PUBLIC NOTICE

The Boston Redevelopment Authority d/b/a the Boston Planning & Development Agency ("BRA"), pursuant to Article 80B of the Boston Zoning Code ("Code"), hereby gives notice that an Expanded Project Notification Form ("PNF") was filed by 105 West First Street Owner, LLC (" Proponent"), an affiliate of Ares Management LLC with CV Properties, LLC as the developer, on January 30, 2017 for the 105 West First Street project ("Project") in South Boston.

The Project will comprise an eight-story, approximately 266,000 square foot office/research and development building containing ground floor retail, café, or restaurant space, convener space, innovation space and a pedestrian passage between West First Street and West Second Street that will be open to the public. The Project will also include approximately 35 parking spaces in an underground parking garage. The existing building on the Project Site will be demolished when the existing tenant vacates the premises under its lease.

The Proponent is seeking the issuance of a Scoping Determination by the BRA pursuant to Section 80B-5 of the Code. In its Scoping Determination for such PNF, the BRA may waive further review pursuant to Section 80B-5.3(d), if, after reviewing public comments, the BRA finds that such PNF adequately describes the Project's impacts.

The PNF may be reviewed in the office of the Secretary of the BRA, Room 910, Boston City Hall, 9th Floor, Boston MA 02201 between 9:00 AM and 5:00 PM, Monday through Friday, except legal holidays. Public comments on the PNF, including the comments of public agencies, should be submitted in writing to Michael Rooney, Project Assistant, BRA, at the address stated above, or via email at Michael.Rooney@boston.gov, no later than March 6, 2017 by 5:00 PM.

BOSTON REDEVELOPMENT AUTHORITY,
Teresa Polhemus
Executive Director/Secretary

EXPANDED PROJECT NOTIFICATION FORM

105 West First Street

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

Submitted by:
105 West First Street Owner, LLC
c/o CV Properties, LLC
451 D Street, Suite 100
Boston, MA 02210

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

In Association with:
Stantec Architecture
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
Nelson\Nygaard Consulting Associates
Nitsch Engineering
Haley & Aldrich, Inc.
Soden Sustainability
WSP Parsons Brinkerhoff

January 30, 2017

Epsilon
ASSOCIATES INC.

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January 30, 2017

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Chapter 1.0

Project Description

1.0 PROJECT DESCRIPTION

1.1 Introduction

105 West First Street Owner, LLC (the Proponent), an affiliate of Ares Management LLC with CV Properties, LLC as the developer, proposes to redevelop an approximately 42,219 square foot site (the Project Site) located at 105 West First Street in South Boston. The 105 West First Street project (the Project) will comprise an eight-story, approximately 266,000 square foot office building containing 1,600+ square feet of ground floor space on West First Street for retail, café or restaurant use and 2,400+ square feet of convener space on West First Street, 10,000+ square feet of innovation space fronting on West Second Street, and 3,000+ square feet of tenant amenity space. The retail/restaurant/café use and innovation space on West First Street and West Second Street respectively are designed to activate the ground floor level of the building. The Project will also include approximately 35 parking spaces in an underground parking garage accessed from West First Street, as well as wider sidewalks and related streetscape improvements along both West First Street and West Second Street.

The Project will improve the pedestrian realm along West Second Street through the enlargement of the existing narrow public sidewalk adjacent to the Project, the introduction of street trees and lighting, and the removal of the existing chain link fence. The public sidewalk along West First Street will also be widened by stepping the building back from the property line for a portion of the façade adjacent to the main entry. An enclosed pedestrian connector will provide public access from West Second Street to West First Street through a two-story, light-filled space that will provide a direct connection to A Street Park, the City's newest public park, as well as easy access to the nearby Channel Center Garage. The pedestrian connector is envisioned as a lively space filled with art curated and installed in possible collaboration with organizations such as Artists For Humanity, whose facility is next door, and the Fort Point Arts Community. In addition to these public realm benefits, the Project will also create new construction and permanent jobs, generate new real estate tax revenues for the City, and generate new housing and jobs linkage funds.

This Expanded Project Notification Form (EPNF) is being submitted to the Boston Planning and Development Agency (BPDA) to initiate review of the Project under Article 80B, Large Project Review, of the Boston Zoning Code (Zoning Code).

1.2 Site Context and Existing Conditions

The site on which the Project will be constructed (Project Site) comprises two parcels of land totaling approximately 42,219 square feet with an address of 105 West First Street in the South Boston neighborhood, and currently contains a warehouse/office building and related parking areas and site improvements. As shown on Figure 1-1, the Project

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

105 West First Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

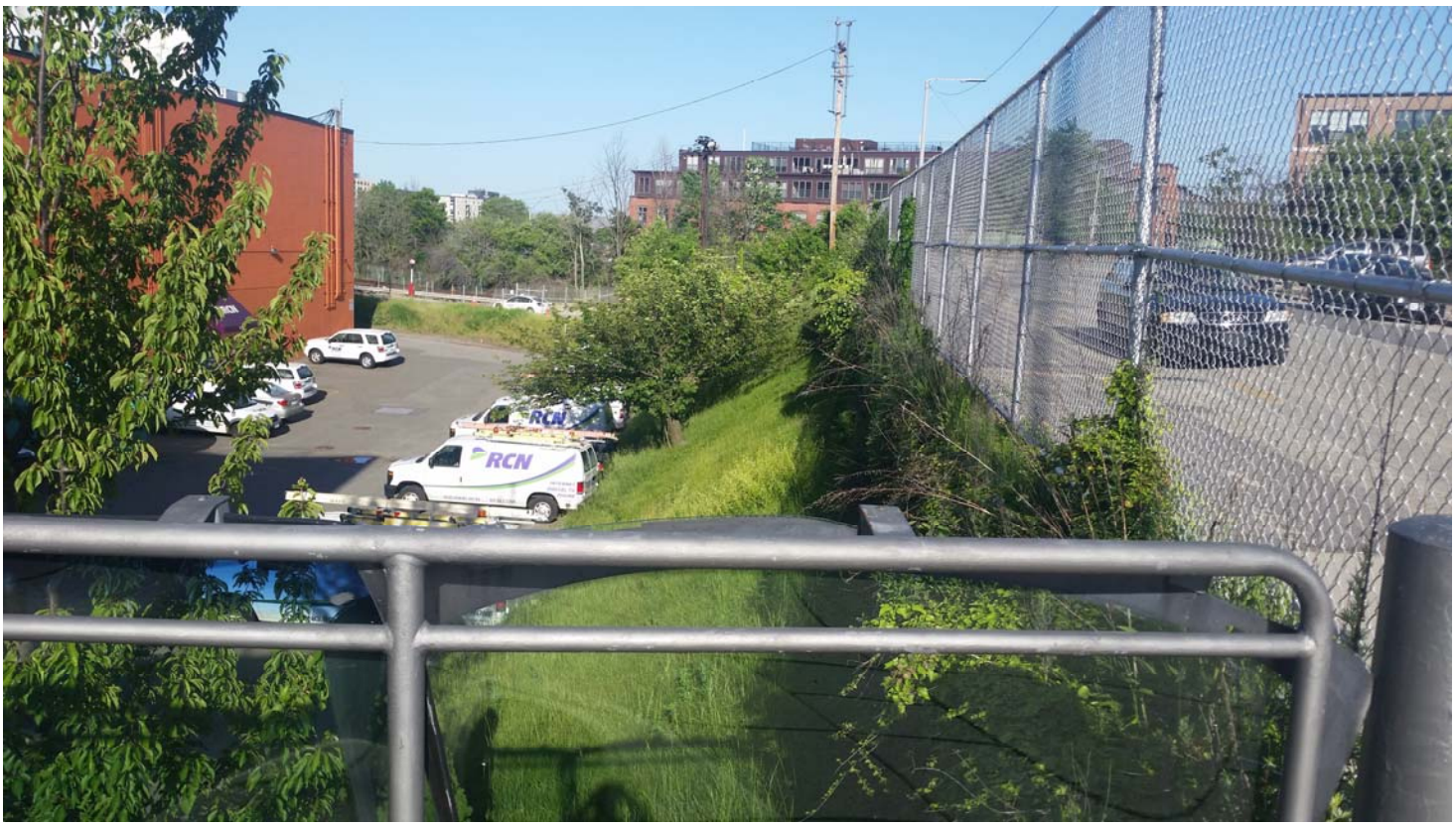
Figure 1-1
Aerial Locus Map

Site is bounded by West First Street and a parcel of land owned by the Massachusetts Department of Transportation to the north, the South Boston Bypass Road (Haul Road) to the east, West Second Street to the south, and land and a building owned by Artists For Humanity (known as100 West Second Street) to the west. The Project Site is shown on the survey included as Appendix A. Figure 1-2 presents the existing conditions at the Project Site.

The Project Site is irregular in shape and has a significant south/north grade difference between West First Street and West Second Street of approximately 12 feet, and there is an additional grade change in the back of the Project Site running east-west near West Second Street of another 3.5 feet.

Across A Street is The Gillette Company's South Boston Manufacturing Center. Also proximate to the site is A Street Park, which was recently conveyed to the City of Boston's Parks Department; One Channel Center, an approximately 525,000 square foot office building occupied by State Street Bank and Trust Company; the Channel Center Garage, an approximately 965-space public parking garage; and Channel Center, a mixed-use community of residential, office and commercial uses located in historic former Boston Wharf Company warehouse buildings and some newly constructed structures along Channel Center Street. The area's vehicular and pedestrian circulation system has been substantially improved with the recent construction by an affiliate of the Proponent of Medallion Avenue between West First Street and Iron Street, which serves as a connecting road parallel to A Street, and Richards Street from A Street to the South Boston Bypass Road, which provides direct access to that restricted access road for trucks and commercial vehicles, as well as the reconstruction of West First Street between A Street and Medallion Avenue and Iron Street between A Street and Channel Center Street. (See Figure 1-3 for an area context map.) These roadway improvements were undertaken as part of the One Channel Center project developed by the Proponent. The Proponent was also responsible for the improvements associated with the One Channel Center Garage.

The Project Site is well served by public transportation, as it is located approximately one quarter mile from the MBTA's Broadway Station on the Red Line. The Project Site is also located within walking distance of South Station, which provides access to the MBTA's Red and Silver Lines, as well as commuter and passenger rail service (Amtrak) and local and regional bus services.



105 West First Street Boston, Massachusetts

Stantec

Figure 1-2
Existing Conditions

105 West First Street Boston, Massachusetts

Stantec

Figure 1-3
Area Context

1.3 Project Description

The Project will consist of the demolition of the existing building on the site after the existing tenant vacates the Project Site, and construction of a new, eight-story building with approximately 266,000 square feet of Gross Floor Area[1] with its front entrance on West First Street, and a secondary entrance on West Second Street as well as a pedestrian connector that runs from West First Street to West Second Street (see Figure 1-4 for the proposed site plan for the Project). The Project, which will be designed for primarily office and research and development uses, will include a two-story enclosed pedestrian connector on the western side of the building to allow public access through the building between West First Street and West Second Street, thereby facilitating pedestrian access to A Street Park as well as access to the Channel Center Garage. The Project will also include approximately 1,600 square feet of ground floor space on West First Street for retail, restaurant or café use, approximately 2,400 square feet of convener space, 10,000 square feet of innovation space such as shared work space, and 3,000 square feet of tenant amenity space. These ground floor uses will help to activate the pedestrian realm along West First Street and West Second Street. The Project will also include approximately 35 enclosed parking spaces in an underground parking garage accessed from West First Street, as well as streetscape improvements along both West First Street and West Second Street.

The following sections describe the Project's guiding design principles, proposed development program and uses, and building design approach, including sustainable elements, key site improvements, and project schedule.

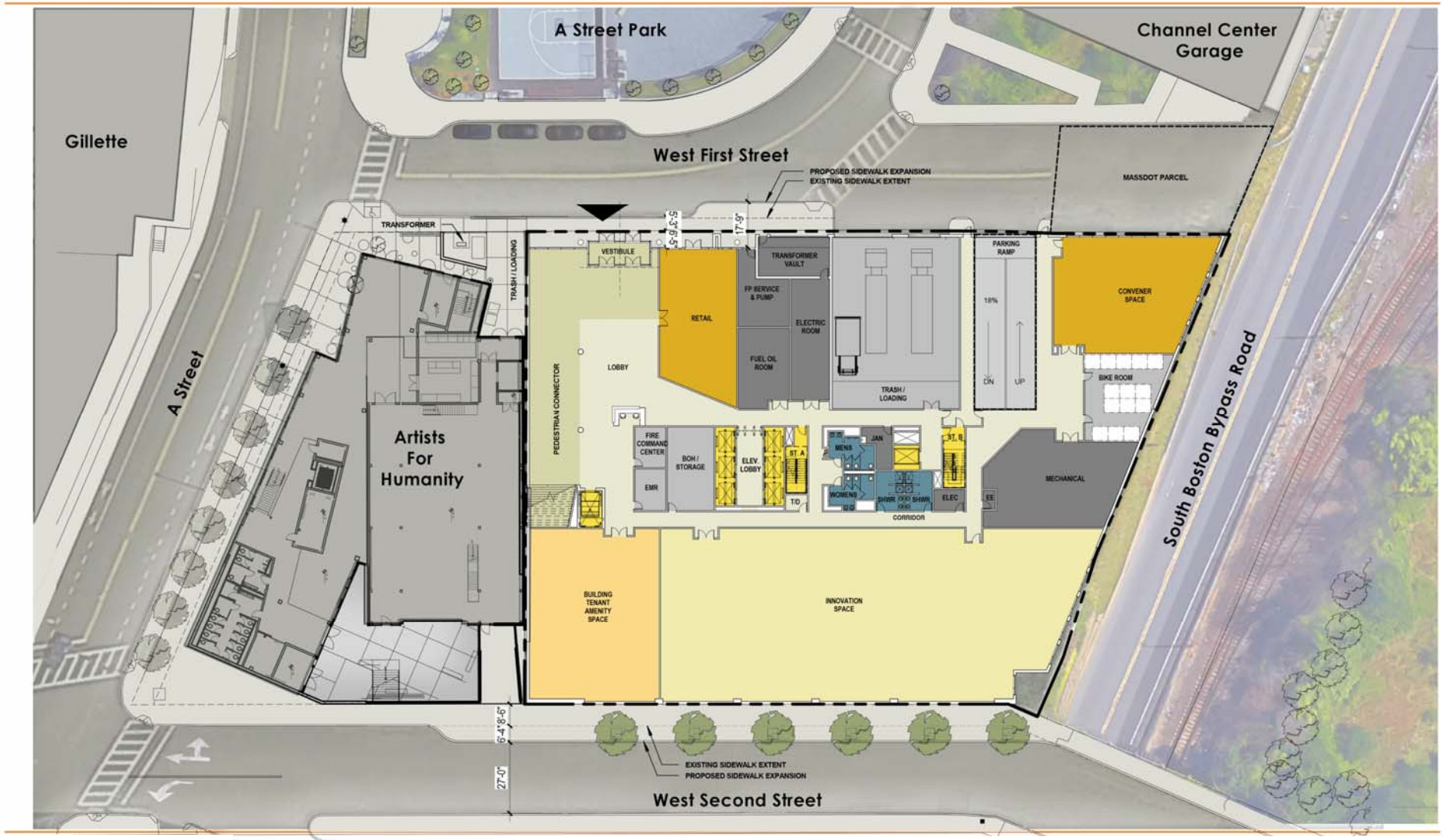
1.3.1 Project Design Principles

The architecture of the building is envisioned as a simple yet elegant grid reminiscent of the formerly industrial buildings in the vicinity. The building relates in height, massing and material selection to the One Channel Center building and the Channel Center Garage, creating an architecturally coherent collection of buildings around A Street Park, and a sophisticated, quiet neighbor to the Artists For Humanity building. The exterior of the Project will be clad in warm toned thin-walled concrete slat wall panels with deep set aluminum windows and slightly protruding sills to provide depth and visual interest.

1.3.2 Proposed Development Program

The building will primarily contain office and/or research and development uses and uses accessory thereto (including parking), as well as ground floor spaces which may include retail, restaurant or café, innovation, shared work space, fitness facility and/or other uses.

[1] All references to square footages in this report refer to "Gross Square Feet" as defined in Article 2A of the Boston Zoning Code



105 West First Street Boston, Massachusetts

Stantec

Figure 1-4
Ground Floor Plan

On the eighth floor, there will be an outdoor roof deck facing West First Street for use by building tenants. Table 1-1 below presents a summary of the proposed development program for the Project. Floor plans, sections, and elevations are provided in Appendix B.

Table 1-1 Project Program

Project Element	Approximate Dimension
Office, Research and Development and related Lobby Space	249,000 sf
Innovation Space (e.g., workshare, tech incubator space)	10,000 sf
Amenity Space for tenants of the building	3,000 sf
Retail/Restaurant/Café Space	Up to 1,600 sf
Convener Space	2,400 sf
Total Gross Square Footage	**266,000 sf**
Building Height (at West First Street)	115 feet
Underground Parking	35 spaces

1.3.3 Public Realm Improvements

The Project will result in improvement of the pedestrian realm along West First Street by providing a widened sidewalk that will mirror a similar improvement planned as part of the Artists For Humanity expansion project. The Project will also result in improvement of the public realm along West Second Street by enlarging the width of the public sidewalk, adding street trees and lighting, and eliminating the existing chain link fence. An enclosed pedestrian connector will provide public access from West Second Street to West First Street through a two-story light filled space that provides a direct connection to A Street Park and easy access to the Channel Center Garage. The pedestrian connector is similar in concept to the pedestrian passageway that exists within the One Channel Center building, and is envisioned as a lively space filled with art curated and installed in possible collaboration with organizations such as Artists For Humanity and the Fort Point Arts Community.

1.3.4 Site Access and Neighborhood Connectivity

It is anticipated that the Project will be primarily accessed via foot from the MBTA Broadway Red Line Station and nearby residences in the Seaport and South Boston, as well as via transit options at South Station. The sidewalks along West First Street as well as

Medallion Avenue and A Street adjacent to A Street Park, the One Channel Center building and the Channel Center Garage were recently completed as part of the One Channel Center project.

Vehicular access to the garage and loading docks will be accessed off West First Street, as shown on Figure 1-4.

1.3.5 Parking

In support of the City's goal not to overbuild parking, the Project will include approximately 35 parking spaces in an underground garage accessed from West First Street, a public street. As discussed more fully in Chapter 3, Transportation, there is currently ample public parking available on a typical weekday in the area, including at the Channel Center Garage directly adjacent to the Project Site, to meet any additional parking needs.

1.3.6 Bicycle Parking

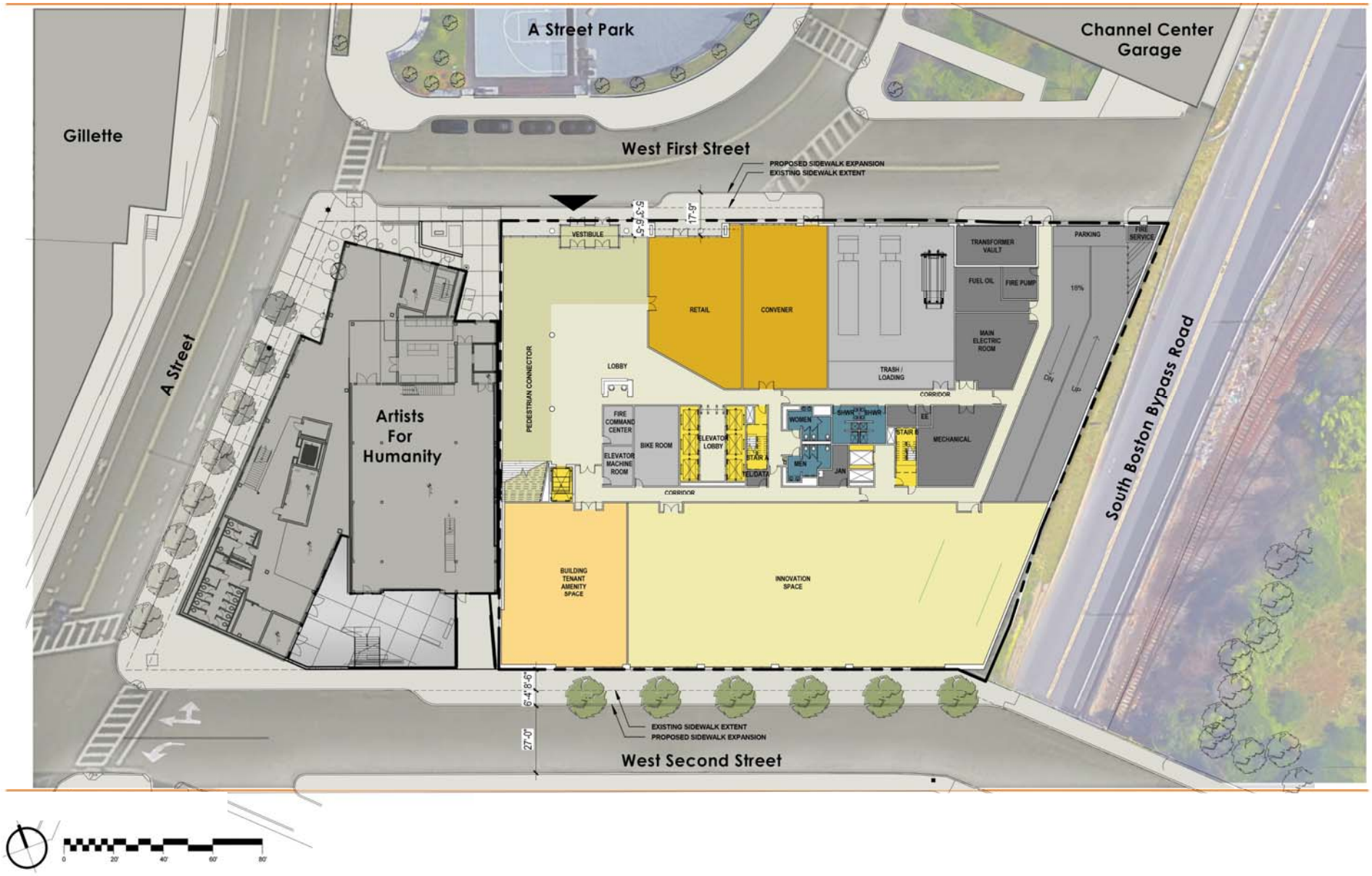
Approximately 120 bicycle parking spaces will be accommodated in a bicycle storage room on the first level of the Project and 20 outdoor bicycle spaces will be provided. Additional specifics about bicycle parking at the Project are discussed in Chapter 3.

1.3.7 Anticipated Project Schedule

Construction of the Project is subject to the finalization of necessary financing and leasing commitments, as well as the vacation of the site by the existing commercial tenant. Construction of the Project is expected to commence within sixty days of the vacation of the Project Site by the existing tenant, and will last approximately 22 months.

1.3.8 The MassDOT Parcel

The Massachusetts Department of Transportation (MassDOT) owns an approximately 3,103 square foot parcel of land located directly north of the Project Site, adjacent to the South Boston Haul Road (MassDOT Parcel). The MassDOT Parcel is currently vacant. MassDOT is currently in the process of confirming that this parcel is surplus and thereby can become available for purchase. If the Proponent is successful in acquiring the MassDOT parcel, the Project would be slightly redesigned to enable the ground floor convener space to be located adjacent to the planned retail space, thus further enlivening the West First Street frontage. An alternative site plan illustrating this change is included as Figure 1-5.



105 West First Street Boston, Massachusetts

Stantec

Figure 1-5
Alternative Site Plan

1.4 Public Benefits

The Project will generate the following public benefits:

- Create an enclosed pedestrian connector that will provide public access from West Second Street to West First Street, envisioned as a lively space filled with art curated and installed in collaboration with organizations such as Artists For Humanity and the Fort Point Arts Community.
- Improve the pedestrian realm along West Second Street by enlarging the width of the public sidewalk, installing street trees and lighting, and eliminating the existing chain link fence.
- Provide a new economic generator in the area, with approximately 980 permanent jobs expected to be created at the Project Site.
- Fill in the gap in the street edge along West Second Street and provide a visual edge for the A Street Park.
- Incorporate best practices in climate resiliency and "green" design.
- Generate new real estate taxes for the City upon stabilized occupancy.
- Generate approximately 300 construction period jobs.
- Generate approximately $1,384,440 in housing linkage funds and approximately $277,220 in jobs linkage funds.

1.5 Community Outreach Overview

As part of its planning efforts, the Proponent has looked to the community for input. The Proponent has met with several neighborhood groups including the St. Vincent Neighborhood Association, the Fort Point Neighborhood Association, the West Broadway Neighborhood Association, and the 100 Acres Improvement Association. The Proponent has also been working with the BPDA and other city agencies to shape its Project proposal. The formal community and public agency review process begins with the filing of this Expanded PNF.

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

Chapter 2.0

Regulatory Context and General Information

2.0 REGULATORY CONTEXT AND GENERAL INFORMATION

This Chapter summarizes the local planning and regulatory controls, and lists the anticipated permits and approvals applicable to the Project. This Chapter also identifies the members of the Project team and provides required legal information.

2.1 Zoning Controls

The Project Site is located primarily within the M-2 (restricted industrial) zoning district, the Restricted Parking Overlay District, and Subarea "B" of the South Boston Waterfront Interim Planning Overlay District established by Article 27P of the Zoning Code. A small portion of the Project Site on its easterly side is located within the I-2 Zoning District. The Project Site is not located within the Groundwater Conservation Overlay District (GCOD) established by Article 32 of the Zoning Code. In addition, the Project Site is located just south of, and therefore outside of, the 100 Acres area governed by the Master Plan for PDA No. 69 (100 Acres/South Boston).

The zoning controls applicable to the Project Site are as follows:

Maximum Building Height	125 feet
Maximum FAR (Floor Area Ratio)	2.0
Rear yard setback	12 feet

There are also parapet setback requirements applicable to the Project Site. There are no minimum lot size, lot width, or frontage restrictions in the M-2 zoning or I-2 districts, nor any applicable front or side yard setback requirements for the uses proposed at the Project.

Within the M-2 and I-2 zoning districts, the uses permitted as of right include office uses, restaurant uses, retail uses, sports facilities operated for profit, and research laboratories. Accessory parking use is a conditional use if accessory to non-residential uses, as would be the case at the Project.

The Project will have an FAR of approximately 6.30. Thus, the Project will require dimensional zoning relief as well as zoning relief with respect to the proposed accessory parking use and the South Boston Planning Overlay District. Other necessary zoning relief for the Project may be identified as the Project program and design continues to evolve.

2.1.1 Article 80 Large Project Review

The Project is subject to Large Project Review pursuant to Article 80B of the Zoning Code. The Proponent filed a Letter of Intent with the BPDA on December 15, 2016 to initiate such review process and a copy of the Letter of Intent is included as Appendix C.

2.2 List of Anticipated Permits and Approvals

Table 2-1 below provides a list of approvals and/or permits anticipated to be required for the Project.

Table 2-1 Anticipated Permits and Approvals

Agency/Department	Permit/Approval/Action
Federal	
Federal Aviation Administration	Determination of no hazard to air navigation (building and cranes)
U.S. Environmental Protection Agency	NPDES (National Pollution Elimination Discharge System) Notice of Intent
Commonwealth of Massachusetts	
Executive Office of Energy and Environmental Affairs	Massachusetts Environmental Policy Act Review
Massachusetts Historical Commission	State Register Review
Massachusetts Department of Environmental Protection	Air Quality Permit Demolition and Construction Notice
Massachusetts Department of Transportation	Chapter 40, Section 54A waiver or determination of non-applicability Indirect Access Permit Potential land conveyance
City of Boston	
Boston Planning and Development Agency	Article 80B Large Project Review
Boston Civic Design Commission	Design Review
Board of Appeal or Boston Zoning Commission	Zoning relief
Public Improvement Commission	Specific Repairs, Canopy License, Earth Retention System approvals
Boston Conservation Commission	Order of Conditions
Boston Water & Sewer Commission	Site Plan Approval and related approvals
Boston Transportation Department	Transportation Access Plan Agreement Construction Management Plan
Parks and Recreation Commission	Approval of the construction of a structure within 100 feet of a City park
Committee on Licenses, Public Safety Commission	Garage Permit and Fuel Storage License
Air Pollution Control Commission	Parking Permit under South Boston Parking Freeze
Inspectional Services Department	Lot Consolidation Demolition Permit Building Permit Certificate of Occupancy

*This is a preliminary list of local, state and federal permits and approvals that may be required for the Project.

*This list is based on current information about the Project, and is subject to change as the design and program of the Project evolves. Some of the permits and approvals listed may not be required, while there may be others not listed that will be needed.

2.3 Agency Coordination

Permitting of the Project pursuant to Article 80B of the Zoning Code will proceed concurrently with review of the Project under the Massachusetts Environmental Policy Act (MEPA) to ensure that all appropriate environmental impacts of the Project are reviewed, analyzed and mitigated.

2.4 Applicant/Proponent Information

The Proponent is 105 West First Street Owner, LLC, a single-purpose limited liability company and an affiliate of Ares Management, LLC with CV Properties, LLC as the developer. CV Properties and Ares have collaborated successfully previously on major developments in South Boston, including the One Channel Center building, the Channel Center Garage and A Street Park located near the Project Site, as well as the Aloft Seaport Hotel and the Element Seaport Hotel located nearby on D Street in South Boston.

2.5 Development Team

The following lists the key members of the development team for the proposed Project:

Address/Location:	105 West First Street, Boston, MA 02127
Developer:	105 West First Street Owner, LLC c/o CV Properties, LLC 451 D Street, Suite 100 Boston, MA 02210 (857) 990-3039 Richard A. Galvin Elisha Long
Architect:	Stantec Architecture 311 Summer Street Boston, MA 02210 (617) 234-3100 B.K. Boley, AIA David Lunny, AIA David Kadish, AIA
Legal Counsel:	Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. One Financial Center Boston, MA 02111 (617) 348-3009 Rebecca A. Lee, Esq.

Permitting Consultant:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Cindy Schlessinger Talya Moked
Transportation and Parking Consultant:	Nelson\Nygaard Consulting Associates 77 Franklin Street, 10th Floor Boston, MA 02110 (617) 521-9404 Ralph DeNisco Jesse Boudart
Civil Engineer:	Nitsch Engineering 2 Center Plaza, Suite 430 Boston, MA 02108 (617) 338-0063 Deborah M. Danik, P.E.
Geotechnical Consultant:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Boston, MA 02129 (617) 886-7400 Mark H. Balfe, P.E.
LEED Consultant:	Soden Sustainability Consulting 19 Richardson Street Winchester, MA 01890 (617) 372-7857 Colleen Soden
Mechanical Consultant:	WSP Parsons Brinkerhoff 88 Black Falcon Pier, Suite 210 Boston, MA 02210 (617)-210-1600 Tom Burroughs, PE Tom Weiss, PE

2.6 Required Legal Information

2.6.1 Legal Judgments or Actions Pending Concerning the Proposed Project

To the Proponent's knowledge, there are no legal judgments or actions pending concerning the Project.

2.6.2 History of Tax Arrears on Property Owned in Boston by the Applicant

The Proponent owns no real property in Boston.

2.6.3 Evidence of Site Control/Public Easements

105 West Street Owner, LLC, the Proponent, has entered into a binding purchase and sale agreement with the current owner of the Project Site for the acquisition of the same. This EPNF is being submitted with the permission of the owner of the Project Site.

There are no public easements applicable to the Project Site, as reflected on the survey included as Appendix A.

Chapter 3.0

Transportation Component

3.0 TRANSPORTATION

The Chapter includes an evaluation of the transportation impacts of the proposed project at 105 West First Street in South Boston in accordance with the requirements of the Massachusetts Environmental Policy Act (MEPA) and the Boston Planning & Development Agency (BPDA) Article 80 process.

3.1 Project Description

The Project Site is an approximately 42,219 square foot site with an address of 105 West First Street in the Fort Point neighborhood of South Boston, an area which has continued to evolve in recent years. The A Street corridor has traditionally been industrial, with the exception of residential development at Channel Center and nearby buildings. Recent developments such as the residential condominiums at 319 A Street and new residential development on West Broadway and north of West Broadway have sped up these changes. In addition, the new One Channel Center building has housed State Street Bank functions since 2014.

The Project includes the demolition of an existing building and construction of a new office building with ground floor retail/restaurant/café space and accompanying site improvements. The building will further enhance the walking and pedestrian environment for workers, customers, and local residents by creating a weather-protected connection between the West Second Street neighborhood and the A Street corridor, and through the creation of widened sidewalks on both West First Street and West Second Street.

The Project will comprise an eight story building with the following elements:

- Approximately 266,000 square feet of gross floor area, comprised of approximately 249,000 square feet of office/research and development uses, , and approximately 10,000 square feet of innovation space. The office/research area will include an additional, approximately 3,000 square foot area, which will be a tenant amenity space.

- Up to 1,600 square feet of retail/restaurant/café space, and approximately 2,400 of square feet of convener space which will serve the building and adjacent neighborhood needs. An example of a convener space would be a shared work space.

- A below-grade parking garage providing approximately 35 vehicle spaces including two ADA accessible spaces (roughly 0.13 spaces per 1,000 square feet of building space) and space for electric vehicles.

- A bike room with 120 interior bicycle parking spaces,

- 20 outdoor bicycle parking spaces;

- A new, weather-protected connection between the West Second Street neighborhood and the A Street corridor and

- Streetscape improvements, including widened sidewalks at West First Street and West Second Street adjacent to the Project Site, and new street trees and street lighting as necessary.

The Project program is summarized below in Table 3-1.

Table 3-1 Project Program

Project Component	Square Feet/Parking
Office, Research and Development and related Lobby Space SF (Office Classification)	249,000
Retail/Restaurant	Up to 1,600
Convener Space (Office Classification)	2,400
Innovation Space (Office Classification)	10,000
Tenant Amenity (Office Classification)	3,000
Parking	35 spaces

Bicycle parking to accommodate 120 bicycles of workers at the building will also be provided, exceeding the requirements of the Boston Transportation Department (BTD) bicycle guidelines. The adjacent Channel Center Garage contains space for 965 vehicles and is available to the general public and area users for hourly, daily or monthly rates.

The site layout is designed to integrate into the area, and create connections where none exist currently. With the creation of A Street Park and the already approved expansion of the adjacent Artists For Humanity facility, this block of West First Street is growing as a hub of activity.

The Project is designed to create a safe and pleasant entry to the building, and features a primary employee/visitor entrance on West First Street on the northwest corner of the building, and an additional entrance on West Second Street at the southwest corner of the building. The parking entrance will be off West First Street on the northeast side of the building, minimizing pedestrian conflict areas. Service vehicle and loading area access will be provided between the pedestrian and vehicular access points along West First Street. Most importantly, the Project will include an internal, publicly accessible, pedestrian connection midway through the block between A Street and the South Boston Bypass Road. For pedestrians from the West Second Street neighborhood, this connection will shorten their walk, bridge the grade change between the two streets, and provide a covered access point to A Street Park and beyond.

3.1.1 Transportation Analysis Summary

The Project will provide a critical link between the A Street corridor and the adjacent South Boston residential neighborhood as accessed via West Second Street. The Project will benefit the local neighborhood and the A Street corridor, building on recent public realm enhancements such as new sidewalks, traffic signals, City streets, and parks (A Street Park and Iron Street Park). The proposed site design is both consistent with current trends in the neighborhood, and in context with the existing area.

The Project also supports ongoing initiatives to enhance multi-modal access and choice throughout the City's neighborhoods. The newly created and inviting pedestrian passageway will be a significant change to pedestrian circulation in the area. This valuable connection will bridge the significant grade change between West First Street and West Second Street, and create a new neighborhood amenity linking West Second Street directly to A Street Park.

Additionally, the A Street corridor has seen significant traffic management and control improvements as the area has grown. With many trips arriving by walking, bicycling and public transportation, resulting vehicle trips are much fewer. This results in a vehicle capacity analysis that shows a negligible change in delay at all Project area intersections, with no change in Level of Service at any approach between the No Build and Build scenarios. Currently, all but one intersection or approach operates at Level of Service (LOS) D or better, which is within typical urban operations and BTD standards. The LOS for all intersections is unaffected as compared to the No Build scenario, with minimal, negligible increases in delay shown.

The Project will provide numerous public realm enhancements including a new and more inviting street presence with landscaping, sidewalk upgrades, street trees on West Second Street and fewer curb cuts and driveways that currently serve the existing business located at the Project Site. With its higher density, walking and biking amenities, and proposed transportation demand management (TDM) measures, the Project will support the growth of this area of South Boston as a transit-rich, walkable, bikeable neighborhood. Specific transportation-related enhancements will include the following:

- Creating a pedestrian passageway within the building connecting West Second Street to West First Street which will provide a valuable pedestrian cut-through given the lack of street network connectivity in the area;

- Creating a large and inviting lobby in conjunction with the pedestrian passageway and retail space;

- Widening the new sidewalk along West First Street adjacent to the Project, complementing similar improvements planned for the Artists For Humanity expansion project;

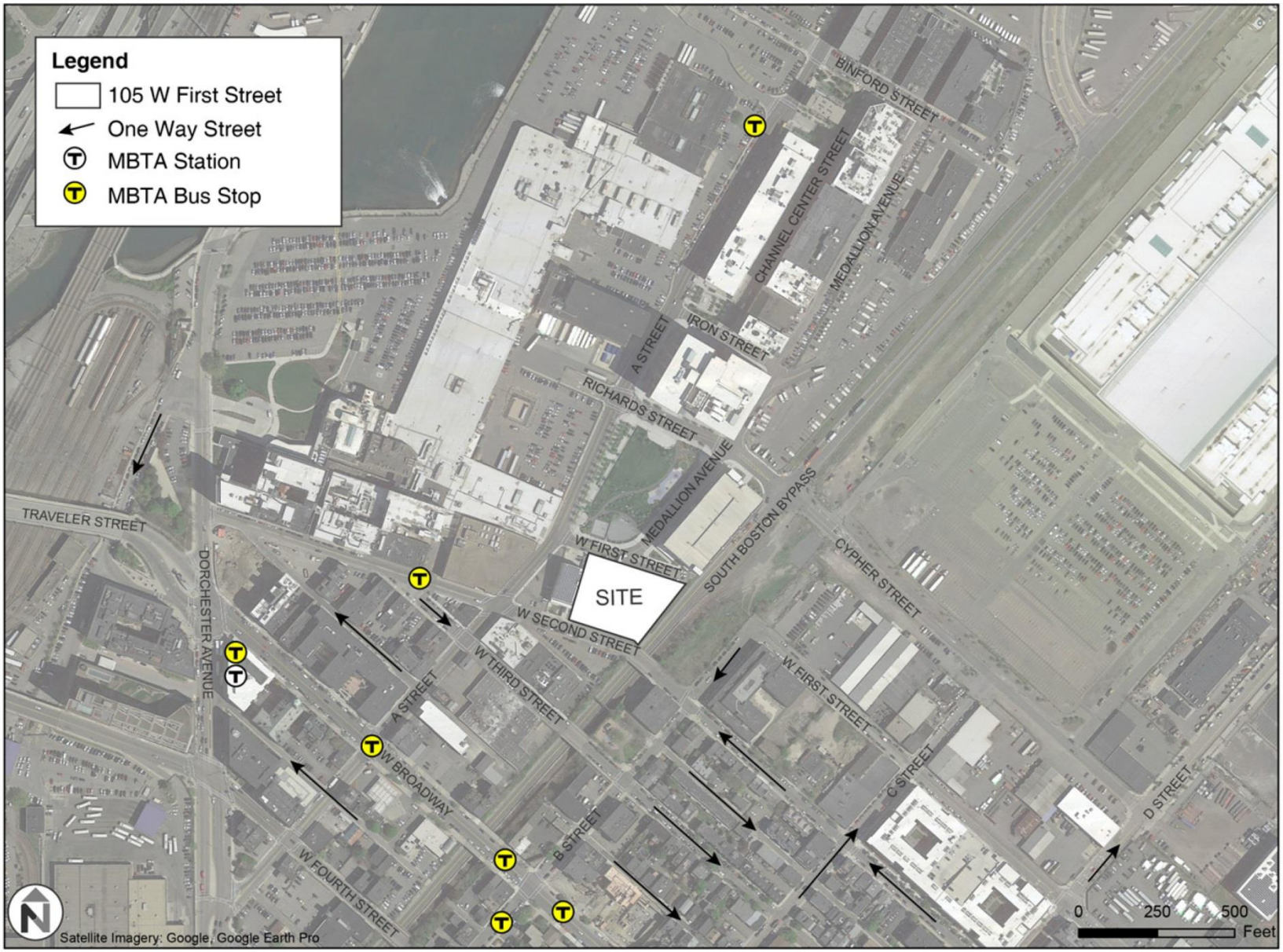
- Widening the sidewalk along West Second Street adjacent to the Project, and adding street trees as well as street lighting as needed;
- Creating a new pedestrian crossing at West First Street;
- Providing an internal facility for loading and service activity;
- Creating a parking supply for the building (35 spaces) via the newly constructed parking facility at ground level;
- Providing two electric vehicle charging stations;
- Charging for parking to minimize demand;
- Adding 20 outdoor, publicly available bicycle parking spaces on West First Street - useful for both visitors and the public;
- Providing 120 bicycle parking spaces in a covered, secure bike room within the building to promote bicycle use and convenience for building employees; and
- Providing four shower facilities for employees of building tenants.

The Proponent will also enter into a Transportation Access Plan Agreement (TAPA) with BTD, consistent with BTD requirements, and setting forth a robust Transportation Demand Management program to be deployed at the Project Site.

3.1.2 Study Area and Methodology

3.1.2.1 Study Area

The Project Site is located east of the intersection of West First Street and A Street in South Boston (see Figure 3-1). As described above, the immediately surrounding neighborhood is a moderately dense mix of industrial, office, retail, and residential buildings, including the Gillette Company's South Boston Manufacturing Center, a major office facility of State Street Bank and numerous residential buildings at and near Channel Center and south of the Project Site, in addition to smaller homes and businesses. South of the Project Site, West Broadway is experiencing significant development and the area between West Broadway and West Second Street is experiencing a substantial increase in residential development. The Project is also across West First Street from the City's A Street Park and adjacent to the Channel Center Garage. The area is well-served by MBTA bus and rapid transit service and the close proximity of public transportation and neighborhood services will reduce the vehicular traffic impacts of the Project.



105 West First Street Boston, Massachusetts

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Figure 3-1
Project Study Area

3.1.2.2 Methodology

The scope of the analysis completed herein was developed in coordination with the Boston Transportation Department (BTD), and follows the guidelines for the completion of a Transportation Access Plan under the Article 80 Large Project Review process. The Project's impact was reviewed for MEPA's review thresholds, and while exceeding the Environmental Notification Form (ENF) threshold for daily vehicle trip generation, it does not meet the Mandatory Environmental Impact Report (EIR) threshold. This report presents an overview and evaluation of the transportation issues and analysis related to the Project within the context of the surrounding neighborhood and other developments recently approved by the BPDA. This analysis looks primarily at adjacent intersections and streets, but also includes a broader evaluation of the transportation network surrounding the Project Site. In coordination with BTD, the following intersections were included for transportation analysis:

- A Street and Binford Street;
- A Street and Richards Street;
- A Street and West First Street;
- A Street and West Second Street;
- Richards Street and Medallion Avenue;
- West First Street and Medallion Avenue; and
- South Boston Bypass Road and Cypher Street.

3.2 Existing Conditions

3.2.1 Project Site

The existing property at 105 West First Street is comprised of two parcels that include an existing 35,000 square foot office/warehouse building, and a surface parking lot behind the building abutting West Second Street. However, due to the grade differences in this area, the surface parking lot is approximately 12 feet below the level of West Second Street, which necessitates a chain linked fence to delineate the parking lot and West Second Street. Along West First Street are four curb cuts and driveways that are used by the tenant at the existing building. To the west of the site is a driveway used by Artists For Humanity that is accessible from West First Street. To the north of the Project Site and east of the West First Street right-of-way there is a MassDOT vacant parcel of land that lies adjacent to the South Boston Bypass Road (MassDOT parcel). There are no existing curb cuts or driveways along West Second Street adjacent to the Project Site.

The Project Site is within walking distance of public transportation, restaurants, retail shops, and residential areas. The Red Line's Broadway Station is a five-minute walk to the west offering service to downtown Boston, Cambridge, and Somerville to the north, and to Dorchester, Mattapan and Quincy to the south. The Project is sited close to the commercial areas along West Broadway, and in close proximity to new retail and commercial offerings along Channel Center Street. Local amenities, such as A Street Park across West First Street, provide employees with open and green spaces to utilize. The Project Site is also within a 10-15 minute walk of the Fort Point neighborhood centered on Congress and Summer Streets and the Seaport District.

3.2.2 Study Area Roadways

The following provides a description of area roadways included in the study area.

West First Street is a two-lane, neighborhood street under BTD jurisdiction that borders the north side of the Project Site, and runs from west of the Project Site at A Street and travels the length of the Project Site to where it terminates at the MassDOT parcel. West First Street re-appears on the east side of the South Boston Bypass Road and runs southeasterly from the Bypass Road, terminating at the intersection with Dorchester Street. Midway between A Street and the South Boston Bypass Road, Medallion Avenue connects to West First Street at the Project Site. Adjacent to the Project Site, West First Street provides two marked travel lanes with no parking on the south side of the street along the Project Site and the Artists For Humanity property. Four two-hour parking spaces are provided on the north side of West First Street between A Street and Medallion Avenue. Approximately six unregulated parking spaces are located on the north side of West First Street to the east of Medallion Avenue.

The curb-to-curb distance across West First Street measures approximately 36 feet. Sidewalks are provided on both sides of the street, with illumination by way of City-owned lamp posts. The land uses along West First Street are largely commercial, with the area east of A Street and north of West First Street occupied by A Street Park, a City of Boston park. There are no bicycle facilities on West First Street, however bicycle racks at the northeast corner of West First Street and A Street were installed as part of the creation of A Street Park, and a series of bike racks along the southern wall of the Channel Center Garage in connection with that facility's construction.

A Street is a two lane, urban minor arterial under BTD jurisdiction within the study area that runs southwest from Congress Street through the Fort Point area before terminating at Dorchester Avenue. A Street borders the Project Site to the west (and west of the adjacent Artists For Humanity facility), and forms the west border of the block. A Street provides two marked travel lanes for the length of the roadway, although the width of the roadway is considerably wider than two lanes. There is no parking along A Street south of Iron Street. There is metered parallel parking on the east side of A Street between Binford Street and Iron Street. The meters are enforced from 10 AM to 6 PM Monday through Saturday, with

the same spaces listed for residential permits from 6 PM to 10 AM Monday through Friday. North of Binford Street, parking on the east side of A Street is for Resident Permit holders only. There is no on-street parking on the west side of A Street except for a portion between Binford Street and Iron Street that offers metered parking from 10 AM to 6 PM from Monday to Saturday.

The curb-to-curb distance across A Street at the closest point to the Project Site is approximately 40 feet, with a distance of 60 feet across at its widest point between Binford Street and Iron Street. Sidewalks are provided along the both sides of the street, with illumination by way of City-owned street lights mounted on concrete posts. A southbound bicycle lane runs the entirety of A Street south of Necco Street. There is a northbound bicycle lane that runs from Dorchester Avenue to just short of Binford Street, whereupon it becomes a shared lane with vehicular traffic.

West Second Street is a neighborhood street under BTD jurisdiction that runs from Dorchester Avenue in the northwest just north of Broadway Station towards the southeast where it terminates at Dorchester Street. Between Dorchester Avenue and A Street, West Second Street operates as a two-lane, two-way street. West Second Street bridges over the South Boston Bypass Road to provide a continual connection between A Street and Dorchester Street. Adjacent to the Project Site, West Second Street also operates as a one-lane, one-way street, with traffic moving northwest towards A Street. Parallel parking lies along both sides of West Second Street between Dorchester Street and the South Boston Bypass Bridge exists for resident permit holders, as well as two-hour visitor parking from 6 PM to 10 AM from Monday to Friday. To the northwest of the South Boston Bypass Bridge, there is no parking along the north side of the street until west of the Gillette service dock to the west of A Street. To the west of that service area is a mix of loading zones, two-hour, and resident parking along the Gillette South Boston Manufacturing Center. Along the south side of West Second Street northwest of the South Boston Bypass Road, there is no on-street parking save for a section of fewer than 200 feet directly across from the Project Site that offers two-hour parking from Monday to Friday from 8 AM to 6 PM.

Adjacent to the Project Site, West Second Street has a curb-to-curb distance of 35 feet. Sidewalks exist on both sides of West Second Street for the duration of the street, with no bicycle facilities installed along it. Illumination is provided by City-owned lamps mounted on concrete poles. West Second Street offers a mix of land uses, though it is primarily commercial and industrial to the northwest of the South Boston Bypass Road and is largely residential to the southeast.

Richards Street, which runs from A Street to the South Boston Bypass Road between Iron Street and West First Street, is an east-west public neighborhood roadway that turns into Cypher Street on the east side of the South Boston Bypass Road. Between A Street and Medallion Avenue, Richards Street has three lanes, with one eastbound lane between A Street and Medallion Avenue and two westbound lanes. Between Medallion Avenue and

the South Boston Bypass Road there are only two lanes. All lanes are marked. There is no on-street parking along Richards Street. The Richards Street layout stops (to the west) at A Street.

Richards Street has a curb-to-curb distance of 36 feet. Sidewalks exist along the entire south side of Richards Street. There is no sidewalk on the north side of the street between Medallion Avenue and the South Boston Bypass Road; rather, there is a concrete shoulder, but it is not designed for pedestrian use. Other than A Street Park on the south side of Richards Street between A Street and Medallion Avenue, all other Richard Street uses commercial, including the One Channel Center building and the Channel Center Garage. Illumination is provided by City-owned street lamps.

Cypher Street is a two-lane, two-way private street that runs easterly from the South Boston Bypass Road towards D Street where it terminates. At the intersection with the South Boston Bypass Road, Cypher Street has one right turn only lane in addition to the straight and left turn lane. There are unused railroad tracks (Track 61) which run perpendicular to the direction of travel where Cypher Street meets the South Boston Bypass Road. No parking is permitted along Cypher Street.

At the intersection of Cypher Street and the South Boston Bypass Road, the roadway is approximately 60 feet wide from curb-to-curb, but narrows to 28 feet curb to curb as the road moves towards D Street. There are no pedestrian or bike facilities along Cypher Street. Land uses along this street are commercial, with the north side of the street largely adjacent to the Boston Convention and Exposition Center parking lot. Illumination is provided by street lights mounted on wooden utility poles.

Medallion Avenue is a two-lane, two-way neighborhood public street that runs between Iron Street and West First Street in a north/south direction and was created as part of the One Channel Center project. One lane of two-hour parallel parking exists on the west side of Medallion Avenue between West First Street and Richards Street. The curb-to-curb distance of the street closest to the Project Site is 34 feet. Sidewalks exist along the entirety of the west side of the street. There is a sidewalk on the east side of the street between West First Street and Richards Street, but none between Richards Street and Iron Street, adjacent to the U.S. Postal Service maintenance facility. There are predominantly commercial uses along Medallion Avenue with the exception of A Street Park on the west side of the street. Illumination is provided by City-owned street lamps.

Binford Street is a neighborhood street that begins just east of the Fort Point Channel and runs southeast to where it terminates at the edge of the U.S. Postal Service maintenance facility west of the South Boston Bypass Road. From just east of the Fort Point Channel to A Street, Binford Street is a public two-way, two-lane street, with parallel Resident Permit Only parking along either side of the street. East of A Street Binford Street is a private two-way street with unmarked lanes. Private head-in parking exists along the entire north side of the street east of A Street. There is unregulated parallel parking along the south side of

the street east of A Street. Binford Street is approximately 38 feet wide curb-to-curb. There is a sidewalk along both sides of the street west of A Street, and on the south side of Binford Street east of A Street. There is no sidewalk on the north side of Binford Street east of A Street. There is a mix of commercial, parking lot and residential uses along the roadway. Streetlamps provide illumination to the west of the intersection with A Street, with a few lamps available on the east side of the intersection.

3.2.3 Study Area Intersections

Below is a description of the area intersections included in this analysis. These intersections were selected in coordination with BTD.

A Street and Binford Street is a two-way stop controlled intersection allowing free-flowing traffic on A Street. Vehicles enter the street from four approaches: A Street southbound, A Street northbound, Binford Street eastbound, and Binford Street westbound. All approaches allow for unrestricted movements from any of the intersection approaches. Sidewalks exist along all approaches to the intersection with the exception of along the north side of Binford Street to the east of A Street. There are crosswalks across three of the intersection approaches with no crosswalk across A Street on the north side of Binford Street. All crosswalks are ladder style, with ramps at the ends of each of them. None of the ramps appear to meet current ADA standards. Parallel on-street parking is available on the either side of the intersection along the northbound lane of A Street, and on the north and south side of Binford Street to the west of the intersection. Private head in parking exists immediately to the east of the intersection on the north side of Binford Street with unregulated parking along the south side of the street east of the intersection.

A Street and Richards Street is a four-way signal controlled intersection of two bi-directional, two lane streets. Vehicles can arrive at the intersection from four approaches: A Street southbound, A Street northbound, the driveway from Gillette's South Boston Manufacturing Center eastbound, and Richards Street westbound. The eastbound and westbound approaches each have a left turn lane and a through/right turn lane. The northbound and southbound approaches have one lane each. Sidewalks exist along all approaches to the intersection. There are ladder crosswalks across all four intersection approaches. Each intersection corner shares a pedestrian ramp for each intersecting crosswalk, with all ramps up to ADA standards, with concurrent pedestrian signals available for each crosswalk. The crosswalk across the eastbound approach along Richards Street is not in alignment with the pedestrian ramp on the northwest corner of the intersection along A Street. There is no parking along any of the approaches to the intersection.

A Street and West First Street is an unsignalized "T" intersection with West First Street terminating at A Street. Both A Street and West First Street have two travel lanes, with bi-directional traffic. There are three approaches to the intersection: A Street northbound, A Street southbound, and West First Street westbound. Only the westbound approach on West First Street is stop controlled. Sidewalks exist along all sides of both A Street and

West First Street. There is only one crosswalk at the intersection across West First Street with pedestrian ramps at both sides. Both ramps are ADA accessible. Parking is allowed on the north side of West First Street, as it approaches A Street.

A Street and West Second Street is a signalized four-way intersection with traffic entering from four approaches: A Street southbound, A Street northbound, West Second Street eastbound, and West Second Street westbound. West Second Street is a westbound one-way street on the east side of A Street. All other approaches are two-lane and bi-directional. Vehicles cannot enter onto West Second Street to the east of the intersection, though all other movements through the intersection are allowed. Sidewalks exist along all sides of both A Street and West Second Street, with crosswalks present at all sides of the intersection. An individual ADA accessible ramp is present at the corner of each crosswalk. No parking is allowed in the immediate vicinity of the intersection.

Richards Street and Medallion Avenue is an unsignalized four-way intersection with traffic entering from four approaches: Richards Street eastbound, Richards Street westbound, Medallion Avenue southbound, and Medallion Avenue northbound. Both Richards Street and Medallion Avenue are two-lane, bi-directional streets. The intersection approaches along Richards Street are uncontrolled, while the approaches along Medallion Avenue are stop controlled. There are no turn movement restrictions at this intersection. Sidewalks are present along both sides of Richards Street west of the intersection, and for Medallion Avenue south of the intersection. Richards Street east of the intersection only has a sidewalk on the south side of the street, while Medallion Avenue north of the intersection only has a sidewalk on the west side of the street.

West First Street and Medallion Avenue is an unsignalized intersection with traffic entering from three approaches: Medallion Avenue southbound, West First Street eastbound, and West First Street westbound. Both Medallion Avenue and West First Street are two-way bi-directional streets. Only the westbound West First Street approach is stop controlled, while Medallion Avenue and West First Street eastbound merge together and function as one continuous thoroughfare in either direction. Sidewalks exist along both sides of each street. There is a crosswalk across Medallion Avenue with ADA accessible pedestrian ramps on either side of the ladder style crosswalk. The remnants of a crosswalk remain across West First Street to the east of the intersection, with ADA accessible pedestrian ramps at either end, however most of the crosswalk is no longer visible due to repaving. There is parking on the west side of Medallion Avenue and along the north side of West First Street on both sides of the intersection. Two-hour time limit parking spaces are present on West First Street and Medallion Ave to the north and west of the intersection, while east of the intersection the parking is unregulated.

South Boston Bypass Road and Richards Street/Cypher Street is a signal controlled four-way intersection with traffic entering from four directions: South Boston Bypass Road southbound, South Boston Bypass Road northbound, Richards Street eastbound, and Cypher Street westbound. All intersecting streets are two-lane, bi-directional streets.

Northbound South Boston Bypass Road has an additional right turn lane, and westbound Cypher Street has an additional right turn lane. There are no turning movement restrictions within the intersection. The South Boston Bypass Road is owned by MassDOT and is use-restricted for Commercial Vehicles Only. There is signage at the Richards Street/Medallion Avenue intersection which discourages non-commercial vehicles from approaching this intersection. There are no sidewalks or pedestrian facilities at the intersection, and no parking within the vicinity of the intersection.

3.2.4 Existing Parking

Consistent with BTD guidelines, parking was identified within a quarter-mile radius, or an approximately five-minute walk from the Project Site. There is limited on-street parking in the surrounding area, with most operating as some variation of two-hour parking and resident parking. There are additional regulations based on particular street locations (see Figure 3-2).

In general, the majority of the on-street parking in the study area is regulated as some variation between two-hour and Resident Permit parking. In the immediate vicinity of the Project Site, West First Street does not accommodate any parking along the Project Site due to driveways and loading zones on the south side of the street. On the north side of West First Street across from the Project Site adjacent to A Street Park, there is a small section of on-street two-hour parking. South of the Project Site along West Second Street there is no parking allowed along the Project Site, with a small section across the street from the Project Site of two-hour parking from 8 AM to 6 PM Monday to Friday. New parking on side streets is not entirely regulated, and most of the neighborhood parking to the south and east of the Project Site is regulated as Resident Parking, with some provision for visitor parking. There is a mix of commercial loading zones, two-hour, and Resident Permit parking to the west of the Project Site.

A detailed map of on-street parking regulations is displayed in Figure 3-3. Based on field assessments and analysis of aerials, there are four two-hour spaces along West First Street between A Street and Medallion Avenue, and six unregulated spaces along West First Street to the east of Medallion Street. Along West Second Street between A Street and the South Boston Bypass Road there are seven spaces regulated as two-hour parking, Monday to Friday from 8 AM to 6 PM. There is no parking permitted along the north side of West Second Street adjacent to the Project Site.

There is one publicly accessible parking garage just across West First Street from the Project Site called the Channel Center Garage. This privately owned garage has nine stories of parking and can accommodate approximately 965 vehicles. The Early Bird (in by 9 AM, out by 7 PM) parking rate is $18, with a maximum daily rate of $24. Monthly rates are available at an advertised rate of $355/month. An inquiry was made to the Channel Center

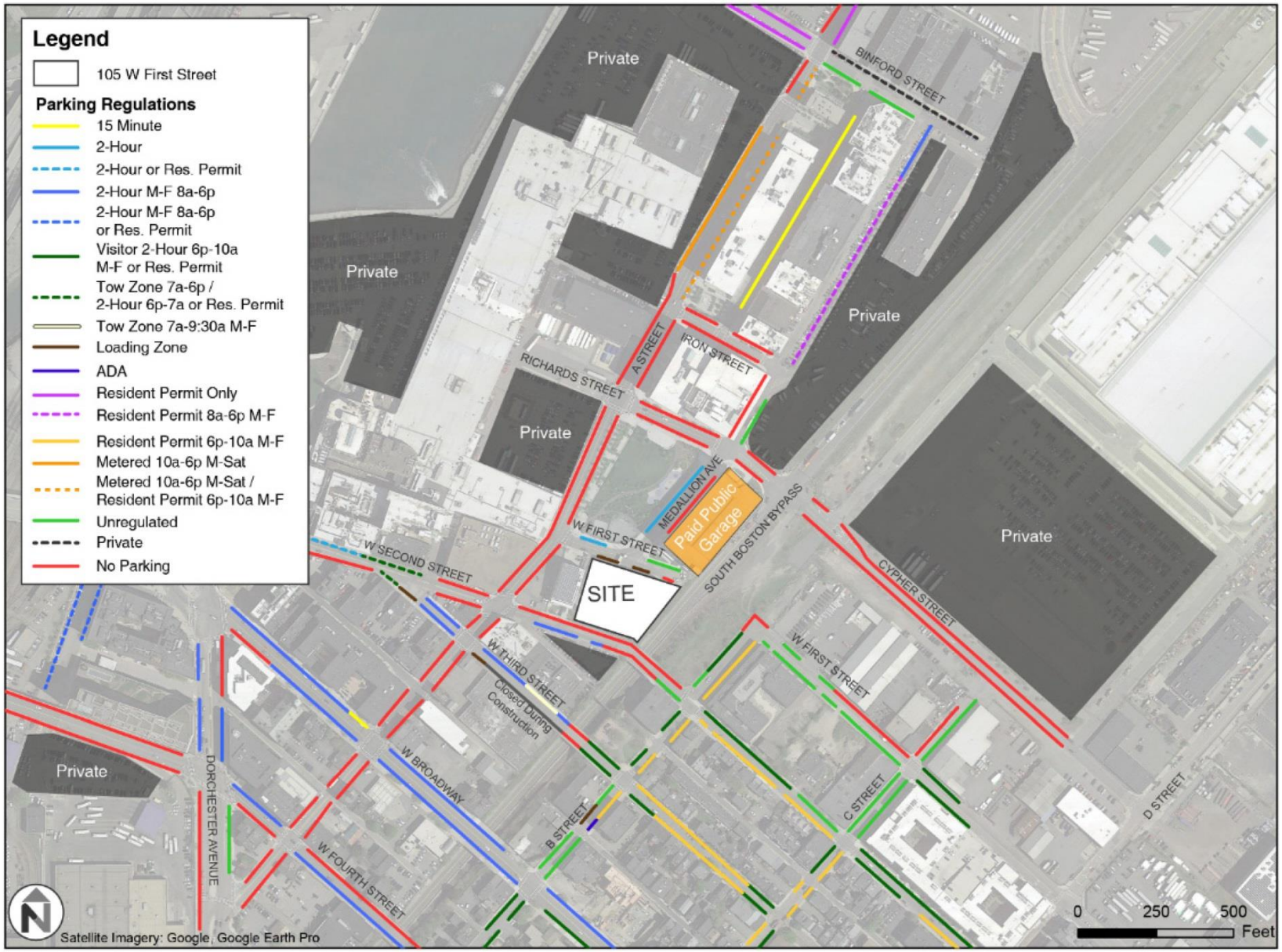

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Figure 3-2

On-Street Parking Regulations – Project Study Area

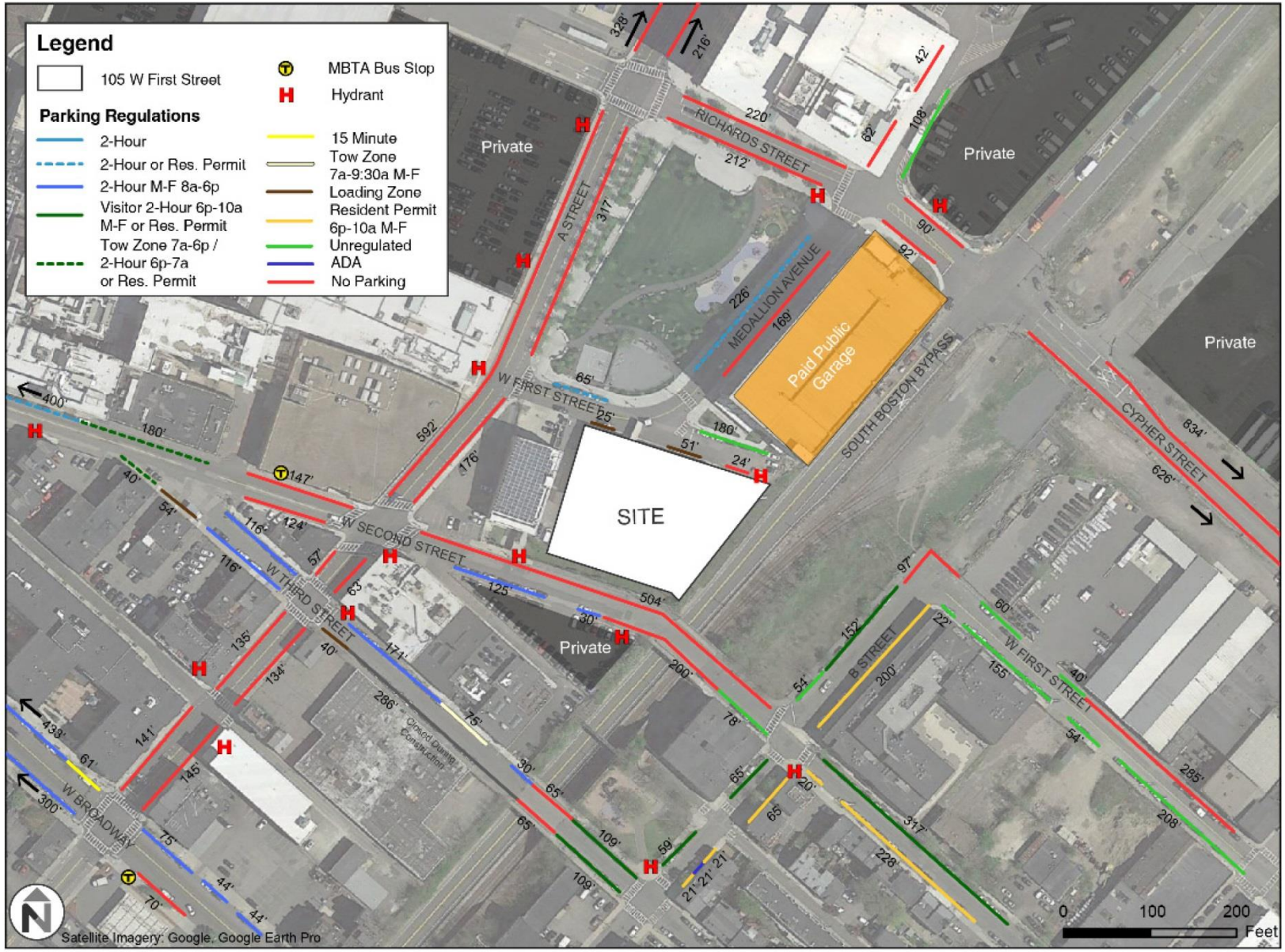

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Figure 3-3

On-Street Parking Regulations – Adjacent Blocks

garage operator who indicated that the facility is typically only 70 percent occupied, with almost 300 spaces available. This same garage has additional parking for motorcycles and bicycles. Additional off-street parking in the immediate vicinity of the Project Site is designated for the adjacent uses, such as residential use, as well as commercial parking particularly for businesses along West Broadway, employee parking for industrial uses such as the Gillette South Boston Manufacturing Center or the United States Post Office, or used for the Boston Convention and Exhibition Center.

3.2.5 Public Transportation

The Project Site is adjacent to or within easy walking distance of robust transportation options. This access was evaluated for the area within both a quarter-mile and a half-mile radius of the Project Site. The Project Site is located within a quarter-mile of the MBTA Red Line's Broadway Station, which offers service from Dorchester and Quincy to the south to downtown Boston, Cambridge, and Somerville to the north. There are several MBTA bus routes with nearby service including Routes 9, 11, and 47, with Routes 4 and 7 having their closest stops just outside the half-mile radius of the Project Site. Additionally, the Silver Line is slightly outside of the half-mile radius of the Project Site.

MBTA Subway

Within a quarter-mile of 105 West First Street is Broadway Station, which is served by the MBTA's Red Line. The Red Line offers service north to downtown Boston via South Station and Downtown Crossing, and continues north to Cambridge and Somerville before terminating at Alewife Station in North Cambridge. South of Broadway Station the Red Line serves South Boston and UMass Boston before splitting service between the Ashmont and Braintree lines. Additional details on Red Line Service and schedule is included in Table 3-2.

Table 3-2 MBTA Red Line Service Details

Subway Route	Origin - Destination	Weekday First Trip / Last Trip	Weekday Peak/ Off Peak	Saturday First Trip / Last Trip	Saturday Peak/ Off Peak	Sunday First Trip / Last Trip	Sunday Peak/ Off Peak
Red Line (Northbound)	Ashmont – Alewife	5:16 AM / 12:30 AM	9 Minutes / 12-14 Minutes	5:16 AM / 12:30 AM	14 Minutes / 14 Minutes	6:00 AM / 12:30 AM	15 Minutes / 15 Minutes
Red Line (Northbound)	Braintree – Alewife	5:15 AM / 12:18 AM	9 Minutes / 12-14 Minutes	5:15 AM / 12:17 AM	14 Minutes / 14 Minutes	6:00 AM / 12:17 AM	15 Minutes / 15 Minutes
Red Line (Southbound)	Alewife – Ashmont	5:16 AM / 12:22 AM	9 Minutes / 12-14 Minutes	5:16 AM / 12:22 AM	14 Minutes / 14 Minutes	6:00 AM / 12:22 AM	15 Minutes / 15 Minutes
Red Line (Southbound)	Alewife – Braintree	5:24 AM / 12:15 AM	9 Minutes / 12-14 Minutes	5:24 AM / 12:15 AM	14 Minutes / 14 Minutes	6:08 AM / 12:15 AM	15 Minutes / 15 Minutes

MBTA Buses

Within a half-mile of the Project Site there are several MBTA bus routes providing direct connections to South Boston, downtown Boston, and the South End. Route 11 runs right to the Project Site on A Street when going in the outbound direction. Many of the routes run partially on (East and West) Broadway, which is the main thoroughfare of the South Boston neighborhood. Service typically runs every 5-10 minutes during weekday peak hours, with midday frequencies ranging from 9-25 minutes. Further detail on nearby bus service is provided below, in Table 3-3 and presented in Figure 3-4.

Table 3-3 Proximate MBTA Bus Routes

Bus Route	Origin - Destination	Weekday Peak/ Off Peak	Saturday	Sunday
Route 9	City Point - Copley Square	5-9 Minutes - 9-25 Minutes	20 Minutes	30 Minutes
Route 11	City Point – Downtown	10 Minutes - 20-25 Minutes	20-22 Minutes	30-40 Minutes
Route 47	Central Square, Cambridge – Broadway Station	10-22 Minutes - 20-22 Minutes	24-40 Minutes	45-60 Minutes

Route 9

The study area is served by the MBTA's Route 9 bus. On Broadway there are bus stops within three blocks of the site for Route 9, which operates between the City Point in the east of South Boston and Copley Square. Route 9 additionally makes stops at Broadway Station. The closest westbound stops to the Project Site are located at either Broadway Station or at the northwest corner of Broadway and B Street. The closest eastbound stop to the Project Site is located at the southeast corner of Broadway and A Street. Route 9 operates between 5:13 AM and 12:55 AM on weekdays, with similar service windows provided on Saturday and Sunday.

Route 11

The study area and the Project Site are served by the MBTA's Route 11 bus, which offers service from City Point in the east of South Boston to downtown. The closest inbound stop to downtown from the Project Site is found at Broadway Station. The nearest outbound stop to City Point from the Project Site is found either along A Street between Iron Street and Richards Street, or at West Second Street and West Third Street. Bus Route 11 operates between 5:11 a.m. and 1:03 a.m. on weekdays, with similar service windows provided on Saturday and Sunday.

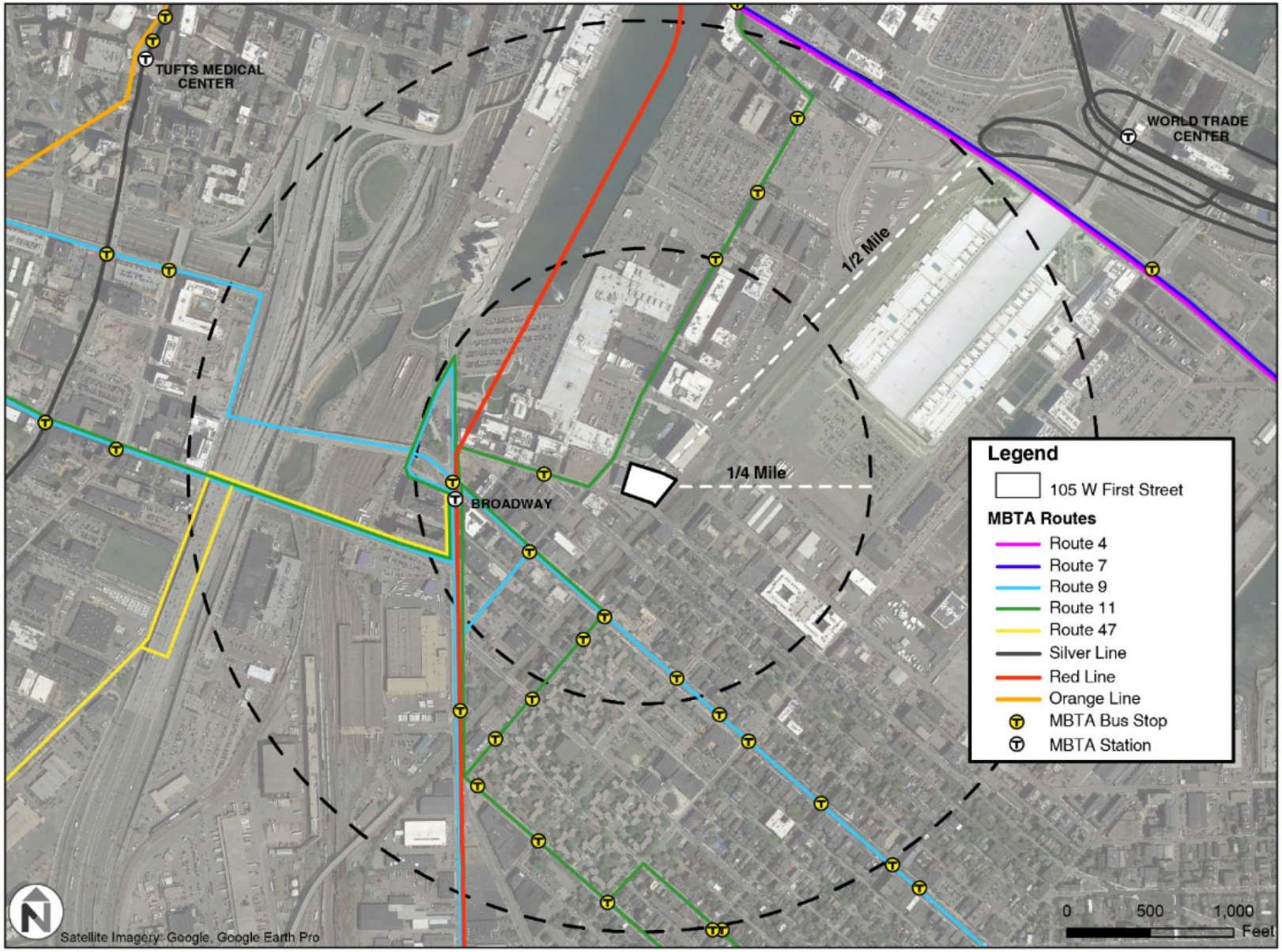

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Figure 3-4
Surrounding Area Transit

Route 47

The study area is served by the MBTA's Route 47 bus. Route 47 operates between Central Square in Cambridge and Broadway Station while providing service along Melnea Cass Boulevard and to the Longwood Medical Area and Fenway. The closest stop to the Project Site is at Broadway Station. Bus Route 47 operates between 6:00 AM and 12:15 AM on weekdays. Saturday has a slightly wider service window with service beginning at 5:35 AM and finishing at 12:40 AM, while Sunday service does not begin until 8:00 AM and ends at 12:40 AM.

3.2.6 Pedestrian Connections

West First Street, the Project environs, and South Boston in general are walkable and accommodating to travel on foot. According to the Boston Transportation Department, 24 percent of all trips taken in the vicinity around 105 West First Street are walking trips. However, the Project Site today acts as a barrier between the adjacent residential neighborhood and the developing A Street corridor. Pedestrians must travel the length of West Second Street to A Street to access A Street Park or anything east of A Street.

Within the study area, sidewalks are provided on both sides of all surrounding streets, with marked crosswalks across most streets at most intersections. Figure 3-5 displays curb-cut locations near the site that conflict with safe and comfortable pedestrian movement by creating conflict zones with vehicles. Pedestrian conditions vary among the study intersections.

In particular, the traffic signals at A Street/Richards Street and A Street/West Second Street provide protected movements for pedestrians to cross intersections. At other unsignalized intersections, recently constructed crosswalks are provided, increasing the visibility of pedestrian crossing movements. Of note, the Richards Street/Cypher Street signalized intersection with the South Boston Bypass Road is not designed to manage pedestrian crossings as it has no pedestrian crosswalks or pedestrian signal indications. This is consistent with the present use of the South Boston Bypass Road for commercial traffic only.

3.2.7 Bicycle Connections

Within the study area, formal bicycle accommodations are provided along A Street with a marked bicycle lane on the southbound side of the street running through the entire study area. There is also a marked bicycle lane along the northbound side of A Street through most of the study area. The bike lane stops at the intersection of A Street and Mt. Washington Street, some 200 feet short of the intersection of A Street and Binford Street. Hubway, the bicycle sharing system for the City of Boston, currently has a station on Richards Street at A Street Park. Additionally, there are bicycle racks along the north side of

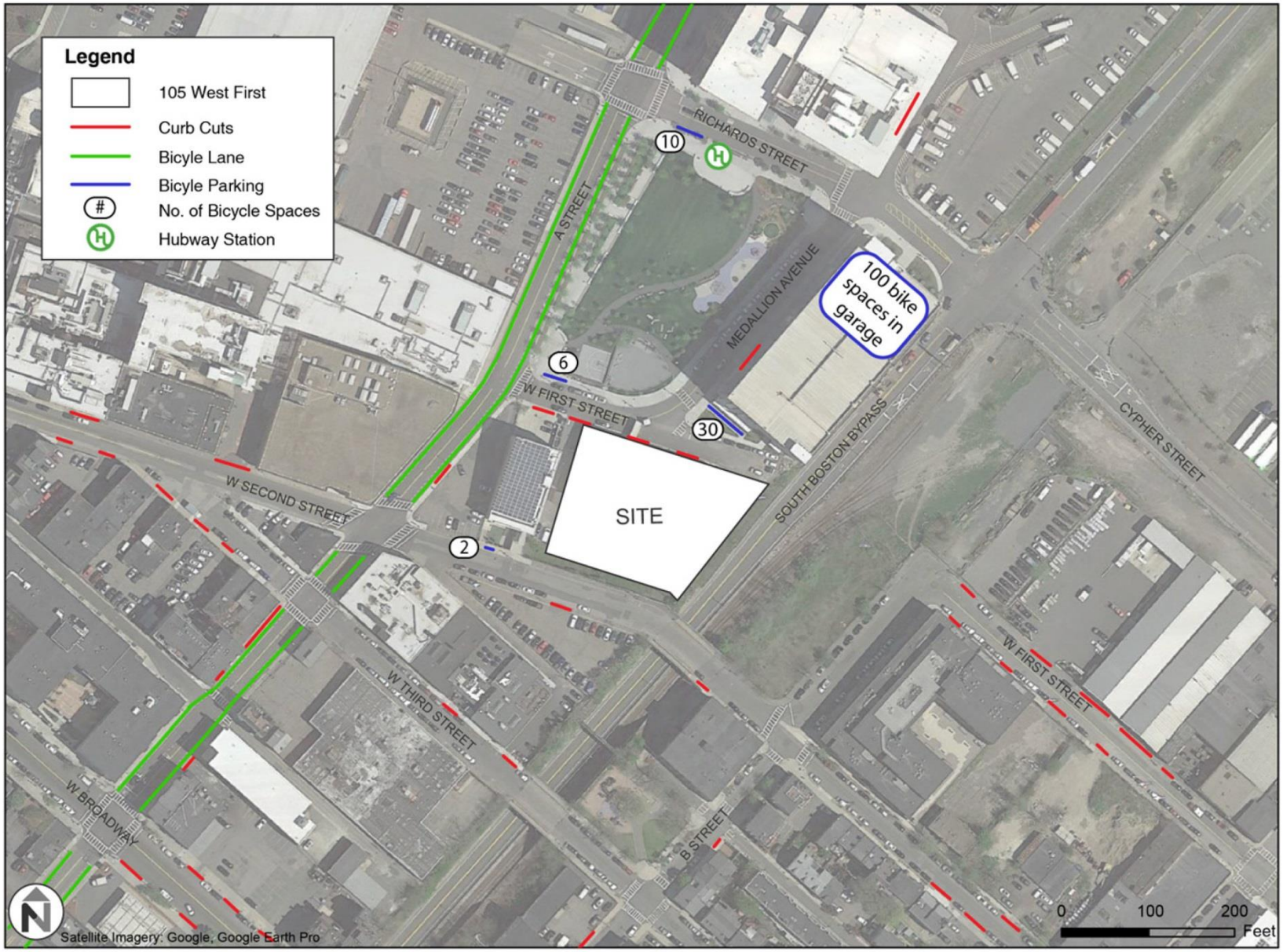

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Figure 3-5

Surrounding Area Pedestrian and Bicycle Conditions

West First Street at A Street Park, as well as covered and secure racks within the Channel Center parking garage available to the public at no charge. Figure 3-5 displays bicycle rack and Hubway locations near the Project Site.

3.3 Capacity Analysis

The following traffic capacity analysis was conducted to create a detailed baseline understanding of the existing transportation conditions in the study area. The scope of the analysis, including the integration and time periods evaluated and counts taken were confirmed with BTD.

3.3.1 Existing Conditions Analysis

In order to document existing traffic patterns and levels, vehicle, pedestrian, and bicycle turning movement counts (TMCs) were conducted or compiled from previous studies in the year 2016 at seven study intersections proximate to the proposed Project Site:

- A Street and Binford Street (TMCs collected on 11/17/16)
- A Street and Richards Street (TMCs compiled from previous study on 4/27/16)
- A Street and West First Street (TMCs collected on 11/16/16)
- A Street and West Second Street (TMCs compiled from previous study on 4/27/16)
- Richards Street and Medallion Avenue (TMCs collected on 11/16/16)
- West First Street and Medallion Avenue (TMCs collected on 11/16/16)
- South Boston Bypass Road and Cypher Street (TMCs collected on 11/16/16)

Counts were recorded from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, and included heavy vehicles and cars, pedestrians, and bicyclists. The morning and evening peak hour of traffic varied by intersection; therefore, a conservative peak hour of traffic was selected based on the highest amount of traffic in the transportation network. The morning peak hour was observed between 8:00 AM and 9:00 AM for all study intersections. The PM peak hour was either 4:15 PM to 5:15 PM, 4:45 PM to 5:45 PM, or 5:00 PM to 6:00 PM.

The lane configuration and traffic control devices are depicted in Figure 3-6. The vehicular, bicycle, and pedestrian volumes are depicted in Figure 3-7, Figure 3-8 and Figure 3-9, respectively. Full, complete traffic count data, including the school hours, are provided in Appendix C. The analysis documents patterns in volumes and turning movement counts on study area intersections. The existing conditions network was then used as baseline to create the 2021 No Build and Build scenarios.

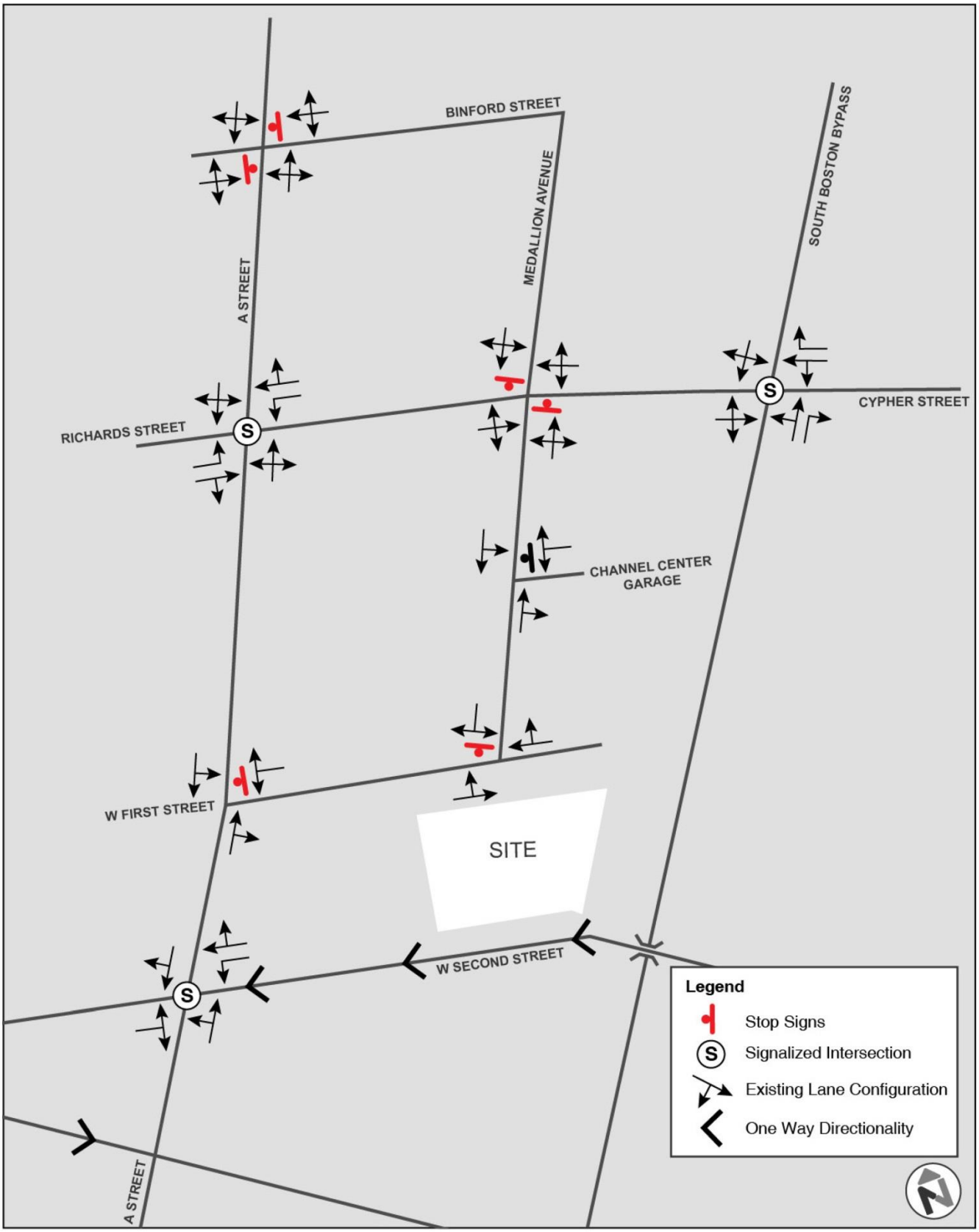

Figure 3-6

Site Vicinity Lane Configuration and Traffic Control Devices

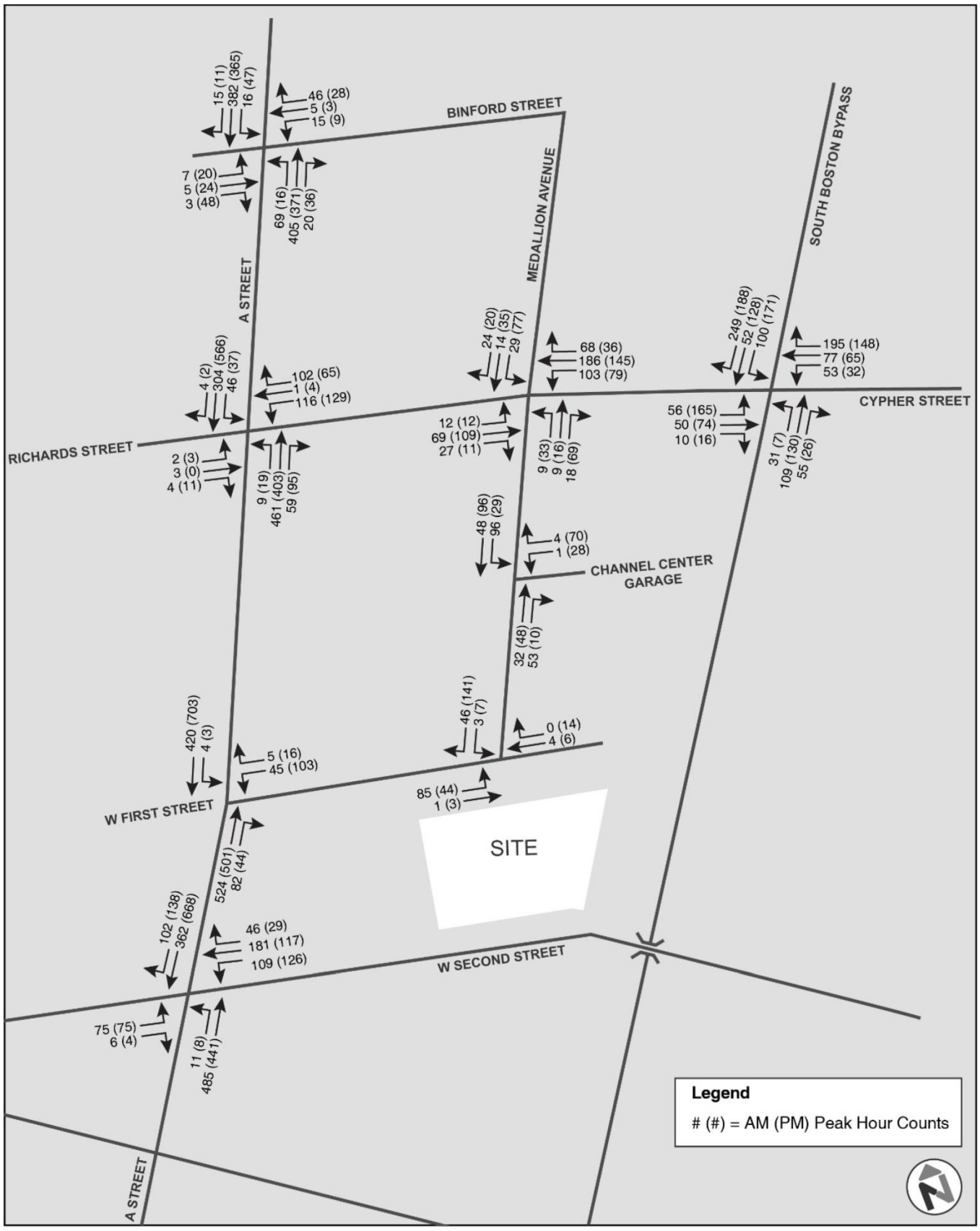

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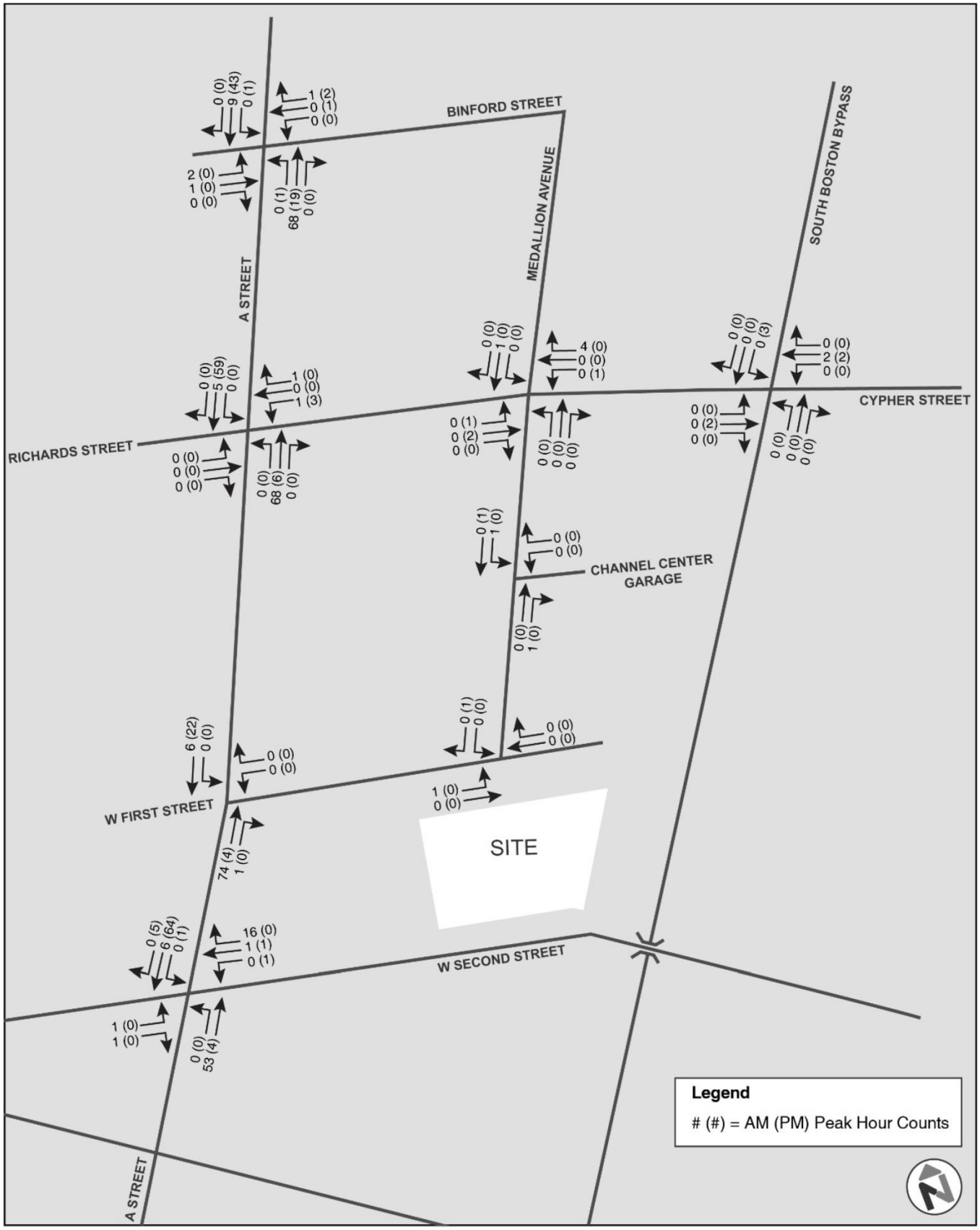
Figure 3-7

Existing Peak Hour Traffic Volumes



105 West First Street Boston, Massachusetts

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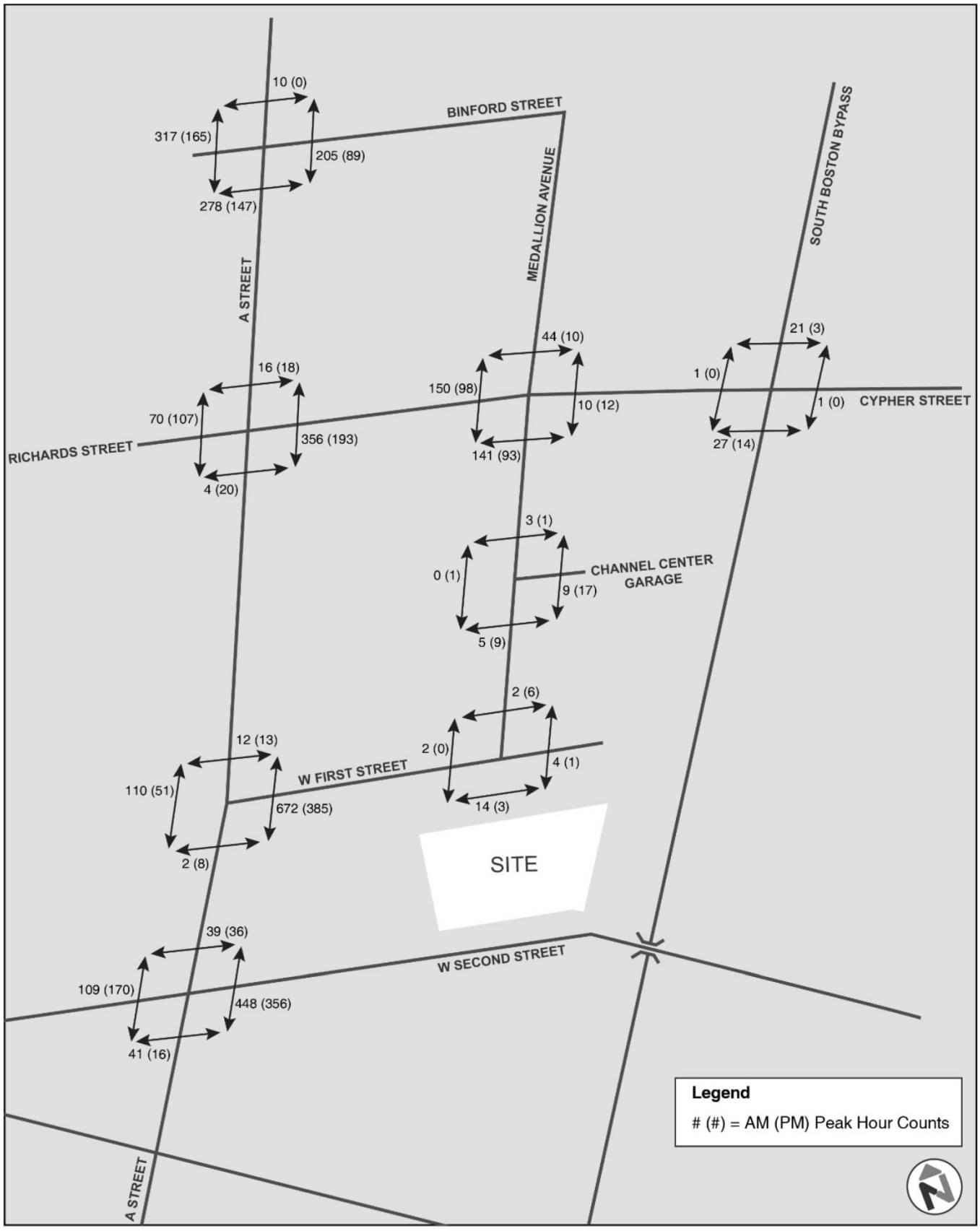
Figure 3-8

Existing Peak Hour Bicycle Volumes



105 West First Street Boston, Massachusetts

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Figure 3-9

Existing Peak Hour Pedestrian Volumes

3.3.2 Existing Volumes

Vehicles

Vehicle volumes within the study area are moderate, with no approaches carrying more than 750 peak hour vehicles. As shown in Figure 3-7, A Street carries the most vehicles in the study area as compared to Boston Bypass, which does not allow passenger vehicles. In the AM peak hour, A Street carries approximately 500 to 550 vehicles in the northbound direction, as opposed to the PM peak hour, which carries 420 to 750 vehicles in the southbound direction. The other intersections studied in the vicinity of the Project Site are generally not part of a connected street network and therefore carry less traffic as compared with intersections on A Street. There are notably higher traffic volumes during the AM peak hour of the A Street/West Second Street intersection, where approximately 340 vehicles travel in the westbound approach.

The Channel Center Garage is a significant vehicle attractor, which draws vehicle trips into the garage during the morning peak hour and then vehicles exit the garage during the evening peak hour. There are also large parking lots across from the A Street Park, and west of the A Street/Binford Avenue intersection operated by the Gillette Company, which are observed to attract vehicle trips.

Of the local streets in the vicinity, West First Street and Medallion Avenue carry traffic around the A Street Park, which is also adjacent to A Street. Vehicle traffic destined for parking spaces and garages on the east and south of the Park use West First Street and Medallion Avenue. Vehicle traffic on West First Street is approximately 130 and 160 vehicles in the AM and PM peak hour, respectively. On Medallion Avenue, there are approximately 175 vehicles and 240 vehicles in the AM and PM peak hour, respectively.

Bicycles

Peak hour bicycle volumes were also observed and recorded at the locations described above. The counts showed relatively low bicycle activity within the study area. The highest bicycle volumes are concentrated along A Street. Similar to the vehicle volumes, bicycle volumes primarily travel in the northbound direction during the AM peak hour, and in the southbound direction during the PM peak hour. The highest AM and PM peak hour bicycle volumes in both directions range from approximately 60-75 bicyclists.

Currently there are few existing bicycle facilities within a half-mile radius from the site. Figure 3-8 shows existing bicycle volumes by intersection for the morning and evening peak hours.

Pedestrians

Peak hour pedestrian volumes were recorded as part of the transportation counts at area intersections. As shown in Figure 3-9, pedestrian volumes in the study area make up a significant amount of traffic. In particular, pedestrians can amount to 44 percent of total traffic on A Street.

3.3.3 Existing Traffic Capacity

To assess the traffic operations at study area intersections, turning movement counts and volumes were compiled. Field observations then were used to calibrate the traffic analysis so that existing results reported were more closely aligned with observed intersection operations.

After these calibrations were made, the traffic operations of the study intersections were evaluated utilizing the procedures outlined by the 2000 Highway Capacity Manual (HCM), and reported in accordance with BTD's standards for transportation impact analysis. Each intersection within the study area was analyzed with summary results for Level of Service (LOS), reporting the summary vehicular delay with a letter grade A to F.

3.3.3.1 Level of Service Standards

Signalized Intersections

Peak hour levels of motor vehicle delay at signalized intersections uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. Table 3-4 summarizes the relationship between average control delay per vehicle and LOS for signalized intersections.

Table 3-4 Level of Service Definitions for Signalized Intersections

Level of Service	Description	Average Control Delay per Vehicle (Seconds)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0

Table 3-4 Level of Service Definitions for Signalized Intersections (Continued)

Level of Service	Description	Average Control Delay per Vehicle (Seconds)
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered by most drivers to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	Greater than 80.0

Source: Transportation Research Board, 2010 Highway Capacity Manual (Washington, DC, 2010).

Unsignalized Intersections

Peak hour levels of motor vehicle delay at unsignalized intersections were estimated using the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side-street controlled intersections, the control delay (and LOS) is calculated for each controlled movement, as well as the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. Table 3-5 summarizes the relationship between average control delay per vehicle and LOS for unsignalized intersections.

Table 3-5 Level of Service Definitions for Unsignalized Intersections

Level of Service	Description	Average Control Delay per Vehicle (Seconds)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	Greater than 50.0

Source: Transportation Research Board, 2010 Highway Capacity Manual (Washington, DC, 2010).

Traffic operations for this study were analyzed using the Synchro (Version 9) software package, which uses the inputs described below in the Data Collection Methodology section to give delay and LOS outputs using the HCM 2000 methodology.

Several performance measures are reported in this section which includes the LOS, volume to capacity ratio (V/C), the stop time delay in seconds, and 95th percentile queue lengths in feet. The intersection capacity analysis worksheets are provided in Appendix C. A summary chart of the results of this analysis is shown in Table 3-6.

As shown in Table 3-6, in both the AM and PM peak periods, all approaches operate at LOS D or better, which is typical in an urban environment. All anticipated traffic queues are estimated at fewer than 75 feet, with at most a 43 second delay at an intersection's approach.

Table 3-6 Existing Level of Service Summary

	Intersection	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Unsignalized	**A Street at Binford Street**								
	A Street NB	A	3.5	0.13	25	A	0.6	0.02	0
	A Street SB	A	0.8	0.03	0	A	1.7	0.06	25
	Binford Street EB	D	25.6	0.09	25	B	14.2	0.21	25
	Binford Street WB	C	17.9	0.21	25	B	11.2	0.07	25
Signalized	**A Street at Richards Street**								
	A Street NB	A	6.5	0.47	250	A	6.5	0.47	250
	A Street SB	A	5.3	0.34	150	A	6.9	0.51	300
	Richards Street EB	D	35.4	0.02	25	D	35.3	0.02	0
	Richards Street WB	D	43.2	0.38	150	D	43.2	0.69	150
	Summary	B	13.6	0.51	-	B	12.4	0.54	-

Table 3-6 Existing Level of Service Summary (Continued)

	Intersection	AM Peak Hour				PM Peak Hour			
Unsignalized	**Medallion Avenue at Richards Street**								
	Medallion Avenue NB	C	22.1	0.16	25	B	12.6	0.22	25
	Medallion Avenue SB	C	21.5	0.26	25	C	24.9	0.46	75
	Richards Street EB	A	1.1	0.01	0	A	0.9	0.01	0
	Richards Street WB	A	3.2	0.10	25	A	3.0	0.07	25
Signalized	**South Boston Bypass Road at Richards Street**								
	S Boston Bypass NB	A	9.3	0.33	75	A	9.0	0.24	75
	S Boston Bypass SB	B	12.5	0.60	125	C	21.2	0.82	275
	Richards Street EB	B	12.1	0.33	75	C	24.0	0.72	250
	Richards Street WB	B	11.6	0.39	75	B	15.0	0.27	75
	Summary	B	11.6	0.51	-	B	18.8	0.78	-
Unsignalized	**A Street at West First Street**								
	A Street NB	A	0.0	0.41	0	A	0.0	0.35	0
	A Street SB	A	1.4	0.03	0	A	0.2	0.01	0
	W 1st Street WB	C	20.5	0.20	25	C	15.4	0.27	50
Unsignalized	**West First Street at Medallion Avenue**								
	Medallion Avenue SB	A	8.8	0.06	25	A	9.2	0.16	25
	W 1st Street EB	A	7.4	0.07	25	A	7.0	0.04	25
	W 1st Street WB	A	0.0	0.00	0	A	0.0	0.02	0
Signalized	**A Street at West Second Street**								
	A Street NB	A	5.4	0.39	200	A	3.7	0.33	125
	A Street SB	A	5.6	0.40	175	A	6.4	0.61	275
	W 2nd Street EB	D	37.1	0.57	100	D	38.3	0.53	100
	W 2nd Street WB	D	40.5	0.74	200	D	44.3	0.73	150
	Summary	B	15.9	0.47	-	B	13.6	0.63	-
Unsignalized	**Medallion Avenue at Channel Center Garage Driveway**								
	Medallion Avenue NB	A	0.0	0.07	0	A	0.0	0.04	0
	Medallion Avenue SB	A	5.4	0.09	25	A	1.9	0.02	0
	Garage Driveway WB	A	9.2	0.01	0	A	9.9	0.15	25

3.4 Evaluation of Long-Term Impacts

3.4.1 Future No Build Conditions (2021)

To provide a baseline comparison for the impacts of the Project, a future No Build analysis was conducted for a five-year timeframe in accordance with BTD requirements. This process entailed creating a forecast network for the year 2021 that builds upon the existing traffic conditions as outlined previously. Following BTD's guidelines for the development of a No Build scenario, this analysis takes into account other permitted area developments,

planned infrastructure changes, and a background growth rate. Projects included in the analysis below were used for the development of the No Build scenario and were selected in consultation with BTD.

Nearby Developments

The South Boston neighborhood has seen the completion and proposal of several new developments in the area near A Street and Broadway, in the vicinity of the Project Site. Below are short descriptions of projects recently constructed, under construction, BPDA approved or proposed near 105 West First Street. Future traffic volumes projected by the developments below were added to the traffic network analysis for the No Build condition.

- **Residential Development, 14 West Broadway, South Boston, Massachusetts**: A 47-unit residential building with 76 parking spaces total spaces, 70 provided at a new below grade garage and 6 in a porte-cochere, accessed off of Athens Street. This project is under construction anticipated for completion by 2017.

- **South Boston Boutique Hotel, 6 West Broadway, South Boston, Massachusetts:** A new 156 room hotel with a ground floor approximately 6,000 square foot restaurant and bar as well as parking to be negotiated in the TAPA and with BTD. This project is under construction anticipated for completion in 2017.

- **Residential Development, 45 West Third Street, South Boston, Massachusetts:** A 105 residential unit building with 109 underground parking spaces and 3,400 square feet of retail space. This project is currently under construction.

- **Residential Development, 181-185 West First Street & 184, 190 and 206 West Second Street, South Boston, Massachusetts:** A 97 residential unit building with 4,000 square feet of retail and 115 parking spaces. This project is currently BPDA Board approved.

- **GE Headquarters, 244-284 A Street Office Development, South Boston, Massachusetts:** A 400,000 square foot office and mixed-use development with approximately 200 underground parking spaces. This project is currently BPDA Board approved.

Infrastructure Projects

With the completion of several new constructed developments in the South Boston, many improvements have been made to the roadways in the site's vicinity. The Artists For Humanity building construction was accompanied by several half-street sidewalk improvements. The construction of the Channel Center building also included a park, new sidewalks, and upgrades to the traffic signals on A Street. Furthermore, other developments included in this study have made upgrades to traffic signals further improving vehicular traffic flow.

A detailed review of the in-process developments' planned infrastructure projects in the Project Site's vicinity was performed to understand what may impact transportation to and from the Project Site. This review yielded no planned infrastructure projects and this conclusion was also confirmed by BTD. No additional roadway or intersection improvement projects were identified, beyond routine maintenance activities.

3.4.1.1 Future No Build (2021) Volumes

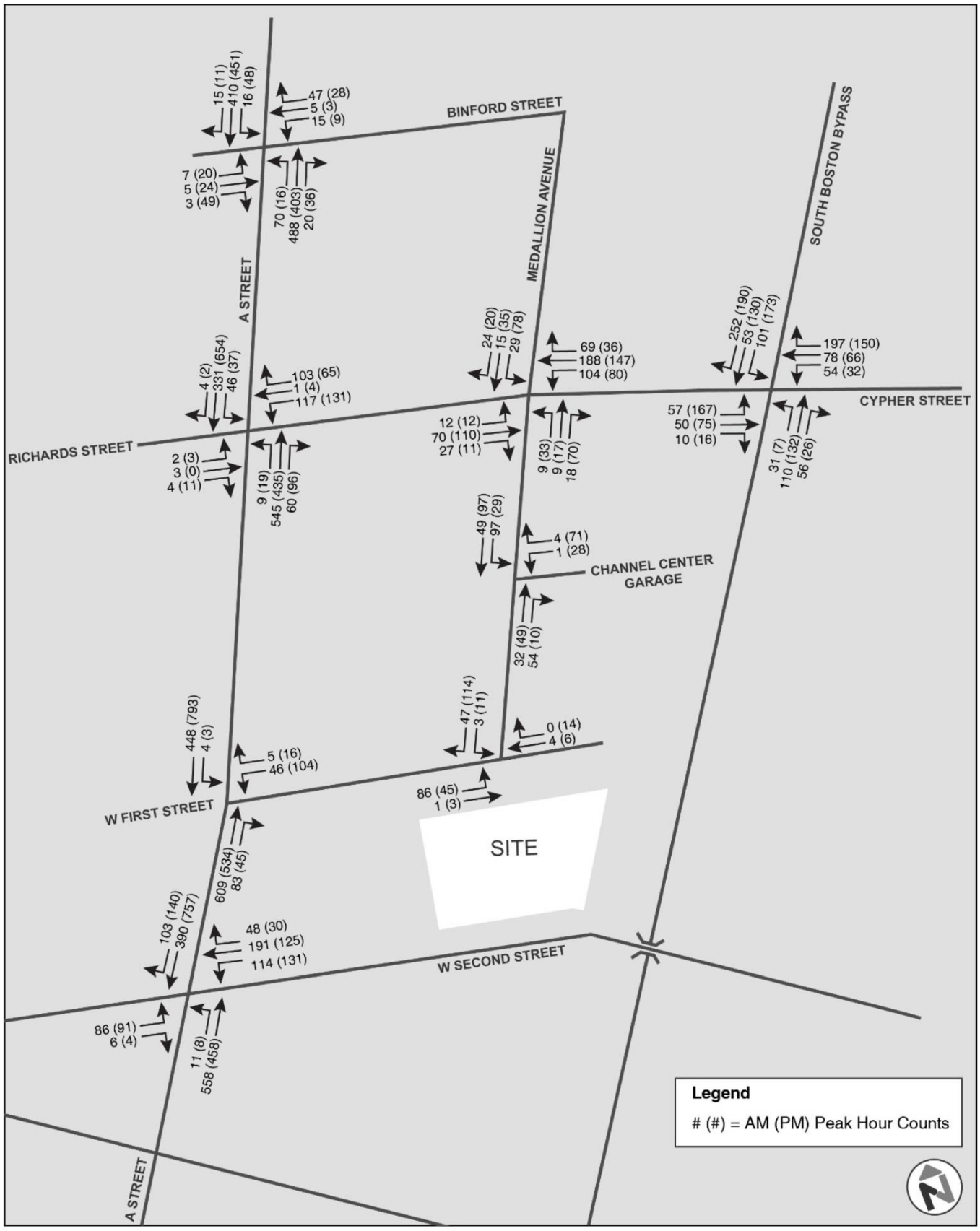
Expected project generated trips from the developments described above were added to the Existing Conditions to create the No Build (2021) condition. In consultation with BTD, an assumed annual background growth rate of 0.25 percent was also included.

Figure 3-10 displays peak hour vehicle traffic volumes for the forecasted 2021 No Build scenario.

3.4.1.2 Future No Build (2021) Traffic Capacity

The future No Build vehicle volumes were added to the Existing Conditions network, and again analyzed to assess the expected transportation system for the No Build scenario. Each identified intersection was analyzed for LOS with grades on the quality of traffic from A to F, as well as the volume to capacity ratio, the average delay in seconds, and 95th percentile queue lengths in feet. The intersection capacity analysis worksheets are provided in Appendix C. A summary chart of the results of this analysis is presented in Table 3-7.

Among all the intersections, traffic operations for the 2021 No Build scenario are largely unchanged compared to existing conditions. All approaches operate at LOS D or better.



105 West First Street Boston, Massachusetts

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Figure 3-10

2021 No-Build Peak Hour Traffic Volumes

Table 3-7 Future No Build (2021) Traffic Operations Summary

	Intersection	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Unsignalized	**A Street at Binford Street**								
	A Street NB	A	3.6	0.14	25	A	0.7	0.02	0
	A Street SB	A	0.8	0.03	0	A	1.6	0.06	25
	Binford Street EB	D	30.5	0.11	25	C	15.6	0.23	25
	Binford Street WB	C	20.9	0.25	25	B	11.8	0.08	25
Signalized	**A Street at Richards Street**								
	A Street NB	A	7.4	0.54	325	A	7.0	0.50	275
	A Street SB	A	5.6	0.37	175	A	8.0	0.58	375
	Richards Street EB	D	35.4	0.02	25	D	35.2	0.02	25
	Richards Street WB	D	43.7	0.69	150	D	43.3	0.69	150
	Summary	B	13.6	0.57	-	B	12.7	0.60	-
Unsignalized	**Medallion Avenue at Richards Street**								
	Medallion Avenue	C	22.3	0.16	25	B	13.8	0.25	25
	Medallion Avenue	C	21.7	0.26	25	D	25.8	0.47	75
	Richards Street EB	A	1.1	0.01	0	A	0.9	0.01	0
	Richards Street WB	A	3.2	0.10	25	A	3.0	0.08	25
Signalized	**South Boston Bypass Road at Richards Street**								
	S Boston Bypass NB	A	9.4	0.33	75	A	9.0	0.24	75
	S Boston Bypass SB	B	12.8	0.61	150	C	21.3	0.82	275
	Richards Street EB	B	12.1	0.33	75	C	25.4	0.74	250
	Richards Street WB	B	11.6	0.39	100	B	15.3	0.27	75
	Summary	B	11.7	0.51	-	B	19.2	0.79	-
Unsignalized	**A Street at West First Street**								
	A Street NB	A	0.0	0.47	0	A	0.0	0.37	0
	A Street SB	A	1.8	0.03	25	A	0.3	0.01	0
	W 1st Street WB	C	22.7	0.22	25	D	26.4	0.44	75
Unsignalized	**West First Street at Medallion Avenue**								
	Medallion Avenue	A	8.8	0.06	25	A	9.2	0.16	25
	W 1st Street EB	A	7.4	0.07	25	A	7.0	0.04	25
	W 1st Street WB	A	0.0	0.00	0	A	0.0	0.02	0
Signalized	**A Street at West Second Street**								
	A Street NB	A	6.2	0.45	225	A	3.8	0.34	125
	A Street SB	A	6.0	0.42	200	A	7.5	0.68	350
	W 2nd Street EB	D	51.3	0.72	125	D	50.7	0.71	125
	W 2nd Street WB	D	41.1	0.76	200	D	45.7	0.75	150
	Summary	B	17.1	0.51	-	B	15.1	0.69	-
Unsignalized	**Medallion Avenue at Channel Center Garage Driveway**								
	Medallion Avenue	A	0.0	0.07	0	A	0.0	0.04	0
	Medallion Avenue	A	5.3	0.09	25	A	1.9	0.02	0
	Garage Driveway	A	9.2	0.01	0	A	10.0	0.15	25

3.4.2 Build Conditions

3.4.2.1 Site Access, Circulation, Pedestrian Walkway

The proposed site access, circulation, and pedestrian walkway will be beneficial to the Project, surrounding neighborhood and future occupants. The internal pedestrian passage will provide a link between West First Street and West Second Street parallel to A Street, which will save time for pedestrian commuters southeast of the Project Site. This passageway will increase the accessibility of the site to the rest of the community, while also providing another through pedestrian route, increasing the pedestrian network connectivity. The main lobby of the building will be primarily accessed from West First Street, but will have another entrance on West Second Street.

Sidewalks abutting the site on West First Street and West Second Street will be improved. On West Second Street, the upgrade of the sidewalk in conjunction with the building construction will create a more inviting pedestrian environment than what currently exists.

Thirty-five total parking spaces will be provided for building patrons, and there will be dedicated internal loading zones for building supplies. The loading zone will accommodate box trucks and their relatively large turning radii to enter and exit the building space.

3.4.2.2 Trip Generation

To estimate the number of vehicle, transit, walk, and bicycle trips associated with the Project, trip generation analysis and estimates were developed based on the most recent data presented in the ITE Trip Generation Manual, 9th Edition. The Project consists of two new land use components, and so trip estimates were based on the ITE trip rates for Land Use 710 (General Office Building), and the ITE trip rates for Land Use 820 (Shopping Center). The ITE land use category and the corresponding trip rates used for analysis are shown in Table 3-8 below.

Table 3-8 ITE Trip Generation Rates

ITE Class	General Office Building (710)	Shopping Center (820)
	Trips per 1,000 SF	Trips per 1,000 SF
Weekday	11.03	42.7
AM Peak Hour*	1.56	0.96
PM Peak Hour*	1.49	3.71

*Peak Hour of adjacent street traffic

As stated previously, the Project will primarily consist of office space, but there are some retail uses and parking. The daily unadjusted trips generated by the site are provided in Table 3-9.

Table 3-9 Unadjusted Daily Trip Generation of the Site

Program	Gross Floor Area	Daily Generated Trips
Existing General Office (Land Use 710)	35,000	-386
Retail (Land Use 820)	1,600	68
Convener Space (Office, Land Use 710)	2,400	26
Innovation Space (Office, Land Use 710)	10,000	110
Building Amenity (Office, Land Use 710)	3,000	35
General Office (Land Use 710)	249,000	2,746
Proposed Project		2,985
Proposed Development - Existing Use (Office)		2,599

The existing site includes an active 35,000 square foot space occupied by RCN, and used for offices, service and other functions. This building will be demolished as part of the Project. Per MEPA requirements, calculations for unadjusted vehicle trips were developed using the ITE methodology. The calculations include a credit for the existing trips using the most appropriate land use code for the existing site. The ancillary building spaces (convener, innovation, tenant amenity) were calculated using the conservative assumption of office space, although they will primarily be used by building tenants. We note that using the calculations shown above, the Project does not exceed the MEPA transportation-related thresholds for a mandatory EIR.

The transportation impact analysis completed through the rest of this Section follows BTD guidelines, but is somewhat more conservative. First, the transportation analysis was based on a slightly higher overall program. This overstates (slightly) the overall number of trips relative to the proposed program. Additionally, no credit was taken for the elimination of the trips from the existing RCN use. All new trips calculated for the Project are simply added to the Existing Conditions.

As compared to the standard development used in ITE analyses, the study area has a low driving rate. South Boston, and especially the area on the A Street corridor are changing rapidly. In accordance with recent analysis, the Project team closely coordinated with BTD on appropriate analytical methods to accurately project expected activity at this site. Thus, the following analysis uses an average between the BTD's Zone 8 mode split and the most recent information provided by BTD for Boston's waterfront area. The applied mode split to this Project by time of day is presented in Table 3-10.

Table 3-10 Mode Split by Time of Day

Trip Type	Entering	Exiting
Daily Avg. Mode Share		
Vehicle Trips	51%	51%
Transit Trips	31%	31%
Walk Trips	19%	19%
AM Peak Mode Share		
Vehicle Trips	51%	45%
Transit Trips	35%	20%
Walk Trips	14%	36%
PM Peak Mode Share		
Vehicle Trips	46%	51%
Transit Trips	26%	36%
Walk Trips	29%	14%

Furthermore, the analysis also uses the average vehicle occupancy for Boston per the 2014 American Community Survey to convert vehicle trips to person trips. The current ratio is 1.08 person trips for every vehicle trip. When this ratio is applied to the mode split by time of day, the Project generated person and vehicle trips can be calculated, which is shown in Table 3-11.

Table 3-11 Project Generated Person and Vehicle Trips

Trip Type	Entering	Exiting	Total
Daily Avg. Mode Share			
Vehicle Trips	773	773	1,546
Transit Trips	499	499	998
Walk Trips	303	303	606
AM Peak Mode Share			
Vehicle Trips	179	22	201
Transit Trips	133	10	143
Walk Trips	53	19	72
PM Peak Mode Share			
Vehicle Trips	33	161	194
Transit Trips	20	121	141
Walk Trips	22	46	68

The Project is estimated to generate a total of 1,546 weekday daily vehicle trips based on the total office and retail uses. During a typical weekday, an estimated total of 201 and 194 AM and PM peak hour trips are anticipated to be generated from the site, respectively.

With the Project's close proximity to transit and high quality pedestrian amenities, approximately 998 and 606 daily total transit and walk trips are anticipated, respectively. For transit, approximately 143 and 141 AM and PM peak hour trips are anticipated, respectively. For walk trips, approximately 72 and 68 AM and PM peak hour trips are anticipated, respectively.

3.4.3 Trip Distribution and Assignment

A trip distribution was developed characterizing the overall split of person trips by mode and then assigning the vehicle trips to the network. As shown in Table 3-12, just over 50 percent of Project generated trips for all uses and time periods are person trips by automobile. Given the changing characteristics of the area and robust transit, pedestrian and bicycle connections, over 49 percent of daily Project generated trips are expected to be made by transit or walking. Transit trips and walking trips are based on the assumption that transit riders typically travel to the nearest bus stop or train station on foot.

To determine auto trips, person trips by automobile were re-calculated into vehicle trips using the same vehicle occupancy rate used to derive overall person trips (1.08). These auto trips were then assigned to the network using the directional distribution shown in Figure 3-11. This vehicle distribution was prepared using BTD's mode share guidelines for Area 8 (South Boston) and show vehicle trip percentages between South Boston and the rest of the Boston region.

Due to the directionality of the highway on-off ramps in the vicinity of the Project Site, particularly how passenger vehicles are restricted from using the South Boston Bypass Road, motorists can be expected to take different routes depending on whether their trip begins or ends at the site. Using the region's mode share distributions to and from Area 8, different entering and exiting trip distribution percentages were developed.

For vehicle trips beginning at the site, six percent of Project-generated vehicle trips are assumed to move northbound on A Street to access destinations in close proximity to the site and to utilize US 1. 88 percent are assumed to move southbound on A Street to utilize I-93 north and southbound or outer Boston. Lastly, six percent are assumed to travel eastbound on Richards Street to access other areas of South Boston.

For vehicle trips ending at the site, approximately 21 percent of Project-generated vehicle trips are assumed to move southbound from the northern extents of A Street coming from origins along I-93 and in close proximity to the site. Approximately 68 percent are assumed to move northbound on A Street originating from areas south of the site either by I-93. Lastly, approximately 10 percent are assumed to travel westbound on Richards Street either

from some motorists exiting I-93 early from Columbia Road or to get to the site from other areas of South Boston. A summary of expected vehicle movements can be viewed in Figure 3-12.

3.4.3.1 Future Build Volumes

Using the 2021 No Build as a basis, the 2021 Build network incorporates the proposed site plan and resulting Project generated traffic volumes into a new network for the AM and PM peak hours. Figure 3-13 highlights the resulting traffic volumes on the network for the 2021 build year.

3.4.3.2 Future Build Capacity Analysis

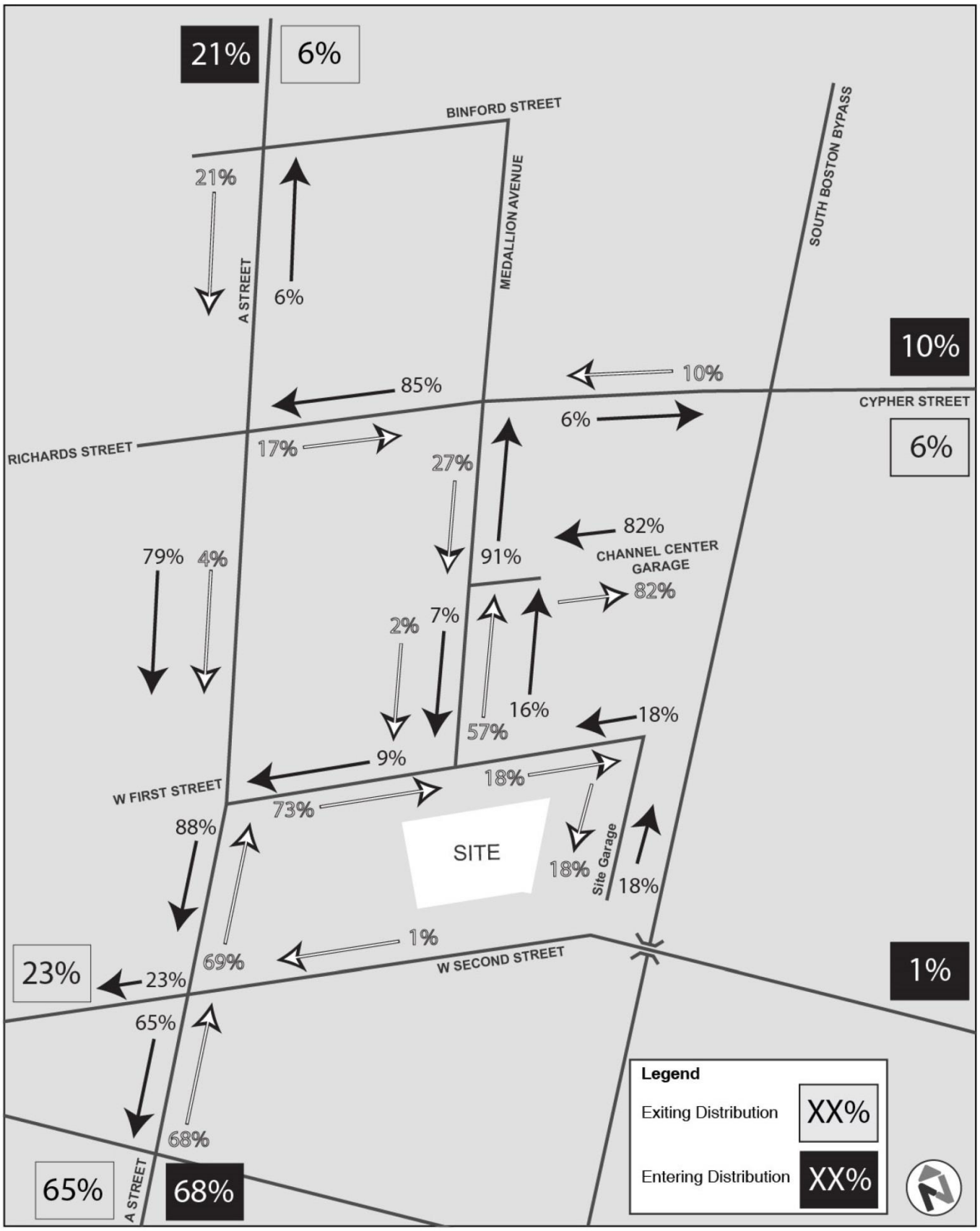
The 2021 Future Build network was completed by adding the Project-generated vehicle trips to the 2021 No Build network described above. Each intersection within the study area was again analyzed for their LOS, reporting the quality of traffic with a letter grade A to F, volume to capacity ratio (V/C), the stop time delay in seconds and the 95th percentile queue lengths. The intersection capacity analysis worksheets are provided in Appendix C. A summary chart of the results of this analysis is shown in Table 3-12 below. Nearly all intersections and approaches operate at the same level as the No Build scenario. All approaches operate at LOS D or better.

Table 3-12 Future Build (2021) Intersection Capacity Analysis

	Intersection	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Unsignalized	**A Street at Binford Street**								
	A Street NB	A	3.8	0.14	25	A	0.6	0.02	0
	A Street SB	A	0.8	0.03	0	A	1.7	0.06	25
	Binford Street EB	D	31.8	0.11	25	C	16.4	0.24	25
	Binford Street WB	C	21.6	0.26	25	B	12.3	0.08	25
Signalized	**A Street at Richards Street**								
	A Street NB	A	7.4	0.54	325	B	13.9	0.59	425
	A Street SB	A	6.4	0.45	200	B	16.7	0.71	650
	Richards Street EB	D	35.4	0.02	25	C	26.1	0.01	25
	Richards Street WB	D	43.6	0.69	150	D	40.9	0.80	250
	Summary	B	13.6	0.57	-	C	20.9	0.74	-
Unsignalized	**Medallion Avenue at Richards Street**								
	Medallion Avenue	C	24.6	0.19	25	C	21.5	0.59	100
	Medallion Avenue	C	24.4	0.29	50	D	26.5	0.48	75
	Richards Street EB	A	0.9	0.01	0	A	0.9	0.01	0
	Richards Street WB	A	3.7	0.13	25	A	3.1	0.08	25

Table 3-12 Future Build (2021) Intersection Capacity Analysis (Continued)

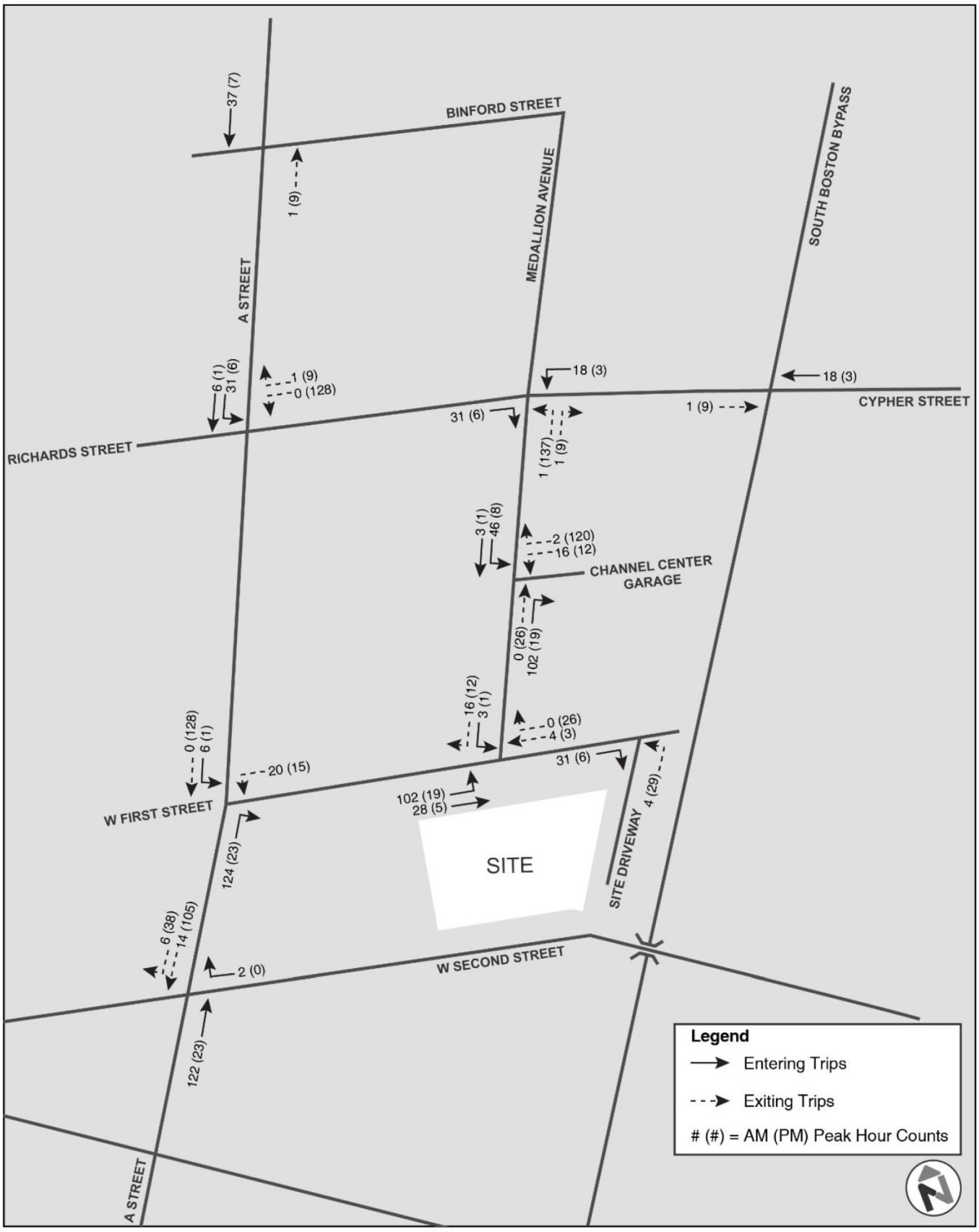
	Intersection	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Signalized	**South Boston Bypass Road at Richards Street**								
	S Boston Bypass	A	9.6	0.34	75	A	9.1	0.24	75
	S Boston Bypass SB	B	13.2	0.62	150	C	21.8	0.82	275
	Richards Street EB	B	11.8	0.33	75	C	25.9	0.75	250
	Richards Street WB	B	11.5	0.41	100	B	15.3	0.27	100
	Summary	B	11.8	0.53	-	B	19.6	0.79	-
Unsignalized	**A Street at West First Street**								
	A Street NB	A	0.0	0.56	0	A	0.0	0.39	0
	A Street SB	A	6.7	0.10	25	A	0.4	0.01	0
	W 1st Street WB	D	31.6	0.38	50	D	30.2	0.52	75
Unsignalized	**West First Street at Medallion Avenue**								
	Medallion Avenue	A	9.3	0.10	25	A	9.5	0.18	25
	W 1st Street EB	A	6.8	0.15	25	A	6.8	0.06	25
	W 1st Street WB	A	0.0	0.01	0	A	0.0	0.04	0
Signalized	**A Street at West Second Street**								
	A Street NB	A	7.4	0.55	325	A	3.9	0.36	125
	A Street SB	A	6.3	0.44	200	B	10.6	0.79	525
	W 2nd Street EB	D	49.4	0.71	100	D	50.7	0.71	125
	W 2nd Street WB	D	40.6	0.76	200	D	45.7	0.75	150
	Summary	B	16.5	0.59	-	B	16.1	0.78	-
Unsignalized	**Medallion Avenue at Channel Center Garage Driveway**								
	Medallion Avenue	A	0.0	0.14	0	A	0.0	0.08	0
	Medallion Avenue	A	6.3	0.14	25	A	2.3	0.03	25
	Garage Driveway	B	13.3	0.06	25	B	11.7	0.35	50
Unsignalized	**West First Street at Site Driveway**								
	Site Driveway NB	A	8.7	0.00	0	A	8.9	0.03	25
	West First Street EB	A	0.0	0.02	0	A	0.0	0.01	0
	West First Street	A	0.0	0.00	0	A	0.0	0.00	0



105 West First Street Boston, Massachusetts

NELSON NYGAARD

Figure 3-11
Site-Generated Traffic Distribution



105 West First Street Boston, Massachusetts

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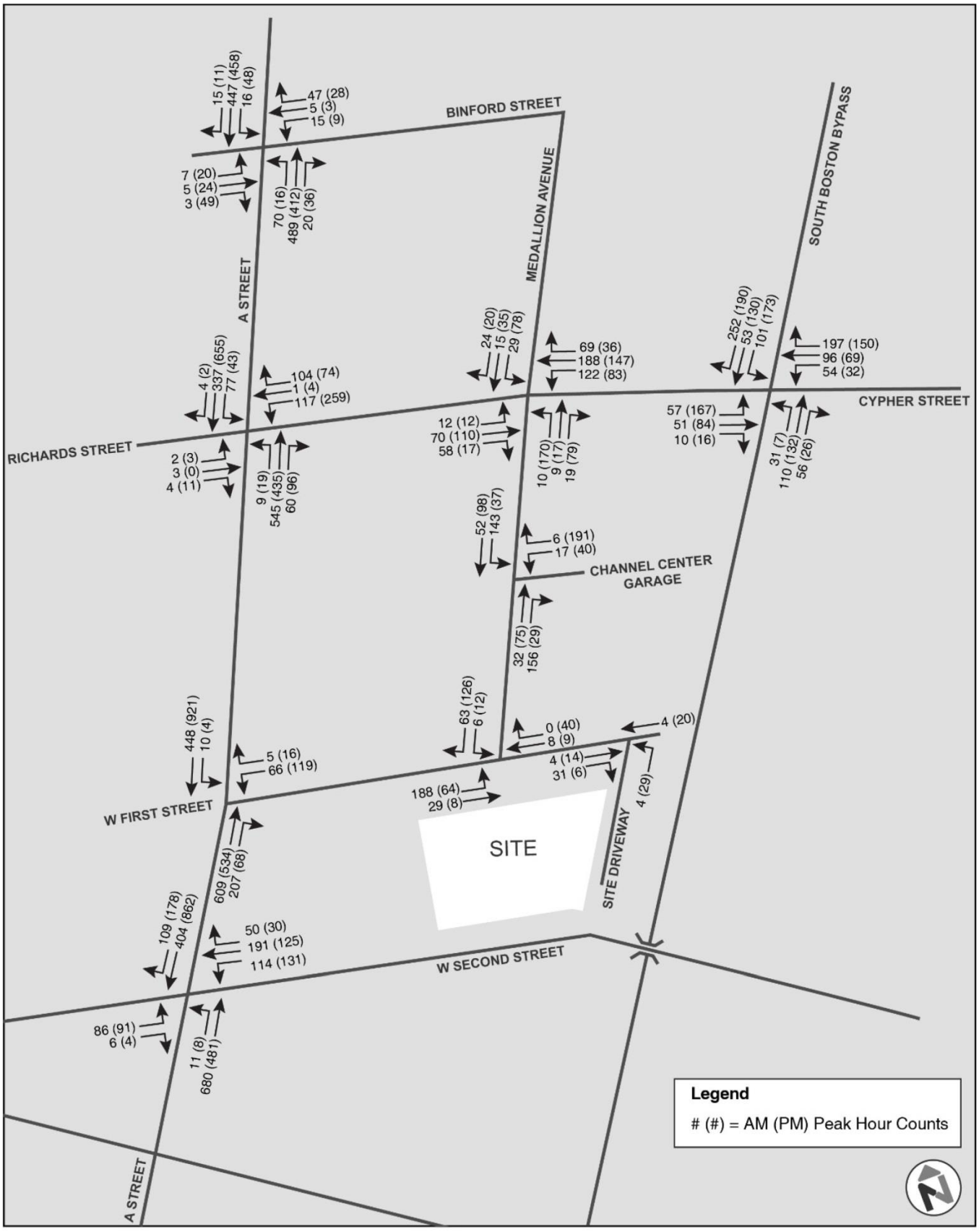
Figure 3-12
Site Generated Trips



105 West First Street Boston, Massachusetts

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Figure 3-13
2021 Build Traffic Volumes

3.4.3.3 Parking Provision

The Project includes 35 vehicle spaces and 120 interior and 20 exterior bicycle spaces. Parking supply is allocated as follows:

- The 35 parking spaces are available at within the building and are accessed via a driveway and gate.
- One publicly accessible car share vehicle space will also be created within the facility.
- Two electric vehicle charging station(s) will be provided, consistent with City guidelines.
- Consistent with best practices, parking will be available at a premium to select office tenants, reducing overall demand in this area.

The proposed parking supply optimizes available space for parking, which contributes to this mixed-use, dense, walkable neighborhood. BTD's off-street parking guidelines recommend a maximum parking ratio between 0.75 and 1.25 spaces per 1,000 square feet of non-residential development. The Project is proposing a robust transportation demand management (TDM) program for the commercial building, which also includes offering spaces at a premium to lower the Project's demand for parking. The Project provides approximately 0.13 spaces per 1,000 square feet of building space. These ratios for the development are shown in Table 3-13 below.

Table 3-13 Parking Ratio

Use	Gross Square Feet	Number of On-Site Parking Spaces	Effective Project Parking Ratio
Building Space	266,000	35	0.13 spaces/ 1,000 GFA

Adjacent to the site, the publicly accessible Channel Center Garage may be able to accommodate vehicular traffic to and from the Project. This privately owned garage has nine stories of parking and can accommodate approximately 965 vehicles. The Early Bird (in by 9am, out by 7pm) parking rate is $18, with a maximum daily rate of $24. Monthly rates are available at an advertised rate of $355/month. An inquiry was made to the Channel Center garage operator who indicated that the facility is typically only 70 percent occupied, with almost 300 spaces available. These daily parking passes are anticipated to be purchased by future Project office employees as needed and there is currently a sufficient number of spaces to accommodate drivers to park at the Channel Center Garage and in the Project vicinity.

3.4.3.4 Bicycle Accommodations

The Project is dedicated to supporting multimodal alternatives. With the site's close proximity to the local bus routes, the Red Line, local neighborhood retail and commercial areas and jobs, bicycling has the potential to serve future residents and visitors. A secure and protected bicycle room is proposed with highly visible and convenient access adjacent to the main entrance on West First Street.

The Proponent is also committed to meeting the city of Boston's Bicycle Parking Requirements, shown in Table 3-14, which are intended to encourage bicycling, promote physical exercise, and reduce energy use and emissions in keeping with overall City bicycling goals. The Project is within 200 yards of a Hubway bicycle sharing station in the southeast quadrant of the A Street/Richards Street intersection which is sufficient to serve the area.

Table 3-14 City of Boston Bicycle Parking Requirements

Use	BTD Requirement	Bicycle Parking Required
Office, Commercial & Industrial	0.3 secure/covered space per 1,000 sq ft of office	120 secure/covered bicycle parking spaces
	1 outdoor/covered or outdoor/open space per 5 units (64/5 = 12.8)	20 outdoor parking spaces
	Provide 1 shower over 40,000 sf and 1 extra shower for 80,000 sf. The shower requirement may be met with providing free access to on-site health club shower facilities.	Provide four shower facilities for office employees
	Provide one bike share station. Bike station requirement may be waived if another station is within 200 yards of the development.	The Richards Street/A Street Hubway bike share station is approximately 175 yards away, so this requirement is waived.
	TOTAL	140 Bike Parking Spaces

3.5 Transportation Mitigation Measures

The Project will provide a critical link between the A Street Corridor and the adjacent South Boston Residential neighborhood as accessed via West Second Street. The newly created and inviting pedestrian passageway will provide a direct connection form West Second Street to West First Street and to the A Street Park, shortening the walking path and activating these spaces. With its higher density, walking and biking amenities and proposed

TDM measures (see following section), the Project supports the growth of South Boston as a transit-rich, walkable, bikeable neighborhood. The Project will add multimodal supportive infrastructure and help to encourage building tenants towards active modes of transportation use and riding transit.

Additionally, the A Street corridor has seen significant traffic management and control improvements as the area has grown. With many trips arriving by walking, bicycling and public transportation, resulting vehicle trips are much fewer. This results in a vehicle capacity analysis that shows a negligible change in delay at all Project area intersections, with no change in Level of Service at any approach between the No Build and Build scenarios.

Specific transportation enhancements include the following:

- Creating a pedestrian passageway connecting West Second Street to West First Street parallel to A Street which will provide a valuable pedestrian cut-through given the lack of street network connectivity in the area;
- Creating a large and inviting development lobby in conjunction with the pedestrian passageway and retail space;
- Extending the sidewalk along West First Street to include the Site frontage;
- Widening the sidewalk on West Second along the Site frontage
- Creating a new pedestrian crossing of West First Street
- Providing internal facility for loading and service activity
- Maintaining building parking supply (35 spaces) via the newly constructed parking facility at ground level;
- Providing two electric vehicle charging stations; [what about shared vehicle spaces]
- Charging for parking to minimize demand;
- Adding 20 outdoor, publically available bicycle parking spaces - useful for both visitors and the public;
- Providing 120 bicycle parking spaces in a covered, secure bike room helping to promote bicycle use and convenience amongst future residents; and
- Providing four shower facilities for office employees.

Additional Off-Site Improvements include:

- Extending the new sidewalk along West First Street, building off the improvements planned for the Artists For Humanity project;
- Widening the sidewalk along West Second Street from the South Boston Bypass Road bridge towards A Street;
- Making improvements to West Second Street/B Street intersection to ensure traffic operations and pedestrian safety; and
- Making pedestrian improvements at Richards Street/Cypher Street/South Boston Bypass Road intersection to provide a new connection.

3.5.1 Transportation Demand Management

Transportation demand management (TDM) comprises a variety of strategies designed to reduce single-occupancy vehicle (SOV) travel and encourage public transit, walking, bicycling and other more space efficient and less costly modes. As an office development in an area heavily supported by transit accessibility, the Project is likely to attract tenants who can rely primarily on non-auto travel for work. Nevertheless, the implementation of TDM programs is critical to helping ensure that employees and visitors can meet their mobility needs using the variety of transportation options available in the surrounding neighborhood. The Project intends to adopt the following measures and programs to benefit the future office employees and the surrounding neighborhood, while reducing vehicular traffic and potential environmental impacts.

Programmatic

- Provide information on travel alternatives on-site and with lease information;
- Encourage the use of non-auto modes for employees and visitors;
- Post signs and enforce idling laws in the loading facility; and
- Work with area developments on transportation issues including investigating joining the nearby Seaport Transportation Management Association (TMA).

Parking

- Provide parking spaces at market rates for building tenants;
- Work with the Channel Center garage to facilitate parking passes as needed;
- Provide space for two electric vehicle charging stations in the garage as needed;

- Encourage tenants to carpool/vanpool; and
- Provide spaces for a car-sharing vehicle as appropriate.

Public Transportation

- Provide information of travel alternatives on-site in a visible and easily accessible location within the building's common areas;
- Investigate the ability to provide on-site MBTA passes; and
- Work with building tenants to provide payroll deducted MBTA passes and/or subsidize transit passes.

Pedestrian / Bicycle

- Provide free, secure, weather-protected, on-site bicycle parking in a separate bicycle room, for tenants (120 spaces);
- Provide an attractive sidewalk along all site frontages to improve and enhance the area's walkability;
- Promote the use of the Hubway bicycle sharing program. An existing bike share station is adjacent to the A Street Park; and
- Provide 20 publicly accessible bicycle spaces in the area surrounding the site.

Chapter 4.0

Environmental Review Component

4.0 ENVIRONMENTAL REVIEW COMPONENT

This Chapter presents information on existing environmental conditions at the Project Site and the potential environmental impacts of the Project.

4.1 Wind

4.1.1 Introduction

A qualitative assessment for the proposed Project at 105 West First Street in Boston was prepared, and predicts that wind speeds at most areas around the Project will be suitable for pedestrian activity and will remain as it is in the existing conditions. The assessment was based on the following:

- a review of the regional long-term meteorological data from Boston Logan International Airport;
- design drawings and renderings provided by the Project architects;
- wind-tunnel studies undertaken by Rowan Williams Davies & Irwin Inc. (RWDI) for similar projects in the Boston area;
- RWDI's engineering judgment, experience and expert knowledge of wind flows around buildings[1][2][3]; and,
- use of software (Windestimator[2]) for estimating the potential wind conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions.

4.1.2 Site and Building Information

The Project Site is bounded by West First Street and a parcel of land owned by the Massachusetts Department of Transportation to the north, the South Boston Bypass Road to the east, West Second Street to the south, and land and a building owned by Artists For Humanity to the west. The Project Site is currently occupied by a two-story industrial

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1 C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", *10th International Conference on Wind Engineering*, Copenhagen, Denmark.

2 H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", *ASCE Structure Congress 2004*, Nashville, Tennessee.

3 H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", *Journal of Wind Engineering and Industrial Aerodynamics*, vol.104-106, pp.397-407.

building (Figure 4.1-1). In the immediate vicinity are buildings up to 15 stories in height to the northeast and west, A Street Park to the north, and parking lots and low buildings in other directions. The dense downtown core is to the northwest; dense arrays of low-rise buildings exist in all other directions. To the northeast through east, the surroundings are less dense, consisting of large open lots and industrial development, with Boston Harbor approximately two miles to the northeast.

This qualitative assessment has taken into account that the BPDA Board has approved an expansion of the Artists For Humanity building located adjacent to the western edge of the Project Site, as shown in Figure 4.1-2. The approved Artists For Humanity project massing has been incorporated into the wind analysis.

The Project will be approximately 115 feet in height on West First Street and 103 feet in height on West Second Street, with the floors above Level 1 set back from the northeast corner to form a terrace at Level 2. Known pedestrian areas around the Site are the main entry points on West First Street and West Second Street, sidewalks on adjacent streets, the A Street Park to the north on the east side of A Street and terraces on the Project roofs.

4.1.3 Meteorological Data

Wind statistics recorded at Boston-Logan International Airport between 1990 and 2015, inclusive, were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. Figures 4.1-3 through 4.1-5 graphically depict the distributions of wind frequency and directionality for the four seasons and for the annual period. When all winds are considered (regardless of speed), winds from the northwest and southwest quadrants are predominant. Northeasterly winds are also frequent, especially in the spring.

Strong winds with mean speeds greater than 20 mph (red bands in the figures) are prevalently from the northwesterly directions throughout the year, while the southwesterly and northeasterly winds are also frequent.

Winds from the northwest, southwest and northeast directions are considered most relevant to the current study, although winds from other directions were also considered in the assessment.

4.1.4 BPDA Wind Criteria

The BPDA has adopted two standards for assessing the relative wind comfort of pedestrians.

First, the BPDA wind design guidance criterion states that an effective gust velocity (hourly-mean wind speed + 1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent (1%) of the time. This criterion is referred to as the gust criterion.

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

105 West First Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 4.1-1
Aerial Locus Map

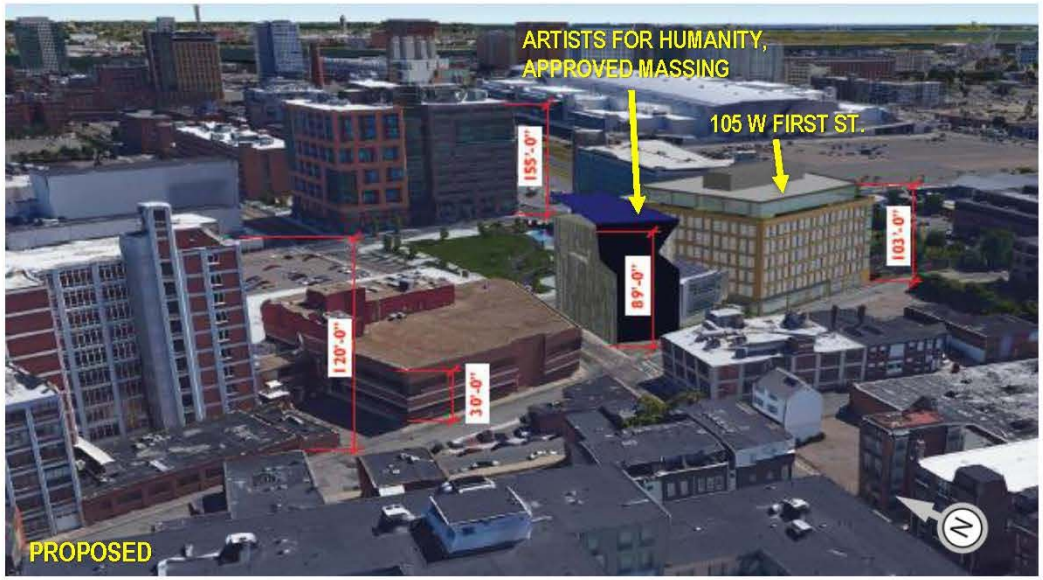
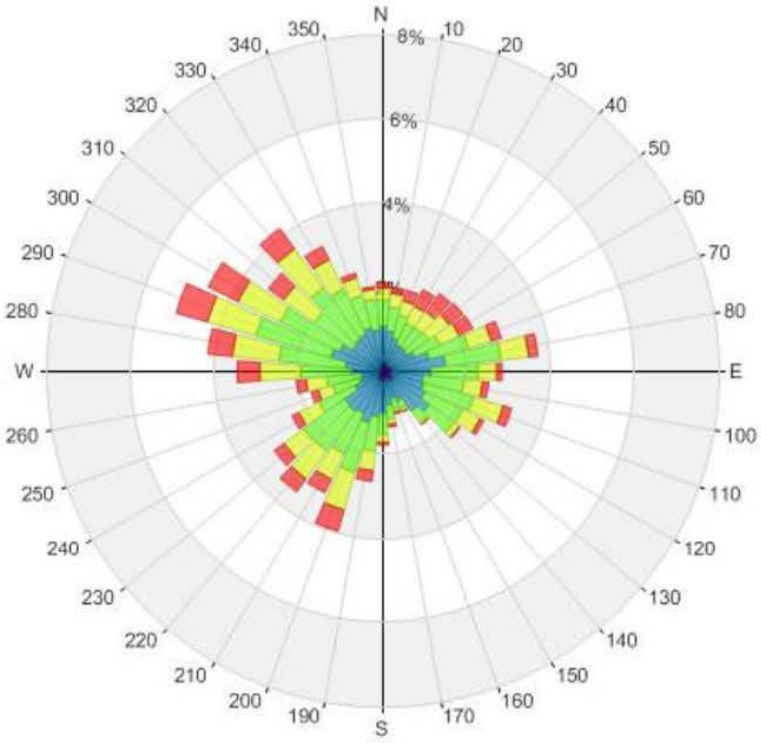
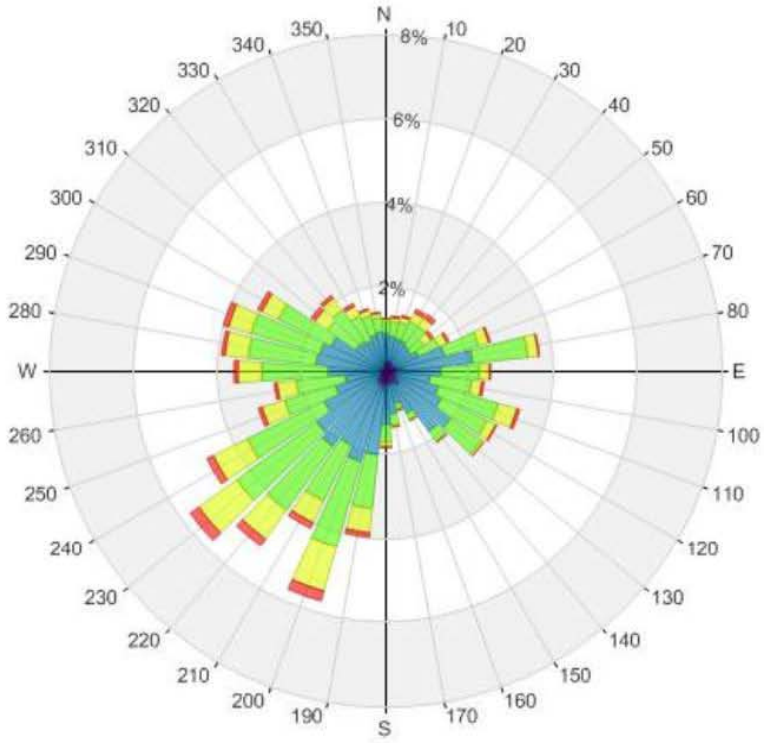


Figure 4.1-2

Aerial View of the Site from the Southwest



Spring
(March - May)

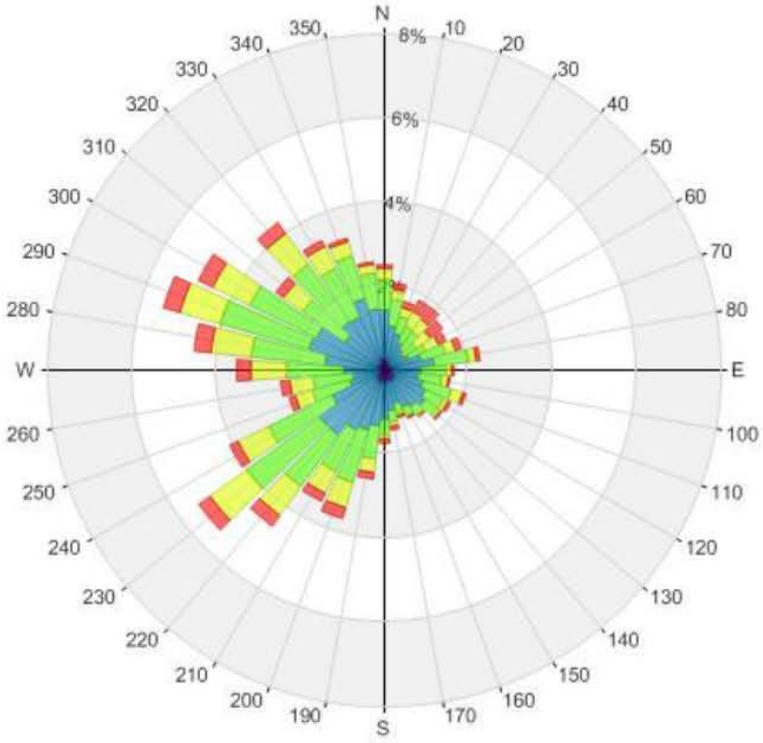


Summer
(June - August)

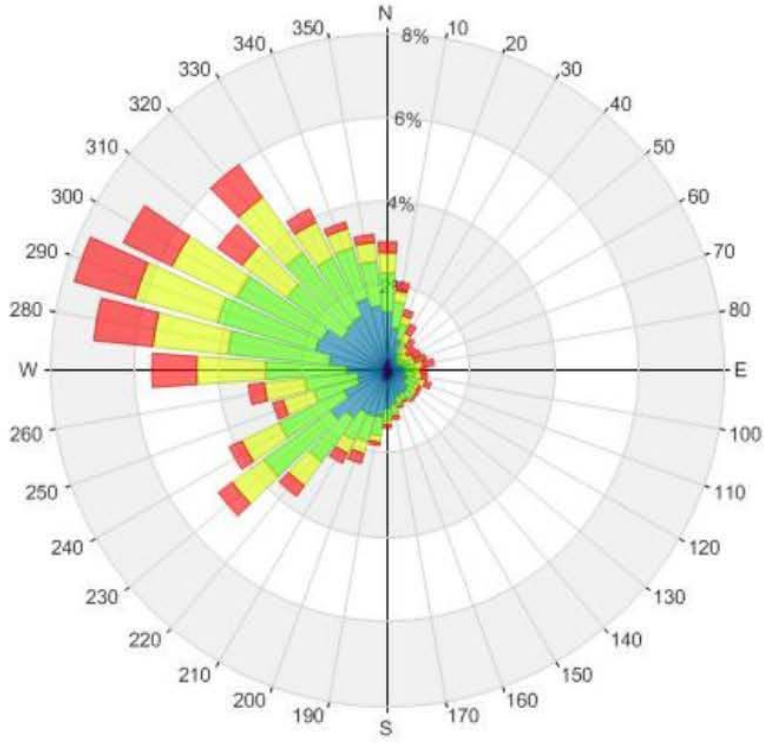
Wind Speed (mph)	Probability (%) Spring	Summer
Calm	2.4	2.7
1-5	6.4	8.9
6-10	28.5	38.1
11-15	32.9	35.1
16-20	19.7	12.6
>20	10.2	2.7

Figure 4.1-3

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1990-2015)



Fall
(September - November)



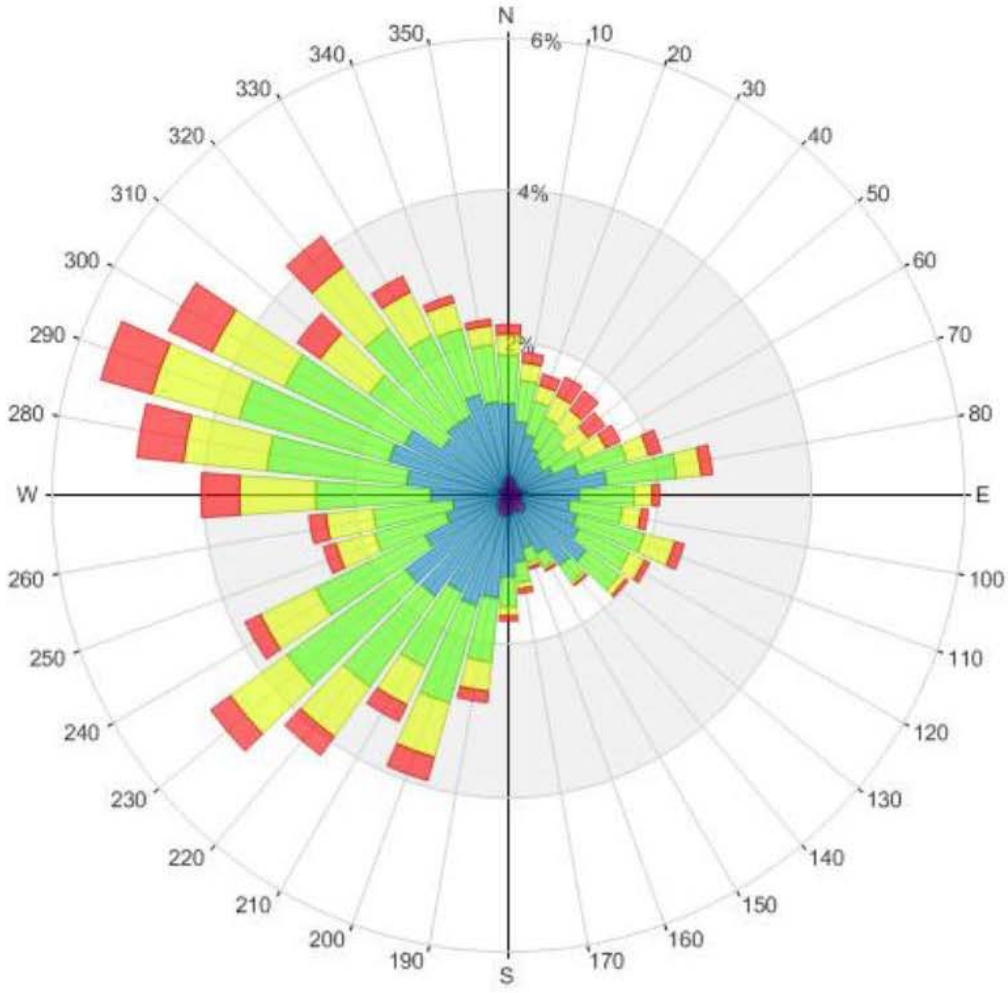
Winter
(December - February)

Wind Speed (mph)	Probability (%) Fall	Winter
Calm	2.9	2.3
1-5	8.0	6.2
6-10	34.3	27.5
11-15	32.8	31.1
16-20	15.3	20.1
>20	6.7	12.8

105 West First Street Boston, Massachusetts

Figure 4.1-4

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1990-2015)



Annual Winds

Wind Speed (mph)	Probability (%)
Calm	2.5
1-5	7.4
6-10	32.1
11-15	33.0
16-20	16.9
>20	8.1

The second set of criteria used by the BPDA to determine the acceptability of specific locations is based on the work of Melbourne[4]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 4.1-1 Boston Planning and Development Agency Mean Wind Criteria*

Level of Comfort	Wind Speed
Dangerous	> 27 mph
Uncomfortable for Walking	>19 and <27 mph
Comfortable for Walking	>15 and <19 mph
Comfortable for Standing	>12 and <15 mph
Comfortable for Sitting	<12 mph

* Applicable to the hourly mean wind speed exceeded one percent of the time.

Pedestrians on sidewalks and parking lots will be active and wind speeds comfortable for walking are appropriate at such locations. Lower wind speeds comfortable for standing are desired for building entrances and bus stops where people are apt to linger. For any outdoor amenity at and above grade, low wind speeds comfortable for sitting are desired in the summer, when it is typically in use.

The wind climate found in a typical location in downtown Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BPDA effective gust velocity criterion of 31 mph at most areas, while windier conditions may be expected near the corners of tall buildings exposed to the prevailing winds. However, without any mitigation measures, this wind climate is likely to be frequently unsuitable for more passive activities such as sitting.

Discussions related to pedestrian wind comfort and safety will be based on the annual wind climate. Typically the summer and fall winds tend to be more comfortable than the annual winds while the winter and spring winds are less comfortable than the annual winds.

[4] Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", *Journal of Industrial Aerodynamics*, 3 (1978) 241 - 249.

4.1.5 Results

Predicting wind speeds and occurrence frequencies involves the assessment of building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted thousands of wind-tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a qualitative, screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

4.1.5.1 Existing Pedestrian Wind Conditions

On an annual basis, wind conditions around the Project Site are expected to be suitable for pedestrian activities. Wind speeds are expected to be comfortable for sitting, standing or walking at most areas. This is largely due to the uniform height of surrounding buildings that tends to keep winds flowing over them and prevent the redirection of winds to street level at most areas. The Project Site is also sheltered from the northeast winds by the mid-rise buildings in the adjacent lots in that direction.

Buildings taller than the surroundings tend to intercept winds at high elevations and redirect them down to grade level. These downwashed winds subsequently accelerate around downwind building corners or channel between, making these areas windy. These generic flow patterns are illustrated in Figure 4.1-6.

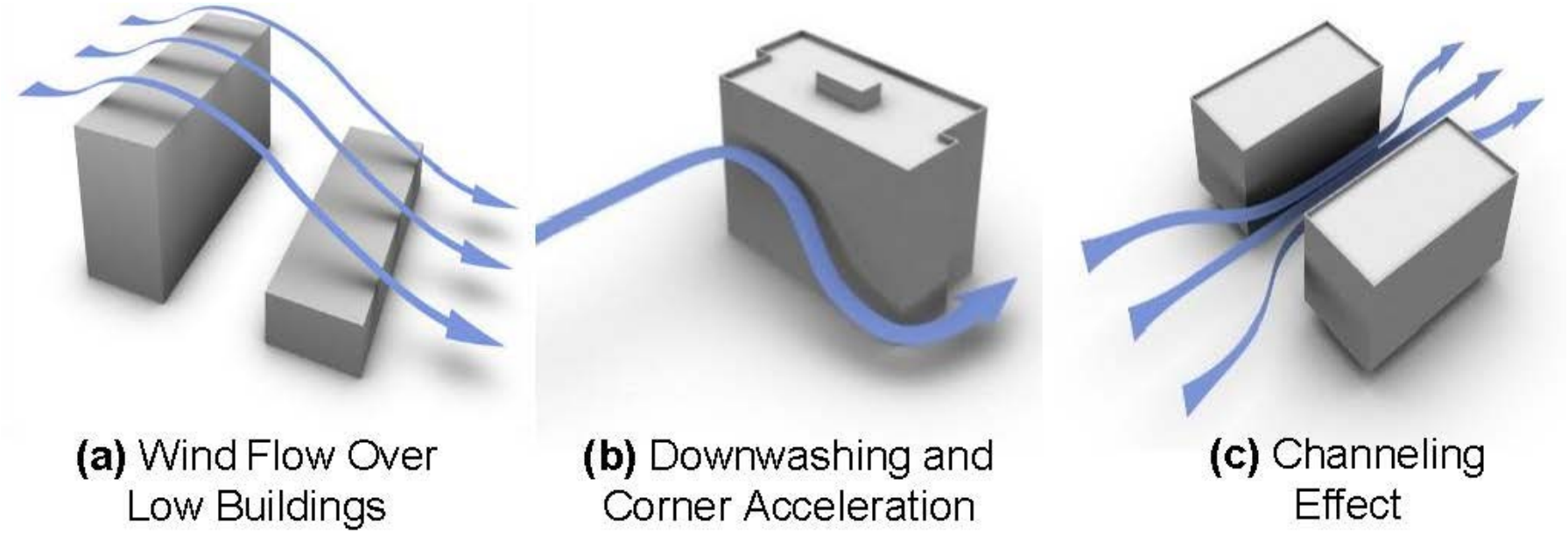
Corners of tall buildings near street intersections tend to be windier, rated uncomfortable for walking, due to the openness of the intersection. Occasionally, particularly during the winter, when winds are seasonally stronger, it is probable that wind conditions at the corners of tall buildings exceed the gust criterion.

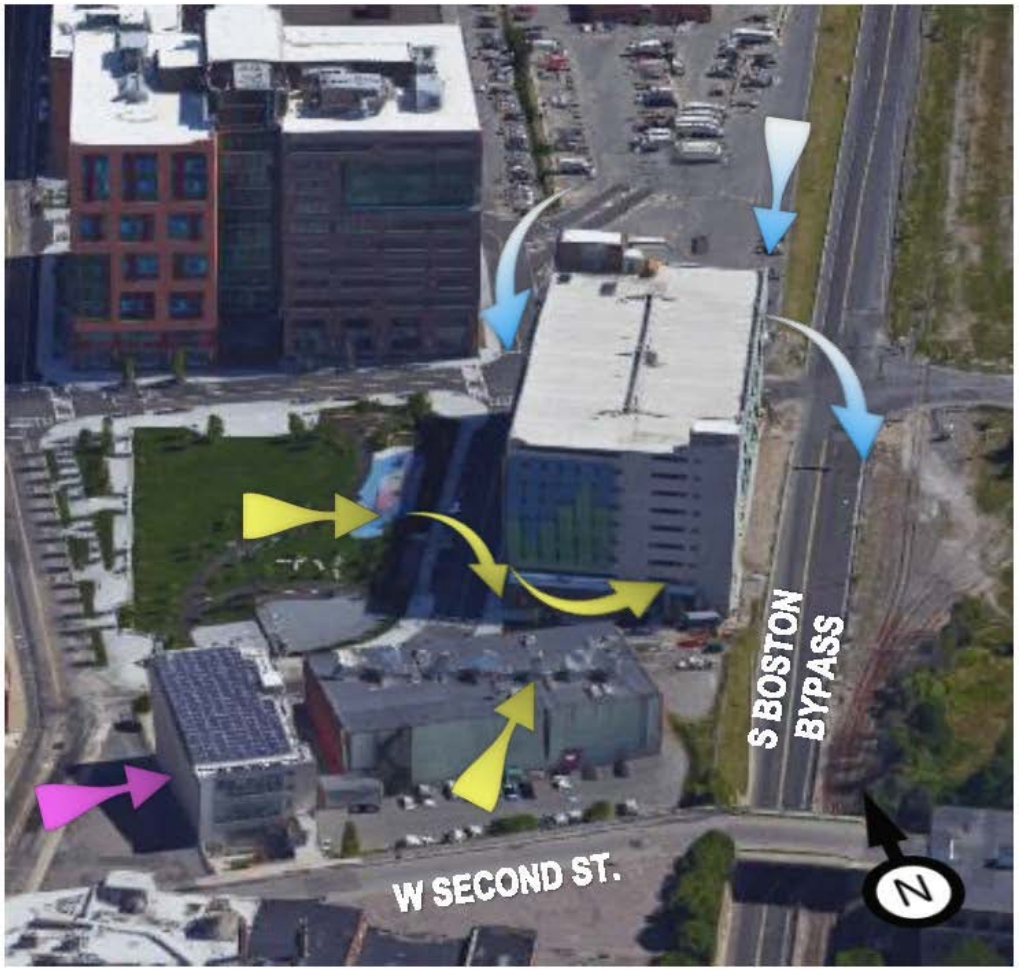
The predicted wind flow patterns around the Project Site are shown in Figure 4.1-7.

4.1.5.2 Future Pedestrian Wind Conditions

Gust Wind Speed Conditions

Winds at most areas around the Project are expected to meet the gust criterion. Similar to the existing conditions, wind speeds in the area between the Project and the Channel Center Garage are likely to be close to the gust threshold and may exceed the gust criterion on particularly windy days (Figure 4.1-8). However, this path is not anticipated to be used frequently as a majority of building users are expected to arrive to the Project from the Broadway MBTA Station rather than from the Channel Center Garage.


(a) Wind Flow Over Low Buildings
(b) Downwashing and Corner Acceleration
(c) Channeling Effect



Winds from Northwest and Southwest

Winds from West

Winds from Northeast

105 West First Street Boston, Massachusetts

Figure 4.1-7

Flow Patterns around the Existing Surroundings

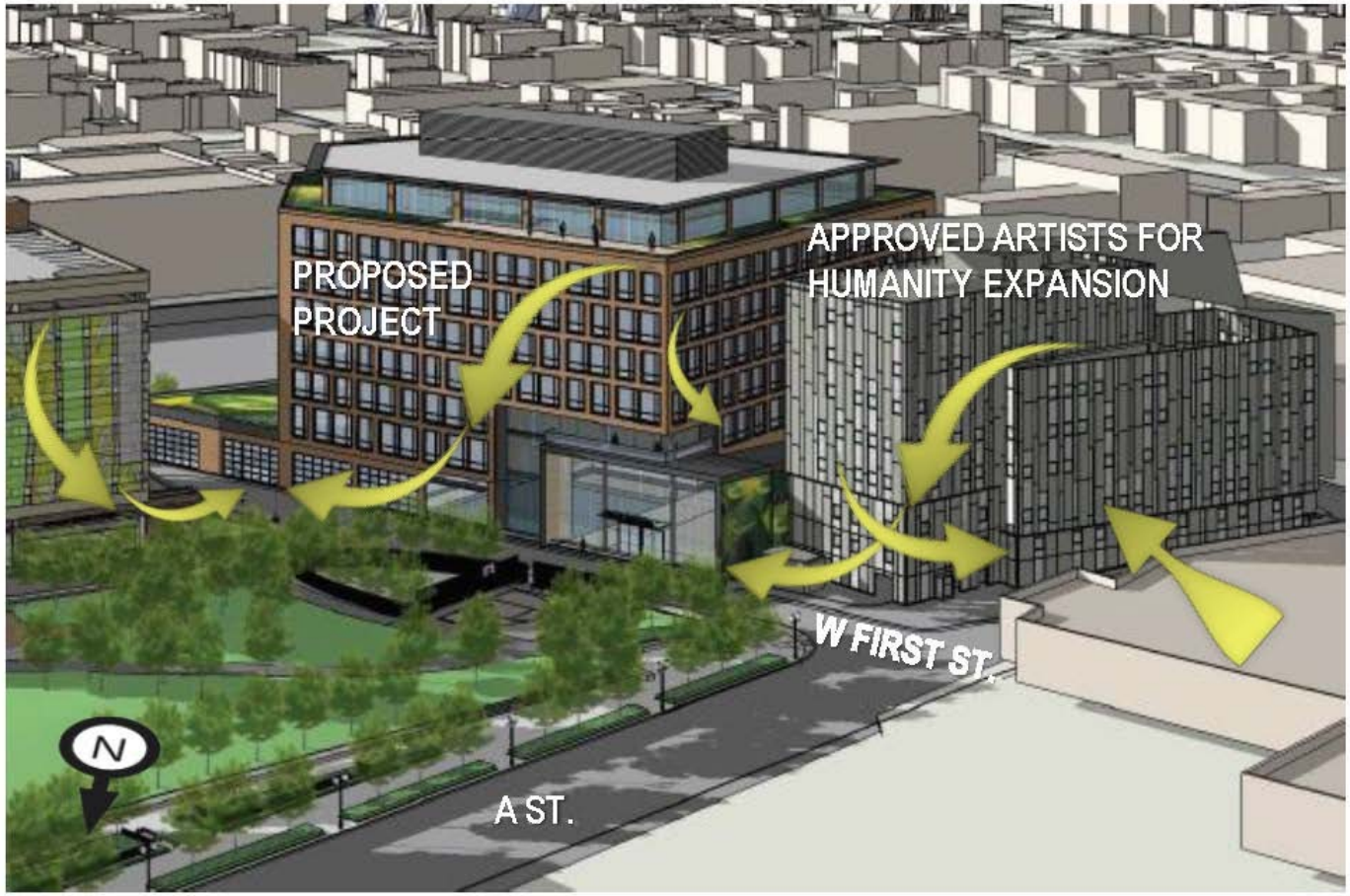


Figure 4.1-8

Predicted Wind Flow Patterns around the Project

Comfort Conditions – Sidewalks and Park

Similar to the conditions that exist currently on West First Street and West Second Street around the taller buildings to the west of the Project, and conditions typical in the area, the redirected flows along the streets near the Project will yield conditions suitable for walking on the associated sidewalks during most of the year. During windier days, particularly in the spring and winter, winds could potentially be uncomfortable for walking, similar to existing conditions.

A Street Park to the north will be protected from the southwest winds by the Project as well as the proposed Artists For Humanity expansion project. Trees in A Street Park will also protect it from winds redirected by the Project and existing buildings during the summer. During the winter, A Street Park is unlikely to be used for passive activities and therefore, higher wind speeds suitable for walking are expected and would be appropriate.

Comfort Conditions – Main Entrances

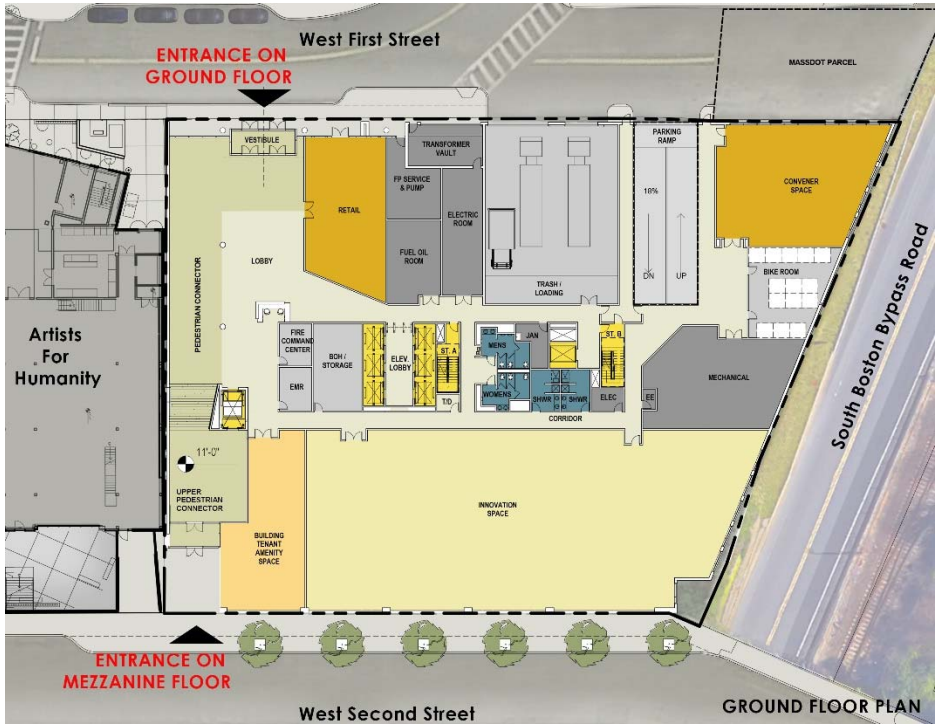
The main entrances to the Project will be located at the west end on West First Street and West Second Street (Figure 4.1-9). The design of the main entrances of the building include features that are favorable for wind control:

- They are recessed from the main façade and protected from winds by projecting side-walls and overhang or canopy; and
- They are designed with closed vestibules that could serve as waiting areas for building patrons on particularly windy days.

It is expected that winds at the entrances will be suitable for pedestrian use during most of the year. On particularly windy days in the winter, the entrance on West First Street may be slightly windier than desired. However, pedestrians are unlikely to linger outside during the colder months; additionally, the vestibules provide a protected waiting area if desired.

Comfort Conditions – Terrace

The Project includes two small terraces for building users, one that wraps around the northwest corner on the third floor and a small terrace on the north side of the eighth floor (Figure 4.1-10). When considering the most predominant wind direction – southwest, the terrace areas are located on the downwind side of the building, and therefore protected from these winds. Wind conditions on these terraces are expected to be suitable for passive activities for most of the summer. Occasionally, when winds are from the northwest or northeast, slightly higher wind speeds would occur. In addition, occasionally, the third-floor terrace may also be influenced by winds channeling between the Project and the



105 West First Street Boston, Massachusetts

Figure 4.1-9

Main Entrances

Figure 4.1-10

Project Terraces

Artists For Humanity building (Figure 4.1-11). Patrons may use their discretion to stay indoors during the higher wind events. In order to ensure low wind speeds at all times, or during larger/longer gatherings, the design team will consider wind screens or tall landscaping features (at least 6 feet tall) to be placed along the terrace edges.

During the winter, winds are seasonally stronger and conditions on the terraces are expected to be windier than desired. Since the terraces are not expected to be used in the winter, the higher wind conditions are acceptable.

4.1.6 Summary

Based on the local wind data, the Project height, information on surroundings, and RWDI's experience with similar projects, it is predicted that wind speeds at most areas around the Project will be suitable for pedestrian activity and will remain as it is in the existing conditions.

The main entrances are favorably designed so that they will be largely protected from wind impacts. The terraces on the third and eighth floors are expected to be suitable for patrons during the summer when used most frequently.

4.2 Shadow

4.2.1 Introduction and Methodology

As typically required by the BPDA, a shadow impact analysis was conducted to investigate shadow impacts from the Project during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21), and winter solstice (December 21). In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new shadow from the Project are provided in Figures 4.2-1 to 4.2-14 at the end of this section.

The shadow analysis presents the existing shadow and new shadow that would be created by the proposed Project, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces, sidewalks and bus stops adjacent to and in the vicinity of the Project Site. For most of the time periods studied, the shadows are limited to the streets or sidewalks immediately abutting the site. The Project will not cast new shadow on public open spaces during eight of the 14 time periods studied. New shadow will be cast onto A Street Park immediately to the north of the Project, however, during most of these time periods shadow will be limited to the small portions of the southernmost edge of the Park.

Figure 4.1-11

Channeling of Southwest Winds

4.2.2 Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, new shadow from the Project will be cast to the west onto West First Street and its southern sidewalk, and onto a small portion of A Street and its sidewalks. No new shadow will be cast onto nearby bus stops or public open space.

At 12:00 p.m., new shadow will be cast to the north onto West First Street and its sidewalks, and onto a small portion of the A Street Park. No new shadow will be cast onto nearby bus stops or other public open space.

At 3:00 p.m., new shadow will be cast to the northeast onto West First Street and its sidewalks and onto Medallion Avenue and its sidewalks. New shadow will be cast onto the northeastern corner of the A Street Park. No new shadow will be cast onto nearby bus stops or other public open spaces.

4.2.3 Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, no new shadow will be cast onto nearby bus stops or public open space. New shadow from the Project will be cast to the southwest onto West Second Street and its northern sidewalk.

At 12:00 p.m., no new shadow will be cast onto nearby bus stops or public open space. New shadow will be cast to the north into West First Street and its southern sidewalk.

At 3:00 p.m., no new shadow will be cast onto nearby bus stops or public open space. New shadow will be cast to the northeast onto West First Street and its sidewalks, and onto the South Boston Bypass Road.

At 6:00 p.m., no new shadow will be cast onto nearby bus stops or public open spaces. New shadow will be cast to the east onto a portion of West First Street and its southern sidewalks, and onto the South Boston Bypass Road.

4.2.4 Autumnal Equinox (September 21)

At 9:00 a.m., no new shadow will be cast onto nearby bus stops or public open spaces. New shadow from the Project will be cast to the northwest onto West First Street and its southern sidewalk, and onto a small portion of A Street and its sidewalks.

At 12:00 p.m., new shadow will be cast to the north onto West First Street and its sidewalks, and onto a small portion of the A Street Park. No new shadow will be cast onto nearby bus stops or other public open space.

At 3:00 p.m., new shadow will be cast to the northeast onto West First Street and its sidewalks and onto Medallion Avenue and its sidewalks. New shadow will be cast onto a very small section of the northeastern corner of the A Street Park. No new shadow will be cast onto nearby bus stops or other public open spaces.

At 6:00 p.m., no new shadow will be cast onto nearby bus stops or public open spaces. New shadow will be cast to the northeast onto the South Boston Bypass Road, B Street and its sidewalks, West First Street and its sidewalks, and onto Cypher Street and its sidewalks. New shadow will be cast onto the Boston Convention and Exhibition Center parking lot.

4.2.5 Winter Solstice (December 21)

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

At 9:00 a.m., new shadow from the Project will be cast to the northwest onto West First Street and its sidewalks, and A Street and its sidewalks. New shadow will also be cast onto a portion of the A Street Park. No new shadow will be cast onto nearby bus stops or other open spaces.

At 12:00 p.m., new shadow will be cast to the north onto West First Street and its sidewalks, and onto a portion of A Street Park. No new shadow will be cast onto nearby bus stops or other public open spaces.

At 3:00 p.m., no new shadow will be cast onto nearby bus stops or public open space. New shadow will be cast to the northeast onto Medallion Avenue and its sidewalks, a small portion of West First Street and its sidewalks, and onto the South Boston Bypass Road.

4.2.6 Conclusions

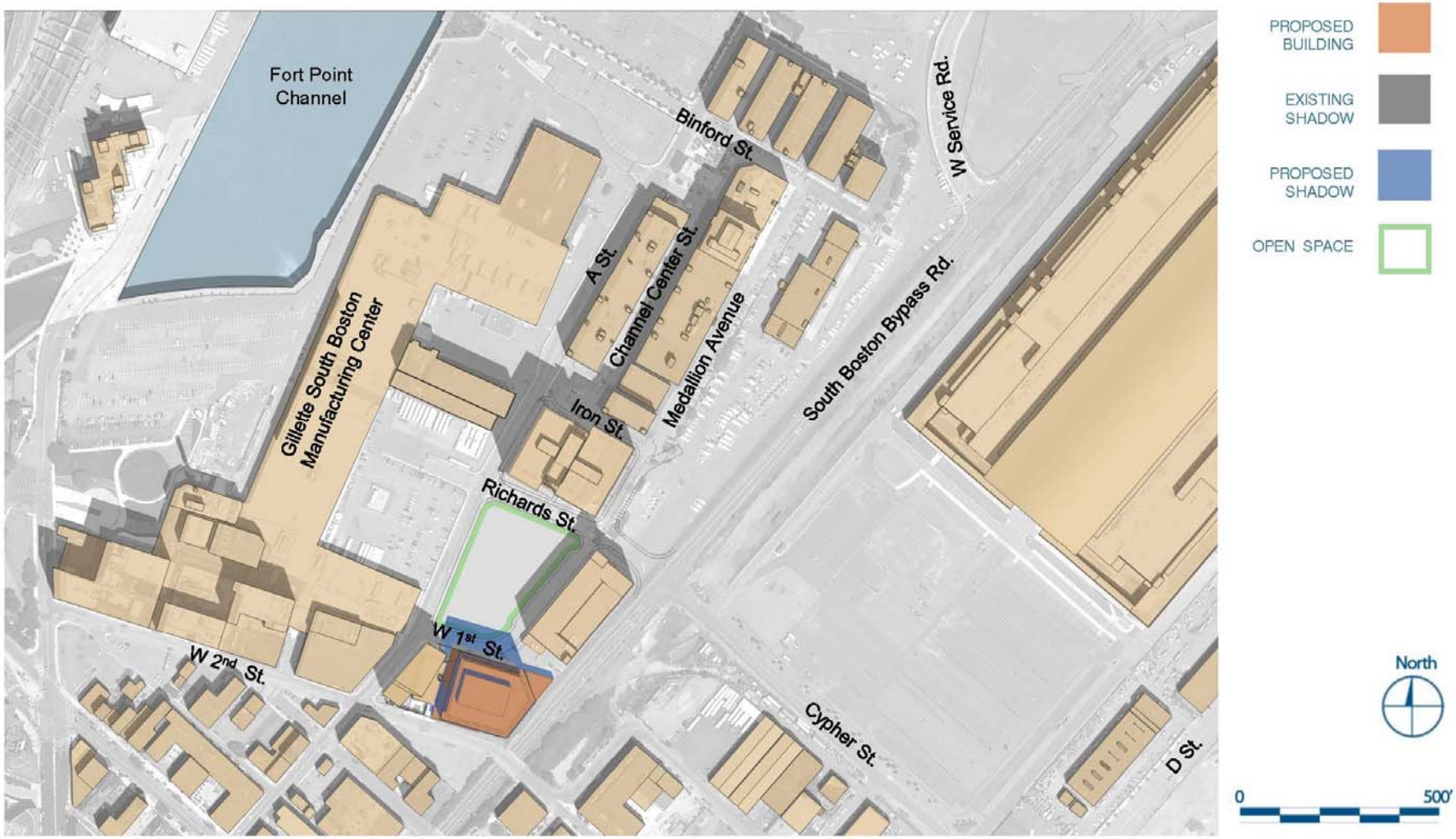
The shadow impact analysis looked at net new shadow created by the Project during fourteen time periods. The Project will not cast new shadow on public open spaces during eight of the 14 time periods studied. New shadow will be cast onto portions of A Street Park immediately to the north of the Project, however, during most of these time periods shadow will be limited to the small portions of the southernmost edge of the Park.

105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-1

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

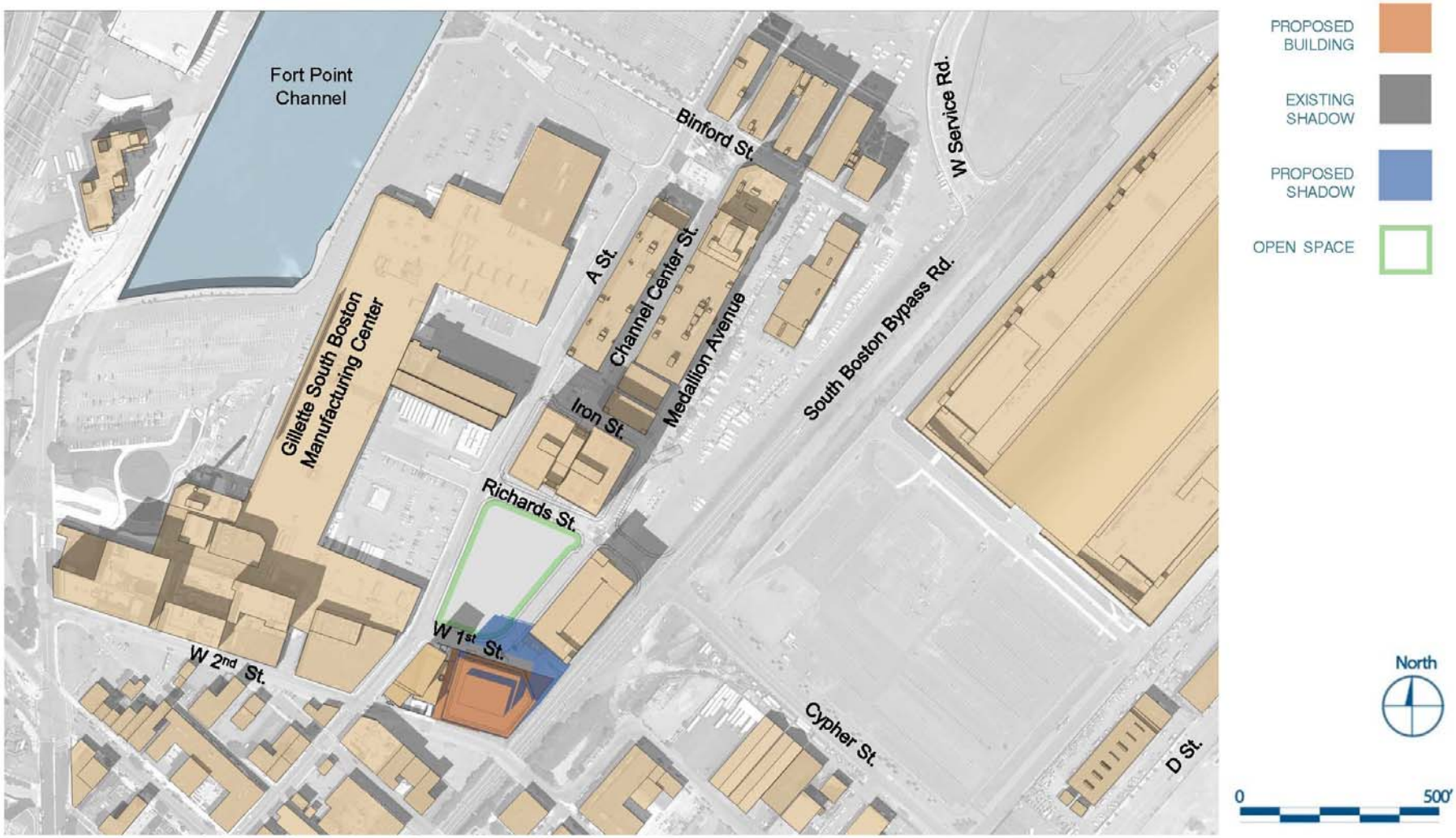


105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-2

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

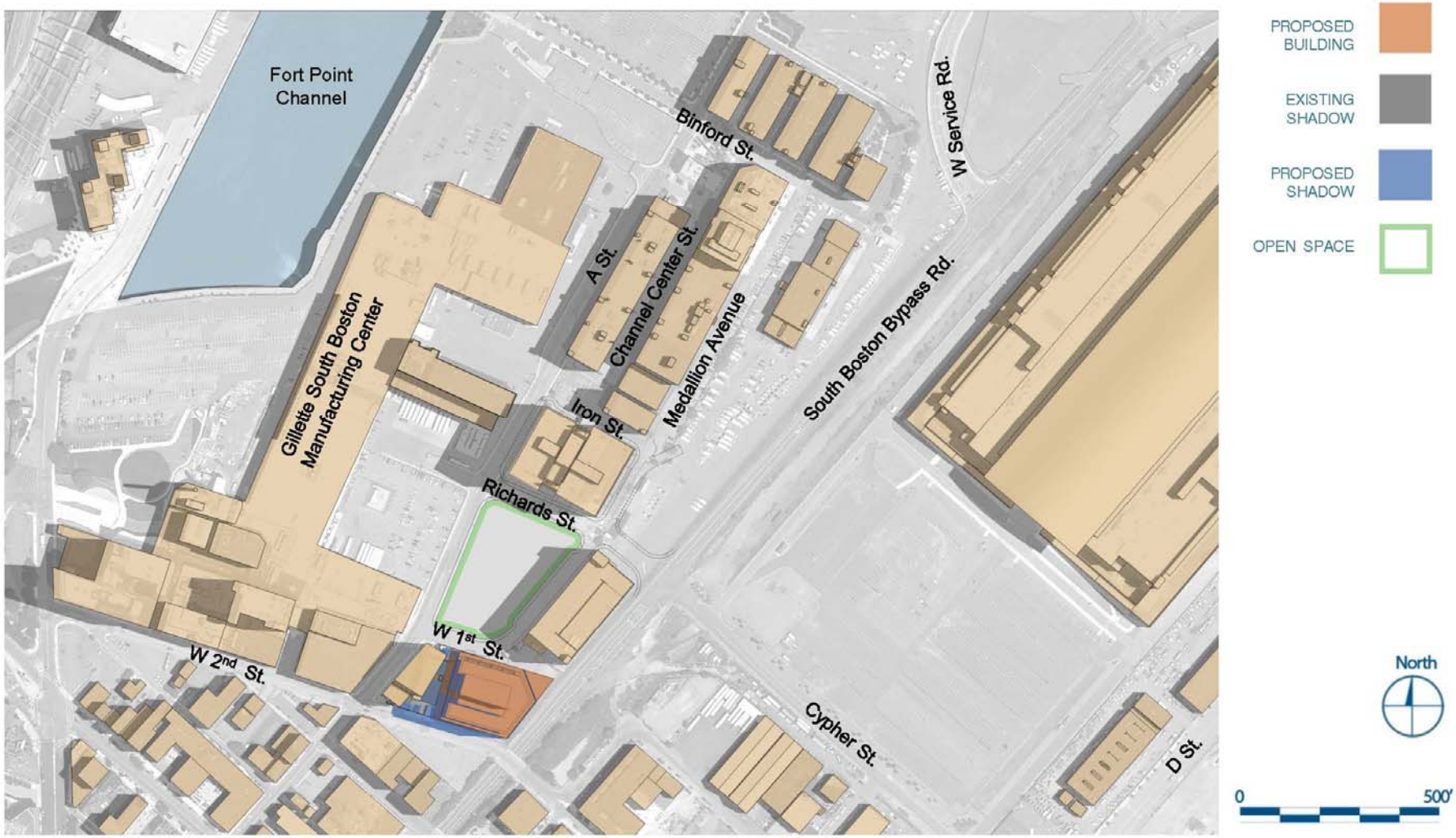


105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-3

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

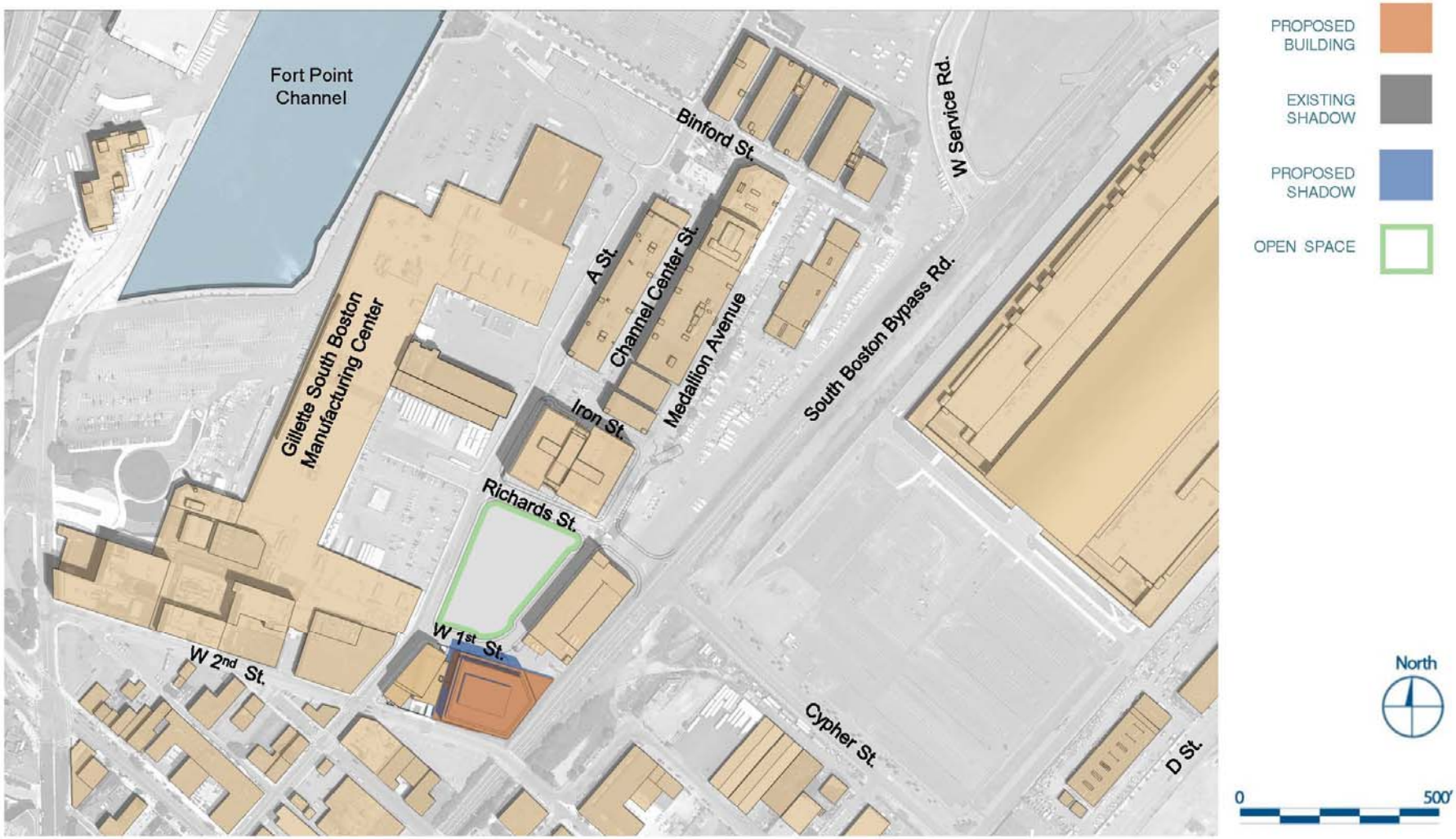


105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-4

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

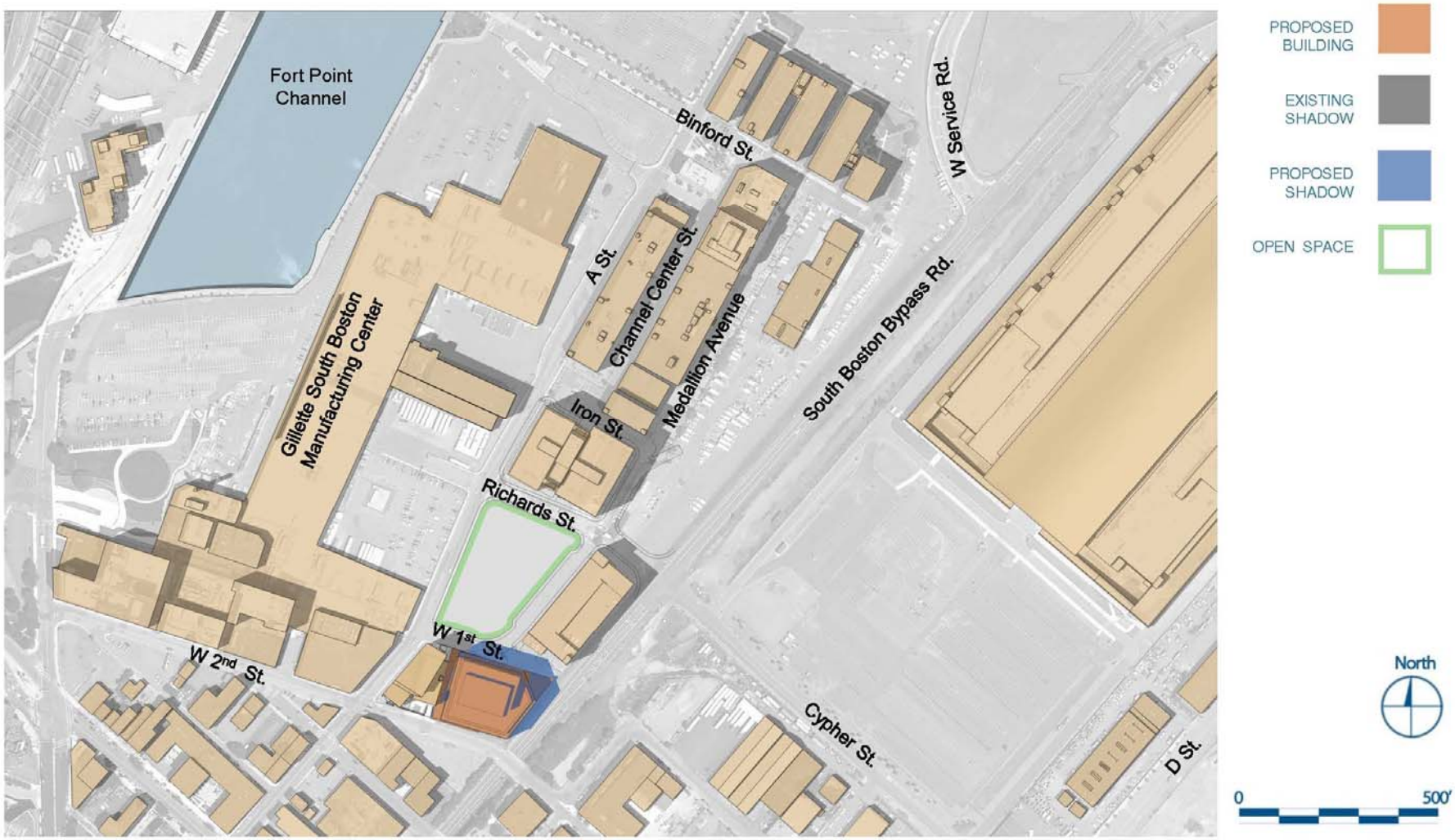


105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-5

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

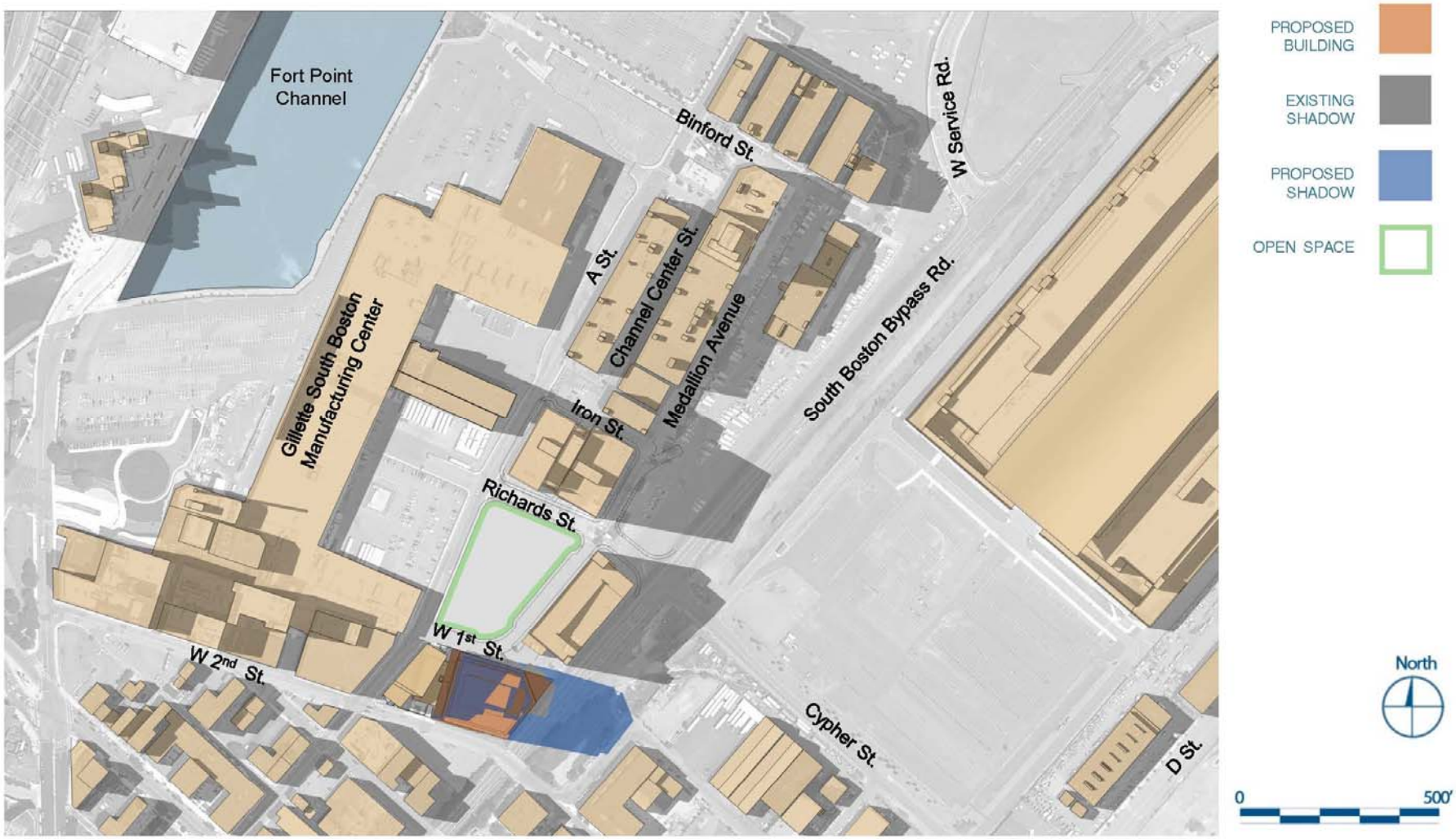


105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-6

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



105 West First Street Boston, Massachusetts

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Figure 4.2-7

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

105 West First Street Boston, Massachusetts

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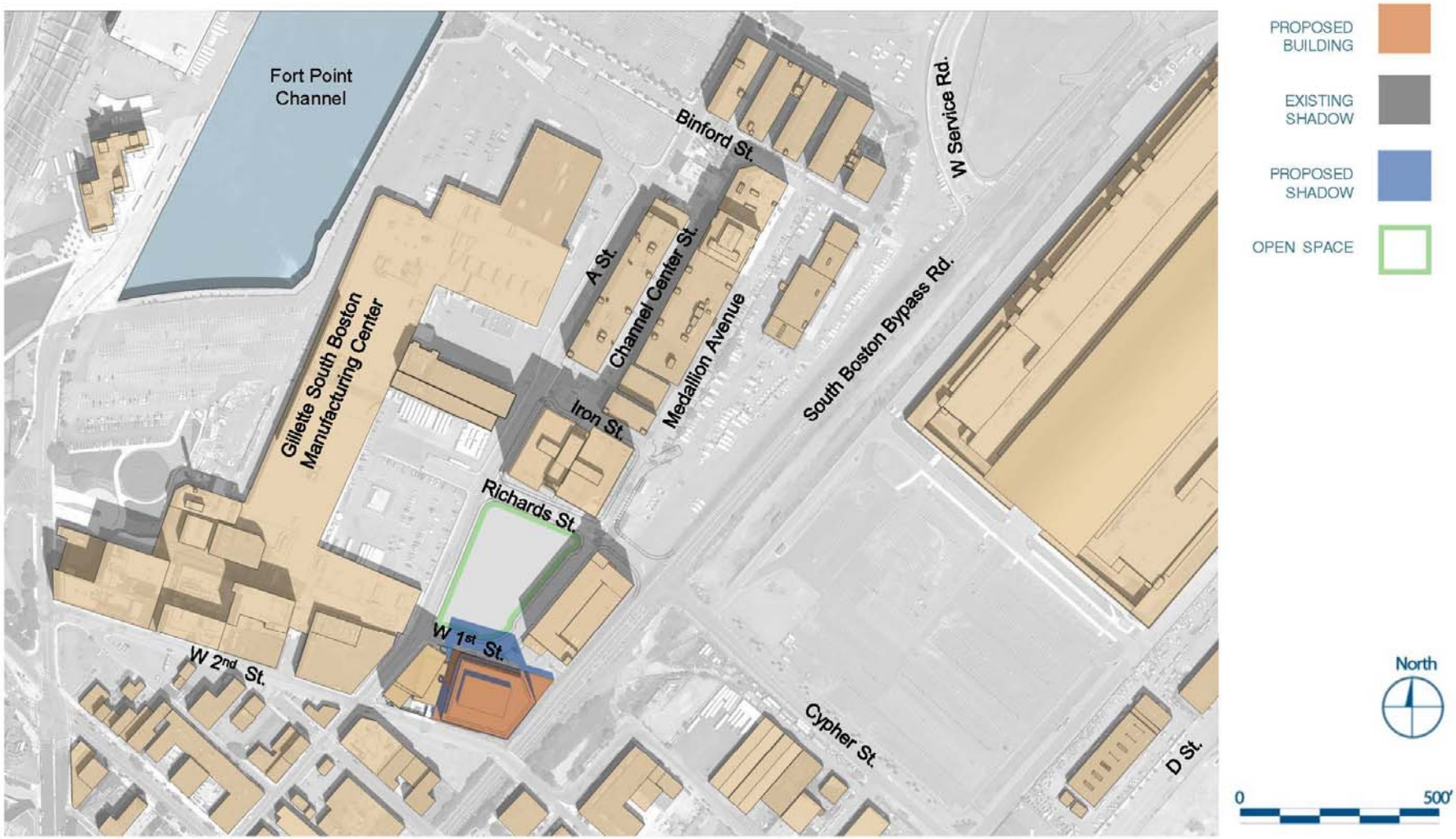
Figure 4.2-8

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



105 West First Street Boston, Massachusetts

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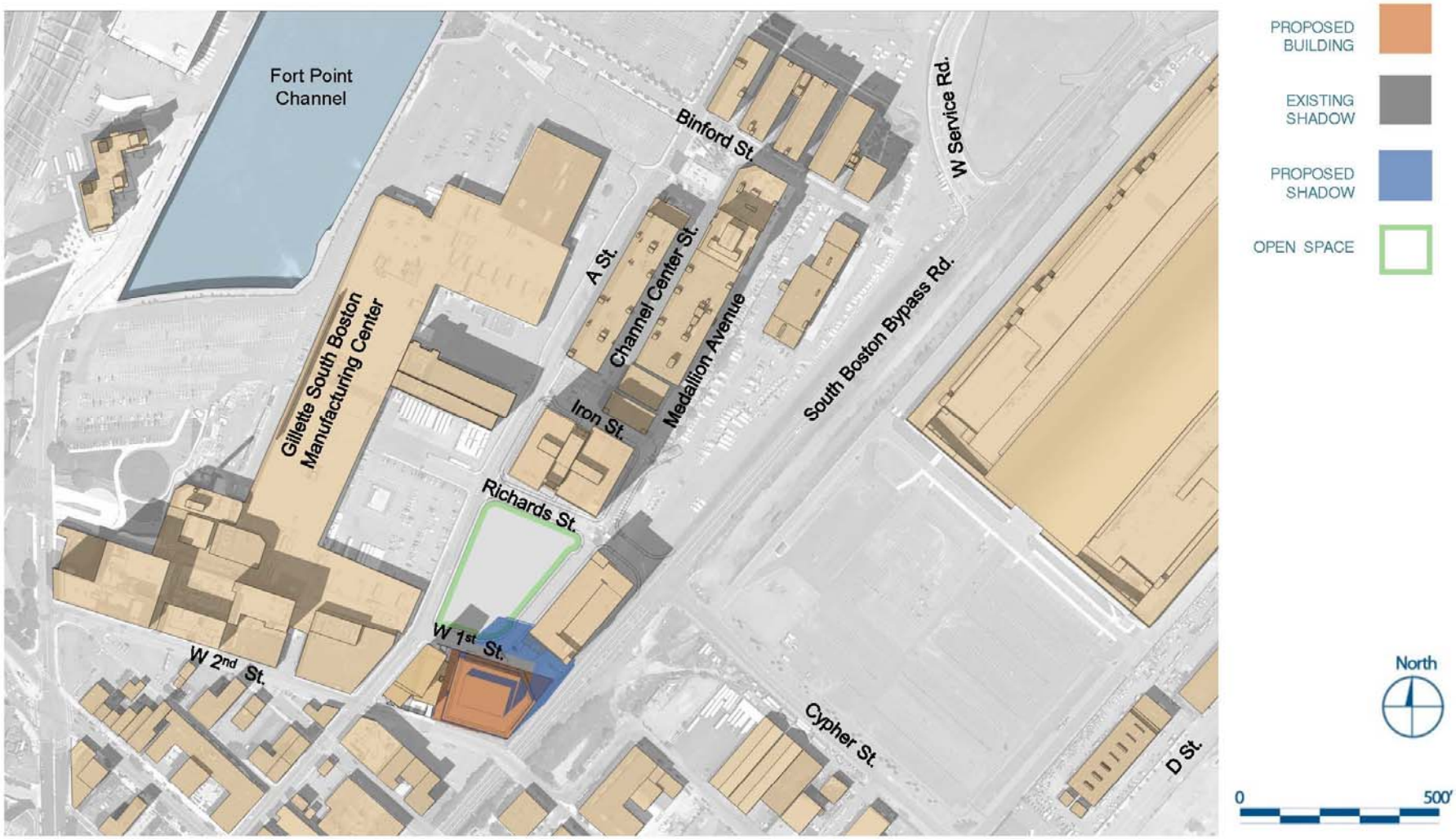
Figure 4.2-9

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



105 West First Street Boston, Massachusetts

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Figure 4.2-10

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

105 West First Street Boston, Massachusetts

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Figure 4.2-11

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

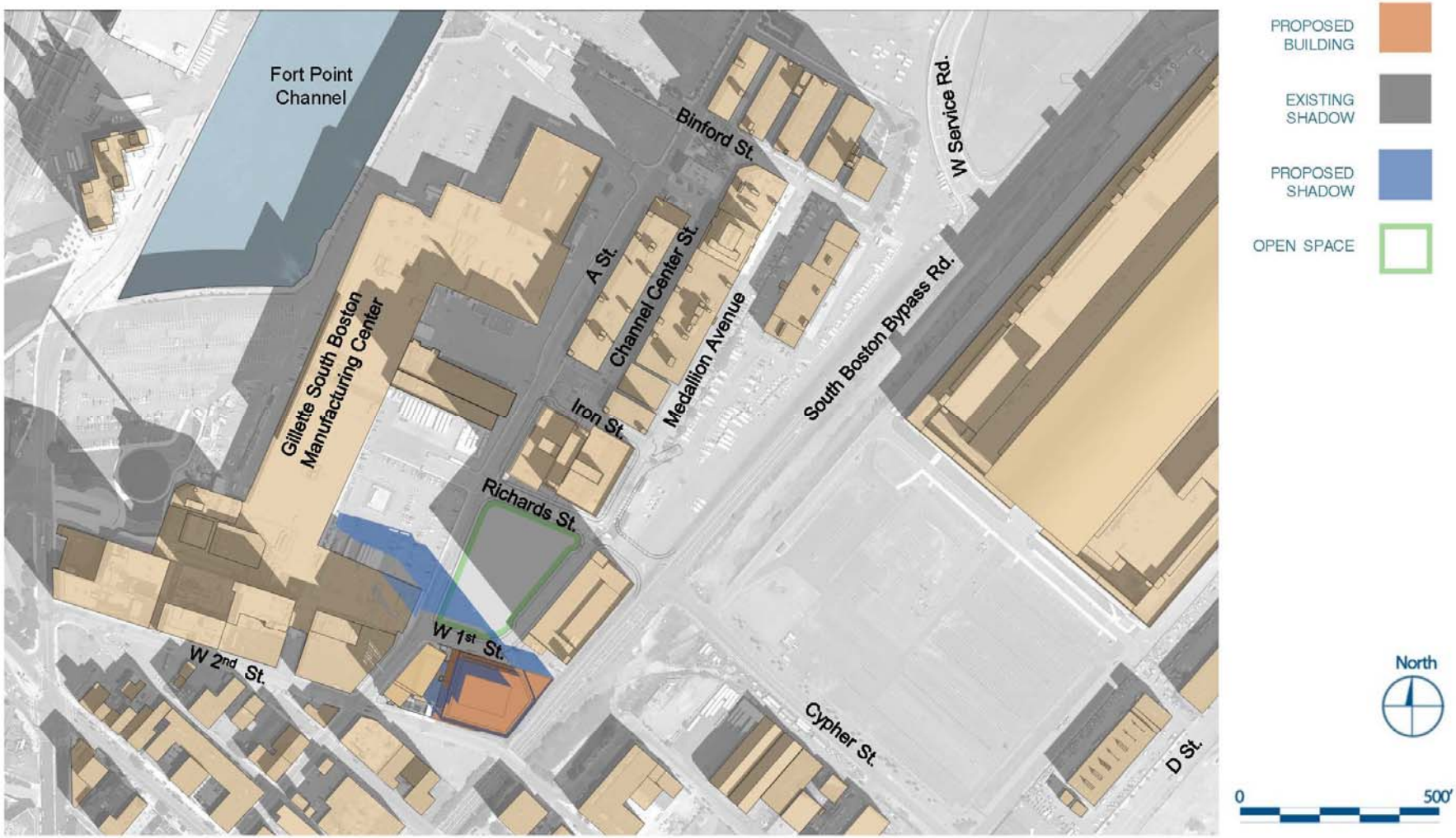

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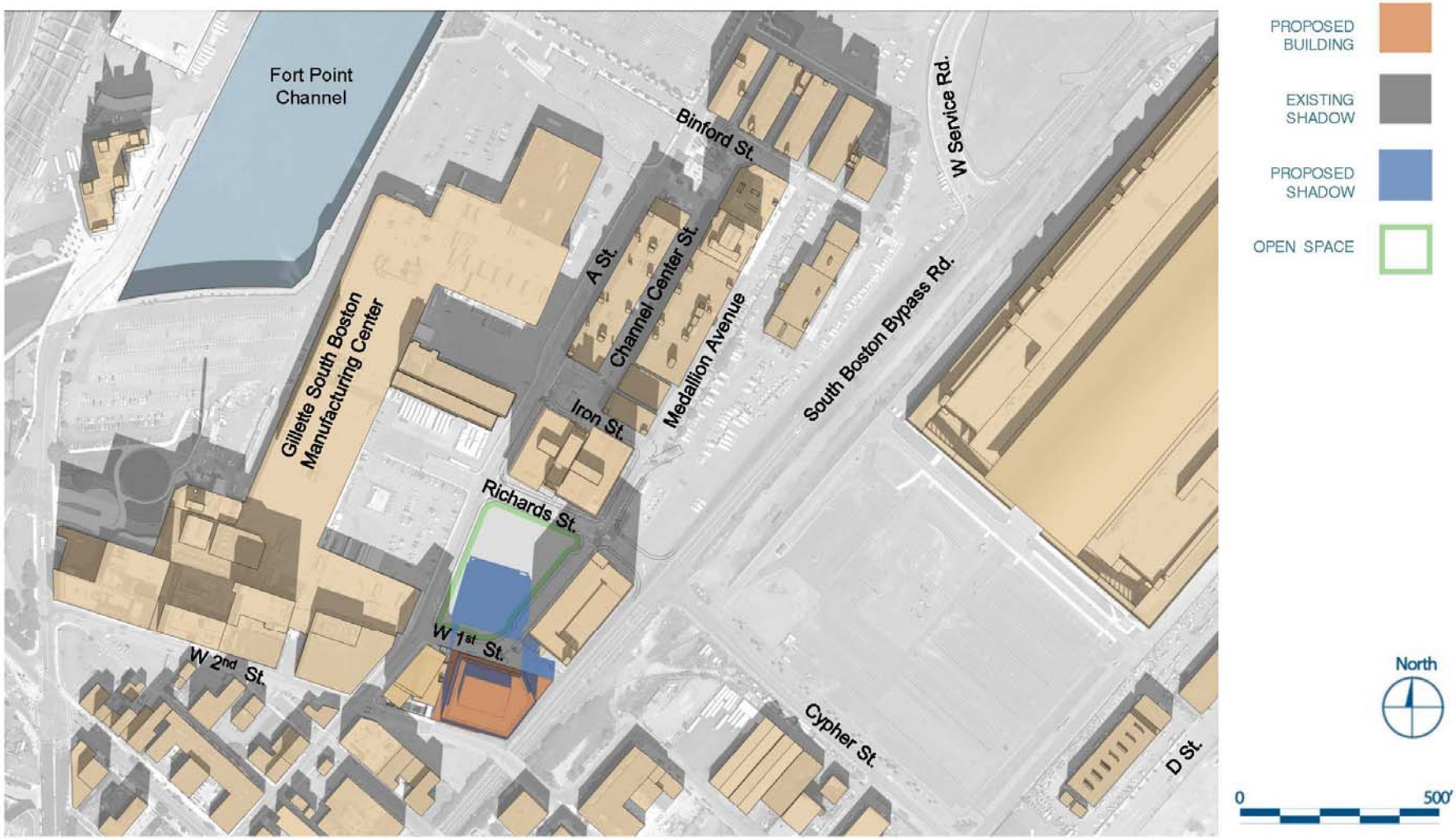
Figure 4.2-12

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

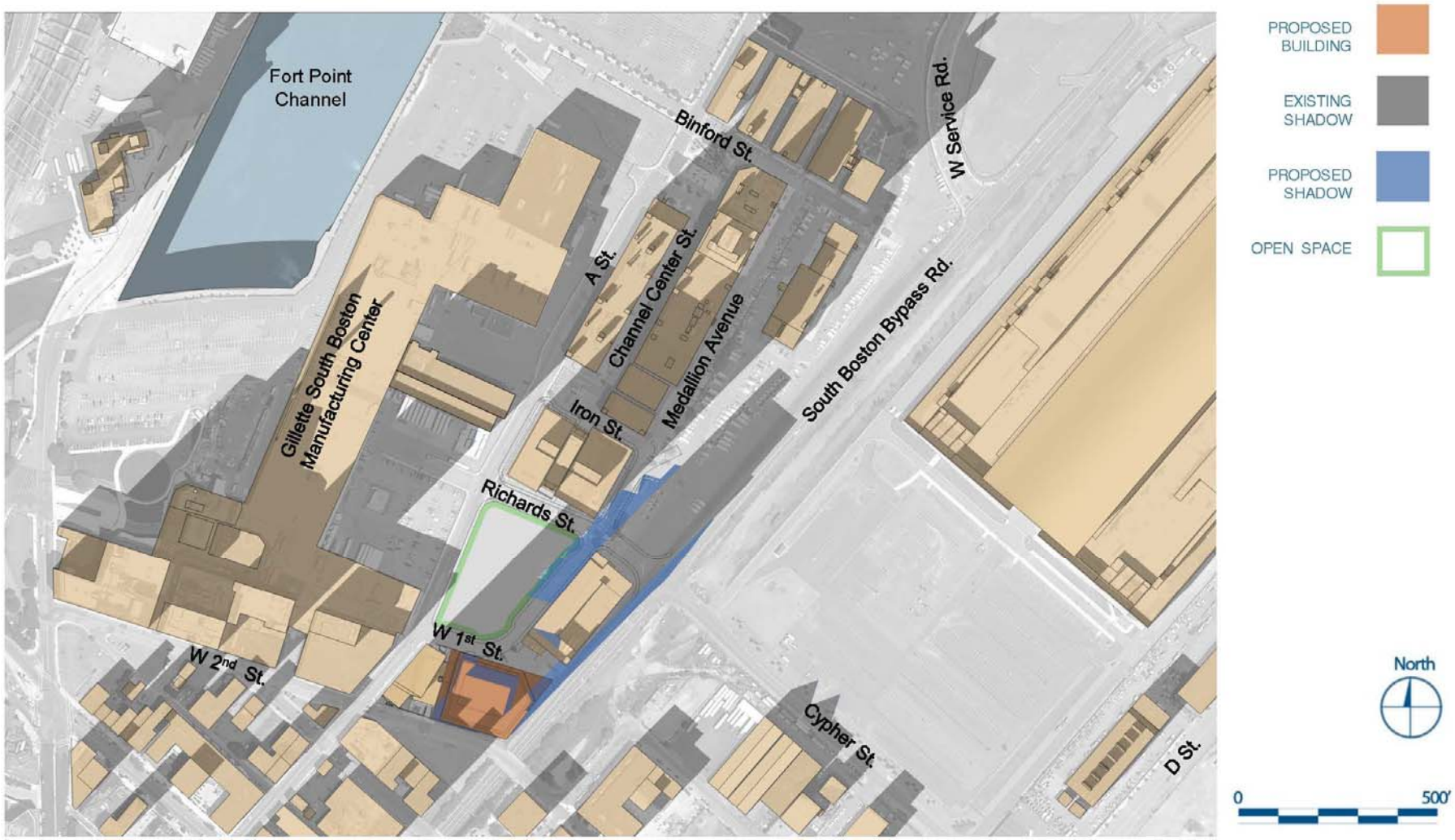


105 West First Street Boston, Massachusetts

Stantec

Figure 4.2-13

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



105 West First Street Boston, Massachusetts

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Figure 4.2-14

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

4.3 Daylight Analysis

4.3.1 Introduction

The purpose of the daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and the sidewalks in the immediate vicinity of a project site.

Because the Project Site currently consists of a two-story building and a surface parking lot, the proposed Project will inherently increase daylight obstruction; however, resulting conditions will be similar to the daylight obstruction values within the surrounding area and typical of densely built urban areas.

4.3.2 Methodology

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program[5]. This program measures the percentage of sky-dome that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

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

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

Two viewpoints were chosen to evaluate the daylight obstruction for the Existing and Proposed Conditions. Two area context points were considered to provide a basis of comparison to existing conditions in the surrounding area. The viewpoint and area context viewpoints were taken in the following locations and are shown in Figure 4.3-1.

---

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

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

105 West First Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 4.3-1
Viewpoint Location Map

- **Viewpoint 1:** View from West First Street facing southwest toward the Project Site.
- **Viewpoint 2:** View from West Second Street facing northeast toward the Project Site.
- **Area Context Viewpoint AC1:** View from Richards Street facing northeast toward One Channel Center.
- **Area Context Viewpoint AC2:** View from Medallion Avenue facing southeast toward the Channel Center Garage.

4.3.3 Results

The results for each viewpoint are described in Table 4.3-1. Figures 4.3-2 through 4.3-4 illustrate the BRADA results for each analysis.

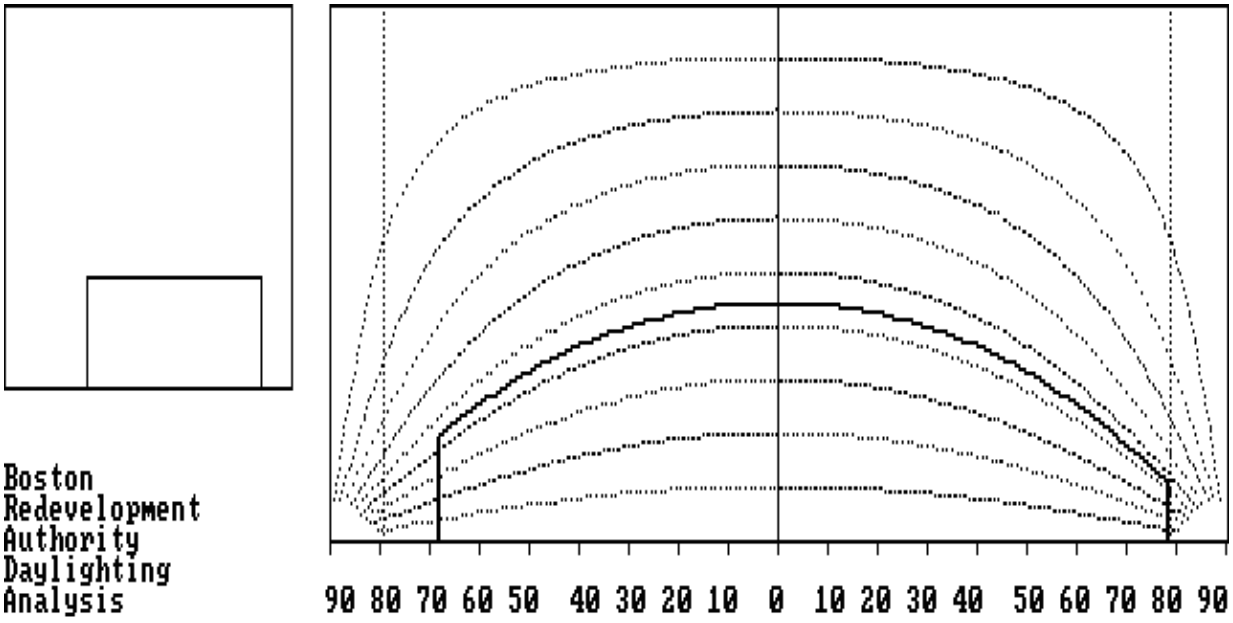
Table 4.3-1 Daylight Analysis Results

Viewpoint Locations		*Existing Conditions*	*Proposed Conditions*
Viewpoint 1	View from West First Street facing southwest toward the Project Site	41.5%	84.4%
Viewpoint 2	View from West Second Street facing northeast toward the Project Site	3.2%	85.3%
Area Context Points			
AC1	View from Richards Street facing northeast toward One Channel Center	87.0	N/A
AC2	View from Medallion Avenue facing southeast toward the Channel Center Garage	82.9	N/A

West First Street – Viewpoint 1

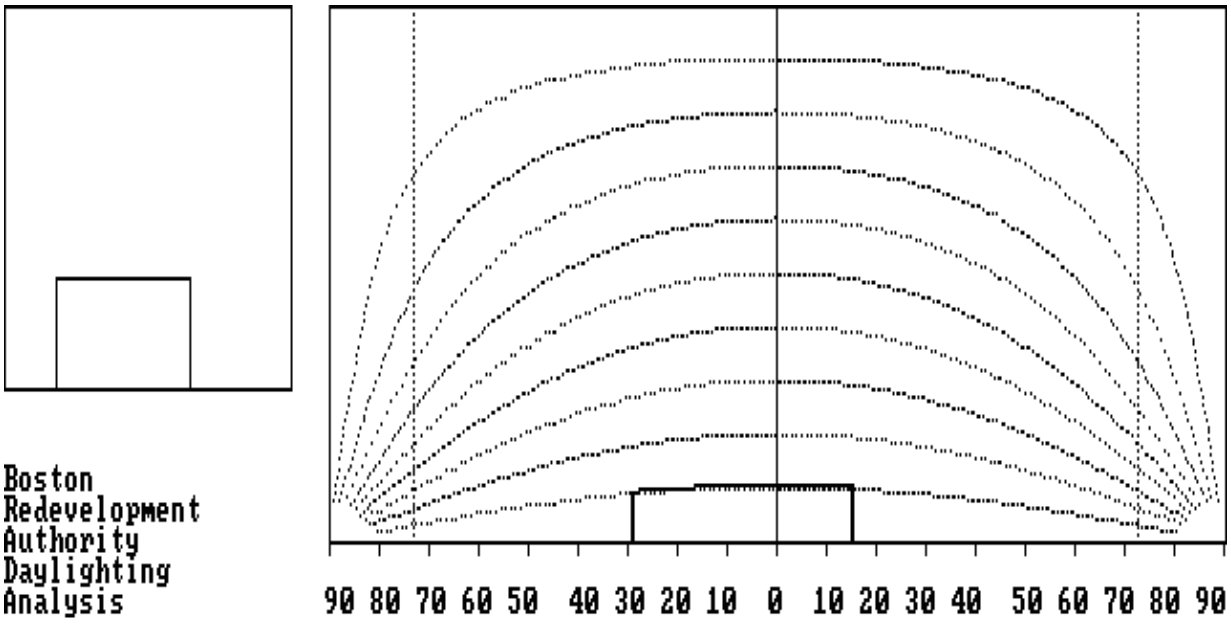
West First Street runs along the northeastern edge of the Project Site. Viewpoint 1 was taken from the center of West First Street facing southwest toward the Project Site. The Project Site has an existing daylight obstruction value of 41.5%. The development of the Project will increase the daylight obstruction value to 84.4%. While this is an increase over existing conditions, the daylight obstruction value is similar to other areas in the vicinity, including the Area Context viewpoints.

Viewpoint 1: View from West First Street facing southwest toward the Project Site



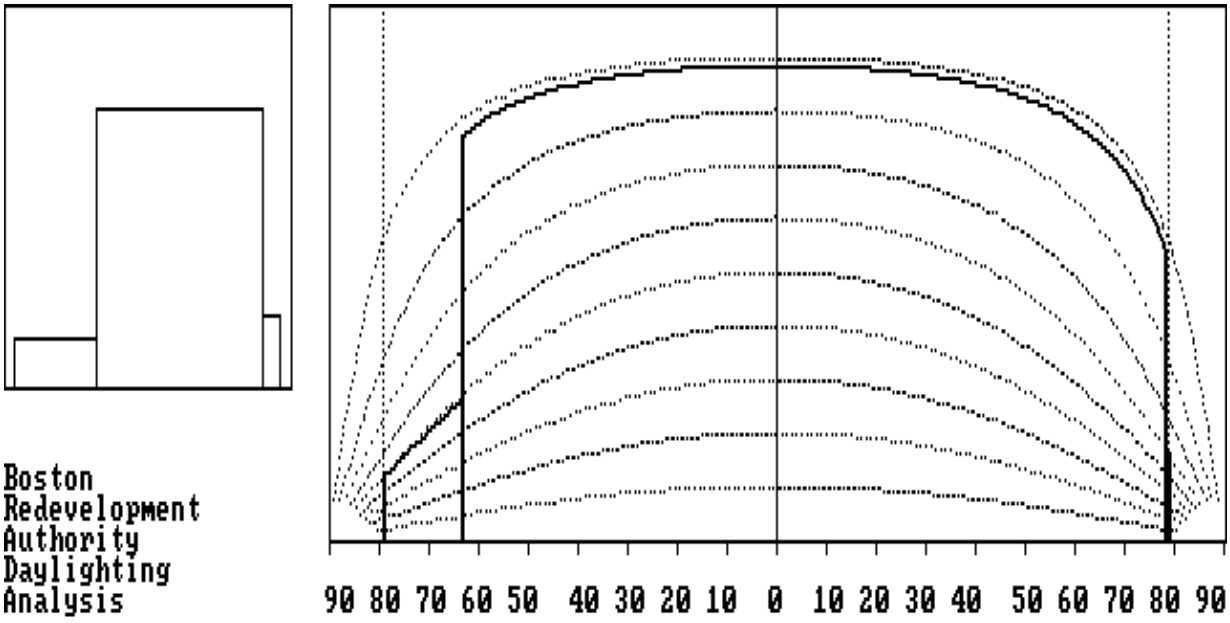
Obstruction of daylight by the building is 41.5 %

Viewpoint 2: View from West Second Street facing northeast toward the Project Site.



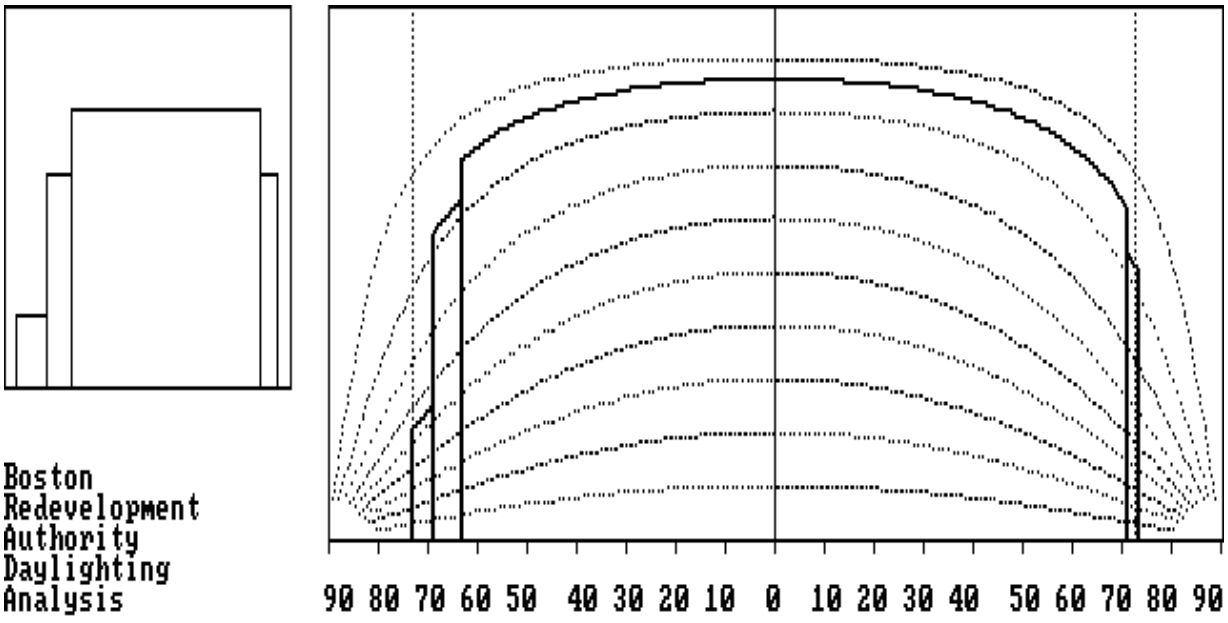
Obstruction of daylight by the building is 3.2 %

Viewpoint 1: View from West First Street facing southwest toward the Project Site



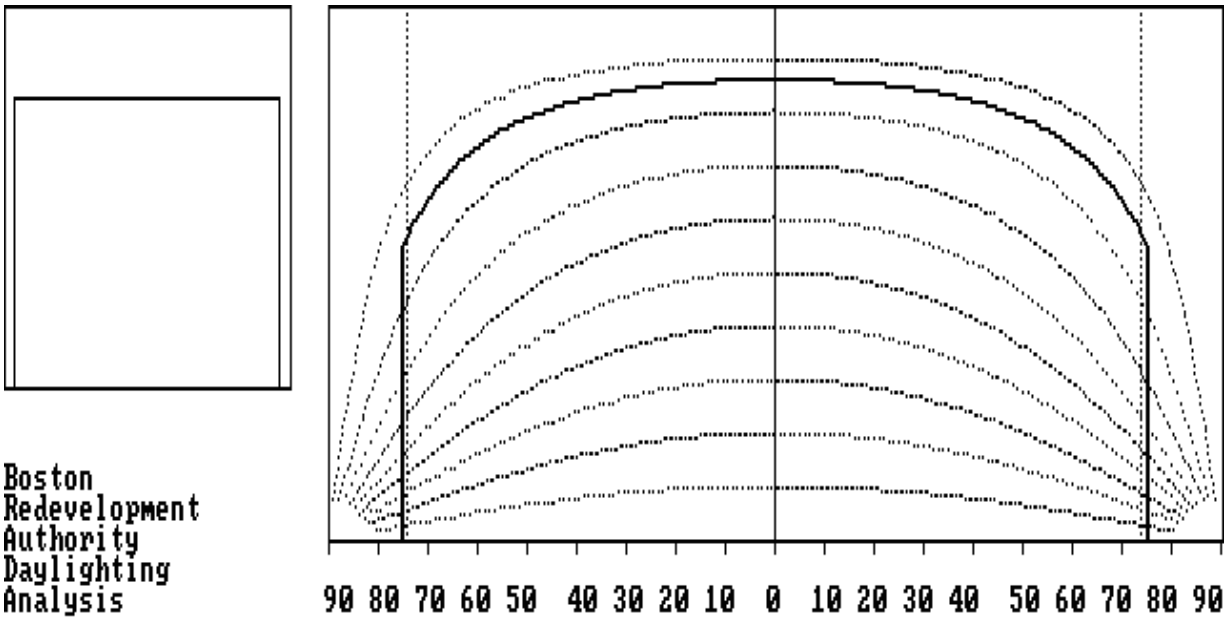
Obstruction of daylight by the building is 84.4 %

Viewpoint 2: View from West Second Street facing northeast toward the Project Site.



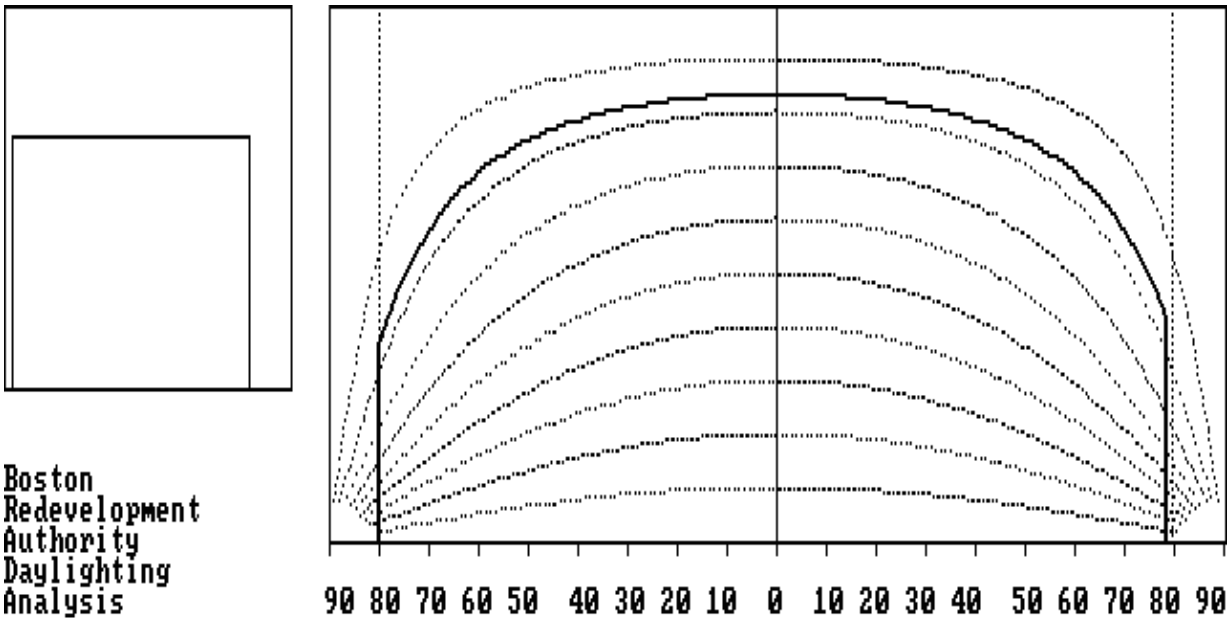
Obstruction of daylight by the building is 85.3 %

Area Context Viewpoint AC1: View from Richards Street facing northeast toward One Channel Center



Obstruction of daylight by the building is 87.0 %

Area Context Viewpoint AC2: View from Medallion Avenue facing southeast toward the Channel Center Garage



Obstruction of daylight by the building is 82.9 %

West Second Street – Viewpoint 2

West Second Street runs along the southwestern edge of the Project Site. Viewpoint 2 was taken from the center of West Second Street facing northeast toward the Project Site. The existing daylight obstruction value is minimal because a portion of the Project Site contains a surface parking lot. The development of the Project will increase the daylight obstruction value to 85.3%, similar to other areas in the vicinity, including the Area Context viewpoints.

Area Context Views

The surrounding area around the Project Site is densely populated, and proposed projects in the immediate vicinity of the Project Site will increase the density of the surrounding area. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for the two Area Context Viewpoints described above and shown in Figure 4.3-1. The daylight obstruction values ranged from 82.9% for AC2 to 87.0% for AC1. Daylight obstruction values for the Project Site vary, but are similar to buildings in the Project vicinity, including the Area Context values.

4.3.4 Conclusions

The daylight analysis conducted for the Project describes existing and proposed daylight obstruction conditions at the Project Site and in the surrounding area. The results of the BRADA analysis indicate that while the development of the Project will result in increased daylight obstruction over existing conditions, the resulting conditions will be similar to or lower than the daylight obstruction values within the surrounding area and typical of densely built urban areas.

4.4 Solar Glare

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

4.5 Air Quality Analysis

A qualitative air quality analysis has been conducted for the Project. Mobile sources do not meet the thresholds requiring a quantitative air quality analysis. Any new stationary sources will be reviewed by the Massachusetts Department of Environmental Protection (MassDEP) during permitting under the Environmental Results Program (ERP).

4.5.1 National Ambient Air Quality Standards and Background Concentrations

Background air quality concentrations and federal air quality standards were utilized to conduct the air quality impact analyses. Federal National Ambient Air Quality Standards (NAAQS) were developed by US Environmental Protection Agency (EPA) to protect the human health against adverse health effects with a margin of safety. The following sections outline the NAAQS standards and detail the sources of background air quality data.

4.5.2 National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the US Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), ozone (O_3), and lead (Pb). The NAAQS are listed in Table 4.5-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS.

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

A one-hour NO_2 standard was promulgated on January 22, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the hourly NO_2 NAAQS was published in the Federal Register on February 9, 2010 and became effective on April 12, 2010. The form of this standard is the three-year average of the 98th percentile of the daily maximum one-hour concentrations.

Similarly, a one-hour SO_2 standard was promulgated on June 2, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the hourly SO_2 NAAQS was published in the Federal Register on June 22, 2010 and became effective on August 23, 2010. The form of this standard is the three-year average of the 99th percentile of the daily maximum one-hour concentrations.

The inhalable particulate (PM10) NAAQS were promulgated on July 1, 1987 at the federal level with the intent of replacing the existing standards limiting ambient levels of Total Suspended Particulate (TSP). In 2006, the annual PM_{10} standard was revoked. However it remains codified in 310 CMR 6.00. EPA also promulgated a Fine Particulate ($PM_{2.5}$)

NAAQS, effective December 2006, with an annual standard of 15 micrograms per cubic meter ($\mu g/m^3$) and the 24-hour standard of 35 $\mu g/m^3$. The annual standard has since been strengthened to 12 $\mu g/m^3$ (in 2012).

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

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

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

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

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

The NAAQS consist of primary and secondary standards. Primary standards are intended to protect human health. Secondary standards are intended to protect public welfare from known or anticipated adverse effects associated with the presence of air pollutants, such as damage to property or vegetation. NAAQS have been developed for various durations of exposure. Massachusetts Ambient Air Quality Standards (MAAQS) are codified in 310 CMR 6.04, and generally follow the NAAQS but are not identical (highlighted in bold in Table 4.5-1.

4.5.3 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP in their Annual Air Quality Reports was obtained for 2013 to 2015. The 3-hour and 24-hour SO_2 values are no longer reported in the annual reports. Data for these pollutant and averaging time combinations were obtained from the U.S. EPA's AirData website.

The Clean Air Act allows for one exceedance per year of the CO and SO_2 short-term NAAQS per year. The highest second-high accounts for the one exceedance. Annual NAAQS are never to be exceeded. The 24-hour PM_{10} standard is not to be exceeded more than once per year on average over three years. To attain the 24-hour $PM_{2.5}$ standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 μg/m3. For annual PM-2.5 averages, the average of the highest yearly observations was used as the background concentration. A new 1-hr NO_2 standard was recently promulgated. To attain this standard, the 3-year average of the 98th percentile of the maximum daily 1-hour concentrations must not exceed 188 μg/m3.

Background concentrations were determined from the closest available monitoring stations to the proposed development. All pollutants are not monitored at every station, so data from multiple locations are necessary. The closest monitor is at East 1st Street in South Boston, roughly 0.8 miles east-southeast of the project location. However this site only samples for NO_2, and SO2. The next closest site is at 174 North Street in Boston, roughly 1.4 miles north of the project. This site samples for PM2.5 only. Finally, the remaining pollutants are measured at Harrison Avenue in Boston, roughly 1.8 miles south. A summary of the background air quality concentrations is presented in Table 4.5-2.

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

Pollutant	Averaging Time	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 (1)(6)	1-Hour (5)	36.7	73.4	24.6	44.9	196.0	23%
	3-Hour	42.7	63.7	22.8	63.7	1300.0	5%
	24-Hour	17.0	21.2	11.3	21.2	365.0	6%
	Annual	4.0	4.6	2.1	4.6	80.0	6%
PM-10	24-Hour	34	61.0	28.0	61.0	150.0	41%
	Annual	15.1	13.9	12.4	15.1	50.0	30%
PM-2.5	24-Hour (5)	19.9	14.5	16.8	17.1	35.0	49%
	Annual (5)	8.8	7.1	7.4	7.8	12.0	65%
NO_2 (3)	1-Hour (5)	88.4	116.6	99.6	101.5	188.0	54%
	Annual	22.9	26.3	28.1	28.1	100.0	28%

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

Pollutant	Averaging Time	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
CO (2)	1-Hour	2145.3	1963.1	1560.9	2145.3	40000.0	5%
	8-Hour	1375.2	1489.8	1031.4	1489.8	10000.0	15%
Ozone (4)	8-Hour	115.8	106.0	109.9	115.8	147.0	79%
Lead	Rolling 3-Month	0.006	0.014	0.016	0.016	0.15	10%

Notes:
From 2013-2015 EPA's AirData Website
(1) SO2 reported ppb. Converted to μg/m3 using factor of 1 ppm = 2.62 μg/m3.
(2) CO reported in ppm. Converted to μg/m3 using factor of 1 ppm = 1146 μg/m3.
(3) NO2 reported in ppb. Converted to μg/m3 using factor of 1 ppm = 1.88 μg/m3.
(4) O3 reported in ppm. Converted to μg/m3 using factor of 1 ppm = 1963 μg/m3.
(5) Background level is the average concentration of the three years.
(6) The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.
(7) The E. 1st St. monitor was closed in 2014. Harrison Avenue data used for 2015 SO2 and NO2.

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

4.5.4 Stationary Sources

Stationary sources of air pollution are typically units that combust fuel. In this case, these sources consist of heating and hot water units and emergency electrical generators. Cooling towers, although not a combustion source, are a source of particulate emissions.

4.5.4.1 Boilers

Building plans may include a number of small condensing boilers for heat and domestic hot water. Typical units will be natural gas-fired and located in a penthouse mechanical area on the roof of the building. The units are typically exhausted through individual stacks.

4.5.4.2 Emergency Generators

The Project will include a 500 kW emergency generator to be installed in the outdoor mechanical penthouse. The unit will provide life safety and standby emergency power. Typically, generators operate for approximately one hour each month for testing and general maintenance and as needed for emergency power. The unit will likely be diesel-fired. The generators are to be designed such that exhaust stacks extend at least 10 feet above the individual building roof height above ground level.

4.5.4.3 Cooling Towers

The Project also includes a 1370-ton 2-cell cooling tower to be installed in the outdoor mechanical penthouse. This unit will remove the excess heat generated by the building's mechanical equipment.

4.5.4.4 Parking Garage Exhausts

The below-grade parking will require mechanical ventilation with carbon monoxide sensors and activation. The garage exhaust fan is located on the first level, southeastern façade.

4.5.4.5 Permitting

It is expected that the majority of stationary sources (boilers, engines, etc) would be subject to the MassDEP's Environmental Results Program (ERP).

Boilers are expected to be within the requirements of the ERP since individual estimated heat inputs are within or below the 10 to 40 MMBtu/hour ERP range.

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

It is expected that any cogeneration units would also be subject to the MassDEP's ERP program for non-emergency engines and turbines if included in the final design.

4.5.5 Mobile Sources

Mobile sources of air pollution include emissions from vehicle traffic associated with the project.

4.5.5.1 BPDA Air Quality Analysis Requirements

BPDA guidelines[6] state:

> *A microscale analysis predicting localized carbon monoxide concentrations should be performed, including identification of any locations projected to exceed the National or Massachusetts Ambient Air Quality Standards, for projects in which: 1) project traffic would impact intersections or roadway links currently operating at*

[6] Boston Redevelopment Authority, BRA Development Review Guidelines, 2006

Level of Service ("LOS") D, E, or F or would cause LOS to decline to D, E, or F; 2) project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) the project will generate 3,000 or more new average daily trips on roadways providing access to a single location.

For this Project, none of the aforementioned criteria are met. Therefore a microscale analysis was not required.

BPDA guidelines also state:

A mesoscale analysis predicting the change in regional emissions of volatile organic compounds ("VOCs") and nitrogen oxides ("NOx") should be performed for projects that generate more than 10,000 vehicle trips per day. The above analyses shall be conducted in accordance with the modeling protocols established by the Massachusetts Department of Environmental Protection ("DEP") and the U.S. Environmental Protection Agency ("EPA").

Again, for this Project, the vehicle trip threshold is not exceeded. Therefore a mesoscale analysis was not required.

4.6 Stormwater/Water Quality

Please see Section 8.3.

4.7 Flood Hazard Zones/ Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM City of Boston - Community Panel Number 250250083J indicates the FEMA Flood Zone Designations for the Project Site. The map shows that the Project Site is located in Zone AE or "Areas subject to inundation by the 1-percent-annual-chance flood event." The Zone AE flood elevation is at 10 feet, which converts to 16.46 Boston City Base (BCB). As discussed in Chapter 5, the design of the Project and the Project Site will recognize and account for the Project Site's location, its proximity to the Fort Point Channel, and within this newly designated flood zone, as well as the potential impacts of sea-level rise. The Proponent's goal is to create a building that will be climate resilient.

The Project Site does not contain wetlands.

4.8 Geotechnical Impacts

This section describes existing site conditions, subsurface soil and groundwater conditions, and planned foundation construction for the Project.

4.8.1 Existing Site Conditions

The Project Site consists of a commercial property located on two contiguous parcels of land in the South Boston neighborhood of Boston. The larger parcel is approximately 36,572 square feet and is occupied by an asphalt paved parking lot, a berm, retaining wall, and a three-story concrete block building used by RCN as a warehouse with related office space, and a basement space for equipment repair and telecommunications operations. The smaller parcel is approximately 5,647 square feet in size and consists of a paved parking lot entrance, a gravel parking area and an earthen embankment sloping up to adjacent streets.

4.8.2 Subsurface Soil and Bedrock Conditions

Site and subsurface conditions at the Project Site are based on results of test boring explorations completed at adjacent properties in recent years. Subsurface conditions generally indicate the following sequence of subsurface units in order of increasing depth below ground surface. One or more of the soil (overburden) units may be absent at any specific location.

Table 4.8-1 Subsurface Soil and Bedrock Conditions

Stratum/Subsurface Unit	Top of Stratum Elevation (BCB)	Estimated Thickness (ft)
Fill Soils	Ground Surface	7 to 14
Organic Deposits	El. 2	7
Marine Deposits (Sand/Clay)	El. -5	15
Glacial Deposits	El. -20	25
Bedrock	El. -45	N/A

4.8.3 Groundwater

The elevation of the groundwater across the Project Site is anticipated at about El. 6 BCB. In general, groundwater levels at and near the Project Site could be influenced by leakage into and out of sewers, storm drains, water utilities, and other below-grade structures, and environmental factors such as precipitation, season, and temperature.

The Project Site is located outside the limits of the Groundwater Conservation Overlay District (GCOD). Accordingly, the Project is not required to comply with the requirements of Article 32 of the Boston Zoning Code. The Project will comply however, with the groundwater conservation policies of the Boston Water and Sewer Commission.

4.8.4 Proposed Foundation Construction

Development of the Project Site will require demolition of the existing building prior to installation of foundations. The Project is anticipated to be supported on pile foundations driven to the top of the Glacial Till deposit. A temporary excavation support system will likely be required along West Second Street during construction to facilitate excavation and protect the adjacent sidewalk, roadway, and bridge abutment, and appropriate approvals will be obtained from the City's Public Improvement Commission, to the extent required.

4.8.5 Vibration Monitoring

Vibration monitoring will be conducted at the perimeter of the site during demolition activities and at other times during construction depending on the type of activity underway at the site. In addition, prior to construction, a preconstruction condition survey of the adjacent buildings will be conducted to observe and document the preconstruction conditions of the buildings. A groundwater monitoring program of observation wells located on and in the vicinity of the site will also be conducted prior to and during construction to document groundwater levels.

4.9 Solid and Hazardous Waste

4.9.1 Hazardous Waste

A Phase I Environmental Site Assessment was conducted at the Project Site in October 2016 using methods consistent with ASTM E1527-05.

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

4.9.2 Operation Solid and Hazardous Waste Generation

The Project will generate solid waste typical of office, research and development and retail uses. Solid waste is expected to include wastepaper, cardboard, glass bottles and food. Recyclable materials will be recycled through a program implemented by building management. The Project will generate approximately 363 tons of solid waste per year.

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

4.9.3 Recycling

A dedicated recyclables storage and collection program will facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills. The recycling program will be fully developed in accordance with LEED standards as described in Chapter 5.

4.10 Noise Impacts

4.10.1 Introduction

A sound level assessment was conducted which included a baseline sound monitoring program to measure existing sound levels in the vicinity of the Project, computer modeling to predict operational sound levels from proposed mechanical equipment, and a comparison of future Project sound levels to applicable City of Boston Zoning District Noise Regulations.

This analysis, which is consistent with BPDA requirements for noise studies, indicates that with appropriate noise controls, predicted sound levels from the Project will comply with local noise regulations.

4.10.2 Noise Terminology

There are several ways in which sound (noise) levels are measured and quantified, all of which use the logarithmic decibel (dB) scale. The following section defines the noise terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities observed in the environment. A property of the decibel scale is that the sound pressure levels of two distinct sounds are not purely additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (53 dB), not a doubling (100 dB). Thus, every three-decibel change in sound level represents a doubling or halving of sound energy. A change in sound level of less than three dB is generally imperceptible to the human ear.

Another mathematical property of the decibel scale is that if one source of noise is 10 dB (or more) louder than another source, then the total combined sound level is simply that of the louder source (i.e., the quieter source contributes negligibly to the overall sound level). For example, a source of sound at 60 dB plus another source at 47 dB is 60 dB.

A sound level meter (SLM) that is used to measure noise is a standardized instrument.[7] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. The most commonly used weighting network is the A-weighting (there are also C- and Z-weighting networks) because it most closely approximates how the human ear responds to sound at various frequencies. Frequencies, reported in Hertz (Hz), are the detailed components of sound. The A-weighting network is the accepted scale used for community sound level measurements and sounds are frequently reported as detected with a sound level meter with this weighting. A-weighted sound levels emphasize middle frequency sounds (*i.e.,* middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. A-weighted sound levels are reported in decibels designated as "dBA".

Because sounds in the environment vary with time, they are usually described with more than simply a single number. Two methods are used for describing variable sounds, exceedance levels and the equivalent level, both of which are derived from a large number of moment-to-moment, A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100 in terms of percentage. Several sound level metrics that are commonly reported in community noise studies are described below.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.

- L_{50} is the median sound level, the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles.

- L_{max} is the maximum instantaneous sound level observed over a given period.

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[7] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud, intrusive noises.

In the design of noise controls, which do not function quite like the human ear, it is important to understand the frequency spectrum of the noise source of interest. The spectra of noises are usually stated in terms of octave-band sound pressure levels, in dB, with the frequency bands being those established by standard (American National Standards Institute [ANSI] S1.11, 1986). To facilitate the noise control design process, the estimates of noise levels in this analysis are also presented in terms of octave-band sound pressure levels. Octave-band measurements and modeling are used in assessing compliance with the City of Boston noise regulations.

4.10.3 Noise Regulations and Criteria

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

Table 4.10-1 below presents the "Zoning District Noise Standards" contained in Regulation 2.5 of the BAPCC "Regulations for the Control of Noise in the City of Boston," adopted December 17, 1976. These maximum allowable sound pressure levels apply at the property line of the receiving property. The "Residential Zoning District" limits apply to any lot located within a residential zoning district or to any residential use located in another zone except an Industrial Zoning District, according to Regulation 2.2. Similarly, per Regulation 2.3, business limits apply to any lot located within a business zoning district not in residential or institutional use. Per Regulation 2.4, City of Boston industrial noise limits apply to any business lot located within an industrial zoning district, such as the Project Site.

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

Octave-band Center	Residential Zoning District		Residential Industrial Zoning District		Business Zoning District	Industrial Zoning District
Frequency (Hz)	Daytime (dB)	All Other Times (dB)	Daytime (dB)	All Other Times (dB)	Anytime (dB)	Anytime (dB)
32	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	**60**	**50**	**65**	**55**	**65**	**70**

Notes:
1. Noise standards from Regulation 2.5 "Zoning District Noise Standards", City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976.
2. All standards apply at the property line of the receiving property.
3. dB and dBA based on a reference pressure of 20 micropascals.
4. Daytime refers to the period between 7:00 a.m. and 6:00 p.m. daily, except Sunday.

4.10.4 Existing Conditions

A background noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project. Existing noise sources in the vicinity of the Project Site include: vehicle and truck traffic along local streets and the nearby South Boston Bypass Road, mechanical equipment at the Gillette South Boston Manufacturing Center, pedestrian foot traffic, overhead planes, birds, rustling vegetation, daytime construction, and the general city soundscape.

4.10.4.1 Noise Monitoring Methodology

Since noise impacts from the Project on the community will be highest when baseline noise levels are the lowest, the study was designed to measure community noise levels under conditions typical of "quiet periods" for the area. Daytime measurements were scheduled to avoid peak traffic conditions. Sound level measurements were made on Thursday, December 8, 2016 during the daytime (11:30 a.m. to 1:30 p.m.) and on Friday, December 9, 2016 during nighttime hours (12:00 a.m. to 2:00 a.m.). All measurements were 20 minutes in duration.

Sound levels were measured at publicly accessible locations at a height of five feet (1.5 meters) above ground level, under low wind conditions, and with dry roadway surfaces. Wind speed measurements were made with a Davis Instruments TurboMeter electronic

wind speed indicator, and temperature and humidity measurements were made using a General Tools digital psychrometer. Unofficial observations about meteorology and land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the Project Site.

4.10.4.2 Noise Monitoring Locations

The selection of the noise monitoring locations was based upon a review of zoning and land use in the Project area. Four noise monitoring locations were selected as representative sites to obtain a sampling of the ambient baseline noise environment. These measurement locations are depicted on Figure 4.10-1 and described below.

- **Location 1** is located at the intersection of West First Street and B Street, east of the Project site and the nearby South Boston Bypass Road. This location is representative of the closest residential receptors to the east of the Project.

- **Location 2** is located along West Second Street alongside the Spice Lofts condominium building to the southeast of the Project Site and east of the South Boston Bypass Road. This location is representative of the closest residential receptors to the southeast of the Project, as well as residential receptors closest to the South Boston Bypass Road.

- **Location 3** is located along West Second Street near the property line of Artists For Humanity, adjacent to the southwestern side of the Project Site. This location is representative of business and residential receptors in the southern vicinity of the Project.

- **Location 4** is located at the southern border of A Street Park, along West First Street and east of A Street. This location is representative of commercial and industrial receptors north of the Project as well as A Street Park.

4.10.4.3 Noise Monitoring Equipment

A Larson Davis Model 831 sound level meter equipped with a PCB PRM831 preamplifier, a PCB 377B20 half-inch microphone, and manufacturer-provided windscreen was used to collect baseline sound pressure level data. This instrumentation meets the "Type 1 - Precision" requirements set forth in ANSI S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the surveys with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. Statistical descriptors (e.g., L_{eq}, L_{90}, etc.) were measured for each 20-minute sampling period, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

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

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Figure 4.10-1

Noise Measurement Locations

4.10.4.4 Measured Background Noise Levels

Baseline noise monitoring results are presented in Table 4.10-2 and summarized below:

- The daytime residual background (L_{90}) measurements ranged from 56 to 57 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 51 to 53 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 61 to 65 dBA;
- The nighttime equivalent level (L_{eq}) measurements ranged from 56 to 63 dBA.

Table 4.10-2 Summary of Measured Background Noise Levels – December 8, 2016 (Daytime) & December 9, 2016 (Nighttime)

Location	Period	Start Time	LA_{eq}	LA_{max}	LA_{10}	LA_{50}	LA_{90}	L_{90} Sound Pressure Level by Octave-Band Center Frequency (Hz)								
								31.5	63	125	250	500	1k	2k	4k	8k
			dBA	dBA	dBA	dBA	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
ST-1	Day	11:29 AM	65	80	68	62	57	66	64	60	54	53	54	47	37	23
ST-2	Day	12:08 PM	65	83	67	61	56	64	61	59	55	52	52	45	34	22
ST-3	Day	12:38 PM	65	87	68	61	57	64	63	61	56	54	53	46	36	25
ST-4	Day	1:11 PM	61	73	64	60	57	66	63	59	57	54	53	48	36	24
ST-1	Night	12:14 AM	57	71	61	54	53	61	59	55	53	51	48	37	25	20
ST-2	Night	12:41 AM	58	79	59	53	51	59	58	55	53	49	46	36	25	19
ST-3	Night	1:21 AM	56	72	59	53	51	58	61	57	53	49	46	36	25	18
ST-4	Night	1:49 AM	63	81	64	55	53	62	61	58	54	51	46	41	27	18

Note: Sound pressure levels are rounded to the nearest whole decibel.

Weather Conditions:

	Date	Temp	RH	Sky	Wind
Daytime	Thursday, December 8, 2016	45 °F	50%	Overcast	W @ 0-3 mph
Nighttime	Friday, December 9, 2016	33°F	43%	Clear	W @ 4-6 mph

Monitoring Equipment Used:

	Manufacturer	Model	S/N
Sound Level Meter	Larson Davis	LD831	2154
Microphone	Larson Davis	377B20	112245
Preamp	Larson Davis	PRM831	016477
Calibrator	Larson Davis	Cal200	7146

4.10.5 Future Conditions

4.10.5.1 Overview of Potential Project Noise Sources

The primary sources of continuous sound exterior to the Project will consist of ventilation, heating, cooling, and emergency power noise sources. Multiple noise sources will be located in an outdoor rooftop mechanical penthouse and one source (i.e., exhaust fan) will be located on the southeastern façade of the Project at the first floor level. An enclosed rooftop mechanical penthouse will contain additional mechanical equipment that was considered to have negligible contribution to exterior sound levels as compared to the outdoor equipment.

Table 4.10-3 provides an anticipated list of the major sources of sound. Sound power levels used in the acoustical modeling of each piece of equipment are presented in Table 4.10-4. Sound power level data were provided by the respective manufacturer of each piece of equipment except for the emergency generator. The sound power levels for the emergency generator were calculated using the sound pressure levels at a reference distance provided by the manufacturer.

The Project includes various noise-control measures that are necessary to achieve compliance with the applicable noise regulations. As the design progresses, specifications for mechanical equipment may change; however, appropriate measures will be taken to ensure compliance with the City Noise Standards. The garage exhaust fan is expected to be attenuated through an acoustical louver[8]. Sound levels from two Energy Recovery Units (ERU's) and a 2-cell cooling tower will be mitigated by a 16-foot high noise barrier wall with a 30-foot-length segment starting from the southeast corner of the enclosed mechanical penthouse to the southeast corner of the outdoor mechanical penthouse, a 120-foot-length segment from the southeast corner of the outdoor penthouse to the southwest corner of the outdoor penthouse, a 30-foot-length segment from the southwest corner of the outdoor penthouse following the west edge of the outdoor penthouse, and a 30-foot-length segment connecting to the southwest corner of the enclosed penthouse. Furthermore, the two ERU's will be mitigated either through a sound mitigation package supplied by the vendor or through the selection of quieter equipment from the same or alternate manufacturer. The emergency generator mechanical and exhaust sound levels will be controlled using an enclosure and exhaust silencer, respectively, as specified by the Proponent. A summary of the noise mitigation proposed for the Project is presented in Table 4.10-5.

[8] The garage fan was conservatively modeled at the building façade. The actual location of the garage fan will likely be within the parking area and exhausted via ductwork to the eastern façade of the building. Acoustical duct losses may effectively reduce sound levels from the fan such that an acoustical louver is not required.

To further limit impacts from the emergency generator, required periodic, routine testing will be conducted during daytime hours, when background sound levels are highest.

Table 4.10-3 Modeled Noise Sources

Noise Source	Quantity	Approximate Location	Size/Capacity
Energy Recovery Unit (ERU)	2	Outdoor Mechanical Penthouse (115′ tier)	40,000 CFM
Cooling Tower (2-cell)	1	Outdoor Mechanical Penthouse (115′ tier)	1370-ton
Emergency Generator	1	Outdoor Mechanical Penthouse (115′ tier)	500 kW
Garage Exhaust Fan	1	First level southeastern façade	14,000 CFM

Table 4.10-4 Modeled Sound Power Levels per Noise Source

Noise Source	Broadband (dBA)	Sound Level (dB) per Octave-Band Center Frequency (Hz) 31.5	63	125	250	500	1k	2k	4k	8k
Energy Recovery Unit (ERU)[1]	108	100[5]	100	104	108	107	103	97	92	88
Cooling Tower (2-cell)[2]	96	102[5]	102	97	96	92	91	89	83	76
Emergency Generator (Mechanical-Unenclosed)[3]	121	118[5]	118	111	114	114	115	113	109	116
Emergency Generator (Exhaust-Unsilenced)[3]	133	134[5]	134	141	136	129	125	121	116	107
Garage Exhaust Fan[4]	90	91[5]	91	95	95	94	82	79	74	70

Notes: Sound power levels do not include mitigation identified in Table 4.10-5.

1. Innovent 40,000 CFM unit. Sound levels include Radiated Supply Fan Array Outlet and Radiated Exhaust Fan Array Outlet sound power data, excluding ERU compressor noise. .
2. Marley NC Steel 1370-ton, 2-cell unit.
3. CAT C15 500kW unit at 100% load. Sound power levels were calculated from sound pressure levels.
4. Greenheck BSQ-300-100, 14,000 CFM fan.
5. No data provided by manufacturer. Octave-band sound level assumed to be equal to the 63 Hz band level.

Table 4.10-5 Attenuation Values Applied to Mitigate Each Noise Source

Noise Source	Form of Mitigation	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
ERU (each)	Alternative/Modified Unit[1]	0	0	0	0	2	2	3	2	1
Garage Exhaust Fan	Louver[2]	0	5	7	11	12	13	14	12	9
Emergency Generator (Mechanical)	Enclosure[3]	2	4	9	17	17	17	17	17	17
Emergency Generator (Exhaust)	Silencer[4]	13	27	37	35	32	28	28	28	29

Notes:

1. The Proponent will consult with the manufacturer to identify mitigation options to achieve the minimum attenuation values presented or select a unit from an alternate manufacturer meeting the mitigated modeled sound levels.
2. Assumed IAC Noishield™ Model R 12″ Acoustical Louver.
3. Proposed CAT C15 Sound Attenuated Enclosure to achieve 72 dBA sound pressure level at 50 ft. at 100% load. Octave-band attenuation levels are estimated such that 72 dBA at 50 ft. is met.
4. Proposed Maxim 14″ M51 Exhaust Silencer.

4.10.5.2 Noise Modeling Methodology

The noise impacts associated with the Project were predicted at the nearest and most representative receptors using the CadnaA noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefit of this software is a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave-band calculation of noise from multiple noise sources, as well as computation of diffraction around building edges.

4.10.5.3 Future Sound Levels - Nighttime

The analysis of sound levels at night considered all of the mechanical equipment without the emergency generator running to simulate typical nighttime operation conditions at nearby receptors. Seven modeling locations were included in the analysis. Locations A through D are identical to measurement Locations 1 through 4, respectively. Three additional modeling locations, E through G, were added for additional residential uses in the vicinity of the Project Site. The modeling receptors, which correspond to residential and business uses in the community, are depicted in Figure 4.10-2. The predicted exterior Project-only sound levels range from 43 to 47 dBA at nearby receptors. The City of Boston residential and industrial zone limits have been applied to the appropriate locations.

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Figure 4.10-2

Noise Modeling Locations

Predicted sound levels from Project-related equipment are within the broadband and octave-band nighttime limits under the City Noise Standards at each of the modeling locations. The evaluation is presented in Table 4.10-6.

Table 4.10-6 Comparison of Future Predicted Project-Only Nighttime Sound Levels to the City of Boston Limits

Modeling Location ID	Zoning / Land Use	Broad-band (dBA)	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
			31.5	63	125	250	500	1k	2k	4k	8k
A	Residential	45	50	49	50	50	43	37	29	22	10
B	Residential	47	57	54	54	52	44	38	31	26	20
C	Industrial (Business Use)	45	53	49	48	48	44	39	32	26	18
D	Industrial (Business Use)	44	50	46	44	48	43	38	30	23	13
E	Residential	43	50	47	48	48	42	35	28	21	8
F	Residential in Industrial	47	49	48	49	51	46	39	29	19	1
G	Residential	46	48	47	48	50	45	39	29	18	0
City of Boston Limits	**Residential**	**50**	**68**	**67**	**61**	**52**	**46**	**40**	**33**	**28**	**26**
	Residential in Industrial	**55**	**72**	**71**	**65**	**57**	**51**	**45**	**39**	**34**	**32**
	Industrial	**70**	**83**	**82**	**77**	**73**	**67**	**61**	**57**	**53**	**50**

4.10.5.4 Future Sound Levels - Daytime

As noted above, the emergency generator will only operate during the day for brief, routine testing when the baseline sound levels are high, or during an interruption of power from the electrical grid. A second analysis combined noise from the Project's mechanical equipment and its emergency generator to reflect worst-case conditions. The sound levels were calculated at the same receptors as in the nighttime analysis, and then were evaluated against applicable daytime limits. The predicted exterior Project-only daytime sound levels range from 44 to 51 dBA at nearby receptors. Predicted sound levels from Project-related equipment are within the daytime broadband and octave-band limits under the City Noise Standards at each of the modeling locations. This evaluation is presented in Table 4.10-7.

Table 4.10-7 Comparison of Future Predicted Project-Only Daytime Sound Levels to City Noise Standards

Modeling Location ID	Zoning / Land Use	Broad-band (dBA)	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
			31.5	63	125	250	500	1k	2k	4k	8k
A	Residential	45	60	53	51	50	43	37	30	22	12
B	Residential	47	64	57	55	52	44	38	32	26	21
C	Industrial (Business Use)	46	69	60	50	49	44	40	34	28	27
D	Industrial (Business Use)	50	68	60	53	50	46	46	42	34	28
E	Residential	44	60	51	48	48	42	36	28	21	9
F	Residential in Industrial	51	67	60	53	52	48	47	43	34	26
G	Residential	46	60	53	49	50	45	39	29	19	2
City of Boston Limits	**Residential**	**60**	**76**	**75**	**69**	**62**	**56**	**50**	**45**	**40**	**38**
	Residential in Industrial	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**
	Industrial	**70**	**83**	**82**	**77**	**73**	**67**	**61**	**57**	**53**	**50**

4.10.6 Conclusions

Baseline noise levels were measured in the vicinity of the Project during the day and at night. At these and additional locations, future Project-only sound levels were calculated based on information provided by the manufacturers of the anticipated mechanical equipment or by consulting assumptions. Project-only sound levels were compared to applicable limits.

Predicted mechanical equipment noise levels from the proposed Project at each receptor location, taking into account attenuation due to distance, structures, and noise-control measures, will be at or below the octave-band requirements of the City Noise Standards. The predicted sound levels from Project-related equipment, as modeled, are expected to remain below 50 dBA at residences during nighttime operation conditions; therefore, are within the nighttime residential zoning limits for the City of Boston at the nearest residential receptors. Additionally, the predicted sound levels are expected to remain below 55 dBA at residences in industrial zoning districts during nighttime operation conditions; therefore, are within the nighttime residential-in-industrial zoning limits for the City of Boston at the nearest residential receptors. The results indicate that the Project can operate without significant impact on the existing acoustical environment; increases to the existing ambient sound levels in the community will be between zero and three decibels which is at the threshold of perceptibility.

At this time, while the mechanical equipment and noise controls have been refined, they are still conceptual in nature. During the final design phase of the Project, mechanical equipment and noise controls will be specified and designed to meet the applicable broadband limit and the corresponding octave-band limits of the City Noise Standards.

4.11 Construction Impacts

4.11.1 Introduction

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

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

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

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

4.11.2 Construction Methodology/Public Safety

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

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

4.11.3 Construction Schedule

The Proponent anticipates that the Project will commence construction in following vacation of the Project Site by the existing tenant and last for approximately 22 months.

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

4.11.4 Construction Staging/Access

Access to the Project Site and construction staging areas will be detailed in the CMP.

Although specific construction and staging details have not been finalized, the Proponent and its construction management consultant will work to ensure that staging areas will be located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the site. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

4.11.5 Construction Mitigation

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

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

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

4.11.6 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary. It is anticipated that approximately 300 construction jobs will be created over the length of construction. The Proponent will require its construction manager for the Project to make reasonable

good-faith efforts to have at least 50% of the total employee work hours be for Boston residents, at least 25% of total employee work hours be for minorities and at least 10% of the total employee work hours be for women. The Proponent will enter into a Boston Residents Construction Employment Plan with the BPDA with respect to the Project.

To reduce vehicle trips to and from the construction site, minimal construction worker parking will be available at the site and all workers will be strongly encouraged to use public transportation and ridesharing options. The construction manager will be required to work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space on-site will be made available for workers' supplies and tools so they do not have to be brought to the site each day.

4.11.7 Construction Truck Routes and Deliveries

Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMP. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity.

"No Idling" signs will be included at the loading and delivery area of the Project.

4.11.8 Construction Air Quality

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

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;

- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

4.11.9 Construction Noise

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

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

4.11.10 Construction Vibration

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

4.11.11 Construction Waste

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

4.11.12 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with applicable MWRA, BWSC, City of Boston, Dig Safe, and governing utility company requirements. All necessary permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its site plan review process.

4.11.13 Rodent Control

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

4.11.14 Wildlife Habitat

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

Chapter 5.0

Sustainable Design and Climate Change Preparedness

5.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE PREPAREDNESS

5.1 Sustainable Design

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

To measure the results of their sustainability initiatives and to comply with Article 37, the Proponent intends to use the framework of the Leadership in Energy and Environmental Design (LEED) rating system promulgated by the US Green Building Council (USGBC). Although the Project is pursuing a formal certification using the LEED for Core and Shell Version 3, the Project will use version 4 (LEED v4 for BD+C: Core and Shell) as the rating system to demonstrate compliance with Article 37. The LEED rating system tracks the sustainable features of a project by achieving points in the following categories: Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation and Design Process and Regional Priority Credits.

A LEED checklist is included at the end of this section, and the narrative below outlines how the Project intends to achieve the prerequisites and credits for each credit category. This checklist is preliminary, and will be updated regularly as the design develops and engineering assumptions are substantiated. At present, 47 points have been targeted. Additional credits, identified as "Maybe" on the checklist, will be evaluated as the design progresses.

Integrative Process

The Integrative Process credit goes beyond checklists and encourages integration during early design stages, when clarifying the owner's aspirations, performance goals, and project needs will be most effective in improving performance. An integrative process will be performed on the Project.

Location and Transportation

The Location and Transportation credit category encourages development on previously developed land, minimizing a building's impact on ecosystems and waterways, regionally appropriate landscaping, and smart transportation choices.

The Project Site has been previously developed, earning sensitive land protection. The site is also located on a brownfield where soil or groundwater contamination has been identified, and where the local, state, or national authority (whichever has jurisdiction) requires its remediation. The Proponent will perform remediation to the satisfaction of that authority.

The site is in an area with surrounding existing density within a ¼-mile (400-meter) radius of the Project boundary and provides dozens of amenities within 0.5 mile of the Project Site.

The Project provides access to quality transit, and is within 0.2 miles from the Red Line and within 0.2 miles of three separate bus lines. The Project will provide bicycle facilities and showers for the occupants of the building along with bicycle parking spots for visitors, far exceeding the LEED requirement. The Project is also providing electric vehicle charging stations. These spaces will be identified and reserved for the sole use by plug-in electric vehicles.

Sustainable Sites

The development of sustainable sites is at the core of sustainable design. Stormwater runoff management, and reduction of erosion, light pollution, heat island effect, and pollution related to construction and site maintenance are critical to lessening the impact of development.

The Project will create and implement an erosion and sedimentation control plan for all construction activities associated with the Project. The plan will conform to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent.

The Project will complete and document a site survey or assessment that will demonstrate the relationships between the site features and topics: Topography, Hydrology, Climate, Vegetation, Soils, Human use.

The Project is will place all parking spaces under an SRI compliant roof. The Project will evaluate compliance with light pollution reduction form the building and the site lighting.

Tenant Guidelines will be provided for the occupants. These will provide a description of the sustainable design and construction features incorporated in the core and shell Project and the Project's sustainability goals and objectives, including those for tenant spaces; recommendations, including examples, for sustainable strategies, products, materials, and services; and information that enables a tenant to coordinate space design and construction with the building systems when pursuing LEED v4 for Commercial Interiors prerequisites and credits.

Water Efficiency

Buildings are major users of our potable water supply and conservation of water preserves a natural resource while reducing the amount of energy and chemicals used for sewage treatment. The goal of the Water Efficiency credit category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside. To satisfy the requirements of the Water Use Reduction Prerequisite and credit, the Project will incorporate water conservation strategies that include low flow plumbing fixtures for water closets and faucets. The landscape will be designed so it will not require a permanent irrigation system, with plant material that is native and adaptive.

The Project is targeting a minimum 30% indoor water use reduction from the baseline. All newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling will have the Water Sense label.

The Project will install permanent water meters that measure the total potable water use for the building and associated grounds in addition to water meters for two or more of the following water subsystems, as applicable to the Project: irrigation, indoor plumbing fixtures and fittings, domestic hot water, boiler. Metering data will be compiled into monthly and annual summaries; and the resulting whole-project water usage data will be shared with USGBC.

The Project will evaluate the ability to conserve water used for cooling tower makeup while controlling microbes, corrosion, and scale in the condenser water system.

Energy and Atmosphere

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

Fundamental Commissioning and Enhanced Commissioning will be pursued for the Project. Envelope commissioning will also be evaluated as an alternative.

A whole-building energy simulation will be performed for the Project, demonstrating a minimum improvement of 5% for new construction according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata. The team will analyze efficiency measures during the design process and account for the results in design decision making. The team will use energy simulation of efficiency opportunities, past energy simulation analyses for similar buildings.

The Project will install new or use existing building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc).

The Project will not use chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems.

Meters will be installed for future tenant spaces so that tenants will be capable of independently metering energy consumption (electricity, chilled water, etc.) for all systems dedicated to their space.

The Project is considering a Demand Response (DR) program with the capability for real-time, fully-automated DR based on external initiation by a DR Program Provider.

The Project will evaluate renewable energy production, and if solar is not yet feasible, the building will be solar ready.

The Project will select refrigerants that are used in heating, ventilating, air-conditioning, and refrigeration (HVAC&R) equipment to minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change. The Project will perform the calculations once systems are selected.

The Project will also consider engaging in a contract for 50% or 100% of the Project's energy to be from green power, carbon offsets, or renewable energy certificates (RECs).

Materials and Resources

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

The Project will provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials will include mixed paper, corrugated cardboard, glass, plastics, and metals. The Project will also take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

The Project will develop and implement a construction and demolition waste management plan that will identifying at least five materials (both structural and nonstructural) targeted for diversion. The Project will divert at least 75% of the total construction and demolition material; diverted materials must include at least four material streams. The Project will also consider completing a life-cycle assessment.

Careful material selection will be performed for the Project. Where possible the Project hopes to integrate products that have Environmental Product Declarations (EPD), sourcing of raw materials and corporate sustainability reporting, and Material Ingredients disclosures.

Indoor Environmental Quality

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

The Project will meet the minimum requirements of ASHRAE Standard 62.1–2010, Sections 4–7, Ventilation for Acceptable Indoor Air Quality (with errata), or a local equivalent, whichever is more stringent.

The Project will provide enhanced indoor air quality strategies. The Project will provide entryway systems, interior cross-contamination prevention and filtration.

The Project will target low emitting materials for all materials within the building interior, defined as everything within the waterproofing membrane. This includes requirements for product manufacturing volatile organic compound (VOC) emissions in the indoor air and the VOC content of materials.

The Project will develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building, meeting or exceeding all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3. The Project will protect absorptive materials stored on-site and installed from moisture damage.

The Project will prohibit the use of all tobacco products inside the building and within 25 feet (8 meters) of the building entrance during construction.

Daylight will be evaluated for energy efficiency opportunities and benefits for the occupants.

The Project will achieve a direct line of sight to the outdoors for at least 75% of all regularly occupied floor area. View glazing in the contributing area will provide a clear image of the exterior, not obstructed by frits, fibers, patterned glazing, or added tints that distort color balance.

Innovation and Design Process

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

Regional Priority

Regional Priority Credits, (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs, an additional point is awarded to the project. The Project anticipates two RPCs for High Priority Site and Indoor Water Use, and potentially a two more RPCs for Optimize Energy and Renewable Energy.

5.2 Renewable Energy

The Proponent will evaluate the potential for a roof-mounted solar photovoltaic (PV) system, and the availability of grants and renewables funding. The building will be designed to be PV ready. Only the roof space above the eighth floor would have available space. Approximately 11,375 sf of roof space will be available for solar panels, with the remainder of the space being occupied by mechanical equipment. Additionally, approximately 50% of the remaining space would be set aside for space around the panels, between panels, etc. This leaves approximately 5,688 sf available for rooftop solar. Assuming 12 watts per square foot, this allows for an approximately 68 kW array. In the location proposed, the installation of this solar array equals an annual generation of approximately 89.8 MW hours, or a GHG reduction of 32.8 tons. The feasibility of installing a solar PV system will depend on the incentives available at the time of construction.

5.3 Climate Change Preparedness

5.3.1 Introduction

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

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

5.3.2 Extreme Heat Events

The *Climate Ready Boston* report predicts that in Boston, there may be between 25 to 90 days over 90 degrees by 2070, compared to an average of 11 days per year over 90 degrees between 1971 to 2000. The Project design will incorporate a number of measures to minimize the impact of high temperature events, including:

- Planting shade trees on West Second Street adjacent to the Project Site;
- Installing a high-performance building envelope;
- Installing higher performance light and controls;
- Incorporating energy recovery ventilation; and
- Specifying high albedo roof tops to minimize the heat island effect.

5.3.3 Sea Level Rise and Future Storms

According to the IPCC, if the sea level continues to rise at historic rates, the sea level in Massachusetts as a whole will rise by one foot by the year 2100. However, using a high emissions scenario of climate change, sea level rise (SLR) could reach approximately three feet by 2070.

Although these impacts are not anticipated until much further in the future, the design team is studying the incorporation of a number of measures to mitigate against flood impacts, including:

- Placing essential mechanical equipment above the future flood level;
- Water-tight utility conduits;

- Employ temporary barriers across the opening to the parking garage in advance of a predicted event;
- Wastewater and stormwater backflow prevention; and
- Resilient materials on the first floor that can either withstand flooding or easily be replaced.

If the Project site is inundated in the future, as an office building, it would not be open, and therefore will not be accessible and will not need to have systems that can run the building without grid provided electricity.

5.3.4 Rain Events

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

5.3.5 Drought Conditions

Although more intense rain storms are predicted, extended periods of drought are also predicted due to climate change. Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project's susceptibility to drought conditions the landscape design is anticipated to incorporate native and adaptive plant materials which require low or no irrigation and are known for their ability to withstand adverse conditions. Plumbing fixtures will be specified to achieve a reduction in water use through low-flow water-closets, low-flow showers, and low-flow sinks.

LEED v4 for BD+C: Core and Shell

Project Checklist

Project Name: 105 First Street Boston

Date: 8-Dec-16

Y	?	N			
	1		Credit	Integrative Process	1

18	1	0	**Location and Transportation**		20
			Credit	LEED for Neighborhood Development Location	20
2			Credit	Sensitive Land Protection	2
2			Credit	High Priority Site	3
6			Credit	Surrounding Density and Diverse Uses	6
6			Credit	Access to Quality Transit	6
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
	1		Credit	Green Vehicles	1

4	0	6	**Sustainable Sites**		11
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
		1	Credit	Open Space	1
		3	Credit	Rainwater Management	3
1			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
1			Credit	Tenant Design and Construction Guidelines	1

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

7	13	13	**Energy and Atmosphere**		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
4	2		Credit	Enhanced Commissioning	6
2	3	13	Credit	Optimize Energy Performance	18
1			Credit	Advanced Energy Metering	1
	2		Credit	Demand Response	2
	3		Credit	Renewable Energy Production	3
	1		Credit	Enhanced Refrigerant Management	1
	2		Credit	Green Power and Carbon Offsets	2

2	10	2	**Materials and Resources**		14
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	6		Credit	Building Life-Cycle Impact Reduction	6
	2		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
		2	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	2		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

4	6	0	**Indoor Environmental Quality**		10
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
	3		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	3		Credit	Daylight	3
1			Credit	Quality Views	1

3	3	0	**Innovation**		6
2	3		Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

2	2	0	**Regional Priority**		4
	1		Credit	Regional Priority: Optimize Energy	1
1			Credit	Regional Priority: High Priority Site	1
1			Credit	Regional Priority: Indoor Water Use	1
	1		Credit	Regional Priority: Renewable Energy	1

47	40	21	**TOTALS**	Possible Points:	**110**

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

Chapter 6.0

Urban Design

6.0 URBAN DESIGN

6.1 Site Context

The Project Site is located at 105 West First Street, facing the new A Street Park and directly adjacent to the Artists For Humanity facility. The Project Site is bounded by West First Street and a parcel of land owned by the Massachusetts Department of Transportation to the north, the South Boston Bypass Road to the east, West Second Street to the south, and land and a building owned by Artists For Humanity to the west. The site is currently occupied by a two-story industrial brick building that was constructed in 1988.

There is an approximately 12-foot grade change between West First and West Second Street. An enclosed pedestrian connector will provide public access from West Second Street to West First Street through a two-story light filled space that provides a direct connection to A Street Park and easy access to the Channel Center Garage. The pedestrian connection is similar in concept to the pedestrian passageway that exists at the One Channel Center building, and is envisioned as a lively space filled with art curated and installed in collaboration with organizations such as Artists For Humanity and the Fort Point Arts Community (see Figure 6-1). A small retail/café space and a small convener space will be located along West First Street. In addition, there will be 35 parking spaces located in an underground garage accessed from West First Street.

6.2 Project Design

The proposed building is appropriately scaled for its location just beyond the southern boundary of the 100 Acres Master Plan area. The building will be eight stories and approximately 115′-0″ high relative to the grade of West First Street and 103′-0″ high relative to the grade of West Second Street, approximately equal to the height of the Channel Center Garage and the BPDA-approved addition to the Artists For Humanity building. When viewed from A Street Park, the mass of the building will fill in the gap in the street edge and provide a visual edge for the park, completing this portion of the 100 Acres (see Figures 6-2 and 6-3). Unlike the existing building, which is set back approximately 20 feet from West Second Street, the proposed building will align with the street edge along West Second Street, enhancing the public realm by enlarging the width of the public sidewalk, adding street trees, and eliminating the existing chain link fence that protects pedestrians from the steep change in grade at the Project site. The upper two floors of the façade on West Second Street have been set back approximately 12 feet to reduce the visual scale of the building from a pedestrian's perspective (see Figure 6-4). To further reduce the overall scale of the building the eighth floor has been set back approximately 18′ for the north, west and south facades and approximately 28′ from the east façade along West First Street. The accessible entrance from West Second Street has been recessed from

the face of the building to coordinate with the bridge entrance to the Artists For Humanity building (see Figure 6-5) and the eastern corner of the building will be chamfered to maintain the view corridor from the Signal Building to the south, to A Street Park (see Figures 6-6 and 6-7).

The architecture of the building is envisioned as a simple yet elegant grid reminiscent of the former industrial buildings in the vicinity. The building relates in height, massing and material selection to the Channel Center Garage and the One Channel Center building, creating a coherent collection of buildings around the A Street Park and a sophisticated, quiet neighbor to the Artists For Humanity building. The exterior will be clad in warm toned thin-walled concrete slat wall panels with deep set aluminum windows and slightly protruding sills to provide depth and visual interest.

105 West First Street Boston, Massachusetts

Stantec

Figure 6-1
Pedestrian Connector

105 West First Street Boston, Massachusetts

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Figure 6-2
Aerial View from A Street

105 West First Street Boston, Massachusetts

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Figure 6-3
View from A Street

105 West First Street Boston, Massachusetts

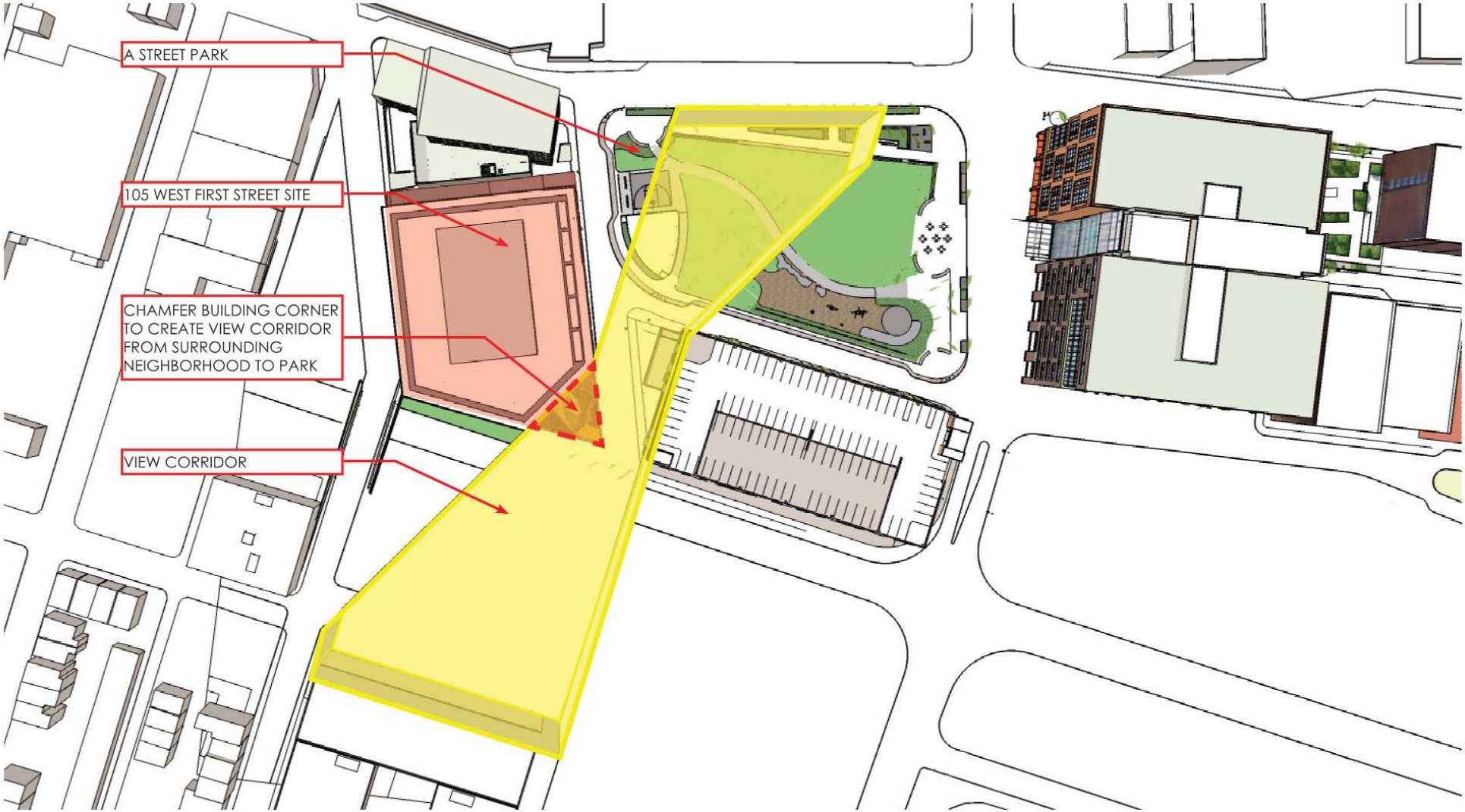
Stantec

Figure 6-4
View from West Second Street

105 West First Street Boston, Massachusetts

Stantec

Figure 6-5
West Second Street Entry


A STREET PARK
105 WEST FIRST STREET SITE
CHAMFER BUILDING CORNER TO CREATE VIEW CORRIDOR FROM SURROUNDING NEIGHBORHOOD TO PARK
VIEW CORRIDOR


ALLOWABLE BUILDING MASSING
CHAMFER BUILDING CORNER TO CREATE VIEW CORRIDOR FROM SURROUNDING NEIGHBORHOOD TO PARK

Chapter 7.0

Historic and Archaeological Resources

7.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This Chapter describes the historic and archaeological resources within and in the vicinity of the Project Site.

7.1 Project Site

No historic resources listed in the State and National Registers of Historic Places or included in the Inventory of Historic and Archaeological Assets of the Commonwealth are located within the Project Site.

The Project Site contains a two-story warehouse/distribution building constructed in 1988. Building permits indicate that the approximately 36,500 sf building was constructed on a vacant lot which had been used as a parking lot since the 1960s.

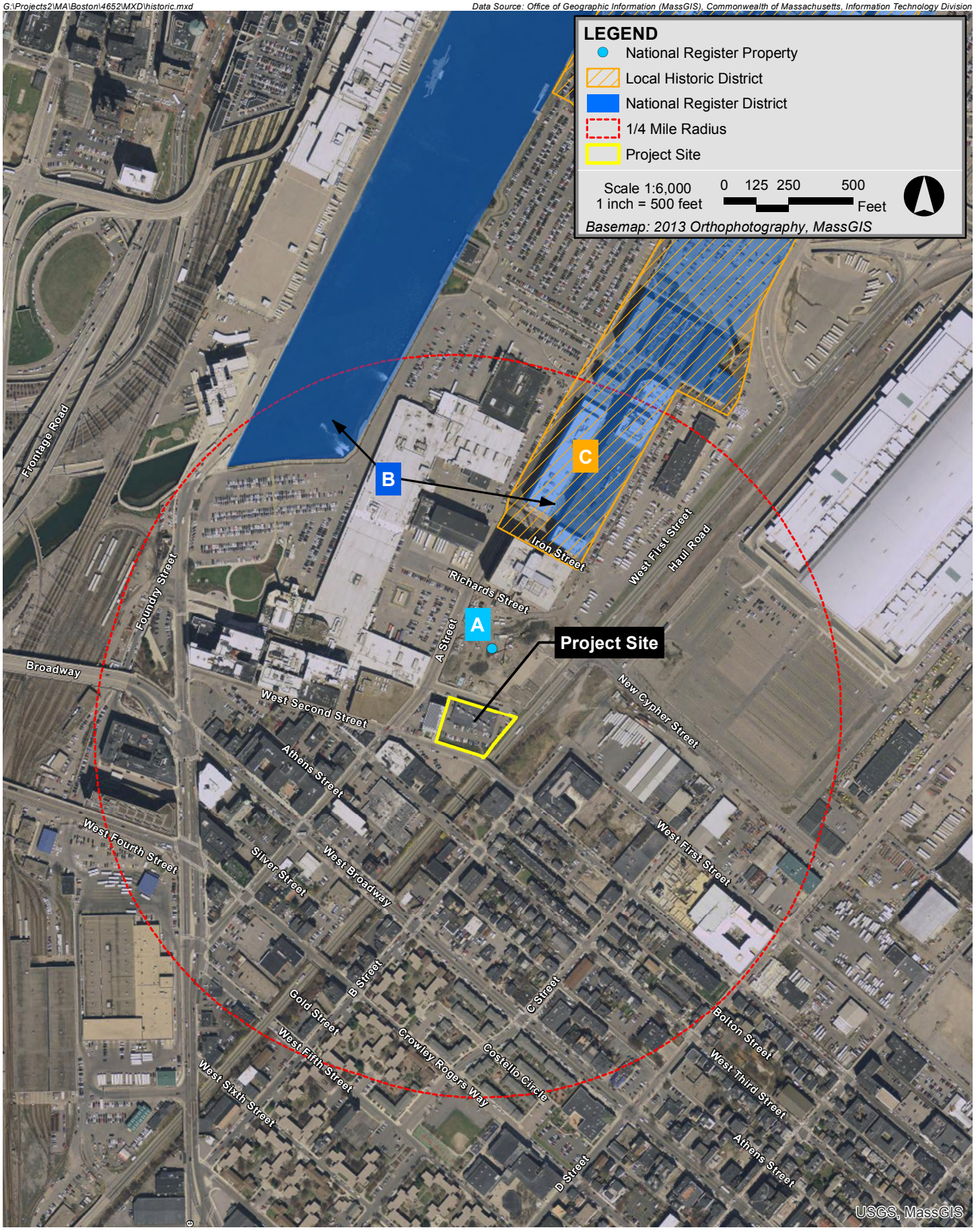
7.2 Historic Resources in the Project Vicinity

The Project Site is located within the vicinity of several historic resources listed in the State and National Registers. Table 7-1 and Figure 7-1 identify historic resources within one-quarter mile of the Project Site. The Fort Point Landmark District and the Fort Point Channel Historic District are located to the north of the Project Site. Both districts include the Channel Center community to the north of the Project Site, as well as commercial and residential buildings to the north of Channel Center. The historic resources in these districts are located amidst other new and non-historic, older industrial and residential buildings. The United States Post Office Garage is no longer extant.

Table 7-1 State and National Register-Listed Properties and Historic Districts

No.	Historic Resource	Address	Designation*
A	United States Post Office Garage (demolished)	135 A Street	
B	Fort Point Channel Historic District	Includes both sides of Fort Point Channel and follow A, Binford, Congress, Farnsworth, Melcher, Midway, Sleeper, Stillings, and Summer Streets, as well as Necco Court and Thomson Place.	NRDIS
C	Fort Point Landmark District	Roughly bounded by A, Binford, Congress, Farnsworth, Melcher, Midway, Sleeper, Stillings, and Summer Streets, as well as Necco Court and Thomson Place.	LHD

*Designation Legend
NRDIS National Register of Historic Places historic district
LHD Local Historic District



105 West First Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 7-1
Historic Resources

7.3 Impacts to Historic Resources

7.3.1 Urban Design

The proposed building is appropriately scaled for its location adjacent to the southern edge of the 100 Acres Master Plan area. The building will be eight stories and approximately 115'-0" high relative to the grade of West First Street and 103'-0" high relative to the grade of West Second Street, approximately equal to the height of the Channel Center Garage and the BPDA-approved addition to the Artists For Humanity building. When viewed from A Street Park, the mass of the building will fill in the gap in the street edge and provide a visual edge for the Park, completing this portion of the 100 Acres. Unlike the existing building, which is set back approximately 20 feet from West Second Street, the proposed building aligns with the street edge along West Second Street, enhancing the public realm by enlarging the width of the public sidewalk and eliminating the existing chain link fence that protects pedestrians from the steep change in grade. The upper two floors of the façade on West Second Street have been set back approximately 12 feet to reduce the visual scale of the building from a pedestrian's perspective. To further reduce the overall scale of the building the eighth floor has been set back approximately 18' for the North, West and South facades and approximately 28' from the east façade along First Street. The accessible entrance from West Second Street has been recessed from the face of the building to coordinate with the bridge entrance to the Artist For Humanity building, and the eastern corner of the building has been chamfered to maintain the view corridor from the Signal Building to the south, to A Street Park.

The architecture of the building is envisioned as a simple yet elegant grid reminiscent of the industrial buildings in the vicinity. The building relates in height, massing and material selection to the garage and One Channel Center, creating a coherent collection of buildings around the park, and a sophisticated, quiet neighbor to the Artists For Humanity building. The exterior will be clad in warm toned thin-walled concrete slat wall panels with deep set aluminum windows and slightly protruding sills to provide depth and visual interest.

7.3.2 Shadow

A shadow impact analysis was undertaken to show the anticipated impacts from the Project. The analysis consisted of a standard shadow study done for March 21, June 21, September 21, at 8:00 a.m., 11:00 p.m. and 2:00 p.m., as well as 5:00 p.m. for June 21 and September 21 and for December 21, at 9:00 a.m., 12:00 p.m., and 3:00 p.m.

As illustrated in the shadow study diagrams (Figures 4.2-1 to 4.2-14), during isolated time periods the Project will cast minimal net new shadow on areas of A Street, West First Street, South Boston Bypass Road, and Cypher Street. The United States Post Office Garage at 135 A Street is no longer extant. There are no historic resources within the proposed area of new shadow. The Project will have no significant impacts to historic resources.

7.3.3 Wind

Based on the local wind data, the proposed Project height, and information on surroundings, it is predicted that wind speeds at most areas around the Project will be suitable for pedestrian activity. Overall, the Project is not expected to cause significant impacts to pedestrian level winds, and is unlikely to affect the setting of nearby historic properties.

7.4 Archaeological Resources

A review of the Inventory determined no previously identified archaeological resources located within the Project Site. Due to the Project Site's previous disturbance, no archaeological resources are anticipated to be located within the Project Site.

7.5 Status of Project Reviews with Historical Agencies

7.5.1 Boston Landmarks Commission Article 85 Review

The existing building on the site is less than 50 years of age, not located within the Downtown or Harborpark areas of Boston, and is not located within a Neighborhood Design Overlay District; therefore, the proposed demolition of the building is not subject to review by the Boston Landmarks Commission under Article 85 of the Boston Zoning Code.

7.5.2 Massachusetts Historical Commission Review

Massachusetts Historical Commission review will occur concurrently with MEPA project review, the Environmental Notification Form filed under MEPA will serve as MHC's notification of the Project and initiate MHC's review of the Project.

Chapter 8.0

Infrastructure

8.0 INFRASTRUCTURE

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

- Sewer
- Domestic water
- Fire protection
- Drainage
- Natural gas
- Electricity
- Telecommunications

The approximately one-acre Project Site is bounded by West First Street and a parcel of land owned by the Massachusetts Department of Transportation to the north, the South Boston Bypass Road (Haul Road) to the east, West Second Street to the south, and land and a building owned by Artists For Humanity, Inc. (100 West Second Street) to the west. The Project Site is comprised of one building with a paved parking lot. The Proposed Project includes the demolition of the existing building and the construction of a new eight-story office building with an underground parking garage.

No capacity problems are expected for the existing sewer mains in West First Street or West Second Street. Improvements to and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. In addition, water capacity problems are not anticipated within the BWSC water system as a result of the Project's construction.

8.1 Wastewater Infrastructure

8.1.1 Existing Sewer System

The Boston Water and Sewer Commission (BWSC) owns and maintains the sewer system that services the City of Boston. The BWSC sewer system connects to the Massachusetts Water Resources Authority (MWRA) interceptors for conveyance, treatment, and disposal through the MWRA Deer Island Wastewater Treatment Plant. There are existing BWSC sanitary sewer mains near the Project Site.

There is an existing 36-inch by 48-inch BWSC sanitary sewer main flowing westerly in West First Street, known as South Boston Interceptor (North Branch), which was previously a combined sewer and was separated as part of the South Boston Sewer Separation Project in 2014. There is also an existing 24-inch by 28-inch BWSC sanitary sewer main in West Second Street. The 24-inch by 28-inch BWSC sanitary sewer main in West Second Street flows westerly to a 24-inch sanitary sewer main in Dorchester Avenue, which flows north. Both sewer mains in West First Street and West Second Street are ultimately directed to the MWRA's Deer Island Wastewater Treatment Plant via the South Boston Interceptor (North Branch). The existing BWSC sanitary sewer system is shown in Figure 8-1.

Record plans indicate that there are four existing building sewer services that connect to the 24-inch by 28-inch BWSC sewer main in West First Street.

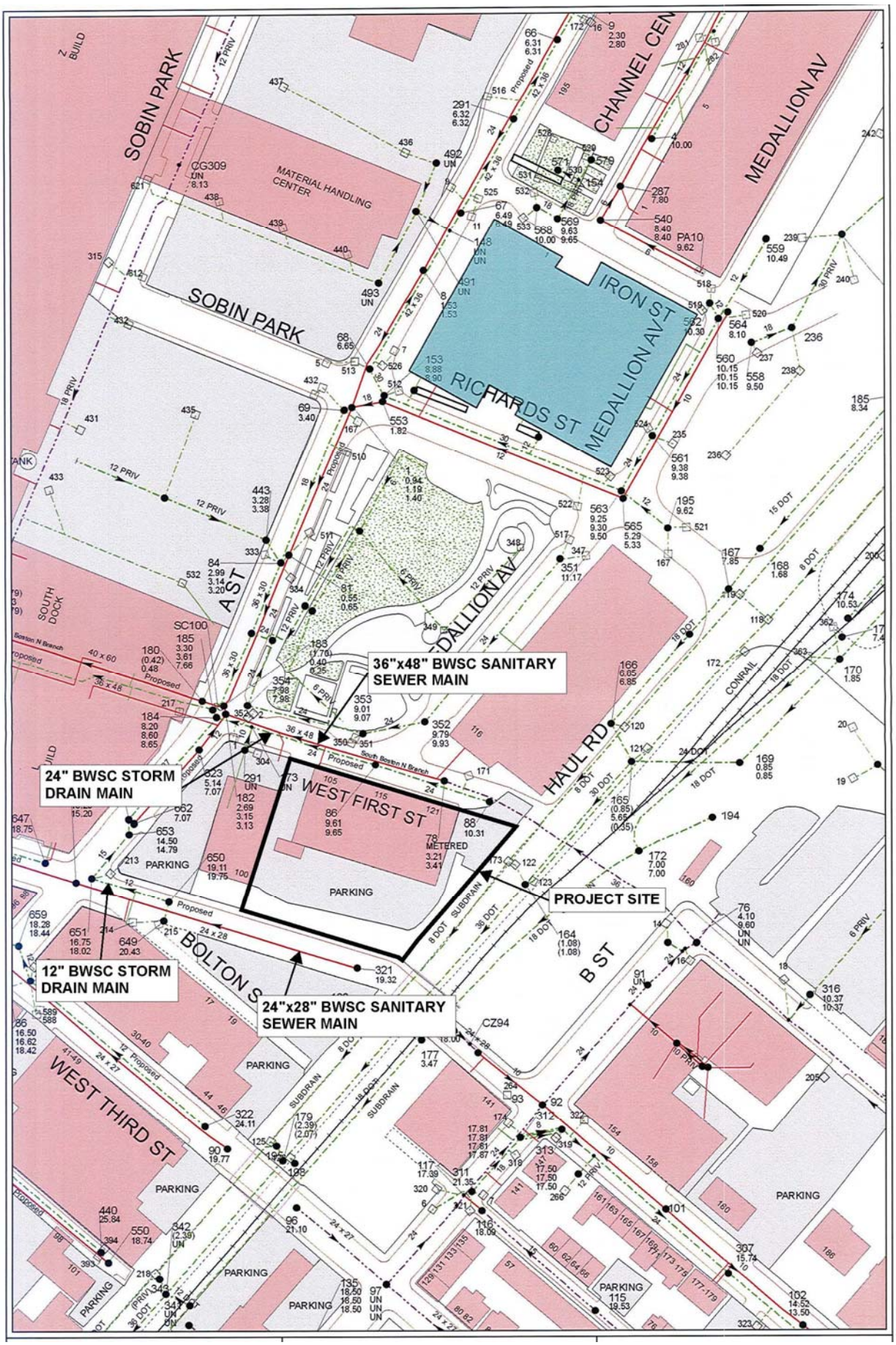
The Project Site's existing sanitary flows were estimated using 310 CMR 15.203 for office uses. 310 CMR 15.203 lists typical sewage generation values by the building use and are conservative values for estimating the sewage flows from buildings. The 310 CMR 15.203 values are used to evaluate new sewage flows or, to estimate existing sewer flows to determine the approximate increase in sewer flows due to the Project.

The existing office building on site has approximately 3,000 sf of office space and warehouse space with approximately 10 occupants. Based on this estimate, the existing average daily sewage generation is estimated to be approximately 375 gallons per day (gpd). The existing building program is summarized in Table 8-1.

8.1.2 Wastewater Generation

The Project will consist of a new building with approximately 266,000 sf of office and innovation space, as well as some tenant amenity, retail and convener space.

As previously described, estimated existing and proposed sewage flows were calculated with 310 CMR 15.203 values, as summarized in Table 8-1. The total estimated proposed sewage flow due to the Project is approximately 24,525 gpd, or an increase of approximately 24,150 gpd compared to the existing condition.



105 West First Street Boston, Massachusetts

Nitsch Engineering

Figure 8-1
Existing Sewer System

Table 8-1 Estimated Sewage Flows

Proposed Use	Units/Size	Design Flow Rate (GPD/unit)	Proposed Sanitary Flows (GPD)
Office Space	249,000 sf	75/1,000 sf	18,675
Innovation Space	10,000 sf	75/1,000 sf	750
Tenant Amenity Space	3,000 sf/40 participants	25/participant	1,000
Retail/Restaurant/Café	1,600 sf/100 seats	35/seat	3,500
Convener Space	2,400 sf/200 seats	3/seat	600
Existing Use	**Units/Size**	**Design Flow Rate (GPD/unit)**	**Existing Sanitary Flows (GPD)**
Office	3,000 sf	75/1000 sf	225
Warehouse	10 people	15/person	150
		TOTAL INCREASE IN SEWER FLOWS	24,150

8.1.3 Sewage Capacity and Impacts

The Project's impact on the existing BWSC systems in West First Street and West Second Street were analyzed. The existing sewer system capacity calculations are presented in Table 8-2.

Table 8-2 Existing Sewer System Capacity

BWSC Sewer Manhole[1]	Slope (%)[2]	Dia. (inches)	Manning's Number	Flow Capacity (cfs)[3]	Flow Capacity (MGD)
West First Street					
76 to 78	0.2%	36 x 48	0.013	44.49	28.76
78 to 182	<0.1%	36 x 48	0.013	17.27	11.16
			Minimum Flow Analyzed	17.27	11.16
West Second Street					
321 to 85	1.3%	24 x 28	0.013	31.16	20.14
Minimum Flow Analyzed				31.16	20.14

1. BWSC sewer manhole numbers are from BWSC GIS Sewer Maps.
2. Slope was calculated with inverts obtained from the BWSC Sewer Map received 10/26/2016 and from information obtained from BWSC South Boston Sewer Separation Project proposed plans received 11/03/2016.
3. Flow calculations based on Manning's Equation.

Table 8-2 indicates the flow (hydraulic) capacity of the 36-inch by 48-inch sanitary sewer main in West First Street and the 24-inch by 28-inch sanitary sewer main in West Second Street. The minimum flow capacity is 11.16 million gallons per day (MGD) or 17.27 cubic feet per second (cfs) for the 36-inch by 48-inch system in West First Street and 20.14 MGD or 31.16 cfs for the 24-inch by 28-inch system in West Second Street.

As previously stated, the approximate proposed increase in sewage flow is 23,735 gpd or 0.0237 MGD. Based on an increase in average daily flow of 0.0237 MGD; and with a factor of safety of 10 (total estimate = 0.0237 MGD x 10 = 0.237 MGD), no capacity problems are expected for the existing sewer mains in West First Street or West Second Street.

8.1.4 Proposed Conditions

The Project will require new building sewer services. The new sewer services for the Project may connect to the existing BWSC sanitary sewer mains in West First Street and/or West Second Street.

Improvements to and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. This process will include a comprehensive design review of the proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts. Coordination with BWSC will include review and approval of the design, capacity, connections, and flow increase resulting from the proposed discharges to the sanitary sewer system. In total, the Project sewage generation is expected to increase wastewater flows by approximately 23,735 gpd. Approval for the increase in sanitary flow will come from BWSC.

The Project is seeking to discontinue a portion of West First Street. The Proponent will work with BWSC to provide necessary utility easements in order to provide BWSC access to the existing BWSC sewer main in West First Street if the discontinuance is approved.

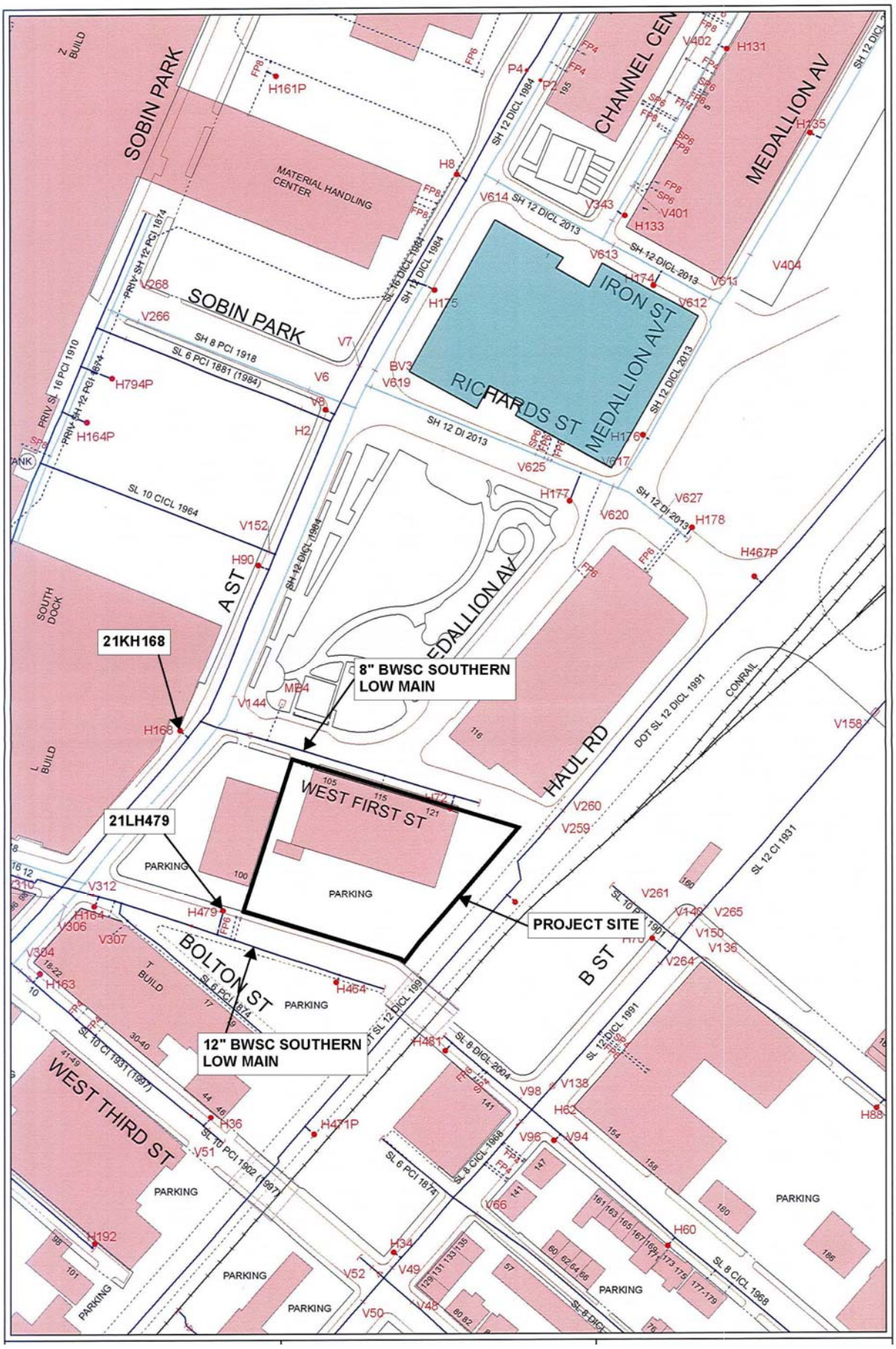
8.2 Water Infrastructure

8.2.1 Existing Water System

Water for the Project will be provided by BWSC. BWSC is supplied water by the MWRA system.

There are five water systems within the City of Boston, and these provide service to portions of the City based on ground surface elevation. The five systems are the southern low (SL), southern high (SH), southern extra high (SEH), northern low (NL), and northern high (NH). Water mains are labeled by their system, pipe size, year installed, pipe material, and year cement lined (CL), if applicable.

There are existing BWSC water mains adjacent to the Project site. There is an 8-inch BWSC southern low main in West First Street, which was recently replaced in 2014 (formerly SL 10 PCI 1901 (1992)). There is also 12-inch BWSC southern low main in West Second Street, which was replaced in 2014 (formerly SL 12 PCI 1918 and SL 12 PCI 1853). The existing BWSC water system is shown in Figure 8-2.



105 West First Street Boston, Massachusetts

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Figure 8-2
Existing Water System

Record Drawings indicate that the existing building has one water service and one fire protection service which connect to the eight-inch water main in West First Street.

The Project's approximate existing water usage for domestic water was estimated using the estimated existing sewage generation described in the previous section. A conservative factor of 1.1 (10%) is applied to the estimated existing average daily sewage flows to account for consumption, system losses and other usages to estimate an average daily water demand. The estimate is used to compare the proposed average daily water demand to the existing conditions. The existing building's estimated water usage is estimated to be approximately 1,263 gpd.

8.2.2 Anticipated Water Consumption

The Project's water demand estimate for the domestic services is based on the Project's estimated sewage generation, described in the previous section. A conservative factor of 1.1 (10%) is applied to the estimated daily sewage flows, calculated in Table 8-1, to account for consumption system losses, and other usages to estimate an average daily water demand. The estimated proposed domestic water demand is approximately 26,978 gpd, or an increase of approximately 26,565 gpd compared to the existing condition.

8.2.3 Existing Water Capacity

BWSC record flow test data containing actual flow and pressure for hydrants within the vicinity of the Project site was requested by the Proponent. Table 8-3 below includes the available hydrant flow test data from August 2015. As the design progresses, the Proponent will request hydrant flows be conducted by BWSC adjacent to the Project, as hydrant flow test data must be less than one-year old when used for design. However, there are no anticipated water capacity issues for the mains in West First Street or West Second Street due to the Project.

Table 8-3 Hydrant Flow Test Data

Date	Address	Static Hydrant	Pressure Zone	Elevation (ft.)	Static (psi)	Residual (psi)	Flow (gpm)
8/12/15	West Second St. @ A St.	21KH168	SL	17.1	70	66	2196
8/12/15	West First St. @ A St.	21LH479	SL	28.2	66	40	2196

8.2.4 Proposed Water Improvements

The proposed Project will require new domestic water and fire protection services. The domestic water and fire protection services will connect to the existing BWSC water mains in West First Street and/or West Second Street.

The domestic water and fire protection service connections required for the Project will meet the applicable City and State codes and standards, including cross-connection backflow prevention. Compliance with the standards for the domestic water system service connection will be reviewed as part of BWSC's Site Plan Review Process. This review will include sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections that conform to BWSC and Boston Fire Department requirements.

The Project is seeking to discontinue a portion of West First Street. The Proponent will work with BWSC to provide necessary utility easements in order to provide BWSC access to the existing BWSC water main in West First Street if the discontinuance is approved.

8.2.5 Proposed Impacts

Water capacity problems are not anticipated within the BWSC water system as a result of the Project's construction.

Efforts to reduce water consumption will be made. Aeration fixtures and appliances will be chosen for water conservation qualities. In public areas, sensor operated faucets and toilets will be installed.

New water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at both domestic and fire protection service connections. New meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system.

8.3 Storm Drainage Infrastructure

8.3.1 Existing Storm Drainage System

There is an existing 24-inch BWSC storm drain main in West First Street that was recently installed in 2014 as part of the South Boston Sewer Separation Project. The 24-inch storm drain main in West First Street flows westerly, increases to a 36-inch by 48-inch storm drain main continuing westerly, and ultimately discharges to the Fort Point Channel.

As part of the South Boston Sewer Separation Project, a new 12-inch storm drain main in West Second Street was installed, which converted the existing 24-inch by 28-inch combined sewer to a dedicated sanitary sewer main. The new 12-inch storm drain main in West Second Street does not extend to the Project site. The existing BWSC Storm Drainage System is shown in Figure 8-1.

The existing site is comprised of building roof, paved parking, and walkways, and is approximately 76% impervious.

Stormwater runoff from the paved driveway and walkways on the site surrounding the building is collected by catch basins on site. Record plans do not indicate where these catch basins connect to, however they may connect either directly to the existing 24-inch storm drain main in West First Street or a closed drainage system in the parking lot. The survey indicates that the existing building has roof drains which connect to the existing 24-inch storm drain in West First Street.

The site is not located in the Boston Groundwater Conservation Overlay District (GCOD). A portion of the site is located in the FEMA 100-Year Floodplain, Zone AE, and will require permitting through the Boston Conservation Commission.

8.3.2 Proposed Drainage Improvements

The proposed design will be nearly 100% impervious. The proposed impervious area will consist mostly of building roof. The Project will be designed to meet or reduce stormwater runoff peak rates and volumes, and to minimize the loss of annual stormwater recharge to groundwater through the use of on-site infiltration measures to the greatest extent practicable.

The Project will be designed to capture and recharge one-inch of stormwater from the impervious site areas to the greatest extent practicable. The Project's design will include a private closed drainage system that will be adequately sized for the site's expected stormwater flows, and will direct stormwater to on-site infiltration systems for groundwater recharge prior to overflow to the BWSC systems. Due to the limited site area, the Project will likely consider a combination of interior stormwater storage tanks and groundwater recharge wells, and underground recharge systems. Overflow connections to the BWSC storm drain mains will be provided for greater stormwater flows. The on-site infiltration systems will strive to infiltrate one-inch of stormwater runoff from impervious areas to the greatest extent practicable, in order to meet the BWSC stormwater quality and stormwater recharge requirements.

Improvements to the BWSC infrastructure and the existing private storm drain systems will be evaluated as part of the BWSC Site Plan Review Process.

The Project is seeking to discontinue a portion of West First Street. The Proponent will work with BWSC to provide necessary utility easements in order to provide BWSC access to the existing BWSC storm drain main in West First Street if the discontinuance is approved.

8.3.3 Water Quality Impact

The Project will not affect the water quality of nearby water bodies. Erosion and sediment control measures will be implemented during construction to minimize the transport of site soils to off-site areas and BWSC storm drain systems. During construction, existing catch basins will be protected with filter fabric, straw bales and/or crushed stone, to provide for

sediment removal from runoff. These controls will be inspected and maintained throughout the construction phase until the areas of disturbance have been stabilized through the placement of pavement or structure.

All necessary dewatering will be conducted in accordance with applicable MWRA and BWSC discharge permits. Once Construction is complete, the Project will be in compliance with local and state stormwater management policies, as described below.

8.3.4 DEP Stormwater Management Policy Standards

In March 1997, Massachusetts Department of Environmental Protection (MassDEP) adopted a new Stormwater Management Policy to address non-point source pollution. In 1997, MassDEP published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was revised in February 2008. The Policy prescribes specific stormwater management standards for development projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of Best Management Practices (BMPs) in the stormwater management design. The Policy is administered locally pursuant to MGL Ch. 131, s. 40.

A description of the Project's anticipated compliance with the Standards is outlined below:

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 design will comply with this Standard. The design does not propose new stormwater conveyances and 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 Project.

Standard #2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

Compliance: The proposed design will comply with this Standard to the maximum extent practicable. The existing peak discharge rate will be met or will be decreased as a result of the improvements associated with the Project.

Standard #3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil

type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Compliance: The Project will comply with this standard. The Project's stormwater system shall be designed to capture and infiltrate 1-inch of stormwater from the impervious site's areas to the maximum extent practicable.

Standard #4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

a) *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*

b) *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*

c) *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

Compliance: The proposed design will comply with this standard. Within the Project site, there will be mostly roof. Runoff from paved areas that would contribute unwanted sediments or pollutants to the existing storm drain system will be collected by deep sump, hooded catch basins and treated before discharging into the BWSC system.

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 thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Compliance: The proposed design will comply with this standard. The proposed design will include source control, pollution prevention and pretreatment practices, as necessary.

Standard #6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Compliance: Not Applicable. The proposed Project is not within an outstanding resource 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 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: Not applicable. The Project is not considered a redevelopment as defined by the Massachusetts Stormwater Handbook.

Standard #8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Compliance: The proposed design will comply with this standard. A plan to control temporary construction-related impacts including erosion, sedimentation, and other pollutant sources during construction and land disturbing activities will be developed and implemented.

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: The Project will comply with this standard. An O&M Plan including long-term Best Management Practices (BMP) operation requirements will be prepared for the Project and will assure proper maintenance and functioning of the stormwater management system.

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

Compliance: The Project will comply with this standard. There will be no illicit connections associated with the Project. Temporary construction dewatering will be conducted in accordance with applicable BWSC and MWRA requirements, as necessary.

8.4 Electrical Services

Eversource Energy owns the electrical system in the vicinity of the Project site. It is expected that adequate service is available in the existing electrical systems in the surrounding streets to serve the Project. The Proponent will work with Eversource Energy to confirm adequate system capacity as the design is finalized.

8.5 Telecommunications System

The Proponent will select private telecommunications companies to provide telephone, cable, and data services. There are several potential candidates with substantial Boston networks capable of providing service. Upon selection of a provider or providers, the Proponent will coordinate service connection locations and obtain appropriate approvals.

8.6 Natural Gas System

National Grid has gas services in the vicinity of the Project site. The Proponent will work with National Grid to confirm adequate system capacity as design is finalized.

8.7 Utility Protection During Construction

Existing public and private infrastructure located within any public or private rights-of-way shall be protected during construction. The installation of proposed utilities within a public way will be in accordance with the BWSC, Boston Public Works Department, Dig-Safe Program, and applicable utility company requirements. Specific methods for construction of proposed utilities where they are near or within existing BWSC water, sewer, and drain facilities will be reviewed by the BWSC as part of the Site Plan Review Process. The necessary permits will be obtained before the commencement of work.

Chapter 9.0

Coordination with other Governmental Agencies

9.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

9.1 Architectural Access Board Requirements

The Project will comply with the requirements of the Massachusetts Architectural Access Board and will comply with the standards of the Americans with Disabilities Act. See Appendix F for the Accessibility Checklist.

9.2 Massachusetts Environmental Policy Act (MEPA)

An Environmental Notification Form (ENF) will be filed with the MEPA Office of the Executive Office of Energy and Environmental Affairs to initiate MEPA review of the Project.

9.3 Massachusetts Historical Commission

MHC review of the Project will occur as part of the MEPA process; a copy of the ENF filed with the MEPA Office will be delivered to MHC.

9.4 Boston Civic Design Commission

The Project will comply with the provisions of Article 28 of the Boston Zoning Code. The Proponent will file an application with the Boston Civic Design Commission to initiate the BCDC design review process.

Appendix A

Site Survey

LOCUS MAP – NOT TO SCALE

LIST OF VISIBLE ENCROACHMENTS

WEST FIRST STREET
SIGN CROSSES SIDELINE
UNDERGROUND ELECTRIC LINE CROSSES SIDELINE

NOW OR FORMERLY COMMONWEALTH OF MASSACHUSETTS
8" DRAIN LINE CROSSES PROPERTY LINE

SOUTH BOSTON BYPASS ROAD
6' CHAIN LINK FENCE CROSSES SIDELINE
OVERHEAD WIRE CROSSES SIDELINE
UNDERGROUND ELECTRIC LINE CROSSES SIDELINE

WEST SECOND STREET
CONCRETE RETAINING WALL CROSSES SIDELINE
(AT INTERSECTION WITH SOUTH BOSTON BYPASS ROAD)
6' CHAIN LINK FENCE CROSSES SIDELINE
CONCRETE RETAINING WALL CROSSES SIDELINE

NOW OR FORMERLY ARTISTS FOR HUMANITY, INC.
SIGN CROSSES PROPERTY LINE
CONCRETE RETAINING WALL CROSSES PROPERTY LINE

PLAN REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS

PLAN IN BOOK 23756, PAGE 327
S.H.L.O. NO. 6863
L-10213A
L.C. PLAN NO. 1073-A
L.C. PLAN NO. 22068-A
L.C. PLAN NO. 25502-A

PARKING SUMMARY

35 REGULAR SPACES

UNDERLYING ZONING CLASSIFICATION – "M-2 RESTRICTED MANUFACTURING DISTRICT" AND "I-2 GENERAL INDUSTRIAL DISTRICT"

MINIMUM FRONT YARD	NONE
MINIMUM SIDE YARD	NONE
MINIMUM REAR YARD	NONE
MAXIMUM BUILDING HEIGHT	125 FEET

THE PROPERTY LIES WITHIN THE INTERIM PLANNING (OVERLAY) DISTRICT.
THE PROPERTY LIES WITHIN THE RESTRICTED PARKING (OVERLAY) DISTRICT.

EXCEPTIONS FROM COVERAGE (SURVEY RELATED ONLY) SCHEDULE B, SECTION TWO, LISTED IN TITLE COMMITMENT NO. 16-0147KC-FN(MA) ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF MAY 19, 2016.

(7) PARTY WALL AGREEMENT BETWEEN DOWNER KERASENE OIL COMPANY AND ARTIMUS C. RICHARDSON DATED JUNE 20, 1871 AND RECORDED WITH IN BOOK 1077, PAGE 90. (AGREEMENT IS NO LONGER APPLICABLE – BUILDINGS HAVE BEEN REMOVED)

NOTES:

1) BENCH MARK INFORMATION:

BENCH MARKS USED:

TBM–A: X–CUT IN RIGHT FRONT HYDRANT FLANGE BOLT LOCATED LOCATED ON NORTHWESTERLY SIDE OF "A" STREET, OPPOSITE IRON STREET.
ELEVATION=17.68.

TBM–B: LEFT OUTER CORNER OF CONCRETE WALL AT ENTRANCE TO 10 CHANNEL CENTER.
ELEVATION=18.28.

TBM–3: X–CUT IN HYDRANT FLANGE BOLT CLOSER TO "D" LOCATED ON NORTHWESTERLY SIDE OF "A" STREET ACROSS FROM PROPOSED RICHARDS STREET, AS SHOWN ON PLAN.
ELEVATION=16.47.

TEMPORARY BENCH MARK SET:

TBM–NG–1: X–CUT IN RIGHT FRONT HYDRANT FLANGE BOLT ON THE SOUTHERLY SIDE OF WEST FIRST STREET, APPROXIMATELY AT THE END OF THE RON BUILDING, AS SHOWN ON PLAN.
ELEVATION = 18.95.

2) ELEVATIONS REFER TO BOSTON CITY BASE.

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

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

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

6) BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES PARTIALLY WITHIN ZONE "AE", A SPECIAL FLOOD HAZARD AREA SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD (BASE FLOOD ELEVATIONS DETERMINED) AND ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY F.E.M.A) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25025C0083J, HAVING AN EFFECTIVE DATE OF MARCH 16, 2016.

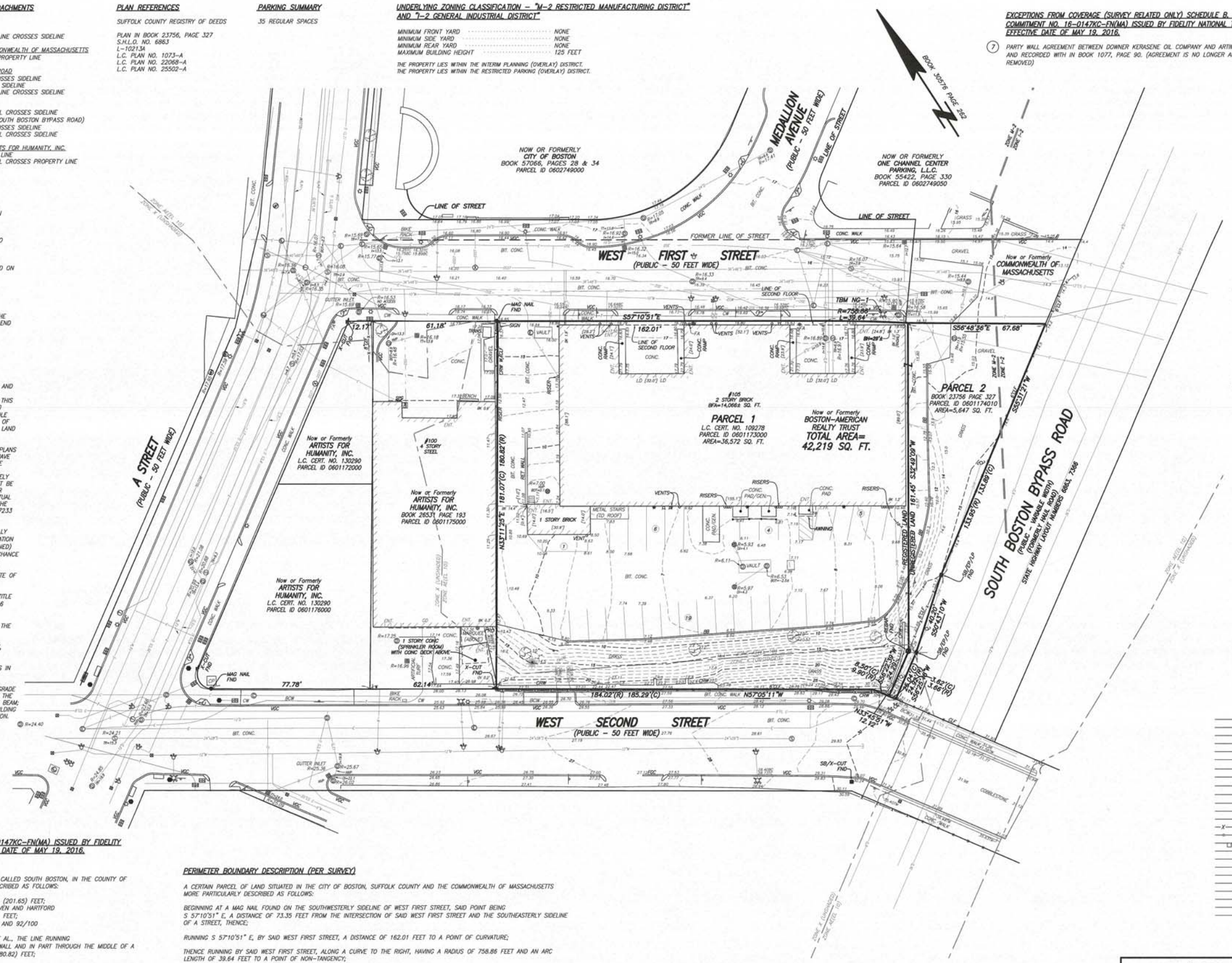
7) ZONING INFORMATION AS SHOWN HEREON WAS NOT PROVIDED BY THE TITLE INSURER AS REQUIRED BY ITEM 6 (A OR B) OF TABLE "A" IN THE 2016 ALTA/NSPS SURVEY REQUIREMENTS.

8) THE PROPERTY SHOWN HEREON IS THE SAME PROPERTY DESCRIBED IN THE TITLE COMMITMENT.

9) THERE WAS NO OBSERVED EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

10) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES.

11) BUILDING HEIGHT SHOWN HEREON IS CALCULATED FROM THE AVERAGE GRADE PLAN AND THE TOP OF THE ROOF. BY CITY OF BOSTON ZONING CODE, THE DEFINITION OF BUILDING HEIGHT IS TO THE TOP OF THE HIGHEST ROOF BEAM; THIS WAS INACCESSIBLE AT THE TIME OF SURVEY. THEREFORE THE BUILDING HEIGHT BY DEFINITION WOULD BE LESS THAN THE HEIGHT SHOWN HEREON.



LEGEND

S	SEWER MANHOLE
D	DRAIN MANHOLE
E	ELECTRIC MANHOLE
T	TELEPHONE MANHOLE
TV	CABLE TV MANHOLE
ST	STEAM MANHOLE
M	MANHOLE
	HYDRANT
WV	WATER SHUT OFF/WATER GATE
GV	GAS SHUT OFF/GAS GATE
CB	CATCH BASIN
DF	D–FRAME CATCH BASIN
	UTILITY POLE W/ LIGHT
	SIGN
CB	CATCH BASIN
RD	ROOF DRAIN
	WALL LIGHT
SC	SECURITY CAMERA
SP	STAND PIPE/SIAMESE CONNECTION
	DECIDUOUS TREE
X	EXCEPTION NUMBER LISTED IN TITLE COMMITMENT
I	INDICATES COMMON OWNERSHIP
[XX']	BUILDING DIMENSION
	CURB RETURN
	TRAFFIC SIGNAL
	GUY POLE
	UTILITY POLE
	LIGHT POLE
	WALL LIGHT
EH	ELECTRIC HANDHOLE
BB	BITUMINOUS BERM
BCW	BITUMINOUS CONCRETE WALK
BIT	BITUMINOUS
BFA	BUILDING FOOTPRINT AREA
BH	BUILDING HEIGHT
BC	BOTTOM OF CURB
BK	BACK
BOT	BOTTOM
BW	BOTTOM OF WALL
(C)	CALCULATED
CLF	CHAINLINK FENCE
CONC	CONCRETE
CP	CONCRETE PAD
CRW	CONCRETE RETAINING WALL
CW	CONCRETE WALK
DI	DROP INLET
ENT	ENTRANCE
GD	GARAGE DOOR
LCC	LAND COURT CASE
L.C. CERT.	LAND COURT CERTIFICATE
M&S	MULCH & SHRUBS
OV	OVER
POB	POINT OF BEGINNING
Rim	RIM ELEVATION
(R)	RECORD
SB	STONE BOUND
EP/A.P.	ESCUTCHEON PIN WITH LEAD PLUG
S.H.L.O.	STATE HIGHWAY LAYOUT
SQ. FT.	SQUARE FEET
TC	TOP OF CURB
TR	CENTER OF THROUGH
TT	TOP OF TRAP
TW	TOP OF WALL
VGC	VERTICAL GRANITE CURB
C	CABLE TELEVISION
D	DRAIN
E	ELECTRIC
G	GAS
OHW	OVERHEAD WIRES
S	SEWER
T	TELEPHONE
W	WATER
12"D(CI)	PIPE SIZE AND MATERIAL
CI	CAST IRON
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
X X	METAL FENCE
	WOOD FENCE
	GUARD RAIL
DSC	DIGSAFE CABLE
DSD	DIGSAFE DRAIN
DSE	DIGSAFE ELECTRIC
DSG	DIGSAFE GAS
DSS	DIGSAFE SEWER
DSST	DIGSAFE STEAM
DST	DIGSAFE TELEPHONE
DSW	DIGSAFE WATER
(P)	PAINTED UTILITY LINE

BOUNDARY DESCRIPTIONS PER TITLE COMMITMENT NO. 16–0147KC–FN(MA) ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF MAY 19, 2016.

PARCEL 1 – REGISTERED LAND

A CERTAIN PARCEL OF LAND SITUATED IN THAT PART OF SAID BOSTON CALLED SOUTH BOSTON, IN THE COUNTY OF SUFFOLK AND COMMONWEALTH OF MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

NORTHEASTERLY BY W. FIRST STREET, TWO HUNDRED ONE AND 65/100 (201.65) FEET;
SOUTHEASTERLY BY LAND NOW FOR FORMERLY OF NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY, ONE HUNDRED EIGHTY–FIVE AND 74/100 (185.74) FEET;
SOUTHWESTERLY BY W. SECOND STREET, ONE–HUNDRED NINETY–THREE AND 92/100 (193.92) FEET; AND
NORTHWESTERLY BY LAND NOW OR FORMERLY OF RUSSELL S. REED ET AL., THE LINE RUNNING IN PART THROUGH THE MIDDLE OF A TWENTY–FOUR (24) INCH BRICK WALL AND IN PART THROUGH THE MIDDLE OF A TWELVE (12) INCH BRICK WALL, ONE HUNDRED EIGHTY AND 82/100 (180.82) FEET;

ALL OF SAID BOUNDARIES ARE DETERMINED BY THE COURT TO BE LOCATED AS SHOWN ON A PLAN DRAWN BY L.G. BRACKETT AND CO., ENGINEERS, DATED JUNE 21, 1948, AS MODIFIED AND APPROVED BY THE COURT, FILED IN THE LAND REGISTRATION OFFICE AS PLAN NO. 22068–A, A COPY OF A PORTION OF WHICH IS FILED WITH CERTIFICATE OF TITLE NO. 53514.

FOR TITLE REFERENCE SEE DEED OF JAMES C. DOW DATED JANUARY 24, 1995 RECORDED WITH THE SUFFOLK REGISTRY DISTRICT OF THE LAND COURT AS DOCUMENT NO. 522581.

PARCEL 2 – UNREGISTERED LAND

SAID PARCEL OF LAND IS SHOWN AS PARCEL SR–37 ON A PLAN ENTITLED "THE COMMONWEALTH OF MASSACHUSETTS PLAN OF LAND IN THE CITY OF BOSTON SUFFOLK COUNTY" DATED DECEMBER ==, 1998 AND PREPARED BY EDWARD DIXON, RECORDED AT BOOK 23756, PAGE 327. THE PARCEL IS MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

A PARCEL OF LAND SITUATED IN THE CITY OF BOSTON, COMPRISING A PORTION OF PARCEL 60–1–UR TAKEN IN CONNECTION WITH LAYOUT NO. 6863 IS BOUNDED AS FOLLOWS:

SOUTHEASTERLY IN THREE COURSES BY HAUL ROAD 133.95 FEET, 40.20 FEET AND 24.91 FEET RESPECTIVELY.
SOUTHWESTERLY BY WEST SECOND STREET 3.66 FEET;
NORTHWESTERLY AND WESTERLY BY LAND NOW OR FORMERLY OF BOSTON REALTY TRUST 24.29 FEET AND 161.45 FEET RESPECTIVELY; AND
NORTHERLY BY LAND OF COMMONWEALTH OF MASSACHUSETTS 67.68 FEET.

CONTAINING ABOUT 5,650 SQUARE FEET (0.13± ACRES) MORE OR LESS AS SHOWN ON SAID PLAN.

PERIMETER BOUNDARY DESCRIPTION (PER SURVEY)

A CERTAIN PARCEL OF LAND SITUATED IN THE CITY OF BOSTON, SUFFOLK COUNTY AND THE COMMONWEALTH OF MASSACHUSETTS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A MAG NAIL FOUND ON THE SOUTHWESTERLY SIDELINE OF WEST FIRST STREET, SAID POINT BEING S 57°10'51" E, A DISTANCE OF 73.35 FEET FROM THE INTERSECTION OF SAID WEST FIRST STREET AND THE SOUTHEASTERLY SIDELINE OF A STREET, THENCE;

RUNNING S 57°10'51" E, BY SAID WEST FIRST STREET, A DISTANCE OF 162.01 FEET TO A POINT OF CURVATURE;

THENCE RUNNING BY SAID WEST FIRST STREET, ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 758.86 FEET AND AN ARC LENGTH OF 39.64 FEET TO A POINT OF NON–TANGENCY;

THENCE RUNNING S 56°48'36" E, BY LAND NOW OR FORMERLY OF THE COMMONWEALTH OF MASSACHUSETTS, A DISTANCE OF 67.68 FEET TO A POINT ON THE NORTHWESTERLY SIDELINE OF SOUTH BOSTON BYPASS ROAD;

THENCE TURNING AND RUNNING S 55°31'21" W, BY SAID SOUTH BOSTON BYPASS ROAD, A DISTANCE OF 133.89 FEET TO A POINT;

THENCE TURNING AND RUNNING S 50°43'10" W BY SAID SOUTH BOSTON BYPASS ROAD, A DISTANCE OF 40.20 FEET TO A POINT;

THENCE TURNING AND RUNNING S 56°25'48" W BY SAID SOUTH BOSTON BYPASS ROAD, A DISTANCE OF 25.04 FEET TO A POINT AT THE INTERSECTION OF SAID BYPASS ROAD AND THE NORTHEASTERLY SIDELINE OF WEST SECOND STREET;

THENCE TURNING AND RUNNING N 33°45'51" W BY SAID WEST SECOND STREET, A DISTANCE OF 12.12 FEET TO A POINT;

THENCE TURNING AND RUNNING N 57°05'11" W BY SAID WEST SECOND STREET, A DISTANCE OF 185.29 FEET TO A POINT;

THENCE TURNING AND RUNNING N 33°11'25" E, BY LAND NOW OR FORMERLY ARTISTS FOR HUMANITY, INC., A DISTANCE OF 181.07 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINING 42,219 SQUARE FEET.

TO: FIDELITY NATIONAL TITLE INSURANCE COMPANY; 105 WEST FIRST STREET OWNER, LLC AND MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C.:

THIS IS TO CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 7(A), 7(B)(1), 7(C), 8, 9, 11, 13, 14, 16, 17 AND 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON SEPTEMBER 27 & 30 AND OCTOBER 3 & 5, 2016.

FELDMAN LAND SURVEYORS

PAUL R. FOLEY, PLS (MA# 48355)
PFOLEY@FELDMANSURVEYORS.COM

11/1/2017
DATE

COMMONWEALTH OF MASSACHUSETTS PAUL R. FOLEY No. 48355 LAND SURVEYOR

ALTA/NSPS LAND TITLE SURVEY
105 WEST FIRST STREET
BOSTON, (SOUTH BOSTON) MASS.

FELDMAN LAND SURVEYORS
152 HAMPDEN STREET
BOSTON, MASS. 02119

JANUARY 7, 2017
PHONE: (617)357–9740
www.feldmansurveyors.com

FELDMAN LAND SURVEYORS

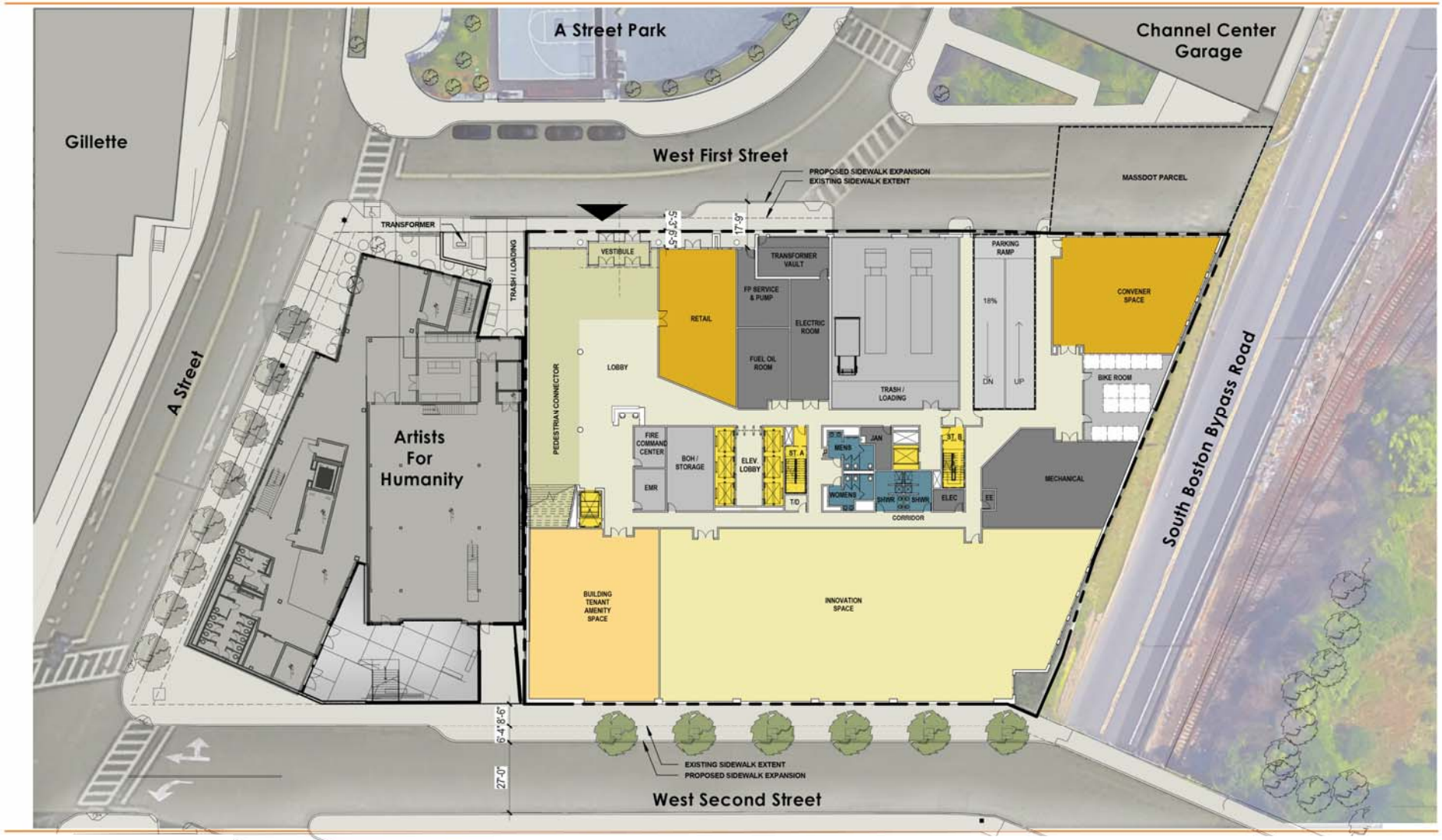
20 0 10 20 40 80
SCALE: 1"=20'

RESEARCH JT	FIELD CHIEF NG	PROJ MGR PRF	APPROVED PRF	SHEET NO. 1	OF 1
CALC JT	CADD JT	FIELD CHECKED	CRD FILE 15336	JOB NO. 15336	

FILENAME: S:\PROJECTS\15300s\15336\DWG\15336–ALTA.dwg

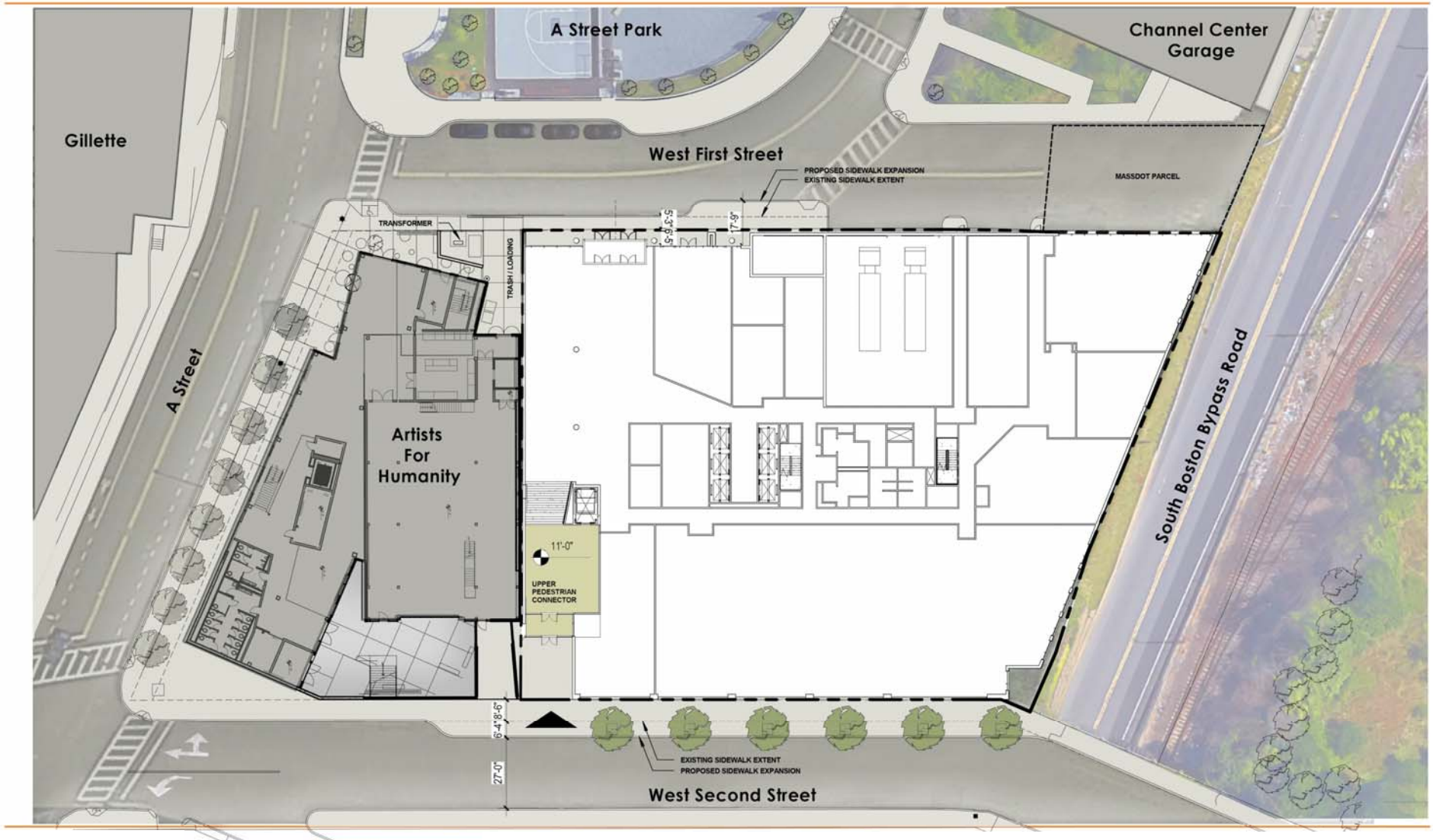
Appendix B

Floor Plans, Elevations, and Sections

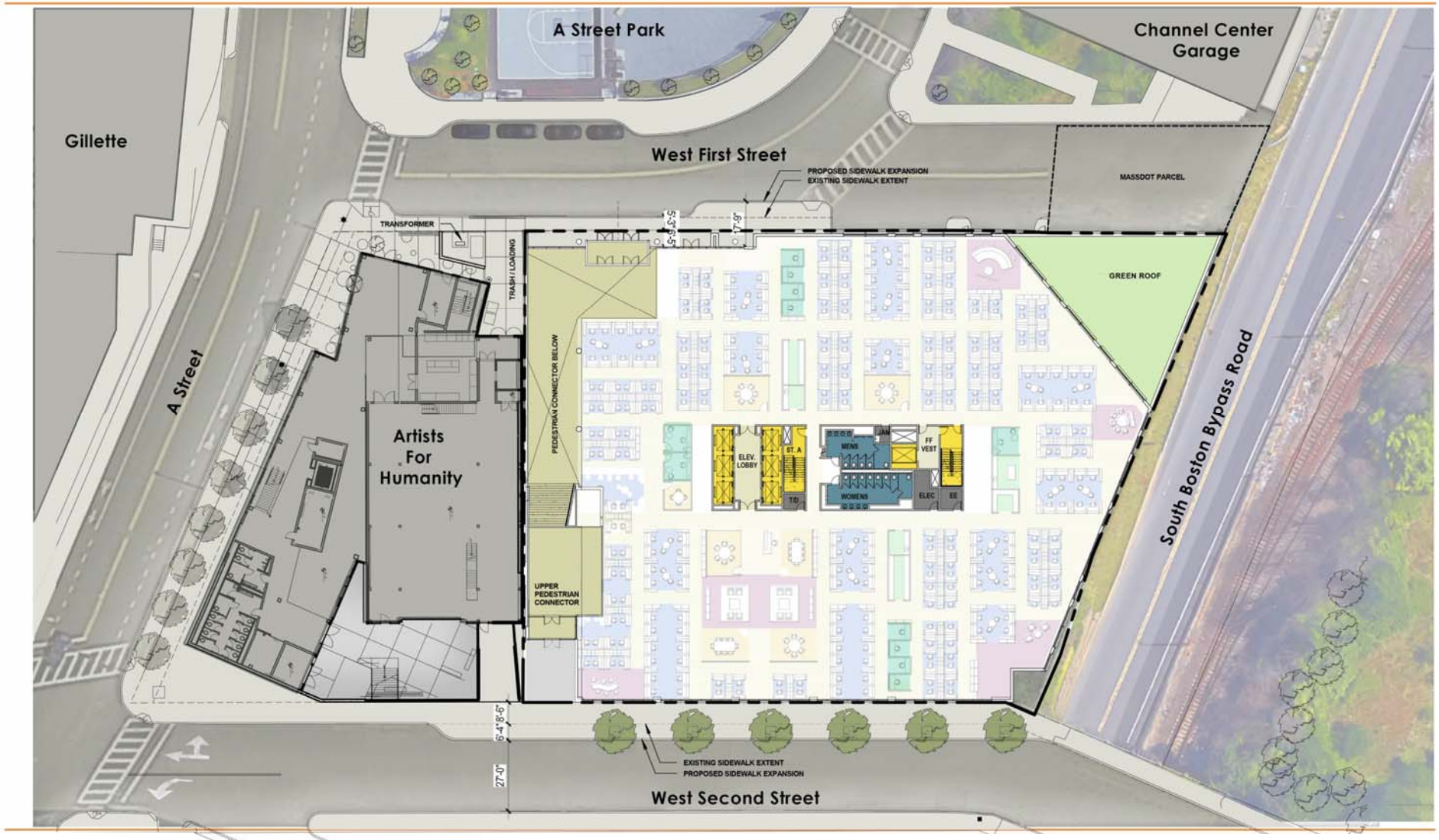


105 West First Street Boston, Massachusetts

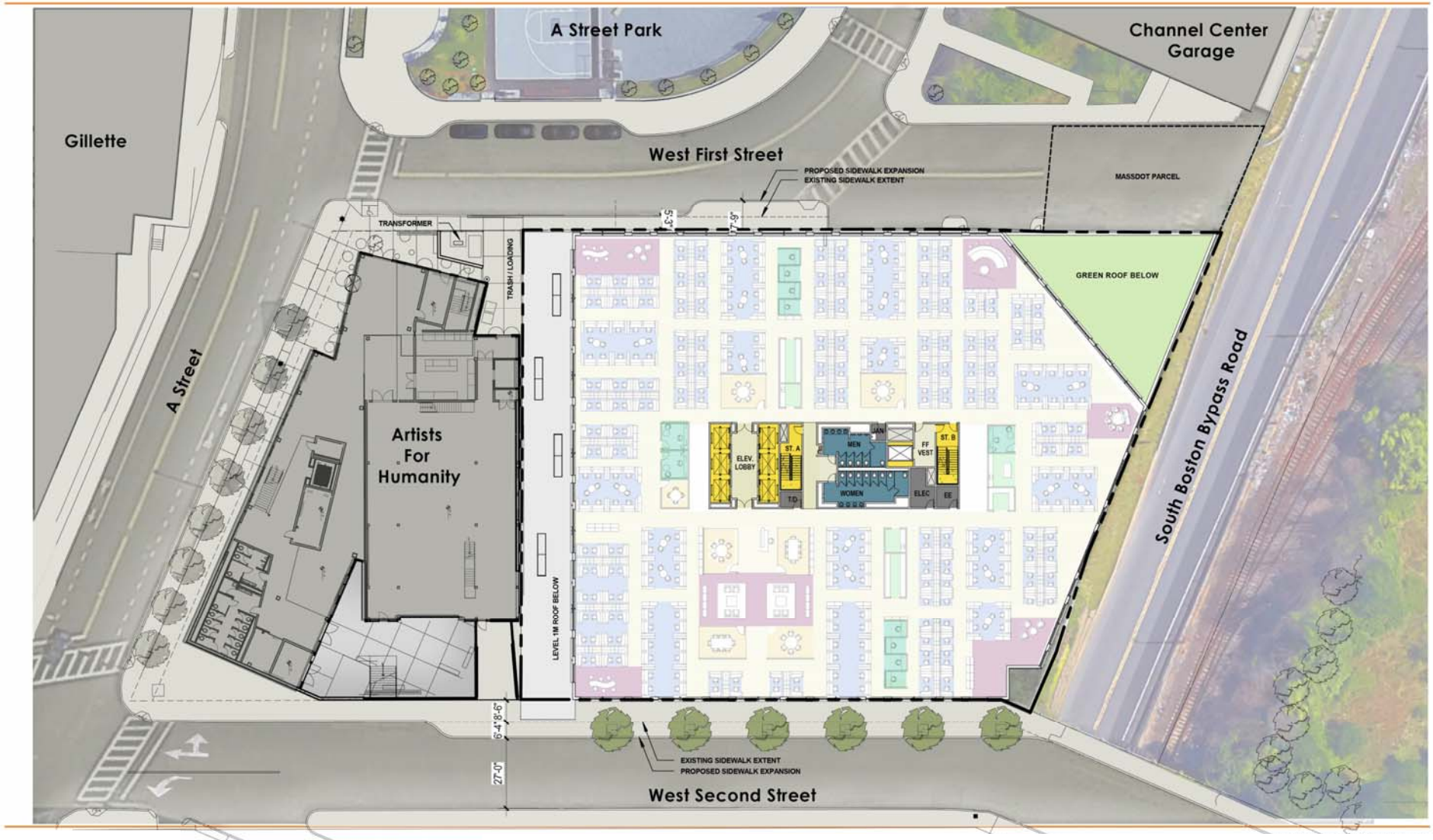
105 West First Street Boston, Massachusetts



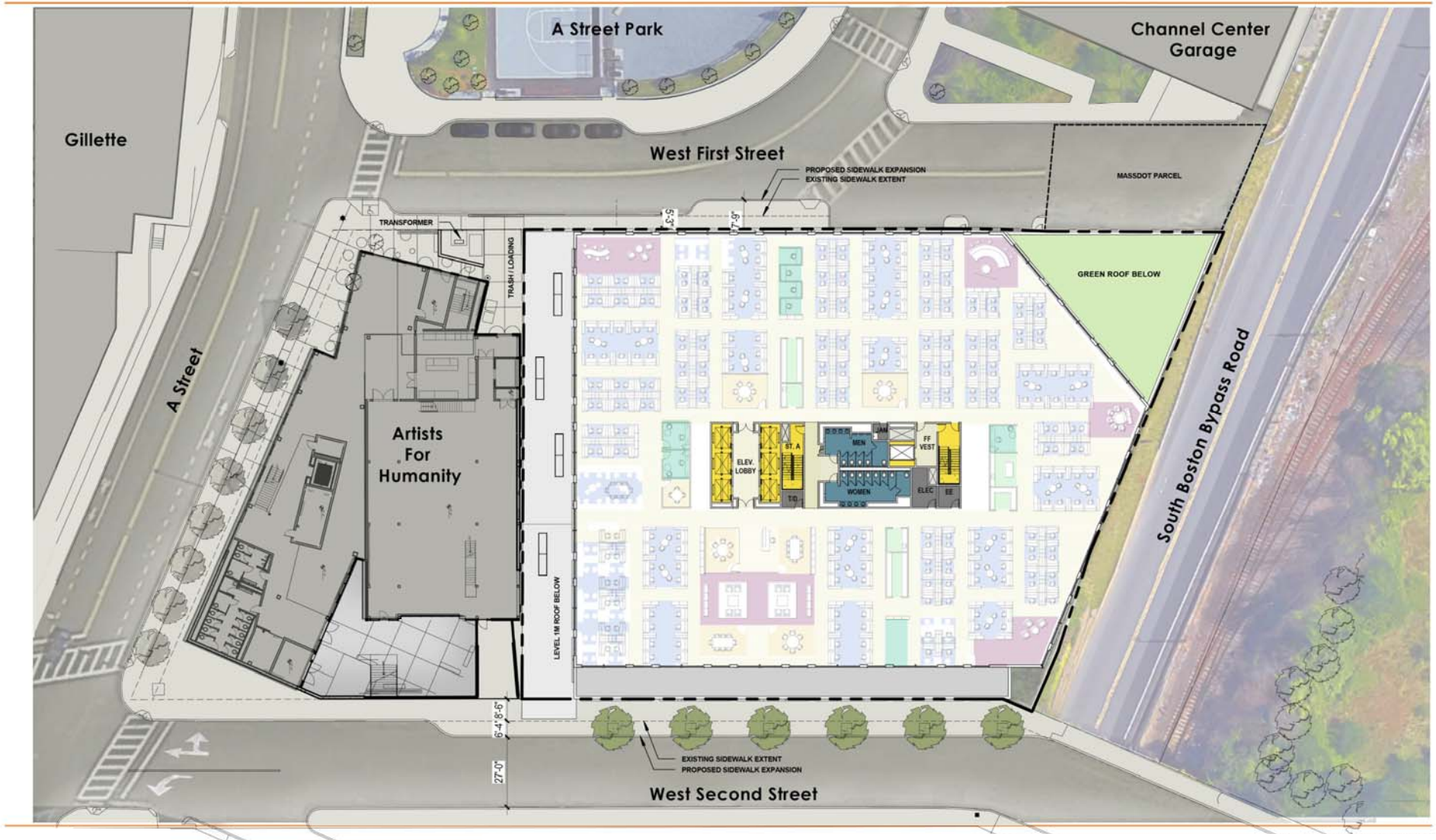
105 West First Street Boston, Massachusetts



105 West First Street Boston, Massachusetts



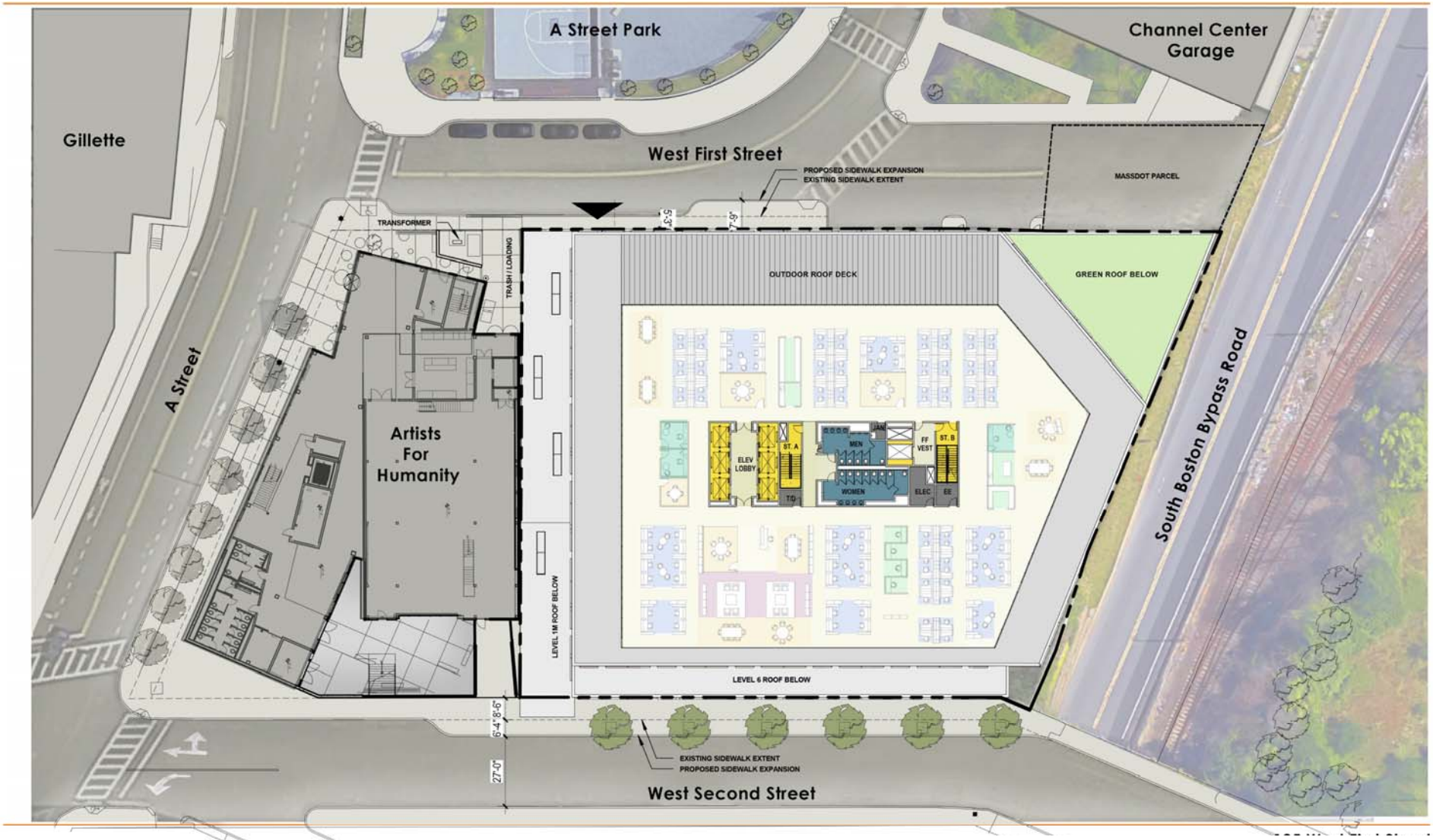
105 West First Street Boston, Massachusetts



105 West First Street Boston, Massachusetts

Stantec

Sixth and Seventh Floor Plan



105 West First Street Boston, Massachusetts

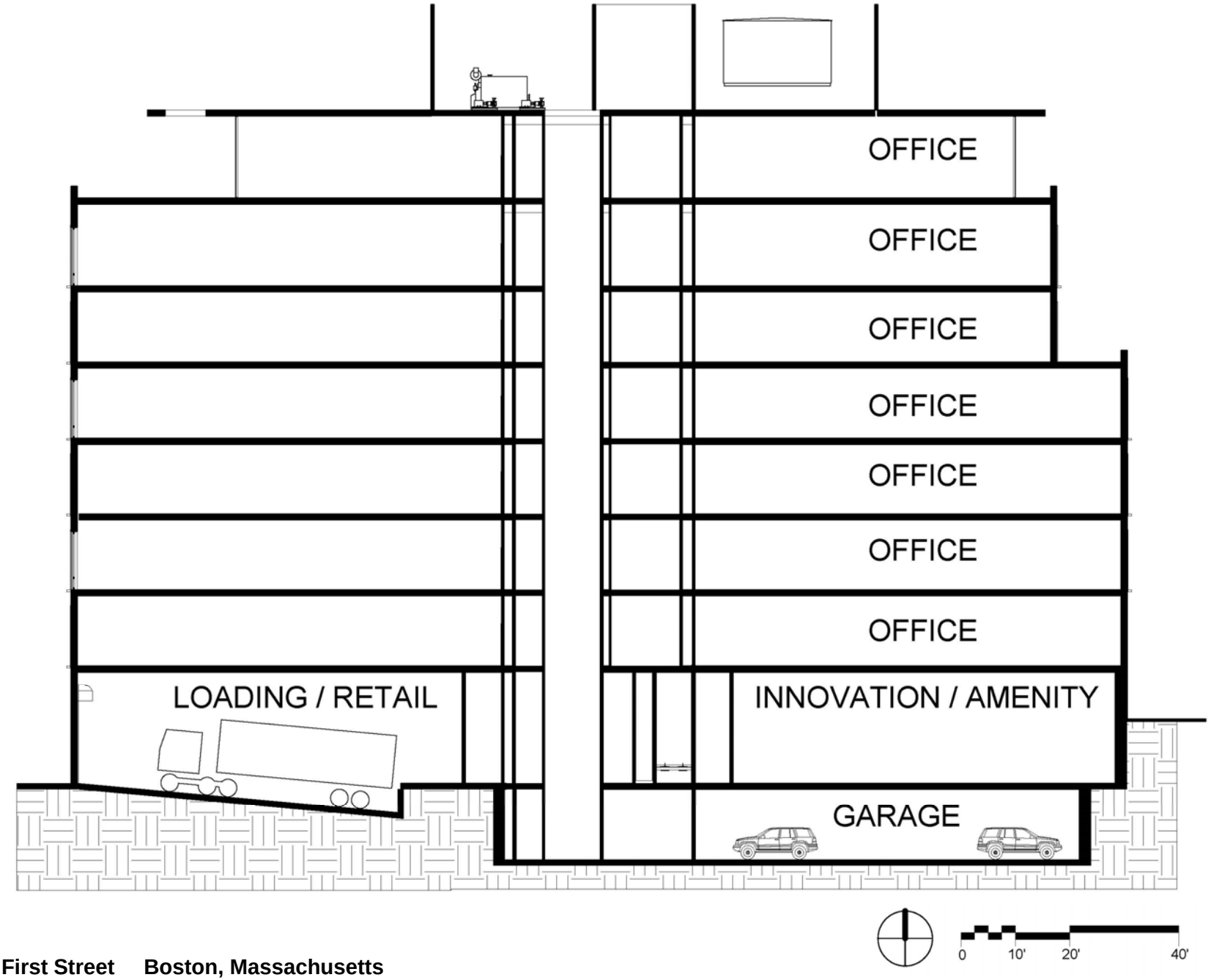
Stantec

Eighth Floor Plan

West First Street Elevation

West Second Street Elevation

105 West First Street Boston, Massachusetts



105 West First Street Boston, Massachusetts

Appendix C

Letter of Intent

CV PROPERTIES LLC
Development ■ Investment

December 15, 2016

By Hand

Mr. Brian P. Golden, Director
Boston Planning & Development Agency
One City Hall Plaza, 9th Floor
Boston, MA 02201-1007

Re: 105 West First Street, South Boston

Dear Director Golden:

This letter constitutes a letter of intent pursuant to the Mayoral Executive Order dated October 10, 2000, as amended on April 3, 2001, with respect to a proposed project at 105 West First Street in South Boston.

The 105 West First Street project (the "Proposed Project") will comprise the construction of a new eight-story building with approximately 266,750 square feet of Gross Floor Area, to be used primarily for office, research and development, and other compatible uses and uses accessory thereto. The building will also contain space along West First Street on the ground floor for retail/café and innovation/community work space/gallery uses or other uses which will activate the ground floor and pedestrian realm. The Proposed Project will include approximately 37 parking spaces within the lower level of the building.

The Proposed Project will also contain a pedestrian connector which will allow the public to pass through an enclosed portion of the building to and from the West Second Street neighborhood; West Second Street lies about 12 feet above the West First Street grade, so providing this new pedestrian route will greatly enhance residents' accessibility to the City's newest park – A Street Park.

The Proposed Project will be developed on an approximately 42,219 square foot site bounded by West First Street to the north, the South Boston Bypass Road to the east, West Second Street to the south, and the property of Artists for Humanity, Inc. to the west. The project proponent, 105 West First Street Owner, LLC, currently has the project site under a binding contract of sale with its current owner.

The Proposed Project will require zoning relief as the project site is located within an industrial zoning district within which the permitted Floor Area Ratio is 2.0, and the project site is also located within the Restricted Parking Overlay District.

CV PROPERTIES LLC
Development ■ Investment

We look forward to working with the BPDA and other City agencies on the successful completion of the Article 80B Large Project Review process for the Proposed Project.

Thank you.

Sincerely,
105 WEST FIRST STREET
OWNER LLC

By: _____
Richard A. Galvin
Duly Authorized

cc: Jonathan Greeley
Rebecca A. Lee, Esq.

Appendix D

Transportation Appendix

Available Upon Request

Appendix E

Climate Change Preparedness Questionnaire

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	**105 West First Street**
Project Address Primary:	**105 West First Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Eli Long/ VP Development/ CV Properties/** elong@cvprop.com

A.2 - Team Description

Owner / Developer:	**105 West First Street Owner, LLC**
Architect:	**Stantec Architecture**
Engineer (building systems):	**WSP Parsons Brinkerhoff**
Sustainability / LEED:	**Soden Sustainability**
Permitting:	**Epsilon**
Construction Management:	**Suffolk Construction**
Climate Change Expert:	**Epsilon**

A.3 - Project Permitting and Phase

At what phase is the project – most recent completed submission at the time of this response?

☑ PNF / Expanded PNF Submission	☐ Draft / Final Project Impact Report Submission	☐ BRA Board Approved	☐ Notice of Project Change
☐ Planned Development Area	☐ BRA Final Design Approved	☐ Under Construction	☐ Construction just completed:

A.4 - Building Classification and Description

List the principal Building Uses:	Commercial Office
List the First Floor Uses:	*Commercial, Retail, Civic*

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

☐ Wood Frame	☐ Masonry	☑ Steel Frame	☐ Concrete

Describe the building?

Site Area:	*42,219 SF*	Building Area:	*266,000 SF*
Building Height:	*115 Ft.*	Number of Stories:	*8 Flrs.*
First Floor Elevation (reference Boston City Base):	*17.0 Elev.*	Are there below grade spaces/levels, if yes how many:	*Yes/ 1 level*

A.5 - Green Building

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

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

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

Registered:	*Yes*	Certified:	*Yes*

A.6 - Building Energy-

What are the base and peak operating energy loads for the building?

Electric:	*3,006 (kW)*	Heating:	*12,000,000 (MMBtu/hr)*
What is the planned building Energy Use Intensity:	*(kWh/SF)*	Cooling:	*1,000 (Tons/hr)*

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

Electric:	*320 (kW)*	Heating:	*0 (MMBtu/hr)*
		Cooling:	*0 (Tons/hr)*

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

Electrical Generation:	*500 (kW)*		Fuel Source:	*Diesel oil*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*(Units)*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

8/91 Deg.	Based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

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

95 Deg.	*5 Days*	*6 Events / yr.*

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

30-90 Days	*0.2 Events / yr.*

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

45 Inches / yr.	*4 Inches*	*0.5 Events / yr.*

What Extreme Wind Storm Event characteristics will be used for project planning – Peak Wind Speed, Duration of Storm Event, and Frequency of Events per year?

130 Peak Wind	*10 Hours*	*0.25 Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	***17%***
How is performance determined:	Energy Modeling

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

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

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

Roof:	*R = 20*	Walls / Curtain Wall Assembly:	*R = 25*
Foundation:	*NA*	Basement / Slab:	*R =5*
Windows:	*R = 2.1 / U =0.475*	Doors:	*R = 5*

What specific measures will the project employ to reduce building energy demands on the utilities and infrastructure?

	☐ On-site clean energy / CHP system(s)	☐ Building-wide power dimming	☐ Thermal energy storage systems	☐ Ground source heat pump
	☐ On-site Solar PV	☐ On-site Solar Thermal	☐ Wind power	☐ None
Describe any added measures:	The building will be PV ready			

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:	☑ Connected to local distributed electrical	☐ Building will be Smart Grid ready	☐ Connected to distributed steam, hot, chilled water	☐ Distributed thermal energy ready

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

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

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

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

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

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

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

Select all appropriate:	☐ On-site retention systems & ponds	☑ Infiltration galleries & areas	☐ Vegetated water capture systems	☑ Vegetated roofs
Describe other strategies:				

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

	No

Describe site conditions?

Site Elevation – Low/High Points:	*5.93/30.12 Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*1,050 Ft.*

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

Coastal Zone:	*Yes*	Velocity Zone:	*No*
Flood Zone:	*Yes*	Area Prone to Flooding:	*No*

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

2013 FEMA Prelim. FIRMs:	*Yes*	Future floodplain delineation updates:	*Yes*

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

	0 Ft.

If you answered YES to any of the above Location Description and Classification questions, please complete the following questions. ***Otherwise you have completed the questionnaire; thank you!***

C - Sea-Level Rise and Storms

This section explores how a project responds to Sea-Level Rise and / or increase in storm frequency or severity.

C.2 - Analysis

How were impacts from higher sea levels and more frequent and extreme storm events analyzed:

Sea Level Rise:	*3 Ft.*	Frequency of storms:	*0.25 per year*

C.3 - Building Flood Proofing

Describe any strategies to limit storm and flood damage and to maintain functionality during an extended periods of disruption.

What will be the Building Flood Proof Elevation and First Floor Elevation:

Flood Proof Elevation:	*16.65 Boston City Base Elev.(Ft.)*	First Floor Elevation:	*17.16 Boston City Base Elev. (Ft.)*

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

	Yes	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*
If Yes, describe:	Temporary barricades will be designed to protect the entrance to the below grade parking		

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

☑ Systems located above 1st Floor.	☑ Water tight utility conduits	☑ Waste water back flow prevention	☑ Storm water back flow prevention

Were the differing effects of fresh water and salt water flooding considered:

Yes

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

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

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

No	
If Yes, describe:	

Will the building remain occupiable without utility power during an extended period of inundation:

No	If Yes, for how long:	*days*

Describe any additional strategies to addressing sea level rise and or sever storm impacts:

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes*	☑ Hardened / Resilient Ground Floor Construction	☑ Temporary shutters and or barricades	☑ Resilient site design, materials and construction

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

Select appropriate:	*No*	☐ Surrounding site elevation can be raised	☑ Building ground floor can be raised	☐ Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

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

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

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

Appendix F

Accessibility Checklist

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

Article 80 | ACCESSIBILTY CHECKLIST

Project Information

Project Name:	105 West First Street
Project Address Primary:	105 West First Street
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Eli Long/ VP Development/ CV Properties/ elong@cvprop.com

Team Description

Owner / Developer:	105 West First Street Owner, LLC
Architect:	Stantec Architecture
Engineer (building systems):	WSP Parsons Brinkerhoff
Sustainability / LEED:	Soden Sustainability
Permitting:	Epsilon
Construction Management:	Suffolk Construction

Project Permitting and Phase

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

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

Article 80 | ACCESSIBILTY CHECKLIST

Building Classification and Description

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

Residential – One to Three Unit	Residential - Multi-unit, Four +	Institutional	Education
Commercial	☑Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List)	*Commercial, civic, retail*		

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	☑Steel Frame	Concrete

Describe the building?

Site Area:	*42, 219 SF*	Building Area:	*266,000 SF*
Building Height:	*115 Ft.*	Number of Stories:	*8 Flrs.*
First Floor Elevation:	*17.0 Elev.*	Are there below grade spaces:	*Yes*

Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the development neighborhood and identifying characteristics.	The Project site is located in South Boston in an area that is transitioning from mostly industrial and commercial uses to predominantly residential with ground floor retail uses. The Project site is adjacent to the Artist For Humanity building, and across the street from the new A Street Park.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	The site is located within a one quarter mile of the MBTA Broadway Station (5 min walk) which provides access to the Red Line and MBTA busses 9, 11 and 47.
List the surrounding institutions: hospitals, public housing and	Surrounding institutions include the Boston Convention and Exhibition Center and the JF Condon School elementary school.

elderly and disabled housing developments, educational facilities, etc.	
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	The Project site is not located on a priority accessible route. The site is located near several parks, including the A Street Park, Flaherty Park and the Lawn on D

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	There are existing sidewalks on West Second Street.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The sidewalks are a combination of concrete and asphalt, and are in poor condition.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	No, sidewalks adjacent to the Project will be replaced.
Is the development site within a historic district? **If yes,** please identify.	No.

Surrounding Site Conditions – Proposed

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

pedestrians.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	Yes The sidewalk along West First Street is 5'-8" and increases up to 11'9 near lobby. The sidewalk along West Second Street will be widened along the length of the property to approximately 14'-10"
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Industrial
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	West First 5'-8" total: Frontage – 0";Pedestrian – 5'-2";Furnishings – 0";Curb – 6" West First 11'9" total: Frontage 3'1"; Pedestrian – 5'2"; Furnishings – 0"; Curb- 6" West Second - 14'10" total: Frontage – 2'; Pedestrian 7'4"; Furnishings – 5'0"; curb – 6"
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	West First – Concrete paving for pedestrian and Furnishings. West Second – Concrete unit pavers in frontage, Concrete paving in pedestrian, permeable unit pavers and street trees in Furnishings Proposed materials will be within City of Boston pedestrian right of way, except for Frontage zone along West First which is located on Private Property.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	

Proposed Accessible Parking:

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding

accessible parking requirement counts and the Massachusetts Office of Disability Handicap Parking Regulations.

What is the total number of parking spaces provided at the development site parking lot or garage?	There will be a total of 35 parking spaces provided in the basement of the building.
What is the total number of accessible spaces provided at the development site?	There will be a total of 2 accessible spaces, and 1 will be designated for van accessibility.
Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	No
Where is accessible visitor parking located?	Accessible visitor parking is available in the Channel Center Garage
Has a drop-off area been identified? **If yes,** will it be accessible?	Yes – it will be accessible
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	See attached.

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	See attached.
Describe accessibility at each entryway: Flush Condition, Stairs,	The primary entrance off West First Street is a flush condition and fully accessible. The entrance off West Second Street is also a flush condition and fully accessible.

Ramp Elevator.	An elevator will be provided to allow accessible circulation between West Second and West First Street through the pedestrian connector.
Are the accessible entrance and the standard entrance integrated?	Yes, all entrances are accessible
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	Yes. See attached.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	This has not yet been developed.

Accessible Units: (If applicable)

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

What is the total number of proposed units for the development?	
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	
How many accessible units are being proposed?	
Please provide plan and diagram of the accessible units.	
How many accessible units will also be affordable? If none, please describe reason.	
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. If yes,	

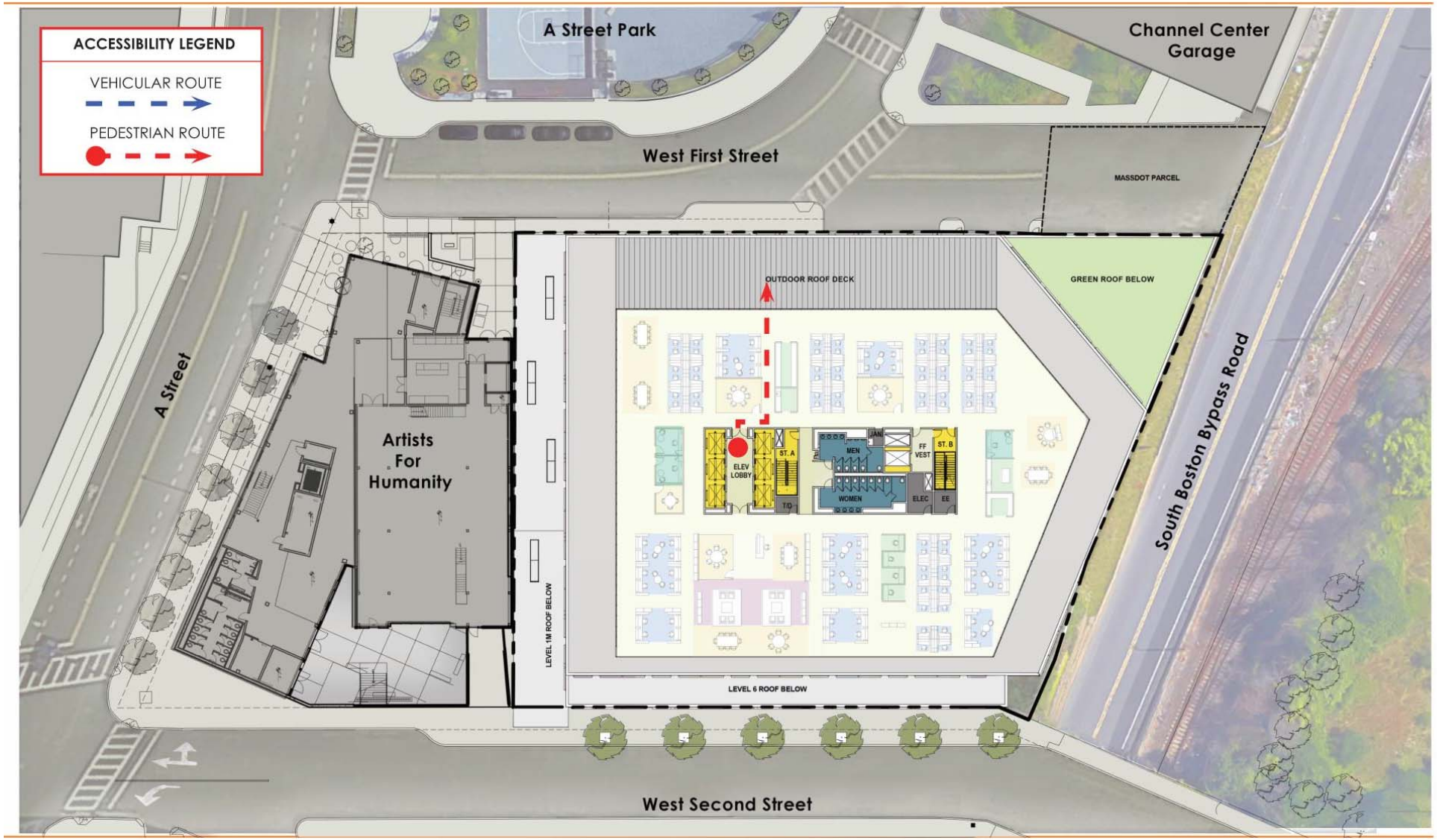
please provide reason.	
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	

Thank you for completing the Accessibility Checklist!

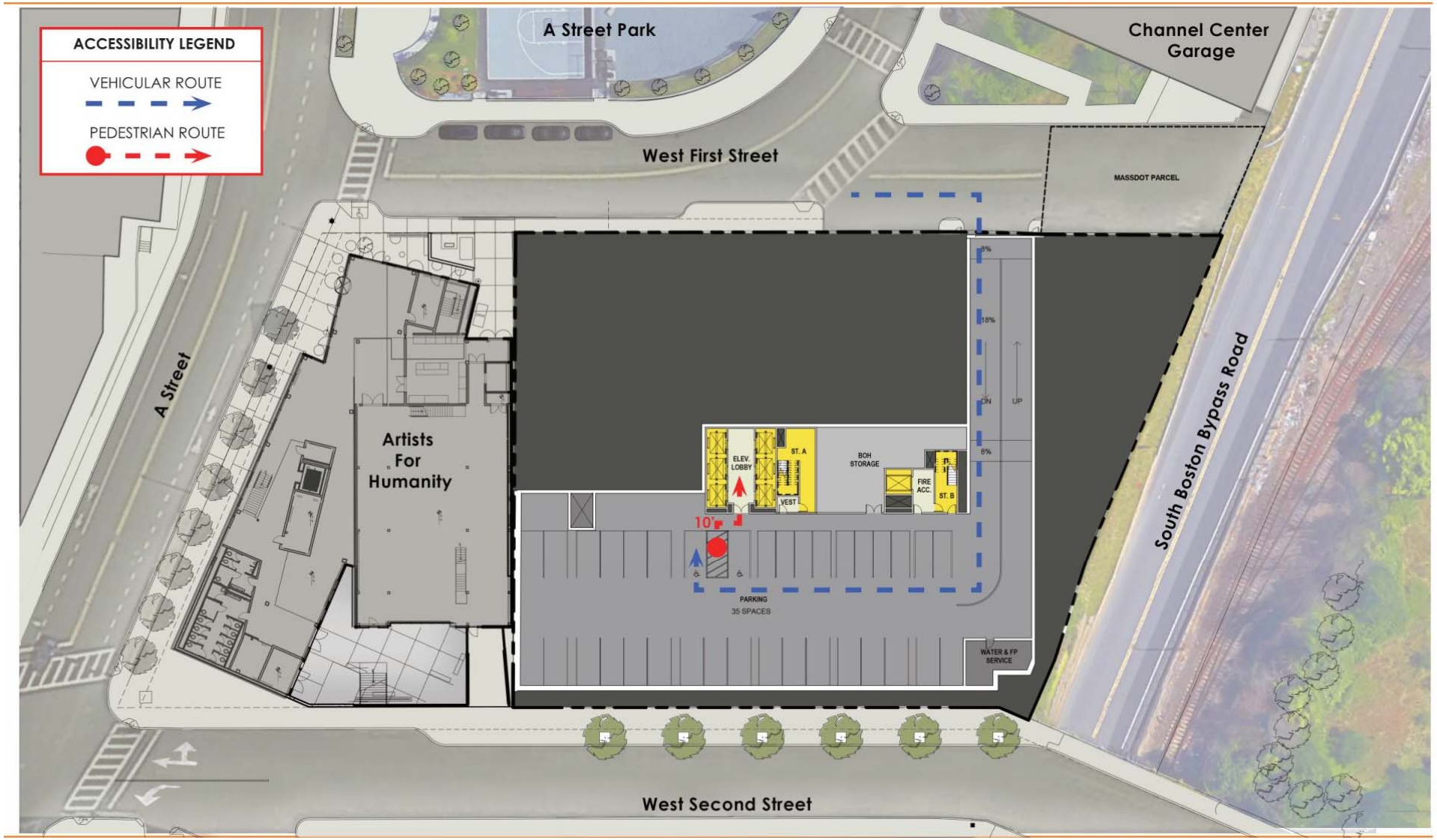
For questions or comments about this checklist or accessibility practices, please contact:

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

105 West First Street Boston, Massachusetts



105 West First Street Boston, Massachusetts



105 West First Street Boston, Massachusetts

Stantec

Parking Level Accessibility