30 AM	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	10
8:45 AM	0	2	0	0	2	1	0	1	0	2	1	6	0	0	7	0	0	0	0	0	11
Total	0	17	0	0	17	2	0	1	0	3	1	20	0	0	21	0	0	0	0	0	41
Grand Total	0	42	0	0	42	4	0	2	0	6	1	44	0	0	45	0	0	0	0	0	93
Approach %	0.0	100.0	0.0	0.0		66.7	0.0	33.3	0.0		2.2	97.8	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	45.2	0.0	0.0	45.2	4.3	0.0	2.2	0.0	6.5	1.1	47.3	0.0	0.0	48.4	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					48					1					44					0	93
Buses	0	14	0	0	14	3	0	0	0	3	0	13	0	0	13	0	0	0	0	0	30
% Buses	0.0	33.3	0.0	0.0	33.3	75.0	0.0	0.0	0.0	50.0	0.0	29.5	0.0	0.0	28.9	0.0	0.0	0.0	0.0	0.0	32.3
Exiting Leg Total					16					0					14					0	30
Single-Unit Trucks	0	26	0	0	26	1	0	2	0	3	1	26	0	0	27	0	0	0	0	0	56
% Single-Unit	0.0	61.9	0.0	0.0	61.9	25.0	0.0	100.0	0.0	50.0	100.0	59.1	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	60.2
Exiting Leg Total					27					1					28					0	56
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
% Articulated	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	11.4	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	7.5
Exiting Leg Total					5					0					2					0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	8	0	0	8	1	0	0	0	1	0	9	0	0	9	0	0	0	0	0	18
7:15 AM	0	7	0	0	7	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	14
7:30 AM	0	5	0	0	5	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	10
7:45 AM	0	5	0	0	5	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	10
Total Volume	0	25	0	0	25	2	0	1	0	3	0	24	0	0	24	0	0	0	0	0	52
% Approach Total	0.0	100.0	0.0	0.0		66.7	0.0	33.3	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.781	0.000	0.000	0.781	0.500	0.000	0.250	0.000	0.750	0.000	0.667	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.722
Buses	0	9	0	0	9	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	17
Buses %	0.0	36.0	0.0	0.0	36.0	50.0	0.0	0.0	0.0	33.3	0.0	29.2	0.0	0.0	29.2	0.0	0.0	0.0	0.0	0.0	32.7
Single-Unit Trucks	0	14	0	0	14	1	0	1	0	2	0	14	0	0	14	0	0	0	0	0	30
Single-Unit %	0.0	56.0	0.0	0.0	56.0	50.0	0.0	100.0	0.0	66.7	0.0	58.3	0.0	0.0	58.3	0.0	0.0	0.0	0.0	0.0	57.7
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Articulated %	0.0	8.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	9.6
Buses	0	9	0	0	9	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	17
Single-Unit Trucks	0	14	0	0	14	1	0	1	0	2	0	14	0	0	14	0	0	0	0	0	30
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Total Entering Leg	0	25	0	0	25	2	0	1	0	3	0	24	0	0	24	0	0	0	0	0	52
Buses					8					0					9					0	17
Single-Unit Trucks					15					0					15					0	30
Articulated Trucks					3					0					2					0	5
Total Exiting Leg					26					0					26					0	52

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	A Street					Binford Street					A Street					Binford Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:45 AM	0	4	0	0	4	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	8
Total	0	9	0	0	9	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	17
8:00 AM	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3
8:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	3
Total	0	5	0	0	5	2	0	0	0	2	0	6	0	0	6	0	0	0	0	0	13
Grand Total	0	14	0	0	14	3	0	0	0	3	0	13	0	0	13	0	0	0	0	0	30
Approach %	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	46.7	0.0	0.0	46.7	10.0	0.0	0.0	0.0	10.0	0.0	43.3	0.0	0.0	43.3	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					16					0					14					0	30

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	A Street					Binford Street					A Street					Binford Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:45 AM	0	4	0	0	4	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	8
8:00 AM	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3
8:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
Total Volume	0	9	0	0	9	2	0	0	0	2	0	7	0	0	7	0	0	0	0	0	18
% Approach Total	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.563	0.000	0.000	0.563	0.500	0.000	0.000	0.000	0.500	0.000	0.583	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.563
Entering Leg	0	9	0	0	9	2	0	0	0	2	0	7	0	0	7	0	0	0	0	0	18
Exiting Leg					9					0					9					0	18
Total					18					2					16					0	36

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	4	0	0	4	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	10
7:15 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11
7:30 AM	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	7
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	14	0	0	14	1	0	1	0	2	0	14	0	0	14	0	0	0	0	0	30
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
8:15 AM	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	8
8:30 AM	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	8
8:45 AM	0	2	0	0	2	0	0	1	0	1	1	4	0	0	5	0	0	0	0	0	8
Total	0	12	0	0	12	0	0	1	0	1	1	12	0	0	13	0	0	0	0	0	26
Grand Total	0	26	0	0	26	1	0	2	0	3	1	26	0	0	27	0	0	0	0	0	56
Approach %	0.0	100.0	0.0	0.0		33.3	0.0	66.7	0.0		3.7	96.3	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	46.4	0.0	0.0	46.4	1.8	0.0	3.6	0.0	5.4	1.8	46.4	0.0	0.0	48.2	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					27					1					28					0	56

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	4	0	0	4	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	10
7:15 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11
7:30 AM	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	7
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	14	0	0	14	1	0	1	0	2	0	14	0	0	14	0	0	0	0	0	30
% Approach Total	0.0	100.0	0.0	0.0		50.0	0.0	50.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.700	0.000	0.000	0.700	0.250	0.000	0.250	0.000	0.500	0.000	0.583	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.682
Entering Leg	0	14	0	0	14	1	0	1	0	2	0	14	0	0	14	0	0	0	0	0	30
Exiting Leg					15					0					15					0	30
Total					29					2					29					0	60

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Grand Total	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					5					0					2					0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Exiting Leg					3					0					2					0	5
Total					5					0					5					0	10

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	8
7:15 AM	0	2	0	0	0	0	2	1	0	0	0	0	0	1	0	11	0	0	0	0	11	0	0	0	0	0	0	0	14
7:30 AM	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	9	0	0	0	0	9	0	0	0	0	0	0	0	11
7:45 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	19	0	0	0	1	20	0	0	0	0	0	1	1	24
Total	0	7	1	0	0	0	8	1	0	0	0	0	0	1	0	46	0	0	0	1	47	0	0	0	0	0	1	1	57
8:00 AM	1	3	0	0	0	0	4	0	1	0	0	0	0	1	0	15	1	0	0	0	16	0	0	0	0	0	0	0	21
8:15 AM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	21	0	0	0	0	21	0	0	1	0	0	0	1	28
8:30 AM	1	4	0	0	0	0	5	0	0	0	0	0	1	1	1	16	0	0	0	0	17	0	0	0	0	0	0	0	23
8:45 AM	0	2	2	0	0	0	4	0	0	0	0	1	0	1	0	15	2	0	0	0	17	0	0	1	0	1	0	2	24
Total	2	15	2	0	0	0	19	0	1	0	0	1	1	3	1	67	3	0	0	0	71	0	0	2	0	1	0	3	96
Grand Total	2	22	3	0	0	0	27	1	1	0	0	1	1	4	1	113	3	0	0	1	118	0	0	2	0	1	1	4	153
Approach %	7.4	81.5	11.1	0.0	0.0	0.0		25.0	25.0	0.0	0.0	25.0	25.0		0.8	95.8	2.5	0.0	0.0	0.8		0.0	0.0	50.0	0.0	25.0	25.0		
Total %	1.3	14.4	2.0	0.0	0.0	0.0	17.6	0.7	0.7	0.0	0.0	0.7	0.7	2.6	0.7	73.9	2.0	0.0	0.0	0.7	77.1	0.0	0.0	1.3	0.0	0.7	0.7	2.6	
Exiting Leg Total							116							6							23							8	153

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	19	0	0	0	1	20	0	0	0	0	0	1	1	24
8:00 AM	1	3	0	0	0	0	4	0	1	0	0	0	0	1	0	15	1	0	0	0	16	0	0	0	0	0	0	0	21
8:15 AM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	21	0	0	0	0	21	0	0	1	0	0	0	1	28
8:30 AM	1	4	0	0	0	0	5	0	0	0	0	0	1	1	1	16	0	0	0	0	17	0	0	0	0	0	0	0	23
Total Volume	2	16	0	0	0	0	18	0	1	0	0	0	1	2	1	71	1	0	0	1	74	0	0	1	0	0	1	2	96
% Approach Total	11.1	88.9	0.0	0.0	0.0	0.0		0.0	50.0	0.0	0.0	0.0	50.0		1.4	95.9	1.4	0.0	0.0	1.4		0.0	0.0	50.0	0.0	0.0	50.0		
PHF	0.500	0.667	0.000	0.000	0.000	0.000	0.750	0.000	0.250	0.000	0.000	0.000	0.250	0.500	0.250	0.845	0.250	0.000	0.000	0.250	0.881	0.000	0.000	0.250	0.000	0.000	0.250	0.500	0.857
Entering Leg	2	16	0	0	0	0	18	0	1	0	0	0	1	2	1	71	1	0	0	1	74	0	0	1	0	0	1	2	96
Exiting Leg							72							2							17							5	96
Total							90							4							91							7	192

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	14	17	0	0	0	0	1	6	7	0	0	0	0	7	5	12	36
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	10	29	39	0	0	0	0	2	12	14	0	0	0	0	7	4	11	65
7:30 AM	0	0	0	0	0	1	1	0	0	0	0	16	26	42	0	0	0	0	6	26	32	0	0	0	0	13	7	20	95
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	14	50	64	0	0	0	0	4	21	25	0	0	0	0	22	12	34	124
Total	0	0	0	0	1	2	3	0	0	0	0	43	119	162	0	0	0	0	13	65	78	0	0	0	0	49	28	77	320
8:00 AM	0	0	0	0	0	1	1	0	0	0	0	10	48	58	0	0	0	0	3	33	36	0	0	0	0	11	7	18	113
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	13	56	69	0	0	0	0	8	8	16	0	0	0	0	12	12	24	109
8:30 AM	0	0	0	0	0	1	1	0	0	0	0	20	44	64	0	0	0	0	13	45	58	0	0	0	0	12	8	20	143
8:45 AM	0	0	0	0	1	0	1	0	0	0	0	24	35	59	0	0	0	0	5	34	39	0	0	0	0	16	16	32	131
Total	0	0	0	0	1	2	3	0	0	0	0	67	183	250	0	0	0	0	29	120	149	0	0	0	0	51	43	94	496
Grand Total	0	0	0	0	2	4	6	0	0	0	0	110	302	412	0	0	0	0	42	185	227	0	0	0	0	100	71	171	816
Approach %	0	0	0	0	33.3	66.7		0	0	0	0	26.7	73.3		0	0	0	0	18.5	81.5		0	0	0	0	58.5	41.5		
Total %	0	0	0	0	0.25	0.49	0.74	0	0	0	0	13.5	37	50.5	0	0	0	0	5.15	22.7	27.8	0	0	0	0	12.3	8.7	21	
Exiting Leg Total							6							412							227							171	816

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	1	1	0	0	0	0	10	48	58	0	0	0	0	3	33	36	0	0	0	0	11	7	18	113
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	13	56	69	0	0	0	0	8	8	16	0	0	0	0	12	12	24	109
8:30 AM	0	0	0	0	0	1	1	0	0	0	0	20	44	64	0	0	0	0	13	45	58	0	0	0	0	12	8	20	143
8:45 AM	0	0	0	0	1	0	1	0	0	0	0	24	35	59	0	0	0	0	5	34	39	0	0	0	0	16	16	32	131
Total Volume	0	0	0	0	1	2	3	0	0	0	0	67	183	250	0	0	0	0	29	120	149	0	0	0	0	51	43	94	496
% Approach Total	0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	26.8	73.2		0.0	0.0	0.0	0.0	19.5	80.5		0.0	0.0	0.0	0.0	54.3	45.7		
PHF	0.000	0.000	0.000	0.000	0.250	0.500	0.750	0.000	0.000	0.000	0.000	0.698	0.817	0.906	0.000	0.000	0.000	0.000	0.558	0.667	0.642	0.000	0.000	0.000	0.000	0.797	0.672	0.734	0.867
Entering Leg	0	0	0	0	1	2	3	0	0	0	0	67	183	250	0	0	0	0	29	120	149	0	0	0	0	51	43	94	496
Exiting Leg							3							250							149							94	496
Total							6							500							298							188	992

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	8	108	10	0	126	0	0	3	0	3	4	54	3	0	61	11	1	7	0	19	209
4:15 PM	7	89	10	0	106	3	1	0	0	4	5	58	5	0	68	7	4	15	0	26	204
4:30 PM	5	77	6	1	89	7	0	0	0	7	5	62	1	0	68	8	1	18	0	27	191
4:45 PM	7	102	5	0	114	7	0	1	0	8	7	61	6	0	74	21	7	18	0	46	242
Total	27	376	31	1	435	17	1	4	0	22	21	235	15	0	271	47	13	58	0	118	846
5:00 PM	9	90	4	0	103	3	0	1	0	4	6	62	2	0	70	17	2	12	0	31	208
5:15 PM	6	57	10	0	73	10	1	3	0	14	2	58	3	0	63	18	8	13	0	39	189
5:30 PM	6	92	4	0	102	11	0	1	0	12	3	68	4	0	75	12	12	12	0	36	225
5:45 PM	10	74	5	0	89	2	0	4	0	6	11	57	2	0	70	16	6	12	0	34	199
Total	31	313	23	0	367	26	1	9	0	36	22	245	11	0	278	63	28	49	0	140	821
Grand Total	58	689	54	1	802	43	2	13	0	58	43	480	26	0	549	110	41	107	0	258	1667
Approach %	7.2	85.9	6.7	0.1		74.1	3.4	22.4	0.0		7.8	87.4	4.7	0.0		42.6	15.9	41.5	0.0		
Total %	3.5	41.3	3.2	0.1	48.1	2.6	0.1	0.8	0.0	3.5	2.6	28.8	1.6	0.0	32.9	6.6	2.5	6.4	0.0	15.5	
Exiting Leg Total					631					138					812					86	1667
Cars	58	665	49	1	773	41	2	11	0	54	42	457	26	0	525	110	41	106	0	257	1609
% Cars	100.0	96.5	90.7	100.0	96.4	95.3	100.0	84.6	0.0	93.1	97.7	95.2	100.0	0.0	95.6	100.0	100.0	99.1	0.0	99.6	96.5
Exiting Leg Total					605					132					786					86	1609
Heavy Vehicles	0	24	5	0	29	2	0	2	0	4	1	23	0	0	24	0	0	1	0	1	58
% Heavy Vehicles	0.0	3.5	9.3	0.0	3.6	4.7	0.0	15.4	0.0	6.9	2.3	4.8	0.0	0.0	4.4	0.0	0.0	0.9	0.0	0.4	3.5
Exiting Leg Total					26					6					26					0	58

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	7	102	5	0	114	7	0	1	0	8	7	61	6	0	74	21	7	18	0	46	242
5:00 PM	9	90	4	0	103	3	0	1	0	4	6	62	2	0	70	17	2	12	0	31	208
5:15 PM	6	57	10	0	73	10	1	3	0	14	2	58	3	0	63	18	8	13	0	39	189
5:30 PM	6	92	4	0	102	11	0	1	0	12	3	68	4	0	75	12	12	12	0	36	225
Total Volume	28	341	23	0	392	31	1	6	0	38	18	249	15	0	282	68	29	55	0	152	864
% Approach Total	7.1	87.0	5.9	0.0		81.6	2.6	15.8	0.0		6.4	88.3	5.3	0.0		44.7	19.1	36.2	0.0		
PHF	0.778	0.836	0.575	0.000	0.860	0.705	0.250	0.500	0.000	0.679	0.643	0.915	0.625	0.000	0.940	0.810	0.604	0.764	0.000	0.826	0.893
Cars	28	330	20	0	378	30	1	4	0	35	18	237	15	0	270	68	29	55	0	152	835
Cars %	100.0	96.8	87.0	0.0	96.4	96.8	100.0	66.7	0.0	92.1	100.0	95.2	100.0	0.0	95.7	100.0	100.0	100.0	0.0	100.0	96.6
Heavy Vehicles	0	11	3	0	14	1	0	2	0	3	0	12	0	0	12	0	0	0	0	0	29
Heavy Vehicles %	0.0	3.2	13.0	0.0	3.6	3.2	0.0	33.3	0.0	7.9	0.0	4.8	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.4
Cars Enter Leg	28	330	20	0	378	30	1	4	0	35	18	237	15	0	270	68	29	55	0	152	835
Heavy Enter Leg	0	11	3	0	14	1	0	2	0	3	0	12	0	0	12	0	0	0	0	0	29
Total Entering Leg	28	341	23	0	392	31	1	6	0	38	18	249	15	0	282	68	29	55	0	152	864
Cars Exiting Leg					322					67					402					44	835
Heavy Exiting Leg					13					3					13					0	29
Total Exiting Leg					335					70					415					44	864

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Cars

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	8	106	9	0	123	0	0	3	0	3	4	47	3	0	54	11	1	7	0	19	199
4:15 PM	7	87	10	0	104	3	1	0	0	4	5	56	5	0	66	7	4	14	0	25	199
4:30 PM	5	72	6	1	84	6	0	0	0	6	4	60	1	0	65	8	1	18	0	27	182
4:45 PM	7	99	4	0	110	7	0	1	0	8	7	57	6	0	70	21	7	18	0	46	234
Total	27	364	29	1	421	16	1	4	0	21	20	220	15	0	255	47	13	57	0	117	814
5:00 PM	9	88	4	0	101	3	0	1	0	4	6	59	2	0	67	17	2	12	0	31	203
5:15 PM	6	53	9	0	68	10	1	1	0	12	2	56	3	0	61	18	8	13	0	39	180
5:30 PM	6	90	3	0	99	10	0	1	0	11	3	65	4	0	72	12	12	12	0	36	218
5:45 PM	10	70	4	0	84	2	0	4	0	6	11	57	2	0	70	16	6	12	0	34	194
Total	31	301	20	0	352	25	1	7	0	33	22	237	11	0	270	63	28	49	0	140	795
Grand Total	58	665	49	1	773	41	2	11	0	54	42	457	26	0	525	110	41	106	0	257	1609
Approach %	7.5	86.0	6.3	0.1		75.9	3.7	20.4	0.0		8.0	87.0	5.0	0.0		42.8	16.0	41.2	0.0		
Total %	3.6	41.3	3.0	0.1	48.0	2.5	0.1	0.7	0.0	3.4	2.6	28.4	1.6	0.0	32.6	6.8	2.5	6.6	0.0	16.0	
Exiting Leg Total					605					132					786					86	1609

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	7	99	4	0	110	7	0	1	0	8	7	57	6	0	70	21	7	18	0	46	234
5:00 PM	9	88	4	0	101	3	0	1	0	4	6	59	2	0	67	17	2	12	0	31	203
5:15 PM	6	53	9	0	68	10	1	1	0	12	2	56	3	0	61	18	8	13	0	39	180
5:30 PM	6	90	3	0	99	10	0	1	0	11	3	65	4	0	72	12	12	12	0	36	218
Total Volume	28	330	20	0	378	30	1	4	0	35	18	237	15	0	270	68	29	55	0	152	835
% Approach Total	7.4	87.3	5.3	0.0		85.7	2.9	11.4	0.0		6.7	87.8	5.6	0.0		44.7	19.1	36.2	0.0		
PHF	0.778	0.833	0.556	0.000	0.859	0.750	0.250	1.000	0.000	0.729	0.643	0.912	0.625	0.000	0.938	0.810	0.604	0.764	0.000	0.826	0.892
Entering Leg	28	330	20	0	378	30	1	4	0	35	18	237	15	0	270	68	29	55	0	152	835
Exiting Leg					322					67					402					44	835
Total					700					102					672					196	1670

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	1	0	3	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	10
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	5
4:30 PM	0	5	0	0	5	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	9
4:45 PM	0	3	1	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
Total	0	12	2	0	14	1	0	0	0	1	1	15	0	0	16	0	0	1	0	1	32
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
5:15 PM	0	4	1	0	5	0	0	2	0	2	0	2	0	0	2	0	0	0	0	0	9
5:30 PM	0	2	1	0	3	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	7
5:45 PM	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	0	12	3	0	15	1	0	2	0	3	0	8	0	0	8	0	0	0	0	0	26
Grand Total	0	24	5	0	29	2	0	2	0	4	1	23	0	0	24	0	0	1	0	1	58
Approach %	0.0	82.8	17.2	0.0		50.0	0.0	50.0	0.0		4.2	95.8	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	0.0	41.4	8.6	0.0	50.0	3.4	0.0	3.4	0.0	6.9	1.7	39.7	0.0	0.0	41.4	0.0	0.0	1.7	0.0	1.7	
Exiting Leg Total					26					6					26					0	58
Buses	0	19	3	0	22	2	0	1	0	3	0	17	0	0	17	0	0	0	0	0	42
% Buses	0.0	79.2	60.0	0.0	75.9	100.0	0.0	50.0	0.0	75.0	0.0	73.9	0.0	0.0	70.8	0.0	0.0	0.0	0.0	0.0	72.4
Exiting Leg Total					19					3					20					0	42
Single-Unit Trucks	0	5	2	0	7	0	0	1	0	1	1	6	0	0	7	0	0	1	0	1	16
% Single-Unit	0.0	20.8	40.0	0.0	24.1	0.0	0.0	50.0	0.0	25.0	100.0	26.1	0.0	0.0	29.2	0.0	0.0	100.0	0.0	100.0	27.6
Exiting Leg Total					7					3					6					0	16
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	1	0	3	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	10
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	5
4:30 PM	0	5	0	0	5	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	9
4:45 PM	0	3	1	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
Total Volume	0	12	2	0	14	1	0	0	0	1	1	15	0	0	16	0	0	1	0	1	32
% Approach Total	0.0	85.7	14.3	0.0		100.0	0.0	0.0	0.0		6.3	93.8	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.000	0.600	0.500	0.000	0.700	0.250	0.000	0.000	0.000	0.250	0.250	0.536	0.000	0.000	0.571	0.000	0.000	0.250	0.000	0.250	0.800
Buses	0	9	2	0	11	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	23
Buses %	0.0	75.0	100.0	0.0	78.6	100.0	0.0	0.0	0.0	100.0	0.0	73.3	0.0	0.0	68.8	0.0	0.0	0.0	0.0	0.0	71.9
Single-Unit Trucks	0	3	0	0	3	0	0	0	0	0	1	4	0	0	5	0	0	1	0	1	9
Single-Unit %	0.0	25.0	0.0	0.0	21.4	0.0	0.0	0.0	0.0	0.0	100.0	26.7	0.0	0.0	31.3	0.0	0.0	100.0	0.0	100.0	28.1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	9	2	0	11	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	23
Single-Unit Trucks	0	3	0	0	3	0	0	0	0	0	1	4	0	0	5	0	0	1	0	1	9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	12	2	0	14	1	0	0	0	1	1	15	0	0	16	0	0	1	0	1	32
Buses					12					2					9					0	23
Single-Unit Trucks					5					1					3					0	9
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					17					3					12					0	32

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	1	0	2	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	9
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:30 PM	0	4	0	0	4	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	6
4:45 PM	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
Total	0	9	2	0	11	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	23
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
5:15 PM	0	4	0	0	4	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	6
5:30 PM	0	1	0	0	1	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	5
5:45 PM	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	10	1	0	11	1	0	1	0	2	0	6	0	0	6	0	0	0	0	0	19
Grand Total	0	19	3	0	22	2	0	1	0	3	0	17	0	0	17	0	0	0	0	0	42
Approach %	0.0	86.4	13.6	0.0		66.7	0.0	33.3	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	45.2	7.1	0.0	52.4	4.8	0.0	2.4	0.0	7.1	0.0	40.5	0.0	0.0	40.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					19					3					20					0	42

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	1	0	2	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	9
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:30 PM	0	4	0	0	4	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	6
4:45 PM	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
Total Volume	0	9	2	0	11	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	23
% Approach Total	0.0	81.8	18.2	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.563	0.500	0.000	0.688	0.250	0.000	0.000	0.000	0.250	0.000	0.393	0.000	0.000	0.393	0.000	0.000	0.000	0.000	0.000	0.639
Entering Leg	0	9	2	0	11	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	23
Exiting Leg					12					2					9					0	23
Total					23					3					20					0	46

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
4:30 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total	0	3	0	0	3	0	0	0	0	0	1	4	0	0	5	0	0	1	0	1	9
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3
5:30 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	2	0	4	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	7
Grand Total	0	5	2	0	7	0	0	1	0	1	1	6	0	0	7	0	0	1	0	1	16
Approach %	0.0	71.4	28.6	0.0		0.0	0.0	100.0	0.0		14.3	85.7	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	0.0	31.3	12.5	0.0	43.8	0.0	0.0	6.3	0.0	6.3	6.3	37.5	0.0	0.0	43.8	0.0	0.0	6.3	0.0	6.3	
Exiting Leg Total					7					3					6					0	16

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3
Total Volume	0	2	1	0	3	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	10
% Approach Total	0.0	66.7	33.3	0.0		0.0	0.0	100.0	0.0		16.7	83.3	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.250	0.000	0.750	0.000	0.000	0.250	0.000	0.250	0.250	0.625	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.833
Entering Leg	0	2	1	0	3	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	10
Exiting Leg					5					2					3					0	10
Total					8					3					9					0	20

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North					Binford Street from East					A Street from South					Binford Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	10
4:15 PM	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	1	1	14
4:30 PM	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	2	2	16
4:45 PM	0	15	1	0	0	0	16	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	22
Total	0	40	1	0	0	0	41	0	0	0	0	0	0	0	0	18	0	0	0	0	18	0	0	0	0	0	3	3	62
5:00 PM	0	9	0	0	0	0	9	1	0	0	0	0	0	1	0	6	0	0	0	0	6	0	0	0	0	0	3	3	19
5:15 PM	4	12	0	0	0	0	16	0	0	0	0	0	0	0	0	4	0	0	0	0	4	1	0	0	0	0	0	1	21
5:30 PM	2	19	0	0	0	0	21	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	1	0	0	1	3	26
5:45 PM	0	15	0	0	0	0	15	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	1	1	22
Total	6	55	0	0	0	0	61	1	0	0	0	0	0	1	0	18	0	0	0	0	18	1	1	1	0	0	5	8	88
Grand Total	6	95	1	0	0	0	102	1	0	0	0	0	0	1	0	36	0	0	0	0	36	1	1	1	0	0	8	11	150
Approach %	5.9	93.1	1.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		9.1	9.1	9.1	0.0	0.0	72.7		
Total %	4.0	63.3	0.7	0.0	0.0	0.0	68.0	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.0	24.0	0.0	0.0	0.0	0.0	24.0	0.7	0.7	0.7	0.0	0.0	5.3	7.3	
Exiting Leg Total							38							2							96							14	150

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	0	15	1	0	0	0	16	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	22
5:00 PM	0	9	0	0	0	0	9	1	0	0	0	0	0	1	0	6	0	0	0	0	6	0	0	0	0	0	3	3	19
5:15 PM	4	12	0	0	0	0	16	0	0	0	0	0	0	0	0	4	0	0	0	0	4	1	0	0	0	0	0	1	21
5:30 PM	2	19	0	0	0	0	21	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	1	0	0	1	3	26
Total Volume	6	55	1	0	0	0	62	1	0	0	0	0	0	1	0	18	0	0	0	0	18	1	1	1	0	0	4	7	88
% Approach Total	9.7	88.7	1.6	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		14.3	14.3	14.3	0.0	0.0	57.1		
PHF	0.375	0.724	0.250	0.000	0.000	0.000	0.738	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.750	0.000	0.000	0.000	0.000	0.750	0.250	0.250	0.250	0.000	0.000	0.333	0.583	0.846
Entering Leg	6	55	1	0	0	0	62	1	0	0	0	0	0	1	0	18	0	0	0	0	18	1	1	1	0	0	4	7	88
Exiting Leg							20							2							56							10	88
Total							82							3							74							17	176

PDI File #: **239422 G**
Location: **N: A Street S: A Street**
Location: **E: Binford Street W: Binford Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	16	12	28	0	0	0	0	13	5	18	0	0	0	0	4	6	10	56
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	10	20	30	0	0	0	0	2	11	13	0	0	0	0	1	14	15	58
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	21	25	46	0	0	0	0	23	9	32	0	0	0	0	9	8	17	96
4:45 PM	0	0	0	0	1	0	1	0	0	0	0	16	33	49	0	0	0	0	15	8	23	0	0	0	0	8	17	25	98
Total	0	0	0	0	1	1	2	0	0	0	0	63	90	153	0	0	0	0	53	33	86	0	0	0	0	22	45	67	308
5:00 PM	0	0	0	0	0	2	2	0	0	0	0	23	28	51	0	0	0	0	19	9	28	0	0	0	0	16	18	34	115
5:15 PM	0	0	0	0	1	2	3	0	0	0	0	48	28	76	0	0	0	0	23	17	40	0	0	0	0	11	33	44	163
5:30 PM	0	0	0	0	1	0	1	0	0	0	0	17	28	45	0	0	0	0	15	11	26	0	0	0	0	3	15	18	90
5:45 PM	0	0	0	0	0	1	1	0	0	0	0	34	20	54	0	0	0	0	12	14	26	0	0	0	0	3	32	35	116
Total	0	0	0	0	2	5	7	0	0	0	0	122	104	226	0	0	0	0	69	51	120	0	0	0	0	33	98	131	484
Grand Total	0	0	0	0	3	6	9	0	0	0	0	185	194	379	0	0	0	0	122	84	206	0	0	0	0	55	143	198	792
Approach %	0	0	0	0	33.3	66.7		0	0	0	0	48.8	51.2		0	0	0	0	59.2	40.8		0	0	0	0	27.8	72.2		
Total %	0	0	0	0	0.38	0.76	1.14	0	0	0	0	23.4	24.5	47.9	0	0	0	0	15.4	10.6	26	0	0	0	0	6.94	18.1	25	
Exiting Leg Total							9							379							206							198	792

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	A Street from North							Binford Street from East							A Street from South							Binford Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	2	2	0	0	0	0	23	28	51	0	0	0	0	19	9	28	0	0	0	0	16	18	34	115
5:15 PM	0	0	0	0	1	2	3	0	0	0	0	48	28	76	0	0	0	0	23	17	40	0	0	0	0	11	33	44	163
5:30 PM	0	0	0	0	1	0	1	0	0	0	0	17	28	45	0	0	0	0	15	11	26	0	0	0	0	3	15	18	90
5:45 PM	0	0	0	0	0	1	1	0	0	0	0	34	20	54	0	0	0	0	12	14	26	0	0	0	0	3	32	35	116
Total Volume	0	0	0	0	2	5	7	0	0	0	0	122	104	226	0	0	0	0	69	51	120	0	0	0	0	33	98	131	484
% Approach Total	0.0	0.0	0.0	0.0	28.6	71.4		0.0	0.0	0.0	0.0	54.0	46.0		0.0	0.0	0.0	0.0	57.5	42.5		0.0	0.0	0.0	0.0	25.2	74.8		
PHF	0.000	0.000	0.000	0.000	0.500	0.625	0.583	0.000	0.000	0.000	0.000	0.635	0.929	0.743	0.000	0.000	0.000	0.000	0.750	0.750	0.750	0.000	0.000	0.000	0.000	0.516	0.742	0.744	0.742
Entering Leg	0	0	0	0	2	5	7	0	0	0	0	122	104	226	0	0	0	0	69	51	120	0	0	0	0	33	98	131	484
Exiting Leg							7							226							120							131	484
Total							14							452							240							262	968

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	43	6	0	49	23	1	46	0	70	20	49	1	0	70	0	1	0	0	1	190
7:15 AM	2	39	9	0	50	28	2	29	0	59	19	45	0	0	64	0	0	0	0	0	173
7:30 AM	1	55	12	0	68	35	2	37	0	74	21	48	1	0	70	1	0	0	0	1	213
7:45 AM	0	40	9	0	49	33	1	33	0	67	20	57	0	0	77	0	0	1	0	1	194
Total	3	177	36	0	216	119	6	145	0	270	80	199	2	0	281	1	1	1	0	3	770
8:00 AM	0	61	6	0	67	43	1	44	0	88	23	90	1	0	114	0	0	1	0	1	270
8:15 AM	0	62	6	0	68	57	1	29	0	87	18	118	0	0	136	1	1	0	0	2	293
8:30 AM	0	57	11	0	68	54	0	33	0	87	15	71	0	0	86	0	0	0	0	0	241
8:45 AM	0	77	9	0	86	39	0	41	0	80	18	66	0	0	84	0	0	0	0	0	250
Total	0	257	32	0	289	193	2	147	0	342	74	345	1	0	420	1	1	1	0	3	1054
Grand Total	3	434	68	0	505	312	8	292	0	612	154	544	3	0	701	2	2	2	0	6	1824
Approach %	0.6	85.9	13.5	0.0		51.0	1.3	47.7	0.0		22.0	77.6	0.4	0.0		33.3	33.3	33.3	0.0		
Total %	0.2	23.8	3.7	0.0	27.7	17.1	0.4	16.0	0.0	33.6	8.4	29.8	0.2	0.0	38.4	0.1	0.1	0.1	0.0	0.3	
Exiting Leg Total					858					224					728					14	1824
Cars	1	397	64	0	462	295	1	245	0	541	130	526	2	0	658	1	0	0	0	1	1662
% Cars	33.3	91.5	94.1	0.0	91.5	94.6	12.5	83.9	0.0	88.4	84.4	96.7	66.7	0.0	93.9	50.0	0.0	0.0	0.0	16.7	91.1
Exiting Leg Total					821					194					643					4	1662
Heavy Vehicles	2	37	4	0	43	17	7	47	0	71	24	18	1	0	43	1	2	2	0	5	162
% Heavy Vehicles	66.7	8.5	5.9	0.0	8.5	5.4	87.5	16.1	0.0	11.6	15.6	3.3	33.3	0.0	6.1	50.0	100.0	100.0	0.0	83.3	8.9
Exiting Leg Total					37					30					85					10	162

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	61	6	0	67	43	1	44	0	88	23	90	1	0	114	0	0	1	0	1	270
8:15 AM	0	62	6	0	68	57	1	29	0	87	18	118	0	0	136	1	1	0	0	2	293
8:30 AM	0	57	11	0	68	54	0	33	0	87	15	71	0	0	86	0	0	0	0	0	241
8:45 AM	0	77	9	0	86	39	0	41	0	80	18	66	0	0	84	0	0	0	0	0	250
Total Volume	0	257	32	0	289	193	2	147	0	342	74	345	1	0	420	1	1	1	0	3	1054
% Approach Total	0.0	88.9	11.1	0.0		56.4	0.6	43.0	0.0		17.6	82.1	0.2	0.0		33.3	33.3	33.3	0.0		
PHF	0.000	0.834	0.727	0.000	0.840	0.846	0.500	0.835	0.000	0.972	0.804	0.731	0.250	0.000	0.772	0.250	0.250	0.250	0.000	0.375	0.899
Cars	0	240	30	0	270	185	1	122	0	308	64	337	0	0	401	0	0	0	0	0	979
Cars %	0.0	93.4	93.8	0.0	93.4	95.9	50.0	83.0	0.0	90.1	86.5	97.7	0.0	0.0	95.5	0.0	0.0	0.0	0.0	0.0	92.9
Heavy Vehicles	0	17	2	0	19	8	1	25	0	34	10	8	1	0	19	1	1	1	0	3	75
Heavy Vehicles %	0.0	6.6	6.3	0.0	6.6	4.1	50.0	17.0	0.0	9.9	13.5	2.3	100.0	0.0	4.5	100.0	100.0	100.0	0.0	100.0	7.1
Cars Enter Leg	0	240	30	0	270	185	1	122	0	308	64	337	0	0	401	0	0	0	0	0	979
Heavy Enter Leg	0	17	2	0	19	8	1	25	0	34	10	8	1	0	19	1	1	1	0	3	75
Total Entering Leg	0	257	32	0	289	193	2	147	0	342	74	345	1	0	420	1	1	1	0	3	1054
Cars Exiting Leg					522					94					362					1	979
Heavy Exiting Leg					17					13					43					2	75
Total Exiting Leg					539					107					405					3	1054

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street					Richards Street					A Street					Sobin Park					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	40	5	0	45	21	0	35	0	56	17	45	1	0	63	0	0	0	0	0	164
7:15 AM	1	32	8	0	41	25	0	28	0	53	15	42	0	0	57	0	0	0	0	0	151
7:30 AM	0	50	12	0	62	33	0	32	0	65	19	48	1	0	68	1	0	0	0	1	196
7:45 AM	0	35	9	0	44	31	0	28	0	59	15	54	0	0	69	0	0	0	0	0	172
Total	1	157	34	0	192	110	0	123	0	233	66	189	2	0	257	1	0	0	0	1	683
8:00 AM	0	60	6	0	66	41	0	37	0	78	17	90	0	0	107	0	0	0	0	0	251
8:15 AM	0	56	4	0	60	55	1	23	0	79	18	114	0	0	132	0	0	0	0	0	271
8:30 AM	0	51	11	0	62	52	0	26	0	78	14	70	0	0	84	0	0	0	0	0	224
8:45 AM	0	73	9	0	82	37	0	36	0	73	15	63	0	0	78	0	0	0	0	0	233
Total	0	240	30	0	270	185	1	122	0	308	64	337	0	0	401	0	0	0	0	0	979
Grand Total	1	397	64	0	462	295	1	245	0	541	130	526	2	0	658	1	0	0	0	1	1662
Approach %	0.2	85.9	13.9	0.0		54.5	0.2	45.3	0.0		19.8	79.9	0.3	0.0		100.0	0.0	0.0	0.0		
Total %	0.1	23.9	3.9	0.0	27.8	17.7	0.1	14.7	0.0	32.6	7.8	31.6	0.1	0.0	39.6	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total					821					194					643					4	1662

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street					Richards Street					A Street					Sobin Park					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	60	6	0	66	41	0	37	0	78	17	90	0	0	107	0	0	0	0	0	251
8:15 AM	0	56	4	0	60	55	1	23	0	79	18	114	0	0	132	0	0	0	0	0	271
8:30 AM	0	51	11	0	62	52	0	26	0	78	14	70	0	0	84	0	0	0	0	0	224
8:45 AM	0	73	9	0	82	37	0	36	0	73	15	63	0	0	78	0	0	0	0	0	233
Total Volume	0	240	30	0	270	185	1	122	0	308	64	337	0	0	401	0	0	0	0	0	979
% Approach Total	0.0	88.9	11.1	0.0		60.1	0.3	39.6	0.0		16.0	84.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.822	0.682	0.000	0.823	0.841	0.250	0.824	0.000	0.975	0.889	0.739	0.000	0.000	0.759	0.000	0.000	0.000	0.000	0.000	0.903
Entering Leg	0	240	30	0	270	185	1	122	0	308	64	337	0	0	401	0	0	0	0	0	979
Exiting Leg					522					94					362					1	979
Total					792					402					763					1	1958

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	3	1	0	4	2	1	11	0	14	3	4	0	0	7	0	1	0	0	1	26
7:15 AM	1	7	1	0	9	3	2	1	0	6	4	3	0	0	7	0	0	0	0	0	22
7:30 AM	1	5	0	0	6	2	2	5	0	9	2	0	0	0	2	0	0	0	0	0	17
7:45 AM	0	5	0	0	5	2	1	5	0	8	5	3	0	0	8	0	0	1	0	1	22
Total	2	20	2	0	24	9	6	22	0	37	14	10	0	0	24	0	1	1	0	2	87
8:00 AM	0	1	0	0	1	2	1	7	0	10	6	0	1	0	7	0	0	1	0	1	19
8:15 AM	0	6	2	0	8	2	0	6	0	8	0	4	0	0	4	1	1	0	0	2	22
8:30 AM	0	6	0	0	6	2	0	7	0	9	1	1	0	0	2	0	0	0	0	0	17
8:45 AM	0	4	0	0	4	2	0	5	0	7	3	3	0	0	6	0	0	0	0	0	17
Total	0	17	2	0	19	8	1	25	0	34	10	8	1	0	19	1	1	1	0	3	75
Grand Total	2	37	4	0	43	17	7	47	0	71	24	18	1	0	43	1	2	2	0	5	162
Approach %	4.7	86.0	9.3	0.0		23.9	9.9	66.2	0.0		55.8	41.9	2.3	0.0		20.0	40.0	40.0	0.0		
Total %	1.2	22.8	2.5	0.0	26.5	10.5	4.3	29.0	0.0	43.8	14.8	11.1	0.6	0.0	26.5	0.6	1.2	1.2	0.0	3.1	
Exiting Leg Total					37					30					85					10	162
Buses	0	12	0	0	12	9	0	0	0	9	0	4	0	0	4	0	0	0	0	0	25
% Buses	0.0	32.4	0.0	0.0	27.9	52.9	0.0	0.0	0.0	12.7	0.0	22.2	0.0	0.0	9.3	0.0	0.0	0.0	0.0	0.0	15.4
Exiting Leg Total					13					0					12					0	25
Single-Unit Trucks	2	25	4	0	31	7	6	38	0	51	24	14	1	0	39	0	2	2	0	4	125
% Single-Unit	100.0	67.6	100.0	0.0	72.1	41.2	85.7	80.9	0.0	71.8	100.0	77.8	100.0	0.0	90.7	0.0	100.0	100.0	0.0	80.0	77.2
Exiting Leg Total					23					30					63					9	125
Articulated Trucks	0	0	0	0	0	1	1	9	0	11	0	0	0	0	0	1	0	0	0	1	12
% Articulated	0.0	0.0	0.0	0.0	0.0	5.9	14.3	19.1	0.0	15.5	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	20.0	7.4
Exiting Leg Total					1					0					10					1	12

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	3	1	0	4	2	1	11	0	14	3	4	0	0	7	0	1	0	0	1	26
7:15 AM	1	7	1	0	9	3	2	1	0	6	4	3	0	0	7	0	0	0	0	0	22
7:30 AM	1	5	0	0	6	2	2	5	0	9	2	0	0	0	2	0	0	0	0	0	17
7:45 AM	0	5	0	0	5	2	1	5	0	8	5	3	0	0	8	0	0	1	0	1	22
Total Volume	2	20	2	0	24	9	6	22	0	37	14	10	0	0	24	0	1	1	0	2	87
% Approach Total	8.3	83.3	8.3	0.0		24.3	16.2	59.5	0.0		58.3	41.7	0.0	0.0		0.0	50.0	50.0	0.0		
PHF	0.500	0.714	0.500	0.000	0.667	0.750	0.750	0.500	0.000	0.661	0.700	0.625	0.000	0.000	0.750	0.000	0.250	0.250	0.000	0.500	0.837
Buses	0	8	0	0	8	4	0	0	0	4	0	2	0	0	2	0	0	0	0	0	14
Buses %	0.0	40.0	0.0	0.0	33.3	44.4	0.0	0.0	0.0	10.8	0.0	20.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	16.1
Single-Unit Trucks	2	12	2	0	16	4	5	17	0	26	14	8	0	0	22	0	1	1	0	2	66
Single-Unit %	100.0	60.0	100.0	0.0	66.7	44.4	83.3	77.3	0.0	70.3	100.0	80.0	0.0	0.0	91.7	0.0	100.0	100.0	0.0	100.0	75.9
Articulated Trucks	0	0	0	0	0	1	1	5	0	7	0	0	0	0	0	0	0	0	0	0	7
Articulated %	0.0	0.0	0.0	0.0	0.0	11.1	16.7	22.7	0.0	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Buses	0	8	0	0	8	4	0	0	0	4	0	2	0	0	2	0	0	0	0	0	14
Single-Unit Trucks	2	12	2	0	16	4	5	17	0	26	14	8	0	0	22	0	1	1	0	2	66
Articulated Trucks	0	0	0	0	0	1	1	5	0	7	0	0	0	0	0	0	0	0	0	0	7
Total Entering Leg	2	20	2	0	24	9	6	22	0	37	14	10	0	0	24	0	1	1	0	2	87
Buses					6					0					8					0	14
Single-Unit Trucks					13					17					29					7	66
Articulated Trucks					1					0					5					1	7
Total Exiting Leg					20					17					42					8	87

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	2	0	0	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
7:15 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	3	0	0	3	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	6
Total	0	8	0	0	8	4	0	0	0	4	0	2	0	0	2	0	0	0	0	0	14
8:00 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	2	0	0	2	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	5
8:30 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total	0	4	0	0	4	5	0	0	0	5	0	2	0	0	2	0	0	0	0	0	11
Grand Total	0	12	0	0	12	9	0	0	0	9	0	4	0	0	4	0	0	0	0	0	25
Approach %	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	48.0	0.0	0.0	48.0	36.0	0.0	0.0	0.0	36.0	0.0	16.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					13					0					12					0	25

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	3	0	0	3	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	6
8:00 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	2	0	0	2	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	5
Total Volume	0	7	0	0	7	5	0	0	0	5	0	3	0	0	3	0	0	0	0	0	15
% Approach Total	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.583	0.000	0.000	0.583	0.625	0.000	0.000	0.000	0.625	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	7	0	0	7	5	0	0	0	5	0	3	0	0	3	0	0	0	0	0	15
Exiting Leg					8					0					7					0	15
Total					15					5					10					0	30

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	1	0	2	0	1	9	0	10	3	4	0	0	7	0	1	0	0	1	20
7:15 AM	1	5	1	0	7	2	1	0	0	3	4	3	0	0	7	0	0	0	0	0	17
7:30 AM	1	4	0	0	5	1	2	4	0	7	2	0	0	0	2	0	0	0	0	0	14
7:45 AM	0	2	0	0	2	1	1	4	0	6	5	1	0	0	6	0	0	1	0	1	15
Total	2	12	2	0	16	4	5	17	0	26	14	8	0	0	22	0	1	1	0	2	66
8:00 AM	0	0	0	0	0	1	1	6	0	8	6	0	1	0	7	0	0	1	0	1	16
8:15 AM	0	4	2	0	6	0	0	4	0	4	0	3	0	0	3	0	1	0	0	1	14
8:30 AM	0	5	0	0	5	1	0	6	0	7	1	1	0	0	2	0	0	0	0	0	14
8:45 AM	0	4	0	0	4	1	0	5	0	6	3	2	0	0	5	0	0	0	0	0	15
Total	0	13	2	0	15	3	1	21	0	25	10	6	1	0	17	0	1	1	0	2	59
Grand Total	2	25	4	0	31	7	6	38	0	51	24	14	1	0	39	0	2	2	0	4	125
Approach %	6.5	80.6	12.9	0.0		13.7	11.8	74.5	0.0		61.5	35.9	2.6	0.0		0.0	50.0	50.0	0.0		
Total %	1.6	20.0	3.2	0.0	24.8	5.6	4.8	30.4	0.0	40.8	19.2	11.2	0.8	0.0	31.2	0.0	1.6	1.6	0.0	3.2	
Exiting Leg Total					23					30					63					9	125

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	1	0	2	0	1	9	0	10	3	4	0	0	7	0	1	0	0	1	20
7:15 AM	1	5	1	0	7	2	1	0	0	3	4	3	0	0	7	0	0	0	0	0	17
7:30 AM	1	4	0	0	5	1	2	4	0	7	2	0	0	0	2	0	0	0	0	0	14
7:45 AM	0	2	0	0	2	1	1	4	0	6	5	1	0	0	6	0	0	1	0	1	15
Total Volume	2	12	2	0	16	4	5	17	0	26	14	8	0	0	22	0	1	1	0	2	66
% Approach Total	12.5	75.0	12.5	0.0		15.4	19.2	65.4	0.0		63.6	36.4	0.0	0.0		0.0	50.0	50.0	0.0		
PHF	0.500	0.600	0.500	0.000	0.571	0.500	0.625	0.472	0.000	0.650	0.700	0.500	0.000	0.000	0.786	0.000	0.250	0.250	0.000	0.500	0.825
Entering Leg	2	12	2	0	16	4	5	17	0	26	14	8	0	0	22	0	1	1	0	2	66
Exiting Leg					13					17					29					7	66
Total					29					43					51					9	132

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	1	5	0	7	0	0	0	0	0	0	0	0	0	0	7
8:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	0	0	1	3
8:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	0	0	1	5
Grand Total	0	0	0	0	0	1	1	9	0	11	0	0	0	0	0	1	0	0	0	1	12
Approach %	0.0	0.0	0.0	0.0		9.1	9.1	81.8	0.0		0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	8.3	8.3	75.0	0.0	91.7	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	8.3	
Exiting Leg Total					1					0					10					1	12

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	1	5	0	7	0	0	0	0	0	0	0	0	0	0	7
% Approach Total	0.0	0.0	0.0	0.0		14.3	14.3	71.4	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.625	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583
Entering Leg	0	0	0	0	0	1	1	5	0	7	0	0	0	0	0	0	0	0	0	0	7
Exiting Leg					1					0					5					1	7
Total					1					7					5					1	14

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	0	0	0	8
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	8	0	0	0	1	9	0	0	0	0	0	1	1	11
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	10	0	0	0	0	10	0	0	0	0	0	0	0	11
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	16	0	0	0	0	0	0	0	16
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	42	0	0	0	1	43	0	0	0	0	0	1	1	46
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0	17	0	0	0	0	17	0	0	0	0	0	0	0	19
8:15 AM	0	2	1	0	1	0	4	0	0	0	0	0	0	0	1	24	0	0	0	0	25	0	0	0	0	0	0	0	29
8:30 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	17	0	0	0	0	17	0	0	0	0	0	0	0	20
8:45 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	19	0	0	0	0	19	0	0	0	0	0	0	0	22
Total	0	8	2	0	1	0	11	0	0	0	0	1	0	1	1	77	0	0	0	0	78	0	0	0	0	0	0	0	90
Grand Total	0	8	2	0	1	0	11	0	0	0	0	1	2	3	1	119	0	0	0	1	121	0	0	0	0	0	1	1	136
Approach %	0.0	72.7	18.2	0.0	9.1	0.0		0.0	0.0	0.0	0.0	33.3	66.7		0.8	98.3	0.0	0.0	0.0	0.8		0.0	0.0	0.0	0.0	0.0	100.0		
Total %	0.0	5.9	1.5	0.0	0.7	0.0	8.1	0.0	0.0	0.0	0.0	0.7	1.5	2.2	0.7	87.5	0.0	0.0	0.0	0.7	89.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	
Exiting Leg Total							120							6							9							1	136

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0	17	0	0	0	0	17	0	0	0	0	0	0	0	19
8:15 AM	0	2	1	0	1	0	4	0	0	0	0	0	0	0	1	24	0	0	0	0	25	0	0	0	0	0	0	0	29
8:30 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	17	0	0	0	0	17	0	0	0	0	0	0	0	20
8:45 AM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	19	0	0	0	0	19	0	0	0	0	0	0	0	22
Total Volume	0	8	2	0	1	0	11	0	0	0	0	1	0	1	1	77	0	0	0	0	78	0	0	0	0	0	0	0	90
% Approach Total	0.0	72.7	18.2	0.0	9.1	0.0		0.0	0.0	0.0	0.0	100.0	0.0		1.3	98.7	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.667	0.500	0.000	0.250	0.000	0.688	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.802	0.000	0.000	0.000	0.000	0.780	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.776
Entering Leg	0	8	2	0	1	0	11	0	0	0	0	1	0	1	1	77	0	0	0	0	78	0	0	0	0	0	0	0	90
Exiting Leg							78							4							8							0	90
Total							89							5							86							0	180

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	1	0	1	0	0	0	0	4	26	30	0	0	0	0	0	0	0	0	0	0	0	4	3	7	38
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	7	42	49	0	0	0	0	0	0	0	0	0	0	0	7	1	8	57
7:30 AM	0	0	0	0	0	1	1	0	0	0	0	19	54	73	0	0	0	0	0	1	1	0	0	0	0	7	0	7	82
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	17	54	71	0	0	0	0	0	0	0	0	0	0	0	6	8	14	85
Total	0	0	0	0	1	1	2	0	0	0	0	47	176	223	0	0	0	0	0	1	1	0	0	0	0	24	12	36	262
8:00 AM	0	0	0	0	1	0	1	0	0	0	0	12	71	83	0	0	0	0	0	0	0	0	0	0	0	4	2	6	90
8:15 AM	0	0	0	0	1	0	1	0	0	0	0	14	75	89	0	0	0	0	0	0	0	0	0	0	0	8	2	10	100
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	16	76	92	0	0	0	0	0	0	0	0	0	0	0	2	2	4	96
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	18	48	66	0	0	0	0	1	0	1	0	0	0	0	7	2	9	76
Total	0	0	0	0	2	0	2	0	0	0	0	60	270	330	0	0	0	0	1	0	1	0	0	0	0	21	8	29	362
Grand Total	0	0	0	0	3	1	4	0	0	0	0	107	446	553	0	0	0	0	1	1	2	0	0	0	0	45	20	65	624
Approach %	0	0	0	0	75	25		0	0	0	0	19.3	80.7		0	0	0	0	50	50		0	0	0	0	69.2	30.8		
Total %	0	0	0	0	0.48	0.16	0.64	0	0	0	0	17.1	71.5	88.6	0	0	0	0	0.16	0.16	0.32	0	0	0	0	7.21	3.21	10.4	
Exiting Leg Total							4							553							2							65	624

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	17	54	71	0	0	0	0	0	0	0	0	0	0	0	6	8	14	85
8:00 AM	0	0	0	0	1	0	1	0	0	0	0	12	71	83	0	0	0	0	0	0	0	0	0	0	0	4	2	6	90
8:15 AM	0	0	0	0	1	0	1	0	0	0	0	14	75	89	0	0	0	0	0	0	0	0	0	0	0	8	2	10	100
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	16	76	92	0	0	0	0	0	0	0	0	0	0	0	2	2	4	96
Total Volume	0	0	0	0	2	0	2	0	0	0	0	59	276	335	0	0	0	0	0	0	0	0	0	0	0	20	14	34	371
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	17.6	82.4		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	58.8	41.2		
PHF	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.868	0.908	0.910	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.438	0.607	0.928
Entering Leg	0	0	0	0	2	0	2	0	0	0	0	59	276	335	0	0	0	0	0	0	0	0	0	0	0	20	14	34	371
Exiting Leg							2							335							0							34	371
Total							4							670							0							68	742

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	72	9	0	82	15	0	42	0	57	16	41	1	0	58	1	0	0	0	1	198
4:15 PM	0	82	18	0	100	22	0	41	0	63	21	47	0	0	68	0	0	0	0	0	231
4:30 PM	0	69	8	0	77	13	0	58	1	72	17	45	0	2	64	0	1	0	0	1	214
4:45 PM	0	90	6	0	96	18	0	44	0	62	16	49	0	0	65	1	0	0	0	1	224
Total	1	313	41	0	355	68	0	185	1	254	70	182	1	2	255	2	1	0	0	3	867
5:00 PM	0	70	7	0	77	21	0	45	0	66	21	45	0	0	66	0	0	0	0	0	209
5:15 PM	0	56	15	0	71	15	0	41	0	56	20	58	0	0	78	0	0	0	0	0	205
5:30 PM	0	82	6	0	88	21	0	41	0	62	18	47	0	0	65	0	0	1	0	1	216
5:45 PM	2	79	4	0	85	16	0	49	0	65	23	54	0	0	77	0	0	0	0	0	227
Total	2	287	32	0	321	73	0	176	0	249	82	204	0	0	286	0	0	1	0	1	857
Grand Total	3	600	73	0	676	141	0	361	1	503	152	386	1	2	541	2	1	1	0	4	1724
Approach %	0.4	88.8	10.8	0.0		28.0	0.0	71.8	0.2		28.1	71.3	0.2	0.4		50.0	25.0	25.0	0.0		
Total %	0.2	34.8	4.2	0.0	39.2	8.2	0.0	20.9	0.1	29.2	8.8	22.4	0.1	0.1	31.4	0.1	0.1	0.1	0.0	0.2	
Exiting Leg Total					528					227					965					4	1724
Cars	2	573	71	0	646	131	0	341	1	473	132	375	1	2	510	2	1	0	0	3	1632
% Cars	66.7	95.5	97.3	0.0	95.6	92.9	0.0	94.5	100.0	94.0	86.8	97.2	100.0	100.0	94.3	100.0	100.0	0.0	0.0	75.0	94.7
Exiting Leg Total					506					205					918					3	1632
Heavy Vehicles	1	27	2	0	30	10	0	20	0	30	20	11	0	0	31	0	0	1	0	1	92
% Heavy Vehicles	33.3	4.5	2.7	0.0	4.4	7.1	0.0	5.5	0.0	6.0	13.2	2.8	0.0	0.0	5.7	0.0	0.0	100.0	0.0	25.0	5.3
Exiting Leg Total					22					22					47					1	92

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	82	18	0	100	22	0	41	0	63	21	47	0	0	68	0	0	0	0	0	231
4:30 PM	0	69	8	0	77	13	0	58	1	72	17	45	0	2	64	0	1	0	0	1	214
4:45 PM	0	90	6	0	96	18	0	44	0	62	16	49	0	0	65	1	0	0	0	1	224
5:00 PM	0	70	7	0	77	21	0	45	0	66	21	45	0	0	66	0	0	0	0	0	209
Total Volume	0	311	39	0	350	74	0	188	1	263	75	186	0	2	263	1	1	0	0	2	878
% Approach Total	0.0	88.9	11.1	0.0		28.1	0.0	71.5	0.4		28.5	70.7	0.0	0.8		50.0	50.0	0.0	0.0		
PHF	0.000	0.864	0.542	0.000	0.875	0.841	0.000	0.810	0.250	0.913	0.893	0.949	0.000	0.250	0.967	0.250	0.250	0.000	0.000	0.500	0.950
Cars	0	293	38	0	331	69	0	173	1	243	63	183	0	2	248	1	1	0	0	2	824
Cars %	0.0	94.2	97.4	0.0	94.6	93.2	0.0	92.0	100.0	92.4	84.0	98.4	0.0	100.0	94.3	100.0	100.0	0.0	0.0	100.0	93.8
Heavy Vehicles	0	18	1	0	19	5	0	15	0	20	12	3	0	0	15	0	0	0	0	0	54
Heavy Vehicles %	0.0	5.8	2.6	0.0	5.4	6.8	0.0	8.0	0.0	7.6	16.0	1.6	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	6.2
Cars Enter Leg	0	293	38	0	331	69	0	173	1	243	63	183	0	2	248	1	1	0	0	2	824
Heavy Enter Leg	0	18	1	0	19	5	0	15	0	20	12	3	0	0	15	0	0	0	0	0	54
Total Entering Leg	0	311	39	0	350	74	0	188	1	263	75	186	0	2	263	1	1	0	0	2	878
Cars Exiting Leg					252					103					469					0	824
Heavy Exiting Leg					8					13					33					0	54
Total Exiting Leg					260					116					502					0	878

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	71	9	0	81	12	0	40	0	52	15	37	1	0	53	1	0	0	0	1	187
4:15 PM	0	77	17	0	94	21	0	37	0	58	16	46	0	0	62	0	0	0	0	0	214
4:30 PM	0	65	8	0	73	12	0	54	1	67	16	45	0	2	63	0	1	0	0	1	204
4:45 PM	0	85	6	0	91	17	0	38	0	55	15	47	0	0	62	1	0	0	0	1	209
Total	1	298	40	0	339	62	0	169	1	232	62	175	1	2	240	2	1	0	0	3	814
5:00 PM	0	66	7	0	73	19	0	44	0	63	16	45	0	0	61	0	0	0	0	0	197
5:15 PM	0	55	14	0	69	14	0	40	0	54	17	56	0	0	73	0	0	0	0	0	196
5:30 PM	0	78	6	0	84	20	0	40	0	60	15	46	0	0	61	0	0	0	0	0	205
5:45 PM	1	76	4	0	81	16	0	48	0	64	22	53	0	0	75	0	0	0	0	0	220
Total	1	275	31	0	307	69	0	172	0	241	70	200	0	0	270	0	0	0	0	0	818
Grand Total	2	573	71	0	646	131	0	341	1	473	132	375	1	2	510	2	1	0	0	3	1632
Approach %	0.3	88.7	11.0	0.0		27.7	0.0	72.1	0.2		25.9	73.5	0.2	0.4		66.7	33.3	0.0	0.0		
Total %	0.1	35.1	4.4	0.0	39.6	8.0	0.0	20.9	0.1	29.0	8.1	23.0	0.1	0.1	31.3	0.1	0.1	0.0	0.0	0.2	
Exiting Leg Total					506					205					918					3	1632

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	77	17	0	94	21	0	37	0	58	16	46	0	0	62	0	0	0	0	0	214
4:30 PM	0	65	8	0	73	12	0	54	1	67	16	45	0	2	63	0	1	0	0	1	204
4:45 PM	0	85	6	0	91	17	0	38	0	55	15	47	0	0	62	1	0	0	0	1	209
5:00 PM	0	66	7	0	73	19	0	44	0	63	16	45	0	0	61	0	0	0	0	0	197
Total Volume	0	293	38	0	331	69	0	173	1	243	63	183	0	2	248	1	1	0	0	2	824
% Approach Total	0.0	88.5	11.5	0.0		28.4	0.0	71.2	0.4		25.4	73.8	0.0	0.8		50.0	50.0	0.0	0.0		
PHF	0.000	0.862	0.559	0.000	0.880	0.821	0.000	0.801	0.250	0.907	0.984	0.973	0.000	0.250	0.984	0.250	0.250	0.000	0.000	0.500	0.963
Entering Leg	0	293	38	0	331	69	0	173	1	243	63	183	0	2	248	1	1	0	0	2	824
Exiting Leg					252					103					469					0	824
Total					583					346					717					2	1648

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	3	0	2	0	5	1	4	0	0	5	0	0	0	0	0	11
4:15 PM	0	5	1	0	6	1	0	4	0	5	5	1	0	0	6	0	0	0	0	0	17
4:30 PM	0	4	0	0	4	1	0	4	0	5	1	0	0	0	1	0	0	0	0	0	10
4:45 PM	0	5	0	0	5	1	0	6	0	7	1	2	0	0	3	0	0	0	0	0	15
Total	0	15	1	0	16	6	0	16	0	22	8	7	0	0	15	0	0	0	0	0	53
5:00 PM	0	4	0	0	4	2	0	1	0	3	5	0	0	0	5	0	0	0	0	0	12
5:15 PM	0	1	1	0	2	1	0	1	0	2	3	2	0	0	5	0	0	0	0	0	9
5:30 PM	0	4	0	0	4	1	0	1	0	2	3	1	0	0	4	0	0	1	0	1	11
5:45 PM	1	3	0	0	4	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	7
Total	1	12	1	0	14	4	0	4	0	8	12	4	0	0	16	0	0	1	0	1	39
Grand Total	1	27	2	0	30	10	0	20	0	30	20	11	0	0	31	0	0	1	0	1	92
Approach %	3.3	90.0	6.7	0.0		33.3	0.0	66.7	0.0		64.5	35.5	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	1.1	29.3	2.2	0.0	32.6	10.9	0.0	21.7	0.0	32.6	21.7	12.0	0.0	0.0	33.7	0.0	0.0	1.1	0.0	1.1	
Exiting Leg Total					22					22					47					1	92
Buses	0	23	1	0	24	9	0	5	0	14	2	4	0	0	6	0	0	0	0	0	44
% Buses	0.0	85.2	50.0	0.0	80.0	90.0	0.0	25.0	0.0	46.7	10.0	36.4	0.0	0.0	19.4	0.0	0.0	0.0	0.0	0.0	47.8
Exiting Leg Total					13					3					28					0	44
Single-Unit Trucks	1	4	1	0	6	1	0	12	0	13	16	7	0	0	23	0	0	0	0	0	42
% Single-Unit	100.0	14.8	50.0	0.0	20.0	10.0	0.0	60.0	0.0	43.3	80.0	63.6	0.0	0.0	74.2	0.0	0.0	0.0	0.0	0.0	45.7
Exiting Leg Total					8					17					16					1	42
Articulated Trucks	0	0	0	0	0	0	0	3	0	3	2	0	0	0	2	0	0	1	0	1	6
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	10.0	10.0	0.0	0.0	0.0	6.5	0.0	0.0	100.0	0.0	100.0	6.5
Exiting Leg Total					1					2					3					0	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	5	1	0	6	1	0	4	0	5	5	1	0	0	6	0	0	0	0	0	17
4:30 PM	0	4	0	0	4	1	0	4	0	5	1	0	0	0	1	0	0	0	0	0	10
4:45 PM	0	5	0	0	5	1	0	6	0	7	1	2	0	0	3	0	0	0	0	0	15
5:00 PM	0	4	0	0	4	2	0	1	0	3	5	0	0	0	5	0	0	0	0	0	12
Total Volume	0	18	1	0	19	5	0	15	0	20	12	3	0	0	15	0	0	0	0	0	54
% Approach Total	0.0	94.7	5.3	0.0		25.0	0.0	75.0	0.0		80.0	20.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.900	0.250	0.000	0.792	0.625	0.000	0.625	0.000	0.714	0.600	0.375	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.794
Buses	0	15	0	0	15	4	0	4	0	8	2	0	0	0	2	0	0	0	0	0	25
Buses %	0.0	83.3	0.0	0.0	78.9	80.0	0.0	26.7	0.0	40.0	16.7	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0	46.3
Single-Unit Trucks	0	3	1	0	4	1	0	9	0	10	8	3	0	0	11	0	0	0	0	0	25
Single-Unit %	0.0	16.7	100.0	0.0	21.1	20.0	0.0	60.0	0.0	50.0	66.7	100.0	0.0	0.0	73.3	0.0	0.0	0.0	0.0	0.0	46.3
Articulated Trucks	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	4
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	10.0	16.7	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0	7.4
Buses	0	15	0	0	15	4	0	4	0	8	2	0	0	0	2	0	0	0	0	0	25
Single-Unit Trucks	0	3	1	0	4	1	0	9	0	10	8	3	0	0	11	0	0	0	0	0	25
Articulated Trucks	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	4
Total Entering Leg	0	18	1	0	19	5	0	15	0	20	12	3	0	0	15	0	0	0	0	0	54
Buses					4					2					19					0	25
Single-Unit Trucks					4					9					12					0	25
Articulated Trucks					0					2					2					0	4
Total Exiting Leg					8					13					33					0	54

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Buses

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	5
4:15 PM	0	4	0	0	4	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	7
4:30 PM	0	3	0	0	3	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	5
4:45 PM	0	4	0	0	4	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	6
Total	0	12	0	0	12	5	0	4	0	9	1	1	0	0	2	0	0	0	0	0	23
5:00 PM	0	4	0	0	4	2	0	0	0	2	1	0	0	0	1	0	0	0	0	0	7
5:15 PM	0	1	1	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	4
5:30 PM	0	3	0	0	3	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	6
5:45 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
Total	0	11	1	0	12	4	0	1	0	5	1	3	0	0	4	0	0	0	0	0	21
Grand Total	0	23	1	0	24	9	0	5	0	14	2	4	0	0	6	0	0	0	0	0	44
Approach %	0.0	95.8	4.2	0.0		64.3	0.0	35.7	0.0		33.3	66.7	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	52.3	2.3	0.0	54.5	20.5	0.0	11.4	0.0	31.8	4.5	9.1	0.0	0.0	13.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					13					3					28					0	44

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	4	0	0	4	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	7
4:30 PM	0	3	0	0	3	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	5
4:45 PM	0	4	0	0	4	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	6
5:00 PM	0	4	0	0	4	2	0	0	0	2	1	0	0	0	1	0	0	0	0	0	7
Total Volume	0	15	0	0	15	4	0	4	0	8	2	0	0	0	2	0	0	0	0	0	25
% Approach Total	0.0	100.0	0.0	0.0		50.0	0.0	50.0	0.0		100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.938	0.000	0.000	0.938	0.500	0.000	0.500	0.000	0.667	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.893
Entering Leg	0	15	0	0	15	4	0	4	0	8	2	0	0	0	2	0	0	0	0	0	25
Exiting Leg					4					2					19					0	25
Total					19					10					21					0	50

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	5
4:15 PM	0	1	1	0	2	0	0	2	0	2	3	1	0	0	4	0	0	0	0	0	8
4:30 PM	0	1	0	0	1	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	4
4:45 PM	0	1	0	0	1	1	0	3	0	4	1	2	0	0	3	0	0	0	0	0	8
Total	0	3	1	0	4	1	0	9	0	10	5	6	0	0	11	0	0	0	0	0	25
5:00 PM	0	0	0	0	0	0	0	1	0	1	4	0	0	0	4	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	0	1	0	1	3	1	0	0	4	0	0	0	0	0	5
5:30 PM	0	1	0	0	1	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	4
5:45 PM	1	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
Total	1	1	0	0	2	0	0	3	0	3	11	1	0	0	12	0	0	0	0	0	17
Grand Total	1	4	1	0	6	1	0	12	0	13	16	7	0	0	23	0	0	0	0	0	42
Approach %	16.7	66.7	16.7	0.0		7.7	0.0	92.3	0.0		69.6	30.4	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	2.4	9.5	2.4	0.0	14.3	2.4	0.0	28.6	0.0	31.0	38.1	16.7	0.0	0.0	54.8	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					8					17					16					1	42

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	5
4:15 PM	0	1	1	0	2	0	0	2	0	2	3	1	0	0	4	0	0	0	0	0	8
4:30 PM	0	1	0	0	1	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	4
4:45 PM	0	1	0	0	1	1	0	3	0	4	1	2	0	0	3	0	0	0	0	0	8
Total Volume	0	3	1	0	4	1	0	9	0	10	5	6	0	0	11	0	0	0	0	0	25
% Approach Total	0.0	75.0	25.0	0.0		10.0	0.0	90.0	0.0		45.5	54.5	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.750	0.250	0.000	0.500	0.250	0.000	0.750	0.000	0.625	0.417	0.500	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.000	0.781
Entering Leg	0	3	1	0	4	1	0	9	0	10	5	6	0	0	11	0	0	0	0	0	25
Exiting Leg					7					6					12					0	25
Total					11					16					23					0	50

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	3	0	3	2	0	0	0	2	0	0	0	0	0	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	0	0	0	0	0	0	0	3	0	3	2	0	0	0	2	0	0	1	0	1	6
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	33.3	0.0	0.0	0.0	33.3	0.0	0.0	16.7	0.0	16.7	
Exiting Leg Total					1					2					3					0	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	A Street from North					Richards Street from East					A Street from South					Sobin Park from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	3	0	3	2	0	0	0	2	0	0	0	0	0	5
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	0	0	0	0	0	0	3	0	3	2	0	0	0	2	0	0	0	0	0	5
Exiting Leg					0					2					3					0	5
Total					0					5					5					0	10

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	8	0	0	0	0	8	1	0	0	0	0	0	1	0	3	0	0	0	0	3	0	0	0	0	0	0	0	12
4:15 PM	0	10	0	0	0	0	10	0	0	0	0	1	0	1	0	4	0	0	0	0	4	0	0	0	0	0	3	3	18
4:30 PM	0	7	0	0	0	0	7	0	0	1	0	0	0	1	0	3	0	0	0	0	3	0	0	0	0	0	0	0	11
4:45 PM	0	12	0	0	0	0	12	2	0	0	0	0	0	2	1	1	0	0	0	0	2	0	0	0	0	0	3	3	19
Total	0	37	0	0	0	0	37	3	0	1	0	1	0	5	1	11	0	0	0	0	12	0	0	0	0	0	6	6	60
5:00 PM	0	14	2	0	0	0	16	0	0	0	0	0	1	1	0	7	0	0	0	0	7	0	0	0	0	0	0	0	24
5:15 PM	5	10	0	0	0	0	15	0	0	0	0	0	0	0	0	10	0	0	0	1	11	0	0	0	0	0	4	4	30
5:30 PM	1	23	0	0	0	0	24	1	0	0	0	0	0	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	27
5:45 PM	6	10	1	0	0	0	17	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	20
Total	12	57	3	0	0	0	72	1	0	0	0	0	1	2	0	22	0	0	0	1	23	0	0	0	0	0	4	4	101
Grand Total	12	94	3	0	0	0	109	4	0	1	0	1	1	7	1	33	0	0	0	1	35	0	0	0	0	0	10	10	161
Approach %	11.0	86.2	2.8	0.0	0.0	0.0		57.1	0.0	14.3	0.0	14.3	14.3		2.9	94.3	0.0	0.0	0.0	2.9		0.0	0.0	0.0	0.0	0.0	100.0		
Total %	7.5	58.4	1.9	0.0	0.0	0.0	67.7	2.5	0.0	0.6	0.0	0.6	0.6	4.3	0.6	20.5	0.0	0.0	0.0	0.6	21.7	0.0	0.0	0.0	0.0	0.0	6.2	6.2	
Exiting Leg Total							37							6							96							22	161

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	14	2	0	0	0	16	0	0	0	0	0	1	1	0	7	0	0	0	0	7	0	0	0	0	0	0	0	24
5:15 PM	5	10	0	0	0	0	15	0	0	0	0	0	0	0	0	10	0	0	0	1	11	0	0	0	0	0	4	4	30
5:30 PM	1	23	0	0	0	0	24	1	0	0	0	0	0	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	27
5:45 PM	6	10	1	0	0	0	17	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	20
Total Volume	12	57	3	0	0	0	72	1	0	0	0	0	1	2	0	22	0	0	0	1	23	0	0	0	0	0	4	4	101
% Approach Total	16.7	79.2	4.2	0.0	0.0	0.0		50.0	0.0	0.0	0.0	0.0	50.0		0.0	95.7	0.0	0.0	0.0	4.3		0.0	0.0	0.0	0.0	0.0	100.0		
PHF	0.500	0.620	0.375	0.000	0.000	0.000	0.750	0.250	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.550	0.000	0.000	0.000	0.250	0.523	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.842
Entering Leg	12	57	3	0	0	0	72	1	0	0	0	0	1	2	0	22	0	0	0	1	23	0	0	0	0	0	4	4	101
Exiting Leg							23							4							58							16	101
Total							95							6							81							20	202

PDI File #: **239422 H**
Location: **N: A Street S: A Street**
Location: **E: Richards Street W: Sobin Park**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	2	0	2	0	0	0	0	28	8	36	0	0	0	0	0	0	0	0	0	0	0	2	4	6	44
4:15 PM	0	0	0	0	1	0	1	0	0	0	0	26	12	38	0	0	0	0	0	0	0	0	0	0	0	3	5	8	47
4:30 PM	0	0	0	0	3	0	3	0	0	0	0	31	11	42	0	0	0	0	0	0	0	0	0	0	0	2	6	8	53
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	37	26	63	0	0	0	0	0	0	0	0	0	0	0	2	11	13	77
Total	0	0	0	0	6	1	7	0	0	0	0	122	57	179	0	0	0	0	0	0	0	0	0	0	0	9	26	35	221
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	54	21	75	0	0	0	0	0	1	1	0	0	0	0	7	10	17	94
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	67	28	95	0	0	0	0	0	1	1	0	0	0	0	2	13	15	111
5:30 PM	0	0	0	0	1	0	1	0	0	0	0	33	24	57	0	0	0	0	0	1	1	0	0	0	0	2	12	14	73
5:45 PM	0	0	0	0	4	0	4	0	0	0	0	51	25	76	0	0	0	0	0	1	1	0	0	0	0	6	19	25	106
Total	0	0	0	0	6	0	6	0	0	0	0	205	98	303	0	0	0	0	0	4	4	0	0	0	0	17	54	71	384
Grand Total	0	0	0	0	12	1	13	0	0	0	0	327	155	482	0	0	0	0	0	4	4	0	0	0	0	26	80	106	605
Approach %	0	0	0	0	92.3	7.69		0	0	0	0	67.8	32.2		0	0	0	0	0	100		0	0	0	0	24.5	75.5		
Total %	0	0	0	0	1.98	0.17	2.15	0	0	0	0	54	25.6	79.7	0	0	0	0	0	0.66	0.66	0	0	0	0	4.3	13.2	17.5	
Exiting Leg Total							13							482							4							106	605

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	A Street from North							Richards Street from East							A Street from South							Sobin Park from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	54	21	75	0	0	0	0	0	1	1	0	0	0	0	7	10	17	94
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	67	28	95	0	0	0	0	0	1	1	0	0	0	0	2	13	15	111
5:30 PM	0	0	0	0	1	0	1	0	0	0	0	33	24	57	0	0	0	0	0	1	1	0	0	0	0	2	12	14	73
5:45 PM	0	0	0	0	4	0	4	0	0	0	0	51	25	76	0	0	0	0	0	1	1	0	0	0	0	6	19	25	106
Total Volume	0	0	0	0	6	0	6	0	0	0	0	205	98	303	0	0	0	0	0	4	4	0	0	0	0	17	54	71	384
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	67.7	32.3		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	23.9	76.1		
PHF	0.000	0.000	0.000	0.000	0.375	0.000	0.375	0.000	0.000	0.000	0.000	0.765	0.875	0.797	0.000	0.000	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000	0.607	0.711	0.710	0.865
Entering Leg	0	0	0	0	6	0	6	0	0	0	0	205	98	303	0	0	0	0	0	4	4	0	0	0	0	17	54	71	384
Exiting Leg							6							303							4							71	384
Total							12							606							8							142	768

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	57	26	22	0	105	30	12	13	0	55	50	58	22	0	130	11	8	21	0	40	330
7:15 AM	49	20	26	0	95	18	11	12	0	41	66	56	40	0	162	4	13	11	0	28	326
7:30 AM	65	22	24	0	111	39	20	10	0	69	69	69	29	0	167	6	17	18	0	41	388
7:45 AM	61	20	23	0	104	31	19	19	0	69	83	85	30	0	198	3	16	23	0	42	413
Total	232	88	95	0	415	118	62	54	0	234	268	268	121	0	657	24	54	73	0	151	1457
8:00 AM	62	21	26	0	109	47	22	12	0	81	43	117	31	0	191	2	17	21	0	40	421
8:15 AM	71	21	18	0	110	34	14	16	0	64	45	152	43	0	240	2	13	15	0	30	444
8:30 AM	62	44	20	0	126	24	16	23	0	63	52	80	47	0	179	6	17	14	0	37	405
8:45 AM	53	17	19	0	89	31	20	25	0	76	58	98	45	0	201	5	12	18	1	36	402
Total	248	103	83	0	434	136	72	76	0	284	198	447	166	0	811	15	59	68	1	143	1672
Grand Total	480	191	178	0	849	254	134	130	0	518	466	715	287	0	1468	39	113	141	1	294	3129
Approach %	56.5	22.5	21.0	0.0		49.0	25.9	25.1	0.0		31.7	48.7	19.6	0.0		13.3	38.4	48.0	0.3		
Total %	15.3	6.1	5.7	0.0	27.1	8.1	4.3	4.2	0.0	16.6	14.9	22.9	9.2	0.0	46.9	1.2	3.6	4.5	0.0	9.4	
Exiting Leg Total					1110					757					360					902	3129
Cars	447	149	170	0	766	241	117	90	0	448	408	617	276	0	1301	35	108	119	1	263	2778
% Cars	93.1	78.0	95.5	0.0	90.2	94.9	87.3	69.2	0.0	86.5	87.6	86.3	96.2	0.0	88.6	89.7	95.6	84.4	100.0	89.5	88.8
Exiting Leg Total					977					686					274					841	2778
Heavy Vehicles	33	42	8	0	83	13	17	40	0	70	58	98	11	0	167	4	5	22	0	31	351
% Heavy Vehicles	6.9	22.0	4.5	0.0	9.8	5.1	12.7	30.8	0.0	13.5	12.4	13.7	3.8	0.0	11.4	10.3	4.4	15.6	0.0	10.5	11.2
Exiting Leg Total					133					71					86					61	351

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	61	20	23	0	104	31	19	19	0	69	83	85	30	0	198	3	16	23	0	42	413
8:00 AM	62	21	26	0	109	47	22	12	0	81	43	117	31	0	191	2	17	21	0	40	421
8:15 AM	71	21	18	0	110	34	14	16	0	64	45	152	43	0	240	2	13	15	0	30	444
8:30 AM	62	44	20	0	126	24	16	23	0	63	52	80	47	0	179	6	17	14	0	37	405
Total Volume	256	106	87	0	449	136	71	70	0	277	223	434	151	0	808	13	63	73	0	149	1683
% Approach Total	57.0	23.6	19.4	0.0		49.1	25.6	25.3	0.0		27.6	53.7	18.7	0.0		8.7	42.3	49.0	0.0		
PHF	0.901	0.602	0.837	0.000	0.891	0.723	0.807	0.761	0.000	0.855	0.672	0.714	0.803	0.000	0.842	0.542	0.926	0.793	0.000	0.887	0.948
Cars	237	80	82	0	399	131	63	53	0	247	192	384	147	0	723	13	60	63	0	136	1505
Cars %	92.6	75.5	94.3	0.0	88.9	96.3	88.7	75.7	0.0	89.2	86.1	88.5	97.4	0.0	89.5	100.0	95.2	86.3	0.0	91.3	89.4
Heavy Vehicles	19	26	5	0	50	5	8	17	0	30	31	50	4	0	85	0	3	10	0	13	178
Heavy Vehicles %	7.4	24.5	5.7	0.0	11.1	3.7	11.3	24.3	0.0	10.8	13.9	11.5	2.6	0.0	10.5	0.0	4.8	13.7	0.0	8.7	10.6
Cars Enter Leg	237	80	82	0	399	131	63	53	0	247	192	384	147	0	723	13	60	63	0	136	1505
Heavy Enter Leg	19	26	5	0	50	5	8	17	0	30	31	50	4	0	85	0	3	10	0	13	178
Total Entering Leg	256	106	87	0	449	136	71	70	0	277	223	434	151	0	808	13	63	73	0	149	1683
Cars Exiting Leg					578					334					146					447	1505
Heavy Exiting Leg					65					39					43					31	178
Total Exiting Leg					643					373					189					478	1683

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	54	22	22	0	98	25	9	7	0	41	41	44	22	0	107	9	7	17	0	33	279
7:15 AM	46	14	25	0	85	17	10	8	0	35	58	39	37	0	134	4	12	6	0	22	276
7:30 AM	62	17	23	0	102	38	17	3	0	58	64	64	27	0	155	5	17	16	0	38	353
7:45 AM	54	16	22	0	92	27	16	14	0	57	74	75	29	0	178	3	15	19	0	37	364
Total	216	69	92	0	377	107	52	32	0	191	237	222	115	0	574	21	51	58	0	130	1272
8:00 AM	59	17	24	0	100	47	19	10	0	76	36	104	31	0	171	2	16	16	0	34	381
8:15 AM	66	17	18	0	101	33	13	11	0	57	36	133	42	0	211	2	12	14	0	28	397
8:30 AM	58	30	18	0	106	24	15	18	0	57	46	72	45	0	163	6	17	14	0	37	363
8:45 AM	48	16	18	0	82	30	18	19	0	67	53	86	43	0	182	4	12	17	1	34	365
Total	231	80	78	0	389	134	65	58	0	257	171	395	161	0	727	14	57	61	1	133	1506
Grand Total	447	149	170	0	766	241	117	90	0	448	408	617	276	0	1301	35	108	119	1	263	2778
Approach %	58.4	19.5	22.2	0.0		53.8	26.1	20.1	0.0		31.4	47.4	21.2	0.0		13.3	41.1	45.2	0.4		
Total %	16.1	5.4	6.1	0.0	27.6	8.7	4.2	3.2	0.0	16.1	14.7	22.2	9.9	0.0	46.8	1.3	3.9	4.3	0.0	9.5	
Exiting Leg Total					977					686					274					841	2778

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	59	17	24	0	100	47	19	10	0	76	36	104	31	0	171	2	16	16	0	34	381
8:15 AM	66	17	18	0	101	33	13	11	0	57	36	133	42	0	211	2	12	14	0	28	397
8:30 AM	58	30	18	0	106	24	15	18	0	57	46	72	45	0	163	6	17	14	0	37	363
8:45 AM	48	16	18	0	82	30	18	19	0	67	53	86	43	0	182	4	12	17	1	34	365
Total Volume	231	80	78	0	389	134	65	58	0	257	171	395	161	0	727	14	57	61	1	133	1506
% Approach Total	59.4	20.6	20.1	0.0		52.1	25.3	22.6	0.0		23.5	54.3	22.1	0.0		10.5	42.9	45.9	0.8		
PHF	0.875	0.667	0.813	0.000	0.917	0.713	0.855	0.763	0.000	0.845	0.807	0.742	0.894	0.000	0.861	0.583	0.838	0.897	0.250	0.899	0.948
Entering Leg	231	80	78	0	389	134	65	58	0	257	171	395	161	0	727	14	57	61	1	133	1506
Exiting Leg					590					306					152					458	1506
Total					979					563					879					591	3012

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	3	4	0	0	7	5	3	6	0	14	9	14	0	0	23	2	1	4	0	7	51
7:15 AM	3	6	1	0	10	1	1	4	0	6	8	17	3	0	28	0	1	5	0	6	50
7:30 AM	3	5	1	0	9	1	3	7	0	11	5	5	2	0	12	1	0	2	0	3	35
7:45 AM	7	4	1	0	12	4	3	5	0	12	9	10	1	0	20	0	1	4	0	5	49
Total	16	19	3	0	38	11	10	22	0	43	31	46	6	0	83	3	3	15	0	21	185
8:00 AM	3	4	2	0	9	0	3	2	0	5	7	13	0	0	20	0	1	5	0	6	40
8:15 AM	5	4	0	0	9	1	1	5	0	7	9	19	1	0	29	0	1	1	0	2	47
8:30 AM	4	14	2	0	20	0	1	5	0	6	6	8	2	0	16	0	0	0	0	0	42
8:45 AM	5	1	1	0	7	1	2	6	0	9	5	12	2	0	19	1	0	1	0	2	37
Total	17	23	5	0	45	2	7	18	0	27	27	52	5	0	84	1	2	7	0	10	166
Grand Total	33	42	8	0	83	13	17	40	0	70	58	98	11	0	167	4	5	22	0	31	351
Approach %	39.8	50.6	9.6	0.0		18.6	24.3	57.1	0.0		34.7	58.7	6.6	0.0		12.9	16.1	71.0	0.0		
Total %	9.4	12.0	2.3	0.0	23.6	3.7	4.8	11.4	0.0	19.9	16.5	27.9	3.1	0.0	47.6	1.1	1.4	6.3	0.0	8.8	
Exiting Leg Total					133					71					86					61	351
Buses	6	0	0	0	6	1	0	0	0	1	1	8	3	0	12	0	0	1	0	1	20
% Buses	18.2	0.0	0.0	0.0	7.2	7.7	0.0	0.0	0.0	1.4	1.7	8.2	27.3	0.0	7.2	0.0	0.0	4.5	0.0	3.2	5.7
Exiting Leg Total					10					1					0					9	20
Single-Unit Trucks	22	34	6	0	62	12	14	32	0	58	44	60	6	0	110	3	5	20	0	28	258
% Single-Unit	66.7	81.0	75.0	0.0	74.7	92.3	82.4	80.0	0.0	82.9	75.9	61.2	54.5	0.0	65.9	75.0	100.0	90.9	0.0	90.3	73.5
Exiting Leg Total					92					55					69					42	258
Articulated Trucks	5	8	2	0	15	0	3	8	0	11	13	30	2	0	45	1	0	1	0	2	73
% Articulated	15.2	19.0	25.0	0.0	18.1	0.0	17.6	20.0	0.0	15.7	22.4	30.6	18.2	0.0	26.9	25.0	0.0	4.5	0.0	6.5	20.8
Exiting Leg Total					31					15					17					10	73

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	3	4	0	0	7	5	3	6	0	14	9	14	0	0	23	2	1	4	0	7	51
7:15 AM	3	6	1	0	10	1	1	4	0	6	8	17	3	0	28	0	1	5	0	6	50
7:30 AM	3	5	1	0	9	1	3	7	0	11	5	5	2	0	12	1	0	2	0	3	35
7:45 AM	7	4	1	0	12	4	3	5	0	12	9	10	1	0	20	0	1	4	0	5	49
Total Volume	16	19	3	0	38	11	10	22	0	43	31	46	6	0	83	3	3	15	0	21	185
% Approach Total	42.1	50.0	7.9	0.0		25.6	23.3	51.2	0.0		37.3	55.4	7.2	0.0		14.3	14.3	71.4	0.0		
PHF	0.571	0.792	0.750	0.000	0.792	0.550	0.833	0.786	0.000	0.768	0.861	0.676	0.500	0.000	0.741	0.375	0.750	0.750	0.000	0.750	0.907
Buses	4	0	0	0	4	1	0	0	0	1	0	7	2	0	9	0	0	1	0	1	15
Buses %	25.0	0.0	0.0	0.0	10.5	9.1	0.0	0.0	0.0	2.3	0.0	15.2	33.3	0.0	10.8	0.0	0.0	6.7	0.0	4.8	8.1
Single-Unit Trucks	8	15	3	0	26	10	9	17	0	36	25	28	3	0	56	2	3	13	0	18	136
Single-Unit %	50.0	78.9	100.0	0.0	68.4	90.9	90.0	77.3	0.0	83.7	80.6	60.9	50.0	0.0	67.5	66.7	100.0	86.7	0.0	85.7	73.5
Articulated Trucks	4	4	0	0	8	0	1	5	0	6	6	11	1	0	18	1	0	1	0	2	34
Articulated %	25.0	21.1	0.0	0.0	21.1	0.0	10.0	22.7	0.0	14.0	19.4	23.9	16.7	0.0	21.7	33.3	0.0	6.7	0.0	9.5	18.4
Buses	4	0	0	0	4	1	0	0	0	1	0	7	2	0	9	0	0	1	0	1	15
Single-Unit Trucks	8	15	3	0	26	10	9	17	0	36	25	28	3	0	56	2	3	13	0	18	136
Articulated Trucks	4	4	0	0	8	0	1	5	0	6	6	11	1	0	18	1	0	1	0	2	34
Total Entering Leg	16	19	3	0	38	11	10	22	0	43	31	46	6	0	83	3	3	15	0	21	185
Buses					9					0					0					6	15
Single-Unit Trucks					51					31					34					20	136
Articulated Trucks					12					6					10					6	34
Total Exiting Leg					72					37					44					32	185

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	5
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
7:45 AM	1	0	0	0	1	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	4
Total	4	0	0	0	4	1	0	0	0	1	0	7	2	0	9	0	0	1	0	1	15
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
8:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	2	0	0	0	2	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	5
Grand Total	6	0	0	0	6	1	0	0	0	1	1	8	3	0	12	0	0	1	0	1	20
Approach %	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0		8.3	66.7	25.0	0.0		0.0	0.0	100.0	0.0		
Total %	30.0	0.0	0.0	0.0	30.0	5.0	0.0	0.0	0.0	5.0	5.0	40.0	15.0	0.0	60.0	0.0	0.0	5.0	0.0	5.0	
Exiting Leg Total					10					1					0					9	20

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	5
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
7:45 AM	1	0	0	0	1	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	4
Total Volume	4	0	0	0	4	1	0	0	0	1	0	7	2	0	9	0	0	1	0	1	15
% Approach Total	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	77.8	22.2	0.0		0.0	0.0	100.0	0.0		
PHF	1.000	0.000	0.000	0.000	1.000	0.250	0.000	0.000	0.000	0.250	0.000	0.583	0.500	0.000	0.750	0.000	0.000	0.250	0.000	0.250	0.750
Entering Leg	4	0	0	0	4	1	0	0	0	1	0	7	2	0	9	0	0	1	0	1	15
Exiting Leg					9					0					0					6	15
Total					13					1					9					7	30

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	3	0	0	4	5	3	2	0	10	6	5	0	0	11	2	1	3	0	6	31
7:15 AM	1	5	1	0	7	1	0	3	0	4	7	11	2	0	20	0	1	5	0	6	37
7:30 AM	1	5	1	0	7	1	3	7	0	11	4	4	1	0	9	0	0	2	0	2	29
7:45 AM	5	2	1	0	8	3	3	5	0	11	8	8	0	0	16	0	1	3	0	4	39
Total	8	15	3	0	26	10	9	17	0	36	25	28	3	0	56	2	3	13	0	18	136
8:00 AM	3	3	0	0	6	0	2	1	0	3	6	9	0	0	15	0	1	5	0	6	30
8:15 AM	3	2	0	0	5	1	0	4	0	5	4	11	1	0	16	0	1	1	0	2	28
8:30 AM	3	13	2	0	18	0	1	5	0	6	5	3	1	0	9	0	0	0	0	0	33
8:45 AM	5	1	1	0	7	1	2	5	0	8	4	9	1	0	14	1	0	1	0	2	31
Total	14	19	3	0	36	2	5	15	0	22	19	32	3	0	54	1	2	7	0	10	122
Grand Total	22	34	6	0	62	12	14	32	0	58	44	60	6	0	110	3	5	20	0	28	258
Approach %	35.5	54.8	9.7	0.0		20.7	24.1	55.2	0.0		40.0	54.5	5.5	0.0		10.7	17.9	71.4	0.0		
Total %	8.5	13.2	2.3	0.0	24.0	4.7	5.4	12.4	0.0	22.5	17.1	23.3	2.3	0.0	42.6	1.2	1.9	7.8	0.0	10.9	
Exiting Leg Total					92					55					69					42	258

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	3	0	0	4	5	3	2	0	10	6	5	0	0	11	2	1	3	0	6	31
7:15 AM	1	5	1	0	7	1	0	3	0	4	7	11	2	0	20	0	1	5	0	6	37
7:30 AM	1	5	1	0	7	1	3	7	0	11	4	4	1	0	9	0	0	2	0	2	29
7:45 AM	5	2	1	0	8	3	3	5	0	11	8	8	0	0	16	0	1	3	0	4	39
Total Volume	8	15	3	0	26	10	9	17	0	36	25	28	3	0	56	2	3	13	0	18	136
% Approach Total	30.8	57.7	11.5	0.0		27.8	25.0	47.2	0.0		44.6	50.0	5.4	0.0		11.1	16.7	72.2	0.0		
PHF	0.400	0.750	0.750	0.000	0.813	0.500	0.750	0.607	0.000	0.818	0.781	0.636	0.375	0.000	0.700	0.250	0.750	0.650	0.000	0.750	0.872
Entering Leg	8	15	3	0	26	10	9	17	0	36	25	28	3	0	56	2	3	13	0	18	136
Exiting Leg					51					31					34					20	136
Total					77					67					90					38	272

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	1	0	0	2	0	0	4	0	4	3	6	0	0	9	0	0	0	0	0	15
7:15 AM	1	1	0	0	2	0	1	1	0	2	1	3	1	0	5	0	0	0	0	0	9
7:30 AM	1	0	0	0	1	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	4
7:45 AM	1	2	0	0	3	0	0	0	0	0	1	1	0	0	2	0	0	1	0	1	6
Total	4	4	0	0	8	0	1	5	0	6	6	11	1	0	18	1	0	1	0	2	34
8:00 AM	0	1	2	0	3	0	1	1	0	2	0	4	0	0	4	0	0	0	0	0	9
8:15 AM	1	2	0	0	3	0	1	1	0	2	5	7	0	0	12	0	0	0	0	0	17
8:30 AM	0	1	0	0	1	0	0	0	0	0	1	5	1	0	7	0	0	0	0	0	8
8:45 AM	0	0	0	0	0	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	5
Total	1	4	2	0	7	0	2	3	0	5	7	19	1	0	27	0	0	0	0	0	39
Grand Total	5	8	2	0	15	0	3	8	0	11	13	30	2	0	45	1	0	1	0	2	73
Approach %	33.3	53.3	13.3	0.0		0.0	27.3	72.7	0.0		28.9	66.7	4.4	0.0		50.0	0.0	50.0	0.0		
Total %	6.8	11.0	2.7	0.0	20.5	0.0	4.1	11.0	0.0	15.1	17.8	41.1	2.7	0.0	61.6	1.4	0.0	1.4	0.0	2.7	
Exiting Leg Total					31					15					17					10	73

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	1	2	0	0	3	0	0	0	0	0	1	1	0	0	2	0	0	1	0	1	6
8:00 AM	0	1	2	0	3	0	1	1	0	2	0	4	0	0	4	0	0	0	0	0	9
8:15 AM	1	2	0	0	3	0	1	1	0	2	5	7	0	0	12	0	0	0	0	0	17
8:30 AM	0	1	0	0	1	0	0	0	0	0	1	5	1	0	7	0	0	0	0	0	8
Total Volume	2	6	2	0	10	0	2	2	0	4	7	17	1	0	25	0	0	1	0	1	40
% Approach Total	20.0	60.0	20.0	0.0		0.0	50.0	50.0	0.0		28.0	68.0	4.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.500	0.750	0.250	0.000	0.833	0.000	0.500	0.500	0.000	0.500	0.350	0.607	0.250	0.000	0.521	0.000	0.000	0.250	0.000	0.250	0.588
Entering Leg	2	6	2	0	10	0	2	2	0	4	7	17	1	0	25	0	0	1	0	1	40
Exiting Leg					18					9					8					5	40
Total					28					13					33					6	80

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Grand Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	
Exiting Leg Total							0							1							0							1	2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							0							0							0							1	1
Total							0							1							0							1	2

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	3
Total	0	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	9
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	9
Approach %	0	0	0	0	83.3	16.7		0	0	0	0	0	0		0	0	0	0	33.3	66.7		0	0	0	0	0	0		
Total %	0	0	0	0	55.6	11.1	66.7	0	0	0	0	0	0	0	0	0	0	0	11.1	22.2	33.3	0	0	0	0	0	0	0	
Exiting Leg Total							6							0							3							0	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	9
% Approach Total	0.0	0.0	0.0	0.0	83.3	16.7		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.625	0.250	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	9
Exiting Leg							6							0							3							0	9
Total							12							0							6							0	18

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	52	77	48	0	177	29	5	17	0	51	19	94	9	0	122	9	18	23	0	50	400
4:15 PM	27	80	44	0	151	27	14	31	0	72	44	108	17	0	169	16	27	36	0	79	471
4:30 PM	40	77	49	0	166	41	25	49	0	115	39	87	18	0	144	8	19	35	0	62	487
4:45 PM	43	75	42	0	160	29	22	37	0	88	34	82	19	0	135	10	22	30	0	62	445
Total	162	309	183	0	654	126	66	134	0	326	136	371	63	0	570	43	86	124	0	253	1803
5:00 PM	46	66	70	0	182	36	15	29	0	80	35	74	18	0	127	19	21	31	0	71	460
5:15 PM	42	84	55	0	181	30	12	26	0	68	28	95	12	0	135	28	26	42	0	96	480
5:30 PM	50	88	61	0	199	39	9	27	0	75	27	106	25	0	158	16	24	36	0	76	508
5:45 PM	62	71	81	0	214	32	10	25	0	67	28	99	22	0	149	5	19	28	0	52	482
Total	200	309	267	0	776	137	46	107	0	290	118	374	77	0	569	68	90	137	0	295	1930
Grand Total	362	618	450	0	1430	263	112	241	0	616	254	745	140	0	1139	111	176	261	0	548	3733
Approach %	25.3	43.2	31.5	0.0		42.7	18.2	39.1	0.0		22.3	65.4	12.3	0.0		20.3	32.1	47.6	0.0		
Total %	9.7	16.6	12.1	0.0	38.3	7.0	3.0	6.5	0.0	16.5	6.8	20.0	3.8	0.0	30.5	3.0	4.7	7.0	0.0	14.7	
Exiting Leg Total					1269					880					970					614	3733
Cars	343	579	442	0	1364	253	110	224	0	587	233	703	138	0	1074	107	170	258	0	535	3560
% Cars	94.8	93.7	98.2	0.0	95.4	96.2	98.2	92.9	0.0	95.3	91.7	94.4	98.6	0.0	94.3	96.4	96.6	98.9	0.0	97.6	95.4
Exiting Leg Total					1214					845					910					591	3560
Heavy Vehicles	19	39	8	0	66	10	2	17	0	29	21	42	2	0	65	4	6	3	0	13	173
% Heavy Vehicles	5.2	6.3	1.8	0.0	4.6	3.8	1.8	7.1	0.0	4.7	8.3	5.6	1.4	0.0	5.7	3.6	3.4	1.1	0.0	2.4	4.6
Exiting Leg Total					55					35					60					23	173

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	46	66	70	0	182	36	15	29	0	80	35	74	18	0	127	19	21	31	0	71	460
5:15 PM	42	84	55	0	181	30	12	26	0	68	28	95	12	0	135	28	26	42	0	96	480
5:30 PM	50	88	61	0	199	39	9	27	0	75	27	106	25	0	158	16	24	36	0	76	508
5:45 PM	62	71	81	0	214	32	10	25	0	67	28	99	22	0	149	5	19	28	0	52	482
Total Volume	200	309	267	0	776	137	46	107	0	290	118	374	77	0	569	68	90	137	0	295	1930
% Approach Total	25.8	39.8	34.4	0.0		47.2	15.9	36.9	0.0		20.7	65.7	13.5	0.0		23.1	30.5	46.4	0.0		
PHF	0.806	0.878	0.824	0.000	0.907	0.878	0.767	0.922	0.000	0.906	0.843	0.882	0.770	0.000	0.900	0.607	0.865	0.815	0.000	0.768	0.950
Cars	194	291	263	0	748	131	46	100	0	277	112	363	77	0	552	64	84	135	0	283	1860
Cars %	97.0	94.2	98.5	0.0	96.4	95.6	100.0	93.5	0.0	95.5	94.9	97.1	100.0	0.0	97.0	94.1	93.3	98.5	0.0	95.9	96.4
Heavy Vehicles	6	18	4	0	28	6	0	7	0	13	6	11	0	0	17	4	6	2	0	12	70
Heavy Vehicles %	3.0	5.8	1.5	0.0	3.6	4.4	0.0	6.5	0.0	4.5	5.1	2.9	0.0	0.0	3.0	5.9	6.7	1.5	0.0	4.1	3.6
Cars Enter Leg	194	291	263	0	748	131	46	100	0	277	112	363	77	0	552	64	84	135	0	283	1860
Heavy Enter Leg	6	18	4	0	28	6	0	7	0	13	6	11	0	0	17	4	6	2	0	12	70
Total Entering Leg	200	309	267	0	776	137	46	107	0	290	118	374	77	0	569	68	90	137	0	295	1930
Cars Exiting Leg					629					459					455					317	1860
Heavy Exiting Leg					19					16					29					6	70
Total Exiting Leg					648					475					484					323	1930

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	50	66	47	0	163	27	4	14	0	45	12	86	9	0	107	9	18	23	0	50	365
4:15 PM	25	76	44	0	145	26	14	26	0	66	40	101	16	0	157	16	27	36	0	79	447
4:30 PM	36	73	47	0	156	40	25	49	0	114	36	78	17	0	131	8	19	34	0	61	462
4:45 PM	38	73	41	0	152	29	21	35	0	85	33	75	19	0	127	10	22	30	0	62	426
Total	149	288	179	0	616	122	64	124	0	310	121	340	61	0	522	43	86	123	0	252	1700
5:00 PM	43	62	68	0	173	33	15	28	0	76	35	70	18	0	123	19	19	30	0	68	440
5:15 PM	41	79	55	0	175	28	12	24	0	64	25	90	12	0	127	25	25	42	0	92	458
5:30 PM	50	83	59	0	192	38	9	25	0	72	26	105	25	0	156	16	21	35	0	72	492
5:45 PM	60	67	81	0	208	32	10	23	0	65	26	98	22	0	146	4	19	28	0	51	470
Total	194	291	263	0	748	131	46	100	0	277	112	363	77	0	552	64	84	135	0	283	1860
Grand Total	343	579	442	0	1364	253	110	224	0	587	233	703	138	0	1074	107	170	258	0	535	3560
Approach %	25.1	42.4	32.4	0.0		43.1	18.7	38.2	0.0		21.7	65.5	12.8	0.0		20.0	31.8	48.2	0.0		
Total %	9.6	16.3	12.4	0.0	38.3	7.1	3.1	6.3	0.0	16.5	6.5	19.7	3.9	0.0	30.2	3.0	4.8	7.2	0.0	15.0	
Exiting Leg Total					1214					845					910					591	3560

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	43	62	68	0	173	33	15	28	0	76	35	70	18	0	123	19	19	30	0	68	440
5:15 PM	41	79	55	0	175	28	12	24	0	64	25	90	12	0	127	25	25	42	0	92	458
5:30 PM	50	83	59	0	192	38	9	25	0	72	26	105	25	0	156	16	21	35	0	72	492
5:45 PM	60	67	81	0	208	32	10	23	0	65	26	98	22	0	146	4	19	28	0	51	470
Total Volume	194	291	263	0	748	131	46	100	0	277	112	363	77	0	552	64	84	135	0	283	1860
% Approach Total	25.9	38.9	35.2	0.0		47.3	16.6	36.1	0.0		20.3	65.8	13.9	0.0		22.6	29.7	47.7	0.0		
PHF	0.808	0.877	0.812	0.000	0.899	0.862	0.767	0.893	0.000	0.911	0.800	0.864	0.770	0.000	0.885	0.640	0.840	0.804	0.000	0.769	0.945
Entering Leg	194	291	263	0	748	131	46	100	0	277	112	363	77	0	552	64	84	135	0	283	1860
Exiting Leg					629					459					455					317	1860
Total					1377					736					1007					600	3720

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	2	11	1	0	14	2	1	3	0	6	7	8	0	0	15	0	0	0	0	0	35
4:15 PM	2	4	0	0	6	1	0	5	0	6	4	7	1	0	12	0	0	0	0	0	24
4:30 PM	4	4	2	0	10	1	0	0	0	1	3	9	1	0	13	0	0	1	0	1	25
4:45 PM	5	2	1	0	8	0	1	2	0	3	1	7	0	0	8	0	0	0	0	0	19
Total	13	21	4	0	38	4	2	10	0	16	15	31	2	0	48	0	0	1	0	1	103
5:00 PM	3	4	2	0	9	3	0	1	0	4	0	4	0	0	4	0	2	1	0	3	20
5:15 PM	1	5	0	0	6	2	0	2	0	4	3	5	0	0	8	3	1	0	0	4	22
5:30 PM	0	5	2	0	7	1	0	2	0	3	1	1	0	0	2	0	3	1	0	4	16
5:45 PM	2	4	0	0	6	0	0	2	0	2	2	1	0	0	3	1	0	0	0	1	12
Total	6	18	4	0	28	6	0	7	0	13	6	11	0	0	17	4	6	2	0	12	70
Grand Total	19	39	8	0	66	10	2	17	0	29	21	42	2	0	65	4	6	3	0	13	173
Approach %	28.8	59.1	12.1	0.0		34.5	6.9	58.6	0.0		32.3	64.6	3.1	0.0		30.8	46.2	23.1	0.0		
Total %	11.0	22.5	4.6	0.0	38.2	5.8	1.2	9.8	0.0	16.8	12.1	24.3	1.2	0.0	37.6	2.3	3.5	1.7	0.0	7.5	
Exiting Leg Total					55					35					60					23	173
Buses	6	10	1	0	17	2	1	1	0	4	0	7	0	0	7	1	2	1	0	4	32
% Buses	31.6	25.6	12.5	0.0	25.8	20.0	50.0	5.9	0.0	13.8	0.0	16.7	0.0	0.0	10.8	25.0	33.3	33.3	0.0	30.8	18.5
Exiting Leg Total					10					3					12					7	32
Single-Unit Trucks	10	23	7	0	40	7	1	11	0	19	14	26	2	0	42	3	4	1	0	8	109
% Single-Unit	52.6	59.0	87.5	0.0	60.6	70.0	50.0	64.7	0.0	65.5	66.7	61.9	100.0	0.0	64.6	75.0	66.7	33.3	0.0	61.5	63.0
Exiting Leg Total					34					25					37					13	109
Articulated Trucks	3	6	0	0	9	1	0	5	0	6	7	9	0	0	16	0	0	1	0	1	32
% Articulated	15.8	15.4	0.0	0.0	13.6	10.0	0.0	29.4	0.0	20.7	33.3	21.4	0.0	0.0	24.6	0.0	0.0	33.3	0.0	7.7	18.5
Exiting Leg Total					11					7					11					3	32

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	2	11	1	0	14	2	1	3	0	6	7	8	0	0	15	0	0	0	0	0	35
4:15 PM	2	4	0	0	6	1	0	5	0	6	4	7	1	0	12	0	0	0	0	0	24
4:30 PM	4	4	2	0	10	1	0	0	0	1	3	9	1	0	13	0	0	1	0	1	25
4:45 PM	5	2	1	0	8	0	1	2	0	3	1	7	0	0	8	0	0	0	0	0	19
Total Volume	13	21	4	0	38	4	2	10	0	16	15	31	2	0	48	0	0	1	0	1	103
% Approach Total	34.2	55.3	10.5	0.0		25.0	12.5	62.5	0.0		31.3	64.6	4.2	0.0		0.0	0.0	100.0	0.0		
PHF	0.650	0.477	0.500	0.000	0.679	0.500	0.500	0.500	0.000	0.667	0.536	0.861	0.500	0.000	0.800	0.000	0.000	0.250	0.000	0.250	0.736
Buses	4	6	0	0	10	0	1	0	0	1	0	5	0	0	5	0	0	1	0	1	17
Buses %	30.8	28.6	0.0	0.0	26.3	0.0	50.0	0.0	0.0	6.3	0.0	16.1	0.0	0.0	10.4	0.0	0.0	100.0	0.0	100.0	16.5
Single-Unit Trucks	7	11	4	0	22	3	1	6	0	10	9	18	2	0	29	0	0	0	0	0	61
Single-Unit %	53.8	52.4	100.0	0.0	57.9	75.0	50.0	60.0	0.0	62.5	60.0	58.1	100.0	0.0	60.4	0.0	0.0	0.0	0.0	0.0	59.2
Articulated Trucks	2	4	0	0	6	1	0	4	0	5	6	8	0	0	14	0	0	0	0	0	25
Articulated %	15.4	19.0	0.0	0.0	15.8	25.0	0.0	40.0	0.0	31.3	40.0	25.8	0.0	0.0	29.2	0.0	0.0	0.0	0.0	0.0	24.3
Buses	4	6	0	0	10	0	1	0	0	1	0	5	0	0	5	0	0	1	0	1	17
Single-Unit Trucks	7	11	4	0	22	3	1	6	0	10	9	18	2	0	29	0	0	0	0	0	61
Articulated Trucks	2	4	0	0	6	1	0	4	0	5	6	8	0	0	14	0	0	0	0	0	25
Total Entering Leg	13	21	4	0	38	4	2	10	0	16	15	31	2	0	48	0	0	1	0	1	103
Buses					6					0					6					5	17
Single-Unit Trucks					21					13					17					10	61
Articulated Trucks					9					6					8					2	25
Total Exiting Leg					36					19					31					17	103

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
4:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	2	0	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	7
4:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
Total	4	6	0	0	10	0	1	0	0	1	0	5	0	0	5	0	0	1	0	1	17
5:00 PM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	4
5:15 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
5:30 PM	0	1	1	0	2	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	4
5:45 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	2	4	1	0	7	2	0	1	0	3	0	2	0	0	2	1	2	0	0	3	15
Grand Total	6	10	1	0	17	2	1	1	0	4	0	7	0	0	7	1	2	1	0	4	32
Approach %	35.3	58.8	5.9	0.0		50.0	25.0	25.0	0.0		0.0	100.0	0.0	0.0		25.0	50.0	25.0	0.0		
Total %	18.8	31.3	3.1	0.0	53.1	6.3	3.1	3.1	0.0	12.5	0.0	21.9	0.0	0.0	21.9	3.1	6.3	3.1	0.0	12.5	
Exiting Leg Total					10					3					12					7	32

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	2	0	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	7
4:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
5:00 PM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	4
5:15 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
Total Volume	4	4	0	0	8	2	0	0	0	2	0	6	0	0	6	1	1	1	0	3	19
% Approach Total	50.0	50.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		33.3	33.3	33.3	0.0		
PHF	0.500	0.500	0.000	0.000	0.667	0.250	0.000	0.000	0.000	0.250	0.000	0.375	0.000	0.000	0.375	0.250	0.250	0.250	0.000	0.750	0.679
Entering Leg	4	4	0	0	8	2	0	0	0	2	0	6	0	0	6	1	1	1	0	3	19
Exiting Leg					9					1					5					4	19
Total					17					3					11					7	38

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	6	1	0	8	2	0	1	0	3	4	6	0	0	10	0	0	0	0	0	21
4:15 PM	1	3	0	0	4	1	0	4	0	5	3	6	1	0	10	0	0	0	0	0	19
4:30 PM	2	2	2	0	6	0	0	0	0	0	1	3	1	0	5	0	0	0	0	0	11
4:45 PM	3	0	1	0	4	0	1	1	0	2	1	3	0	0	4	0	0	0	0	0	10
Total	7	11	4	0	22	3	1	6	0	10	9	18	2	0	29	0	0	0	0	0	61
5:00 PM	2	2	2	0	6	1	0	0	0	1	0	4	0	0	4	0	1	1	0	2	13
5:15 PM	0	3	0	0	3	2	0	2	0	4	2	3	0	0	5	2	1	0	0	3	15
5:30 PM	0	4	1	0	5	1	0	1	0	2	1	1	0	0	2	0	2	0	0	2	11
5:45 PM	1	3	0	0	4	0	0	2	0	2	2	0	0	0	2	1	0	0	0	1	9
Total	3	12	3	0	18	4	0	5	0	9	5	8	0	0	13	3	4	1	0	8	48
Grand Total	10	23	7	0	40	7	1	11	0	19	14	26	2	0	42	3	4	1	0	8	109
Approach %	25.0	57.5	17.5	0.0		36.8	5.3	57.9	0.0		33.3	61.9	4.8	0.0		37.5	50.0	12.5	0.0		
Total %	9.2	21.1	6.4	0.0	36.7	6.4	0.9	10.1	0.0	17.4	12.8	23.9	1.8	0.0	38.5	2.8	3.7	0.9	0.0	7.3	
Exiting Leg Total					34					25					37					13	109

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	6	1	0	8	2	0	1	0	3	4	6	0	0	10	0	0	0	0	0	21
4:15 PM	1	3	0	0	4	1	0	4	0	5	3	6	1	0	10	0	0	0	0	0	19
4:30 PM	2	2	2	0	6	0	0	0	0	0	1	3	1	0	5	0	0	0	0	0	11
4:45 PM	3	0	1	0	4	0	1	1	0	2	1	3	0	0	4	0	0	0	0	0	10
Total Volume	7	11	4	0	22	3	1	6	0	10	9	18	2	0	29	0	0	0	0	0	61
% Approach Total	31.8	50.0	18.2	0.0		30.0	10.0	60.0	0.0		31.0	62.1	6.9	0.0		0.0	0.0	0.0	0.0		
PHF	0.583	0.458	0.500	0.000	0.688	0.375	0.250	0.375	0.000	0.500	0.563	0.750	0.500	0.000	0.725	0.000	0.000	0.000	0.000	0.000	0.726
Entering Leg	7	11	4	0	22	3	1	6	0	10	9	18	2	0	29	0	0	0	0	0	61
Exiting Leg					21					13					17					10	61
Total					43					23					46					10	122

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	2	0	0	3	0	0	2	0	2	3	2	0	0	5	0	0	0	0	0	10
4:15 PM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
4:30 PM	0	2	0	0	2	1	0	0	0	1	2	2	0	0	4	0	0	0	0	0	7
4:45 PM	1	0	0	0	1	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	5
Total	2	4	0	0	6	1	0	4	0	5	6	8	0	0	14	0	0	0	0	0	25
5:00 PM	1	1	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	2	0	0	3	0	0	1	0	1	1	1	0	0	2	0	0	1	0	1	7
Grand Total	3	6	0	0	9	1	0	5	0	6	7	9	0	0	16	0	0	1	0	1	32
Approach %	33.3	66.7	0.0	0.0		16.7	0.0	83.3	0.0		43.8	56.3	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	9.4	18.8	0.0	0.0	28.1	3.1	0.0	15.6	0.0	18.8	21.9	28.1	0.0	0.0	50.0	0.0	0.0	3.1	0.0	3.1	
Exiting Leg Total					11					7					11					3	32

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Bypass Road from North					Cypher Street from East					Bypass Road from South					Richards Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	2	0	0	3	0	0	2	0	2	3	2	0	0	5	0	0	0	0	0	10
4:15 PM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
4:30 PM	0	2	0	0	2	1	0	0	0	1	2	2	0	0	4	0	0	0	0	0	7
4:45 PM	1	0	0	0	1	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	5
Total Volume	2	4	0	0	6	1	0	4	0	5	6	8	0	0	14	0	0	0	0	0	25
% Approach Total	33.3	66.7	0.0	0.0		20.0	0.0	80.0	0.0		42.9	57.1	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.500	0.500	0.000	0.000	0.500	0.250	0.000	0.500	0.000	0.625	0.500	0.667	0.000	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	2	4	0	0	6	1	0	4	0	5	6	8	0	0	14	0	0	0	0	0	25
Exiting Leg					9					6					8					2	25
Total					15					11					22					2	50

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	0	0	1	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	1	0	0	0	1	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	1	6
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
5:30 PM	0	0	1	0	0	0	1	0	1	0	0	1	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Total	0	0	1	0	0	0	1	0	1	0	0	1	0	2	0	0	0	0	0	0	0	0	8	0	0	0	0	8	11
Grand Total	0	0	2	0	0	0	2	0	5	0	0	1	0	6	0	0	0	0	0	0	0	0	9	0	0	0	0	9	17
Approach %	0.0	0.0	100.0	0.0	0.0	0.0		0.0	83.3	0.0	0.0	16.7	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	11.8	0.0	0.0	0.0	11.8	0.0	29.4	0.0	0.0	5.9	0.0	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.9	0.0	0.0	0.0	0.0	52.9	
Exiting Leg Total							0							12							0							5	17

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	0	0	1	0	0	0	1	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
5:30 PM	0	0	1	0	0	0	1	0	1	0	0	1	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
Total Volume	0	0	2	0	0	0	2	0	4	0	0	1	0	5	0	0	0	0	0	0	0	0	6	0	0	0	0	6	13
% Approach Total	0.0	0.0	100.0	0.0	0.0	0.0		0.0	80.0	0.0	0.0	20.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.333	0.000	0.000	0.250	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.813
Entering Leg	0	0	2	0	0	0	2	0	4	0	0	1	0	5	0	0	0	0	0	0	0	0	6	0	0	0	0	6	13
Exiting Leg							0							9							0							4	13
Total							2							14							0							10	26

PDI File #: **239422 I**
Location: **N: Bypass Road S: Bypass Road**
Location: **E: Cypher Street W: Richards Street**
City, State: **Boston, MA**
Client: **VHB/ M. Santos**
Site Code: **15921.00**
Count Date: **Thursday, June 1, 2023**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	2	2	0	0	0	0	1	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3
Total	0	0	0	0	0	4	4	0	0	0	0	2	0	2	0	0	0	0	3	0	3	0	0	0	0	0	0	0	9
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	2	3	5	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	7
Grand Total	0	0	0	0	2	7	9	0	0	0	0	2	0	2	0	0	0	0	4	1	5	0	0	0	0	0	0	0	16
Approach %	0	0	0	0	22.2	77.8		0	0	0	0	100	0		0	0	0	0	80	20		0	0	0	0	0	0		
Total %	0	0	0	0	12.5	43.8	56.3	0	0	0	0	12.5	0	12.5	0	0	0	0	25	6.25	31.3	0	0	0	0	0	0	0	
Exiting Leg Total							9							2							5							0	16

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Bypass Road from North							Cypher Street from East							Bypass Road from South							Richards Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:30 PM	0	0	0	0	0	2	2	0	0	0	0	1	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	1	4	5	0	0	0	0	2	0	2	0	0	0	0	4	0	4	0	0	0	0	0	0	0	11
% Approach Total	0.0	0.0	0.0	0.0	20.0	80.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.500	0.625	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.550
Entering Leg	0	0	0	0	1	4	5	0	0	0	0	2	0	2	0	0	0	0	4	0	4	0	0	0	0	0	0	0	11
Exiting Leg							5							2							4							0	11
Total							10							4							8							0	22

Crash Data

Congress Street at B Street

Crash Number	Crash Date	Crash Time	Crash Severity	Manner of Collision	Road Surface	Weather Condition	Non Motorist Type	Day	Weekday	AM PEAK	PM PEAK	Off-Peak	Sunday	Saturday	Weekend	Peak Hour	Off-Peak
4061691	6/26/2015	2:30 PM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		6	1	0	0	1	0	0	0	0	0
4082244	8/28/2015	8:50 AM	Property damage only (none injured)	Sideswipe, same direction	Dry	Not Reported		6	1	0	0	1	0	0	0	0	0
4255710	9/23/2016	12:25 PM	Non-fatal injury	Angle	Dry	Clear		6	1	0	0	1	0	0	0	0	0
4267663	10/19/2016	1:03 PM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		4	1	0	0	1	0	0	0	0	0
4393308	6/30/2017	12:30 AM	Property damage only (none injured)	Rear-end	Dry	Cloudy		6	1	0	0	1	0	0	0	0	0
4400653	7/27/2017	10:54 AM	Non-fatal injury	Single vehicle crash	Dry	Cloudy		5	1	0	0	1	0	0	0	0	0
4464663	11/8/2017	5:54 PM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		4	1	0	0	1	0	0	0	0	0
4482321	12/21/2017	12:48 PM	Property damage only (none injured)	Single vehicle crash	Dry	Clear		5	1	0	0	1	0	0	0	0	0
4568882	7/13/2018	10:39 AM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		6	1	0	0	1	0	0	0	0	0
4588374	7/15/2018	5:35 AM	Property damage only (none injured)	Single vehicle crash	Dry	Clear		1	0	0	0	0	1	0	1	0	1
4619935	11/2/2018	3:45 AM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		6	1	0	0	1	0	0	0	0	0
4631351	10/21/2018	2:53 AM	Non-fatal injury	Single vehicle crash	Dry	Clear		1	0	0	0	0	1	0	1	0	1
4637575	12/11/2018	7:45 AM	Non-fatal injury	Rear-end	Dry	Clear		3	1	0	0	1	0	0	0	0	0
4674098	3/4/2019	2:55 AM	Property damage only (none injured)	Single vehicle crash	Snow	Snow		2	1	0	0	1	0	0	0	0	0
4696813	5/3/2019	6:58 AM	Property damage only (none injured)	Sideswipe, same direction	Dry	Not Reported		6	1	0	0	1	0	0	0	0	0
4705919	5/10/2019	6:58 AM	Non-fatal injury	Head-on	Dry	Cloudy	P2: Pedestrian	6	1	0	0	1	0	0	0	0	0
4784725	10/12/2019	12:52 AM	Non-fatal injury	Rear-end	Wet	Rain		7	0	0	0	0	0	1	1	0	1
4879741	9/9/2020	6:42 AM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		4	1	0	0	1	0	0	0	0	0

Congress Street at Boston Wharf Road

Crash Number	Crash Date	Crash Time	Crash Severity	Manner of Collision	Road Surface	Weather Condition	Non Motorist Type	Day	Weekday	AM PEAK	PM PEAK	Off-Peak	Sunday	Saturday	Weekend	Peak Hour	Off-Peak
4028397	03/17/2015	4:10 PM	Property damage only (none injured)	Rear-end	Dry	Clear		3	1	0	0	1	0	0	0	0	0
4591605	08/24/2018	8:34 PM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		6	1	0	0	1	0	0	0	0	0

A Street at Melcher Street

4671919	01/25/2019	5:00 PM	Non-fatal injury	Angle	Dry	Clear	P2: Cyclist	6	1	0	0	1	0	0	0	0	0

A Street at Cypher Street

4590506	08/30/2018	9:45 AM	Property damage only (none injured)	Rear-end	Dry	Clear		5	1	0	0	1	0	0	0	0	0
4764029	10/17/2019	10:00 PM	Non-fatal injury	Head-on	Wet	Rain/Rain		5	1	0	0	1	0	0	0	0	0

Cypher Street at South Boston Bypass

4478425	12/04/2017	6:50 PM	Property damage only (none injured)	Angle	Dry	Clear	P2: Cyclist	2	1	0	0	1	0	0	0	0	0
4543159	05/22/2018	5:48 AM	Non-fatal injury	Angle	Dry	Clear		3	1	0	0	1	0	0	0	0	0
4563599	06/28/2018	10:53 AM	Property damage only (none injured)	Sideswipe, same direction	Wet	Clear		5	1	0	0	1	0	0	0	0	0
4631353	11/29/2018	11:40 AM	Property damage only (none injured)	Sideswipe, same direction	Dry	Clear		5	1	0	0	1	0	0	0	0	0
4676633	03/16/2019	9:45 PM	Property damage only (none injured)	Rear-end	Dry	Clear		7	0	0	0	0	0	1	1	0	1

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston, MA COUNT DATE :

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

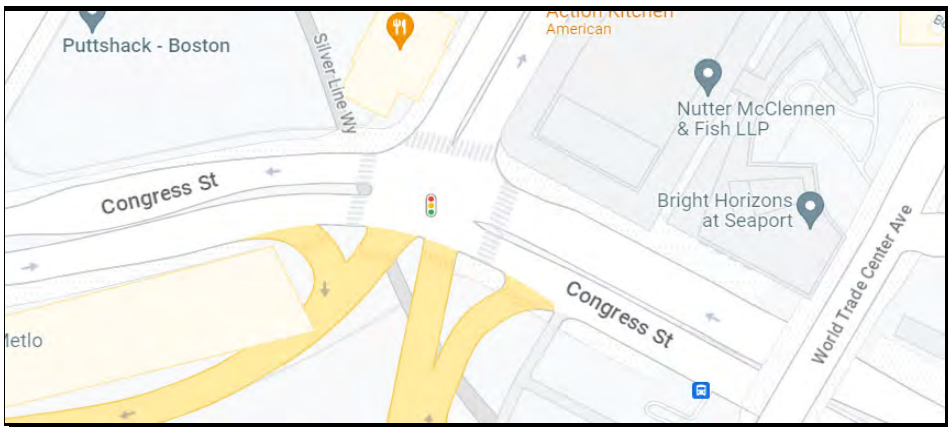
~ INTERSECTION DATA ~

MAJOR STREET : Congress Street

MINOR STREET(S) : B Street

I-90 On and Off Ramps

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

approach:	NB	SB	EB	WB		Total Peak Hourly Approach Volume
PEAK HOURLY VOLUMES (AM/PM) :	1,535	495	710	1,135		**3,875**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **43,056**

TOTAL # OF CRASHES : 17

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **3.40**

CRASH RATE CALCULATION : **0.22**

RATE = (A * 1,000,000) / (V * 365)

Comments :

Project Title & Date: 15921.00

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston, MA COUNT DATE :

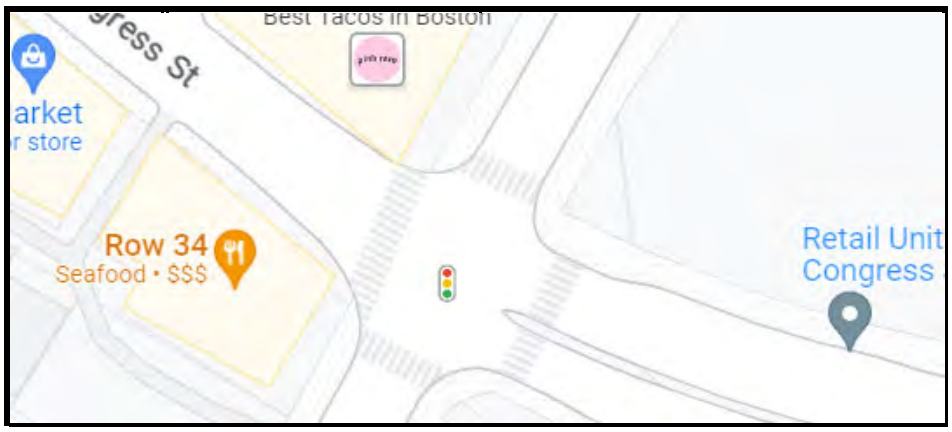
DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Congress St

MINOR STREET(S) : Boston Wharf Rd

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

approach:	NB	SB	EB	WB		Total Peak Hourly Approach Volume
PEAK HOURLY VOLUMES (AM/PM) :	610	460	780	885		**2,735**

" K " FACTOR : **0.090** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **30,389**

TOTAL # OF CRASHES : 2 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : **0.04** RATE = (A * 1,000,000) / (V * 365)

Comments :

Project Title & Date: 15921.00

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston, MA COUNT DATE :

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : A Street

MINOR STREET(S) : Melcher St

INTERSECTION DIAGRAM
(Label Approaches)

PEAK HOUR VOLUMES

approach:	NB	SB	EB	WB		Total Peak Hourly Approach Volume
PEAK HOURLY VOLUMES (AM/PM) :	750	580	330			**1,660**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,444**

TOTAL # OF CRASHES : 1

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.20**

CRASH RATE CALCULATION : **0.03**

RATE = (A * 1,000,000) / (V * 365)

Comments :

Project Title & Date: 15921.00

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston, MA COUNT DATE :

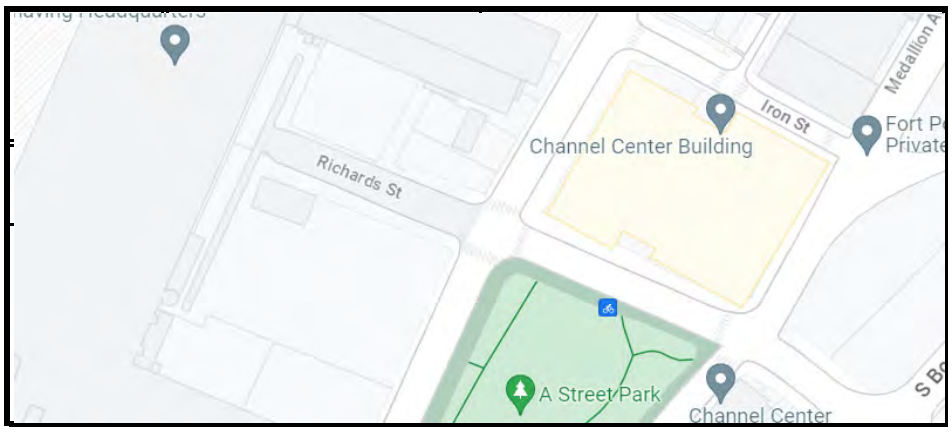
DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : A Street

MINOR STREET(S) : Cypher St

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

						Total Peak Hourly Approach Volume
approach:	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	711	705	5	587		**2,008**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **22,311**

TOTAL # OF CRASHES : 2

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : **0.05**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 15921.00

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston, MA COUNT DATE :

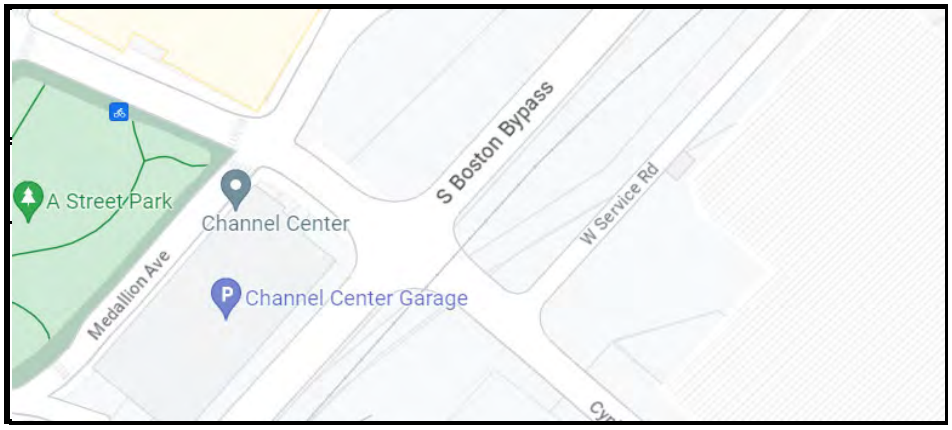
DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Cypher St

MINOR STREET(S) : South Boston Bypass Road

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

approach:	NB	SB	EB	WB		Total Peak Hourly Approach Volume
PEAK HOURLY VOLUMES (AM/PM) :	1,365	1,165	455	595		**3,580**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **39,778**

TOTAL # OF CRASHES : 5

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.00**

CRASH RATE CALCULATION : **0.07**

RATE = (A * 1,000,000) / (V * 365)

Comments :

Project Title & Date: 15921.00

Trip Generation

232 A Street Development
Trip Generation Estimate
VHB, Inc.

	Size	Unadjusted Vehicle Trips	VOR	Person Trips	Transit Share	Walk, Bike, Other Share	Vehicle Share	Local VOR	Transit Trips	Walk. Bike, Other Trips	Vehicle Trips
Daily R & D		2031		2397					1271	240	752
In	183.87	1016	1.18	1199	53.0%	10.0%	37.0%	1.18	635	120	376
Out	ksf	1016	1.18	1198	53.0%	10.0%	37.0%	1.18	635	120	376
Daily Office		1385		1636					867	164	513
In	122.58	693	1.18	818	53.0%	10.0%	37.0%	1.18	434	82	256
Out	ksf	693	1.18	818	53.0%	10.0%	37.0%	1.18	434	82	256
Total Daily		3,416		4,033					2,138	404	1,265
In		1,708		2,017					1,069	202	632
Out		1,708		2,016					1,069	202	632
AM R & D		188		222					118	22	70
In	183.87	154	1.18	182	53.0%	10.0%	37.0%	1.18	97	18	57
Out	ksf	34	1.18	40	53.0%	10.0%	37.0%	1.18	21	4	13
AM Office		199		237					126	24	74
In	122.58	176	1.18	208	53.0%	10.0%	37.0%	1.18	110	21	65
Out	ksf	24	1.18	29	53.0%	10.0%	37.0%	1.18	15	3	9
Total AM Peak Hour		388		459					244	46	144
In		330		390					207	39	122
Out		58		69					37	7	22
PM R & D		180		212					112	21	66
In	183.87	29	1.18	34	53.0%	10.0%	37.0%	1.18	18	3	11
Out	ksf	151	1.18	178	53.0%	10.0%	37.0%	1.18	94	18	56
PM Office		197		233					123	23	73
In	122.58	33	1.18	40	53.0%	10.0%	37.0%	1.18	21	4	13
Out	ksf	163	1.18	193	53.0%	10.0%	37.0%	1.18	102	19	61
Total PM Peak Hour		376		445					235	44	139
In		62		74					39	7	23
Out		314		371					197	37	116

ITE Trip Gen 11th Ed:

LUC 760 - Research and Development (regression - Peak Hour Adjacent Street)

LUC 710 - General Office (regression - Peak Hour Adjacent Street)

VOR stands for Vehicle Occupancy Rate (from 2017 NHTS) for both local and national VOR

Mode shares based on GoBoston 2030

ITE TRIP GENERATION WORKSHEET
(11th Edition, Updated 2021)

LANDUSE: Research & Development Center
LANDUSE CODE: 760
SETTING/LOCATION: General Urban/Suburban
JOB NAME: **232 A Street Project**
JOB NUMBER: **15921**

Trip Type --- Vehicle
Independent Variable --- 1,000 Sq. Feet Gross Floor Area

FLOOR AREA (KSF): 184

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	22	0.89	11.08	3.48	24.95	179	22	705	50%	50%
AM PEAK (ADJACENT ST)	39	0.70	1.03	0.17	3.73	173	10	800	82%	18%
PM PEAK (ADJACENT ST)	39	0.70	0.98	0.13	4.13	173	10	800	16%	84%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	2,037	1,019	1,019	2,031	1,016	1,016
AM PEAK (ADJACENT ST)	189	155	34	188	154	34
PM PEAK (ADJACENT ST)	180	29	151	180	29	151

ITE TRIP GENERATION WORKSHEET
(11th Edition, Updated 2021)

LANDUSE: General Office Building
LANDUSE CODE: 710
SETTING/LOCATION: General Urban/Suburban
JOB NAME: **232 A Street Project**
JOB NUMBER: **15921**

Trip Type --- Vehicle
Independent Variable --- 1,000 Sq. Feet Gross Floor Area

FLOOR AREA (KSF): 123

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	59	0.78	10.84	3.27	27.56	163	14	677	50%	50%
AM PEAK (ADJACENT ST)	221	0.78	1.52	0.32	4.93	201	10	815	88%	12%
PM PEAK (ADJACENT ST)	232	0.77	1.44	0.26	6.20	199	10	1,092	17%	83%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	1,329	664	664	1,385	693	693
AM PEAK (ADJACENT ST)	186	164	22	199	176	24
PM PEAK (ADJACENT ST)	177	30	147	197	33	163

Transit Analysis Worksheets

Route 7 Composite Day (CD) Trip Peak Load Point
INBOUND (from City Point to Otis @ Summer St)
Fall 2022 Ridership / Schedule
Downloaded from MBTA

Number of Trips Exceeding Threshold 0 0 20
Total Passengers Over Threshold 0 0 0

DAILY TRIPS	To Site	From Site
Boardings	40	258

Annual Growth Rate
0.22% MPO LRTP (transit trips growth)
8 years of growth (2030-2022)

Stop: Summer OPP Melcher
time from start to stop: 0:08

	GTFS.route_id	GTFS.direction_id	Day.Type	Trip.Start.Time	Route_Variant	Passenger Crowding Threshold	Time at Stop (Trip Start+8m)	Time Window	EXISTING Existing.To.Site	Existing.From.Site	Max Load Existing	GROWN TO 2022 Existing.To.Site	GROWN TO 2022 Existing.From.Site	GROWN TO 2022 Max Load Existing	Exceed	Boardings	Alightings	NO BUILD Bus Pax w/ Backgrd Growth.To.Site	Growth.From.Site	Existing.To.Site.Wk.Growth	Existing.From.Site.Wk.Growth	Max Load w/ No-Build Pax Growth	Exceed	DISTRIBUTION not used	not used	not used	Site Pax To Site	BUILD Site Pax GROWTH New.Riders.To.Site	New.Riders.From.Site	Total.To.Site	Total.From.Site	BUILD Bus Pax TOTAL Max Load with Bus Pax	Exceed
						formula		formula				0%		formula	formula								formula	formula										
1	7	Inbound	Weekday	5:15	7/1/2001	47	5:23	5:00	8.1	6.3	10.2	8.1	6.3	10.2		0	1.8	0.00	1.83	8.1	8.1	10.4		0.9%			0.4							
2	7	Inbound	Weekday	5:45	7/1/2001	47	5:53	5:30	14.2	11.7	15.5	14.2	11.7	15.5		0.1	2.6	0.10	2.65	14.3	14.3	15.8						1.2		15.5		16.9	
3	7	Inbound	Weekday	5:55	7/1/2001	47	6:03	6:00	10.4	9.2	10.7	10.4	9.2	10.7		0	1.2	0.00	1.22	10.4	10.4	10.9						0.6	1.3	11.0	11.7	12.2	
4	7	Inbound	Weekday	6:05	7/1/2001	47	6:13	6:00	11.3	10.3	11.8	11.3	10.3	11.8		0	1	0.00	1.02	11.3	11.3	12.0						0.6	1.3	11.9	12.6	13.3	
5	7	Inbound	Weekday	6:15	7/1/2001	47	6:23	6:00	12.9	12.2	14.4	12.9	12.2	14.4		0	0.7	0.00	0.71	12.9	12.9	14.7						0.6	1.3	13.5	14.2	16.0	
6	7	Inbound	Weekday	6:24	7/1/2001	47	6:32	6:30	16.8	14.3	17.9	16.8	14.3	17.9		0	2.5	0.00	2.54	16.8	16.8	18.2						0.7	1.5	17.5	18.3	19.7	
7	7	Inbound	Weekday	6:32	7/1/2001	47	6:40	6:30	13.1	11.5	14.7	13.1	11.5	14.7		0	1.6	0.00	1.63	13.1	13.1	15.0						0.7	1.5	13.8	14.6	16.4	
8	7	Inbound	Weekday	6:40	7/1/2001	47	6:48	6:30	15.1	13.4	16.1	15.1	13.4	16.1		0	1.7	0.00	1.73	15.1	15.1	16.4						0.7	1.5	15.8	16.6	17.9	
9	7	Inbound	Weekday	6:48	7/1/2001	47	6:56	6:30	15.1	13.5	15.9	15.1	13.5	15.9		0.1	1.7	0.10	1.73	15.2	15.2	16.2						0.7	1.5	15.9	16.7	17.7	
10	7	Inbound	Weekday	6:55	7/1/2001	53	7:03	7:00	19.2	16.3	19.9	19.2	16.3	19.9		0.1	3	0.10	3.05	19.3	19.4	20.3						0.9	1.5	20.2	20.9	21.8	
11	7	Inbound	Weekday	7:01	7/1/2001	53	7:09	7:00	14.3	13	15.8	14.3	13	15.8		0.1	1.4	0.10	1.43	14.4	14.4	16.1						0.9	1.5	15.3	16.0	17.6	
12	7	Inbound	Weekday	7:07	7/1/2001	53	7:15	7:00	15.2	14.4	16.8	15.2	14.4	16.8		0.1	0.9	0.10	0.92	15.3	15.3	17.1						0.9	1.5	16.2	16.8	18.6	
13	7	Inbound	Weekday	7:13	7/1/2001	53	7:21	7:00	19.3	18.1	20.3	19.3	18.1	20.3		0.2	1.4	0.20	1.43	19.5	19.5	20.7						0.9	1.5	20.4	21.1	22.2	
14	7	Inbound	Weekday	7:19	7/1/2001	53	7:27	7:00	20.3	19.2	21.9	20.3	19.2	21.9		0.2	1.3	0.20	1.32	20.5	20.5	22.3						0.9	1.5	21.4	22.0	23.8	
15	7	Inbound	Weekday	7:25	7/1/2001	53	7:33	7:30	24.8	23.6	26.5	24.8	23.6	26.5		0.2	1.4	0.20	1.43	25.0	25.0	27.0						1.1	1.8	26.1	26.9	28.8	
16	7	Inbound	Weekday	7:31	7/1/2001	53	7:39	7:30	29.9	28.3	31.7	29.9	28.3	31.7		0.5	2.1	0.51	2.14	30.4	30.4	32.3						1.1	1.8	31.5	32.3	34.1	
17	7	Inbound	Weekday	7:37	7/1/2001	53	7:45	7:30	29.6	27.6	31	29.6	27.6	31		0.6	2.6	0.61	2.65	30.2	30.2	31.6						1.1	1.8	31.3	32.1	33.4	
18	7	Inbound	Weekday	7:42	7/1/2001	53	7:50	7:30	30.2	28.5	31.5	30.2	28.5	31.5		1	2.7	1.02	2.75	31.2	31.2	32.1						1.1	1.8	32.3	33.1	33.9	
19	7	Inbound	Weekday	7:48	7/1/2001	53	7:56	7:30	37.3	34.8	39.1	37.3	34.8	39.1		1.1	3.6	1.12	3.66	38.4	38.5	39.8						1.1	1.8	39.5	40.3	41.6	
20	7	Inbound	Weekday	7:53	7/1/2001	53	8:01	8:00	36.4	33.4	38.1	36.4	33.4	38.1		1.3	4.3	1.32	4.38	37.7	37.8	38.8						0.8	1.7	38.5	39.4	40.4	
21	7	Inbound	Weekday	7:59	7/1/2001	53	8:07	8:00	40.1	36.9	42.3	40.1	36.9	42.3		1.2	4.4	1.22	4.48	41.3	41.4	43.1						0.8	1.7	42.1	43.0	44.7	
22	7	Inbound	Weekday	8:04	7/1/2001	53	8:12	8:00	29.8	28.1	31.2	29.8	28.1	31.2		0.7	2.4	0.71	2.44	30.5	30.5	31.8						0.8	1.7	31.3	32.2	33.4	
23	7	Inbound	Weekday	8:10	7/1/2001	53	8:18	8:00	36	33.7	37.8	36	33.7	37.8		1	3.3	1.02	3.36	37.0	37.1	38.5						0.8	1.7	37.8	38.7	40.1	
24	7	Inbound	Weekday	8:15	7/1/2001	53	8:23	8:00	31.4	29.8	32.7	31.4	29.8	32.7		0.8	2.4	0.81	2.44	32.2	32.2	33.3						0.8	1.7	33.0	33.9	34.9	
25	7	Inbound	Weekday	8:21	7/1/2001	53	8:29	8:00	29.5	27.3	31.3	29.5	27.3	31.3		0.8	3	0.81	3.05	30.3	30.4	31.9						0.8	1.7	31.1	32.0	33.5	
26	7	Inbound	Weekday	8:26	7/1/2001	53	8:34	8:30	27.8	26.1	29.3	27.8	26.1	29.3		0.7	2.4	0.71	2.44	28.5	28.5	29.8						0.5	1.4	29.0	30.0	31.3	
27	7	Inbound	Weekday	8:31	7/1/2001	53	8:39	8:30	26.8	25.5	29.1	26.8	25.5	29.1		0.5	1.8	0.51	1.83	27.3	27.3	29.6						0.5	1.4	27.8	28.8	31.1	
28	7	Inbound	Weekday	8:36	7/1/2001	53	8:44	8:30	25.1	23.3	26.7	25.1	23.3	26.7		0.6	2.4	0.61	2.44	25.7	25.7	27.2						0.5	1.4	26.2	27.2	28.6	
29	7	Inbound	Weekday	8:41	7/1/2001	53	8:49	8:30	13.2	11.7	13.5	13.2	11.7	13.5		0.1	1.6	0.10	1.63	13.3	13.3	13.7						0.5	1.4	13.8	14.8	15.2	
30	7	Inbound	Weekday	8:46	7/1/2001	53	8:54	8:30	19.6	17.6	20.7	19.6	17.6	20.7		0.2	2.2	0.20	2.24	19.8	19.8	21.1						0.5	1.4	20.3	21.3	22.5	
31	7	Inbound	Weekday	8:51	7/1/2001	53	8:59	8:30	13.3	11.8	13.6	13.3	11.8	13.6		0.2	1.7	0.20	1.73	13.5	13.5	13.8						0.5	1.4	14.0	15.0	15.3	
32	7	Inbound	Weekday	8:57	7/1/2001	47	9:05	9:00	11.5	10.8	12.1	11.5	10.8	12.1		0.2	0.9	0.20	0.92	11.7	11.7	12.3						0.4	1.4	12.1	13.1	13.7	
33	7	Inbound	Weekday	9:03	7/1/2001	47	9:11	9:00	13.8	12.2	14.1	13.8	12.2	14.1		0	1.6	0.00	1.63	13.8	13.8	14.4						0.4	1.4	14.2	15.3	15.8	
34	7	Inbound	Weekday	9:11	7/1/2001	47	9:19	9:00	9.2	8.2	9.5	9.2	8.2	9.5		0.1	1.1	0.10	1.12	9.3	9.3	9.7						0.4	1.4	9.7	10.7	11.1	
35	7	Inbound	Weekday	9:21	7/1/2001	47	9:29	9:00	11.4	10.2	11.7	11.4	10.2	11.7		0.1	1.3	0.10	1.32	11.5	11.5	11.9						0.4	1.4	11.9	13.0	13.3	
36	7	Inbound	Weekday	9:33	7/1/2001	47	9:41	9:30	9.3	8.3	9.8	9.3	8.3	9.8		0.1	1.1	0.10	1.12	9.4	9.4	10.0						0.4	1.4	9.8	10.9	11.4	
37	7	Inbound	Weekday	9:45	7/1/2001	47	9:53	9:30	9.8	8.8	10.2	9.8	8.8	10.2		0.1	1.1	0.10	1.12	9.9	9.9	10.4						0.4	1.4	10.3	11.4	11.8	
38	7	Inbound	Weekday	10:20	7/1/2001	47	10:28	10:00	13.8	12.8	13.8	13.8	12.8	13.8		0.2	1.2	0.20	1.22	14.0	14.0	14.0						0.5	1.6	14.5	15.6	15.6	
39	7	Inbound	Weekday	11:05	7/1/2001	47	11:13	11:00	12.3	11.6	12.4	12.3	11.6	12.4		0.2	0.9	0.20	0.92	12.5	12.5	12.6						0.3	1.5	12.8	14.0	14.1	
40	7	Inbound	Weekday	11:50	7/1/2001	47	11:58	11:30	12.2	11.2	12.2	12.2	11.2	12.2		0.3	1.3	0.31	1.32	12.5	12.5	12.4						0.3	2.2	12.8	14.7	14.6	
41	7	Inbound	Weekday	12:35	7/1/2001	47	12:43	12:30	9.8	8.9	9.8	9.8	8.9	9.8		0.2	1.1	0.20	1.12	10.0	10.0	10.0						0.4	2.8	10.4	12.8	12.8	
42	7	Inbound	Weekday	13:20	7/1/2001	47	13:28	13:00	15	13.9	14.9	15	13.9	14.9		0	1.1	0.00	1.12	15.0	15.0	15.2						0.4	2.4	15.4	17.4	17.6	
43	7	Inbound	Weekday	14:00	7/1/2001	47	14:08	14:00	9.6	8.8	9.5	9.6	8.8	9.5		0.1	0.9	0.10	0.92	9.7	9.7	9.7						0.4	3.9	10.1	13.6	13.6	
44	7	Inbound	Weekday	14:40	7/1/2001	47	14:48	14:30	10.3	9.8	10.2	10.3	9.8	10.2		0.2	0.7	0.20	0.71	10.5	10.5	10.4						0.6	6.0	11.1	16.6	16.4	
45	7	Inbound	Weekday	15:01	7/1/2001	47	15:09	15:00	10	9.9	10	10	9.9	10		0.4	0.5	0.41	0.51	10.4	10.4	10.2						0.4	3.6	10.8	14.0	13.8	
46	7	Inbound	Weekday	15:21	7/1/2001	47	15:29	15:00	10.3	9.9	10.2	10.3	9.9	10.2		0.2	0.6	0.20	0.61	10.5	10.5	10.4						0.4	3.6	10.9	14.1	14.0	
47	7	Inbound	Weekday	15:38	7/1/2001	47	15:46	15:30	8.5	8.2	8.5	8.5	8.2	8.5		0.2	0.5	0.20	0.51	8.7	8.7	8.7						0.4	5.8	9.2	14.5	14.4	
48	7	Inbound	Weekday	15:48	7/1/2001	47	15:56	15:30	7.3	6.7	7.3	7.3	6.7	7.3		0.1	0.7	0.10	0.71	7.4	7.4	7.4						0.4	5.8	7.8	13.2	13.2	
49	7	Inbound	Weekday	15:58	7/1/2001	53	16:06	16:00	10.7	10.1	10.7	10.7	10.1	10.7		0.1	0.7	0.10	0.71	10.8	10.8	10.9						0.4	5.0	11.2	15.8	15.9	
50	7	Inbound	Weekday	16:08	7/2/2001	53	16:16	16:00	6.7	6.5	10.2	6.7	6.5	10.2		0.1	0.3	0.10	0.31	6.8	6.8	10.4						0.4	5.0	7.2	11.8	15.4	
51	7	Inbound	Weekday	16:16	7/2/2001	53	16:24	16:00	7.4	7.2	6.6	7.4	7.2	6.6		0.2	0.4	0.20	0.41	7.6	7.6	6.7						0.4	5.0	8.0	12.6	11.7	
52	7	Inbound	Weekday	16:23	7/2/2001	53	16:31	16:30	10.2	9.8	7.4	10.2	9.8	7.4		0	0.4	0.00	0.41	10.2	10.2	7.5						0.2	4.2	10.4	14.4	11.7	
53	7	Inbound	Weekday	16:30	7/2/2001	53	16:38	16:30	10.8	10.5	10.9	10.8	10.5	10.9		0.3	0.6	0.31	0.61	11.1	11.1	11.1						0.2	4.2	11.4	15.3	15.3	
54	7	Inbound	Weekday	16:37	7/2/2001	53	16:45	16:30	12.1	11.7	12.1	12.1	11.7	12.1		0.2	0.6	0.20	0.61	12.3	12.3	12.3						0.2	4.2	12.6	16.5	16.5	
55	7	Inbound	Weekday	16:44	7/2/2001	53	16:52	16:30	7.9	7.6	7.9	7.9	7.6	7.9		0.3	0.6	0.31	0.61	8.2	8.2	8.0						0.2	4.2	8.5	12.4	12.2	
56	7	Inbound	Weekday	16:51	7/2/2001	53	16:59	16:30	12.9	13.2	13.2	12.9	13.2	13.2		0.9	0.6	0.92	0.61	13.8	13.8	13.4						0.2	4.2	14.1	18.0	17.6	
57	7	Inbound	Weekday	16:58	7/2/2001	53	17:06	17:00	10.1	10.7	10.7	10.1	10.7	10.7		1.1	0.5	1.12	0.51	11.2	11.2	10.9						0.3	6.3	11.5	17.6	17.2	
58	7	Inbound	Weekday	17:05	7/2/2001	53	17:13	17:00	11.1	10.9	4.7	11.1	10.9	4.7		0.5	0.7	0.51	0.71	11.6	11.6	4.8						0.3	6.3	11.9	18.0	11.1	
59	7	Inbound	Weekday	17:12	7/2/2001	53	17:20	17:00	11.3	10.8	11	11.3	10.8	11		0.5	1	0.51	1.02	11.8	11.8	11.2						0.3	6.3	12.1	18.2	17.5	
60	7	Inbound	Weekday	17:19	7/2/2001	53	17:27	17:00	8.1	7.8	11.2	8.1	7.8	11.2		0.3	0.6	0.31	0.61	8.4	8.4	11.4						0.3	6.3	8.7	14.8	17.7	
61	7	Inbound	Weekday	17:26	7/2/2001	53	17:34	17:30	8.1	7.3	8.2	8.1	7.3	8.2		0.2	1	0.20	1.02	8.3	8.3	8.3						0.2	6.1	8.5	14.4	14.5	
62	7	Inbound	Weekday	17:33	7/2/2001	53	17:41	17:30	5.5	4.9	8.1	5.5	4.9	8.1		0.2	0.8	0.20	0.81	5.7	5.7	8.2						0.2	6.1	5.9	11.8	14.4	
63	7	Inbound	Weekday	17:40	7/2/2001	53	17:48	17:30	5.6	4.6	5.5	5.6	4.6	5.5		0.1	1.1	0.10	1.12	5.7	5.7	5.6						0.2	6.1	5.9	11.8	11.7	
64	7	Inbound	Weekday	17:47	7/2/2001	53	17:55	17:30	6.5	5.6	5.6	6.5	5.6	5.6		0.2	1.1	0.20	1.12	6.7	6.7	5.7						0.2	6.1	6.9	12.8	11.8	
65	7	Inbound	Weekday	17:54	7/2/2001	53	18:02	18:00	5	4.7	6.5	5	4.7	6.5		0.1	0.4	0.10	0.41	5.1	5.1	6.6						0.2	5.0	5.3	10.2	11.7	
66	7	Inbound	Weekday	18:01	7/2/2001	53	18:09	18:00	8.2	7.2	5.1	8.2	7.2	5.1		0.1	1.1	0.10	1.12	8.3	8.3	5.2						0.2	5.0	8.5	13.4	10.2	
67	7	Inbound	Weekday	18:10	7/2/2001	53	18:18	18:00	4.8	4.2	8.2	4.8	4.2	8.2		0	0.6	0.00	0.61	4.8	4.8	8.3						0.2	5.0	5.0	9.9	13.4	
68	7	Inbound	Weekday	18:20	7/2/2001	53	18:28	18:00	4.9	4.6	4.7	4.9	4.6	4.7		0.1	0.4	0.10	0.41	5.0	5.0	4.8						0.2	5.0	5.2	10.1	9.8	
69	7	Inbound	Weekday	18:30	7/2/2001	53	18:38	18:30	4.8	4.5	5	4.8	4.5	5		0.1	0.4	0.10	0.41	4.9	4.9	5.1						0.2	4.6	5.1	9.5	9.7	
70	7	Inbound	Weekday	18:40	7/1/2001	47	18:48	18:30	5.5	5	5.6	5.5	5	5.6		0.2	0.7	0.20	0.71	5.7	5.7	5.7						0.2	4.6	5.9	10.3	10.3	
71	7	Inbound	Weekday	18:50	7/1/2001	47	18:58	18:30	4.6	3.7	6.3	4.6	3.7	6.3		0	0.9	0.00	0.92	4.6	4.6	6.4						0.2	4.6	4.8	9.2	11.0	
72	7	Inbound	Weekday	19:01	7/1/2001	47	19:09	19:00	4.4	3.9	4.3	4.4	3.9	4.3		0.1	0.6	0.10	0.61	4.5	4.5	4.4						0.2	5.6	4.7	10.1	10.0	
73	7	Inbound	Weekday	19:15	7/1/2001	47	19:23	19:00	5.5	5	5.5	5.5	5	5.5		0.3	0.8	0.31	0.81	5.8	5.8	5.6						0.2	5.6	6.0	11.4	11.2	
74	7	Inbound	Weekday	19:30	7/1/2001	47	19:38	19:30	3.6	3.5	4.4	3.6	3.5	4.4		0.1	0.2	0.10	0.20	3.7	3.7	4.5						0.2	7.6	3.9	11.3	12.1	
75	7	Inbound	Weekday	20:00	7/1/2001	47	20:08	20:00	7.9	7.7	7.9	7.9	7.7	7.9		0.1	0.3	0.10	0.31	8.0	8.0	8.0						0.2	4.3	8.2	12.3	12.3	
76	7	Inbound	Weekday	20:40	7/1/2001	47	20:48	20:30	5.7	5.6	5.7	5.7	5.6	5.7		0	0.1	0.00	0.10	5.7	5.7	5.8						0.2	2.7	5.9	8.4	8.5	
77	7	Inbound	Weekday	21:20	7/1/2001	47	21:28	21:00	8	7.8	7.9	8	7.8	7.9		0	0.2	0.00	0.20	8.0	8.0	8.0						0.2	2.4	8.2	10.4	10.4	
78	7	Inbound	Weekday	22:00	7/1/2001	47	22:08	22:00	7.3	7.3	7.3	7.3	7.3	7.3		0	0	0.00	0.00	7.3	7.3	7.4						0.1	1.6	7.4	8.9	9.0	
Peak Trips						**43** trips								**42.3**				**18.1**	**67.4**			**43.1**						**23.1**	**145.8**			**44.7**	
Off-Peak Trips						**35** trips												**3.8**	**35.8**									**14.7**	**96.7**				
Service Day						**78** trips								**1015.5** pax at pk load pt				**21.9**	**103.2**									**37.8**	**242.7**			**1396.6**	
																		-97.8%						1%	0.0						6281.0%	

threshold_peak	53	*43*
threshold_offpeak	47	*35*

Route 7 Composite Day (CD) Trip Peak Load Point
OUTBOUND (from Otis @ Summer St to City Point)
Fall 2022 Ridership / Schedule

Number of Trips Exceeding Threshold	0	0	16	
Total Passengers Over Threshold	0	0	0	

DAILY TRIPS	To Site	From Site
Boardings	258	40

Annual Growth Rate 0.22% MPO LRTP
8 years of gr

Stop: Summer at Melcher
time from start to stop: 0:08 formula

EXISTING — GROWTH TO 2022 0% formula formula — NO BUILD Bus Pax w/ Backgrd formula formula — BUILD Site Pax GROWTH — BUILD Bus Pax TOTAL formula

	GTFS.route_id	GTFS.direction_id	Day.Type	Trip.Start.Time	Route_Variant	Passenger Crowding Threshold	Time at Stop (Trip Start+8mi)	Time Window	Existing.To.Site	Existing.From.Site	Max Load Existing	GROWN TO 2022 Existing.To.Site	GROWN TO 2022 Existing.From.Site	GROWN TO 2022 Max Load Existing	Exceed	Boardings	Alightings	Growth.To.Site	Growth.From.Site	Existing.To.Site.W.Growth	Existing.From.Site.W.Growth	Max Load w/ No-Build Pax Growth	Exceed	New.Riders.To.Site	New.Riders.From.Site	Total.To.Site	Total.From.Site	Max Load with Bus Pax	Exceed
1	7	Outbound	Weekday	5:40	7/1/2000	47	5:48	5:30	4.7	4.9	4.9	4.7	4.9	4.9		0.3	0.1	0.31	0.10	5.0	5.0	5.0		7.5	0.3	12.5	5.3	12.5	
2	7	Outbound	Weekday	6:01	7/2/2000	47	6:09	6:00	6.6	6.6	6.6	6.6	6.6	6.6		0	0	0.00	0.00	6.6	6.6	6.7		6.0	0.3	12.6	6.9	12.7	
3	7	Outbound	Weekday	6:15	7/2/2000	47	6:23	6:00	5.5	5.3	5.5	5.5	5.3	5.5		0.1	0.3	0.10	0.31	5.6	5.6	5.6		6.0	0.3	11.6	5.9	11.6	
4	7	Outbound	Weekday	6:25	7/2/2000	47	6:33	6:30	5.7	5.3	5.7	5.7	5.3	5.7		0.1	0.5	0.10	0.51	5.8	5.8	5.8		6.2	0.3	12.0	6.1	12.0	
5	7	Outbound	Weekday	6:35	7/2/2000	47	6:43	6:30	6.6	6.5	6.6	6.6	6.5	6.6		0.2	0.3	0.20	0.31	6.8	6.8	6.7		6.2	0.3	13.0	7.1	12.9	
6	7	Outbound	Weekday	6:44	7/2/2000	47	6:52	6:30	5.5	5.4	5.4	5.5	5.4	5.4		0.3	0.4	0.31	0.41	5.8	5.8	5.5		6.2	0.3	12.0	6.1	11.7	
7	7	Outbound	Weekday	6:52	7/2/2000	53	7:00	7:00	6.6	6.7	6.7	6.6	6.7	6.7		0.3	0.2	0.31	0.20	6.9	6.9	6.8		7.2	0.3	14.1	7.2	14.0	
8	7	Outbound	Weekday	7:00	7/2/2000	53	7:08	7:00	6.1	6.1	6.1	6.1	6.1	6.1		0.2	0.2	0.20	0.20	6.3	6.3	6.2		7.2	0.3	13.5	6.6	13.4	
9	7	Outbound	Weekday	7:08	7/2/2000	53	7:16	7:00	6	6.1	6.1	6	6.1	6.1		0.3	0.2	0.31	0.20	6.3	6.3	6.2		7.2	0.3	13.5	6.6	13.4	
10	7	Outbound	Weekday	7:15	7/2/2000	53	7:23	7:00	8.6	8.8	8.8	8.6	8.8	8.8		0.3	0.1	0.31	0.10	8.9	8.9	9.0		7.2	0.3	16.1	9.2	16.1	
11	7	Outbound	Weekday	7:22	7/2/2000	53	7:30	7:30	6.5	6.7	6.7	6.5	6.7	6.7		0.4	0.2	0.41	0.20	6.9	6.9	6.8		4.9	0.2	11.8	7.1	11.7	
12	7	Outbound	Weekday	7:28	7/2/2000	53	7:36	7:30	6.9	6.9	6.9	6.9	6.9	6.9		0.4	0.4	0.41	0.41	7.3	7.3	7.0		4.9	0.2	12.2	7.5	11.9	
13	7	Outbound	Weekday	7:33	7/7/2000	53	7:41	7:30	5	4.9	5.1	5	4.9	5.1		0.2	0.3	0.20	0.31	5.2	5.2	5.2		4.9	0.2	10.1	5.4	10.1	
14	7	Outbound	Weekday	7:34	7/2/2000	53	7:42	7:30	7	6.7	6.9	7	6.7	6.9		0.3	0.6	0.31	0.61	7.3	7.3	7.0		4.9	0.2	12.2	7.5	11.9	
15	7	Outbound	Weekday	7:40	7/2/2000	53	7:48	7:30	9.7	9	9.6	9.7	9	9.6		0.4	1.1	0.41	1.12	10.1	10.1	9.8		4.9	0.2	15.0	10.3	14.7	
16	7	Outbound	Weekday	7:46	7/2/2000	53	7:54	7:30	8.3	8	8.4	8.3	8	8.4		0.5	0.8	0.51	0.81	8.8	8.8	8.6		4.9	0.2	13.7	9.0	13.4	
17	7	Outbound	Weekday	7:51	7/7/2000	53	7:59	7:30	4.3	4.3	4.3	4.3	4.3	4.3		0.2	0.2	0.20	0.20	4.5	4.5	4.4		4.9	0.2	9.4	4.7	9.3	
18	7	Outbound	Weekday	7:52	7/2/2000	53	8:00	8:00	8.1	8.1	8.1	8.1	8.1	8.1		0.8	0.8	0.81	0.81	8.9	8.9	8.2		4.4	0.2	13.4	9.1	12.7	
19	7	Outbound	Weekday	7:58	7/2/2000	53	8:06	8:00	7.5	7.5	7.5	7.5	7.5	7.5		0.5	0.5	0.51	0.51	8.0	8.0	7.6		4.4	0.2	12.5	8.2	12.1	
20	7	Outbound	Weekday	8:03	7/2/2000	53	8:11	8:00	6.9	7.1	7.1	6.9	7.1	7.1		0.7	0.5	0.71	0.51	7.6	7.6	7.2		4.4	0.2	12.1	7.8	11.7	
21	7	Outbound	Weekday	8:08	7/2/2000	53	8:16	8:00	9.2	9.5	9.5	9.2	9.5	9.5		0.8	0.5	0.81	0.51	10.0	10.0	9.7		4.4	0.2	14.5	10.2	14.1	
22	7	Outbound	Weekday	8:12	7/7/2000	53	8:20	8:00	4.6	4.8	4.8	4.6	4.8	4.8		0.4	0.2	0.41	0.20	5.0	5.0	4.9		4.4	0.2	9.5	5.2	9.3	
23	7	Outbound	Weekday	8:14	7/2/2000	53	8:22	8:00	8.6	8.9	8.9	8.6	8.9	8.9		0.8	0.5	0.81	0.51	9.4	9.4	9.1		4.4	0.2	13.9	9.6	13.5	
24	7	Outbound	Weekday	8:20	7/2/2000	53	8:28	8:00	12.2	12.4	12.4	12.2	12.4	12.4		0.7	0.5	0.71	0.51	12.9	12.9	12.6		4.4	0.2	17.4	13.1	17.1	
25	7	Outbound	Weekday	8:25	7/2/2000	53	8:33	8:30	6.3	6.4	6.4	6.3	6.4	6.4		0.4	0.3	0.41	0.31	6.7	6.7	6.5		2.9	0.2	9.6	6.9	9.4	
26	7	Outbound	Weekday	8:30	7/2/2000	53	8:38	8:30	9.8	10	10	9.8	10	10		0.7	0.5	0.71	0.51	10.5	10.5	10.2		2.9	0.2	13.4	10.7	13.1	
27	7	Outbound	Weekday	8:32	7/7/2000	53	8:40	8:30	6.2	6.9	6.9	6.2	6.9	6.9		1.2	0.5	1.22	0.51	7.4	7.4	7.0		2.9	0.2	10.3	7.6	9.9	
28	7	Outbound	Weekday	8:35	7/2/2000	53	8:43	8:30	8.1	8.2	8.2	8.1	8.2	8.2		0.3	0.2	0.31	0.20	8.4	8.4	8.3		2.9	0.2	11.3	8.6	11.2	
29	7	Outbound	Weekday	8:40	7/2/2000	53	8:48	8:30	7.3	7.2	7.2	7.3	7.2	7.2		0.3	0.4	0.31	0.41	7.6	7.6	7.3		2.9	0.2	10.5	7.8	10.2	
30	7	Outbound	Weekday	8:45	7/2/2000	53	8:53	8:30	5.7	5.8	5.8	5.7	5.8	5.8		0.3	0.2	0.31	0.20	6.0	6.0	5.9		2.9	0.2	8.9	6.2	8.8	
31	7	Outbound	Weekday	8:50	7/2/2000	53	8:58	8:30	6.6	6.7	6.7	6.6	6.7	6.7		0.3	0.2	0.31	0.20	6.9	6.9	6.8		2.9	0.2	9.8	7.1	9.7	
32	7	Outbound	Weekday	9:00	7/2/2000	47	9:08	9:00	6.9	7.6	7.6	6.9	7.6	7.6		0.7	0	0.71	0.00	7.6	7.6	7.7		3.6	0.3	11.2	7.9	11.3	
33	7	Outbound	Weekday	9:10	7/2/2000	47	9:18	9:00	6	6.2	6.2	6	6.2	6.2		0.3	0.1	0.31	0.10	6.3	6.3	6.3		3.6	0.3	9.9	6.6	9.9	
34	7	Outbound	Weekday	9:20	7/2/2000	47	9:28	9:00	4.7	4.8	4.8	4.7	4.8	4.8		0.2	0.1	0.20	0.10	4.9	4.9	4.9		3.6	0.3	8.5	5.2	8.5	
35	7	Outbound	Weekday	9:30	7/2/2000	47	9:38	9:30	5.6	5.7	5.7	5.6	5.7	5.7		0.2	0.1	0.20	0.10	5.8	5.8	5.8		5.5	0.4	11.3	6.3	11.3	
36	7	Outbound	Weekday	10:00	7/1/2000	47	10:08	10:00	5.7	6.2	6.2	5.7	6.2	6.2		0.5	0	0.51	0.00	6.2	6.2	6.3		3.3	0.2	9.5	6.4	9.6	
37	7	Outbound	Weekday	10:40	7/1/2000	47	10:48	10:30	5.6	6.1	6.1	5.6	6.1	6.1		0.5	0	0.51	0.00	6.1	6.1	6.2		2.4	0.3	8.5	6.4	8.6	
38	7	Outbound	Weekday	11:25	7/1/2000	47	11:33	11:30	6.4	6.9	6.9	6.4	6.9	6.9		0.5	0	0.51	0.00	6.9	6.9	7.0		2.2	0.3	9.1	7.2	9.2	
39	7	Outbound	Weekday	12:10	7/1/2000	47	12:18	12:00	10.4	11.5	11.5	10.4	11.5	11.5		1.2	0.1	1.22	0.10	11.6	11.6	11.7		2.6	0.4	14.2	12.0	14.3	
40	7	Outbound	Weekday	12:55	7/1/2000	47	13:03	13:00	10	11.2	11.4	10	11.2	11.4		1.5	0.3	1.53	0.31	11.5	11.5	11.6		2.6	0.4	14.1	11.9	14.2	
41	7	Outbound	Weekday	13:40	7/1/2000	47	13:48	13:30	11.2	12.4	12.6	11.2	12.4	12.6		1.4	0.2	1.43	0.20	12.6	12.6	12.8		2.6	0.5	15.2	13.1	15.4	
42	7	Outbound	Weekday	14:20	7/1/2000	47	14:28	14:00	13.3	14.4	14.8	13.3	14.4	14.8		1.2	0.1	1.22	0.10	14.5	14.5	15.1		2.5	0.6	17.0	15.1	17.5	
43	7	Outbound	Weekday	14:45	7/1/2000	47	14:53	14:30	8.5	9.5	10.4	8.5	9.5	10.4		1.1	0.1	1.12	0.10	9.6	9.6	10.6		3.9	0.9	13.5	10.5	14.5	
44	7	Outbound	Weekday	15:05	7/1/2000	47	15:13	15:00	9.5	10.2	11.3	9.5	10.2	11.3		0.9	0.2	0.92	0.20	10.4	10.4	11.5		2.5	0.6	12.9	11.0	14.0	
45	7	Outbound	Weekday	15:20	7/1/2000	47	15:28	15:00	10.1	10.8	10.8	10.1	10.8	10.8		0.9	0.2	0.92	0.20	11.0	11.0	11.0		2.5	0.6	13.5	11.6	13.5	
46	7	Outbound	Weekday	15:30	7/1/2000	47	15:38	15:30	9.4	10	10.2	9.4	10	10.2		0.8	0.2	0.81	0.20	10.2	10.2	10.4		1.9	0.6	12.1	10.8	12.3	
47	7	Outbound	Weekday	15:40	7/1/2000	47	15:48	15:30	12.6	13.5	13.5	12.6	13.5	13.5		1	0.1	1.02	0.10	13.6	13.6	13.7		1.9	0.6	15.5	14.2	15.7	
48	7	Outbound	Weekday	15:50	7/1/2000	47	15:58	15:30	10.6	11.3	11.3	10.6	11.3	11.3		0.8	0.1	0.81	0.10	11.4	11.4	11.5		1.9	0.6	13.3	12.0	13.4	
49	7	Outbound	Weekday	16:00	7/1/2000	53	16:08	16:00	11.4	12	12	11.4	12	12		0.8	0.2	0.81	0.20	12.2	12.2	12.2		1.8	0.6	14.0	12.8	14.0	
50	7	Outbound	Weekday	16:07	7/1/2000	53	16:15	16:00	10.4	11	11.4	10.4	11	11.4		0.8	0.2	0.81	0.20	11.2	11.2	11.6		1.8	0.6	13.0	11.8	13.4	
51	7	Outbound	Weekday	16:14	7/1/2000	53	16:22	16:00	9.1	10.3	11.2	9.1	10.3	11.2		1.4	0.2	1.43	0.20	10.5	10.5	11.4		1.8	0.6	12.4	11.1	13.2	
52	7	Outbound	Weekday	16:21	7/1/2000	53	16:29	16:00	11.9	13.1	13.2	11.9	13.1	13.2		1.4	0.2	1.43	0.20	13.3	13.3	13.4		1.8	0.6	15.2	13.9	15.3	
53	7	Outbound	Weekday	16:28	7/1/2000	53	16:36	16:30	12.6	13.7	14.1	12.6	13.7	14.1		1.3	0.2	1.32	0.20	13.9	13.9	14.4		2.0	0.8	15.9	14.7	16.4	
54	7	Outbound	Weekday	16:35	7/1/2000	53	16:43	16:30	13.5	14.8	15	13.5	14.8	15		1.6	0.3	1.63	0.31	15.1	15.1	15.3		2.0	0.8	17.1	15.9	17.3	
55	7	Outbound	Weekday	16:42	7/1/2000	53	16:50	16:30	16	16.6	16.9	16	16.6	16.9		1.3	0.7	1.32	0.71	17.3	17.3	17.2		2.0	0.8	19.3	18.1	19.2	
56	7	Outbound	Weekday	16:49	7/1/2000	53	16:57	16:30	17.7	18.9	19.7	17.7	18.9	19.7		1.8	0.6	1.83	0.61	19.5	19.5	20.1		2.0	0.8	21.5	20.3	22.1	
57	7	Outbound	Weekday	16:56	7/1/2000	53	17:04	17:00	22.6	24.4	25.2	22.6	24.4	25.2		2.9	1.1	2.95	1.12	25.6	25.5	25.7		2.0	1.0	27.6	26.5	27.7	
58	7	Outbound	Weekday	17:03	7/1/2000	53	17:11	17:00	20.9	24	24.9	20.9	24	24.9		3.7	0.6	3.77	0.61	24.7	24.6	25.3		2.0	1.0	26.7	25.6	27.4	
59	7	Outbound	Weekday	17:10	7/1/2000	53	17:18	17:00	32.6	34	34.6	32.6	34	34.6		2.3	0.9	2.34	0.92	34.9	34.9	35.2		2.0	1.0	37.0	35.9	37.2	
60	7	Outbound	Weekday	17:17	7/1/2000	53	17:25	17:00	27.5	29.7	30.4	27.5	29.7	30.4		2.9	0.7	2.95	0.71	30.5	30.4	30.9		2.0	1.0	32.5	31.4	33.0	
61	7	Outbound	Weekday	17:24	7/1/2000	53	17:32	17:30	25.4	27.4	27.9	25.4	27.4	27.9		2.5	0.5	2.54	0.51	27.9	27.9	28.4		1.5	0.9	29.4	28.9	29.9	
62	7	Outbound	Weekday	17:31	7/1/2000	53	17:39	17:30	27.1	29.4	29.9	27.1	29.4	29.9		2.8	0.5	2.85	0.51	30.0	29.9	30.4		1.5	0.9	31.4	30.9	31.9	
63	7	Outbound	Weekday	17:38	7/1/2000	53	17:46	17:30	25.1	27.1	27.7	25.1	27.1	27.7		2.2	0.2	2.24	0.20	27.3	27.3	28.2		1.5	0.9	28.8	28.3	29.7	
64	7	Outbound	Weekday	17:45	7/1/2000	53	17:53	17:30	24.4	26.9	27.2	24.4	26.9	27.2		2.7	0.2	2.75	0.20	27.1	27.1	27.7		1.5	0.9	28.6	28.1	29.2	
65	7	Outbound	Weekday	17:52	7/1/2000	53	18:00	18:00	19.8	22.3	23.5	19.8	22.3	23.5		2.9	0.4	2.95	0.41	22.8	22.7	23.9		0.9	0.6	23.6	23.3	24.8	
66	7	Outbound	Weekday	17:59	7/1/2000	53	18:07	18:00	16.7	18.6	19.1	16.7	18.6	19.1		2.1	0.2	2.14	0.20	18.8	18.8	19.4		0.9	0.6	19.7	19.4	20.3	
67	7	Outbound	Weekday	18:06	7/1/2000	53	18:14	18:00	18.9	20.5	21.6	18.9	20.5	21.6		1.8	0.2	1.83	0.20	20.7	20.7	22.0		0.9	0.6	21.6	21.3	22.9	
68	7	Outbound	Weekday	18:13	7/1/2000	53	18:21	18:00	15.2	17.6	17.8	15.2	17.6	17.8		2.6	0.2	2.65	0.20	17.8	17.8	18.1		0.9	0.6	18.7	18.4	19.0	
69	7	Outbound	Weekday	18:20	7/1/2000	53	18:28	18:00	20.8	22.4	22.9	20.8	22.4	22.9		1.7	0.1	1.73	0.10	22.5	22.5	23.3		0.9	0.6	23.4	23.1	24.2	
70	7	Outbound	Weekday	18:30	7/1/2000	47	18:38	18:30	20.4	22.8	23.7	20.4	22.8	23.7		2.7	0.3	2.75	0.31	23.1	23.1	24.1		1.1	0.7	24.2	23.8	25.2	
71	7	Outbound	Weekday	18:40	7/1/2000	47	18:48	18:30	18.3	20.4	21.3	18.3	20.4	21.3		2.1	0	2.14	0.00	20.4	20.4	21.7		1.1	0.7	21.5	21.1	22.8	
72	7	Outbound	Weekday	18:50	7/1/2000	47	18:58	18:30	15.2	18	18.1	15.2	18	18.1		3.1	0.3	3.16	0.31	18.4	18.3	18.4		1.1	0.7	19.4	19.0	19.5	
73	7	Outbound	Weekday	19:00	7/1/2000	47	19:08	19:00	17.8	20	20.5	17.8	20	20.5		2.5	0.3	2.54	0.31	20.3	20.3	20.9		0.7	0.6	21.1	20.9	21.6	
74	7	Outbound	Weekday	19:10	7/1/2000	47	19:18	19:00	14.2	16	16.4	14.2	16	16.4		2.1	0.3	2.14	0.31	16.3	16.3	16.7		0.7	0.6	17.1	16.9	17.4	
75	7	Outbound	Weekday	19:20	7/1/2000	47	19:28	19:00	12.8	14.3	14.6	12.8	14.3	14.6		1.8	0.3	1.83	0.31	14.6	14.6	14.9		0.7	0.6	15.3	15.2	15.6	
76	7	Outbound	Weekday	19:35	7/1/2000	47	19:43	19:30	13.6	16	16.3	13.6	16	16.3		2.6	0.2	2.65	0.20	16.2	16.2	16.6		0.8	0.6	17.0	16.8	17.4	
77	7	Outbound	Weekday	19:50	7/1/2000	47	19:58	19:30	10.4	12.9	13.4	10.4	12.9	13.4		2.6	0.1	2.65	0.10	13.0	13.0	13.6		0.8	0.6	13.8	13.6	14.4	
78	7	Outbound	Weekday	20:20	7/1/2000	47	20:28	20:00	10.2	13	13.3	10.2	13	13.3		2.9	0.1	2.95	0.10	13.2	13.1	13.5		1.3	0.7	14.5	13.8	14.8	
79	7	Outbound	Weekday	21:00	7/1/2000	47	21:08	21:00	7.1	8.1	9	7.1	8.1	9		1.1	0.1	1.12	0.10	8.2	8.2	9.2		1.1	0.4	9.3	8.6	10.2	
80	7	Outbound	Weekday	21:40	7/1/2000	47	21:48	21:30	6.4	7.2	7.6	6.4	7.2	7.6		0.8	0	0.81	0.00	7.2	7.2	7.7		1.0	0.4	8.2	7.6	8.7	
81	7	Outbound	Weekday	22:20	7/1/2000	47	22:28	22:00	6.1	6.5	6.5	6.1	6.5	6.5		0.5	0.1	0.51	0.10	6.6	6.6	6.6		0.6	0.2	7.2	6.8	7.2	
Peak Trips						**46** trips								**34.6**				**56.2**	**18.8**			**35.2**		**147.9**	**21.9**			**37.2**	
Off-Peak Trips						**35** trips												**40.2**	**5.7**					**97.9**	**16.5**				
Service Day						**81** trips								**985.9**	pax at pk load pt			**96.4**	**24.5**					**246.0**	**38.4**			**1272.1**	
																		-90.2%										1219.6%	

threshold_peak	53	*46*
threshold_offpeak	47	*35*

Route 11 Composite Day (CD) Trip Peak Load Point
OUTBOUND (from Chauncy @ Summer St to City Point)
Fall 2022 Ridership / Schedule
Downloaded from MBTA

Number of Trips Exceeding Threshold 0 — 79 — 79
Total Passengers Over Threshold 0 — 87.1387 — 87

DAILY TRIPS	To Site	From Site
Boardings	387	69

Annual Growth Rate
0.22% MPO LRTP
8 years of gr

Stop: A ST @ MT WASHINGTON AVE
time from start to stop: 0:03 *formula*

EXISTING — GROWTH TO 2022: 0% *formula* *formula* — NO BUILD Bus Pax w/ Backgrd *formula* *formula* — BUILD Site Pax GROWTH — BUILD Bus Pax TOTAL *formula*

	GTFS.route_id	GTFS.direction_id	Day.Type	Trip.Start.Time	Route_Variant	Passenger Crowding Threshold	Time at Stop (Trip Start+3mi)	Time Window	Existing.To.Site	Existing.From.Site	Max Load Existing	GROWN TO 2022 Existing.To.Site	GROWN TO 2022 Existing.From.Site	GROWN TO 2022 Max Load Existing	Exceed	Boardings	Alightings	Growth.To.Site	Growth.From.Site	Existing.To.Site.W.Growth	Existing.From.Site.W.Growth	Max Load w/ No-Build Pax Growth	Exceed	New.Riders.To.Site	New.Riders.From.Site	Total.To.Site	Total.From.Site	Max Load with Bus Pax	Exceed
1	11	Outbound	Weekday	5:37	11/3/2000	47	5:40	5:30	6.6	6.6	6.6	6.6	6.6	6.6		0	0	0.00	0.00	6.6	6.6	6.7		11.3	0.5	17.9	7.1	7.3	
2	11	Outbound	Weekday	5:58	11/3/2000	47	6:01	6:00	3.2	2.9	4.4	3.2	2.9	4.4		0	0.3	0.00	0.31	3.2	3.2	4.5		9.0	0.5	12.2	3.7	5.0	
3	11	Outbound	Weekday	6:16	11/3/2000	47	6:19	6:00	2.7	2.2	4.4	2.7	2.2	4.4		0	0.5	0.00	0.51	2.7	2.7	4.5		9.0	0.5	11.7	3.2	5.0	
4	11	Outbound	Weekday	6:30	11/3/2000	47	6:33	6:30	2.9	3.1	5.9	2.9	3.1	5.9		0.4	0.2	0.41	0.20	3.3	3.3	6.0		9.3	0.5	12.6	3.8	6.5	
5	11	Outbound	Weekday	6:41	11/3/2000	47	6:44	6:30	3.3	3.1	5.8	3.3	3.1	5.8		0.4	0.6	0.41	0.61	3.7	3.7	5.9		9.3	0.5	13.0	4.2	6.4	
6	11	Outbound	Weekday	6:52	11/3/2000	47	6:55	6:30	4.1	3.8	5.8	4.1	3.8	5.8		0.1	0.4	0.10	0.41	4.2	4.2	5.9		9.3	0.5	13.5	4.7	6.4	
7	11	Outbound	Weekday	7:03	11/3/2000	53	7:06	7:00	3.3	2.9	5.8	3.3	2.9	5.8		0.2	0.6	0.20	0.61	3.5	3.5	5.9		14.3	0.7	17.8	4.2	6.6	
8	11	Outbound	Weekday	7:13	11/3/2000	53	7:16	7:00	2.8	2.6	4.3	2.8	2.6	4.3		0.2	0.4	0.20	0.41	3.0	3.0	4.4		14.3	0.7	17.3	3.7	5.1	
9	11	Outbound	Weekday	7:25	11/3/2000	53	7:28	7:00	4.1	4.1	6.7	4.1	4.1	6.7		0	0	0.00	0.00	4.1	4.1	6.8		14.3	0.7	18.4	4.8	7.5	
10	11	Outbound	Weekday	7:43	11/3/2000	53	7:46	7:30	3.8	3.6	5.5	3.8	3.6	5.5		0	0.2	0.00	0.20	3.8	3.8	5.6		51.4	2.5	55.2	6.3	8.1	
11	11	Outbound	Weekday	8:01	11/3/2000	53	8:04	8:00	7.2	7.1	9.9	7.2	7.1	9.9		0.1	0.2	0.10	0.20	7.3	7.3	10.1		23.4	1.3	30.7	8.6	11.4	
12	11	Outbound	Weekday	8:21	11/3/2000	53	8:24	8:00	5.1	5	6.5	5.1	5	6.5		0	0.1	0.00	0.10	5.1	5.1	6.6		23.4	1.3	28.5	6.4	7.9	
13	11	Outbound	Weekday	8:40	11/3/2000	53	8:43	8:30	7.8	7.5	9.7	7.8	7.5	9.7		0.1	0.4	0.10	0.41	7.9	7.9	9.9		15.1	1.2	23.0	9.1	11.0	
14	11	Outbound	Weekday	8:55	11/3/2000	53	8:58	8:30	10.5	9.4	11	10.5	9.4	11		0.1	1.2	0.10	1.22	10.6	10.6	11.2		15.1	1.2	25.7	11.8	12.4	
15	11	Outbound	Weekday	9:10	11/3/2000	47	9:13	9:00	3.8	3.7	5.5	3.8	3.7	5.5		0	0.1	0.00	0.10	3.8	3.8	5.6		8.0	0.8	11.8	4.6	6.4	
16	11	Outbound	Weekday	9:25	11/3/2000	47	9:28	9:00	4.8	4.8	6.5	4.8	4.8	6.5		0.1	0.1	0.10	0.10	4.9	4.9	6.6		8.0	0.8	12.9	5.7	7.4	
17	11	Outbound	Weekday	9:45	11/3/2000	47	9:48	9:30	3.2	3.1	5.4	3.2	3.1	5.4		0	0.1	0.00	0.10	3.2	3.2	5.5		8.2	0.8	11.4	4.0	6.3	
18	11	Outbound	Weekday	10:20	11/3/2000	47	10:23	10:00	4.8	4.8	6.4	4.8	4.8	6.4		0	0	0.00	0.00	4.8	4.8	6.5		5.0	0.4	9.8	5.2	6.9	
19	11	Outbound	Weekday	11:00	11/3/2000	47	11:03	11:00	5.1	5	6.6	5.1	5	6.6		0	0.1	0.00	0.10	5.1	5.1	6.7		3.3	0.4	8.4	5.5	7.1	
20	11	Outbound	Weekday	11:35	11/3/2000	47	11:38	11:30	6.1	6	8.3	6.1	6	8.3		0	0.1	0.00	0.10	6.1	6.1	8.4		3.3	0.6	9.4	6.7	9.0	
21	11	Outbound	Weekday	12:10	11/3/2000	47	12:13	12:00	6.2	6.2	8.2	6.2	6.2	8.2		0.1	0.1	0.10	0.10	6.3	6.3	8.3		3.9	0.7	10.2	7.0	9.1	
22	11	Outbound	Weekday	12:50	11/3/2000	47	12:53	12:30	8	8	10.2	8	8	10.2		0	0	0.00	0.00	8.0	8.0	10.4		4.0	0.8	12.0	8.8	11.1	
23	11	Outbound	Weekday	13:25	11/3/2000	47	13:28	13:00	8.9	9	11.3	8.9	9	11.3		0.1	0	0.10	0.00	9.0	9.0	11.5		3.9	0.6	12.9	9.6	12.2	
24	11	Outbound	Weekday	14:00	11/3/2000	47	14:03	14:00	8.2	7.9	12.5	8.2	7.9	12.5		0	0.3	0.00	0.31	8.2	8.2	12.7		1.8	0.5	10.0	8.7	13.2	
25	11	Outbound	Weekday	14:25	11/3/2000	47	14:28	14:00	5.6	5.6	10.8	5.6	5.6	10.8		0.1	0.1	0.10	0.10	5.7	5.7	11.0		1.8	0.5	7.5	6.2	11.5	
26	11	Outbound	Weekday	14:45	11/3/2000	47	14:48	14:30	8.1	8.5	12.3	8.1	8.5	12.3		0.5	0.1	0.51	0.10	8.6	8.6	12.5		5.9	1.6	14.5	10.2	14.1	
27	11	Outbound	Weekday	15:02	11/3/2000	47	15:05	15:00	8.3	8.6	13.8	8.3	8.6	13.8		0.4	0.1	0.41	0.10	8.7	8.7	14.0		3.8	1.0	12.5	9.7	15.0	
28	11	Outbound	Weekday	15:19	11/3/2000	47	15:22	15:00	10.4	10.2	16.5	10.4	10.2	16.5		0.1	0.3	0.10	0.31	10.5	10.5	16.8		3.8	1.0	14.3	11.5	17.8	
29	11	Outbound	Weekday	15:36	11/3/2000	47	15:39	15:30	8.6	8.6	13.2	8.6	8.6	13.2		0.1	0.1	0.10	0.10	8.7	8.7	13.4		4.3	1.6	13.0	10.3	15.0	
30	11	Outbound	Weekday	15:50	11/3/2000	47	15:53	15:30	6.3	6.4	11	6.3	6.4	11		0.1	0	0.10	0.00	6.4	6.4	11.2		4.3	1.6	10.7	8.0	12.7	
31	11	Outbound	Weekday	16:03	11/3/2000	53	16:06	16:00	8.9	9	13.1	8.9	9	13.1		0.2	0.1	0.20	0.10	9.1	9.1	13.3		5.5	2.0	14.6	11.1	15.3	
32	11	Outbound	Weekday	16:16	11/3/2000	53	16:19	16:00	10.1	10.1	15.8	10.1	10.1	15.8		0.1	0.1	0.10	0.10	10.2	10.2	16.1		5.5	2.0	15.7	12.2	18.1	
33	11	Outbound	Weekday	16:28	11/3/2000	53	16:31	16:30	10.7	10.8	14.9	10.7	10.8	14.9		0.2	0.1	0.20	0.10	10.9	10.9	15.2		4.0	1.9	14.9	12.8	17.0	
34	11	Outbound	Weekday	16:40	11/3/2000	53	16:43	16:30	12.7	12.7	17.9	12.7	12.7	17.9		0.1	0.1	0.10	0.10	12.8	12.8	18.2		4.0	1.9	16.8	14.7	20.1	
35	11	Outbound	Weekday	16:52	11/3/2000	53	16:55	16:30	15.4	15.6	20.5	15.4	15.6	20.5		0.3	0.1	0.31	0.10	15.7	15.7	20.9		4.0	1.9	19.7	17.6	22.7	
36	11	Outbound	Weekday	17:05	11/3/2000	53	17:08	17:00	18.2	18.3	23.9	18.2	18.3	23.9		0.2	0.1	0.20	0.10	18.4	18.4	24.3		6.0	3.4	24.4	21.8	27.7	
37	11	Outbound	Weekday	17:18	11/3/2000	53	17:21	17:00	20.7	20.8	27.7	20.7	20.8	27.7		0.3	0.2	0.31	0.20	21.0	21.0	28.2		6.0	3.4	27.0	24.4	31.6	
38	11	Outbound	Weekday	17:31	11/3/2000	53	17:34	17:30	17.9	17.8	22.5	17.9	17.8	22.5		0.1	0.2	0.10	0.20	18.0	18.0	22.9		3.0	2.2	21.0	20.2	25.1	
39	11	Outbound	Weekday	17:44	11/3/2000	53	17:47	17:30	17	16.7	20.6	17	16.7	20.6		0.1	0.4	0.10	0.41	17.1	17.1	21.0		3.0	2.2	20.1	19.3	23.1	
40	11	Outbound	Weekday	17:55	11/3/2000	53	17:58	17:30	15.8	15.7	20.6	15.8	15.7	20.6		0.2	0.3	0.20	0.31	16.0	16.0	21.0		3.0	2.2	19.0	18.2	23.1	
41	11	Outbound	Weekday	18:10	11/3/2000	53	18:13	18:00	14.5	14.4	18.4	14.5	14.4	18.4		0.2	0.3	0.20	0.31	14.7	14.7	18.7		3.2	2.7	17.9	17.4	21.4	
42	11	Outbound	Weekday	18:25	11/3/2000	53	18:28	18:00	12.8	12.6	17	12.8	12.6	17		0.1	0.3	0.10	0.31	12.9	12.9	17.3		3.2	2.7	16.1	15.6	20.0	
43	11	Outbound	Weekday	18:40	11/3/2000	47	18:43	18:30	10.7	10.9	14.7	10.7	10.9	14.7		0.3	0.1	0.31	0.10	11.0	11.0	15.0		2.4	1.9	13.4	12.9	16.8	
44	11	Outbound	Weekday	18:56	11/3/2000	47	18:59	18:30	8.3	8.5	11.8	8.3	8.5	11.8		0.2	0	0.20	0.00	8.5	8.5	12.0		2.4	1.9	10.9	10.4	13.9	
45	11	Outbound	Weekday	19:10	11/3/2000	47	19:13	19:00	7.2	7.4	9.9	7.2	7.4	9.9		0.2	0	0.20	0.00	7.4	7.4	10.1		1.6	1.5	9.0	8.9	11.6	
46	11	Outbound	Weekday	19:25	11/3/2000	47	19:28	19:00	7.8	8	11.4	7.8	8	11.4		0.2	0	0.20	0.00	8.0	8.0	11.6		1.6	1.5	9.6	9.5	13.1	
47	11	Outbound	Weekday	19:40	11/3/2000	47	19:43	19:30	6.8	7	9.9	6.8	7	9.9		0.2	0	0.20	0.00	7.0	7.0	10.1		1.2	1.0	8.2	8.0	11.1	
48	11	Outbound	Weekday	19:55	11/3/2000	47	19:58	19:30	6.6	6.7	8.7	6.6	6.7	8.7		0.1	0	0.10	0.00	6.7	6.7	8.9		1.2	1.0	7.9	7.7	9.9	
49	11	Outbound	Weekday	20:15	11/3/2000	47	20:18	20:00	6.1	6.1	8.6	6.1	6.1	8.6		0.1	0.1	0.10	0.10	6.2	6.2	8.8		2.0	1.1	8.2	7.3	9.9	
50	11	Outbound	Weekday	20:45	11/3/2000	47	20:48	20:30	7.4	7.6	9.9	7.4	7.6	9.9		0.2	0	0.20	0.00	7.6	7.6	10.1		2.2	0.7	9.8	8.3	10.8	
51	11	Outbound	Weekday	21:15	11/3/2000	47	21:18	21:00	6.6	6.6	9.1	6.6	6.6	9.1		0	0	0.00	0.00	6.6	6.6	9.3		1.6	0.6	8.2	7.2	9.9	
52	11	Outbound	Weekday	21:45	11/3/2000	47	21:48	21:30	6.3	6.3	9.3	6.3	6.3	9.3		0	0	0.00	0.00	6.3	6.3	9.5		1.5	0.7	7.8	7.0	10.1	
53	11	Outbound	Weekday	22:25	11/3/2000	47	22:28	22:00	4.1	4	6.2	4.1	4	6.2		0	0.1	0.00	0.10	4.1	4.1	6.3		0.9	0.4	5.0	4.5	6.7	
54	11	Outbound	Weekday	23:20	11/3/2000	47	23:23	23:00	3.6	4.1	4.8	3.6	4.1	4.8		0.5	0	0.51	0.00	4.1	4.1	4.9		0.2	0.1	4.3	4.2	5.0	
55	11	Outbound	Weekday	0:11	11/3/2000	47	0:14	0:00	1.8	1.8	2.9	1.8	1.8	2.9		0	0	0.00	0.00	1.8	1.8	3.0		0.2	0.0	2.0	1.8	3.0	
56	11	Outbound	Weekday	1:03	11/3/2000	47	1:06	1:00	1.8	1.8	3.1	1.8	1.8	3.1		0	0	0.00	0.00	1.8	1.8	3.2		0.0	0.0	1.8	1.8	3.2	
Peak Trips						**20** trips								**27.7**				**2.9**	**5.5**			**28.2**	8.2	**221.9**	**37.8**			**31.6**	
Off-Peak Trips						**36** trips												**4.6**	**4.0**			0.0		**149.4**	**29.1**				
Service Day						**56** trips								**431.6** pax at pk load pt				**94.4**	**56.3**			0.0		**371.3**	**66.9**			**768.9**	
																		-78.1%				0.0						714.8%	

threshold_peak	53	*20*
threshold_offpeak	47	*36*

Route 11 Composite Day (CD) Trip Peak Load Point
INBOUND (from City Point to Chauncy @ Summer St)
Fall 2022 Ridership / Schedule
Downloaded from MBTA

Number of Trips Exceeding Threshold 0 63 74
Total Passengers Over Threshold 0 42.1442 42

DAILY TRIPS	To Site	From Site
Boardings	69	387

Annual Growth Rate
0.22% MPO LRTP
8 years of gr

Stop: Broadway Station Stop
time from start to stop: 0:11

									EXISTING			GROWTH TO 2022					NO BUILD Bus Pax w/ Backgrd						BUILD Site Pax GROWTH				BUILD Bus Pax TOTAL		
	GTFS.route_id	GTFS.direction_id	Day.Type	Trip.Start.Time	Route_Variant	Passenger Crowding Threshold	Time at Stop (Trip Start+11mi)	Time Window	Existing.To.Site	Existing.From.Site	Max Load Existing	GROWN TO 2022 Existing.To.Site	GROWN TO 2022 Existing.From.Site	GROWN TO 2022 Max Load Existing	Exceed	Boardings	Alightings	Growth.To.Site	Growth.From.Site	Existing.To.Site.W.Growth	Existing.From.Site.W.Growth	Max Load w/ No-Build Pax Growth	Max Growth	Exceed	New.Ride rs.To.Site	New.Ride rs.From.Site	Total.To.Site	Total.From.Site	Max Load with Bus Pax	Max Growth	Exceed
1	11	Inbound	Weekday	5:10	11/3/2001	47	5:21	5:00	10.3	7.4	10.3	10.3	7.4	10.3		1.5	4.4	1.53	4.48	11.8	11.9	10.5	0.2		0.0	0.0	11.8	11.9	11.9	1.4	
2	11	Inbound	Weekday	5:30	11/3/2001	47	5:41	5:30	13	9.6	13.1	13	9.6	13.1		0.3	3.7	0.31	3.77	13.3	13.4	13.3	0.2		1.0	1.5	14.3	14.9	14.9	1.6	
3	11	Inbound	Weekday	5:45	11/3/2001	47	5:56	5:30	11.7	6	11.6	11.7	6	11.6		0.3	6	0.31	6.11	12.0	12.1	11.8	0.2		1.0	1.5	13.0	13.6	13.6	1.8	
4	11	Inbound	Weekday	5:59	11/3/2001	47	6:10	6:00	12.4	6.1	12.5	12.4	6.1	12.5		0.4	6.7	0.41	6.82	12.8	12.9	12.7	0.2		1.6	3.0	14.4	15.9	15.9	3.2	
5	11	Inbound	Weekday	6:10	11/3/2001	47	6:21	6:00	15	10.1	15.2	15	10.1	15.2		0.4	5.3	0.41	5.40	15.4	15.5	15.5	0.3		1.6	3.0	17.0	18.5	18.5	3.0	
6	11	Inbound	Weekday	6:21	11/3/2001	47	6:32	6:30	16.4	12.6	16.4	16.4	12.6	16.4		1.5	5.3	1.53	5.40	17.9	18.0	16.7	0.3		1.7	2.9	19.6	20.9	20.9	4.2	
7	11	Inbound	Weekday	6:31	11/3/2001	47	6:42	6:30	16	12.4	16	16	12.4	16		1.7	5.3	1.73	5.40	17.7	17.8	16.3	0.3		1.7	2.9	19.4	20.7	20.7	4.4	
8	11	Inbound	Weekday	6:41	11/3/2001	47	6:52	6:30	15.7	9.9	15.6	15.7	9.9	15.6		1	6.8	1.02	6.92	16.7	16.8	15.9	0.3		1.7	2.9	18.4	19.8	19.8	3.9	
9	11	Inbound	Weekday	6:51	11/3/2001	53	7:02	7:00	17.1	11.2	17.1	17.1	11.2	17.1		1.2	7.1	1.22	7.23	18.3	18.4	17.4	0.3		2.6	3.8	20.9	22.2	22.2	4.8	
10	11	Inbound	Weekday	7:00	11/4/2001	53	7:11	7:00	20.5	13.5	20.5	20.5	13.5	20.5		1.2	8.2	1.22	8.35	21.7	21.8	20.9	0.4		2.6	3.8	24.3	25.7	25.7	4.8	
11	11	Inbound	Weekday	7:10	11/3/2001	53	7:21	7:00	23	17	22.9	23	17	22.9		2.2	8.2	2.24	8.35	25.2	25.3	23.3	0.4		2.6	3.8	27.8	29.2	29.2	5.9	
12	11	Inbound	Weekday	7:19	11/4/2001	53	7:30	7:30	26	19.5	26	26	19.5	26		2.6	9.1	2.65	9.26	28.6	28.8	26.5	0.5		2.3	3.4	30.9	32.2	32.2	5.7	
13	11	Inbound	Weekday	7:29	11/3/2001	53	7:40	7:30	31.5	25	31.5	31.5	25	31.5		2.9	9.4	2.95	9.57	34.5	34.6	32.1	0.6		2.3	3.4	36.7	38.0	38.0	5.9	
14	11	Inbound	Weekday	7:39	11/4/2001	53	7:50	7:30	27.4	21	27.4	27.4	21	27.4		2.9	9.3	2.95	9.47	30.4	30.5	27.9	0.5		2.3	3.4	32.6	33.9	33.9	6.0	
15	11	Inbound	Weekday	7:48	11/3/2001	53	7:59	7:30	26.9	21.7	26.9	26.9	21.7	26.9		3.1	8.3	3.16	8.45	30.1	30.1	27.4	0.5		2.3	3.4	32.3	33.6	33.6	6.2	
16	11	Inbound	Weekday	7:57	11/4/2001	53	8:08	8:00	22.8	16.9	23	22.8	16.9	23		2.1	8	2.14	8.14	24.9	25.0	23.4	0.4		2.8	5.0	27.7	30.0	30.0	6.6	
17	11	Inbound	Weekday	8:06	11/3/2001	53	8:17	8:00	33	25.5	33	33	25.5	33		3.2	10.7	3.26	10.89	36.3	36.4	33.6	0.6		2.8	5.0	39.0	41.4	41.4	7.8	
18	11	Inbound	Weekday	8:17	11/3/2001	53	8:28	8:00	21.4	16.5	21.7	21.4	16.5	21.7		2.7	7.6	2.75	7.74	24.1	24.2	22.1	0.4		2.8	5.0	26.9	29.2	29.2	7.1	
19	11	Inbound	Weekday	8:28	11/3/2001	53	8:39	8:30	15.4	12.7	16.1	15.4	12.7	16.1		2.3	5	2.34	5.09	17.7	17.8	16.4	0.3		2.7	6.5	20.4	24.3	24.3	7.9	
20	11	Inbound	Weekday	8:39	11/3/2001	53	8:50	8:30	9.2	6.8	9.4	9.2	6.8	9.4		0.9	3.3	0.92	3.36	10.1	10.2	9.6	0.2		2.7	6.5	12.8	16.6	16.6	7.1	
21	11	Inbound	Weekday	8:50	11/3/2001	47	9:01	9:00	11.3	8.3	11.3	11.3	8.3	11.3		1.2	4.2	1.22	4.28	12.5	12.6	11.5	0.2		1.4	4.3	14.0	16.9	16.9	5.4	
22	11	Inbound	Weekday	9:02	11/3/2001	47	9:13	9:00	9.7	7.9	10.3	9.7	7.9	10.3		1.3	3.1	1.32	3.16	11.0	11.1	10.5	0.2		1.4	4.3	12.5	15.3	15.3	4.9	
23	11	Inbound	Weekday	9:20	11/3/2001	47	9:31	9:30	12.6	10.3	12.7	12.6	10.3	12.7		1.2	3.5	1.22	3.56	13.8	13.9	12.9	0.2		0.7	2.2	14.6	16.0	16.0	3.1	
24	11	Inbound	Weekday	9:45	11/3/2001	47	9:56	9:30	11	9	12.1	11	9	12.1		1	3	1.02	3.05	12.0	12.1	12.3	0.2		0.7	2.2	12.7	14.2	14.2	1.9	
25	11	Inbound	Weekday	10:20	11/3/2001	47	10:31	10:30	11.6	10.3	11.7	11.6	10.3	11.7		1.4	2.7	1.43	2.75	13.0	13.0	11.9	0.2		0.6	2.6	13.7	15.6	15.6	3.7	
26	11	Inbound	Weekday	10:55	11/3/2001	47	11:06	11:00	12.3	10	12.4	12.3	10	12.4		1.4	3.7	1.43	3.77	13.7	13.8	12.6	0.2		0.6	2.2	14.3	16.0	16.0	3.4	
27	11	Inbound	Weekday	11:30	11/3/2001	47	11:41	11:30	10	8.1	10.1	10	8.1	10.1		1.1	3	1.12	3.05	11.1	11.2	10.3	0.2		0.6	3.3	11.7	14.5	14.5	4.2	
28	11	Inbound	Weekday	12:10	11/3/2001	47	12:21	12:00	12.1	9.5	12.2	12.1	9.5	12.2		1.9	4.5	1.93	4.58	14.0	14.1	12.4	0.2		0.7	4.0	14.7	18.1	18.1	5.6	
29	11	Inbound	Weekday	12:45	11/3/2001	47	12:56	12:30	10.4	7.9	10.4	10.4	7.9	10.4		1.6	4.1	1.63	4.17	12.0	12.1	10.6	0.2		0.7	4.2	12.7	16.3	16.3	5.7	
30	11	Inbound	Weekday	13:20	11/3/2001	47	13:31	13:30	8.9	7.1	8.9	8.9	7.1	8.9		1.5	3.3	1.53	3.36	10.4	10.5	9.1	0.2		0.7	5.0	11.1	15.4	15.4	6.4	
31	11	Inbound	Weekday	13:55	11/3/2001	47	14:06	14:00	11.5	6.9	11.6	11.5	6.9	11.6		2.5	7.1	2.54	7.23	14.0	14.1	11.8	0.2		0.7	5.9	14.7	20.0	20.0	8.2	
32	11	Inbound	Weekday	14:20	11/3/2001	47	14:31	14:30	9.7	7.6	9.6	9.7	7.6	9.6		1.6	3.7	1.63	3.77	11.3	11.4	9.8	0.2		0.5	4.5	11.9	15.9	15.9	6.1	
33	11	Inbound	Weekday	14:40	11/3/2001	47	14:51	14:30	8.1	5.8	11.1	8.1	5.8	11.1		1.6	3.9	1.63	3.97	9.7	9.8	11.3	0.2		0.5	4.5	10.3	14.3	14.3	3.0	
34	11	Inbound	Weekday	15:00	11/3/2001	47	15:11	15:00	11.8	7.7	12.2	11.8	7.7	12.2		1.1	5.2	1.12	5.29	12.9	13.0	12.4	0.2		1.3	10.7	14.3	23.7	23.7	11.3	
35	11	Inbound	Weekday	15:20	11/3/2001	47	15:31	15:30	10.2	7.8	10.2	10.2	7.8	10.2		1.7	4.1	1.73	4.17	11.9	12.0	10.4	0.2		0.8	8.7	12.7	20.7	20.7	10.3	
36	11	Inbound	Weekday	15:35	11/3/2001	47	15:46	15:30	5.8	4.6	8.2	5.8	4.6	8.2		1.4	2.6	1.43	2.65	7.2	7.2	8.3	0.1		0.8	8.7	8.0	15.9	15.9	7.6	
37	11	Inbound	Weekday	15:50	11/3/2001	53	16:01	16:00	7.6	5.5	7.6	7.6	5.5	7.6		1.1	3.2	1.12	3.26	8.7	8.8	7.7	0.1		1.0	11.2	9.7	20.0	20.0	12.2	
38	11	Inbound	Weekday	16:05	11/3/2001	53	16:16	16:00	7.7	6.2	7.8	7.7	6.2	7.8		0.9	2.4	0.92	2.44	8.6	8.6	7.9	0.1		1.0	11.2	9.6	19.9	19.9	11.9	
39	11	Inbound	Weekday	16:20	11/3/2001	53	16:31	16:30	5.4	4	5.4	5.4	4	5.4		0.9	2.3	0.92	2.34	6.3	6.3	5.5	0.1		0.7	10.4	7.0	16.8	16.8	11.3	
40	11	Inbound	Weekday	16:32	11/3/2001	53	16:43	16:30	5.6	4.4	5.5	5.6	4.4	5.5		1.8	3	1.83	3.05	7.4	7.5	5.6	0.1		0.7	10.4	8.1	17.9	17.9	12.3	
41	11	Inbound	Weekday	16:45	11/3/2001	53	16:56	16:30	7.7	5.4	7.7	7.7	5.4	7.7		0.7	3	0.71	3.05	8.4	8.5	7.8	0.1		0.7	10.4	9.1	18.9	18.9	11.0	
42	11	Inbound	Weekday	16:58	11/3/2001	53	17:09	17:00	7.9	5.8	7.8	7.9	5.8	7.8		1.9	4	1.93	4.07	9.8	9.9	7.9	0.1		1.1	19.0	10.9	28.9	28.9	21.0	
43	11	Inbound	Weekday	17:11	11/3/2001	53	17:22	17:00	9	6.8	9.1	9	6.8	9.1		0.9	3.1	0.92	3.16	9.9	10.0	9.3	0.2		1.1	19.0	11.0	29.0	29.0	19.7	
44	11	Inbound	Weekday	17:22	11/3/2001	53	17:33	17:30	9.8	7.2	9.9	9.8	7.2	9.9		0.8	3.4	0.81	3.46	10.6	10.7	10.1	0.2		0.8	18.3	11.4	29.0	29.0	18.9	
45	11	Inbound	Weekday	17:37	11/3/2001	53	17:48	17:30	7.2	6	7.3	7.2	6	7.3		1.2	2.4	1.22	2.44	8.4	8.4	7.4	0.1		0.8	18.3	9.2	26.8	26.8	19.3	
46	11	Inbound	Weekday	17:52	11/3/2001	53	18:03	18:00	7.5	6.7	7.5	7.5	6.7	7.5		1.8	2.6	1.83	2.65	9.3	9.3	7.6	0.1		0.6	15.1	9.9	24.5	24.5	16.9	
47	11	Inbound	Weekday	18:07	11/3/2001	53	18:18	18:00	7.3	6.9	7.4	7.3	6.9	7.4		1.2	1.6	1.22	1.63	8.5	8.5	7.5	0.1		0.6	15.1	9.1	23.7	23.7	16.1	
48	11	Inbound	Weekday	18:23	11/3/2001	47	18:34	18:30	5	4.1	5.1	5	4.1	5.1		0.8	1.7	0.81	1.73	5.8	5.8	5.2	0.1		0.4	10.4	6.2	16.2	16.2	11.0	
49	11	Inbound	Weekday	18:37	11/3/2001	47	18:48	18:30	3.6	2.9	3.7	3.6	2.9	3.7		0.3	1	0.31	1.02	3.9	3.9	3.8	0.1		0.4	10.4	4.3	14.3	14.3	10.6	
50	11	Inbound	Weekday	18:52	11/3/2001	47	19:03	19:00	3.2	2.5	3.5	3.2	2.5	3.5		0.3	1	0.31	1.02	3.5	3.5	3.6	0.1		0.3	8.4	3.8	11.9	11.9	8.4	
51	11	Inbound	Weekday	19:07	11/3/2001	47	19:18	19:00	2.3	1.9	2.3	2.3	1.9	2.3		0.4	0.8	0.41	0.81	2.7	2.7	2.3	0.0		0.3	8.4	3.0	11.1	11.1	8.8	
52	11	Inbound	Weekday	19:24	11/3/2001	47	19:35	19:30	2.3	1.9	2.4	2.3	1.9	2.4		0.4	0.8	0.41	0.81	2.7	2.7	2.4	0.0		0.2	5.7	2.9	8.4	8.4	6.0	
53	11	Inbound	Weekday	19:44	11/3/2001	47	19:55	19:30	2.8	2.1	2.9	2.8	2.1	2.9		0.4	1.1	0.41	1.12	3.2	3.2	3.0	0.1		0.2	5.7	3.4	8.9	8.9	6.0	
54	11	Inbound	Weekday	20:15	11/3/2001	47	20:26	20:00	3.8	3.1	4.1	3.8	3.1	4.1		0.4	1.1	0.41	1.12	4.2	4.2	4.2	0.1		0.4	6.4	4.6	10.6	10.6	6.5	
55	11	Inbound	Weekday	20:45	11/3/2001	47	20:56	20:30	2.7	2.4	2.8	2.7	2.4	2.8		0.5	0.8	0.51	0.81	3.2	3.2	2.9	0.1		0.4	4.0	3.6	7.2	7.2	4.4	
56	11	Inbound	Weekday	21:15	11/3/2001	47	21:26	21:00	2.8	2.2	2.8	2.8	2.2	2.8		0.3	0.9	0.31	0.92	3.1	3.1	2.9	0.1		0.3	3.6	3.4	6.7	6.7	3.9	
57	11	Inbound	Weekday	21:55	11/3/2001	47	22:06	22:00	3.2	2.5	3.2	3.2	2.5	3.2		0.5	1.2	0.51	1.22	3.7	3.7	3.3	0.1		0.2	2.4	3.9	6.1	6.1	2.8	
58	11	Inbound	Weekday	22:50	11/3/2001	47	23:01	23:00	1.9	1.2	1.9	1.9	1.2	1.9		0.2	0.9	0.20	0.92	2.1	2.1	1.9	0.0		0.0	0.4	2.1	2.5	2.5	0.6	
59	11	Inbound	Weekday	23:45	11/3/2001	47	23:56	23:30	1.2	1.1	1.3	1.2	1.1	1.3		0.1	0.2	0.10	0.20	1.3	1.3	1.3	0.0		0.0	0.6	1.3	1.9	1.9	0.6	
60	11	Inbound	Weekday	0:35	11/3/2001	47	0:46	0:30	1.1	1.1	1.2	1.1	1.1	1.2		0	0	0.00	0.00	1.1	1.1	1.2	0.0		0.0	0.0	1.1	1.1	1.1	-0.1	
Peak Trips						**23**	trips							**33.0**				**41.2**	**127.5**			**33.6**			**39.6**	**211.7**			**41.4**		
Off-Peak Trips						**37**	trips											**35.8**	**118.8**						**26.1**	**161.5**					
Service Day						**60**	trips							**504.1**	pax at pk load pt			**118.3**	**274.1**						**65.7**	**373.5**			**1165.9**		
																		-76.5%											885.6%		

threshold_peak	53	*23*
threshold_offpeak	47	*37*

Traffic Operations Analysis

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	15	70	390	370	25
Future Vol, veh/h	5	15	70	390	370	25
Conflicting Peds, #/hr	64	4	159	0	0	159
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	56	88	88	83	83
Heavy Vehicles, %	25	25	4	4	5	4
Mvmt Flow	9	27	80	443	446	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1287	624	635	0	-	0
Stage 1	620	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Critical Hdwy	6.65	6.45	4.14	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.525	2.236	-	-	-
Pot Cap-1 Maneuver	162	446	939	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	104	383	809	-	-	-
Mov Cap-2 Maneuver	104	-	-	-	-	-
Stage 1	370	-	-	-	-	-
Stage 2	405	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.6	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	809	-	229	-	-
HCM Lane V/C Ratio	0.098	-	0.156	-	-
HCM Control Delay (s)	9.9	0	23.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	10	1	25	95	430	15	15	275	95
Future Vol, veh/h	5	5	5	10	1	25	95	430	15	15	275	95
Conflicting Peds, #/hr	3	0	149	149	0	3	94	0	250	250	0	94
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	85	85	85	90	90	90	83	83	83
Heavy Vehicles, %	0	0	0	10	0	9	0	0	0	0	6	0
Mvmt Flow	7	7	7	12	1	29	106	478	17	18	331	114

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1235	1475	631	1529	1524	740	539	0	0	745	0	0
Stage 1	518	518	-	949	949	-	-	-	-	-	-	-
Stage 2	717	957	-	580	575	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.2	6.5	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.59	4	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	155	128	485	92	119	405	1040	-	-	872	-	-
Stage 1	544	536	-	303	342	-	-	-	-	-	-	-
Stage 2	424	339	-	486	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	109	73	377	46	68	308	955	-	-	664	-	-
Mov Cap-2 Maneuver	109	73	-	46	68	-	-	-	-	-	-	-
Stage 1	423	474	-	195	221	-	-	-	-	-	-	-
Stage 2	322	219	-	383	447	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42.2	53.5	1.6	0.4
HCM LOS	E	F		

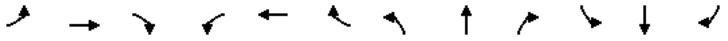
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	955	-	-	118	115	664	-	-
HCM Lane V/C Ratio	0.111	-	-	0.182	0.368	0.027	-	-
HCM Control Delay (s)	9.2	0	-	42.2	53.5	10.6	0	-
HCM Lane LOS	A	A	-	E	F	B	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.6	1.5	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	165	175	435	115	240	105	390	30	195	85
Future Volume (vph)	165	175	435	115	240	105	390	30	195	85
Lane Group Flow (vph)	247	192	236	438	267	117	433	0	262	99
Turn Type	NA	pt+ov	Split	NA	D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2 3	1	1	3	3 4	3 4		4	2 4
Permitted Phases					4			4		
Detector Phase	2	2 3	1	1	3	3 4	3 4	4	4	2 4
Switch Phase										
Minimum Initial (s)	8.0		8.0	8.0	8.0			8.0	8.0	
Minimum Split (s)	26.0		26.0	26.0	30.0			13.0	13.0	
Total Split (s)	30.0		35.0	35.0	30.0			15.0	15.0	
Total Split (%)	27.3%		31.8%	31.8%	27.3%			13.6%	13.6%	
Yellow Time (s)	3.0		3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0			2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0				0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0				5.0	
Lead/Lag	Lag		Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	Max		C-Max	C-Max	Max			Min	Min	
v/c Ratio	0.35	0.25	0.65	0.56	0.65	0.19	0.75		1.06	0.19
Control Delay	29.9	14.6	45.3	35.8	35.6	25.0	40.4		121.3	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	29.9	14.6	45.3	35.8	35.6	25.0	40.4		121.3	3.6
Queue Length 50th (ft)	74	64	162	139	144	56	265		~106	0
Queue Length 95th (ft)	114	132	261	194	223	99	392		#180	17
Internal Link Dist (ft)	378			513		267			265	
Turn Bay Length (ft)		165	275							125
Base Capacity (vph)	702	756	361	783	410	621	576		248	510
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.35	0.25	0.65	0.56	0.65	0.19	0.75		1.06	0.19

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 40 (36%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: I-90 Ramps/B St & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	165	175	435	115	70	240	105	390	30	195	85
Future Volume (vph)	60	165	175	435	115	70	240	105	390	30	195	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	16	11	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		0.95	1.00	0.91	0.91		1.00	1.00	1.00		0.95	1.00
Frpb, ped/bikes		1.00	1.00	1.00	0.95		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00	0.95	0.97		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		3091	1425	1327	2817		1547	1710	1584		3041	1391
Flt Permitted		0.99	1.00	0.95	0.97		0.40	1.00	1.00		0.89	1.00
Satd. Flow (perm)		3091	1425	1327	2817		651	1710	1584		2730	1391
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	66	181	192	473	125	76	267	117	433	35	227	99
RTOR Reduction (vph)	0	0	44	0	15	0	0	0	0	0	0	68
Lane Group Flow (vph)	0	247	149	236	423	0	267	117	433	0	262	32
Confl. Peds. (#/hr)						166						20
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	3%	4%	2%	4%	3%	1%	5%	0%	4%	0%	3%	1%
Turn Type	Split	NA	pt+ov	Split	NA		D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2	2 3	1	1		3	3 4	3 4		4	2 4
Permitted Phases							4			4		
Actuated Green, G (s)		25.0	55.0	30.0	30.0		35.0	40.0	40.0		10.0	35.0
Effective Green, g (s)		25.0	55.0	30.0	30.0		35.0	40.0	40.0		10.0	35.0
Actuated g/C Ratio		0.23	0.50	0.27	0.27		0.32	0.36	0.36		0.09	0.32
Clearance Time (s)		5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0				2.0	
Lane Grp Cap (vph)		702	712	361	768		410	621	576		248	442
v/s Ratio Prot		c0.08	0.10	c0.18	0.15		0.15	0.07	c0.27			0.02
v/s Ratio Perm							0.06				c0.10	
v/c Ratio		0.35	0.21	0.65	0.55		0.65	0.19	0.75		1.06	0.07
Uniform Delay, d1		35.7	15.4	35.4	34.2		31.0	23.9	30.7		50.0	26.2
Progression Factor		0.79	1.63	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		1.3	0.6	8.9	2.8		2.8	0.1	4.9		72.8	0.0
Delay (s)		29.7	25.6	44.3	37.1		33.8	24.0	35.5		122.8	26.2
Level of Service		C	C	D	D		C	C	D		F	C
Approach Delay (s)		27.9			39.6			33.3			96.3	
Approach LOS		C			D			C			F	

Intersection Summary				
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	90	270	360	30	160	60	150	85
Future Volume (vph)	90	270	360	30	160	60	150	85
Lane Group Flow (vph)	96	287	458	38	256	121	115	96
Turn Type	Perm	NA	NA	Split	NA	Prot	Prot	Prot
Protected Phases		1	1	6	6	5	5	5
Permitted Phases	1							
Detector Phase	1	1	1	6	6	5	5	5
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	32.0	32.0	32.0	31.0	31.0	33.5	33.5	33.5
Total Split (s)	32.0	32.0	32.0	44.0	44.0	34.0	34.0	34.0
Total Split (%)	29.1%	29.1%	29.1%	40.0%	40.0%	30.9%	30.9%	30.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.28	0.35	0.32	0.12	0.79	0.57	0.61	0.49
Control Delay	31.4	29.1	11.6	34.1	58.4	53.1	56.3	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	29.1	11.6	34.1	58.4	53.1	56.3	50.2
Queue Length 50th (ft)	51	155	93	22	173	82	83	65
Queue Length 95th (ft)	m92	m226	172	42	210	122	125	101
Internal Link Dist (ft)		439	378		213	281		
Turn Bay Length (ft)								
Base Capacity (vph)	346	810	1448	544	562	389	347	359
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	0.28	0.35	0.32	0.07	0.46	0.31	0.33	0.27

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	90	270	360	80	30	160	45	60	150	85
Future Volume (vph)	90	270	360	80	30	160	45	60	150	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	0.90	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.97		0.93	0.85	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (prot)	1408	1660	2945		1577	1627		1529	1367	1411
Flt Permitted	0.47	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (perm)	701	1660	2945		1577	1627		1529	1367	1411
Peak-hour factor, PHF	0.94	0.94	0.96	0.96	0.80	0.80	0.80	0.89	0.89	0.89
Adj. Flow (vph)	96	287	375	83	38	200	56	67	169	96
RTOR Reduction (vph)	0	0	11	0	0	0	0	0	0	0
Lane Group Flow (vph)	96	287	447	0	38	256	0	121	115	96
Confl. Peds. (#/hr)	153			153	7		20	7		20
Confl. Bikes (#/hr)				11						
Heavy Vehicles (%)	0%	3%	3%	4%	3%	1%	0%	2%	1%	3%
Parking (#/hr)				2						
Turn Type	Perm	NA	NA		Split	NA		Prot	Prot	Prot
Protected Phases		1	1		6	6		5	5	5
Permitted Phases	1									
Actuated Green, G (s)	53.7	53.7	53.7		22.0	22.0		15.3	15.3	15.3
Effective Green, g (s)	53.7	53.7	53.7		22.0	22.0		15.3	15.3	15.3
Actuated g/C Ratio	0.49	0.49	0.49		0.20	0.20		0.14	0.14	0.14
Clearance Time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	342	810	1437		315	325		212	190	196
v/s Ratio Prot		c0.17	0.15		0.02	c0.16		0.08	c0.08	0.07
v/s Ratio Perm	0.14									
v/c Ratio	0.28	0.35	0.31		0.12	0.79		0.57	0.61	0.49
Uniform Delay, d1	16.7	17.4	17.0		36.1	41.8		44.3	44.5	43.7
Progression Factor	1.32	1.32	0.58		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.0	0.5		0.1	11.1		2.3	3.7	0.7
Delay (s)	23.6	23.9	10.3		36.1	52.8		46.6	48.2	44.4
Level of Service	C	C	B		D	D		D	D	D
Approach Delay (s)		23.9	10.3			50.7		46.5		
Approach LOS		C	B			D		D		

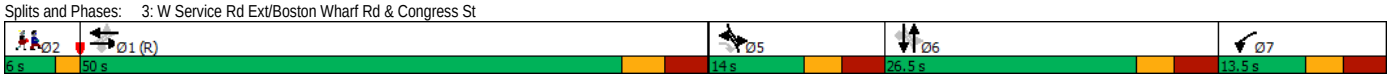
Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

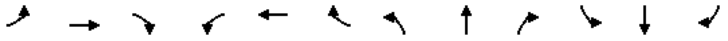
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø2
Lane Configurations											
Traffic Volume (vph)	35	235	265	165	260	85	70	40	225	75	
Future Volume (vph)	35	235	265	165	260	85	70	40	225	75	
Lane Group Flow (vph)	0	293	288	201	347	94	172	0	316	89	
Turn Type	Perm	NA	custom	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		1		7	1	5	6	5	6		2
Permitted Phases	1		1 5	1		6		6		6	
Detector Phase	1	1	1 5	7	1	5	6	5	6	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0		7.0	10.0	7.0	8.0	7.0	8.0	8.0	1.0
Minimum Split (s)	24.5	24.5		13.5	24.5	13.5	25.5	13.5	25.5	25.5	6.0
Total Split (s)	50.0	50.0		13.5	50.0	14.0	26.5	14.0	26.5	26.5	6.0
Total Split (%)	45.5%	45.5%		12.3%	45.5%	12.7%	24.1%	12.7%	24.1%	24.1%	5%
Yellow Time (s)	3.5	3.5		3.0	3.5	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0		6.5	7.0	6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag			Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max		None	C-Max	None	Ped	None	Ped	Ped	Ped
v/c Ratio		0.52	0.38	0.49	0.58	0.36	0.63		0.84	0.24	
Control Delay		12.3	3.6	14.7	24.2	33.0	41.2		58.1	1.6	
Queue Delay		0.2	0.5	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		12.5	4.1	14.7	24.2	33.0	41.2		58.1	1.6	
Queue Length 50th (ft)		71	25	58	201	49	81		190	0	
Queue Length 95th (ft)		m98	m49	50	91	91	157		#285	0	
Internal Link Dist (ft)		349			439		826		274		
Turn Bay Length (ft)											
Base Capacity (vph)		563	758	411	595	266	277		380	371	
Starvation Cap Reductn		28	183	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		0.55	0.50	0.49	0.58	0.35	0.62		0.83	0.24	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 42 (38%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: W Service Rd Ext/Boston Wharf Rd & Congress St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	235	265	165	260	25	85	70	85	40	225	75
Future Volume (vph)	35	235	265	165	260	25	85	70	85	40	225	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	12	11	8	12	11	11	12
Total Lost time (s)		7.0	7.0	6.5	7.0		6.5	6.5			6.5	6.5
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.95		1.00	0.97			1.00	0.84
Flpb, ped/bikes		0.97	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		1566	1197	1494	1512		1525	1308			1641	1197
Flt Permitted		0.91	1.00	0.50	1.00		0.57	1.00			0.90	1.00
Satd. Flow (perm)		1440	1197	786	1512		913	1308			1484	1197
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	38	255	288	201	317	30	94	78	94	48	268	89
RTOR Reduction (vph)	0	0	136	0	3	0	0	39	0	0	0	73
Lane Group Flow (vph)	0	293	152	201	344	0	94	133	0	0	316	16
Confl. Peds. (#/hr)	230		1	1		230			23			86
Confl. Bikes (#/hr)			7			8						2
Heavy Vehicles (%)	18%	3%	5%	5%	3%	0%	3%	0%	2%	0%	0%	2%
Parking (#/hr)			2									
Turn Type	Perm	NA	custom	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		1		7	1		5	6		5	6	
Permitted Phases	1		1 5	1			6			6		6
Actuated Green, G (s)		43.1	57.5	50.4	43.1		27.0	19.6			27.0	19.6
Effective Green, g (s)		43.1	57.5	50.4	43.1		27.0	19.6			27.0	19.6
Actuated g/C Ratio		0.39	0.52	0.46	0.39		0.25	0.18			0.25	0.18
Clearance Time (s)		7.0		6.5	7.0		6.5	6.5			6.5	6.5
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		564	625	407	592		265	233			374	213
v/s Ratio Prot				c0.03	c0.23		0.02	0.10			c0.06	
v/s Ratio Perm		0.20	0.13	0.19			0.06				c0.15	0.01
v/c Ratio		0.52	0.24	0.49	0.58		0.35	0.57			0.84	0.07
Uniform Delay, d1		25.5	14.4	19.8	26.3		33.4	41.3			39.5	37.6
Progression Factor		0.37	1.35	0.73	0.76		1.00	1.00			1.00	1.00
Incremental Delay, d2		2.6	0.1	0.3	4.0		0.3	1.9			15.3	0.1
Delay (s)		12.1	19.4	14.8	23.9		33.7	43.2			54.8	37.7
Level of Service		B	B	B	C		C	D			D	D
Approach Delay (s)		15.7			20.6			39.9			51.1	
Approach LOS		B			C			D			D	

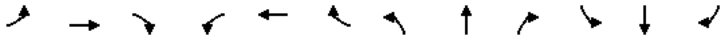
Intersection Summary				
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.5	
Intersection Capacity Utilization	87.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	Ø2
Lane Configurations								
Traffic Volume (vph)	40	400	160	145	215	40	135	
Future Volume (vph)	40	400	160	145	215	40	135	
Lane Group Flow (vph)	0	478	174	171	324	222	167	
Turn Type	Perm	NA	Perm	D.P+P	NA	NA	Prot	
Protected Phases		1		5	1 5	4	4	2
Permitted Phases	1		1	1				
Detector Phase	1	1	1	5	1 5	4	4	
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	6.0		8.0	8.0	1.0
Minimum Split (s)	18.5	18.5	18.5	12.5		14.5	14.5	24.0
Total Split (s)	42.0	42.0	42.0	20.0		24.0	24.0	24.0
Total Split (%)	38.2%	38.2%	38.2%	18.2%		21.8%	21.8%	22%
Yellow Time (s)	4.0	4.0	4.0	3.0		4.0	4.0	2.0
All-Red Time (s)	4.5	4.5	4.5	3.5		2.5	2.5	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		8.5	8.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	C-Max	C-Max	C-Max	None		None	None	None
v/c Ratio		0.60	0.43	0.41	0.42	0.90	0.81	
Control Delay		36.1	34.6	13.4	13.2	82.6	74.0	
Queue Delay		0.0	0.0	0.0	0.4	0.0	0.0	
Total Delay		36.1	34.6	13.4	13.6	82.6	74.0	
Queue Length 50th (ft)		152	99	41	77	155	114	
Queue Length 95th (ft)		210	166	65	117	#241	#186	
Internal Link Dist (ft)		494			349	441		
Turn Bay Length (ft)							100	
Base Capacity (vph)		792	403	420	759	258	215	
Starvation Cap Reductn		0	0	0	129	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.60	0.43	0.41	0.51	0.86	0.78	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: A St/Thompson Pl & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	400	160	145	215	60	140	40	135	0	0	0
Future Volume (vph)	40	400	160	145	215	60	140	40	135	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	11	11	12	10	12	10	12	12	12
Total Lost time (s)		8.5	8.5	6.5	8.5			6.5	6.5			
Lane Util. Factor		0.95	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	0.99			1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	0.97			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00			
Satd. Flow (prot)		2927	1280	1540	1556			1626	1357			
Flt Permitted		0.86	1.00	0.43	1.00			0.96	1.00			
Satd. Flow (perm)		2514	1280	692	1556			1626	1357			
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	43	435	174	171	253	71	173	49	167	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	478	174	171	314	0	0	222	167	0	0	0
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	5%	7%	6%	2%	2%	3%	1%	2%	0%	2%	2%	2%
Turn Type	Perm	NA	Perm	D.P+P	NA		Split	NA	Prot			
Protected Phases		1		5	1 5		4	4	4			
Permitted Phases	1		1	1								
Actuated Green, G (s)		34.7	34.7	47.7	54.2			16.8	16.8			
Effective Green, g (s)		34.7	34.7	47.7	47.7			16.8	16.8			
Actuated g/C Ratio		0.32	0.32	0.43	0.43			0.15	0.15			
Clearance Time (s)		8.5	8.5	6.5				6.5	6.5			
Vehicle Extension (s)		2.0	2.0	2.0				2.0	2.0			
Lane Grp Cap (vph)		793	403	400	674			248	207			
v/s Ratio Prot				0.05	c0.20			c0.14	0.12			
v/s Ratio Perm		c0.19	0.14	0.13								
v/c Ratio		0.60	0.43	0.43	0.47			0.90	0.81			
Uniform Delay, d1		31.8	29.8	19.9	22.1			45.7	45.0			
Progression Factor		1.00	1.00	0.69	0.68			1.00	1.00			
Incremental Delay, d2		3.4	3.3	0.2	0.2			30.3	19.1			
Delay (s)		35.2	33.2	13.9	15.1			76.0	64.1			
Level of Service		D	C	B	B			E	E			
Approach Delay (s)		34.7			14.7			70.9			0.0	
Approach LOS		C			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	35	95	280	250
Future Volume (vph)	35	95	280	250
Lane Group Flow (vph)	175	0	412	359
Turn Type	Prot	Perm	NA	NA
Protected Phases	5		1	1
Permitted Phases		1		
Detector Phase	5	1	1	1
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	44.0	44.0	44.0
Total Split (s)	27.0	73.0	73.0	73.0
Total Split (%)	27.0%	73.0%	73.0%	73.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
v/c Ratio	0.63		0.43	0.28
Control Delay	21.7		5.2	4.3
Queue Delay	0.0		0.0	0.0
Total Delay	21.7		5.2	4.3
Queue Length 50th (ft)	21		59	61
Queue Length 95th (ft)	88		102	90
Internal Link Dist (ft)	208		310	441
Turn Bay Length (ft)				
Base Capacity (vph)	365		952	1304
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.48		0.43	0.28

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 5: A St & Melcher St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	125	95	280	250	55
Future Volume (vph)	35	125	95	280	250	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	16	12
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.84			1.00	0.93	
Flpb, ped/bikes	1.00			0.95	1.00	
Frt	0.89			1.00	0.98	
Flt Protected	0.99			0.99	1.00	
Satd. Flow (prot)	1175			1491	1698	
Flt Permitted	0.99			0.82	1.00	
Satd. Flow (perm)	1175			1243	1698	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.85	0.85
Adj. Flow (vph)	38	137	104	308	294	65
RTOR Reduction (vph)	118	0	0	0	6	0
Lane Group Flow (vph)	57	0	0	412	353	0
Confl. Peds. (#/hr)	43	64	140			140
Heavy Vehicles (%)	5%	9%	9%	2%	4%	4%
Parking (#/hr)		1				1
Turn Type	Prot		Perm	NA	NA	
Protected Phases	5			1	1	
Permitted Phases			1			
Actuated Green, G (s)	13.6			76.4	76.4	
Effective Green, g (s)	13.6			76.4	76.4	
Actuated g/C Ratio	0.14			0.76	0.76	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	159			949	1297	
v/s Ratio Prot	c0.05				0.21	
v/s Ratio Perm				c0.33		
v/c Ratio	0.36			0.43	0.27	
Uniform Delay, d1	39.2			4.2	3.5	
Progression Factor	1.00			0.74	1.00	
Incremental Delay, d2	0.5			1.4	0.5	
Delay (s)	39.7			4.5	4.0	
Level of Service	D			A	A	
Approach Delay (s)	39.7			4.5	4.0	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

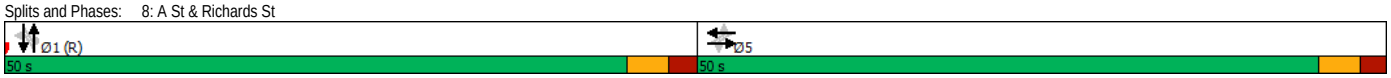
c Critical Lane Group

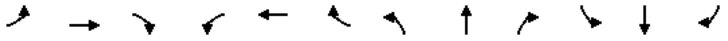
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	0	170	0	215	35	380
Future Volume (vph)	1	0	170	0	215	35	380
Lane Group Flow (vph)	2	2	183	81	329	0	483
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		5		5	1		1
Permitted Phases	5		5			1	
Detector Phase	5	5	5	5	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.02	0.00	0.76	0.24	0.35		0.46
Control Delay	27.0	0.0	55.6	6.0	8.2		11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	27.0	0.0	55.6	6.0	8.2		11.8
Queue Length 50th (ft)	1	0	110	0	68		156
Queue Length 95th (ft)	4	0	167	27	149		257
Internal Link Dist (ft)		195		263	148		999
Turn Bay Length (ft)							
Base Capacity (vph)	278	754	532	627	930		1051
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.01	0.00	0.34	0.13	0.35		0.46

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 8: A St & Richards St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	170	0	75	0	215	75	35	380	0
Future Volume (vph)	1	0	1	170	0	75	0	215	75	35	380	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.97			0.86			1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			0.97	
Frt	1.00	0.85		1.00	0.85			0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	834	1414		1485	1278			1330			1579	
Flt Permitted	0.70	1.00		0.76	1.00			1.00			0.95	
Satd. Flow (perm)	618	1414		1183	1278			1330			1507	
Peak-hour factor, PHF	0.50	0.50	0.50	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	2	0	2	183	0	81	0	244	85	41	442	0
RTOR Reduction (vph)	0	2	0	0	64	0	0	7	0	0	0	0
Lane Group Flow (vph)	2	0	0	183	17	0	0	322	0	0	483	0
Confl. Peds. (#/hr)	3		3	3		3	59		290	290		59
Confl. Bikes (#/hr)									20			59
Heavy Vehicles (%)	100%	0%	0%	5%	0%	7%	0%	3%	16%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1			1		
Actuated Green, G (s)	20.5	20.5		20.5	20.5			69.5			69.5	
Effective Green, g (s)	20.5	20.5		20.5	20.5			69.5			69.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20			0.70			0.70	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	126	289		242	261			924			1047	
v/s Ratio Prot		0.00			0.01			0.24				
v/s Ratio Perm	0.00			c0.15							c0.32	
v/c Ratio	0.02	0.00		0.76	0.06			0.35			0.46	
Uniform Delay, d1	31.7	31.6		37.4	32.0			6.1			6.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.22	
Incremental Delay, d2	0.0	0.0		11.3	0.0			1.0			1.4	
Delay (s)	31.7	31.6		48.7	32.1			7.2			9.8	
Level of Service	C	C		D	C			A			A	
Approach Delay (s)		31.7			43.6			7.2			9.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

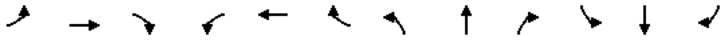
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	140	95	120	60	135	75	355	125	230	315
Future Volume (vph)	140	95	120	60	135	75	355	125	230	315
Lane Group Flow (vph)	0	392	0	204	153	0	488	142	0	797
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2		2			1			1
Permitted Phases	2		2		2	1		1	1	
Detector Phase	2	2	2	2	2	1	1	1	1	1
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		1.14		0.70	0.29		0.65	0.17		1.34
Control Delay		118.8		38.7	5.6		16.0	2.1		185.6
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0
Total Delay		118.8		38.7	5.6		16.0	2.1		185.6
Queue Length 50th (ft)		~195		79	0		133	0		~456
Queue Length 95th (ft)		#292		#167	37		225	20		#664
Internal Link Dist (ft)		124		125			345			386
Turn Bay Length (ft)								245		
Base Capacity (vph)		344		290	525		748	825		593
Starvation Cap Reductn		0		0	0		0	0		0
Spillback Cap Reductn		0		0	0		0	0		0
Storage Cap Reductn		0		0	0		0	0		0
Reduced v/c Ratio		1.14		0.70	0.29		0.65	0.17		1.34

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ 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: 9: S Boston Bypass & Richards St/Cypher St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	95	75	120	60	135	75	355	125	230	315	180
Future Volume (vph)	140	95	75	120	60	135	75	355	125	230	315	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	14	16	16	12	13	12	12	14	12
Total Lost time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		0.99			1.00	0.96		1.00	0.98		1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	
Frt		0.97			1.00	0.85		1.00	0.85		0.97	
Flt Protected		0.98			0.97	1.00		0.99	1.00		0.98	
Satd. Flow (prot)		1600			1790	1527		1682	1368		1668	
Flt Permitted		0.74			0.58	1.00		0.79	1.00		0.61	
Satd. Flow (perm)		1207			1068	1527		1343	1368		1036	
Peak-hour factor, PHF	0.79	0.79	0.79	0.88	0.88	0.88	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	177	120	95	136	68	153	85	403	142	253	346	198
RTOR Reduction (vph)	0	17	0	0	0	111	0	0	63	0	17	0
Lane Group Flow (vph)	0	375	0	0	204	42	0	488	79	0	780	0
Confl. Peds. (#/hr)	6		2	2		6			1	1		
Confl. Bikes (#/hr)			6			4						
Heavy Vehicles (%)	1%	6%	4%	6%	2%	4%	0%	5%	4%	2%	5%	5%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2		2	1		1	1		
Actuated Green, G (s)		19.0			19.0	19.0		39.0	39.0		39.0	
Effective Green, g (s)		19.0			19.0	19.0		39.0	39.0		39.0	
Actuated g/C Ratio		0.27			0.27	0.27		0.56	0.56		0.56	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)		327			289	414		748	762		577	
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.19	0.03		0.36	0.06		c0.75	
v/c Ratio		1.15			0.71	0.10		0.65	0.10		1.35	
Uniform Delay, d1		25.5			23.0	19.1		10.8	7.3		15.5	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		96.0			6.3	0.0		4.4	0.3		169.6	
Delay (s)		121.5			29.3	19.1		15.2	7.6		185.1	
Level of Service		F			C	B		B	A		F	
Approach Delay (s)		121.5			24.9			13.5			185.1	
Approach LOS		F			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	97.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	55	10	330	360	15
Future Vol, veh/h	45	55	10	330	360	15
Conflicting Peds, #/hr	47	1	178	0	0	178
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	93	93	92	92
Heavy Vehicles, %	0	6	18	4	5	7
Mvmt Flow	52	64	11	355	391	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1001	578	585	0	-	0
Stage 1	577	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.4	6.26	4.28	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.354	2.362	-	-	-
Pot Cap-1 Maneuver	271	508	915	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	190	429	773	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	470	-	-	-	-	-
Stage 2	561	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.5	0.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	773	-	274	-	-
HCM Lane V/C Ratio	0.014	-	0.424	-	-
HCM Control Delay (s)	9.7	0	27.5	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	2	-	-

Intersection	
Int Delay, s/veh	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	55	30	70	5	1	30	15	255	20	25	360	30
Future Vol, veh/h	55	30	70	5	1	30	15	255	20	25	360	30
Conflicting Peds, #/hr	7	0	117	117	0	7	121	0	221	221	0	121
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	68	68	68	94	94	94	86	86	86
Heavy Vehicles, %	0	0	0	33	0	3	0	5	0	13	3	0
Mvmt Flow	66	36	84	7	1	44	16	271	21	29	419	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	959	1161	675	1207	1168	510	575	0	0	513	0	0
Stage 1	616	616	-	535	535	-	-	-	-	-	-	-
Stage 2	343	545	-	672	633	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.23	4.1	-	-	4.23	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.327	2.2	-	-	2.317	-	-
Pot Cap-1 Maneuver	239	197	457	139	195	561	1008	-	-	998	-	-
Stage 1	481	485	-	477	527	-	-	-	-	-	-	-
Stage 2	676	522	-	399	476	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	179	130	359	55	128	440	902	-	-	788	-	-
Mov Cap-2 Maneuver	179	130	-	55	128	-	-	-	-	-	-	-
Stage 1	421	412	-	369	407	-	-	-	-	-	-	-
Stage 2	590	404	-	233	405	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	82.6	27	0.5	0.6
HCM LOS	F	D		

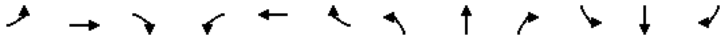
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	902	-	-	211	216	788	-	-
HCM Lane V/C Ratio	0.018	-	-	0.885	0.245	0.037	-	-
HCM Control Delay (s)	9.1	0	-	82.6	27	9.7	0	-
HCM Lane LOS	A	A	-	F	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	7	0.9	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	115	90	345	95	240	195	365	30	95	60
Future Volume (vph)	115	90	345	95	240	195	365	30	95	60
Lane Group Flow (vph)	253	103	198	394	255	207	388	0	137	66
Turn Type	NA	pt+ov	Split	NA	D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2 3	1	1	3	3 4	3 4		4	2 4
Permitted Phases					4			4		
Detector Phase	2	2 3	1	1	3	3 4	3 4	4	4	2 4
Switch Phase										
Minimum Initial (s)	8.0		8.0	8.0	8.0			8.0	8.0	
Minimum Split (s)	26.0		26.0	26.0	30.0			13.0	13.0	
Total Split (s)	30.0		35.0	35.0	30.0			15.0	15.0	
Total Split (%)	27.3%		31.8%	31.8%	27.3%			13.6%	13.6%	
Yellow Time (s)	3.0		3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0			2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0				0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0				5.0	
Lead/Lag	Lag		Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	Max		C-Max	C-Max	Max			Min	Min	
v/c Ratio	0.36	0.14	0.58	0.53	0.56	0.35	0.73		0.67	0.14
Control Delay	31.5	7.2	42.6	34.3	32.2	27.7	39.7		65.2	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	31.5	7.2	42.6	34.3	32.2	27.7	39.7		65.2	3.8
Queue Length 50th (ft)	75	14	132	120	135	105	233		50	0
Queue Length 95th (ft)	109	m54	210	165	211	168	352		#89	15
Internal Link Dist (ft)	378			513		267			265	
Turn Bay Length (ft)		165	275							125
Base Capacity (vph)	696	757	340	738	459	597	539		213	485
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.36	0.14	0.58	0.53	0.56	0.35	0.72		0.64	0.14

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 40 (36%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: I-90 Ramps/B St & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	115	90	345	95	75	240	195	365	30	95	60
Future Volume (vph)	105	115	90	345	95	75	240	195	365	30	95	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	16	11	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		0.95	1.00	0.91	0.91		1.00	1.00	1.00		0.95	1.00
Frpb, ped/bikes		1.00	1.00	1.00	0.94		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		3063	1411	1232	2595		1593	1644	1484		2803	1378
Flt Permitted		0.98	1.00	0.95	0.98		0.67	1.00	1.00		0.83	1.00
Satd. Flow (perm)		3063	1411	1232	2595		1115	1644	1484		2351	1378
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.91	0.91	0.91
Adj. Flow (vph)	121	132	103	397	109	86	255	207	388	33	104	66
RTOR Reduction (vph)	0	0	52	0	22	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	253	52	198	372	0	255	207	388	0	137	21
Confl. Peds. (#/hr)			18			167						27
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	1%	6%	3%	12%	8%	8%	2%	4%	11%	13%	10%	2%
Turn Type	Split	NA	pt+ov	Split	NA		D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2	2 3	1	1		3	3 4	3 4		4	2 4
Permitted Phases							4			4		
Actuated Green, G (s)		25.0	55.0	30.4	30.4		34.6	39.6	39.6		9.6	34.6
Effective Green, g (s)		25.0	55.0	30.4	30.4		34.6	39.6	39.6		9.6	34.6
Actuated g/C Ratio		0.23	0.50	0.28	0.28		0.31	0.36	0.36		0.09	0.31
Clearance Time (s)		5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0				2.0	
Lane Grp Cap (vph)		696	705	340	717		459	591	534		205	433
v/s Ratio Prot		c0.08	0.04	c0.16	0.14		0.13	0.13	c0.26			0.02
v/s Ratio Perm							0.05				0.06	
v/c Ratio		0.36	0.07	0.58	0.52		0.56	0.35	0.73		0.67	0.05
Uniform Delay, d1		35.8	14.3	34.3	33.6		30.8	25.8	30.5		48.7	26.2
Progression Factor		0.83	2.36	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		1.4	0.2	7.1	2.7		0.8	0.1	4.2		6.2	0.0
Delay (s)		31.2	33.9	41.4	36.3		31.6	25.9	34.7		54.9	26.3
Level of Service		C	C	D	D		C	C	C		D	C
Approach Delay (s)		32.0			38.0			31.6			45.6	
Approach LOS		C			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	50	155	310	35	250	90	190	80
Future Volume (vph)	50	155	310	35	250	90	190	80
Lane Group Flow (vph)	63	194	412	36	338	153	142	84
Turn Type	Perm	NA	NA	Split	NA	Prot	Prot	Prot
Protected Phases		1	1	6	6	5	5	5
Permitted Phases	1							
Detector Phase	1	1	1	6	6	5	5	5
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	32.0	32.0	32.0	31.0	31.0	33.5	33.5	33.5
Total Split (s)	32.0	32.0	32.0	44.0	44.0	34.0	34.0	34.0
Total Split (%)	29.1%	29.1%	29.1%	40.0%	40.0%	30.9%	30.9%	30.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.23	0.28	0.32	0.09	0.83	0.65	0.69	0.40
Control Delay	37.9	34.0	15.3	29.3	56.0	55.0	59.6	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	34.0	15.3	29.3	56.0	55.0	59.6	45.5
Queue Length 50th (ft)	37	115	95	20	226	104	102	55
Queue Length 95th (ft)	m59	m149	166	41	302	152	153	92
Internal Link Dist (ft)		439	378		213	281		
Turn Bay Length (ft)								
Base Capacity (vph)	279	698	1271	529	564	395	344	348
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	0.23	0.28	0.32	0.07	0.60	0.39	0.41	0.24

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	50	155	310	85	35	250	75	90	190	80
Future Volume (vph)	50	155	310	85	35	250	75	90	190	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	0.92	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.97		0.94	0.85	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (prot)	1263	1644	2952		1533	1635		1552	1354	1371
Flt Permitted	0.49	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (perm)	655	1644	2952		1533	1635		1552	1354	1371
Peak-hour factor, PHF	0.80	0.80	0.96	0.96	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	62	194	323	89	36	260	78	95	200	84
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0
Lane Group Flow (vph)	63	194	395	0	36	338	0	153	142	84
Confl. Peds. (#/hr)	115			115	14		15	14		15
Confl. Bikes (#/hr)				3						
Heavy Vehicles (%)	14%	4%	3%	2%	6%	0%	1%	0%	2%	6%
Parking (#/hr)				2						
Turn Type	Perm	NA	NA		Split	NA		Prot	Prot	Prot
Protected Phases		1	1		6	6		5	5	5
Permitted Phases	1									
Actuated Green, G (s)	46.8	46.8	46.8		27.4	27.4		16.8	16.8	16.8
Effective Green, g (s)	46.8	46.8	46.8		27.4	27.4		16.8	16.8	16.8
Actuated g/C Ratio	0.43	0.43	0.43		0.25	0.25		0.15	0.15	0.15
Clearance Time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	278	699	1255		381	407		237	206	209
v/s Ratio Prot		0.12	c0.13		0.02	c0.21		0.10	c0.10	0.06
v/s Ratio Perm	0.10									
v/c Ratio	0.23	0.28	0.32		0.09	0.83		0.65	0.69	0.40
Uniform Delay, d1	20.1	20.6	21.0		31.8	39.1		43.8	44.1	42.1
Progression Factor	1.33	1.32	0.64		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.8	0.6		0.0	12.9		4.5	7.4	0.5
Delay (s)	28.2	28.0	14.1		31.8	52.0		48.3	51.6	42.5
Level of Service	C	C	B		C	D		D	D	D
Approach Delay (s)		28.1	14.1			50.0		48.2		
Approach LOS		C	B			D		D		

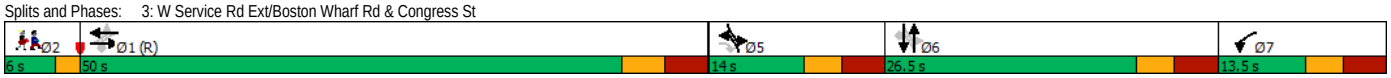
Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

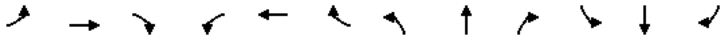
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø2
Lane Configurations											
Traffic Volume (vph)	40	110	95	50	345	140	155	20	65	35	
Future Volume (vph)	40	110	95	50	345	140	155	20	65	35	
Lane Group Flow (vph)	0	190	120	56	427	152	250	0	105	43	
Turn Type	Perm	NA	custom	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		1		7	1	5	6	5	6		2
Permitted Phases	1		1 5	1		6		6		6	
Detector Phase	1	1	1 5	7	1	5	6	5	6	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0		7.0	10.0	7.0	10.0	7.0	10.0	10.0	1.0
Minimum Split (s)	24.5	24.5		13.5	24.5	13.5	25.5	13.5	25.5	25.5	6.0
Total Split (s)	50.0	50.0		13.5	50.0	14.0	26.5	14.0	26.5	26.5	6.0
Total Split (%)	45.5%	45.5%		12.3%	45.5%	12.7%	24.1%	12.7%	24.1%	24.1%	5%
Yellow Time (s)	3.5	3.5		3.0	3.5	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0		6.5	7.0	6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag			Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max		None	C-Max	None	Ped	None	Ped	Ped	Ped
v/c Ratio		0.42	0.19	0.11	0.68	0.52	0.96		0.32	0.12	
Control Delay		12.4	2.6	10.2	28.4	38.1	88.8		32.0	0.6	
Queue Delay		0.0	0.0	0.0	0.2	0.0	0.0		0.0	0.0	
Total Delay		12.4	2.6	10.2	28.7	38.1	88.8		32.0	0.6	
Queue Length 50th (ft)		37	0	13	265	82	164		55	0	
Queue Length 95th (ft)		49	9	25	141	140	#327		89	0	
Internal Link Dist (ft)		349			439		826		274		
Turn Bay Length (ft)											
Base Capacity (vph)		449	620	501	624	295	261		333	371	
Starvation Cap Reductn		0	0	0	17	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		0.42	0.19	0.11	0.70	0.52	0.96		0.32	0.12	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 42 (38%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: W Service Rd Ext/Boston Wharf Rd & Congress St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	110	95	50	345	40	140	155	75	20	65	35
Future Volume (vph)	40	110	95	50	345	40	140	155	75	20	65	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	12	11	8	12	11	11	12
Total Lost time (s)		7.0	7.0	6.5	7.0		6.5	6.5			6.5	6.5
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.95		1.00	0.99			1.00	0.91
Flpb, ped/bikes		0.95	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	0.98		1.00	0.95			1.00	0.85
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		1531	1044	1475	1496		1481	1347			1493	1196
Flt Permitted		0.70	1.00	0.63	1.00		0.69	1.00			0.84	1.00
Satd. Flow (perm)		1083	1044	974	1496		1075	1347			1271	1196
Peak-hour factor, PHF	0.79	0.79	0.79	0.90	0.90	0.90	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	51	139	120	56	383	44	152	168	82	25	80	43
RTOR Reduction (vph)	0	0	56	0	4	0	0	16	0	0	0	35
Lane Group Flow (vph)	0	190	64	56	423	0	152	234	0	0	105	8
Confl. Peds. (#/hr)	163		3	3		163			9			44
Confl. Bikes (#/hr)			4			2			1			
Heavy Vehicles (%)	11%	3%	20%	6%	3%	3%	6%	3%	5%	30%	3%	11%
Parking (#/hr)			2									
Turn Type	Perm	NA	custom	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		1		7	1		5	6		5	6	
Permitted Phases	1		1 5	1			6			6		6
Actuated Green, G (s)		44.4	58.9	50.0	44.4		27.4	19.9			27.4	19.9
Effective Green, g (s)		44.4	58.9	50.0	44.4		27.4	19.9			27.4	19.9
Actuated g/C Ratio		0.40	0.54	0.45	0.40		0.25	0.18			0.25	0.18
Clearance Time (s)		7.0		6.5	7.0		6.5	6.5			6.5	6.5
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		437	559	468	603		295	243			331	216
v/s Ratio Prot				c0.01	c0.28		c0.04	c0.17			0.02	
v/s Ratio Perm		0.18	0.06	0.05			0.09				0.06	0.01
v/c Ratio		0.43	0.11	0.12	0.70		0.52	0.96			0.32	0.04
Uniform Delay, d1		23.7	12.6	17.0	27.3		34.6	44.7			33.7	37.1
Progression Factor		0.39	0.75	0.86	0.81		1.00	1.00			1.00	1.00
Incremental Delay, d2		3.0	0.0	0.0	6.5		0.6	46.5			0.2	0.0
Delay (s)		12.2	9.5	14.6	28.7		35.3	91.2			33.9	37.2
Level of Service		B	A	B	C		D	F			C	D
Approach Delay (s)		11.2			27.1			70.0			34.8	
Approach LOS		B			C			E			C	

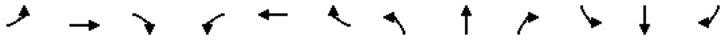
Intersection Summary				
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.5	
Intersection Capacity Utilization	78.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	Ø2
Lane Configurations								
Traffic Volume (vph)	10	185	120	155	340	30	60	
Future Volume (vph)	10	185	120	155	340	30	60	
Lane Group Flow (vph)	0	260	160	174	410	255	63	
Turn Type	Perm	NA	Perm	D.P+P	NA	NA	Prot	
Protected Phases		1		5	1 5	4	4	2
Permitted Phases	1		1	1				
Detector Phase	1	1	1	5	1 5	4	4	
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	6.0		8.0	8.0	1.0
Minimum Split (s)	18.5	18.5	18.5	12.5		14.5	14.5	24.0
Total Split (s)	42.0	42.0	42.0	20.0		24.0	24.0	24.0
Total Split (%)	38.2%	38.2%	38.2%	18.2%		21.8%	21.8%	22%
Yellow Time (s)	4.0	4.0	4.0	3.0		4.0	4.0	2.0
All-Red Time (s)	4.5	4.5	4.5	3.5		2.5	2.5	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		8.5	8.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	C-Max	C-Max	C-Max	None		None	None	None
v/c Ratio		0.34	0.41	0.36	0.54	1.01	0.30	
Control Delay		31.2	34.4	14.8	17.7	105.6	45.4	
Queue Delay		0.0	0.0	0.0	0.7	0.0	0.0	
Total Delay		31.2	34.4	14.8	18.4	105.6	45.4	
Queue Length 50th (ft)		74	90	44	108	~183	40	
Queue Length 95th (ft)		90	122	m94	208	#351	82	
Internal Link Dist (ft)		494			349	441		
Turn Bay Length (ft)							100	
Base Capacity (vph)		767	389	488	766	253	209	
Starvation Cap Reductn		0	0	0	128	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.34	0.41	0.36	0.64	1.01	0.30	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: A St/Thompson Pl & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	185	120	155	340	25	215	30	60	0	0	0
Future Volume (vph)	10	185	120	155	340	25	215	30	60	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	11	11	12	10	12	10	12	12	12
Total Lost time (s)		8.5	8.5	6.5	8.5			6.5	6.5			
Lane Util. Factor		0.95	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	0.99			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00			
Satd. Flow (prot)		2730	1280	1510	1571			1596	1317			
Flt Permitted		0.92	1.00	0.59	1.00			0.96	1.00			
Satd. Flow (perm)		2520	1280	939	1571			1596	1317			
Peak-hour factor, PHF	0.75	0.75	0.75	0.89	0.89	0.89	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	13	247	160	174	382	28	224	31	62	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	260	160	174	407	0	0	255	63	0	0	0
Confl. Bikes (#/hr)						3			4			
Heavy Vehicles (%)	10%	15%	6%	4%	4%	4%	3%	0%	3%	2%	2%	2%
Turn Type	Perm	NA	Perm	D.P+P	NA		Split	NA	Prot			
Protected Phases		1		5	1 5		4	4	4			
Permitted Phases	1		1	1								
Actuated Green, G (s)		33.5	33.5	47.0	53.5			17.5	17.5			
Effective Green, g (s)		33.5	33.5	47.0	47.0			17.5	17.5			
Actuated g/C Ratio		0.30	0.30	0.43	0.43			0.16	0.16			
Clearance Time (s)		8.5	8.5	6.5				6.5	6.5			
Vehicle Extension (s)		2.0	2.0	2.0				2.0	2.0			
Lane Grp Cap (vph)		767	389	471	671			253	209			
v/s Ratio Prot				0.05	c0.26			c0.16	0.05			
v/s Ratio Perm		0.10	0.13	0.11								
v/c Ratio		0.34	0.41	0.37	0.61			1.01	0.30			
Uniform Delay, d1		29.7	30.4	20.4	24.4			46.2	40.9			
Progression Factor		1.00	1.00	0.83	0.78			1.00	1.00			
Incremental Delay, d2		1.2	3.2	0.1	0.9			58.6	0.3			
Delay (s)		30.9	33.6	17.1	19.8			104.9	41.1			
Level of Service		C	C	B	B			F	D			
Approach Delay (s)		31.9			19.0			92.2			0.0	
Approach LOS		C			B			F			A	

Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	20	90	285	245
Future Volume (vph)	20	90	285	245
Lane Group Flow (vph)	197	0	441	328
Turn Type	Prot	Perm	NA	NA
Protected Phases	5		1	1
Permitted Phases		1		
Detector Phase	5	1	1	1
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	44.0	44.0	44.0
Total Split (s)	27.0	73.0	73.0	73.0
Total Split (%)	27.0%	73.0%	73.0%	73.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
v/c Ratio	0.68		0.44	0.24
Control Delay	20.8		5.0	3.7
Queue Delay	0.0		0.0	0.0
Total Delay	20.8		5.0	3.7
Queue Length 50th (ft)	14		29	32
Queue Length 95th (ft)	72		131	79
Internal Link Dist (ft)	208		310	441
Turn Bay Length (ft)				
Base Capacity (vph)	395		992	1380
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.50		0.44	0.24

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 5: A St & Melcher St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	150	90	285	245	30
Future Volume (vph)	20	150	90	285	245	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	16	12
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.82			1.00	0.96	
Flpb, ped/bikes	1.00			0.95	1.00	
Frt	0.88			1.00	0.99	
Flt Protected	0.99			0.99	1.00	
Satd. Flow (prot)	1179			1490	1758	
Flt Permitted	0.99			0.84	1.00	
Satd. Flow (perm)	1179			1265	1758	
Peak-hour factor, PHF	0.86	0.86	0.85	0.85	0.84	0.84
Adj. Flow (vph)	23	174	106	335	292	36
RTOR Reduction (vph)	154	0	0	0	3	0
Lane Group Flow (vph)	43	0	0	441	325	0
Confl. Peds. (#/hr)	20	62	129			129
Confl. Bikes (#/hr)		1				10
Heavy Vehicles (%)	0%	5%	8%	3%	4%	9%
Parking (#/hr)		1				1
Turn Type	Prot		Perm	NA	NA	
Protected Phases	5			1	1	
Permitted Phases			1			
Actuated Green, G (s)	11.6			78.4	78.4	
Effective Green, g (s)	11.6			78.4	78.4	
Actuated g/C Ratio	0.12			0.78	0.78	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	136			991	1378	
v/s Ratio Prot	c0.04				0.18	
v/s Ratio Perm				c0.35		
v/c Ratio	0.32			0.45	0.24	
Uniform Delay, d1	40.6			3.6	2.9	
Progression Factor	1.00			0.81	1.00	
Incremental Delay, d2	0.5			1.3	0.4	
Delay (s)	41.1			4.2	3.3	
Level of Service	D			A	A	
Approach Delay (s)	41.1			4.2	3.3	
Approach LOS	D			A	A	

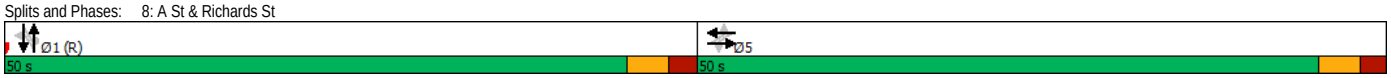
Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

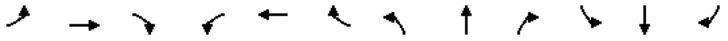
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	1	145	2	1	345	30	260
Future Volume (vph)	1	1	145	2	1	345	30	260
Lane Group Flow (vph)	3	6	149	203	0	546	0	346
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		5		5		1		1
Permitted Phases	5		5		1		1	
Detector Phase	5	5	5	5	1	1	1	1
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.04	0.04	0.73	0.72		0.54		0.34
Control Delay	29.0	22.5	57.4	43.2		10.5		9.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	29.0	22.5	57.4	43.2		10.5		9.5
Queue Length 50th (ft)	2	2	90	98		136		76
Queue Length 95th (ft)	4	4	141	157		230		168
Internal Link Dist (ft)		195		263		148		999
Turn Bay Length (ft)								
Base Capacity (vph)	180	353	478	613		1018		1022
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.02	0.02	0.31	0.33		0.54		0.34

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 8: A St & Richards St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	1	145	2	195	1	345	75	30	260	0
Future Volume (vph)	1	1	1	145	2	195	1	345	75	30	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.90			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Frt	1.00	0.93		1.00	0.85			0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	837	782		1339	1315			1434			1554	
Flt Permitted	0.46	1.00		0.75	1.00			1.00			0.92	
Satd. Flow (perm)	402	782		1062	1315			1434			1433	
Peak-hour factor, PHF	0.38	0.38	0.38	0.97	0.97	0.97	0.77	0.77	0.77	0.84	0.84	0.84
Adj. Flow (vph)	3	3	3	149	2	201	1	448	97	36	310	0
RTOR Reduction (vph)	0	2	0	0	32	0	0	4	0	0	0	0
Lane Group Flow (vph)	3	4	0	149	171	0	0	542	0	0	346	0
Confl. Peds. (#/hr)	2		1	1		2	29		330	330		29
Confl. Bikes (#/hr)									77			8
Heavy Vehicles (%)	100%	100%	100%	17%	50%	4%	100%	2%	14%	6%	7%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1			1		
Actuated Green, G (s)	19.1	19.1		19.1	19.1			70.9			70.9	
Effective Green, g (s)	19.1	19.1		19.1	19.1			70.9			70.9	
Actuated g/C Ratio	0.19	0.19		0.19	0.19			0.71			0.71	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	76	149		202	251			1016			1015	
v/s Ratio Prot		0.00			0.13							
v/s Ratio Perm	0.01			c0.14				0.38			0.24	
v/c Ratio	0.04	0.02		0.74	0.68			0.53			0.34	
Uniform Delay, d1	33.0	32.9		38.1	37.6			6.8			5.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.23	
Incremental Delay, d2	0.1	0.0		11.4	5.7			2.0			0.9	
Delay (s)	33.1	32.9		49.5	43.3			8.8			7.7	
Level of Service	C	C		D	D			A			A	
Approach Delay (s)		32.9			45.9			8.8			7.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

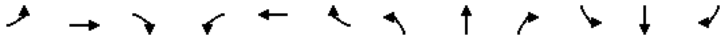
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	70	60	75	70	135	165	445	200	85	105
Future Volume (vph)	70	60	75	70	135	165	445	200	85	105
Lane Group Flow (vph)	0	163	0	165	153	0	726	238	0	512
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2		2			1			1
Permitted Phases	2		2		2	1		1	1	
Detector Phase	2	2	2	2	2	1	1	1	1	1
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.62		0.62	0.34		1.00	0.27		0.76
Control Delay		32.7		33.7	6.4		51.3	2.1		17.0
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0
Total Delay		32.7		33.7	6.4		51.3	2.1		17.0
Queue Length 50th (ft)		55		59	0		235	0		80
Queue Length 95th (ft)		109		111	37		#499	22		#293
Internal Link Dist (ft)		124		125			345			386
Turn Bay Length (ft)								245		
Base Capacity (vph)		373		382	579		725	867		674
Starvation Cap Reductn		0		0	0		0	0		0
Spillback Cap Reductn		0		0	0		0	0		0
Storage Cap Reductn		0		0	0		0	0		0
Reduced v/c Ratio		0.44		0.43	0.26		1.00	0.27		0.76

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 64.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: S Boston Bypass & Richards St/Cypher St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	60	15	75	70	135	165	445	200	85	105	250
Future Volume (vph)	70	60	15	75	70	135	165	445	200	85	105	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	14	16	16	12	13	12	12	14	12
Total Lost time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00		1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	
Frt		0.99			1.00	0.85		1.00	0.85		0.92	
Flt Protected		0.98			0.97	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		1592			1612	1595		1585	1275		1511	
Flt Permitted		0.76			0.78	1.00		0.75	1.00		0.66	
Satd. Flow (perm)		1246			1294	1595		1197	1275		1013	
Peak-hour factor, PHF	0.89	0.89	0.89	0.88	0.88	0.88	0.84	0.84	0.84	0.86	0.86	0.86
Adj. Flow (vph)	79	67	17	85	80	153	196	530	238	99	122	291
RTOR Reduction (vph)	0	6	0	0	0	121	0	0	94	0	60	0
Lane Group Flow (vph)	0	157	0	0	165	32	0	726	145	0	452	0
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	3%	7%	24%	10%	1%	2%	13%	14%	6%	22%	7%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2		2	1		1	1		
Actuated Green, G (s)		13.3			13.3	13.3		39.1	39.1		39.1	
Effective Green, g (s)		13.3			13.3	13.3		39.1	39.1		39.1	
Actuated g/C Ratio		0.21			0.21	0.21		0.61	0.61		0.61	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)		257			267	329		726	774		615	
v/s Ratio Prot												
v/s Ratio Perm		0.13			c0.13	0.02		c0.61	0.11		0.45	
v/c Ratio		0.61			0.62	0.10		1.00	0.19		0.73	
Uniform Delay, d1		23.2			23.2	20.7		12.7	5.6		9.0	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		2.8			3.0	0.0		33.4	0.5		7.6	
Delay (s)		26.0			26.2	20.7		46.1	6.1		16.6	
Level of Service		C			C	C		D	A		B	
Approach Delay (s)		26.0			23.6			36.2			16.6	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		

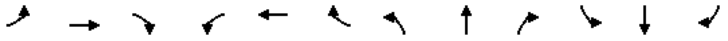
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	210	105	385	125	280	210	425	55	100	60
Future Volume (vph)	210	105	385	125	280	210	425	55	100	60
Lane Group Flow (vph)	390	121	226	453	298	223	452	0	170	66
Turn Type	NA	pt+ov	Split	NA	D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2 3	1	1	3	3 4	3 4		4	2 4
Permitted Phases					4			4		
Detector Phase	2	2 3	1	1	3	3 4	3 4	4	4	2 4
Switch Phase										
Minimum Initial (s)	8.0		8.0	8.0	8.0			8.0	8.0	
Minimum Split (s)	26.0		26.0	26.0	30.0			13.0	13.0	
Total Split (s)	30.0		35.0	35.0	30.0			15.0	15.0	
Total Split (%)	27.3%		31.8%	31.8%	27.3%			13.6%	13.6%	
Yellow Time (s)	3.0		3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0			2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0				0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0				5.0	
Lead/Lag	Lag		Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	Max		C-Max	C-Max	Max			Min	Min	
v/c Ratio	0.56	0.16	0.67	0.62	0.65	0.37	0.84		0.86	0.14
Control Delay	34.5	5.0	46.8	37.0	35.4	28.1	48.0		85.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	34.5	5.0	46.8	37.0	35.4	28.1	48.0		85.5	3.7
Queue Length 50th (ft)	115	17	156	145	163	115	289		63	0
Queue Length 95th (ft)	169	m31	242	195	249	182	#467		#126	15
Internal Link Dist (ft)	378			513		267			265	
Turn Bay Length (ft)		165	275							125
Base Capacity (vph)	695	766	337	736	456	597	539		201	485
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.56	0.16	0.67	0.62	0.65	0.37	0.84		0.85	0.14

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 40 (36%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: I-90 Ramps/B St & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	210	105	385	125	80	280	210	425	55	100	60
Future Volume (vph)	130	210	105	385	125	80	280	210	425	55	100	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	16	11	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		0.95	1.00	0.91	0.91		1.00	1.00	1.00		0.95	1.00
Frpb, ped/bikes		1.00	1.00	1.00	0.94		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)		3063	1411	1232	2618		1593	1644	1484		2779	1378
Flt Permitted		0.98	1.00	0.95	0.98		0.63	1.00	1.00		0.78	1.00
Satd. Flow (perm)		3063	1411	1232	2618		1055	1644	1484		2216	1378
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.91	0.91	0.91
Adj. Flow (vph)	149	241	121	443	144	92	298	223	452	60	110	66
RTOR Reduction (vph)	0	0	61	0	19	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	390	61	226	434	0	298	223	452	0	170	21
Confl. Peds. (#/hr)			18			167						27
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	1%	6%	3%	12%	8%	8%	2%	4%	11%	13%	10%	2%
Turn Type	Split	NA	pt+ov	Split	NA		D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2	2 3	1	1		3	3 4	3 4		4	2 4
Permitted Phases							4			4		
Actuated Green, G (s)		25.0	55.0	30.1	30.1		34.9	39.9	39.9		9.9	34.9
Effective Green, g (s)		25.0	55.0	30.1	30.1		34.9	39.9	39.9		9.9	34.9
Actuated g/C Ratio		0.23	0.50	0.27	0.27		0.32	0.36	0.36		0.09	0.32
Clearance Time (s)		5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0				2.0	
Lane Grp Cap (vph)		696	705	337	716		456	596	538		199	437
v/s Ratio Prot		c0.13	0.04	c0.18	0.17		0.15	0.14	c0.30			0.02
v/s Ratio Perm							0.06				0.08	
v/c Ratio		0.56	0.09	0.67	0.61		0.65	0.37	0.84		0.85	0.05
Uniform Delay, d1		37.6	14.4	35.5	34.8		31.5	25.8	32.1		49.3	26.0
Progression Factor		0.83	1.69	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		2.9	0.2	10.2	3.8		2.6	0.1	10.9		27.3	0.0
Delay (s)		34.2	24.5	45.7	38.6		34.1	26.0	43.0		76.7	26.0
Level of Service		C	C	D	D		C	C	D		E	C
Approach Delay (s)		31.9			41.0			36.4			62.5	
Approach LOS		C			D			D			E	

Intersection Summary				
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	50	200	365	60	270	120	200	125
Future Volume (vph)	50	200	365	60	270	120	200	125
Lane Group Flow (vph)	63	250	484	63	406	175	162	132
Turn Type	Perm	NA	NA	Split	NA	Prot	Prot	Prot
Protected Phases		1	1	6	6	5	5	5
Permitted Phases	1							
Detector Phase	1	1	1	6	6	5	5	5
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	32.0	32.0	32.0	31.0	31.0	33.5	33.5	33.5
Total Split (s)	32.0	32.0	32.0	44.0	44.0	34.0	34.0	34.0
Total Split (%)	29.1%	29.1%	29.1%	40.0%	40.0%	30.9%	30.9%	30.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.29	0.40	0.43	0.14	0.88	0.68	0.73	0.59
Control Delay	40.4	37.4	18.8	27.8	57.6	55.5	61.5	51.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	37.4	18.8	27.8	57.6	55.5	61.5	51.9
Queue Length 50th (ft)	38	152	116	33	270	118	115	88
Queue Length 95th (ft)	m49	m178	206	61	366	173	174	136
Internal Link Dist (ft)		439	378		213	281		
Turn Bay Length (ft)								
Base Capacity (vph)	217	619	1130	530	557	400	344	348
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	35	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.40	0.44	0.12	0.73	0.44	0.47	0.38

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	50	200	365	100	60	270	120	120	200	125
Future Volume (vph)	50	200	365	100	60	270	120	120	200	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	0.93	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.95		0.96	0.85	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (prot)	1280	1644	2953		1533	1610		1572	1354	1371
Flt Permitted	0.43	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (perm)	575	1644	2953		1533	1610		1572	1354	1371
Peak-hour factor, PHF	0.80	0.80	0.96	0.96	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	62	250	380	104	62	281	125	126	211	132
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	0	0
Lane Group Flow (vph)	63	250	466	0	63	406	0	175	162	132
Confl. Peds. (#/hr)	115			115	14		15	14		15
Confl. Bikes (#/hr)				3						
Heavy Vehicles (%)	14%	4%	3%	2%	6%	0%	1%	0%	2%	6%
Parking (#/hr)				2						
Turn Type	Perm	NA	NA		Split	NA		Prot	Prot	Prot
Protected Phases		1	1		6	6		5	5	5
Permitted Phases	1									
Actuated Green, G (s)	41.5	41.5	41.5		31.5	31.5		18.0	18.0	18.0
Effective Green, g (s)	41.5	41.5	41.5		31.5	31.5		18.0	18.0	18.0
Actuated g/C Ratio	0.38	0.38	0.38		0.29	0.29		0.16	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	216	620	1114		438	461		257	221	224
v/s Ratio Prot		0.15	c0.16		0.04	c0.25		0.11	c0.12	0.10
v/s Ratio Perm	0.11									
v/c Ratio	0.29	0.40	0.42		0.14	0.88		0.68	0.73	0.59
Uniform Delay, d1	24.0	25.2	25.3		29.2	37.5		43.3	43.7	42.6
Progression Factor	1.21	1.22	0.66		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	1.2	1.0		0.1	17.1		5.8	10.3	2.5
Delay (s)	31.0	32.0	17.6		29.3	54.6		49.1	54.0	45.1
Level of Service	C	C	B		C	D		D	D	D
Approach Delay (s)		31.8	17.6			51.2		49.7		
Approach LOS		C	B			D		D		

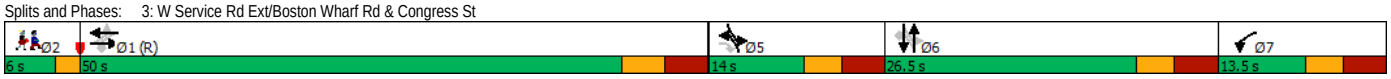
Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

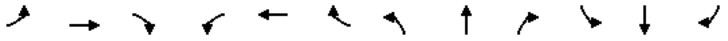
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø2
Lane Configurations											
Traffic Volume (vph)	50	130	110	65	440	150	175	30	80	40	
Future Volume (vph)	50	130	110	65	440	150	175	30	80	40	
Lane Group Flow (vph)	0	228	139	72	533	163	288	0	136	49	
Turn Type	Perm	NA	custom	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		1		7	1	5	6	5	6		2
Permitted Phases	1		1 5	1		6		6		6	
Detector Phase	1	1	1 5	7	1	5	6	5	6	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0		7.0	10.0	7.0	10.0	7.0	10.0	10.0	1.0
Minimum Split (s)	24.5	24.5		13.5	24.5	13.5	25.5	13.5	25.5	25.5	6.0
Total Split (s)	50.0	50.0		13.5	50.0	14.0	26.5	14.0	26.5	26.5	6.0
Total Split (%)	45.5%	45.5%		12.3%	45.5%	12.7%	24.1%	12.7%	24.1%	24.1%	5%
Yellow Time (s)	3.5	3.5		3.0	3.5	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0		6.5	7.0	6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag			Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max		None	C-Max	None	Ped	None	Ped	Ped	Ped
v/c Ratio		0.68	0.22	0.15	0.84	0.56	1.10		0.52	0.13	
Control Delay		25.2	3.0	10.4	38.3	40.1	126.0		38.4	0.7	
Queue Delay		0.0	0.0	0.0	0.9	0.0	0.0		0.0	0.0	
Total Delay		25.2	3.0	10.4	39.2	40.1	126.0		38.4	0.7	
Queue Length 50th (ft)		52	1	18	369	89	~219		73	0	
Queue Length 95th (ft)		69	14	32	#563	150	#392		112	0	
Internal Link Dist (ft)		349			439		826		274		
Turn Bay Length (ft)											
Base Capacity (vph)		337	628	470	632	290	261		263	371	
Starvation Cap Reductn		0	0	0	16	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		0.68	0.22	0.15	0.87	0.56	1.10		0.52	0.13	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 42 (38%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: W Service Rd Ext/Boston Wharf Rd & Congress St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	130	110	65	440	40	150	175	90	30	80	40
Future Volume (vph)	50	130	110	65	440	40	150	175	90	30	80	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	12	11	8	12	11	11	12
Total Lost time (s)		7.0	7.0	6.5	7.0		6.5	6.5			6.5	6.5
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.96		1.00	0.99			1.00	0.91
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	0.99		1.00	0.95			1.00	0.85
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		1603	1044	1476	1518		1481	1343			1478	1196
Flt Permitted		0.50	1.00	0.58	1.00		0.67	1.00			0.60	1.00
Satd. Flow (perm)		816	1044	903	1518		1045	1343			895	1196
Peak-hour factor, PHF	0.79	0.79	0.79	0.90	0.90	0.90	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	63	165	139	72	489	44	163	190	98	37	99	49
RTOR Reduction (vph)	0	0	65	0	3	0	0	17	0	0	0	40
Lane Group Flow (vph)	0	228	74	72	530	0	163	271	0	0	136	9
Confl. Peds. (#/hr)	163		3	3		163			9			44
Confl. Bikes (#/hr)			4			2			1			
Heavy Vehicles (%)	11%	3%	20%	6%	3%	3%	6%	3%	5%	30%	3%	11%
Parking (#/hr)			2									
Turn Type	Perm	NA	custom	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		1		7	1		5	6		5	6	
Permitted Phases	1		1 5	1			6			6		6
Actuated Green, G (s)		44.3	58.8	49.9	44.3		27.5	20.0			27.5	20.0
Effective Green, g (s)		44.3	58.8	49.9	44.3		27.5	20.0			27.5	20.0
Actuated g/C Ratio		0.40	0.53	0.45	0.40		0.25	0.18			0.25	0.18
Clearance Time (s)		7.0		6.5	7.0		6.5	6.5			6.5	6.5
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		328	558	438	611		290	244			263	217
v/s Ratio Prot				c0.01	c0.35		c0.04	c0.20			0.04	
v/s Ratio Perm		0.28	0.07	0.07			0.10				0.09	0.01
v/c Ratio		0.70	0.13	0.16	0.87		0.56	1.11			0.52	0.04
Uniform Delay, d1		27.2	12.8	17.3	30.2		34.9	45.0			35.5	37.1
Progression Factor		0.51	0.91	0.84	0.82		1.00	1.00			1.00	1.00
Incremental Delay, d2		10.9	0.0	0.1	14.6		1.5	90.3			0.7	0.0
Delay (s)		24.7	11.7	14.6	39.5		36.4	135.3			36.2	37.1
Level of Service		C	B	B	D		D	F			D	D
Approach Delay (s)		19.8			36.5			99.5			36.5	
Approach LOS		B			D			F			D	

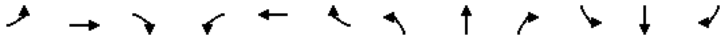
Intersection Summary				
HCM 2000 Control Delay	50.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.5	
Intersection Capacity Utilization	94.6%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	Ø2
Lane Configurations								
Traffic Volume (vph)	10	210	130	235	370	30	80	
Future Volume (vph)	10	210	130	235	370	30	80	
Lane Group Flow (vph)	0	293	173	264	444	271	83	
Turn Type	Perm	NA	Perm	D.P+P	NA	NA	Prot	
Protected Phases		1		5	1 5	4	4	2
Permitted Phases	1		1	1				
Detector Phase	1	1	1	5	1 5	4	4	
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	6.0		8.0	8.0	1.0
Minimum Split (s)	18.5	18.5	18.5	12.5		14.5	14.5	24.0
Total Split (s)	42.0	42.0	42.0	20.0		24.0	24.0	24.0
Total Split (%)	38.2%	38.2%	38.2%	18.2%		21.8%	21.8%	22%
Yellow Time (s)	4.0	4.0	4.0	3.0		4.0	4.0	2.0
All-Red Time (s)	4.5	4.5	4.5	3.5		2.5	2.5	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		8.5	8.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	C-Max	C-Max	C-Max	None		None	None	None
v/c Ratio		0.38	0.44	0.55	0.58	1.07	0.40	
Control Delay		31.9	35.2	18.3	20.1	121.5	48.0	
Queue Delay		0.0	0.0	0.0	1.1	0.0	0.0	
Total Delay		31.9	35.2	18.3	21.2	121.5	48.0	
Queue Length 50th (ft)		85	98	80	147	~212	53	
Queue Length 95th (ft)		101	132	m116	m203	#377	103	
Internal Link Dist (ft)		494			349	441		
Turn Bay Length (ft)							100	
Base Capacity (vph)		768	389	479	767	253	209	
Starvation Cap Reductn		0	0	0	142	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.38	0.44	0.55	0.71	1.07	0.40	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: A St/Thompson Pl & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	210	130	235	370	25	230	30	80	0	0	0
Future Volume (vph)	10	210	130	235	370	25	230	30	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	11	11	12	10	12	10	12	12	12
Total Lost time (s)		8.5	8.5	6.5	8.5			6.5	6.5			
Lane Util. Factor		0.95	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	0.99			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00			
Satd. Flow (prot)		2730	1280	1510	1572			1595	1317			
Flt Permitted		0.92	1.00	0.57	1.00			0.96	1.00			
Satd. Flow (perm)		2524	1280	910	1572			1595	1317			
Peak-hour factor, PHF	0.75	0.75	0.75	0.89	0.89	0.89	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	13	280	173	264	416	28	240	31	83	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	293	173	264	442	0	0	271	83	0	0	0
Confl. Bikes (#/hr)						3			4			
Heavy Vehicles (%)	10%	15%	6%	4%	4%	4%	3%	0%	3%	2%	2%	2%
Turn Type	Perm	NA	Perm	D.P+P	NA		Split	NA	Prot			
Protected Phases		1		5	1 5		4	4	4			
Permitted Phases	1		1	1								
Actuated Green, G (s)		33.5	33.5	47.0	53.5			17.5	17.5			
Effective Green, g (s)		33.5	33.5	47.0	47.0			17.5	17.5			
Actuated g/C Ratio		0.30	0.30	0.43	0.43			0.16	0.16			
Clearance Time (s)		8.5	8.5	6.5				6.5	6.5			
Vehicle Extension (s)		2.0	2.0	2.0				2.0	2.0			
Lane Grp Cap (vph)		768	389	462	671			253	209			
v/s Ratio Prot				0.07	c0.28			c0.17	0.06			
v/s Ratio Perm		0.12	0.14	0.17								
v/c Ratio		0.38	0.44	0.57	0.66			1.07	0.40			
Uniform Delay, d1		30.1	30.8	21.9	25.1			46.2	41.5			
Progression Factor		1.00	1.00	0.86	0.87			1.00	1.00			
Incremental Delay, d2		1.4	3.7	0.7	1.2			76.7	0.5			
Delay (s)		31.5	34.4	19.6	23.1			123.0	42.0			
Level of Service		C	C	B	C			F	D			
Approach Delay (s)		32.6			21.8			104.0			0.0	
Approach LOS		C			C			F			A	

Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	95	310	300
Future Volume (vph)	30	95	310	300
Lane Group Flow (vph)	221	0	477	434
Turn Type	Prot	Perm	NA	NA
Protected Phases	5		1	1
Permitted Phases		1		
Detector Phase	5	1	1	1
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	44.0	44.0	44.0
Total Split (s)	27.0	73.0	73.0	73.0
Total Split (%)	27.0%	73.0%	73.0%	73.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
v/c Ratio	0.72		0.49	0.33
Control Delay	22.9		5.7	4.4
Queue Delay	0.0		0.0	0.6
Total Delay	22.9		5.7	5.0
Queue Length 50th (ft)	22		29	45
Queue Length 95th (ft)	82		173	119
Internal Link Dist (ft)	208		310	441
Turn Bay Length (ft)				
Base Capacity (vph)	408		966	1327
Starvation Cap Reductn	0		0	514
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.54		0.49	0.53

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 5: A St & Melcher St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	30	160	95	310	300	65
Future Volume (vph)	30	160	95	310	300	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	16	12
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.83			1.00	0.94	
Flpb, ped/bikes	1.00			0.96	1.00	
Frt	0.89			1.00	0.98	
Flt Protected	0.99			0.99	1.00	
Satd. Flow (prot)	1199			1507	1695	
Flt Permitted	0.99			0.81	1.00	
Satd. Flow (perm)	1199			1235	1695	
Peak-hour factor, PHF	0.86	0.86	0.85	0.85	0.84	0.84
Adj. Flow (vph)	35	186	112	365	357	77
RTOR Reduction (vph)	164	0	0	0	5	0
Lane Group Flow (vph)	57	0	0	477	429	0
Confl. Peds. (#/hr)	20	62	129			129
Confl. Bikes (#/hr)		1				10
Heavy Vehicles (%)	0%	5%	8%	3%	4%	9%
Parking (#/hr)		1				1
Turn Type	Prot		Perm	NA	NA	
Protected Phases	5			1	1	
Permitted Phases			1			
Actuated Green, G (s)	12.0			78.0	78.0	
Effective Green, g (s)	12.0			78.0	78.0	
Actuated g/C Ratio	0.12			0.78	0.78	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	143			963	1322	
v/s Ratio Prot	c0.05				0.25	
v/s Ratio Perm				c0.39		
v/c Ratio	0.40			0.50	0.32	
Uniform Delay, d1	40.7			3.9	3.2	
Progression Factor	1.00			0.82	1.00	
Incremental Delay, d2	0.7			1.6	0.7	
Delay (s)	41.3			4.8	3.9	
Level of Service	D			A	A	
Approach Delay (s)	41.3			4.8	3.9	
Approach LOS	D			A	A	

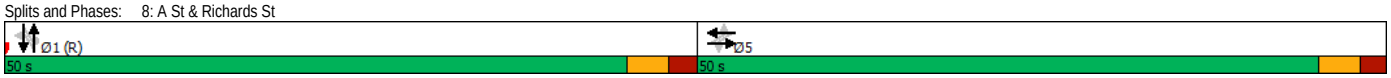
Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

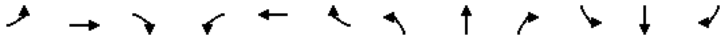
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	1	160	2	1	435	35	310
Future Volume (vph)	1	1	160	2	1	435	35	310
Lane Group Flow (vph)	3	6	165	275	0	670	0	411
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		5		5		1		1
Permitted Phases	5		5		1		1	
Detector Phase	5	5	5	5	1	1	1	1
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.05	0.04	0.74	0.93		0.66		0.42
Control Delay	28.0	21.0	55.1	69.7		14.9		11.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	28.0	21.0	55.1	69.7		14.9		11.9
Queue Length 50th (ft)	2	2	100	159		206		110
Queue Length 95th (ft)	4	4	150	224		344		225
Internal Link Dist (ft)		195		263		148		999
Turn Bay Length (ft)								
Base Capacity (vph)	130	353	478	606		1012		979
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.02	0.02	0.35	0.45		0.66		0.42

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 8: A St & Richards St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	1	160	2	265	1	435	80	35	310	0
Future Volume (vph)	1	1	1	160	2	265	1	435	80	35	310	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.91			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Frt	1.00	0.93		1.00	0.85			0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	837	782		1339	1315			1463			1563	
Flt Permitted	0.33	1.00		0.75	1.00			1.00			0.90	
Satd. Flow (perm)	291	782		1062	1315			1463			1410	
Peak-hour factor, PHF	0.38	0.38	0.38	0.97	0.97	0.97	0.77	0.77	0.77	0.84	0.84	0.84
Adj. Flow (vph)	3	3	3	165	2	273	1	565	104	42	369	0
RTOR Reduction (vph)	0	2	0	0	21	0	0	4	0	0	0	0
Lane Group Flow (vph)	3	4	0	165	254	0	0	666	0	0	411	0
Confl. Peds. (#/hr)	2		1	1		2	29		330	330		29
Confl. Bikes (#/hr)									77			8
Heavy Vehicles (%)	100%	100%	100%	17%	50%	4%	100%	2%	14%	6%	7%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1			1		
Actuated Green, G (s)	21.0	21.0		21.0	21.0			69.0			69.0	
Effective Green, g (s)	21.0	21.0		21.0	21.0			69.0			69.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.69			0.69	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	61	164		223	276			1009			972	
v/s Ratio Prot		0.00			c0.19							
v/s Ratio Perm	0.01			0.16				0.46			0.29	
v/c Ratio	0.05	0.02		0.74	0.92			0.66			0.42	
Uniform Delay, d1	31.5	31.4		36.9	38.7			8.8			6.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.23	
Incremental Delay, d2	0.1	0.0		10.5	32.7			3.4			1.3	
Delay (s)	31.7	31.4		47.5	71.4			12.2			9.6	
Level of Service	C	C		D	E			B			A	
Approach Delay (s)		31.5			62.4			12.2			9.6	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

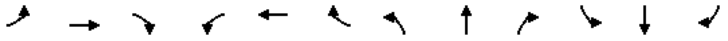
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	75	65	80	80	140	205	500	205	90	115
Future Volume (vph)	75	65	80	80	140	205	500	205	90	115
Lane Group Flow (vph)	0	174	0	182	159	0	839	244	0	594
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2		2			1			1
Permitted Phases	2		2		2	1		1	1	
Detector Phase	2	2	2	2	2	1	1	1	1	1
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.64		0.66	0.34		1.24	0.28		1.06
Control Delay		33.8		35.7	6.2		140.4	2.1		70.6
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0
Total Delay		33.8		35.7	6.2		140.4	2.1		70.6
Queue Length 50th (ft)		60		66	0		~418	0		~233
Queue Length 95th (ft)		117		122	38		#623	22		#422
Internal Link Dist (ft)		124		125			345			386
Turn Bay Length (ft)								245		
Base Capacity (vph)		367		377	580		675	864		560
Starvation Cap Reductn		0		0	0		0	0		0
Spillback Cap Reductn		0		0	0		0	0		0
Storage Cap Reductn		0		0	0		0	0		0
Reduced v/c Ratio		0.47		0.48	0.27		1.24	0.28		1.06

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 65
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ 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: 9: S Boston Bypass & Richards St/Cypher St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	65	15	80	80	140	205	500	205	90	115	305
Future Volume (vph)	75	65	15	80	80	140	205	500	205	90	115	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	14	16	16	12	13	12	12	14	12
Total Lost time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00		1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	
Frt		0.99			1.00	0.85		1.00	0.85		0.92	
Flt Protected		0.98			0.98	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		1595			1616	1596		1586	1275		1508	
Flt Permitted		0.76			0.78	1.00		0.70	1.00		0.54	
Satd. Flow (perm)		1235			1287	1596		1123	1275		817	
Peak-hour factor, PHF	0.89	0.89	0.89	0.88	0.88	0.88	0.84	0.84	0.84	0.86	0.86	0.86
Adj. Flow (vph)	84	73	17	91	91	159	244	595	244	105	134	355
RTOR Reduction (vph)	0	6	0	0	0	125	0	0	97	0	69	0
Lane Group Flow (vph)	0	168	0	0	182	34	0	839	147	0	525	0
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	3%	7%	24%	10%	1%	2%	13%	14%	6%	22%	7%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2		2	1		1	1		
Actuated Green, G (s)		13.9			13.9	13.9		39.1	39.1		39.1	
Effective Green, g (s)		13.9			13.9	13.9		39.1	39.1		39.1	
Actuated g/C Ratio		0.21			0.21	0.21		0.60	0.60		0.60	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)		264			275	341		675	766		491	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.14	0.02		c0.75	0.12		0.64	
v/c Ratio		0.64			0.66	0.10		1.24	0.19		1.07	
Uniform Delay, d1		23.2			23.4	20.5		12.9	5.8		12.9	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		3.6			4.6	0.0		121.6	0.6		60.7	
Delay (s)		26.9			28.0	20.6		134.5	6.4		73.6	
Level of Service		C			C	C		F	A		E	
Approach Delay (s)		26.9			24.5			105.7			73.6	
Approach LOS		C			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	78.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	20	110	415	405	50
Future Vol, veh/h	10	20	110	415	405	50
Conflicting Peds, #/hr	64	4	159	0	0	159
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	56	88	88	83	83
Heavy Vehicles, %	25	25	4	4	5	4
Mvmt Flow	18	36	125	472	488	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1463	681	707	0	-	0
Stage 1	677	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	6.65	6.45	4.14	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.525	2.236	-	-	-
Pot Cap-1 Maneuver	126	413	882	-	-	-
Stage 1	465	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	354	760	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	354	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40	2.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	760	-	155	-	-
HCM Lane V/C Ratio	0.164	-	0.346	-	-
HCM Control Delay (s)	10.7	0	40	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.6	-	1.4	-	-

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	25	10	1	25	185	495	15	15	310	100
Future Vol, veh/h	5	5	25	10	1	25	185	495	15	15	310	100
Conflicting Peds, #/hr	3	0	149	149	0	3	94	0	250	250	0	94
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	85	85	85	90	90	90	83	83	83
Heavy Vehicles, %	0	0	0	10	0	9	0	0	0	0	6	0
Mvmt Flow	7	7	36	12	1	29	206	550	17	18	373	120

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1552	1792	676	1861	1844	812	587	0	0	817	0	0
Stage 1	563	563	-	1221	1221	-	-	-	-	-	-	-
Stage 2	989	1229	-	640	623	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.2	6.5	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.59	4	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	93	82	457	53	76	368	998	-	-	820	-	-
Stage 1	514	512	-	212	255	-	-	-	-	-	-	-
Stage 2	300	252	-	451	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	54	37	355	19	34	280	916	-	-	625	-	-
Mov Cap-2 Maneuver	54	37	-	19	34	-	-	-	-	-	-	-
Stage 1	317	451	-	108	130	-	-	-	-	-	-	-
Stage 2	178	129	-	324	424	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	57	172.2	2.7	0.4
HCM LOS	F	F		

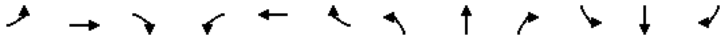
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	916	-	-	117	56	625	-	-
HCM Lane V/C Ratio	0.224	-	-	0.427	0.756	0.029	-	-
HCM Control Delay (s)	10.1	0	-	57	172.2	10.9	0	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.9	-	-	1.8	3.2	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	220	225	665	160	265	115	415	30	205	90
Future Volume (vph)	220	225	665	160	265	115	415	30	205	90
Lane Group Flow (vph)	308	247	361	623	294	128	461	0	273	105
Turn Type	NA	pt+ov	Split	NA	D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2 3	1	1	3	3 4	3 4		4	2 4
Permitted Phases					4			4		
Detector Phase	2	2 3	1	1	3	3 4	3 4	4	4	2 4
Switch Phase										
Minimum Initial (s)	8.0		8.0	8.0	8.0			8.0	8.0	
Minimum Split (s)	26.0		26.0	26.0	30.0			13.0	13.0	
Total Split (s)	30.0		35.0	35.0	30.0			15.0	15.0	
Total Split (%)	27.3%		31.8%	31.8%	27.3%			13.6%	13.6%	
Yellow Time (s)	3.0		3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0			2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0				0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0				5.0	
Lead/Lag	Lag		Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	Max		C-Max	C-Max	Max			Min	Min	
v/c Ratio	0.44	0.33	1.00	0.88dl	0.72	0.21	0.80		1.10	0.20
Control Delay	29.9	16.9	88.5	44.6	38.8	25.2	43.6		133.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	29.9	16.9	88.5	44.6	38.8	25.2	43.6		133.6	3.6
Queue Length 50th (ft)	97	104	280	219	161	62	289		~115	0
Queue Length 95th (ft)	144	186	#493	292	248	107	#455		#188	17
Internal Link Dist (ft)	378			513		267			265	
Turn Bay Length (ft)		165	275							125
Base Capacity (vph)	703	747	361	788	410	621	576		248	514
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.44	0.33	1.00	0.79	0.72	0.21	0.80		1.10	0.20

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 40 (36%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 1: I-90 Ramps/B St & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	220	225	665	160	80	265	115	415	30	205	90
Future Volume (vph)	60	220	225	665	160	80	265	115	415	30	205	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	16	11	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		0.95	1.00	0.91	0.91		1.00	1.00	1.00		0.95	1.00
Frpb, ped/bikes		1.00	1.00	1.00	0.96		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00	0.95	0.97		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		3097	1425	1327	2850		1547	1710	1584		3041	1391
Flt Permitted		0.99	1.00	0.95	0.97		0.40	1.00	1.00		0.89	1.00
Satd. Flow (perm)		3097	1425	1327	2850		651	1710	1584		2731	1391
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	66	242	247	723	174	87	294	128	461	35	238	105
RTOR Reduction (vph)	0	0	35	0	11	0	0	0	0	0	0	72
Lane Group Flow (vph)	0	308	213	361	612	0	294	128	461	0	273	33
Confl. Peds. (#/hr)						166						20
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	3%	4%	2%	4%	3%	1%	5%	0%	4%	0%	3%	1%
Turn Type	Split	NA	pt+ov	Split	NA		D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2	2 3	1	1		3	3 4	3 4		4	2 4
Permitted Phases							4			4		
Actuated Green, G (s)		25.0	55.0	30.0	30.0		35.0	40.0	40.0		10.0	35.0
Effective Green, g (s)		25.0	55.0	30.0	30.0		35.0	40.0	40.0		10.0	35.0
Actuated g/C Ratio		0.23	0.50	0.27	0.27		0.32	0.36	0.36		0.09	0.32
Clearance Time (s)		5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0				2.0	
Lane Grp Cap (vph)		703	712	361	777		410	621	576		248	442
v/s Ratio Prot		c0.10	0.15	c0.27	0.21		0.16	0.07	c0.29			0.02
v/s Ratio Perm							0.07				c0.10	
v/c Ratio		0.44	0.30	1.00	0.88dl		0.72	0.21	0.80		1.10	0.08
Uniform Delay, d1		36.5	16.2	40.0	37.1		31.7	24.1	31.4		50.0	26.2
Progression Factor		0.76	1.34	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		1.8	1.0	47.4	7.9		4.9	0.1	7.4		86.8	0.0
Delay (s)		29.6	22.6	87.4	45.0		36.6	24.1	38.8		136.8	26.2
Level of Service		C	C	F	D		D	C	D		F	C
Approach Delay (s)		26.5			60.5			35.9			106.1	
Approach LOS		C			E			D			F	

Intersection Summary				
HCM 2000 Control Delay	52.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	69.4%	ICU Level of Service	C	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	95	360	415	40	175	65	155	95
Future Volume (vph)	95	360	415	40	175	65	155	95
Lane Group Flow (vph)	101	383	536	50	282	127	120	107
Turn Type	Perm	NA	NA	Split	NA	Prot	Prot	Prot
Protected Phases		1	1	6	6	5	5	5
Permitted Phases	1							
Detector Phase	1	1	1	6	6	5	5	5
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	32.0	32.0	32.0	31.0	31.0	33.5	33.5	33.5
Total Split (s)	32.0	32.0	32.0	44.0	44.0	34.0	34.0	34.0
Total Split (%)	29.1%	29.1%	29.1%	40.0%	40.0%	30.9%	30.9%	30.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.34	0.49	0.39	0.15	0.80	0.59	0.62	0.54
Control Delay	30.9	29.8	14.3	33.2	57.4	53.6	56.9	52.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	29.8	14.3	33.2	57.4	53.6	56.9	52.0
Queue Length 50th (ft)	52	203	111	29	190	87	86	72
Queue Length 95th (ft)	m72	m290	m213	50	225	127	129	111
Internal Link Dist (ft)		439	378		213	281		
Turn Bay Length (ft)								
Base Capacity (vph)	299	779	1388	544	561	389	347	359
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	0.34	0.49	0.39	0.09	0.50	0.33	0.35	0.30

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	95	360	415	100	40	175	50	65	155	95
Future Volume (vph)	95	360	415	100	40	175	50	65	155	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	0.91	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.97		0.94	0.85	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (prot)	1431	1660	2930		1577	1626		1532	1367	1411
Flt Permitted	0.42	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (perm)	631	1660	2930		1577	1626		1532	1367	1411
Peak-hour factor, PHF	0.94	0.94	0.96	0.96	0.80	0.80	0.80	0.89	0.89	0.89
Adj. Flow (vph)	101	383	432	104	50	219	62	73	174	107
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0
Lane Group Flow (vph)	101	383	523	0	50	282	0	127	120	107
Confl. Peds. (#/hr)	153			153	7		20	7		20
Confl. Bikes (#/hr)				11						
Heavy Vehicles (%)	0%	3%	3%	4%	3%	1%	0%	2%	1%	3%
Parking (#/hr)				2						
Turn Type	Perm	NA	NA		Split	NA		Prot	Prot	Prot
Protected Phases		1	1		6	6		5	5	5
Permitted Phases	1									
Actuated Green, G (s)	51.7	51.7	51.7		23.8	23.8		15.5	15.5	15.5
Effective Green, g (s)	51.7	51.7	51.7		23.8	23.8		15.5	15.5	15.5
Actuated g/C Ratio	0.47	0.47	0.47		0.22	0.22		0.14	0.14	0.14
Clearance Time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	296	780	1377		341	351		215	192	198
v/s Ratio Prot		c0.23	0.18		0.03	c0.17		0.08	c0.09	0.08
v/s Ratio Perm	0.16									
v/c Ratio	0.34	0.49	0.38		0.15	0.80		0.59	0.62	0.54
Uniform Delay, d1	18.4	20.1	18.8		34.9	40.9		44.3	44.5	43.9
Progression Factor	1.16	1.18	0.65		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.2	0.6		0.1	11.8		2.9	4.5	1.6
Delay (s)	23.1	24.8	12.9		35.0	52.7		47.2	49.0	45.6
Level of Service	C	C	B		C	D		D	D	D
Approach Delay (s)		24.5	12.9			50.0		47.3		
Approach LOS		C	B			D		D		

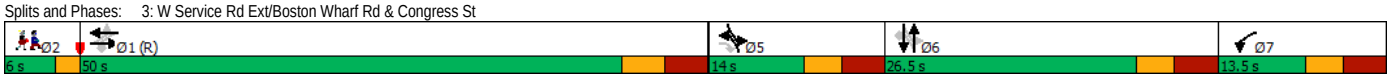
Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

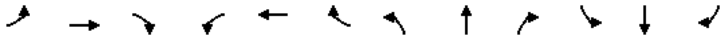
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø2
Lane Configurations											
Traffic Volume (vph)	40	285	320	185	310	100	100	60	250	90	
Future Volume (vph)	40	285	320	185	310	100	100	60	250	90	
Lane Group Flow (vph)	0	353	348	226	408	111	233	0	369	107	
Turn Type	Perm	NA	custom	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		1		7	1	5	6	5	6		2
Permitted Phases	1		1 5	1		6		6		6	
Detector Phase	1	1	1 5	7	1	5	6	5	6	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0		7.0	10.0	7.0	8.0	7.0	8.0	8.0	1.0
Minimum Split (s)	24.5	24.5		13.5	24.5	13.5	25.5	13.5	25.5	25.5	6.0
Total Split (s)	50.0	50.0		13.5	50.0	14.0	26.5	14.0	26.5	26.5	6.0
Total Split (%)	45.5%	45.5%		12.3%	45.5%	12.7%	24.1%	12.7%	24.1%	24.1%	5%
Yellow Time (s)	3.5	3.5		3.0	3.5	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0		6.5	7.0	6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag			Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max		None	C-Max	None	Ped	None	Ped	Ped	Ped
v/c Ratio		0.69	0.47	0.62	0.68	0.44	0.84		1.29	0.29	
Control Delay		16.6	6.1	21.0	26.0	35.2	62.1		184.7	1.9	
Queue Delay		0.3	0.9	0.0	0.3	0.0	0.0		0.0	0.0	
Total Delay		16.9	7.0	21.0	26.3	35.2	62.1		184.7	1.9	
Queue Length 50th (ft)		110	67	68	234	58	132		~305	0	
Queue Length 95th (ft)		m139	m81	62	107	105	#271		#468	0	
Internal Link Dist (ft)		349			439		826		274		
Turn Bay Length (ft)											
Base Capacity (vph)		510	748	362	598	256	276		287	372	
Starvation Cap Reductn		16	183	0	19	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		0.71	0.62	0.62	0.70	0.43	0.84		1.29	0.29	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 42 (38%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: W Service Rd Ext/Boston Wharf Rd & Congress St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	285	320	185	310	25	100	100	110	60	250	90
Future Volume (vph)	40	285	320	185	310	25	100	100	110	60	250	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	12	11	8	12	11	11	12
Total Lost time (s)		7.0	7.0	6.5	7.0		6.5	6.5			6.5	6.5
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.96		1.00	0.97			1.00	0.84
Flpb, ped/bikes		0.98	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		1582	1197	1495	1525		1525	1315			1637	1197
Flt Permitted		0.82	1.00	0.43	1.00		0.52	1.00			0.59	1.00
Satd. Flow (perm)		1306	1197	677	1525		832	1315			973	1197
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	43	310	348	226	378	30	111	111	122	71	298	107
RTOR Reduction (vph)	0	0	127	0	2	0	0	36	0	0	0	87
Lane Group Flow (vph)	0	353	221	226	406	0	111	197	0	0	369	20
Confl. Peds. (#/hr)	230		1	1		230			23			86
Confl. Bikes (#/hr)			7			8						2
Heavy Vehicles (%)	18%	3%	5%	5%	3%	0%	3%	0%	2%	0%	0%	2%
Parking (#/hr)			2									
Turn Type	Perm	NA	custom	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		1		7	1		5	6		5	6	
Permitted Phases	1		1 5	1			6			6		6
Actuated Green, G (s)		43.0	57.4	50.0	43.0		27.5	20.1			27.5	20.1
Effective Green, g (s)		43.0	57.4	50.0	43.0		27.5	20.1			27.5	20.1
Actuated g/C Ratio		0.39	0.52	0.45	0.39		0.25	0.18			0.25	0.18
Clearance Time (s)		7.0		6.5	7.0		6.5	6.5			6.5	6.5
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		510	624	359	596		254	240			287	218
v/s Ratio Prot				c0.04	0.27		0.03	0.15			c0.09	
v/s Ratio Perm		c0.27	0.18	0.25			0.08				c0.23	0.02
v/c Ratio		0.69	0.35	0.63	0.68		0.44	0.82			1.29	0.09
Uniform Delay, d1		28.0	15.4	22.5	27.8		33.4	43.2			41.2	37.3
Progression Factor		0.46	1.26	0.81	0.71		1.00	1.00			1.00	1.00
Incremental Delay, d2		3.1	0.1	2.4	6.0		0.4	18.8			152.4	0.1
Delay (s)		16.1	19.5	20.8	25.6		33.8	62.1			193.6	37.4
Level of Service		B	B	C	C		C	E			F	D
Approach Delay (s)		17.8			23.9			52.9			158.5	
Approach LOS		B			C			D			F	

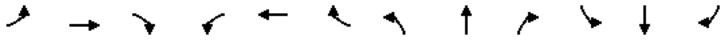
Intersection Summary				
HCM 2000 Control Delay	56.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.5	
Intersection Capacity Utilization	96.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	Ø2
Lane Configurations								
Traffic Volume (vph)	40	425	170	180	260	45	220	
Future Volume (vph)	40	425	170	180	260	45	220	
Lane Group Flow (vph)	0	505	185	212	377	241	272	
Turn Type	Perm	NA	Perm	D.P+P	NA	NA	Prot	
Protected Phases		1		5	1 5	4	4	2
Permitted Phases	1		1	1				
Detector Phase	1	1	1	5	1 5	4	4	
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	6.0		8.0	8.0	1.0
Minimum Split (s)	18.5	18.5	18.5	12.5		14.5	14.5	24.0
Total Split (s)	42.0	42.0	42.0	20.0		24.0	24.0	24.0
Total Split (%)	38.2%	38.2%	38.2%	18.2%		21.8%	21.8%	22%
Yellow Time (s)	4.0	4.0	4.0	3.0		4.0	4.0	2.0
All-Red Time (s)	4.5	4.5	4.5	3.5		2.5	2.5	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		8.5	8.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	C-Max	C-Max	C-Max	None		None	None	None
v/c Ratio		0.70	0.48	0.53	0.49	0.93	1.27	
Control Delay		40.1	36.1	17.2	16.3	88.1	190.0	
Queue Delay		0.0	0.0	0.0	0.5	0.0	0.0	
Total Delay		40.1	36.1	17.2	16.8	88.1	190.0	
Queue Length 50th (ft)		165	106	56	101	170	~242	
Queue Length 95th (ft)		228	177	93	160	#270	#351	
Internal Link Dist (ft)		494			349	441		
Turn Bay Length (ft)							100	
Base Capacity (vph)		719	389	398	768	258	215	
Starvation Cap Reductn		0	0	0	129	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.70	0.48	0.53	0.59	0.93	1.27	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ 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: A St/Thompson Pl & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	425	170	180	260	60	150	45	220	0	0	0
Future Volume (vph)	40	425	170	180	260	60	150	45	220	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	11	11	12	10	12	10	12	12	12
Total Lost time (s)		8.5	8.5	6.5	8.5			6.5	6.5			
Lane Util. Factor		0.95	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	0.97			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00			
Satd. Flow (prot)		2927	1280	1540	1565			1627	1357			
Flt Permitted		0.80	1.00	0.40	1.00			0.96	1.00			
Satd. Flow (perm)		2364	1280	649	1565			1627	1357			
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	43	462	185	212	306	71	185	56	272	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	505	185	212	368	0	0	241	272	0	0	0
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	5%	7%	6%	2%	2%	3%	1%	2%	0%	2%	2%	2%
Turn Type	Perm	NA	Perm	D.P+P	NA		Split	NA	Prot			
Protected Phases		1		5	1 5		4	4	4			
Permitted Phases	1		1	1								
Actuated Green, G (s)		33.5	33.5	47.0	53.5			17.5	17.5			
Effective Green, g (s)		33.5	33.5	47.0	47.0			17.5	17.5			
Actuated g/C Ratio		0.30	0.30	0.43	0.43			0.16	0.16			
Clearance Time (s)		8.5	8.5	6.5				6.5	6.5			
Vehicle Extension (s)		2.0	2.0	2.0				2.0	2.0			
Lane Grp Cap (vph)		719	389	386	668			258	215			
v/s Ratio Prot				0.07	c0.24			0.15	c0.20			
v/s Ratio Perm		c0.21	0.14	0.17								
v/c Ratio		0.70	0.48	0.55	0.55			0.93	1.27			
Uniform Delay, d1		33.8	31.1	21.1	23.6			45.7	46.2			
Progression Factor		1.00	1.00	0.79	0.77			1.00	1.00			
Incremental Delay, d2		5.7	4.1	0.7	0.5			37.9	150.9			
Delay (s)		39.5	35.2	17.5	18.7			83.6	197.1			
Level of Service		D	D	B	B			F	F			
Approach Delay (s)		38.4			18.3			143.8			0.0	
Approach LOS		D			B			F			A	

Intersection Summary			
HCM 2000 Control Delay	61.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	75	100	340	280
Future Volume (vph)	75	100	340	280
Lane Group Flow (vph)	230	0	484	411
Turn Type	Prot	Perm	NA	NA
Protected Phases	5		1	1
Permitted Phases		1		
Detector Phase	5	1	1	1
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	44.0	44.0	44.0
Total Split (s)	27.0	73.0	73.0	73.0
Total Split (%)	27.0%	73.0%	73.0%	73.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
v/c Ratio	0.85		0.52	0.33
Control Delay	51.8		7.5	5.8
Queue Delay	0.0		0.0	0.0
Total Delay	51.8		7.5	5.8
Queue Length 50th (ft)	92		90	74
Queue Length 95th (ft)	#179		159	127
Internal Link Dist (ft)	208		310	441
Turn Bay Length (ft)				
Base Capacity (vph)	337		926	1246
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.68		0.52	0.33

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: A St & Melcher St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	75	135	100	340	280	70
Future Volume (vph)	75	135	100	340	280	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	16	12
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.87			1.00	0.93	
Flpb, ped/bikes	1.00			0.96	1.00	
Frt	0.91			1.00	0.97	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1238			1512	1682	
Flt Permitted	0.98			0.82	1.00	
Satd. Flow (perm)	1238			1255	1682	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.85	0.85
Adj. Flow (vph)	82	148	110	374	329	82
RTOR Reduction (vph)	69	0	0	0	7	0
Lane Group Flow (vph)	161	0	0	484	404	0
Confl. Peds. (#/hr)	43	64	140			140
Heavy Vehicles (%)	5%	9%	9%	2%	4%	4%
Parking (#/hr)		1				1
Turn Type	Prot		Perm	NA	NA	
Protected Phases	5			1	1	
Permitted Phases			1			
Actuated Green, G (s)	16.3			73.7	73.7	
Effective Green, g (s)	16.3			73.7	73.7	
Actuated g/C Ratio	0.16			0.74	0.74	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	201			924	1239	
v/s Ratio Prot	c0.13				0.24	
v/s Ratio Perm				c0.39		
v/c Ratio	0.80			0.52	0.33	
Uniform Delay, d1	40.3			5.6	4.6	
Progression Factor	1.00			0.77	1.00	
Incremental Delay, d2	18.3			2.1	0.7	
Delay (s)	58.6			6.5	5.3	
Level of Service	E			A	A	
Approach Delay (s)	58.6			6.5	5.3	
Approach LOS	E			A	A	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

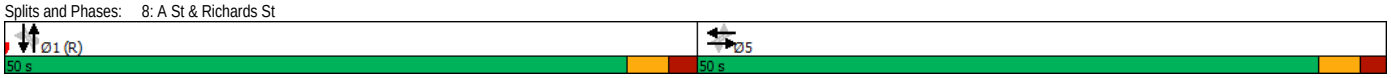
c Critical Lane Group

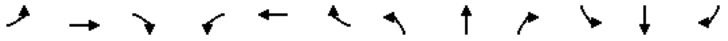
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	0	180	0	260	50	510
Future Volume (vph)	1	0	180	0	260	50	510
Lane Group Flow (vph)	2	2	194	118	392	0	651
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		5		5	1		1
Permitted Phases	5		5			1	
Detector Phase	5	5	5	5	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.02	0.00	0.76	0.35	0.42		0.64
Control Delay	26.0	0.0	54.8	13.7	9.6		15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	26.0	0.0	54.8	13.7	9.6		15.7
Queue Length 50th (ft)	1	0	117	19	91		224
Queue Length 95th (ft)	4	0	174	59	195		413
Internal Link Dist (ft)		195		263	148		999
Turn Bay Length (ft)							
Base Capacity (vph)	262	711	532	620	926		1021
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.01	0.00	0.36	0.19	0.42		0.64

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 8: A St & Richards St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	180	0	110	0	260	85	50	510	0
Future Volume (vph)	1	0	1	180	0	110	0	260	85	50	510	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.97			0.86			1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			0.97	
Frt	1.00	0.85		1.00	0.85			0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	834	1414		1485	1278			1343			1583	
Flt Permitted	0.67	1.00		0.76	1.00			1.00			0.93	
Satd. Flow (perm)	584	1414		1183	1278			1343			1485	
Peak-hour factor, PHF	0.50	0.50	0.50	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	2	0	2	194	0	118	0	295	97	58	593	0
RTOR Reduction (vph)	0	2	0	0	64	0	0	7	0	0	0	0
Lane Group Flow (vph)	2	0	0	194	54	0	0	385	0	0	651	0
Confl. Peds. (#/hr)	3		3	3		3	59		290	290		59
Confl. Bikes (#/hr)									20			59
Heavy Vehicles (%)	100%	0%	0%	5%	0%	7%	0%	3%	16%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1			1		
Actuated Green, G (s)	21.5	21.5		21.5	21.5			68.5			68.5	
Effective Green, g (s)	21.5	21.5		21.5	21.5			68.5			68.5	
Actuated g/C Ratio	0.22	0.22		0.22	0.22			0.68			0.68	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	125	304		254	274			919			1017	
v/s Ratio Prot		0.00			0.04			0.29				
v/s Ratio Perm	0.00			c0.16							c0.44	
v/c Ratio	0.02	0.00		0.76	0.20			0.42			0.64	
Uniform Delay, d1	30.9	30.8		36.9	32.2			7.0			8.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.14	
Incremental Delay, d2	0.0	0.0		11.6	0.1			1.4			3.0	
Delay (s)	30.9	30.8		48.4	32.3			8.4			13.1	
Level of Service	C	C		D	C			A			B	
Approach Delay (s)		30.9			42.3			8.4			13.1	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

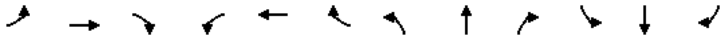
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	160	115	125	65	140	95	380	130	240	345
Future Volume (vph)	160	115	125	65	140	95	380	130	240	345
Lane Group Flow (vph)	0	450	0	216	159	0	540	148	0	868
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2		2			1			1
Permitted Phases	2		2		2	1		1	1	
Detector Phase	2	2	2	2	2	1	1	1	1	1
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		1.35		0.76	0.30		0.78	0.18		1.56
Control Delay		202.1		43.8	5.5		22.2	2.1		282.2
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0
Total Delay		202.1		43.8	5.5		22.2	2.1		282.2
Queue Length 50th (ft)		~256		85	0		166	0		~541
Queue Length 95th (ft)		#353		#184	38		#314	21		#755
Internal Link Dist (ft)		124		125			345			386
Turn Bay Length (ft)								245		
Base Capacity (vph)		333		283	530		694	827		555
Starvation Cap Reductn		0		0	0		0	0		0
Spillback Cap Reductn		0		0	0		0	0		0
Storage Cap Reductn		0		0	0		0	0		0
Reduced v/c Ratio		1.35		0.76	0.30		0.78	0.18		1.56

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
~ 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: 9: S Boston Bypass & Richards St/Cypher St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	115	80	125	65	140	95	380	130	240	345	205
Future Volume (vph)	160	115	80	125	65	140	95	380	130	240	345	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	14	16	16	12	13	12	12	14	12
Total Lost time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		0.99			1.00	0.96		1.00	0.98		1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	
Frt		0.97			1.00	0.85		1.00	0.85		0.97	
Flt Protected		0.98			0.97	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		1605			1792	1527		1682	1368		1666	
Flt Permitted		0.72			0.56	1.00		0.73	1.00		0.57	
Satd. Flow (perm)		1174			1045	1527		1247	1368		966	
Peak-hour factor, PHF	0.79	0.79	0.79	0.88	0.88	0.88	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	203	146	101	142	74	159	108	432	148	264	379	225
RTOR Reduction (vph)	0	15	0	0	0	116	0	0	66	0	18	0
Lane Group Flow (vph)	0	435	0	0	216	43	0	540	82	0	850	0
Confl. Peds. (#/hr)	6		2	2		6			1	1		
Confl. Bikes (#/hr)			6			4						
Heavy Vehicles (%)	1%	6%	4%	6%	2%	4%	0%	5%	4%	2%	5%	5%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2		2	1		1	1		
Actuated Green, G (s)		19.0			19.0	19.0		39.0	39.0		39.0	
Effective Green, g (s)		19.0			19.0	19.0		39.0	39.0		39.0	
Actuated g/C Ratio		0.27			0.27	0.27		0.56	0.56		0.56	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)		318			283	414		694	762		538	
v/s Ratio Prot												
v/s Ratio Perm		c0.37			0.21	0.03		0.43	0.06		c0.88	
v/c Ratio		1.37			0.76	0.10		0.78	0.11		1.58	
Uniform Delay, d1		25.5			23.4	19.1		12.1	7.3		15.5	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		185.0			10.5	0.0		8.4	0.3		269.7	
Delay (s)		210.5			33.9	19.2		20.5	7.6		285.2	
Level of Service		F			C	B		C	A		F	
Approach Delay (s)		210.5			27.6			17.7			285.2	
Approach LOS		F			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	153.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	95	20	355	390	20
Future Vol, veh/h	70	95	20	355	390	20
Conflicting Peds, #/hr	47	1	178	0	0	178
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	93	93	92	92
Heavy Vehicles, %	0	6	18	4	5	7
Mvmt Flow	81	110	22	382	424	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1086	614	624	0	-	0
Stage 1	613	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Critical Hdwy	6.4	6.26	4.28	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.354	2.362	-	-	-
Pot Cap-1 Maneuver	242	485	885	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	166	409	747	-	-	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	53.8	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	747	-	252	-	-
HCM Lane V/C Ratio	0.029	-	0.761	-	-
HCM Control Delay (s)	10	0	53.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	5.5	-	-

Intersection	
Int Delay, s/veh	66.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	55	30	145	5	1	30	55	290	20	25	430	30
Future Vol, veh/h	55	30	145	5	1	30	55	290	20	25	430	30
Conflicting Peds, #/hr	7	0	117	117	0	7	121	0	221	221	0	121
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	68	68	68	94	94	94	86	86	86
Heavy Vehicles, %	0	0	0	33	0	3	0	5	0	13	3	0
Mvmt Flow	66	36	175	7	1	44	59	309	21	29	500	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1164	1366	756	1457	1373	548	656	0	0	551	0	0
Stage 1	697	697	-	659	659	-	-	-	-	-	-	-
Stage 2	467	669	-	798	714	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.23	4.1	-	-	4.23	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.327	2.2	-	-	2.317	-	-
Pot Cap-1 Maneuver	173	149	411	92	147	534	941	-	-	966	-	-
Stage 1	435	446	-	405	464	-	-	-	-	-	-	-
Stage 2	580	459	-	337	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	122	91	323	18	90	419	842	-	-	763	-	-
Mov Cap-2 Maneuver	122	91	-	18	90	-	-	-	-	-	-	-
Stage 1	355	377	-	292	335	-	-	-	-	-	-	-
Stage 2	469	331	-	116	371	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	289.5	75.8	1.4	0.5
HCM LOS	F	F		

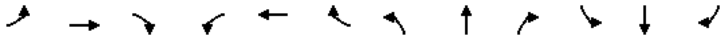
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	842	-	-	187	100	763	-	-
HCM Lane V/C Ratio	0.069	-	-	1.482	0.529	0.038	-	-
HCM Control Delay (s)	9.6	0	-	289.5	75.8	9.9	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	17.3	2.4	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	210	105	385	125	280	210	425	55	100	60
Future Volume (vph)	210	105	385	125	280	210	425	55	100	60
Lane Group Flow (vph)	390	121	226	453	298	223	452	0	170	66
Turn Type	NA	pt+ov	Split	NA	D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2 3	1	1	3	3 4	3 4		4	2 4
Permitted Phases					4			4		
Detector Phase	2	2 3	1	1	3	3 4	3 4	4	4	2 4
Switch Phase										
Minimum Initial (s)	8.0		8.0	8.0	8.0			8.0	8.0	
Minimum Split (s)	26.0		26.0	26.0	30.0			13.0	13.0	
Total Split (s)	30.0		35.0	35.0	30.0			15.0	15.0	
Total Split (%)	27.3%		31.8%	31.8%	27.3%			13.6%	13.6%	
Yellow Time (s)	3.0		3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0			2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0				0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0				5.0	
Lead/Lag	Lag		Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	Max		C-Max	C-Max	Max			Min	Min	
v/c Ratio	0.56	0.16	0.67	0.62	0.65	0.37	0.84		0.86	0.14
Control Delay	34.5	5.0	46.8	37.0	35.4	28.1	48.0		85.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	34.5	5.0	46.8	37.0	35.4	28.1	48.0		85.5	3.7
Queue Length 50th (ft)	115	17	156	145	163	115	289		63	0
Queue Length 95th (ft)	169	m31	242	195	249	182	#467		#126	15
Internal Link Dist (ft)	378			513		267			265	
Turn Bay Length (ft)		165	275							125
Base Capacity (vph)	695	766	337	736	456	597	539		201	485
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.56	0.16	0.67	0.62	0.65	0.37	0.84		0.85	0.14

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 40 (36%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: I-90 Ramps/B St & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	210	105	385	125	80	280	210	425	55	100	60
Future Volume (vph)	130	210	105	385	125	80	280	210	425	55	100	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	16	11	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		0.95	1.00	0.91	0.91		1.00	1.00	1.00		0.95	1.00
Frpb, ped/bikes		1.00	1.00	1.00	0.94		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.97		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)		3063	1411	1232	2618		1593	1644	1484		2779	1378
Flt Permitted		0.98	1.00	0.95	0.98		0.63	1.00	1.00		0.78	1.00
Satd. Flow (perm)		3063	1411	1232	2618		1055	1644	1484		2216	1378
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.91	0.91	0.91
Adj. Flow (vph)	149	241	121	443	144	92	298	223	452	60	110	66
RTOR Reduction (vph)	0	0	61	0	19	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	390	61	226	434	0	298	223	452	0	170	21
Confl. Peds. (#/hr)			18			167						27
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	1%	6%	3%	12%	8%	8%	2%	4%	11%	13%	10%	2%
Turn Type	Split	NA	pt+ov	Split	NA		D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2	2 3	1	1		3	3 4	3 4		4	2 4
Permitted Phases							4			4		
Actuated Green, G (s)		25.0	55.0	30.1	30.1		34.9	39.9	39.9		9.9	34.9
Effective Green, g (s)		25.0	55.0	30.1	30.1		34.9	39.9	39.9		9.9	34.9
Actuated g/C Ratio		0.23	0.50	0.27	0.27		0.32	0.36	0.36		0.09	0.32
Clearance Time (s)		5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0				2.0	
Lane Grp Cap (vph)		696	705	337	716		456	596	538		199	437
v/s Ratio Prot		c0.13	0.04	c0.18	0.17		0.15	0.14	c0.30			0.02
v/s Ratio Perm							0.06				0.08	
v/c Ratio		0.56	0.09	0.67	0.61		0.65	0.37	0.84		0.85	0.05
Uniform Delay, d1		37.6	14.4	35.5	34.8		31.5	25.8	32.1		49.3	26.0
Progression Factor		0.83	1.69	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		2.9	0.2	10.2	3.8		2.6	0.1	10.9		27.3	0.0
Delay (s)		34.2	24.5	45.7	38.6		34.1	26.0	43.0		76.7	26.0
Level of Service		C	C	D	D		C	C	D		E	C
Approach Delay (s)		31.9			41.0			36.4			62.5	
Approach LOS		C			D			D			E	

Intersection Summary				
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	50	200	365	61	270	120	200	125
Future Volume (vph)	50	200	365	61	270	120	200	125
Lane Group Flow (vph)	63	250	484	64	406	175	162	132
Turn Type	Perm	NA	NA	Split	NA	Prot	Prot	Prot
Protected Phases		1	1	6	6	5	5	5
Permitted Phases	1							
Detector Phase	1	1	1	6	6	5	5	5
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	32.0	32.0	32.0	31.0	31.0	33.5	33.5	33.5
Total Split (s)	32.0	32.0	32.0	44.0	44.0	34.0	34.0	34.0
Total Split (%)	29.1%	29.1%	29.1%	40.0%	40.0%	30.9%	30.9%	30.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.29	0.40	0.43	0.15	0.88	0.68	0.73	0.59
Control Delay	40.4	37.4	18.8	27.8	57.6	55.5	61.5	51.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	37.4	18.8	27.8	57.6	55.5	61.5	51.9
Queue Length 50th (ft)	38	152	116	33	270	118	115	88
Queue Length 95th (ft)	m49	m178	206	62	366	173	174	136
Internal Link Dist (ft)		439	378		213	281		
Turn Bay Length (ft)								
Base Capacity (vph)	217	619	1130	530	557	400	344	348
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	35	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.40	0.44	0.12	0.73	0.44	0.47	0.38

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	50	200	365	100	61	270	120	120	200	125
Future Volume (vph)	50	200	365	100	61	270	120	120	200	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	0.93	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.95		0.96	0.85	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (prot)	1280	1644	2953		1533	1610		1572	1354	1371
Flt Permitted	0.43	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (perm)	575	1644	2953		1533	1610		1572	1354	1371
Peak-hour factor, PHF	0.80	0.80	0.96	0.96	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	62	250	380	104	64	281	125	126	211	132
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	0	0
Lane Group Flow (vph)	63	250	466	0	64	406	0	175	162	132
Confl. Peds. (#/hr)	115			115	14		15	14		15
Confl. Bikes (#/hr)				3						
Heavy Vehicles (%)	14%	4%	3%	2%	6%	0%	1%	0%	2%	6%
Parking (#/hr)				2						
Turn Type	Perm	NA	NA		Split	NA		Prot	Prot	Prot
Protected Phases		1	1		6	6		5	5	5
Permitted Phases	1									
Actuated Green, G (s)	41.5	41.5	41.5		31.5	31.5		18.0	18.0	18.0
Effective Green, g (s)	41.5	41.5	41.5		31.5	31.5		18.0	18.0	18.0
Actuated g/C Ratio	0.38	0.38	0.38		0.29	0.29		0.16	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	216	620	1114		438	461		257	221	224
v/s Ratio Prot		0.15	c0.16		0.04	c0.25		0.11	c0.12	0.10
v/s Ratio Perm	0.11									
v/c Ratio	0.29	0.40	0.42		0.15	0.88		0.68	0.73	0.59
Uniform Delay, d1	24.0	25.2	25.3		29.2	37.5		43.3	43.7	42.6
Progression Factor	1.21	1.22	0.66		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	1.2	1.0		0.1	17.1		5.8	10.3	2.5
Delay (s)	31.0	32.0	17.6		29.3	54.6		49.1	54.0	45.1
Level of Service	C	C	B		C	D		D	D	D
Approach Delay (s)		31.8	17.6			51.1		49.7		
Approach LOS		C	B			D		D		

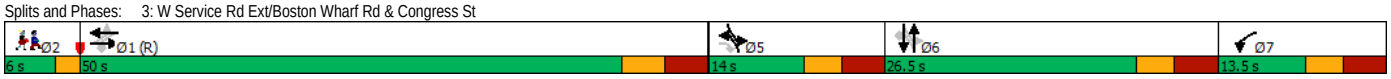
Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

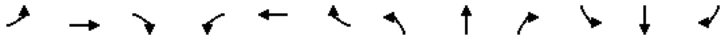
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø2
Lane Configurations											
Traffic Volume (vph)	50	130	110	65	441	150	175	30	80	40	
Future Volume (vph)	50	130	110	65	441	150	175	30	80	40	
Lane Group Flow (vph)	0	228	139	72	534	163	288	0	136	49	
Turn Type	Perm	NA	custom	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		1		7	1	5	6	5	6		2
Permitted Phases	1		1 5	1		6		6		6	
Detector Phase	1	1	1 5	7	1	5	6	5	6	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0		7.0	10.0	7.0	10.0	7.0	10.0	10.0	1.0
Minimum Split (s)	24.5	24.5		13.5	24.5	13.5	25.5	13.5	25.5	25.5	6.0
Total Split (s)	50.0	50.0		13.5	50.0	14.0	26.5	14.0	26.5	26.5	6.0
Total Split (%)	45.5%	45.5%		12.3%	45.5%	12.7%	24.1%	12.7%	24.1%	24.1%	5%
Yellow Time (s)	3.5	3.5		3.0	3.5	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0		6.5	7.0	6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag			Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max		None	C-Max	None	Ped	None	Ped	Ped	Ped
v/c Ratio		0.68	0.22	0.15	0.84	0.56	1.10		0.52	0.13	
Control Delay		25.3	3.0	10.4	38.4	40.1	126.0		38.4	0.7	
Queue Delay		0.0	0.0	0.0	0.9	0.0	0.0		0.0	0.0	
Total Delay		25.3	3.0	10.4	39.3	40.1	126.0		38.4	0.7	
Queue Length 50th (ft)		52	1	18	370	89	~219		73	0	
Queue Length 95th (ft)		69	14	32	#561	150	#392		112	0	
Internal Link Dist (ft)		349			439		826		274		
Turn Bay Length (ft)											
Base Capacity (vph)		337	628	470	632	290	261		263	371	
Starvation Cap Reductn		0	0	0	16	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		0.68	0.22	0.15	0.87	0.56	1.10		0.52	0.13	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 42 (38%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: W Service Rd Ext/Boston Wharf Rd & Congress St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	130	110	65	441	40	150	175	90	30	80	40
Future Volume (vph)	50	130	110	65	441	40	150	175	90	30	80	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	12	11	8	12	11	11	12
Total Lost time (s)		7.0	7.0	6.5	7.0		6.5	6.5			6.5	6.5
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.96		1.00	0.99			1.00	0.91
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	0.99		1.00	0.95			1.00	0.85
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		1603	1044	1476	1518		1481	1343			1478	1196
Flt Permitted		0.50	1.00	0.58	1.00		0.67	1.00			0.60	1.00
Satd. Flow (perm)		814	1044	903	1518		1045	1343			895	1196
Peak-hour factor, PHF	0.79	0.79	0.79	0.90	0.90	0.90	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	63	165	139	72	490	44	163	190	98	37	99	49
RTOR Reduction (vph)	0	0	65	0	3	0	0	17	0	0	0	40
Lane Group Flow (vph)	0	228	74	72	531	0	163	271	0	0	136	9
Confl. Peds. (#/hr)	163		3	3		163			9			44
Confl. Bikes (#/hr)			4			2			1			
Heavy Vehicles (%)	11%	3%	20%	6%	3%	3%	6%	3%	5%	30%	3%	11%
Parking (#/hr)			2									
Turn Type	Perm	NA	custom	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		1		7	1		5	6		5	6	
Permitted Phases	1		1 5	1			6			6		6
Actuated Green, G (s)		44.3	58.8	49.9	44.3		27.5	20.0			27.5	20.0
Effective Green, g (s)		44.3	58.8	49.9	44.3		27.5	20.0			27.5	20.0
Actuated g/C Ratio		0.40	0.53	0.45	0.40		0.25	0.18			0.25	0.18
Clearance Time (s)		7.0		6.5	7.0		6.5	6.5			6.5	6.5
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		327	558	438	611		290	244			263	217
v/s Ratio Prot				c0.01	c0.35		c0.04	c0.20			0.04	
v/s Ratio Perm		0.28	0.07	0.07			0.10				0.09	0.01
v/c Ratio		0.70	0.13	0.16	0.87		0.56	1.11			0.52	0.04
Uniform Delay, d1		27.3	12.8	17.3	30.2		34.9	45.0			35.5	37.1
Progression Factor		0.51	0.91	0.84	0.82		1.00	1.00			1.00	1.00
Incremental Delay, d2		11.0	0.0	0.1	14.8		1.5	90.3			0.7	0.0
Delay (s)		24.9	11.7	14.6	39.6		36.4	135.3			36.2	37.1
Level of Service		C	B	B	D		D	F			D	D
Approach Delay (s)		19.9			36.7			99.5			36.5	
Approach LOS		B			D			F			D	

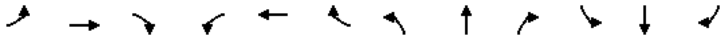
Intersection Summary				
HCM 2000 Control Delay	50.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.5	
Intersection Capacity Utilization	94.7%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	Ø2
Lane Configurations								
Traffic Volume (vph)	10	210	132	236	370	30	80	
Future Volume (vph)	10	210	132	236	370	30	80	
Lane Group Flow (vph)	0	293	176	265	444	271	83	
Turn Type	Perm	NA	Perm	D.P+P	NA	NA	Prot	
Protected Phases		1		5	1 5	4	4	2
Permitted Phases	1		1	1				
Detector Phase	1	1	1	5	1 5	4	4	
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	6.0		8.0	8.0	1.0
Minimum Split (s)	18.5	18.5	18.5	12.5		14.5	14.5	24.0
Total Split (s)	42.0	42.0	42.0	20.0		24.0	24.0	24.0
Total Split (%)	38.2%	38.2%	38.2%	18.2%		21.8%	21.8%	22%
Yellow Time (s)	4.0	4.0	4.0	3.0		4.0	4.0	2.0
All-Red Time (s)	4.5	4.5	4.5	3.5		2.5	2.5	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		8.5	8.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	C-Max	C-Max	C-Max	None		None	None	None
v/c Ratio		0.38	0.45	0.55	0.58	1.07	0.40	
Control Delay		31.9	35.4	18.3	20.1	121.5	48.0	
Queue Delay		0.0	0.0	0.0	1.1	0.0	0.0	
Total Delay		31.9	35.4	18.3	21.2	121.5	48.0	
Queue Length 50th (ft)		85	100	80	147	~212	53	
Queue Length 95th (ft)		101	134	m116	m203	#377	103	
Internal Link Dist (ft)		494			349	441		
Turn Bay Length (ft)							100	
Base Capacity (vph)		768	389	479	767	253	209	
Starvation Cap Reductn		0	0	0	142	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.38	0.45	0.55	0.71	1.07	0.40	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: A St/Thompson Pl & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	210	132	236	370	25	230	30	80	0	0	0
Future Volume (vph)	10	210	132	236	370	25	230	30	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	11	11	12	10	12	10	12	12	12
Total Lost time (s)		8.5	8.5	6.5	8.5			6.5	6.5			
Lane Util. Factor		0.95	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	0.99			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00			
Satd. Flow (prot)		2730	1280	1510	1572			1595	1317			
Flt Permitted		0.92	1.00	0.57	1.00			0.96	1.00			
Satd. Flow (perm)		2524	1280	910	1572			1595	1317			
Peak-hour factor, PHF	0.75	0.75	0.75	0.89	0.89	0.89	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	13	280	176	265	416	28	240	31	83	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	293	176	265	442	0	0	271	83	0	0	0
Confl. Bikes (#/hr)						3			4			
Heavy Vehicles (%)	10%	15%	6%	4%	4%	4%	3%	0%	3%	2%	2%	2%
Turn Type	Perm	NA	Perm	D.P+P	NA		Split	NA	Prot			
Protected Phases		1		5	1 5		4	4	4			
Permitted Phases	1		1	1								
Actuated Green, G (s)		33.5	33.5	47.0	53.5			17.5	17.5			
Effective Green, g (s)		33.5	33.5	47.0	47.0			17.5	17.5			
Actuated g/C Ratio		0.30	0.30	0.43	0.43			0.16	0.16			
Clearance Time (s)		8.5	8.5	6.5				6.5	6.5			
Vehicle Extension (s)		2.0	2.0	2.0				2.0	2.0			
Lane Grp Cap (vph)		768	389	462	671			253	209			
v/s Ratio Prot				0.07	c0.28			c0.17	0.06			
v/s Ratio Perm		0.12	0.14	0.17								
v/c Ratio		0.38	0.45	0.57	0.66			1.07	0.40			
Uniform Delay, d1		30.1	30.9	21.9	25.1			46.2	41.5			
Progression Factor		1.00	1.00	0.86	0.87			1.00	1.00			
Incremental Delay, d2		1.4	3.8	0.7	1.2			76.7	0.5			
Delay (s)		31.5	34.6	19.6	23.1			123.0	42.0			
Level of Service		C	C	B	C			F	D			
Approach Delay (s)		32.7			21.8			104.0			0.0	
Approach LOS		C			C			F			A	

Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	95	310	303
Future Volume (vph)	30	95	310	303
Lane Group Flow (vph)	266	0	477	438
Turn Type	Prot	Perm	NA	NA
Protected Phases	5		1	1
Permitted Phases		1		
Detector Phase	5	1	1	1
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	44.0	44.0	44.0
Total Split (s)	27.0	73.0	73.0	73.0
Total Split (%)	27.0%	73.0%	73.0%	73.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
v/c Ratio	0.76		0.50	0.33
Control Delay	22.7		5.8	4.6
Queue Delay	0.0		0.0	0.6
Total Delay	22.7		5.8	5.2
Queue Length 50th (ft)	22		28	46
Queue Length 95th (ft)	86		182	130
Internal Link Dist (ft)	208		310	441
Turn Bay Length (ft)				
Base Capacity (vph)	441		961	1322
Starvation Cap Reductn	0		0	505
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.60		0.50	0.54

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 5: A St & Melcher St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	30	199	95	310	303	65
Future Volume (vph)	30	199	95	310	303	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	16	12
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.83			1.00	0.94	
Flpb, ped/bikes	1.00			0.96	1.00	
Frt	0.88			1.00	0.98	
Flt Protected	0.99			0.99	1.00	
Satd. Flow (prot)	1186			1507	1696	
Flt Permitted	0.99			0.81	1.00	
Satd. Flow (perm)	1186			1233	1696	
Peak-hour factor, PHF	0.86	0.86	0.85	0.85	0.84	0.84
Adj. Flow (vph)	35	231	112	365	361	77
RTOR Reduction (vph)	202	0	0	0	5	0
Lane Group Flow (vph)	64	0	0	477	433	0
Confl. Peds. (#/hr)	20	62	129			129
Confl. Bikes (#/hr)		1				10
Heavy Vehicles (%)	0%	5%	8%	3%	4%	9%
Parking (#/hr)		1				1
Turn Type	Prot		Perm	NA	NA	
Protected Phases	5			1	1	
Permitted Phases			1			
Actuated Green, G (s)	12.4			77.6	77.6	
Effective Green, g (s)	12.4			77.6	77.6	
Actuated g/C Ratio	0.12			0.78	0.78	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	147			956	1316	
v/s Ratio Prot	c0.05				0.26	
v/s Ratio Perm				c0.39		
v/c Ratio	0.43			0.50	0.33	
Uniform Delay, d1	40.5			4.1	3.4	
Progression Factor	1.00			0.79	1.00	
Incremental Delay, d2	0.7			1.5	0.7	
Delay (s)	41.3			4.7	4.0	
Level of Service	D			A	A	
Approach Delay (s)	41.3			4.7	4.0	
Approach LOS	D			A	A	

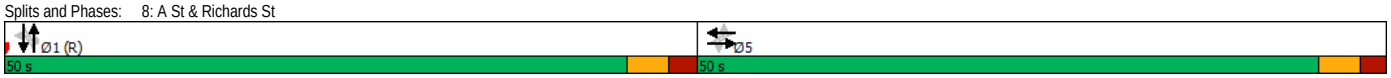
Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

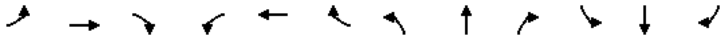
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	1	160	2	1	451	37	319
Future Volume (vph)	1	1	160	2	1	451	37	319
Lane Group Flow (vph)	3	6	165	336	0	691	0	424
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		5		5		1		1
Permitted Phases	5		5		1		1	
Detector Phase	5	5	5	5	1	1	1	1
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.04	0.03	0.59	0.92		0.74		0.47
Control Delay	23.0	17.5	39.1	62.6		21.1		15.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	23.0	17.5	39.1	62.6		21.1		15.5
Queue Length 50th (ft)	1	1	92	195		267		136
Queue Length 95th (ft)	3	3	135	260		423		259
Internal Link Dist (ft)		195		263		148		999
Turn Bay Length (ft)								
Base Capacity (vph)	121	353	478	606		939		897
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.02	0.02	0.35	0.55		0.74		0.47

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 8: A St & Richards St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	1	160	2	324	1	451	80	37	319	0
Future Volume (vph)	1	1	1	160	2	324	1	451	80	37	319	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.91			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Frt	1.00	0.93		1.00	0.85			0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	838	782		1339	1316			1469			1565	
Flt Permitted	0.31	1.00		0.75	1.00			1.00			0.89	
Satd. Flow (perm)	269	782		1062	1316			1469			1402	
Peak-hour factor, PHF	0.38	0.38	0.38	0.97	0.97	0.97	0.77	0.77	0.77	0.84	0.84	0.84
Adj. Flow (vph)	3	3	3	165	2	334	1	586	104	44	380	0
RTOR Reduction (vph)	0	2	0	0	19	0	0	4	0	0	0	0
Lane Group Flow (vph)	3	4	0	165	317	0	0	687	0	0	424	0
Confl. Peds. (#/hr)	2		1	1		2	29		330	330		29
Confl. Bikes (#/hr)									77			8
Heavy Vehicles (%)	100%	100%	100%	17%	50%	4%	100%	2%	14%	6%	7%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1			1		
Actuated Green, G (s)	26.3	26.3		26.3	26.3			63.7			63.7	
Effective Green, g (s)	26.3	26.3		26.3	26.3			63.7			63.7	
Actuated g/C Ratio	0.26	0.26		0.26	0.26			0.64			0.64	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	70	205		279	346			935			893	
v/s Ratio Prot		0.00			c0.24							
v/s Ratio Perm	0.01			0.16				0.47			0.30	
v/c Ratio	0.04	0.02		0.59	0.92			0.73			0.47	
Uniform Delay, d1	27.5	27.3		32.2	35.8			12.4			9.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.15	
Incremental Delay, d2	0.1	0.0		2.2	27.5			5.1			1.7	
Delay (s)	27.6	27.3		34.4	63.2			17.5			12.6	
Level of Service	C	C		C	E			B			B	
Approach Delay (s)		27.4			53.7			17.5			12.6	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

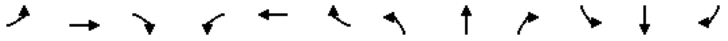
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	75	67	80	85	140	232	500	205	90	115
Future Volume (vph)	75	67	80	85	140	232	500	205	90	115
Lane Group Flow (vph)	0	176	0	188	159	0	871	244	0	625
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2		2			1			1
Permitted Phases	2		2		2	1		1	1	
Detector Phase	2	2	2	2	2	1	1	1	1	1
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.65		0.67	0.34		1.35	0.28		1.17
Control Delay		33.7		36.0	6.1		187.7	2.1		111.4
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0
Total Delay		33.7		36.0	6.1		187.7	2.1		111.4
Queue Length 50th (ft)		61		69	0		~460	0		~270
Queue Length 95th (ft)		118		126	38		#665	22		#273
Internal Link Dist (ft)		124		125			345			386
Turn Bay Length (ft)								245		
Base Capacity (vph)		366		378	578		644	862		534
Starvation Cap Reductn		0		0	0		0	0		0
Spillback Cap Reductn		0		0	0		0	0		0
Storage Cap Reductn		0		0	0		0	0		0
Reduced v/c Ratio		0.48		0.50	0.28		1.35	0.28		1.17

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 65.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ 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: 9: S Boston Bypass & Richards St/Cypher St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	67	15	80	85	140	232	500	205	90	115	332
Future Volume (vph)	75	67	15	80	85	140	232	500	205	90	115	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	14	16	16	12	13	12	12	14	12
Total Lost time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00		1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	
Frt		0.99			1.00	0.85		1.00	0.85		0.92	
Flt Protected		0.98			0.98	1.00		0.98	1.00		0.99	
Satd. Flow (prot)		1596			1620	1596		1588	1275		1507	
Flt Permitted		0.76			0.78	1.00		0.67	1.00		0.50	
Satd. Flow (perm)		1235			1295	1596		1075	1275		764	
Peak-hour factor, PHF	0.89	0.89	0.89	0.88	0.88	0.88	0.84	0.84	0.84	0.86	0.86	0.86
Adj. Flow (vph)	84	75	17	91	97	159	276	595	244	105	134	386
RTOR Reduction (vph)	0	6	0	0	0	125	0	0	98	0	75	0
Lane Group Flow (vph)	0	170	0	0	188	34	0	871	146	0	550	0
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	3%	7%	24%	10%	1%	2%	13%	14%	6%	22%	7%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2		2	1		1	1		
Actuated Green, G (s)		14.1			14.1	14.1		39.1	39.1		39.1	
Effective Green, g (s)		14.1			14.1	14.1		39.1	39.1		39.1	
Actuated g/C Ratio		0.22			0.22	0.22		0.60	0.60		0.60	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)		267			280	345		644	764		458	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.15	0.02		c0.81	0.11		0.72	
v/c Ratio		0.64			0.67	0.10		1.35	0.19		1.20	
Uniform Delay, d1		23.2			23.4	20.5		13.1	5.9		13.1	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		3.6			4.9	0.0		168.7	0.6		109.5	
Delay (s)		26.8			28.3	20.5		181.8	6.5		122.6	
Level of Service		C			C	C		F	A		F	
Approach Delay (s)		26.8			24.7			143.4			122.6	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	110.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	20	110	415	447	50
Future Vol, veh/h	10	20	110	415	447	50
Conflicting Peds, #/hr	64	4	159	0	0	159
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	56	88	88	83	83
Heavy Vehicles, %	25	25	4	4	5	4
Mvmt Flow	18	36	125	472	539	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1514	732	758	0	-	0
Stage 1	728	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	6.65	6.45	4.14	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.525	2.236	-	-	-
Pot Cap-1 Maneuver	117	385	844	-	-	-
Stage 1	439	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	67	330	727	-	-	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	290	-	-	-	-	-
Stage 2	354	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44.5	2.3	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	727	-	143	-	-
HCM Lane V/C Ratio	0.172	-	0.375	-	-
HCM Control Delay (s)	11	0	44.5	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.6	-	1.6	-	-

Intersection	
Int Delay, s/veh	21.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	36	10	1	25	265	495	15	15	310	142
Future Vol, veh/h	5	5	36	10	1	25	265	495	15	15	310	142
Conflicting Peds, #/hr	3	0	149	149	0	3	94	0	250	250	0	94
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	85	85	85	90	90	90	83	83	83
Heavy Vehicles, %	0	0	0	10	0	9	0	0	0	0	6	0
Mvmt Flow	7	7	51	12	1	29	294	550	17	18	373	171

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1754	1994	702	2070	2071	812	638	0	0	817	0	0
Stage 1	589	589	-	1397	1397	-	-	-	-	-	-	-
Stage 2	1165	1405	-	673	674	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.2	6.5	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.59	4	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	67	61	442	38	55	368	956	-	-	820	-	-
Stage 1	498	499	-	168	210	-	-	-	-	-	-	-
Stage 2	239	208	-	432	457	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	31	21	343	~ 9	19	280	878	-	-	625	-	-
Mov Cap-2 Maneuver	31	21	-	~ 9	19	-	-	-	-	-	-	-
Stage 1	233	439	-	65	82	-	-	-	-	-	-	-
Stage 2	107	81	-	293	402	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	111.5	$ 536.6	3.8	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	878	-	-	91	29	625	-	-
HCM Lane V/C Ratio	0.335	-	-	0.722	1.46	0.029	-	-
HCM Control Delay (s)	11.2	0	-	111.5	$ 536.6	10.9	0	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	1.5	-	-	3.6	4.9	0.1	-	-

Notes

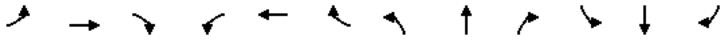
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	220	225	665	160	265	115	415	30	205	90
Future Volume (vph)	220	225	665	160	265	115	415	30	205	90
Lane Group Flow (vph)	308	247	361	623	294	128	461	0	273	105
Turn Type	NA	pt+ov	Split	NA	D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2 3	1	1	3	3 4	3 4		4	2 4
Permitted Phases					4			4		
Detector Phase	2	2 3	1	1	3	3 4	3 4	4	4	2 4
Switch Phase										
Minimum Initial (s)	8.0		8.0	8.0	8.0			8.0	8.0	
Minimum Split (s)	26.0		26.0	26.0	30.0			13.0	13.0	
Total Split (s)	30.0		35.0	35.0	30.0			15.0	15.0	
Total Split (%)	27.3%		31.8%	31.8%	27.3%			13.6%	13.6%	
Yellow Time (s)	3.0		3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0			2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0				0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0				5.0	
Lead/Lag	Lag		Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	Max		C-Max	C-Max	Max			Min	Min	
v/c Ratio	0.44	0.33	1.00	0.88dl	0.72	0.21	0.80		1.10	0.20
Control Delay	29.9	16.9	88.5	44.6	38.8	25.2	43.6		133.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	29.9	16.9	88.5	44.6	38.8	25.2	43.6		133.6	3.6
Queue Length 50th (ft)	97	104	280	219	161	62	289		~115	0
Queue Length 95th (ft)	144	186	#493	292	248	107	#455		#188	17
Internal Link Dist (ft)	378			513		267			265	
Turn Bay Length (ft)		165	275							125
Base Capacity (vph)	703	747	361	788	410	621	576		248	514
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.44	0.33	1.00	0.79	0.72	0.21	0.80		1.10	0.20

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 40 (36%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 1: I-90 Ramps/B St & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	220	225	665	160	80	265	115	415	30	205	90
Future Volume (vph)	60	220	225	665	160	80	265	115	415	30	205	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	16	11	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		0.95	1.00	0.91	0.91		1.00	1.00	1.00		0.95	1.00
Frpb, ped/bikes		1.00	1.00	1.00	0.96		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00	0.95	0.97		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		3097	1425	1327	2850		1547	1710	1584		3041	1391
Flt Permitted		0.99	1.00	0.95	0.97		0.40	1.00	1.00		0.89	1.00
Satd. Flow (perm)		3097	1425	1327	2850		651	1710	1584		2731	1391
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	66	242	247	723	174	87	294	128	461	35	238	105
RTOR Reduction (vph)	0	0	35	0	11	0	0	0	0	0	0	72
Lane Group Flow (vph)	0	308	213	361	612	0	294	128	461	0	273	33
Confl. Peds. (#/hr)						166						20
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	3%	4%	2%	4%	3%	1%	5%	0%	4%	0%	3%	1%
Turn Type	Split	NA	pt+ov	Split	NA		D.P+P	NA	Prot	Perm	NA	pt+ov
Protected Phases	2	2	2 3	1	1		3	3 4	3 4		4	2 4
Permitted Phases							4			4		
Actuated Green, G (s)		25.0	55.0	30.0	30.0		35.0	40.0	40.0		10.0	35.0
Effective Green, g (s)		25.0	55.0	30.0	30.0		35.0	40.0	40.0		10.0	35.0
Actuated g/C Ratio		0.23	0.50	0.27	0.27		0.32	0.36	0.36		0.09	0.32
Clearance Time (s)		5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0				2.0	
Lane Grp Cap (vph)		703	712	361	777		410	621	576		248	442
v/s Ratio Prot		c0.10	0.15	c0.27	0.21		0.16	0.07	c0.29			0.02
v/s Ratio Perm							0.07				c0.10	
v/c Ratio		0.44	0.30	1.00	0.88dl		0.72	0.21	0.80		1.10	0.08
Uniform Delay, d1		36.5	16.2	40.0	37.1		31.7	24.1	31.4		50.0	26.2
Progression Factor		0.76	1.34	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		1.8	1.0	47.4	7.9		4.9	0.1	7.4		86.8	0.0
Delay (s)		29.6	22.6	87.4	45.0		36.6	24.1	38.8		136.8	26.2
Level of Service		C	C	F	D		D	C	D		F	C
Approach Delay (s)		26.5			60.5			35.9			106.1	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	52.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	95	360	415	40	175	65	155	95
Future Volume (vph)	95	360	415	40	175	65	155	95
Lane Group Flow (vph)	101	383	536	50	282	127	120	107
Turn Type	Perm	NA	NA	Split	NA	Prot	Prot	Prot
Protected Phases		1	1	6	6	5	5	5
Permitted Phases	1							
Detector Phase	1	1	1	6	6	5	5	5
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	32.0	32.0	32.0	31.0	31.0	33.5	33.5	33.5
Total Split (s)	32.0	32.0	32.0	44.0	44.0	34.0	34.0	34.0
Total Split (%)	29.1%	29.1%	29.1%	40.0%	40.0%	30.9%	30.9%	30.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.34	0.49	0.39	0.15	0.80	0.59	0.62	0.54
Control Delay	30.9	29.8	14.3	33.2	57.4	53.6	56.9	52.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	29.8	14.3	33.2	57.4	53.6	56.9	52.0
Queue Length 50th (ft)	52	203	111	29	190	87	86	72
Queue Length 95th (ft)	m72	m290	m213	50	225	127	129	111
Internal Link Dist (ft)		439	378		213	281		
Turn Bay Length (ft)								
Base Capacity (vph)	299	779	1388	544	561	389	347	359
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	0.34	0.49	0.39	0.09	0.50	0.33	0.35	0.30

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	95	360	415	100	40	175	50	65	155	95
Future Volume (vph)	95	360	415	100	40	175	50	65	155	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	0.91	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.97		0.94	0.85	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (prot)	1431	1660	2930		1577	1626		1532	1367	1411
Flt Permitted	0.42	1.00	1.00		0.95	1.00		0.97	1.00	1.00
Satd. Flow (perm)	631	1660	2930		1577	1626		1532	1367	1411
Peak-hour factor, PHF	0.94	0.94	0.96	0.96	0.80	0.80	0.80	0.89	0.89	0.89
Adj. Flow (vph)	101	383	432	104	50	219	62	73	174	107
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0
Lane Group Flow (vph)	101	383	523	0	50	282	0	127	120	107
Confl. Peds. (#/hr)	153			153	7		20	7		20
Confl. Bikes (#/hr)				11						
Heavy Vehicles (%)	0%	3%	3%	4%	3%	1%	0%	2%	1%	3%
Parking (#/hr)				2						
Turn Type	Perm	NA	NA		Split	NA		Prot	Prot	Prot
Protected Phases		1	1		6	6		5	5	5
Permitted Phases	1									
Actuated Green, G (s)	51.7	51.7	51.7		23.8	23.8		15.5	15.5	15.5
Effective Green, g (s)	51.7	51.7	51.7		23.8	23.8		15.5	15.5	15.5
Actuated g/C Ratio	0.47	0.47	0.47		0.22	0.22		0.14	0.14	0.14
Clearance Time (s)	7.0	7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	296	780	1377		341	351		215	192	198
v/s Ratio Prot		c0.23	0.18		0.03	c0.17		0.08	c0.09	0.08
v/s Ratio Perm	0.16									
v/c Ratio	0.34	0.49	0.38		0.15	0.80		0.59	0.62	0.54
Uniform Delay, d1	18.4	20.1	18.8		34.9	40.9		44.3	44.5	43.9
Progression Factor	1.16	1.18	0.65		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.2	0.6		0.1	11.8		2.9	4.5	1.6
Delay (s)	23.1	24.8	12.9		35.0	52.7		47.2	49.0	45.6
Level of Service	C	C	B		C	D		D	D	D
Approach Delay (s)		24.5	12.9			50.0		47.3		
Approach LOS		C	B			D		D		

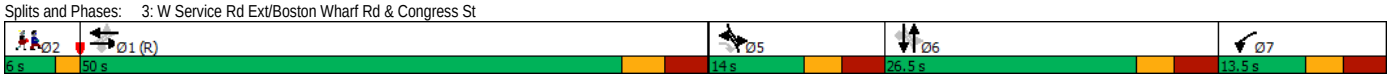
Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

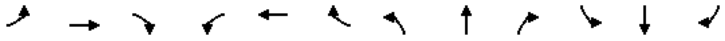
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø2
Lane Configurations											
Traffic Volume (vph)	40	285	320	185	310	100	100	60	250	90	
Future Volume (vph)	40	285	320	185	310	100	100	60	250	90	
Lane Group Flow (vph)	0	353	348	226	408	111	233	0	369	107	
Turn Type	Perm	NA	custom	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		1		7	1	5	6	5	6		2
Permitted Phases	1		1 5	1		6		6		6	
Detector Phase	1	1	1 5	7	1	5	6	5	6	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0		7.0	10.0	7.0	8.0	7.0	8.0	8.0	1.0
Minimum Split (s)	24.5	24.5		13.5	24.5	13.5	25.5	13.5	25.5	25.5	6.0
Total Split (s)	50.0	50.0		13.5	50.0	14.0	26.5	14.0	26.5	26.5	6.0
Total Split (%)	45.5%	45.5%		12.3%	45.5%	12.7%	24.1%	12.7%	24.1%	24.1%	5%
Yellow Time (s)	3.5	3.5		3.0	3.5	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0		6.5	7.0	6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag			Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max		None	C-Max	None	Ped	None	Ped	Ped	Ped
v/c Ratio		0.69	0.47	0.62	0.68	0.44	0.84		1.29	0.29	
Control Delay		16.6	6.1	21.0	26.0	35.2	62.1		184.7	1.9	
Queue Delay		0.3	0.9	0.0	0.3	0.0	0.0		0.0	0.0	
Total Delay		16.9	7.0	21.0	26.3	35.2	62.1		184.7	1.9	
Queue Length 50th (ft)		110	67	68	234	58	132		~305	0	
Queue Length 95th (ft)		m139	m81	62	107	105	#271		#468	0	
Internal Link Dist (ft)		349			439		826		274		
Turn Bay Length (ft)											
Base Capacity (vph)		510	748	362	598	256	276		287	372	
Starvation Cap Reductn		16	183	0	19	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		0.71	0.62	0.62	0.70	0.43	0.84		1.29	0.29	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 42 (38%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: W Service Rd Ext/Boston Wharf Rd & Congress St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	285	320	185	310	25	100	100	110	60	250	90
Future Volume (vph)	40	285	320	185	310	25	100	100	110	60	250	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	12	11	8	12	11	11	12
Total Lost time (s)		7.0	7.0	6.5	7.0		6.5	6.5			6.5	6.5
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.96		1.00	0.97			1.00	0.84
Flpb, ped/bikes		0.98	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		1582	1197	1495	1525		1525	1315			1637	1197
Flt Permitted		0.82	1.00	0.43	1.00		0.52	1.00			0.59	1.00
Satd. Flow (perm)		1306	1197	677	1525		832	1315			973	1197
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	43	310	348	226	378	30	111	111	122	71	298	107
RTOR Reduction (vph)	0	0	127	0	2	0	0	36	0	0	0	87
Lane Group Flow (vph)	0	353	221	226	406	0	111	197	0	0	369	20
Confl. Peds. (#/hr)	230		1	1		230			23			86
Confl. Bikes (#/hr)			7			8						2
Heavy Vehicles (%)	18%	3%	5%	5%	3%	0%	3%	0%	2%	0%	0%	2%
Parking (#/hr)			2									
Turn Type	Perm	NA	custom	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		1		7	1		5	6		5	6	
Permitted Phases	1		1 5	1			6			6		6
Actuated Green, G (s)		43.0	57.4	50.0	43.0		27.5	20.1			27.5	20.1
Effective Green, g (s)		43.0	57.4	50.0	43.0		27.5	20.1			27.5	20.1
Actuated g/C Ratio		0.39	0.52	0.45	0.39		0.25	0.18			0.25	0.18
Clearance Time (s)		7.0		6.5	7.0		6.5	6.5			6.5	6.5
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		510	624	359	596		254	240			287	218
v/s Ratio Prot				c0.04	0.27		0.03	0.15			c0.09	
v/s Ratio Perm		c0.27	0.18	0.25			0.08				c0.23	0.02
v/c Ratio		0.69	0.35	0.63	0.68		0.44	0.82			1.29	0.09
Uniform Delay, d1		28.0	15.4	22.5	27.8		33.4	43.2			41.2	37.3
Progression Factor		0.46	1.26	0.81	0.71		1.00	1.00			1.00	1.00
Incremental Delay, d2		3.1	0.1	2.4	6.0		0.4	18.8			152.4	0.1
Delay (s)		16.1	19.5	20.8	25.6		33.8	62.1			193.6	37.4
Level of Service		B	B	C	C		C	E			F	D
Approach Delay (s)		17.8			23.9			52.9			158.5	
Approach LOS		B			C			D			F	

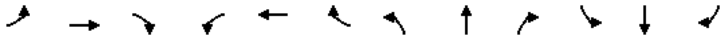
Intersection Summary				
HCM 2000 Control Delay	56.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.5	
Intersection Capacity Utilization	96.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	Ø2
Lane Configurations								
Traffic Volume (vph)	40	425	171	180	260	45	220	
Future Volume (vph)	40	425	171	180	260	45	220	
Lane Group Flow (vph)	0	505	186	212	377	242	272	
Turn Type	Perm	NA	Perm	D.P+P	NA	NA	Prot	
Protected Phases		1		5	1 5	4	4	2
Permitted Phases	1		1	1				
Detector Phase	1	1	1	5	1 5	4	4	
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	6.0		8.0	8.0	1.0
Minimum Split (s)	18.5	18.5	18.5	12.5		14.5	14.5	24.0
Total Split (s)	42.0	42.0	42.0	20.0		24.0	24.0	24.0
Total Split (%)	38.2%	38.2%	38.2%	18.2%		21.8%	21.8%	22%
Yellow Time (s)	4.0	4.0	4.0	3.0		4.0	4.0	2.0
All-Red Time (s)	4.5	4.5	4.5	3.5		2.5	2.5	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		8.5	8.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes					Yes
Recall Mode	C-Max	C-Max	C-Max	None		None	None	None
v/c Ratio		0.70	0.48	0.53	0.49	0.94	1.27	
Control Delay		40.1	36.1	17.2	16.3	88.9	190.0	
Queue Delay		0.0	0.0	0.0	0.5	0.0	0.0	
Total Delay		40.1	36.1	17.2	16.8	88.9	190.0	
Queue Length 50th (ft)		165	107	56	101	171	~242	
Queue Length 95th (ft)		228	178	93	160	#272	#351	
Internal Link Dist (ft)		494			349	441		
Turn Bay Length (ft)							100	
Base Capacity (vph)		719	389	398	768	258	215	
Starvation Cap Reductn		0	0	0	129	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.70	0.48	0.53	0.59	0.94	1.27	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ 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: A St/Thompson Pl & Congress St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	425	171	180	260	60	151	45	220	0	0	0
Future Volume (vph)	40	425	171	180	260	60	151	45	220	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	11	11	12	10	12	10	12	12	12
Total Lost time (s)		8.5	8.5	6.5	8.5			6.5	6.5			
Lane Util. Factor		0.95	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	0.97			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00			
Satd. Flow (prot)		2927	1280	1540	1565			1627	1357			
Flt Permitted		0.80	1.00	0.40	1.00			0.96	1.00			
Satd. Flow (perm)		2364	1280	649	1565			1627	1357			
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	43	462	186	212	306	71	186	56	272	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	505	186	212	368	0	0	242	272	0	0	0
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	5%	7%	6%	2%	2%	3%	1%	2%	0%	2%	2%	2%
Turn Type	Perm	NA	Perm	D.P+P	NA		Split	NA	Prot			
Protected Phases		1		5	1 5		4	4	4			
Permitted Phases	1		1	1								
Actuated Green, G (s)		33.5	33.5	47.0	53.5			17.5	17.5			
Effective Green, g (s)		33.5	33.5	47.0	47.0			17.5	17.5			
Actuated g/C Ratio		0.30	0.30	0.43	0.43			0.16	0.16			
Clearance Time (s)		8.5	8.5	6.5				6.5	6.5			
Vehicle Extension (s)		2.0	2.0	2.0				2.0	2.0			
Lane Grp Cap (vph)		719	389	386	668			258	215			
v/s Ratio Prot				0.07	c0.24			0.15	c0.20			
v/s Ratio Perm		c0.21	0.15	0.17								
v/c Ratio		0.70	0.48	0.55	0.55			0.94	1.27			
Uniform Delay, d1		33.8	31.1	21.1	23.6			45.7	46.2			
Progression Factor		1.00	1.00	0.79	0.77			1.00	1.00			
Incremental Delay, d2		5.7	4.2	0.7	0.5			38.7	150.9			
Delay (s)		39.5	35.3	17.5	18.7			84.4	197.1			
Level of Service		D	D	B	B			F	F			
Approach Delay (s)		38.4			18.3			144.0			0.0	
Approach LOS		D			B			F			A	

Intersection Summary			
HCM 2000 Control Delay	62.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	75	101	341	281
Future Volume (vph)	75	101	341	281
Lane Group Flow (vph)	238	0	486	413
Turn Type	Prot	Perm	NA	NA
Protected Phases	5		1	1
Permitted Phases		1		
Detector Phase	5	1	1	1
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	44.0	44.0	44.0
Total Split (s)	27.0	73.0	73.0	73.0
Total Split (%)	27.0%	73.0%	73.0%	73.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
v/c Ratio	0.86		0.53	0.33
Control Delay	51.9		7.9	5.9
Queue Delay	0.0		0.0	0.0
Total Delay	51.9		7.9	5.9
Queue Length 50th (ft)	94		97	76
Queue Length 95th (ft)	#194		166	128
Internal Link Dist (ft)	208		310	441
Turn Bay Length (ft)				
Base Capacity (vph)	340		920	1241
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.70		0.53	0.33

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: A St & Melcher St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	75	142	101	341	281	70
Future Volume (vph)	75	142	101	341	281	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	16	12
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.87			1.00	0.93	
Flpb, ped/bikes	1.00			0.96	1.00	
Frt	0.91			1.00	0.97	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1233			1512	1683	
Flt Permitted	0.98			0.82	1.00	
Satd. Flow (perm)	1233			1253	1683	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.85	0.85
Adj. Flow (vph)	82	156	111	375	331	82
RTOR Reduction (vph)	73	0	0	0	7	0
Lane Group Flow (vph)	165	0	0	486	406	0
Confl. Peds. (#/hr)	43	64	140			140
Heavy Vehicles (%)	5%	9%	9%	2%	4%	4%
Parking (#/hr)		1				1
Turn Type	Prot		Perm	NA	NA	
Protected Phases	5			1	1	
Permitted Phases			1			
Actuated Green, G (s)	16.6			73.4	73.4	
Effective Green, g (s)	16.6			73.4	73.4	
Actuated g/C Ratio	0.17			0.73	0.73	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	204			919	1235	
v/s Ratio Prot	c0.13				0.24	
v/s Ratio Perm				c0.39		
v/c Ratio	0.81			0.53	0.33	
Uniform Delay, d1	40.2			5.8	4.7	
Progression Factor	1.00			0.80	1.00	
Incremental Delay, d2	19.3			2.2	0.7	
Delay (s)	59.5			6.8	5.4	
Level of Service	E			A	A	
Approach Delay (s)	59.5			6.8	5.4	
Approach LOS	E			A	A	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

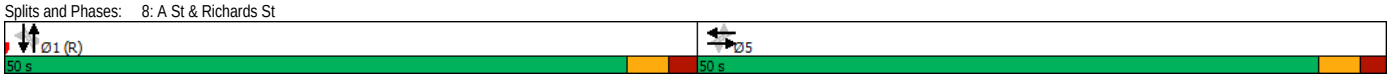
c Critical Lane Group

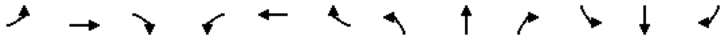
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	0	180	0	264	62	555
Future Volume (vph)	1	0	180	0	264	62	555
Lane Group Flow (vph)	2	2	194	130	397	0	717
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		5		5	1		1
Permitted Phases	5		5			1	
Detector Phase	5	5	5	5	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.02	0.01	0.76	0.38	0.43		0.71
Control Delay	26.0	0.0	54.8	15.9	9.7		18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	26.0	0.0	54.8	15.9	9.7		18.3
Queue Length 50th (ft)	1	0	117	26	93		265
Queue Length 95th (ft)	4	0	174	69	200		476
Internal Link Dist (ft)		195		263	148		999
Turn Bay Length (ft)							
Base Capacity (vph)	252	700	532	619	928		1005
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.01	0.00	0.36	0.21	0.43		0.71

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 8: A St & Richards St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	180	0	121	0	264	85	62	555	0
Future Volume (vph)	1	0	1	180	0	121	0	264	85	62	555	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.97			0.87			1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			0.97	
Frt	1.00	0.85		1.00	0.85			0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	834	1414		1485	1278			1347			1578	
Flt Permitted	0.64	1.00		0.76	1.00			1.00			0.92	
Satd. Flow (perm)	561	1414		1183	1278			1347			1461	
Peak-hour factor, PHF	0.50	0.50	0.50	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	2	0	2	194	0	130	0	300	97	72	645	0
RTOR Reduction (vph)	0	2	0	0	64	0	0	7	0	0	0	0
Lane Group Flow (vph)	2	0	0	194	66	0	0	390	0	0	717	0
Confl. Peds. (#/hr)	3		3	3		3	59		290	290		59
Confl. Bikes (#/hr)									20			59
Heavy Vehicles (%)	100%	0%	0%	5%	0%	7%	0%	3%	16%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1			1		
Actuated Green, G (s)	21.5	21.5		21.5	21.5			68.5			68.5	
Effective Green, g (s)	21.5	21.5		21.5	21.5			68.5			68.5	
Actuated g/C Ratio	0.22	0.22		0.22	0.22			0.68			0.68	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	120	304		254	274			922			1000	
v/s Ratio Prot		0.00			0.05			0.29				
v/s Ratio Perm	0.00			c0.16							c0.49	
v/c Ratio	0.02	0.00		0.76	0.24			0.42			0.72	
Uniform Delay, d1	30.9	30.8		36.9	32.5			7.0			9.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.11	
Incremental Delay, d2	0.0	0.0		11.6	0.2			1.4			4.3	
Delay (s)	30.9	30.8		48.4	32.7			8.4			15.2	
Level of Service	C	C		D	C			A			B	
Approach Delay (s)		30.9			42.1			8.4			15.2	
Approach LOS		C			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	89.8%	ICU Level of Service	E	
Analysis Period (min)	15			

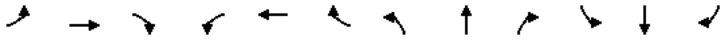
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	160	127	125	66	140	100	380	130	240	345
Future Volume (vph)	160	127	125	66	140	100	380	130	240	345
Lane Group Flow (vph)	0	465	0	217	159	0	546	148	0	874
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2		2			1			1
Permitted Phases	2		2		2	1		1	1	
Detector Phase	2	2	2	2	2	1	1	1	1	1
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		1.39		0.78	0.30		0.80	0.18		1.58
Control Delay		217.2		45.7	5.5		24.0	2.1		290.7
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0
Total Delay		217.2		45.7	5.5		24.0	2.1		290.7
Queue Length 50th (ft)		~269		86	0		171	0		~548
Queue Length 95th (ft)		#367		#188	38		#351	21		#763
Internal Link Dist (ft)		124		125			345			386
Turn Bay Length (ft)								245		
Base Capacity (vph)		335		278	530		681	827		552
Starvation Cap Reductn		0		0	0		0	0		0
Spillback Cap Reductn		0		0	0		0	0		0
Storage Cap Reductn		0		0	0		0	0		0
Reduced v/c Ratio		1.39		0.78	0.30		0.80	0.18		1.58

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ 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: 9: S Boston Bypass & Richards St/Cypher St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	127	80	125	66	140	100	380	130	240	345	210
Future Volume (vph)	160	127	80	125	66	140	100	380	130	240	345	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	14	16	16	12	13	12	12	14	12
Total Lost time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		0.99			1.00	0.96		1.00	0.98		1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	
Frt		0.97			1.00	0.85		1.00	0.85		0.96	
Flt Protected		0.98			0.97	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		1607			1792	1527		1682	1368		1664	
Flt Permitted		0.72			0.55	1.00		0.72	1.00		0.57	
Satd. Flow (perm)		1181			1026	1527		1224	1368		958	
Peak-hour factor, PHF	0.79	0.79	0.79	0.88	0.88	0.88	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	203	161	101	142	75	159	114	432	148	264	379	231
RTOR Reduction (vph)	0	15	0	0	0	116	0	0	66	0	19	0
Lane Group Flow (vph)	0	450	0	0	217	43	0	546	82	0	855	0
Confl. Peds. (#/hr)	6		2	2		6			1	1		
Confl. Bikes (#/hr)			6			4						
Heavy Vehicles (%)	1%	6%	4%	6%	2%	4%	0%	5%	4%	2%	5%	5%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2		2	1		1	1		
Actuated Green, G (s)		19.0			19.0	19.0		39.0	39.0		39.0	
Effective Green, g (s)		19.0			19.0	19.0		39.0	39.0		39.0	
Actuated g/C Ratio		0.27			0.27	0.27		0.56	0.56		0.56	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)		320			278	414		681	762		533	
v/s Ratio Prot												
v/s Ratio Perm		c0.38			0.21	0.03		0.45	0.06		c0.89	
v/c Ratio		1.41			0.78	0.10		0.80	0.11		1.60	
Uniform Delay, d1		25.5			23.6	19.1		12.4	7.3		15.5	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		201.1			12.3	0.0		9.6	0.3		280.9	
Delay (s)		226.6			35.9	19.2		22.1	7.6		296.4	
Level of Service		F			D	B		C	A		F	
Approach Delay (s)		226.6			28.8			19.0			296.4	
Approach LOS		F			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	161.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	10.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	95	20	356	398	20
Future Vol, veh/h	70	95	20	356	398	20
Conflicting Peds, #/hr	47	1	178	0	0	178
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	93	93	92	92
Heavy Vehicles, %	0	6	18	4	5	7
Mvmt Flow	81	110	22	383	433	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1096	623	633	0	-	0
Stage 1	622	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Critical Hdwy	6.4	6.26	4.28	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.354	2.362	-	-	-
Pot Cap-1 Maneuver	238	479	878	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	164	404	742	-	-	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	438	-	-	-	-	-
Stage 2	532	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	55.5	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	742	-	249	-	-
HCM Lane V/C Ratio	0.029	-	0.771	-	-
HCM Control Delay (s)	10	0	55.5	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	5.6	-	-

Intersection	
Int Delay, s/veh	114.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	56	30	202	5	1	30	70	290	20	25	430	38
Future Vol, veh/h	56	30	202	5	1	30	70	290	20	25	430	38
Conflicting Peds, #/hr	7	0	117	117	0	7	121	0	221	221	0	121
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	68	68	68	94	94	94	86	86	86
Heavy Vehicles, %	0	0	0	33	0	3	0	5	0	13	3	0
Mvmt Flow	67	36	243	7	1	44	74	309	21	29	500	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1198	1400	760	1526	1412	548	665	0	0	551	0	0
Stage 1	701	701	-	689	689	-	-	-	-	-	-	-
Stage 2	497	699	-	837	723	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.23	4.1	-	-	4.23	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.327	2.2	-	-	2.317	-	-
Pot Cap-1 Maneuver	164	142	409	82	139	534	934	-	-	966	-	-
Stage 1	433	444	-	390	450	-	-	-	-	-	-	-
Stage 2	559	445	-	320	434	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	113	84	322	8	83	419	835	-	-	763	-	-
Mov Cap-2 Maneuver	113	84	-	8	83	-	-	-	-	-	-	-
Stage 1	345	375	-	274	317	-	-	-	-	-	-	-
Stage 2	441	313	-	59	367	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 412.2	265.9	1.8	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	835	-	-	195	51	763	-	-
HCM Lane V/C Ratio	0.089	-	-	1.779	1.038	0.038	-	-
HCM Control Delay (s)	9.7	0	-	$ 412.2	265.9	9.9	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	24.3	4.6	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix D: Energy and Climate Change Supporting Documentation

Stationary Source Analysis

232 A Street
Boston, MA

Figure 1: Conceptual Rendering, Final Massing TBD

Greenhouse Gas Emissions Study

Prepared For:

Breakthrough Properties
Tishman Speyer

Prepared By:

The Green Engineer, Inc.
23 Bradford Street
Concord, MA 01742
978.369.8978

Report Date:
January 26th, 2024

Table of Contents

Executive Summary

This report contains the MEPA Greenhouse Gas Assessment (ZCBA) for the 232 A Street project, a new nine story, core and shell life sciences building. The project is in the conceptual design phase. The project intends to meet Article 37 by designing to LEEDv4 Gold certifiable standards and is assessing the feasibility of a future path to a net zero carbon building early in the design process.

The Green Engineer (TGE) performed building energy analysis comparing the proposed design to the ASHRAE 90.1-2019 Appendix G baseline and the Massachusetts prescriptive baseline equivalent. **The results of this analysis indicate that the proposed design complies with the MA "Opt-in" energy code on a Performance Energy Index (PEI) basis by 13% while also achieving a greenhouse gas (GHG) emissions reduction of 5.5%**. Figure 2 illustrates annual GHG emissions by fuel type. A detailed breakdown of PEI and GHG data is provided in section 3 of this report. A detailed breakdown of the baseline and design assumptions that achieve cited performance is provided in Appendix A.

Figure 2: Comparison of GHG Emissions by Fuel Type

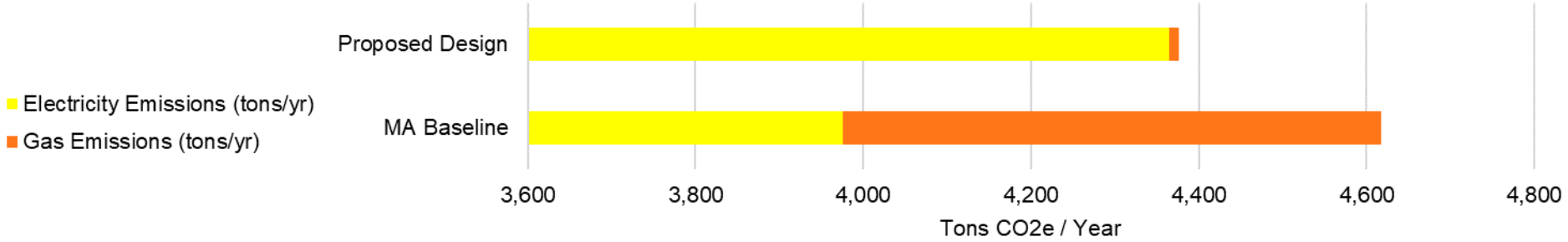
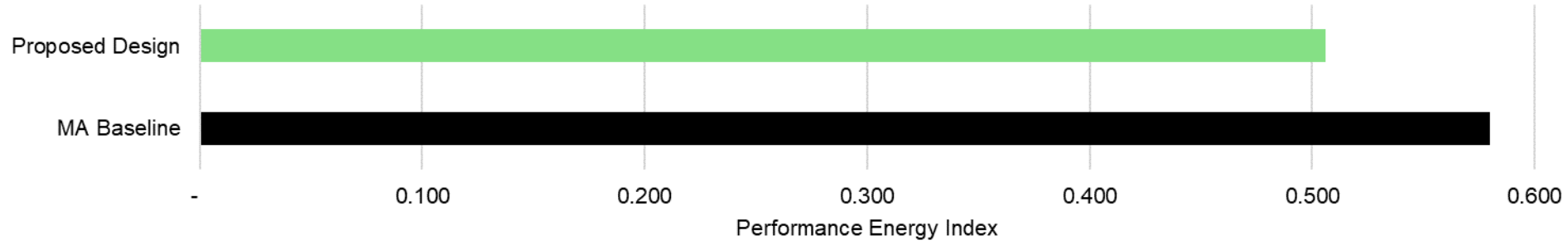


Figure 3: Comparison of Performance Energy Index



1. Project Overview

The proposed 232 A Street project includes the design and construction of a new ground up nine story 335,000 GSF Life Sciences building in Boston. The space program includes first floor amenities but the primary program is shell space for future Life Sciences tenants. There will be some parking below-grade that provides EV charging stations for at least 20% of all parking spaces. The overall quantity of parking provided within the development will target a 40-percent reduction from the ITE Transportation Planning Handbook. The current project team includes: Breakthrough Properties / Tishman Speyer, VHB, Payette, Cosentini, The Green Engineer, and many others. Project goals include:

- LEEDv4 Gold at a minimum
- Carbon emissions reduction that meets or exceeds BERDO 2025 requirements
- Energy performance that meets or exceeds the upcoming MA Opt-in code requirements

1.1 Proposed Design

The analysis incorporates multiple proposed energy conservation measures (ECMs) consistent with high performance laboratory design practices, as well as some beyond standard practices such as the electrification of primary space heating. Those measures include:

- An enhanced thermal envelope with assemblies that meet or exceed prescriptive code minimums
- C406.3 compliant reduced interior lighting power density in base building areas
- Laboratory ventilation energy recovery and demand control ventilation
- Heat recovery chiller as first stage heating & cooling plant
- Air to water heat pumps sized to meet 25% of design day heating capacity as second stage heating & cooling plant
- High efficiency chillers and condensing boilers as final stage heating & cooling plant
- C406.5 compliant rooftop solar PV
- Heat pump service water heating in base building areas

A summary of breakdown of vertical façade assembly U-value design targets is provided in Table 1.

Table 1: Vertical Facade U-Values

Envelope Insulation Summary

Component	Percent of Above-Grade Vertical Area	Derated U-value
Wall (framed, insulated)	49.5%	0.042
Glazed wall system	50.5%	see below
Opaque spandrel portion	12.6%	0.250
Vision portion	37.9%	0.250
Punched window vision glass	incl. above	incl. above

The project team cannot make a commitment to C406.9 at this time due to limited data on feasibility and corresponding risk. Achieving the C406.9 infiltration rate is highly dependent upon both contractor and product manufacturer's capabilities that are beyond the control and scope of the designer. For example, a recent passive house certified, large commercial building in Boston using comparable levels of unitized systems was only able to achieve measured infiltration

on the order of 0.36 cfm75/SF. This illustrates the stringency and difficulty of the current stretch code air leakage requirement, which will require market adaptation beyond the levels achievable as recent as 2023. Infiltration loads are extremely small in a laboratory building when compared to total building loads, particularly mechanical ventilation. Additionally, laboratory operations will require the building to maintain positive pressurization 24/7/365, which will effectively eliminate most infiltration loads.

Many design variables that will have an impact on energy performance are still under development, including massing. It is anticipated that relevant design solutions will meet or exceed the upcoming “opt-in” energy code requirements.

For further information regarding energy model input assumptions, refer to Appendix A: Energy Model Input Tables of this report.

1.1 Reference Baselines

The analysis methodology is based on MA amended 2023 energy code. An ASHRAE 90.1 Appendix G baseline was established according to the state energy code relative performance pathway. This established the performance energy index target. A second IECC-MA 2021 prescriptive baseline was established with an additional energy conservation measure necessary to achieve a PEI equal to the ASHRAE PEI target. The additional prescriptive option added to the MA baseline is demand control ventilation, which is not required under C403.7.1. All other MA baseline input assumptions are per IECC-MA 2021. See section three and Appendix A for further details.

2. C406.9 Renewable Energy Analysis

Due to the extensive rooftop equipment necessary to accommodate electrification, a solar veil (canopy) is proposed to avoid interference with other equipment. Solar veil area satisfies opt-in code requirements at 10,800 SF. A flat mounted installation, though less efficient than a tilted configuration, maximizes annual solar energy production per square foot of available area.

Preliminary PV study assumptions:

Assumed PV performance: 15.4 watts (peak)/sf (65 SF/kW)[1]
Estimated installation cost: $3.5/Watt (Peak)[2]
Estimated utility rate: $0.1878/ kWh (2022 EIA Average)
Estimated PV coverage: Equivalent to 100% of *Potential Solar Zone Area*

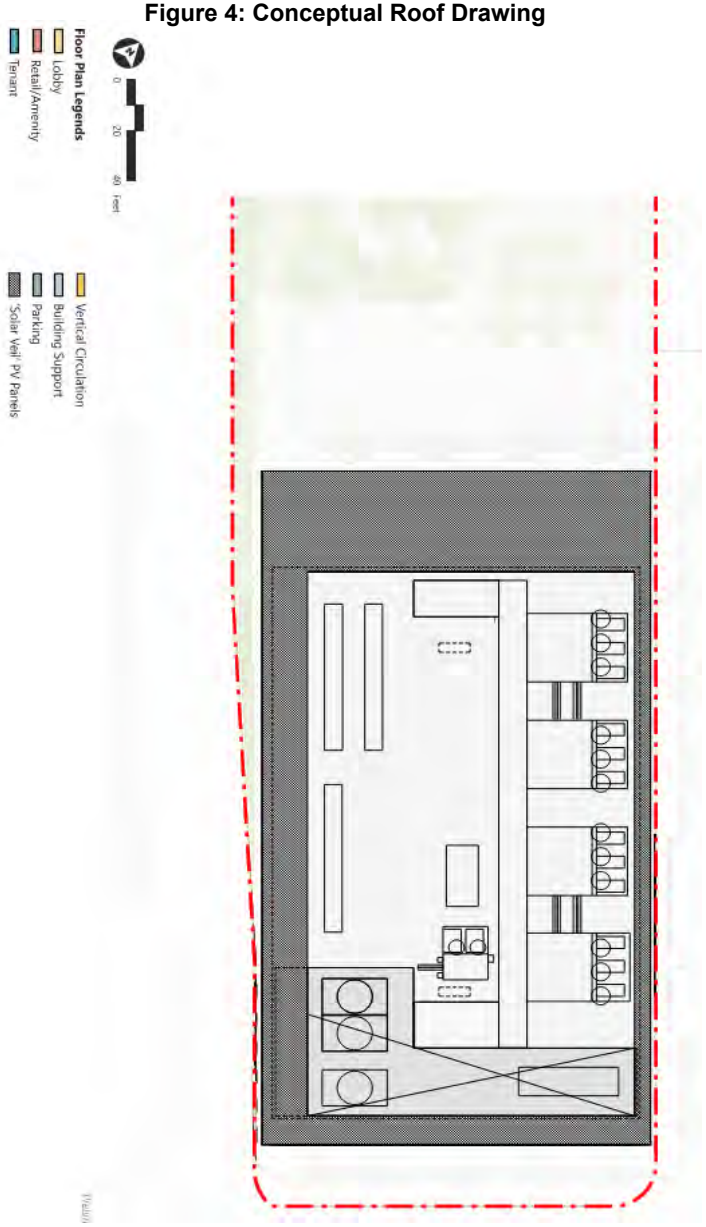
The PV potential was calculated using the PV Watts program. Detailed outputs of the analysis are provided in the following Table 2.

As the design progresses details such as areas required for set-backs and fire access, shafts and vents, roof mounted HVAC equipment, etc. will be refined. The net available capacity may change as the design progresses. The shaded region in Figure 4 depicts a "solar veil" approach to meeting the code requirement.

Table 2: Solar PV Cost Benefit Analysis

Available Roof (SF)	Array Size (kW)	Tilt (Deg)	Production (kWh/yr)	Value ($/yr)	Installation Cost ($)	Simple Payback (yrs)
10,800	162	0	181,602	34,105	567,000	17

Figure 4: Conceptual Roof Drawing



[1] Reference: ASHRAE Journal, Feasibility of ZNE by Building Type and Climate
www.eley.com/sites/default/files/pdfs/ASHRAE_Journal_July_2017_[36-37].pd

[2] Reference: MassCEC Solar Electricity Cost and Performance. Median installer costs for Middlesex County.
https://www.masscec.com/solar-costs-performance

3. Energy Savings Analysis

This section discusses the results of the energy analysis. The analysis was based on conceptual drawings and narrative coordination with the project team. The project intends to incorporate the design intent outlined here into the design development process, at a minimum. The project team is committed to incorporating energy efficiency measures that yield energy and carbon reduction targets while meeting budget goals.

The most significant energy conservation measures, starting with the most impactful include:

1. Demand control ventilation
2. Sensible heat recovery on the DOAS serving both laboratory and office areas.
3. Electrification of the space heating system accomplished with an air to water heat pump plant

These measures yield reduced energy use and reduced greenhouse gas emissions as shown in Table 3.

This is the anticipated effect of incorporating heat pumps and energy recovery into the design and significantly reduces onsite fossil fuel use.

Many design options were identified, analyzed and considered throughout this process, including massing, WWR, triple glazing, additional electrification etc. The cited approach is the most cost feasible solution of the options considered.

Greenhouse Gas Emissions factors used for this comparison are:

- Electricity – 654 lbs/MWhr
- Gas – 117 lbs/MMbtu

Table 3: Energy and GHG Performance Data

	Reference Baseline	***Code Minimum***	***Proposed***
	ASHRAE 90.1-2019 App.G Baseline	*Equals PEI_t, includes MA amended requirements*	*Improved over PEI_t*
Heating	48,231,242	10,955,358	4,579,149
Cooling	3,952,393	3,856,776	5,120,769
Interior Lighting	5,403,915	3,994,149	2,644,528
Interior Equipment	15,556,467	15,527,457	15,556,222
Fans	14,757,589	15,134,047	15,093,668
Pumps	1,224,652	1,460,777	2,088,184
Heat Rejection	1,317,228	1,512,717	663,591
Water Systems	670,000	335,000	167,500
Total	91,113,485	52,776,280	45,913,610
Unregulated Energy	15,556,467	15,527,457	15,556,222
Regulated Energy	75,557,019	37,248,823	30,357,388
Building Performance Factor (BPF)	0.51	-	-
Performance Energy Index Target (PEI_t)	0.594	-	-
Performance Energy Index (PEI)	-	0.579	0.504
% Improvement over PEI_t			**13%**
GHG Emissions (tons/yr)		4,649	4,393
% Improvement over PEIt			**5.5%**
Notes:	*Enduse energy units in kBtu*		

4. Cost Analysis

Conceptual feasibility and costing has been completed. The following incentive resources should be considered before the end of Schematic Design, which has not begun at the time of this report. These incentives are structured to increase adoption of heat pump technology specifically and can significantly reduce or eliminate a potential cost premium compared to a conventional fossil fuel based heating system.

- **MassSave[3] Utility Incentives:** The project is currently in concept design / planning stages and the utility incentive program has not been engaged. In order to maximize available incentives, the project should enroll in the MassSave program before 100% Schematic Design is complete.
- **Alternative Energy Credits (AEC's):** AEC's are financial incentives that function similarly to solar renewable energy credits (SREC's). Under the Massachusetts Alternative Energy Portfolio Standard[4], utilities must obtain a certain percentage of the electricity they serve from qualified energy sources. The owner of a renewable thermal energy system, such as heat pumps, can sell the benefit of the thermal energy produced back to the utilities in an open market bid system to help the utilities meet that requirement. This process is managed through a qualified third party aggregator who should be engaged early in the design process to ensure eligibility requirements are met.
- **Inflation Reduction Act (IRA):** Under the IRA, tax incentives may be available[5] to offset the capital cost premium of high performance energy conservation measures. A qualified tax accounting firm should be engaged early in the design process to ensure eligibility requirements are met.
- **179d Federal Tax Deductions:** This provision under the IRS code allows property owners to claim tax deductions for energy efficient design solutions up to $5/sf if IRS stipulations are met and verified by qualified entities.

[3] MassSave Utility Incentive Program
[4] Alternative Energy Portfolio Standard
[5] Inflation Reduction Act Guidebook

5. Modeling Methodology

The energy analysis was conducted using DesignBuilder v7. DesignBuilder uses the EnergyPlus simulation engine to estimate annual energy consumption by simulating a year of building operations based on a typical weather year and user inputs.

It is important to keep in mind the limitations of energy models when reviewing this information. Energy consumption is highly dependent on weather conditions, equipment operations & maintenance and the actual operating schedule of the building. The numbers generated will not necessarily be an accurate projection of actual energy costs but can serve as an accurate comparison between alternatives.

The analysis methodology followed DOER recommendations and compared the proposed design to both an ASHRAE 90.1 and IECC-MA 2021 amended baselines. The purpose of this energy modeling exercise is to assess the energy performance of proposed energy conservation measures against a standard industry practice fossil fuel baseline.

Appendix A: Energy Model Input Tables

Project Details			
Gross Building Area (SF)	335,000		
Space Program	60% Laboratory 40% Office		
Building Envelope			
Input Description	**90.1 2019 Baseline**	**MA Baseline**	**Design Case**
Roof Assembly	U-0.063	U-0.032	U-0.032
Wall Assembly (Aggregate)	U-0.084	U-0.055	U-0.084
Infiltration (ACH75)	1.0 cfm/sf @ 75Pa	0.35 cfm/sf @ 75Pa	0.35 cfm/sf @ 75Pa
Fenestration	U-0.57	U-0.25	U-0.25
WWR	40%	50.5%	50.5%
Internal loads			
Input Description	**90.1 2019 Baseline**	**MA Baseline**	**Design Case**
Lighting Power Density (w/sf)	1.40 - Laboratory 1.10 - Office	1.20 - Laboratory 0.55 - Office *(i)*	1.20 - Laboratory 0.55 - Office *(i)*
Process Loads (w/sf)	6 - Laboratory 1.5 - Office	No Change	No Change
HVAC (Air-side)			
Input Description	**90.1 2019 Baseline**	**MA Baseline**	**Design Case**
T-Stat Setpoints	76F Cooling 72F Heating 67F Unoccupied Heating 81F Unoccupied Cooling	No Change	No Change
HVAC System	Laboratory: System 7 - VAV with reheat Office (per floor): System 7 - VAV with reheat	No Change	DOAS + hydronic terminal units
Ventilation (cfm)	As per Design - 420,000	No Change	420,000
Design Airflow Rates	Autosized	No Change	420,000
Peak Fan Power (kW)	838 kW	No Change	1025 kW
Energy Recovery Effectiveness	Laboratory: System 7 - N/A Office (per floor): System 7 - 50% Enthalpy	Laboratory: System 7 - 50% Sensible Office (per floor): System 7 - 70% Enthalpy	50% Sensible
Demand Control Ventilation	Not required per 90.1	Laboratory VAV: Not required per C403.7.1; Included to achieve par with PEI_t	Included

HVAC (Waterside)

Input Description	**90.1 2019 Baseline**	**MA Baseline**	**Design Case**
Chiller Capacity	4 x 3024 Tons	4 x 2943 Tons	3 x 985 Tons
Chiller Efficiency	0.576 kW/ton (6.1 COP)	0.56 kW/ton (6.28 COP)	0.55 kW/Ton (6.4 COP)
Chiller-HRCH Capacity	N/A	N/A	300 Ton
Chiller-HRCH Efficiency	N/A	N/A	2.7 COP (cooling)
Boiler Capacity	2 x 30571 mbh	2 x 33211 mbh	8 x 5000 mbh
Boiler Efficiency	80%	95%	95%
AWHP Capacity	N/A	N/A	8,400 mbh Cooling 5,500 mbh Heating
AWHP Efficiency	N/A	N/A	4.4 COP Cooling 2.2 COP Heating (Annual Effective)
Plant Staging Controls	Sequential to meet load	No Change	HRC > AWHP > Chiller / Boiler
Service Hot Water	Electric resistance storage 1 COP	AWHP Storage 2 COP	AWHP Storage 4 COP

Miscellaneous

Input Description	**90.1 2019 Baseline**	**MA Baseline**	**Design Case**
Solar PV (ii)	N/A	162 kW	162 kW

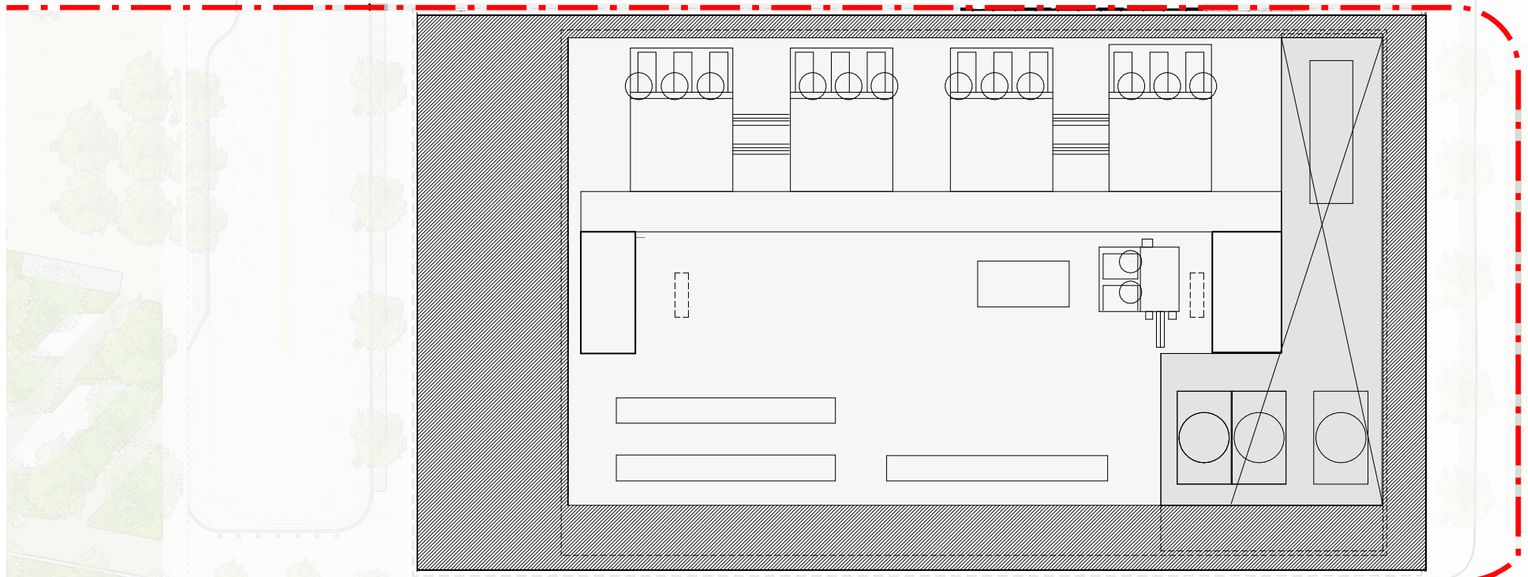
Notes:
(i): As per IECC 2021 Section C406.3
(ii): As per IECC 2021 Section C406.5

Appendix B: Additional Energy Model Output Data

	Reference Baseline *ASHRAE 90.1-2019 App.G Baseline*		***Code Minimum*** *Equals PEI_t, includes MA amended requirements*		***Proposed*** *Basis of Design*	
End Uses	**Electricity [kWh]**	**Natural Gas [Therms]**	**Electricity [kWh]**	**Natural Gas [Therms]**	**Electricity [kWh]**	**Natural Gas [Therms]**
Heating	-	482,312	-	109,554	1,282,726	2,025
Cooling	1,158,380	-	1,130,356	-	1,500,811	-
Exterior Lighting	-	-	-	-	-	-
Exterior Equipment	-	-	-	-	-	-
Fans	4,325,202	-	4,435,535	-	4,423,701	-
Pumps	358,925	-	428,129	-	612,012	-
Heat Recovery	-	-	-	-	-	-
Generators	-	-	-	-	-	-
Total	12,568,067	482,312	12,257,011	109,554	13,397,164	2,025
Electricity Emissions Factor (lbs/MWhr)	654	-	654	-	654	-
Gas Emissions Factor (lbs/MMBtu)	-	117	-	117	-	117
GHG Emissions (lbs/yr)	8,219,516	5,643,055	8,016,085	1,281,777	8,761,745	23,691
Electricity Emissions (tons/yr)	4,110	-	4,008	-	4,381	-
Gas Emissions (tons/yr)	-	2,822	-	641	-	12
Total GHG Emissions (tons/yr)		6,931	-	4,649	-	4,393

- END OF REPORT -

Specialized Code-Solar



0 20 40 Feet

Floor Plan Legends

- Lobby
- Retail/Amenity
- Tenant
- Vertical Circulation
- Building Support
- Parking
- 'Solar Veil' PV Panels

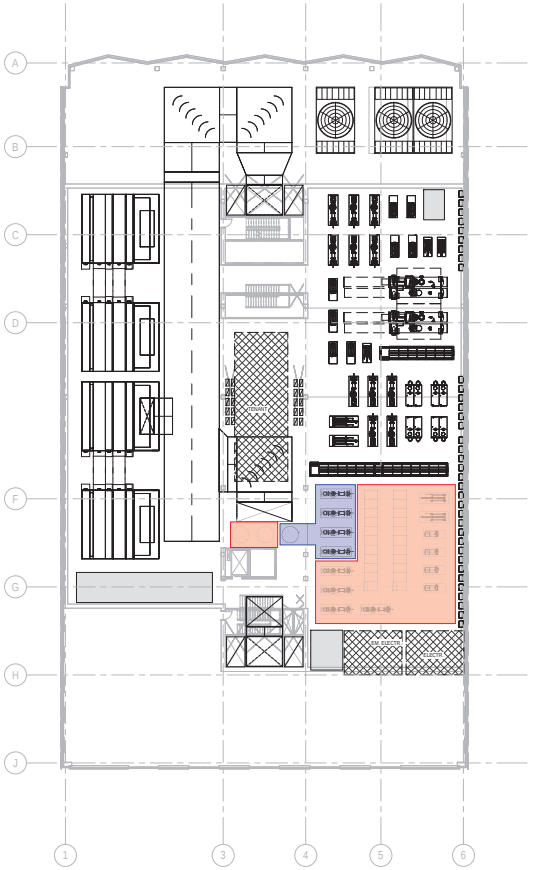
Preliminary plans and subject to change

Figure 1.7e: Building Floorplan - Mechanical Level 2 / Roof

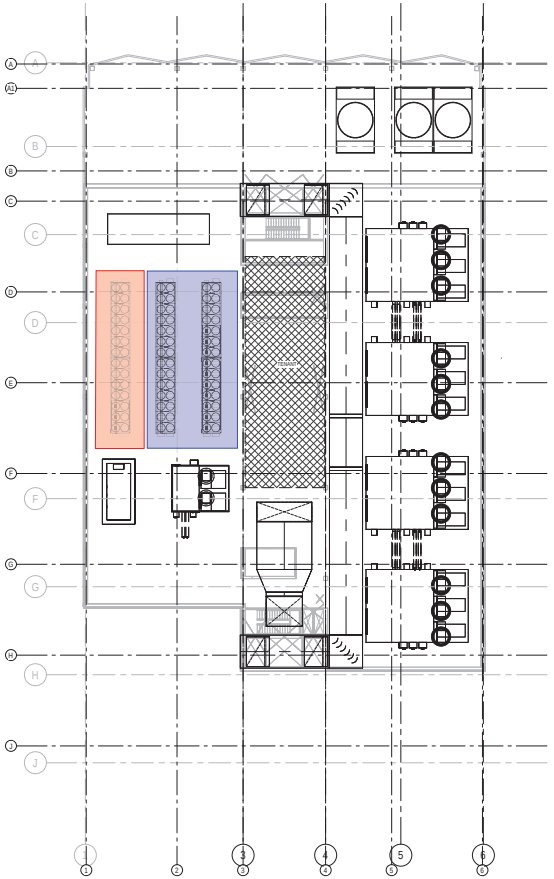
Specialized Code-Electric Readiness

25% electrification equipment

additional equipment for 100% electrification



1 PENTHOUSE - MECHANICAL PLAN
1/16" = 1'-0"



2 PENTHOUSE ROOF - MECHANICAL PLAN
1/16" = 1'-0"

PAYETTE

Architect
Payette Associates Inc.
290 Congress Street, Fifth Floor
Boston, MA 02210-1005
Tel: 617-895-1000
Fax: 617-895-1002

Civil Engineer
VHB
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13th Floor
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MEP/FP Engineer
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Tetra Tech Company
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Structural Engineer
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Landscape Architect
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Tel: 617.782.9130

Geotechnical Engineer
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Suite 2200
Boston, MA 02129
Tel: 617-886-7400

Wind Engineer
RWDI
600 Southgate Drive,
Guelph, ON N1G 4P6
Canada
Tel: 519-823-1311

#	DATE	DESCRIPTION
	07/28/23	CONCEPT DESIGN PRICING SET

Breakthrough Properties
TISHMAN SPEYER

232 A STREET

MECHANICAL PENTHOUSE AND ROOF PLANS

Drawing Scale
1/16" = 1'-0"

Project Number
93250

Date Issued
07/25/23

M001

Heating System Electrification

- *Day 1 – 25% electrification*
  - *Option1.*
    - *Install heat recovery chiller evaporator coils in EAHU units. Size coils for full electrification capacity*
    - *Provide exhaust air recovery modular chiller (HRCH) similar to Multistack model MSH050 – 13 modules (+/- 5,500 MBH.)*
    - *Provide (2) condenser pumps and (2) evaporator pumps (N+1), buffer tank, glycol feed, other auxiliaries*
    - *Pipe HRCH condenser to the HW loop in a close-coupled fashion on HWR side.*
    - *Pipe HRCH evaporator to the coils in the EAHU's*
    - *Size piping and provide valved connections for future addition of two more HRCH's*
    - *Reserve space on the roof and in the mechanical room for future installation of additional equipment described below in Day 2 scope*

- *Full Future electrification*
  - *Option1.*
    - *Provide (2) exhaust air recovery modular chillers (HRCH) similar to Multistack model MSH050 – 20 modules total (+/- 8,500 MBH.)*
    - *Provide (2) condenser pumps and (2) evaporator pumps buffer tank, glycol feed, other auxiliaries*
    - *Pipe HRCH's condensers to the HW loop piping provide in "25%" scope.*
    - *Pipe HRCH's evaporators to the coils in the EAHU's piping provide in "25%" scope.*
    - *Provide (3) modular 2-pipe air-to-water heat pumps similar to Multistack model ARP030 – 42 modules total (+/- 8,500 MBH)*
    - *Tie ASHP's into the building hot water loop (on the return side) in a side-stream configuration using a dedicated heat exchanger and pumps. System will be provided with associated HW glycol heat exchangers, unit side glycol pumps, and house side hot water pumps.*
    - *Replace gas fired boiler plant with electric boiler plant sized to provide required level of back-up for low ambient temperature and equipment failure operation.*

Mobile Source Mesoscale Analysis

Fort Point Channel - 232 A St.

Mesoscale Analysis

	2023 Existing	2030 No-Build	2030 Build	2030 Mitigation- Roadway Improvements	2030 Mitigation- TDM Reduction	2030 Build Mitigation
OXIDES OF NITROGEN (NOx)						
Emissions (kg/d)	5.8	4.1	4.5	4.5		4.5
Project Contribution (kg/d)			0.40	0.00	-0.008	0.39
Emissions (short tons per year)	2.3	1.6	1.8	1.8		1.8
Project Contribution (short tons per year)			0.16	0.00	-0.003	0.16
VOLATILE ORGANIC COMPOUNDS (VOC)						
Emissions (kg/d)	14.5	13.3	13.8	13.8		13.8
Project Contribution (kg/d)			0.50	0.00	-0.01	0.49
Emissions (short tons per year)	5.8	5.3	5.6	5.6		5.6
Project Contribution (short tons per year)			0.20	0.00	-0.004	0.20
GREENHOUSE GAS (CO_2)						
Emissions (short tons per year)	6,127	7,175	7,823	7,823		7,810
Project Contribution (short tons per year)			649	0	-13	636

Fort Point Channel - 232 A St.

Build With Mitigation

Link No.	Description	Roadway Link Length Speed	Roadway Link Length (miles)	Emission Factor (g/mi) NO_x	Emission Factor (g/mi) VOC	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Peak Traffic Data Average Delay (sec)	Peak Traffic Data Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Off-Peak Traffic Data Average Delay (sec)	Off-Peak Traffic Data Adjusted Delay (veh-sec)	Link Emissions NO_x (grams)	Link Emissions VOC (grams)
1	Congress St, E of I90/B St	25	0.11	0.08	0.41	19,557	19,557	2,006	145	0.93	18,239	30	551,742	1,318	27	35,880	169	884
2	I90 Ramp @ B St	25	0.06	0.07	0.72	23,544	23,544	1,317	95	0.93	21,957	18	394,128	1,587	16	25,631	103	1,010
3	B Street	25	0.07	0.08	0.62	7,225	7,225	472	34	0.93	6,738	53	357,458	487	48	23,246	43	314
4	Congress St, I93 Ramp to B St	25	0.10	0.08	0.45	12,706	12,706	1,185	86	0.93	11,850	20	233,441	856	18	15,181	95	568
5	I93 Ramp	25	0.08	0.06	0.55	3,924	3,924	293	21	0.93	3,659	47	173,094	264	43	11,257	19	171
6	I90 Ramp	25	0.08	0.06	0.55	3,301	3,301	246	18	0.93	3,079	50	153,931	222	45	10,010	16	144
7	Pier 4 Boulevard	25	0.14	0.07	0.33	6,540	6,540	854	62	0.93	6,099	0	0	441	0	0	62	303
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.08	0.49	12,145	12,145	1,019	74	0.93	11,327	24	274,114	818	22	17,826	92	539
9	West Service Rd	25	0.10	0.08	0.45	13,267	13,267	1,237	89	0.93	12,373	26	327,255	894	24	21,282	100	593
10	Boston Wharf Rd	25	0.12	0.07	0.38	7,038	7,038	788	57	0.93	6,564	79	520,186	474	71	33,828	62	320
11	Congress St, A St to West Service Rd	25	0.08	0.07	0.55	14,263	14,263	1,064	77	0.93	13,302	18	240,101	961	16	15,614	83	625
12	Thompson Place	25	0.13	0.07	0.35	1,806	1,806	219	16	0.93	1,685	0	0	122	0	0	18	83
13	Congress St, W of A st	25	0.13	0.08	0.35	13,042	13,042	1,581	114	0.93	12,163	19	233,539	879	17	15,187	131	601
14	A St, Congress to Melcher	25	0.11	0.07	0.41	9,554	9,554	980	71	0.93	8,911	75	665,621	644	67	43,286	77	431
15	Melcher St	25	0.11	0.09	0.41	5,543	5,543	569	41	0.93	5,170	30	153,801	374	27	10,002	54	252
16	A St, Melcher to Necco	25	0.07	0.07	0.62	11,423	11,423	746	54	0.93	10,653	5	55,929	770	5	3,637	58	495
17	Necco St	25	0.06	0.08	0.72	2,554	2,554	143	10	0.93	2,382	32	77,044	172	29	5,010	12	110
18	A St, Necco to Binford	25	0.10	0.07	0.45	11,548	11,548	1,077	78	0.93	10,769	1	5,385	778	0	350	84	516
19	Binford St	25	0.10	0.08	0.45	1,370	1,370	128	9	0.93	1,278	0	0	92	0	0	10	61
20	Site Driveway	25	0.09	0.07	0.49	5,655	5,655	475	34	0.93	5,274	344	1,813,049	381	309	117,905	37	250
21	A St, Binford to Richards	25	0.21	0.08	0.24	11,859	11,859	2,323	168	0.93	11,060	9	94,008	799	8	6,113	189	588
22	Richards St, W of A St	25	0.06	0.08	0.72	0	0	0	0	0.93	0	15	0	0	14	0	0	0
23	A St, S of Richards	25	0.08	0.08	0.55	12,943	12,943	966	70	0.93	12,071	4	50,696	872	4	3,297	86	569
24	Richards St, A St to S Boston Bypass	25	0.10	0.08	0.45	8,321	8,321	776	56	0.93	7,760	134	1,042,618	561	121	67,803	64	372
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.08	0.35	14,450	14,450	1,752	127	0.93	13,476	10	128,024	974	9	8,326	149	666
26	Cypher St, E of S. Boston Bypass	25	0.15	0.07	0.31	10,314	10,314	1,443	104	0.93	9,619	14	138,517	695	13	9,008	115	484
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.08	0.31	18,374	18,374	2,570	186	0.93	17,136	148	2,539,518	1,238	133	165,148	212	863
							VMT (per day)	26,228	1,895								2.1	11.8
							VMT (per year)	9,573,360	691,739.9			Arterial	10,223,201			664,826	Daily Total (kg) NO_x	Daily Total (kg) VOC

VMT Total (per year)	**10,265,100.00**

	NOx EF (g/s)	NOx Idle (g/day)	NOx Idle (kg/day)	VOC EF (g/s)	VOC Idle (g/day)	VOC Idle (kg/day)
Arterial						
Peak Period	0.0002	2,189	**2.19**	0.0002	1,872	**1.87**
Off-Peak Period	0.0002	142	**0.14**	0.0002	122	**0.12**
Total (Including Link)			**4.47**			**13.80**

Fort Point Channel - 232 A St.

Build

Link No.	Description	Roadway Link Length Speed	Roadway Link Length (miles)	Emission Factor (g/mi) NO_x	Emission Factor (g/mi) VOC	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Peak Traffic Data Average Delay (sec)	Peak Traffic Data Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Off-Peak Traffic Data Average Delay (sec)	Off-Peak Traffic Data Adjusted Delay (veh-sec)	Link Emissions NO_x (grams)	Link Emissions VOC (grams)
1	Congress St, E of I90/B St	25	0.11	0.08	0.41	19,557	19,557	2,006	145	0.93	18,239	30	551,742	1,318	27	35,880	169	884
2	I90 Ramp @ B St	25	0.06	0.07	0.72	23,544	23,544	1,317	95	0.93	21,957	18	394,128	1,587	16	25,631	103	1,010
3	B Street	25	0.07	0.08	0.62	7,225	7,225	472	34	0.93	6,738	53	357,458	487	48	23,246	43	314
4	Congress St, I93 Ramp to B St	25	0.10	0.08	0.45	12,706	12,706	1,185	86	0.93	11,850	20	233,441	856	18	15,181	95	568
5	I93 Ramp	25	0.08	0.06	0.55	3,924	3,924	293	21	0.93	3,659	47	173,094	264	43	11,257	19	171
6	I90 Ramp	25	0.08	0.06	0.55	3,301	3,301	246	18	0.93	3,079	50	153,931	222	45	10,010	16	144
7	Pier 4 Boulevard	25	0.14	0.07	0.33	6,540	6,540	854	62	0.93	6,099	0	0	441	0	0	62	303
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.08	0.49	12,145	12,145	1,019	74	0.93	11,327	24	274,114	818	22	17,826	92	539
9	West Service Rd	25	0.10	0.08	0.45	13,267	13,267	1,237	89	0.93	12,373	26	327,255	894	24	21,282	100	593
10	Boston Wharf Rd	25	0.12	0.07	0.38	7,038	7,038	788	57	0.93	6,564	79	520,186	474	71	33,828	62	320
11	Congress St, A St to West Service Rd	25	0.08	0.07	0.55	14,263	14,263	1,064	77	0.93	13,302	18	240,101	961	16	15,614	83	625
12	Thompson Place	25	0.13	0.07	0.35	1,806	1,806	219	16	0.93	1,685	0	0	122	0	0	18	83
13	Congress St, W of A st	25	0.13	0.08	0.35	13,042	13,042	1,581	114	0.93	12,163	19	233,539	879	17	15,187	131	601
14	A St, Congress to Melcher	25	0.11	0.07	0.41	9,554	9,554	980	71	0.93	8,911	75	665,621	644	67	43,286	77	431
15	Melcher St	25	0.11	0.09	0.41	5,543	5,543	569	41	0.93	5,170	30	153,801	374	27	10,002	54	252
16	A St, Melcher to Necco	25	0.07	0.07	0.62	11,423	11,423	746	54	0.93	10,653	5	55,929	770	5	3,637	58	495
17	Necco St	25	0.06	0.08	0.72	2,554	2,554	143	10	0.93	2,382	32	77,044	172	29	5,010	12	110
18	A St, Necco to Binford	25	0.10	0.07	0.45	11,548	11,548	1,077	78	0.93	10,769	1	5,385	778	0	350	84	516
19	Binford St	25	0.10	0.08	0.45	1,370	1,370	128	9	0.93	1,278	0	0	92	0	0	10	61
20	Site Driveway	25	0.09	0.07	0.49	5,655	5,655	475	34	0.93	5,274	344	1,813,049	381	309	117,905	37	250
21	A St, Binford to Richards	25	0.21	0.08	0.24	11,859	11,859	2,323	168	0.93	11,060	9	94,008	799	8	6,113	189	588
22	Richards St, W of A St	25	0.06	0.08	0.72	0	0	0	0	0.93	0	15	0	0	14	0	0	0
23	A St, S of Richards	25	0.08	0.08	0.55	12,943	12,943	966	70	0.93	12,071	4	50,696	872	4	3,297	86	569
24	Richards St, A St to S Boston Bypass	25	0.10	0.08	0.45	8,321	8,321	776	56	0.93	7,760	134	1,042,618	561	121	67,803	64	372
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.08	0.35	14,450	14,450	1,752	127	0.93	13,476	10	128,024	974	9	8,326	149	666
26	Cypher St, E of S. Boston Bypass	25	0.15	0.07	0.31	10,314	10,314	1,443	104	0.93	9,619	14	138,517	695	13	9,008	115	484
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.08	0.31	18,374	18,374	2,570	186	0.93	17,136	148	2,539,518	1,238	133	165,148	212	863
							VMT (per day)	26,228	1,895								2.1	11.8
							VMT (per year)	9,573,360	691,739.9			Arterial	10,223,201			664,826	Daily Total (kg) NO_x	Daily Total (kg) VOC

VMT Total (per year)	**10,265,100.00**

	NOx EF (g/s)	NOx Idle (g/day)	NOx Idle (kg/day)	VOC EF (g/s)	VOC Idle (g/day)	VOC Idle (kg/day)
Arterial						
Peak Period	0.0002	2,189	**2.19**	0.0002	1,872	**1.87**
Off-Peak Period	0.0002	142	**0.14**	0.0002	122	**0.12**
Total (Including Link)			**4.47**			**13.80**

Fort Point Channel - 232 A St.

No Build

Link No.	Description	Roadway Link Length Speed	Roadway Link Length (miles)	Emission Factor (g/mi) NO_x	Emission Factor (g/mi) VOC	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Peak Traffic Data Average Delay (sec)	Peak Traffic Data Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Off-Peak Traffic Data Average Delay (sec)	Off-Peak Traffic Data Adjusted Delay (veh-sec)	Link Emissions NO_x (grams)	Link Emissions VOC (grams)
1	Congress St, E of I90/B St	25	0.11	0.08	0.41	19,557	19,557	2,006	145	0.93	18,239	30	551,742	1,318	27	35,880	169	884
2	I90 Ramp @ B St	25	0.06	0.07	0.72	23,544	23,544	1,317	95	0.93	21,957	18	394,128	1,587	16	25,631	103	1,010
3	B Street	25	0.07	0.08	0.62	7,225	7,225	472	34	0.93	6,738	53	357,458	487	48	23,246	43	314
4	Congress St, I93 Ramp to B St	25	0.10	0.08	0.45	12,706	12,706	1,185	86	0.93	11,850	20	233,441	856	18	15,181	95	568
5	I93 Ramp	25	0.08	0.06	0.55	3,924	3,924	293	21	0.93	3,659	47	173,094	264	43	11,257	19	171
6	I90 Ramp	25	0.08	0.06	0.55	3,301	3,301	246	18	0.93	3,079	50	153,931	222	45	10,010	16	144
7	Pier 4 Boulevard	25	0.14	0.07	0.33	6,540	6,540	854	62	0.93	6,099	0	0	441	0	0	62	303
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.08	0.49	12,145	12,145	1,019	74	0.93	11,327	24	274,114	818	22	17,826	92	539
9	West Service Rd	25	0.10	0.08	0.45	13,267	13,267	1,237	89	0.93	12,373	26	327,255	894	24	21,282	100	593
10	Boston Wharf Rd	25	0.12	0.07	0.38	7,038	7,038	788	57	0.93	6,564	79	520,186	474	71	33,828	62	320
11	Congress St, A St to West Service Rd	25	0.08	0.07	0.55	14,263	14,263	1,064	77	0.93	13,302	18	240,101	961	16	15,614	83	625
12	Thompson Place	25	0.13	0.07	0.35	1,806	1,806	219	16	0.93	1,685	0	0	122	0	0	18	83
13	Congress St, W of A st	25	0.13	0.08	0.35	13,017	13,017	1,578	114	0.93	12,140	19	233,093	877	17	15,158	131	600
14	A St, Congress to Melcher	25	0.11	0.07	0.41	9,530	9,530	978	71	0.93	8,887	75	662,552	642	67	43,086	77	430
15	Melcher St	25	0.11	0.09	0.41	4,734	4,734	486	35	0.93	4,415	29	129,349	319	26	8,412	46	215
16	A St, Melcher to Necco	25	0.07	0.07	0.62	10,588	10,588	691	50	0.93	9,875	3	32,093	714	3	2,087	54	459
17	Necco St	25	0.06	0.08	0.72	2,554	2,554	143	10	0.93	2,382	27	64,064	172	24	4,166	12	110
18	A St, Necco to Binford	25	0.10	0.07	0.45	10,713	10,713	999	72	0.93	9,991	1	4,996	722	0	325	78	478
19	Binford St	25	0.10	0.08	0.45	1,370	1,370	128	9	0.93	1,278	0	0	92	0	0	10	61
20	Site Driveway	25	0.09	0.07	0.49	3,924	3,924	329	24	0.93	3,659	145	529,712	264	130	34,448	26	174
21	A St, Binford to Richards	25	0.21	0.08	0.24	11,523	11,523	2,257	163	0.93	10,746	7	77,910	776	7	5,067	184	571
22	Richards St, W of A St	25	0.06	0.08	0.72	0	0	0	0	0.93	0	15	0	0	14	0	0	0
23	A St, S of Richards	25	0.08	0.08	0.55	12,893	12,893	962	70	0.93	12,024	4	50,501	869	4	3,284	86	566
24	Richards St, A St to S Boston Bypass	25	0.10	0.08	0.45	8,035	8,035	749	54	0.93	7,493	126	947,148	541	114	61,594	62	359
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.08	0.35	14,388	14,388	1,744	126	0.93	13,418	9	118,751	970	8	7,722	148	664
26	Cypher St, E of S. Boston Bypass	25	0.15	0.07	0.31	10,152	10,152	1,420	103	0.93	9,468	14	130,662	684	12	8,497	113	476
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.08	0.31	18,312	18,312	2,562	185	0.93	17,078	143	2,435,275	1,234	128	158,369	211	860
							VMT (per day)	25,727	1,859								2.1	11.6
							VMT (per year)	9,390,303	678,512.8			Arterial	8,641,555			561,970	**Daily Total (kg)** NO_X	**Daily Total (kg)** VOC

VMT Total (per year)	**10,068,816.06**

	NOx EF (g/s)	NOx Idle (g/day)	NOx Idle (kg/day)	VOC EF (g/s)	VOC Idle (g/day)	VOC Idle (kg/day)
Arterial						
Peak Period	0.0002	1,850	**1.85**	0.0002	1,582	**1.58**
Off-Peak Period	0.0002	120	**0.12**	0.0002	103	**0.10**
Total (Including Link)			**4.07**			**13.26**

Fort Point Channel - 232 A St.

Existing

Link No.	Description	Roadway Link Length Speed	Roadway Link Length (miles)	Emission Factor (g/mi) NO_x	Emission Factor (g/mi) VOC	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Peak Traffic Data Average Delay (sec)	Peak Traffic Data Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Off-Peak Traffic Data Average Delay (sec)	Off-Peak Traffic Data Adjusted Delay (veh-sec)	Link Emissions NO_x (grams)	Link Emissions VOC (grams)
1	Congress St, E of I90/B St	25	0.11	0.16	0.56	12,519	12,519	1,284	93	0.93	11,676	20	231,176	844	18	15,034	224	776
2	I90 Ramp @ B St	25	0.06	0.15	0.98	19,184	19,184	1,073	78	0.93	17,891	17	297,883	1,293	15	19,372	175	1,125
3	B Street	25	0.07	0.18	0.85	6,789	6,789	443	32	0.93	6,332	48	304,862	457	43	19,826	84	404
4	Congress St, I93 Ramp to B St	25	0.10	0.16	0.61	10,464	10,464	976	71	0.93	9,759	19	186,390	705	17	12,121	163	641
5	I93 Ramp	25	0.08	0.12	0.74	3,675	3,675	274	20	0.93	3,427	47	159,362	248	42	10,364	37	219
6	I90 Ramp	25	0.08	0.12	0.74	2,927	2,927	218	16	0.93	2,730	51	138,416	197	46	9,001	29	174
7	Pier 4 Boulevard	25	0.14	0.14	0.45	5,979	5,979	781	56	0.93	5,576	0	0	403	0	0	118	380
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.18	0.68	10,090	10,090	847	61	0.93	9,410	22	209,376	680	20	13,616	159	614
9	West Service Rd	25	0.10	0.16	0.61	11,149	11,149	1,040	75	0.93	10,398	20	207,433	751	18	13,490	174	683
10	Boston Wharf Rd	25	0.12	0.15	0.52	5,855	5,855	655	47	0.93	5,460	26	139,508	395	23	9,072	107	366
11	Congress St, A St to West Service Rd	25	0.08	0.15	0.75	11,896	11,896	888	64	0.93	11,095	15	168,639	802	14	10,967	145	713
12	Thompson Place	25	0.13	0.16	0.49	1,744	1,744	211	15	0.93	1,626	0	0	118	0	0	35	110
13	Congress St, W of A st	25	0.13	0.16	0.49	11,896	11,896	1,442	104	0.93	11,095	17	192,493	802	16	12,518	249	753
14	A St, Congress to Melcher	25	0.11	0.15	0.56	7,474	7,474	767	55	0.93	6,970	37	261,044	504	34	16,976	125	462
15	Melcher St	25	0.11	0.18	0.57	3,862	3,862	396	29	0.93	3,601	20	71,488	260	18	4,649	78	241
16	A St, Melcher to Necco	25	0.07	0.15	0.85	9,343	9,343	610	44	0.93	8,713	2	19,604	630	2	1,275	100	554
17	Necco St	25	0.06	0.16	0.98	1,557	1,557	87	6	0.93	1,452	14	19,968	105	12	1,299	15	91
18	A St, Necco to Binford	25	0.10	0.15	0.61	9,405	9,405	877	63	0.93	8,771	0	3,947	634	0	257	143	576
19	Binford St	25	0.10	0.16	0.61	1,370	1,370	128	9	0.93	1,278	14	17,252	92	12	1,122	21	84
20	Site Driveway	25	0.09	0.15	0.67	2,491	2,491	209	15	0.93	2,323	41	95,960	168	37	6,240	34	151
21	A St, Binford to Richards	25	0.21	0.16	0.33	8,782	8,782	1,720	124	0.93	8,190	5	42,180	592	5	2,743	291	601
22	Richards St, W of A St	25	0.06	0.17	0.98	0	0	0	0	0.93	0	16	0	0	14	0	0	0
23	A St, S of Richards	25	0.08	0.17	0.75	10,464	10,464	781	56	0.93	9,759	4	35,131	705	3	2,285	145	629
24	Richards St, A St to S Boston Bypass	25	0.10	0.16	0.61	6,914	6,914	645	47	0.93	6,448	83	532,257	466	74	34,613	111	424
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.16	0.49	13,267	13,267	1,608	116	0.93	12,373	7	83,515	894	6	5,431	284	841
26	Cypher St, E of S. Boston Bypass	25	0.15	0.15	0.43	9,530	9,530	1,333	96	0.93	8,887	12	110,648	642	11	7,196	221	614
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.16	0.43	16,879	16,879	2,361	171	0.93	15,742	93	1,456,890	1,137	83	94,743	405	1,090
							VMT (per day)	21,656	1,565								3.7	13.3
							VMT (per year)	7,904,265	571,136.5			Arterial	4,985,423			324,207	**Daily Total (kg)**	
																	NO_X	**VOC**

VMT Total (per year)	**8,475,401.48**

	NOx EF (g/s)	NOx Idle (g/day)	NOx Idle (kg/day)	VOC EF (g/s)	VOC Idle (g/day)	VOC Idle (kg/day)
Arterial						
Peak Period	0.0004	1,980	**1.98**	0.0002	1,149	**1.15**
Off-Peak Period	0.0004	129	**0.13**	0.0002	75	**0.07**
Total (Including Link)			**5.78**			**14.54**

Fort Point Channel - 232 A St.

Build With Mitgation

Link No.	Description	Roadway Link Length Speed	Roadway Link Length (miles)	Emission Factor (g/mi) CO_2	AADT (veh/day)	Weekday Seasonally Adjusted ADT (veh/day)	Weekday VMT Peak (veh-miles)	Weekday VMT Off-Peak (veh-miles)	Weekday Annual Weekday Trips (veh/yr)	Weekday Peak Period Factor	Weekday Peak Traffic Data Period Volume (vehicles)	Weekday Peak Traffic Data Average Delay (sec)	Weekday Peak Traffic Data Adjusted Delay (veh-sec)	Weekday Off-Peak Traffic Data Period Volume (vehicles)	Weekday Off-Peak Traffic Data Average Delay (sec)	Weekday Off-Peak Traffic Data Adjusted Delay (veh-sec)	Link Emissions CO_2 (grams)
1	Congress St, E of I90/B St	25	0.11	373.2	19,557	19,557	732,312	52,914	7,138,425	0.93	6,657,384	30	201,385,856	481,041	27	13,096,338	293,052,312
2	I90 Ramp @ B St	25	0.06	357.1	23,544	23,544	480,858	34,745	8,593,390	0.93	8,014,303	18	143,856,732	579,087	16	9,355,158	184,115,101
3	B Street	25	0.07	391.6	7,225	7,225	172,159	12,440	2,637,125	0.93	2,459,416	53	130,471,999	177,709	48	8,484,734	72,288,605
4	Congress St, I93 Ramp to B St	25	0.1	363.3	12,706	12,706	432,518	31,252	4,637,703	0.93	4,325,179	20	85,206,030	312,523	18	5,541,040	168,465,467
5	I93 Ramp	25	0.08	319.0	3,924	3,924	106,857	7,721	1,432,232	0.93	1,335,717	47	63,179,419	96,515	43	4,108,625	36,553,991
6	I90 Ramp	25	0.08	319.0	3,301	3,301	89,896	6,496	1,204,893	0.93	1,123,699	50	56,184,926	81,195	45	3,653,766	30,751,770
7	Pier 4 Boulevard	25	0.14	340.9	6,540	6,540	311,667	22,520	2,387,053	0.93	2,226,195	0	0	160,858	0	0	113,933,309
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Bl	25	0.09	391.1	12,145	12,145	372,093	26,886	4,433,098	0.93	4,134,362	24	100,051,572	298,736	22	6,506,461	156,049,480
9	West Service Rd	25	0.1	363.3	13,267	13,267	451,600	32,631	4,842,307	0.93	4,515,996	26	119,448,092	326,311	24	7,767,838	175,897,767
10	Boston Wharf Rd	25	0.12	357.1	7,038	7,038	287,497	20,774	2,568,923	0.93	2,395,810	79	189,867,946	173,113	71	12,347,316	110,079,144
11	Congress St, A St to West Service Rd	25	0.08	357.1	14,263	14,263	388,418	28,066	5,206,048	0.93	4,855,226	18	87,636,823	350,823	16	5,699,117	148,720,671
12	Thompson Place	25	0.13	361.9	1,806	1,806	79,931	5,776	659,281	0.93	614,854	0	0	44,427	0	0	31,015,227
13	Congress St, W of A st	25	0.13	370.5	13,042	13,042	577,157	41,703	4,760,465	0.93	4,439,669	19	85,241,649	320,796	17	5,543,356	229,315,427
14	A St, Congress to Melcher	25	0.11	357.1	9,554	9,554	357,760	25,851	3,487,370	0.93	3,252,365	75	242,951,676	235,005	67	15,799,408	136,982,166
15	Melcher St	25	0.11	402.2	5,543	5,543	207,566	14,998	2,023,311	0.93	1,886,965	30	56,137,222	136,346	27	3,650,664	89,523,643
16	A St, Melcher to Necco	25	0.07	357.1	11,423	11,423	272,189	19,668	4,169,386	0.93	3,888,421	5	20,414,210	280,965	5	1,327,558	104,217,962
17	Necco St	25	0.06	367.3	2,554	2,554	52,157	3,769	932,087	0.93	869,276	32	28,121,085	62,811	29	1,828,744	20,539,662
18	A St, Necco to Binford	25	0.1	357.1	11,548	11,548	393,082	28,403	4,214,853	0.93	3,930,825	1	1,965,412	284,029	0	127,813	150,506,502
19	Binford St	25	0.1	363.3	1,370	1,370	46,644	3,370	500,144	0.93	466,441	0	0	33,704	0	0	18,167,845
20	Site Driveway	25	0.09	357.1	5,655	5,655	173,262	12,519	2,064,232	0.93	1,925,129	344	661,763,019	139,104	309	43,035,159	66,339,675
21	A St, Binford to Richards	25	0.21	365.8	11,859	11,859	847,735	61,255	4,328,522	0.93	4,036,834	9	34,313,088	291,688	8	2,231,417	332,539,194
22	Richards St, W of A St	25	0.06	387.2	0	0	0	0	0	0.93	0	15	0	0	14	0	0
23	A St, S of Richards	25	0.08	387.2	12,943	12,943	352,460	25,468	4,724,091	0.93	4,405,746	4	18,504,134	318,345	4	1,203,344	146,341,479
24	Richards St, A St to S Boston Bypass	25	0.1	368.7	8,321	8,321	283,257	20,467	3,037,241	0.93	2,832,568	134	380,555,557	204,672	121	24,747,936	111,986,703
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	375.3	14,450	14,450	639,448	46,204	5,274,250	0.93	4,918,831	10	46,728,897	355,419	9	3,038,830	257,304,295
26	Cypher St, E of S. Boston Bypass	25	0.15	361.1	10,314	10,314	526,654	38,054	3,764,723	0.93	3,511,028	14	50,558,801	253,695	13	3,287,893	203,902,301
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	368.7	18,374	18,374	938,182	67,790	6,706,482	0.93	6,254,548	148	926,924,066	451,933	133	60,278,867	370,914,032
						VMT (per year)	9,573,360	691,740									4,144.07
												Arterial	3,731,468,214			242,661,383	**Total (tons/year)**

	Weekday	Total
VMT per year	**10,265,100.00**	**10,265,100.00**

	Weekday Idle EF (g/s)	Weekday Idle Idle (g/year)	Weekday Idle Idle (tons/year)	Total Idle EF (g/s)	Total Idle Idle (g/year)	Total Idle Idle (tons/year)
Arterial						
Peak Period	0.8399	#########	**3,454.71**			**3,454.71**
Off-Peak Period	0.8399	#########	**224.66**			**224.66**
Total			**3,679.38**	Total (Including Link)		**7,823.45**

Fort Point Channel - 232 A St.

Build						Weekday					Weekday						Link Emissions
		Roadway									Peak Traffic Data			Off-Peak Traffic Data			
Link No.	Description	Link Length Speed	(miles)	Emission Factor (g/mi) CO_2	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Annual Weekday Trips (veh/yr)	Peak Period Factor	Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	CO_2 (grams)
1	Congress St, E of I90/B St	25	0.11	373.2	19,557	19,557	732,312	52,914	7,138,425	0.93	6,657,384	30	201,385,856	481,041	27	13,096,338	293,052,312
2	I90 Ramp @ B St	25	0.06	357.1	23,544	23,544	480,858	34,745	8,593,390	0.93	8,014,303	18	143,856,732	579,087	16	9,355,158	184,115,101
3	B Street	25	0.07	391.6	7,225	7,225	172,159	12,440	2,637,125	0.93	2,459,416	53	130,471,999	177,709	48	8,484,734	72,288,605
4	Congress St, I93 Ramp to B St	25	0.1	363.3	12,706	12,706	432,518	31,252	4,637,703	0.93	4,325,179	20	85,206,030	312,523	18	5,541,040	168,465,467
5	I93 Ramp	25	0.08	319.0	3,924	3,924	106,857	7,721	1,432,232	0.93	1,335,717	47	63,179,419	96,515	43	4,108,625	36,553,991
6	I90 Ramp	25	0.08	319.0	3,301	3,301	89,896	6,496	1,204,893	0.93	1,123,699	50	56,184,926	81,195	45	3,653,766	30,751,770
7	Pier 4 Boulevard	25	0.14	340.9	6,540	6,540	311,667	22,520	2,387,053	0.93	2,226,195	0	0	160,858	0	0	113,933,309
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Bl	25	0.09	391.1	12,145	12,145	372,093	26,886	4,433,098	0.93	4,134,362	24	100,051,572	298,736	22	6,506,461	156,049,480
9	West Service Rd	25	0.1	363.3	13,267	13,267	451,600	32,631	4,842,307	0.93	4,515,996	26	119,448,092	326,311	24	7,767,838	175,897,767
10	Boston Wharf Rd	25	0.12	357.1	7,038	7,038	287,497	20,774	2,568,923	0.93	2,395,810	79	189,867,946	173,113	71	12,347,316	110,079,144
11	Congress St, A St to West Service Rd	25	0.08	357.1	14,263	14,263	388,418	28,066	5,206,048	0.93	4,855,226	18	87,636,823	350,823	16	5,699,117	148,720,671
12	Thompson Place	25	0.13	361.9	1,806	1,806	79,931	5,776	659,281	0.93	614,854	0	0	44,427	0	0	31,015,227
13	Congress St, W of A st	25	0.13	370.5	13,042	13,042	577,157	41,703	4,760,465	0.93	4,439,669	19	85,241,649	320,796	17	5,543,356	229,315,427
14	A St, Congress to Melcher	25	0.11	357.1	9,554	9,554	357,760	25,851	3,487,370	0.93	3,252,365	75	242,951,676	235,005	67	15,799,408	136,982,166
15	Melcher St	25	0.11	402.2	5,543	5,543	207,566	14,998	2,023,311	0.93	1,886,965	30	56,137,222	136,346	27	3,650,664	89,523,643
16	A St, Melcher to Necco	25	0.07	357.1	11,423	11,423	272,189	19,668	4,169,386	0.93	3,888,421	5	20,414,210	280,965	5	1,327,558	104,217,962
17	Necco St	25	0.06	367.3	2,554	2,554	52,157	3,769	932,087	0.93	869,276	32	28,121,085	62,811	29	1,828,744	20,539,662
18	A St, Necco to Binford	25	0.1	357.1	11,548	11,548	393,082	28,403	4,214,853	0.93	3,930,825	1	1,965,412	284,029	0	127,813	150,506,502
19	Binford St	25	0.1	363.3	1,370	1,370	46,644	3,370	500,144	0.93	466,441	0	0	33,704	0	0	18,167,845
20	Site Driveway	25	0.09	357.1	5,655	5,655	173,262	12,519	2,064,232	0.93	1,925,129	344	661,763,019	139,104	309	43,035,159	66,339,675
21	A St, Binford to Richards	25	0.21	365.8	11,859	11,859	847,735	61,255	4,328,522	0.93	4,036,834	9	34,313,088	291,688	8	2,231,417	332,539,194
22	Richards St, W of A St	25	0.06	387.2	0	0	0	0	0	0.93	0	15	0	0	14	0	0
23	A St, S of Richards	25	0.08	387.2	12,943	12,943	352,460	25,468	4,724,091	0.93	4,405,746	4	18,504,134	318,345	4	1,203,344	146,341,479
24	Richards St, A St to S Boston Bypass	25	0.1	368.7	8,321	8,321	283,257	20,467	3,037,241	0.93	2,832,568	134	380,555,557	204,672	121	24,747,936	111,986,703
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	375.3	14,450	14,450	639,448	46,204	5,274,250	0.93	4,918,831	10	46,728,897	355,419	9	3,038,830	257,304,295
26	Cypher St, E of S. Boston Bypass	25	0.15	361.1	10,314	10,314	526,654	38,054	3,764,723	0.93	3,511,028	14	50,558,801	253,695	13	3,287,893	203,902,301
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	368.7	18,374	18,374	938,182	67,790	6,706,482	0.93	6,254,548	148	926,924,066	451,933	133	60,278,867	370,914,032
						VMT (per year)	9,573,360	691,740									4,144.07
												Arterial	3,731,468,214			242,661,383	**Total (tons/year)**

	Weekday	Total
VMT per year	**10,265,100.00**	**10,265,100.00**

	Weekday Idle			Total Idle		
	EF (g/s)	Idle (g/year)	Idle (tons/year)	EF (g/s)	Idle (g/year)	Idle (tons/year)
Arterial						
Peak Period	0.8399	#########	**3,454.71**			**3,454.71**
Off-Peak Period	0.8399	#########	**224.66**			**224.66**
Total			**3,679.38**	Total (Including Link)		**7,823.45**

Fort Point Channel - 232 A St.

No Build

Link No.	Description	Roadway Link Length Speed	Roadway Link Length (miles)	Emission Factor (g/mi) CO_2	AADT (veh/day)	Weekday Seasonally Adjusted ADT (veh/day)	Weekday VMT Peak (veh-miles)	Weekday VMT Off-Peak (veh-miles)	Weekday Annual Weekday Trips (veh/yr)	Weekday Peak Period Factor	Weekday Peak Traffic Data Period Volume (vehicles)	Weekday Peak Traffic Data Average Delay (sec)	Weekday Peak Traffic Data Adjusted Delay (veh-sec)	Weekday Off-Peak Traffic Data Period Volume (vehicles)	Weekday Off-Peak Traffic Data Average Delay (sec)	Weekday Off-Peak Traffic Data Adjusted Delay (veh-sec)	Link Emissions CO_2 (grams)
1	Congress St, E of I90/B St	25	0.11	373.2	19,557	19,557	732,312	52,914	7,138,425	0.93	6,657,384	30	201,385,856	481,041	27	13,096,338	293,052,312
2	I90 Ramp @ B St	25	0.06	357.1	23,544	23,544	480,858	34,745	8,593,390	0.93	8,014,303	18	143,856,732	579,087	16	9,355,158	184,115,101
3	B Street	25	0.07	391.6	7,225	7,225	172,159	12,440	2,637,125	0.93	2,459,416	53	130,471,999	177,709	48	8,484,734	72,288,605
4	Congress St, I93 Ramp to B St	25	0.1	363.3	12,706	12,706	432,518	31,252	4,637,703	0.93	4,325,179	20	85,206,030	312,523	18	5,541,040	168,465,467
5	I93 Ramp	25	0.08	319.0	3,924	3,924	106,857	7,721	1,432,232	0.93	1,335,717	47	63,179,419	96,515	43	4,108,625	36,553,991
6	I90 Ramp	25	0.08	319.0	3,301	3,301	89,896	6,496	1,204,893	0.93	1,123,699	50	56,184,926	81,195	45	3,653,766	30,751,770
7	Pier 4 Boulevard	25	0.14	340.9	6,540	6,540	311,667	22,520	2,387,053	0.93	2,226,195	0	0	160,858	0	0	113,933,309
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Bl	25	0.09	391.1	12,145	12,145	372,093	26,886	4,433,098	0.93	4,134,362	24	100,051,572	298,736	22	6,506,461	156,049,480
9	West Service Rd	25	0.1	363.3	13,267	13,267	451,600	32,631	4,842,307	0.93	4,515,996	26	119,448,092	326,311	24	7,767,838	175,897,767
10	Boston Wharf Rd	25	0.12	357.1	7,038	7,038	287,497	20,774	2,568,923	0.93	2,395,810	79	189,867,946	173,113	71	12,347,316	110,079,144
11	Congress St, A St to West Service Rd	25	0.08	357.1	14,263	14,263	388,418	28,066	5,206,048	0.93	4,855,226	18	87,636,823	350,823	16	5,699,117	148,720,671
12	Thompson Place	25	0.13	361.9	1,806	1,806	79,931	5,776	659,281	0.93	614,854	0	0	44,427	0	0	31,015,227
13	Congress St, W of A st	25	0.13	370.5	13,017	13,017	576,055	41,624	4,751,372	0.93	4,431,188	19	85,078,819	320,183	17	5,532,767	228,877,384
14	A St, Congress to Melcher	25	0.11	357.1	9,530	9,530	356,827	25,783	3,478,277	0.93	3,243,884	75	241,831,582	234,393	67	15,726,567	136,624,977
15	Melcher St	25	0.11	402.2	4,734	4,734	177,248	12,807	1,727,772	0.93	1,611,341	29	47,212,299	116,430	26	3,070,266	76,447,156
16	A St, Melcher to Necco	25	0.07	357.1	10,588	10,588	252,302	18,231	3,864,752	0.93	3,604,316	3	11,714,027	260,436	3	761,776	96,603,346
17	Necco St	25	0.06	367.3	2,554	2,554	52,157	3,769	932,087	0.93	869,276	27	23,383,530	62,811	24	1,520,656	20,539,662
18	A St, Necco to Binford	25	0.1	357.1	10,713	10,713	364,672	26,350	3,910,220	0.93	3,646,720	1	1,823,360	263,500	0	118,575	139,628,470
19	Binford St	25	0.1	363.3	1,370	1,370	46,644	3,370	500,144	0.93	466,441	0	0	33,704	0	0	18,167,845
20	Site Driveway	25	0.09	357.1	3,924	3,924	120,215	8,686	1,432,232	0.93	1,335,717	145	193,345,051	96,515	130	12,573,436	46,028,629
21	A St, Binford to Richards	25	0.21	365.8	11,523	11,523	823,692	59,517	4,205,760	0.93	3,922,344	7	28,436,993	283,416	7	1,849,288	323,107,935
22	Richards St, W of A St	25	0.06	387.2	0	0	0	0	0	0.93	0	15	0	0	14	0	0
23	A St, S of Richards	25	0.08	387.2	12,893	12,893	351,103	25,370	4,705,904	0.93	4,388,785	4	18,432,896	317,119	4	1,198,711	145,778,085
24	Richards St, A St to S Boston Bypass	25	0.1	368.7	8,035	8,035	273,504	19,763	2,932,665	0.93	2,735,040	126	345,709,029	197,625	114	22,481,829	108,130,873
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	375.3	14,388	14,388	636,692	46,005	5,251,516	0.93	4,897,629	9	43,344,020	353,887	8	2,818,708	256,195,225
26	Cypher St, E of S. Boston Bypass	25	0.15	361.1	10,152	10,152	518,385	37,457	3,705,615	0.93	3,455,903	14	47,691,461	249,712	12	3,101,427	200,700,937
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	368.7	18,312	18,312	935,002	67,560	6,683,748	0.93	6,233,346	143	888,875,211	450,401	128	57,804,509	369,656,696
						VMT (per year)	9,390,303	678,513									4,064.61
												Arterial	3,154,167,676			205,118,909	**Total (tons/year)**

	Weekday	Total
VMT per year	**10,068,816.06**	**10,068,816.06**

	Weekday Idle EF (g/s)	Weekday Idle Idle (g/year)	Weekday Idle Idle (tons/year)	Total Idle EF (g/s)	Total Idle Idle (g/year)	Total Idle Idle (tons/year)
Arterial						
Peak Period	0.8399	#########	**2,920.23**			**2,920.23**
Off-Peak Period	0.8399	#########	**189.91**			**189.91**
Total			**3,110.13**	Total (Including Link)		**7,174.74**

Fort Point Channel - 232 A St.

Existing											Weekday						Link Emissions
											Peak Traffic Data			Off-Peak Traffic Data			
Link No.	Description	Roadway Link Length Type	(miles)	Emission Factor (g/mi) CO_2	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Annual Weekday Trips (veh/yr)	Peak Period Factor	Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	CO_2 (grams)
1	Congress St, E of I90/B St	25	0.11	438.7	12,519	12,519	468,773	33,872	4,569,501	0.93	4,261,574	20	84,379,158	307,927	18	5,487,267	220,486,656
2	I90 Ramp @ B St	25	0.06	419.8	19,184	19,184	391,810	28,311	7,002,022	0.93	6,530,173	17	108,727,372	471,849	15	7,070,658	176,367,629
3	B Street	25	0.07	460.1	6,789	6,789	161,770	11,689	2,477,988	0.93	2,311,003	48	111,274,776	166,986	43	7,236,318	79,815,258
4	Congress St, I93 Ramp to B St	25	0.1	426.9	10,464	10,464	356,191	25,737	3,819,284	0.93	3,561,912	19	68,032,525	257,372	17	4,424,228	163,059,000
5	I93 Ramp	25	0.08	375.2	3,675	3,675	100,073	7,231	1,341,296	0.93	1,250,910	47	58,167,300	90,387	42	3,782,682	40,261,962
6	I90 Ramp	25	0.08	375.2	2,927	2,927	79,719	5,760	1,068,490	0.93	996,487	51	50,521,909	72,003	46	3,285,494	32,073,088
7	Pier 4 Boulevard	25	0.14	400.9	5,979	5,979	284,953	20,590	2,182,448	0.93	2,035,378	0	0	147,070	0	0	122,491,441
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Bl	25	0.09	459.6	10,090	10,090	309,123	22,336	3,682,881	0.93	3,434,701	22	76,422,100	248,180	20	4,969,811	152,329,495
9	West Service Rd	25	0.1	426.9	11,149	11,149	379,513	27,422	4,069,357	0.93	3,795,133	20	75,712,898	274,224	18	4,923,691	173,735,483
10	Boston Wharf Rd	25	0.12	419.8	5,855	5,855	239,157	17,281	2,136,981	0.93	1,992,975	26	50,920,504	144,006	23	3,311,415	107,653,180
11	Congress St, A St to West Service Rd	25	0.08	419.8	11,896	11,896	323,964	23,409	4,342,163	0.93	4,049,555	15	61,553,237	292,608	14	4,002,873	145,828,072
12	Thompson Place	25	0.13	425.3	1,744	1,744	77,175	5,576	636,547	0.93	593,652	0	0	42,895	0	0	35,190,952
13	Congress St, W of A st	25	0.13	435.4	11,896	11,896	526,442	38,039	4,342,163	0.93	4,049,555	17	70,259,780	292,608	16	4,569,069	245,785,527
14	A St, Congress to Melcher	25	0.11	419.8	7,474	7,474	279,865	20,222	2,728,060	0.93	2,544,223	37	95,281,154	183,837	34	6,196,236	125,977,187
15	Melcher St	25	0.11	472.6	3,862	3,862	144,597	10,448	1,409,498	0.93	1,314,515	20	26,093,128	94,983	18	1,696,864	73,271,338
16	A St, Melcher to Necco	25	0.07	419.8	9,343	9,343	222,620	16,086	3,410,075	0.93	3,180,279	2	7,155,627	229,797	2	465,338	100,209,158
17	Necco St	25	0.06	431.5	1,557	1,557	31,803	2,298	568,346	0.93	530,046	14	7,288,139	38,299	12	473,955	14,715,897
18	A St, Necco to Binford	25	0.1	419.8	9,405	9,405	320,148	23,133	3,432,809	0.93	3,201,481	0	1,440,666	231,329	0	93,688	144,110,364
19	Binford St	25	0.1	426.9	1,370	1,370	46,644	3,370	500,144	0.93	466,441	14	6,296,952	33,704	12	409,498	21,352,964
20	Site Driveway	25	0.09	419.8	2,491	2,491	76,327	5,515	909,353	0.93	848,074	41	35,025,471	61,279	37	2,277,744	34,357,372
21	A St, Binford to Richards	25	0.21	429.8	8,782	8,782	627,787	45,362	3,205,471	0.93	2,989,462	5	15,395,730	216,009	5	1,001,201	289,348,246
22	Richards St, W of A St	25	0.06	455.0	0	0	0	0	0	0.93	0	16	0	0	14	0	0
23	A St, S of Richards	25	0.08	455.0	10,464	10,464	284,953	20,590	3,819,284	0.93	3,561,912	4	12,822,884	257,372	3	833,886	139,029,220
24	Richards St, A St to S Boston Bypass	25	0.1	433.3	6,914	6,914	235,341	17,005	2,523,456	0.93	2,353,406	83	194,273,693	170,049	74	12,633,827	109,343,356
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	441.0	13,267	13,267	587,079	42,420	4,842,307	0.93	4,515,996	7	30,482,973	326,311	6	1,982,340	277,637,563
26	Cypher St, E of S. Boston Bypass	25	0.15	424.3	9,530	9,530	486,583	35,159	3,478,277	0.93	3,243,884	12	40,386,361	234,393	11	2,626,368	221,388,834
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	433.3	16,879	16,879	861,856	62,275	6,160,870	0.93	5,745,704	93	531,764,882	415,166	83	34,581,241	400,433,101
						VMT (per year)	7,904,265	571,136									4,019.24
												Arterial	1,819,679,217			118,335,692	**Total (tons/year)**

	Weekday	Total
VMT per year	**8,475,401.48**	**8,475,401.48**

	Weekday			Total		
	EF (g/s)	Idle (g/year)	Idle (tons/year)	EF (g/s)	Idle (g/year)	Idle (tons/year)
Arterial						
Peak Period	0.9864	#########	**1,978.64**			**1,978.64**
Off-Peak Period	0.9864	#########	**128.67**			**128.67**
Total			**2,107.31**	Total (Including Link)		**6,126.55**

Fort Point Channel - 232 A St.

Weekday Traffic

Link No.	Roadway Description	Existing			No Build			Build				Build with Mitigation			
		Roadway S.A.F.	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Traffic Increase (existing)	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Traffic Increase (existing)	Traffic Increase (no-build)	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Traffic Increase (existing)	Traffic Increase (no-build)
1	Congress St, E of I90/B St	100%	12,519	12,519	19,557	19,557	56%	19,557	19,557	56%	0%	19,557	19,557	56%	0%
2	I90 Ramp @ B St	100%	19,184	19,184	23,544	23,544	23%	23,544	23,544	23%	0%	23,544	23,544	23%	0%
3	B Street	100%	6,789	6,789	7,225	7,225	6%	7,225	7,225	6%	0%	7,225	7,225	6%	0%
4	Congress St, I93 Ramp to B St	100%	10,464	10,464	12,706	12,706	21%	12,706	12,706	21%	0%	12,706	12,706	21%	0%
5	I93 Ramp	100%	3,675	3,675	3,924	3,924	7%	3,924	3,924	7%	0%	3,924	3,924	7%	0%
6	I90 Ramp	100%	2,927	2,927	3,301	3,301	13%	3,301	3,301	13%	0%	3,301	3,301	13%	0%
7	Pier 4 Boulevard	100%	5,979	5,979	6,540	6,540	9%	6,540	6,540	9%	0%	6,540	6,540	9%	0%
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	100%	10,090	10,090	12,145	12,145	20%	12,145	12,145	20%	0%	12,145	12,145	20%	0%
9	West Service Rd	100%	11,149	11,149	13,267	13,267	19%	13,267	13,267	19%	0%	13,267	13,267	19%	0%
10	Boston Wharf Rd	100%	5,855	5,855	7,038	7,038	20%	7,038	7,038	20%	0%	7,038	7,038	20%	0%
11	Congress St, A St to West Service Rd	100%	11,896	11,896	14,263	14,263	20%	14,263	14,263	20%	0%	14,263	14,263	20%	0%
12	Thompson Place	100%	1,744	1,744	1,806	1,806	4%	1,806	1,806	4%	0%	1,806	1,806	4%	0%
13	Congress St, W of A st	100%	11,896	11,896	13,017	13,017	9%	13,042	13,042	10%	0%	13,042	13,042	10%	0%
14	A St, Congress to Melcher	100%	7,474	7,474	9,530	9,530	28%	9,554	9,554	28%	0%	9,554	9,554	28%	0%
15	Melcher St	100%	3,862	3,862	4,734	4,734	23%	5,543	5,543	44%	17%	5,543	5,543	44%	17%
16	A St, Melcher to Necco	100%	9,343	9,343	10,588	10,588	13%	11,423	11,423	22%	8%	11,423	11,423	22%	8%
17	Necco St	100%	1,557	1,557	2,554	2,554	64%	2,554	2,554	64%	0%	2,554	2,554	64%	0%
18	A St, Necco to Binford	100%	9,405	9,405	10,713	10,713	14%	11,548	11,548	23%	8%	11,548	11,548	23%	8%
19	Binford St	100%	1,370	1,370	1,370	1,370	0%	1,370	1,370	0%	0%	1,370	1,370	0%	0%
20	Site Driveway	100%	2,491	2,491	3,924	3,924	58%	5,655	5,655	127%	44%	5,655	5,655	127%	44%
21	A St, Binford to Richards	100%	8,782	8,782	11,523	11,523	31%	11,859	11,859	35%	3%	11,859	11,859	35%	3%
22	Richards St, W of A St	100%	0	0	0	0	0%	0	0	0%	0%	0	0	-100%	-100%
23	A St, S of Richards	100%	10,464	10,464	12,893	12,893	23%	12,943	12,943	24%	0%	12,943	12,943	24%	0%
24	Richards St, A St to S Boston Bypass	100%	6,914	6,914	8,035	8,035	16%	8,321	8,321	20%	4%	8,321	8,321	20%	4%
25	S. Boston Bypass, S of Richards/Cypher	100%	13,267	13,267	14,388	14,388	8%	14,450	14,450	9%	0%	14,450	14,450	9%	0%
26	Cypher St, E of S. Boston Bypass	100%	9,530	9,530	10,152	10,152	7%	10,314	10,314	8%	2%	10,314	10,314	8%	2%
27	S. Boston Bypass, N of Richards/Cypher	100%	16,879	16,879	18,312	18,312	8%	18,374	18,374	9%	0%	18,374	18,374	9%	0%

Peak Period Volume Factor

Weekday ATR Volumes

Peak Period Factor Derived From ATR-Data Analysis => **0.080**

Seasonal Adjustment Factor (S.A.F.)

MassPike - ADT Adjustment Factor => **1.00**

Principal Arterial - ADT Adjustment Factor => **1.00**

Fort Point Channel - 232 A St.

Emissions Factors By Link (g/mi)

Emission Factors From MOVES3

	Roadway Segments	2023 Existing			2030 No Build			2030 Build			2030 Build-Mit		
		NO_x	VOC	CO_2	NO_x	VOC	CO_2	NO_x	VOC	CO_2	NO_x	VOC	CO_2
1	Congress St, E of I90/B St	0.16	0.56	438.65	0.08	0.41	373.21	0.08	0.41	373.21	0.08	0.41	373.21
2	I90 Ramp @ B St	0.15	0.98	419.80	0.07	0.72	357.09	0.07	0.72	357.09	0.07	0.72	357.09
3	B Street	0.18	0.85	460.14	0.08	0.62	391.60	0.08	0.62	391.60	0.08	0.62	391.60
4	Congress St, I93 Ramp to B St	0.16	0.61	426.94	0.08	0.45	363.25	0.08	0.45	363.25	0.08	0.45	363.25
5	I93 Ramp	0.12	0.74	375.22	0.06	0.55	319.03	0.06	0.55	319.03	0.06	0.55	319.03
6	I90 Ramp	0.12	0.74	375.22	0.06	0.55	319.03	0.06	0.55	319.03	0.06	0.55	319.03
7	Pier 4 Boulevard	0.14	0.45	400.90	0.07	0.33	340.93	0.07	0.33	340.93	0.07	0.33	340.93
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	0.18	0.68	459.57	0.08	0.49	391.12	0.08	0.49	391.12	0.08	0.49	391.12
9	West Service Rd	0.16	0.61	426.94	0.08	0.45	363.25	0.08	0.45	363.25	0.08	0.45	363.25
10	Boston Wharf Rd	0.15	0.52	419.80	0.07	0.38	357.09	0.07	0.38	357.09	0.07	0.38	357.09
11	Congress St, A St to West Service Rd	0.15	0.75	419.80	0.07	0.55	357.09	0.07	0.55	357.09	0.07	0.55	357.09
12	Thompson Place	0.16	0.49	425.26	0.07	0.35	361.88	0.07	0.35	361.88	0.07	0.35	361.88
13	Congress St, W of A st	0.16	0.49	435.42	0.08	0.35	370.54	0.08	0.35	370.54	0.08	0.35	370.54
14	A St, Congress to Melcher	0.15	0.56	419.80	0.07	0.41	357.09	0.07	0.41	357.09	0.07	0.41	357.09
15	Melcher St	0.18	0.57	472.58	0.09	0.41	402.24	0.09	0.41	402.24	0.09	0.41	402.24
16	A St, Melcher to Necco	0.15	0.85	419.80	0.07	0.62	357.09	0.07	0.62	357.09	0.07	0.62	357.09
17	Necco St	0.16	0.98	431.54	0.08	0.72	367.27	0.08	0.72	367.27	0.08	0.72	367.27
18	A St, Necco to Binford	0.15	0.61	419.80	0.07	0.45	357.09	0.07	0.45	357.09	0.07	0.45	357.09
19	Binford St	0.16	0.61	426.94	0.08	0.45	363.25	0.08	0.45	363.25	0.08	0.45	363.25
20	Site Driveway	0.15	0.67	419.80	0.07	0.49	357.09	0.07	0.49	357.09	0.07	0.49	357.09
21	A St, Binford to Richards	0.16	0.33	429.84	0.08	0.24	365.83	0.08	0.24	365.83	0.08	0.24	365.83
22	Richards St, W of A St	0.17	0.98	455.02	0.08	0.72	387.22	0.08	0.72	387.22	0.08	0.72	387.22
23	A St, S of Richards	0.17	0.75	455.02	0.08	0.55	387.22	0.08	0.55	387.22	0.08	0.55	387.22
24	Richards St, A St to S Boston Bypass	0.16	0.61	433.31	0.08	0.45	368.71	0.08	0.45	368.71	0.08	0.45	368.71
25	S. Boston Bypass, S of Richards/Cypher	0.16	0.49	441.04	0.08	0.35	375.27	0.08	0.35	375.27	0.08	0.35	375.27
26	Cypher St, E of S. Boston Bypass	0.15	0.43	424.33	0.07	0.31	361.08	0.07	0.31	361.08	0.07	0.31	361.08
27	S. Boston Bypass, N of Richards/Cypher	0.16	0.43	433.31	0.08	0.31	368.71	0.08	0.31	368.71	0.08	0.31	368.71

Fort Point Channel - 232 A St.
Weekday Vehicle Delay

Link No.	Description	Directions	Existing					No Build					Build					Build-Mit				
			Delay By Approach		Adjusted Delay *		Combined	Delay By Approach		Adjusted Delay *		Combined	Delay By Approach		Adjusted Delay *		Combined	Delay By Approach		Adjusted Delay *		Combined
			NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)	NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)	NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)	NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)
1	Congress St, E of I90/B St	2		39.6	0	39.6	19.8		60.5	0	60.5	30.25		60.5	0	60.5	30.25		60.5	0	60.5	30.25
2	I90 Ramp @ B St	2	33.3		33.3	0	16.65	35.9		35.9	0	17.95	35.9		35.9	0	17.95	35.9		35.9	0	17.95
3	B Street	2		96.3	0	96.3	48.15		106.1	0	106.1	53.05		106.1	0	106.1	53.05		106.1	0	106.1	53.05
4	Congress St, I93 Ramp to B St	2	27.9	10.3	27.9	10.3	19.1	26.5	12.9	26.5	12.9	19.7	26.5	12.9	26.5	12.9	19.7	26.5	12.9	26.5	12.9	19.7
5	I93 Ramp	1	46.5		46.5	0	46.5	47.3		47.3	0	47.3	47.3		47.3	0	47.3	47.3		47.3	0	47.3
6	I90 Ramp	1	50.7		50.7	0	50.7	50.0		50	0	50	50.0		50	0	50	50.0		50	0	50
7	Pier 4 Boulevard	1			0	0	0			0	0	0			0	0	0			0	0	0
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	2	23.9	20.6	23.9	20.6	22.25	24.5	23.9	24.5	23.9	24.2	24.5	23.9	24.5	23.9	24.2	24.5	23.9	24.5	23.9	24.2
9	West Service Rd	2	39.9		39.9	0	19.95	52.9		52.9	0	26.45	52.9		52.9	0	26.45	52.9		52.9	0	26.45
10	Boston Wharf Rd	2		51.1	0	51.1	25.55		158.5	0	158.5	79.25		158.5	0	158.5	79.25		158.5	0	158.5	79.25
11	Congress St, A St to West Service Rd	2	15.7	14.7	15.7	14.7	15.2	17.8	18.3	17.8	18.3	18.05	17.8	18.3	17.8	18.3	18.05	17.8	18.3	17.8	18.3	18.05
12	Thompson Place	1		0.0	0	0	0		0.0	0	0	0		0.0	0	0	0		0.0	0	0	0
13	Congress St, W of A st	2	34.7		34.7	0	17.35	38.4		38.4	0	19.2	38.4		38.4	0	19.2	38.4		38.4	0	19.2
14	A St, Congress to Melcher	2	70.9	4.0	70.9	4	37.45	143.8	5.3	143.8	5.3	74.55	144.0	5.4	144	5.4	74.7	144.0	5.4	144	5.4	74.7
15	Melcher St	2	39.7		39.7	0	19.85	58.6		58.6	0	29.3	59.5		59.5	0	29.75	59.5		59.5	0	29.75
16	A St, Melcher to Necco	2	4.5	0.0	4.5	0	2.25	6.5	0.0	6.5	0	3.25	10.5	0.0	10.5	0	5.25	10.5	0.0	10.5	0	5.25
17	Necco St	2	27.5		27.5	0	13.75	53.8		53.8	0	26.9	64.7		64.7	0	32.35	64.7		64.7	0	32.35
18	A St, Necco to Binford	2	0.3	0.6	0.3	0.6	0.45	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
19	Binford St	2		27.0	0	27	13.5		0.0	0	0	0		0.0	0	0	0		0.0	0	0	0
20	Site Driveway	2	82.6		82.6	0	41.3	289.5		289.5	0	144.75	687.5		687.5	0	343.75	687.5		687.5	0	343.75
21	A St, Binford to Richards	2	0.5	9.8	0.5	9.8	5.15	1.4	13.1	1.4	13.1	7.25	1.8	15.2	1.8	15.2	8.5	1.8	15.2	1.8	15.2	8.5
22	Richards St, W of A St	2	31.7		31.7	0	15.85	30.9		30.9	0	15.45	30.9		30.9	0	15.45	30.9		30.9	0	15.45
23	A St, S of Richards	2	7.2		7.2	0	3.6	8.4		8.4	0	4.2	8.4		8.4	0	4.2	8.4		8.4	0	4.2
24	Richards St, A St to S Boston Bypass	2	43.6	121.5	43.6	121.5	82.55	42.3	210.5	42.3	210.5	126.4	42.1	226.6	42.1	226.6	134.35	42.1	226.6	42.1	226.6	134.35
25	S. Boston Bypass, S of Richards/Cypher	2	13.5		13.5	0	6.75	17.7		17.7	0	8.85	19.0		19	0	9.5	19.0		19	0	9.5
26	Cypher St, E of S. Boston Bypass	2		24.9	0	24.9	12.45		27.6	0	27.6	13.8		28.8	0	28.8	14.4		28.8	0	28.8	14.4
27	S. Boston Bypass, N of Richards/Cypher	2		185.1	0	185.1	92.55		285.2	0	285.2	142.6		296.4	0	296.4	148.2		296.4	0	296.4	148.2

PM PEAK CONDITION
DELAY BY APPROACH (seconds)

		Existing				No Build				Build				Build-Mit			
		EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
1	1: I-90 Ramps/B St & Congress St	27.9	39.6	33.3	96.3	26.5	60.5	35.9	106.1	26.5	60.5	35.9	106.1	26.5	60.5	35.9	106.1
2	2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St	23.9	10.3	50.7	46.5	24.5	12.9	50.0	47.3	24.5	12.9	50.0	47.3	24.5	12.9	50.0	47.3
3	3: W Service Rd Ext/Boston Wharf Rd & Congress St	15.7	20.6	39.9	51.1	17.8	23.9	52.9	158.5	17.8	23.9	52.9	158.5	17.8	23.9	52.9	158.5
4	4: A St/Thompson Pl & Congress St	34.7	14.7	70.9	0.0	38.4	18.3	143.8	0.0	38.4	18.3	144.0	0.0	38.4	18.3	144.0	0.0
5	5: A St & Melcher St	39.7		4.5	4.0	58.6		6.5	5.3	59.5		10.5	5.4	59.5	0.0	10.5	5.4
6	6: A St & Necco St	27.5	27.0	0.3	0.0	53.8		0.5	0.0	64.7		0.5	0.0	64.7	0.0	0.5	0.0
7	7: A St & Binford St	82.6		0.5	0.6	289.5	75.8	1.4	0.5	687.5	265.9	1.8	0.5	687.5	265.9	1.8	0.5
8	8: A St & Richards St	31.7	43.6	7.2	9.8	30.9	42.3	8.4	13.1	30.9	42.1	8.4	15.2	30.9	42.1	8.4	15.2
9	9: S Boston Bypass & Richards St/Cypher St	121.5	24.9	13.5	185.1	210.5	27.6	17.7	285.2	226.6	28.8	19.0	296.4	226.6	28.8	19.0	296.4

Fort Point Channel - 232 A St.

Weekday Average Daily Traffic (ADT) for Mesoscale Roadway Network

	Roadway Segments	Speed (mph)	Existing Volume (ADT)	2030 No-Build Volume (ADT)	2030 Build Volume (ADT)	2030 Build-Mit Volume (ADT)	K Factor	S.A.F.	Unadjusted PM Peak Hour			
									Existing	No-Build	Build	Build-Mit
							8.0%	1.00				
1	Congress St, E of I90/B St	25	12,519	19,557	19,557	19,557			1005	1570	1570	1570
2	I90 Ramp @ B St	25	19,184	23,544	23,544	23,544			1540	1890	1890	1890
3	B Street	25	6,789	7,225	7,225	7,225			545	580	580	580
4	Congress St, I93 Ramp to B St	25	10,464	12,706	12,706	12,706			840	1020	1020	1020
5	I93 Ramp	25	3,675	3,924	3,924	3,924			295	315	315	315
6	I90 Ramp	25	2,927	3,301	3,301	3,301			235	265	265	265
7	Pier 4 Boulevard	25	5,979	6,540	6,540	6,540			480	525	525	525
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	25	10,090	12,145	12,145	12,145			810	975	975	975
9	West Service Rd	25	11,149	13,267	13,267	13,267			895	1065	1065	1065
10	Boston Wharf Rd	25	5,855	7,038	7,038	7,038			470	565	565	565
11	Congress St, A St to West Service Rd	25	11,896	14,263	14,263	14,263			955	1145	1145	1145
12	Thompson Place	25	1,744	1,806	1,806	1,806			140	145	145	145
13	Congress St, W of A st	25	11,896	13,017	13,042	13,042			955	1045	1047	1047
14	A St, Congress to Melcher	25	7,474	9,530	9,554	9,554			600	765	767	767
15	Melcher St	25	3,862	4,734	5,543	5,543			310	380	445	445
16	A St, Melcher to Necco	25	9,343	10,588	11,423	11,423			750	850	917	917
17	Necco St	25	1,557	2,554	2,554	2,554			125	205	205	205
18	A St, Necco to Binford	25	9,405	10,713	11,548	11,548			755	860	927	927
19	Binford St	25	1,370	1,370	1,370	1,370			110	110	110	110
20	Site Driveway	25	2,491	3,924	5,655	5,655			200	315	454	454
21	A St, Binford to Richards	25	8,782	11,523	11,859	11,859			705	925	952	952
22	Richards St, W of A St	25	0	0	0	0			0	0	0	0
23	A St, S of Richards	25	10,464	12,893	12,943	12,943			840	1035	1039	1039
24	Richards St, A St to S Boston Bypass	25	6,914	8,035	8,321	8,321			555	645	668	668
25	S. Boston Bypass, S of Richards/Cypher	25	13,267	14,388	14,450	14,450			1065	1155	1160	1160
26	Cypher St, E of S. Boston Bypass	25	9,530	10,152	10,314	10,314			765	815	828	828
27	S. Boston Bypass, N of Richards/Cypher	25	16,879	18,312	18,374	18,374			1355	1470	1475	1475

Fort Point Channel - 232 A St.

Mesoscale Roadway Data

Link No.	Description	Speed (mph)	Link Length (miles)	Start Elev (ft)	Finish Elev (ft)	Grade (%)	Directions
1	Congress St, E of I90/B St	25	0.11	12	9	0.5	2
2	I90 Ramp @ B St	25	0.06	12	12	0.0	2
3	B Street	25	0.07	12	8	1.1	2
4	Congress St, I93 Ramp to B St	25	0.10	12	13	0.2	2
5	I93 Ramp	25	0.08	13	7	-1.4	1
6	I90 Ramp	25	0.08	13	7	-1.4	1
7	Pier 4 Boulevard	25	0.14	13	9	-0.5	1
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	25	0.09	13	8	1.1	2
9	West Service Rd	25	0.10	9	8	0.2	2
10	Boston Wharf Rd	25	0.12	8	8	0.0	2
11	Congress St, A St to West Service Rd	25	0.08	8	8	0.0	2
12	Thompson Place	25	0.13	8	9	0.1	1
13	Congress St, W of A st	25	0.13	8	11	0.4	2
14	A St, Congress to Melcher	25	0.11	8	8	0.0	2
15	Melcher St	25	0.11	8	16	1.4	2
16	A St, Melcher to Necco	25	0.07	8	8	0.0	2
17	Necco St	25	0.06	8	9	0.3	2
18	A St, Necco to Binford	25	0.10	8	8	0.0	2
19	Binford St	25	0.10	8	7	0.2	2
20	Site Driveway	25	0.09	8	8	0.0	2
21	A St, Binford to Richards	25	0.21	8	5	0.3	2
22	Richards St, W of A St	25	0.06	5	8	0.9	2
23	A St, S of Richards	25	0.08	5	9	0.9	2
24	Richards St, A St to S Boston Bypass	25	0.10	5	7	0.4	2
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	7	3	0.6	2
26	Cypher St, E of S. Boston Bypass	25	0.15	7	8	0.1	2
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	7	10	0.4	2

Fort Point Channel - 232 A St.

Weekday ATR Volumes

A St. North of Richards Street

Mon 03/25/2019 - Sun 03/31/2019

			Peak Period Data	
Begin Time	Volume	V/C Ratio	Hours	Volume
12:00 AM	163	0.10	0	0
1:00 AM	111	0.07	0	0
2:00 AM	77	0.05	0	0
3:00 AM	60	0.04	0	0
4:00 AM	110	0.07	0	0
5:00 AM	336	0.21	1	336
6:00 AM	508	0.32	1	508
7:00 AM	631	0.40	1	631
8:00 AM	928	0.59	1	928
9:00 AM	852	0.54	1	852
10:00 AM	606	0.39	1	606
11:00 AM	585	0.37	1	585
12:00 PM	544	0.35	1	544
1:00 PM	526	0.34	1	526
2:00 PM	617	0.39	1	617
3:00 PM	680	0.43	1	680
4:00 PM	768	0.49	1	768
5:00 PM	731	0.47	1	731
6:00 PM	660	0.42	1	660
7:00 PM	565	0.36	1	565
8:00 PM	484	0.31	1	484
9:00 PM	401	0.26	1	401
10:00 PM	359	0.23	1	359
11:00 PM	258	0.16	0	0
Total	**11,560**		**18**	**10,781**

Roadway Capacity	Crit. V/C	Critical Capacity
1,570	18%	283
Peak Hour (K) Factor	**0.080**	
Peak Period Volume Factor		**0.933**

Project Data

TRAFFIC DATA

Project Name	Fort Point Channel - 232 A St.
Project County	Suffolk
Existing Year	2023
No-Build Year	2030
Build Year	2030
Build with Mitigation Year	2030
Seasonal Adjustment Factor	1.00
K-Factor	8.0%

Idle Emission Factors

Year	NOx (g/hr)	VOC (g/hr)	CO2 (g/hr)
2023	1.43	0.83	3551.16
2030	0.77	0.66	3023.69
2028 Truck	22.55	1.10	5,212.69

Fort Point Channel - 232 A St.

Truck Emissions Analysis

	2030 Build
OXIDES OF NITROGEN (NOx)	
Emissions (kg/d)	0.063
Emissions (short tons per year)	0.026
VOLATILE ORGANIC COMPOUNDS (VOC)	
Emissions (kg/d)	0.003
Emissions (short tons per year)	0.001
GREENHOUSE GAS (CO_2)	
Emissions (kg/d)	14.7
Project Contribution (short tons per year)	5.9

Fort Point Channel - 232 A St.

Build

Link No.	Description	Roadway Link Length Speed	(miles)	NOx	Emission Factor (g/mi) VOC	CO2e	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Link Emissions PM10 (grams)	PM2.5 (grams)	EPM (grams)
1	Idling Trucks	0	0.00	22.55	1.10	5212.69	34	34	0	0	0.93	32	300	9,513	2	270	619	0	0	0
								VMT (per day)	0	0								0.0	0.0	0.0
								VMT (per year)	0	0.0			Arterial	9,513			619			

Daily Total (kg)

NOx	VOC	CO2e

VMT Total (per year)	**0.00**

	NOx EF (g/s)	NOx Idle (g/day)	NOx Idle (kg/day)	VOC EF (g/s)	VOC Idle (g/day)	VOC Idle (kg/day)	CO2e EF (g/s)	CO2e Idle (g/day)	CO2e Idle (kg/day)
Arterial									
Peak Period	6.26E-03	59.586	**0.060**	3.05E-04	2.899	**0.003**	1.45E+00	13,774.032	**13.774**
Off-Peak Period	6.26E-03	3.875	**0.004**	3.05E-04	0.189	**0.000**	1.45E+00	895.740	**0.896**
Total (Including Link)			**0.063**			**0.003**			**14.670**

Fort Point Channel - 232 A St.

Truck Emissions Factors By Speed (g/mi)

Emission Factors From MOVES3

	MPH	Description	NO_x	2030 No Build VOC	CO_2	PM10	2030 Build PM2.5	EPM	PM10	2030 Build-Mit PM2.5	EPM
1	0	Idle	*22.550*	*1.097*	*5212.694*	*22.550*	*1.097*	*5212.694*	*22.550*	*1.097*	*5212.694*
2	5	5 mph	*7.072*	*0.3273*	*2214.074*	*7.072*	*0.327*	*2214.074*	*7.072*	*0.327*	*2214.074*
3	10	10 mph	*4.145*	*0.177*	*1474.098*	*4.145*	*0.177*	*1474.098*	*4.145*	*0.177*	*1474.098*
4	15	15 mph	*3.132*	*0.126*	*1262.836*	*3.132*	*0.126*	*1262.836*	*3.132*	*0.126*	*1262.836*
5	20	20 mph	*2.490*	*0.099*	*1129.465*	*2.490*	*0.099*	*1129.465*	*2.490*	*0.099*	*1129.465*
6	25	25 mph	*2.083*	*0.081*	*1025.068*	*2.083*	*0.081*	*1025.068*	*2.083*	*0.081*	*1025.068*
7	30	30 mph	*1.832*	*0.072*	*989.107*	*1.832*	*0.072*	*989.107*	*1.832*	*0.072*	*989.107*
8	35	35 mph	*1.461*	*0.062*	*866.635*	*1.461*	*0.062*	*866.635*	*1.461*	*0.062*	*866.635*
9	40	40 mph	*1.261*	*0.055*	*842.002*	*1.261*	*0.055*	*842.002*	*1.261*	*0.055*	*842.002*
10	45	45 mph	*1.106*	*0.050*	*822.913*	*1.106*	*0.050*	*822.913*	*1.106*	*0.050*	*822.913*
11	50	50 mph	*0.955*	*0.046*	*801.584*	*0.955*	*0.046*	*801.584*	*0.955*	*0.046*	*801.584*
12	55	55 mph	*0.823*	*0.041*	*781.974*	*0.823*	*0.041*	*781.974*	*0.823*	*0.041*	*781.974*
13	60	60 mph	*0.755*	*0.038*	*767.879*	*0.755*	*0.038*	*767.879*	*0.755*	*0.038*	*767.879*
14	65	65 mph	*0.796*	*0.037*	*797.020*	*0.796*	*0.037*	*797.020*	*0.796*	*0.037*	*797.020*
15	70	70 mph	*0.838*	*0.036*	*825.667*	*0.838*	*0.036*	*825.667*	*0.838*	*0.036*	*825.667*
16	75	75 mph	*0.886*	*0.036*	*860.283*	*0.886*	*0.036*	*860.283*	*0.886*	*0.036*	*860.283*

Fort Point Channel - 232 A St.

Particulate Mesoscale Analysis

	2023 Existing	2030 No-Build	2030 Build	2030 Mitigation- Roadway Improvements	2030 Mitigation- TDM Reduction	2030 Build Mitigation
Particulate Matter < 10 µm (PM10)						
Emissions (kg/d)	1.82	2.01	2.06	2.06		2.06
Project Contribution (kg/d)			0.05	0.00	-0.0010	0.05
Emissions (short tons per year)	0.73	0.81	0.83	0.83		0.83
Project Contribution (short tons per year)			0.02	0.00	-0.0004	0.02
Particulate Matter < 2.5 µm (PM2.5)						
Emissions (kg/d)	0.41	0.36	0.38	0.38		0.38
Project Contribution (kg/d)			0.02	0.00	-0.0004	0.02
Emissions (short tons per year)	0.16	0.15	0.15	0.15		0.15
Project Contribution (short tons per year)			0.01	0.00	-0.0002	0.01
Exhaust Particulate (EPM)						
Emissions (kg/d)	0.07	0.05	0.06	0.06		0.06
Project Contribution (kg/d)			0.01	0.00	-0.0002	0.01
Emissions (short tons per year)	0.03	0.02	0.02	0.02		0.02
Project Contribution (short tons per year)			0.00	0.00	-0.0001	0.00

Fort Point Channel - 232 A St.

Build With Mitigation

Link No.	Description	Roadway Link Length Speed	(miles)	Emission Factor (g/mi) PM10	PM2.5	EPM	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Link Emissions PM10 (grams)	PM2.5 (grams)	EPM (grams)
1	Congress St, E of I90/B St	25	0.11	0.069	0.011	0.003	19,557	19,557	2,006	145	0.93	18,239	30	551,742	1,318	27	35,880	149	24	6
2	I90 Ramp @ B St	25	0.06	0.073	0.011	0.002	23,544	23,544	1,317	95	0.93	21,957	18	394,128	1,587	16	25,631	103	16	3
3	B Street	25	0.07	0.067	0.011	0.003	7,225	7,225	472	34	0.93	6,738	53	357,458	487	48	23,246	34	6	2
4	Congress St, I93 Ramp to B St	25	0.10	0.071	0.011	0.003	12,706	12,706	1,185	86	0.93	11,850	20	233,441	856	18	15,181	91	14	3
5	I93 Ramp	25	0.08	0.084	0.012	0.002	3,924	3,924	293	21	0.93	3,659	47	173,094	264	43	11,257	26	4	1
6	I90 Ramp	25	0.08	0.084	0.012	0.002	3,301	3,301	246	18	0.93	3,079	50	153,931	222	45	10,010	22	3	1
7	Pier 4 Boulevard	25	0.14	0.077	0.012	0.002	6,540	6,540	854	62	0.93	6,099	0	0	441	0	0	70	11	2
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.067	0.011	0.003	12,145	12,145	1,019	74	0.93	11,327	24	274,114	818	22	17,826	73	12	3
9	West Service Rd	25	0.10	0.071	0.011	0.003	13,267	13,267	1,237	89	0.93	12,373	26	327,255	894	24	21,282	95	15	3
10	Boston Wharf Rd	25	0.12	0.073	0.011	0.002	7,038	7,038	788	57	0.93	6,564	79	520,186	474	71	33,828	62	10	2
11	Congress St, A St to West Service Rd	25	0.08	0.073	0.011	0.002	14,263	14,263	1,064	77	0.93	13,302	18	240,101	961	16	15,614	83	13	3
12	Thompson Place	25	0.13	0.072	0.011	0.002	1,806	1,806	219	16	0.93	1,685	0	0	122	0	0	17	3	1
13	Congress St, W of A st	25	0.13	0.070	0.011	0.003	13,042	13,042	1,581	114	0.93	12,163	19	233,539	879	17	15,187	118	19	4
14	A St, Congress to Melcher	25	0.11	0.073	0.011	0.002	9,554	9,554	980	71	0.93	8,911	75	665,621	644	67	43,286	77	12	3
15	Melcher St	25	0.11	0.065	0.011	0.003	5,543	5,543	569	41	0.93	5,170	30	153,801	374	27	10,002	40	7	2
16	A St, Melcher to Necco	25	0.07	0.073	0.011	0.002	11,423	11,423	746	54	0.93	10,653	5	55,929	770	5	3,637	58	9	2
17	Necco St	25	0.06	0.071	0.011	0.003	2,554	2,554	143	10	0.93	2,382	32	77,044	172	29	5,010	11	2	0
18	A St, Necco to Binford	25	0.10	0.073	0.011	0.002	11,548	11,548	1,077	78	0.93	10,769	1	5,385	778	0	350	84	13	3
19	Binford St	25	0.10	0.071	0.011	0.003	1,370	1,370	128	9	0.93	1,278	0	0	92	0	0	10	2	0
20	Site Driveway	25	0.09	0.073	0.011	0.002	5,655	5,655	475	34	0.93	5,274	344	1,813,049	381	309	117,905	37	6	1
21	A St, Binford to Richards	25	0.21	0.071	0.011	0.003	11,859	11,859	2,323	168	0.93	11,060	9	94,008	799	8	6,113	177	28	6
22	Richards St, W of A St	25	0.06	0.067	0.011	0.003	0	0	0	0	0.93	0	15	0	0	14	0	0	0	0
23	A St, S of Richards	25	0.08	0.067	0.011	0.003	12,943	12,943	966	70	0.93	12,071	4	50,696	872	4	3,297	69	12	3
24	Richards St, A St to S Boston Bypass	25	0.10	0.070	0.011	0.003	8,321	8,321	776	56	0.93	7,760	134	1,042,618	561	121	67,803	58	9	2
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.069	0.011	0.003	14,450	14,450	1,752	127	0.93	13,476	10	128,024	974	9	8,326	129	21	5
26	Cypher St, E of S. Boston Bypass	25	0.15	0.072	0.011	0.002	10,314	10,314	1,443	104	0.93	9,619	14	138,517	695	13	9,008	111	18	4
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.070	0.011	0.003	18,374	18,374	2,570	186	0.93	17,136	148	2,539,518	1,238	133	165,148	193	31	7
								VMT (per day)	26,228	1,895								2.0	0.3	0.1
								VMT (per year)	9,573,360	691,739.9			Arterial	10,223,201			664,826	Daily Total (kg)		
																		PM10	PM2.5	EPM

VMT Total (per year)	10,265,100.00

	PM10 EF (g/s)	Idle (g/day)	Idle (kg/day)	PM2.5 EF (g/s)	Idle (g/day)	Idle (kg/day)	EPM EF (g/s)	Idle (g/day)	Idle (kg/day)
Arterial									
Peak Period	5.80E-06	59	**0.06**	5.21E-06	53	**0.05**	5.21E-06	53	**0.05**
Off-Peak Period	5.80E-06	4	**0.00**	5.21E-06	3	**0.00**	5.21E-06	3	**0.00**
Total (Including Link)			**2.06**			**0.38**			**0.06**

Fort Point Channel - 232 A St.

Build

Link No.	Description	Roadway Link Length Speed	(miles)	Emission Factor (g/mi) PM10	PM2.5	EPM	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Link Emissions PM10 (grams)	PM2.5 (grams)	EPM (grams)
1	Congress St, E of I90/B St	25	0.11	0.069	0.011	0.003	19,557	19,557	2,006	145	0.93	18,239	30	551,742	1,318	27	35,880	149	24	6
2	I90 Ramp @ B St	25	0.06	0.073	0.011	0.002	23,544	23,544	1,317	95	0.93	21,957	18	394,128	1,587	16	25,631	103	16	3
3	B Street	25	0.07	0.067	0.011	0.003	7,225	7,225	472	34	0.93	6,738	53	357,458	487	48	23,246	34	6	2
4	Congress St, I93 Ramp to B St	25	0.10	0.071	0.011	0.003	12,706	12,706	1,185	86	0.93	11,850	20	233,441	856	18	15,181	91	14	3
5	I93 Ramp	25	0.08	0.084	0.012	0.002	3,924	3,924	293	21	0.93	3,659	47	173,094	264	43	11,257	26	4	1
6	I90 Ramp	25	0.08	0.084	0.012	0.002	3,301	3,301	246	18	0.93	3,079	50	153,931	222	45	10,010	22	3	1
7	Pier 4 Boulevard	25	0.14	0.077	0.012	0.002	6,540	6,540	854	62	0.93	6,099	0	0	441	0	0	70	11	2
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.067	0.011	0.003	12,145	12,145	1,019	74	0.93	11,327	24	274,114	818	22	17,826	73	12	3
9	West Service Rd	25	0.10	0.071	0.011	0.003	13,267	13,267	1,237	89	0.93	12,373	26	327,255	894	24	21,282	95	15	3
10	Boston Wharf Rd	25	0.12	0.073	0.011	0.002	7,038	7,038	788	57	0.93	6,564	79	520,186	474	71	33,828	62	10	2
11	Congress St, A St to West Service Rd	25	0.08	0.073	0.011	0.002	14,263	14,263	1,064	77	0.93	13,302	18	240,101	961	16	15,614	83	13	3
12	Thompson Place	25	0.13	0.072	0.011	0.002	1,806	1,806	219	16	0.93	1,685	0	0	122	0	0	17	3	1
13	Congress St, W of A st	25	0.13	0.070	0.011	0.003	13,042	13,042	1,581	114	0.93	12,163	19	233,539	879	17	15,187	118	19	4
14	A St, Congress to Melcher	25	0.11	0.073	0.011	0.002	9,554	9,554	980	71	0.93	8,911	75	665,621	644	67	43,286	77	12	3
15	Melcher St	25	0.11	0.065	0.011	0.003	5,543	5,543	569	41	0.93	5,170	30	153,801	374	27	10,002	40	7	2
16	A St, Melcher to Necco	25	0.07	0.073	0.011	0.002	11,423	11,423	746	54	0.93	10,653	5	55,929	770	5	3,637	58	9	2
17	Necco St	25	0.06	0.071	0.011	0.003	2,554	2,554	143	10	0.93	2,382	32	77,044	172	29	5,010	11	2	0
18	A St, Necco to Binford	25	0.10	0.073	0.011	0.002	11,548	11,548	1,077	78	0.93	10,769	1	5,385	778	0	350	84	13	3
19	Binford St	25	0.10	0.071	0.011	0.003	1,370	1,370	128	9	0.93	1,278	0	0	92	0	0	10	2	0
20	Site Driveway	25	0.09	0.073	0.011	0.002	5,655	5,655	475	34	0.93	5,274	344	1,813,049	381	309	117,905	37	6	1
21	A St, Binford to Richards	25	0.21	0.071	0.011	0.003	11,859	11,859	2,323	168	0.93	11,060	9	94,008	799	8	6,113	177	28	6
22	Richards St, W of A St	25	0.06	0.067	0.011	0.003	0	0	0	0	0.93	0	15	0	0	14	0	0	0	0
23	A St, S of Richards	25	0.08	0.067	0.011	0.003	12,943	12,943	966	70	0.93	12,071	4	50,696	872	4	3,297	69	12	3
24	Richards St, A St to S Boston Bypass	25	0.10	0.070	0.011	0.003	8,321	8,321	776	56	0.93	7,760	134	1,042,618	561	121	67,803	58	9	2
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.069	0.011	0.003	14,450	14,450	1,752	127	0.93	13,476	10	128,024	974	9	8,326	129	21	5
26	Cypher St, E of S. Boston Bypass	25	0.15	0.072	0.011	0.002	10,314	10,314	1,443	104	0.93	9,619	14	138,517	695	13	9,008	111	18	4
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.070	0.011	0.003	18,374	18,374	2,570	186	0.93	17,136	148	2,539,518	1,238	133	165,148	193	31	7
								VMT (per day)	26,228	1,895								2.0	0.3	0.1
								VMT (per year)	9,573,360	691,739.9			Arterial	10,223,201			664,826	Daily Total (kg)		
																		PM10	PM2.5	EPM

VMT Total (per year)	10,265,100.02

	PM10 EF (g/s)	Idle (g/day)	Idle (kg/day)	PM2.5 EF (g/s)	Idle (g/day)	Idle (kg/day)	EPM EF (g/s)	Idle (g/day)	Idle (kg/day)
Arterial									
Peak Period	5.80E-06	59	**0.06**	5.21E-06	53	**0.05**	5.21E-06	53	**0.05**
Off-Peak Period	5.80E-06	4	**0.00**	5.21E-06	3	**0.00**	5.21E-06	3	**0.00**
Total (Including Link)			**2.06**			**0.38**			**0.06**

Fort Point Channel - 232 A St.

No Build

Link No.	Description	Roadway Link Length Speed	(miles)	Emission Factor (g/mi) PM10	PM2.5	EPM	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Link Emissions PM10 (grams)	PM2.5 (grams)	EPM (grams)
1	Congress St, E of I90/B St	25	0.11	0.069	0.011	0.003	19,557	19,557	2,006	145	0.93	18,239	30	551,742	1,318	27	35,880	149	24	6
2	I90 Ramp @ B St	25	0.06	0.073	0.011	0.002	23,544	23,544	1,317	95	0.93	21,957	18	394,128	1,587	16	25,631	103	16	3
3	B Street	25	0.07	0.067	0.011	0.003	7,225	7,225	472	34	0.93	6,738	53	357,458	487	48	23,246	34	6	2
4	Congress St, I93 Ramp to B St	25	0.10	0.071	0.011	0.003	12,706	12,706	1,185	86	0.93	11,850	20	233,441	856	18	15,181	91	14	3
5	I93 Ramp	25	0.08	0.084	0.012	0.002	3,924	3,924	293	21	0.93	3,659	47	173,094	264	43	11,257	26	4	1
6	I90 Ramp	25	0.08	0.084	0.012	0.002	3,301	3,301	246	18	0.93	3,079	50	153,931	222	45	10,010	22	3	1
7	Pier 4 Boulevard	25	0.14	0.077	0.012	0.002	6,540	6,540	854	62	0.93	6,099	0	0	441	0	0	70	11	2
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.067	0.011	0.003	12,145	12,145	1,019	74	0.93	11,327	24	274,114	818	22	17,826	73	12	3
9	West Service Rd	25	0.10	0.071	0.011	0.003	13,267	13,267	1,237	89	0.93	12,373	26	327,255	894	24	21,282	95	15	3
10	Boston Wharf Rd	25	0.12	0.073	0.011	0.002	7,038	7,038	788	57	0.93	6,564	79	520,186	474	71	33,828	62	10	2
11	Congress St, A St to West Service Rd	25	0.08	0.073	0.011	0.002	14,263	14,263	1,064	77	0.93	13,302	18	240,101	961	16	15,614	83	13	3
12	Thompson Place	25	0.13	0.072	0.011	0.002	1,806	1,806	219	16	0.93	1,685	0	0	122	0	0	17	3	1
13	Congress St, W of A st	25	0.13	0.070	0.011	0.003	13,017	13,017	1,578	114	0.93	12,140	19	233,093	877	17	15,158	118	19	4
14	A St, Congress to Melcher	25	0.11	0.073	0.011	0.002	9,530	9,530	978	71	0.93	8,887	75	662,552	642	67	43,086	76	12	3
15	Melcher St	25	0.11	0.065	0.011	0.003	4,734	4,734	486	35	0.93	4,415	29	129,349	319	26	8,412	34	6	2
16	A St, Melcher to Necco	25	0.07	0.073	0.011	0.002	10,588	10,588	691	50	0.93	9,875	3	32,093	714	3	2,087	54	9	2
17	Necco St	25	0.06	0.071	0.011	0.003	2,554	2,554	143	10	0.93	2,382	27	64,064	172	24	4,166	11	2	0
18	A St, Necco to Binford	25	0.10	0.073	0.011	0.002	10,713	10,713	999	72	0.93	9,991	1	4,996	722	0	325	78	12	3
19	Binford St	25	0.10	0.071	0.011	0.003	1,370	1,370	128	9	0.93	1,278	0	0	92	0	0	10	2	0
20	Site Driveway	25	0.09	0.073	0.011	0.002	3,924	3,924	329	24	0.93	3,659	145	529,712	264	130	34,448	26	4	1
21	A St, Binford to Richards	25	0.21	0.071	0.011	0.003	11,523	11,523	2,257	163	0.93	10,746	7	77,910	776	7	5,067	172	28	6
22	Richards St, W of A St	25	0.06	0.067	0.011	0.003	0	0	0	0	0.93	0	15	0	0	14	0	0	0	0
23	A St, S of Richards	25	0.08	0.067	0.011	0.003	12,893	12,893	962	70	0.93	12,024	4	50,501	869	4	3,284	69	12	3
24	Richards St, A St to S Boston Bypass	25	0.10	0.070	0.011	0.003	8,035	8,035	749	54	0.93	7,493	126	947,148	541	114	61,594	56	9	2
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.069	0.011	0.003	14,388	14,388	1,744	126	0.93	13,418	9	118,751	970	8	7,722	129	21	5
26	Cypher St, E of S. Boston Bypass	25	0.15	0.072	0.011	0.002	10,152	10,152	1,420	103	0.93	9,468	14	130,662	684	12	8,497	109	17	4
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.070	0.011	0.003	18,312	18,312	2,562	185	0.93	17,078	143	2,435,275	1,234	128	158,369	193	31	7
								VMT (per day)	25,727	1,859								2.0	0.3	0.1
								VMT (per year)	9,390,303	678,512.8			Arterial	8,641,555			561,970	**Daily Total (kg)**		
																		PM10	**PM2.5**	**EPM**

VMT Total (per year)	**10,068,816.08**

	PM10 EF (g/s)	PM10 Idle (g/day)	PM10 Idle (kg/day)	PM2.5 EF (g/s)	PM2.5 Idle (g/day)	PM2.5 Idle (kg/day)	EPM EF (g/s)	EPM Idle (g/day)	EPM Idle (kg/day)
Arterial									
Peak Period	5.80E-06	50	**0.05**	5.21E-06	45	**0.05**	5.21E-06	45	**0.05**
Off-Peak Period	5.80E-06	3	**0.00**	5.21E-06	3	**0.00**	5.21E-06	3	**0.00**
Total (Including Link)			**2.01**			**0.36**			**0.05**

Fort Point Channel - 232 A St.

Existing

Link No.	Description	Roadway Link Length Speed	(miles)	Emission Factor (g/mi) PM10	PM2.5	EPM	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Link Emissions PM10 (grams)	PM2.5 (grams)	EPM (grams)
1	Congress St, E of I90/B St	25	0.11	0.073	0.015	0.003	12,519	12,519	1,284	93	0.93	11,676	20	231,176	844	18	15,034	101	20	4
2	I90 Ramp @ B St	25	0.06	0.077	0.015	0.002	19,184	19,184	1,073	78	0.93	17,891	17	297,883	1,293	15	19,372	88	17	3
3	B Street	25	0.07	0.071	0.015	0.003	6,789	6,789	443	32	0.93	6,332	48	304,862	457	43	19,826	34	7	1
4	Congress St, I93 Ramp to B St	25	0.10	0.075	0.015	0.003	10,464	10,464	976	71	0.93	9,759	19	186,390	705	17	12,121	79	15	3
5	I93 Ramp	25	0.08	0.087	0.015	0.002	3,675	3,675	274	20	0.93	3,427	47	159,362	248	42	10,364	26	4	1
6	I90 Ramp	25	0.08	0.087	0.015	0.002	2,927	2,927	218	16	0.93	2,730	51	138,416	197	46	9,001	20	3	0
7	Pier 4 Boulevard	25	0.14	0.081	0.015	0.002	5,979	5,979	781	56	0.93	5,576	0	0	403	0	0	67	12	2
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	25	0.09	0.071	0.015	0.003	10,090	10,090	847	61	0.93	9,410	22	209,376	680	20	13,616	65	13	3
9	West Service Rd	25	0.10	0.075	0.015	0.003	11,149	11,149	1,040	75	0.93	10,398	20	207,433	751	18	13,490	84	16	3
10	Boston Wharf Rd	25	0.12	0.077	0.015	0.002	5,855	5,855	655	47	0.93	5,460	26	139,508	395	23	9,072	54	10	2
11	Congress St, A St to West Service Rd	25	0.08	0.077	0.015	0.002	11,896	11,896	888	64	0.93	11,095	15	168,639	802	14	10,967	73	14	2
12	Thompson Place	25	0.13	0.075	0.014	0.002	1,744	1,744	211	15	0.93	1,626	0	0	118	0	0	17	3	1
13	Congress St, W of A st	25	0.13	0.074	0.015	0.003	11,896	11,896	1,442	104	0.93	11,095	17	192,493	802	16	12,518	114	23	4
14	A St, Congress to Melcher	25	0.11	0.077	0.015	0.002	7,474	7,474	767	55	0.93	6,970	37	261,044	504	34	16,976	63	12	2
15	Melcher St	25	0.11	0.070	0.015	0.003	3,862	3,862	396	29	0.93	3,601	20	71,488	260	18	4,649	30	6	1
16	A St, Melcher to Necco	25	0.07	0.077	0.015	0.002	9,343	9,343	610	44	0.93	8,713	2	19,604	630	2	1,275	50	10	2
17	Necco St	25	0.06	0.075	0.015	0.003	1,557	1,557	87	6	0.93	1,452	14	19,968	105	12	1,299	7	1	0
18	A St, Necco to Binford	25	0.10	0.077	0.015	0.002	9,405	9,405	877	63	0.93	8,771	0	3,947	634	0	257	72	14	2
19	Binford St	25	0.10	0.075	0.015	0.003	1,370	1,370	128	9	0.93	1,278	14	17,252	92	12	1,122	10	2	0
20	Site Driveway	25	0.09	0.077	0.015	0.002	2,491	2,491	209	15	0.93	2,323	41	95,960	168	37	6,240	17	3	1
21	A St, Binford to Richards	25	0.21	0.075	0.015	0.003	8,782	8,782	1,720	124	0.93	8,190	5	42,180	592	5	2,743	138	27	5
22	Richards St, W of A St	25	0.06	0.072	0.015	0.003	0	0	0	0	0.93	0	16	0	0	14	0	0	0	0
23	A St, S of Richards	25	0.08	0.072	0.015	0.003	10,464	10,464	781	56	0.93	9,759	4	35,131	705	3	2,285	60	12	2
24	Richards St, A St to S Boston Bypass	25	0.10	0.074	0.015	0.003	6,914	6,914	645	47	0.93	6,448	83	532,257	466	74	34,613	51	10	2
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	0.073	0.015	0.003	13,267	13,267	1,608	116	0.93	12,373	7	83,515	894	6	5,431	126	25	5
26	Cypher St, E of S. Boston Bypass	25	0.15	0.076	0.014	0.002	9,530	9,530	1,333	96	0.93	8,887	12	110,648	642	11	7,196	108	21	4
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	0.074	0.015	0.003	16,879	16,879	2,361	171	0.93	15,742	93	1,456,890	1,137	83	94,743	188	37	7
								VMT (per day)	21,656	1,565								1.7	0.3	0.1
								VMT (per year)	7,904,265	571,136.5			Arterial	4,985,423			324,207	Daily Total (kg)		
																		PM10	PM2.5	EPM

VMT Total (per year)	8,475,401.50

	PM10 EF (g/s)	Idle (g/day)	Idle (kg/day)	PM2.5 EF (g/s)	Idle (g/day)	Idle (kg/day)	EPM EF (g/s)	Idle (g/day)	Idle (kg/day)
Arterial									
Peak Period	1.43E-05	71	**0.07**	1.30E-05	65	**0.06**	1.30E-05	65	**0.06**
Off-Peak Period	1.43E-05	5	**0.00**	1.30E-05	4	**0.00**	1.30E-05	4	**0.00**
Total (Including Link)			**1.82**			**0.41**			**0.07**

Fort Point Channel - 232 A St.

Weekday Traffic

Link No.	Roadway Description	Existing			No Build			Build				Build with Mitigation			
		Roadway S.A.F.	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Traffic Increase (existing)	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Traffic Increase (existing)	Traffic Increase (no-build)	Roadway ADT (veh/day)	Seasonal ADT (veh/day)	Traffic Increase (existing)	Traffic Increase (no-build)
1	Congress St, E of I90/B St	100%	12,519	12,519	19,557	19,557	56%	19,557	19,557	56%	0%	19,557	19,557	56%	0%
2	I90 Ramp @ B St	100%	19,184	19,184	23,544	23,544	23%	23,544	23,544	23%	0%	23,544	23,544	23%	0%
3	B Street	100%	6,789	6,789	7,225	7,225	6%	7,225	7,225	6%	0%	7,225	7,225	6%	0%
4	Congress St, I93 Ramp to B St	100%	10,464	10,464	12,706	12,706	21%	12,706	12,706	21%	0%	12,706	12,706	21%	0%
5	I93 Ramp	100%	3,675	3,675	3,924	3,924	7%	3,924	3,924	7%	0%	3,924	3,924	7%	0%
6	I90 Ramp	100%	2,927	2,927	3,301	3,301	13%	3,301	3,301	13%	0%	3,301	3,301	13%	0%
7	Pier 4 Boulevard	100%	5,979	5,979	6,540	6,540	9%	6,540	6,540	9%	0%	6,540	6,540	9%	0%
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blv	100%	10,090	10,090	12,145	12,145	20%	12,145	12,145	20%	0%	12,145	12,145	20%	0%
9	West Service Rd	100%	11,149	11,149	13,267	13,267	19%	13,267	13,267	19%	0%	13,267	13,267	19%	0%
10	Boston Wharf Rd	100%	5,855	5,855	7,038	7,038	20%	7,038	7,038	20%	0%	7,038	7,038	20%	0%
11	Congress St, A St to West Service Rd	100%	11,896	11,896	14,263	14,263	20%	14,263	14,263	20%	0%	14,263	14,263	20%	0%
12	Thompson Place	100%	1,744	1,744	1,806	1,806	4%	1,806	1,806	4%	0%	1,806	1,806	4%	0%
13	Congress St, W of A st	100%	11,896	11,896	13,017	13,017	9%	13,042	13,042	10%	0%	13,042	13,042	10%	0%
14	A St, Congress to Melcher	100%	7,474	7,474	9,530	9,530	28%	9,554	9,554	28%	0%	9,554	9,554	28%	0%
15	Melcher St	100%	3,862	3,862	4,734	4,734	23%	5,543	5,543	44%	17%	5,543	5,543	44%	17%
16	A St, Melcher to Necco	100%	9,343	9,343	10,588	10,588	13%	11,423	11,423	22%	8%	11,423	11,423	22%	8%
17	Necco St	100%	1,557	1,557	2,554	2,554	64%	2,554	2,554	64%	0%	2,554	2,554	64%	0%
18	A St, Necco to Binford	100%	9,405	9,405	10,713	10,713	14%	11,548	11,548	23%	8%	11,548	11,548	23%	8%
19	Binford St	100%	1,370	1,370	1,370	1,370	0%	1,370	1,370	0%	0%	1,370	1,370	0%	0%
20	Site Driveway	100%	2,491	2,491	3,924	3,924	58%	5,655	5,655	127%	44%	5,655	5,655	127%	44%
21	A St, Binford to Richards	100%	8,782	8,782	11,523	11,523	31%	11,859	11,859	35%	3%	11,859	11,859	35%	3%
22	Richards St, W of A St	100%	0	0	0	0	0%	0	0	0%	0%	0	0	-100%	-100%
23	A St, S of Richards	100%	10,464	10,464	12,893	12,893	23%	12,943	12,943	24%	0%	12,943	12,943	24%	0%
24	Richards St, A St to S Boston Bypass	100%	6,914	6,914	8,035	8,035	16%	8,321	8,321	20%	4%	8,321	8,321	20%	4%
25	S. Boston Bypass, S of Richards/Cypher	100%	13,267	13,267	14,388	14,388	8%	14,450	14,450	9%	0%	14,450	14,450	9%	0%
26	Cypher St, E of S. Boston Bypass	100%	9,530	9,530	10,152	10,152	7%	10,314	10,314	8%	2%	10,314	10,314	8%	2%
27	S. Boston Bypass, N of Richards/Cypher	100%	16,879	16,879	18,312	18,312	8%	18,374	18,374	9%	0%	18,374	18,374	9%	0%

Peak Period Volume Factor

Weekday ATR Volumes

Peak Period Factor Derived From ATR-Data Analysis => **0.080**

Seasonal Adjustment Factor (S.A.F.)

MassPike - ADT Adjustment Factor => **1.00**

Principal Arterial - ADT Adjustment Factor => **1.00**

Fort Point Channel - 232 A St.

Emissions Factors By Link (g/mi)

Emission Factors From MOVES3

	Roadway Segments	2023 Existing			2030 No Build			2030 Build			2030 Build-Mit		
		PM10	PM2.5	EPM	PM10	PM2.5	EPM	PM10	PM2.5	EPM	PM10	PM2.5	EPM
1	Congress St, E of I90/B St	0.073	0.015	0.006	0.069	0.011	0.003	0.069	0.011	0.003	0.069	0.011	0.003
2	I90 Ramp @ B St	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
3	B Street	0.071	0.015	0.007	0.067	0.011	0.003	0.067	0.011	0.003	0.067	0.011	0.003
4	Congress St, I93 Ramp to B St	0.075	0.015	0.006	0.071	0.011	0.003	0.071	0.011	0.003	0.071	0.011	0.003
5	I93 Ramp	0.087	0.015	0.004	0.084	0.012	0.002	0.084	0.012	0.002	0.084	0.012	0.002
6	I90 Ramp	0.087	0.015	0.004	0.084	0.012	0.002	0.084	0.012	0.002	0.084	0.012	0.002
7	Pier 4 Boulevard	0.081	0.015	0.005	0.077	0.012	0.002	0.077	0.012	0.002	0.077	0.012	0.002
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	0.071	0.015	0.007	0.067	0.011	0.003	0.067	0.011	0.003	0.067	0.011	0.003
9	West Service Rd	0.075	0.015	0.006	0.071	0.011	0.003	0.071	0.011	0.003	0.071	0.011	0.003
10	Boston Wharf Rd	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
11	Congress St, A St to West Service Rd	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
12	Thompson Place	0.075	0.014	0.006	0.072	0.011	0.002	0.072	0.011	0.002	0.072	0.011	0.002
13	Congress St, W of A st	0.074	0.015	0.006	0.070	0.011	0.003	0.070	0.011	0.003	0.070	0.011	0.003
14	A St, Congress to Melcher	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
15	Melcher St	0.070	0.015	0.007	0.065	0.011	0.003	0.065	0.011	0.003	0.065	0.011	0.003
16	A St, Melcher to Necco	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
17	Necco St	0.075	0.015	0.006	0.071	0.011	0.003	0.071	0.011	0.003	0.071	0.011	0.003
18	A St, Necco to Binford	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
19	Binford St	0.075	0.015	0.006	0.071	0.011	0.003	0.071	0.011	0.003	0.071	0.011	0.003
20	Site Driveway	0.077	0.015	0.005	0.073	0.011	0.002	0.073	0.011	0.002	0.073	0.011	0.002
21	A St, Binford to Richards	0.075	0.015	0.006	0.071	0.011	0.003	0.071	0.011	0.003	0.071	0.011	0.003
22	Richards St, W of A St	0.072	0.015	0.006	0.067	0.011	0.003	0.067	0.011	0.003	0.067	0.011	0.003
23	A St, S of Richards	0.072	0.015	0.006	0.067	0.011	0.003	0.067	0.011	0.003	0.067	0.011	0.003
24	Richards St, A St to S Boston Bypass	0.074	0.015	0.006	0.070	0.011	0.003	0.070	0.011	0.003	0.070	0.011	0.003
25	S. Boston Bypass, S of Richards/Cypher	0.073	0.015	0.006	0.069	0.011	0.003	0.069	0.011	0.003	0.069	0.011	0.003
26	Cypher St, E of S. Boston Bypass	0.076	0.014	0.005	0.072	0.011	0.002	0.072	0.011	0.002	0.072	0.011	0.002
27	S. Boston Bypass, N of Richards/Cypher	0.07	0.01	0.01	0.07	0.01	0.00	0.07	0.01	0.00	0.07	0.01	0.00

Fort Point Channel - 232 A St.
Weekday Vehicle Delay

Link No.	Description	Directions	Existing					No Build					Build					Build-Mit				
			Delay By Approach		Adjusted Delay *		Combined	Delay By Approach		Adjusted Delay *		Combined	Delay By Approach		Adjusted Delay *		Combined	Delay By Approach		Adjusted Delay *		Combined
			NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)	NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)	NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)	NB or EB (sec)	SB or WB (sec)	NB or EB (sec)	SB or WB (sec)	Delay (sec)
1	Congress St, E of I90/B St	2		39.6	0	39.6	19.8		60.5	0	60.5	30.25		60.5	0	60.5	30.25		60.5	0	60.5	30.25
2	I90 Ramp @ B St	2	33.3		33.3	0	16.65	35.9		35.9	0	17.95	35.9		35.9	0	17.95	35.9		35.9	0	17.95
3	B Street	2		96.3	0	96.3	48.15		106.1	0	106.1	53.05		106.1	0	106.1	53.05		106.1	0	106.1	53.05
4	Congress St, I93 Ramp to B St	2	27.9	10.3	27.9	10.3	19.1	26.5	12.9	26.5	12.9	19.7	26.5	12.9	26.5	12.9	19.7	26.5	12.9	26.5	12.9	19.7
5	I93 Ramp	1	46.5		46.5	0	46.5	47.3		47.3	0	47.3	47.3		47.3	0	47.3	47.3		47.3	0	47.3
6	I90 Ramp	1	50.7		50.7	0	50.7	50.0		50	0	50	50.0		50	0	50	50.0		50	0	50
7	Pier 4 Boulevard	1			0	0	0			0	0	0			0	0	0			0	0	0
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	2	23.9	20.6	23.9	20.6	22.25	24.5	23.9	24.5	23.9	24.2	24.5	23.9	24.5	23.9	24.2	24.5	23.9	24.5	23.9	24.2
9	West Service Rd	2	39.9		39.9	0	19.95	52.9		52.9	0	26.45	52.9		52.9	0	26.45	52.9		52.9	0	26.45
10	Boston Wharf Rd	2		51.1	0	51.1	25.55		158.5	0	158.5	79.25		158.5	0	158.5	79.25		158.5	0	158.5	79.25
11	Congress St, A St to West Service Rd	2	15.7	14.7	15.7	14.7	15.2	17.8	18.3	17.8	18.3	18.05	17.8	18.3	17.8	18.3	18.05	17.8	18.3	17.8	18.3	18.05
12	Thompson Place	1		0.0	0	0	0		0.0	0	0	0		0.0	0	0	0		0.0	0	0	0
13	Congress St, W of A st	2	34.7		34.7	0	17.35	38.4		38.4	0	19.2	38.4		38.4	0	19.2	38.4		38.4	0	19.2
14	A St, Congress to Melcher	2	70.9	4.0	70.9	4	37.45	143.8	5.3	143.8	5.3	74.55	144.0	5.4	144	5.4	74.7	144.0	5.4	144	5.4	74.7
15	Melcher St	2	39.7		39.7	0	19.85	58.6		58.6	0	29.3	59.5		59.5	0	29.75	59.5		59.5	0	29.75
16	A St, Melcher to Necco	2	4.5	0.0	4.5	0	2.25	6.5	0.0	6.5	0	3.25	10.5	0.0	10.5	0	5.25	10.5	0.0	10.5	0	5.25
17	Necco St	2	27.5		27.5	0	13.75	53.8		53.8	0	26.9	64.7		64.7	0	32.35	64.7		64.7	0	32.35
18	A St, Necco to Binford	2	0.3	0.6	0.3	0.6	0.45	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
19	Binford St	2		27.0	0	27	13.5		0.0	0	0	0		0.0	0	0	0		0.0	0	0	0
20	Site Driveway	2	82.6		82.6	0	41.3	289.5		289.5	0	144.75	687.5		687.5	0	343.75	687.5		687.5	0	343.75
21	A St, Binford to Richards	2	0.5	9.8	0.5	9.8	5.15	1.4	13.1	1.4	13.1	7.25	1.8	15.2	1.8	15.2	8.5	1.8	15.2	1.8	15.2	8.5
22	Richards St, W of A St	2	31.7		31.7	0	15.85	30.9		30.9	0	15.45	30.9		30.9	0	15.45	30.9		30.9	0	15.45
23	A St, S of Richards	2	7.2		7.2	0	3.6	8.4		8.4	0	4.2	8.4		8.4	0	4.2	8.4		8.4	0	4.2
24	Richards St, A St to S Boston Bypass	2	43.6	121.5	43.6	121.5	82.55	42.3	210.5	42.3	210.5	126.4	42.1	226.6	42.1	226.6	134.35	42.1	226.6	42.1	226.6	134.35
25	S. Boston Bypass, S of Richards/Cypher	2	13.5		13.5	0	6.75	17.7		17.7	0	8.85	19.0		19	0	9.5	19.0		19	0	9.5
26	Cypher St, E of S. Boston Bypass	2		24.9	0	24.9	12.45		27.6	0	27.6	13.8		28.8	0	28.8	14.4		28.8	0	28.8	14.4
27	S. Boston Bypass, N of Richards/Cypher	2		185.1	0	185.1	92.55		285.2	0	285.2	142.6		296.4	0	296.4	148.2		296.4	0	296.4	148.2

PM PEAK CONDITION
DELAY BY APPROACH (seconds)

		Existing				No Build				Build				Build-Mit			
		EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
1	1: I-90 Ramps/B St & Congress St	27.9	39.6	33.3	96.3	26.5	60.5	35.9	106.1	26.5	60.5	35.9	106.1	26.5	60.5	35.9	106.1
2	2: I-90 Off Ramp/Pier 4 Blvd & I-93 Off Ramp & Congress St	23.9	10.3	50.7	46.5	24.5	12.9	50.0	47.3	24.5	12.9	50.0	47.3	24.5	12.9	50.0	47.3
3	3: W Service Rd Ext/Boston Wharf Rd & Congress St	15.7	20.6	39.9	51.1	17.8	23.9	52.9	158.5	17.8	23.9	52.9	158.5	17.8	23.9	52.9	158.5
4	4: A St/Thompson Pl & Congress St	34.7	14.7	70.9	0.0	38.4	18.3	143.8	0.0	38.4	18.3	144.0	0.0	38.4	18.3	144.0	0.0
5	5: A St & Melcher St	39.7		4.5	4.0	58.6		6.5	5.3	59.5		10.5	5.4	59.5	0.0	10.5	5.4
6	6: A St & Necco St	27.5	27.0	0.3	0.0	53.8		0.5	0.0	64.7		0.5	0.0	64.7	0.0	0.5	0.0
7	7: A St & Binford St	82.6		0.5	0.6	289.5	75.8	1.4	0.5	687.5	265.9	1.8	0.5	687.5	265.9	1.8	0.5
8	8: A St & Richards St	31.7	43.6	7.2	9.8	30.9	42.3	8.4	13.1	30.9	42.1	8.4	15.2	30.9	42.1	8.4	15.2
9	9: S Boston Bypass & Richards St/Cypher St	121.5	24.9	13.5	185.1	210.5	27.6	17.7	285.2	226.6	28.8	19.0	296.4	226.6	28.8	19.0	296.4

Fort Point Channel - 232 A St.

Weekday Average Daily Traffic (ADT) for Mesoscale Roadway Network

	Roadway Segments	Speed (mph)	Existing Volume (ADT)	2030 No-Build Volume (ADT)	2030 Build Volume (ADT)	2030 Build-Mit Volume (ADT)	K Factor	S.A.F.	Unadjusted PM Peak Hour			
									Existing	No-Build	Build	Build-Mit
							8.0%	1.00				
1	Congress St, E of I90/B St	25	12,519	19,557	19,557	19,557			1005	1570	1570	1570
2	I90 Ramp @ B St	25	19,184	23,544	23,544	23,544			1540	1890	1890	1890
3	B Street	25	6,789	7,225	7,225	7,225			545	580	580	580
4	Congress St, I93 Ramp to B St	25	10,464	12,706	12,706	12,706			840	1020	1020	1020
5	I93 Ramp	25	3,675	3,924	3,924	3,924			295	315	315	315
6	I90 Ramp	25	2,927	3,301	3,301	3,301			235	265	265	265
7	Pier 4 Boulevard	25	5,979	6,540	6,540	6,540			480	525	525	525
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	25	10,090	12,145	12,145	12,145			810	975	975	975
9	West Service Rd	25	11,149	13,267	13,267	13,267			895	1065	1065	1065
10	Boston Wharf Rd	25	5,855	7,038	7,038	7,038			470	565	565	565
11	Congress St, A St to West Service Rd	25	11,896	14,263	14,263	14,263			955	1145	1145	1145
12	Thompson Place	25	1,744	1,806	1,806	1,806			140	145	145	145
13	Congress St, W of A st	25	11,896	13,017	13,042	13,042			955	1045	1047	1047
14	A St, Congress to Melcher	25	7,474	9,530	9,554	9,554			600	765	767	767
15	Melcher St	25	3,862	4,734	5,543	5,543			310	380	445	445
16	A St, Melcher to Necco	25	9,343	10,588	11,423	11,423			750	850	917	917
17	Necco St	25	1,557	2,554	2,554	2,554			125	205	205	205
18	A St, Necco to Binford	25	9,405	10,713	11,548	11,548			755	860	927	927
19	Binford St	25	1,370	1,370	1,370	1,370			110	110	110	110
20	Site Driveway	25	2,491	3,924	5,655	5,655			200	315	454	454
21	A St, Binford to Richards	25	8,782	11,523	11,859	11,859			705	925	952	952
22	Richards St, W of A St	25	0	0	0	0			0	0	0	0
23	A St, S of Richards	25	10,464	12,893	12,943	12,943			840	1035	1039	1039
24	Richards St, A St to S Boston Bypass	25	6,914	8,035	8,321	8,321			555	645	668	668
25	S. Boston Bypass, S of Richards/Cypher	25	13,267	14,388	14,450	14,450			1065	1155	1160	1160
26	Cypher St, E of S. Boston Bypass	25	9,530	10,152	10,314	10,314			765	815	828	828
27	S. Boston Bypass, N of Richards/Cypher	25	16,879	18,312	18,374	18,374			1355	1470	1475	1475

Fort Point Channel - 232 A St.

Mesoscale Roadway Data

Link No.	Description	Speed (mph)	Link Length (miles)	Start Elev (ft)	Finish Elev (ft)	Grade (%)	Directions
1	Congress St, E of I90/B St	25	0.11	12	9	0.5	2
2	I90 Ramp @ B St	25	0.06	12	12	0.0	2
3	B Street	25	0.07	12	8	1.1	2
4	Congress St, I93 Ramp to B St	25	0.10	12	13	0.2	2
5	I93 Ramp	25	0.08	13	7	-1.4	1
6	I90 Ramp	25	0.08	13	7	-1.4	1
7	Pier 4 Boulevard	25	0.14	13	9	-0.5	1
8	Congress St, W Service Rd/Boston Wharf Rd to Pier 4 Blvd	25	0.09	13	8	1.1	2
9	West Service Rd	25	0.10	9	8	0.2	2
10	Boston Wharf Rd	25	0.12	8	8	0.0	2
11	Congress St, A St to West Service Rd	25	0.08	8	8	0.0	2
12	Thompson Place	25	0.13	8	9	0.1	1
13	Congress St, W of A st	25	0.13	8	11	0.4	2
14	A St, Congress to Melcher	25	0.11	8	8	0.0	2
15	Melcher St	25	0.11	8	16	1.4	2
16	A St, Melcher to Necco	25	0.07	8	8	0.0	2
17	Necco St	25	0.06	8	9	0.3	2
18	A St, Necco to Binford	25	0.10	8	8	0.0	2
19	Binford St	25	0.10	8	7	0.2	2
20	Site Driveway	25	0.09	8	8	0.0	2
21	A St, Binford to Richards	25	0.21	8	5	0.3	2
22	Richards St, W of A St	25	0.06	5	8	0.9	2
23	A St, S of Richards	25	0.08	5	9	0.9	2
24	Richards St, A St to S Boston Bypass	25	0.10	5	7	0.4	2
25	S. Boston Bypass, S of Richards/Cypher	25	0.13	7	3	0.6	2
26	Cypher St, E of S. Boston Bypass	25	0.15	7	8	0.1	2
27	S. Boston Bypass, N of Richards/Cypher	25	0.15	7	10	0.4	2

Fort Point Channel - 232 A St.

Weekday ATR Volumes

A St. North of Richards Street

Mon 03/25/2019 - Sun 03/31/2019

Begin Time	Volume	V/C Ratio	Peak Period Data	
			Hours	Volume
12:00 AM	163	0.10	0	0
1:00 AM	111	0.07	0	0
2:00 AM	77	0.05	0	0
3:00 AM	60	0.04	0	0
4:00 AM	110	0.07	0	0
5:00 AM	336	0.21	1	336
6:00 AM	508	0.32	1	508
7:00 AM	631	0.40	1	631
8:00 AM	928	0.59	1	928
9:00 AM	852	0.54	1	852
10:00 AM	606	0.39	1	606
11:00 AM	585	0.37	1	585
12:00 PM	544	0.35	1	544
1:00 PM	526	0.34	1	526
2:00 PM	617	0.39	1	617
3:00 PM	680	0.43	1	680
4:00 PM	768	0.49	1	768
5:00 PM	731	0.47	1	731
6:00 PM	660	0.42	1	660
7:00 PM	565	0.36	1	565
8:00 PM	484	0.31	1	484
9:00 PM	401	0.26	1	401
10:00 PM	359	0.23	1	359
11:00 PM	258	0.16	0	0
Total	**11,560**		**18**	**10,781**

Roadway Capacity	Crit. V/C	Critical Capacity
1,570	**18%**	**283**

Peak Hour (K) Factor **0.080**

Peak Period Volume Factor **0.933**

Project Data

TRAFFIC DATA

Project Name	Fort Point Channel - 232 A St.
Project County	Suffolk
Existing Year	2023
No-Build Year	2030
Build Year	2030
Build with Mitigation Year	2030
Seasonal Adjustment Factor	1.00
K-Factor	8.0%

Idle Emission Factors

Year	PM10 (g/hr)	PM2.5 (g/hr)	EPM (g/hr)
2023	0.05	0.05	0.05
2030	0.02	0.02	0.02
2030 Truck	0.34	0.31	0.31

Fort Point Channel - 232 A St.

Truck Emissions Analysis

	2030 Build
Particulate Matter < 10 µm (PM10)	
Emissions (kg/d)	9.59E-04
Emissions (short tons per year)	3.86E-04
Particulate Matter < 2.5 µm (PM2.5)	
Emissions (kg/d)	8.83E-04
Emissions (short tons per year)	3.55E-04
Exhaust Particulate (EPM)	
Emissions (kg/d)	8.83E-04
Emissions (short tons per year)	3.55E-04

Fort Point Channel - 232 A St.

Build

Link No.	Description	Roadway Link Length Speed	(miles)	Emission Factor (g/mi) PM10	PM2.5	EPM	AADT (veh/day)	Seasonally Adjusted ADT (veh/day)	VMT Peak (veh-miles)	VMT Off-Peak (veh-miles)	Peak Period Factor	Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Off-Peak Traffic Data Period Volume (vehicles)	Average Delay (sec)	Adjusted Delay (veh-sec)	Link Emissions PM10 (grams)	PM2.5 (grams)	EPM (grams)
1	Idling Trucks	0	0.00	0.34	0.31	0.31	34	34	0	0	0.93	32	300	9,513	2	270	619	0	0	0
								VMT (per day)	0	0								0.0	0.0	0.0
								VMT (per year)	0	0.0			Arterial	9,513			619	Daily Total (kg)		
																		PM10	PM2.5	EPM

VMT Total (per year)	**0.00**

	PM10 EF (g/s)	PM10 Idle (g/day)	PM10 Idle (kg/day)	PM2.5 EF (g/s)	PM2.5 Idle (g/day)	PM2.5 Idle (kg/day)	EPM EF (g/s)	EPM Idle (g/day)	EPM Idle (kg/day)
Arterial									
Peak Period	9.47E-05	0.901	**0.001**	8.71E-05	0.829	**0.001**	8.71E-05	0.829	**0.001**
Off-Peak Period	9.47E-05	0.059	**0.000**	8.71E-05	0.054	**0.000**	8.71E-05	0.054	**0.000**
Total (Including Link)			**0.001**			**0.001**			**0.001**

Fort Point Channel - 232 A St.

Truck Emissions Factors By Speed (g/mi)

Emission Factors From MOVES3

	MPH	Description	2030 No Build PM10	2030 No Build PM2.5	2030 No Build EPM	2030 Build PM10	2030 Build PM2.5	2030 Build EPM	2030 Build-Mit PM10	2030 Build-Mit PM2.5	2030 Build-Mit EPM
1	0	Idle	*0.341*	*0.314*	*0.314*	*0.341*	*0.314*	*0.314*	*0.341*	*0.314*	*0.314*
2	5	5 mph	*1.053*	*0.2062*	*0.085*	*1.053*	*0.206*	*0.085*	*1.053*	*0.206*	*0.085*
3	10	10 mph	*0.614*	*0.124*	*0.054*	*0.614*	*0.124*	*0.054*	*0.614*	*0.124*	*0.054*
4	15	15 mph	*0.405*	*0.090*	*0.044*	*0.405*	*0.090*	*0.044*	*0.405*	*0.090*	*0.044*
5	20	20 mph	*0.295*	*0.071*	*0.038*	*0.295*	*0.071*	*0.038*	*0.295*	*0.071*	*0.038*
6	25	25 mph	*0.237*	*0.060*	*0.034*	*0.237*	*0.060*	*0.034*	*0.237*	*0.060*	*0.034*
7	30	30 mph	*0.197*	*0.053*	*0.032*	*0.197*	*0.053*	*0.032*	*0.197*	*0.053*	*0.032*
8	35	35 mph	*0.155*	*0.042*	*0.026*	*0.155*	*0.042*	*0.026*	*0.155*	*0.042*	*0.026*
9	40	40 mph	*0.122*	*0.036*	*0.024*	*0.122*	*0.036*	*0.024*	*0.122*	*0.036*	*0.024*
10	45	45 mph	*0.096*	*0.032*	*0.022*	*0.096*	*0.032*	*0.022*	*0.096*	*0.032*	*0.022*
11	50	50 mph	*0.074*	*0.027*	*0.020*	*0.074*	*0.027*	*0.020*	*0.074*	*0.027*	*0.020*
12	55	55 mph	*0.056*	*0.023*	*0.018*	*0.056*	*0.023*	*0.018*	*0.056*	*0.023*	*0.018*
13	60	60 mph	*0.046*	*0.021*	*0.017*	*0.046*	*0.021*	*0.017*	*0.046*	*0.021*	*0.017*
14	65	65 mph	*0.042*	*0.021*	*0.017*	*0.042*	*0.021*	*0.017*	*0.042*	*0.021*	*0.017*
15	70	70 mph	*0.039*	*0.020*	*0.018*	*0.039*	*0.020*	*0.018*	*0.039*	*0.020*	*0.018*
16	75	75 mph	*0.037*	*0.020*	*0.018*	*0.037*	*0.020*	*0.018*	*0.037*	*0.020*	*0.018*

Appendix E: ENF Certificate and Comment Letters

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September 29, 2023

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: 232 A Street Project
PROJECT MUNICIPALITY	: Boston
PROJECT WATERSHED	: Boston Harbor
EEA NUMBER	: 16746
PROJECT PROPONENT	: Parcel 3 Owner, L.L.C
DATE NOTICED IN MONITOR	: August 9, 2023

Pursuant to the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I hereby determine that this project **requires** the preparation of a mandatory Draft Environmental Impact Report (DEIR).

Project Description

As described in the Environmental Notification Form (ENF), the project consists of the construction of an approximately 335,000 square feet (sf), 150 ft, mixed use building, including laboratory/R&D and office space, and ground floor space with intended retail, restaurant, civic, and/or cultural uses. The project includes below grade parking for approximately 125 car spaces as well as improvements to the Harborwalk[1] and South Bay Harbor Trail[2], site grading for improved neighborhood resiliency, and approximately 1.5-acres of publicly accessible open space along the Fort Point Channel waterfront. The project also includes the possible addition of a floating dock located in and on filled and flowed tidelands of the Fort Point Channel.

[1] About the Harborwalk - Boston Harbor Now
[2] South Bay Harbor Trail Project | Boston.gov

Project Site

The 2.41-acre project site is bordered to the west by Fort Point Channel, to the east by A Street, to the south by low-scale manufacturing located within a Proctor and Gamble facility, and to the north by Binford Steet and a proposed mixed-use development (EEA#16250). The site consists of a single parcel which has been allowed by zoning to be developed as two separate parcels, a western parcel and an eastern parcel (such areas are referred to as Parcel G7 and Parcel G8, respectively, in the filing). The site is almost entirely paved and is currently used as a parking lot with 125 spaces. A portion of the project site, near the intersection of Binford and Necco Streets, includes an existing emergency access structure that serves the Massachusetts Department of Transportation (MassDOT) Central Artery tunnel system. The site also contains a section of the Harborwalk and South Bay Harbor Trail and the existing approximately 0.25-acre Binford Street Park. A large portion of the project site sits above the Central Artery tunnel extension to the Ted Williams tunnel. According to the ENF, a Memorandum of Agreement (MOA) was developed with the previous owner of the site (Proctor & Gamble) and MassDOT to address construction over the I-90 tunnel. The Proponent will comply with the MOA.

The project site is within the planning area of the South Boston Waterfront Municipal Harbor Plan (South Boston MHP) as amended in 2009 to include the Fort Point Industrial District. The South Boston MHP as approved in 2009 was incorporated into the 310 CMR 9.00 on November 22, 2022, and a clarification was approved by EEA in April 2023. [3] The South Boston MHP incorporates the guidelines developed in the Fort Point Channel Watersheet Activation Plan (FPCWAP). The site is located within the study area of the 100 Acres Master Plan, which was completed by the Boston Planning and Development Agency (BPDA) in 2006. The zoning requirements for the 100 Acres Master Plan area are included in the Master Plan for Planned Development Area (PDA) No. 69 adopted by the Boston Zoning Commission pursuant to Article 80C of the Boston Zoning Code. The PDA Master Plan provides the framework for the mixed-use neighborhood envisioned in the 100 Acres Master Plan. The site is also located in the Groundwater Conservation Overlay District (GCOD).

The site is located within the 100-year floodplain (Zone AE) with a Base Flood Elevation (BFE) of 10 feet North American Vertical Datum of 1988 (NAVD 88).[4] The project site is located on filled and flowed tidelands of the Fort Point Channel including filled Private Tidelands, filled Commonwealth Tidelands, and Flowed Commonwealth Tidelands. A portion of the project site also includes Landlocked Tidelands.

The project site is located within one mile of 33 EJ Populations characterized as Minority, Income, Minority and Income, Minority and English Isolation and Income, English Isolation and Minority, Income, and English Isolation. As described below, the ENF identified the "Designated Geographic Area" (DGA) for the project as one mile around EJ Populations, included a review of potential impacts and benefits to the EJ Populations within this DGA, and described public involvement efforts undertaken to date.

[3] The term "South Boston MHP" used herein includes the MHP as approved by the EEA Secretary and clarified on April 25, 2023.
[4] The FEMA flood elevation of 10 ft NAVD 88 converts to 16.45 feet Boston City Base (BCB).

Environmental Impacts and Mitigation

Potential environmental impacts of the project include the nonwater-dependent use of tidelands; generation of 3,744 average daily trips (adt); alteration of 104,771 sf (2.4 acres) of Land Subject to Coastal Storm Flowage (LSCSF); new use of approximately 27,638 gallons per day (gpd) of water; and generation of approximately 25,125 gpd of wastewater. Greenhouse Gas (GHG) emissions and other air pollutants are associated with the burning of fossil fuels for on-site energy use and for vehicle trips generated by the project.

Measures to avoid, minimize and mitigate environmental impacts include removing 0.91 acres of impervious area; enhancing pedestrian and bicycle access by making improvements to the Harborwalk and South Bay Harbor Trail; providing 1.5 acres of publicly-accessible open space, including waterfront parkland; providing interior public uses, including civic and cultural space; and implementing Transportation Demand Management (TDM) measures such as encouraging use of public transit and other alternate modes of travel. The project design includes a stormwater management system with Best Management Practices (BMPs) to improve water quality, reduce flow rates and infiltrate stormwater. The project will employ measures to conserve water and contribute to Infiltration/Inflow (I/I) reduction to preserve sewer capacity and minimize overflows. The DEIR should provide a comprehensive description of all mitigation commitments for the project, including those related to stationary- and mobile-source GHG emissions and any environmental justice impacts. C.1

Jurisdiction and Permitting

The project is subject to the preparation of a Mandatory EIR pursuant to 301 CMR 11.03(3)(a)(5) and 301 CMR 11.03(6)(a)(6), respectively, because it requires Agency Actions and involves the nonwater-dependent use of more than one acre of tidelands and will generate 3,000 or more new adt on roadways providing access to a single location. The project also exceeds the ENF thresholds under 301 CMR 11.03(3)(b)(1)(f) for the alteration of 0.5 or more acres of any other wetlands and 310 CMR 11.03(3)(b)(5) for the new or existing unlicensed non-water dependent use of waterways or tidelands, unless the project is an overhead utility line, a structure of 1,000 or less sf base area accessory to a single family dwelling, a temporary use in a designated port area, or an existing unlicensed structure in use prior to January 1, 1984. The project requires a M.G.L. Chapter 91 (c. 91) License from the Massachusetts Department of Environmental Protection (MassDEP); a Vehicular Access Permit from MassDOT; and a Sewer Use Discharge Permit from the Massachusetts Water Resources Authority (MWRA). The ENF states that the project also requires a Section 8(m) Permit and a Construction Dewatering Permit from MWRA; however, these permits may not be needed as explained below. The project requires a Public Benefit Determination (PBD) and is subject to review under the May 2010 MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol ("the GHG Policy").

The project requires an Order of Conditions from the Boston Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions (SOC) from MassDEP). It requires Article 80 Large Project Review, PDA Development Plan Approval by the BPDA and a Transportation Access Plan Agreement (TAPA) and Construction Management Plan (CMP) approval from the Boston Transportation Department (BTD). The project requires a PDA Development Plan Approval and may also require a PDA Master Plan No. 69 Amendment

Approval by the Boston Zoning Commission. The project requires a determination of no hazard to air navigation from the Federal Aviation Administration (FAA) and a National Pollutant Discharge Elimination System (NPDES) Stormwater General Permit from the Environmental Protection Agency (EPA).

Because the Proponent is not seeking Financial Assistance from an Agency, MEPA jurisdiction extends to those aspects of the project that are within the subject matter of required or potentially required Permits that are likely, directly or indirectly, to cause Damage to the Environment.

Review of the ENF

The ENF included a project description, an alternatives analysis, existing and proposed conditions plans, estimates of project-related impacts and c. 91 requirements applicable to the site. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the filing contained an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience Design Tool"), together with information on climate resilience strategies to be undertaken by the project. It also included a description of measures taken to enhance public involvement by EJ Populations and a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)(1). The filing did not request any expedited review treatment, and indicates agreement that a Scope for DEIR would be issued for this project.

SCOPE

General

The DEIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should clearly demonstrate that the Proponent has sought to avoid, minimize and mitigate Damage to the Environment to the maximum extent feasible.

Project Description and Permitting

The DEIR should include detailed site plans for existing and post-development conditions at a legible scale. Plans should clearly identify buildings, interior and exterior public areas, impervious areas, pedestrian and bicycle accommodations, and stormwater and utility infrastructure. C.2 The DEIR should describe the project and identify any changes since the filing of the ENF. C.3 It should identify and describe State, federal and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. C.4 The DEIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards. C.5

The information and analyses identified in this Scope should be addressed within the main body of the DEIR and not in appendices. In general, appendices should be used only to

provide raw data, such as drainage calculations, traffic counts, capacity analyses and energy modelling, that is otherwise adequately summarized with text, tables and figures within the main body of the DEIR. Information provided in appendices should be indexed with page numbers and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the DEIR to materials provided in an appendix should include specific page numbers to facilitate review.

Alternatives Analysis

The ENF analyzed a series of alternatives including a No-Build Alternative, a larger footprint Build Alternative and the Preferred Alternative. The No Build alternative would avoid impacts associated with the project, as it would continue the use of the site as a surface parking lot with limited public access. However, according to the ENF, continuing the current use of the existing parcel as a surface parking lot does not align with the 100 Acres Master Plan and would not meet the project's goal of providing the public access benefits and resiliency improvements associated with the proposed project.

The larger footprint Build Alternative, which represents an earlier iteration of the project design, consists of 0.43-acre of open space, with a six-story building on the G7 parcel (approximately 150,610 sf) along the Font Point Channel and a nine-story building set back on the G8 parcel (approximately 335,000 sf) along A Street, which is consistent with the 100 Acres Master Plan. This is larger than the Preferred Alternative, which proposes only the nine-story 335,000 sf building on the G8 parcel with open space on the G7 parcel. As with the Preferred Alternative, both buildings would provide office, lab and ground floor uses with Facilities for Public Accommodation (FPA), in compliance with Chapter 91 regulations. This alternative will also have below-grade parking for approximately 340 spaces. This alternative maximizes the amount of gross floor area possible on the combined two parcels as allowed under the 100 Acres Master Plan.

As shown in the table below, this larger footprint alternative results in greater impacts in terms of water use, wastewater generation and adt compared to the Preferred Alternative. In addition, after obtaining input from the surrounding community, it was determined that this alternative did not provide the desired level of public access to the waterfront. As a result of this public input, the Proponent amended the project to its current design and removed the six-story building that would take up a large portion of the G7 parcel (adjacent to the waterfront) and replaced it with open space.

Impact Category	No-Build Alternative	Build Alternative	Preferred Alternative
Land			
Total Site Area	2.4 acres	2.4 acres	2.4 acres
New Land Alteration	2.4 acres (existing)	0 acres	0 acres
New Impervious Area	±2.21 acres (existing)	Approx. (0.44 acres)	Approx. (0.91 acres)
Water & Wastewater			
Water Use	0 GPD	40,428 GPD	27,638 GPD
Wastewater Generation	0 GPD	36,752 GPD	25,125 GPD
Transportation & Parking			
Net New Daily Vehicle Trips (Unadjusted)[1]	0	4,626	3,164
Net New Daily Vehicle Trips (Adjusted)[2]	0	1,554	1,014
Parking Ratio[3]	NA	0.70[3]	0.70[3]
Maximum Parking Spaces	125 existing	340 spaces	235 spaces
Proposed Parking Spaces	125 existing	340 spaces	125 spaces
Net-New Parking Spaces	0	+215 Spaces	0 spaces
Trip Generation			
Weekday Daily Trips (vpd)[4]	252	1,806	1,266
Net-New Trips	0	+1,554	+1,014

The Preferred Alternative consists of a single nine-story building with the same dimension as in the larger footprint alternative (approximately 335,000 sf) within the G8 parcel of the project site. The G7 parcel would be converted to approximately 1.5-acres of waterfront public realm space with no building component. The G8 building would provide office, lab, and ground floor uses with FPA in compliance with Chapter 91 regulations. The Preferred Alternative will also have below-grade parking for approximately 125 spaces, which is consistent with the number of spaces currently on the project site and 215 less spaces than the larger footprint alternative. As discussed above, the Preferred Alternative incorporated feedback from the surrounding community and removed the proposed building on the G7 parcel and replaced it with open space.

Environmental Justice

As noted above, the project site is located within one mile of 33 EJ Populations characterized as Minority, Income, Minority and Income, Minority and English Isolation and Income, English Isolation and Minority, Income, and English Isolation. Within the census tracts containing the above EJ Populations, the following languages are identified as those spoken by 5% or more of residents who also identify as not speaking English very well: Spanish or Spanish Creole and Chinese.

Effective January 1, 2022, all new projects in a DGA (as defined in 301 CMR 11.02) around EJ Populations are subject to new requirements imposed by the Chapter 8 of the Acts of 2021: An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy (the "Climate Roadmap Map") and amended MEPA regulations at 301 CMR 11.00. Two related MEPA protocols—the MEPA Public Involvement Protocol for Environmental Justice Populations (the "MEPA EJ Public Involvement Protocol") and MEPA Interim Protocol for Analysis of project Impacts on Environmental Justice Populations (the "MEPA Interim Protocol for Analysis of EJ Impacts")—are also in effect for new projects filed on or after January 1,

2022. Under the new regulations and protocols, all projects located in a DGA around one or more EJ Populations must take steps to enhance public involvement opportunities for EJ Populations, and must submit analysis of impacts to such EJ Populations in the form of an EIR.

Community Engagement

Consistent with the MEPA EJ Public Involvement Protocol, the Proponent sent advance notification of the project in the form of an EJ Screening Form (translated into Spanish and Chinese) to a "EJ Reference List" provided by the MEPA Office and consisting of Community Based Organizations (CBOs) and tribes/indigenous organizations. Notice of the MEPA remote and in-person consultation sessions was also distributed to the EJ Reference List, and the meetings were held at 9:30 AM on August 22, 2023 (remote) and 10 AM on August 23, 2023 (in-person). The Proponent offered translation and interpretation services upon request; however, no requests for language interpretation were received.

According to the ENF, additional public involvement activities included holding public listening sessions on August 2, 2022 at Binford Street Park and May 13, 2023 at 105 West First Street (a property owned by the Proponent), to discuss the development of the site and solicit stakeholder feedback. The Proponent also held a voluntary pre-filing public meeting through the BPDA on April 12, 2023, again soliciting stakeholder feedback. These public meetings helped the Proponent obtain the feedback to remove the building that was originally proposed on parcel G7 in exchange for planned open space. A project factsheet was developed and translated into Chinese. In addition, the Proponent published the ENF public notice in the Boston Herald, El Mundo Boston, and Sampan publications.

The DEIR, or a summary thereof, should be distributed to all CBOs and tribes/indigenous organizations included in the "EJ Reference List" that was utilized to provide notice of the ENF, and an updated list should be obtained from the MEPA Office to ensure that contact information is up to date. C.6 The DEIR should describe the public involvement plan that the project intends to follow for EJ Populations within the DGA for the remainder of the MEPA review process. C.7 The Proponent should hold at least one public meeting prior to filing the DEIR, and should demonstrate in the DEIR and notice of the meeting was distributed widely within the surrounding EJ neighborhoods with translations in Spanish and Chinese, including through alternative language media. C.8 The DEIR should indicate whether a project website or other online resource will be made available. C.9

Enhanced Analysis

The ENF contained a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. and the MEPA Interim Protocol for Analysis of EJ Impacts. The baseline assessment included a review of the data provided by the Department of Public Health (DPH) EJ Tool applicable to the DGA regarding "vulnerable health EJ criteria"; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling

average.[5] According to the ENF, the data surveyed indicate that the City of Boston exceeds the criteria for Low Birth Weight and Childhood Asthma. The ENF did not include census tract data for vulnerable health EJ criteria. The DEIR should provide this information. C.10

In addition, the ENF indicates that the following sources of potential pollution exist within one mile of the identified EJ Populations, based on the mapping layers available in the DPH EJ Tool:

- Major air and waste facilities: 25

Although the ENF states that other sources of potential pollution exist within one mile of the identified EJ Populations, the filing did not provide complete data from the DPH Tool. The DEIR should fully analyze the data available in the DPH tool including sources of pollution not identified in the ENF but present within the 1-mile DGA around the project site. These include: C.11

- M.G.L. c. 21E sites
- "Tier II" Toxics Release Inventory Site
- MassDEP sites with AULs
- MassDEP groundwater discharge permits
- Wastewater treatment plants
- MassDEP public water suppliers
- Underground storage tanks
- EPA facilities
- Road infrastructure
- MBTA bus and rapid transit
- Other transportation infrastructure
- Regional transit agencies
- Energy generation and supply

While the ENF concludes that there is some indication of an existing "unfair or inequitable" burden impacting EJ Populations, it asserts that the project will not result in disproportionate adverse effects, or increase the risks of climate change, on the EJ Populations by materially exacerbating such existing burdens. In particular, the filing indicates the proposed building elevates the first floor of the building one foot above the flood elevations associated with the anticipated 2070 100-year storm event. In addition, the ENF indicates that the project will provide benefits by creating 500 construction jobs and 900 permanent jobs and enhancing public realm improvements by providing 1.5-acres of publicly accessible open space along the Fort Point Channel waterfront.

The ENF asserts that the additional traffic associated with the project is not anticipated to contribute to any adverse or disproportionate impacts to EJ communities near the project site and states that air quality impacts from the project site are proposed to be mitigated through a

[5] See https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html. Four vulnerable health EJ criteria are tracked at the municipal level in the DPH EJ Viewer (heart attack hospitalization, childhood asthma, childhood blood lead, and low birth weight); of these, two (childhood blood lead and low birth weight) are also available at the census tract level.

Transportation Demand Management (TDM) program and the promotion of alternative modes of transportation to minimize vehicle-related emissions. As discussed below, the DEIR should provide an air quality analysis using the MOVES model, consistent with the *MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources*, for the study area used for the traffic study performed for the project, and should clarify how wide the traffic study area extends around the project site (e.g., ½ mile). Data on NOx, PM2.5, PM10, and DPM should be provided to the extent they are available. The DEIR should provide a comparison of GHG emissions and air pollutants from Existing (current) conditions to future No Build, future Build, and future Build with Mitigation conditions. Where a substantial increase from No Buil to future Build conditions is shown (e.g., above 1 ton per year), the DEIR should consider mitigation measures. The DEIR should confirm that any impacted intersections within the study area (where Level of Service (LOS) was shown to degrade from No Build to Build conditions) and adjacent to EJ Populations will be adequately mitigated. The DEIR should discuss whether project related traffic is anticipated to extend near other EJ Populations within the DGA, and provide a narrative description of whether air quality will be impacted at those locations.

C.12
C.13
C.14
C.15
C.16

Chapter 91/Tidelands

As noted above, the project site is located on filled and flowed tidelands of the Fort Point Channel including filled Private Tidelands, filled Commonwealth Tidelands, and Flowed Commonwealth Tidelands. A portion of the project site also includes Landlocked Tidelands, which are not subject to licensing pursuant to G.L. c.91 and 310 CMR 9.04(2). The building is proposed to be used for nonwater-dependent uses and the project is therefore subject to the setbacks, use limitations, height requirements, site coverage limits and public access standards, including for public access facilities in the Water-dependent Use Zone (WDUZ), under the Waterways Regulations. According to MassDEP comments, the baseline c.91 regulations applied to the project site establish a 25-foot wide WDUZ. The South Boston MHP included a substitute provision establishing a 110-foot wide WDUZ. The project proposes a mixed-use building to be located approximately 385 feet from the project shoreline with publicly accessible open space between the building and the shoreline.

The ENF provided a review of the project's compliance with the Waterways Regulations and South Boston MHP. The project includes FPA that will occupy the ground floor of the proposed building; a 110-ft WDUZ within which only water-dependent uses are allowed, including publicly-accessible parkland; and building height that do not exceed the 180-ft maximum height established by the South Boston MHP.

The DEIR should provide the information and analyses requested in the detailed comment letter submitted by the MassDEP Waterways Program, which is incorporated by reference herein. In particular, the DEIR should provide detailed plans, including profiles and cross-sections as necessary, showing all aspects relative to c.91 jurisdictional boundaries (historic high water, mean high water, Landlocked Tidelands, WDUZ, etc.) including above-ground and below-ground building elements. The DEIR should include a tabular breakdown and graphical depiction of the proposed ground floor uses located on Landlocked Tidelands, filled Private Tidelands, and on filled Commonwealth Tidelands. The DEIR should specifically demonstrate compliance with 310 CMR 9.53(2)(c), which requires at least 75% of the interior ground floor of a nonwater-dependent building located on filled Commonwealth Tidelands to

C.17
C.18
C.19
C.20

include FPAs. It should clarify if any outdoor dining, public restrooms, and/or parking or loading areas of any kind at or above grade are proposed on any filled Commonwealth Tidelands on the project site. C.21 The DEIR should demonstrate compliance with the baseline Chapter 91 building height setbacks at 310 CMR 9.51(3)(e) by updating figures (specifically Figure 4.5) showing building height in relation to the setback distance from the high-water mark. C.22

The DEIR should demonstrate compliance with the open space requirements at 310 CMR 9.51(3)(d) by providing calculations of the overall project site subject to licensing, the footprint of buildings for non-water dependent use and proposed open space, presented in square feet with corresponding area percentages. C.23 The DEIR should describe and provide detailed plans of the open space, and quantify each open space by its character and proposed use, such as landscaped, hardscaped plaza, sidewalks, etc. C.24 In addition, the DEIR should include a discussion of pertinent negotiations with the City of Boston Parks Department related to the long-term ownership and management of the proposed open space. C.25

The DEIR should provide a comprehensive and detailed review of the South Boston MHP and related zoning and planning documents, such as the 100 Acres Master Plan and FPCWAP. C.26 It should describe all requirements of the approved South Boston MHP that are pertinent to the site, such as the height and WDUZ substitutions and amplifications requiring measures to enhance the public's access to and use of the Fort Point waterfront. C.27 It should provide a draft management plan for the publicly accessible interior and exterior facilities to be provided by the project. C.28 The DEIR should include a detailed analysis of the project's compliance with the c. 91 regulations and approved South Boston MHP. C.29

The ENF indicates that the Proponent contemplates adding a dock and associated structures in the Fort Point Channel, seaward of the State Harbor Line. Comments from MassDEP Waterways Program advise that any license application for fill or structures to be located seaward of the State Harbor Line must demonstrate compliance with Chapter 204 of the Acts of 2010. Temporary floats authorized pursuant the M.G.L. c.91 §10A are not subject to the prohibitions regarding licensure of structures seaward of the State Harbor Line stipulated in M.G.L. c.91 §14 and §34. Comments state that in the event that a docking facility is proposed over the State Harbor Line, the State Harbor line must be included on all applicable project plans and coordinate the licensing of any such structure with the BPDA in advance of filing a c.91 Waterway License Application. The DEIR should provide additional information regarding the plans for the dock, including its intended uses, size, location, structure, and interaction with the South Boston Municipal Harbor Plan. C.30

Public Benefit Determination

The project site is comprised of tidelands subject to the provisions of An Act Relative to Licensing Requirements for Certain Tidelands (2007 Mass. Acts ch. 168) and the Public Benefit Determination regulations (301 CMR 13.00). Consistent with Section 8 of the legislation, I must conduct a Public Benefit Review as part of the review of EIR projects located on landlocked tidelands that entail new use or modification of an existing use. The DEIR should include a review of the PBD regulations and describe how the project will have a public benefit. C.31 I will issue a PBD within 30 days of the issuance of a Certificate on the Final Environmental Impact Report (FEIR).

Section 3 of this legislation requires that any project that is subject to MEPA review and proposes a new use or structure or modification of an existing use or structure within landlocked tidelands address the project's impacts on tidelands and groundwater within the ENF. It indicates that the ENF "shall include an explanation of the project's impact on the public's right to access, use and enjoy tidelands that are protected by chapter 91, and identify measures to avoid, minimize or mitigate any adverse impacts on such rights set forth herein." If a project is located in an area where low groundwater levels have been identified by a municipality or by a State or federal agency as a threat to building foundations, the ENF "shall also include an explanation of the project's impacts on groundwater levels, and identification and commitment to taking measures to avoid, minimize, or mitigate any adverse impacts on groundwater levels." The legislation notes that these provisions apply to the filing of an EIR if one is required. The ENF did not include a detailed analysis of the project's groundwater impacts or mitigation measures; therefore, this information should be provided in the DEIR. C.32

The project site is located within the City's GCOD and the ENF indicated that the project will be required to recharge groundwater by infiltrating the first inch of runoff from the site's impervious area. It should address the project's impacts on groundwater levels and identify measures to avoid, minimize and mitigate these impacts. C.33

Wetlands and Stormwater

The project includes new buildings and fill within LSCSF and may include a boating dock that would impact Land Under Ocean (LUO) and Coastal Bank. According to comments from MassDEP Northeast Regional Office (NERO), the ENF did not provide sufficient information to review for wetland regulation compliance. The DEIR should include a detailed description of the project's impacts on wetland resource areas and the floodplain and review how the project will comply with the relevant performance standards in the Wetlands Regulations (310 CMR 10.00). It should provide a cross-sections showing where the wetlands boundaries are locad, proposed wetland alteration, or grading and drainage plan(s) with details. C.34 C.35

Comments from MassDEP state that the DEIR should provide clarification as to whether the proposed alteration to LSCSF involves filling or temporary alteration to this wetland resource area. If filling is proposed, comments from MassDEP state that the DEIR should provide a narrative of how the floodwaters currently flow on the site based on the existing topography, and how they are expected to flow under the proposed grading. Comments go on to say that the DEIR should explain whether and how the proposed project will increase the elevation or velocity of floodwaters, and/or cause floodwater to be displaced, deflected, or reflected onto adjacent properties or public and private ways. C.36 C.37 C.38

Comments from MassDEP state that the DEIR should clarify what work involving the potential dock or other aspects of the project is proposed in LUO and Coastal Bank and notate this on the plans, quantify the amount of alteration proposed (and restored, if applicable) for each of the wetland resource area; and, explain how the project will meet the performance standards under 310 CMR 10.25(3) through (7) and 10.30(3) through (8), respectively. This information should be provided in the DEIR. C.39

The project will reduce impervious area from 2.41 acres under existing conditions to 1.3 acres by converting impervious area to landscaped open space. According to the ENF, the stormwater management system will be designed to meet the Massachusetts Stormwater Management Standards (SMS) and BWSC requirements to the maximum extent possible, including infiltration of the first 1.25-inches of runoff from impervious areas. According to the ENF, the project is expected to reduce peak runoff rates and volumes for various design storm events for the post-development condition as compared to the pre-development condition, including the 2-, 10-, and 25-year design storms. Stormwater runoff from proposed and modified impervious surface areas is expected to be treated using new infrastructure such as deep-sump, hooded catch basins, and proprietary treatment devices to reduce the Total Suspended Solids (TSS) concentrations by at least 80 percent. The DEIR should include a Stormwater Report and supporting computations, including an Operation and Maintenance Plan. C.40 The DEIR should include a more detailed stormwater narrative that explains how the stormwater treatment train(s) have been designed to meet the Stormwater Standards fully and if not, that the highest level of treatment possible is being proposed (Standard 7). C.41 The ENF states that groundwater recharge will be provided (Standard 3) through a stormwater infiltration system or equivalent recharge system. Since the site is partially within several Massachusetts Contingency Plan (MCP) sites with designated MassDEP Release Tracking Numbers, it is not clear how the groundwater recharge will be achieved or if it's even appropriate to do so. This should be clarified in the DEIR. C.42

Water and Wastewater

The project will use 27,638 gpd of water and generate 25,125 gpd of wastewater. Water will be supplied by a connection to BWSC water mains on A and Binford Streets. Wastewater from the site will be conveyed to the BWSC's sewer system through connections in A Street. There is a 72-inch Combined Sewer Overflow in Mount Washington Avenue.

The project will be required to mitigate its contribution of flow into the City's sanitary system. MassDEP regulations at 314 CMR 12.04(2)(d) specify that communities with CSOs, such as Boston, must require projects generating 15,000 gpd or more of new wastewater flow to remove four gallons of infiltration and inflow (I/I) for each gallon of wastewater. As noted in comments from MWRA, the Proponent should consult with the BWSC to develop a plan for ensuring a 4:1 offset of the project's wastewater flow. C.43 The DEIR should include a commitment to I/I removal and identify any mitigation projects or monetary contribution by the Proponent. As noted by the BWSC, groundwater discharges into the sanitary system are prohibited. Discharges from laboratory uses require a Sewer Use Discharge Permit from the MWRA's Toxic Reduction and Control (TRAC) Department. C.44 The DEIR should review any requirements associated with the MWRA's permit and should include a commitment to use oil/gas separators in the parking garage drainage systems.

The DEIR should describe the location and size of infrastructure and connections to the BWSC's water and sewer systems. C.45 It should document that adequate water and sewer capacity exist to serve the site. The DEIR should identify and describe water conservation measures that will be incorporated into design and operations. C.46 At a minimum, the DEIR should review the feasibility of installing low-flow fixtures and using rainwater or gray water for irrigation and other purposes.

Comments from MWRA explain that the ENF states that the project requires a Section 8(m) Permit, but that there is no MWRA infrastructure in the vicinity of the project site and therefore an MWRA Section 8(m) permit would not be issued for the project. Comments go on to clarify that the ENF also stated that the project would require a Construction Dewatering Permit from MWRA, however, the project site has access to separate sewer and storm drain systems. Therefore, the discharge of groundwater or stormwater to the sanitary sewer system associated with this project is prohibited and an MWRA Construction Site Dewatering Permit would not be issued for the project.

Traffic and Transportation

According to the ENF, the project will generate a total of 3,744 adt (unadjusted). The trip generation estimate is based on trip rates published in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th edition, using Land Use Codes 710 (General Office Building) and 760 (Research & Development Center). The project includes the construction of a below-grade garage with 125 parking spaces. Necco Street will be extended south through the center of the project site. Access to the loading docks at the building and the garage will be from Binford Street. The project will provide bicycle and pedestrian facilities, including sidewalks along internal roadways, the Harborwalk, bicycle racks and bicycle parking spaces within the buildings.

The DEIR should include a Transportation Impact Analysis (TIA) developed in accordance with MassDOT/EOEEA's Transportation Impact Assessment Guidelines. The study should include a comprehensive assessment of the transportation impacts of the project. The TIA should provide capacity analyses of existing conditions, future No-Build conditions, and future Build conditions, particularly at state highway locations. The future Build conditions should include an analysis of operations both with and without any improvements suggested to mitigate project impacts. The study should propose an integrated multimodal mitigation package intended to improve vehicular traffic operations while supporting increased use of walking, bicycling, and transit by employees and residents. C.47 C.48 C.49 C.50

Study Area

Based on an initial evaluation of the expected increase in project vehicle-trips, the ENF included a proposed study area consisting of the following nine different intersections:

- Congress Street at B Street (signalized);
- Congress Street at Pier 4 Boulevard (signalized);
- Congress Street at West Service Road Extension/Boston Wharf Road (signalized);
- Congress Street at A Street (signalized);
- A Street at Melcher Street (signalized);
- A Street at Necco Street (unsignalized);
- A Street at Binford Street (unsignalized);
- A Street at Richards Street/Sobin Park (signalized); and • Cypher Street at the South Boston Bypass Road (signalized).

Comments from MassDOT indicate that the TIA should include an analysis of intersections and roadways where site traffic exceeds 100 vehicle trips per hour or 5% of existing volume. C.51

Trip Generation / Distribution

In accordance with the Institute of Transportation Engineers' (ITE) *Trip Generation Manual (11th Edition),* the ENF outlines that the project will utilize Land Use Code (LUC) 710, *General Office Building,* and LUC 760, *Research and Development Center* to develop the base trip-generation characteristics for the project. Accordingly, the proposed project is anticipated to generate a total of 390 unadjusted vehicle trips during the weekday morning peak hour and 375 unadjusted vehicle trips during the weekday evening peak hour. The existing trips currently generated by the existing uses on site will be eliminated with the construction of the proposed project, and as a result, the net increase in vehicle trips associated with the project will be referenced accordingly with a credit calculation. Traffic counts were conducted at the existing driveway that serves the parking lot on the project site on Wednesday, May 31 and Thursday, June 1, 2023, to determine the number of trips currently being generated by the 125 existing parking spaces on the site. The net new adjusted trips are anticipated to generate 140 vehicle trips during the weekday morning peak hour and 140 vehicle trips during the weekday evening peak hour. Comments from MassDOT note that total daily net new and unadjusted daily vehicle trips should be indicated separately within the TIA. The DEIR should present analysis consistent with this recommendation. C.52

The anticipated mode shares used for the project are 37% vehicle, 53% transit, and 10% bike/pedestrian. The mode shares were developed based on the 2014 American Community Survey (ACS) census data and adjusted to align with the Go Boston 2030 aspirational mode shares. Comments from MassDOT state that the Proponent should verify with the Massachusetts Bay Transportation Authority (MBTA) Service Planning Department that the mode split figures represent appropriate transit trip generation and trip assignments for the project prior to conducting a transit capacity analysis. The DEIR should provide this clarification. C.53

Comments from MassDOT state that the TIA should provide a trip distribution for the project based on a gravity model or similar model that uses factors such as census data, origin-destination, travel time, and distance to determine trip characteristics for visitors and employees of the Project. The DEIR should provide all appropriate backup documentation to verify how the different percentages are calculated and assigned to the roadway network and the transit system. C.54

Safety

The TIA should include crash analyses for all intersections in the study area using the MassDOT crash database for the most recent five years of accepted/available data. The study area intersections that are identified as Highway Safety Improvement Program (HSIP) clusters should be reviewed to determine whether Road Safety Audits (RSAs) are required or if any further actions may be taken to improve safety. C.55 Additionally, the Fort Point neighborhood corridor should be reviewed in the MassDOT Impact portal and specifically look at the crash based and risk-based screening tools. The mitigation proposed should reduce the number of crashes along high crash corridors as well as address any risks identified. C.56

Traffic Operations

The TIA should include an operational analysis of existing traffic conditions at the intersections and roadways included in the study area identified above. The TIA should include capacity analyses for the weekday morning and evening peak hours for both existing and future conditions for the project. In addition, capacity analyses for Build with mitigation conditions should be provided for all intersections, particularly those with impacts to the state highway system. C.57 C.58 C.59

The TIA should provide illustrations depicting the peak hour 50th (average) and 95th percentile queue lengths for each lane group/turning movement at each study area intersection, for all analysis scenarios. The level-of-service (LOS) for each lane group/turning movement should be clearly indicated for each condition. The information contained in these illustrations should clearly demonstrate that the project would not result in any extended queues that would block vehicle movements to/from study area intersections, particularly those involving state highways. Appropriate mitigation should be identified if necessary to address these concerns. C.60

Site Access

The main roadways supporting the project site area include A Street, which is a two-way roadway connecting Dorchester Avenue in the west to Congress Avenue in the east. One travel lane per direction is provided with occasional exclusive turn lanes at intersections. Bike lanes are provided on most segments along the roadways, and they alternate from sharrow markings to bike lanes between street segments. On segments of A Street with sharrow markings, on-street parking is provided. Crosswalks are provided at all intersections along A Street and narrow sidewalk is provided on both sides of the street. The other main road is Necco Street which is classified as a local private way that runs in a general north/south direction with an abend in the road past the Necco Street lot entrance which changes the orientation to an east/west direction. Necco Street connects Melcher Street to the north and A Street to the south. Necco Street is a two-lane roadway with no center line and private parking on both sides. Sidewalks are provided on both sides. There are no bicycle accommodations on Necco Street.

Comments from MassDOT state that the TIA should offer recommendations with respect to the design and operation of the project site access and internal circulation to allow for safe ingress and egress to the site. The DEIR should address this comment and offer recommendations as requested by MassDOT. C.61

Multimodal Access Accommodations

Comments from MassDOT state that the TIA should provide an inventory of existing sidewalks and crosswalks within the study area and should address the quality and condition of those facilities. Comments go on to say that the TIA should include a commitment to improvements in any areas that are structurally deficient or not meeting current codes for accessibility, including sidewalks, crosswalks, ramps, and pedestrian equipment. Special attention should be given to linking the proposed development to adjacent complementary land uses and transit facilities. C.62

Consistent with MassDOT comments, the TIA should include a detailed inventory of the bicycle network to include bikeway types, bikeway widths, and bicycle volumes and speeds. The Proponent should identify the likely travel routes for bicyclists within the study area. The degree to which these routes can safely support bicycle travel should also be examined. The TIA should reevaluate these routes based on the origin-destination of potential employees and visitors. Based on this analysis, the Proponent should consider the feasibility of expanding some of these existing routes or considering new routes to encourage bicycle travel in and around the site. C.63

Parking

The project site currently consists of a surface parking lot with 125 spaces. Limited on-street parking is located in the vicinity of the project site, along A Street and Binford Street.

As the project is a transit-oriented development, parking supply will be constrained to minimize dependence on auto travel and encourage the use of alternative means of accessing the project site, consistent with the City's recently published parking policies. The Proponent will coordinate with BPDA and BTD to determine final parking ratios for the project that are aligned with the City's guidelines and goals. The DEIR should include a parking analysis along with a commitment to electric vehicle charging accommodations. The total vehicle parking supply currently envisioned for the project is 125 spaces. C.64

As stated in comments from MassDOT, the TIA should clarify how the parking needs of the project were determined and explain the methodology used to determine the total parking required. This information should be provided in the DEIR. C.65

Transportation Demand Management

The following Transportation Demand Management (TDM) measures will be considered for implementation as a part of the project to reduce the overall number of automobile trips to and from the project site and to promote the use of alternative modes of transportation:

- TMA Membership – Join and participate in a local Transportation Management Association, if available, at the time of project approval;
- On-site TDM Coordinator – Designate an on-site Transportation Coordinator to oversee transportation issues, including parking, service and loading, and deliveries;
- Marketing – Develop and disseminate welcome packets to employees with tailored information about nearby transportation options, including public transportation routes/schedules, nearby vehicle sharing and bicycle sharing locations, and walking opportunities;
- Provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options;
- Real-Time Transit Information – Provide real-time transit information to employees and visitors via the internet and in the building lobby;
- Market-Rate Parking – Charge (at a minimum) market rates for on-site vehicle parking;
- Provide on-site parking at a rate below the maximum allowed by BTD's Parking Ratio Guidelines;

- Car Share Parking – Provide a minimum of one car share vehicle (ex Zipcar) that is accessible 24 hours a day, 7 days a week;
- Encourage employers' participation in the MBTA Perq Program to facilitate the purchase of transit passes;
- Comply with BTD Bike Parking Guidelines, including providing covered secure bicycle storage for building employees and providing on-site external bike racks for visitors;
- Comply with BTD Bike Parking Guidelines, including provision of showers and lockers for on-site employees (may be substituted with access to showers and lockers at an on-site health club or gym); and
- Provide on-site fitness center/gym component.

The DEIR should include a detailed TDM Plan with specific commitments. C.66

Transportation Monitoring Program

The Proponent will be required to conduct an annual Traffic Monitoring Program (TMP) for a period of five years, beginning six months after occupancy of the full-build project. The TMP will include:

- Simultaneous automatic traffic recorder (ATR) counts at the site driveway for a continuous 24-hour period on a typical weekday;
- Travel survey of employees and patrons at the site (to be administered by the Transportation Coordinator);
- Weekday AM and PM peak hour turning movement counts (TMCs) and operations analysis at "mitigated" intersections, including those involving site driveways, and;
- Transit Ridership counts.

The goals of the monitoring program will be to evaluate the assumptions made in the EIR and the adequacy of the mitigation measures, as well as to determine the effectiveness of the TDM program. The DEIR should provide the details of the proposed TMP for the project. C.67

Hazardous Waste

According to the ENF, the project site is partially within several Massachusetts Consistency Plan (MCP) sites; specifically, MassDEP Release Tracking Numbers (RTNs) 3-2966, 3-4365, and 3-11312. The MCP site identified by RTN 3-2966 has achieved regulatory closure; the remaining two sites identified by RTNs 3-4365 and 3-11312 are in Phase V of MCP response actions. The primary constituents of concern (COCs) associated with these MCP sites are volatile organic compounds (VOCs), particularly trichloroethylene (TCE) in groundwater under RTN 3-4365 and petroleum compounds and metals in soil under RTN 3-11312. On-going Phase V MCP response actions for RTN 3-4365 and RTN 3-11312 include operation of a groundwater treatment system and a sub-slab depressurization system in Z Building at the P&G South Boston Manufacturing Center.

The ENF acknowledged that the site may contain concentrations of contaminants associated with its historical uses, including placement of fill material. The Proponent will characterize soil and groundwater conditions and test soil and groundwater generated by

construction activities. The DEIR should include a description of procedure for the testing, handling and disposal of any hazardous waste encountered at the site. C.68

Climate Change

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the ENF, the project has a high exposure rating based on the project's location for the following climate parameters: sea level rise/storm surge, extreme precipitation (urban flooding), and extreme heat. Based on the 60-year useful life and the self-assessed criticality of the building, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 500-year (.2% annual chance) storm event for sea level rise/storm surge, and a 100-year (1% annual chance) storm event for extreme precipitation. The tool recommends planning for the 90th percentile with respect to extreme heat (which indicates an increase in extremely hot days as compared to a historical baseline).

To mitigate against the effects of sea-level rise/storm surge, the first floor of the proposed buildings will be elevated one foot above the anticipated 2070 100-year storm elevation as determined by City of Boston mapping to 15.1 NAVD 88 (21.5 BCB). The MA Resilience Design Tool now provides numeric values associated with a "wave action water elevation" (water elevation after taking into account wave action) for projects based on user inputs. Here, this value is reported as 16.6 to 18.9 feet NAVD88 (area weighted average and maximum) for 2070, and 14.9 to 16.8 feet NAVD88 for a 2050 interim planning horizon. The Tool indicates that the site is predicted to be exposed to the 1% annual chance (100-year) storm event as early as 2030. Based on these values, the proposed first floor elevation does not appear to be fully resilient to recommended standards for 2070, and is only modestly above recommended 2050 elevations based on an area weighted average. The DEIR should discuss the feasibility of further elevating the site to the recommended 500-year storm conditions given the proximity of the site to the coastline, and how a higher elevation would interact with ongoing planning regarding the Resilient Fort Point Channel Infrastructure Project, discussed below. C.69 Comments from MassDEP Waterways indicates that sea level rise and climate change will be considered when evaluating the Proponent's application for an extended term c. 91 license. The DEIR should discuss the project's resilience to future sea level rise, as indicated in MassDEP's letter. C.70 As requested by MassDEP, the DEIR should consider interior and exterior spaces, public benefits, public access and planned adaptability in the event predicted water elevations continue to increase. C.71

The ENF states that the proposed project is located behind the Resilient Fort Point Channel Infrastructure Project (EEA#16514). The infrastructure project involves the planned construction of approximately 2,090 linear feet of mixed berm and floodwall structures along the portion of the Fort Point Channel between Necco Street and Dorchester Avenue. The proposed berm is still in conceptual design and has not been constructed.

Comments from the Massachusetts Office of Coastal Zone Management (CZM) request detailed information regarding the proposed berm, including the design elevation and the basis for it, cross-sections, composition, a monitoring and maintenance plan, as well as information

regarding what storms might overtop the berm and how floodwater that gets over the berm will drain. Comments state that the DEIR should specify any design elements of the project (such as added elevation or adjacent roadway designs) that are not being pursued in favor of these long-term regional solutions. The DEIR should provide the information requested by CZM, and should clarify whether the berm will be designed, constructed and maintained by the City and/or the Proponent, and whether public funds will be required for its design and construction. The DEIR should describe how raising the site and constructing the berm will affect access to adjacent roadways, sections of the Harborwalk and infrastructure on or adjacent to the site. The DEIR should clarify if FEMA[6] has commented on the current design of the berm. The DEIR should discuss how flood protection will be provided if the berm were not constructed in a manner that aligns with the timing of construction of this project, and whether interim measures have been considered. C.72 C.73 C.74 C.75

The DEIR should provide further analysis in accordance with CZM comments, which request a detailed analysis specific to how the proposed fill, grading, and solid project components (e.g., berm, buildings, pavement) proposed in the coastal floodplain will affect coastal floodwater flow and drainage patterns within and adjacent to the site, both during rain events and coastal storm events where there is a combination of rain and coastal flooding. Comments go on to state that the DEIR should provide a detailed description in the form of a narrative as well as plans of depicting topography and the sources, flow direction, and pathways of existing and proposed coastal and inland flooding onto, through, and off the site during a coastal storm event. The analysis should demonstrate, using flow arrows and a narrative, how coastal floodwater will flow onto and off the project site and surrounding area under existing and proposed conditions. This analysis should also include a description about potential impacts if the proposed berm changes, reduces and/or eliminates any flood pathways. If the project will channelize flow, the DEIR should include an analysis of any changes in velocity, direction, depth, and extent of coastal floodwater. An analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities should be included in the DEIR. In addition to plan views, the DEIR should include cross-sections through the site that show the existing grades, proposed grades, proposed buildings, structures and FEMA flood zone elevations. The DEIR should also discuss how the flow path analysis would be affected, if the regional berm were not constructed and whether off-site flood impacts are anticipated under that scenario. C.76 C.77 C.78 C.79 C.80 C.81

To mitigate the effects of extreme precipitation events, the project will reduce impervious area by .91 acres, creating new pervious area that will allow stormwater infiltration. The project will incorporate green infrastructure approaches into the design, such as rain gardens, permeable pavers, and increased landscaping. In addition, subsurface infiltration systems will be used to promote stormwater infiltration. The DEIR should provide a full explanation of what measures will be taken to improve the project's resiliency to climate change. The DEIR should address the recommendations from the MA Resilience Design Tool, and specifically indicate whether stormwater sizing is consistent with 24-hour rainfall volumes for the 2070 100-year storm event as shown in the climate output report. C.82 C.83

The DEIR should demonstrate that the Proponent is developing appropriate strategies for C.84

to adapt to extreme heat conditions throughout the useful life of the project. The DEIR should document all efforts taken to maximize the use of low-impact design (LID) strategies for stormwater management, including rain gardens, bioretention areas, tree box filters, water quality swales and green roofs. C.84

GHG Emissions

This project is subject to review under the May 5, 2010, MEPA GHG Policy. The Policy requires Proponents to quantify carbon dioxide (CO2) emissions and identify measures to avoid, minimize or mitigate such emissions. The analysis should quantify the direct and indirect CO2 emissions of the project's energy use (stationary sources) and transportation-related emissions (mobile sources). Direct emissions include on-site stationary sources, which typically emit GHGs by burning fossil fuel for heat, hot water, steam and other processes. Indirect emissions result from the consumption of energy, such as electricity, that is generated off-site by burning of fossil fuels, and from emissions from vehicles used by employees, vendors, customers and others.

The ENF did not provide an analysis of the project's stationary- and mobile-source GHG emissions or review potential mitigation measures. The DEIR should include a GHG analysis prepared in accordance with the GHG Policy, guidance provided in the comment letter submitted by the Department of Energy Resources (DOER).

Stationary Source

The DEIR should include a GHG analysis for stationary sources prepared in accordance with the GHG Policy. The GHG analysis should clearly demonstrate consistency with the key objective of MEPA review, which is to document how Damage to the Environment can be avoided, minimized and mitigated to the maximum extent feasible. C.85 The DEIR should identify the model used to analyze GHG emissions, clearly state modeling assumptions, explicitly note which GHG reduction measures have been modeled, and identify whether certain building design or operational GHG reduction measures will be mandated by the Proponent to future occupants or merely encouraged for adoption and implementation. C.86 The DEIR should include the modeling printouts for each alternative and emission tables that compare base case emissions in tons per year (tpy) with the Preferred Alternative showing the anticipated reduction in tpy and percentage by emissions source. C.87 The DEIR should provide data and analysis in the format requested in DOER's letter. C.88

The DEIR should provide the information and analyses requested in the detailed comment letter submitted by DOER, which is incorporated by reference herein. In particular, the DEIR should include the following: C.89

- Additional information to better characterize proposed vertical envelope performance.
- Provide more details on proposed strategy to satisfy C406 requirements. C.90
- Commit to C406.9, reduced air leakage. C.91
- Evaluate air source heat pump service water heating. C.92

- Provide the following table, populating the gray cells. At least three scenarios need to be created as follows: (A) a "Reference Baseline" scenario that conforms to ASHRAE 90.12019 Appendix G, (B) a "Code Minimum" scenario that results in a performance energy index that is equal to the target performance energy index, and (C) a "Proposed" scenario that is improved from the code minimum. C.93
- Provide a table summary (similar to the "Appendix A" table in Zero Carbon Building Assessment" part of the report) of envelope characteristics, proposed efficiency, proposed equipment, etc to characterize each of the (A), (B), and (C) scenarios above. It's important to understand what the difference is between the (B) and (C) scenarios, as those differences are the above-code mitigation. Be sure to include C406 and other mandatory measures in scenario (B), Code Minimum. C.94
- The project will be pursuing the mixed fuel pathway of the code (CC101.3 part 3). Provide the following additional details:
  - Calculations and scale plan of roof showing PV necessary to conform with CC105.2. C.95
  - Calculations of the electric capacity, interior and exterior space requirements, and electric infrastructure necessary to conform with CC106.1.6. Scale plans showing interior and exterior location(s) to be set aside for future electric equipment.
- An evaluation of an all-electric option should be included in the DEIR. This evaluation should include an evaluation of the costs/benefits, and key considerations, of the proposed mixed-fuel option (with installed PV and electric readiness) compared to all electric (without the installed PV and electric readiness) option. C.96

Mobile Sources/Air Quality

The GHG analysis should include an evaluation of potential GHG emissions associated with mobile emissions sources. The DEIR should follow the guidance provided in the GHG Policy for *Indirect Emissions from Transportation* to determine mobile emissions for Existing Conditions, Build Conditions, and Build Conditions with Mitigation. C.97 The DEIR should describe truck loading and staging activities and estimate GHG emissions from idling. C.98 The Proponent should thoroughly explore means to reduce overall single occupancy vehicle trips and to minimize air emissions from diesel vehicle traffic. C.99 The DEIR should also review measures to promote the use of low-emissions vehicles, including installing electric vehicle charging stations and providing designated parking spaces for these vehicles. C.100 The Build with Mitigation model should incorporate TDM measures, and any roadway improvements implemented by the project, and document the associated reductions in GHG emissions. C.101

As stated above, the DEIR should conduct an air quality analysis in accordance with the *MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources (1991)*. C.102 Data on NOx, PM2.5, PM10, and DPM, in addition to GHG and VOCs, should be provided to the extent they are available for roadway segments included within the traffic study area used for the TIA. C.103 The DEIR should clearly indicate the radius of the traffic study utilized for the air quality analysis, and quantify the level of air pollutants for Existing, No Build, Build and Buil with Mitigation scenarios. C.104 Additional analysis of air quality at intersections near EJ populations should be conducted in accordance with the Environmental Justice Scope above. C.105 The DEIR

should demonstrate that all feasible measures will be taken to avoid, minimize and mitigate traffic impacts, and to avoid disproportionate adverse effects on EJ populations. C.106

Construction Period

The DEIR should provide an update on construction staging and timing, and should provide a construction management plan to the extent it is available. C.107 The DEIR should include a comprehensive discussion of construction period impacts on surrounding areas, including for EJ Populations, including an estimate of total duration, extent of construction period traffic, and ways to minimize impacts. C.108 If truck routes for construction vehicles will extend near EJ Populations, the DEIR should quantify the extent of traffic at those locations and discuss mitigation measures. C.109 All construction and demolition (C&D) activities should be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). C.110 The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management, etc.) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). C.111 I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. C.112 Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). C.113 If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). C.114 All construction activities should be undertaken in compliance with the conditions of all State and local permits. C.115 I encourage the Proponent to reuse or recycle C&D debris to the maximum extent. C.116

Mitigation and Draft Section 61 Findings

The DEIR should include a separate chapter updating all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ Populations. C.117 The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. C.118 Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. C.119 The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

Responses to Comments

The DEIR should contain a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the DEIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the DEIR beyond what has been expressly identified in this certificate. C.120

Circulation

The Proponent should circulate the DEIR to each Person or Agency who previously commented on the ENF, each Agency from which the project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. The Proponent may circulate copies of the DEIR to commenters other than Agencies in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis. A copy of the DEIR should be made available for review at the Boston Public Library Chinatown and South Boston branches and other appropriate Boston Public Library branches. C.121 C.122

September 29, 2023
Date

Rebecca L. Tepper

Comments received on the ENF:

08/10/2023	Boston Water and Sewer Commission
09/05/2023	Massachusetts Department of Transportation (MassDOT)
09/05/2023	Boston Harbor Now
09/05/2023	Conservation Law Foundation
09/18/2023	Water Resources Commission (WRC)
09/19/2023	Steve Hollinger
09/19/2023	Massachusetts Department of Environmental Protection (MassDEP)/ Waterways Regulation Program (WRP)
09/19/2023	Massachusetts Office of Coastal Zone Management (CZM)
09/19/2023	Massachusetts Department of Environmental Protection ((MassDEP) Northeast Regional Office (NERO)
09/21/2023	Massachusetts Water Resources Authority (MWRA).
09/22/2023	Boston Parks and Recreation Commission
09/27/2023	Department of Energy Resources (DOER)

RLT/NSP/nsp

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Gina Fiandaca, Secretary & CEO

massDOT
Massachusetts Department of Transportation

1.11

September 5, 2023

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Boston: 232 A Street – ENF
EEA #16746

ATTN: MEPA Unit
Nicholas Perry

Dear Secretary Tepper:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Environmental Notification Form filed for the proposed 232 A Street project in Boston as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavallee, P.E., Chief Engineer, Highway Division
John McInerney, P.E. District 6 Highway Director
James Danila, P.E., State Traffic Engineer
Metropolitan Area Planning Council (MAPC)
Boston Planning & Development Agency (BPDA)
Boston Transportation Department (BTD)

1

MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: September 5, 2023

RE: Boston: 232 A Street – ENF
EEA #16746

The Public/Private Development Unit (PPDU) has reviewed the Environmental Notification Form (ENF) for the proposed 232 A Street project located at 232 A Street in Boston as submitted by Vanasse Hangen Brustlin, Inc. (VHB) on behalf of Parcel 3 Owner, LLC. (the "Proponent"). The 2.4-acre site currently consists of a single legal parcel, with the PDA Master Plan segmenting the Project Site into two separate parcel designations. The site is bounded by a variety of older masonry buildings that have been converted to support office and/or residential uses to the east, low-scale manufacturing located within the P&G facility to the south, the 244-284 A Street proposed project to the north, and the Fort Point Channel to the west.

The project entails the construction of a 335,000 square foot (sf) single building, which is comprised of laboratory/R&D and office space, a ground floor space with intended retail, restaurant, civic, and/or cultural uses, a below-grade parking garage, as well as a city street extension, sidewalks, improvements to the Harborwalk, site grading for improved neighborhood resiliency, and approximately 1.5 acres of publicly accessible open space and public realm along the Fort Point Channel waterfront. The Project also includes approximately 125 below grade vehicle parking spaces, and approximately 155 bicycle parking spaces located within the building for Project workers and located throughout the Project Site for visitor use. Primary vehicle and truck access to the building will be provided through Binford Street.

The Project surpasses MEPA thresholds for review of an Environmental Notification Form (ENF) and an Environmental Impact Report (EIR) due to impacts on transportation per 301 CMR 11.03(6)(a)(6). The Project additionally requires a Non-Vehicular Access Permit from MassDOT, as it abuts an existing emergency access structure that serves the Central Artery tunnel system.

The ENF includes a description of the existing transportation infrastructure supporting the Project Site and an overview of the Project's transportation characteristics, including a preliminary estimate of Project trip generation prepared by VHB. The Proponent states that a comprehensive assessment of the Project-related transportation impacts within the study area

will be provided in the Draft Environmental Impact Report (DEIR), based on further discussions with the Boston Planning & Development Agency (BPDA), the Boston Transportation Department (BTD) and the Massachusetts Department of Transportation (MassDOT). The ENF includes the full scope of the Transportation Impact Assessment (TIA) that will be included in the DEIR filing and is submitted in lieu of a formal Transportation Scoping Letter (TSL) to MassDOT.

Scope of Work

The Draft EIR (DEIR) should include a Transportation Impact Analysis (TIA) developed in accordance with MassDOT/EOEEA's Transportation Impact Assessment Guidelines. The study should include a comprehensive assessment of the transportation impacts of the project. The TIA should provide capacity analyses of existing conditions, future No-Build conditions, and future Build conditions, particularly at state highway locations. The future Build conditions should include an analysis of operations both with and without any improvements suggested to mitigate project impacts. The study should propose an integrated multimodal mitigation package intended to improve vehicular traffic operations while supporting increased use of walking, bicycling, and transit by employees and residents. 1.1 1.2 1.3 1.4 1.5

Study Area

The ENF includes a study consisting of the following nine different intersections:

- Congress Street at B Street (signalized);
- Congress Street at Pier 4 Boulevard (signalized);
- Congress Street at West Service Road Extension/Boston Wharf Road (signalized);
- Congress Street at A Street (signalized);
- A Street at Melcher Street (signalized);
- A Street at Necco Street (unsignalized);
- A Street at Binford Street (unsignalized);
- A Street at Richards Street/Sobin Park (signalized); and
- Cypher Street at the South Boston Bypass Road (signalized).

MassDOT additionally notes that The TIA should include an analysis of intersections and roadways where site traffic exceeds 100 vehicle trips per hour or 5% of existing volume.

Trip Generation

In accordance with the Institute of Transportation Engineers' (ITE) *Trip Generation Manual (11th Edition),* the ENF outlines that the Project will utilize Land Use Code (LUC) 710, *General Office Building,* and LUC 760, *Research and Development Center* to develop the base trip-generation characteristics for the Project. Accordingly, the proposed project is anticipated to generate a total of 390 unadjusted vehicle trips during the weekday morning

peak hour and 375 unadjusted vehicle trips during the weekday evening peak hour. The existing trips currently generated by the existing uses on Site will be eliminated with the construction of the Proposed Project, and as a result, the net increase in vehicle trips associated with the Project will be referenced accordingly with a credit calculation. Traffic counts were conducted at the existing driveway that serves the parking lot on the Project Site on Wednesday, May 31 and Thursday, June 1, 2023, to determine the number of trips currently being generated by the 125 existing parking spaces on the Site. The net new adjusted trips are anticipated to generate 140 vehicle trips during the weekday morning peak hour and 140 vehicle trips during the weekday evening peak hour.

MassDOT notes that total daily net new and unadjusted daily vehicle trips should be acknowledged within the TIA. 1.7

Trip Distribution

The TIA should provide a trip distribution for the project based on a gravity model or similar model that uses factors such as census data, origin-destination, travel time, and distance to determine trip characteristics for visitors and employees of the Project. 1.8 The DEIR should provide all appropriate backup documentation to verify how the different percentages are calculated and assigned to the roadway network and the transit system. 1.9

Safety

The TIA should include crash analyses for all intersections in the study area using the MassDOT crash database for the most recent five years of accepted/available data. 1.10 The study area intersections that are identified as Highway Safety Improvement Program (HSIP) clusters should be reviewed to determine whether Road Safety Audits (RSAs) are required or if any further actions may be taken to improve safety. 1.11 Additionally, the Fort Point neighborhood corridor should be reviewed in the MassDOT Impact portal and specifically look at the crash based and risk-based screening tools. 1.12 The mitigation proposed should reduce the number of crashes along high crash corridors as well as address any risks identified. 1.13

Traffic Operations

The TIA should include an operational analysis of existing traffic conditions at the intersections and roadways included in the study area as identified above. 1.14 The TIA should include capacity analyses for the weekday morning and evening peak hours for both existing and future conditions for the Project. 1.15 In addition, capacity analyses for Build with mitigation conditions should be provided for all intersections, particularly those with impacts to the state highway system. 1.16

The TIA should provide illustrations depicting the peak hour 50th (average) and 95th percentile queue lengths for each lane group/turning movement at each study area intersection, for all analysis scenarios. The information contained in these illustrations should 1.17

clearly demonstrate that the Project would not result in any extended queues that would block vehicle movements to/from study area intersections, particularly those involving state highways. Appropriate mitigation should be identified if necessary to address these concerns. 1.17

Site Access

The main roadways supporting the Project site area include A Street, which is a two-way roadway connecting Dorchester Avenue in the west to Congress Avenue in the east. One travel lane per direction is provided with occasional exclusive turn lanes at intersections. Bike lanes are provided on most segments along the roadways, and they alternate from sharrow markings to bike lanes between street segments. On segments of A Street with sharrow markings, on-street parking is provided. Crosswalks are provided at all intersections along A Street and narrow sidewalk is provided on both sides of the street. The other main road is Necco Street which is classified as a local private way that runs in a general north/south direction with an abend in the road past the Necco Street lot entrance which changes the orientation to an east/west direction. Necco Street connects Melcher Street to the north and A Street to the south. Necco Street is a two-lane roadway with no center line and private parking on both sides. Sidewalks are provided on both sides. There are no bicycle accommodations on Necco Street.

The TIA should offer recommendations with respect to the design and operation of the Project site access and internal circulation to allow for safe ingress and egress to the site. 1.18

Multimodal Access Accommodations

The TIA should provide an inventory of existing sidewalks and crosswalks within the study area and should address the quality and condition of those facilities. 1.19 The TIA should include a commitment to improvements in any areas that are structurally deficient or not meeting current codes for accessibility, including sidewalks, crosswalks, ramps, and pedestrian equipment. 1.20 Special attention should be given to linking the proposed development to adjacent complementary land uses and transit facilities. 1.21

The TIA should include a detailed inventory of the bicycle network to include bikeway types, bikeway widths, and bicycle volumes and speeds. 1.22 The Proponent should identify the likely travel routes for bicyclists within the study area. The degree to which these routes can safely support bicycle travel should also be examined. 1.23 The TIA should reevaluate these routes based on the origin-destination of potential employees and visitors. Based on this analysis, the Proponent should consider the feasibility of expanding some of these existing routes or considering new routes to encourage bicycle travel in and around the site. 1.24

Mode Split

The anticipated mode shares used for the Project are 37% vehicle, 53% transit, and 10% bike/ped. The mode shares were developed based on the 2014 American Community

Survey (ACS) census data and adjusted to align with the Go Boston 2030 aspirational mode shares.

The Proponent should verify with the Massachusetts Bay Transportation Authority (MBTA) Service Planning Department that the mode split figures represent appropriate transit trip generation and trip assignments for the project prior to conducting a transit capacity analysis. 1.25

Parking

The Project Site currently consists of a surface parking lot with 125 spaces. Limited on-street parking is located in the vicinity of the Project Site, along A Street and Binford Street. Developments in the area are supported by private off-street surface parking in some cases. Zipcar has one car-sharing vehicle location within approximately a quarter mile of the Project Site at the 315 on A Apartments development.

As the Project is a transit-oriented development, parking supply will be constrained to minimize dependence on auto travel and encourage the use of alternative means of accessing the Project Site, consistent with the City's recently published parking policies. The Proponent will coordinate with BPDA and BTD to determine final parking ratios for the Project that are aligned with the City's guidelines and goals. The DEIR will include a parking analysis along with a commitment to electric vehicle charging accommodations. The total vehicle parking supply currently envisioned for the Project is 125 spaces. 1.26

The TIA should clarify how the parking needs of the project were determined and explain the methodology used to determine the total parking required. 1.27

Off-Site Mitigation

As noted previously, several major off-site transportation infrastructure initiatives have begun in recent years by City and State agencies and advocacy groups with significant infrastructure investments. The projects prioritize sustainable networks and integrate protected, contiguous pedestrian and bicycle routes linking to the larger regional networks.

Additionally, the Proponent also proposes Project specific mitigation and transportation demand management measures including as following:

- The Project will include streetscape improvements along existing streets, A Street and Binford Street, while also providing for the extension of Necco Street southward;
- The Proponent has proposed a temporary condition to create an activated and welcoming environment for the period in which the Necco Street extension does not continue across the site of the P&G facility;

- Planned improvements to Binford Street include adequate planting beds that act as stormwater retention and will help establish healthy street trees;
- The extension of Necco Street is planned to include a widened sidewalk, street lighting, new trees and plantings with large planting beds, the addition of new bike racks and a bike sharing port, seating areas, and a new drop off area for the building;
- The streetscape will be well lit and welcoming, connecting the neighborhood to the vastly improved public realms of the Project Site open space and neighboring approved Channelside Park to the building entry;
- All streets, associated ROW landscape improvements, and amenities will be consistent with the Boston Transportation Department's Complete Street guidelines;
- All streetscapes will incorporate native & adaptive plantings, permeable paver furnishing zone, lighting, and site furnishings;
- The Project Site will respect the A Street ROW setback which will also align with the 244-284 A Street approved development setback on A Street to provide a consistent streetscape experience;
- The Proponent has created an arcade within the building form on the southern edge of the Project Site which allows universal access to the facilities of public accommodation whose floor levels have been raised to an elevation of 21.5 feet BCB at its peak for resiliency measures; and
- At the northwest and southeast corners of the ground floor of the building, the volume is 'carved out' to soften the streetscape and to improve the through block site lines when approaching the publicly accessible open space from Binford Street and A Street.

Transportation Demand Management

The following Transportation Demand Management (TDM) measures will be considered for implementation as a part of the Project to reduce the overall number of automobile trips to and from the Project site and to promote the use of alternative modes of transportation:

- *TMA Membership* – Join and participate in a local Transportation Management Association, if available, at the time of Project approval;
- *On-Site TDM Coordinator* – Designate an on-site Transportation Coordinator to oversee transportation issues, including parking, service and loading, and deliveries;
- *Marketing* – Develop and disseminate welcome packets to employees with tailored information about nearby transportation options, including public transportation routes/schedules, nearby vehicle sharing and bicycle sharing locations, and walking opportunities;
- Provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options;
- *Real-Time Transit Information* – Provide real-time transit information to employees and visitors via the internet and in the building lobby;

- *Market-Rate Parking* – Charge (at a minimum) market rates for on-site vehicle parking;
- Provide on-site parking at a rate below the maximum allowed by BTD's Parking Ratio Guidelines;
- *Car Share Parking* – Provide a minimum of one car share vehicle (ex Zipcar) that is accessible 24 hours a day, 7 days a week;
- Encourage employers' participation in the MBTA Perq Program to facilitate the purchase of transit passes;
- Comply with BTD Bike Parking Guidelines, including providing covered secure bicycle storage for building employees and providing on-site external bike racks for visitors;
- Comply with BTD Bike Parking Guidelines, including provision of showers and lockers for on-site employees (may be substituted with access to showers and lockers at an on-site health club or gym); and
- Provide on-site fitness center/gym component.

Transportation Monitoring Program

The Proponent will be required to conduct an annual Traffic Monitoring Program (TMP) for a period of five years, beginning six months after occupancy of the full-build project. The TMP will include:

- Simultaneous automatic traffic recorder (ATR) counts at the site driveway for a continuous 24-hour period on a typical weekday;
- Travel survey of employees and patrons at the site (to be administered by the Transportation Coordinator);
- Weekday AM and PM peak hour turning movement counts (TMCs) and operations analysis at "mitigated" intersections, including those involving site driveways, and;
- Transit Ridership counts.

The goals of the monitoring program will be to evaluate the assumptions made in the EIR and the adequacy of the mitigation measures, as well as to determine the effectiveness of the TDM program. 1.28

Section 61 Finding

The DEIR should include a Draft Section 61 Finding, outlining the mitigation measures the Proponent has committed to implementing in conjunction with this project. The Draft Section 61 Finding will be the basis for MassDOT to issue a final Section 61 Finding for the project. 1.29

The Proponent should continue consultation with appropriate MassDOT units, including PPDU, Traffic Operations, and the District 6 Office during the preparation of the 1.30

DEIR for the project. If you have any questions regarding these comments, please contact william.m.simon@dot.state.ma.us.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

2.9

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

Memorandum

To: Nicholas Perry, MEPA Unit

From: Susan You, Waterways Regulation Program, MassDEP/Boston

Cc: Daniel Padien, Program Chief, MassDEP/Boston

Re: 232 A Street, (South) Boston, Suffolk County, ENF/ EEA #16746
Chapter 91 Waterways Regulation Program Comments

Date: September 19, 2023

The Department of Environmental Protection Waterways Regulation Program (the "Department") has reviewed the above referenced ENF (EEA #16746), submitted by VHB on behalf of Parcel 3 Owner, LLC, an affiliate of Tishman Speyer (the "Proponent") for the redevelopment of an approximately 2.41-acre site along the Fort Point Channel in South Boston. The project includes approximately 335,000 square feet of office, research and development/laboratory and ground floor Facilities of Public Accommodation in a 150-foot high new building with below grade parking, internal roadways, approximately 65,340 square feet (1.5-acres) of a new publicly accessible open space, improvements to the existing Harborwalk/South Bay Harbor Trail, site grading, and possible addition of a floating dock located in and on filled and flowed Tidelands of the Fort Point Channel at 232 A Street in (South) Boston, Suffolk County (the "project site").

The proposed project includes the mixed-use redevelopment of a surface parking lot (referred to as G7 and G8 in the Boston Redevelopment Authority Master Plan for Planned Development Area No. 69, South Boston/The 100 Acres). The building, as proposed, would contain a mixture of ground floor Facilities of Public Accommodations (FPAs) such as retail, restaurant, and/or civic space on the ground floor with commercial lab and office space on the upper floors. The improvements proposed by the Project include new internal streets, public open spaces, pedestrian connections to the Fort Point Channel, climate resilience of project site, and enhancement to the existing 18-foot wide Harborwalk/South Bay Harbor Trail along the Fort Point Channel. The Proponent is also considering installation of a dock in the Fort Point Channel.

Chapter 91 Jurisdiction

The project site is located on filled and flowed tidelands of the Fort Point Channel including filled Private Tidelands, filled Commonwealth Tidelands, and Flowed Commonwealth Tidelands. A portion of the project site also includes Landlocked Tidelands, which are not subject to licensing pursuant to G.L. c.91 and 310 CMR 9.04(2). The ENF describes two (2) prior Waterways Licenses were issued for the project site, authorizing existing structures and fill. The Department has determined that the proposed project is nonwater-dependent pursuant to 310 CMR 9.12(2)(f) and subject to review under the nonwater-dependent performance standards at 310 CMR 9.31(2)(b). Such projects must demonstrate compliance with the applicable provision of 310 CMR 9.51 – *Conservation of Capacity for Water Dependent Use*, 310 CMR 9.52 - *Utilization of Shoreline for Water-dependent Purposes*, 310 CMR 9.53 – Activation of Commonwealth for Public Use and 310 CMR 9.54 – *Consistency with Coastal Zone Management Policies*. 2.1

The proposed project is located with the planning area for the *City of Boston's South Boston Municipal Harbor Plan Amendment* (the "South Boston MHP") dated May 2009, approved by the Secretary of Energy and Environmental Affairs (the "Secretary") on October 22, 2009, and incorporated into the 310 CMR 9.00 on November 22, 2022 and City of Boston's *100 Acres Master Plan/ Planned Development Area* (PDA) *Master Plan* (PDA Master Plan).

Chapter 91 Regulatory Analysis

WATER DEPENDENT USE ZONE (WDUZ)- 310 CMR 9.51(3)(c)

The baseline c.91 regulations applied to the project site establish a 25-foot wide WDUZ. The South Boston MHP included a substitute provision establishing a 110 foot wide WDUZ.

The project proposes a mixed-use building to be located approximately 385 feet from the project shoreline with publicly accessible open space between the building and the shoreline. No surface parking, at or above grade, is proposed. However, 125 underground parking spaces are proposed. The Draft EIR should describe the location of all project elements relative to c.91 jurisdiction jurisdictional boundaries (historic high water, mean high water, Landlocked Tidelands, WDUZ, etc.) including above-ground and below-ground building elements. 2.2

BUILDING HEIGHT REQUIREMENTS- 310 CMR 9.51(3)(e)

The baseline building height setbacks stipulated at 310 CMR 9.51(3)(e), limit new or expanded buildings within 100 feet of the project shoreline to 55 feet. At greater landward distances, an additional ½ foot of building height is permitted for each additional one foot of building setback from the project shoreline.

Local zoning, implemented through the PDA Master Plan established maximum building heights on Parcel G8 at 150 feet and on Parcel G7 at 100 feet. The South Boston MHP allows nonwater-dependent buildings ranging in height from 80 feet to 180 feet in this area.

The building to be located on parcel G8 is proposed to be 150 feet high, set back approximately 385 feet from the project shoreline. The ENF states the proposed building complies with baseline Chapter 91 building height setbacks at 310 CMR 9.51(3)(e) and no substitution is required. Preliminary review by the Waterways Program appears to confirm that the project meets the building height requirements, however the Draft EIR should demonstrate compliance with this standard by updating Figure 4.5 to include the building height and corresponding setback distance from the high water mark. 2.3

OPEN SPACE REQUIREMENTS- 310 CMR 9.51(3)(d)

The baseline Waterways Regulations at 310 CMR 9.51(3)(d) require at least one square foot of ground level open space landward of the project shoreline to be provided for each square foot of buildings for non-water dependent use. A project requiring a building height substitution under the South Boston MHP Amendment must provide additional open space at a 1:2 ratio for any net new shadow cast onto the ground level open space within c.91 jurisdiction. The ENF asserts that no building height substitution is required for the proposed project and the baseline provisions of 310 CMR 9.51(3)(d) apply.

The ENF states that approximately 65,340 square feet (1.5-acres) is proposed for open space and 335,000 square feet (Gross Floor Area) of the building for nonwater-dependent use but does not specify the footprint of buildings for non-water dependent use. The Program's review of Figure 4.3b appears to indicate that the overall building footprint (considering above-ground and below-ground elements) is approximately 40,000 square feet. Our preliminary review indicates that the project appears to be designed to meet the open space requirements. However, a portion of the overall project site consists of Landlocked Tidelands not subject to licensing. The Draft EIR should demonstrate compliance with the open space requirements at 310 CMR 9.51(3)(d) by providing calculations of the overall project site subject to licensing, the footprint of buildings for non-water dependent use and proposed open space, presented in square feet with corresponding area percentages. 2.4

SOUTH BOSTON MUNICIPAL HARBOR PLAN AMENDMENT

Pursuant to 310 CMR 9.34(2)(b)(2), the Department shall adhere to the greatest reasonable extent to all applicable guidance specified in an MHP which amplifies any discretionary requirements of 310 CMR 9.00. The Secretary's Decision on the South Boston MHP, as reflected in 310 CMR 9.57 includes amplifications for 310 CMR 9.52 and 310 CMR 9.53.

Amplification 310 CMR 9.52: Utilization of Shoreline for Water-dependent Purposes

The MHP's first amplification is to 310 CMR 9.52, which requires any nonwater-dependent project that includes fill or structures on tidelands to devote a reasonable portion of such lands to water-dependent uses and to give particular consideration to applicable guidance specified in a State-approved MHP. The South Boston MHP amplifies this provision by requiring (1) an 18-foot wide public walkway along the entire length of the WDUZ and (2) historic interpretive elements and displays as stipulated in Section 9 and Appendix 1 of the South Boston MHP.

The project proposes to make improvements to the existing Harborwalk/South Bay Harbor Trail along the Fort Point Channel and provide interpretive and wayfinding signage to attract visitors to the waterfront, which meets the requirement set forth in the South Boston MHP.

Amplification – 310 CMR 9.53: Activation of Commonwealth Tidelands for Public Use

The South Boston MHP's second amplification is to 310 CMR 9.53, which requires nonwater-dependent projects located on Commonwealth Tidelands to promote public use and enjoyment of such lands to a degree that is fully commensurate with the proprietary right of the Commonwealth, and which ensure that private uses are not primary, but merely incidental to the public purpose. In applying these standards, the Department must take into account the quantity and quality of benefits provided to the public in comparison to the detriments to public rights associated with private facilities and nonwater-dependent uses, and to give particular consideration to applicable guidance specified in a State approved MHP. The Secretary's Decision amplifies this provision by directing the Department, during the licensing process, to require all nonwater-dependent projects located on Commonwealth Tidelands within the MHP planning area to include public benefits located within the WDUZ and adjacent watersheet as recommended in the Fort Point Channel Waterfront Activation Plan ("FPCWAP") in order to promote public uses and enjoyment of the Commonwealth Tidelands. The Secretary's Decision cites several recommended interior and exterior amenities described in the FPCWAP.

In the ENF, the Proponent commits to provide exterior open spaces including plazas and vegetated open space with pedestrian amenities. The Proponent also anticipates installing a docking facility in the Fort Point Channel.

When submitting the DEIR, please provide more specific information regarding the public amenities to be provided by the project and programming of the site so that the Department can further evaluate the project elements to ensure the proposed project includes the appropriate measures to satisfy the Secretary's amplifications to 310 CMR 9.52 and 9.53 and to promote the FPCWAP. 2.5

FACILITIES OF PUBLIC ACCOMMODATION – 310 CMR 9.51(3)(b) AND 9.53(2)(c)

The regulation at 310 CMR 9.51(3)(b) prohibits nonwater-dependent Facilities of Private Tenancy (FPTs) within 100 feet of a project shoreline (mean high water) at the ground level of any building. The project, as presented in the ENF complies with this requirement as the NWD building is set back 385 feet from the high water mark. FPTs however are permitted on the ground floor of any NWD buildings located on filled Private Tidelands more than 100 feet from the project.

The regulation at 310 CMR 9.53(2)(c) requires at least 75% of the interior ground floor of a nonwater-dependent building located on filled Commonwealth Tidelands to include Facilities of Public Accommodations (FPAs), as defined at 310 CMR 9.02, with a limit of 25% for Upper Floor Accessory Services (UFAS), as defined in 310 CMR 9.02. The Proponent states that the interior ground floor of the proposed building located on filled Commonwealth Tidelands will include FPAs such as lobby, retail stores, restaurant, civic/cultural space, bike parking room, etc. Please be advised that the proposed bike parking room can only count as an FPA if it is open/available to the public at large on at lease an equal basis with any private organization, group, company etc. A private bike storage room would be regulated under c.91 as an UFAS. 2.6

The DEIR should include a tabular breakdown and graphical depiction of the proposed ground floor uses located on Landlocked Tidelands, filled Private Tidelands, and on filled Commonwealth Tidelands. The DEIR should specifically demonstrate compliance with 310 CMR 9.53(2)(c). 2.7
Please clarify if any outdoor dining, public restrooms, and/or parking or loading areas of any kind at or above grade are proposed on any filled Commonwealth Tidelands on the project site. 2.8

The Proponent will be required to develop a Management Plan in accordance with 310 CMR 9.53(2)(d) during licensing for any publicly accessible space (internal and external) located within 100 feet of the project shoreline on filled Private Tidelands subject to licensing and at any distance from the project shoreline on filled Commonwealth Tidelands subject to licensing. 2.9

CLIMATE RESILIANCE / SEA LEVEL RISE

The regulations at 310 CMR 9.37(2)(b) requires new or expanded buildings for nonwater dependent use located within flood zone (for human occupancy) to incorporate climate resilience into building design and construction. The Department notes that the project site is located within Flood Zone AE (Elevation 10 NAVD88, 16.5 BCB). The first floor of the proposed buildings will be elevated one foot above the 100-year storm as anticipated in 2070 to 15.1 NAVD 88 (21.5 BCB) to address current flooding potential and future conditions of sea level rise through design of the finished floor elevations above standard code requirements. An earthen berm is proposed on site as a flood control measure and will have a minimum design elevation of 14.6 feet NAVD88 (21.1 BCB).

The filing includes a discussion about climate resilience and adaptation strategies of the project site with a focus on interior spaces. The DEIR should include an analysis of potential impacts from sea level rise based on the modeling presented at ResilientMass.gov. This assessment should consider interior and exterior spaces, public benefits, public access and planned adaptability in the event predicted water elevations continue to increase. 2.10

LICENSE TERM

The Proponent acknowledges that a Chapter 91 License will be required for this project. When submitting DEIR, please specify the license term the Proponent plans to seek. This is of particular importance with respect to public benefits required in association with NWD use projects, particularly amenities at or near the project shoreline. Any proposed extended-term license application will need to include details on projected sea level rise and justify how the project site will address those potential impacts for the full term of the requested license. 2.11

In order for the Waterways Program staff to evaluate the appropriateness of proposed fill and structures within c.91 jurisdiction as they relate to projected sea level rise, the Proponent should identify anticipated sea level rise over the term of license using the best available data as determined by the Department. 2.12 The Proponent should provide details on resiliency and the potential to retrofit or improve any areas that may become regularly impacted and/or inundated. 2.13 This information and assessment of potential future impacts is specifically relevant to requests for extended-term licenses. If an extended license term will be requested, the Department suggests that the Proponent submit all necessary items listed in 310 CMR 9.15(1)(b)(2) including the strategies specifically for making the exterior publicly accessible facilities resilient to sea level rise and flooding during licensing to warrant an extended license term. 2.14

If the Department determines that additional public benefits are required for the requested extended term, the South Boston MHP states that such benefits should be consistent with the FPCWAP and/or the Boston Inner Harbor Passenger Water Transportation Plan (BIHPWTP). The South Boston MHP also states that the Department should consult with the BPDA regarding implementation of the FPCWAP or BIHPWTP as the basis for additional public benefits required to justify an extended license term. 2.15 The DEIR should demonstrate compliance with these documents and the referenced amplification.

Specifically, the Proponent needs to include details as to which watersheet activation project recommended in the FPCWAP they intend to implement or provide monetary contribution towards and providing justification as to how said project will be commensurate to the overall scope and size of the proposed NWD use project onsite. In cases where monetary contribution is permitted and/or required, said payment must be paid in installments per year, for the full term of the license and tied to inflation. 2.16

STATE HARBOR LINE

There is a State Harbor Line within the Fort Point Channel established by the Legislature and modified on one or more occasions. Pursuant to M.G.L. c.91, §14 and §34, and 310 CMR 9.35(2)(a)1.a., the Department is precluded from licensing any fill or structure seaward of said line, unless explicitly authorized by law.

Pursuant to Chapter 204 of the Acts of 2010, the Department may only license structures seaward of the State Harbor Line if the City of Boston Redevelopment Authority (now known as the Boston Planning and Development Authority (BPDA)) and any co-applicant propose a structure that is consistent with said act (or other applicable Act.)

The filing indicates that the Proponent contemplates adding a dock and associated structures in the Fort Point Channel, seaward of the State Harbor Line. Please be advised, any license application for fill or structures to be located seaward of the State Harbor Line must demonstrate compliance with Chapter 204 of the Acts of 2010. Temporary floats authorized pursuant the M.G.L. c.91 §10A are not subject to the prohibitions regarding licensure of structures seaward of the State Harbor Line stipulated in M.G.L. c.91 §14 and §34. 2.17

In the event that a docking facility is proposed over the State Harbor Line, please include the State Harbor line on all applicable Project Plans and coordinate the licensing of any such structure with the BPDA in advance of filing a c.91 Waterway License Application with the Department, to ensure the Proponent meets said legislative act to permit an incursion over the State Harbor Line.

ASSIGNMENT OF ESTABLISHED OPEN SPACE PUBLIC RIGHTS

The Department acknowledges that the Proponent owns the project site but has been coordinating with P&G regarding the assignment of open space rights. When submitting a license application, please include the proposed and existing easements described in metes & bounds on a plan, along with the recording information at the Suffolk County Registry of Deeds for each. 2.18 The DEIR should include a discussion of pertinent negotiations with the City of Boston Parks Department related to the long-term ownership and management of the proposed open space. 2.19

CONCLUSION

In the ENF, the Proponent asserts that the project is being designed to comply with all requirements under 310 CMR 9.00 and the South Boston MHP without demonstration of such compliance. Thus, the Department expects to receive a DEIR that includes a Chapter dedicated for the compliance analysis supported by the above-mentioned information for its review. 2.20

With regards to the eventual filing of an application for a nonwater-dependent use Waterways License, the proponent should demonstrate the application is in compliance with (i) all applicable 2.21

provisions of the Waterways Regulations, (ii) the Secretary's Decision on the 2009 South Boston MHP, (iii) meets the minimum filing standards as set forth in 310 CMR 9.11(3) including the Secretary's Certificate concluding the MEPA review process, project plans prepared in accordance with the Chapter 91 Waterways Plan Template (upon request), copy of a Wetlands Notice of Intent Applications and associated plans, and a list of state environmental regulatory programs with which the project must comply, in accordance with the applicable provisions of 310 CMR 9.33. 2.21

The Department welcomes any forms of pre-application consultation if needed. Please feel free to contact dep.waterways@mass.gov or susan.you@mass.gov if you have any questions.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 150 Presidential Way Woburn, MA 01801 • 978-694-3200

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

September 19, 2023

Rebecca L. Tepper, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Boston
232 A Street
EEA# 16746

Attn: MEPA Unit

Dear Secretary Tepper:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Environmental Notification Form (ENF) for the proposed 232 A Street project in Boston. MassDEP provides the following comments.

Wetlands

The project entails redeveloping the site located at 232 A Street in Boston with a 335,000 square foot mixed-used building, including below-grade parking with site grading and stormwater improvements, city street expansion, improvements to the Harborwalk and South Bay Harbor Trail, and 1.5-acres of open space. The Environmental Notification Form (ENF) documents do not provide sufficient information to review for wetland regulation compliance. The proponent submitted rendered drawings rather than civil engineered plans that do not show where the wetlands boundaries are located, proposed wetland alteration, or grading and drainage plan(s) with details. According to the ENF, the project will permanently alter 104,771 square feet of FEMA Zone AE at elevation 10 NAVD88. Further clarification should be provided that explains if 104,771 of alteration to Land Subject to Coastal Storm Flowage (LSCSF) involves filling this resource area or if its temporary alteration to this wetland resource area. 3.1 If filling is proposed, the proponent should explain how the floodwaters currently flow on the site based on the existing topography, or how they are expected to flow under the proposed grading. 3.2 Although there are no performance standards for LSCSF under the MA Wetlands Protection Regulations, the proponent should explain how the proposed project will not increase the elevation or velocity of floodwaters; 3.3

how the project will not cause floodwater to be displaced, deflected, or reflected onto adjacent properties or public and private ways; and, ensure that no other wetland resource area will be impacted.

On page 12 of the ENF application, it states that the project will alter Land Under the Ocean but that alteration amounts are "to be determined." Also, under Section 7.9.1 Wetlands of the project narrative, it states that the project will "potentially" alter Land Under the Ocean and Coastal Bank, and that "[i]n-water work will comply with the performance standards." The proponent should clarify what work is proposed in these wetland resource areas and notate this on the plans, quantify the amount of alteration proposed (and restored, if applicable) for each of the wetland resource area; and, explain how the project will meet the performance standards under 310 CMR 10.25(3) through (7) and 10.30(3) through (8), respectively. 3.4

Although the proponent acknowledged that the project would be designed to meet the Stormwater Standards to the maximum extent possible and provided a brief explanation of how each of the Stormwater Standards are going to be met, a Stormwater Report and supporting computations, including an Operation and Maintenance Plan should be submitted (310 CMR 10.05(6)(k)). 3.5 A more detailed stormwater narrative should be provided that explains how the stormwater treatment train(s) have been designed to meet the Stormwater Standards fully and if not, that the highest level of treatment possible is being proposed (Standard 7). 3.6 The proponent claims that groundwater recharge will be provided (Standard 3) through a stormwater infiltration system or equivalent recharge system. Since the site is partially within several Massachusetts Contingency Plan (MCP) sites with designated MassDEP Release Tracking Numbers, it is not clear how the groundwater recharge will be achieved or if it's even appropriate to do so. Additionally, the redevelopment of this site is expected to generate approximately 1,014 vehicle trips per day, which would classify this project as a Land Use with Higher Potential Pollutant Load (LUHPPL). 3.7 Therefore, the stormwater design must comply with Standard 5, including but not limited to providing 44% Total Suspended Solids (TSS) treatment prior to the discharge to an infiltration unit, and stormwater structures must be equipped with an emergency shut off valve.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Kristin.Divris@mass.gov at (508) 887-0021 for further information on wetlands and wastewater issues. If you have any general questions regarding these comments, please contact me at John.D.Viola@mass.gov or at (857) 276-3161.

Sincerely,

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission,
Eric Worrall, Kristin Divris, Jill Provencal, Pam Merrill, MassDEP-NERO

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
100 Cambridge Street, Suite 900, Boston, MA 02114

MEMORANDUM

TO:	Rebecca L. Tepper, Secretary, EEA
ATTN:	Nicholas Perry, MEPA Office
FROM:	Lisa Berry Engler, Director, CZM
DATE:	September 19, 2023
RE:	EEA-16746, 232 A Street, Boston

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Environmental Notification Form (ENF)/noticed in the *Environmental Monitor* dated August 9, 2023, and offers the following comments.

Project Description

The proposed project involves the redevelopment of an approximately 2.4-acre site located at 232 A Street in the Fort Point neighborhood of South Boston. It is proposed to be 385 feet from the shoreline with open space from the proposed building to the water. The building is proposed to contain approximately 335,000 square feet (sf) of Gross Floor Area in a single building that will be no higher than 150 feet with proposed uses that include laboratory/R&D and office space, ground floor space with intended retail, restaurant, civic, and/or cultural uses, and 125 below-grade parking spaces, as well as a city street extension, sidewalks, improvements to the Harborwalk and South Bay Harbor Trail, site grading for neighborhood resiliency, and approximately 1.5-acres of publicly accessible open space and public realm along the Fort Point Channel waterfront. The project proposes to enhance the public realm offering by converting approximately 1.1-acres of the project site previously planned as building footprint under the approved 100 Acres Master Plan PDA to public realm, which represents a roughly 154% increase to the previously planned publicly accessible open space and public realm areas.

Project Comments

Climate Resiliency

The project site is entirely within the 1% chance floodplain, as mapped by the Federal Emergency Management Agency (FEMA) on their Flood Insurance Rate Maps. The ENF states that the proposed project is located behind the proposed flood barrier along Fort Point Channel. The proposed flood barrier is still in conceptual design and has not been constructed. This project should assess the potential impacts on Land Subject to Coastal Storm Flowage if the berm is not ultimately constructed. 4.1 The EIR should include detailed information regarding the proposed berm, including the design elevation and the basis for it, cross-sections, composition, a monitoring and maintenance plan, as well as information regarding what storms might overtop the berm and how floodwater that gets over the berm will drain. 4.2 The EIR should also clarify the relationship between the proponent, which owns the project site on which the berm would be constructed, and the City, which is seeking public funds for the proposed berm. 4.3

The EIR should include a detailed analysis specific to how the proposed fill, grading, and solid project components (e.g., berm, buildings, pavement) proposed in the coastal floodplain will affect coastal floodwater flow and drainage patterns within and adjacent to the site, both during rain events and coastal storm events where there is a combination of rain and coastal flooding. 4.4 The EIR should provide a detailed description in the form of a narrative as well as plans of depicting topography and 4.5

the sources, flow direction, and pathways of existing and proposed coastal and inland flooding onto, through, and off the site during a coastal storm event. The analysis should demonstrate, using flow arrows and a narrative, how coastal floodwater will flow onto and off the project site and surrounding area under existing and proposed conditions. This analysis should also include a description about potential impacts if the proposed berm changes, reduces and/or eliminates any flood pathways. If the project will channelize flow, the EIR should include an analysis of any changes in velocity, direction, depth, and extent of coastal floodwater. An analysis of alternative designs to avoid, minimize, and mitigate any changes to flow pathways and particularly increases in flow velocities should be included in the EIR. In addition to plan views, the EIR should include cross-sections through the site that show the existing grades, proposed grades, proposed buildings, structures and FEMA flood zone elevations. 4.6 4.7 4.8 4.9

Municipal Harbor Plan

The proposed project lies within the boundaries of the 2009 South Boston Municipal Harbor Plan Amendment (MHP Amendment). The MHP Amendment contains a substitute provision for the Water-Dependent Use Zone (WDUZ) that generally increases the minimum setback to 110 feet from the project shoreline for water-dependent uses. The DEIR should include an updated figure depicting the boundary of the WDUZ, as well as the Chapter 91 jurisdictional area. The Secretary's Decision on the MHP Amendment allows non water-dependent buildings ranging in height from 80 feet to 180 feet in the MHP Amendment area. While the proposed height of the project appears to meet the building height requirements approved in the Secretary's Decision on the MHP Amendment, the proponent should demonstrate compliance with the building height substitute provision by updating figures showing building height in relation to the setback distance from the high-water mark in the DEIR. There are portions of the proposed project site located on Landlocked Tidelands as well as jurisdictional tidelands subject to Chapter 91 licensing. The proponent should coordinate with the Department of Environmental Protection (DEP) on any special considerations regarding licensing for this project. The DEIR should also include additional information outlining compliance with the Secretary's Decision on the 2009 South Boston MHP as well as compliance with the Chapter 91 Waterways Regulations. 4.10 4.11 4.12 4.13

Federal Consistency Review

The proposed project may be subject to CZM federal consistency review, and if so, must be found to be consistent with CZM's enforceable program policies. For further information on this process, please visit the CZM website at www.mass.gov/federal-consistency-review-program. 4.14

LE/rh/jy

cc: Joanna Yelen, Rebecca Haney, CZM
Susan You, DEP

THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

September 18, 2023

Secretary Rebecca L. Tepper
Executive Office of Energy and Environmental Affairs
Attn: Nicholas Perry, MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: MEPA File No. 16746 – 232 A Street

Dear Secretary Tepper:

The Water Resources Commission (WRC) staff has reviewed the Environmental Notification Form (ENF) filed for the Neponset Wharf Project (the Project) in Boston.

As proposed, the Project involves activities within a 100-year floodplain as delineated on the current effective Flood Insurance Rate Map (FIRM) for Suffolk County, dated March 16, 2016. In its role as the state coordinating agency for the National Flood Insurance Program (NFIP), I submit the following comments on behalf of the WRC.

WRC's Flood Hazard Management Program (FHMP), under agreement with the Federal Emergency Management Agency (FEMA), is the state coordinating agency for the NFIP. As such, the FHMP provides technical assistance to communities that participate in the NFIP related directly to the program and also related to floodplain management in general. Communities that participate in the NFIP are required by FEMA, as a condition of their participation, to regulate development within the 100-year floodplain in a manner that meets or exceeds the minimum standards established by FEMA, located at 44 CFR 60.3. Participating communities such as Boston are required to adopt the NFIP requirements through locally enforceable measures. In Massachusetts, many of the requirements contained in 44 CFR 60.3 are enforced through existing state regulations such as the State Building Code (780 CMR) and Wetlands Protection Act regulations (310 CMR 10.00). Communities typically adopt the remainder of the requirements as part of a zoning ordinance or other locally enforceable measure. Boston has a zoning ordinance that includes a Floodplain District section which has been accepted by FEMA as meeting their requirements under the NFIP.

In our role as NFIP coordinator, the FHMP offers comments on the proposed Project's relationship to many of the above regulations and requirements. The FHMP does not administer any of these requirements and therefore does not provide official determinations as to compliance with them; rather, our comments are provided as an overview of the requirements and the documentation that the FHMP believes may be necessary to demonstrate compliance with these requirements.

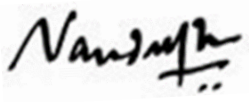
The Project includes construction of a new non-residential building and other associated work. Based on information submitted with the ENF, the structure is proposed to be located within the 100-year floodplain on

the current effective FIRM, specifically a zone AE with a base flood elevation of 10 feet above North American Vertical Datum (NAVD). Because of its location in the 100-year floodplain, compliance with the requirements of several federal, state and local measures related to floodplain development is required. The Massachusetts State Building Code (780 CMR) Ninth Edition, includes specific standards for structures newly constructed or substantially improved in the floodplain.

Proposed structures located in the floodplain will be required to meet the standards of applicable sections of the State Building Code for construction in floodplains. For nonresidential structures, these sections include Section 1612, Flood Loads, and ASCE 24-14, Flood Resistant Design and Construction. According to the ENF, the building will be constructed with below grade parking. Any enclosures that are below-grade within floodplains, are required to be dry-floodproofed. Designs for structures in floodplains must be certified by a registered design professional. Designs for dry-floodproofing must comply with ASCE 24-14, Chapter 6. For further information see FEMA's Technical Bulletins 3, Non-Residential Floodproofing and 6, Below-Grade Parking Requirements. 5.1 5.2

Additionally, projects within the 100-year floodplain involving any federal action (e.g., permit, funding) must also comply with federal Executive Order 11988, Floodplain Management, as amended by Executive Orders 13690 and 14030. This executive order requires an eight-step decision-making process which includes analysis of alternatives, avoiding impacts when possible, and minimizing impacts when avoidance is not possible. Because this project requires multiple federal actions, compliance with this process is necessary. Compliance with these orders can involve design and construction to a higher standard, to be determined by the applicable federal agency. Also, the proponent should be aware that climate change can bring further impacts to the proposed development. Changes to the state's precipitation regime are ongoing with further predicted changes to the amount and timing of rainfall. This may increase the potential for flooding to properties located in the 100-year floodplain. 5.3 5.4

Thank you for the opportunity to comment on the SFEIR. If you have any questions regarding these comments, or to request additional information or coordination with the FHMP, please contact Eric Carlson (857) 278-5062 or at eric.carlson@mass.gov.



Vandana Rao, PhD
Executive Director, MA Water Resources Commission

cc: Eric Carlson, Department of Conservation and Recreation
Joy Duperault, Department of Conservation and Recreation
Boston Inspectional Services Department

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
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TTY: (617) 788-4971

September 21, 2023

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge St, Suite 900
MEPA Office, Nicholas Perry
Boston, MA 02114

Subject: EOEEA #16746 – Expanded Environmental Notification Form
232 A Street Project, Boston, MA

Dear Secretary Tepper,

The Massachusetts Water Resources Authority (MWRA) appreciates the opportunity to comment on the Expanded Environmental Notification Form (EENF) submitted by Parcel 3 Owner, LLC (the "Proponent") for 232 A Street Project (the "Project") in Boston, Massachusetts. The Project site is located adjacent to the Fort Point Channel and currently consists of paved parking areas. The Project involves construction of a new building with approximately 335,000 square feet of Gross Floor Area (GFA) with uses to include laboratory/R&D, office space, and ground-floor retail, restaurant, civic and cultural space.

MWRA's comments on this EENF relate to wastewater issues and the need for Infiltration/Inflow (I/I) Removal as well as Toxic Reduction and Control (TRAC) discharge permitting. The EENF notes that an MWRA Section 8(m) Permit may be required for the Project. However, there is no MWRA infrastructure in the vicinity of the Project site, therefore an MWRA Section 8(m) permit would not be issued for the Project.

Wastewater

The EENF reports that the Project will generate approximately 25,125 gallons per day (gpd) of new wastewater flow. According to the Boston Water and Sewer Commission's (BWSC) storm drain and sewer maps, the Project area is served by BWSC separate sanitary sewers and storm drains. The sanitary sewer system connects to BWSC's South Boston Interceptor North Branch (SBI-NB) at A Street and West First Street, for conveyance to MWRA's Columbus Park Headworks which directs flow to MWRA's Deer Island Wastewater Treatment Plant. Large storms can cause combined sewer overflow (CSO) along BWSC's SBI-NB when combined stormwater and sanitary flow exceeds system capacity.

To ensure that the Project's wastewater flow does not increase system surcharging or overflows in large storms, the Proponent should continue to work with BWSC to develop a plan for ensuring a 4:1 offset of the Project's wastewater flow as required by Massachusetts Department of Environmental Protection (MassDEP) regulation. Four gallons of stormwater and/or infiltration and inflow (I/I) should be removed from a hydraulically related sewer system(s) for every gallon of new wastewater flow. Increasing wastewater flow to the South Boston sewer systems without the required offset can compromise the sewer system and water quality benefits of MWRA's $912 million region-wide CSO control plan, including water quality improvement in the Fort Point Channel and Reserved Channel. 6.1

TRAC Discharge Permitting

MWRA prohibits the discharge of groundwater and stormwater into the sanitary sewer system, pursuant to 360 C.M.R. 10.023(1) except in a combined sewer area when permitted by the Authority and the local community. The EENF noted that an MWRA Construction Site Dewatering Permit may be required for the Project. However, the Project site has access to separate sewer and storm drain systems. Therefore, the discharge of groundwater or stormwater to the sanitary sewer system associated with this Project is prohibited and an MWRA Construction Site Dewatering Permit would not be issued for the Project. 6.2

A Sewer Use Discharge Permit is required prior to discharging industrial process wastewater, laboratory wastewater, or photo processing wastewater from office, high-tech, R&D, laboratory or commercial space associated with the Project into the MWRA sanitary sewer system. For assistance in obtaining this permit, a representative from the proposed laboratory/R&D/commercial space should contact Molly Rounds, Industrial Coordinator, in the TRAC Department at (617) 305-5638 or Molly.Rounds@mwra.com. 6.3

Any gas/oil separators in parking garages associated with the Project must comply with 360 C.M.R. 10.016 and State Plumbing Code. Installation of gas/oil separator(s) may not be back filled until inspected and approved by the MWRA and the Local Plumbing Inspector. For assistance in obtaining an inspection, the Proponent should contact Michael J. Quercio, Source Coordinator, in the TRAC Department at (617) 305-5645 or Michael.Quercio@mwra.com. 6.4

On behalf of the MWRA, thank you for the opportunity to provide comments on this Project. Please do not hesitate to contact Katie Ronan of my staff at (857) 289-1742 with any questions or concerns.

Sincerely,

Colleen Rizzi

Colleen Rizzi
Director
Environmental and Regulatory Affairs

cc: John Viola, MassDEP
Adam Horst, BWSC

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
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Facsimile: 617-727-0030

Maura Healey
Governor

Kim Driscoll
Lt. Governor

Rebecca Tepper
Secretary

Elizabeth Mahony
Commissioner

27 September 2023

Rebecca Tepper, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: 232 A Street, Boston MA, EEA #16746

cc: Jo Ann Bodemer, Director of Energy Efficiency, Department of Energy Resources
Elizabeth Mahony, Commissioner, Department of Energy Resources

Dear Secretary Tepper:

We've reviewed the Environmental Notification Form (ENF) for the proposed project. The project includes one 377,000-sf lab-office building.

The proposed building includes measures which will reduce emissions. For example, the inclusion of air source heat pumps for primary heating will reduce gas use to about 3 kBtu/sf-yr, a 92% reduction.

For the next submission, we recommend the following:

1. Provide the additional information below to better characterize proposed vertical envelope performance (add rows as needed): 7.1

	% of above grade vertical area	U-value after derating
Wall (framed, insulated)		
Glazed wall system		
Opaque spandrel portion		
Vision portion		
Punched window vision glass		

2. Provide more details on proposed strategy to satisfy C406 requirements. 7.2

3. Commit to C406.9, reduced air leakage. 7.3

4. Evaluate air source heat pump service water heating. 7.4

5. Provide the following table, populating the gray cells. At least three scenarios need to be created as follows: (A) a "Reference Baseline" scenario that conforms to ASHRAE 90.1-2019 Appendix G, (B) a "Code Minimum" scenario that results in a performance energy index that is equal to the target performance energy index, and (C) a "Proposed" scenario that is improved from the code minimum. 7.5

	(A) REFERENCE BASELINE	(B) CODE MINIMUM	(C) PROPOSED
	ASHRAE 90.1-2019 Appendix G Baseline	*Equals PEIt, includes MA amended requirements*	*Improved over PEIt*
Space Cooling			
Heat Rejection			
Refrigeration			
Space Heat			
Hot Water			
Vent Fans			
Pumps and Aux			
Ext Usage			
Misc Equip			
Task Lights			
Area Lights			
Unregulated Energy			
Regulated Energy			
Site Energy			
Building Performance Factor (BPF)	0.51		
Performance Energy Index Target (PEI t)			
Performance Energy Index (PEI)			
% Improvement over PEI t		0%	

6. Provide a table summary (similar to the "Appendix A" table in Zero Carbon Building Assessment" part of the report) of envelope characteristics, proposed efficiency, proposed equipment, etc to characterize each of the (A), (B), and (C) scenarios above. It's important to understand what the difference is between the (B) and (C) scenarios, as those differences are the above-code mitigation. Be sure to include C406 and other mandatory measures in scenario (B), Code Minimum. 7.6

7. It appears that the project will be pursuing the mixed fuel pathway of the code (CC101.3 part 3). Provide the following additional details:

    a. Calculations and scale plan of roof showing PV necessary to conform with CC105.2. 7.7

    b. Calculations of the electric capacity, interior and exterior space requirements, and electric infrastructure necessary to conform with CC106.1.6. Scale plans showing interior and exterior location(s) to be set aside for future electric equipment.

8. We also recommend evaluating an all-electric option. This evaluation should include an evaluation of the costs/benefits, and key considerations, of the proposed mixed-fuel option (with installed PV and electric readiness) compared to all electric (without the installed PV and electric readiness) option. 7.8

Sincerely,

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

Boston Water and Sewer Commission

980 Harrison Avenue
Boston, MA 02119-2540
617-989-7000

August 10, 2023

Secretary Rebecca L. Tepper
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Nicholas Perry, EEA No. 16746
100 Cambridge Street, Suite 900
Boston, MA 02114

and

Nick Carter
Senior Project Manager
Boston Planning and Development Agency
One City Hall Square
Boston, MA 02201

Re: 232 A Street, South Boston
Environmental Notification Form/Project Notification Form

Dear Secretary Tepper and Mr. Carter:

The Boston Water and Sewer Commission (Commission) has reviewed the Environmental Notification Form (ENF) and the Project Notification Form (PNF) for the proposed 232 A Street project located at 232 A Street in South Boston.

The proposed project is located on an approximately 2.41 acre site currently occupied by surface parking, an emergency access structure for the Central Artery tunnel system and Binford Park. The project proponent, Parcel 3 Owner, LLC, proposes to construct a new 335,000 gross square foot (gsf) building with uses that will include laboratory/R&D and office space, and ground floor space with intended retail, restaurant or civic and or cultural uses, plus improvements to the Harborwalk. The improvements will include the construction of a berm along Fort Point Channel. Below grade garage parking will contain approximately 125 parking spaces.
The site is bounded to the northeast by the 244-284 A Street project, to the southeast by A Street, to the southwest by the Proctor & Gamble facility and to the northwest by the Fort Point Channel.

According to the ENF/PNF, the proposed water demand is approximately 27,638 gallons per day (gpd). The Commission owns and maintains a 16-inch Southern Low DICL water main installed in 1984 and a 12-inch Southern High DICL water main installed in 1984 in A Street, and a 12-inch Southern High DICL water main installed in 2007 and an 8-inch Southern Low DICL water main installed in 2007 in Binford Street.

According to the ENF/PNF, the proposed sewage generation is 25,125 gpd. For sewage and storm drainage service, the site is served by a 24-inch sanitary sewer and a 54-inch storm drain in A Street. There is a 72-inch Combined Sewer Overflow in Mount Washington Avenue. The proponent anticipates rerouting a portion of the 72-inch Combined Sewer Overflow.

The Commission has the following comments regarding the proposed project:

General

1. Prior to the initial phase of the site plan development, Parcel 3 Owner, LLC should meet with the Commission's Design and Engineering Customer Services to review water main, sewer and storm drainage system availability and potential upgrades that could impact the development. 8.1

2. All new or relocated water mains, sewers and storm drains must be designed and constructed at Parcel 3 Owner, LLC's expense. They must be designed and constructed in conformance with the Commission's design standards, Water Distribution System and Sewer Use regulations, and Requirements for Site Plans. The site plan should include the locations of new, relocated and existing water mains, sewers and drains which serve the site, proposed service connections, water meter locations, as well as back flow prevention devices in the facilities that will require inspection. A General Service Application must also be submitted to the Commission with the site plan. 8.2 8.3 8.4

3. The Department of Environmental Protection (DEP), in cooperation with the Massachusetts Water Resources Authority and its member communities, is implementing a coordinated approach to flow control in the MWRA regional wastewater system, particularly the removal of extraneous clean water (e.g., infiltration/inflow (I/I)) in the system. In April of 2014, the Massachusetts DEP promulgated new regulations regarding wastewater. The Commission has a National Pollutant Discharge Elimination System (NPDES) Permit for its combined sewer overflows and is subject to these new regulations [314 CMR 12.00, section 12.04(2)(d)]. This section requires all new sewer connections with design flows exceeding 15,000 gpd to mitigate the impacts of the development by removing four gallons of infiltration and inflow (I/I) for each new gallon of wastewater flow. In this regard, any new connection or expansion of an existing connection that exceeds 15,000 gallons per day of wastewater shall assist in the I/I reduction effort to ensure that the additional wastewater flows are offset by the removal of I/I. Currently, a minimum ratio of 4:1 for I/I removal to new wastewater flow added is used. The Commission supports the policy and will require proponent to develop a consistent inflow reduction plan. The 4:1 requirement should be addressed at least 90 days prior to activation of water service and will be based on the estimated sewage generation provided on the project site plan. 8.5

4. The design of the project should comply with the City of Boston's Complete Streets Initiative, which requires incorporation of "green infrastructure" into street designs. Green infrastructure includes greenscapes, such as trees, shrubs, grasses and other landscape plantings, as well as rain gardens and vegetative swales, infiltration basins, and paving materials and permeable surfaces. The proponent must develop a maintenance plan for the proposed green infrastructure. For more information on the Complete Streets Initiative see the City's website at http://bostoncompletestreets.org/ 8.6 8.7

5. The Commission owns and maintains an outfall within the vicinity of the project site. It is located at Fort Point Channel. The Commission requests that Parcel 3 Owner, LLC take appropriate measures to ensure that the outfall is not damaged during construction. 8.8

6. Parcel 3 Owner, LLC should be aware that the US Environmental Protection Agency issued the Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If groundwater contaminated with petroleum products, for example, is encountered, Parcel 3 Owner, LLC will be required to apply for a RGP to cover these discharges. 8.9

7. Parcel 3 Owner, LLC is advised that the Commission will not allow buildings to be constructed over any of its water lines. Also, any plans to build over Commission sewer facilities are subject to review and approval by the Commission. The project must be designed so that access, including vehicular access, to the Commission's water and sewer lines for the purpose of operation and maintenance is not inhibited. 8.10

8. It is Parcel 3 Owner, LLC's responsibility to evaluate the capacity of the water, sewer and storm drain systems serving the project site to determine if the systems are adequate to meet future project demands. With the site plan, Parcel 3 Owner, LLC must include a detailed capacity analysis for the water, sewer and storm drain systems serving the project site, as well as an analysis of the impacts the proposed project will have on the Commission's water, sewer and storm drainage systems. 8.11

9. The laboratory may require that the project proponent or owner of the facility complete and submit a Sewer Use Discharge Permit Application with the MWRA. If Parcel 3 Owner, LLC needs additional information regarding the Permit application contact the MWRA's Toxic Reduction and Control Unit at 617-305-5627. 8.12

Water

1. Parcel 3 Owner, LLC must provide separate estimates of peak and continuous maximum water demand for residential, commercial, industrial, irrigation of landscaped areas, and air-conditioning make-up water for the project with the site plan. Estimates should be 8.13

based on full-site build-out of the proposed project. Parcel 3 Owner, LLC should also provide the methodology used to estimate water demand for the proposed project. 8.13

2. Parcel 3 Owner, LLC should explore opportunities for implementing water conservation measures in addition to those required by the State Plumbing Code. In particular, Parcel 3 Owner, LLC should consider outdoor landscaping which requires minimal use of water to maintain. 8.14 If Parcel 3 Owner, LLC plans to install in-ground sprinkler systems, the Commission recommends that timers, soil moisture indicators and rainfall sensors be installed. 8.15 The use of sensor-operated faucets and toilets in common areas of buildings should be considered. 8.16

3. Parcel 3 Owner, LLC is required to obtain a Hydrant Permit for use of any hydrant during the construction phase of this project. The water used from the hydrant must be metered. 8.17 Parcel 3 Owner, LLC should contact the Commission's Meter Department for information on and to obtain a Hydrant Permit.

4. Parcel 3 Owner, LLC will be required to install approved backflow prevention devices on the water services for fire protection, mechanical and any irrigation systems. Parcel 3 Owner, LLC is advised to consult with Mr. Larry Healy, Manager of Engineering Code Enforcement, with regards to backflow prevention. 8.18

5. The Commission is utilizing a Fixed Radio Meter Reading System to obtain water meter readings. For new water meters, the Commission will provide a Meter Transmitter Unit (MTU) and connect the device to the meter. For information regarding the installation of MTUs, Parcel 3 Owner, LLC should contact the Commission's Meter Department. 8.19

<u>Sewage / Drainage</u>

1. In conjunction with the Site Plan and the General Service Application Parcel 3 Owner, LLC will be required to submit a Stormwater Pollution Prevention Plan. The plan must: 8.20

- Identify specific best management measures for controlling erosion and preventing the discharge of sediment, contaminated stormwater or construction debris to the Commission's drainage system when construction is underway.

- Include a site map which shows, at a minimum, existing drainage patterns and areas used for storage or treatment of contaminated soils, groundwater or stormwater, and the location of major control structures or treatment structures to be utilized during the construction.

- Specifically identify how the project will comply with the Department of Environmental Protection's Performance Standards for Stormwater Management both during construction and after construction is complete.

2. Developers of projects involving disturbances of land of one acre or more will be required to obtain an NPDES General Permit for Construction from the Environmental Protection Agency and the Massachusetts Department of Environmental Protection. Parcel 3 Owner, LLC is responsible for determining if such a permit is required and for obtaining the permit. If such a permit is required, it is required that a copy of the permit and any pollution prevention plan prepared pursuant to the permit be provided to the Commission's Engineering Services Department, prior to the commencement of construction. The pollution prevention plan submitted pursuant to a NPDES Permit may be submitted in place of the pollution prevention plan required by the Commission provided the Plan addresses the same components identified in item 1 above. 8.21

3. The Commission encourages Parcel 3 Owner, LLC to explore additional opportunities for protecting stormwater quality on site by minimizing sanding and the use of deicing chemicals, pesticides, and fertilizers. 8.22

4. The discharge of dewatering drainage to a sanitary sewer is prohibited by the Commission. Parcel 3 Owner, LLC is advised that the discharge of any dewatering drainage to the storm drainage system requires a Drainage Discharge Permit from the Commission. If the dewatering drainage is contaminated with petroleum products, Parcel 3 Owner, LLC will be required to obtain a Remediation General Permit from the Environmental Protection Agency (EPA) for the discharge. 8.23

5. Parcel 3 Owner, LLC must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. The site plan should indicate how storm drainage from roof drains will be handled and the feasibility of retaining their stormwater discharge on-site. All projects at or above 100,000 square feet of floor area are to retain, on site, a volume of runoff equal to 1.25 inches of rainfall times the impervious area. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. 8.24

6. The Massachusetts Department of Environmental Protection (MassDEP) established Stormwater Management Standards. The standards address water quality, water quantity and recharge. In addition to Commission standards, Parcel 3 Owner, LLC will be required to meet MassDEP Stormwater Management Standards. 8.25

7. The Commission requests that Parcel 3 Owner, LLC install a permanent casting stating "Don't Dump: Drains to Boston Harbor" next to any catch basin created or modified as part of this project. Parcel 3 Owner, LLC should contact the Commission's Operations Division for information regarding the purchase of the castings. 8.26

8. If a cafeteria or food service facility is built as part of this project, grease traps will be required in accordance with the Commission's Sewer Use Regulations. Parcel 3 Owner, 8.27

LLC is advised to consult with the Commission's Operations Department with regards to grease traps.

9. The enclosed floors of a parking garage must drain through oil separators into the sewer system in accordance with the Commission's Sewer Use Regulations. The Commission's Requirements for Site Plans, available by contacting the Engineering Services Department, include requirements for separators. 8.28

Thank you for the opportunity to comment on this project.

Yours truly,

John P. Sullivan, P.E.
Chief Engineer

JPS/afh

C: Jessica Hughes, Tishman Speyer
K. Ronan, MWRA via e-mail
M. Zlody, BED via e-mail
P. Larocque, BWSC via e-mail

City of Boston
Parks and Recreation
Mayor Michelle Wu

September 19, 2023

Secretary Rebecca Tepper
MEPA Office - EOEEA
100 Cambridge Street, 9th Floor
Boston, MA 02114

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

RE: ENF/PNF, EEA# 16746, 232 A Street, Fort Point Channel, South Boston

Dear Secretary Tepper and Ms. Polhemus;

The Boston Parks and Recreation Department (BPRD) has reviewed the joint *Environmental Notification Form EEA# 16746* (ENF) submitted in accordance with the Massachusetts Environmental Policy Act (MEPA); and the *Project Notification Form* (PNF) submitted to the Boston Planning and Development Agency (BPDA) for the project located at 232 A Street in the Fort Point Channel neighborhood of South Boston.

Description The project site is 2.41 acres located between A Street and the Fort Point Channel, straddling the alignment of Necco Street. The Central Artery Tunnel is under the west part of the site, which limits the ability to construct buildings. There is an emergency access structure for the tunnel; a vehicle access easement and a standpipe on the site. There is a requirement to maintain vehicular access to the pump house to the north of the site along the Fort Point Channel.

Parcel G8 (to the east) will be developed with a lab/office building that is 150' tall and 335,000 sf. Parcel G7 (to the west) will be improved as a 1.1 acre waterfront park.

Context The site is in the 100 Acres Planned Development Area and is subject to the *Master Plan for Planned Development Area No. 69* as amended (PDA) and the *South Boston Municipal Harbor Plan* (SBMHP). BPRD previously reviewed the *Draft Fort Point 100 Acres Open Space Concept Plan*[i] and the plans for the adjacent project at 244 A Street. That project includes two parks, of which the top one foot will be transferred in fee to BPRD. The parks at 244 A Street will link the open space at 232 A Street to the open space at 5-15 Necco Street.[ii]

Coordination The ENF/PNF states that the proponent has been in contact with the development team for 244-284 A Street in order to ensure that the public realm improvements are coordinated and designed to maximize utility and benefit to the neighborhood.

Chapter 91 The site contains filled former tidelands that are subject to the Massachusetts Public Tidelands Act (M.G.L Chapter 91). Portions of the site include Landlocked Tidelands which are not subject to Chapter 91. However, the EOEEA Secretary is required to make a determination that the project has positive public benefits at the conclusion of MEPA review.

Draft Fort Point 100 Acres Open Space Concept Plan The *Draft Fort Point 100 Acres Open Space Concept Plan* refines the framework of open space that was negotiated as impact mitigation for the increased footprints, height and massing allowed on private development parcels in the *Master Plan for Planned Development Area No. 69* (PDA 69) as amended.[iii] The Open Space Concept Plan creates a cohesive network of open spaces that frame new development and connects the historic neighborhood to the Fort Point Channel.

The BPDA describes the Open Space Concept Plan as "a vision for a connected set of distinct, destination-quality open space experiences, reflective of community priorities and needs."[iv] Further, "the proposed park network strengthens connections to the waterfront, creates a more resilient community, and expands recreation, events, and green space access."[v]

Much of the open space at 232 A Street is not in the PDA Master Plan or the Draft Fort Point Open Space Concept Plan. However, it should be designed in manner that responds to the Open Space Concept Plan as it will serve as a significant piece of the green infrastructure system. 9.1

Conceptual Open Space Design Section 4.3.1 of the ENF/PNF notes that the proposed open space will provide an amenity to the neighborhood. The open space site will be raised to 21'-6" at its peak and graded to serve as a resilient buffer against coastal flooding for the project and the greater neighborhood. It will be graded to ensure a coordinated transition to the abutting open space and development. It will provide access to the Fort Point Channel and connect to the Harborwalk and South Bay Harbor Trail. It will offset the heat island effect by decreasing impermeable hardscape, adding shade and implementing biodiverse planting. The open space will be an amenity to the neighborhood by providing programming for active and passive uses.

The final design of the open space at 232 A Street should be created through a public process that incorporates the input of stakeholders in the community, the BPDA and BPRD. 9.2

The final design should minimize the impacts of existing infrastructure on the site (such as the tunnel emergency egress). It should maximize the connection to adjacent open space and the Harborwalk. 9.3 *The raised grade and resiliency buffer should be engineered so that it does not detract from the overall use of the open space.* 9.4 *The site should be designed in a flexible manner that can be adapted when/if the adjacent pump house (and required access) becomes obsolete.* 9.5

Wind and Shadow PDA 69 allows buildings with commercial scale footprints and heights the range from 100-180 feet. The proposed building on Parcel G8 will be 150 feet tall – it is unclear if this includes rooftop appurtenances.

The wind and shadow impacts (from dawn to dusk) of the full height of the proposed building on the adjacent open space network should be evaluated in order to mitigate the impacts on the natural landscape and the desirability of year round use of the open spaces. 9.6

Protection in Perpetuity The proponent has stated that it will convey the fee ownership of the open space on Parcel G7 to the City, which will permanently protect it. This is consistent with the transfer of fee ownership of other parks in the 100 Acre PDA such as A Street Park and the parks to be constructed at 244 A Street and 5-15 Necco Street.

BPRD is grateful for the proponent's generous offer to transfer the fee ownership of the open space to the City, thereby ensuring its protection in perpetuity for the people of Boston.

Maintenance The ENF/PNF states that the proposed open space will be dedicated for public use following construction, thereby foregoing future development rights, and addressing its maintenance through assessments paid by the members of the 100 Acres Association, consistent with other open space contributed through developments of other property within PDA No. 69.

Inclusive Public Realm: The ENF/PNF states that the project will offer a wide variety of open spaces that are accessible and open to all of Boston's residents. The design goals are rooted in creating a public realm that promotes equitable and inclusive access to the waterfront.

The generous transfer of fee ownership to BPRD will ensure that the open space is inclusive of all.

Sincerely,

Carrie M. Dixon

Carrie Marsh Dixon
Executive Secretary, Boston Parks and Recreation Commission

cc: Nicholas Perry, Analyst, Massachusetts Environmental Policy Act
Ryan Woods, Commissioner, Boston Parks and Recreation Department
Liza Meyer, Chief Landscape Architect, Boston Parks and Recreation Department
Seth Riseman, Director, Urban Design, Boston Planning and Development Agency
Jill Zick, Senior Landscape Architect, Boston Planning and Development Agency
Nick Carter, Project Manager, Boston Planning and Development Agency
Elizabeth A. Stifel, Executive Director, Boston Civic Design Commission

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[i] Comment letter from Carrie M. Dixon at BPRD to Joe Christo at BPDA; *DRAFT Fort Point 100 Acres Open Space Concept Plan;* February 5, 2021.
[ii] Comment letter from Carrie M. Dixon at BPRD to Teresa Polhemus at BPDA; *244-284 A Street in Fort Point; Supplemental Information Document;* February 22, 2022; and comment letter from Carrie M. Dixon at BPRD to Teresa Polhemus at BPDA; *244-284 A Street in Fort Point; Project Notification Form;* February 12, 2021.
[iii] *Master Plan for Planned Development Area No. 69, South Boston/The 100 Acres;* January 10, 2007.
[iv] https://www.bostonplans.org/news-calendar/news-updates/2021/01/05/bpda-releases-draft-fort-point-100-acres-open-spac
[v] https://www.bostonplans.org/getattachment/e9bf1c3e-1f50-4514-9334-e29be1be9f86

clf
Conservation
Law Foundation

For a thriving New England

CLF Massachusetts 62 Summer Street
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September 5, 2023

Via electronic mail: Nicholas.Perry@mass.gov

Nicholas Perry
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Written Comments on 232 A Street Environmental Notification Form, EEA #16746

Dear Mr. Perry:

Conservation Law Foundation ("CLF") appreciates the opportunity to comment on Parcel 3 Owner, LLC ("the Proponent's"), Environmental Notification Form ("ENF") for 232 A Street. CLF protects New England's environment for the benefit of all people and uses the law, science, and the market to create solutions that preserve our natural resources, build healthy communities, and sustain a vibrant economy. CLF's advocacy includes participation in proceedings that impact equitable access to and climate resilience of the Commonwealth's tidelands. CLF commends the Proponent on many aspects of this project, including its decision to provide significantly more open space onsite as a result of community feedback. We comment to seek clarification on certain aspects of the project and to encourage the Proponent to maximize the accessibility, resilience, and value to the community of this project.

Transportation

The Proponent plans to implement a transportation demand management ("TDM") plan that will minimize single-occupant vehicle trips to the site and lists a number of potential elements of the TDM that the Proponent is considering but has not yet committed to implementing, such as providing transit information on screens in the building lobby, participating in a program that facilitates the purchase of transit passes for employees, subsidizing half the cost of monthly MBTA passes, and other amenities to encourage the use of bicycles and public transportation. ENF at 20, 6-2. CLF encourages the Proponent to commit to adopting these measures to encourage public transit and bicycle travel. Further, CLF urges the Proponent to provide an analysis of pedestrian safety on the streets leading onto the site and any alterations that might be required to the surrounding thoroughfares in order to make the site safely approachable on foot. 10.1 10.2

Resilience

The Proponent discusses the use of a berm that will serve as a resilience measure to counter storm flooding and sea level rise and that will be funded by a FEMA grant. *Id.* at 5-15. The Proponent should clarify how the berm will be funded in the event that the cost exceeds what the federal grant covers, as well as whether FEMA has expressed an opinion about the berm design as it currently stands. 10.3 Similarly, the Proponent should explain how and by whom the berm will be maintained and provide greater transparency about how the project is being coordinated with the City, given that it is the federal grant applicant. 10.4 CLF is also concerned about the potential for the Harborwalk to flood. If the structure is landward of the Harborwalk, it will not protect the Harborwalk from flooding. The Proponent must make every effort to protect this pathway from flooding in order to attain the level of public access to the lateral shoreline the law requires. 10.5 Finally, CLF appreciates the Proponent's plans to include rain gardens, permeable pavers, and landscaping to improve the site's water management infrastructure and asks the Proponent to provide more detail about where those infrastructural improvements will be added. 10.6

Chapter 91

CLF is pleased to see the amount of open space above and beyond what Chapter 91 requires, as well as the commitment to a public process for tenanting of civic and cultural facilities of public accommodation. *Id.* at 1-2, 1-11. That said, there are aspects of the Proponent's Chapter 91 compliance that require attention. In particular, the project plan features a dock that extends into flowed tidelands, but the ENF does not provide sufficient detail about its intended use beyond members of the arts and dragon boat communities. *Id.* at 10. The Proponent should provide additional information about its plans for the dock, including its intended uses, size, location, structure, and interaction with the South Boston Municipal Harbor Plan, in order to show compliance with Chapter 91 regulations. 10.7

Conclusion

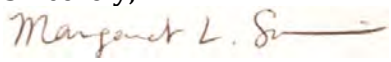
The 232 A Street project has many positive features, but certain aspects of the plan must be fleshed out in order for stakeholders to understand the benefits and drawbacks of the project. Specifically, the Proponent's DEIR should provide:

- more concrete information about what will be in its TDM plan;
- an analysis of pedestrian safety and needs
- information about FEMA's opinion on the current berm design;
- information about coordination with the City on the berm, as well as who will fund surplus berm costs and maintain it;
- the Proponent's strategy for avoiding Harborwalk flooding;

- details about the location of the planned rain gardens, permeable pavers, and landscaping; and
- detail about the plans for the dock, including its intended uses, size, location, structure, and interaction with the South Boston Municipal Harbor Plan.

CLF looks forward to evaluating the additional detail provided in the DEIR and engaging with the Proponent as the project progresses.

Sincerely,



Margaret L. Sullivan
Senior Attorney
Conservation Law Foundation

BOSTON HARBOR NOW
Are you on board?

15 State Street Suite 1100
Boston, MA 02109
617 223 8667
bostonharbornow.org

September 5, 2023 via email: Nicholas.Perry@mass.gov

MEPA Office
Attn: Nicholas Perry
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: 232 A Street ENF/PNF

Dear Mr. Perry,

Boston Harbor Now (BHN) respectfully submits the following comments on the 232 A Street Environmental Notification Form/Project Notification Form, submitted by Parcel 3 Owner LLC, an affiliate of Tishman Speyer. Our staff has been following this project since its inception and met with the proponent prior to filing as they worked to learn more about the neighborhood and collect resident ideas. Most recently, we attended the virtual and in-person site visits on August 22 and 23.

As longtime stewards of the Boston Harborwalk, Boston Harbor Now is committed to ensuring that the waterfront we build today is designed for a more resilient and inclusive future. We use the term "Harborwalk 2.0" to capture the aspirations of this work to ensure the waterfront is accessible and welcoming; is prepared for the coastal impacts of climate change; and centers equity and inclusion in the development of its design, construction, and programming. An accessible waterfront should have both linear and lateral connections between the city and the water, as well as numerous activation strategies to serve all Bostonians. A resilient waterfront includes a variety of climate adaptation strategies to protect and serve Boston at a district scale. To center equity in waterfront design is to focus on strategies that make the waterfront feel safe and inclusive through lighting, clear signage, full ADA accommodations, and the elimination of features that make users feel unwelcome or excluded.

Open Space Plan

During one of our last discussions with the proponent, they had intended to conduct an open space planning process that would evaluate the existing and proposed types of open space in the neighborhood. Since then, they have completed their evaluation and paired their findings with Fort Point stakeholder conversations to shape their open space plans. We applaud the proponent's community engagement efforts and resulting community-responsive design. The initial open space concepts include a thoughtful mix of uses that fill existing gaps within the neighborhood and reflect the

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community's desires for a mix of quiet and restful areas and other spaces that can be used for flex space to support special events. We hope the same thoughtfulness and ongoing engagement leads to the creation of an activated waterfront and watersheet at their site.

We also commend the proponent's flood resilience proposal that creates a significantly more welcoming waterfront than previous plans had outlined for the parcel. At the behest of the community, the proponent has offered an alternative coastal flood solution that replaces the Boston Planning and Development Agency's (BPDA) proposed seawall and floodgate with a more inland berm offering the same level of flood protection but is now embedded in the landscape. The gate has been replaced by accessible slopes on both sides of the line of higher elevation. We are in full support of the change to a proposed berm design, as it will create a higher quality waterfront experience for people to travel and relax while still maintaining a continuous line of defense from sea level rise and storm surge. In the event that weather conditions at high tide temporarily disrupt use of the Harborwalk, we recommend an alternative elevated path of travel be provided so that people can still navigate across the site even if the area immediately adjacent to the channel is temporarily under water. In this same vein, we recommend that the proponents use materials that weather the potential damage from storms and coastal flooding at the lowest elevation so that they can bounce back quickly. 11.1 11.2

Facilities of Public Accommodation

The proponent intends to place community uses, such as publicly accessible retail/restaurant establishments and civic and cultural uses, on the ground floor; the final uses have yet to be decided. The proponent has stated they intend to vet their Facilities of Public Accommodation (FPAs) through "a transparent public process, which will include the BPDA Staff, City and State agencies, elected officials, abutting owners, neighborhood groups…and other stakeholders." We applaud these efforts, which will allow for additional public input in the development process and hopefully creative new tenants in the neighborhood. Should the proponent pursue the model set by the neighboring Channelside development, we suggest they coordinate the processes with Related Beal to ensure they incorporate best practices and lessons learned from their experience. Notably, Channelside has engaged with a DEI consultant to help ensure the RFI/RFP process is accessible to a range of potential tenants and further plans to offer technical and financial assistance to those groups that may not have the in-house capacity or expertise to apply to an RFI/RFP, a practice that the proponent may want to implement here as well. Should the proponent's RFP process 11.3 11.4

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begin after the completion of the Channelside project, the proponent may also want to encourage unselected applicants to apply for their FPA space. 11.5

Although the ground floor uses have yet to be decided, it seems the proponent has determined where they will be located within the building. Lobby space for the office/lab tenants will be situated at the intersection of Necco Street and Binford Street and retail/amenity space will be placed along A Street, the Gillette property, and the new park. Like Channelside, the proponent has put back-of-house operations along Binford Street, concentrating loading in one area. While the space fronting A Street will be highly visible, the retail/amenity spaces facing Gillette and the park are less visible, in part because they are not yet facing a street or along a primary pedestrian route. The proponent may want to explore additional wayfinding and activation along the Gillette side of the building, and the arcaded design suggests they have begun to explore strategies to ensure that the pathway feels inviting. 11.6

The proposed project is a thoughtful design that is a reflection of the proponent's receptivity to community suggestions and experiences elsewhere on the waterfront. We appreciate the efforts the proponent has put into engaging with the community and balancing complex infrastructure needs on the site, especially with regard to the design of the outdoor space, which will include space for quiet appreciation of nature while also providing an elegant coastal flood intervention. The uses and configuration of indoor spaces, while yet to be decided, will also be heavily guided by community input. We look forward to remaining engaged in the state and local processes that will continue to shape this project and hope that lessons from Channelside can be iteratively applied to the site as the neighboring park and buildings are constructed and leased.

We are grateful for the opportunity to comment on this project, and we will continue to follow its progress toward implementation. We would be happy to speak with you or the proponent further if there are additional questions.

Sincerely,

Kathy Abbott
President and CEO
Boston Harbor Now

9/19/2023

Sent via e-mail to:
Mr. Nick Carter, BPDA
Mr. Nick Perry, EEA/MEPA

Subject: My comments on 232 A Street PNF/ENF

Mr. Carter and Mr. Perry:

Please accept the following comments regard the PNF/ENF for 232 A Street (the “Project”) filed by Tishman Speyer (the “Proponent”).

These comments are submitted for the 9/19 (EEA) and 9/20 (BPDA) public comment period deadlines.

Regards,
Steve Hollinger
Resident
21 Wormwood St. #215
Boston, MA 02210
617 338-2222

Massing and Commercial/Industrial Uses

I don't take issue with massing or laboratory use of the proposed building. The building massing and use are generally supported by existing zoning. In my view, the Proponent deserves praise for not only arriving within the planned 100 Acres zoning framework, but for eliminating the formerly-approved Building G8 and instead creating a meaningful waterfront park. I believe the Project may be the first large project PNF to be filed under the 100 Acres Plan without need for a substantive variance.

Furthermore, while BPDA's waterfront team under two prior mayoral administrations should be held accountable for continued misrepresentations to the community and undisclosed legal maneuvers in zoning (PDA #69) regarding claimed *minimum* residential density anticipated under the 100 Acres Plan, as I understand, this particular parcel could not have been residential use per a binding restriction of Gillette that predated the Proponent's ownership.

NOTE to Readers in the Fort Point community: Above comments should be understood in context. The appropriate forum for registering concerns about height zones and/or use was during 100 Acres Plan drafting. As a result of that process, landowners already have property rights (and obligations including creation/maintenance of a park network) under existing zoning, conveyed to them through the 100 Acres Plan rezoning process. While I don't dismiss concerns of others, in my view, attention must be directed where it has the most positive impact.

Biosafety Level

Given the close proximity of the Project to a dense residential community including a director abutter, a zoning amendment (to PDA #69) must restrict lab use to Biosafety Level 1 and 2, with an expressed prohibition on Biosafety Levels 3 and 4. 12.1

Mechanicals and Possible Setbacks

I don't take issue with the need for rooftop mechanicals to support lab use. That said, I do support the community's call to consider *reasonable* changes to the design, for example using setbacks or other modifications, to improve sunlight availability at the abutting 249 A Street artist co-op. 12.2

I'd encourage the Proponent to deliver a building with mechanicals that are either seamlessly integrated into the design (see 400 Summer Street) or mechanicals that are visible (complementing Fort Point's industrial heritage), as opposed to employing highly contrasting materials to screen rooftop mechanicals (see 15 Necco). 12.3

Civic/Cultural Facilities of Public Accommodation (FPAs)

1) A minimum of 10,000 square feet of ground floor FPA space must be provided rent-free, for civic/cultural space, tenanted through a City-led process. This minimum footage is consistent with prior permitting at Fan Pier Pier 4 and Atlantic Wharf. It is also consistent with the requirement during General Electric campus permitting at 5-15 Necco (which provided a 13,400sf cultural space in 15 Necco alone). 12.4
2) Provision for such civic/cultural FPA space(s) is consistent with the Fort Point 100 Acres Master Plan Final Draft, notwithstanding BPDA's failure to require the drafting of legally binding obligations within PDA #69, as the agency had achieved prior in Fan Pier, Pier 4 and Atlantic Wharf PDAs. 12.5
3) I recommend distinguishing rent-free civic/cultural space as a SPDF under Chapter 91. 12.6
4) Floorplans depicting (and differentiating) the rent-free civic/cultural space, commercial retail and lobby spaces must be required prior to BPDA Board approval. 12.7
5) A minimum contribution of $200 psf toward fit-out of the 10 ksf civic/cultural space is required, a conservative estimate considering Grub Street's recent example. 12.8
6) Civic/Cultural FPA space(s) should be located along the southeast and east (Channel-facing) facades of the building, allowing for interaction with park users. In no configuration should frontage along A Street be dedicated to civic/cultural FPA space, given projected flooding issues at 16.9' elevation and long-term costs associated with future grade changes necessary to protect against foreseeable flooding. 12.9

NOTE: The proponent has excluded an inordinate amount of ground floor footage from classification as an FPA, perhaps for lab mechanicals or other amenities. To meet a 10,000sf minimum civic/cultural FPA requirement, up to 33% of required civic/cultural footage may be located on an upper floor.

Capital Investment in Watersheet Activation

Funds for capital investment in waterside infrastructure to serve as a means to activate the Fort Point Channel watersheet must be identified by coordinating required contributions from the Proponent (Tishman Speyer), Related Beal and National Development, the three successors to Gillette's former 9.5 acres under the 100 Acres Plan. 12.10

As recent as a decade ago and dating back a decade prior, BPDA's own claims regarding anticipated funds arriving from development of Gillette's 9.5 acre portfolio (sold to the three current landowners) dwarfed the current expected total contribution.

As a result of BPDA fecklessness during permitting of Gillette's former 9.5 acres, the Fort Point Channel edge will likely rival 3rd-tier waterfronts nationwide, failing to offer the types of waterside amenities found on top-tier waterfronts nationwide and worldwide.

It is not acceptable to find this Proponent suggesting another so-called "touch the water moment" of modest size; nor is it acceptable to see the three proponents each proposing redundant concepts such as multiple floating docks and multiple small piers; nor is it acceptable to see regulators and proponents *exclusively* embracing relatively low-cost concepts such as modest floating stages and ramps, simply because the most vocal community members developing support for their ideas are unaware of the level of investment appropriate for large projects being developed on Boston's premium waterfront real estate.

A process must be convened that will identify one or more *signature* waterside elements, funded by all three (3) landowners, that will create a monumental waterside feature dedicated to watersheet activation. 12.11

I would suggest revisiting the 2003 Watersheet Activation Plan. At that time, we envisioned concepts including the possible development of a pedestrian bridge. Another concept discussed for over a decade was the "Channelwalk," a floating dock running the entire length of these properties.

The existing pier and floating dock ("Fort Point Pier") was constructed by Gillette, required during the company's application for a Chapter 91 amnesty license. However valuable, this relatively small contribution to waterside infrastructure should not represent the high bar for a world class waterfront.

Harborwalk and South Bay Harbor Trail

It is critical to set a high quality standard for the Harborwalk and South Bay Harbor Trail that carries through to points south, for development in the future when Gillette sells the land it currently uses for its manufacturing.

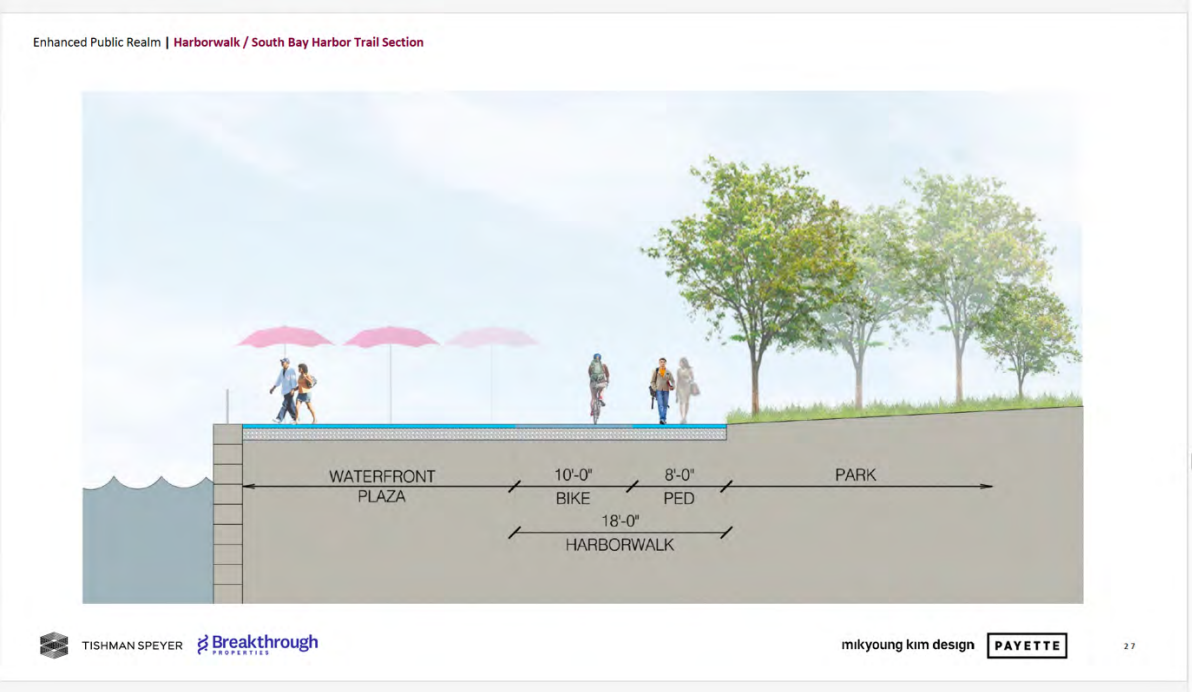
The Proponent is proposing a width of only 8’ for the pedestrian area of the Harborwalk (see graphic below).

Secondly, the Proponent is proposing that cyclists on the South Bay Harbor Trail ride along the edge of the Fort Point Channel, with pedestrians walking inland of cycle lanes (see graphic below).

Recommendations:

1. Minimum Harborwalk area for pedestrians must be 12’ wide, not 8’ wide. 12.12
2. Pedestrians must walk along the Fort Point Channel, not inland of cycle lanes. Cycle lanes should run along the inland edge of the pedestrian area of the Harborwalk. 12.13

From the PNF/ENF:



Public Park Design

The public park created by the Project is unique and holds great potential. Insulated from residential buildings, the park will be viable for use for an array of events that otherwise could be expected to garner noise complaints. These include evening and weekend events.

The Proponent must commence a reasonable public park design process to secure input. 12.14

Control by Boston Parks Dept

As has been achieved with the 100 Acres Plan at A Street Park and Fort Point Park (244-284 A Street), the waterfront park created at 232 A Street should be controlled by the City of Boston Parks Department, with construction and maintenance funded in perpetuity by the Proponent and/or the 100 Acres Owners Association. 12.15

Enclosed Structures on Public Park

No enclosed structures such as pavilions or tents (aside from the existing headhouse) on the public park should be approved in zoning. 12.16 These types of structures have been repeatedly increased in size and reapproved by BPDA as large commercial buildings. As one example, a 30,000 square foot retail building approved on Seaport Common (2017 NPC) was originally planned and permitted as a 9,000 sf "pavilion" (2010 PNF). Other such structures have been reapproved by BPDA and DEP for uses widely varying from stated purpose, such as a long-planned "Snack Bar" outbuilding on Fan Pier now tenanted by a restaurant with a full service kitchen, indoor/outdoor seating, an oyster / caviar menu and a liquor license.

NOTE to the Proponent and Regulators

No reference to the BPDA Fort Point "Open Space Concept Plan" should be included in any zoning or regulatory permitting document associated with the Project, particularly an amendment to 100 Acres Plan PDA #69. Any such reference could be misconstrued as legal codification of the Open Space Concept Plan. 12.17

With its rollout of its "Open Space Concept Plan," BPDA's waterfront team repeatedly misrepresented to the public that newly reconfigured Fort Point Park parcel dimensions, building footprints, and shifts in massing west behind Channel Center had been derived through a public process using the existing 100 Acres Plan zoning as a baseline.

In fact, the only public process prior to BPDA's publication and press tour regarding the "Open Space Concept Plan" was a Sasaki-led public process to determine park uses within the dimensions and height zones of the existing 100 Acres Plan zoning.

BPDA's false claims regarding a robust public process upon publication of the "Open Space Concept Plan" followed BPDA's own chain of private e-mail correspondences with the US Postal Service that floated shifts in dimensions, building footprints and massing. These exchanges were discovered through a Public Records Request.

Shifts impacting Channel Center and shifts away from residential use in Fort Point were never discussed publicly prior to BPDA's inclusion of them with publication of the "Open Space Concept Plan."

BPDA held a series of Open Houses following its publication date and press tour, but made no changes to park dimensions, building footprints or height zones west of A Street based on resulting input.