



Onyx Hotel Expansion

155 Portland Street, Boston, MA

Expanded Project Notification Form
November 15, 2019

Submitted to: Boston Planning and Development Agency

Submitted by: Back Street Boston Holdings, LLC

Prepared by: Bohler Engineering

In Association With:

Group One Partners
Dain/Torpy
CHA Consulting, Inc.
McPhail Associates, LLC
Vanderweil Engineers
Tech Environmental
The Green Engineer
Hemenway & Barnes



BOHLERTM
ENGINEERING

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1.0 PROJECT SUMMARY

1.1 Project Identification

Project Name: Onyx Hotel

Address/Location: 169 Portland Street, 236 Friend Street (155 Portland Street)
Boston, MA 02114

Assessor's Parcel #: 0301648000, 0301657000

Back Street Boston Holdings, LLC (the "Proponent"), submits this Expanded Project Notification Form ("EPNF") to initiate review by the Boston Redevelopment Authority, d/b/a Boston Planning & Development Agency (the "BPDA") under Article 80 of the Boston Zoning Code (the "Code") for the development of an addition to the existing hotel (the "Project") located at 155 Portland Street in the Bulfinch Triangle District. The parcel IDs for the Project are: 0301648000 and 0301657000. This EPNF presents details about the Project and provides a comprehensive analysis of traffic/transportation and other potential environmental impacts, as well as infrastructure needs to inform reviewing agencies and the community about the Project, its potential impacts, and the mitigation measures proposed to address those potential impacts.

1.2 Project Team

Proponent: Back Street Boston Holdings, LLC
800 Boylston Street, Suite 1390
Boston, MA 02199
Andrew Copelotti
William McQuillan

Proponent Description: The Project will be developed by Back Street Boston Holdings, LLC, a Massachusetts Limited Liability Corporation. This entity's EIN number is 83-4531970 and its Manager is William McQuillan, with an address of 800 Boylston Street, Suite 1390, c/o Boylston Properties, Boston, MA 02199. The Project will be wholly owned by Back Street Boston Holdings, LLC, or an affiliated entity.

Architect: Group One Partners
21 W 3rd Street
Boston, MA 02127
(617) 268-7000
Harry Wheeler
Rob Festa

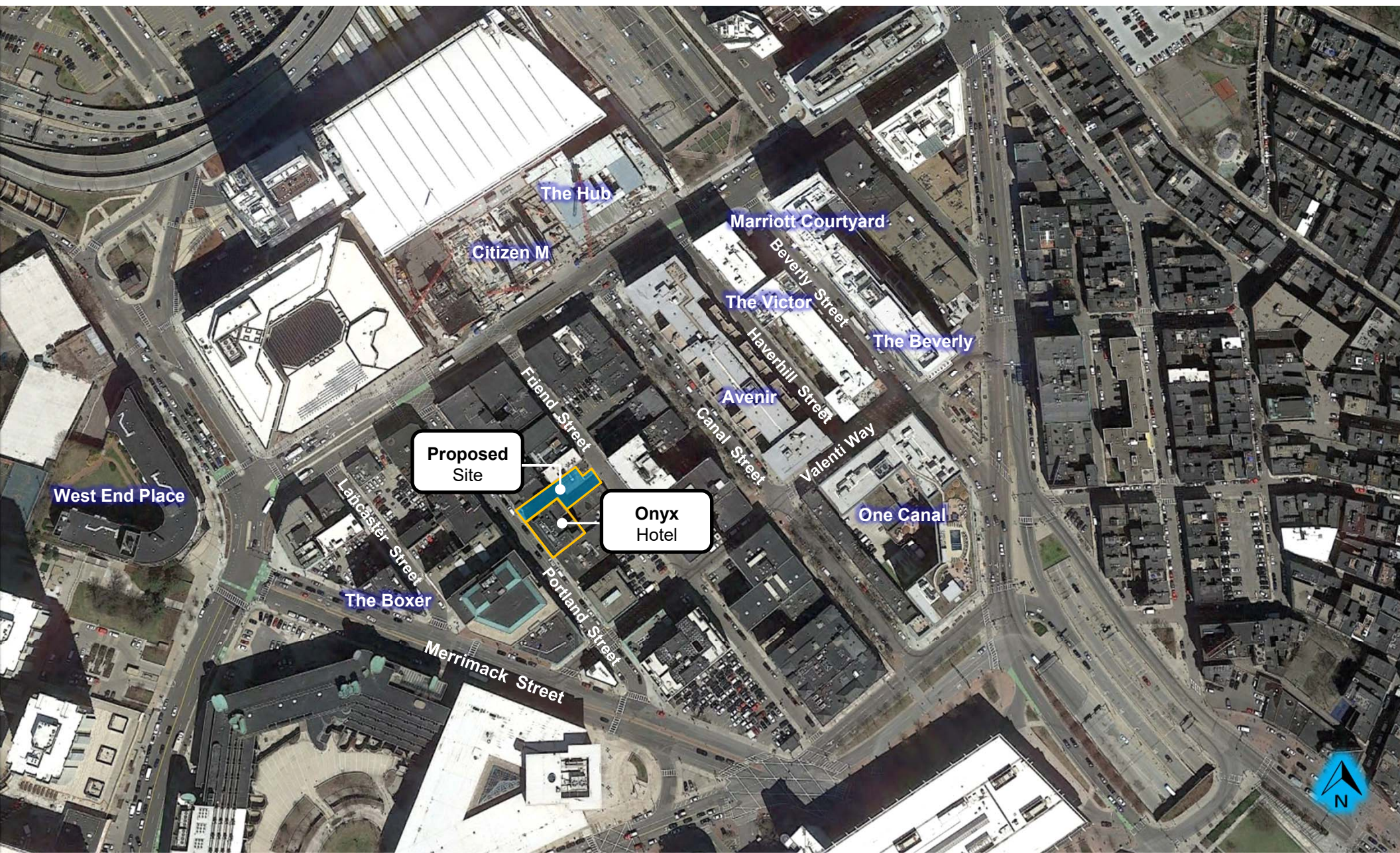
Legal:	Dain/Torpy 745 Atlantic Avenue Boston, MA 02111 (617) 542-4800 Donald Wiest
Civil Engineering & Permitting Consultant:	Bohler Engineering 45 Franklin Street, 5 th Floor Boston, MA 02110 (617) 849-8040 Stephen Martorano, PE Daniel Bourque, PE
Transportation Consultants:	CHA Consulting, Inc. 141 Longwater Drive #104 Norwell, MA 02061 (781) 982-5400 Ellen Donohoe-Moshier, PE, ENV SP
Geotechnical Consultant:	McPhail Associates, LLC. 2269 Massachusetts Avenue Cambridge, MA 02140 (617) 868-1420 Jonathan Patch
Mechanical, Electrical and Plumbing Systems and Fire Protection:	Vanderweil Engineers 274 Summer Street Boston, MA 02210 (617) 423-7423 Paul Van Kauwenberg
Landscape Architects:	Bohler Engineering 45 Franklin Street, 5th Floor Boston, MA 02110 (617) 849-8040 Matthew Mrva, RLA Jay Emperor, RLA
Acoustical, Air Quality & Wind Consultants:	Tech Environmental 303 Wyman Street 295 Waltham, MA 02451 (781) 890-2220 Mark C. Wallace, QEP, INCE

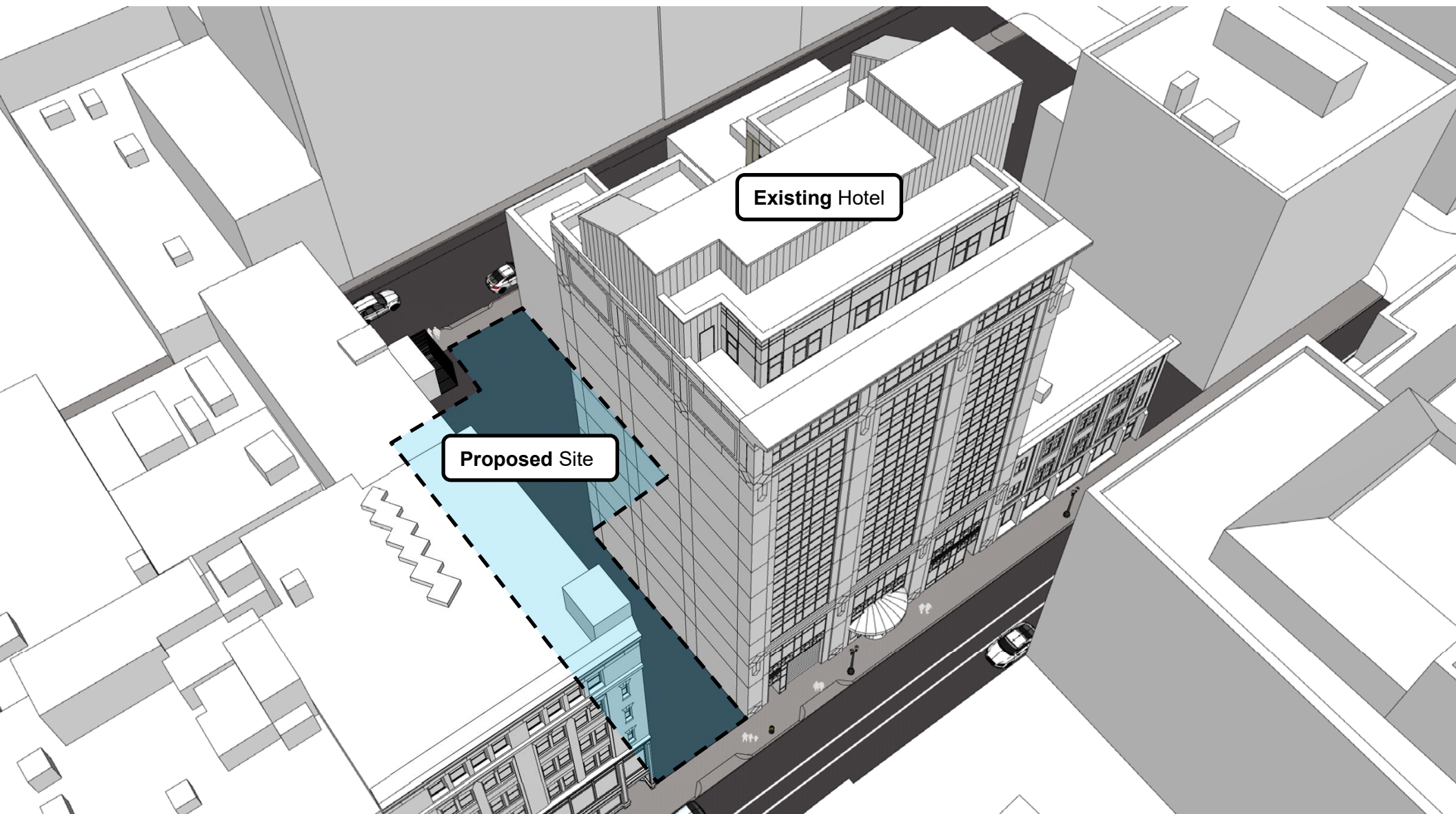
LEED Consultants: The Green Engineer
23 Bradford Street, 1st Floor
Concord, MA 01742
(978) 369-8978
Sarah Michelman
Ryan Montoni

Community Outreach: Hemenway & Barnes LLP
75 State Street
Boston, MA 02109
(617) 557-9723
Johanna Schneider

1.3 Site

The Project is located on two parcels, now or formerly addressed as 169 Portland Street and 236 Friend Street, consisting of approximately 5,478 total square feet of land (0.13 acres) (the “Site”). The existing Hotel has an address of 155 Portland Street, and this address is expected to be used for the expanded Hotel at the completion of the Project. The Site is currently a surface parking lot and is bounded by Friend Street to the North, Portland Street to the South, the existing Onyx Hotel parcel to the East, and two private parcels consisting of mixed-use buildings to the West. See **Figure 1-1** through **Figure 1-5** for Aerial Views of the existing site, Existing Conditions Photographs, and the Existing Conditions Survey.





BOUNDARY DESCRIPTION PER COMMITMENT NO. NCS-58850-CH2
ISSUED BY FIRST AMERICAN TITLE INSURANCE COMPANY HAVING AN
EFFECTIVE DATE OF DECEMBER 24, 2014.

REAL PROPERTY IN THE CITY OF BOSTON, COUNTY OF SUFFOLK, COMMONWEALTH OF MASSACHUSETTS, DESCRIBED AS FOLLOWS:

236 FRIEND STREET - PARCEL 1

THE LAND WITH ANY IMPROVEMENTS THEREON, SITUATED IN SAID BOSTON, SUFFOLK COUNTY, BEING BOUNDARY 236 FRIEND STREET AND BOUNDED AS FOLLOWS:

NORTHEASTERLY BY FRIEND STREET, TWENTY SEVEN (27) FEET;

NORTHWESTERLY BY LOT 109 OR FORMERLY NAMED AS ON A PLAN OF BOSTON CITY CONFORMANCE, DATED OCTOBER 1988, RECORDED IN BOOK 3588, PAGE 295, AS MAY BE AMENDED OR SET FORTH IN THE MASTER DEED OF THE 169 PORTLAND STREET CONDOMINIUM DATED NOVEMBER 5, 1980, RECORDED IN BOOK 3588, PAGE 295, AS MAY BE AMENDED OR SET FORTH IN THE RELATED DECLARATION OF TRUST DATED NOVEMBER 5, 1980, RECORDED IN BOOK 3588, PAGE 303, IN THE RELATED BY-LAWS, IN ANY INSTRUMENT CREATING THE ESTATE OR INTEREST INSURED BY THIS POLICY, AND IN ANY OF THE INSTRUMENTS AFORESAID, (AFFECTS PARCELS 2, 3, 4 AND 5) (NOT PLOTTABLE);

SOUTHWESTERLY ON LAND NOW OR FORMERLY OF JOHN HOLTON, TWENTY SIX (26) FEET AND TEN (10) INCHES TO LAND BELONGING TO THE HEIRS OF E. CLUMAY, INCORPORATED; AND

SOUTHEASTERLY ON THE LAND OF SAID HEIRS, SEVENTY FIVE (75) FEET AND SIX (6) INCHES.

169 PORTLAND STREET - PARCELS 2, 3, 4 AND 5

THE LAND WITH ANY IMPROVEMENTS THEREON SITUATED IN BOSTON, SUFFOLK COUNTY, AND BEING BOUNDED AND DESCRIBED AS FOLLOWS:

SOUTHWESTERLY BY PORTLAND STREET AS INDICED BY THE CITY OF BOSTON IN 1882, TWENTY SEVEN (27) FEET;

NORTHWESTERLY PARTLY BY LAND NOW OR LATE OF H. HOLLS HUNNELL, AND PARTLY BY LAND NOW OR LATE OF JEREMIAH C. HACKETT, EIGHTY FIVE (85) FEET;

NORTHEASTERLY BY LAND FORMERLY OF CATHERINE TURNER, TWENTY SEVEN (27) FEET; AND SOUTHEASTERLY PARTLY BY LAND NOW OR LATE OF BAILEY AND PARTLY BY LAND NOW OR LATE OF AMES, EIGHTY FIVE (85) FEET;

THE LAND WITH ANY IMPROVEMENTS THEREON SITUATED IN BOSTON, SUFFOLK COUNTY, AND BEING SITUATED IN THE REAR OF THE ABOVE PARCEL AND IS BOUNDED AND DESCRIBED AS FOLLOWS:

EASTERLY BY LAND CONVEYED BY EDWARD BELL TO SHAWMUT LANDMARK, BY DEED DATED JUNE 16, 1855, RECORDED WITH SUFFOLK DEEDS, BOOK 304, FOLIO 7, TWENTY ONE (21) FEET;

SOUTHERLY BY A PASSADWAY SIX (6) FEET WIDE, THIRTY SIX (36) FEET; WESTERLY BY PARCEL 4 DESCRIBED ABOVE, TWENTY ONE (21) FEET; AND NORTHERLY BY LAND NOW OR LATE OF VOSE AND LEWIS, THIRTY SIX (36) FEET;

TOGETHER WITH THE RIGHT TO USE THE ABOVE REFERENCED SIX (6) FOOT WIDE PASSADWAY TO AND FROM FRIEND STREET, IN COMMON WITH OTHERS LAWFULLY ENTITLED THEREIN.

PARCEL 4

THE PARCEL OF LAND WITH ANY IMPROVEMENTS THEREON LOCATED BETWEEN PARCELS 1 AND 3 ABOVE AND BEING SHOWN AS "OWNERS UNKNOWN AREA" = 141 SQ. FT. ON AN UNRECORDED PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY 169 PORTLAND STREET, BOSTON, MASS. PREPARED BY FELDMAN PROFESSIONAL LAND SURVEYORS, DATED FEBRUARY 28, 2012, AND BEING BOUNDED AND DESCRIBED AS FOLLOWS:

EASTERLY BY THE LAND DESCRIBED IN PARCEL 3 ABOVE TWENTY SEVEN POINT TWENTY TWO (27.22) FEET;

SOUTHERLY BY THE LAND DESCRIBED AS PARCEL 1 ABOVE, FIVE POINT NINETEEN FEET (5.19);

WESTERLY BY PARCEL 2 DESCRIBED ABOVE TWENTY SEVEN POINT TWENTY TWO FEET (27.22);

NORTHERLY BY LAND NOW OR FORMERLY OF DONATO F. PIZZUTI, TRUSTEE, FIVE POINT SIXTEEN FEET (5.16);

PROPOSED PARCEL - PARCEL 3

THE LAND WITH ANY IMPROVEMENTS THEREON SITUATED IN BOSTON, SUFFOLK COUNTY, AND BEING BOUNDED AND DESCRIBED AS FOLLOWS:

WESTERLY BY THE PARCEL 4 DESCRIBED ABOVE, SIX (6) FEET;

NORTHERLY BY THE PARCEL 3 DESCRIBED ABOVE, THIRTY-SIX (36) FEET;

EASTERLY BY LAND NOW OR FORMERLY OF MAURIZIO A. FARRO, SIX (6) FEET;

SOUTHERLY BY PARCEL 1 DESCRIBED ABOVE, THIRTY-SIX (36) FEET;

SAID BOUNDARY BEING A PORTION OF A SIX (6) FOOT WIDE PASSADWAY THAT EXTENDS TO FRIEND STREET.

NOTES:

1. ZONING INFORMATION AS SHOWN HEREON WAS NOT PROVIDED BY THE TITLE INSURER AS REQUIRED BY ITEM 6 OF TABLE "A" IN THE 2011 ACTA SURVEY REQUIREMENTS.

2. BY GRAPHIC PLOTTING ONLY, THE PROPERTIES SHOWN HEREON LIE WITHIN A ZONE "A" (UNIMPROVED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25052000810 HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009.

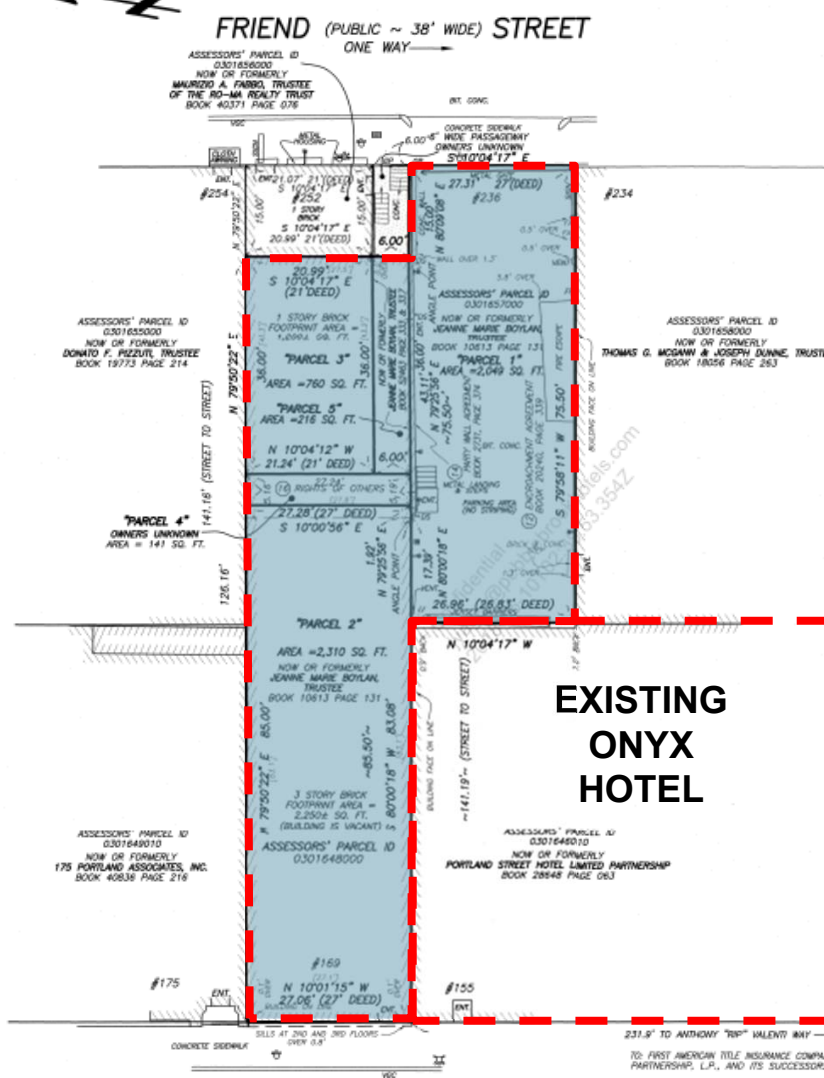
3. THE PROPERTIES SHOWN HEREON ARE THE SAME PROPERTIES DESCRIBED IN THE TITLE COMMITMENTS.

4. EXCEPT AS SHOWN ON THE SURVEY, THERE ARE NO ENCROACHMENTS ONTO ADJACING PREMISES, STREETS OR ALLEYS BY ANY BUILDINGS, STRUCTURES OR OTHER IMPROVEMENTS LOCATED ON THE PROPERTY, AND NO ENCROACHMENTS ONTO THE PROPERTY BY BUILDINGS, STRUCTURES OR OTHER IMPROVEMENTS SITUATED ON ADJACING PREMISES.

5. BEARING SYSTEM FROM DISCONTINUANCE PLAN, "150 PORTLAND STREET, DATED NOVEMBER 26, 2002," PREPARED BY BRYANT ASSOCIATES, INC.

6. AT THE TIME OF SURVEY THERE WAS NO EVIDENCE OF RECENT EARTH MOVING OR CONSTRUCTION ACTIVITY.

7. AT THE TIME OF SURVEY THERE WAS NO OBSERVABLE EVIDENCE ON THE SURFACE OF SITE USE AS A SOLID WASTE DUMP, SLUMP OR SANITARY LANDFILL.



PORTLAND (PUBLIC ~ 50' WIDE) STREET
ONE WAY

EXISTING
ONYX
HOTEL

EXEMPTIONS FROM COVERAGE SCHEDULE B, SECTION TWO, LISTED IN
TITLE COMMITMENT NO. NCS-58850-CH2 ISSUED BY FIRST AMERICAN
TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF DECEMBER
24, 2014.

⑦ COVENANTS, CONDITIONS, RESTRICTIONS, RESERVATIONS, EASEMENTS, LENS FOR COMMON CHARGES, OPTIONS, POWERS OF ATTORNEY AND LIMITATIONS ON TITLE CREATED BY THE COMMONWEALTH OF MASSACHUSETTS GENERAL LAWS CHAPTER 183A, AS AMENDED OR SET FORTH IN THE MASTER DEED OF THE 169 PORTLAND STREET CONDOMINIUM DATED NOVEMBER 5, 1980, RECORDED IN BOOK 3588, PAGE 295, AS MAY BE AMENDED OR SET FORTH IN THE RELATED DECLARATION OF TRUST DATED NOVEMBER 5, 1980, RECORDED IN BOOK 3588, PAGE 303, IN THE RELATED BY-LAWS, IN ANY INSTRUMENT CREATING THE ESTATE OR INTEREST INSURED BY THIS POLICY, AND IN ANY OF THE INSTRUMENTS AFORESAID, (AFFECTS PARCELS 2, 3, 4 AND 5) (NOT PLOTTABLE);

⑧ PROVISIONS AND RESTRICTIONS SET FORTH IN THE DEED OF UNIT 2 FROM ANTONY NEWS, INC., DATED NOVEMBER 7, 1980, RECORDED WITH SAID DEEDS, BOOK 3582, PAGE 141 INCLUDING THE EXCLUSIVE AND APPURTENANT RIGHT TO BUILD A ROOF DECK ON THE ROOF OVER UNIT 1 IN ACCORDANCE WITH THE PROVISIONS OF THE MASTER DEED, (AFFECTS PARCELS 2, 3, 4 AND 5) (NOT PLOTTABLE);

⑨ PROVISIONS AND RESTRICTIONS SET FORTH IN THE DEED OF UNIT 3 FROM ANTONY NEWS, INC., DATED OCTOBER 13, 1981, RECORDED WITH SAID DEEDS, BOOK 3584, PAGE 207 INCLUDING THE EXCLUSIVE AND APPURTENANT RIGHT TO BUILD A ROOF DECK ON THE ROOF OVER SAID UNIT IN ACCORDANCE WITH THE PROVISIONS OF THE MASTER DEED, (AFFECTS PARCELS 2, 3, 4 AND 5) (NOT PLOTTABLE);

⑩ PROVISIONS AND RESTRICTIONS OF THE DEED OF UNIT 1 BY ANTONY NEWS, INC., DATED OCTOBER 19, 1981, RECORDED WITH SAID DEEDS, BOOK 10613, PAGE 131, (AFFECTS PARCELS 2, 3, 4 AND 5) (NOT PLOTTABLE);

⑪ TERMS AND PROVISIONS OF AN AGREEMENT WITH BOSTON EDISON COMPANY, RECORDED WITH SAID DEEDS, BOOK 6466, PAGE 228, (NOT LOCUS);

⑫ TERMS AND PROVISIONS OF AN AGREEMENT BY AND BETWEEN JOSEPH DUNNE AND THOMAS MCDONNELL, TRUSTEES OF BOSTON TRUST, AND JEANNE MARIE BOYLAN, TRUSTEE OF 169 PORTLAND STREET TRUST, REGARDING IMPROVEMENTS AND VACANT LAND DATED NOVEMBER 29, 1995 AND RECORDED IN BOOK 20240, PAGE 339, (AFFECTS PARCEL 1) (AS SHOWN HEREON);

⑬ TERMS AND PROVISIONS OF A PARTY WALL AGREEMENT, RECORDED WITH SAID DEEDS, BOOK 2731, PAGE 374, (AFFECTS ALL PARCELS) (AS SHOWN HEREON);

⑭ RIGHTS OF OTHERS IN AND TO PARCEL 4 OF THE 169 PORTLAND STREET PARCEL, A PORTION OF THE LAND UNDERLYING THE 169 PORTLAND STREET CONDOMINIUM, AND TITLE THEREIN, (AS SHOWN HEREON);

TABLE OF VISUAL ENCROACHMENTS

NORTHERLY ABUTTER: CONCRETE WALL WITH 8" BROADWENT IRON FENCE - OVER 1.3' LOCUS BUILDING - OVER 0.2'
SOUTHERLY ABUTTER: FIRE ALARMS - OVER 0.5'
FIRE ESCAPE - OVER 0.5'
BRICK AND CONCRETE STEP - OVER 0.8'
PORTLAND STREET: SKIS AT 2ND AND 3RD FLOORS - OVER 0.8'
LOCUS BUILDING - OVER 0.1'

ZONING CLASSIFICATION

THE PROPERTIES LIE WITHIN THE BULFINCH TRIANGLE ZONING DISTRICT, GENERAL AREA, THE RESTRICTED PARKING OVERLAY DISTRICT AND THE GROUNDWATER CONSERVATION OVERLAY.

DIMENSIONAL REQUIREMENTS
MAXIMUM HEIGHT 80 FEET/100 FEET
MAXIMUM FLOOR AREA RATIO 677/3000

* IF THE PROPOSED PROJECT IS SUBJECT TO OR HAS ELECTED TO COMPLY WITH LARGE PROJECT REVIEW AND HAS RECEIVED A CERTIFICATION OF COMPLIANCE PURSUANT TO SECTION 80B-6

** IF ALL USES WITH STREET FRONTAGE LOCATED ON THE GROUND LEVEL ARE USES DESCRIBED IN APPENDIX A OF ARTICLE 4B AND SUCH PROJECT IS SUBJECT TO OR HAS ELECTED TO COMPLY WITH LARGE PROJECT REVIEW, HAS RECEIVED A CERTIFICATION OF COMPLIANCE PURSUANT TO SECTION 80B-6 AND COMPLEES WITH THE PROVISIONS OF SECTION 46E



LOCUS MAP
(NOT TO SCALE)

LEGEND

- HYDANT
- WATER SHUT OFF
- GAS SHUT OFF
- GAS METER
- LIGHT
- FIRE ALARM
- DOWN SPOUT
- GATE POST
- ELECTRIC HANDRAIL
- CHURN LINK FENCE
- ENTRANCE
- CHURN LINK FENCE
- RETAINING
- RETAINING
- CONCRETE
- FUEL FILL
- BUILDING DIMENSION

⑦ EXEMPTION NO. IN TITLE COMMITMENT

REFERENCES

SUFFOLK COUNTY RECORDS OF DEEDS
BOOK 315, PAGE 232
BOOK 332, PAGE 109
BOOK 332, PAGE 121
BOOK 333, PAGE 001
BOOK 8239, PAGE 48 (LOCUS CONFORMANCE DEED)

PLANS
PLAN 4A IN PLAN BOOK 5

CITY OF BOSTON ENGINEERING DEPARTMENT
1-1804

MASSACHUSETTS LAND COURT
PETITIONER'S PLAN ON FILE AS CASE NO. 18803A

TITLE RESEARCH REPORT FOR 169 PORTLAND STREET, BOSTON, MASS., DATED JULY 24, 2012, PREPARED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY.

PARCEL 3 RELEASE DEED ADDED, JANUARY 22, 2014
UPDATED FIELD INSPECTION, JANUARY 17, 2014

ALTA/ACSM LAND TITLE SURVEY
169 PORTLAND STREET AND 236 FRIEND STREET
BOSTON, MASS.

SCALE: 1"=10'
HARRY R. FELDMAN, INC.
112 SHAWMUT AVENUE
BOSTON, MASS. 02118
FEBRUARY 28, 2012
LAND SURVEYORS
PHONE: (617)357-9740
www.harryfelddman.com

FELDMAN
Professional Land Surveyors



RESEARCH	INT	FIELD	CHIEF	BY	PROJ	MAN	PROJ	APPROVED	SHEET
DATE	TWT	DATE	TWT	FIELD	CHECKED	DATE	FILE	13374	1 OF 1
FILENAME:	S:\PROJECTS\140500\140500\140500-ALTA-140500-ALTA.dwg								

Onyx Hotel | Boston, MA

Existing Conditions Survey

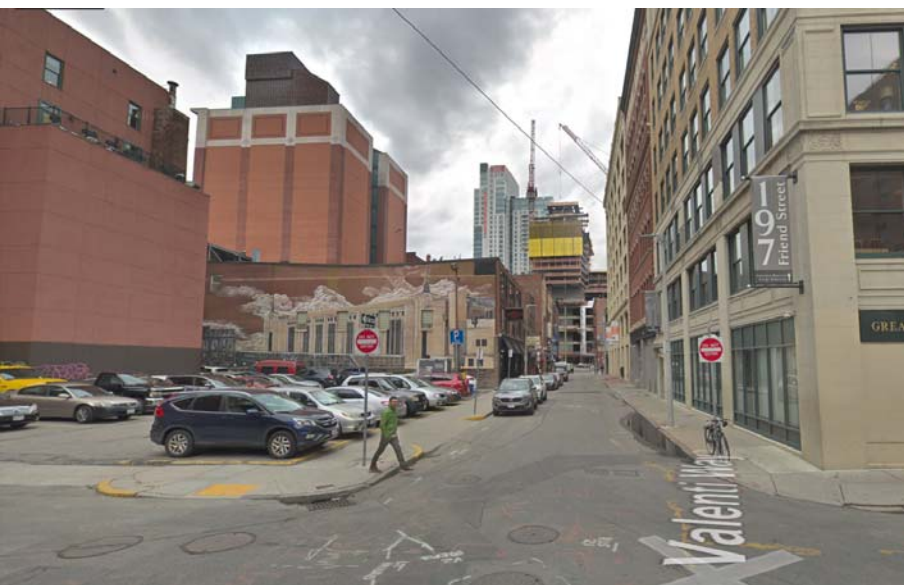
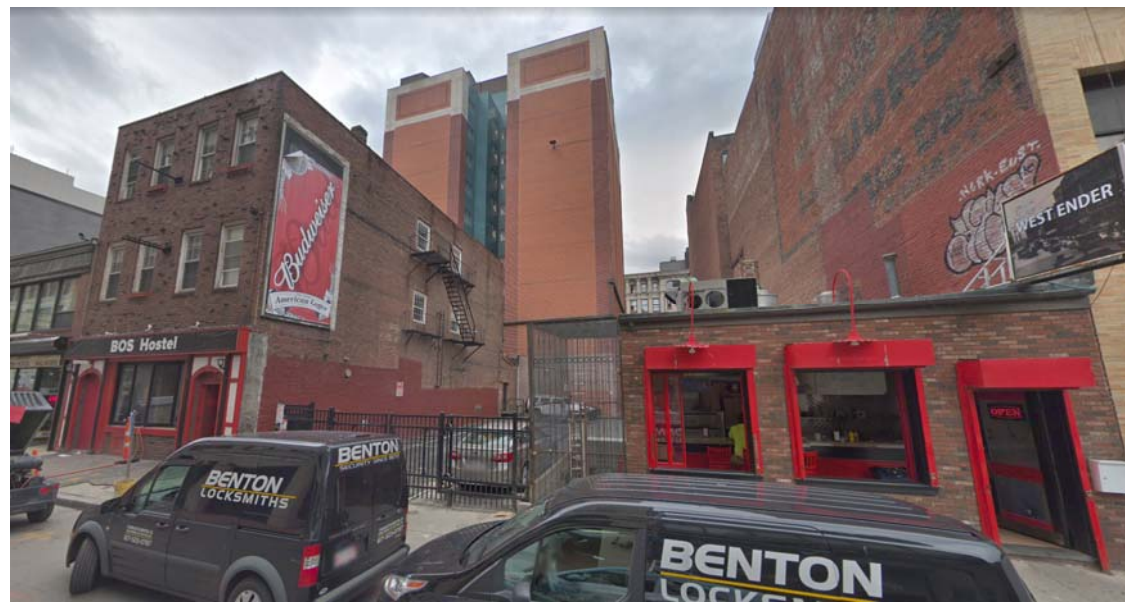
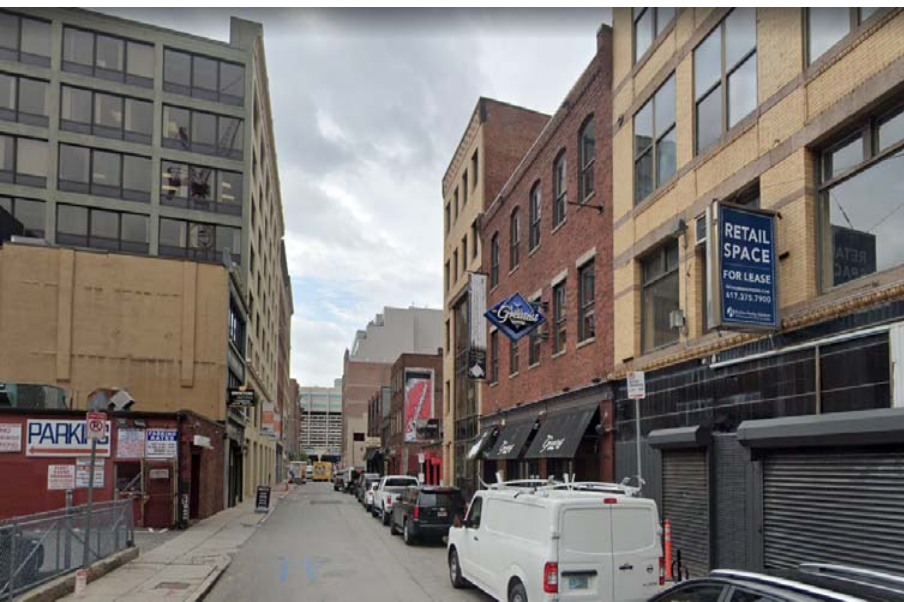
Figure 1 - 3





Onyx Hotel | Boston, MA

Existing Conditions – Portland Street



1.4 Development Summary

The Proponent proposes to develop a nine (9) story hotel addition to the existing 112-room Onyx Hotel at 155 Portland Street. The addition will be developed on the 5,478 SF parking lot immediately abutting the hotel. The Project will add approximately 40,725 gross square feet, providing approximately seventy-seven (77) additional hotel rooms, ground floor flexible retail/restaurant space, proposed rooftop amenity space and improved operational space along the Friend Street elevation. No additional parking will be provided at the Site in connection with the Project. The Project will also involve a reconfigured, improved first floor lobby layout within the existing hotel. In total, the expanded hotel will contain approximately 189 guest rooms and will comprise approximately 91,000 square feet of gross floor area.

The Project is designed to minimize disruption to existing hotel operations, as the existing hotel is expected to remain open during the duration of the construction period.

Table 1-1 summarizes the proposed development program for the Project.

Table 1-1 Proposed Development Program Summary

Use/Element	Size/Quantity
Lot Area	5,478 SF
Building Gross Square Footage	40,725 SF
Building Height	9 stories
Hotel	77 keys
Retail/Restaurant	2,000 SF/98 seats

1.5 Community Process

The Proponent has already completed extensive public engagement to best understand the needs and concerns of the community. The Proponent has held over twenty (20+) meetings with local stakeholders to introduce the Project, including meeting with representatives and neighbors associated with the following organizations:

- a. Community Work Services;
- b. The Downtown North Association;
- c. The West End Civic Association;
- d. City Councilor Ed Flynn;
- e. Mass General Hospital;
- f. Breaktime Café;
- g. HYM Investments;
- h. Boston Properties;
- i. Porters Bar & Grill;
- j. Several residents of West End Place;

- k. Flavin Architects;
- l. KS Partners;
- m. Equity Residential;
- n. Pizzuti Development;
- o. The Boston Planning and Development Agency;
- p. The Mayor's Office of Neighborhood Services;

In addition to the significant community outreach to date, the Proponent is committed to participating in an ongoing conversation with the neighborhood.

As a result of the varied stakeholder meetings mentioned above, the Project has already undergone some revisions based on community input, including:

- a. An adjustment of the building layout to maintain a light well for a direct abutter;
- b. Improving the façade of the existing building along floors one and two; and
- c. The re-location of the expanded loading dock along Friend Street

The Project will undergo Large Project Review under Article 80. The project is currently designed to a maximum of ninety-nine feet and ten inches (99'-10") in keeping with the applicable 100-foot height limitation. In addition, the project will comply with the maximum FAR of 8.0. It is expected to have an overall FAR of 7.43.

The Project will be assigned an Impact Advisory Group ("IAG"), comprised of members of the community who have a vested interest in their neighborhood to provide input on local developments. The Proponent is committed to working closely with the IAG to ensure that impacts of the Project on the surrounding community are appropriately mitigated

The Proponent will continue to meet with local elected officials, community organizations, residents, and interested parties through the permitting and construction of the Project to ensure that community concerns are observed and addressed as the Project advances.

1.6 Community and Public Benefits

The Project will transform a surface parking lot into seventy-seven (77) additional hotel rooms that will provide numerous community and public benefits. These benefits include the creation of much-needed additional hotel rooms, revitalization of the existing Portland Street façade, the filling in of the street wall along both Portland and Friend Streets (54 total lineal feet), creation of approximately thirty-three (33) permanent jobs, an improved pedestrian experience, and additional tax revenue to the City of Boston by increasing the assessed value of the Property and through additional room hotel taxes.

The Project is located 0.1 miles from the Hub on Causeway Street and 0.2 miles from the new mixed-use development at One Congress Street. These two new developments have added 800,000 and 1,000,000 SF of additional office space respectively, increasing the overall demand for hotel rooms in the Bullfinch Triangle. The Site is situated between Haymarket Station and

North Station providing convenient access to Commuter Rail, subway, and local bus routes. By incorporating an underutilized site into an improved and more vibrant hotel, the Project will contribute substantially to the improvement of the pedestrian experience, urban design, and architectural character of the neighborhood.

1.6.1 *Proposed Community & Public Benefits:*

1. Contribute \$5,000 to a North Station area Blue Bike station
2. Provide \$2,500 to the Break Time café operation in support of employment opportunities at their new venture located within Community Work Services
3. Provide \$10,000 for Friend Street sidewalk and crosswalk improvements
4. Add a dedicated Ride Share drop off/pick up space along Portland Street to the Northwest of the Hotel entrance

1.6.2 *Job Creation*

The hotel room expansion and new restaurant/retail location along Portland Street will generate approximately thirty-three (33) full time jobs, broken down in the following new full and part time positions:

- Total Additional Salaried Employees = 6 Full Time Equivalent Positions
- Total Hourly Additional Employees = 27.3 Full Time Equivalent Positions
Total Additional Full Time Equivalent Positions Created = 33.3

The breakdown, by category, on these new positions created is detailed below:

1. New Hotel & Restaurant Salaried positions (6 total FTE)
2. New Hotel & Restaurant Hourly Full Time (27.3 total FTE)

1.6.3 *LEED Certifiable Building*

The project will comply with the requirements of Article 37 of the Code (Green Buildings) using the USGBC's Leadership in Energy and Environmental Design (LEED) for New Construction and Major Renovation, (LEED-NC), version 4 (v4) Rating System. The team will work together to demonstrate the achievement of certifiability at a 'Certified' level. The Project will also comply with the Massachusetts State Energy Code in enforcement at the time of permitting. The building design will include a high-performance envelope, efficient mechanical systems, low lighting power density, low flow plumbing fixtures and healthy materials selections.

1.7 Summary of Required Permits and Approvals

Table 1-2 presents a preliminary list of permits and approvals from government agencies that are expected to be required for the Project, based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions may be required.

Table 1-2 Anticipated Permits and Approvals

<i>Agency Name</i>	<i>Required Permit or Action</i>
<i>Boston Civic Design Commission</i>	Design Review
<i>Boston Conservation Commission</i>	Order of Conditions
<i>Boston Employment Commission</i>	Construction Employment Plan
<i>Boston Fire Department</i>	Approval of Fire Safety Equipment; Fuel Oil Storage Permit (if required)
<i>Boston Inspectional Services Department</i>	Building Permit; Other construction-related permits; Certificates of Occupancy
<i>Boston Public Works Department</i>	Curb Cut Permit(s); Sidewalk Occupancy Permit (as required) Projection License
<i>Boston Planning and Development Agency</i>	Article 80 B Large Project Review; Cooperation Agreement; Certification of Compliance
<i>Boston Transportation Department</i>	Transportation Access Plan Agreement; Construction Management Agreement
<i>Boston Water and Sewer Commission</i>	Site Plan Review Water and Sewer connection permits
<i>Office of Jobs and Community Services</i>	Permanent Employment Agreement (as required)
<i>Zoning Board of Appeals</i>	Groundwater Conservation Overlay District (GCOD)

2.0 PROJECT DESCRIPTION

2.1 Site and Surroundings

The Project Site is approximately 5,478 square feet (SF) and is located mid-block between Portland and Friend Streets within the Bulfinch Triangle in the West End neighborhood of Boston. There is an existing paved lot located on the site currently used to park cars for guests of the existing Onyx Hotel. The proposal calls for a new, zoning compliant structure that will include a hotel addition of approximately 77 guest rooms, street level lobby and restaurant/retail areas, a rooftop terrace, and operational support spaces. There will be no below grade construction under the new hotel addition. Loading and deliveries will be moved from its current location on Portland Street to Friend Street. See Figure 2-1 through Figure 2-6 at the end of this chapter.

The Site is relatively flat in contour and has typical depth sidewalks along Portland and Friend Streets. Upon completion of the site improvements, the pedestrian path along Portland Street will be greatly improved with increased transparency into the Project. The existing curb cuts will be removed to accommodate the new addition. The goal will be to have guest vehicles stop on Portland Street (as they do currently) with a proposed loading drop off zone and provide all deliveries and support access to be within a dedicated loading area on Friend Street. The sidewalks will be replaced, and the pedestrian realm will be improved with new sidewalks and retail activation.

The Site is located between Haymarket Station and North Station providing convenient access to Commuter Rail, subway, and local bus routes.

2.2 Proposed Project

This Project will provide needed hotel space to address the growing hospitality needs of Boston, in particular the demand resulting from the expanding commercial and office uses in this area and surrounding neighborhoods. The Site is well-served by public transportation; options include several bus lines as well as the nearby Orange and Green Lines and the Commuter Rail at North Station. The Site is a short walk to the Boston Garden and the new Hub on Causeway, both of which house many local retailers and restaurants, and also provide access to Haymarket and the North End. The general program components are outlined in Table 2-1.

Table 2-1 Overall Project Program

Project Component	Dimensions / Count
Ground Floor Retail/Restaurant	2,000 SF / 98 Seats
Hotel Use	35,605 SF
Roof Deck	3,120 SF
Gross Floor Area	40,725 SF
Floor Area Ratio	7.43

The street level uses, including retail/restaurant space and the updated hotel lobby will further enhance the pedestrian experience along the street. The Project is designed to establish a dynamic blend of uses, creating a more vibrant hotel that further activates Portland Street. The surrounding context along Portland Street was the design generator for the new addition's aesthetic. This addition will fill the gaps along Portland and Friend Streets, completing the street walls. The design of the public realm on the street edges of the building is intended to strongly enhance the pedestrian experience. See Figure 2-7 through Figure 2-11 for floor plans.



Onyx Hotel | Boston, MA

Aerial View – Portland Street



Onyx Hotel | Boston, MA

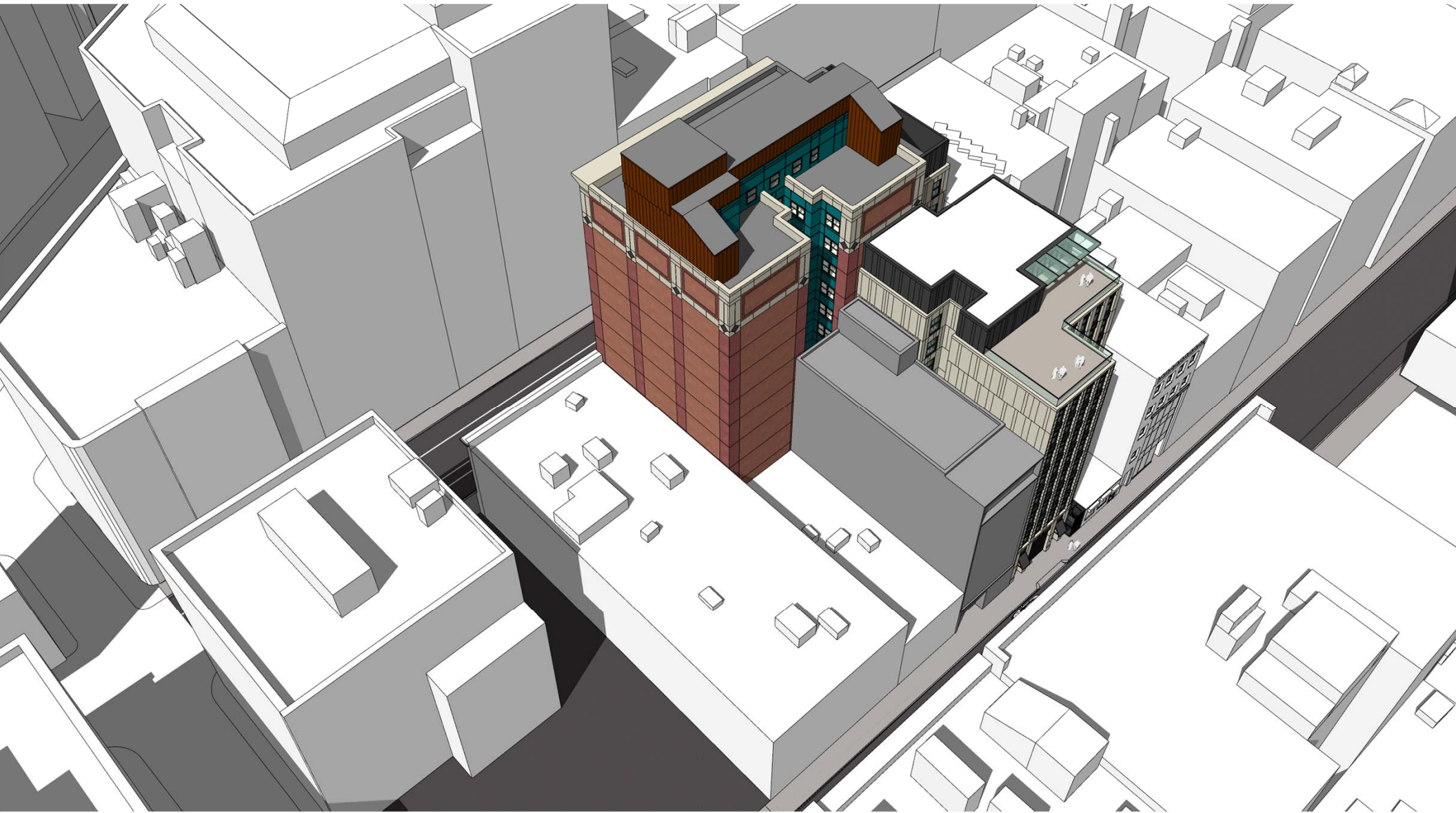
View Looking Northwest on Portland



Onyx Hotel | Boston, MA

View Looking Southeast on Portland





Onyx Hotel | Boston, MA

Aerial View – Friend Street

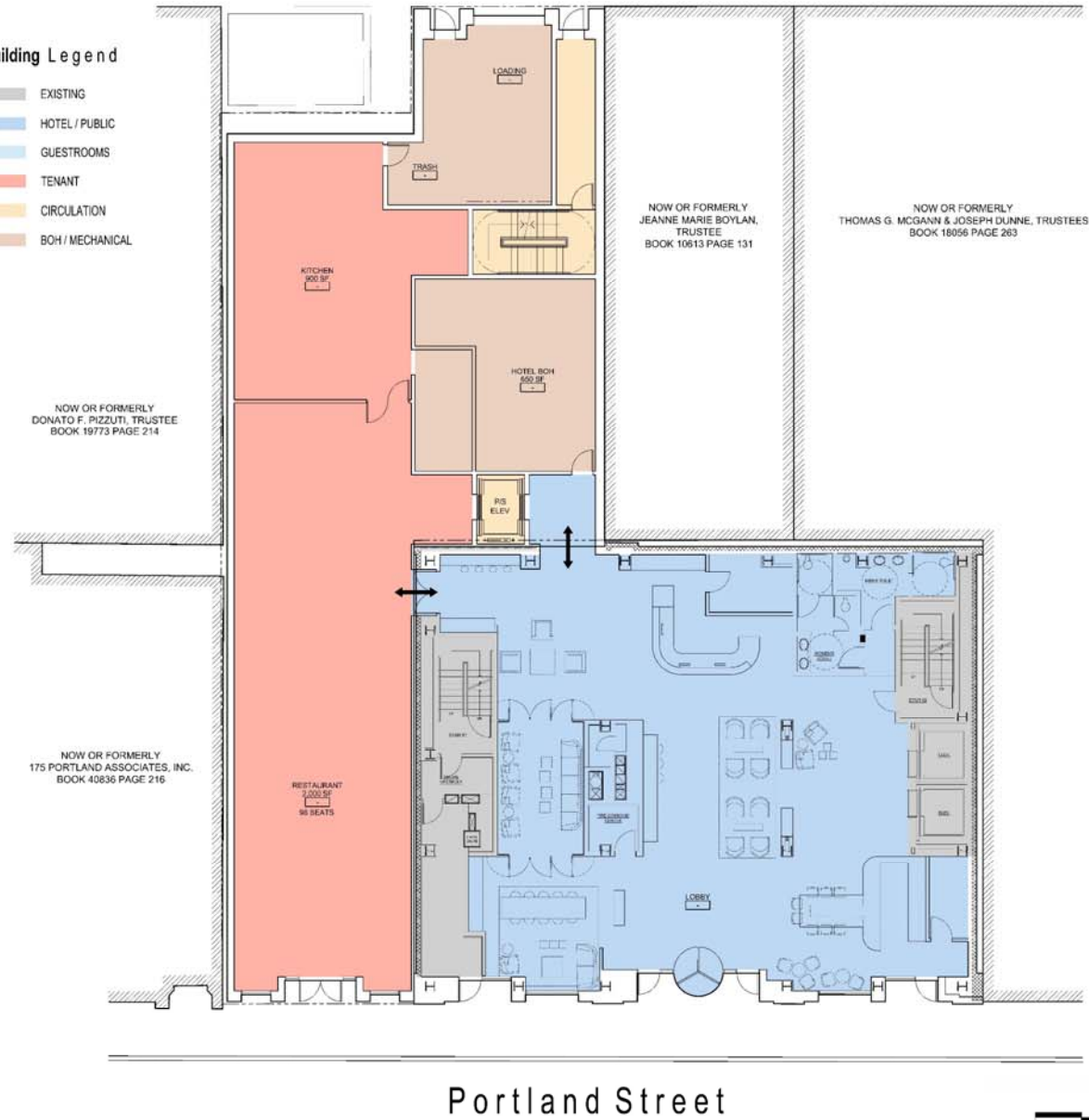


Onyx Hotel | Boston, MA

Friend Street

Building Legend

- EXISTING
- HOTEL / PUBLIC
- GUESTROOMS
- TENANT
- CIRCULATION
- BOH / MECHANICAL



0 10 25 50



Building Legend

- EXISTING
- HOTEL / PUBLIC
- GUESTROOMS
- TENANT
- CIRCULATION
- BOH / MECHANICAL



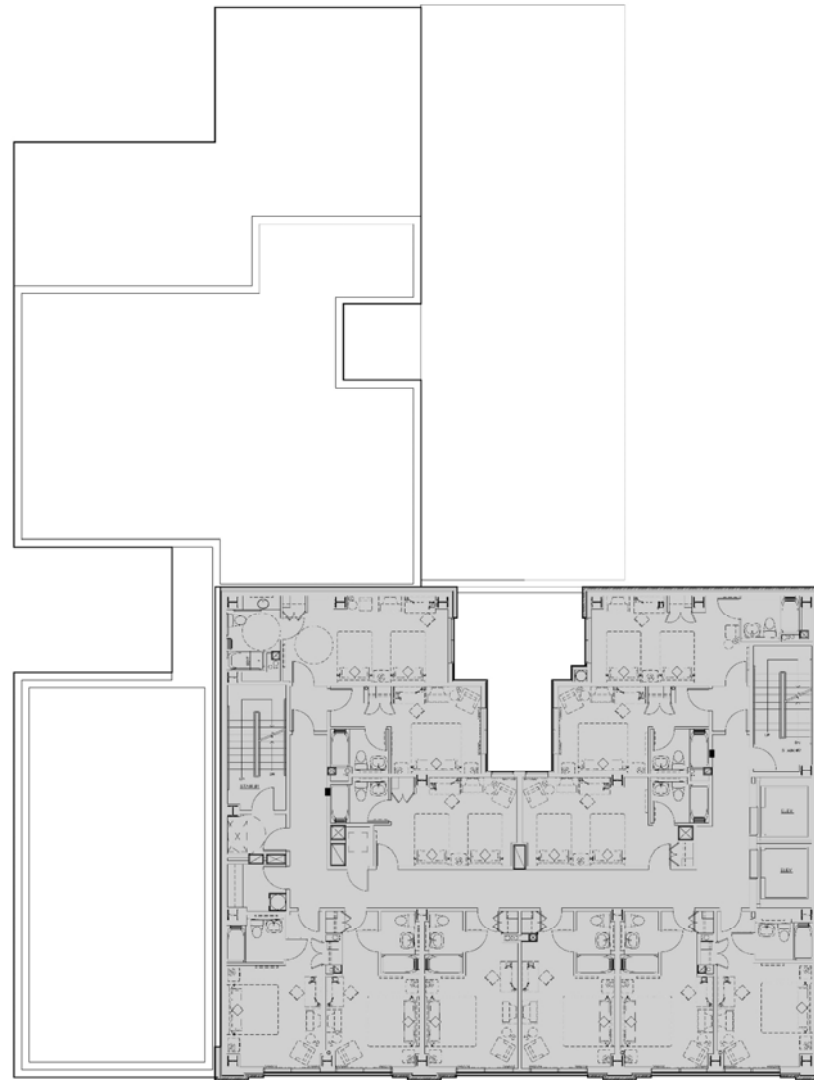
0 10 25 50



Building Legend

- EXISTING
- HOTEL / PUBLIC
- GUESTROOMS
- TENANT
- CIRCULATION
- BOH / MECHANICAL





0 10 25 50



2.3 Compliance with Boston Zoning

Map 1B/1J/1K/1L of the Boston Zoning Maps indicates that the Site is located within the “General Area” established by Article 46 of the Boston Zoning Code (the “Code”), the Bulfinch Triangle District. The Site is further located within the Groundwater Conservation Overlay District, or GCOD, which is governed by Article 32 of the Code. In addition, the Project is undergoing review pursuant to the provisions of Article 80B of the Code, Large Project Review. It is also subject to, and will comply with, the provisions of Article 37 of the Code, Green Buildings.

The Project has been designed to comply fully with the provisions of Article 46.

As indicated above, the principal use of the Project will be as a hotel. According to Code Subsection 46-9(2)(e), Bulfinch Triangle District Use Regulations; Allowed Uses, hotel uses are designated as allowed at the Project Site. The Project will additionally contain an independent restaurant or retail component. Subsection (a) of Section 46-9(2) provides that a variety of restaurant uses, including “[l]unchroom, restaurant, cafeteria, or other place for the service or sale of food or drink for on-premises consumption,” are allowed, as are local retail uses.

Code Section 46-6 provides that the Project will be subject to a maximum building height of 100 feet and a maximum floor area ratio, or FAR, of 8.0. The Project will comply with these limitations. Within the General Area, there are no minimum lot size, lot width, lot frontage, or yard setback requirements.

No parking will be provided at the Project. Code Section 46-10, Off-Street Parking, provides that, “[w]ithin the Bulfinch Triangle District, off-street parking facilities are not required in any Proposed Project.” Section 46-11, Off-Street Loading, provides that “[t]he provision and design of off-street loading facilities for the use of any structure or land that is subject to Large Project Review shall be determined through such review.”

For the above reasons, we do not expect that the Project will require zoning relief from the provisions of Article 46. The Proponent will seek a GCOD conditional use permit pursuant to Article 32.

3.0 URBAN DESIGN

Discussion of urban design elements for the Project is provided below, and is illustrated on the plans and perspectives that are included at the end of this section.

Conceptually, the Project has been designed to reflect both its context and its intended use. The building's facades are organized in a rhythm pattern derived from the neighboring buildings but expressed in a contemporary manner. Within this rhythm, the design is intended to evoke a more contemporary look, one that speaks to the upscale use of the building. By both "fitting in and standing out" at the same time, the Project will be another step in redefining the neighborhood.

Components and Characteristics of the Project include:

- Steel and concrete construction
- Precast cladding with composite metal panel accents.
- Non-reflective glass punched aluminum window system
- Roof terrace along Friend Street at the 8th floor level
- Building branding with hotel name to be determined

The urban context of the Project is a determining factor in the overall design approach to the building.

Located in the Bulfinch Triangle, the existing street language, for the most part, is turn of the last century Renaissance Revival Architecture with a few "modern" infill buildings scattered throughout. New developments dominate the urban realm to the North and East, Notably the Hub on Causeway and the new residential and hotel properties on Canal, Haverhill and Beverly Streets. Within this contextual language, the proposed project can blend these elements and fulfill the void that is currently there while providing a new face to the neighborhood that will have long term impact on the street wall. The convergence of all these styles and languages is the basis of design for this Project and will be the guiding factor that all design decisions are based on.

The street wall elevations and massing are organized by a strong base element to ground the building and identify the Project from its pedestrian and vehicular approaches. This classic base, middle, top design is prominent throughout this neighborhood. By providing this strong base that maintains the street wall, the pedestrian context is maintained. The ground floor lobby and retail/restaurant space will also be engaged with the public from its program perspective and encourage interaction. The entry of the hotel will be upgraded and signified with a new metal canopy that covers the framed entrance below. As a mid-block building, the fire party walls provide an opportunity to add contemporary patterning while using the same materials as the street wall facades. See Figure 3-6 through Figure 3-9 for elevation views.

3.1 Evolution of Design

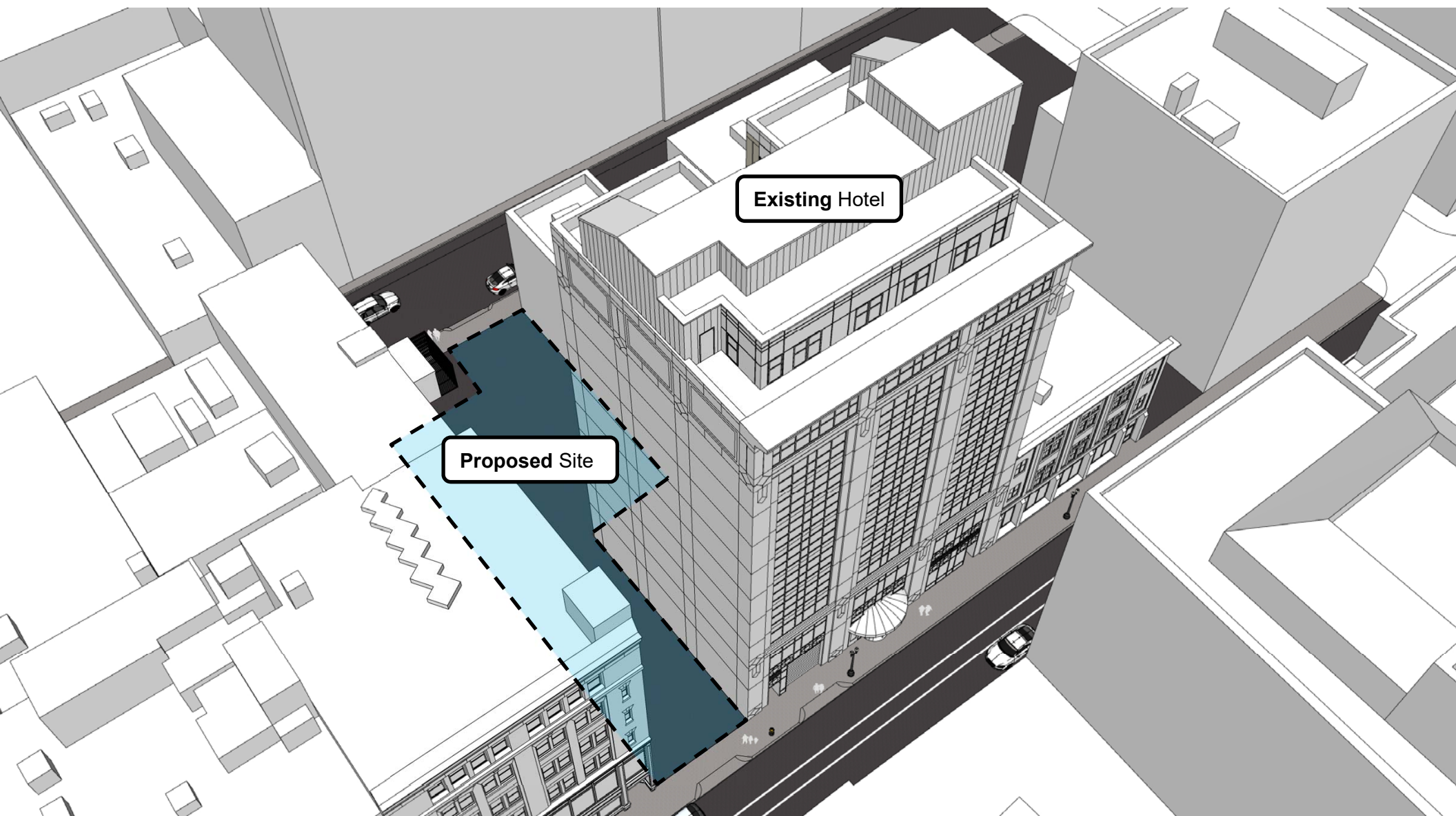
The concept for the Project is to create a strong presence that fits within the existing neighborhood context. Being an infill addition to an existing mid-block building we have our adjacent neighbors to consider and with the zoning compliant proposed height, we will also have to provide a respectful design as we will be taller than our immediate abutters. In our meetings with the neighborhood, a contextual building that respects the building architecture around us and the heritage of Boston was specifically requested.

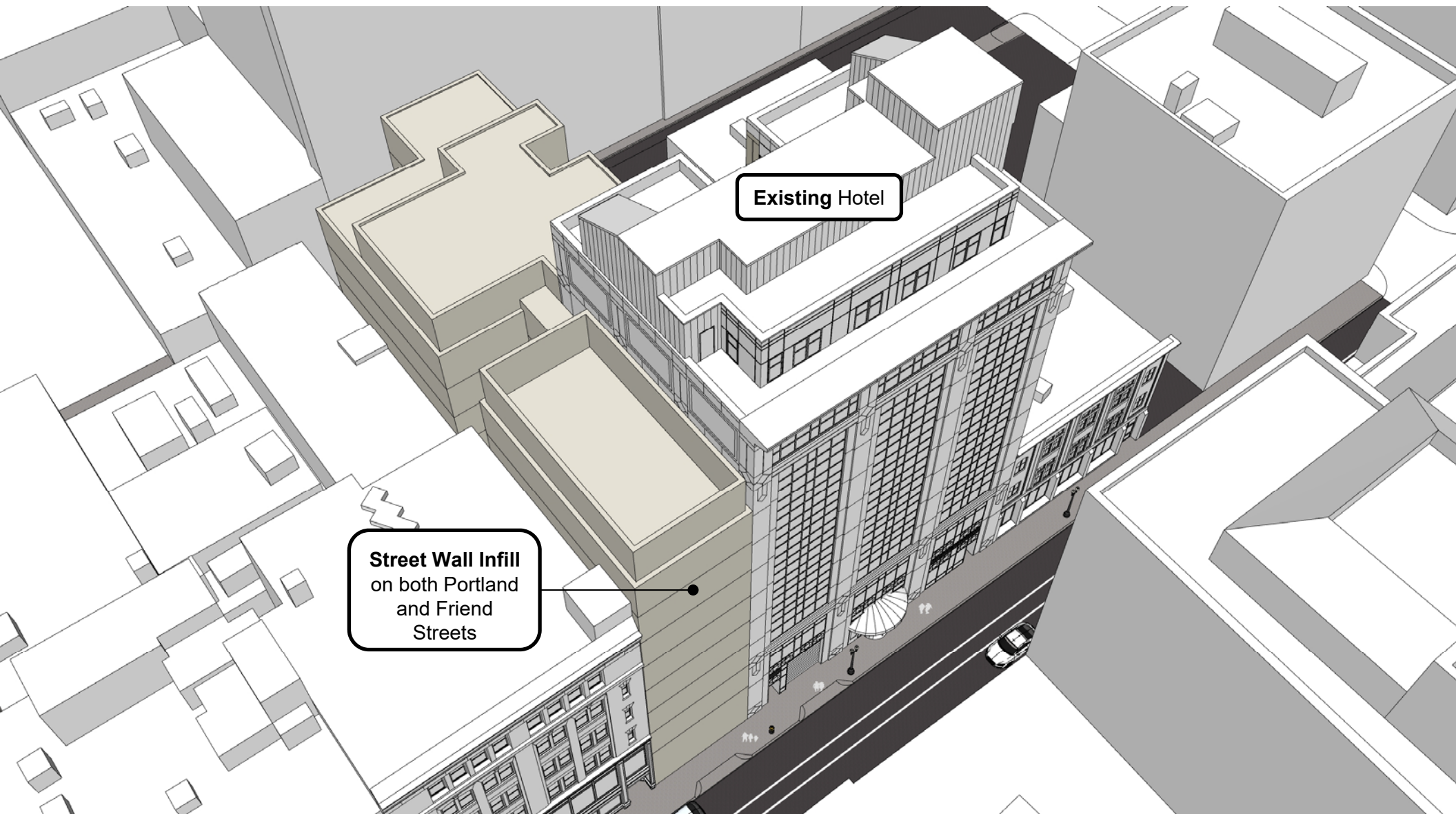
Because the Project is mid-block and the street is narrow, the pedestrian realm lives within the bottom 2 stories of the existing hotel on Portland Street. The alteration of the existing 2 story façade is directly connected to the new 9 story addition with its street wall vernacular taking cues from the surrounding historical context. Friend Street uses the same street wall architecture and is punctuated by a roof amenity deck with views toward the Hub on Causeway and the historic North End.

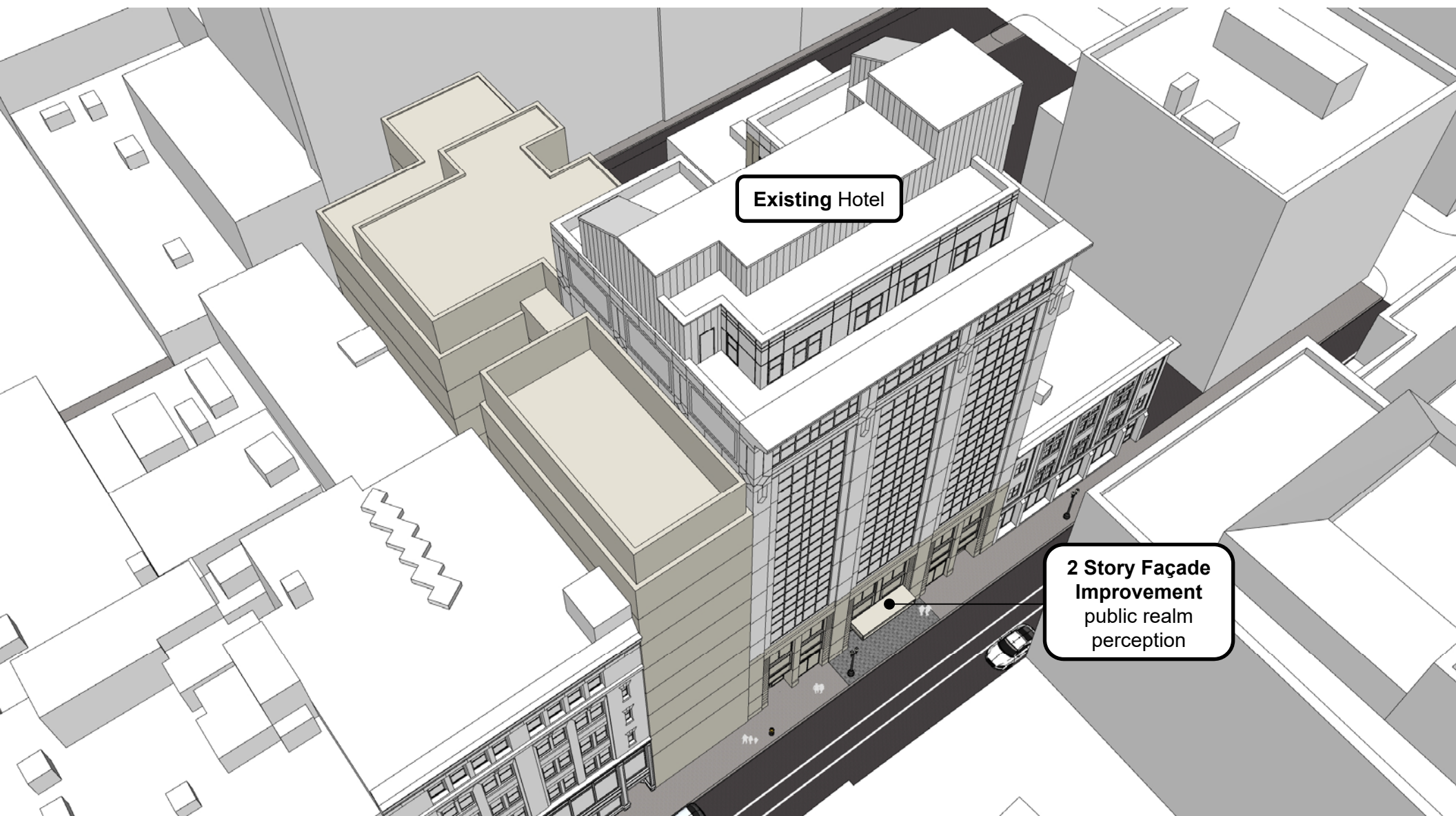
In looking at early design and building schemes, it was quickly determined that the building has an opportunity to respond to its multiple adjacent uses. While blending the details and ornamental designs of the past with a more modern interpretation into a high-rise structure not only allows the team to deliver a building that will stand the test of time but is grounded in its sense of place.

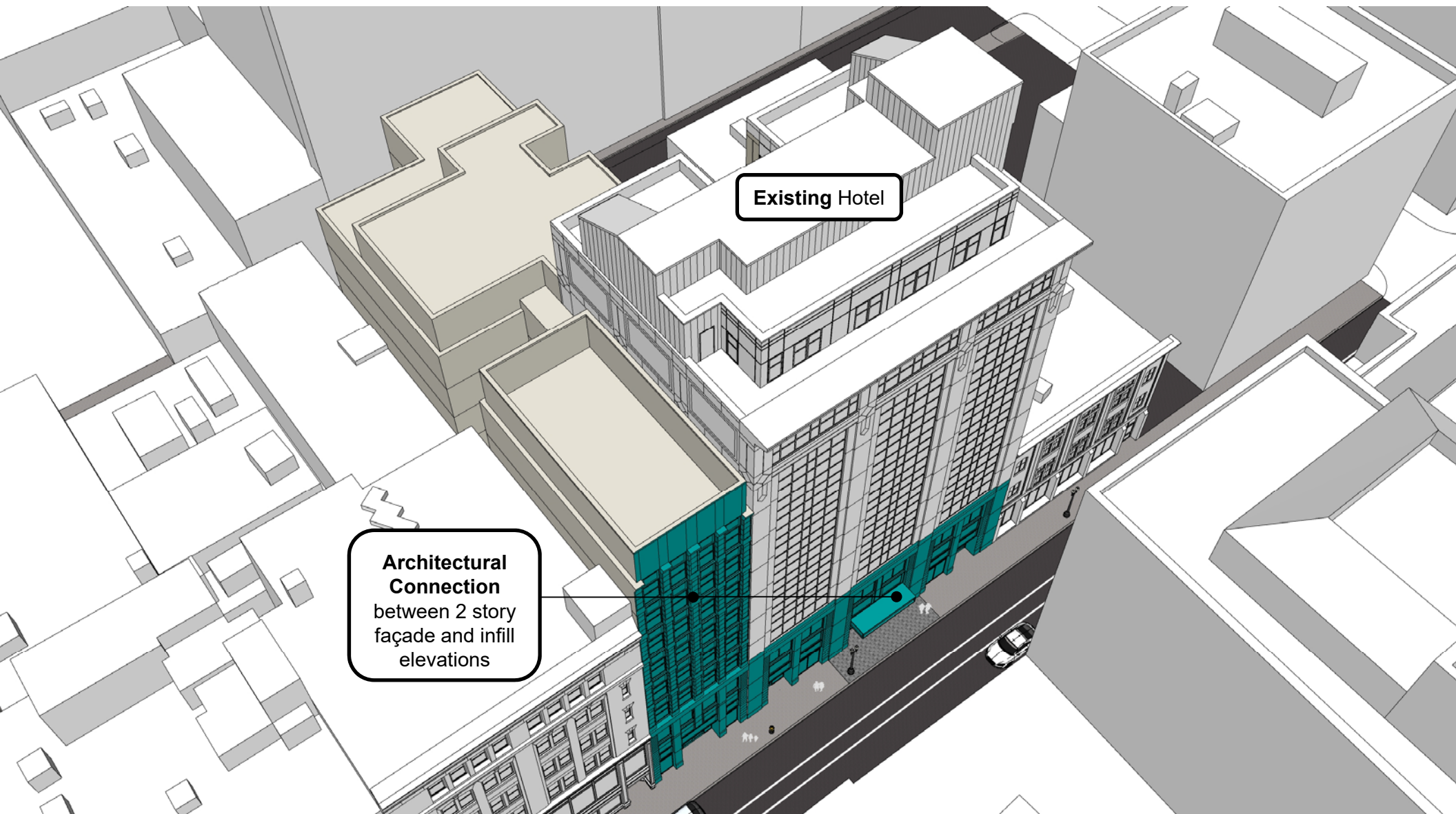
3.2 Development Schedule and Cost

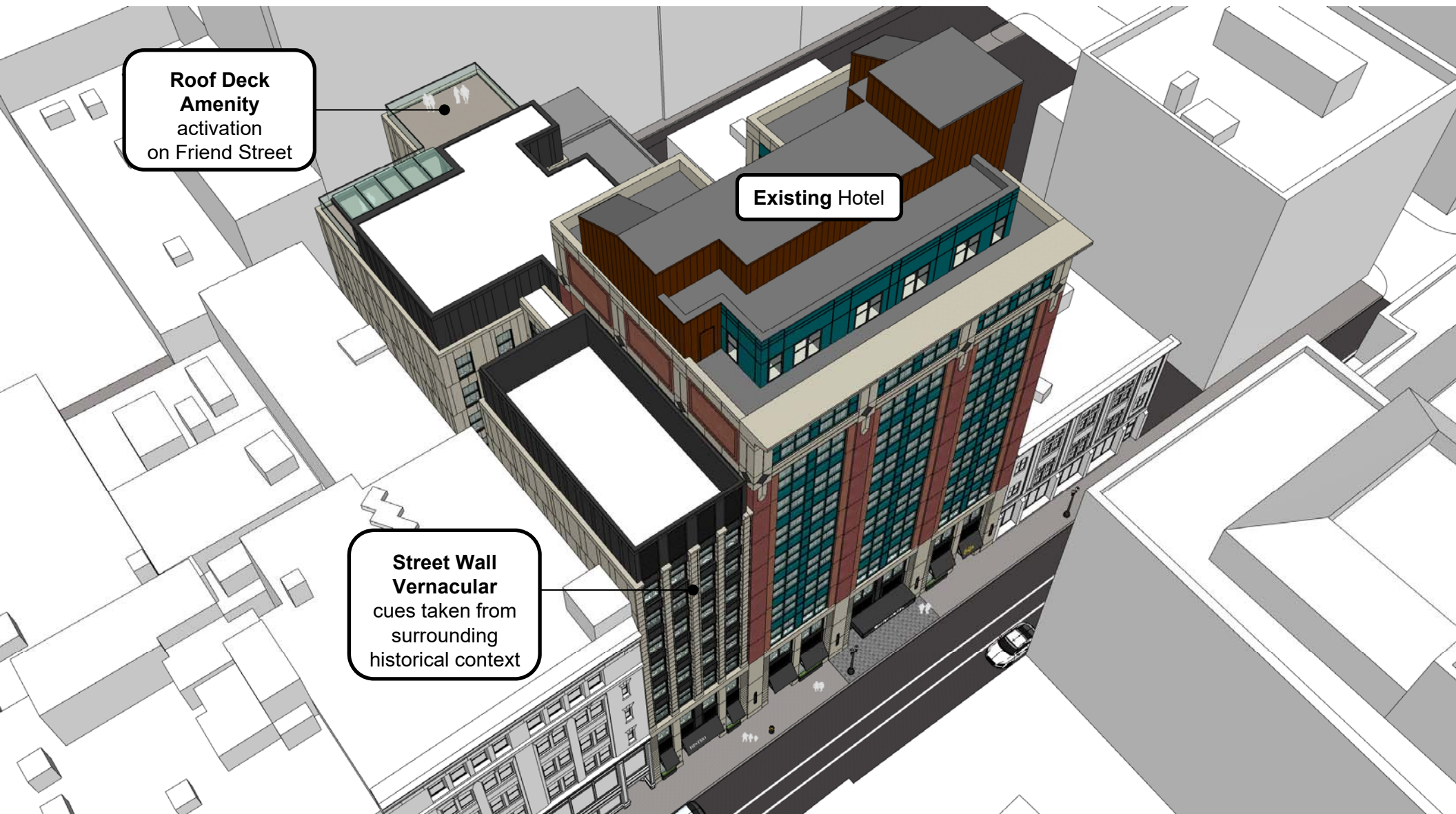
The anticipated physical construction schedule for the Project should commence upon final approvals of all permits and financing in the third quarter or 2020, and should be approximately eighteen (18) months plus preopening and installation of all FF&E. Costs are still being determined.













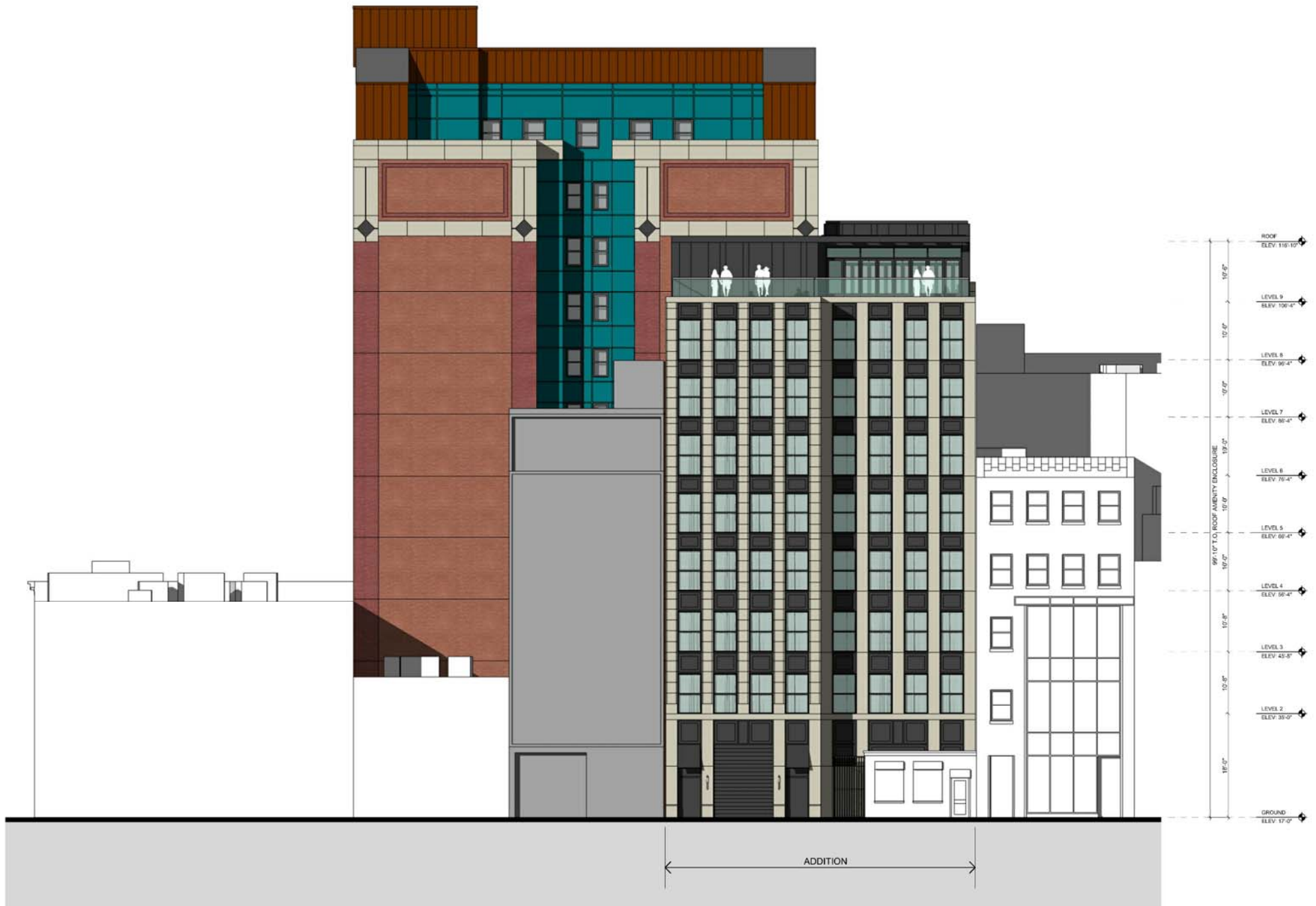
Onyx Hotel | Boston, MA

Southwest Elevation (Portland Street)



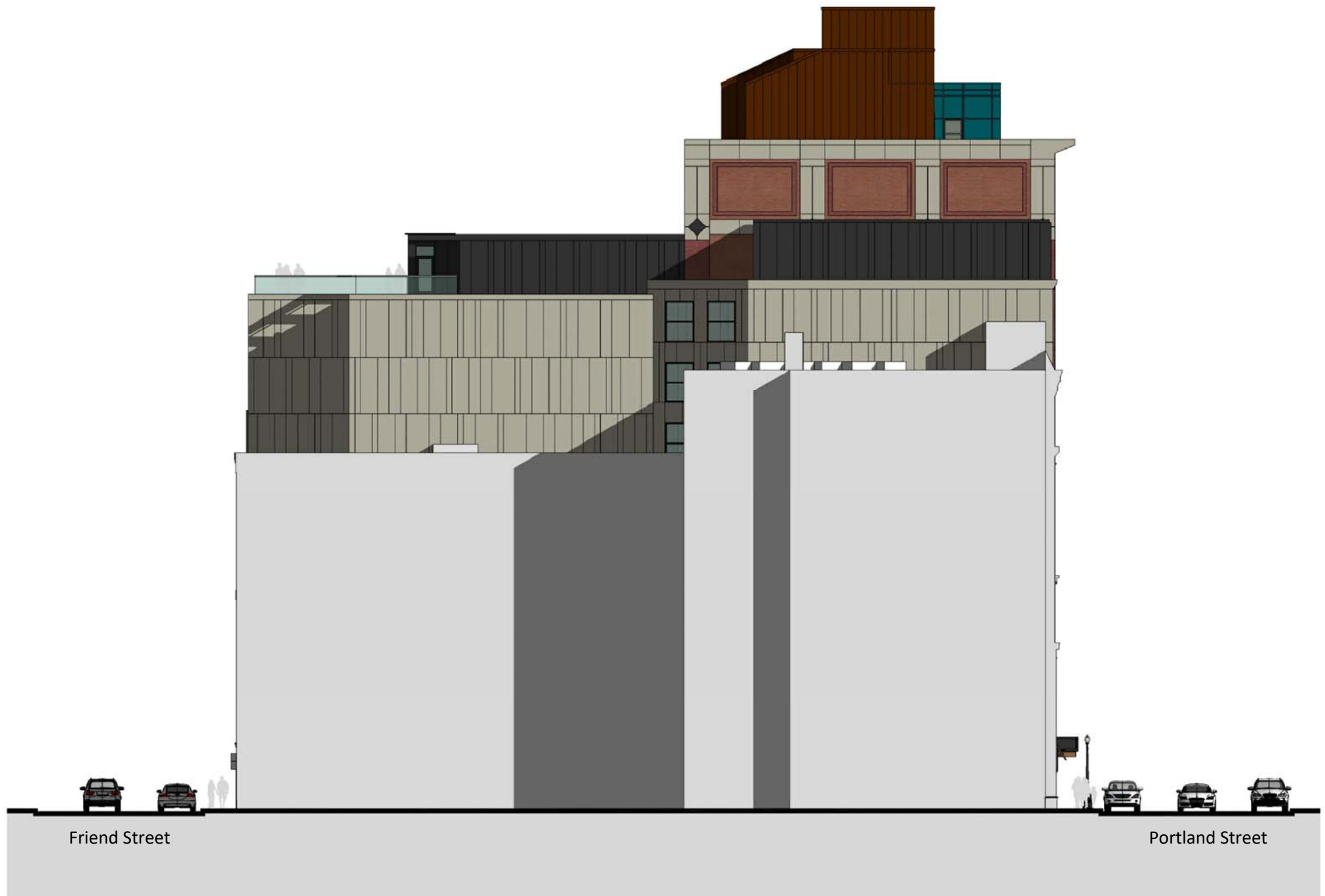
Onyx Hotel | Boston, MA

Southeast Elevation



Onyx Hotel | Boston, MA

Northeast Elevation (Friend Street)



Onyx Hotel | Boston, MA

Northwest Elevation

4.0 SUSTAINABLE DESIGN

4.1 Sustainable Design Background

The following chapter describes the overall approach to sustainable design, construction, and operation for the Project. Included is a preliminary assessment of green building design, in compliance with the requirements of Article 37 of the Code (Green Buildings). It identifies consistency with the U.S. Green Building Council's ("USGBC") Leadership in Energy and Environmental Design ("LEED") version 4 ("v4") rating system based on early design. This chapter includes an overview of the susceptibility of the Project Site to predicted climate change impacts, in accordance with the BPDA Climate Change Preparedness and Resiliency Policy ("Resiliency Policy"). The required Climate Change Preparedness and Resiliency Checklist ("Resiliency Checklist") has been completed for the Project and is provided in Appendix B.

4.2 Massachusetts Energy Code

Per the Green Communities Act of 2008, the Massachusetts Board of Building Regulations and Standards (BBRS) is required to update the energy code every three years to be consistent with the most recent version of the International Energy Conservation Code (IECC). The Project will be required to comply with the new State energy code recently adopted by the BBRS which will go into effect on January 1st, 2020. The applicable energy code will be IECC 2018/ASHRAE 90.1-2016 with MA amendments. Given the adoption of the recently revised Energy Code, the Project has incorporated these new requirements into its basis of design.

4.3 Article 37

Article 37 – Green Buildings, encourages major building projects to be “planned, designed, constructed, and managed to minimize adverse environmental impacts; to conserve natural resources; to promote sustainable development; and to enhance the quality of life in Boston.” Any project that is subject to Article 80, Large Project Review is also subject to the requirements of Article 37.

An interdisciplinary committee, the Boston Interagency Green Building Committee ("IGBC"), consisting of at least one representative from certain city agencies, including the BPDA, Boston Environment Department, BTB, the Inspectional Services Department, and the Mayor's Office advises the BPDA on a proposed project's compliance with Article 37.

4.3.1 Compliance with Article 37

Any Proposed Project subject to the provisions of this article shall be LEED Certifiable under the most appropriate LEED building rating system. This Project type is most applicable to the LEED for New Construction rating system and will document compliance using version 4/4.1. Refer to Section 4.4 LEED Overview and LEED Scorecard provided in Appendix D for additional information on proposed sustainability strategies that will allow the project to

demonstrate compliance with all prerequisites and at least 40 credits points (minimum required for LEED Certifiable). As the Project progresses, the team will continue to identify opportunities for implementing sustainability strategies into the design.

4.4 LEED Overview

The following is a summary of LEED compliance for the Project. The LEED Scorecard is provided in Appendix D.

4.4.1 Integrative Process

The Project team plans to meet regularly to ensure the individual members from consulting firms involved are collaborating and communicating. Sustainable design focused workshops will be held early on to assist the team in establishing shared sustainable design and energy efficiency goals for the Project. As the design progresses, there will be multiple sustainable design focused workshops to ensure the entire team is engaged throughout the design and construction process.

The Project team plans to contact Eversource and National Grid to set up a meeting to discuss the incentive programs and potential Energy Conservation Measures for the Project.

4.4.2 Location and Transportation

The Project Site is located within the vibrant West End neighborhood of Boston. It is within easy walking distance of multiple modes of Public Transportation. There are several bus stops located within 0.25 miles of the Project Site and each of the MBTA North Station and Haymarket stations are approximately 0.25-mile walking distance from the site in either direction and are served by the Green, Orange, and commuter rail lines. The Project does not include an increase in the amount of available parking.

Short-term bike storage for guests, visitors and employees will be provided at exterior locations within the Project Site. There is an existing striped bicycle lane on Portland Street.

The immediate neighborhood provides a wide variety of services with pedestrian and cyclist access including restaurants, grocery stores, banks, and the TD Garden. It is also within walking distance of City Hall. The Project Site currently has a Walk Score of 98, Transit Score of 100 and Bikers Score of 92 making it a 'Walker's, Rider's and Biker's Paradise.'

4.4.3 Sustainable Sites

The Project is an addition to an existing hotel, the Site is considered an infill and is comprised of parcels previously designated for parking in a densely developed Boston neighborhood.

As described more fully in Chapter 7, Infrastructure, the Project will be designed to meet BWSC and MassDEP stormwater management requirements. Project benefits may include, but are not limited to, improving stormwater quality, reducing stormwater runoff volume, and controlling peak rates of runoff by incorporating new stormwater management and treatment systems on site. Stormwater runoff from the Site is expected to be treated to remove suspended solids prior to being released into the City system.

4.4.4 *Water Efficiency*

The Project will reduce potable water use for both sewage conveyance and irrigation demand. The Project Team plans to specify low-flow/high-efficiency plumbing fixtures including the following:

- 1.28 gallons per flush (gpf) Water Closet (WC), 1.5 gallons per minute (gpm) Lavatory faucet; 1.5 gpm shower head

Through the specification of low flow and high-efficiency plumbing fixtures each building will exceed a 20 percent annual potable water use reduction for interior water use and sewage conveyance.

Rooftop landscaped areas will include a mixture of drought tolerant shrubs that grow well in an urban environment. If a permanent irrigation system is used, a 50 percent reduction in potable water when compared to a mid-summer baseline will be demonstrated.

4.4.5 *Energy and Atmosphere*

The proposed building will be designed with high-efficiency building systems and a high-performance building envelope. The proposed HVAC system type includes air-cooled variable refrigerant flow (VRF) with heat recovery and Dedicated Outdoor Air System (DOAS). Refrigerants with low global warming and ozone depleting potential will be specified for use in applicable building systems equipment. The Project will target a 20% lighting power density reduction below code by using primarily LED lighting.

Preliminary conceptual energy modeling estimates the project will have an annual site energy use that is approximately 41.5% below the ASHRAE 90.1-2016 w/ MA Amendments baseline (MA energy code metric) and an annual cost savings of approximately 31.76% below the ASHRAE 90.1-2010 baseline (LEED metric).

Additionally, the Proponent plans to engage a Commissioning Agent (“CxA”) to perform the fundamental commissioning services required by the LEED prerequisite which includes providing reviews of design documents. The CxA will continue through construction and ultimately confirm the building systems are installed and function as intended and desired.

4.4.6 *Materials and Resources*

The Project team will specify materials and products that are environmentally responsible and are transparent regarding the harvest and/or extraction of raw materials and the

manufacturing processes. The Project team will endeavor to specify materials and products with compliant environmental and health product declarations to reduce the overall environmental impact of the Project.

Waste management will be addressed both during construction and post occupancy. The construction manager will implement a construction waste management plan to divert a minimum of 75 percent of the construction waste and demolition debris.

During occupancy, collected recyclables will be accommodated in a central location. Hotel housekeeping staff will relocate recycled collected in guest rooms and common areas to the central storage room. A contracted waste management company will pick up the collected recyclables on a regular basis.

4.4.7 *Indoor Environmental Quality*

The Project will maintain a healthy interior environment by specifying low VOC containing interior construction and finish materials and designing an ASHRAE 62.1 compliant ventilation system. The building will be 100% non-smoking and smoking will not be allowed on the rooftop terrace or within 25 feet of the building.

The construction manager will be required to implement a compliant Indoor Air Quality Management Plan for the construction and pre-occupancy phases of the Project.

The building envelope design includes large areas of vision glazing with ample access to daylight and views for the residential units.

The thermal comfort systems and controls will be designed to meet the requirements of ASHRAE 55-2010 for all applicable mechanically ventilated spaces that are regularly occupied.

4.4.8 *Innovation*

The Project team will explore innovative approaches to design, construction, operations, and maintenance including low mercury containing lighting fixtures, integrative analysis of building materials, green housekeeping, hardscape management and pest management strategies.

4.4.9 *Climate Change Preparedness and Resiliency*

As required by the BPDA for all Large Project Review projects, the Proponent has considered anticipated changes in climate, which is reflected in the Resiliency Checklist provided in Appendix B. The Resiliency Checklist reflects the level of analysis that was performed to mitigate the impacts of climate change by considering a variety of strategies.

The following sections further describe how climate change has been considered in the early stages of the Project's design.

4.4.10 Addressing Anticipated Sea Level Rise

The potential effects of climate change, including rising sea levels and more frequent extreme storms, increase the probability of coastal and riverine flooding and enlarge the 100-year floodplain. Utilizing the Coastal Flood Exceedance maps published in the MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather, Vulnerability Assessments and Adaptation Options for the Central Artery/Tunnel (June 2015), the Project Site is not at high risk of inundation from sea level rise during its design life.

Figures 3.2a and 3.2b show the 2030 (Figure 3.2a) and 2070 (Figure 3.2b) inundation probabilities from the high emissions scenario of the same flood risk model, developed by the Woods Hole Group. These maps show that there will be no flooding due to sea level rise in 2030 at or near the Project Site. In 2070, the projections also show minimal risk to the immediate Project Site. The Climate Ready Boston report, released in December 2016, indicated no change in sea level rise projections.

4.4.11 Addressing Extreme Weather and Heat Events

This section examines how the Project may be affected by and will prepare for climate change-induced extreme weather events.

The 2011 Massachusetts Climate Change Adaptation Report projects an increase in extreme weather events which could consist of drought, tropical rainfall patterns (i.e., increased precipitation), extreme heat and cold stretches, an increase in the number of days with extreme heat (i.e., temperatures greater than 90°F and 100°F), and increased winter precipitation, yet fewer days of snow.

The latest Climate Ready Boston report, released in December 2016, predicts an increase in the days of extreme heat from previous research; an additional 10 days above 90 degrees by 2030 to 20-40 in total; and an additional 22 days above 90 degrees by 2070 to 25-90 in total. Projections for increased precipitation and sea level rise from previous reports have remained consistent, as do implications to the Project Site.

Please refer to the Resiliency Checklist in Appendix B for additional details on how the Project will respond to extreme weather conditions.

5.0 ENVIRONMENTAL PROTECTION

5.1 Introduction

This section focuses on how the Project will impact the surrounding environment. This review focuses on potential environmental impacts and how the Project will mitigate and manage those impacts. The following is a list of environmental areas of concern:

- Wind
- Shadow
- Daylight
- Solar Glare
- Air Quality
- Noise
- Flood Zones
- Water Quality
- Groundwater Conservation Overlay District
- Geotechnical
- Solid and Hazardous Waste
- Construction Impacts/Construction Management Plan
- Wildlife Habitats
- Historic and Archaeological Impacts

5.2 Wind

5.2.1 Introduction

A qualitative wind study was performed to assess the potential pedestrian wind conditions for the proposed Project. The Project consists of an addition to the existing Onyx Hotel. The height of the proposed addition and its context within the neighborhood does not meet the requirements of wind tunnel testing. The objective of this assessment is therefore to provide a qualitative evaluation of wind comfort conditions resulting from the addition and recommend mitigation measures, if necessary.

This qualitative assessment is based on the following:

- A review of regional long-term meteorological data;
- Preliminary building design drawings, and
- Engineering judgment and knowledge of wind flow patterns.

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

5.2.2 *Project Layout*

As shown in **Appendix 5-A, Figure 1**, the Project is a proposed nine-story addition to the existing hotel, which will be built on top of the existing parking lot. The existing southwest-facing main entrance will remain and an entrance to the addition will be along the same façade. Apart from a roof deck, the addition will have limited outdoor gathering space. To the southwest of the Site is Portland Street along with several retail and office buildings. To the northeast of the Site is Friend Street along with several commercial and office buildings and few residential buildings. To the southeast of the Site is the Onyx Hotel along with an at-grade parking lot and a few office buildings. To the northwest of the Site are several restaurants. The Project is not expected to cause a significant change in wind conditions. Although the roof deck will be slightly exposed, the rooftop structure will shelter the decks somewhat from the prevailing west/northwesterly winds in the winter and spring. The office building to the northeast will shelter the deck somewhat from the gusty northeasterly winds in the spring, summer and fall. The roof deck will be protected by the existing hotel from prevailing southwesterly winds in the summer and fall.

Pedestrian-level wind conditions are expected to remain largely unchanged by the Project.

5.2.3 *Meteorological Wind Conditions*

The most recent five years of wind direction and wind speed data measured at Boston-Logan International Airport between 2014 and 2018 were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. **Appendix 5-A, Figure 2** graphically depicts the distributions of wind frequency and directionality for these four seasons and for the annual period. The predominant wind directions are from the west/northwest and southwest. Although not as frequent, northeasterly winds correspond with higher wind speeds, especially during the fall. Therefore, winds from the west/northwest, southwest and northeast directions are considered most relevant for this qualitative analysis, while winds from other directions are also considered in this analysis.

5.2.4 *BPDA Wind Criteria*

The BPDA wind comfort criteria include two standards for assessing the relative wind comfort of pedestrians. The first 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 of the time. The second set of criteria is used by the BPDA to determine the acceptability of specific locations. 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 point of reference for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed) and are presented in Table 5-1.

Table 5-1 BPDA Wind Comfort Criteria

Criteria Description	Wind Speed (mph)
Dangerous	>27
Uncomfortable for Walking	>19 and \leq 27
Comfortable for Walking	>15 and \leq 19
Comfortable for Standing	>12 and < 15
Comfortable for Sitting	<12

Since pedestrians on sidewalks will be active, wind speeds comfortable for walking are appropriate. Lower wind speeds comfortable for standing are desired for building main entrances where people tend to remain. For outdoor terraces, low wind speeds comfortable for sitting are desired during the summer. In other seasons, wind conditions in these areas may not be of a serious concern due to limited usage.

5.2.5 Potential Pedestrian Wind Conditions

As discussed in **Section 5.2.3**, winds are mostly from the northeast, southwest and west/northwest directions (**Appendix 5-A, Figure 2**). Winds from the northeast will generally be reduced by the northwest-to-southeast layout of the neighboring street blocks, and will primarily travel along Causeway Street to the northwest and Valenti Way to the southeast. Winds from the southwest will also generally be reduced by the layout of the neighboring street blocks, and will also primarily travel along Causeway Street and Valenti Way. Winds from the west/northwest will have the most likelihood to impact pedestrian wind conditions at the Project, although no more so than the current conditions. Winds from the west/northwest will also generally be reduced by the layout of the neighborhood. **Appendix 5-A, Figure 3** shows the general wind flow patterns for the Site.

Building Decks and Entrances

A combination of the local wind climate, existing surroundings and the proposed Building design, were found to generally support conditions that are comfortable for walking, although there is potential for uncomfortable conditions at the roof deck and entrance during the winter, spring, and fall seasons. Lower wind conditions are likely for the roof deck and main entrance in the summer, when pedestrian traffic and outdoor activity peaks.

Since the addition is only nine stories in height, the wind criterion is anticipated to be met. With the main entrance to the hotel building facing southwest, some uncomfortable conditions may occur due to the frequency and speed of westerly winds.

Sidewalks

Pedestrians using the sidewalks are typically active along Portland Street, and less active along Friend Street. The two streets will generally experience the same wind conditions, given their orientation and surrounding structures. Both streets are expected to be comfortable for walking, with the exception of northwesterly winds when conditions may be uncomfortable. However, conditions are not expected to be worse than the current wind conditions.

5.2.6 Conclusions

A qualitative wind study was performed to assess the potential pedestrian wind conditions for the Project. The results of the study predict that there will be suitable wind conditions for pedestrians using adjacent sidewalks and accessing the main entrance to the building. However, uncomfortable wind conditions may occur along the Portland Street sidewalk, but not any worse than the current conditions.

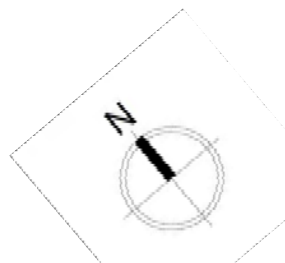
5.3 Shadow

A shadow analysis was conducted for the Project to ensure that the proposed addition will not create adverse shadow impacts. **Table 5-2** identifies the dates and times for which shadow conditions have been simulated.

Table 5-2 Shadow Study and Times

Date	Time
Vernal Equinox – March 21st	9:00 AM, 12:00 PM, 3:00 PM
Summer Solstice – June 21st	9:00 AM, 12:00 PM, 3:00 PM, 6:00 PM
Autumnal Equinox – September 21 st , EDT	9:00 AM, 12:00 PM, 3:00 PM, 6:00 PM
Winter Solstice – December 21 st , EST	9:00 AM, 12:00 PM, 3:00 PM

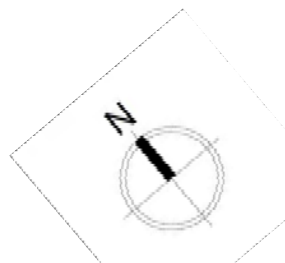
The study presents both the existing conditions and the proposed conditions. The following is in reference to the shadow study images shown in



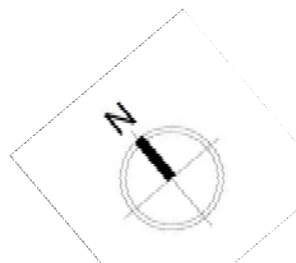


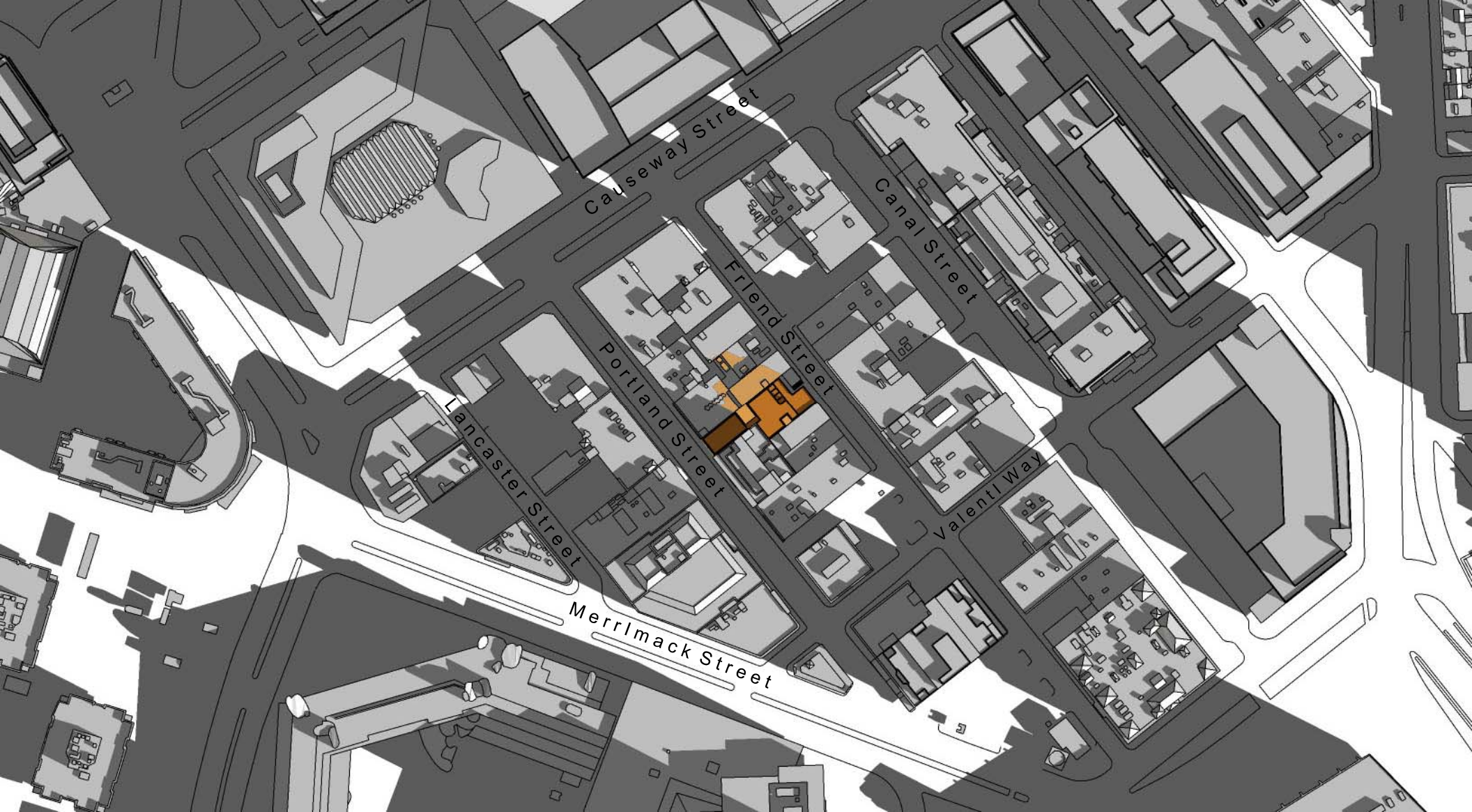






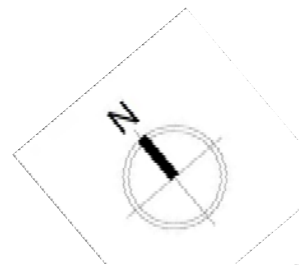
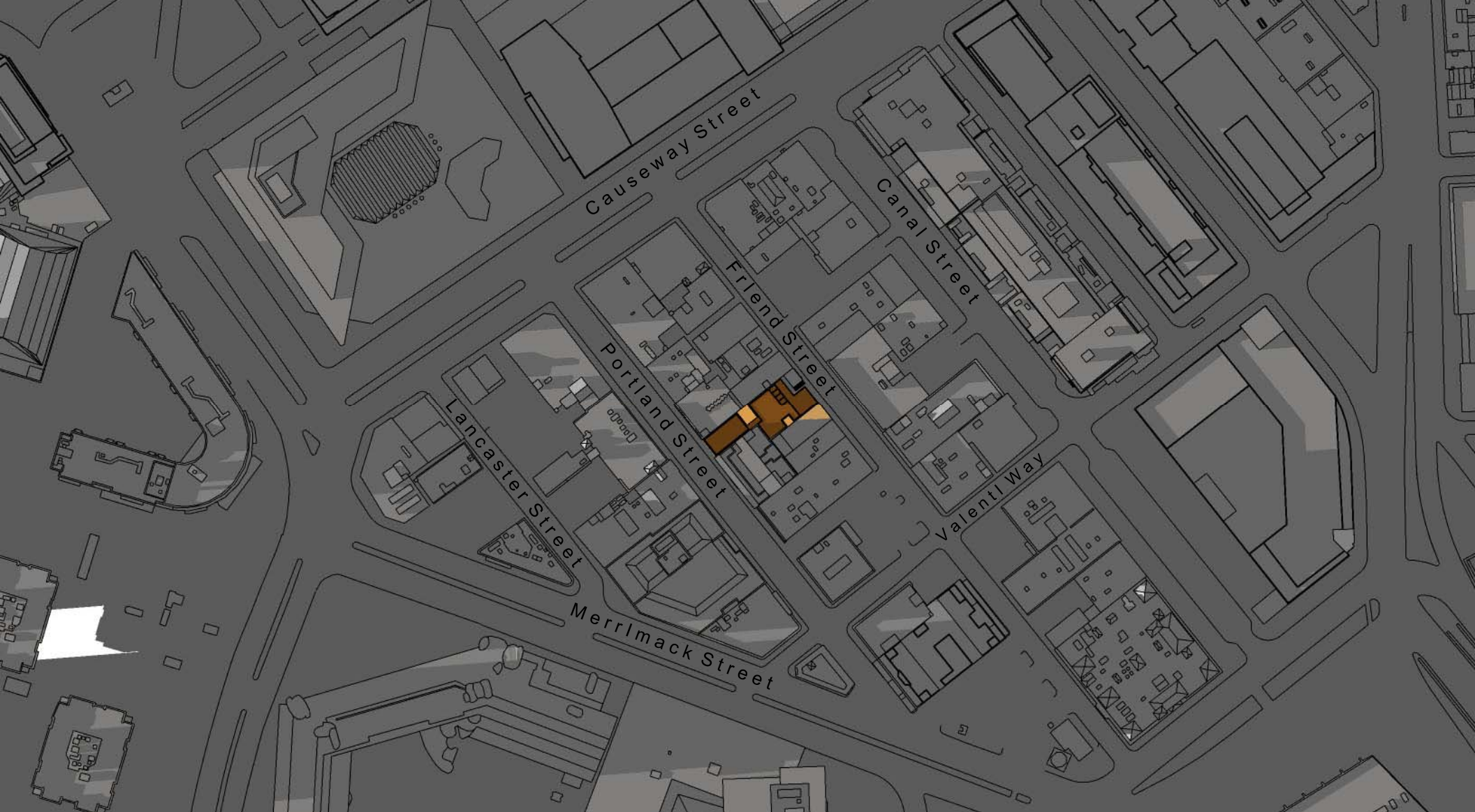


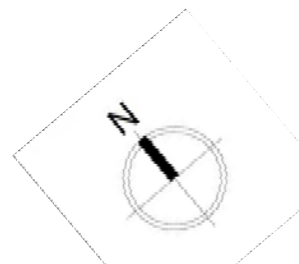


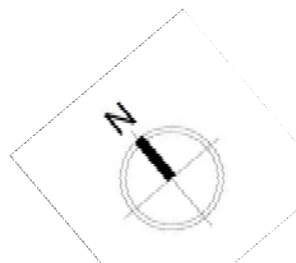


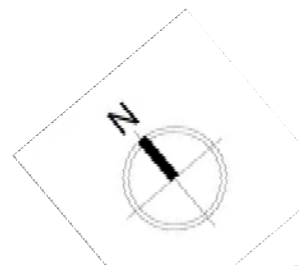












5.4 Daylight Analysis

The Project is similar in size and scale to the other projects in the Bullfinch Triangle neighborhood. Constructing a building where no buildings exist will increase the sky plane blockage. The materials for the proposed hotel addition are similar to those on the existing hotel façade. The daylight impacts will be further reduced when factoring in the Building's materials and glazing, which will provide a level of reflectance and overall daylight experience similar to the streets within the Bullfinch Triangle area.

5.5 Solar Glare

The addition will utilize high-performance materials and facades that are cognizant of the necessary balance of visual aesthetics, thermal performance, cost, heat gain and construction efficiency. As such, the addition will incorporate significant efficiencies related to energy conservation into their design.

Further, the Proponent does not believe that there will be any solar glare issues resulting from material and façade choices. Glazing performance will balance the metrics of visible light transmittance, thermal insulation value and solar heat gain. Highly mirrored finishes or glazing with a high degree of reflectivity will not be used within the Site.

5.6 Air Quality

5.6.1 *Introduction*

This section presents the evaluation of potential air quality impacts associated with the Project. The purpose of the air quality assessment is to demonstrate that the Project will not result in a violation of applicable local, state, and federal air quality standards. Boston, in Suffolk County, is in attainment for all National Ambient Air Quality Standards (NAAQS) criteria pollutants. As described more fully in the sections below, the Project does not require quantitative analysis of mesoscale (regional) or microscale (localized, or "hot spot") air quality impacts. It also provides an evaluation of potential stationary sources associated with the Project and possible permits.

5.6.2 *Background Concentrations*

The City is currently classified as being in attainment of the Massachusetts and National Ambient Air Quality Standards ("NAAQS") for all of the criteria air pollutants (see

Table 5-3). The County is also in maintenance for carbon monoxide (CO). These air quality standards have been established to protect the public health and welfare in ambient air, with a margin for safety.

The Massachusetts Department of Environmental Protection (“MassDEP”) currently operates air monitors in various locations throughout the city. The closest, most representative, MassDEP monitors for carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), fine particulate matter (PM_{2.5}), coarse particulate matter (PM₁₀), and lead are located at Kenmore Square and Dudley Square on Harrison Avenue, Boston, MA.

Table 5-4 summarizes the MassDEP air monitoring data, for the most recent available, complete, three-year period (2016-2018), that are considered to be representative of the Project area.

Table 5-4 shows that the existing air quality in the Project area is generally much better than the NAAQS. The highest impacts relative to a NAAQS are for ozone and PM_{2.5}. Ozone is a regional air pollutant on which the small amount of additional traffic generated by this Project will have an insignificant impact. The Project’s operations will also not have a significant impact on local PM_{2.5} concentrations.

Table 5-3 Massachusetts and National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	NAAQS (µg/m ³)
Sulfur Dioxide (SO ₂)	1-hour ^P 3-hour ^S Annual ^P (Arithmetic Mean)	196 ^a 1,300 ^b 80
Carbon Monoxide (CO)	1-hour ^P 8-hour ^P	40,000 ^b 10,000 ^b
Nitrogen Dioxide (NO ₂)	1-hour ^P Annual ^{P/S} (Arithmetic Mean)	188 ^c 100
Coarse Particulate Matter (PM ₁₀)	24-hour ^{P/S}	150
Fine Particulate Matter (PM _{2.5})	24-hour ^{P/S} Annual ^P (Arithmetic Mean) Annual ^S (Arithmetic Mean)	35 ^d 12 ^{e,f} 15
Ozone (O ₃)	8-hour ^{P/S}	137 ^g
Lead (Pb)	Rolling 3-Month Avg. ^{P/S}	0.15

P = primary standard; S = secondary standard.

^a 99th percentile 1-hour concentrations in a year (average over three years).

^b One exceedance per year is allowed.

^c 98th percentile 1-hour concentrations in a year (average over three years).

^d 98th percentile 24-hour concentrations in a year (average over three years).

^e Three-year average of annual arithmetic means.

^f As of March 18, 2013, the U.S. EPA lowered the PM_{2.5} annual standard from 15 µg/m³ to 12 µg/m³.

^g Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.070 ppm (137 µg/m³) (effective December 28, 2015); the annual PM₁₀ standard was revoked in 2006.

Table 5-4 Representative Existing Air Quality in the Project Area

Pollutant, Averaging Period	Monitor Location	Value ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	Percent of NAAQS
CO, 1-hour	Harrison Avenue, Boston	2,758 (2.4 ppm)	40,000	7%
CO, 8-hour	Harrison Avenue, Boston	1,438 (1.3 ppm)	10,000	14%
NO ₂ , 1-hour	Harrison Avenue, Boston	89.7	188	48%
NO ₂ , Annual	Harrison Avenue, Boston	24.8	100	25%
Ozone, 8-hour	Harrison Avenue, Boston	127	137	93%
PM ₁₀ , 24-hour	Harrison Avenue, Boston	28	150	19%
PM _{2.5} , 24-hour	North Street, Boston	14.9	35	40%
PM _{2.5} , Annual	North Street, Boston	6.6	12	60%
Lead, Quarterly	Harrison Avenue, Boston	0.017	0.15	12%
SO ₂ , 1-hour	Harrison Avenue, Boston	10.9	196	6%

Source: MassDEP, <http://www.mass.gov/dep/air/priorities/aqreports.htm>, downloaded September 24, 2019.

Notes:

- (1) Annual averages are highest measured during the most recent three-year period for which data are available (2016 - 2018). Values for periods of 24-hours or less are highest, second-highest over the three-year period unless otherwise noted.
- (2) The eight-hour ozone value is the 3-year average of the annual fourth-highest values, the 24-hour PM_{2.5} value is the 3-year average of the 98th percentile values, the annual PM_{2.5} value is the 3-year average of the annual values – these are the values used to determine compliance with the NAAQS for these air pollutants.
- (3) The one-hour NO₂ value is the -year average of the 98th percentile values and the one-hour SO₂ value is the -year average of the 99th percentile values
- (4) The one-hour ozone standard was revoked by the US EPA in 2005; the annual PM₁₀ standard was revoked in 2006 and the 3-hour SO₂ standard was revoked by the US EPA in 2010.
- (5) Kenmore Square PM₁₀ data not available in 2017 report. 2017 PM₁₀ data is from Harrison Avenue.

5.6.3 Mesoscale (Regional) Air Quality

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

The BPDA requires a mesoscale air quality analysis if a project produces 10,000 or more vehicle trips per day. Since the Project is not anticipated to generate 10,000 or more vehicle trips per day, this analysis is not required.

5.6.4 *Microscale CO Analysis for Selected Intersections*

Per the Clean Air Act Amendments (CAAA), air quality control regions are classified and divided into one of three categories: attainment, non-attainment, and maintenance areas, depending upon air quality data and ambient concentrations of pollutants. The Project is in the West End neighborhood within the City of Boston, Suffolk County, Massachusetts, which, under the Environmental Protection Agency (EPA) designation, is a CO Maintenance Area. Projects located in a CO Maintenance Area are required to evaluate their CO concentrations with the NAAQS, as has been done for this Project. The City is in attainment for the remainder of the criteria pollutants.

The air quality study uses traffic data, such as volumes, delays, and speed, from the traffic study conducted for the Project. The BPDA Development Review Guidelines state that, for determination of potential CO impacts, “a microscale analysis predicting localized CO concentrations should be performed, including identification of any locations (intersections) projected to exceed the National or Massachusetts Ambient Air Quality Standards.”

The BPDA typically requires a microscale air quality analysis for any intersection in the Project study area where the level of service (“LOS”) is expected to deteriorate to D and the Project causes a ten percent (10%) increase in traffic or where the level of service is E or F and the Project contributes to a reduction in LOS. For such intersections, a microscale air quality analysis is required to examine the carbon monoxide (CO) concentrations at sensitive receptors near the intersection.

A microscale air quality analysis was not performed for this Project due to the Project trip generation having minimal impacts on the overall delays at the nearby intersections. The Project will generate approximately 17 motor vehicle trips during the morning peak traffic hour and approximately 26 motor vehicle trips during the afternoon traffic hour.

5.6.5 *Stationary Source Emissions and Permitting*

Sizable combustion equipment (e.g., emergency generators and boilers) can have the potential to emit air pollutants at the Project and may be subject to air permitting under 310 CMR 7.00. MassDEP has established the Environmental Results Program (ERP) to streamline the certification process of smaller combustion equipment, subject to permitting regulations.

The exact sizes, makes, and models of equipment to be used by the Project are still to be determined and will be determined throughout the design process. However, equipment

that is likely to be used at the Project, such as boilers or emergency generators, may be subject to permitting regulations. If a boiler with a rated capacity between 10 to 40 MMBtu per hour is used on the Project Site, the Proponent will submit the appropriate self-certification forms under the ERP process before the installation of the boiler. Additionally, if an emergency generator with a rated capacity equal to or greater than 37 kW is used on the Project Site, the Proponent will submit the appropriate self-certification forms under the ERP process within 60 days of generator startup. During the ERP process, the stationary sources will be required to show compliance with all applicable air quality regulations, including the NAAQS, to ensure public health and safety.

5.7 Noise

5.7.1 Introduction

Tech Environmental, Inc., performed a noise study to determine whether the operation of the Project will comply with the City of Boston Noise Regulations, the Massachusetts Department of Environmental Protection (MassDEP) Noise Policy and Housing and Urban Development (“HUD”) guideline.

5.7.2 Noise Terminology

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

Table 5-5 Subjective Effects of Changes in Sound Pressure Levels

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

¹ American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1989 ASHRAE Handbook-- Fundamentals (I-P) Edition, Atlanta, GA, 1989.

Non-steady noise exposure in a community is commonly expressed in terms of the A-weighted sound level (dBA); A-weighting approximates the frequency response of the human ear. Levels of many sounds change from moment to moment. Some are sharp impulses lasting 1 second or less, while others rise and fall over much longer periods of time. There are various measures of sound pressure designed for different purposes. To establish the background ambient sound level in an area, the L_{90} metric, which is the sound level exceeded 90 percent of the time, is typically used. The L_{90} can also be thought of as the level representing the quietest 10 percent of any time period. Similarly, the L_{10} can also be thought of as the level representing the quietest 90 percent of any time period. The L_{10} and L_{90} are broadband sound pressure measures, i.e., they include sounds at all frequencies. The L_{eq} , or equivalent sound level, is the steady-state sound level over a period of time that has the same acoustic energy as the fluctuating sounds that actually occurred during that same period. Federal noise guidelines are based on the L_{dn} , which is the A-weighted equivalent sound level for a 24-hour period with an additional 10 dB imposed on the equivalent sound levels for night time hours of 10 p.m. to 7 am.

Sound level measurements typically include an analysis of the sound spectrum into its various frequency components to determine tonal characteristics. The unit of frequency is Hertz (Hz), measuring the cycles per second of the sound pressure waves, and typically the frequency analysis examines 10 octave bands from 32 Hz to 16,000 Hz.

The acoustic environment in an urban area such as the Project area results from numerous sources. Observations show that major contributors to the background sound level in the Project area include motor vehicle traffic on local and distant streets, aircraft over-flights, mechanical equipment on nearby buildings, and general city noises such as street sweepers and police/fire sirens. Typical sound levels associated with various activities and environments are presented in **Table 5-6**.

5.7.3 Noise Regulations and Criteria

Commonwealth Noise Policy

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

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

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

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

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

Local Regulations

The City of Boston Environment Department regulates noise through the Regulations for the Control of Noise as administered by the Air Pollution Control Commission. The Project is located in an area consisting of commercial uses. The Project must comply with Regulation 2.2 for noise levels in Commercial Zoning Districts at these commercial locations. **Table 5-7** lists the maximum allowable octave band and broadband sound pressure levels for residential and business districts. Daytime is defined by the City of Boston Noise Regulations as occurring between the hours of 7:00 a.m. and 6:00 p.m. daily except Sunday. Compliance with the most restrictive nighttime residential limits will ensure compliance for other land uses with equal or higher noise limits.

HUD Site Acceptability Standards

Noise monitoring at the Site during the daytime and nighttime were used to evaluate the existing ambient sound levels and to evaluate conformance with the Site Acceptability Standards established by HUD for residential development. The purpose of the HUD guidelines is to provide standards for determining the acceptability of residential project locations with regards to existing sound levels. The HUD criteria regarding the day-night average sound level (“ L_{dn} ”) are listed below. These standards apply to L_{dn} measurements taken several feet from the Building in the direction of the predominant source of noise.

Normally Acceptable – L_{dn} not exceeding 65 dBA

Normally Unacceptable – L_{dn} above 65 dBA, but not exceeding 75 dBA

Unacceptable – L_{dn} above 75 dBA.

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

5.7.4 Existing Conditions

5.7.4.1 Baseline Noise Environment

The acoustic environment in an urban area such as the Project area results from numerous sources. Observations show that major contributors to the

background sound level in the Project area include motor vehicle traffic on the Massachusetts Turnpike, local and distant streets, aircraft over-flights.

5.7.4.2 Noise Measurement Methodology

Existing baseline sound levels in the Project area were measured during the quietest overnight period when human activity and street traffic were at a minimum, and when the Project's mechanical equipment (the principal sound sources) could be operating. Since the Project's mechanical equipment may operate at any time during a 24-hour day, a weekday between 12:00 a.m. and 4:00 a.m. was selected as the worst-case time period, i.e., the time period when Project-related sounds may be most noticeable due to the quieter background sound levels. Establishing an existing background (L90) during the quietest hours of the facility operation is a conservative approach for noise impact assessment and is required by the MassDEP Noise Policy.

Table 5-6 Common Indoor and Outdoor Sound Levels

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

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

Table 5-7 City of Boston on Maximum Allowable Sound Pressure Levels (db)

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

The nighttime noise measurement locations are as follows (see the Figure 1 in the **Appendix 5-B**):

- Location #1: 230 Friend Street
- Location #2: 169 Portland Street

5.7.4.3 Measurement Equipment

Broadband (dBA) and octave band sound level measurements were made with a Larson Davis Type 831 environmental sound level analyzer, at each monitoring location, for a duration of approximately thirty minutes. The full octave band frequency analysis was performed on the frequencies spanning 16 to 16,000 Hertz. A time integrated statistical analysis of the data used to quantify the sound variation was also performed, including the calculation of the L_{90} , which is used to set the ambient background sound level.

The Larson Davis 831 is equipped with a $\frac{1}{2}$ " precision condenser microphone and has an operating range of 5 dB to 140 dB and an overall frequency range of 3.5 Hz to 20,000 Hz. This meter meets or exceeds all requirements set forth in the ANSI S1.4 1983 Standards for Type 1 quality and accuracy and the State and City requirements for sound level instrumentation. Prior to any measurements, this sound analyzer was calibrated with an ANSI Type 1 calibrator that has an accuracy traceable to the National Institute of Standards and Technology (NIST).

During all measurements, the Larson Davis was tripod mounted at approximately five feet above the ground in open areas away from vertical reflecting surfaces.

5.7.4.4 Baseline Ambient Noise Levels

The daytime sound level monitoring was conducted on Monday, September 30, 2019, and the nighttime sound level monitoring was conducted overnight on Monday, September 30, 2019, into Tuesday morning October 1, 2019. Weather conditions during the sound surveys were conducive to accurate sound level monitoring: the skies were partially cloudy, and the winds were light (i.e., less than 12 mph). The microphone of the sound level analyzer was fitted with a 7-inch windscreen to negate any effects of wind-generated noise.

The daytime sound level measurements taken in the vicinity of the Site reveal sound levels that are typical for an urban area. A significant source of existing sound at all locations is motor vehicle traffic on nearby highways and local streets, residential, and aircraft over-flights. Similarly, the nighttime sound level measurements taken in the vicinity of the Site reveal sound levels that are typical for an urban area. A significant source of existing sound at all locations is motor vehicle traffic on local streets, residential and commercial air handling equipment, and pedestrians.

Noise monitoring at the Site during the daytime were used to evaluate the existing ambient sound levels and to evaluate conformance with the Site Acceptability Standards established by HUD for residential development. These sound level measurements were taken to help estimate the L_{dn} for the Site. A 30-minute sound level measurement was taken during the afternoon on Monday, September 30th between 2:16 p.m. and 2:46 p.m. at 169 Portland Street (Location #2) representing the closest location to the Site.

The main source of noise during the daytime sound level measurement was motor vehicle traffic on Portland Street and local streets, nearby construction, and sirens. The L_{eq} measured during the morning period was 64.4 dBA. The L_{eq} sound level measured during the nighttime at the same location was 61.6 dBA. Using both the daytime and nighttime L_{eq} sound levels, the calculated L_{dn} for the Site is 68.5 dBA, which is above the HUD guideline noise limit of 65 dBA.

The results of the nighttime baseline sound level measurements are presented in **Table 5-8**. The nighttime background L_{90} level ranged was 55.7 dBA at Location #1 and 54.3 dBA at Location #2. The octave band data in Table 5-8 shows that pure tones were not detected.

Table 5-8 Nighttime Baseline Sound Level Measurements – September 30 and October 1

Sound Level Measurement	Location #1 230 Friend Street 12:08 AM- 12:38-AM	Location #2 169 Portland Street 11:30 PM- 12:00 AM
Background (L₉₀)	55.7	54.3
16 Hz	55.5	56.7
32 Hz	59.2	61.9
63 Hz	58.1	59.3
125 Hz	59.0	57.1
250 Hz	56.0	54.6
500 Hz	54.2	52.0
1000 Hz	50.8	50.1
2000 Hz	44.7	44.4
4000 Hz	35.2	35.3
8000 Hz	24.7	25.9
16000 Hz	18.4	16.6
Pure Tone?	No	No

5.7.5 Overview of Potential Project Noise Sources

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

The design for the Project is expected to include the following roof-top mechanical equipment:

- (18) 8-ton Daikin Condenser Units
- (1) Greenheck Energy Recovery Unit
- (2) Greenheck Blowers

The equipment listed above, which will be located on building roof levels, was included in the noise impact analysis. The Project's traffic was not included in the noise analysis because motor vehicles are exempt under both the City and MassDEP noise regulations.

The sound generation profiles for the mechanical equipment noise sources operating concurrently under full-load conditions were used to determine the maximum possible resultant sound levels from the Site as a whole, to define a worst-case scenario. To be in compliance with City and MassDEP regulations, the resultant sound level must not exceed the allowable octave band limits in the City of Boston Noise Regulation and must be below

the allowable incremental noise increase, relative to existing noise levels, as required in the MassDEP Noise Policy.

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

5.7.6 Modeling Methodology

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

The Cadna-A computer program, a comprehensive 3-dimensional acoustical modeling software package was used to calculate Project generated sound propagation and attenuation.²The model is based on ISO 9613, an internationally recognized standard specifically developed to ensure the highly accurate calculation of environmental noise in an outdoor environment. ISO 9613 standard incorporates the propagation and attenuation of sound energy due to divergence with distance, surface and Building reflections, air and ground absorption, and sound wave diffraction and shielding effects caused by barriers, buildings, and ground topography.

The closest/worst-case sensitive (residential) location is to the northeast of the project area on Canal Street. This location was selected based on the proximity of the equipment and the amount of shielding by other buildings. This location is expected to receive the largest sound level impacts from the Project's rooftop mechanical equipment. It can be classified as a residential zone.

The sound level impacts from the Project's mechanical equipment were predicted at the closest residential locations to the north, west, and south. The Site is bound by commercial uses to the east. Figure 1 in **Appendix 5-B** shows the locations of the modeled noise receptors. Noise impacts at other nearby noise-sensitive locations farther from the Site will be less than those predicted for these receptors.

5.7.7 Future Sound Level of Project

The City and MassDEP noise standards apply to the operation of the mechanical equipment at the Project. The details of the noise predictions are presented in **Table 5-9** to **Table 5-13**. The sound impact analysis includes the simultaneous operation of the Project's rooftop mechanical equipment. The predicted sound levels are worst-case predictions that represent all hours of the day, as the analysis assumes full operation of the mechanical equipment 24-hours a day. The typical sound level impacts from the

² Cadna-A Computer Aided Noise Abatement Program, Version 2017.

mechanical equipment will likely be lower than what is presented here, since most of the mechanical equipment will operate at full-load only during certain times of the day and during the warmer months of the year, it is not likely that all of the mechanical equipment will operate at the same time. Sound level impacts at locations farther from the Project (e.g. other residences, etc.) will be lower than those presented in this report.

5.7.7.5 City of Boston Noise Standards

The noise impact analysis results, presented in **Table 5-9** to **Table 5-13**, reveal that the sound level impact at the noise-sensitive receptors will be between 13 and 38 dBA. The smallest sound level impact of 13 dBA is predicted to occur at 55 Causeway Street (Location R3). The largest sound level impact of 38 dBA is predicted to occur at 101 Canal Street (Location R1). Noise impacts predicted at all locations are in compliance with the City's nighttime noise limit (50 dBA) for a residential area. Note that sound levels from the Project will be below the residential nighttime limits at all times. The results also demonstrate compliance with the City, residential, non-daytime, octave band noise limits at all locations.

The City noise limits for business areas are significantly higher than the nighttime noise limits for residential areas (see **Table 5-7**). The Project will also easily comply with the City business area noise limits at all surrounding commercial properties.

5.7.7.6 MassDEP Noise Regulations

The predicted sound level impacts at the noise-sensitive locations were added to the measured L90 value of the quietest daily hour to test compliance with MassDEP's noise criteria. Assuming the Project's mechanical noise is constant throughout the day, the Project will cause the largest increase in sound levels during the period when the lowest background noise occurs. Minimum background sound levels (diurnal) typically occur between 12:00 a.m. and 4:00 a.m.

As shown in **Table 5-9** to **Table 5-13**, the Project is predicted to produce a less than 1 dBA change in the background sound levels at all modeled locations. Therefore, the Project's worst-case sound level impacts during the quietest nighttime periods will be in compliance with the MassDEP allowed noise increase of 10 dBA. The noise predictions for each octave band indicate that the mechanical equipment will not create a pure tone condition at any location.

5.7.7.7 HUD Site Acceptability Standards

The maximum predicted sound level impacts from the Project are slightly above 65 dBA, which is slightly above the HUD guideline noise limit of 65 dBA primarily due to the traffic on Portland Street.

It is assumed that standard building construction practices will result in at least a 30-dBA reduction of sound from outdoor sound levels, which will assure that the typical urban sound sources do not result in noise impacts greater than 45 dBA inside the hotel units closest to the neighboring streets.

5.7.7.4 Conclusions

Sound levels at all nearby sensitive locations and at all property lines will fully comply with the most stringent City and MassDEP daytime and nighttime sound level limits, and the HUD design Noise Levels. This acoustic analysis demonstrates that the Project's design will meet the applicable acoustic criteria.

Table 5-9: 101 Canal Street (Location R1) Estimated Future Level Impacts at Anytime

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	1
63 Hz	67	14
125 Hz	61	20
250 Hz	52	31
500 Hz	46	34
1000 Hz	40	34
2000 Hz	33	31
4000 Hz	28	25
8000 Hz	26	10
Broadband (dBA)	50	38
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L ₉₀ (Location # 1)	55.7
155 Portland Street Project*	41.4
Calculated Combined Future Sound Level	55.8
Calculated Incremental Increase	+0.1
Compliance with MassDEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.

Note: MassDEP Policy allows a sound level increase of up to 10 dBA.

Table 5-10: 280 Friend Street (Location R2) Estimated Future Level Impacts at Anytime

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	-10
63 Hz	67	-1
125 Hz	61	3
250 Hz	52	14
500 Hz	46	15
1000 Hz	40	15
2000 Hz	33	11
4000 Hz	28	6
8000 Hz	26	-6
Broadband (dBA)	50	19
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L ₉₀ (Location # 1)	55.7
155 Portland Street Project*	18.5
Calculated Combined Future Sound Level	55.7
Calculated Incremental Increase	+0.0
Compliance with MassDEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.

Note: MassDEP Policy allows a sound level increase of up to 10 dBA.

Table 5-11: 55 Causeway Street (Location R3) Estimated Future Level Impacts at Anytime

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	-8
63 Hz	67	3
125 Hz	61	6
250 Hz	52	10
500 Hz	46	11
1000 Hz	40	10
2000 Hz	33	5
4000 Hz	28	-2
8000 Hz	26	-20
Broadband (dBA)	50	13
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L ₉₀ (Location # 2)	54.3
155 Portland Street Project*	13.3
Calculated Combined Future Sound Level	54.3
Calculated Incremental Increase	+0.0
Compliance with MassDEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.

Note: MassDEP Policy allows a sound level increase of up to 10 dBA.

Table 5-12: 107 Merrimac Street (Location R4) Estimated Future Level Impacts at Anytime

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	-1
63 Hz	67	11
125 Hz	61	17
250 Hz	52	22
500 Hz	46	21
1000 Hz	40	22
2000 Hz	33	18
4000 Hz	28	10
8000 Hz	26	-6
Broadband (dBA)	50	25
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L ₉₀ (Location # 2)	54.3
155 Portland Street Project*	25.0
Calculated Combined Future Sound Level	54.3
Calculated Incremental Increase	+0.0
Compliance with MassDEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.

Note: MassDEP Policy allows a sound level increase of up to 10 dBA.

Table 5-13: 70 Causeway Street (Location R5) Estimated Future Level Impacts at Anytime

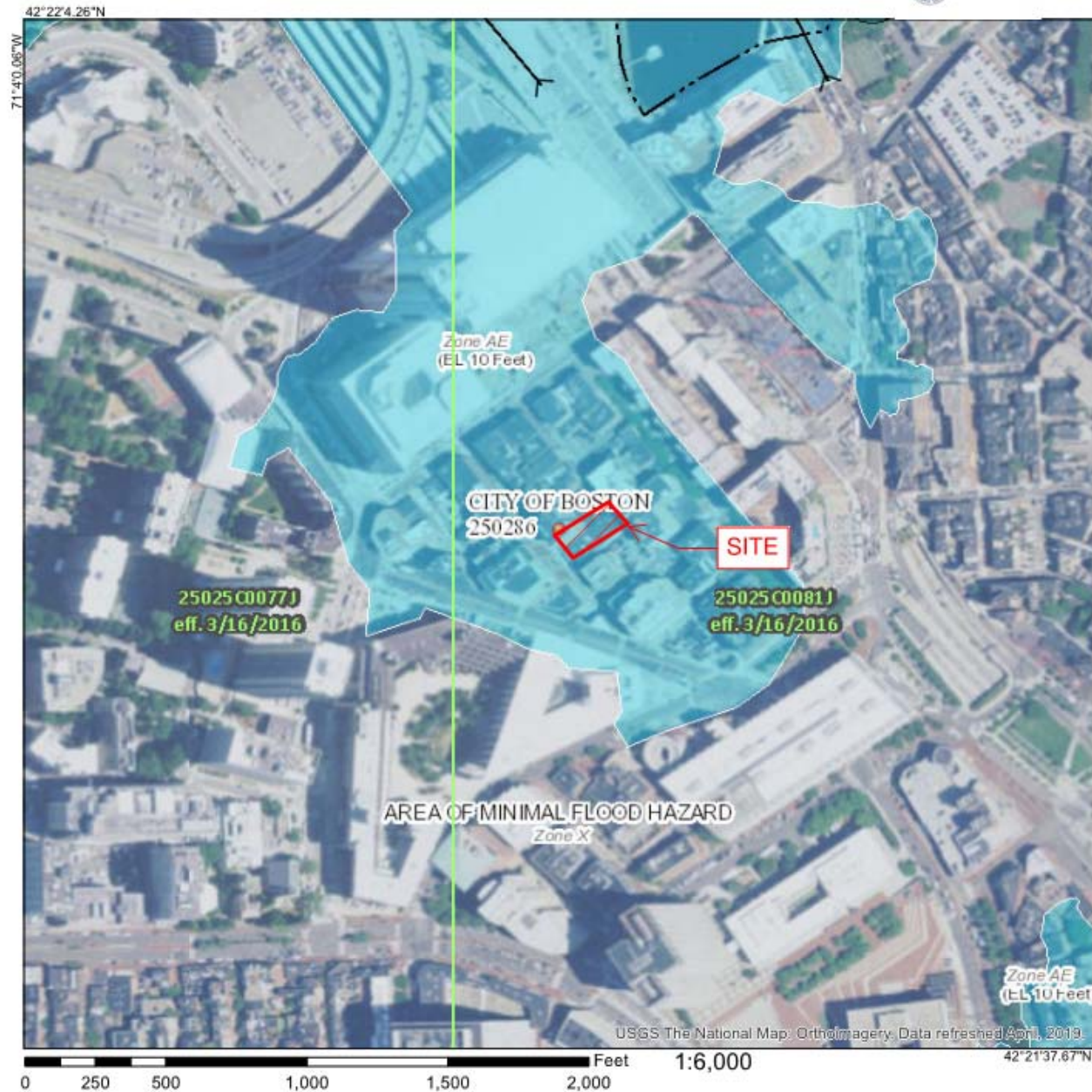
Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	-8
63 Hz	67	3
125 Hz	61	7
250 Hz	52	13
500 Hz	46	14
1000 Hz	40	12
2000 Hz	33	7
4000 Hz	28	-1
8000 Hz	26	-21
Broadband (dBA)	50	16
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L ₉₀ (Location # 1)	55.7
155 Portland Street Project*	15.8
Calculated Combined Future Sound Level	55.7
Calculated Incremental Increase	+0.0
Compliance with MassDEP Noise Policy?	Yes

5.8 Flood Zones

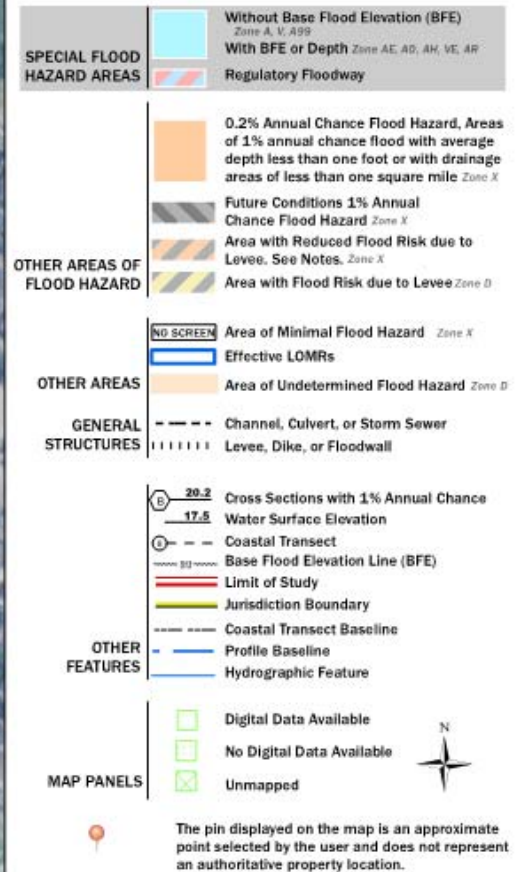
The Site is currently mapped within Flood Zone AE (Elevation 10 Feet, 16.46 Boston City Base). The Project will obtain approval as required through the Conservation Commission. See **Figure 5-15** for the FEMA Flood Insurance Rate Map for the Site (Map No. 25025C0081J).

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/1/2019 at 11:11:18 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

5.9 Water Quality

The water quality of runoff from the Site will be enhanced in the built condition. It is anticipated that stormwater runoff will be collected on-site and will be routed to subsurface infiltration systems to reduce the impact on the BWSC drainage system. At a minimum, on-site systems will be designed with a capacity of 1-inch over the impervious area of the Site. For larger storms, these systems will be equipped with overflow connections to the municipal system. Appropriate stormwater best management practices (BMP's) are to be included in the Project to improve the quality of stormwater runoff discharged from the Site, to promote infiltration to groundwater, and to ensure peak flows are at or below existing levels.

5.10 Groundwater Conservation Overlay District

The Project is within the Groundwater Conservation Overlay District (GCOD) and subject to the provisions of Article 32 of the Code. A Conditional Use Permit will be obtained through the Zoning Board of Appeals. The Project team will coordinate with the Boston Groundwater Trust as part of the GCOD process. As mentioned above, an infiltration system will be provided as required by Boston Water and Sewer Commission (BWSC). Final size, location, and design of the system will be coordinated with and approved by BWSC.

5.11 Geotechnical

This section includes a description of anticipated subsurface soil and groundwater conditions at the Project Site, planned foundation construction activities, and mitigation measures for maintaining groundwater levels in the Project's vicinity during foundation and below-grade construction.

5.11.1 *Site and Subsurface Conditions*

Based on available subsurface data, the general Project Site subsurface profile is listed below in Table 5-14, in order of increasing depth below ground surface.

TABLE 5-14 SUBSURFACE SOIL AND BEDROCK CONDITIONS

Generalized Subsurface Strata	Approximate Thickness (Feet)
Miscellaneous Fill	10
Organic Deposits	21
Marine Clay/ Marine Sand	40 - 50
Glacial Till	4 to 12
Bedrock	--

5.11.2 *Groundwater Conditions*

Groundwater levels in the vicinity of the site are expected to be at depths ranging from 6 feet to 10 feet below ground surface, corresponding to about Elevation +8 to Elevation +4

on the Boston City Base (BCB) datum. Groundwater levels in the area could be influenced by leakage into and out of sewers, storm drains and other below grade structures, as well as environmental factors such as precipitation, season, and temperature.

5.11.3 *Proposed Foundation Construction*

The Project includes construction of a new 9-story addition to the existing building. No below-grade space is planned as part of the building. Foundation support for the proposed building will be provided by drilled-in mini-piles which transfer the structural loads into the bedrock.

The proposed building is not anticipated to have below-grade space, and hence the building will not require perimeter or under slab foundation drainage, and will therefore not have an adverse impact on the groundwater level within or adjacent to the site.

As discussed above, the Project will include coordination with the Boston Groundwater Trust to protect groundwater levels in the area, and it will include the monitoring of existing groundwater observation wells in the vicinity of the site before, during, and following construction.

5.12 Solid and Hazardous Waste

5.12.1 *Massachusetts Contingency Plan*

Environmental due diligence has been performed at the Project Site. The site is currently in compliance with the Massachusetts Contingency Plan (MCP).

McPhail Associates completed a Phase I Environmental Site Assessment for the Project Site dated April 23, 2019. Specific tasks completed included a visual inspection of the subject site and surrounding properties for the presence of oil or hazardous materials (OHM), a review of historical information regarding the subject property, a review of federal and state databases and municipal files regarding the use, storage or release of OHM on or near the subject property. In summary, the Phase I assessment did not indicate the presence of Recognized Environmental Conditions (RECs) with respect to the subject property.

The 155 and 169 Portland Street parcels are the location of two (2) historical releases of oil and/or hazardous material as defined by the MCP 310 CMR 40.0000 which have been reported to Massachusetts Department of Environmental Protection (DEP). Specifically, the DEP has assigned Release Tracking Numbers (RTNs) 3-21942 and 3-32295 due to concentrations of metals that are present in fill material which exceed the reporting thresholds established in the MCP. A Class A-1 Response Action Outcome (RAO) Statement was filed with the DEP for RTN 3-21942 on July 17, 2003 documenting that the contamination was remediated to Background and a Permanent Solution had been achieved for the release. A Permanent Solution Statement with Conditions was filed with

the DEP on October 29, 2014 for RTN 3-32295. According to the Permanent Solution Statement, levels of metals in fill material at the site are present at or below Anthropogenic Background and further response actions are not considered necessary.

The Proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the Project, including proper management and/or disposal of contaminated soil encountered during construction. In the event that compounds are detected in soil during the above referenced testing at concentrations above applicable DEP standards, the release condition will be reported to the DEP. Further, remedial activities, if necessary, will be conducted in accordance with the Massachusetts Contingency Plan and applicable DEP Policies. The LSP will also prepare required MCP regulatory compliance submittals.

5.12.2 *Solid and Hazardous Waste*

Asphalt pavement, brick, and concrete (ABC) rubble generated from demolition of site walkways and structures will be handled in accordance with applicable Massachusetts Department of Environmental Protection (DEP) solid waste policies. The Project's disposal contract will include specific provisions for the segregation, reprocessing, reuse, and/or recycling of building materials and demolition debris. Those materials will be transported in covered trucks to an approved solid waste facility per applicable DEP solid waste policies.

Abatement and disposal of hazardous materials (or hazardous waste), if encountered, will be performed under the provisions of MGL c21/2C, OSHA, and the Massachusetts Contingency Plan (MCP) by specialty contractors experienced and licensed in handling materials of this nature.

It is currently anticipated that construction of the Project will require excavation and off-site removal of an unknown quantity of excess soil. Off-site removal of excess excavated soil will be conducted in accordance with the current policies of the Massachusetts Department of Environmental Protection (DEP). Chemical testing of soil samples will be performed as needed to reuse/dispose of the soils off-site depending on the acceptance criteria of specific facilities. The soils transported off-site will be legally reused/disposed in accordance with the MCP and other regulatory requirements. Disposal of materials will be tracked via Material Shipping Records, Bills of Lading and/or other methods, as required to ensure their proper and legal disposal.

5.13 Construction Impacts/Construction Management Plan

5.13.1 *Construction Management Plan*

The Construction Management Plan (CMP) will be submitted to the Boston Transportation Department for its approval prior to the start of construction and will

include specific mitigation measures and staging plans to minimize impacts to abutters. The Project construction manager will be bound by the CMP.

5.13.2 Construction Methodology

5.13.2.1 Construction Activity Schedule

The Construction Management Plan (CMP) will be submitted to The Boston Transportation Department for their approval prior to the start of construction and will include specific mitigation measures and staging plans to minimize impacts to abutters. The construction manager will be bound by the CMP.

5.13.2.2 Construction Staging Area

The Logistics Plan will be designed to isolate the construction while providing safe access for pedestrians and automobiles during normal day-to-day activities and emergencies. Interaction with the public will occur mainly along Portland Street and Friend Street.

The Project consists of demolishing the existing parking lot, relocation of existing utilities, placing spread footings/foundation walls and the erection of an approximately 100-foot-tall structural steel structure. The new building addition will consist of a first-floor retail/restaurant space, new kitchen and new back of house spaces, approximately seventy-seven (77) new hotel rooms and publicly accessible rooftop amenity spaces.

The site will be secured by a 6-foot high fence with privacy screening in accordance with the Logistics Plan. The Site will utilize two (2) primary gates for access.

All construction material delivery trucks will be unable to drive directly into the site to load/unload. Trucks will not be allowed to park or idle on the neighborhood streets for more than 30 minutes while making deliveries. During construction trucks will be live loaded and unloaded to minimize disruptions. For major deliveries, such as steel, large pieces of mechanical equipment, etc., an off-site staging and marshaling area will be utilized. If necessary, a wheel wash station will be located at the exit to the site. Also, adjacent streets/sidewalks will be swept as necessary to minimize accumulations of dirt and dust. Mechanical sweeping will be utilized, continuously during the excavation and foundation phases.

If it becomes necessary, off-hours work will require a special permit and will be coordinated with BTM and the Mayor's Office of Neighborhood Services (MONS).

Proper signage and way finding will direct pedestrians safely around the construction job site and activities.

5.13.2.3 Perimeter Protection/Public Safety

The Project's general contractor will work to ensure the staging areas minimize impact to pedestrian and vehicular flow. The specific configuration of staging and pedestrian access around the site will vary depending on the phase of the work being performed. In general, secured fencing will be used to isolate construction areas from pedestrian traffic, pedestrian way finding signage will be installed and police details will be provided as needed to facilitate traffic flow. Work will be performed outside of the site fence for utility work and connections. This work will be isolated from traffic and pedestrians utilizing traffic barriers and overhead sidewalk protection. All utility work within the public ways, will also have a dedicated police detail.

Construction procedures will be designed to meet all OSHA safety standards for specific site construction activities. Subcontractors will implement and manage their own Health and Safety Program for the Project. All Subcontractors are required to wear appropriate personal protective equipment.

Snow removal and ice treatment will be provided on the surrounding sidewalks, as will trash and debris clean up. Snow removal will occur in a timely manner and will predominantly occur on off hours.

5.13.3 Construction Traffic Impacts

5.13.3.1 Construction Trip Generation and Worker Parking

The number of workers required during the construction will vary with an estimated average daily workforce of 78 during peak of construction. Because the workforce will arrive prior to peak traffic periods, these trips are not expected to impact traffic conditions. Additionally, jobsite personnel will be encouraged to utilize public transportation. No personal vehicles will be allowed to park on the adjacent residential streets. Terms and conditions related to workforce parking and public transportation use will be written into each subcontract.

5.13.3.2 Truck Routes and Volumes

Truck traffic will vary throughout the construction period, depending on the activity. Given the sites location, with easy access to major roadways such as Causeway Street, Merrimack Street and I-93 South and Northbound, there will be limited truck or construction access through local roads.

5.13.4 Construction Air Quality

5.13.4.1 Dust Control

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

- Wetting agents will be used regularly to control and suppress dust that may come from the construction materials;
- All trucks used for transportation of construction debris will be fully covered;
- Actual construction practices will be monitored to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized and to ensure that any emissions of dust are negligible;
- Street and sidewalks will be cleaned periodically to minimize dust accumulations;
- A wheel wash station will be implemented prior to exiting to the City streets during site work activities, if warranted;
- A preconstruction survey will be conducted to determine the existing dust particle levels in the area and set a baseline for our controls. This survey will also document the conditions of the surrounding structures to establish existing dust levels on these structures.

5.13.5 Construction Noise

The Project will require the use of equipment that can be heard from offsite locations. This Proponent is committed to mitigating noise impacts. Increased community sound levels, however, are an inherent consequence of construction activities. The general contractor will record baseline neighborhood sound levels before the start of construction to better understand the existing conditions at the site. Construction will occur during the daytime hours as defined by the Boston Noise Regulation (7:00 a.m. to 6:00 p.m. except Sundays). In some instances, a second shift, off hour, holiday and Saturday may be required. When these events arise, all required permits will be in place.

5.13.6 Rodent Control

The City of Boston has declared that the infestation of rodents in the City is a serious problem. In order to control the infestation, the City enforces the requirements established under the Massachusetts State Sanitary Code and the State Building Code that the extermination of rodents shall be required for issuance of permits for demolition, excavation, foundation and basement rehabilitation. The proposed project will develop a rodent control program prior to its construction start. We will conduct a preconstruction

survey to establish the rodent level. This survey will also document existing conditions that may affect the ability to manage the rodent control such as trash containment, etc.

5.14 Wildlife Habitats

According to the most recent GIS polygons maintained by the Natural Heritage and Endangered Species Program (“NHESP”) of the Massachusetts Division of Fisheries and Wildlife, the Project is located outside of the Estimated Habitats of Rare Wildlife and the Priority Habitats of Rare Species.

5.15 Historic and Archaeological Impacts

This Section describes the historic and archeological resources that may be affected by the Project.

5.15.1 Historic Resources Within the Site

The Site does not contain any properties included in the Inventory of Historic and Archeological Assets of the Commonwealth (Inventory), maintained by the Massachusetts Historical Commission (“MHC”).

5.15.2 Historic Resources Within Vicinity of the Site

The Site is not listed on any State and National Registers of Historic Places.

5.15.3 Archeological Resources on the Site

No known archeological resources listed in the State and National Registers of Historic Places or included in the Inventory located within the Site.

5.15.4 Massachusetts Historical Commission (MHC) Review

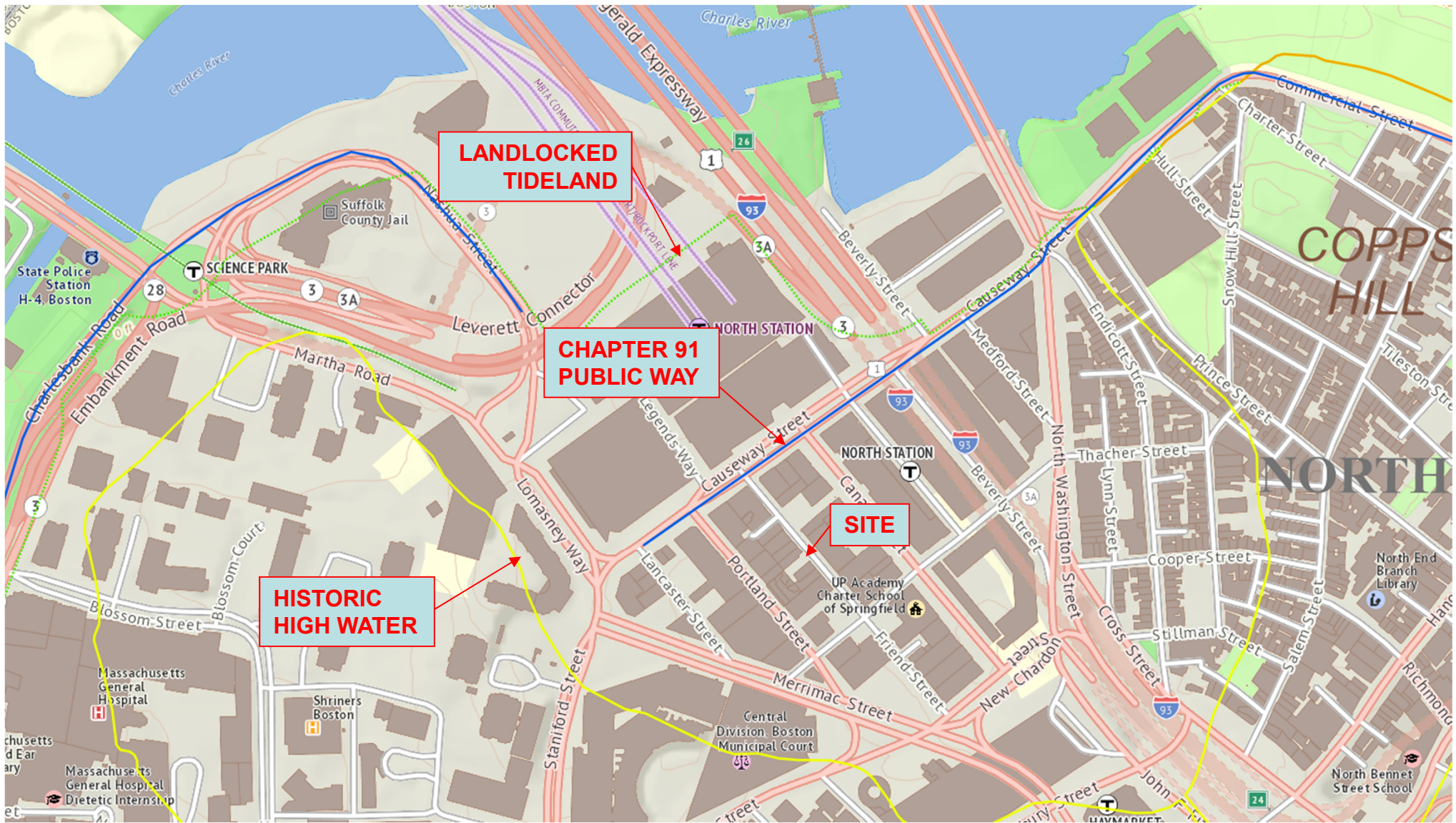
The Site is not within any Historic Districts and therefore is not subject to MHC review.

5.15.5 Article 85 – Demolition Delay

The Site is currently used as a surface level parking lot with no buildings or structures. Therefore, Article 85 – Demolition Delay is not applicable to the Project.

5.16 Tidelands

Per OLIVER MassGIS, the Site is located within the Tidelands Jurisdiction Chapter 91 Historic High-Water area. The Site is a landlocked tideland, and does not trigger MEPA, therefore Chapter 91 Public Benefit Review will not be required. See **Figure 5-16** for the Chapter 91 Map.



6.0 TRANSPORTATION

6.1 Introduction

This section provides a description of the Project's transportation operations and assesses any impacts to existing infrastructure. The transportation analysis is consistent with the City's policy for Complete Streets which puts pedestrians, bicyclists and transit users on equal footing with motor-vehicle drivers. The approach to the transportation component of this study was discussed with the Boston Planning & Development Agency (BPDA) and the Boston Transportation Department (BTD). Due to the anticipated low volume of Project-generated traffic associated with the hotel expansion, it was determined that traffic modeling would not be required as part of this submittal. Moreover, the underlying zoning does not require the provision of off-street parking. The analysis herein focuses on curbside operations and multi-modal opportunities in the area.

6.2 Project Overview

The Project includes the expansion of the existing Onyx Hotel located on Portland Street in the Bullfinch Triangle Area. As proposed, the hotel addition will include 77 new guest rooms and a new ground floor lobby with supporting retail/restaurant amenities. This approximately 40,725 square foot addition will be built adjacent to the hotel on land currently occupied by a surface parking lot. In total, the expanded hotel will provide 189 guest rooms. No on-site parking will be provided. A summary of the proposed Project is provided in **Table 6-1**.

Table 6-1 Development Program Summary

Use	Existing	Proposed Project	Total
Hotel (rooms)	112	+77	189
Retail/Restaurant	X	+2,000	X
Parking (spaces)	25	-25	0

6.3 Existing Conditions

This section describes the existing conditions of the study area's transportation facilities, including the area's street network, pedestrian and bicycle facilities, public transportation services, and nearby public parking.

6.3.1 Roadway Inventory

Portland Street is an urban minor arterial located adjacent to the Site to the south. It runs north-south between Causeway Street and Merrimac Street and is a one-way northbound roadway with a striped bicycle lane on the east side of the road. Parking is provided on both sides of the street.

Friend Street is a local roadway abutting the site to the east. It runs north-south between Causeway Street and New Chardon Street. Between Causeway Street and Valenti Way, Friend Street is one-way southbound with parking on the west side of the road. To the south, between Valenti Way and New Chardon Street, Friend Street is a one-way northbound roadway with parking on the east side of the roadway. The Public Works Department plans to reconstruct and reverse Friend Street to be one-way northbound in the near future.

6.3.1 ***Pedestrians***

The study area provides sidewalks on both sides of the roadway on Portland Street and Friend Street. There are also striped crosswalks at nearby intersections and a mid-block crosswalk on Friend Street behind the hotel. The sidewalks immediately adjacent to the Project are considered to be in good condition.

6.3.2 ***Bicycles***

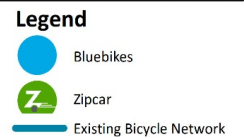
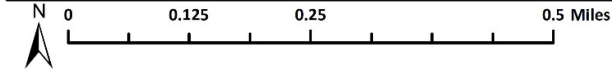
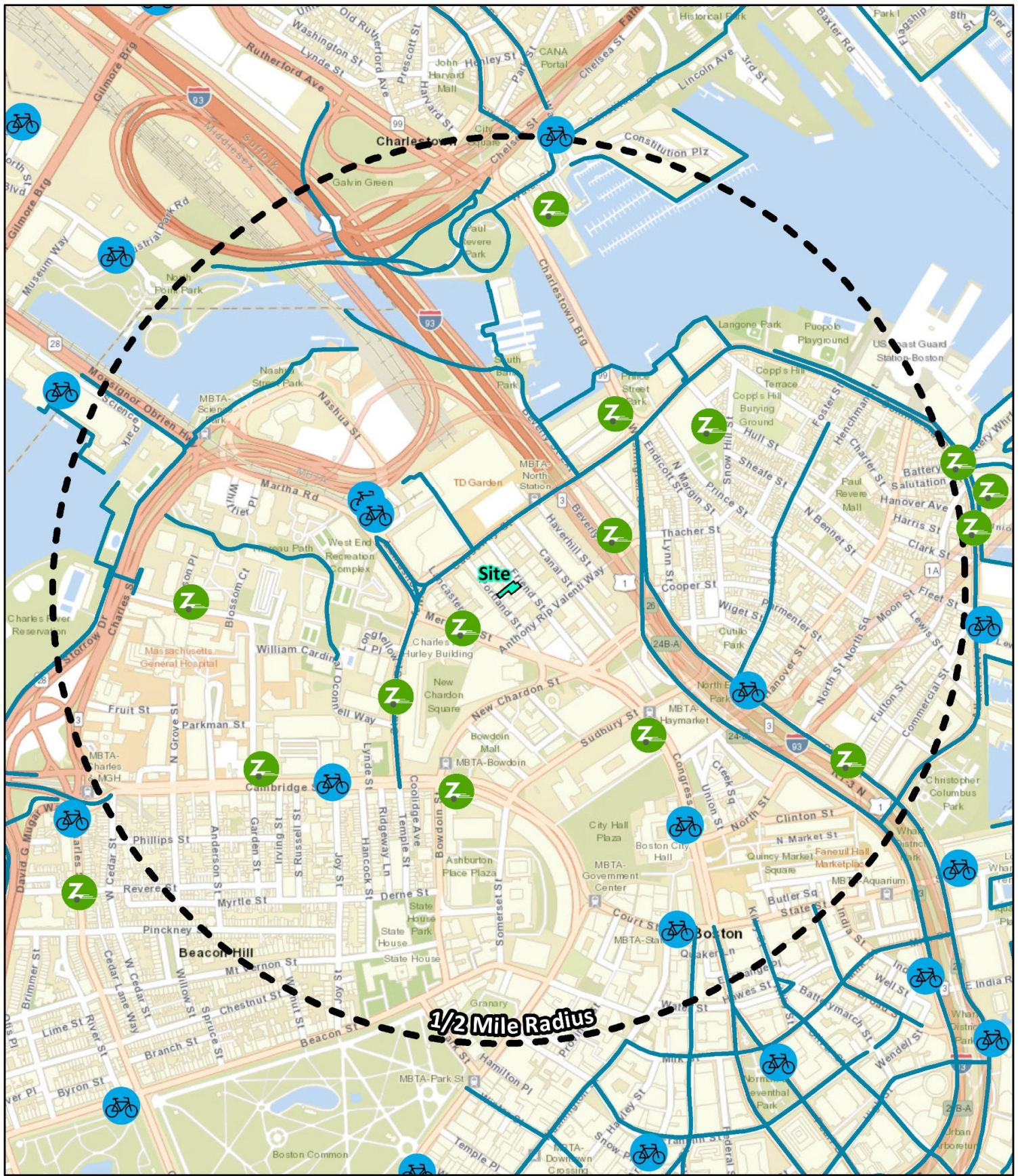
In recent years, the number of bicycles in the neighborhood has increased with the City's initiative to make Boston more bicycle friendly. The existing hotel offers loaner bicycles and will continue to do so with the expansion. Bicycle lanes are provided on Portland Street on the east side of the road.

The Project is located between two Bluebike stations: one on Nashua Street to the north and one at the Boston Public Market to the south. There is also a new station planned at the TD Garden on Legends Way in the near future. These bicycle stations help to reduce auto-dependency in the neighborhood and are an attractive amenity for commuters coming to the hotel from other transit lines.

There are several car share (Zipcar) locations near the Project Site. These amenities help to reduce auto-dependency in the neighborhood and are an attractive amenity for hotel users. Existing bicycle and car share locations are shown in **Figure 6-1**.

6.3.3 ***Public Transportation***

The MBTA provides local bus, subway and commuter rail services within proximity of the Site. The Site is situated between Haymarket Station and North Station providing convenient access to Commuter Rail, subway, and local bus routes. Services are shown in **Figure 6-2**.



Onyx Hotel | Boston, MA

Existing Zipcar & Bluebike Locations

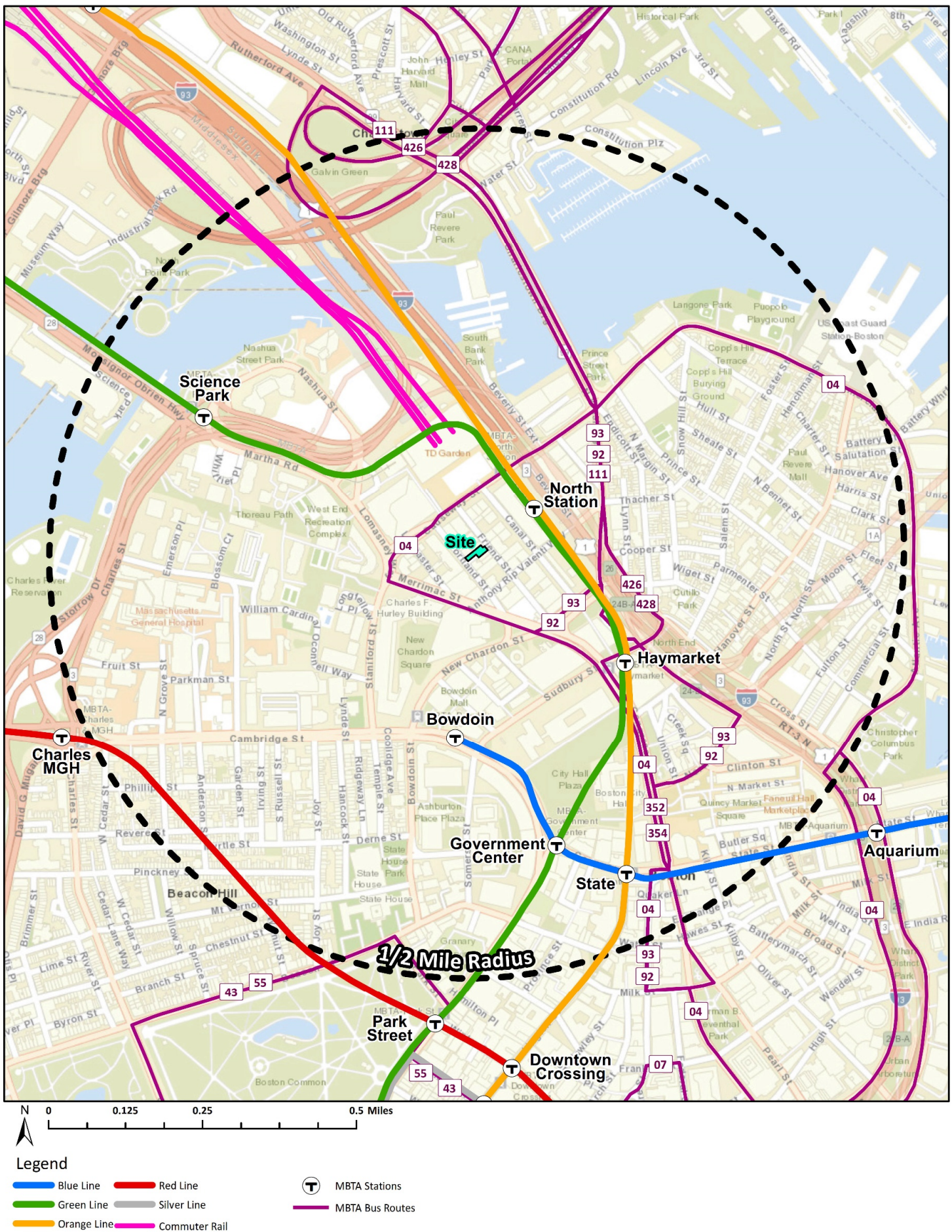


Table 6-2 MBTA Transit Services

Service	Origin-Destination
Route 4	North Station – Tide Street via South Station
Route 92	Sullivan Square Station – Haymarket Station-
Route 93	Sullivan – Clarendon Hill – Haymarket Station
Route 111	Woodlawn or Cary Square – Haymarket Station
Route 117	Wonderland – Haymarket Station
Route 325	Elm Street – Medford - Haymarket Station
Route 326	West Medford -Haymarket Station
Route 352	North Burlington – Downtown Boston
Route 354	Burlington -Woodburn – State Street Station
Route 424	Eastern Avenue & Essex Street - Wonderland
Route 428	Oaklandvale – Haymarket Station
Route 426	Central Square- Lynn-Haymarket Station
Route 434	Main Street – Haymarket via Goodwin Circle
Route 450	Salem Depot – Haymarket or Wonderland
Green Line– C Line	Cleveland Circle – North Station
Green Line– E Line	Heath Street – Lechmere
Blue Line	Bowdoin - Wonderland
Orange Line	Forest Hills – Oak Grove
Red Line	Braintree/Ashmont - Alewife
Commuter Rail	Fitchburg Line – North Station
Commuter Rail	Lowell Line – North Station
Commuter Rail	Haverhill Line – North Station
Commuter Rail	Newburyport/Rockport Line – North Station

Source: MBTA

6.3.4 Public Parking

On-street 'Pay and Display' metered parking is provided along most of the Portland Street frontage. In addition, there is limited metered parking on the east side of Friend Street due to construction between Valenti Way and New Chardon Street. Although there are no parking /tow away zone signs on Friend Street between Causeway Street and Valenti Way, parking occurs on the west side.

There are several surface parking lots including the J&O lot at 241 Friend Street west of the development site, the Green Park Parking lot at 37 Merrimac Street, 101 Merrimac Street, 166-174 Portland Street Parking, Stanhope Garage, Inc. at 208 Friend Street and 31 Lancaster Street, and the 230 Friend Street surface parking lot adjacent to the Onyx Hotel.

There are several public parking garages in the vicinity of the site including the Government Center Garage at 125 Bowker Street, the North Station Garage at 140 Causeway Street, the Longfellow Garage at 60 Staniford Street, 100 Cambridge Street Parking Facility, and the Pilgrim Parking at 34 Cooper Street.

6.4 Existing Hotel Operations

6.4.1 Valet & Parking

The existing hotel is currently served by a 25-space surface lot adjacent to the hotel. This lot is accessed via a gated driveway on Portland Street and Friend Street; however, only the Portland Street driveway is typically used. The existing lot includes spaces for electric vehicle charging. All spaces are operated by a valet who utilizes the on-site spaces first and moves any overflow to the Beverly Garage or Government Center Garage.

Valet operations vary on a day-to-day basis. Data was provided by the valet operator for January 2018 thru June 2019. The results are summarized in **Table 6-3**.

Table 6-3 Historic Valet Data

Month	Total	Average Daily	Total	Average Daily
	2018		2019	
January	600	19	706	23
February	674	24	608	22
March	786	25	777	24
April	738	25	1,096	37
May	532	19	984	32
June	584	20	486	16
July	650	22	-	-
August	683	22	-	-
September	585	20	-	-
October	648	21	-	-
November	578	19	-	-
December	815	26	-	-

Source: LAZ Parking

In 2018, the average daily valet operations ranged from 19 to 26 parked cars and the average in 2019 ranged from 16 to 37 parked cars, indicating that there will not be a significant displacement of parking to the existing parking garages.

The data shows that the total monthly valet operations for January, February, March and June are generally consistent between 2018 and 2019. The 2019 data shows a spike in the valet operations in the total monthly valet operations for April and May over the same months in 2018, suggesting this is an anomaly and that the remaining months of 2019 would be consistent with the 2018 data.

6.4.2 Curbside Observations

The existing Onyx Hotel is supported by two (2) dedicated valet spaces in front of the hotel lobby. To the north of the valet zone, there is a fire hydrant and two (2) curb curbs for the parking lot and existing loading dock that provides an additional 40 feet of flex space for vehicles to move out of the travel way.

Curbside observations were conducted on Tuesday, October 15, 2019 between the hours of 7:00 AM and 6:00 PM. During this time, all vehicles associated with the hotel on Portland Street were inventoried. This included valets, rideshare and taxi drop-off/pick-up activity, and deliveries. A summary of curbside activity is provided in **Table 6-4**.

Table 6-4 Existing Curbside Operations

Time	Valet		Taxi/TNC*		Deliveries		Total		Max Vehicles Queued at Curb
	In	Out	In	Out	In	Out	In	Out	
7:00-8:00 AM	5	3	7	6	0	0	12	9	4
8:00-9:00 AM	1	2	7	8	0	0	8	10	3
9:00-10:00 AM	5	5	5	5	0	0	10	10	4
10:00-11:00 AM	3	4	4	4	1	1	8	9	4
11:00 AM-12:00 PM	3	2	11	11	0	0	14	13	4
12:00-1:00 PM	1	1	4	4	0	0	5	5	2
1:00-2:00 PM	2	1	6	6	0	0	8	7	2
2:00-3:00 PM	2	4	8	8	2	1	12	13	5
3:00-4:00 PM	1	1	8	8	2	3	11	12	4
4:00-5:00 PM	1	1	13	13	1	1	15	15	3
5:00-6:00 PM	1	1	10	10	0	0	11	11	3

*Transportation Network Company. Category includes all drop-off/pick-up vehicles.

The curbside study indicated that the hotel experiences steady vehicle activity throughout the day. Existing hotel patrons predominantly use rideshare vehicles over personal automobiles while at the hotel. It was typical to have up to 4 or 5 vehicles associated with the hotel stopped on Portland Street at one time. These vehicles sometimes double-parked in the bicycle lanes; however, the majority pulled past the dedicated valet area and stopped adjacent to the fire hydrant or existing loading dock. There was minimal valet turnover and deliveries observed on an hourly basis.

6.4.3 Loading Dock

CHA conducted observations at the existing loading dock in conjunction with curbside observations on October 15, 2019. There were no vehicles using the loading dock during the curbside field observations. Typical deliveries included packages in small vans and box trucks from FedEx, Amazon, USPS, and UPS. These vehicles parked along the curb or in available space across the street and brought parcels into the Hotel through the front lobby.

According to hotel personnel, the majority of scheduled deliveries occur during off peak hours. Deliveries such as provisions for the restaurant and hotel linens use the loading dock when it is open during early morning hours.

6.5 Project Operations

The hotel's proposed 77 room expansion will be built on the existing surface parking lot resulting in the closure of the Portland Street and Friend Street driveways. In addition, the loading dock will be relocated from Portland Street to Friend Street. In total, the hotel's two (2) curb cuts on Portland Street will be closed and the sidewalk will be reconstructed to improve the pedestrian realm. The hotel's lobby will continue to front Portland Street.

6.5.1 Trip Generation

6.5.1.2 ITE Trip Estimates

Project trip generation was estimated using trip generation rates from the Institute of Transportation Engineers ("ITE") Trip Generation Manual, 10th Edition. The following land use code ("LUC") was used:

- LUC 310: Hotel

ITE's trip generation provides unadjusted vehicle trips assuming that all trips are vehicle trips. These unadjusted trips were converted to person trips using national vehicle occupancy rates. To account for local commuting trends such as walking, bicycling and transit use, local mode splits were then applied to the unadjusted trip estimates. **Table 6-5** provides a summary of the local mode splits.

Table 6-5 Local Mode Share

Mode Choice	Average Percentage
Single Occupant Vehicle	31.0%
Carpool	19.0%
Walk	17.0%
Bicycle	4.0%
Transit	29.0%

Source: Go Boston 2012, Zone 1

The resulting Project-generated by mode are shown in **Table 6-6**.

Table 6-6 Adjusted Trip Generation

Time of Day	Vehicle Trips*	Walk/Bicycle Trips	Transit Trips
Daily Total	379	266	367
AM Peak Hour			
In	10	7	9
Out	<u>7</u>	<u>4</u>	<u>7</u>
Total	17	11	16
PM Peak Hour			
In	13	9	13
Out	<u>13</u>	<u>9</u>	<u>13</u>
Total	26	18	26

*Includes SOV, HOV and rideshare vehicles

Using ITE rates, the Project is estimated to generate approximately 17 vehicle trips (10 entering and 7 exiting) during the morning peak hour and 26 vehicle trips (13 entering and 13 exiting) during the evening peak hour. In addition, the Project will generate approximately 11 walk/bike trips and 66 transit trips during the morning peak hour. During the evening peak hour, the Project will generate approximately 18 walk/bike trips and 25 transit trips.

6.5.1.3 Custom Trip Generation

Table 6-4 summarizes the hourly trip generation of the existing hotel which shows that the weekday AM peak is from 7:00 am to 8:00 am with a total of 21 trips (12 entering and 9 exiting) and the weekday PM peak is from 4:00 pm to 5:00 pm with a total of 30 trips (15 entering and 15 exiting). The 112 existing rooms yields a trip generation rate of 0.375 for the weekday AM peak hour and a trip generation rate of 0.535 for the weekday PM peak hour, which is less than the ITE LUC 310 trip generation rate.

These existing trip generation rates and the same Boston Mode Share trips shown in **Table 6-5** were applied to the proposed number of rooms to determine the estimated number of trips based upon the local conditions. **Table 6-7** summarizes the resulting Project-generated trips by mode for the weekday AM and PM peak hours.

Table 6-7 Adjusted Trip Generation based on Local Trip Generation Characteristics

Time of Day	Vehicle Trips*	Walk/Bicycle Trips	Transit Trips
AM Peak Hour			
In	8	6	8
Out	<u>6</u>	<u>4</u>	<u>6</u>
Total	14	10	14
PM Peak Hour			
In	10	7	10
Out	<u>10</u>	<u>7</u>	<u>10</u>
Total	20	14	20

*Includes SOV, HOV and rideshare vehicles

Table 6-7 shows that using the trip generations rates based upon the existing counts and applying them to the proposed number of rooms yields less weekday AM and PM peak hour trips than using the ITE Trip Generation rates. Using local rates yields fewer peak hour vehicle trips (3 less during the AM peak hour and 6 less during the weekday PM peak hour).

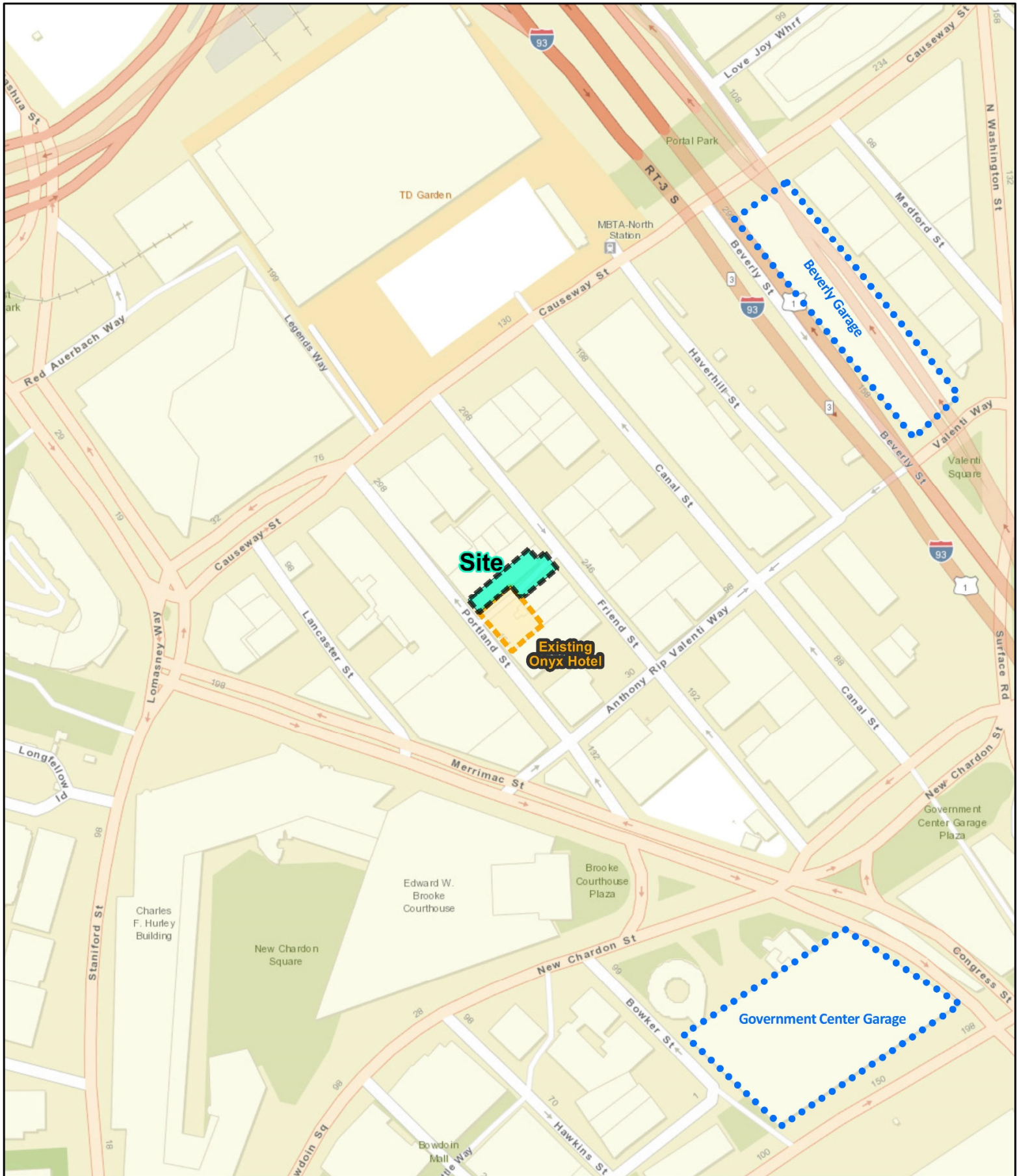
6.5.2 ***Valet & Parking***

The hotel will continue to provide valet operations on Portland Street adjacent to the main lobby. The Beverly Garage and Government Center Garage will continue to be utilized to accommodate parking needs associated with the hotel. See **Figure 6-3**.

With the closure of the existing loading dock and parking lot curb cuts on Portland Street, there is an opportunity for the valet zone to be expanded to accommodate additional curbside demand. The Project team will work with the Public Works Department and BTD to designate this new curb space on Portland Street as valet zone or drop-off/pick-up area that may be used by rideshare vehicles.

6.5.3 ***Loading***

The Project proposes to relocate the existing loading to Friend Street. This off-street loading dock will be similar in size to the existing dock and serve small vans and box trucks. It is anticipated that the majority of deliveries using the dock will occur during the early morning hours when the dock is staffed. Trash will be rolled out to the curb and picked up during scheduled times on Friend Street. Unscheduled daytime deliveries such as package deliveries will continue to be handled at the front lobby on Portland Street.



6.5.4 *Transportation Demand Management*

The Project will encourage alternative modes of transportation by implementing a comprehensive TDM plan. These measures will be specified in the forthcoming Transportation Access Plan Agreement (TAPA), a legally binding agreement with BTM, to finalize all transportation-related mitigation measures.

The Project is committed to the following TDM measures:

- Charge market-rate parking fees for guests
- Continue to provide loaner bicycles for hotel guests
- Provide secure on-site bicycle parking for employees
- Provide on-site showers and lockers for employees
- Provide sponsorship to a nearby Bluebikes Station to increase capacity in the area
- Provide transit information in the hotel lobby for guests
- Provide transit subsidy for employees using pre-tax payroll deductions
- Provide loaner umbrellas for hotel guests to encourage walking during inclement weather

6.5.5 *Pedestrian Realm Improvements*

The Project proposes to remove the existing curb cuts on Portland Street to provide a more continuous path for pedestrians. The Project also proposes to replace the existing sidewalks along Portland Street and Friend Street adjacent to the Site.

All improvements within the public realm will be coordinated with BTM and are subject to approval by the Public Works Department.

6.5.6 *Construction Management Plan*

A Construction Management Plan (“CMP”) will be required as part of the Project. This plan will identify any construction-related impacts in the public-realm and is subject to approval by BTM. The plan will include any necessary sidewalk closures, truck routing, temporary changes to on-street parking, detours, and measures to encourage non-auto trips to the Site by subcontractors during the construction phase. Efforts will be made as part of the CMP to minimize impacts to the adjacent transportation system.

7.0 INFRASTRUCTURE SYSTEMS

7.1 Overview of Utility Services

Existing sanitary sewer, storm drainage, water, gas, electric and telecommunications lines are in the Project vicinity, and are anticipated to have adequate capacity to serve the Project.

Approval of site plans and a General Service Application are required from BWSC for construction and activation of sewer, water, and storm drainage service connections. The final sewer and water connections, as well as the Project's stormwater management system, will be designed in conformance with BWSC's design standards, Requirements for Site Plans, Regulations Governing the Use of Sanitary and Combined Sewers and Storm Drains, and Regulations Governing the Use of the Water Distribution Facilities of the Boston Water and Sewer Commission.

A Drainage Discharge Permit Application will be submitted to BWSC for any required construction dewatering. The appropriate approvals from the MassDEP and the EPA will also be sought.

7.2 Water System

7.2.1 *Existing Water Service*

BWSC owns, operates, and maintains the water distribution systems near the Site. Per BWSC GIS Maps, two existing 12-inch ductile iron cement lined (DICL) mains built in 2009 are located in Portland Street and two existing 12-inch DICL mains built in 2009 are located in Friend Street. Per record plans provided by BWSC, there is an existing 4-inch domestic water line and 2-inch meter servicing the existing hotel. The record plans also show an existing 6-inch fire protection line with backflow preventer servicing the existing hotel. There are numerous existing hydrants in the Project vicinity, including a hydrant in front of the existing hotel on Portland Street. The extent of existing water distribution near the Site is shown on **Figure 7-1**.

7.2.2 *Estimated Proposed Water Demand*

The estimated proposed water demand for the Project is based on the estimated sanitary sewer flow (see **Table 7-1**), with a factor of 1.1 applied to account for consumption and other losses. Based on this formula, the Project's estimated peak water demand for domestic uses is 13,090 gallons per day. The domestic water will be supplied by the BWSC water system.

There are no anticipated water capacity issues near the Site. Prior to full design, this will be confirmed by flow testing by BWSC. The Project's engineer will coordinate water

demand and availability with BWSC during Project design to ensure the Project needs are met while maintaining adequate water flows to the surrounding neighborhood.

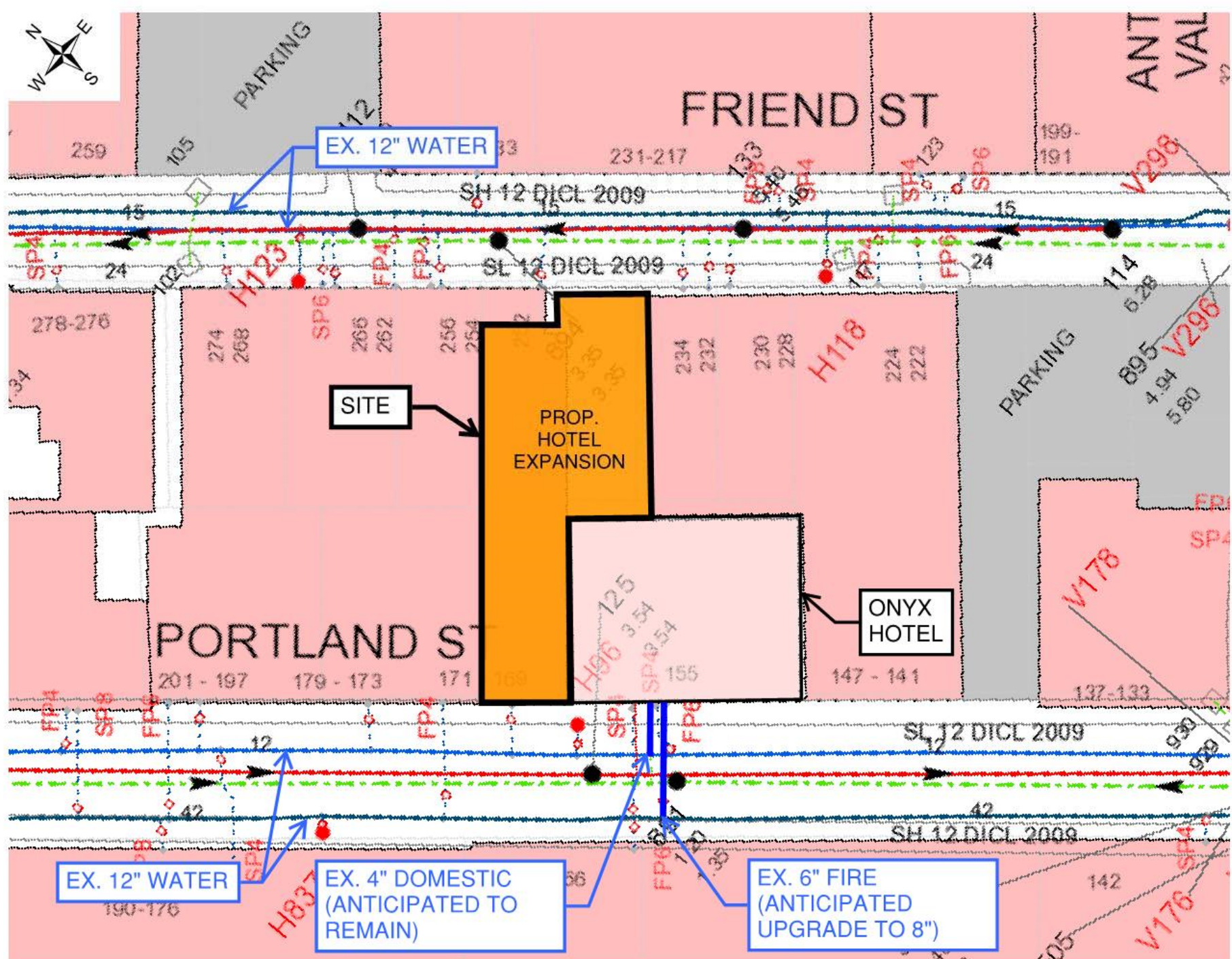
7.2.3 *Proposed Water Service*

It is anticipated that the existing 4-inch domestic water line servicing the existing hotel will be sufficient for the additional hotel rooms. The existing booster pump and/or meter may need to be upgraded and will be coordinated with the design team and BWSC.

It is anticipated that the existing 6-inch fire protection line will be upgraded to an 8-inch line to service both the existing hotel and proposed addition. The final size and location of this service connection will be coordinated between the Project's engineer and BWSC. Appropriate gate valves and backflow prevention devices will also be installed to allow individual services to be shut off and to prevent potential backflow of non-potable water or other contaminants into the public water supply.

At this point in the design it is anticipated that additional fire hydrants will not be required, as there are existing hydrants adjacent to the site on both Friend and Portland Street.

Final service locations will be coordinated with BWSC. See **Figure 7-2** for proposed water service connections.



7.2.4 *Water Supply Conservation and Mitigation*

The Project will be LEED certifiable in accordance with requirements of Article 37 of the Code. As such, various water conservation measures such as low-flow toilets and urinals, restricted flow faucets, and sensor operated sinks, toilets, and urinals may be incorporated to meet the LEED water conservation requirements. Specific water conservation measures to be included in the Project will be more fully described as the Building designs develop.

7.3 Sanitary Sewer System

7.3.1 *Existing Sanitary Sewer System*

BWSC owns, operates, and maintains the sanitary sewer mains near the Site. Per BWSC GIS mapping, there is a 12-inch separated sanitary sewer main within Portland Street and a 15-inch separated sanitary sewer main within Friend Street. Per record plans provided by BWSC, there is an existing 8-inch sanitary connection servicing the existing hotel. The extent of existing sanitary sewer distribution near the Site is shown in red on **Figure 7-1**.

7.3.2 *Estimated Proposed Sanitary Flow*

MassDEP establishes sewer generation rates for various types of establishments in a section of the State Environmental Code Title V ("Title 5"), 310 CMR 15.203. Based on an estimate of the Project's building program, **Table 7-1** gives the estimated proposed sanitary sewer flows expected to be generated by the Project. Based on these Title V sewer generation rates, the project is expected to produce approximately 11,900-gallons/day of sewer flow. The proposed sewer generation calculation will be refined as final sewer generation flows are coordinated with BWSC.

Table 7-1 Sewer Generation

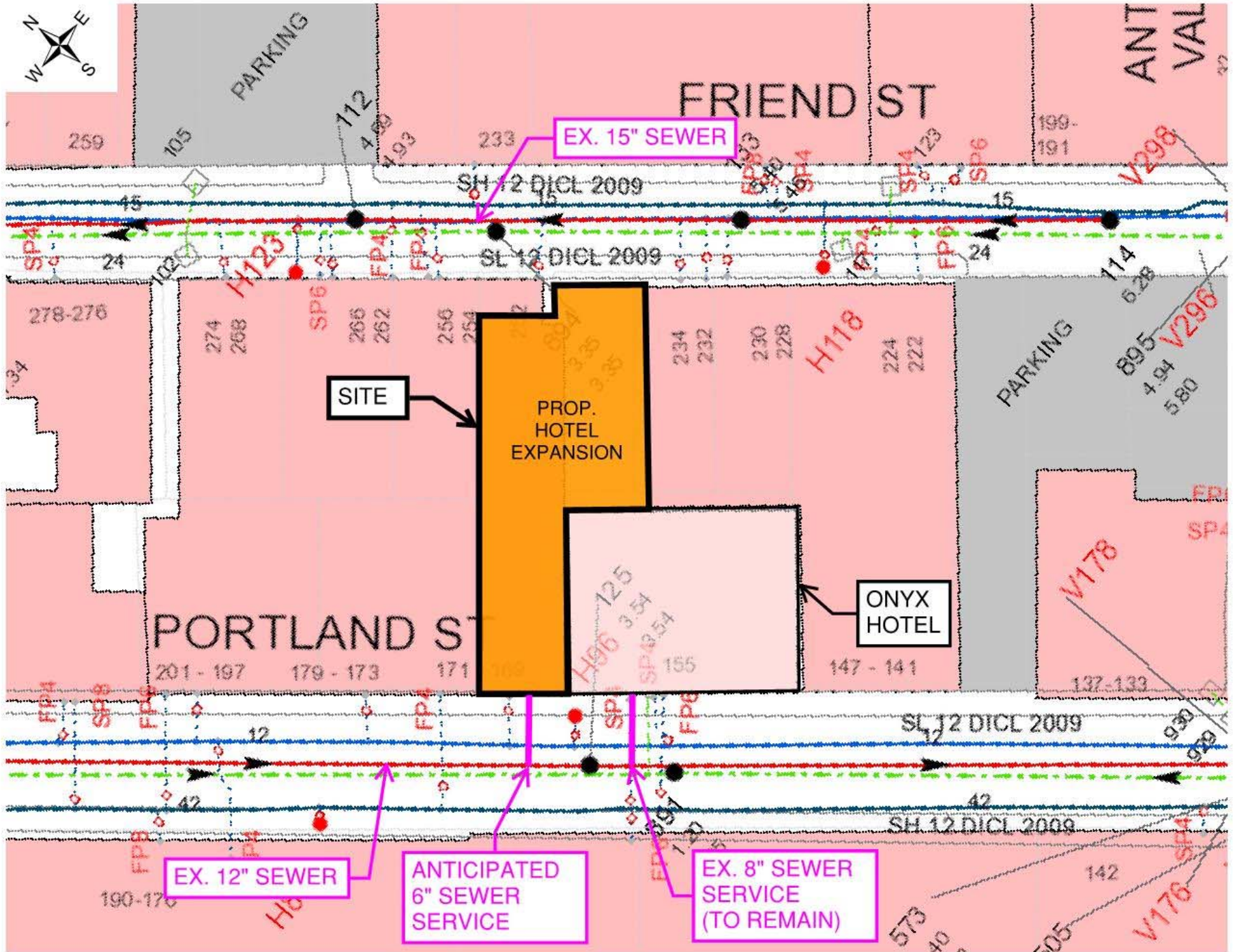
Unit Type	Program	Sewer Generation Rate	Sewer Flow (gpd)
Hotel	77 Rooms	110 gallons/day/room	8,470
Restaurant	98 Seats	35 gallons/day/seat	3,430
Total Sewer Generation			11,900

There are no known sewer capacity problems near the Site. The Project's engineer will coordinate final proposed sewer flows and available capacity with BWSC during Project design to ensure the Project needs are met without disruption of service to the surrounding area.

7.3.3 *Proposed Sanitary Sewer Connections*

A proposed 6-inch service connection in Portland Street is anticipated to provide service to the proposed hotel addition. The final size and location of the service connection(s) will be coordinated between the Project's plumbing engineer and the BWSC.

Sewer connections will be constructed to minimize effects on adjacent streets, sidewalks, and other areas within the public right-of-way, and sewer service connections will be kept separate from storm drain connections in accordance with BWSC requirements. See **Figure 7-3** for proposed sanitary sewer service connections.



7.3.4 Sewer System Mitigation

The sanitary sewer connections are subject to approval by the municipal sewer system owner, BWSC, as part of the site plan approval process. The Project flows are calculated to be approximately 11,900 gallons per day. This is below BWSC's 15,000 gallon per day threshold for inflow and infiltration (I/I) mitigation requirements.

Additionally, as stated in the Water Supply Conservation and Mitigation Section, various measures for water use reduction, which translates directly into wastewater reduction, are being implemented into the design which will also benefit the overall goal of reducing the volume of flows being sent to the MWRA wastewater treatment facility.

7.4 Storm Drainage System

7.4.1 Existing Storm Drainage System

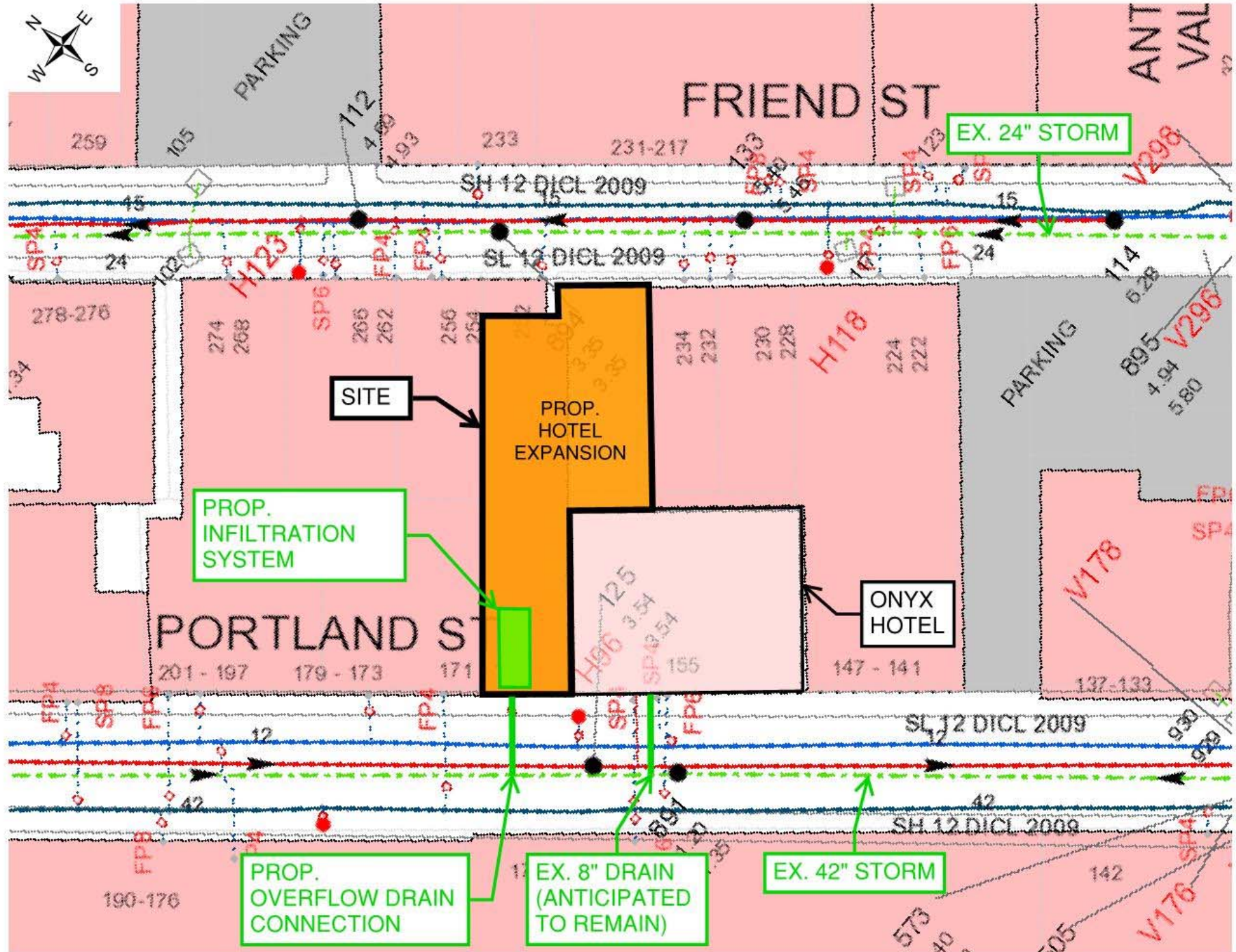
The Site is currently occupied by a parking lot. Runoff from the Site appears to flow to the existing drainage infrastructure within Portland and Friend Streets. Per BWSC GIS mapping, there is a 42-inch storm main within Portland Street and a 24-inch storm main within Friend Street. Per record plans provided by BWSC, there is an existing 8-inch storm drain line servicing the existing hotel. The extent of existing storm drainage infrastructure near the Site is shown in green on **Figure 7-1**.

7.4.2 Proposed Storm Drainage System

The Project will include a proposed stormwater management system for the addition and will be designed to comply with BWSC and GCOD requirements. It is anticipated that stormwater runoff will be collected and routed to subsurface infiltration systems to reduce the impact on the BWSC drainage system. At a minimum, the system will be designed with a capacity of 1.00-inch over the impervious area of the Site. Appropriate stormwater best management practices ("BMPs") are to be included in the Project to improve the quality of stormwater runoff discharged from the Site, to promote infiltration to groundwater, and to ensure peak flows are at or below existing levels. Overflow connections from the underground infiltration/detention areas are proposed to handle larger, less frequent storm events and will discharge to the BWSC drain system.

See

Figure 7-4 for a schematic design of the proposed storm drainage connection points and underground stormwater infiltration/detention system. It is anticipated that a long-term operations and maintenance plan will be used to assist the Property Manager in maintaining the stormwater BMPs in appropriate operational condition.



7.5 Electrical Services

Existing underground electric lines are located within Portland Street and Friend Street. It is assumed that there is capacity available in the existing hotel service to accommodate the proposed expansion. Metering and studies of the existing electrical service and distribution equipment will be required to confirm actual available capacity. The Project team will coordinate with private utility providers as the Project design progresses.

7.6 Telecommunication Services

All energy and telecommunications connections will be coordinated with the appropriate utility companies and the City. Existing underground telecommunication lines are located within Portland Street and Friend Street. It is anticipated that the existing service to the existing hotel will be upgraded to support the proposed hotel addition. The Project team will coordinate with private utility providers as the Project design progresses.

7.7 Natural Gas System

Per record mapping, a 6-inch gas line exists within both Portland Street and Friend Street. The Project team will coordinate with the utility provider as the design progresses to determine if the existing service may be reused, or if a new service line will be required for the proposed hotel addition.

7.8 Utility Protection During Construction

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

7.9 Smart Utilities

Minimum requirements for Green Infrastructure, District Energy Microgrids, Telecommunications Utilidor, Smart Street Lights, and Adaptive Signal Technology are not triggered by the proposed expansion. The Boston Smart Utilities Checklist is not applicable to the Project.

APPENDIX A

ACCESSIBILITY CHECKLIST

Article 80 – Accessibility Checklist

A requirement of the Boston Planning & Development Agency (BPDA) Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities strives to reduce architectural, procedural, attitudinal, and communication barriers that affect persons with disabilities in the City of Boston. In 2009, a Disability Advisory Board was appointed by the Mayor to work alongside the Commission in creating universal access throughout the city's built environment. The Disability Advisory Board is made up of 13 volunteer Boston residents with disabilities who have been tasked with representing the accessibility needs of their neighborhoods and increasing inclusion of people with disabilities.

In conformance with this directive, the BPDA has instituted this Accessibility Checklist as a tool to encourage developers to begin thinking about access and inclusion at the beginning of development projects, and strive to go beyond meeting only minimum MAAB / ADAAG compliance requirements. Instead, our goal is for developers to create ideal design for accessibility which will ensure that the built environment provides equitable experiences for all people, regardless of their abilities. As such, any project subject to Boston Zoning Article 80 Small or Large Project Review, including Institutional Master Plan modifications and updates, must complete this Accessibility Checklist thoroughly to provide specific detail about accessibility and inclusion, including descriptions, diagrams, and data.

For more information on compliance requirements, advancing best practices, and learning about progressive approaches to expand accessibility throughout Boston's built environment. Proponents are highly encouraged to meet with Commission staff, prior to filing.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
http://www.ada.gov/2010ADASTandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
<http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html>
3. Massachusetts State Building Code 780 CMR
<http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html>
4. Massachusetts Office of Disability – Disabled Parking Regulations
<http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf>
5. MBTA Fixed Route Accessible Transit Stations
http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
<http://bostoncompletestreets.org/>
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

1. **Accessible Route** – A continuous and unobstructed path of travel that meets or exceeds the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 20
2. **Accessible Group 2 Units** – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
3. **Accessible Guestrooms** – Guestrooms with additional floor space, that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 8.4
4. **Inclusionary Development Policy (IDP)** – Program run by the BPDA that preserves access to affordable housing opportunities, in the City. For more information visit: <http://www.bostonplans.org/housing/overview>
5. **Public Improvement Commission (PIC)** – The regulatory body in charge of managing the public right of way. For more information visit: <https://www.boston.gov/pic>
6. **Visitability** – A place's ability to be accessed and visited by persons with disabilities that cause functional limitations; where architectural barriers do not inhibit access to entrances/doors and bathrooms.

Article 80 | ACCESSIBILITY CHECKLIST

1. Project Information:

If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.

Project Name:	Onyx Hotel Expansion
Primary Project Address:	155 Portland Street Boston, MA 02114
Total Number of Phases/Buildings:	1
Primary Contact (Name / Title / Company / Email / Phone):	Andrew Copelotti/Principal/Boylston Properties/ andrew@boylprop.com / 617-807-8203
Owner / Developer:	Back Street Boston Holdings, LLC
Architect:	Group One
Civil Engineer:	Bohler Engineering
Landscape Architect:	Bohler Engineering
Permitting:	Bohler Engineering
Construction Management:	TBD

At what stage is the project at time of this questionnaire? Select below:

	PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BPDA Board Approved
	BPDA Design Approved	Under Construction	Construction Completed:

Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? **If yes**, identify and explain.

No

2. Building Classification and Description:

This section identifies preliminary construction information about the project including size and uses.

What are the dimensions of the project?

Site Area:	5,478 SF	Building Area:	40,725 GSF
Building Height:	99'-10" FT.	Number of Stories:	9 .
First Floor Elevation:	17.0-17.5'	Is there below grade space:	Yes / No

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What is the Construction Type? (Select most appropriate type)				
	Wood Frame	Masonry	Steel Frame	Concrete
What are the principal building uses? (IBC definitions are below – select all appropriate that apply)				
	Residential – One - Three Unit	Residential - Multi-unit, Four +	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		
List street-level uses of the building:	<i>Retail/Restaurant, Hotel Lobby</i>			
3. Assessment of Existing Infrastructure for Accessibility: <i>This section explores the proximity to accessible transit lines and institutions, such as (but not limited to) hospitals, elderly & disabled housing, and general neighborhood resources. Identify how the area surrounding the development is accessible for people with mobility impairments and analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.</i>				
Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The Project is located on two parcels consisting of approximately 5,478 square feet of land adjacent to the existing Onyx Hotel located at 155 Portland Street within the Bulfinch Triangle District. The Site is currently a surface parking lot and is bounded by Friend Street to the North, Portland Street to the South, the existing Onyx Hotel parcel to the East, and two private parcels consisting of mixed-use buildings to the West. The is generally flat.			
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	The Project is well served by various MBTA routes within a half-mile of the site. The site is situated between Haymarket Station and North Station providing convenient access to Commuter Rail, subway, and local bus routes.			
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	<i>Hospitals: Mass General, Mass Eye/Ear</i>			
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	Federal Buildings: Edward W. Brooke Courthouse, Thomas P. O'Neill, Jr. Federal Building, John F. Kennedy Federal Building			
4. Surrounding Site Conditions – Existing: <i>This section identifies current condition of the sidewalks and pedestrian ramps at the development site.</i>				
Is the development site within a	No			

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historic district? If yes , identify which district:	
Are there sidewalks and pedestrian ramps existing at the development site? If yes , list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	There are existing sidewalks within the public right-of-way along the Project frontage (Portland & Friend Streets) and are approximately 7.5-feet wide. There are no known pedestrian ramps onsite or along the project frontage. The sidewalks are concrete in good condition. Existing slopes pending topographical survey.
Are the sidewalks and pedestrian ramps existing-to-remain? If yes , have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? If yes , provide description and photos:	Yes. Photos attached for reference.
5. Surrounding Site Conditions – Proposed <i>This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.</i>	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? If yes , choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	It is currently anticipated that the existing concrete sidewalks will be replaced in kind.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	It is currently anticipated that the existing concrete sidewalks will be replaced in kind.
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?	Concrete. Within the city right-of-way.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? If yes , what	No

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are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	N/A
Will any portion of the Project be going through the PIC? If yes , identify PIC actions and provide details.	TBD. A projection license may be sought.
6. Accessible Parking: <i>See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability – Disabled Parking Regulations.</i>	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	There will be no parking provided on-site. Valet parking will be provided and vehicles will be parked in the nearby Government Center Garage or Beverly Street garage.
What is the total number of accessible spaces provided at the development site? How many of these are “Van Accessible” spaces with an 8 foot access aisle?	Not Applicable. No parking will be provided on site.
Will any on-street accessible parking spaces be required? If yes , has the proponent contacted the Commission for Persons with Disabilities regarding this need?	N/A
Where is the accessible visitor parking located?	N/A. Valet services will be provided to hotel guests.
Has a drop-off area been identified? If yes , will it be accessible?	Drop-off will remain as currently located on Portland Street in front of existing hotel.
7. Circulation and Accessible Routes: <i>The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability</i>	

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<i>with neighbors.</i>	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	Entry to the building will be flush with the sidewalk
Are the accessible entrances and standard entrance integrated? <i>If yes, describe. If no, what is the reason?</i>	Yes. Entry to the building will be flush with the sidewalk.
<i>If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.</i>	Accessible sidewalks are provided on Portland Street today. No new wayfinding signage is planned.
8. Accessible Units (Group 2) and Guestrooms: (If applicable) <i>In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.</i>	
What is the total number of proposed housing units or hotel rooms for the development?	77 New Guestrooms
<i>If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?</i>	Not Applicable
<i>If a residential development, how many accessible Group 2 units are being proposed?</i>	Not Applicable
<i>If a residential development, how many accessible Group 2 units will also be IDP units? If none, describe reason.</i>	Not Applicable
<i>If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? If yes, provide amount and location of equipment.</i>	Existing hotel is fully compliant. 1 additional wheel -in shower will be provided. Yes, 5% of new guestrooms

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Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs / thresholds at entry, step to balcony, others. If yes , provide reason.	No
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? If yes , describe:	Yes. Elevators.
9. Community Impact: <i>Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.</i>	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	The Proponent is committed to working with BTM to improve the pedestrian sidewalks within the City right of way in compliance with city standards. The streetscape will be studied to find opportunities to install street trees, wide pedestrian friendly sidewalks, and flexible public seating areas along the perimeter of the site.
What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	All indoor and outdoor amenity space and common areas will be accessible
Are any restrooms planned in common public spaces? If yes , will any be single-stall, ADA compliant and designated as "Family"/"Companion" restrooms? If no , explain why not.	Yes there will be restrooms in common public spaces, There will not be single-stall, ADA compliant and designated as "Family/Companion" restrooms due to space constraints.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? If yes , did they approve? If no , what were their	The proponent will work with the Disabilities Commission as the design progresses.

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comments?	
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? <i>If no</i> , what recommendations did the Advisory Board give to make this project more accessible?	The Proponent has not presented to the Disability Advisory Board.
10. Attachments <i>Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.</i>	
Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.	
Provide a diagram of the accessible route connections through the site, including distances.	
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)	
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.	
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. <ul style="list-style-type: none"> • • • • 	

This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open spaces are usable and welcoming to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions or comments about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or our office:

The Mayor's Commission for Persons with Disabilities
 1 City Hall Square, Room 967,
 Boston MA 02201.

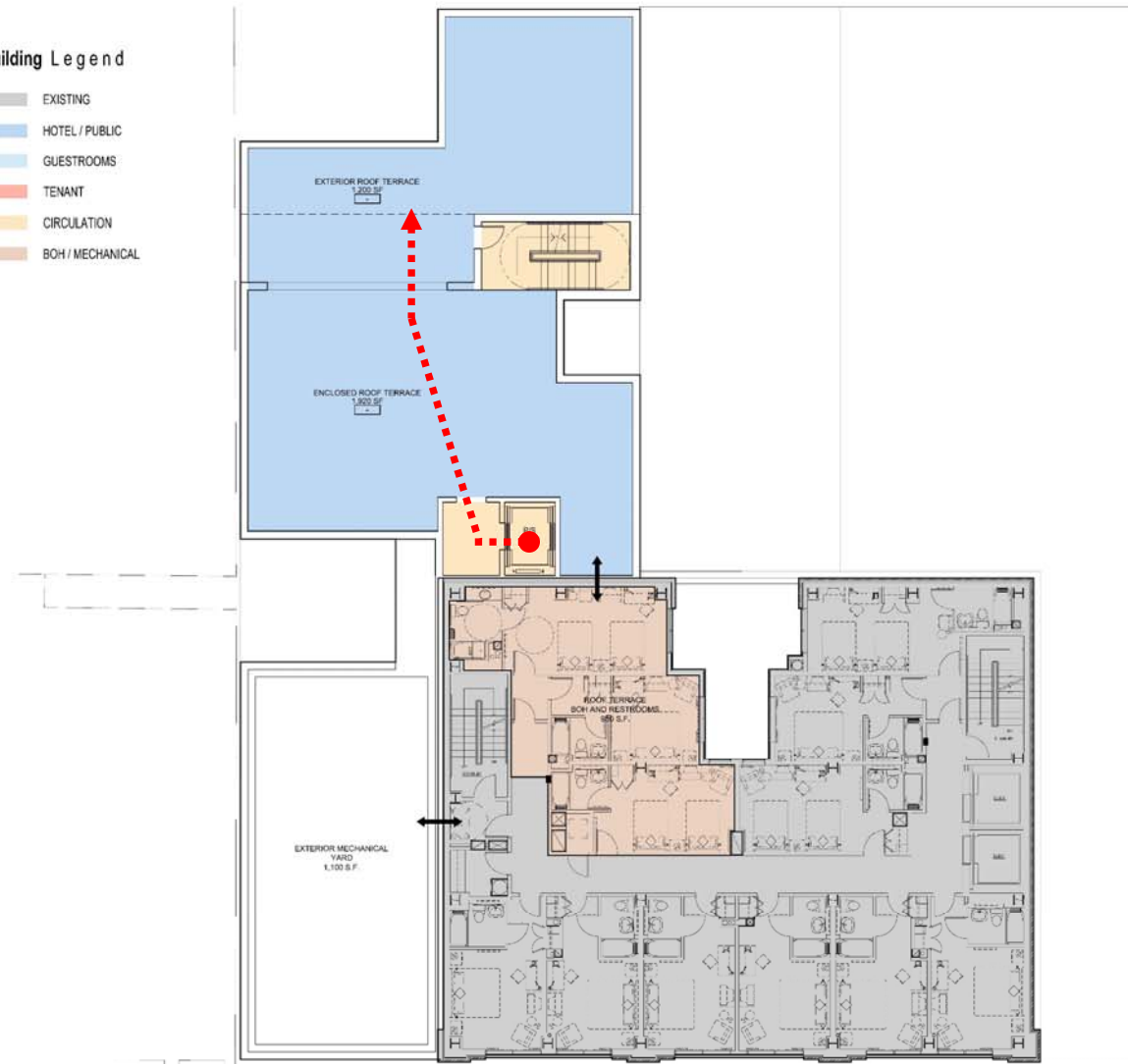
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Architectural Access staff can be reached at:

accessibility@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov | 617-635-3682

Building Legend

- EXISTING
- HOTEL / PUBLIC
- GUESTROOMS
- TENANT
- CIRCULATION
- BOH / MECHANICAL



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APPENDIX B

CLIMATE CHANGE RESILIENCY CHECKLIST

NOTE: Project filings should be prepared and submitted using the online [Climate Resiliency Checklist](#).

A.1 - Project Information

Project Name:	Onyx Hotel Expansion		
Project Address:	155 Portland Street		
Project Address Additional:	Boston, MA 02114		
Filing Type (select)	EPNF		
Filing Contact	Andrew Copelotti	Boylston Properties	andrew@boylprop.com 617-807-8203
Is MEPA approval required	No		Date 11/15/19

A.3 - Project Team

Owner / Developer:	Back Street Boston Holdings, LLC
Architect:	Group One Partners
Engineer:	Bohler Engineering
Sustainability / LEED:	Green Engineer
Permitting:	Bohler Engineering
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Hotel
List the First Floor Uses:	Hotel Lobby, Restaurant
List any Critical Site Infrastructure and or Building Uses:	N/A

Site and Building:

Site Area:	5,478 SF
Building Height:	99'-10"
Existing Site Elevation – Low:	16.5 Ft BCB
Proposed Site Elevation – Low:	17.0 Ft BCB
Proposed First Floor Elevation:	17.0-17.5 Ft BCB

Building Area:	(Addition) 40,725 SF
Building Height:	9 Stories
Existing Site Elevation – High:	17.0 Ft BCB
Proposed Site Elevation – High:	17.0 Ft BCB
Below grade levels:	0 Stories

Article 37 Green Building:

LEED Version - Rating System :	LEED-NC v4/v4.1
Proposed LEED rating:	Certified

LEED Certification:	No
Proposed LEED point score:	44 Pts.

Building Envelope

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	TBD (R)	Exposed Floor:	(R)
Foundation Wall:	(R)	Slab Edge (at or below grade):	(R)

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:	(%)	Wall & Spandrel Assembly Value:	(U)
Area of Framed & Insulated / Standard Wall:	(%)	Wall Value	(R)
Area of Vision Window:	%	Window Glazing Assembly Value:	(U)
		Window Glazing SHGC:	(SHGC)
Area of Doors:	%	Door Assembly Value:	(U)

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined

Vanderweil models energy performance using eQUEST 3.64, a software program that utilizes DOE-2.2 to simulate the hourly energy consumption and demand load shapes for a given building. To develop a model, a graphic representation of the building is created using floor plans, floor heights, and window configurations. Mechanical systems and building envelope are defined, and operating parameters such as lighting power density, airflow rates, and occupancy schedules are included. The simulation uses 30-year average hourly weather data to estimate the energy consumption of the building for each hour of the year

This analysis evaluates compliance by comparing the Conceptual Energy Performance to ASHRAE 90.1-2016 Appendix G Baseline energy performance per the requirements Massachusetts Building Energy Code in effect in 2020.

Annual Electric:	441,150 (kWh)	Peak Electric:	511 (kW)
Annual Heating:	160.5 (MMBTU) (MMBtu/hr)	Peak Heating:	800 (MBH)
Annual Cooling:	21,106 (Ton.hr) (Tons/hr)	Peak Cooling:	100 (Tons)
Energy Use - Below ASHRAE 90.1 - 2013:	41.17%	Have the local utilities reviewed the building energy performance?:	Yes / <u>no</u>
Energy Use - Below Mass. Code:	41.17%	Energy Use Intensity:	38 (kBtu/SF)

Back-up / Emergency Power System

Electrical Generation Output:	150 (kW)	Number of Power Units:	1
System Type:	Life Safety and Legally Required Standby	Fuel Source:	Diesel

Emergency and Critical System Loads (in the event of a service interruption)

Electric:

150 (kW)

Heating:

20 (MBH)

Cooling:

0 (Tons)

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing GHG emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon neutrality by 2050 new buildings performance will need to progressively improve to net carbon zero and positive.

B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions:

145.32 (Tons)

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The project will use energy modeling to optimize the building envelope and MEP systems to maximize the energy efficiency of the structure within the project budget.

Describe building specific passive energy efficiency measures including orientation, massing, envelop, and systems:

The project does not implement passive energy efficiency measures.

Describe building specific active energy efficiency measures including equipment, controls, fixtures, and systems:

The project uses VRF capable of Heat Recovery and ECM fan motors to reduce heating, cooling, and fan energy consumption. DOAS unit uses Dx cooling with ASRHAE 90.1-2016 code efficiency and Electric Resistance heating.

Describe building specific load reduction strategies including on-site renewable, clean, and energy storage systems:

The project does not implement load reduction strategies.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

The project is not benefited from area or district scale emission reduction strategies.

Describe any energy efficiency assistance or support provided or to be provided to the project:

The project team will work with power and gas utilities to pursue all applicable rebates that can be obtained for the project.

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The building uses electricity as the only energy source, and will take advantage of the greener power grid in the future.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2°F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low:	7 Deg.	Temperature Range - High:	87 Deg.
Annual Heating Degree Days:	5641	Annual Cooling Degree Days	2897
What Extreme Heat Event characteristics will be / have been used for project planning			
Hours Days - Above 90°:	80#	Hours Days - Above 100°:	10#
Number of Heatwaves / Year:	2#	Average Duration of Heatwave (Days):	3#

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The project will use materials with an SRI of 78 or higher for low-sloped roof.

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

Systems are designed for service life of 20 years and temperatures anticipated during that service life. As future demand increases due to extreme temperature events, the systems will be replaced as needed to meet future change in demand.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

Stair pressurization fans and smoke control system fans are on emergency power so there will not be a disruption of life safety systems.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm: **5.10 In.**

Describe all building and site measures for reducing storm water run-off:

The project will reduce existing peak rates and volumes of stormwater runoff from the site and will infiltrate the first 1.00-inch of rainfall from the impervious areas.

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

The project will encourage groundwater recharge by infiltrating stormwater via a subsurface infiltration system.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, sea levels in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA SFHA? **Yes**

What Zone: **AE**

Current FEMA SFHA Zone Base Flood Elevation: **16.46 Ft BCB**

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online [BPDA SLR-FHA Mapping Tool](#) to assess the susceptibility of the project site.

Yes

If you answered YES to either of the above questions, please complete the following questions. Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented on the BPDA Sea Level Rise - Flood Hazard Area (SLR-FHA) map, which depicts a modeled 1% annual chance coastal flood event with 40 inches of sea level rise (SLR). Use the online [BPDA SLR-FHA Mapping Tool](#) to identify the highest Sea Level Rise - Base Flood Elevation for the site. The Sea Level Rise - Design Flood Elevation is determined by adding either 24" of freeboard for critical facilities and infrastructure and any ground floor residential units OR 12" of freeboard for other buildings and uses.

Sea Level Rise - Base Flood Elevation: **18 Ft BCB**

Sea Level Rise - Design Flood Elevation: **19 Ft BCB**

Site Elevations at Building: **17.0 Ft BCB**

First Floor Elevation: **17.0-17.5 Ft BCB**

Accessible Route Elevation: **17.0 Ft BCB**

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

A stormwater system will be provided as part of the project. Additionally, the design team is considering additional options to protect the entryways during future flooding events.

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Backwater valves are being considered for the new connection to the sanitary sewer main, as required by BWSC.

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

TBD. The addition is anticipated to be primarily served by the existing hotel infrastructure.

Describe any strategies that would support rapid recovery after a weather event:

Flood barriers such as sandbags can be rapidly deployed and removed. It is anticipated that the first-floor spaces in the addition will have concrete slabs which would limit permanent damage should some isolated flooding occur within the space.

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

There is a limited ability to make site improvements to address future sea level rise, as the building occupies nearly all of the property.

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

In the future, the first-floor entry elevations could be raised if the surrounding streets were to be raised.

A pdf and word version of the Climate Resiliency Checklist is provided for informational use and off-line preparation of a project submission. **NOTE: Project filings should be prepared and submitted using the online [Climate Resiliency Checklist](#).**

For questions or comments about this checklist or Climate Change best practices, please contact:
John.Dalzell@boston.gov

APPENDIX C

BROADBAND QUESTIONNAIRE

25				11/08/2019 8:02:09
		Form Publisher Template		
11/08/2019				

This is a simple template document automatically generated by Form Publisher.
Feel free to personalize it like any other Google Spreadsheet.



FormPublisher

Questions list:				
Project Name::				
Project Address Primary: :				
Project Address Additional: :				
Project Contact (name / Title / Company / email / phone): :				
Expected completion date:	09/15/2020			
Owner / Developer:	Boylston Properties			
Architect:	Group One			
Engineer (building systems)::	Vanderweil Engineers, LLP			
Permitting::	To Be Determined			
Construction Management:	To Be Determined			
Number of Points of Entry:	The project goal is for two separate entry points.			
Locations of Points of Entry:	Portland Street side of project and Friend Street side of project.			
Quantity and size of conduits:	Two four-inch conduit for each entrance.			
Location where conduits connect (e.g. building-owned manhole, carrier-specific manhole or stubbed at property line) :	Carrier manholes in street.			
Other information/comments:				
Do you plan to conduct a utility site assessment to identify where cabling is located within the street? This information can be helpful in determining the locations of POEs and telco rooms. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.:	Yes			
Number of risers:	Two			
Distance between risers (if more than one):	Approximately 100'.			
Dimensions of riser closets:	To be determined.			
Riser or conduit will reach to top floor :	Yes			
Number and size of conduits or sleeves within each riser:	To be determined.			
Proximity to other utilities (e.g. electrical, heating):	To be determined.			
Other information/comments:				
What is the size of the telecom room?:	To be determined.			
Describe the electrical capacity of the telecom room (i.e. # and size of electrical circuits):	Detailed design will provide A & B power feeds with the infrastructure to support Owner-provided UPS and/or emergency power.			

Will the telecom room be located in an area of the building containing one or more load bearing walls?:	Unknown			
Will the telecom room be climate controlled? :	Yes			
If the building is within a flood-prone geographic area, will the telecom equipment will be located above the floodplain?:	Yes			
Will the telecom room be located on a floor where water or other liquid storage is present?:	Unknown			
Will the telecom room contain a flood drain?:	Unknown			
Will the telecom room be single use (telecom only) or shared with other utilities?:	Yes			
Other information/comments:				
Will building/developer supply common inside wiring to all floors of the building? :	Yes			
If yes, what transmission medium (e.g. coax, fiber)? Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.:	Unknown			
Is the building/developer providing wiring within each unit? :	Yes			
If yes, what transmission medium (e.g. coax, fiber)? Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.:	Unknown			
Will the building conduct any RF benchmark testing to assess cellular coverage?:	Yes			
Will the building allocate any floor space for future in-building wireless solutions (DAS/small cell/booster equipment)?:	Yes			
Will the building be providing an in-building solution (DAS/ Small cell/ booster)? :	Unknown			
If so, are you partnering with a carrier, neutral host provider, or self-installing?:				
Will you allow cellular providers to place equipment on the roof?:	Unknown			
Will you allow broadband providers (fixed wireless) to install equipment on the roof? :	Unknown			
Will you allow broadband providers (fixed wireless) to install equipment on the roof? :	Unknown			
Date contacted:				
Does Comcast intend to serve the building?:	Unknown			
Transmission Medium:	Unknown			
If no or unknown, why?:	Refer to Comcast questions.			
Date contacted:				
Does RCN intend to serve the building?:	Unknown			
Transmission Medium:	Unknown			

If no or unknown, why?:	Refer to Comcast questions.			
Date contacted:				
Does Verizon intend to serve the building?:	Unknown			
Transmission Medium:	Unknown			
If no or unknown, why?:	Refer to Comcast questions.			
Date contacted:				
Does netBlazr intend to serve the building?:	Unknown			
Transmission Medium:	Unknown			
If no or unknown, why?:	Refer to Comcast questions.			
Date contacted:				
Does WebPass intend to serve the building?:				
Transmission Medium:	Unknown			
If no or unknown, why?:	Refer to Comcast questions.			
Date contacted:				
Does Starry intend to serve the building?:	Unknown			
Transmission Medium:	Unknown			
If no or unknown, why?:	Refer to Comcast questions.			
Do you plan to abstain from exclusivity agreements with broadband and cable providers? :	Unknown			
Do you plan to make public to tenants and prospective tenants the list of broadband/cable providers who serve the building?:	No			

APPENDIX D

LEED SCORECARD



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

Project Checklist

Project Name: Onyx Hotel

Date: November 4, 2019

Y	?	N		
0	0	1	Integrative Process	1
		1	Credit Integrative Process	1
14	1	1	Location and Transportation	16
		x	Credit LEED for Neighborhood Development Location	16
1			Credit Sensitive Land Protection	1
1	1		Credit <u>High Priority Site</u>	2
5			Credit Surrounding Density and Diverse Uses	5
5			Credit Access to Quality Transit	5
1			Credit Bicycle Facilities	1
1			Credit Reduced Parking Footprint	1
		1	Credit Green Vehicles	1
2	4	4	Sustainable Sites	10
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 <u>Rainwater Management</u>	3
2			Credit Heat Island Reduction	2
	1		Credit Light Pollution Reduction	1
3	5	3	Water Efficiency	11
Y			Prereq Outdoor Water Use Reduction	Required
Y			Prereq Indoor Water Use Reduction	Required
Y			Prereq Building-Level Water Metering	Required
1	1		Credit Outdoor Water Use Reduction	2
2	1	3	Credit <u>Indoor Water Use Reduction</u>	6
	2		Credit Cooling Tower Water Use	2
	1		Credit Water Metering	1
15	6	12	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
3	2	1	Credit Enhanced Commissioning	6
12		6	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

Y	?	N		
2	2	9	Materials and Resources	13
Y			Prereq Storage and Collection of Recyclables	Required
Y			Prereq Construction and Demolition Waste Management Planning	Required
		5	Credit Building Life-Cycle Impact Reduction	5
1		1	Credit Building Product Disclosure & Optimization: Environmental Product Declarati	2
		2	Credit Building Product Disclosure & Optimization: Sourcing of Raw Materials	2
1		1	Credit Building Product Disclosure & Optimization: Material Ingredients	2
	2		Credit Construction and Demolition Waste Management	2
6	7	3	Indoor Environmental Quality	16
Y			Prereq Minimum Indoor Air Quality Performance	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
1	1		Credit Enhanced Indoor Air Quality Strategies	2
2	1		Credit Low-Emitting Materials	3
1			Credit Construction Indoor Air Quality Management Plan	1
	2		Credit Indoor Air Quality Assessment	2
1			Credit Thermal Comfort	1
1	1		Credit Interior Lighting	2
		3	Credit Daylight	3
	1		Credit Quality Views	1
	1		Credit Acoustic Performance	1
4	2	0	Innovation	6
3	2		Credit Innovation	5
1			Credit LEED Accredited Professional	1
1	2	1	Regional Priority (credit names have been underlined)	4
		1	Credit Regional Priority: Renewable Energy Production (2 points)	1
1			Credit Regional Priority: Optimize Energy Performance (8 points)	1
	1		Credit Regional Priority: High Priority Site (2 points)	1
	1		Credit Regional Priority: Rainwater Management (2 points) OR Indoor Water Use Reduction (4 points)	1

Y	?	N		
47	29	34	TOTALS	Possible Points: 110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110				

APPENDIX E

ENVIRONMENTAL STUDIES DATA

APPENDIX 5-A WIND

155 PORTLAND STREET PROJECT NOTIFICATION FORM

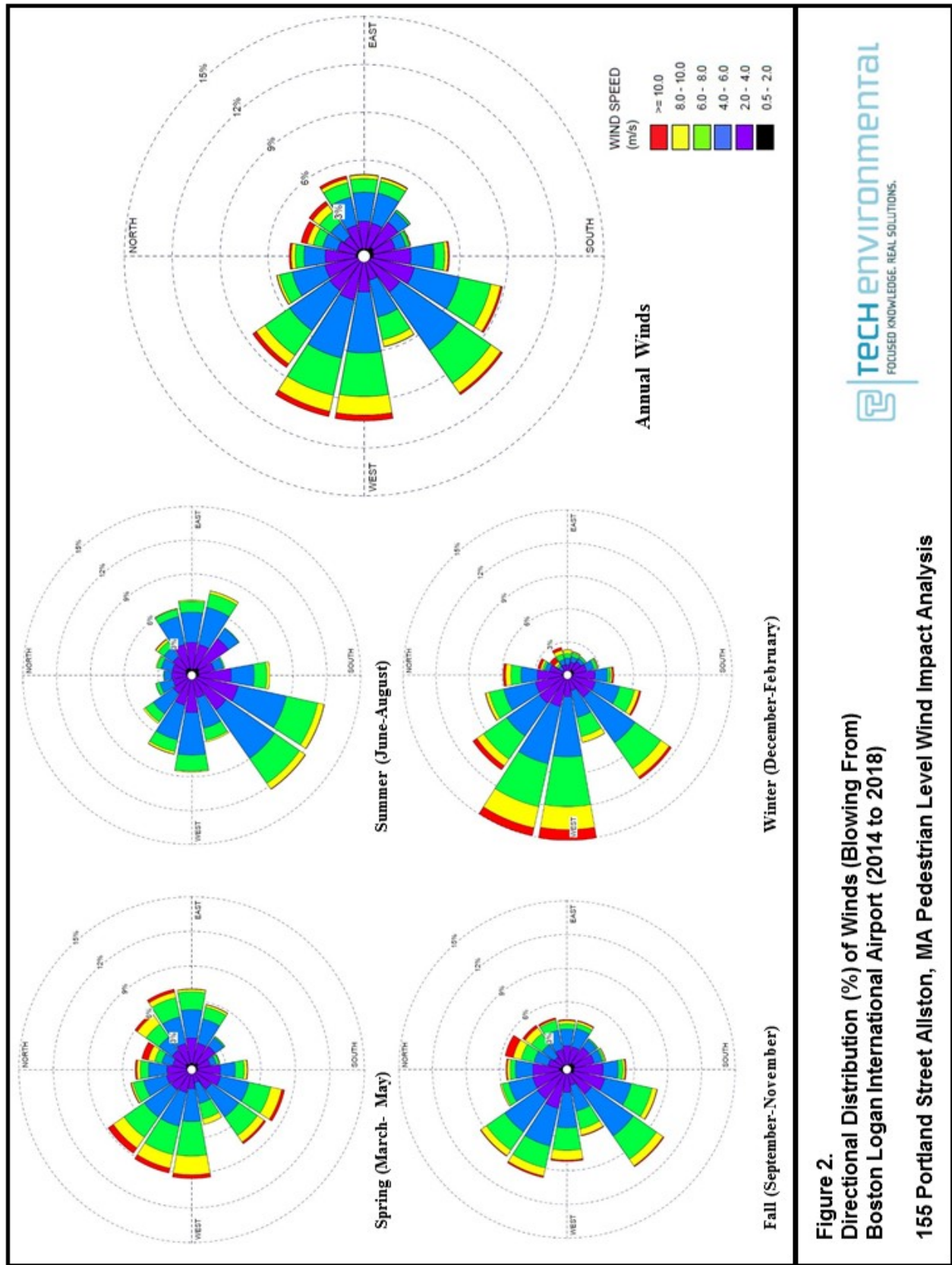
<u>Page</u>	<u>Contents</u>
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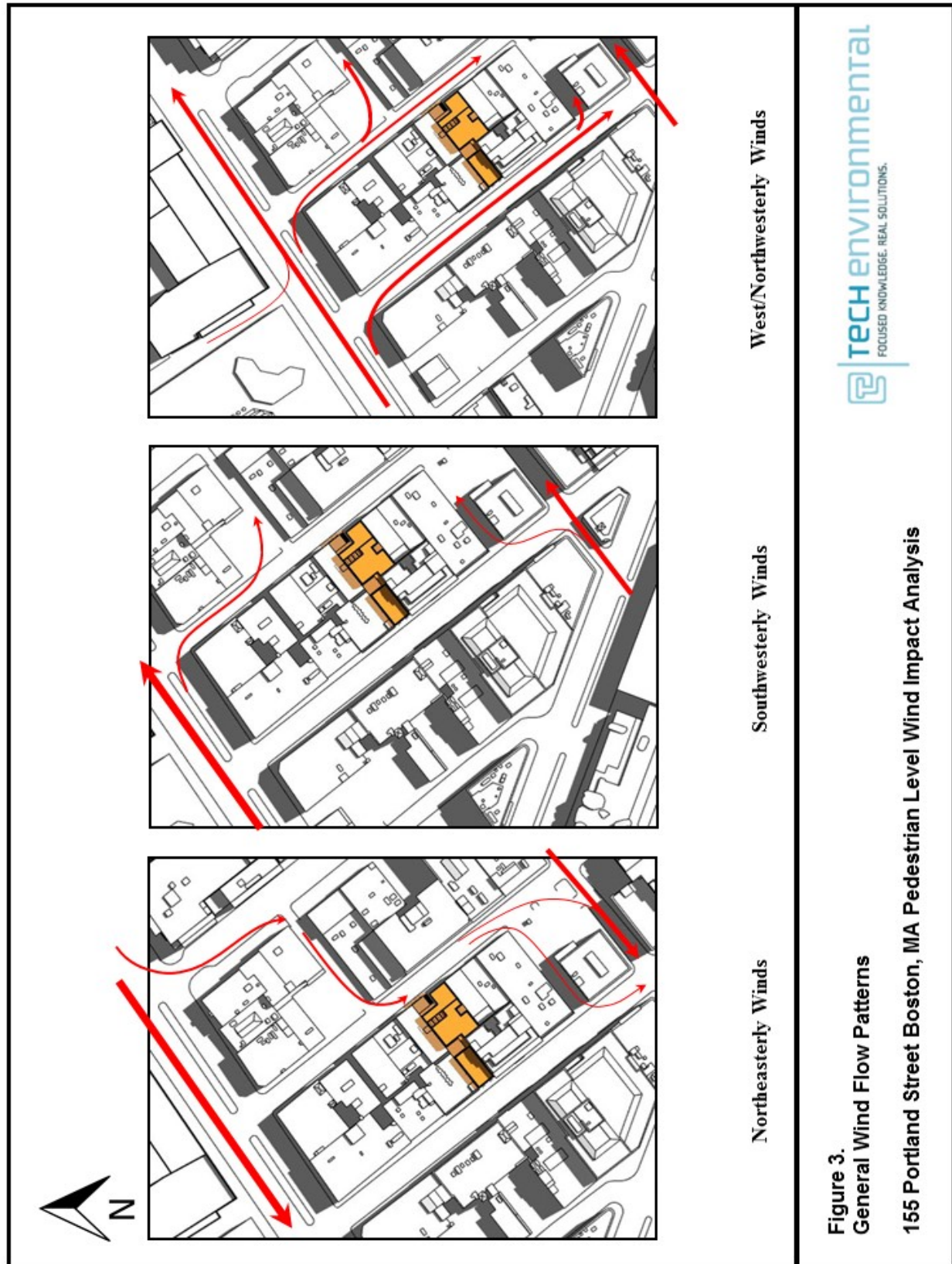
- | | |
|---|---|
| 2 | Figure 1: Site Plan |
| 3 | Figure 2: Direction Distribution of Winds |
| 4 | Figure 3: General Wind Flow Patterns |



**Figure 1.
Site Plan**

155 Portland Street Boston, MA Pedestrian Level Wind Impact Analysis





APPENDIX 5-B NOISE

155 PORTLAND STREET PROJECT NOTIFICATION FORM

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- | | |
|---|--|
| 2 | Figure 1: Sound Monitoring and Modeling Receptor Locations |
| 3 | Cadna Noise Modeling Results |

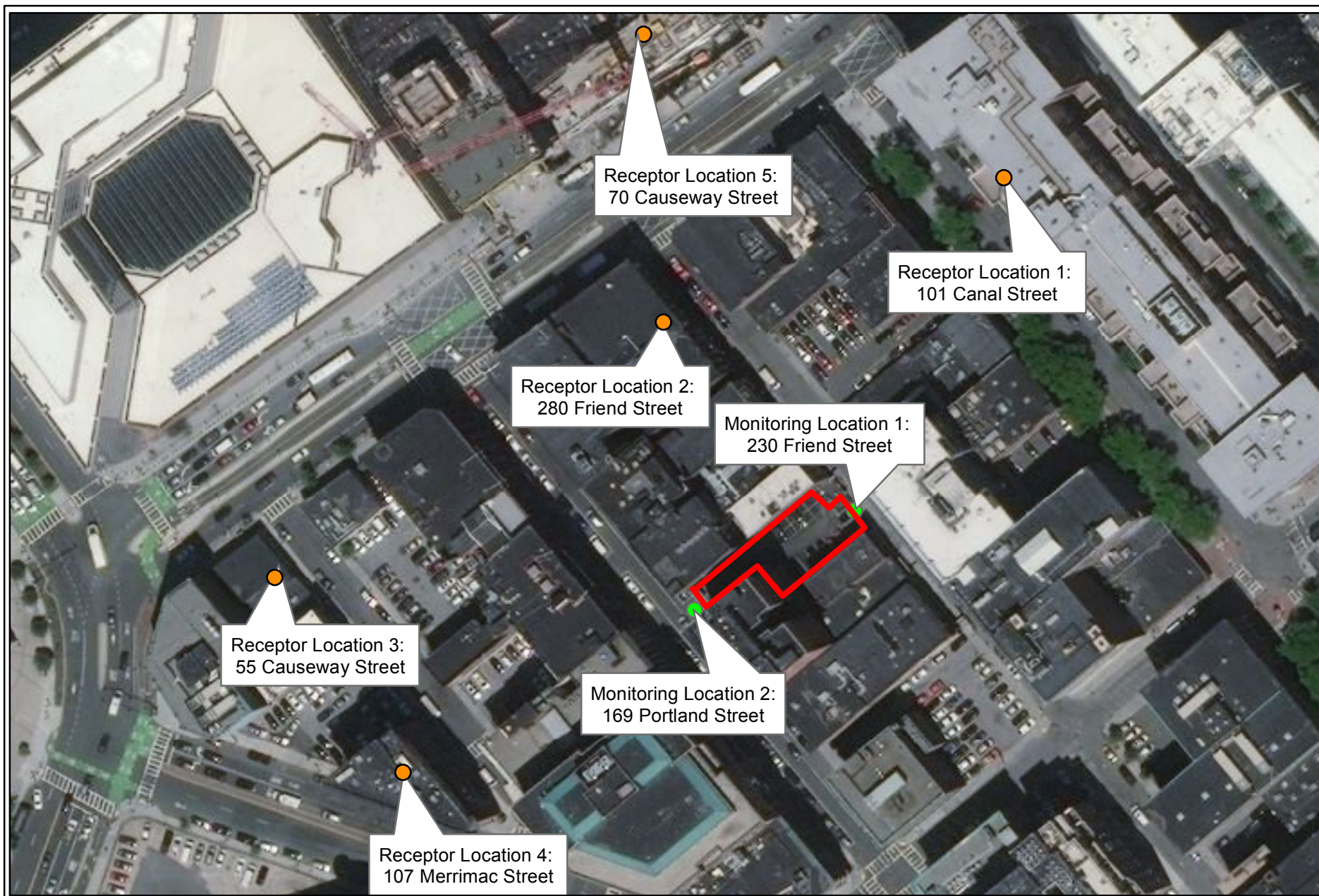


Figure 1
Sound Monitoring and Modeling Receptor Locations
155 Portland Street Project

Cadna Noise Modeling Results
155 Portland Street

	31.5	63	125	250	500	1000	2000	4000	8000	A-Wtd	
Local Nighttime Limit	68	67	61	52	46	40	33	28	26	50	
NIGHTTIME RESULTS & CITY OF BOSTON ANALYSIS	31.5	63	125	250	500	1000	2000	4000	8000	A-Wtd	Complies Night?
101 Canal Street	1	14	20	31	34	34	31	25	10	38	YES
280 Friend Street	-10	-1	3	14	15	15	11	6	-6	19	YES
55 Causeway Street	-8	3	6	10	11	10	5	-2	-20	13	YES
107 Merrimac Street	-1	11	17	22	21	22	18	10	-6	25	YES
70 Causeway Street	-8	3	7	13	14	12	7	-1	-21	16	YES

NIGHTTIME RESULTS & MASSDEP ANALYSIS (< +10 dBA)	Impact Level (dBA)	Backgrou nd Level (dBA)	Total Level (dBA)	Increase (dBA)	Complies Night?
101 Canal Street	38.0	55.7	55.8	+0.1	YES
280 Friend Street	18.5	55.7	55.7	+0.0	YES
55 Causeway Street	13.3	54.3	54.3	+0.0	YES
107 Merrimac Street	25.0	54.3	54.3	+0.0	YES
70 Causeway Street	15.8	55.7	55.7	+0.0	YES