11-26 Heron Street, West Roxbury (Boston)

Multi-Family Residential Development

PROJECT NOTIFICATION FORM April 17, 2019

Submitted Pursuant to Article 80B of the Boston Zoning Code

SUBMITTED BY:

Onsite Builders & Development, LLC
306 East Street
Westwood, MA 02090

SUBMITTED TO:

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

PREPARED BY:

Mitchell L. Fischman ("MLF") Consulting LLC
41 Brush Hill Road
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IN ASSOCIATON WITH:

Nunes Trabucco Architects
Michael D'Angelo Landscape Architects LLC
Adams & Morancy, P.C.
MJR Consulting, LLC
Howard Stein Hudson
J.M. Grenier Associates, Inc.
Tech Environmental, Inc.
Soden Sustainability Consulting
Goldman Environmental Consultants, Inc.

MLF CONSULTING LLC
Mitchell L. Fischman Consulting LLC
41 Brush Hill Road
Newton, MA 02461

April 17, 2019

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

RE: Project Notification Form
Proposed Multi-Family Residential Development
11-26 Heron Street, West Roxbury

Dear Director Golden:

On behalf of Onsite Builders & Development, LLC (the "Proponent"), as developer of a 1.1 acre (47,982 square feet) site at 11-26 Heron Street and associated contiguous properties, bounded to the northeast by the rear property lines of residences along Grouse Street, to the northwest by an existing three-family residence and associated property, to the west by properties along Willet Street, and to the south by the Stony Brook Condominium building and a single-family residence (the "Project Site"), we are pleased to submit this Project Notification Form ("PNF") for the 11-26 Heron Street multi-family residential development to the Boston Planning and Development Agency ("BPDA") in accordance with the Article 80B-2 Large Project Review requirements of the Boston Zoning Code.

The residential proposal contemplates the construction of approximately 72 residential units in two multi-family buildings, to be located on both sides of Heron Street, with a total project square footage of approximately 78,704 gross square feet of interior space and with a total of 85 parking spaces including 57 interior garage parking spaces in the two buildings along with 28 surface parking spaces as well as on-site bicycle storage rooms for approximately 72 bicycles (the "Proposed Project").

The scope and scale of the Proponent's residential program is intended to further the new housing creation goals of Mayor Walsh's 2030 Housing Plan.

The Proposed Project is located within a 1F-6000 zoning subdistrict of the West Roxbury Neighborhood District (Article 56), which requires a use variance for new multi-family residential uses, and imposes certain dimensional and other requirements for which the Proposed Project will require zoning variances from the Zoning Board of Appeal.

In accordance with BPDA requirements, the public notice for the PNF submission appears in the April 17, 2019 edition of the *Boston Herald*.

The Proposed Project will exceed the 50,000 square foot size threshold of Article 80 for a project within a Boston neighborhood, and therefore requires several additional filings pursuant to Large Project Review regulations. A Letter of Intent to File a Project Notification Form was filed with the BPDA on January 7, 2019 (attached hereto as Appendix "A").

In support of the Article 80 Large Project Review process, the Proponent has conducted, and continues to conduct, community outreach with neighbors and abutters of the site, including meetings and discussions with elected representatives and other officials. The Proponent has also made presentations to residents of the surrounding neighborhood sponsored by the relevant local civic association.

On behalf of the entire project team, we would like to thank you and the BPDA staff assigned to the 11-26 Heron Street Project, particularly the Project Manager Aisling Kerr and the reviewing BPDA Urban Designer, Matthew Martin, for their invaluable assistance to date in assisting the development team in shaping the Proposed Project and in completing this comprehensive PNF filing.

We believe that the Proposed Project will constitute a significant positive addition to the West Roxbury neighborhood, by revitalizing this underutilized site with much-needed new multi-family housing in an attractive and thoughtfully designed buildings.

We look forward to continuing the Large Project Review process and advancing the Proposed Project through public review with the cooperation of the BPDA, other City officials, members of the Impact Advisory Group, and the West Roxbury community.

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

Very truly yours,
MITCHELL L. FISCHMAN ("MLF") CONSULTING LLC

Mitchell L. Fischman, Principal

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APPENDICES

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

Onsite Builders and Development, and its principal, Peter Heaney (the "Proponent"), are submitting this Project Notification Form ("PNF") for a proposed multi-family residential development at 11-26 Heron Street in the West Roxbury neighborhood of Boston (the "Proposed Site"). The Proponent's proposal contemplates the construction of approximately 72 residential units in two multi-family buildings, to be located on both sides of Heron Street, with a total project square footage of approximately 78,704 square feet of interior space, with a total of 85 parking spaces including 57 interior garage parking spaces in the two buildings along with 28 surface parking spaces adjacent to the buildings, all accessed from Heron Street (the "Proposed Project").

The Proposed Site consists of 1.2 acres (52,062 square feet) at 11-26 Heron Street and associated contiguous properties, and is bounded to the northeast by the rear property lines of residences along Grouse Street; to the northwest by an existing three-family residence and associated property; to the west by properties along Willet Street; and to the south by the Stony Brook Condominium building and a single-family residence. Please see **Figures 1-1** thru **1-7.**

The scope and scale of the Proponent's residential program is intended to further the new housing creation goals of Mayor Walsh's 2030 Housing Plan.

The Proposed Project is located within a 1F-6000 zoning subdistrict of the West Roxbury Neighborhood District (Article 56), which requires a use variance for new multi-family residential uses, and imposes certain dimensional and other requirements for which the Proposed Project will require zoning variances from the Zoning Board of Appeal.

A Letter of Intent (LOI) to File a Project Notification Form was filed with the Boston Planning and Development Agency for the proposed multi-family residential development on January 7, 2019 (See **Appendix A**).

The nearby neighborhood is a mix of multi-family and single-family residential uses. MBTA bus routes 34, 34E, and 40, all run adjacent to the Project site along Washington Street, providing direct connections to the Forest Hills Orange Line station, which provides rapid transit access to downtown Boston. The context of the immediate area is supportive of and well-suited for the proposed scale and scope of the Proposed Project, and includes several buildings of four-stories in height.

11-26 Heron Street

Figure 1-1. Project Locus
11-26 Heron Street, West Roxbury

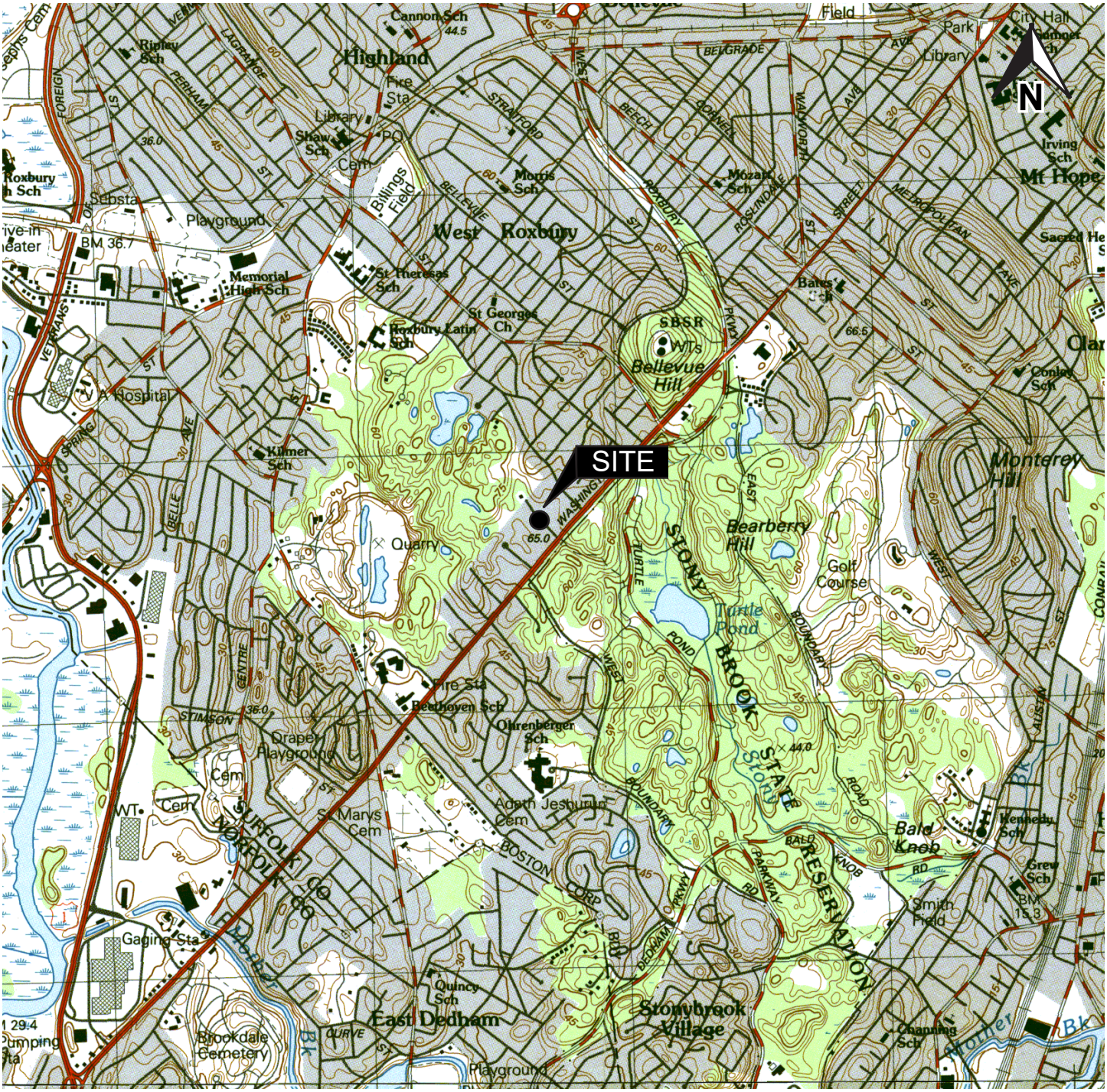


Figure 1-2. USGS Map-
11-26 Heron Street

Figure 1-3. Existing Site Photos

On-Site Building at 11 Heron St and Adjacent 4907 Washington St

On-Site Building at 26 Heron St and Adjacent Stony Brook Condominiums

Figure 1-4. Existing Site Photos

View of Adjacent Heron St and Portion of Project Site

Adjacent New Development (Under Construction) on Willet St

Figure 1-5. Existing Site Photos

View of Rear Properties Along Grouse St

Adjacent Buildings at the End of Heron St

Figure 1-6. Existing Site Photos

View Up Heron St Toward Washington St

View from Stony Brook Condominiums Toward 11 Heron St

Figure 1-7. Existing Site Photos

View of Washington St at Heron St

View of Homes Along Grouse St

1.2 Detailed Project Description

1.2.1 Existing Conditions Plan

The Proposed Site consists of 1.2 acres (52,062 square feet) at 11-26 Heron Street and associated contiguous properties, and is bounded to the northeast by the rear property lines of residences along Grouse Street; to the northwest by an existing three-family residence and associated property; to the west by properties along Willet Street; and to the south by the Stony Brook Condominium residential complex, and a single-family residence. (See **Figure 3-6 Existing Site Plan** at the end of **Section 3.0**.)

1.2.2 Detailed Project Program

The Project proposes construction of approximately 72 residential units in two multi-family buildings, to be located on both sides of Heron Street, with an overall height of up to approximately 49 feet, a total overall project floor area of approximately 78,704 gross square feet of interior space (including the parking garage) with a total of 85 parking spaces including 57 interior garage parking spaces in the two buildings and 28 surface parking spaces, all accessed from Heron Street (the "Proposed Project"). The residential units currently planned include 48 two-bedroom and 24 one-bedroom units. Service vehicle access will be provided from Heron Street. The context of the overall area is supportive and well-suited for the proposed scale and scope of the Proposed Project. It includes several buildings of four-stories in height as well as 1-3 family residences and a single warehouse See Project Dimensions in **Tables 1-1** below.

Table 1-1. Approximate Dimensions of Proposed Project

Lot Area	1.2 acres (52,062 square feet)
Total Floor Area	78,704 gross square feet
Floor Area Ratio (FAR)	1.5
Number of Floors	4
Height*	Approximately 50 feet

* Height from Average Front Grade

The Site circulation plan is designed to create a safe and pleasant entry to the Proposed Project from Heron Street and a front door vehicle drop off. Service access and the parking garage (at the ground level) will also be accessed from Heron Street.

1.3 Summary of Project Impacts and Mitigation

1.3.1 Urban Design

The proposed two buildings at 11-26 Heron Street will be an important addition to this neighborhood.

The conceptual design of the two proposed structures is for four-story, linear shaped buildings designed and sited to minimize site disruption and with respect to existing high underground water table and to keep the building footprints compact, with the main entrance, lobby, offices and elevator all centrally located to minimize the distance to the furthest apartments. Common areas in both buildings for the residents are located adjacent to elevator/lobby area, mechanical and trash rooms are on the ground floor/parking level. In addition, at the ground floor/parking level each parking space will have a wall mounted bike rack, and six of the parking spaces will be equipped with an electric car charging unit. Floor to floor height dimensions will measure approximately 9'-8".

The two buildings will be designed with proportions to complement nearby or adjoining 3-1/2 story multi-family residential structures, and use exterior finish materials that are prevalent in adjoining or nearby single-family residential structures. The structures will be wood-frame construction with exterior clapboards, cementitious panels and simulated stone units. The combination of clapboard and cementitious panels will be used to visually minimize the scale of the structure and complement adjacent residential structures. The roof cornice line will provide a cap to the structure and will reinforce the modern residential roof design.

The Proponent has already made presentations of the Proposed Project's conceptual design to the neighborhood and Boston Planning and Development Agency as it has continued to complete modifications to its schematic design plans.

1.3.2 Landscape Design

Public realm design is an important component of the project. The design team is proposing new concrete sidewalks for the length of the buildings, extending up Heron Street to Washington Street. Along the south side of Heron Street, the new sidewalk will tie-in with an existing sidewalk. Along the north side, a new sidewalk will be constructed where there currently is not one. This will dramatically increase walkability, pedestrian safety, and connectivity to Washington Street and local bus routes.

New fastigiate street trees and contextually appropriate light poles will line the new portions of sidewalk. Existing trees canopy will be protected. Sidewalk design is compliant with the City of Boston Complete Streets Guidelines. Sidewalks will be 5-feet wide concrete pavement with a 4-feet wide tree pit/furnishing zone. Bike racks will be provided near the building entries.

Plantings within the applicant's property will consist of native, drought tolerant species; the palette was developed for year-round interest as well as selective screening.

1.3.3 Sustainable Design

To meet the City of Boston Requirements the overall project is demonstrating the compliance with the LEED BD&C v4 criteria. The project is currently tracking 53 points in the YES column with 14 in the study column. Further study over the coming weeks and months will determine final credit achievement. We have outlined in the narrative below, how the project intends to achieve the prerequisites and credits for the LEED BD&C v4 certification. Please see **Figures 3-41 and 3-42** at the end of **Section 3.0** for the LEED checklists for each project.

In conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the BPDA requires projects subject to Boston Zoning Article 80 Large Project Review to complete a Resiliency Checklist to assess potential adverse impacts that might arise under future climate conditions, and any project resiliency, preparedness, and/or mitigation measures identified early in the design stage. The Resiliency Checklists (Responses to Climate Change Questionnaires) are provided in **Appendices E1** and **E2**, and will be submitted online in accordance with BPDA procedures.

1.3.4 Pedestrian Level Wind Conditions

The height of the proposed structure will not exceed approximately 50 feet. Wind conditions are expected to be similar to that of existing buildings in the neighborhood where buildings range from 2 to 5 stories.

1.3.5 Shadow Impact Analysis

NUNES TRABUCCO, the Project's architect, prepared a shadow study to assess the potential shadow impacts of the Project on the surrounding neighborhood with the shadow drawings contained in detail in **Section 4.1**. With the proposed height limits to 4-floors (50-feet), the Proposed Project's shadow impacts are generally not extensive. New shadow is generally limited to Heron Street. Late afternoon shadows may extend in late afternoons to the rear property lines of the houses along Grouse Street. Overall, the Project's shadow impacts will be consistent with current patterns and will not adversely impact the Project Site and surroundings.

1.3.6 Daylight Analysis

Although the Proposed Project would cause an increase in daylight obstruction when compared to the existing vacant land and 1-4 story condition, the Proposed Project was designed to be of a similar massing to existing multi-family buildings along Heron, Willett, and Washington Streets. Daylight obstruction values for the Proposed Project are expected to be consistent with, and typical to, the surrounding neighborhood.

1.3.7 Solar Glare

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

1.3.8 Air Quality Analysis

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

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

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

A microscale air quality analysis was not performed for the Proposed Project due to the estimated Project trip generation having minimal impacts on the overall delays at the one project intersection affected. Therefore, the motor vehicle traffic generated by the project will not have a significant impact on air quality at any intersection in the Project area and a microscale air quality analysis is not necessary for this Project. The air quality in the Project area will remain safely in compliance with the NAAQS for CO after the Project is built.

1.3.9 *Noise Analysis*

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

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

Nighttime ambient baseline sound level (L_{90}) monitoring was conducted at three locations deemed to be representative of the nearby residential areas, during the time period when human activity is

at a minimum and any future noise would be most noticeable. The lowest nighttime L_{90} measured in the Project area was 30.3 dBA.

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

- (72) Packaged HVAC Units

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

To minimize the sound level at nearby residences, the following noise mitigation specifications will be incorporated into the final engineering design of the Proposed Project, as necessary, to comply with the applicable sound level criteria:

- Specification of low-noise rooftop packaged HVAC units.

1.3.10 *Stormwater Management and Water Quality*

The Proposed Project is expected to substantially improve the water quality and will meet the Boston Water and Sewer Commission (BWSC) Site Plan requirements. The Project will result in an increase in impervious areas for both 11 Heron Street and 26 Heron Street. The project as designed will improve the water quality and attenuate the quantity of stormwater runoff being discharged to BWSC storm drain system. This will be accomplished through the installation of an on-site infiltration system on each lot. It is anticipated that the equivalent of 1-inch of the site's impervious area will be recharged. In addition to the installation of an on-site infiltration system, stormwater runoff will be treated through the use of deep sump catch basins with hoods and water quality treatment units. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

1.3.11 Solid and Hazardous Waste

Solid Waste

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

In order to meet the requirements for the Boston Environmental Department and the LEED™ rating system, the Project will include space dedicated to the storage and collection of recyclables, including dedicated dumpsters at the trash room. The recycling program will meet or exceed the

City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (21 through 27, co-mingled).

Hazardous Waste

A Phase I Environmental Site Assessment (ESA) was completed for the property in March 2019 for the Proponent. The assessments for 11 and 26 Heron Street included historical and regulatory research, site visit, and the professional judgment of Goldman Environmental Consultants, the hazardous waste engineer, as to the existence of or potential for contamination of the site with oil and/or hazardous materials. The assessment of both addresses revealed no evidence of *recognized environmental conditions* (RECs), or historical RECs (HRECs), although data gaps exist because of the lack of access to the interior of the site buildings. Please see **Section 4.5.2** for a more complete discussions of the ESA findings.

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

1.3.12 Geotechnical /Groundwater Impacts Analysis

In general, the subsurface soil conditions within the proposed building sites consist of fill material and organic deposit material. The southwest portion of 11 Heron St has areas of ledge rock outcroppings. The presence of fill and ledge is consistent with the USDA soil survey mapping for this area. Soil test pits were dug within the building areas of both 11 and 26 Heron Street, with depth to seasonal high ground water, being observed at 2-ft deep below existing grade at 26 Heron Street and approximately 4-feet below existing grade at 11 Heron Street. See **Section 4.5** for additional information.

As part of the demolition and excavation activities on the sites, any unsuitable soils encountered will be removed**.** Both 11 and 26 Heron Street have the potential for unsuitable soil conditions. All building areas of both sites will have suitable structural material placed as needed. These materials will be placed in compacted lifts and compaction testing will be performed to ensure that proper soil compaction is achieved prior to foundation construction. It is anticipated that the proposed buildings will be supported by conventional spread footing foundations.

All roof drains will be directed to subsurface recharge chambers that will both detain and infiltrate stormwater at the rear of each building. Runoff from impervious paved surfaces will be directed to catch basins and the storm drainage system. Construction mitigation measures will be incorporated into the proposed project to avoid the potential for ground movement and settlement during excavation, and potential impacts on utility lines and roadways.

1.3.13 Construction Impacts Analysis

Section 4.6 describes impacts likely to result from the Proposed Project's construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager who will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

Construction is expected to commence in the 4th quarter 2019 and will be completed in the 3rd quarter 2021.

The Proponent will comply with applicable state and local regulations governing construction of the Project. The Proponent will require that the general contractor comply with the Construction Management Plan ("CMP") developed in consultation with and approved by the Boston Transportation Department ("BTD"), prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the Project and will include specific mitigation measures and staging plans to minimize impacts on abutters. All deliveries will be from Washington Street facilitated by a police detail.

Most construction activities will be accommodated within the current site boundaries. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan to be filed with BTD in accordance with the City's transportation maintenance plan requirements. To minimize transportation impacts during the construction period, there will be limited construction worker parking on-site, carpooling will be encouraged, secure on-site spaces will be provided for workers' supplies and tools so they do not have to be brought to the site each day, and subsidies for MBTA passes will be considered. The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

1.3.14 Wetlands/Flood Hazard Zone

The existing Project Site is not considered a part of a wetland resource area regulated by the Massachusetts Wetland Protection Act. As reported in the Phase I Environmental Site Assessment, according to the U.S. Fish and Wildlife Services National Wetlands Inventory website, there are certified wetlands identified as Freshwater Forested/Shrub Wetland approximately 650 to 850 feet southeast and northwest of the site, respectively. The Proposed Project site is within an Area of Minimal Flood Hazard (Zone X on the FEMA flood maps) on FEMA Panel No. 25025C0069G (effective 09/25/09).

1.3.15 Historic Resources Component

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

1.3.16 *Infrastructure Systems Component*

An analysis of the infrastructure system (**Section 6.0**) was completed by J.M. Grenier Associates, the Civil Engineer for this project. The existing infrastructure surrounding the site appears sufficient to service the needs of the proposed project. This longer **Section 6.0** describes the existing sewer, water, and drainage systems surrounding the site, and explains how these systems will service the development. This analysis also discusses any anticipated project-related impacts on the utilities and identifies mitigation measures to address these potential impacts.

1.3.17 Transportation Component

Section 7.0 presents the comprehensive transportation study completed by Howard Stein Hudson for the proposed Project in conformance with the BTD Guidelines as outlined in Access Boston 2000-2010. The study analyzes existing conditions within the Project study area, as well as conditions forecast to be in place under the seven-year planning horizon of 2026.

Access to the two buildings will be provided by a driveway connection to Heron Street, a dead-end private way open to public travel. The Project will include the construction of two new buildings, containing a total of approximately 72 residential units with partially below-grade parking on the ground floor and exterior parking located adjacent to each building. 11 Heron Street will be located along the north side of Heron Street and consist of 40 residential units with 52 total parking spaces including 33 indoor spaces and 19 exterior spaces. 26 Heron Street will be located along the south side of Heron Street and will consist of 32 residential units with 33 total parking spaces including 24 indoor spaces and 9 exterior spaces. Both buildings combined will contain 85 parking spaces for 72 residential units, which results in a parking ratio of approximately 1.18 parking spaces per residential unit, consistent within the BTD maximum parking goals or 1.0 to 1.5 spaces per unit for this area. Loading and service operations will occur along Heron Street or within the surface parking lots adjacent to each building.

The analysis identifies the number of trips generated by the Project using ITE's *Trip Generation Manual*, 10th Edition and employs mode use data for the area surrounding the Project site based on BTD data for Area 19 – West Roxbury. Based on the land use of the Project, it is estimated to generate approximately 330 new vehicle trips on a daily basis, with 19 trips during the a.m. peak hour (5 entering and 14 exiting) and 23 trips during the p.m. peak hour (14 entering and 9 exiting).

According to the trip generation rates, the Project will have minimal impact on the surrounding neighborhood.

The Project will reconstruct Heron Street, a private-way open to public travel. Heron Street is in poor condition and has major drainage deficiencies. Water pools at the low point of the roadway and take days to dry-up, during the winter frequently freezing and becoming a major hazard. The Project will regrade and reconstruct the roadway while also adding sidewalks with vertical granite curbs, tree pits, and street lights along both the north side and south side of the roadway between the new buildings and Washington Street.

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

1.3.18 Responses to Climate Change Questionnaire

Please see **Appendices E1** and **E2** for the Proponent's Responses to the City of Boston's Climate Change Questionnaire.

1.3.19 Responses to City of Boston Accessibility Guidelines

Please see **Appendix F1 and F2** for the Proponent's Responses to the City of Boston's Accessibility Guidelines.

1.3.20 Response to BPDA Broadband Questionnaire

Please see **Appendix G** for the Proponent's Response to the BPDA Broadband Questionnaire.

2.0 GENERAL INFORMATION

2.1 Applicant Information

2.2 Project Proponent

The Proponent is Onsite Builders & Development, LLC. The principal is Peter Heaney, a second-generation Builder/Developer, with extensive experience in real estate transaction project management and real estate development.

2.2.1 Project Team

Project Name	11-26 Heron Street, West Roxbury
Property Owner / Developer	**Onsite Builders & Development, LLC** 306 East Street Westwood, MA 02090 Tel: 781-727-1308 Peter Heaney peter@onsitebuilders.net
Article 80 Permitting Consultant	**Mitchell L. Fischman Consulting ("MLF Consulting") LLC** 41 Brush Hill Road Newton, MA 02461 Tel: 781-760-1726 Mitchell L. Fischman, Principal mitchfischman@gmail.com
Architect	**Nunes Trabucco Architects** 109 Highland Avenue Needham, MA 02494 Tel: 781-455-9980 Lucio Trabucco trabucco@ntarchitects.com Andrew Fyffe fyffe@ntarchitects.com

Landscape Architect	**Michael D'Angelo Landscape Architects LLC** 732 East Broadway, Suite #3 So. Boston, MA 02127 Tel: 203-592-4788 Michael D'Angelo, Principal michael@m-d-a.com
Legal Counsel	**Adams & Morancy, P.C.** 350 West Broadway South Boston, MA 02127 Tel: 617-269-5800 George Morancy, Esq. gmorancy@admorlaw.com
Public/Agency Outreach	**MJR Consulting LLC** 15 Broad Street Boston, MA 02109 Tel: 617-686-4034 Joe Rull joerull@mjr-consultants.com
Civil and Geotechnical Engineer	**J.M. Grenier Associates, Inc.** 787 Hartford Turnpike Shrewsbury, MA 01545 Tel: 508-845-2500 John Grenier jmgrenier@townisp.com
LEED/ Sustainability Consultant	**Soden Sustainability Consulting** 19 Richardson Street Winchester, MA 01890 Tel: 617-372-7857 Colleen Ryan Soden, LEED AP BD+C colleen@sodensustainability.com
Noise and Air Consultant	**Tech Environmental, Inc.** Hobbs Brook Office Park 303 Wyman Street, Suite 295 Waltham, MA 02451 Tel: 781-890-2220 Marc C. Wallace mwallace@techenv.com

Environmental / 21E	**Goldman Environmental Consultants, Inc.** 60 Brooks Drive Braintree, MA 02184 Tel: 781-356-02184 www.goldmanenvironmental.com
Surveyor	**J.M. Grenier Associates, Inc.** 787 Hartford Turnpike Shrewsbury, MA 01545 Tel: 508-845-2500
Construction Commencement	4th Quarter 2019
Construction Completion	3rd Quarter 2021
Status of Project Design	Schematic

2.3 Legal Information

Legal Judgments or Actions Pending Concerning the Proposed Project:
None.

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

Nature and Extent of Any and All Public Easements:
The Site is bounded by utility easements for sewer, electric, telephone and gas. Additionally, there are utilities that cross the two portions of the site.

2.4 Public Benefits

The Proposed Project will provide substantial public benefits to the City of Boston and the West Roxbury neighborhood including:

- The creation of 72 new units of housing, including 9 affordable units in accordance with the City's Inclusionary Development Policy (IDP);
- The introduction of new neighborhood residents who will provide support to the local community and utilize local businesses;
- Encouraging the use of alternative modes of transportation, such as mass transit, ride sharing services, and bicycle use;

- Improving the safety and visual appearance of the site and surrounding neighborhood by adding two new attractive multi-family buildings to an acre of vacant land;
- The complete rebuilding to modern standards of Heron Street, a private-way, including new sidewalks, street trees, and other streetscape amenities to improve and enhance the pedestrian landscape and experience, all at the private expense of the Proponent;
- A comprehensive solution to the drainage and water-buildup problems afflicting Heron Street and existing properties, at the private expense of the Proponent;
- Establishing a premier example of sustainable construction and development;
- Temporary creation of many new jobs in the construction and building trade industries; and
- Substantial addition to real property taxes for the City of Boston.

2.5 Regulatory Controls and Permits

2.5.1 Zoning Overview

The Proposed Project is located within a 1F-6000 zoning subdistrict of the West Roxbury Neighborhood District (Article 56), partially abutting an MFR multifamily subdistrict.[1] The proposed new buildings will each require a use variance for multifamily use, and the relevant 1F-6000 zoning sets certain dimensional requirements for which the Proposed Project will require zoning variances from the Zoning Board of Appeal as detailed herein. A breakdown of the various dimensional zoning requirements is included in **Table 2-1**.

2.5.2 Boston Zoning Code – Use Requirements

Multifamily residential use is a forbidden use within the relevant 1F-6000 zoning district, requiring a use variance from the Zoning Board of Appeal.

2.5.3 Boston Zoning Code – Dimensional Requirements

The Proposed Project will include approximately 78,704 (41,240 gsf at 11 Heron Street and 37,464 gsf at 26 Heron Street) gross square feet of floor area on a combined site that consists of 51,962 square feet of land, for a resulting combined floor area ratio ("FAR") of just over 1.5. Current 1F-6000 zoning establishes a maximum FAR of 0.4. The applicable dimensional regulations under zoning require a minimum lot size of 6,000 square feet for a single-family dwelling, but do not set forth a square-foot-per-additional-dwelling-unit requirement owing to the fact that any use exceeding a single-family dwelling is not an allowed use. Each building's front setback will be determined by Article 80 review considerations. Side setback requirements are 12 feet, with a rear setback requirement of 30 feet, and a maximum building height of 2-½ stories and 35 feet. Eighteen hundred square feet of usable open space is required for a single-family dwelling. It is, therefore, anticipated that the Proposed Project will require dimensional variances for excessive FAR, excessive building height, insufficient front yard setback, insufficient side yard setback, and insufficient rear yard setback (with respect to 11 Heron Street only), as well as for insufficient

[1] A negligible portion of the site is located within the bordering MFR subdistrict.

usable open space, and a violation owing to limitation of area of accessory use, owing to the surface parking. As a project that is subject to Large Project Review, the number of required off-street parking spaces and off-street loading bays are expected to be determined as a part of the Large Project Review process in accordance with the provisions of Article 80 of the Boston Zoning Code, but may be cited by the Inspectional Services Department. Site and building design elements of the Proposed Project will also continue to be reviewed by BPDA staff, and other City agencies, pursuant to the ongoing Large Project Review process.

Table 2-1. 1F-6000 Zoning District - Dimensional & Off-Street Parking Requirements[2]

Dimensional Element	1F-6000	Proposed Project 11 Heron --- 26 Heron *(40 Units) --- (32 Units)*	Expected Zoning Relief Required?
Minimum Lot Size	6,000 s.f.	29,275 s.f. - 22,787 s.f.	No
Minimum Lot Size (Add'l Dwelling Units)	n/a	n/a	No
Max. Floor Area Ratio	0.4	1.60 - 1.64	No
Max. Building Height	2-½ / 35'	4/50'-10" - 4/49'-1"	Yes
Minimum Lot Width	60'	273.25' - 200.14'	No
Minimum Lot Frontage	60'	273.25' - 200.14'	No
Minimum Front Yard Setback	20'	10'-8" - 10'-8"	Yes
Minimum Side Yard	12'	7'6" - 3'-6"	Yes
Minimum Rear Yard	30'	27' - 31'-5"	Yes
Required Off-Street Parking	Per Article 80	52 spaces - 33 spaces	Per Article 80
Minimum Number of Loading Bays	Per Article 80	1 - 1	Per Article 80
Minimum Usable Open Space	1,800 s.f./d.u.	11,000 s.f. - 9,000 s.f.	Yes

Note: Off-Street Parking & Loading requirements are determined by the BPDA as part of the Article 80 Large Project Review Process.

Note: Proposed dimensional data may change in accordance with BPDA requirements during ongoing design review.

[2] A negligible portion of the site is located within the bordering MFR subdistrict.

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

Agency Name	Permit or Action*
Local Agencies	
Boston Planning and Development Agency	Article 80 Review and Execution of Related Agreements; Section 80B-6 Certificate of Compliance
Boston Public Safety Commission Committee on Licenses	Garage License, Flammable Fuels
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Plan
Boston Department of Public Works Public Improvements Commission	Possible Sidewalk Repair Plan; Curb-Cut Permit; Street/Sidewalk Occupancy Permit; Permit for Street Opening
Boston Fire Department	Approval of Fire Safety Equipment
Boston Water and Sewer Commission	Approval for Sewer and Water and Connections; Construction Site Dewatering; and Storm Drainage
Boston Department of Inspectional Services	Demolition Permit; Building Permits; Certificates of Occupancy; Other Construction-Related Permits

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

2.6 Public Review Process and Agency Coordination

In support of the required Article 80 Large Project Review process, the Proponent has conducted, and will continue to conduct, community outreach with neighbors and abutters of the Site, including meetings and discussions with the elected representatives and officials from the area, and with area residents. Specifically, and to date, the Proponent has shared proposed building and site plans on numerous occasions with many residents of both Heron and Grouse Streets, presented project plans at a November 2018 meeting of the West Roxbury Civic & Improvement Association, and at a neighborhood meeting organized by the Mayor's Office of Neighborhood Services held on February 25, 2019 at St. Stephen's United Methodist Church.

The Proponent has also discussed in detail and on numerous occasions the Proposed Project with representatives of the Boston Planning & Development Agency prior to filing this Project Notification Form in order to identify and address planning issues and concerns, as well as urban design and site planning requirements related to the Project.

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

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

2.7 Development Impact Project ("DIP") Status

It is not anticipated that the Proposed Project will be subject to the requirements of Section 80B-7 of the Article 80, owing to the fact that the Proposed Project is not considered a DIP included use, and will not consist of an aggregate gross floor area of more than 100,000 square feet.

3.0 URBAN DESIGN AND SUSTAINABILITY

3.1 Urban Design Overview

The conceptual design of the two proposed structures is for four-story, linear shaped buildings designed and sited to minimize site disruption and with respect to existing underground water level, and to keep the building footprints compact, with the main entrance, lobby, offices and elevator all centrally located to minimize the distance to the furthest apartments. Common areas for the buildings' residents are located adjacent to elevator/lobby area, mechanical and trash rooms are on the ground floor/parking level. In addition, at the ground floor/parking level each parking space will have a wall mounted bike rack and six of the parking spaces will be equipped with an electric car charging unit.

The two buildings will be designed with proportions to complement nearby or adjoining 3-1/2 story multi-family residential structures, and use exterior finish materials that are prevalent in adjoining or nearby single-family residential structures. The structures will be wood-frame construction with exterior clapboards, cementitious panels and simulated stone units. The combination of clapboard and cementitious panels is used to visually minimize the scale of the structure and complement adjacent residential structures. The synthetic units create a base for the structure. The roof cornice line will provide a cap to the structure and will reinforce the modern residential roof design.

The cores of the two building floor plans include a lobby, elevator, waiting area, mail area. Meeting and exercise areas will be located on upper floor elevator lobby area. A 5-foot wide corridor extends in two directions from the cores, from which the common areas of the building and all residential units are accessed.

Parking spaces, mechanical room, electrical room, trash and recycling rooms will be located at ground floor level. Additional surface parking will be located adjacent to structures.

The Urban Design figures as well as the two LEED v4 BD+C Checklists, are included at the end of this section **(Figures 3-1** thru **3-42)**.

3.2 Site Design

The sites where the proposed buildings are to be located are surrounded by attractive green spaces which will remain in place.

The proposed buildings will be designed to be compact in order to better respond to the constraints of the site, which consist primarily of open once used as farm land. The designs are for linear shape buildings running parallel to Heron Street, thus minimizing site disruption. The front of the buildings face Heron Street with landscaped areas. The sides of the buildings overlook surface parking and landscaped areas. The building rears overlook landscaped areas with undisturbed existing vegetation with outdoor amenities. The surfaces parking areas for resident vehicles will be paved parking lots. From the surface parking areas, residents can gain access to the ground floor side entrances and to all floors via main entrance off the front

sidewalk. Ground floor level parking area residents can access all residential floors via elevator and two (2) stairs in either building.

In locating the buildings in close proximity to one another, 11 Heron Street as well as 26 Heron Street, the intention is to create a vibrant community for residents, a "campus" of sorts, where a synergy between the two developments is created, and property management and services may be provided in a coordinated and comprehensive manner, and where there are economies of scale and resource sharing.

The entrances to the two buildings will face each other, and exterior program, design and improvements will be coordinated. Interior common areas will likewise be complementary, such that residents of either building may use the facilities of the other. All of these elements will combine to enhance the experience of the residents of both 11 and 26 Heron Street as well as the surrounding community.

3.3 Dwelling Unit and Common Area Design, and Exterior Common-Use Spaces

3.3.1 Dwelling Unit Design

The individual residential units are designed in strict accordance with the Commonwealth of Massachusetts Architectural Access Board requirements. Five percent of the proposed units will be handicapped accessible Group 2. The rest of the units will be Group 1, all easily adaptable for the various handicaps that frail elderly and aging populations have. One of the units (2% of total units) will be equipped with visual and audio alarm indicators (doorbell strobe, smoke detector strobe, telephone strobe, activated bed vibrator or fan-operated signaling device). The handicapped units are designed to accommodate physically challenged people that are confined to a wheelchair, blind, deaf, or who have other physical disabilities. The handicapped unit kitchens will have low counters, pull-in areas for wheelchairs, controls located so they can easily be reached and side-by-side refrigerators. Bathrooms will have roll in showers, with adjustable shower heads, lavatory and vanities properly designed for wheelchair access and use by people with hand deformities. All electrical switched and controls will be mounted at the proper heights for access from a wheelchair. The building will be designed to accommodate a voice activated control system, and electronic automatic door openers for apartment doors. There will also be strobe lights on the doorbell, intercom and fire alarm for the hearing impaired.

3.3.2 Common Area Design

Entrance and elevator lobby space, resident mailboxes, stairway exit access corridors, and circulation space fill out the center core of the ground floors. To accommodate access for residents, the design will require that all entrances and exits be handicapped accessible. An exterior entrance canopy is planned to protect the main entrances from accumulations of rain, snow, or ice, and the exterior appearance of the entries will create a more inviting aesthetic.

The elevator lobbies will be furnished and provide an area for residents to meet each other and be social as they come and go from various activities or simply picking up the mail.

The ground floors will also contain the building services and physical plant space. Mechanical equipment, consisting of new boiler and domestic hot water generators will be outfitted in the mechanical room which will also include an electrical room, with the new electric service, electric meter stack, telephone services, cable TV antenna systems, and other miscellaneous electrical services.

3.3.3 Exterior Common - Use Spaces

Exterior spaces will include outdoor patio/seating area off the rear of the two buildings accessible from the ground floor, and a walking path. These areas will be secure and well lit. In addition, the amenities will include a community garden, and an outdoor picnic area – all providing residents many opportunities for enjoying the outdoors and enhance the senior campus concept driving these aspects of the design.

3.3.4 Finishes

Exterior Finishes

Exterior finishes will be clapboards, cementitious panels and synthetic stone units with double hung fiberglass windows meeting the International Energy Conservation Code 2015 requirements and gable roof.

Interior Finishes

The scope of the work for interior finishes will be gypsum partitions, utilizing paint colors for walls and ceiling differentiation. Flooring will consist of vinyl planks, and sheet carpeting, with limited areas of ceramic tile at unit bathrooms.

3.4 Landscape Design

The design team is proposing new sidewalks extending from the new buildings up Heron Street to Washington Street. Along the south side of Heron Street, the new sidewalk will tie in with an existing sidewalk. Along the north side of Heron Street, a new concrete sidewalk will be constructed. This will dramatically increase walkability, pedestrian safety, and connectivity to Washington Street and the MBTA bus routes.

New fastigiate street trees and contextually appropriate light poles will line the new portions of sidewalk. Street trees will be planted at 30-feet on center. Existing tree canopy will be protected. Sidewalk design is compliant with the City of Boston Complete Streets Guidelines. Sidewalks will be 5-feet wide concrete pavement with a 4 feet wide tree pit/furnishing zone. Public bike racks will be placed within the furnishing zone on Heron Street.

Plantings within the applicant's property will consist of native, drought tolerant species; the palette was developed for year-round interest as well as selective screening. Water efficient irrigation will be provided to ensure plants survive during the establishment period and unusual periods of drought.

Each building has at grade amenity areas for the tenants. These areas consist of special paving, natural gas grilling stations, lighting, and dining tables. Turf grass areas are provided for active recreation and family gathering space.

Additional evergreen and deciduous trees in a raised planter will provide a buffer zone for the abutting neighbors to the North.

All details, including caliper and species selection, will be approved by the City of Boston Parks and Recreation Department.

3.5 Sustainable Design/Energy Conservation

As there are two buildings proposed, this section is divided into sustainable design/energy conservation narratives for each of the two buildings at 11 Heron and 26 Heron Streets. Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. The project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while some access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts.

To meet the City of Boston Requirements the overall project is demonstrating the compliance with the LEED BD&C v4 criteria. The project is currently tracking 53 points in the YES column with 14 in the study column. Further study over the coming weeks and months will determine final credit achievement. We have outlined in the narrative below, how the project intends to achieve the prerequisites and credits for the LEED BD&C v4 certification. Please see **Figures 3-41** and **3-42** at the end of this section for the LEED checklists for each of the projects discussed below.

The Proponent and the Project design team are committed to an integrated design approach and are using the LEED Building Design and Construction v4 rating system and intend to meet certification as presented above. This rating will meet or exceed Boston's Green Building standard. The LEED rating system tracks the sustainable features of the project by achieving points in following categories: Location & Transportation; Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation and Design Process.

3.5.1 11 Heron Street

The proposed project involves developing a new approximately 41,240 gross square feet residential building, located at 11 Heron Street.

Location and Transportation - 11 Heron Street

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

The site has been previously developed earning sensitive land protection. The site has surrounding existing density within a ¼-mile [400-meter] radius of the project boundary with 13-dwelling units/acre earning 3 LEED points. The site is also located in a Federal Empowerment zone achieving 1 point though High Priority Site.

The project provides access to quality transit as the project is located within 0.2 miles of Bus 34, 34E, 40, and 50 bus lines. The project achieves 4 transit points.

The project is providing bicycle facilities and showers for the occupants of the building along with bicycle parking spots for visitors, far exceeding the LEED requirement. The project also achieves a 40% parking reduction from the LEED baseline.

The project will provide low emitting vehicle spaces along with charging stations for its tenants.

Sustainable Sites - 11 Heron Street

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

The project will create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan will conform to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent. Careful assessment of the site and location selection is part of our site assessment analysis for LEED.

In order to reduce the impact of urban heat island effect all the roofing and hardscape material will be low SRI or vegetated. The project is also evaluating Light Pollution Reduction. The project will be also be earning the open space credit.

Water Efficiency - 11 Heron Street

Buildings are major users of our potable water supply and conservation of water preserves a natural resource while reducing the amount of energy and chemicals used for sewage treatment. The goal of the Water Efficiency credit category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside. To satisfy the requirements of the Water Use Reduction Prerequisite and credit, the project will incorporate water conservation strategies that include low flow plumbing fixtures for water closets and faucets. The landscape will be designed so it will reduce the need for potable water for irrigation and select plant material that is native and adaptive.

The project is targeting a minimum 50% indoor water use reduction from the baseline. All newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling will have the Water Sense label. We anticipate needing irrigation for foundation plantings, if required

this will be a highly efficient drip system achieving greater than a 50% reduction in potable water use.

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

Energy & Atmosphere - 11 Heron Street

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

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

A preliminary whole-building energy simulation was performed for the project demonstrating a minimum improvement of 20.1% energy cost savings according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata. The team will continue to analyze efficiency measures during the design process and account for the results in design decision making.

The project will install new or use existing building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc). Prereq 4- fundamental refrigerant management. The project will not use chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems.

The project will evaluate renewable energy production if it is not possible the building will be solar ready. The project is also evaluating the Advanced Energy Metering.

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

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

Materials & Resources - 11 Heron Street

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

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

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

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

Indoor Environmental Quality - 11 Heron Street

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

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

The project will provide enhanced indoor air quality strategies. The project will provide entryway systems design systems, interior cross-contamination prevention and filtration. The project is also targeting increased ventilation but will complete the calculations once the design is developed further.

The project will target Low emitting materials for all materials within the building interior is defined as everything within the waterproofing membrane. This includes requirements for product

manufacturing volatile organic compound (VOC) emissions in the indoor air and the VOC content of materials.

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

The project prohibits the use of all tobacco products inside the building and within 25 feet (8 meters) of the building entrance during construction. Daylight will be evaluated for energy efficiency opportunities and benefits for the occupants.

Innovation and Design Process - 11 Heron Street

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

- Innovation in Design: Green Cleaning
- Innovation in Design: Walkable Sites
- Innovation in Design: IPM
- Innovation in Design: Education
- Innovation in Design: Thermal Comfort Survey

Regional Priority

- Regional Priority: High Priority Site (maybe)
- Regional Priority: Indoor water use reduction (yes)
- Regional Priority: Optimize Energy (yes)
- Regional Priority: Renewable Energy (maybe)

3.5.2 26 Heron Street

The proposed project involves developing a new approximately 37,464 gross square feet residential building, located at 26 Heron Street.

Location and Transportation - 26 Heron Street

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

The site has been previously developed earning sensitive land protection. The site has surrounding existing density within a ¼-mile [400-meter] radius of the project boundary with 13 dwelling units/acre earning 3 LEED points. The site is also located in a Federal Empowerment zone achieving 1 point though High Priority Site.

The project provides access to quality transit as the project is located within 0.2 miles of Bus 34, 34E, 40, and 50 bus lines. The project achieves 4 transit points.

The project is providing bicycle facilities and showers for the occupants of the building along with bicycle parking spots for visitors, far exceeding the LEED requirement. The project also achieves a 40% parking reduction from the LEED baseline.

The project will provide low emitting vehicle spaces along with charging stations for its tenants.

Sustainable Sites - 26 Heron Street

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

The project will create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan will conform to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent. Careful assessment of the site and location selection is part of our site assessment analysis for LEED.

In order to reduce the impact of urban heat island effect all the roofing and hardscape material will be low SRI or vegetated. The project is also evaluating Light Pollution Reduction. The project will be also be earning the open space credit

Water Efficiency - 26 Heron Street

Buildings are major users of our potable water supply and conservation of water preserves a natural resource while reducing the amount of energy and chemicals used for sewage treatment. The goal

of the Water Efficiency credit category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside. To satisfy the requirements of the Water Use Reduction Prerequisite and credit, the project will incorporate water conservation strategies that include low flow plumbing fixtures for water closets and faucets. The landscape will be designed so it will reduce the need for potable water for irrigation and select plant material that is native and adaptive.

The project is targeting a minimum 50% indoor water use reduction from the baseline. All newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling will have the Water Sense label. We anticipate needing irrigation for foundation plantings, if required this will be a highly efficient drip system achieving greater than a 50% reduction in potable water use.

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

Energy & Atmosphere - 26 Heron Street

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

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

A preliminary whole-building energy simulation was performed for the project demonstrating a minimum improvement of 20.1% energy cost savings according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata. The team will continue to analyze efficiency measures during the design process and account for the results in design decision making.

The project will install new or use existing building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc), Prereq 4- fundamental refrigerant management. The project will not use chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems.

The project will evaluate renewable energy production if it is not possible the building will be solar ready. The project is also evaluating the Advanced Energy Metering.

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

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

Materials & Resources - 26 Heron Street

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

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

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

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

Indoor Environmental Quality - 26 Heron Street

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

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

The project will provide enhanced indoor air quality strategies. The project will provide entryway systems design systems, interior cross-contamination prevention and filtration. The project is also targeting increased ventilation but will complete the calculations once the design is developed further.

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

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

The project prohibits the use of all tobacco products inside the building and within 25 feet (8 meters) of the building entrance during construction. Daylight will be evaluated for energy efficiency opportunities and benefits for the occupants.

Innovation and Design Process - 26 Heron Street

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

- Innovation in Design: Green Cleaning
- Innovation in Design: Walkable Sites
- Innovation in Design: IPM
- Innovation in Design: Education
- Innovation in Design: Thermal Comfort Survey

Regional Priority

- Regional Priority: High Priority Site (maybe)
- Regional Priority: Indoor water use reduction (yes)
- Regional Priority: Optimize Energy (yes)
- Regional Priority: Renewable Energy (maybe)

3.6 Urban Design Figures and LEED Checklists

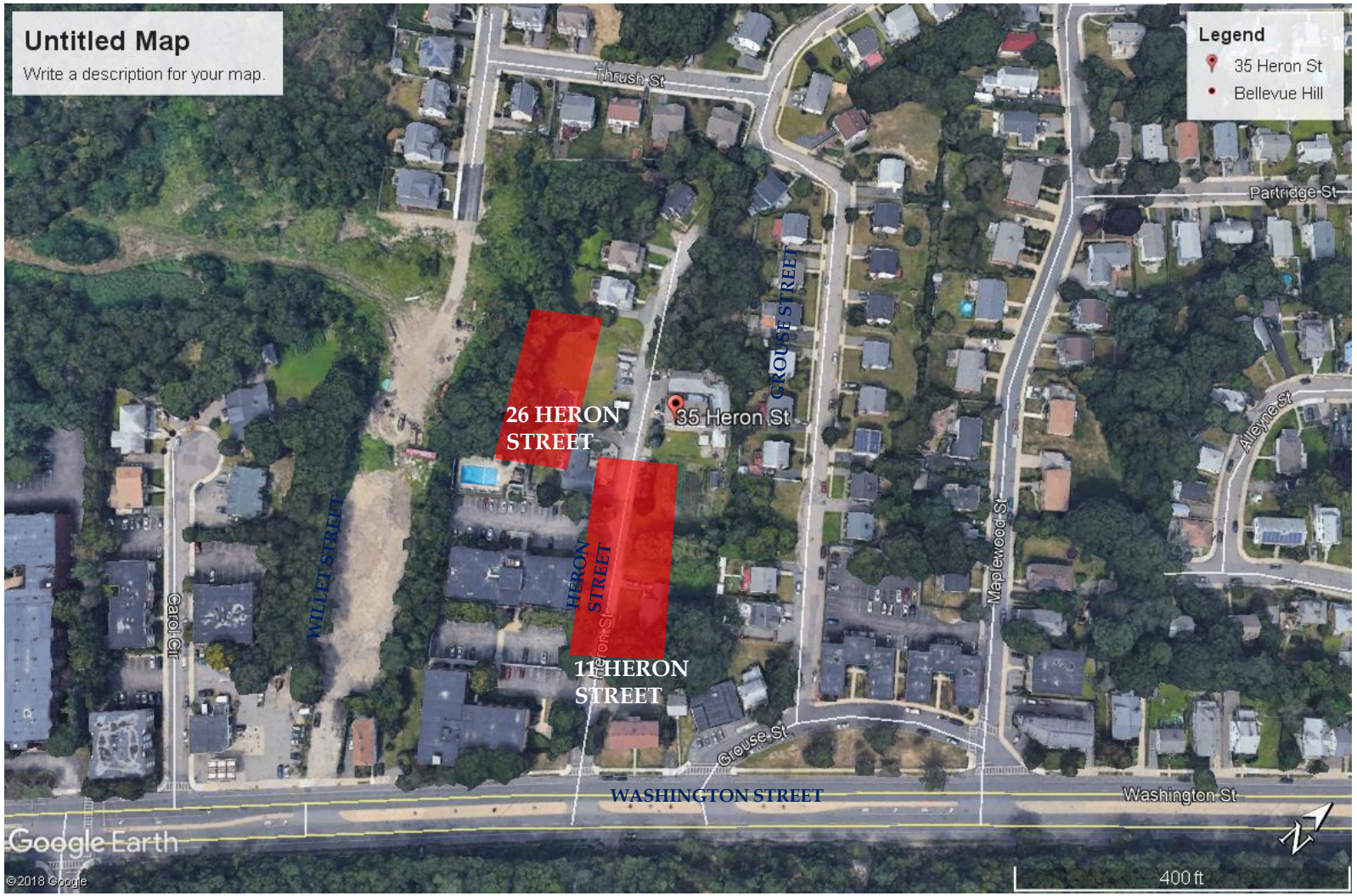
Urban design figures and renderings depicting the Proposed Project, and the two LEED v4 BD+C Checklists include:

Residences at 11 Heron Street & 26 Heron Street

West Roxbury, MA

Fig 3-1

NUNES TRABUCCO ARCHITECTS



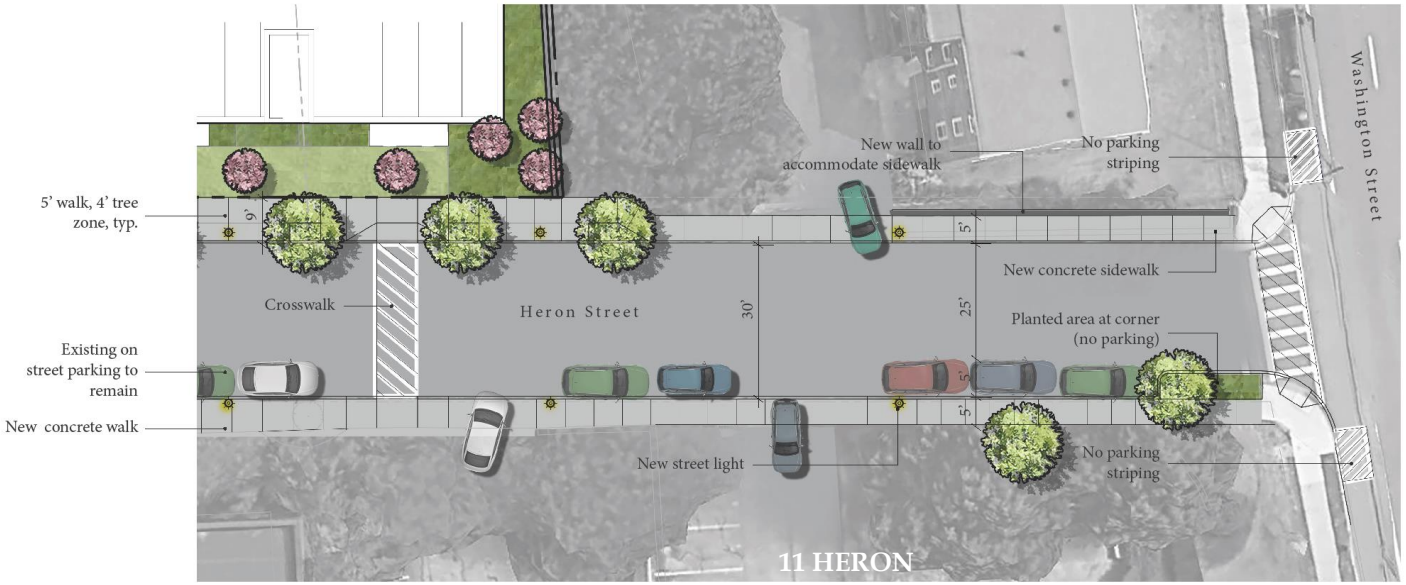
Existing Conditions: Satellite View (close up)

Fig 3-2

Landscape Plan- (Noteing Site Improvements)

Fig 3-3

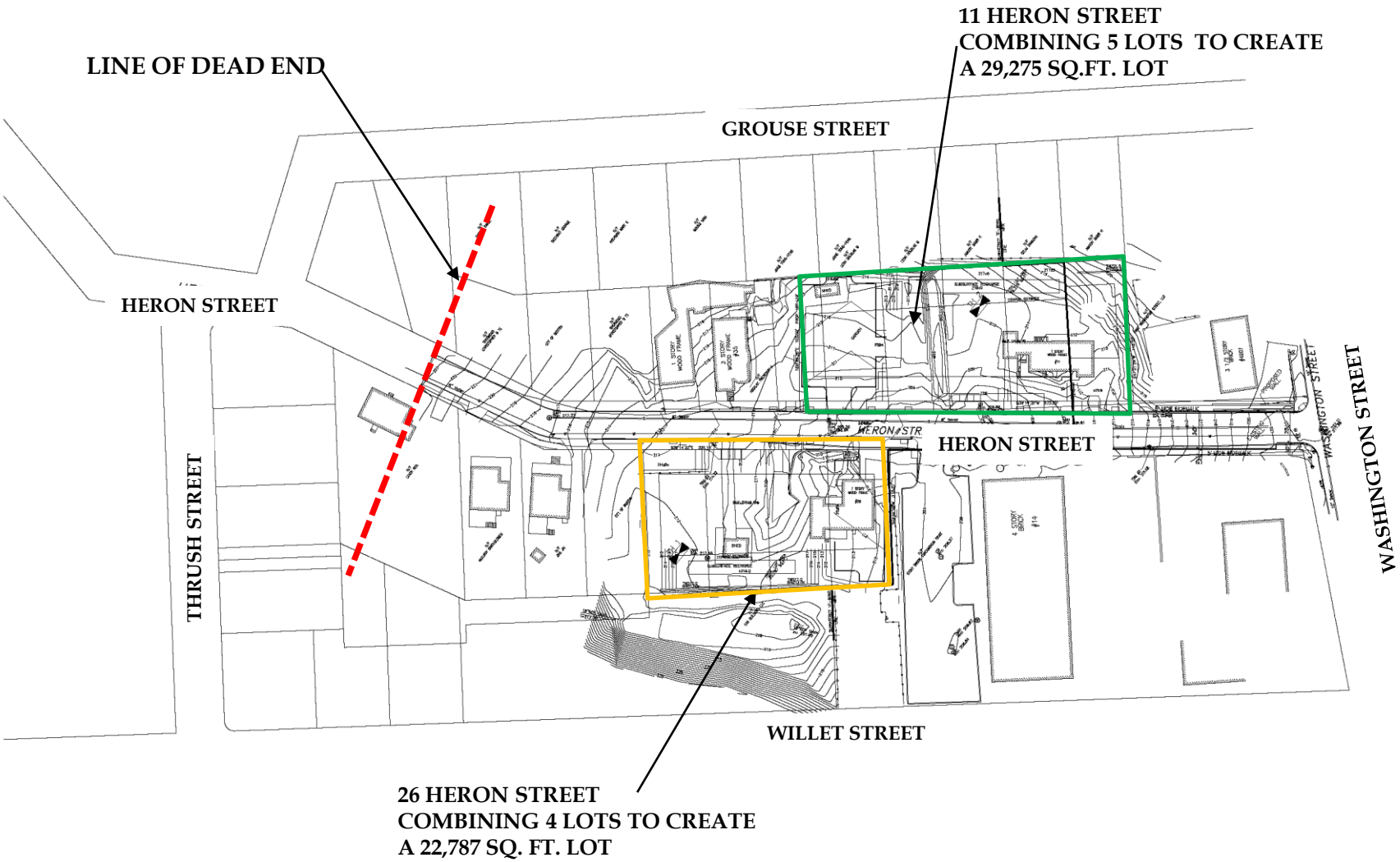
NUNES TRABUCCO ARCHITECTS



Landscape Plan- (Heron/ Washington St. intersection) Fig 3-4

Bus Stop Connection

Fig 3-5



Existing Site Plan

Fig 3-6

NUNES TRABUCCO ARCHITECTS

Proposed Site Plan

Fig 3-7

NUNES TRABUCCO ARCHITECTS

Site Birds Eye View

Fig 3-8

NUNES TRABUCCO ARCHITECTS

26 Heron Street

32 Residential Units

(12) 1 bedroom units @ 850 sq. ft. each

(20) 2 bedroom units @ 1100 sq. ft. each

Parking Level: 8,485 sq. ft.

Residential Levels: 9,366 sq. ft. each

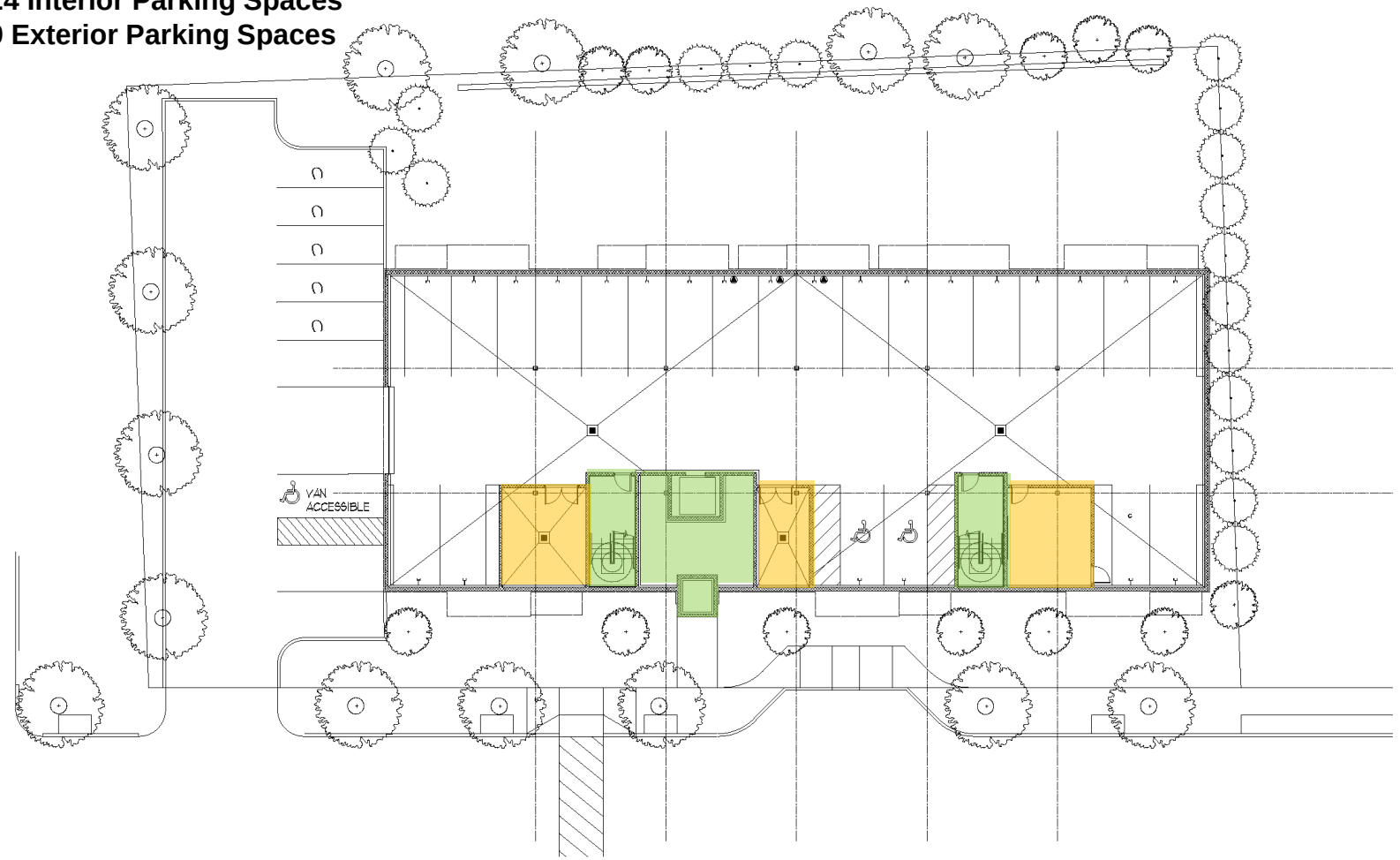
Parking spaces provided: 38

24 Indoor Parking Spaces

And 9 Exterior Parking Spaces

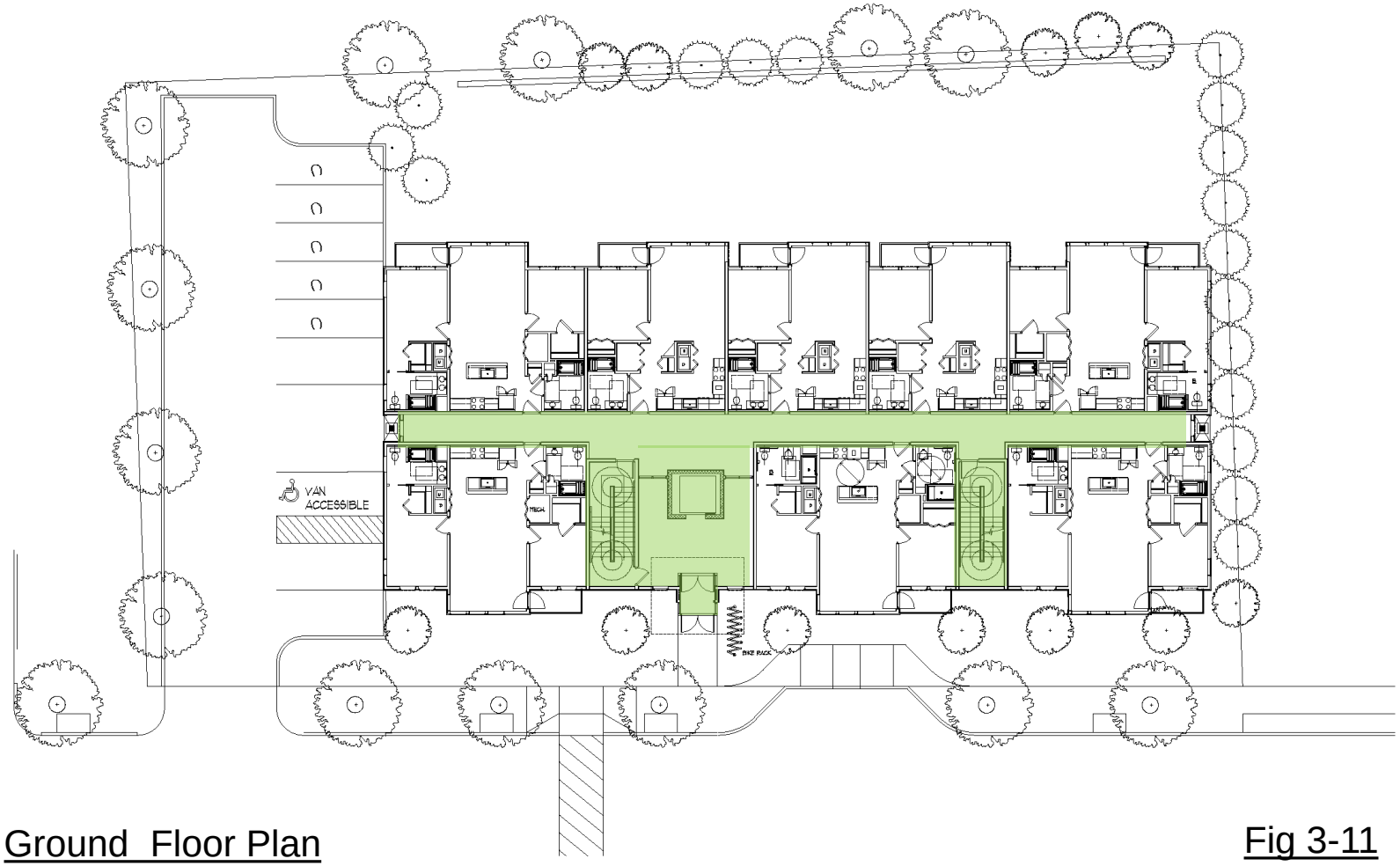
Fig 3-9

24 Interior Parking Spaces
9 Exterior Parking Spaces



Parking Level Floor Plan

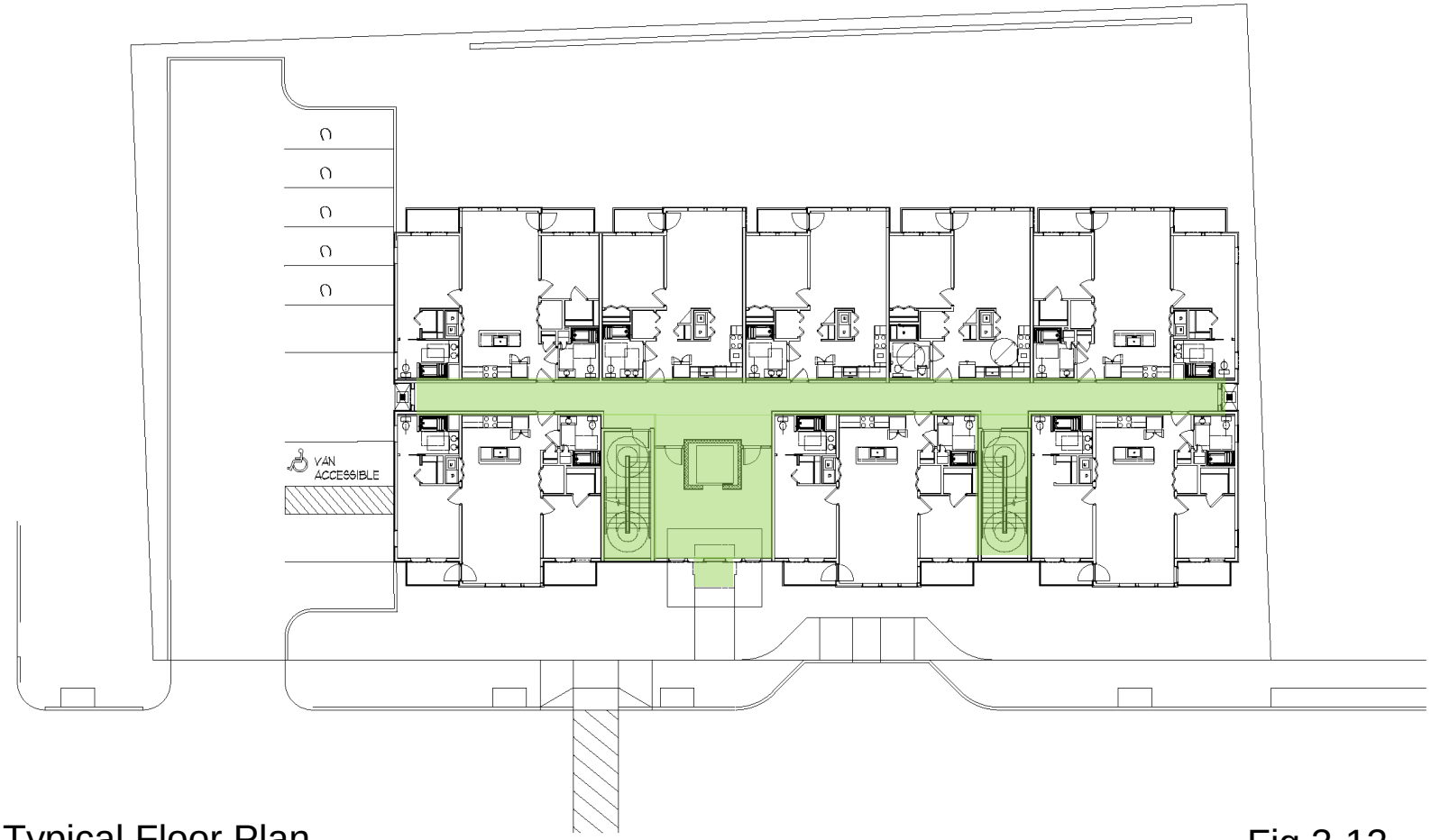
Fig 3-10



Ground Floor Plan

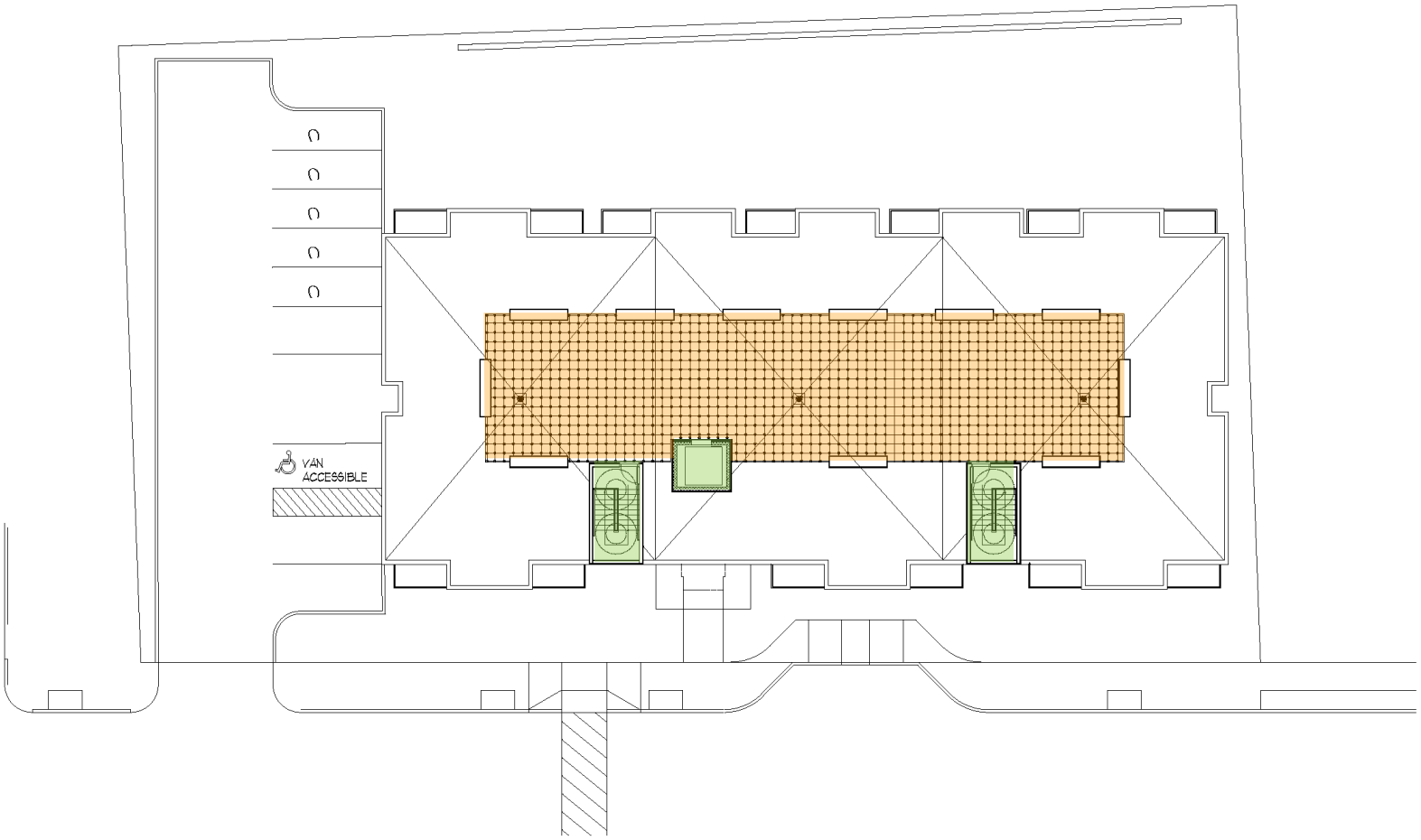
Fig 3-11

NUNES TRABUCCO ARCHITECTS



Typical Floor Plan

Fig 3-12



Roof Plan

Fig 3-13

26 Heron Street -Front Elevation

Fig 3-14

26 Heron Street- Rear Elevation

Fig 3-15

26 Heron Street- Left Side Elevation

Fig 3-16

26 Heron Street- Right Side Elevation

Fig 3-17

11 Heron Street

40 Residential Units

(12) 1 bedroom units @ 850 sq. ft. each

(28) 2 bedroom units @ 1100 sq. ft. each

Parking Level: 10,310 sq. ft.

Residential Levels: 11,746 sq. ft. each

Parking Spaces Provided: 57

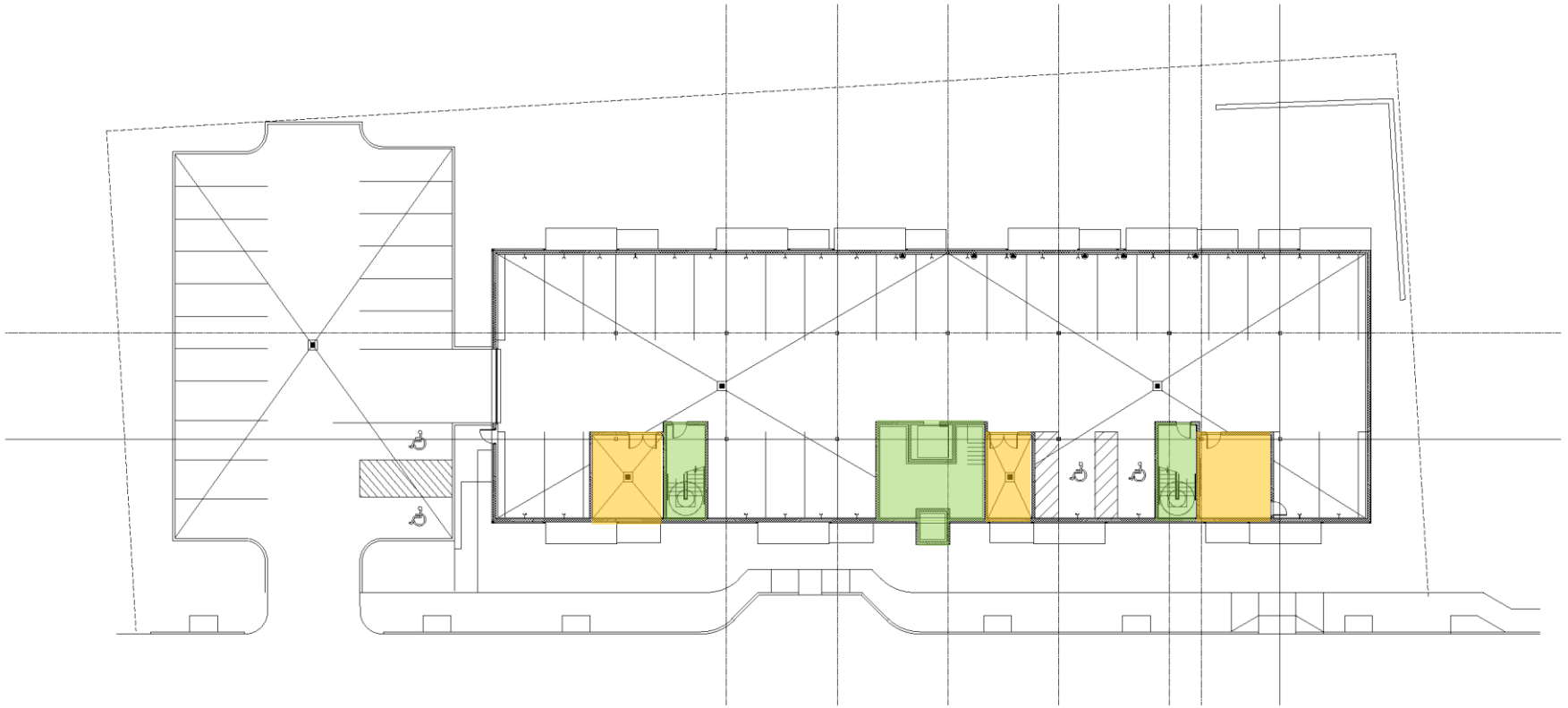
33 Indoor Parking Spaces

And 19 Exterior Parking Spaces

Fig 3-18

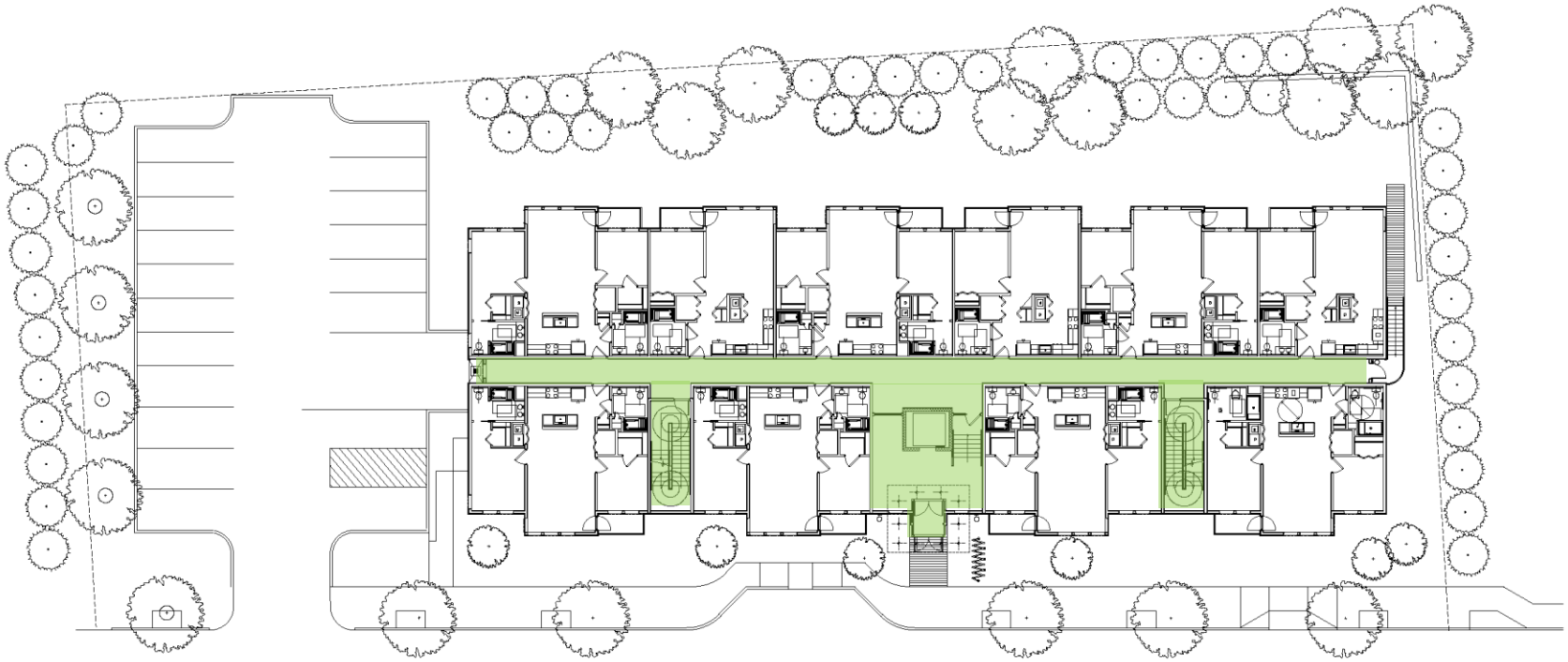
NUNES TRABUCCO ARCHITECTS

33 Interior Parking Spaces
19 Exterior Parking Spaces



Parking Level Floor Plan

Fig 3-19

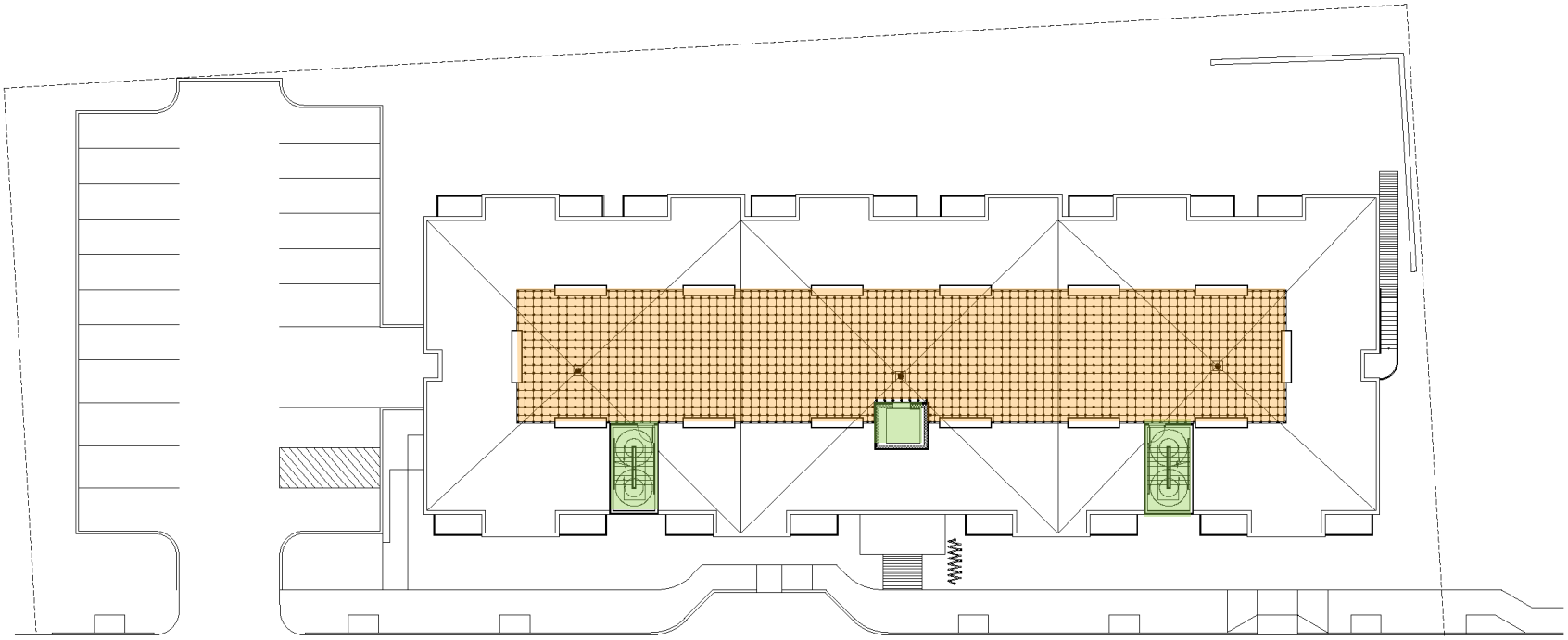


First Floor Plan

Fig 3-20

Typical Floor Plan

Fig 3-21



Roof Plan

Fig 3-22

11 Heron Street- Front Elevation

Fig 3-23

NUNES TRABUCCO ARCHITECTS

11 Heron Street- Left Side Elevation

Fig 3-24

11 Heron Street- Right Side Elevation

Fig 3-25

11 Heron Street- Rear Elevation

Fig 3-26

Section Thru 11 Heron Street

Fig 3-27

MDLA
MICHAEL D'ANGELO landscape architecture

NUNES TRABUCCO ARCHITECTS

Section Thru 26 Heron Street

Fig 3-28

MDLA
MICHAEL D'ANGELO landscape architecture

NUNES TRABUCCO ARCHITECTS

Perspective

Fig 3-29

NUNES TRABUCCO ARCHITECTS

Perspective

Fig 3-30

Perspective

Fig 3-31

NUNES TRABUCCO ARCHITECTS

Perspective

Fig 3-32

NUNES TRABUCCO ARCHITECTS

Perspective

Fig 3-33

NUNES TRABUCCO ARCHITECTS

Perspective

Fig 3-34

Perspective

Fig 3-35

Perspective

Fig 3-36

NUNES TRABUCCO ARCHITECTS

Perspective

Fig 3-37

NUNES TRABUCCO ARCHITECTS

Armstrong Maple (native)

Acer rubrum (Red Maple) (native)

Amelanchier arborea (Serviceberry) (native)

Cercis C. (Eastern Redbud) (native)

Quercus coccinea (Scarlet Oak) (native)

Cornus florida (Native dogwood) (native)

Picea omorika (Serbian Spruce)

Pyramidal Arborvitae (native)

Gleditsea Triacanthos (Honey locust) (native)

Tree Palette

Fig 3-38

MDLA

MICHAEL D'ANGELO landscape architecture

NUNES TRABUCCO ARCHITECTS

Gro-low Sumac (fall and summer) (native)

Low Bush Blueberry (native)

Carex pensylvanica (native)

Inkberry (native)

Winterberry (native)

Red twig dogwood (native)

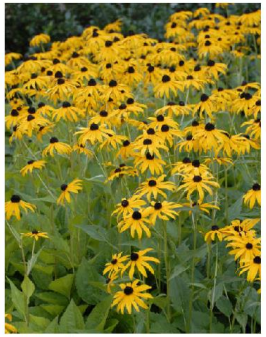
Dryopteris marginalis (native)

Panicum virgatum 'Northwind' (native)

Little Bluestem (native)

Aster (native)

Coneflower (native)



Black-eyed susan (native)

Under-story Palette

Fig 3-39

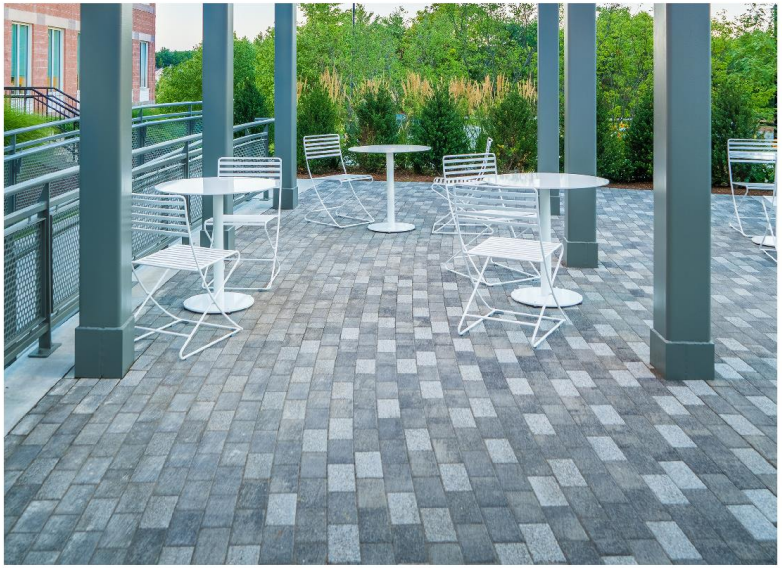
MDLA

MICHAEL D'ANGELO landscape architecture

NUNES TRABUCCO ARCHITECTS

City of Boston Acorn Light

Bike racks



Precast pavers at main entry

Hardscape

Fig 3-40

MDLA

MICHAEL D'ANGELO landscape architecture

NUNES TRABUCCO ARCHITECTS

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

Project Checklist

Project Name: 11 Heron Street
Date: 2-Apr-19

Figure 3-41

Y	?	N			
1			Credit	Integrative Process	1

12	0	4	**Location and Transportation**		16
			Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
1		1	Credit	High Priority Site	2
3		2	Credit	Surrounding Density and Diverse Uses	5
4		1	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

4	1	5	**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	Rainwater Management	3
2			Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1

8	1	2	**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
6			Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

13	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	1	2	Credit	Enhanced Commissioning	6
8	3	7	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
		1	Credit	Renewable Energy Production	3
	1		Credit	Enhanced Refrigerant Management	1
2			Credit	Green Power and Carbon Offsets	2

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 and Optimization - Environmental Product Declarations	2
		2	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

5	3	8	**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
		3	Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1		1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1		1	Credit	Interior Lighting	2
	1	2	Credit	Daylight	3
	1		Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

6	0	0	**Innovation**		6
5			Credit	Innovation- IPM, Education, Green Cleaning, Thermal Comfort, Walkable Sites	5
1			Credit	LEED Accredited Professional	1

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

53	14	41	**TOTALS**	Possible Points:	110

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

Figure 3-42

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

Project Checklist

Project Name: 26 Heron Street
Date: 2-Apr-19

Y	?	N			
1			Credit	Integrative Process	1

12	0	4	Location and Transportation		16
			Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
1		1	Credit	High Priority Site	2
3		2	Credit	Surrounding Density and Diverse Uses	5
4		1	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

4	1	5	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	Rainwater Management	3
2			Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1

8	1	2	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
6			Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

13	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	1	2	Credit	Enhanced Commissioning	6
8	3	7	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
		1	Credit	Renewable Energy Production	3
	1		Credit	Enhanced Refrigerant Management	1
2			Credit	Green Power and Carbon Offsets	2

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 and Optimization - Environmental Product Declarations	2
		2	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

5	3	8	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
		3	Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1		1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1		1	Credit	Interior Lighting	2
	1	2	Credit	Daylight	3
	1		Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

6	0	0	Innovation		6
5			Credit	Innovation- IPM, Education, Green Cleaning, Thermal Comfort, Walkable Sites	5
1			Credit	LEED Accredited Professional	1

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

53	14	41	TOTALS	Possible Points:	110

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

4.0 ENVIRONMENTAL PROTECTION COMPONENT

4.1 Shadow Impacts Analysis

4.1.1 Introduction

The following shadow study describes and graphically depicts anticipated new shadow impacts from the Project compared to shadows from existing buildings. The study presents the existing and built conditions for the proposed Project for the hours 9:00 AM, 12:00 Noon, and 3:00 PM for the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21), and winter solstice (December 21). In addition, shadows are depicted for 6:00 PM during the summer solstice & autumnal equinox. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the new shadow from the proposed 11-26 Heron Street project are provided in **Figures 4-1** through **4-4**.

4.1.2 Vernal Equinox (March 21)

Figure 4-1 depicts shadow impacts on March 21.

At 9:00 AM, new shadow for 11 Heron Street is cast in a Northwesterly direction onto its adjacent surface open parking lot. 26 Heron's shadow is cast onto the open land toward the end of Heron Street.

At 12:00 Noon, new shadow for 11 Heron is cast in a Northeasterly direction to its rear property line with the Grouse Street residences. 26 Heron's shadow is cast onto the Heron Street sidewalk and a portion of the roadway.

At 3:00 PM, new shadow for 11 Heron is cast in a Northeasterly direction to its rear property line with the Grouse Street residences. 26 Heron's shadow is cast onto the Heron Street's sidewalks, roadway, and onto the opposite 35 Heron Street property owned by the Proponent.

4.1.3 Summer Solstice (June 21)

Figure 4-2 depicts shadow impacts on June 21.

At 9:00 AM, new shadow for 11 Heron Street is cast in a Northwesterly direction onto its adjacent surface open parking lot and front sidewalk along Heron Street. 26 Heron's shadow is cast onto the open land toward the end of Heron Street and onto a portion of its backyard.

At 12:00 Noon, new shadow for 11 Heron is cast in a Northeasterly direction to the rear of the property and onto a small portion of its surface parking area. 26 Heron's shadow is cast onto its Heron Street sidewalk.

At 3:00 PM, new shadow for 11 Heron is cast in a Northeasterly direction to its rear property line with the Grouse Street residences. 26 Heron's shadow is cast onto the Heron Street's front sidewalk and roadway.

At 6:00 PM, new shadow for 11 Heron is cast in an easterly direction to its rear property line with the Grouse Street residences and onto some open land that fronts onto Grouse Street. 26 Heron's shadow is cast onto the new 11 Heron Street structure on the other side of Heron Street.

4.1.4 Autumnal Equinox (September 21)

Figure 4-3 depicts shadows on September 21.

At 9:00 AM, new shadow for 11 Heron Street is cast in a Northwesterly direction onto its adjacent surface open parking lot. 26 Heron's shadow is cast onto the open land toward the end of Heron Street and onto a portion of its backyard.

At 12:00 Noon, new shadow for 11 Heron is cast in a Northeasterly direction towards its rear property line with the Grouse Street residences. 26 Heron's shadow is cast onto the Heron Street sidewalk and a portion of roadway.

At 3:00 PM, new shadow for 11 Heron is cast in a Northeasterly direction to its rear property line with the Grouse Street residences and onto a small portion of an open land of property fronting on Grouse Street. 26 Heron's shadow is cast onto the Heron Street's sidewalks, roadway, on the opposite 35 Heron Street property owned by the Proponent, and onto the surface parking lot for 11 Heron Street.

At 6:00 PM, new shadow for 11 Heron is cast in an easterly direction to its rear property line with the Grouse Street residences and onto a small portion of open land that fronts onto Grouse Street. 26 Heron's shadow is cast onto 11 Heron Street and its surface parking lot on the other side of Heron Street.

4.1.5 Winter Solstice (December 21)

Figure 4-4 depicts shadow impacts on December 21. Winter sun casts the longest shadows of the year.

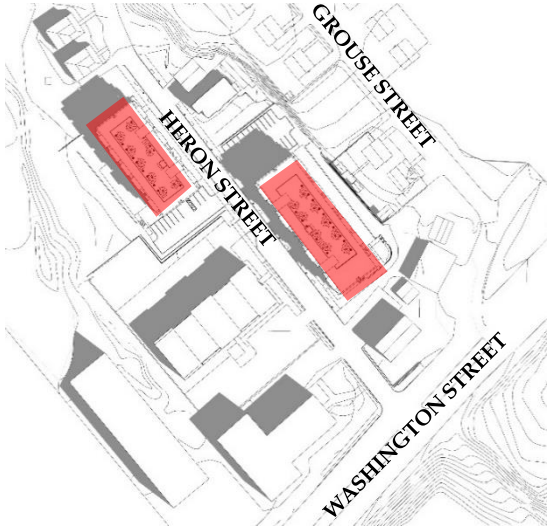
At 9:00 AM, new shadow for 11 Heron Street is cast in a Northwesterly direction onto the adjacent surface open parking lot and onto the 35 Heron Street property owned by the Proponent. 26 Heron's shadow is cast onto the open land and houses toward the end of Heron Street.

At 12:00 Noon, new shadow for 11 Heron is cast in a Northeasterly direction towards its rear property line with the Grouse Street residences. 26 Heron's shadow is cast onto the Heron Street sidewalk, roadway, and onto a portion of the 35 Heron Street property owned by the Proponent, and open wooded last to its Northeast.

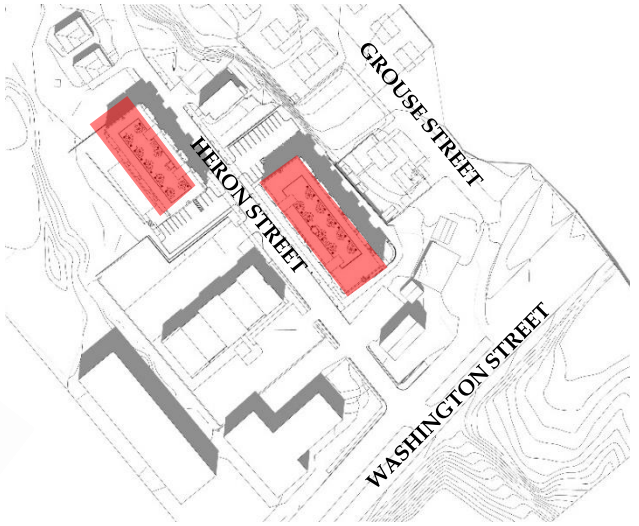
At 3:00 PM, new shadow for 11 Heron is cast in a Northeasterly direction to its rear property line with the Grouse Street residences. 26 Heron's shadow is cast onto the Heron Street's sidewalks, roadway, on the opposite 35 Heron Street property owned by the Proponent,

4.1.6 Summary

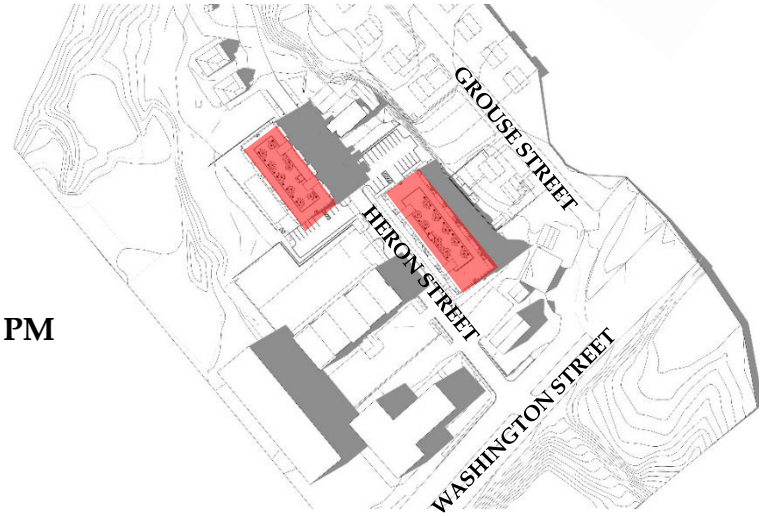
With the proposed height limits to 4-floors (approx..50-feet), the Proposed Project's shadow impacts are generally not extensive. New shadow is generally limited to Heron Street. Late afternoon shadow may extend to the rear property lines of the houses along Grouse Street. Overall, the Project's shadow impacts will be consistent with current patterns and will not adversely impact the Project Site and surroundings.



9.00 AM



12 NOON



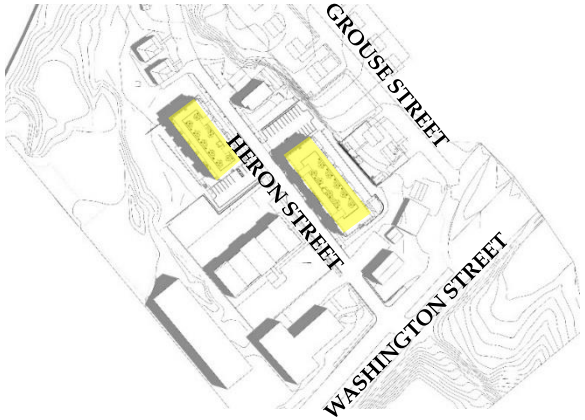
3.00 PM

	Sun Altitude	Sun Azimuth
9am	23°	113°
12pm	46°	161°
3pm	39°	137°

Fig 4-1

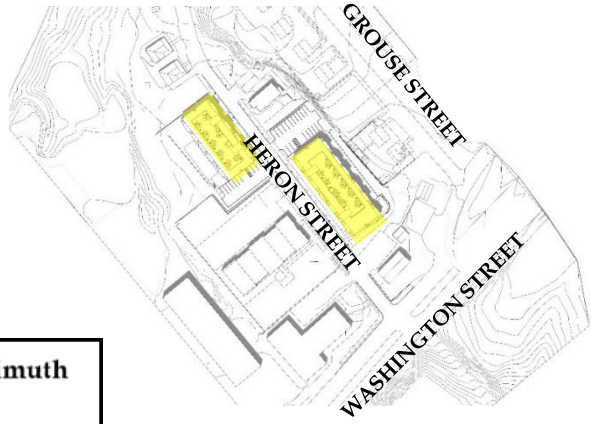
SHADOW STUDY MARCH 21 (Vernal Equinox)

NUNES TRABUCCO ARCHITECTS

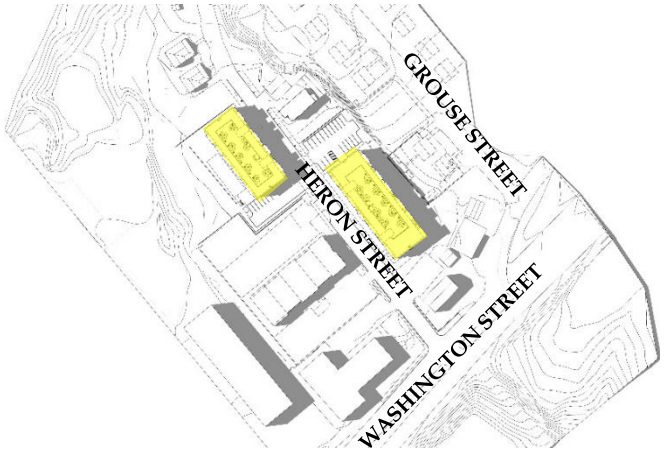


9.00 AM

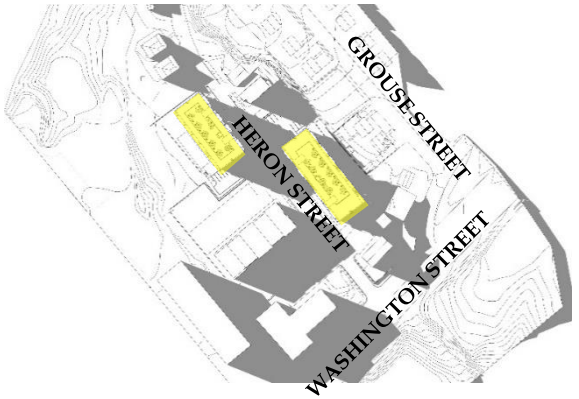
	Sun Altitude	Sun Azimuth
9am	40°	94°
12pm	69°	150°
3pm	56°	114°
6pm	24°	79°



12 NOON



3.00 PM

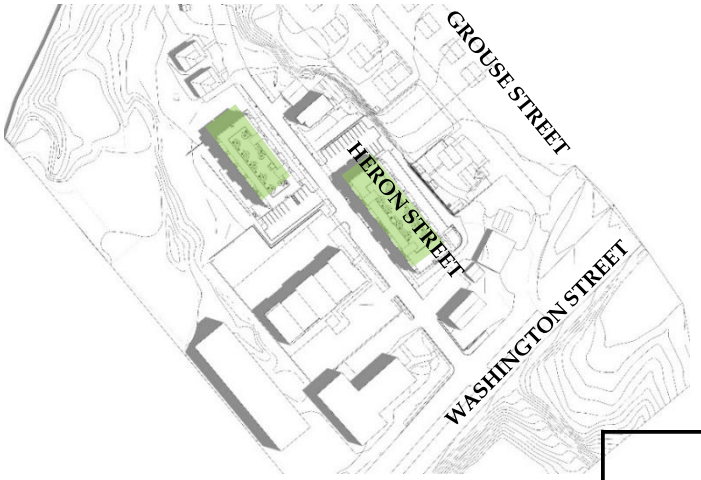


6.00 PM

SHADOW STUDY JUNE 21 (Summer Solstice)

Fig 4-2

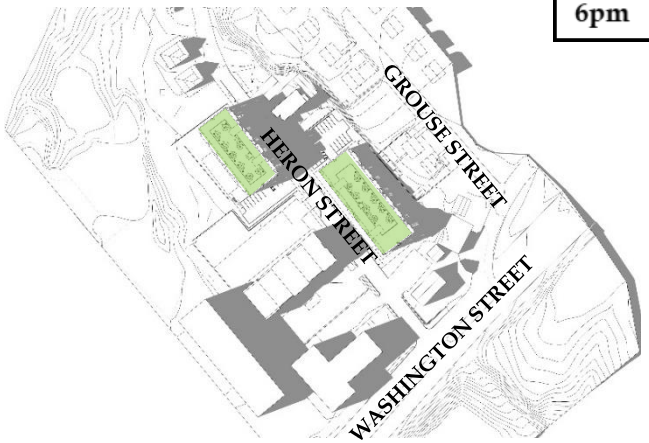
NUNES TRABUCCO ARCHITECTS



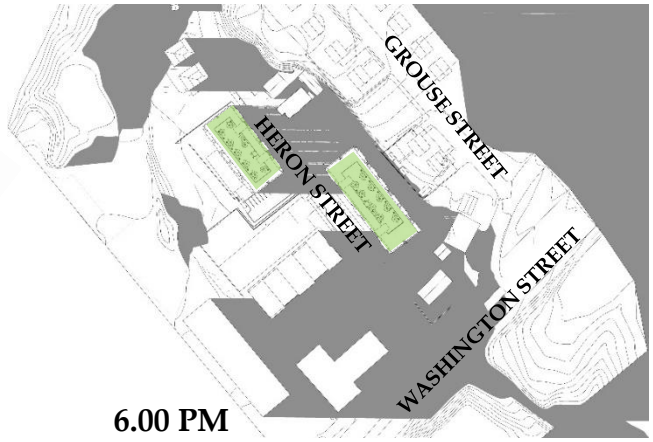
9.00 AM

12 NOON

	Sun Altitude	Sun Azimuth
9am	26°	115°
12pm	48°	166°
3pm	38°	133°
6pm	8°	-96°



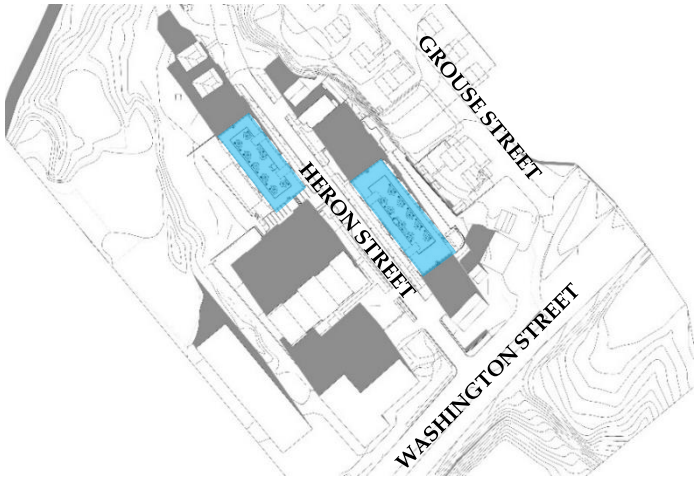
3.00 PM



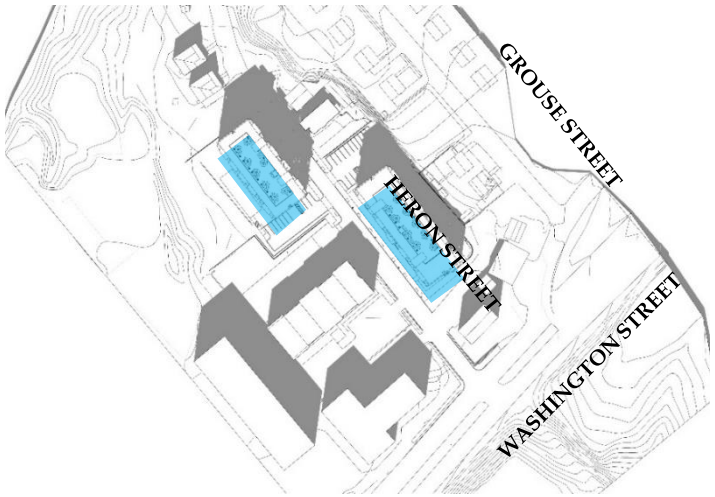
6.00 PM

SHADOW STUDY SEPTEMBER 21 (Atumnal Equinox)

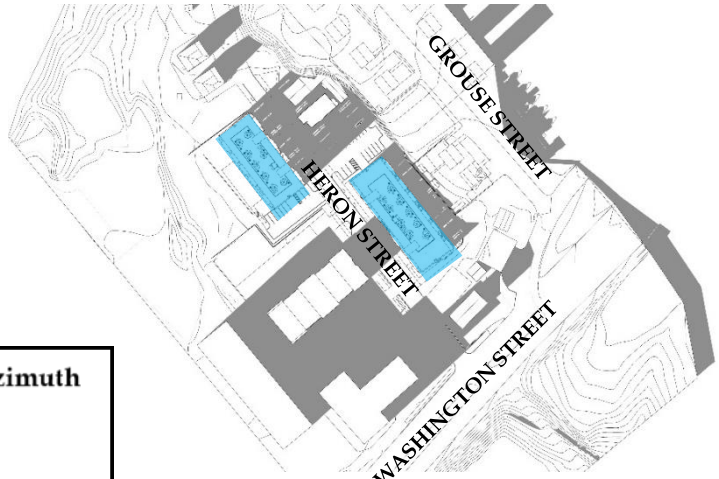
Fig 4-3



9.00 AM



12 NOON



3.00 PM

	Sun Altitude	Sun Azimuth
9am	7°	130°
12pm	24°	169°
3pm	17°	-147°

SHADOW STUDY DECEMBER 21 (Winter Solstice)

Fig 4-4

NUNES TRABUCCO ARCHITECTS

4.2 Air Quality

Tech Environmental performed air quality analyses for the Project. These analyses consisted of: 1) an evaluation of existing air quality; 2) an evaluation of potential carbon monoxide (CO) impacts from the operation of the Project's enclosed parking garage, and 3) a microscale CO analysis for intersections in the Project area that meet the BPDA criteria for requiring such an analysis.

4.2.1 Existing Air Quality

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

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

Table 4.2-2 summarizes the DEP air monitoring data, for the most recent available, complete, three-year period (2015-2017), that are considered to be representative of the project area. **Table 4.3-2** shows that the existing air quality in the Project area is generally much better than the NAAQS. The highest impacts relative to a NAAQS are for O_3, NO_2 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 not have a significant impact on local NO_2 and $PM_{2.5}$ concentrations.

Table 4.2-1. 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 ug/m^3 to 12 ug/m^3.
[g] Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.070 ppm (137 ug/m^3) (effective December 28, 2015); the annual PM_{10} standard was revoked in 2006.

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

Pollutant, Averaging Period	Monitor Location	Value ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
CO, 1-hour	Harrison Avenue, Boston	2,758	40,000	8%
CO, 8-hour	Harrison Avenue, Boston	1,438	10,000	14%
NO_2, 1-hour	Harrison Avenue, Boston	92.8	188	49%
NO_2, Annual	Harrison Avenue, Boston	41.6	100	42%
Ozone, 8-hour	Harrison Avenue, Boston	120	137	87%
PM_{10}, 24-hour	Harrison Avenue, Boston	28	150	19%
$PM_{2.5}$, 24-hour	Harrison Avenue, Boston	13.8	35	40%
$PM_{2.5}$, Annual	Harrison Avenue, Boston	5.8	12	50%
Lead, Quarterly	Harrison Avenue, Boston	0.017	1.5	12%
SO_2, 1-hour	Harrison Avenue, Boston	15.8	197	8%

Source: MassDEP, http://www.mass.gov/eea/agencies/massdep/air/quality/air-monitoring-reports-and-studies.html, downloaded February 20, 2018.

Notes:

(1) Annual averages are highest measured during the most recent three-year period for which data are available (2015 - 2017). Values for periods of 24-hours or less are highest, second-highest over the three-year period unless otherwise noted.

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

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

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

4.2.2 Impacts from Parking Garages

The Project includes two parking garages designed to provide parking spaces for 57 vehicles. An analysis of the worst-case air quality impacts from the proposed parking garages was performed (see **Appendix B**). The procedures used for this analysis are consistent with U.S. EPA's Volume 9 guidance.[3] CO emissions from motor vehicles operating inside the garages were calculated and the CO concentrations inside the garages and surrounding the Project were based on morning and afternoon peak traffic periods.

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

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

Garage Ventilation System

The proposed parking garages will require mechanical ventilation. The garage ventilation systems will be designed to provide adequate dilution of the motor vehicle emissions before they are vented outside. The design of the garage ventilation systems will meet all building code requirements. Full ventilation of the garages will require a maximum flow of approximately 7,700 cubic feet per minute (cfm), and 10,800 cfm, of fresh air for 26 Heron Street and 11 Heron Street, respectively. This quantity of air is designed to meet the building code and will be more than adequate to dilute the emissions inside the parking garages to safe levels before they are vented outside.

Peak Garage Traffic Volumes

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

Table 4.2-3. Peak-Hour Garage Traffic Volumes

Period	Entering (vehicles/hour)	Exiting (vehicles/hour)	Total (vehicles/hour)
Morning Peak Hour	5	14	19
Afternoon Peak Hour	14	9	23

Source: Howard Stein Hudson

Motor Vehicle Emission Rates

The U.S. Environmental Protection Agency (EPA) MOVES2014b emission factor model was used to calculate single vehicle CO emissions rates, for a vehicle speed of 5 mph. The inputs to the MOVES2014b model followed the latest guidance from the Massachusetts Department of Environmental Protection (DEP) and were performed for the future traffic year of 2025. The CO emission rate calculated by MOVES2014b, for vehicles moving at 5 miles per hour (mph), was 2.935 grams per vehicle-mile for each entering and exiting vehicle. These emission rates apply to wintertime conditions when motor vehicle CO emissions are greatest due to cold temperatures. MOVES2014b model output is provided in the **Appendix B.**

To determine the maximum one-hour CO emissions inside the garages it was necessary to estimate the amount of time each motor vehicle will be in the parking garages with its engine running. To be conservative, it was assumed that every car entering each garage will travel to the farthest parking spot, and that the vehicles leaving the garages will have to travel the same distance from inside the garage to the exit. The calculations in **Appendix B** show the distance each vehicle was calculated to travel in the garages for the weekday afternoon peak period.

Peak CO Emission Rates and CO Concentration Inside the Garages

The peak one-hour CO emission rates for the 26 Heron Street parking garage was calculated to be 0.012 grams per minute for the morning peak hour and 0.014 grams per minute for the afternoon peak hour. Applying the maximum volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the garage was calculated to be 0.047 parts of CO per million parts of air (ppm) for the morning peak hour and 0.057 ppm for the afternoon peak hour. Therefore, the peak one-hour CO concentration inside the garage will be 0.057 ppm with a peak one-hour emission rate of 0.014 grams/minute (0.00024 grams/second), corresponding to the afternoon peak period. These predictions represent conservative estimates of the peak garage CO emissions and concentrations.

The peak one-hour CO emission rates for the 11 Heron Street parking garage was calculated to be 0.019 grams per minute for the morning peak hour and 0.024 grams per minute for the afternoon peak hour. Applying the maximum volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the garage was calculated to be 0.056 parts of CO per million parts of air (ppm) for the morning peak hour and 0.068 ppm for the afternoon peak hour. Therefore, the peak one-hour CO concentration inside the garage will be 0.068 ppm with a peak one-hour emission rate of 0.068 grams/minute (0.00039 grams/second), corresponding to the afternoon peak period. These predictions represent conservative estimates of the peak garage CO emissions and concentrations.

Peak Ambient CO Concentration

Worst-case concentrations of CO from the parking garages were predicted for locations around the buildings using AERMOD model (Version 18081) in screening-mode. The results of the air quality analysis for locations outside and around the buildings are summarized in **Table 4.2-4**. The results in **Table 4.2-4** represent all outside locations on and near the Project Site, including nearby building air intakes and nearby residences. **Appendix B** contains the AERMOD model output.

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

AERMOD predicted that the maximum one-hour CO concentration from the parking garages will be 0.044 ppm (50.8 $\mu g/m^3$). This concentration represents the maximum CO concentration at any location surrounding the Project. AERSCREEN guidance allows the maximum eight-hour CO impact to be conservatively estimated by multiplying the maximum one-hour impact by a factor of 0.9 (i.e. the eight-hour impact is 90% of the one-hour impact). The maximum predicted eight-hour CO concentration was determined to be approximately 0.040 ppm (0.044 ppm x 0.9).

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare in ambient air, with a margin for safety. The NAAQS for CO are 35 ppm for a one-hour average and 9 ppm for an eight-hour average. The Commonwealth of Massachusetts has established the same standards for CO. The CO background values of 2.4 ppm for a one-hour period and 1.3 ppm for an eight-hour period were added to the maximum predicted garage ambient impacts to represent the CO contribution from other, more distant, sources. With the background concentration added, the peak, total, one-hour and eight-hour CO impacts from the parking garages, at any location around the building, will be no larger than 2.44 ppm and 1.34 ppm, respectively. These maximum predicted total CO concentrations (garage exhaust impacts plus background) are safely in compliance with the NAAQS. This analysis demonstrates that the operation of the parking garages will not have an adverse impact on air quality.

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

Location	Peak Predicted One-Hour Impact (ppm)	One-Hour NAAQS (ppm)	Peak Predicted Eight-Hour Impact (ppm)	Eight-Hour NAAQS (ppm)
Outside – Surrounding the Building* (Parking Garages)	2.44**	35 (NAAQS)	1.34**	9 (NAAQS)

NAAQS = Massachusetts and National Ambient Air Quality Standards for CO (ppm = parts per million)
* Representative of maximum CO impact at all nearby residences, buildings, and sidewalks.
** Includes background concentrations of 2.2 ppm for the one-hour period and 1.1 ppm for the eight-hour period.

4.2.3 Microscale CO Analysis for Selected Intersections

The Boston Planning & Development Agency (BPDA) and the DEP typically require a microscale air quality analysis for any intersection in the Project study area where the level of service (LOS) is expected to deteriorate to D and the proposed project causes a 10% increase in traffic (unless the increase in traffic volume is less than 100 vehicles per hour (vph)), 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 single intersection. The Washington Street/Heron Street intersection LOS is projected to deteriorate to an E for the afternoon peak period in the 2025. However, the traffic data shows this deterioration without the project moving forward. With only 28 vehicle trips generated by the project during the afternoon peak traffic hour, this represents an increase of approximately 1 vehicle trip every two minutes during the afternoon peak hour. This increase in traffic generates an additional 5 seconds in delay time in the Heron Street queue of the intersection. **Table 4.2-5** shows a comparison of the Existing (2019) and Build (2025) LOS at the four intersections.

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

Intersection	Existing LOS (AM/PM)	Build LOS (AM/PM)	Requires Analysis?
Washington Street / Heron Street	C/D	D/E	NO*

The LOS shown represents the overall delay at each intersection
*Project does not contribute to reduction in level of service.

Source: Howard Stein Hudson

Conclusions

The motor vehicle trip generation from the Project will not have a significant impact on motor vehicle delays and air pollutant emissions at the analyzed intersections. Therefore, the motor vehicle traffic generated by the Project will not have a significant impact on air quality at any intersection in the Project area and a microscale air quality analysis is not necessary for this Project.

4.3 Noise Impacts

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

4.3.1 Common Measures of Community Noise

The unit of sound pressure is the decibel (dB). The decibel scale is logarithmic to accommodate the wide range of sound intensities to which the human ear is subjected. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 70 dB is added to another sound of 70 dB, the total is only a 3-decibel increase (or 73 dB), not a doubling to 140 dB. Thus, every 3dB increase represents a doubling of sound energy.

For broadband sounds, a 3dB change is the minimum change perceptible to the human ear. **Table 4.3-1** gives the perceived change in loudness of different changes in sound pressure levels.[4]

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

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

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

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

The acoustic environment in an urban area such as the Project area results from numerous sources. Observations show that 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, nature noises such as insects, tree frogs, small animals, and general city noises such as street sweepers and police/fire sirens. Typical sound levels associated with various activities and environments are presented in **Table 4.3-2**.

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

4.3.2 Noise Regulations

Commonwealth Noise Policy

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

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

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

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

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

Local Regulations

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

Table 4.3-2. Common Indoor and Outdoor Sound Levels

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

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

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

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

4.3.3 Pre-Construction Sound Level Measurements

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

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

Monitoring Location #1: 21 Thrush Street

Monitoring Location #2: 4899 Washington Street

Monitoring Location #3: 46 Heron Street

Broadband (dBA) and octave band sound level measurements were made with a Bruel & Kjaer Type 2250 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 Bruel & Kjaer 2250 is equipped with a ½" precision condenser microphone and has an operating range of 5 dB to 140 dB and an overall frequency range of 3.5 Hz to 20,000 Hz. This meter meets or exceeds all requirements set forth in the ANSI S1.4-1983 Standards for Type 1 quality and accuracy and the State and City requirements for sound level instrumentation. Prior to any measurements, this sound analyzer was calibrated with an ANSI Type 1 calibrator that has an accuracy traceable to the National Institute of Standards and Technology (NIST). During all measurements, the Bruel & Kjaer was tripod mounted at approximately five feet above the ground in open areas away from vertical reflecting surfaces.

The sound level monitoring was conducted Tuesday night, March 26th, into Wednesday morning, March 27th, 2019. Weather conditions during the sound survey were conducive to accurate sound level monitoring: the temperature was 38°F, the skies were clear, and the winds were 7 to 10 miles per hour (mph), from the north. The microphone of the sound level analyzer was fitted with a 7-inch windscreen to negate any effects of wind-generated noise.

The nighttime sound level measurements taken in the vicinity of the Project 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, sirens and aircraft over-flights.

The results of the nighttime baseline sound level measurements are presented in **Table 4.3-4**. The nighttime background L_{90} level was 31.8 dBA at Location #1, 38.1 dBA at Location #2, and 30.3 dBA at Location #3. The octave band data in **Table 4.3-4** show that no pure tones were detected.

Noise monitoring at the Project Site during the afternoon peak traffic period was 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.

Daytime sound level measurements were taken to help estimate the L_{dn} for the Project Site. A 30-minute sound level measurement was taken during the afternoon, on Wednesday, March 26, 2018 between 3:08 p.m. and 3:38 p.m. at 46 Heron Street (the closest location to the project). The weather conditions during the sound survey were conducive to accurate sound level monitoring: the skies were clear, and the winds were approximately 10 mph. The microphone of the sound level analyzer was fitted with a 7-inch windscreen to negate any effects of wind-generated noise.

The daytime sound level measurements taken in the vicinity of the Project Site reveal sound levels that are typical for an urban area. The main sources of noise during the morning period sound level measurements were motor vehicle traffic on nearby local streets, passing sirens, and aircraft over-flights.

The L_{eq} measured during the afternoon period was 45.1 dBA at 46 Heron Street. The L_{eq} sound level measured during the nighttime at the same location was 32.8 dBA. Using both the daytime and nighttime L_{eq} sound levels, the calculated L_{dn} for the site is 44.4 dBA, which is well below the HUD guideline noise limit of 65 dBA.

Table 4.3-4. Nighttime Baseline Sound Level Measurements, March 26th – March 27th, 2019

Sound Level Measurement	(Location #1) 21 Thrush Street 12:14 a.m. – 12:44 a.m.	(Location #2) 4899 Washington Street 11:41 p.m. – 12:11 a.m.	(Location #3) 46 Heron Street 12:49 a.m. – 1:19 a.m.
Broadband (dBA)	35.4	54.2	32.8
Background (L_{90})	31.8	38.1	30.3
Octave Band L_{90} (dB)			
16 Hz	45.0	44.9	44.4
32 Hz	46.6	46.7	44.7
63 Hz	45.4	52.5	50.0
125 Hz	43.5	44.9	39.4
250 Hz	33.3	37.7	30.5
500 Hz	26.8	34.2	25.0
1000 Hz	22.5	32.6	21.5
2000 Hz	15.0	26.6	15.4
4000 Hz	11.6	16.2	11.6
8000 Hz	11.1	12.6	10.3
16000 Hz	10.3	10.5	10.1
Pure Tone?	No	No	No

4.3.4 Reference Data and Candidate Mitigation Measures

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

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

- (72) Packaged HVAC Units

The equipment listed above, which will be located on the building rooftops, was included in the noise impact analysis. The Project's traffic was not included in the noise analysis because motor vehicles are exempt under both the City of Boston and Massachusetts DEP 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 Project Site as a whole, to define a worst-case scenario. To be in compliance with City

and DEP regulations, the resultant sound level must not exceed the allowable octave band limits in the City of Boston noise regulation and must be below the allowable incremental noise increase, relative to existing noise levels, as required in the DEP Noise Policy.

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

To minimize the sound level at nearby residences, the following noise mitigation specifications will be incorporated into the final engineering design of the Proposed Project, as necessary, to comply with the applicable sound level criteria:

- Specification of low-noise rooftop packaged HVAC units.

4.3.5 Calculated Future Sound Levels

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.[5] The model is based on ISO 9613, an internationally recognized standard specifically developed to ensure the highly accurate calculation of environmental noise in an outdoor environment. ISO 9613 standard incorporates the propagation and attenuation of sound energy due to divergence with distance, surface and building reflections, air and ground absorption, and sound wave diffraction and shielding effects caused by barriers, buildings, and ground topography.

Receptors

The closest/worst-case sensitive (residential) location is to the south of the project area at 4903 Washington Street. This location was selected based on the proximity of the equipment (smaller distances correspond to larger noise impacts) and the amount of shielding by the project (residences further from the project will experience less shielding from the Project's rooftop mechanical equipment, which may result in larger potential noise impacts from the Project). 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.

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

The sound level impacts from the building's mechanical equipment were predicted at the closest residential location, as well as additional residential uses to the east (14 Heron Street), north (37 & 48 Heron Street) south, west (8 & 26 Grouse Street) and south (4895 & 4907 Washington Street) Figure 1 in Appendix C shows the locations of the modeled noise receptors. Noise impacts at other nearby noise-sensitive locations (residences, parks, etc.) farther from the Project Site will be less than those predicted for these receptors.

4.3.6 Compliance with State and Local Noise Standards

The City of Boston and DEP noise standards apply to the operation of the mechanical equipment at the proposed Project. The details of the noise predictions are presented in **Tables 4.3-5** through **4.3-12**. The sound impact analysis includes the simultaneous operation of the Project's rooftop HVAC equipment. The predicted sound levels are worst-case predictions that represent all hours of the day, as the analysis assumes full operation of the mechanical equipment 24-hours a day. The typical sound level impacts from the mechanical equipment will likely be lower than what is presented here, since most of the mechanical equipment will operate at full-load only during certain times of the day and during the warmer months of the year, it is not likely that all of the mechanical equipment will operate at the same time. Sound level impacts at locations farther from the Project (e.g. other residences, etc.) will be lower than those presented in this report.

City of Boston Noise Standards

The noise impact analysis results, presented in **Tables 4.3-5** through **4.3-12**, reveal that the sound level impact at the upper floors of the closest residences will be between 27.0 and 35.3 dBA. The smallest sound level impact of 27.0 dBA is predicted to occur at 26 Grouse Street. The largest sound level impact of 35.3 dBA is predicted to occur at 4903 Washington Street. Noise impacts predicted at all locations are in compliance with the City of Boston's nighttime noise limit (50 dBA) for a residential area. Note that sound levels from the Project will be below the residential nighttime limits at all times. The results also demonstrate compliance with the City of Boston, residential, non-daytime, octave band noise limits at both closest locations.

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

Massachusetts DEP Noise Regulations

The predicted sound level impacts at the worst-case residential locations were added to the measured L_{90} value of the quietest daily hour to test compliance with DEP's noise criteria. Assuming the Project's mechanical noise is constant throughout the day, the Project will cause the largest increase in sound levels during the period when the lowest background noise occurs. Minimum background sound levels (diurnal) typically occur between 12:00 a.m. and 4:00 a.m.

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

As shown in **Tables 4.3-5** through **4.3-12**, 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 DEP allowed noise increase of 10 dBA. The noise predictions for each octave band indicate that the mechanical equipment will not create a pure tone condition at any location.

Table 4.3-5. Estimated Future Sound Level Impacts – Anytime 37 Heron Street – Location R1

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	29
63 Hz	67	29
125 Hz	61	29
250 Hz	52	29
500 Hz	46	26
1000 Hz	40	27
2000 Hz	33	21
4000 Hz	28	17
8000 Hz	26	3
Broadband (dBA)	**50**	**30**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #3)	30.3
11-26 Heron Street Project*	30.3
Calculated Combined Future Sound Level	33.3
Calculated Incremental Increase	+3.0
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-6. Estimated Future Sound Level Impacts – Anytime 48 Heron Street – Location R2

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	32
63 Hz	67	33
125 Hz	61	33
250 Hz	52	33
500 Hz	46	29
1000 Hz	40	30
2000 Hz	33	24
4000 Hz	28	20
8000 Hz	26	8
Broadband (dBA)	**50**	**34**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #1)	31.8
11-26 Heron Street Project*	33.6
Calculated Combined Future Sound Level	35.8
Calculated Incremental Increase	+4.0
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-7. Estimated Future Sound Level Impacts – Anytime, 14 Heron Street – Location R3

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	29
63 Hz	67	29
125 Hz	61	29
250 Hz	52	29
500 Hz	46	26
1000 Hz	40	28
2000 Hz	33	22
4000 Hz	28	17
8000 Hz	26	3
Broadband (dBA)	**50**	**31**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #2)	38.1
11-26 Heron Street Project*	30.7
Calculated Combined Future Sound Level	38.8
Calculated Incremental Increase	+0.7
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-8. Estimated Future Sound Level Impacts – Anytime, 4907 Washington Street – Location R4

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	33
63 Hz	67	35
125 Hz	61	36
250 Hz	52	35
500 Hz	46	30
1000 Hz	40	31
2000 Hz	33	25
4000 Hz	28	21
8000 Hz	26	9
Broadband (dBA)	**50**	**35**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #2)	38.1
11-26 Heron Street Project*	34.6
Calculated Combined Future Sound Level	39.7
Calculated Incremental Increase	+1.6
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-9. Estimated Future Sound Level Impacts – Anytime, 4903 Washington Street (Closest/Worst Case Residence) – Location R5

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	35
63 Hz	67	35
125 Hz	61	34
250 Hz	52	35
500 Hz	46	30
1000 Hz	40	32
2000 Hz	33	26
4000 Hz	28	23
8000 Hz	26	12
Broadband (dBA)	**50**	**35**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #2)	38.1
11-26 Heron Street Project*	35.3
Calculated Combined Future Sound Level	39.9
Calculated Incremental Increase	+1.8
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-10. Estimated Future Sound Level Impacts – Anytime, 4895 Washington Street – Location R6

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	34
63 Hz	67	34
125 Hz	61	32
250 Hz	52	31
500 Hz	46	27
1000 Hz	40	28
2000 Hz	33	23
4000 Hz	28	19
8000 Hz	26	7
Broadband (dBA)	**50**	**32**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #2)	38.1
11-26 Heron Street Project*	31.5
Calculated Combined Future Sound Level	39.0
Calculated Incremental Increase	+0.9
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-11. Estimated Future Sound Level Impacts – Anytime, 8 Grouse Street – Location R7

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	29
63 Hz	67	29
125 Hz	61	28
250 Hz	52	28
500 Hz	46	25
1000 Hz	40	27
2000 Hz	33	21
4000 Hz	28	17
8000 Hz	26	3
Broadband (dBA)	**50**	**30**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #3)	30.3
11-26 Heron Street Project*	30.0
Calculated Combined Future Sound Level	33.2
Calculated Incremental Increase	+2.9
Compliance with DEP Noise Policy?	Yes

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

Table 4.3-12. Estimated Future Sound Level Impacts – Anytime, 26 Grouse Street – Location R8

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	26
63 Hz	67	26
125 Hz	61	26
250 Hz	52	26
500 Hz	46	23
1000 Hz	40	24
2000 Hz	33	18
4000 Hz	28	13
8000 Hz	26	0
Broadband (dBA)	**50**	**27**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #3)	30.3
11-26 Heron Street Project*	27.0
Calculated Combined Future Sound Level	32.0
Calculated Incremental Increase	+1.7
Compliance with DEP Noise Policy?	Yes

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

4.3.7 Conclusions

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

4.4 Solid and Hazardous Waste Materials

4.4.1 Solid Waste

During the preparation of the Site, debris, including asphalt, trash, and demolition debris will be removed from the Project Site. The Proponent will ensure that waste removal and disposal during

construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste.

Upon completion of construction, the Project is estimated to generate approximately 100 tons of solid waste per year, based on the assumption that each of the 72 units will each generate approximately 1.4 tons per year. A significant portion of the waste will be recycled. The project will also include ambitious goals for construction waste management in order to meet the requirements for the LEED™ rating system. This strategy will divert demolition and construction waste by reusing and recycling materials.

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

4.4.2 Hazardous Waste

A Phase I Environmental Site Assessment was completed for the property in March 2019 for the Proponent. The assessments for 11 and 26 Heron Street included historical and regulatory research, site visit, and the professional judgment of Goldman Environmental Consultants, the hazardous waste engineer, as to the existence of or potential for contamination of the site with oil and/or hazardous materials. The assessment of both addresses revealed no evidence of *recognized environmental conditions* (RECs), or historical RECs (HRECs), although data gaps exist because of the lack of access to the interior of the site buildings.

The following *de minimus* conditions and possible *business environmental risks* were also identified for 11 Heron Street assessment including:

- The aboveground storage tank (AST) is considered a *de minimus* risk although at the time of the site visit the visible portions of the tank appeared to be in fair condition.
- The sump pump observed in the 11 Heron Street building basement due to high groundwater levels in the area, the sump pump is considered a *de minimus* condition.
- Based on visual observations, the onsite storage of limited quantities of building and equipment maintenance products (i.e. paint, gasoline), with the containers found in sound condition, with no evidence of spills or releases noted in the vicinity of the stored chemicals or other portions of the 11 Heron Street building, is considered a *de minimus* condition. The same conclusion was registered for the various debris observed along the exterior of the site building, and equipment in the basement (although if fluid leakage occur in the future, could be a source of PCBs).
- While the project engineer indicated that the soils were clean urban fill, urban fill soils with metals and/or polycyclic aromatic carbons (PAHs) may possibly be present in site soil at

elevated concentrations, representing a business environmental risk, suggesting that during construction, the urban fill soils, if present, should be managed in accordance with relevant state and local regulations and guidelines to insure the appropriate on-site handling and reuse and/or off-site reuse/disposal of excess soil generated by the construction activities.

The following non-ASTM-scope issues were also identified during the 11 Heron Street assessment including:

- Based on the date of construction of the site buildings (1955), asbestos-containing building materials (ACBM) may be present. ACM is considered as a business environmental risk due to potential abatement costs.
- Also based on the date of construction (1955) for both site buildings, the original painted surfaces may contain elevated levels of lead. The suspect LBP is considered as a business environmental risk due to potential abatement costs.

The following *de minimus* conditions and possible *business environmental risks* were identified for 26 Heron Street assessment including:

- While the project engineer indicated that the soils were clean urban fill, urban fill soils with metals and/or polycyclic aromatic carbons (PAHs) may possibly be present in site soil at elevated concentrations, representing a business environmental risk, suggesting that during construction, the urban fill soils, if present, should be managed in accordance with relevant state and local regulations and guidelines to insure the appropriate on-site handling and reuse and/or off-site reuse/disposal of excess soil generated by the construction activities.

The following non-ASTM-scope issues were also identified during the 26 Heron Street assessment including:

- Based on the date of construction of the site buildings (1960), asbestos-containing building materials (ACBM) may be present. ACM is considered as a business environmental risk due to potential abatement costs.
- Also based on the date of construction (1960) for both site buildings, the original painted surfaces may contain elevated levels of lead. The suspect LBP is considered as a business environmental risk due to potential abatement costs

Based on limited reconnaissance from public thoroughfares and site boundaries of the surrounding properties, there was no obviously evidence of improperly stored or disposed OHM on exterior portions of the abutting parcels, or other evidence of adverse environmental conditions in connection with surrounding properties' current operations.

If needed, the project proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the project, including proper management and/or off-site disposal of contaminated soil and groundwater encountered during construction. If necessary, the LSP will

also prepare the required Massachusetts Contingency Plan (MCP) (310 CMR 40.0000) regulatory submittals.

4.5 Geotechnical/Groundwater Impacts Analysis

With the potential for both unsuitable soils and the presence of seasonal high groundwater within the range of 2-4 feet below existing grade, measures will be taken to determine the limit of fill material and the composition of the underlying native soils. It is recommended that test boring be performed at both sites to obtain data necessary to ensure that suitable structural material is in place and proper drainage is installed for proposed structures and parking areas for both 11 and 26 Heron Streets.

As part of the demolition phase of construction, all organic and unsuitable fill will be removed from both sites. All fill imported to the site for foundation and parking areas will be clean structural grade material that will be compacted in lifts. Ordinary Fill should be placed in maximum 6-inch lifts and compacted to at least 92 percent of the material's Modified Proctor maximum dry density. Fill be placed within the footprint of the proposed buildings should consist of gravel fill placed in maximum 6-inch lifts and compacted to at least 95 percent of the material's Modified Proctor maximum dry density. Compaction testing will be performed during this process to ensure that proper compaction is achieved. Results of all testing will be provided to the design engineer as part of the structural design of the foundations.

Elevations of the foundations will be set to ensure that proper drainage is achieved for the foundations. Any groundwater removed from the excavation will be discharged under a NPDES general or exclusion permit. Construction mitigation measures will be incorporated into the Project to avoid the potential for ground movement and settlement during excavation, and potential impacts on utility lines and roadways.

4.6 Construction Impact

The following section describes impacts likely to result from the 11-26 Heron Street Project construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager who will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures. As was discussed with the adjacent Stony Brook Condominium Association, 11 Heron Street will be constructed initially and the Proponent will use the 26 Heron Street site for temporary parking for residents of Heron Street as well as for storage of building materials

4.6.1 Construction Management Plan

The Proponent will comply with applicable state and local regulations governing construction of the Project. The Proponent will require that the general contractor comply with the Construction Management Plan, ("CMP") developed in consultation with and approved by the Boston Transportation Department ("BTD") prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the

Project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

Proper pre-construction planning with the neighborhood will be essential to the successful construction of this Project. Construction methodologies that will ensure safety will be employed; signage will include construction manager contact information with emergency contact numbers.

The Proponent will also coordinate construction with other ongoing projects in the neighborhood.

4.6.2 *Proposed Construction Program*

Construction Activity Schedule

The construction period for the Proposed Project is expected to last approximately 14 months, beginning in the 4th Quarter 2019 and reaching completion in the 3rd Quarter 2021. The City of Boston Noise and Work Ordinances will dictate the normal work hours, which will be from 7:00 AM to 6:00 PM, Monday through Friday.

Perimeter Protection/Public Safety

The CMP will describe any necessary sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary to ensure safety around the Site perimeter. If possible, the sidewalk will remain open to pedestrian traffic during the construction period. Barricades and secure fencing will be used to isolate construction areas from pedestrian traffic. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety.

Proper signage will be placed at every corner of the Project as well as those areas that may be confusing to pedestrians and automobile traffic.

The Proponent will continue to coordinate with all pertinent regulatory agencies and representatives of the surrounding neighborhoods to ensure they are informed of any changes in construction activities.

4.6.3 Construction Traffic Impacts

Construction Vehicle Routes

Specific truck routes will be established with BTD through the CMP. These established truck routes will prohibit travel on any residential side streets. Construction contracts will include clauses restricting truck travel to BTD requirements. Maps showing approved truck routes will be provided to all suppliers, contractors, and subcontractors. It is anticipated that all deliveries will be via Washington Street directly to the site and facilitated by a police detail.

Construction Worker Parking

The number of workers required for construction of the Project will vary during the construction period. However, it is anticipated that all construction workers will arrive and depart prior to peak traffic periods.

Limited parking in designated areas of the Project Site and lay-down area(s) will be allowed. Parking will be discouraged in the immediate neighborhood. Further, public transit use will be encouraged with the Proponent and construction manager working to ensure the construction workers are informed of the public transportation options serving the area. Terms and conditions related to worker parking will be written into each subcontractor's contract. The contractor will provide a weekly orientation with all new personnel to ensure enforcement of this policy.

Pedestrian Traffic

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

4.6.4 Construction Environmental Impacts and Mitigation

Construction Air Quality

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

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

These measures may include:

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

Construction Noise Impacts

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

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

4.6.5 Rodent Control

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

5.0 HISTORIC RESOURCES COMPONENT

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

5.1 Historic Resources on the Project Site and Property History

Based on a search of the Sanborn Maps as a part of the Phase 1 Environmental Site Assessment, as far back as the 1896 Sanborn Map Heron Street was depicted, with the site being undeveloped.

The 1929 Sanborn Map indicated that the 11 Heron Street site vicinity was lightly developed with residential dwellings at this time, with Heron Street extending directly to the northerly located Thrush Street.

On the 1944 Sanborn map, the site still appeared undeveloped with Heron Street depicted as a dirt road.

No significant changes were noted on the site or in the vicinity until 1956 and 1964 when the two sites were depicted as developed with a one-family residential dwellings.

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

5.2 Historic Districts and Resources

Historic resources within one-quarter-mile radius of the Proposed Project are summarized in **Table 5-1** that follows and listed on **Figure 5-1. Historic Resources**.

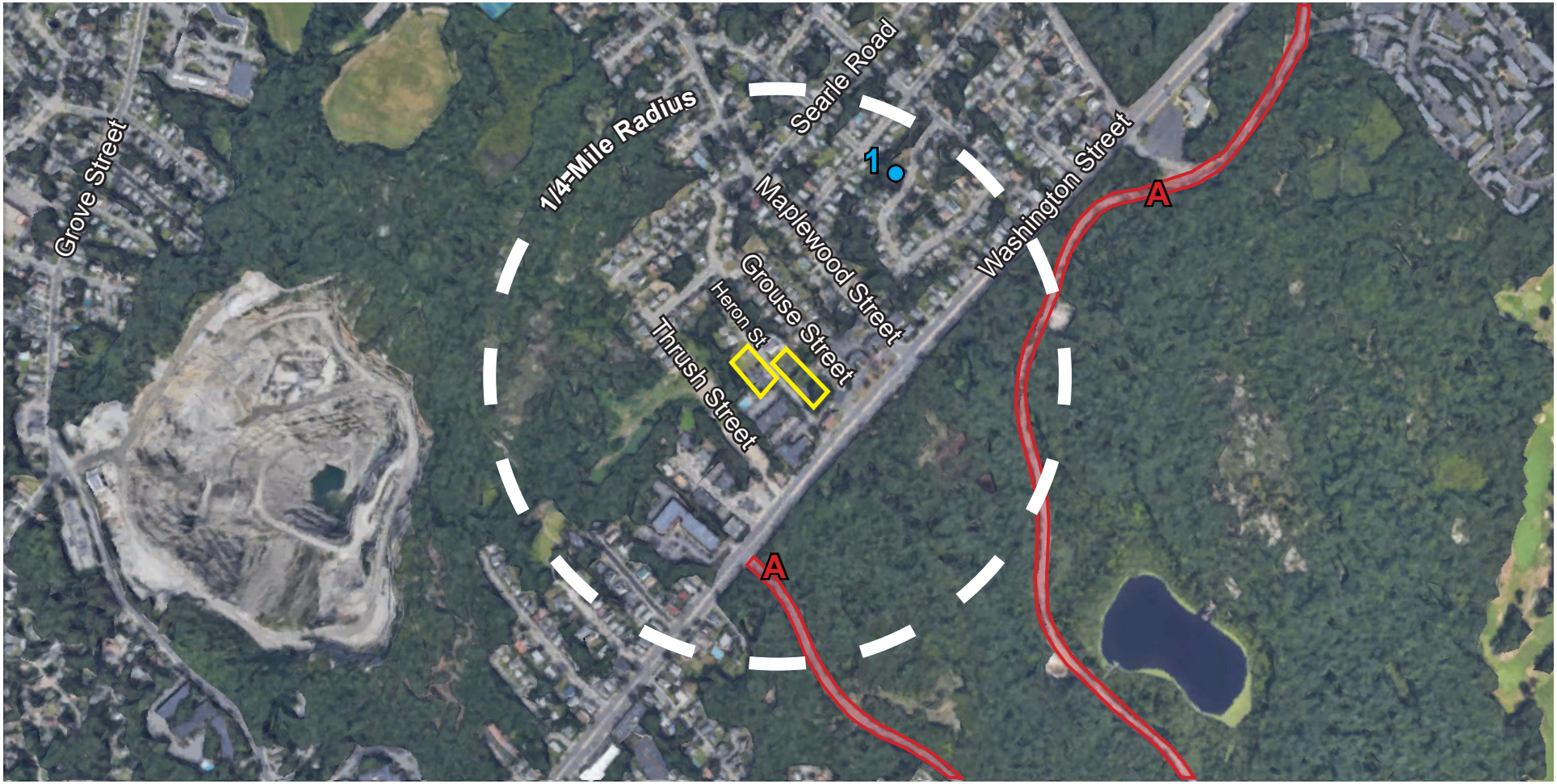
Table 5.1. Historic Resources in the Vicinity of the Project Site

Key to Historic Resources in Figure 5-1	Historic Resource	Source of Listing
National Register of Historic Places		
A	Stony Brook Reservation Parkways	MHC Inventory Areas
Properties Included the MA Inventory of Historical and Archaeological Assets		
1	Hugh W. Morrison Two-Family House	MHC Inventory

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

5.3 Archaeological Resources

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



MLF CONSULTING LLC

Figure 5-1. Historic Resources

Historic Resources Component

6.0 INFRASTRUCTURE SYSTEMS COMPONENT

The existing infrastructure surrounding the site appears to be sufficient to service the needs of the Proposed Projects. The following sections describe the existing sewer, water, and drainage systems surrounding the site and explain how these systems will service the development. The analysis also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts.

A detailed infrastructure analysis will be performed when the Project proceeds into the Design Development Phase. The Project's team will coordinate with the appropriate utilities to address the capacity of the area utilities to provide services for the new building. A Boston Water and Sewer Commission (BWSC) Site Plan and General Service Application is required for the new water, sanitary sewer, and storm drain connections. In addition, a Storm Water Pollution Prevention Plan (SWPPP) will be submitted specifying best management measures for protecting the BWSC drainage systems during construction.

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

6.1 Sanitary Sewer System

6.1.1 Existing Sewer System

The Boston Water and Sewer Commission owns and maintains the sanitary sewer system adjacent to the site on Washington St (See **Figure 6-1**). BWSC record drawings indicate an existing 12-inch sanitary sewer line as it runs southerly along Washington St to the south of the Project. The existing residences on Heron St do not tie into the existing sewer at the intersection of Heron Street and Washington Street. The existing residences tie into an existing pump station that services the apartment building at 14 Heron Street that is then pumped cross country to the south-west via a 4" force main into the existing gravity sewer system on Willet Street which then flows southerly to Washington Street.

The existing Project Sites consist of two residential dwellings that flow into this existing sewer system.

6.1.2 Proposed Sewer Generation

The Proposed Project will generate an estimated 13,200 gallons per day (gpd) based on design sewer flows provided in 310 CMR 15.000-The State Environmental Code, Title 5 and the proposed building program as summarized in **Table 6-1**.

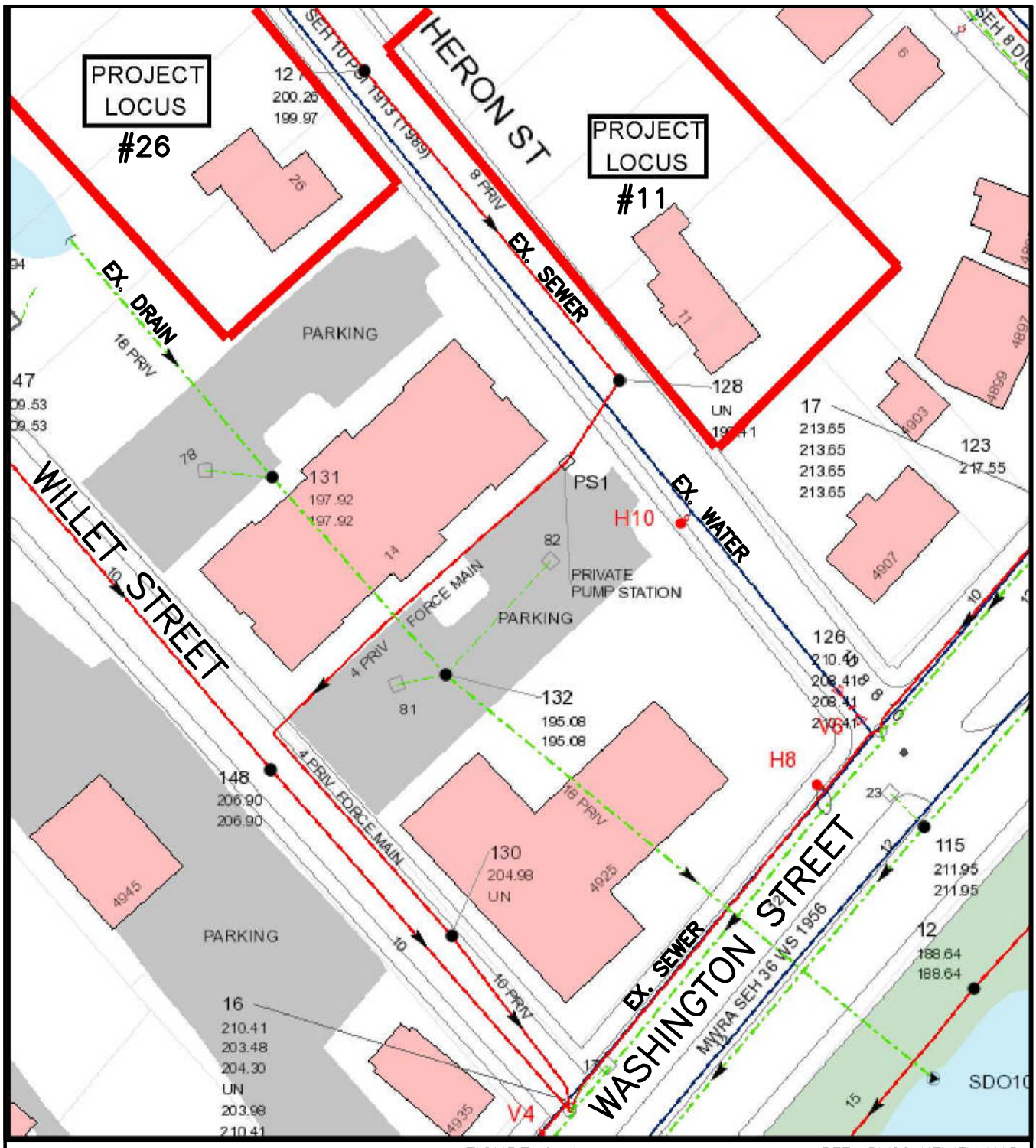


FIGURE 6-1
BWSC UTILITY SYSTEM MAP

REF: BWSC UTILITY MAP

J.M. GRENIER ASSOCIATES, INC.
787 HARTFORD TURNPIKE
SHREWSBURY, MASSACHUSETTS 01545
TELE NO.:(508) 845-2500 FAX NO.:(508) 842-0800

Table 6-1. Projected Sanitary Sewer Flows

Use: Residential	Quantity: (bedrooms)	Unit Flow Rate: (gallons per day)	Estimated Maximum Daily Flow (gpd)
11 Heron Street	75 bedrooms	**110 gpd / bedroom**	**8,250 gpd**
26 Heron Street	**55 bedrooms**	**110 gpd / bedroom**	**6,050 gpd**
Total	**130 bedrooms**		**14,300 gpd**

6.1.3 Sanitary Sewage Connection

It is anticipated that the proposed building's sanitary services will tie into the 12-inch sanitary sewer main in Washington Street. It is expected that each building will have its own pump station that will each pump independently to a sewer manhole within Heron Street and flow gravity through an 8" gravity line into the Washington Street sewer line. Parking garage floor drains will be routed through an oil and sand trap in accordance with the BWSC's Requirements for Site Plans, prior to discharge to the BWSC sanitary sewer system. The Proponent will submit a Site Plan to the BWSC for review and approval.

6.1.4 Sewer System Mitigation

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

6.2 Water System

6.2.1 Existing Water Service

The water mains in the vicinity of the Project Site are owned and maintained by BWSC (see **Figure 6-1**). BWSC record drawings indicate there is an existing 10-inch water line that runs within Heron St. that connects into an existing 12-inch line within Washington Street. The existing site currently have water services for the residential dwellings located on each lot.

The site is within the service radius of existing fire hydrants. There are two hydrants (H10) which is on Heron Street and (H8) which is on Washington Street just south of Heron Street. The Proponent will confirm that the hydrants are sufficient for the development with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

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

6.2.2 Anticipated Water Consumption

The Project's water demand estimate for domestic services is based on the project's estimated sewage generation, plus a factor to account for consumption, system losses, and other usages to estimate an average water demand. The total estimated water demand is 15,730 gpd. The water for the Project will be supplied by BWSC.

6.2.3 Proposed Water Service

It is anticipated that the domestic water and fire protection services for the Project will be directly tapped from the 10-inch water main in Heron Street. The water supply systems servicing the building will be gated in order to minimize public hazard or inconvenience in the event of a water main break. Final locations and sizes of the services will be provided on a Site Plan during the detailed design phase and submitted to BWSC for review and approval.

Water service to the building will be metered in accordance with BWSC's requirements. The property owner will provide a suitable location for a Meter Transmission Unit (MTU) as part of BWSC's Automatic Meter Reading System. A backflow preventer will be installed on the fire protection service and will be coordinated with BWSC's Cross Connection Control Department.

6.2.4 Water Supply System Mitigation

As discussed in the Sewer System Mitigation Section, water conservation measures such as the use of water-efficient toilets, low-flow lavatory faucets, and aerated showerheads in compliance with all pertinent Code requirements are being considered to reduce potable water usage. Water usage for landscape irrigation will be significantly reduced by the selection of native and adaptive plantings, and using soil moisture sensors as part of the irrigation system.

6.3 Storm Drainage System

6.3.1 Existing Drainage Conditions

The existing sites are developed with single family house structures and associated driveway pavement. Stormwater runoff from the paved areas flow overland to the catch-basins within the existing Heron Street roadway. Ultimately all runoff from these lots flow to the south-west and into an existing 18" drainage culvert pipe that flows southerly toward Washington Street.

The storm drainage system that receives flow from the two sites is privately owned and maintained.

6.3.2 Proposed Drainage Systems

The Proposed Project is expected to substantially improve the water quality and will meet the Boston Water and Sewer Commission (BWSC) Site Plan requirements. The existing storm drain utility infrastructure surrounding the Site appears to be of adequate capacity to service the needs of the Project. The Project will result in an increase in impervious area, but will improve the quality and attenuate the quantity of stormwater runoff being discharged to the storm drain system through the installation of an on-site infiltration system. It is anticipated that the equivalent of 1-inch over the site's impervious area can be recharged.

In addition to the installation of an on-site infiltration system, stormwater runoff within Heron St. will be upgraded to address puddling issues and will be treated through the use of deep sump catch basins and water quality treatment units. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

6.3.3 Water Quality

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

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

6.4 Electric Systems

Eversource owns and maintains the electrical transmission system in the vicinity of the Proposed Project. There is existing service in the Project Area. It is expected that electrical service can be provided by Eversource. Electric power supply design, and any upgrades that may be required, will be further coordinated with Eversource as the design for each phase progresses. The Proponent will investigate energy conservation measures, including high efficiency lighting.

6.5 Telephone and Cable Systems

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

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

6.6 Steam and Gas Systems

The Proposed Project is not expected to require steam service and there is no steam infrastructure in the Project area.

National Grid provides natural gas in the Project area. The project is expected to use natural gas for heating and domestic hot water. It is expected that there is adequate supply of natural gas in the area. The actual size and location of the building services will be coordinated with National Grid.

6.7 Utility Protection During Construction

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

7.0 TRANSPORTATION COMPONENT

7.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the proposed redevelopment to be located at 11-26 Heron Street (the "Project" and/or "Site"), in Boston's West Roxbury neighborhood. This transportation study adheres to the Boston Transportation Department's (BTD) Transportation Access Plan Guidelines and the Boston Planning and Development Agency (BPDA) Article 80 development review process. The study includes an evaluation of existing condition, future conditions with and without the Project, projected parking demand, transit services, and pedestrian and bicycle activity. The project is not expected to have a significant impact on the existing neighborhood or surrounding transportation facilities.

7.2 Project Description

The Project site is located at 11-26 Heron Street and includes several parcels of land on both sides of Heron Street. The Site is bounded by Grouse Street to the north, an unbuilt paper street portion of Willet Street to the south, and adjacent residential buildings to the east and west.

The Project will include the construction of two new buildings, containing a total of approximately 72 residential units with partially below-grade parking on the ground floor and exterior parking located adjacent to each building. 11 Heron Street will be located along the north side of Heron Street, and consist of 40 residential units with 52 total parking spaces including 33 indoor spaces and 19 exterior spaces. 26 Heron Street will be located along the south side of Heron Street and will consist of 32 residential units with 33 total parking spaces including 24 indoor spaces and 9 exterior spaces.

The Project will reconstruct Heron Street, a private-way open to public travel. Heron Street is in poor condition and has major drainage deficiencies. Water pools at the low point of the roadway and often takes days to completely drain. During the winter the frequent freeze-thaw and drainage issues persist creating a major hazard to all roadway users. The Project will regrade and reconstruct the roadway while also adding sidewalks with vertical granite curbs, tree pits, and street lights along both the north side and south side of the roadway between the new buildings and Washington Street.

7.2.1 Study Area

The transportation study area is generally bounded by the dead end of Heron Street to the west, Grouse Street to the north, an unbuilt paper street portion of Willet Street to the south, and Washington Street to the east. The study area includes the following unsignalized intersection of Washington Street and Heron Street, shown in **Figure 7-1**:

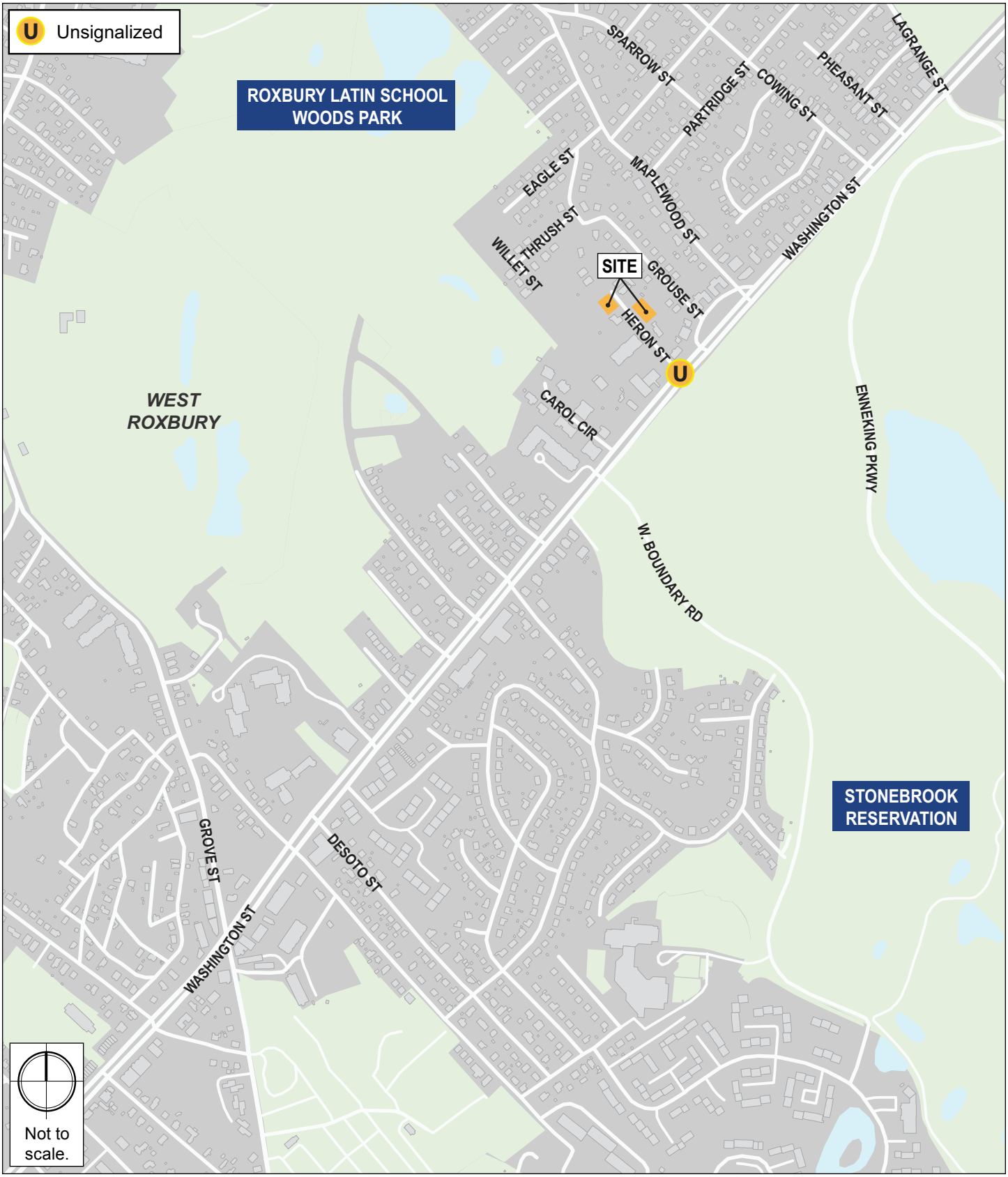


Figure 7-1.
Study Area Intersections

7.2.2 Study Methodology

The Existing (2019) Condition analysis includes an inventory of the existing transportation condition such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site condition. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. The traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation condition analysis evaluates potential transportation impacts associated with the Project. Long-term impacts are evaluated for the year 2026, based on a seven-year horizon from the year of the filing of this traffic study.

The No-Build (2026) Condition includes general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project site.

The Build (2026) Condition includes a net increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-Build (2026) Condition. Expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies are identified.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction related issues that are necessary to accommodate the Project.

An evaluation of short-term traffic impacts associated with construction activities is also provided.

7.3 Existing (2019) Condition

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

7.3.1 Existing Roadway Condition

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

Washington Street is a two-way, four-lane roadway located to the southeast of the Project site. Washington Street is classified as an urban principal arterial under City of Boston jurisdiction and runs predominately in a northeast-southwest direction between City Hall in downtown Boston to the north and Water Street in South Walpole to the south. In the vicinity of the site, on-street parking is provided along both sides of the roadway, a concrete sidewalk is provided along the west side of the roadway, and an asphalt sidewalk is provided along the east side of the roadway. A concrete median separates the northbound and southbound traffic, with breaks to allow turns, and left-turn lane pockets, where necessary.

Heron Street is a two-way, dead-end, unmarked roadway located adjacent to the Project. Heron Street is classified as a private roadway and runs predominately in an east-west direction to the northwest of Washington Street. On-street parking and an asphalt sidewalk is provided along the south side of the roadway.

7.3.2 Existing Intersection Condition

The existing study area intersections are described below. Intersection characteristics such as traffic control, lane usage, pedestrian facilities, pavement markings, and adjacent land use are described.

Washington Street/Heron Street is three-legged, unsignalized intersection located to the southeast of the Project site. The Heron Street eastbound approach consists of one shared left-turn/right-turn lane. The Washington Street northbound approach consists of two through only lanes. The Washington Street southbound approach consists of two lanes, a through lane and a shared through/right-turn lane. The northbound and southbound approaches of Washington Street are separated by a concrete median. On-street parking is provided along the eastbound and southbound approaches to the intersection, and a bus stop is provided along the northbound approach to the intersection. A crosswalk with curb ramps is provided across Heron Street along the west side of Washington Street.

7.3.3 Existing Parking and Curb Use

An inventory of the on-street parking in the vicinity of the Project was collected. On-street parking is available along the south side of Heron Street and along both sides of Washington Street and is generally unrestricted. The on-street parking regulations within the study area are shown in **Figure 7-2**.

7.3.4 Car Sharing Services

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

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who do not own cars. There is one nearby car sharing location at 5120 Washington Street, located within a 15-minute walk of the Project site. The nearby car sharing service is shown in **Figure 7-3.**

7.3.5 Existing Traffic Data

Traffic volume data was collected in the study area intersections on January 16, 2019. Turning Movement Counts (TMCs) were conducted during the weekday from 7:00 a.m. – 6:00 p.m. at the study area intersection. The TMCs collected vehicle classification including car, heavy vehicle, pedestrian, and bicycle movements. Based on the TMC data, the vehicular traffic peak hours for the study area intersection are generally 7:45 a.m. – 8:45 a.m. and 4:30 p.m. – 5:30 p.m. The detailed traffic counts are provided in **Appendix D.**

In order to account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT were reviewed. The most recent (2016) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the January 2019 TMCs. The seasonal adjustment factor for roadways similar to the study area (Factor Group U3 – Urban Other Principal Arterial) during the month of January is 1.00. This indicates that average month traffic volumes are approximately the same as the traffic volumes that were collected. The traffic counts were not adjusted to reflect average month condition in order to provide a conservative analysis consistent with the peak season traffic volumes. The MassDOT 2016 Weekday Seasonal Factors table is provided in **Appendix D**.

7.3.6 Existing (2019) Traffic Volumes

Existing traffic volumes were balanced, where necessary, to develop the Existing (2019) Condition vehicular traffic volumes. The Existing (2019) Condition weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 7-4**.

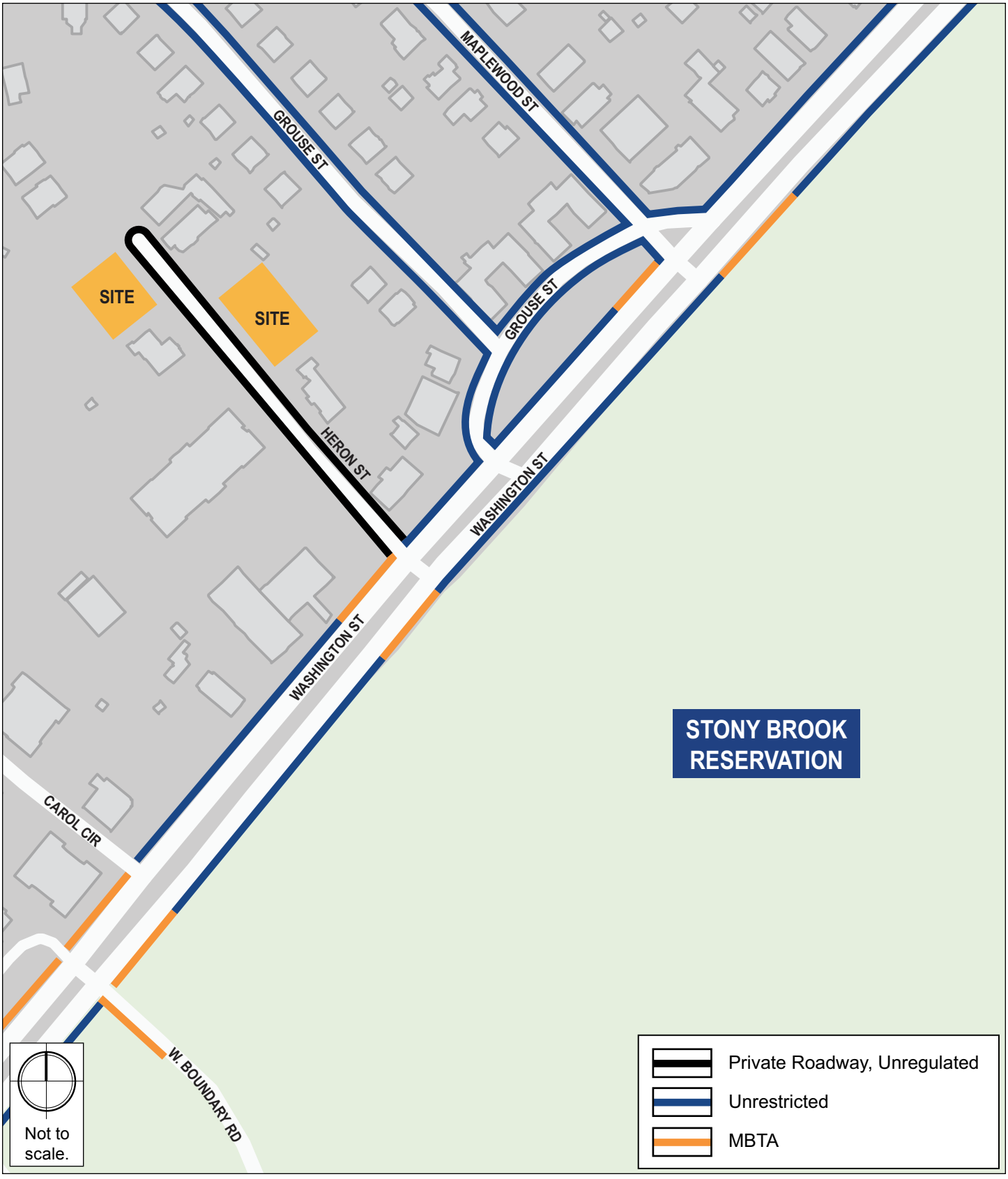


Figure 7-2.
On-Street Parking Regulations

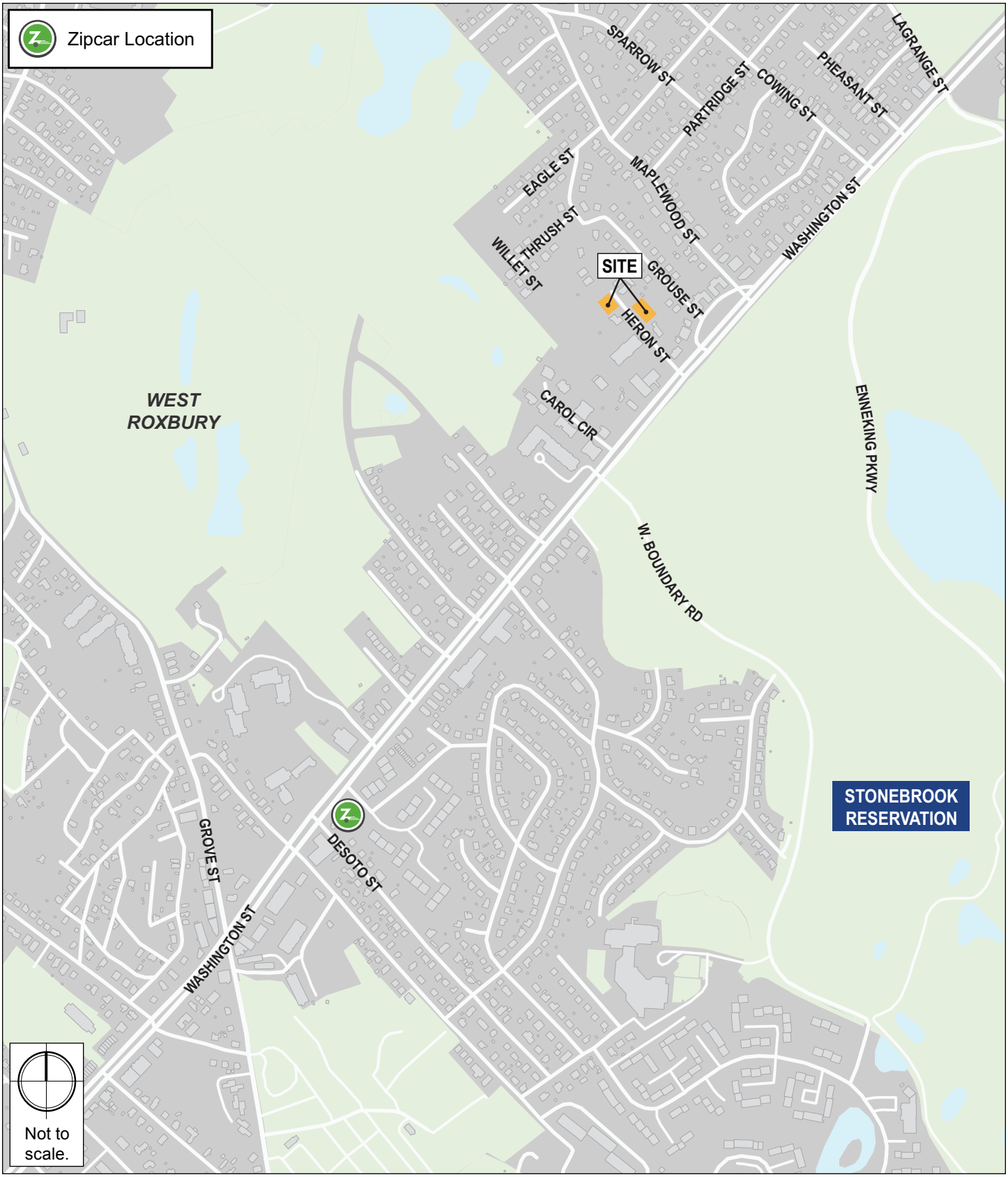
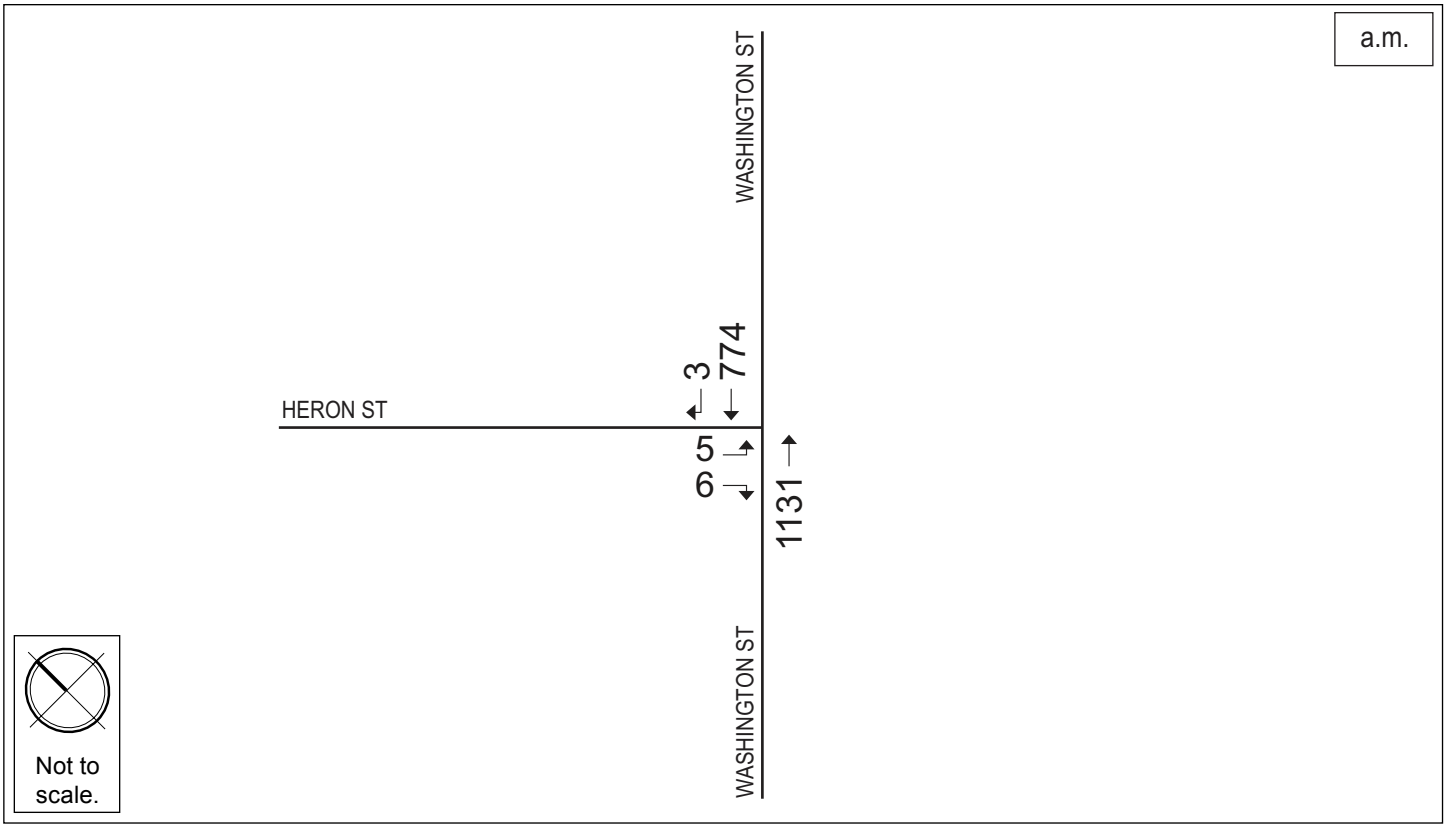


Figure 7-3.
Car Sharing Locations



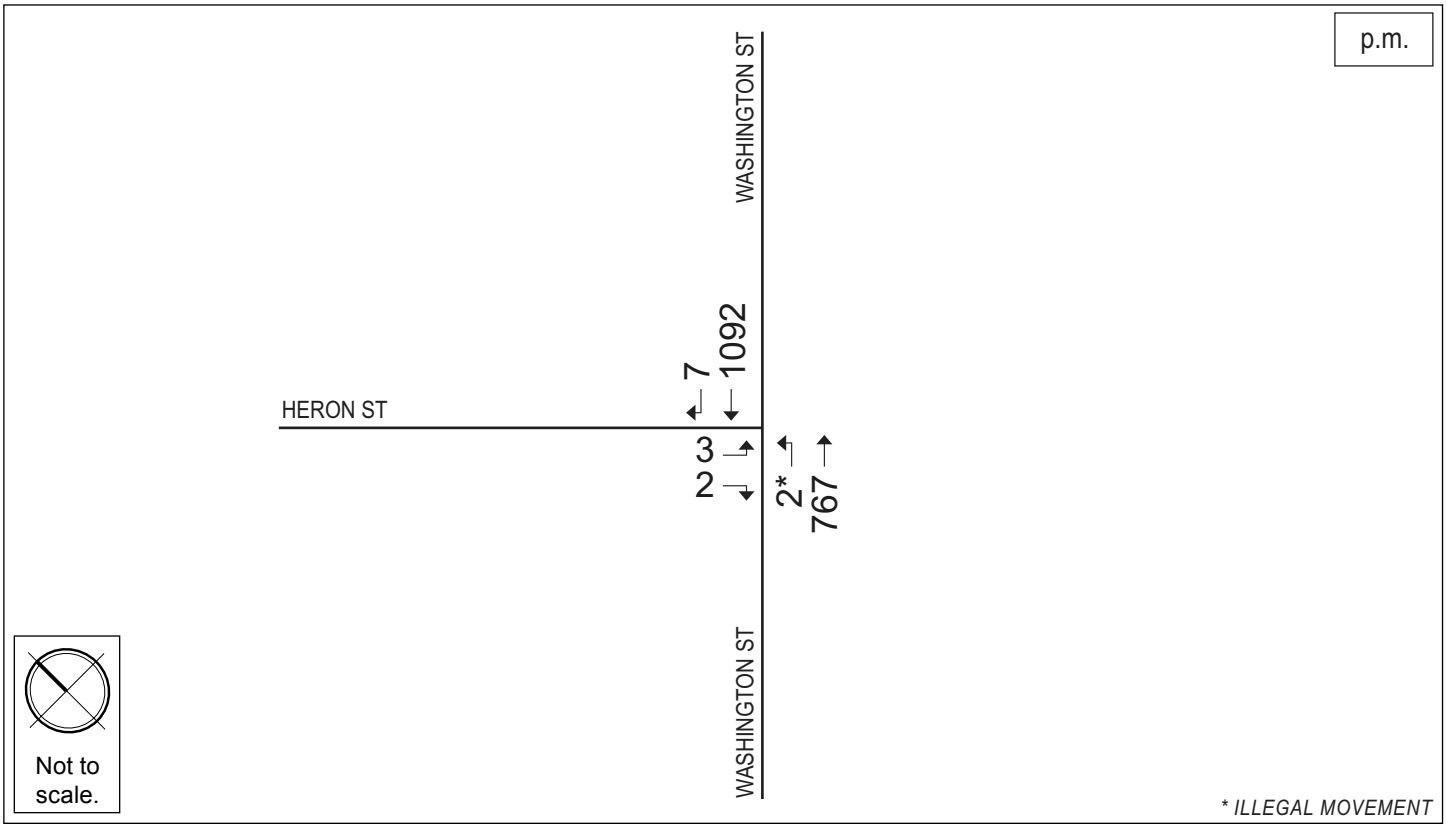


Figure 7-4.
Existing (2019) Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours

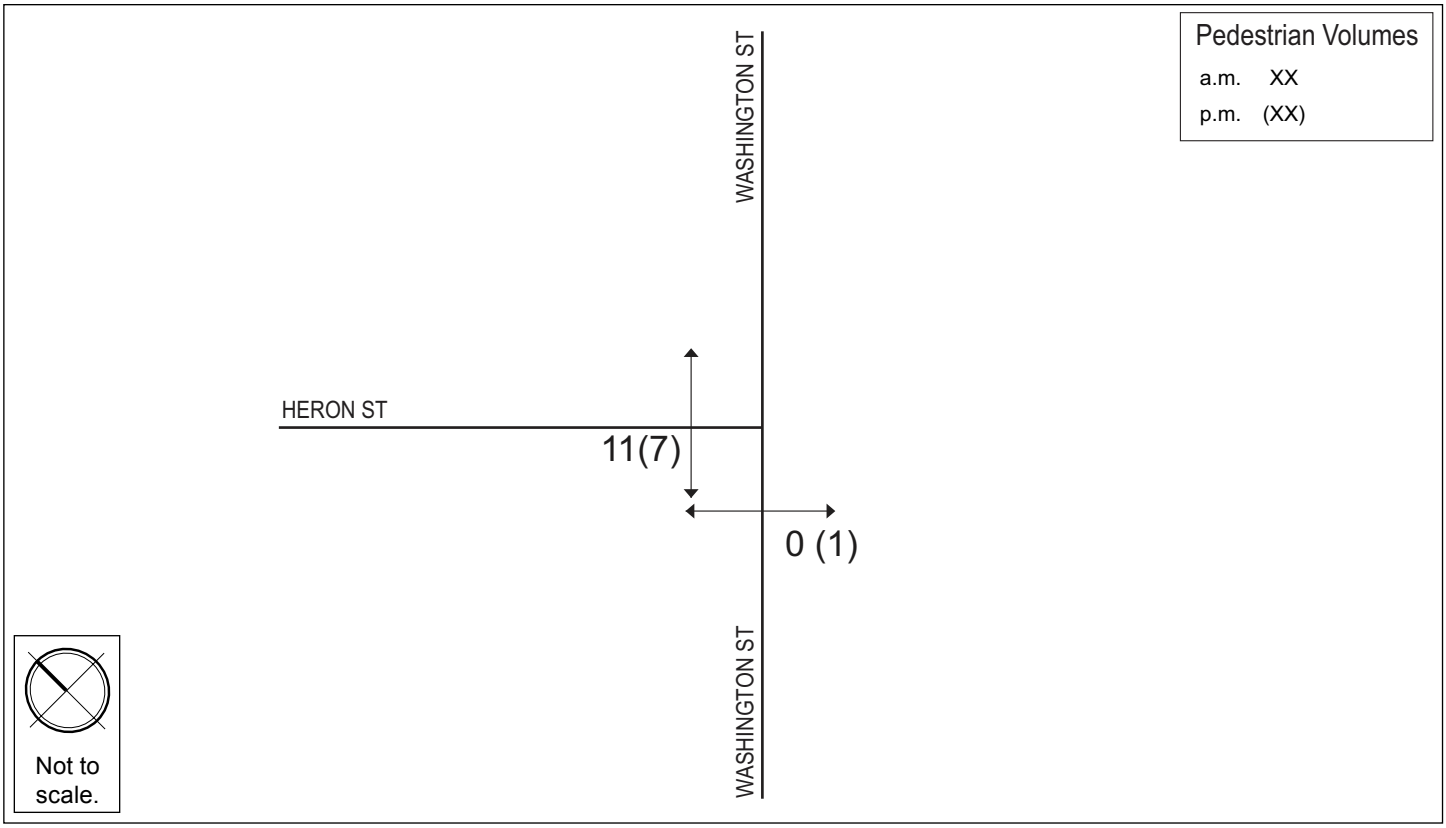
7.3.7 Existing Pedestrian and Bicycle Conditions

Sidewalks are provided along both sides of Washington Street in the study area. In general, the sidewalks provided along Washington Street roadways are in good condition with few cracks and level grades. Wheelchair ramps are typically provided along Washington Street to cross the minor streets, including the crosswalk across Heron Street. The closest crosswalk across Washington Street is located approximately 900 ft to the south of the Project site at the intersection with West Boundary Road. The south side of Heron Street has an asphalt sidewalk that is in generally poor condition with numerous cracks and uneven grades. As Heron Street is a private, dead-end street, many pedestrians travel in the roadway.

In recent years, bicycle use has increased dramatically throughout the City of Boston. Washington Street and Heron Street do not currently provide any infrastructure for bicycling along either side of the roadways.

Opposite Washington Street to the southeast, Stony Brook Reservation, a Massachusetts State Park, contains over 475 acres of park land include 12 miles of trails, consisting of walking trails, paved and unpaved bike trails, and paved mixed-use paths. A trailhead to the Lawrence Path of the park lies opposite Heron Street.

To determine the amount of pedestrian and bicycle activity within the study area, pedestrian and bicycle counts were conducted concurrent with the TMCs on January 16, 2019 at the study area intersection. The weekday a.m. and p.m. peak hours pedestrian and bicycle volumes are presented in **Figure 7-5**. It is important to note that the majority of the traffic counts were conducted in the winter months when bicycling activity is typically lower than it is during the spring and summer months. Based on data collected by the City of Boston in 2017, 331 bicyclists were counted over the course of a day at Roslindale Square, north of the Project site.



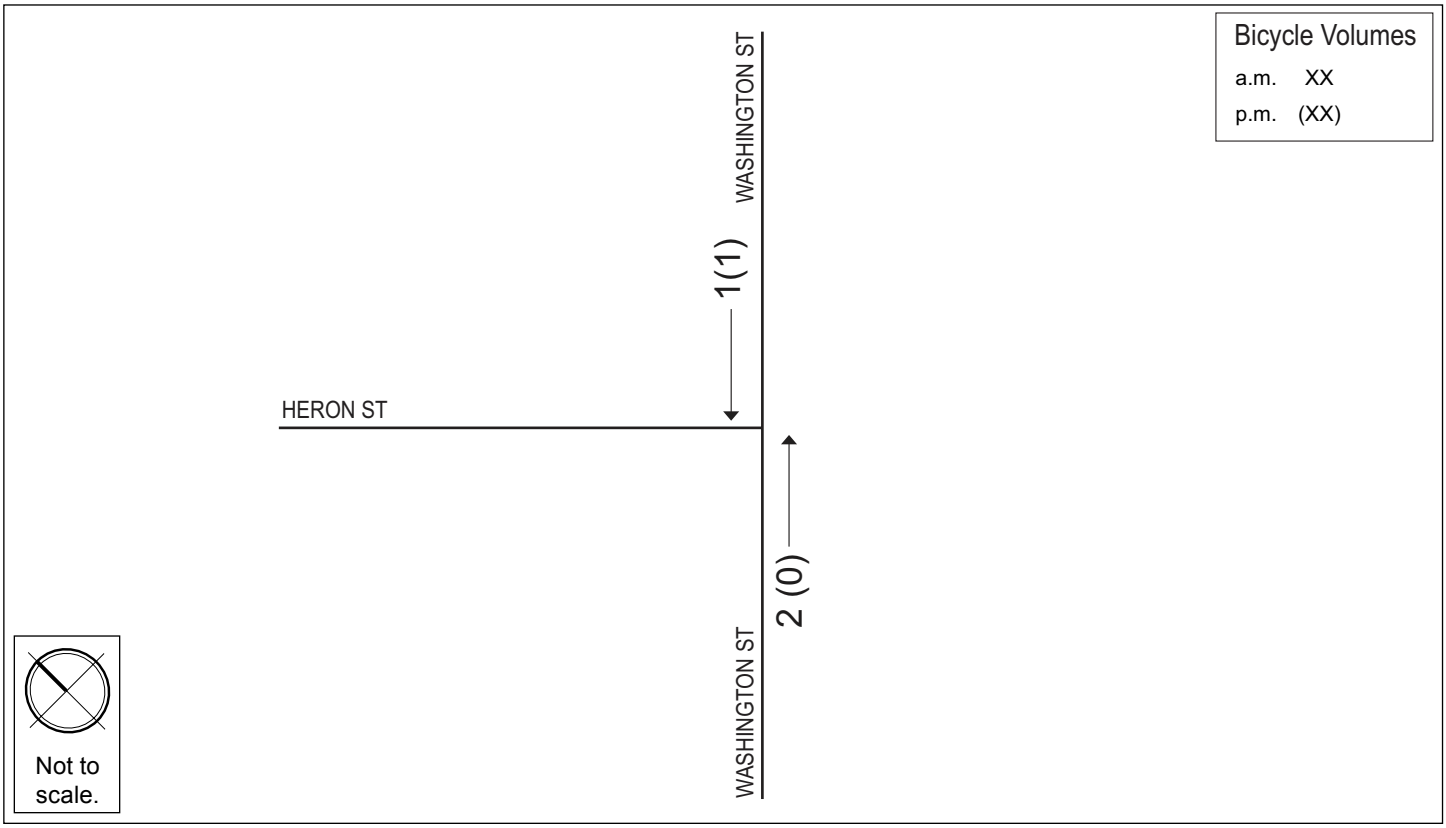


Figure 7-5.
Existing (2019) Condition Pedestrian and Bicycle Volumes, Weekday a.m. and p.m. Peak Hours

7.3.8 Existing Public Transportation

The Project site is located in West Roxbury with several public transportation opportunities. The Project site is in the vicinity of three MBTA bus routes: 34, 34E, and 40. All three routes serve a stop at the intersection of Washington Street and Heron Street (Washington Street @ Heron Street outbound, and Washington Street opposite Heron Street inbound), located less than 600 feet from the Project site. **Table 7-1** describes each public transportation route located in the vicinity of the Project site, with a map of the nearby public transportation services shown in **Figure 7-6**.

Forest Hills/Roslindale Village Rapid Bus – A bus lane was recently established along Washington Street, inbound from Roslindale Village to the Forest Hills MBTA station, to be active from 5 a.m. – 9 a.m. on weekdays. The lane is reserved for buses and bikes during the specified hours and travel times within the designated lane have decreased by 20 to 25 percent during the worst hour of congestion. All three routes serving the closest Project site bus stop use this priority lane each weekday morning.

MBTA Bus Route 34/34E – Bus Route 34 provides access between Dedham Line and Forest Hills via Washington Street. Bus Route 34E extends past Route 34, providing access between Walpole and Forest Hills via Washington Street. Bus Routes 34 and 34E operate with headways of approximately 20 – 30 minutes between 5:15 a.m. – 1:45 a.m. on weekdays. Additionally, Routes 34 and 34E operate on Saturdays with headways of approximately 20 – 50 minutes between 5:15 a.m. – 1:45 a.m. The Route 34 Bus operates on Sundays between 6:30 a.m. – 1:30 a.m. with headways of approximately 20 – 60 minutes. The Route 34E Bus also operates on Sundays between 6:00 a.m. – 1:15 a.m. with headways of approximately 40 – 60 minutes. Bus Routes 34 and 34E connect to the Orange Line branch of the MBTA subway system and the Needham Line of the MBTA Commuter Rail at Forest Hills station. In January 2019, the MBTA proposed to combine Routes 34 and 34E into one route with three main variations and an additional stop at Legacy Place for Route 34. If these proposals are approved, the changes will take effect on September 1, 2019. The proposed changes are expected to save 94 new passenger hours and add 384 new passenger trips each weekday by eliminating a 12-minute walk for riders at Legacy Place (8% of Route 34E riders) and decreasing wait time by 5 minutes for passengers between Dedham Line and Elm Street (4% of Route 34E riders).

MBTA Bus Route 40 – Bus Route 40 provides access between Georgetown and Forest Hills via Washington Street. The Route 40 Bus operates with headways of approximately 30 – 60 minutes between 6:00 a.m. – 8:30 p.m. on the weekdays. The route operates on Saturdays between 6:00 a.m. – 8:30 p.m. with headways of approximately 50 – 60 minutes. The Route 40 Bus also operates on Sundays but does not provide service in the vicinity of the Project site. Bus Route 40 connects to the Orange Line branch of the MBTA subway system and the Needham Line of the MBTA Commuter Rail at Forest Hills station.

Table 7-1. Existing Public Transportation

MBTA Transit Service	Description	Weekday Service Duration	Peak-Hour Headway (minutes)
Local Bus Routes			
34	Dedham Line – Forest Hills	5:15 a.m.-1:45 a.m.	15
34E	Walpole – Forest Hills	5:15 a.m.-1:45 a.m.	30
40	Georgetown – Forest Hills	6:00 a.m.-8:30 p.m.	30

Headway is the time between service, Headways vary.

Figure 7-6.
Existing Public Transportation

7.4 No-Build (2026) Condition

The No-Build (2026) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, pedestrian, and bicycle improvements. The No-Build (2026) Condition does not include the impact of the Project.

7.4.1 Background Traffic Growth

The methodology to account for generic future background traffic growth, independent of large development projects, may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of recent and historic traffic data collected recently and to account for any additional unforeseen traffic growth, a one-half percent per year annual traffic growth rate was used.

7.4.2 Specific Development Traffic Growth

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

Willet Street Extension – This project calls for the construction of approximately 29 single family homes, totaling approximately 75,400 gross square feet, on a 7.75-acre lot of land. Off-street parking will be provided by a private driveway for each home. Additionally, the project includes the construction of a new road and associated infrastructure. The new road will extend from the existing Willet Street and run parallel to Washington Street. The project has been approved by the BPDA Board.

4945 Washington Street – This project includes the construction of a new four-story building consisting of approximately 47,537 sf of space. The development will include 46 residential units and 67 parking spaces. This project is currently under construction.

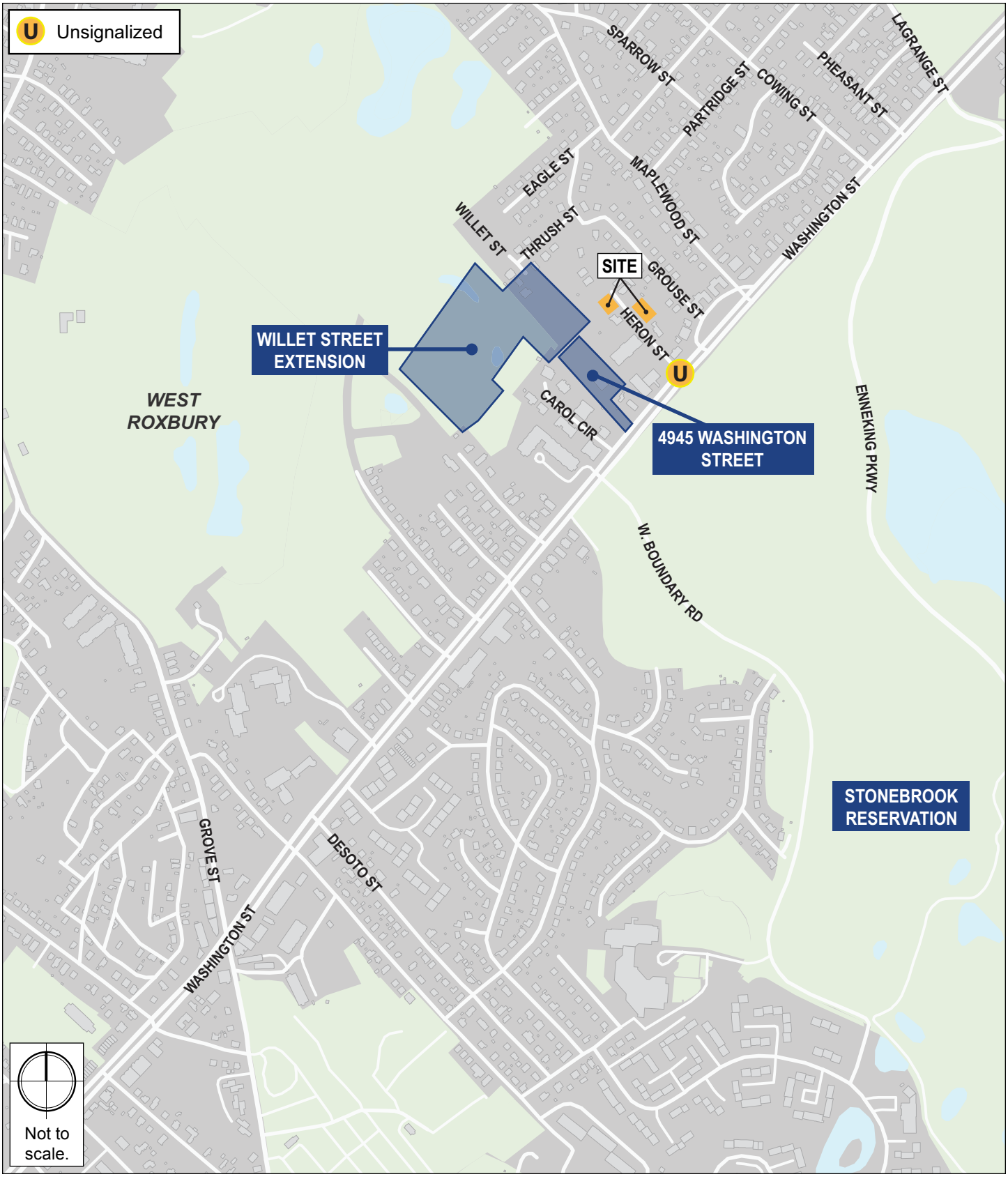


Figure 7-7.
Specific Development Projects

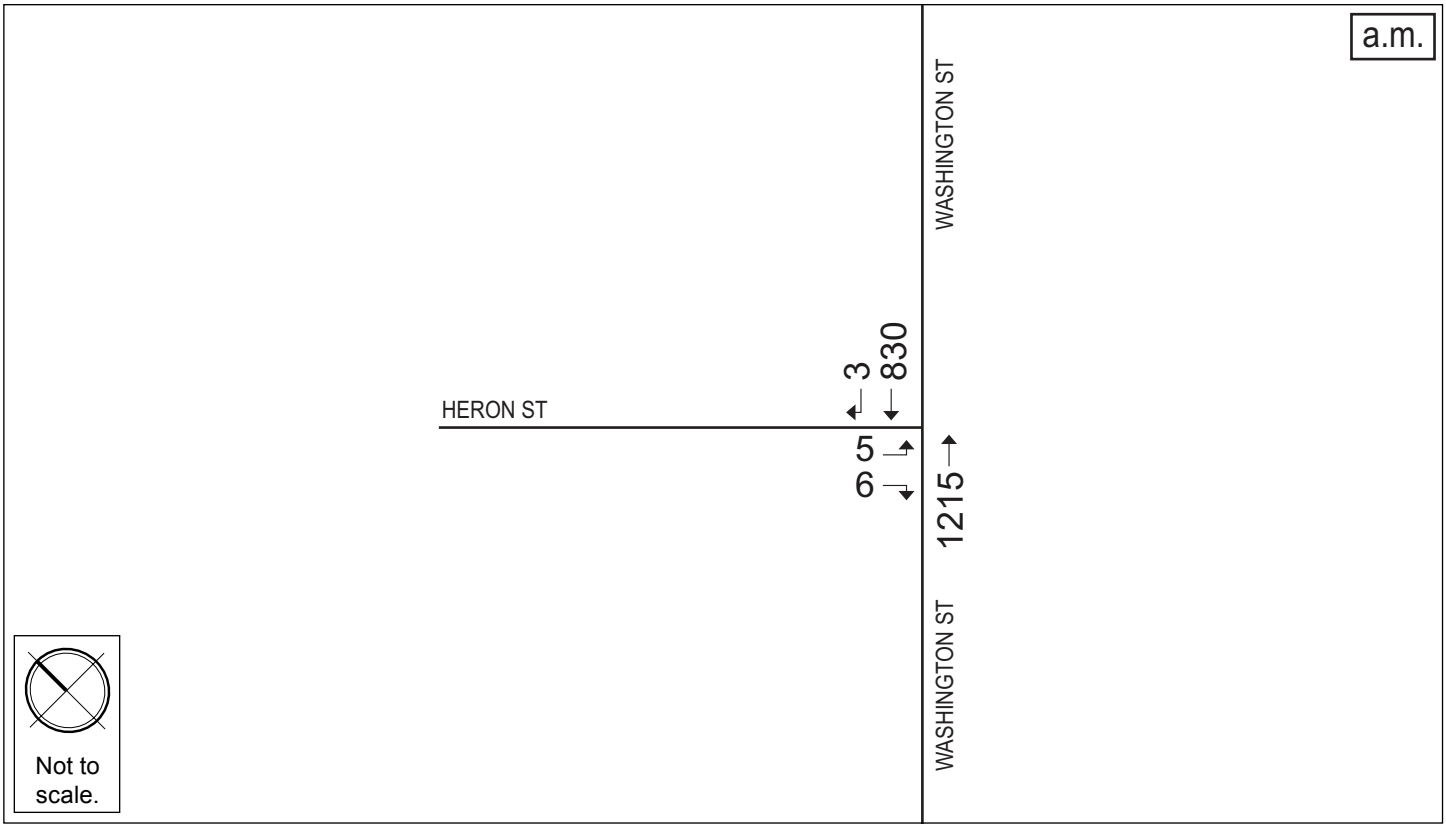
7.4.3 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. One improvement project has been identified that could affect future travel patterns in the area.

Neighborhood Mobility microHUB – As part of Go Boston 2030's initiatives to improve transportation, a Mobility microHUB has been identified to be installed in proximity to Grouse Street at Washington Street near t the Speedy Market convenience store. Mobility microHUBs assist users in multi-modal travel by identifying public transportation routes and providing real-time information. Additional features may be provided at microHUBs, such as a bus shelter, secure bike parking or bike sharing services, ride-hailing pick-up spots, or Wi-Fi.

7.4.4 No-Build (2026) Condition Traffic Volumes

The one-half percent per year annual growth rate was applied to the Existing (2019) Condition traffic volumes, then the traffic volumes associated with the background development project listed above was added to develop the No-Build (2026) Condition traffic volumes. The No-Build (2026) Condition weekday a.m. and p.m. peak hour traffic volumes are shown on **Figure 7-8**.



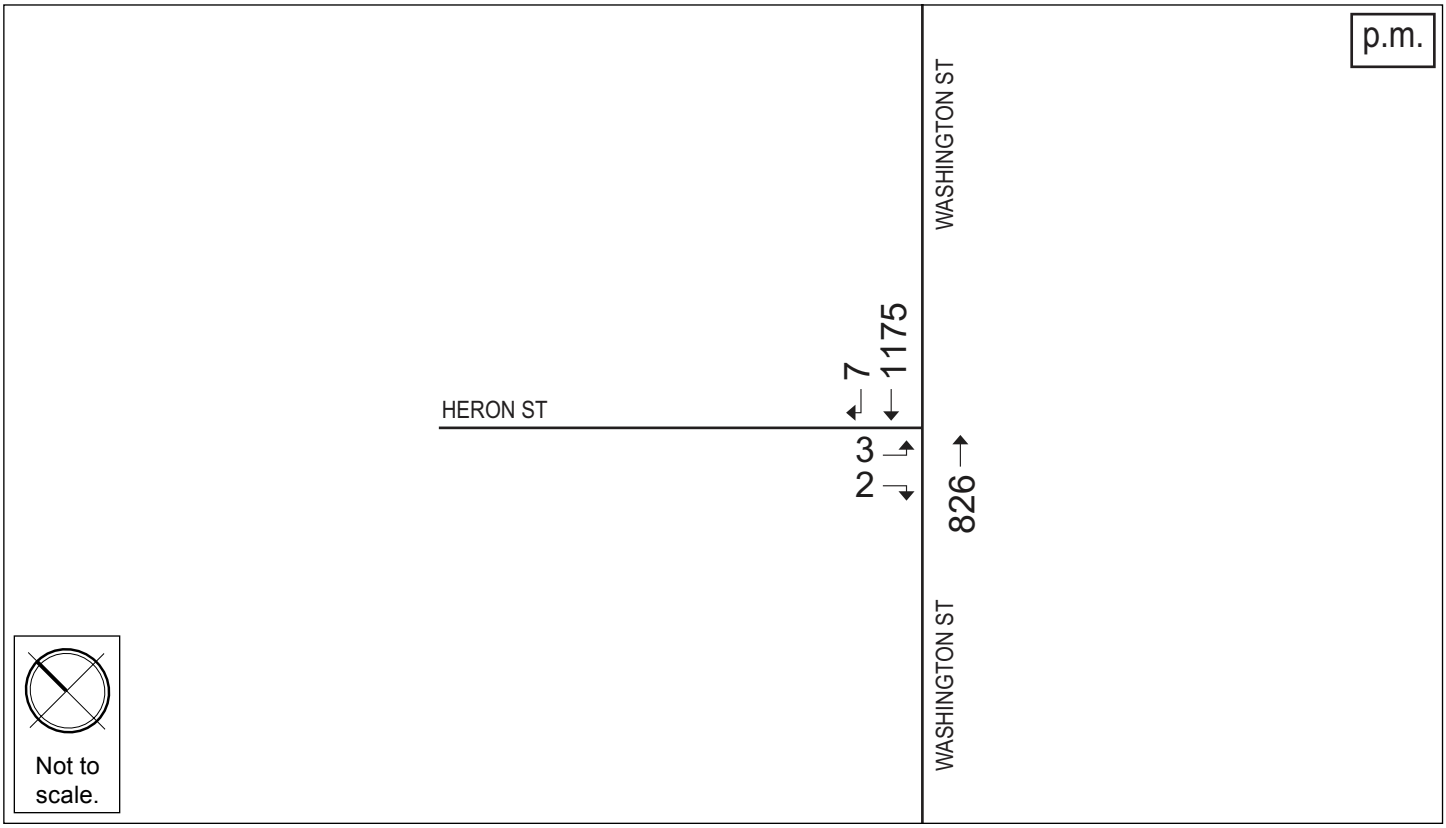


Figure 7-8.
No-Build (2025) Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours

7.5 Build (2026) Condition

As previously summarized, the Project will include the construction of two new buildings, containing a total of approximately 72 residential units with partially below grade parking on the ground floor and exterior parking located adjacent to each building. 11 Heron Street will be located along the north side of Heron Street and consist of 40 residential units with 57 total parking spaces including 35 indoor spaces and 22 exterior spaces. 26 Heron Street will be located along the south side of Heron Street and will consist of 32 residential units with 38 total parking spaces including 26 indoor spaces and 12 exterior spaces.

7.5.1 Site Access and Circulation

Vehicular access to the two buildings will be provided along Heron Street. Each building has a surface parking lot adjacent to the entrance to the garage. The garage entrance of building to the north of Heron Street is located on the west side of the building, and the garage entrance of the building to the south of Heron Street is located on the east side of the building. Heron Street is a dead-end street that connects to Washington Street on the east.

Pedestrian access to the buildings will be provided via two entrances. Each building will have a building lobby with elevators on one end and a stairway on the other end. A sidewalk will be provided along the front of each building, and the sidewalk along the south side of Heron Street will be extended to Washington Street to create a new, fully accessible sidewalk to the Project. The site plan is provided in **Figure 7-9** and shows all vehicular and pedestrian access points.

7.5.2 Parking

The parking goals developed by the BTD for West Roxbury are a maximum of 1.0 to 1.5 parking spaces per residential unit. As previously mentioned, the Project will include the construction of two new buildings, containing a total of approximately 72 residential units with partially below grade parking on the ground floor and exterior parking located adjacent to each building. 11 Heron Street will be located along the north side of Heron Street and consist of 40 residential units with 52 total parking spaces including 33 indoor spaces and 19 exterior spaces. 26 Heron Street will be located along the south side of Heron Street and will consist of 32 residential units with 33 total parking spaces including 24 indoor spaces and 9 exterior spaces. The resulting parking ratio for the site is approximately 1.18 parking spaces per residential unit, consistent with the BTD maximum parking goals.

7.5.3 Loading and Service Accommodations

Residential units primarily generate delivery trips related to small packages and prepared food. Loading and service operations will occur along Heron Street in the designated active loading zone. The active loading zone will also be utilized by Transportation Network Companies (TNC's) such as Uber and Lyft for pick-up and drop-off activity. Deliveries to the Project site will be limited to

36-foot-long box trucks (SU-36) or smaller delivery vehicles. Residential move-in/move-out activity will be scheduled with the building management and take place on- site.

7.5.4 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents. Based on BTD guidelines, the Project will supply a minimum of 72 secure bicycle parking/storage spaces within the parking garage, at a rate of one secure indoor bicycle parking spaces per residential unit. Additional storage will be provided by outdoor bicycle racks accessible to visitors to the site in accordance with BTD guidelines.

7.5.5 Trip Generation Methodology

Determining the future trip generation of the Project is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed development and a specific land use program. A project's location and proximity to different travel modes determines how people will travel to and from a project site.

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*[6] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

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

Land Use Code 221 – Multifamily Housing (Mid-Rise). Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and ten floors. The trip generation estimates are based on the average rate per dwelling units.

7.5.6 Mode Share

BTD provides vehicle, transit, and walking mode share rates for different areas of Boston. The Project is located within designated Area 19 – West Roxbury. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[7]. The person trips were then distributed to different modes according to the mode shares shown in **Table 7-2**.

6 Trip Generation Manual, 10th Edition; Institute of Transportation Engineers; Washington, D.C.; 2017.

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

Figure 7-9.
Site Plan

Table 7-2. Travel Mode Shares

Land Use		*Walk/Bicycle Share[1]*	*Transit Share[1]*	*Auto Share[1]*	*Vehicle Occupancy Rate[1]*
Daily					
Residential	In	8%	8%	84%	1.13
	Out	8%	8%	84%	1.13
a.m. Peak					
Residential	In	11%	9%	80%	1.13
	Out	8%	19%	73%	1.13
p.m. Peak					
Residential	In	8%	19%	73%	1.13
	Out	11%	9%	80%	1.13

1. Based on rates published by the Boston Transportation Department for Area 19 – VFW Parkway.

7.5.7 Trip Generation

The mode share percentages shown in **Table 7-2** were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates. The trip generation for the Project by mode is shown in **Table 7-3**. The detailed trip generation information is provided in **Appendix D.**

Table 7-3. Trip Generation Summary

Land Use		*Walk/Bicycle Trips[1]*	*Transit Trips[1]*	*Private Auto Trips[1]*
Daily				
Residential	In	18	18	165
	Out	18	18	165
	Total	36	36	330
a.m. Peak				
Residential	In	1	1	5
	Out	2	4	14
	Total	3	5	19
p.m. Peak				
Residential	In	2	4	14
	Out	2	1	9
	Total	4	5	23

1. Based on ITE LUC 221 – Multifamily Housing (Mid-rise), 72 dwelling units, average rate.

The Project is expected to generate approximately 330 new daily vehicle trips with 19 new vehicle trips (5 entering and 14 exiting) during the weekday a.m. peak hour and 23 new vehicle trips (14

entering and 9 exiting) during the weekday p.m. peak hour. The project is also expected to generate 36 new daily pedestrian trips and 36 new daily transit trips.

7.5.8 Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 19 – West Roxbury and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are illustrated in **Figure 7-10**. Since Washington Street northbound left-turn movements are restricted, vehicles bound for the Project site will utilize the left-turn lane at Maplewood Street/Grouse Street at Washington Street to turn around.

7.5.9 Build (2026) Traffic Volumes

The vehicle trips were distributed through the study area. The project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure 7-11**. The trip assignments were added to the No-Build (2026) Condition vehicular traffic volumes to develop the Build (2026) Condition vehicular traffic volumes. The Build (2026) weekday a.m. and p.m. peak hour traffic volumes are shown on **Figure 7-12**.

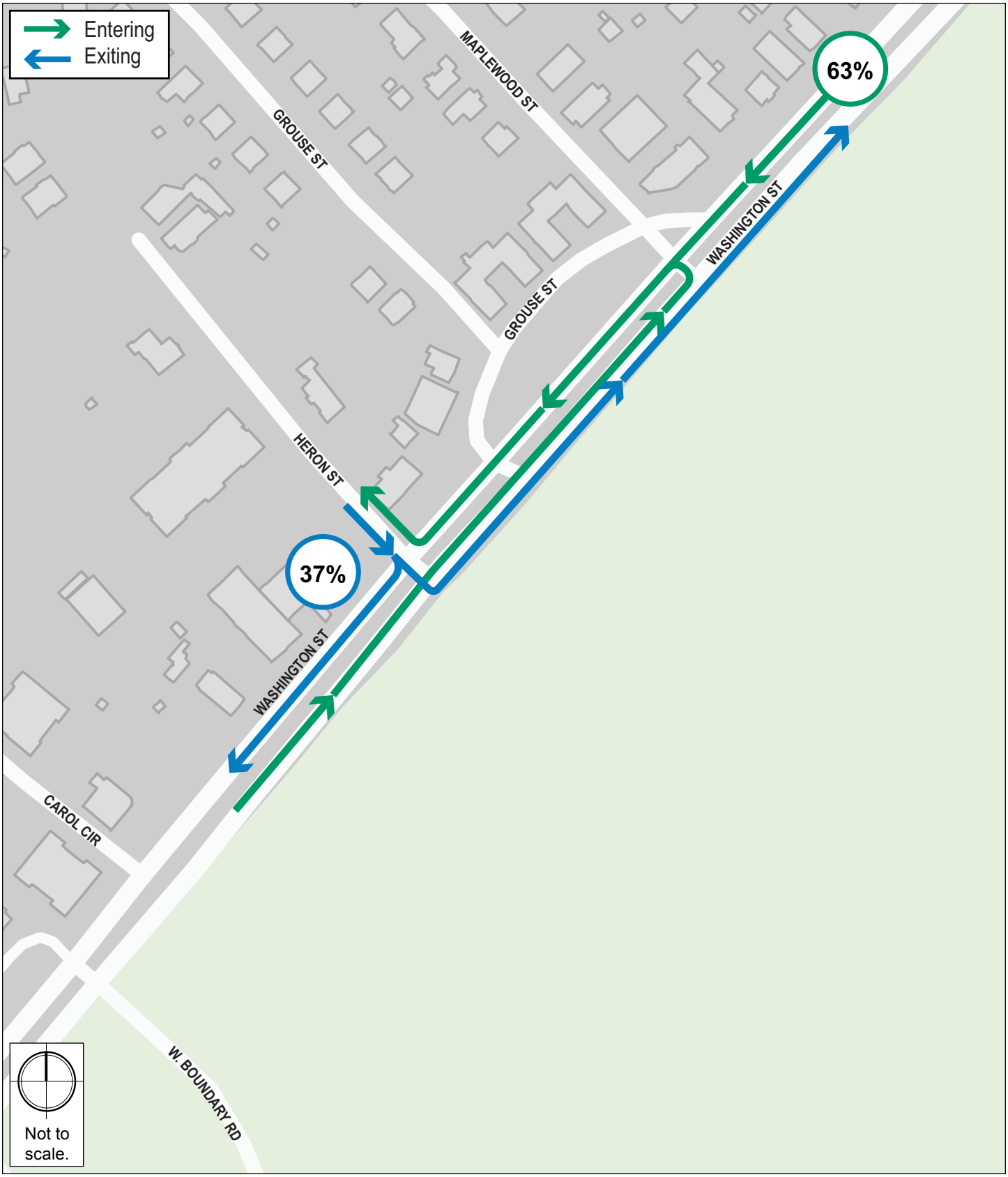
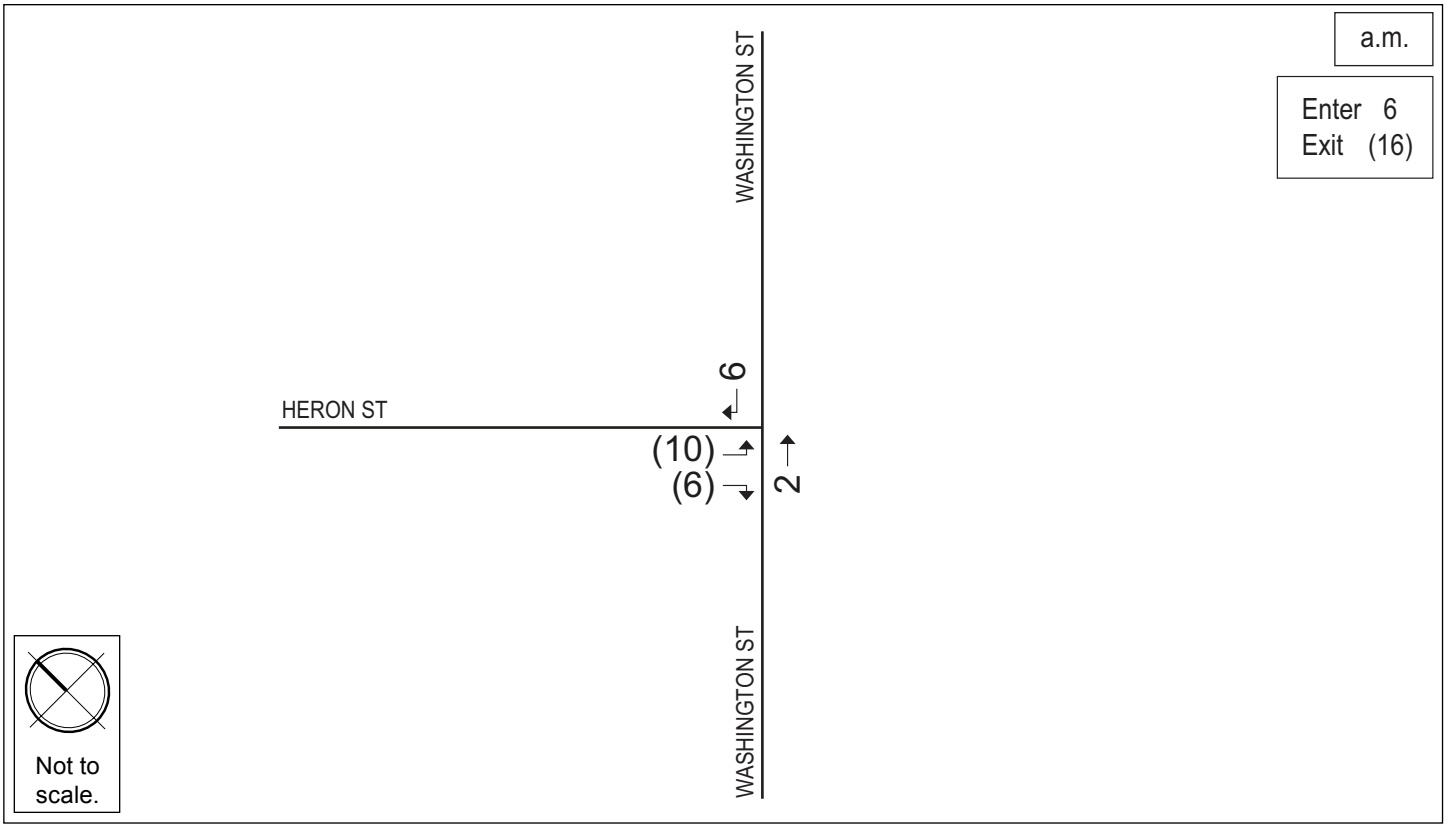


Figure 7-10.
Trip Distribution



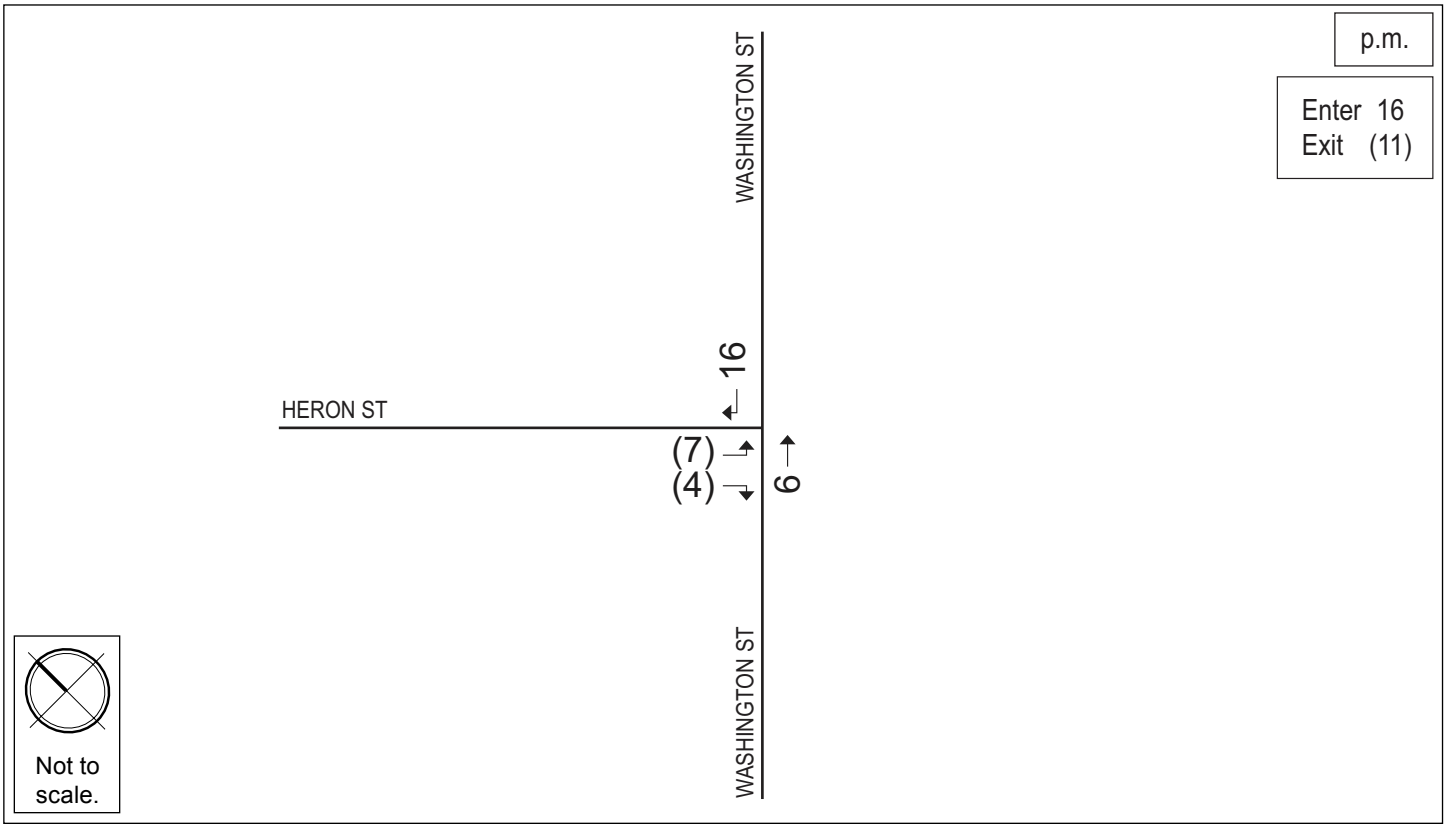
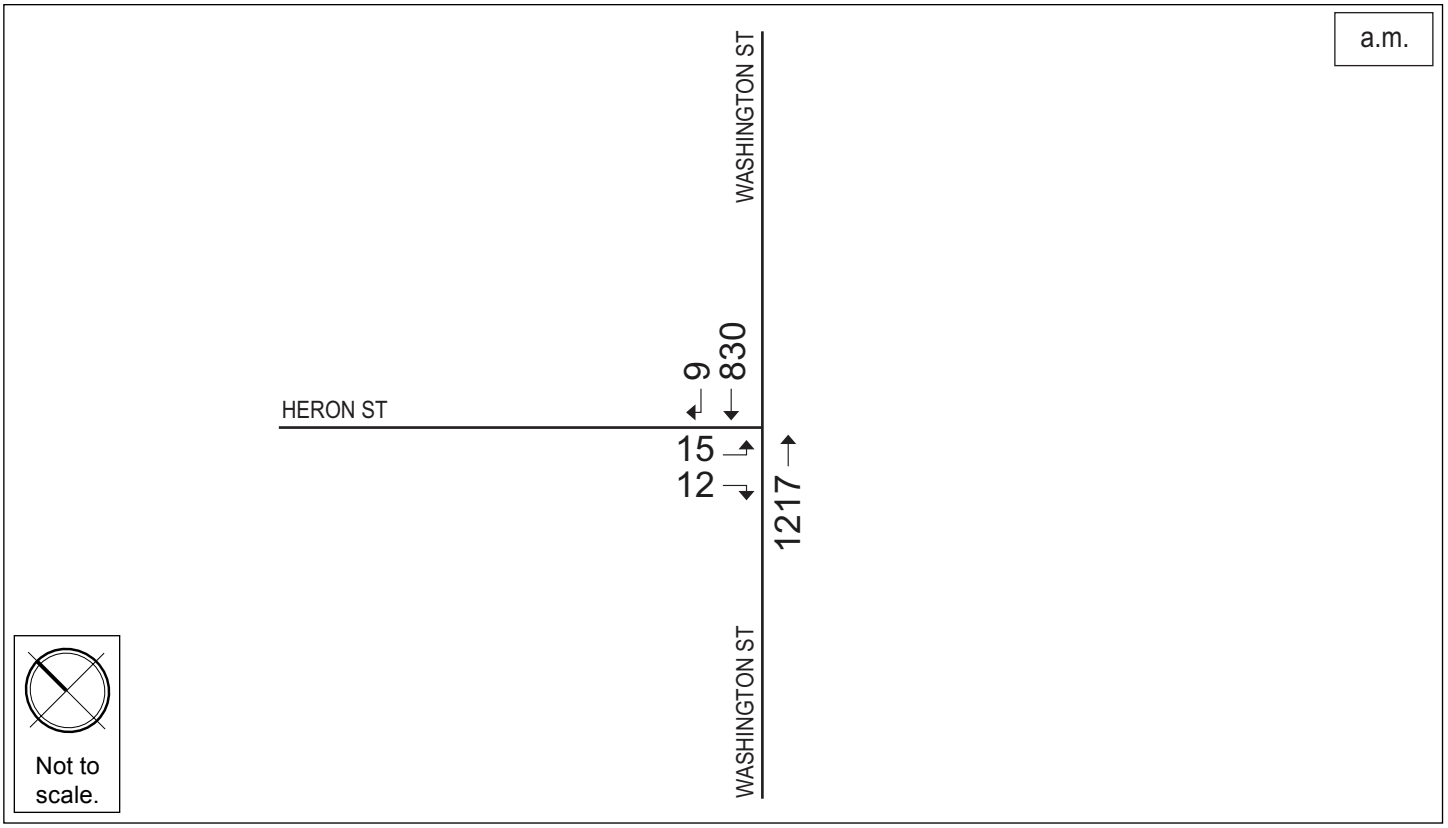


Figure 7-11.
Project Generated Vehicle Trips, Weekday a.m. and p.m. Peak Hours



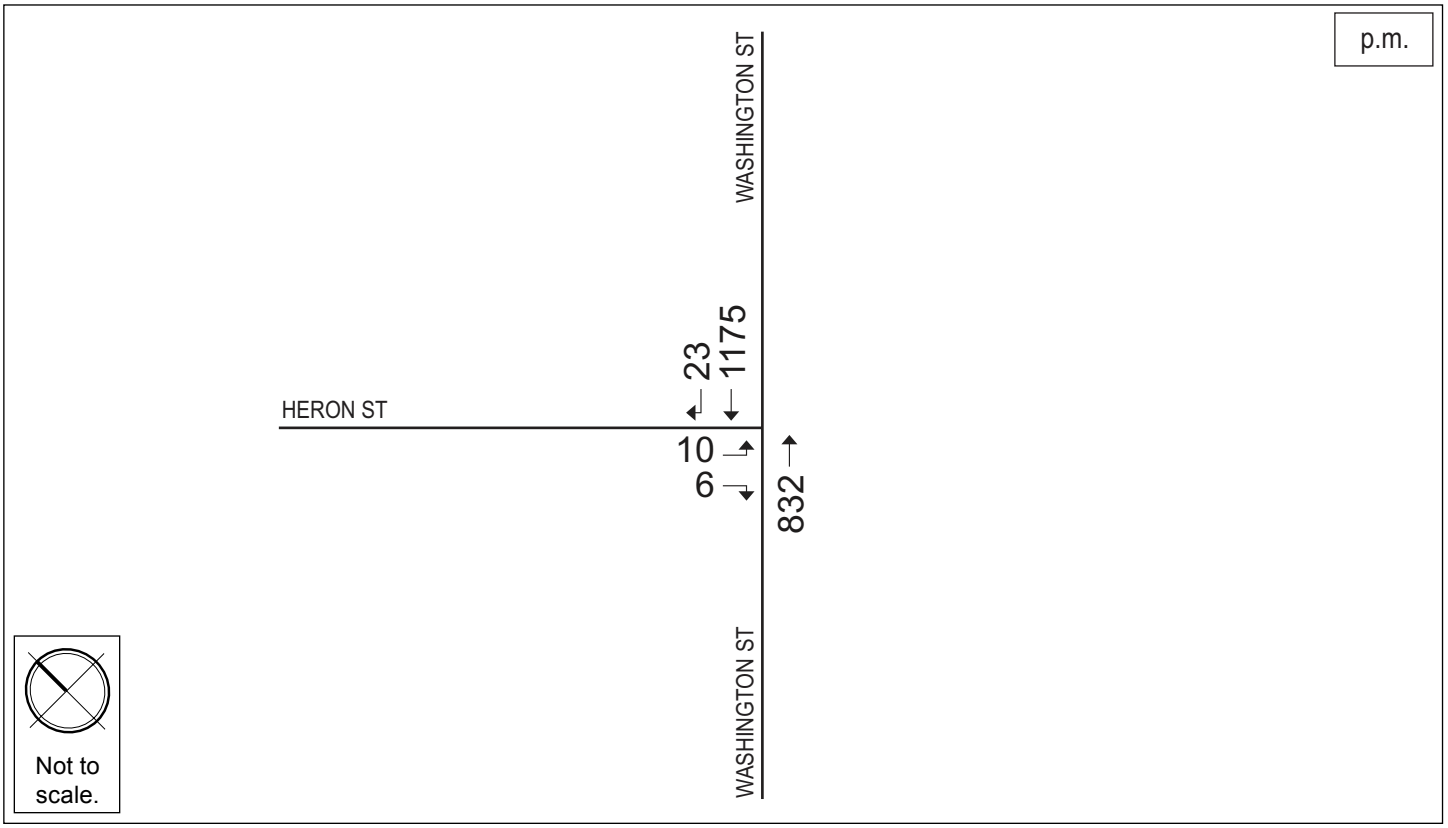


Figure 7-12.
Build (2026) Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours

7.6 Traffic Operation Analysis

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

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 7-4** displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

Table 7-4. Vehicle Level of Service Criteria

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

Source: 2010 Highway Capacity Manual, Transportation Research Board.

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

The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously.

Table 7-5 summarizes the Existing (2019) Condition, the No-Build (2026) Condition, and the Build (2026) Condition capacity analysis for the study area intersection during the weekday a.m. and p.m. peak hours. The detailed analysis of the Synchro results is provided in **Appendix D.**

Table 7-5. Unsignalized Capacity Analysis Summary, Weekday a.m. and p.m. Peak Hours

Intersection/ Movement	Existing (2019) Condition				No-Build (2026) Condition				Build (2026) Condition			
	LOS	Delay (s)	V/C ratio	95th %ile Queue (ft)	LOS	Delay (s)	V/C ratio	95th %ile Queue (ft)	LOS	Delay (s)	V/C ratio	95th %ile Queue (ft)
Weekday a.m. Peak Hour												
Washington/Heron	-	-	-	-	-	-	-	-	-	-	-	-
Heron EB L/R	C	24.0	0.10	8	D	25.7	0.10	9	D	34.3	0.27	26
Wash. NB T | T	A	0.0	0.36	0	A	0.0	0.38	0	A	0.0	0.38	0
Wash. SB T | T/R	A	0.0	0.33	0	A	0.0	0.35	0	A	0.0	0.35	0
Weekday p.m. Peak Hour												
Washington/Heron	-	-	-	-	-	-	-	-	-	-	-	-
Heron EB L/R	D	32.5	0.06	5	E	35.6	0.06	5	E	40.8	0.18	16
Wash. NB T | T	A	0.0	0.24	0	A	0.0	0.26	0	A	0.0	0.26	0
Wash. SB T | T/R	A	0.0	0.46	0	A	0.0	0.48	0	A	0.0	0.48	0

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

As shown in Table 7-5, all of the intersections and approaches have acceptable operations (LOS D or better) under the Existing (2019) Condition. Under the No-Build (2026) Condition, the Heron Street eastbound approach worsens from D to E during the weekday p.m. peak hour. This is due to the general increase in background traffic along Washington Street. Under the Build (2026) Condition. The queue length along Heron Street will rarely exceed 1 vehicle during both the weekday a.m. and p.m. peak hours and range from 16 feet to 26 feet long.

7.7 Transportation Demand Management

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

On-site management will keep a supply of transit information (schedules, maps, and fare information) to be made available to the residents of the building. The Proponent will work with the City to develop a TDM program appropriate to the Project and consistent with its level of impact.

The Proponent is prepared to take advantage of transit access in marketing the site to future residents by working with them to implement the following TDM measures to encourage the use of non-vehicular modes of travel.

The TDM measures for the Project may include but are not limited to the following:

- **Transportation Coordinator**: The Proponent will encourage building management to designate a full-time, on-site employee as the transportation coordinator for the site. The transportation coordinator will oversee all transportation issues. This includes managing vehicular operations, service and loading operations, and TDM programs.
- **Information and Promotion of Travel Alternatives**: The Proponent will encourage the building to provide public transit system maps, schedules, and other information on transit services in the area;
- **Annual News Letter**: The Proponent will encourage the building to provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options;
- **Real Time Transit Info**: The Proponent will encourage the building to provide real-time information on travel alternatives via the Internet in the building lobby.
- **Electric Vehicle Charging**: The Proponent will explore the feasibility of providing electric vehicle charging station(s) within the garage.
- **Vehicle Sharing Program**: The Proponent will explore the feasibility of providing spaces in the garage for a car sharing service.
- **Bicycle Accommodation**: The Proponent will provide bicycle storage in secure, sheltered areas for residents to encourage bicycling as an alternative mode of transportation. Subject to necessary approvals, public use bicycle racks for visitors will be placed near building entrances.

7.8 Transportation Mitigation Measures

While the traffic impacts associated with the new trips are minimal, the Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use.

As part of the Project, the Proponent will reconstruct Heron Street meet the City of Boston standards in accordance with the Boston Complete Streets design guidelines. Improvement to the street include re-grading the roadway and repaving with hot mix asphalt, construction of new drainage structures at the low point of Heron Street. The Proponent will construct sidewalks with vertical granite curbs, street lighting, and street trees along both sides of Heron Street between the new buildings and Washington Street.

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

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

7.9 Evaluation of Short-Term Construction Impacts

Most construction activities will be accommodated within the current site boundaries. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The Construction Management Plan will document all committed measures and will be executed with the City prior to commencement of construction.

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

- Limited construction worker parking on-site;
- Encouragement of worker carpooling;
- Consideration of a subsidy for MBTA passes for full-time employees; and
- Providing secure spaces on-site for workers' supplies and tools so they do not have to be brought to the site each day.

8.0 COORDINATION WITH GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

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

8.2 Massachusetts Environmental Policy Act

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

8.3 Boston Civic Design Commission

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

9.0 PROJECT CERTIFICATION

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

Onsite Builders & Development, LLC

Peter Heaney
Name

04/16/2019
Date

Mitchell L. Fischman ("MLF") Consulting LLC

Mitchell L. Fischman
Signature of Preparer
Mitchell L. Fischman, Principal

04/16/19
Date

APPENDIX A – LETTER OF INTENT (LOI) TO FILE PNF, JANUARY 7, 2019

MLF CONSULTING LLC

Mitchell L. Fischman
Consulting LLC
41 Brush Hill Road
Newton, MA 02461
www.bostonpermitting.com

January 7, 2019 ***Via In-Hand Delivery***

Mr. Brian Golden, Director
Boston Planning & Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201
Attn: Ms. Aisling Kerr, Project Manager

RE: Letter of Intent to File a Project Notification Form
Article 80B - Large Project Review
11-26 Heron Street, West Roxbury

Dear Director Golden:

Our office represents **Onsite Builders and Development**, and its principal, Peter Heaney (the "Proponent"), the proposed owner-developer of the real property located at 11-26 Heron Street, and associated contiguous properties, in West Roxbury (the "Project Site").

The purpose of this letter is to notify the Boston Planning & Development Agency (the "BPDA") of the Proponent's intent to file an Expanded Project Notification Form (the "PNF") with the BRA pursuant to Article 80B, Large Project Review, of the Boston Zoning Code (the "Code").

The Proponent's proposal contemplates the construction of approximately 72 residential units in two multi-family buildings, to be located on both sides of Heron Street, with a total project square footage of approximately 78,576 gross square feet of interior space, with a total of 84 parking spaces including 48 interior garage parking spaces in the two buildings and 36 surface parking spaces, all accessed from Heron Street (the "Proposed Project"). The scope and scale of the Proponent's residential program is intended to further the new housing creation goals of Mayor Walsh's 2030 Housing Plan.

The Project Site consists of 1.1 acres (47,982 square feet) at 11-26 Heron Street and associated contiguous properties, and is bounded to the northeast by the rear property

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lines of residences along Grouse Street; to the northwest by an existing three-family residence with associated property; to the west by properties along Willet Street; and to the south by a single-family residence and the Stony Brook Condominium building.

The nearby neighborhood is a mix of multi-family and single-family residential uses. MBTA bus routes 34, 34E, and 40, all run adjacent to the Project site along Washington Street, providing direct connections to the MBTA Forest Hills Orange Line station, which provides rapid transit access to downtown Boston. The context of the immediate area is supportive of and well-suited for the proposed scale and scope of the Proposed Project, and includes several buildings with four-stories in height. Please see attached *Figure 1. Project Locus.*

The Proposed Project is located within a 1F-6000 zoning subdistrict of the West Roxbury Neighborhood District (Article 56), which requires a use variance for new multi-family residential uses, and imposes certain dimensional and other requirements for which the Proposed Project will require zoning variances from the Zoning Board of Appeal.

The Proposed Project will exceed the 50,000 square foot Article 80 threshold for a development project in a Boston neighborhood and will therefore require filings by the Proponent under Article 80's Large Project Review requirements. The Expanded PNF filing is expected to address many issues normally presented in a Draft Project Impact Report ("DPIR") including a transportation analysis, and air and noise, shadow, infrastructure, historic resources, and other environmental evaluations that will help explain potential project impacts from the proposed uses, and any needed mitigation measures to reduce these impacts.

Prior to submitting this Letter of Intent, the Proponent and development team met with BPDA planning and urban design staff, provided notice to local elected officials and civic group leaders, and, on November 14, 2018, appeared before the West Roxbury Civic Improvement Association at its scheduled monthly meeting, all in an effort to gain valuable feedback from these important constituencies.

On behalf of Onsite, Mr. Heaney, and the entire development team, we wish to thank you for your time and attention. We look forward to continuing working with the BPDA, members of the Impact Advisory Group to be formed, local elected officials, City departments and agencies, and, most important, abutters and other neighborhood residents, in order to shape a successful development project for West Roxbury and the

MLF CONSULTING LLC

City of Boston. Please do not hesitate to contact me with if you have any questions, or if I can provide any additional information on the Proposed Project.

Very truly yours,

MITCHELL L. FISCHMAN ("MLF") CONSULTING LLC
on behalf of Onsite Builders and Development

Mitchell L. Fischman, Principal

Attachment: Figure 1. Project Locus, 11-26 Heron Street, West Roxbury

cc: Jonathan Greeley, BPDA Director of Development Review and Policy
Aisling Kerr, BPDA Project Manager
District City Councilor Matt O'Malley
Jack Duggan, Mayor's Office of Neighborhood Services
State Senator Michael F. Rush
State Representative Edward J. Coppinger
Peter Heaney, Onsite Builders and Development
Joseph Rull, MJR Consulting LLC
George Morancy, Adams & Morancy, P.C.
Lucio Trabucco, Nunes Trabucco Architects

11-26 Heron Street

Figure 1. Project Locus
11-26 Heron Street, West Roxbury

APPENDIX B – AIR QUALITY APPENDIX

APPENDIX B
AIR QUALITY

11-26 HERON STREET
PROJECT NOTIFICATION FORM

Pages **Contents**

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

*** MODEL SETUP OPTIONS SUMMARY ***

- -

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

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

**Model Uses URBAN Dispersion Algorithm for the SBL for 2 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 90700.0 ; Urban Roughness Length = 1.000 m

**Model Allows User-Specified Options:
1. Stack-tip Downwash.
2. Model Assumes Receptors on FLAT Terrain.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. Full Conversion Assumed for NO2.
6. Urban Roughness Length of 1.0 Meter Used.

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

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: CO

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

**This Run Includes: 2 Source(s); 1 Source Group(s); and 1025 Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 2 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

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

**The AERMET Input Meteorological Data Version Date: 18081

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

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

```
**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     6.10 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

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

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

**File for Summary of Results:   W:\Apps\aermod\4421\CO_5yrs_CO.SUM
```

```
*** AERMOD - VERSION  18081 ***   *** 11 and 26 Heron Street Parking Garages                                ***        03/26/19
*** AERMET - VERSION  18081 ***   *** CO One-Hour Screening Modeling                                        ***        10:49:12
                                                                                                                       PAGE   2
*** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

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

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

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

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

                                                  1.54,   3.09,   5.14,   8.23,  10.80,
```

```
*** AERMOD - VERSION  18081 ***   *** 11 and 26 Heron Street Parking Garages                                ***        03/26/19
*** AERMET - VERSION  18081 ***   *** CO One-Hour Screening Modeling                                        ***        10:49:12
                                                                                                                       PAGE   3
*** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

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

  Surface file:   Urban.sfc                                                                           Met Version:  18081
  Profile file:   Urban.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    11111                Upper air station no.:    22222
                 Name: UNKNOWN                                  Name: UNKNOWN
                 Year:   2010                                   Year:   2010
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
10	01	01	1	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	10.	10.0	255.2	2.0
10	01	02	2	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	20.	10.0	255.2	2.0
10	01	03	3	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	30.	10.0	255.2	2.0
10	01	04	4	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	40.	10.0	255.2	2.0
10	01	05	5	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	50.	10.0	255.2	2.0
10	01	06	6	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	60.	10.0	255.2	2.0
10	01	07	7	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	70.	10.0	255.2	2.0
10	01	08	8	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	80.	10.0	255.2	2.0
10	01	09	9	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	90.	10.0	255.2	2.0
10	01	10	10	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	100.	10.0	255.2	2.0
10	01	11	11	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	110.	10.0	255.2	2.0

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

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

F indicates top of profile (=1) or below (=0)
*** AERMOD - VERSION  18081 ***   *** 11 and 26 Heron Street Parking Garages                              ***        03/26/19
*** AERMET - VERSION  18081 ***   *** CO One-Hour Screening Modeling                                      ***        10:49:12
                                                                                                                     PAGE   4
*** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

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


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

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

ALL      HIGH   1ST HIGH VALUE IS      50.81109  ON 10020302: AT (  322738.00,  4681969.60,     6.10,     6.10,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```


```
*** AERMOD - VERSION  18081 ***   *** 11 and 26 Heron Street Parking Garages                              ***        03/26/19
*** AERMET - VERSION  18081 ***   *** CO One-Hour Screening Modeling                                      ***        10:49:12
                                                                                                                     PAGE   5
*** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN
```


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

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

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

A Total of       18504 Hours Were Processed

A Total of           0 Calm Hours Identified

A Total of           0 Missing Hours Identified (  0.00 Percent)


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

INDOOR GARAGE ANALYSIS PROGRAM

PROJECT: 11 HERON STREET GARAGES PEAK PM HOUR - YEAR: 2025

DISTANCE IN:	**90 METERS**
DISTANCE OUT:	**90 METERS**
NUMBER OF EXIT LANES:	**1 LANE(S)**
PEAK VOLUME:	**13 VEH/HOUR**
CO RATE:	**2.935 GRAMS CO/MILE**
SPEED IN GARAGE:	**5.0 M.P.H.**
VENT CFM:	**10,800 CFM**

TOTAL CO EMISSIONS = 0.024 GRAMS/MIN = 0.00039 GRAMS/SEC
TOTAL VENTILATION = 300 CU. M/MIN

PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES: 0.068 PPM

INDOOR GARAGE ANALYSIS PROGRAM

PROJECT: 26 HERON STREET GARAGES PEAK PM HOUR - YEAR: 2025

DISTANCE IN:	**45 METERS**
DISTANCE OUT:	**45 METERS**
NUMBER OF EXIT LANES:	**1 LANE(S)**
PEAK VOLUME:	**10 VEH/HOUR**
CO RATE:	**2.935 GRAMS CO/MILE**
SPEED IN GARAGE:	**5.0 M.P.H.**
VENT CFM:	**7,700 CFM**

TOTAL CO EMISSIONS = 0.014 GRAMS/MIN = 0.00024 GRAMS/SEC
TOTAL VENTILATION = 220 CU. M/MIN

PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES: 0.057 PPM

MOVES2014B OUTPUT – 11 HERON STREET

Zone ID	Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
250250	5	0.038	10	5	CO	2.935
250250	5	0.038	13	5	CO	2.935

MOVES2014B OUTPUT – 26 HERON STREET

Zone ID	Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
250250	5	0.028	9	5	CO	2.935
250250	5	0.028	10	5	CO	2.935

APPENDIX C – NOISE APPENDIX

APPENDIX C
NOISE

11-26 HERON STREET
PROJECT NOTIFICATION FORM

Page **Contents**

Figure 1
Sound Monitoring & Modeling Locations
11-26 Heron Street West Roxbury, MA

TECH environmental

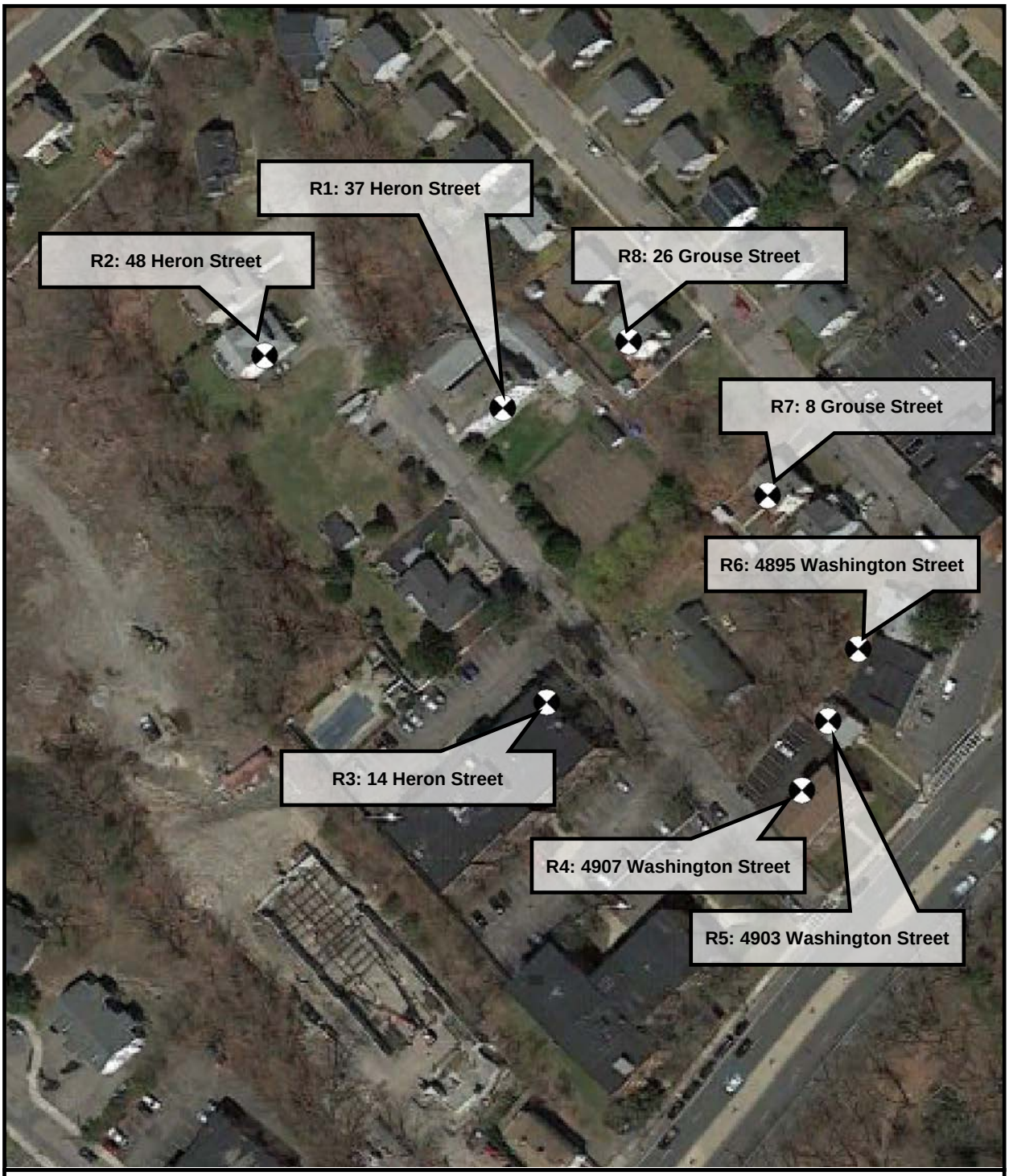

Figure 2
Sound Modeling Receptor Locations
11-26 Heron Street, West Roxbury, MA

Cadna Noise Modeling Results

	31.5	63	125	250	500	1000	2000	4000	8000	A-Wtd	
Local Nighttime Limit	68	67	61	52	46	40	33	28	26	**50**	
Nighttime Results	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**A-Wtd**	**Complies Night?**
37 Heron St	29	29	29	29	26	27	21	17	3	**30.3**	**YES**
48 Heron Street	32	33	33	33	29	30	24	20	8	**33.6**	**YES**
14 Heron Street	29	29	29	29	26	28	22	17	3	**30.7**	**YES**
4907 Washington Street	33	35	36	35	30	31	25	21	9	**34.6**	**YES**
4903 Washington Street	35	35	34	35	30	32	26	23	12	**35.3**	**YES**
4895 Washington Street	34	34	32	31	27	28	23	19	7	**31.5**	**YES**
8 Grouse Street	29	29	28	28	25	27	21	17	3	**30.0**	**YES**
26 Grouse Street	26	26	26	26	23	24	18	13	-4	**27.0**	**YES**

NIGHTTIME RESULTS & MASSDEP ANALYSIS (< +10 dBA)	**Impact Level (dBA)**	**Background Level (dBA)**	***Total Level (dBA)***	***Increase (dBA)***	**Complies Night?**
37 Heron St	30.3	30.3	33.3	**+3.0**	**YES**
48 Heron Street	33.6	31.8	35.8	**+4.0**	**YES**
14 Heron Street	30.7	38.1	38.8	**+0.7**	**YES**
4907 Washington Street	34.6	38.1	39.7	**+1.6**	**YES**
4903 Washington Street	35.3	38.1	39.9	**+1.8**	**YES**
4895 Washington Street	31.5	38.1	39.0	**+0.9**	**YES**
8 Grouse Street	30.0	30.3	33.2	**+2.9**	**YES**
26 Grouse Street	27.0	30.3	32.0	**+1.7**	**YES**

APPENDIX D – TRANSPORTATION APPENDIX

Client:	Mike Littman
Project #:	314_C002_HSH
BTD #:	Location 1
Location:	West Roxbury, Boston, MA
Street 1:	Washington Street
Street 2:	Heron Street
Count Date:	1/16/2019
Day of Week:	Wednesday
Weather:	Clouds & Sun, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	245	0	1	0	160	1	0	3	0	0	0	0	0	0
7:15 AM	0	0	259	0	0	0	164	0	0	2	0	0	0	0	0	0
7:30 AM	0	0	268	0	0	0	175	0	0	2	0	1	0	0	0	0
7:45 AM	0	0	285	0	0	0	183	1	0	1	0	1	0	0	0	0
8:00 AM	0	0	297	0	0	0	196	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	284	0	0	0	205	1	0	2	0	2	0	0	0	0
8:30 AM	0	0	265	0	0	0	190	1	0	2	0	3	0	0	0	0
8:45 AM	0	0	258	0	1	0	171	0	0	0	0	1	0	0	0	0
9:00 AM	0	0	246	0	0	0	155	1	0	1	0	1	0	0	0	0
9:15 AM	0	1	227	0	0	0	136	1	0	1	0	2	0	0	0	0
9:30 AM	0	0	203	0	0	0	138	0	0	1	0	1	0	0	0	0
9:45 AM	0	0	189	0	1	0	134	2	0	3	0	2	0	0	0	0
10:00 AM	0	0	171	0	0	0	135	0	0	0	0	1	0	0	0	0
10:15 AM	0	0	172	0	0	0	133	3	0	0	0	2	0	0	0	0
10:30 AM	0	0	169	0	0	0	141	0	0	1	0	2	0	0	0	0
10:45 AM	0	0	170	0	0	0	146	1	0	1	0	1	0	0	0	0
11:00 AM	0	0	167	0	0	0	152	0	0	2	0	1	0	0	0	0
11:15 AM	0	1	168	0	0	0	154	1	0	0	0	0	0	0	0	0
11:30 AM	0	0	165	0	0	0	153	1	0	2	0	1	0	0	0	0
11:45 AM	0	0	169	0	0	0	149	1	0	2	0	2	0	0	0	0
12:00 PM	0	0	168	0	0	0	148	1	0	1	0	0	0	0	0	0
12:15 PM	0	0	166	0	0	0	145	0	0	1	0	2	0	0	0	0
12:30 PM	0	0	164	0	0	0	153	1	0	1	0	1	0	0	0	0
12:45 PM	0	0	163	0	0	0	158	0	0	2	0	1	0	0	0	0
1:00 PM	1	0	161	0	0	0	166	1	0	0	0	2	0	0	0	0
1:15 PM	0	0	160	0	0	0	170	5	0	2	0	1	0	0	0	0
1:30 PM	0	0	155	0	0	0	179	1	0	1	0	1	0	0	0	0
1:45 PM	0	0	153	0	0	0	184	2	0	3	0	0	0	0	0	0
2:00 PM	0	0	147	0	0	0	195	3	0	1	0	1	0	0	0	0
2:15 PM	0	1	162	0	0	0	202	0	0	4	0	0	0	0	0	0
2:30 PM	0	0	173	0	0	0	210	0	0	1	0	2	0	0	0	0
2:45 PM	0	0	186	0	0	0	213	1	0	1	0	1	0	0	0	0
3:00 PM	0	0	195	0	0	0	221	1	0	1	0	1	0	0	0	0
3:15 PM	0	0	184	0	0	0	224	1	0	0	0	0	0	0	0	0
3:30 PM	0	1	170	0	0	0	242	0	0	1	0	1	0	0	0	0
3:45 PM	0	0	158	0	0	0	256	2	0	1	0	0	0	0	0	0
4:00 PM	0	0	146	0	0	0	275	5	0	1	0	1	0	0	0	0
4:15 PM	0	0	162	0	0	0	288	4	0	0	0	1	0	0	0	0
4:30 PM	0	1	174	0	0	0	285	2	0	1	0	1	0	0	0	0
4:45 PM	0	0	189	0	0	0	276	1	0	1	0	0	0	0	0	0
5:00 PM	0	1	201	0	0	0	271	3	0	0	0	0	0	0	0	0
5:15 PM	0	0	203	0	0	0	260	1	0	1	0	1	0	0	0	0
5:30 PM	0	0	198	0	0	0	257	5	0	1	0	1	0	0	0	0
5:45 PM	0	1	194	0	0	0	254	1	0	0	0	2	0	0	0	0

AM PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
7:45 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
8:45 AM	**0**	**0**	**1131**	**0**	**0**	**0**	**774**	**3**	**0**	**5**	**0**	**6**	**0**	**0**	**0**	**0**
PHF	**0.95**				**0.94**				**0.55**				**0.00**			
HV %	**0.0%**	**0.0%**	**2.7%**	**0.0%**	**0.0%**	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

MID PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
1:00 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
2:00 PM	**1**	**0**	**629**	**0**	**0**	**0**	**699**	**9**	**0**	**6**	**0**	**4**	**0**	**0**	**0**	**0**
PHF	**0.97**				**0.95**				**0.83**				**0.00**			
HV %	**0.0%**	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**0.0%**	**3.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
4:30 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:30 PM	**0**	**2**	**767**	**0**	**0**	**0**	**1092**	**7**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**
PHF	**0.95**				**0.96**				**0.63**				**0.00**			
HV %	**0.0%**	**0.0%**	**2.7%**	**0.0%**	**0.0%**	**0.0%**	**2.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Mike Littman
Project #:	314_C002_HSH
BTD #:	Location 1
Location:	West Roxbury, Boston, MA
Street 1:	Washington Street
Street 2:	Heron Street
Count Date:	1/16/2019
Day of Week:	Wednesday
Weather:	Clouds & Sun, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
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www.BostonTrafficData.com

HEAVY VEHICLES

	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	5	0	0	0	6	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	8	0	0	0	11	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	7	0	0	0	9	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	7	0	0	0	8	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	8	0	0	0	7	1	0	0	0	1	0	0	0	0
9:15 AM	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	7	0	0	0	5	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	5	0	0	0	6	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	7	0	0	0	5	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	6	0	0	0	3	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	5	0	0	0	6	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	8	0	0	0	10	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	5	0	0	0	5	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	6	0	0	0	7	0	0	1	0	0	0	0	0	0
4:00 PM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	7	0	0	0	8	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	5	0	0	0	6	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	5	0	0	0	6	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0

AM PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
7:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
8:15 AM	**0**	**0**	**31**	**0**	**0**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.86**				**0.75**				**0.00**				**0.00**			

MID PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
10:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:15 AM	**0**	**0**	**25**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.89**				**0.88**				**0.00**				**0.00**			

PM PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
2:00 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
3:00 PM	**0**	**0**	**28**	**0**	**0**	**0**	**32**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.88**				**0.80**				**0.00**				**0.00**			

Client:	Mike Littman
Project #:	314_C002_HSH
BTD #:	Location 1
Location:	West Roxbury, Boston, MA
Street 1:	Washington Street
Street 2:	Heron Street
Count Date:	1/16/2019
Day of Week:	Wednesday
Weather:	Clouds & Sun, 40°F

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

PEDESTRIANS & BICYCLES

	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	1	0	1	0	0	0	0	0	0	0	5	0	0	0	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	2	0	0	0	1	0	0	0	0	0	2	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
9:00 AM	0	1	0	1	0	0	0	0	0	0	0	3	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
9:30 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
10:00 AM	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
10:45 AM	0	0	0	1	0	0	0	0	0	0	0	7	0	0	0	0
11:00 AM	0	0	0	1	0	1	0	0	0	0	0	4	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1:45 PM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
3:45 PM	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0

AM PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
7:45 AM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:45 AM	0	2	0	0	0	1	0	0	0	0	0	11	0	0	0	0

MID PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
1:00 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
2:00 PM	0	1	0	0	0	1	0	0	0	0	0	6	0	0	0	0

PM PEAK HOUR	Washington Street Northbound				Washington Street Southbound				Heron Street Eastbound				Westbound			
4:30 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	0	0	0	1	0	1	0	0	0	0	0	7	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Massachusetts Highway Department
Statewide Traffic Data Collection
2016 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.21	1.17	1.10	1.04	0.97	0.92	0.90	0.88	0.97	0.93	0.97	1.05	0.88
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.03	1.02	0.99	0.92	0.91	0.91	0.90	0.94	0.93	0.99	1.02	0.97
R4-R7	1.09	1.13	1.06	1.05	0.95	0.90	0.88	0.91	0.95	0.95	1.04	1.07	0.95
U1-Boston	1.03	1.04	0.99	0.96	0.94	0.91	0.93	0.91	0.95	0.93	0.98	0.98	0.93
U1-Essex	1.06	1.08	1.04	1.01	0.95	0.89	0.88	0.86	0.94	0.94	1.01	1.05	0.91
U1-Southeast	1.07	1.12	1.05	1.01	0.95	0.89	0.87	0.86	0.94	0.95	0.99	1.01	0.94
U1-West	0.97	0.97	0.91	0.95	0.92	0.90	0.94	0.92	0.92	0.90	0.93	0.94	0.94
U1-Worcester	1.10	1.14	1.03	1.00	0.94	0.91	0.92	0.90	0.94	0.93	0.97	1.04	0.92
U2	1.02	1.00	0.97	0.96	0.93	0.90	0.93	0.91	0.94	0.93	0.96	0.99	0.95
U3	1.00	1.00	0.96	0.95	0.92	0.89	0.94	0.92	0.94	0.93	0.96	0.97	0.96
U4-U7	1.02	1.03	0.97	0.96	0.92	0.89	0.93	0.92	0.94	0.95	0.98	0.96	0.93
Rec - East	1.18	1.17	1.13	1.05	0.93	0.84	0.79	0.80	0.93	1.00	1.09	1.13	0.99
Rec - West	1.20	1.24	1.29	1.18	1.03	0.85	0.70	0.81	0.92	0.95	1.11	1.15	0.98

Round off:
0-999 = 10
>1000 = 100

U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.

2/13/2019

11-26 Heron Street

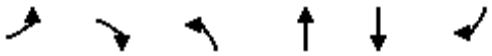
Trip Generation Assessment

HOWARD STEIN HUDSON
11-Mar-2019

xx HARD CODED TO BALANCE

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Transit Share[3]	Transit Person-Trips	Walk/Bike/ Other Share[3]	Walk/ Bike/ Other Trips	Auto Share[3]	Auto Person-Trips	Assumed Local Auto Occupancy Rate[5]	Total Adjusted Private Auto Trips
Daily Peak Hour															
Multifamily Housing (Mid Rise)[7]	72	Total		5.440	392	1.18	**462**	8%	**36**	8%	**36**	84%	**390**	1.18	**330**
	units	In	50%	2.720	196	1.18	**231**	8%	**18**	8%	**18**	84%	**195**	1.18	**165**
		Out	50%	2.720	196	1.18	**231**	8%	**18**	8%	**18**	84%	**195**	1.18	**165**
Total		Total			**392**		**462**		**36**		**36**		**390**		**330**
		In			**196**		**231**		**18**		**18**		**195**		**165**
		Out			**196**		**231**		**18**		**18**		**195**		**165**
AM Peak Hour															
Multifamily Housing (Mid Rise)[7]	72	Total		0.360	26	1.18	**30**		**5**		**3**		**22**	1.18	**19**
	units	In	26%	0.094	7	1.18	**8**	9%	**1**	11%	**1**	80%	**6**	1.18	**5**
		Out	74%	0.266	19	1.18	**22**	19%	**4**	8%	**2**	73%	**16**	1.18	**14**
Total		Total			**26**		**30**		**5**		**3**		**22**		**19**
		In			**7**		**8**		**1**		**1**		**6**		**5**
		Out			**19**		**22**		**4**		**2**		**16**		**14**
PM Peak Hour															
Multifamily Housing (Mid Rise)[7]	72	Total		0.440	31	1.18	**36**		**5**		**4**		**27**	1.18	**23**
	units	In	61%	0.268	19	1.18	**22**	19%	**4**	8%	**2**	73%	**16**	1.18	**14**
		Out	39%	0.172	12	1.18	**14**	9%	**1**	11%	**2**	80%	**11**	1.18	**9**
Total		Total			**31**		**36**		**5**		**4**		**27**		**23**
		In			**19**		**22**		**4**		**2**		**16**		**14**
		Out			**12**		**14**		**1**		**2**		**11**		**9**

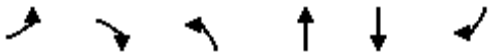
1. 2017 National vehicle occupancy rates - 1.18:home to work; 1.82: family/personal business; 1.82: shopping; 2.1 social/recreational
2. Based on ITE Trip Generation Handbook, 3rd Edition method
3. Mode shares based on peak-hour BTD Data for Area 19
5. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates
7. ITE Trip Generation Manual, 10th Edition, LUC 221 (Multifamily Housing (Mid Rise)), average rate



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	6	0	1165	797	3
Future Volume (Veh/h)	5	6	0	1165	797	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.55	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	9	11	0	1226	848	3
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1474	436	862			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1474	436	862			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	98	100			
cM capacity (veh/h)	118	567	780			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	613	613	565	286
Volume Left	9	0	0	0	0
Volume Right	11	0	0	0	3
cSH	210	1700	1700	1700	1700
Volume to Capacity	0.10	0.36	0.36	0.33	0.17
Queue Length 95th (ft)	8	0	0	0	0
Control Delay (s)	24.0	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	24.0	0.0		0.0	
Approach LOS	C				

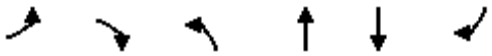
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	2	0	790	1125	7
Future Volume (Veh/h)	3	2	0	790	1125	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.95	0.95	0.96	0.96
Hourly flow rate (vph)	5	3	0	832	1172	7
Pedestrians	7			1		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	3.5			3.5		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1598	598	1186			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1598	598	1186			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	99	100			
cM capacity (veh/h)	98	447	592			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	8	416	416	781	398
Volume Left	5	0	0	0	0
Volume Right	3	0	0	0	7
cSH	139	1700	1700	1700	1700
Volume to Capacity	0.06	0.24	0.24	0.46	0.23
Queue Length 95th (ft)	5	0	0	0	0
Control Delay (s)	32.5	0.0	0.0	0.0	0.0
Lane LOS	D				
Approach Delay (s)	32.5	0.0		0.0	
Approach LOS	D				

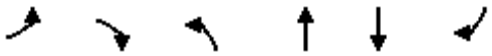
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	6	0	1215	830	3
Future Volume (Veh/h)	5	6	0	1215	830	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.55	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	9	11	0	1279	883	3
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1535	454	897			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1535	454	897			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	98	100			
cM capacity (veh/h)	108	553	757			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	640	640	589	297
Volume Left	9	0	0	0	0
Volume Right	11	0	0	0	3
cSH	194	1700	1700	1700	1700
Volume to Capacity	0.10	0.38	0.38	0.35	0.17
Queue Length 95th (ft)	9	0	0	0	0
Control Delay (s)	25.7	0.0	0.0	0.0	0.0
Lane LOS	D				
Approach Delay (s)	25.7	0.0		0.0	
Approach LOS	D				

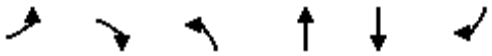
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	2	0	826	1175	7
Future Volume (Veh/h)	3	2	0	826	1175	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.95	0.95	0.96	0.96
Hourly flow rate (vph)	5	3	0	869	1224	7
Pedestrians	7			1		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	3.5			3.5		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1669	624	1238			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1669	624	1238			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	99	100			
cM capacity (veh/h)	88	430	566			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	8	434	434	816	415
Volume Left	5	0	0	0	0
Volume Right	3	0	0	0	7
cSH	126	1700	1700	1700	1700
Volume to Capacity	0.06	0.26	0.26	0.48	0.24
Queue Length 95th (ft)	5	0	0	0	0
Control Delay (s)	35.6	0.0	0.0	0.0	0.0
Lane LOS	E				
Approach Delay (s)	35.6	0.0		0.0	
Approach LOS	E				

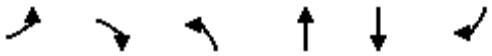
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	11	0	1217	830	8
Future Volume (Veh/h)	14	11	0	1217	830	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.55	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	25	20	0	1281	883	9
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1539	457	903			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1539	457	903			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	96	100			
cM capacity (veh/h)	107	550	753			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	45	640	640	589	303
Volume Left	25	0	0	0	0
Volume Right	20	0	0	0	9
cSH	167	1700	1700	1700	1700
Volume to Capacity	0.27	0.38	0.38	0.35	0.18
Queue Length 95th (ft)	26	0	0	0	0
Control Delay (s)	34.3	0.0	0.0	0.0	0.0
Lane LOS	D				
Approach Delay (s)	34.3	0.0		0.0	
Approach LOS	D				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	5	0	831	1175	21
Future Volume (Veh/h)	9	5	0	831	1175	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.95	0.95	0.96	0.96
Hourly flow rate (vph)	14	8	0	875	1224	22
Pedestrians	7			1		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	3.5			3.5		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1680	631	1253			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1680	631	1253			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	98	100			
cM capacity (veh/h)	87	425	558			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	22	438	438	816	430
Volume Left	14	0	0	0	0
Volume Right	8	0	0	0	22
cSH	122	1700	1700	1700	1700
Volume to Capacity	0.18	0.26	0.26	0.48	0.25
Queue Length 95th (ft)	16	0	0	0	0
Control Delay (s)	40.8	0.0	0.0	0.0	0.0
Lane LOS	E				
Approach Delay (s)	40.8	0.0		0.0	
Approach LOS	E				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX E – RESPONSES TO CLIMATE CHANGE QUESTIONNAIRE

boston planning & development agency

Appendix E1 - Climate Change Resiliency Checklist
11 Heron Street, West Roxbury

A.1 - Project Information

Project Name:	11 Heron St			
Project Address:	11 Heron St			
Project Address Additional:	West Roxbury, MA			
Filing Type (*select*)	*Initial (PNF, EPNF, NPC or other substantial filing)* *Design / Building Permit (prior to final design approval), or* *Construction / Certificate of Occupancy (post construction completion)*			
Filing Contact	*Colleen Soden*	*Soden Sustainability Consulting*	*colleen@sodensustainability.com*	*617-372-7857*
Is MEPA approval required	*Yes/**no***		*Date*	

A.3 - Project Team

Owner / Developer:	Onsite Builders & Development, LLC
Architect:	Nunes Trabucco Architects
Engineer:	J.M. Grenier Associates, Inc.
Sustainability / LEED:	Soden Sustainability Consulting
Permitting:	Mitchell L. Fischman ("MLF") Consulting, LLC
Construction Management:	O'Donnell Construction Services

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential
List the First Floor Uses:	Residential, lobby
List any Critical Site Infrastructure and or Building Uses:	n/a

Site and Building:

Site Area:	*29,275 SF*	Building Area:	*41,240 SF Residential & 11,746 SF Parking level*
Building Height:	*50'-10" Ft Average*	Building Height:	*4 Stories*
Existing Site Elevation – Low:	*208 Ft BCB*	Existing Site Elevation – High:	*222 Ft BCB*
Proposed Site Elevation – Low:	*209 Ft BCB*	Proposed Site Elevation – High:	*222 Ft BCB*
Proposed First Floor Elevation:	*208 Ft BCB Entry*	Below grade levels:	*0.5 Stories*

Article 37 Green Building:

LEED Version - Rating System :	LEED BDC v4	LEED Certification:	*Yes / **No***
Proposed LEED rating:	*Certified/**Silver**/ Gold/Platinum*	Proposed LEED point score:	*53 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:	*R40ci (R)*	Exposed Floor:	*R30ci (R)*
Foundation Wall:	*NA (R)*	Slab Edge (at or below grade):	*R19 + R7.5ci (R)*

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

Area of Opaque Curtain Wall & Spandrel Assembly:	*0 (%)*	Wall & Spandrel Assembly Value:	*U-0.060 (U)*
Area of Framed & Insulated / Standard Wall:	*75.1 (%)*	Wall Value	*R19 + R7.5ci (R)*
Area of Vision Window:	*24.9 %*	Window Glazing Assembly Value:	*U-0.33 (U)*
		Window Glazing SHGC:	*0.27(SHGC)*
Area of Doors:	*1 %*	Door Assembly Value:	*U-0.5 (U)*

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	*Energy performance was evaluated using an eQuest v3.65 energy model created based on 2/26/19 drawings. Loads were estimated based on building size and use type.*		
Annual Electric:	*347,793 (kWh)*	Peak Electric:	*94.2 (kW)*
Annual Heating:	*840 (MMbtu)*	Peak Heating:	*0.7 (MMbtu/hr)*
Annual Cooling:	*6,500 (Tons-hr)*	Peak Cooling:	*10 (Tons)*
Energy Use - Below ASHRAE 90.1 - 2013:	*23.2 %*	Have the local utilities reviewed the building energy performance?:	***Yes** / no*
Energy Use - Below Mass. Code:	*23.2 %*	Energy Use Intensity:	*51 (kBtu/SF)*

Back-up / Emergency Power System

Electrical Generation Output:	*48 (kW)*	Number of Power Units:	1
System Type:	*Ground (kW)*	Fuel Source:	Natural Gas

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

Electric:	*45 (kW)*	Heating:	*0.4 (MMbtu/hr)*
		Cooling:	*5 (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: *345.2 (Tons)*

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

High energy performance of the building has been incorporated in the project via condensing boilers, condensing DHW heaters, improved envelope, low flow hot water fixtures, and energy star appliances.

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

There is passive energy savings in the orientation and shading of the glazing with recessed balconies as well as operable windows and sliders at the balconies.

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

The high efficiency equipment includes: low flow plumbing fixtures, high efficiency condensing boilers, high efficiency condensing domestic hot water heaters, as well as variable speed hot water pumps.

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

The variable speed hot water loop, condensing boilers (reduced hot water temp) and low flow hot water plumbing fixtures will reduce the loads on both the boiler and the domestic hot water heaters. LED light fixtures will reduce the cooling load in the building as well as reduce the lighting energy.

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

There are not any district scale emission reduction strategies incorporated at this time. Project will consider strategies where feasible as they arise.

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

The client is coordinating with ICF for Utility Incentives

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 has space on the roof that could house both a solar PV array to offset electrical use as well as solar hot water heaters to reduce natural gas use in the building.

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:	*3 Deg.*	Temperature Range - High:	*103 Deg.*
Annual Heating Degree Days:	5,596	Annual Cooling Degree Days	900

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90°:	*25 #*	Days – Above 100°:	*10 #*
Number of Heatwaves / Year:	*5 #*	Average Duration of Heatwave (Days):	*4 #*

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

Heat island effect is reduced by incorporating reflective building materials as well as underground parking.

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:

The building is cooled by many individual heat pumps that can operate independently to maintain indoor conditions at higher outdoor average temperatures.

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:

Interruptions of power can be mitigated in the short term by the emergency generator. Longer power outages could require operable windows to provide ventilation and natural cooling.

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:	*5.25 In.*

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

Runoff from building will be captured by an on-site detention/recharge system

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):

Stormwater from roof runoff can be harvested to accommodate a future irrigation system. This will increase capacity of detention and recharge 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 / **No***	What Zone:	A, AE, AH, AO, AR, A99, V, VE
		Current FEMA SFHA Zone Base Flood Elevation:	*n/a 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 / **No***

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:	*Ft BCB*		
Sea Level Rise - Design Flood Elevation:	*Ft BCB*	First Floor Elevation:	*Ft BCB*
Site Elevations at Building:	*Ft BCB*	Accessible Route Elevation:	*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.:

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.:

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:

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

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.:

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

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

boston planning & development agency

Appendix E2 - Climate Change Resiliency Checklist
26 Heron Street, West Roxbury

A.1 - Project Information

Project Name:	26 Heron St			
Project Address:	26 Heron St			
Project Address Additional:	West Roxbury, MA			
Filing Type (*select*)	*Initial (**PNF,** EPNF, NPC or other substantial filing)* *Design / Building Permit (prior to final design approval), or* *Construction / Certificate of Occupancy (post construction completion)*			
Filing Contact	*Colleen Soden*	*Soden Sustainability Consulting*	*colleen@sodensustainability.com*	*617-372-7857*
Is MEPA approval required	*Yes/**no***		*Date*	

A.3 - Project Team

Owner / Developer:	ONSITE Builders & Development
Architect:	Nunes Trabucco Architects
Engineer:	J.M. Grenier Associates Inc.
Sustainability / LEED:	Soden Sustainability Consulting
Permitting:	Mitchell L. Fischman ("MLF") Consulting
Construction Management:	O'Donnell Construction Services

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential
List the First Floor Uses:	Residential, lobby
List any Critical Site Infrastructure and or Building Uses:	n/a

Site and Building:

Site Area:	*22,787 SF*	Building Area:	*37,464 SF Residential & 8,485 SF Parking Level*
Building Height:	*49'-1" Average Ft*	Building Height:	*4-Stories*
Existing Site Elevation – Low:	*208 Ft BCB*	Existing Site Elevation – High:	*214 Ft BCB*
Proposed Site Elevation – Low:	*211 Ft BCB*	Proposed Site Elevation – High:	*218 Ft BCB*
Proposed First Floor Elevation:	*212 Ft BCB*	Below grade levels:	*0 Stories*

Article 37 Green Building:

LEED Version - Rating System :	LEED v4 BDC	LEED Certification:	*Yes / **No***
Proposed LEED rating:	*Certified/**Silver**/ Gold/Platinum*	Proposed LEED point score:	*53 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:	*R40ci (R)*	Exposed Floor:	*R30ci (R)*
Foundation Wall:	*NA (R)*	Slab Edge (at or below grade):	*R19 + R7.5ci (R)*

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

Area of Opaque Curtain Wall & Spandrel Assembly:	*0 (%)*	Wall & Spandrel Assembly Value:	*U-0.060 (U)*
Area of Framed & Insulated / Standard Wall:	*75.7(%)*	Wall Value	*R19 + R7.5ci (R)*
Area of Vision Window:	*24.3 %*	Window Glazing Assembly Value:	*U-0.32 (U)*
		Window Glazing SHGC:	*0.27 (SHGC)*
Area of Doors:	*1 %*	Door Assembly Value:	*U-0.5 (U)*

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	*Energy performance was evaluated using an eQuest v3.65 energy model created based on 2/26/19 drawings. Loads were estimated based on building size and use type.*		
Annual Electric:	*281,534 (kWh)*	Peak Electric:	*76.8 (kW)*
Annual Heating:	*660 (MMbtu)*	Peak Heating:	*0.5 (MMbtu/hr)*
Annual Cooling:	*4,920 (Tons-hr)*	Peak Cooling:	*7.8 (Tons)*
Energy Use - Below ASHRAE 90.1 - 2013:	*23.2 %*	Have the local utilities reviewed the building energy performance?:	*Yes / **no***
Energy Use - Below Mass. Code:	*23.2 %*	Energy Use Intensity:	*51.5 (kBtu/SF)*

Back-up / Emergency Power System

Electrical Generation Output:	*48 (kW)*	Number of Power Units:	1
System Type:	*Ground (kW)*	Fuel Source:	Natural Gas

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

Electric:	*45 (kW)*	Heating:	*0.4 (MMbtu/hr)*
		Cooling:	*5 (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: *276.7 (Tons)*

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

High energy performance of the building has been incorporated in the project via condensing boilers, condensing DHW heaters, improved envelope, low flow hot water fixtures, and energy star appliances.

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

There is passive energy savings in the orientation and shading of the glazing with recessed balconies as well as operable windows and sliders at the balconies.

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

The high efficiency equipment includes: low flow plumbing fixtures, high efficiency condensing boilers, high efficiency condensing domestic hot water heaters, as well as variable speed hot water pumps.

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

The variable speed hot water loop, condensing boilers (reduced hot water temp) and low flow hot water plumbing fixtures will reduce the loads on both the boiler and the domestic hot water heaters. LED light fixtures will reduce the cooling load in the building as well as reduce the lighting energy.

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

There are not any district scale emission reduction strategies incorporated at this time. Project will consider strategies where feasible as they arise.

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

The client is coordinating with ICF for Utility Incentives

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 has space on the roof that could house both a solar PV array to offset electrical use as well as solar hot water heaters to reduce natural gas use in the building.

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:	*3 Deg.*	Temperature Range - High:	*103 Deg.*
Annual Heating Degree Days:	5,596	Annual Cooling Degree Days	900

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90°:	*25 #*	Days – Above 100°:	*10 #*
Number of Heatwaves / Year:	*5 #*	Average Duration of Heatwave (Days):	*4 #*

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

Heat island effect is reduced by incorporating reflective building materials as well as underground parking.

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:

The building is cooled by many individual heat pumps that can operate independently to maintain indoor conditions at higher outdoor average temperatures.

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:

Interruptions of power can be mitigated in the short term by the emergency generator. Longer power outages could require operable windows to provide ventilation and natural cooling.

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:	*5.25 In..*

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

Runoff from building will be captured by an on-site detention/recharge system

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):

Stormwater from roof runoff can be harvested to accommodate a future irrigation system. This will increase capacity of detention and recharge system

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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 / **No***	What Zone:	A, AE, AH, AO, AR, A99, V, VE
		Current FEMA SFHA Zone Base Flood Elevation:	*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 / **No***

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:	*Ft BCB*		
Sea Level Rise - Design Flood Elevation:	*Ft BCB*	First Floor Elevation:	*Ft BCB*
Site Elevations at Building:	*Ft BCB*	Accessible Route Elevation:	*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.:

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.:

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:

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

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.:

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

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 F – RESPONSES TO COB ACCESSIBILITY GUIDELINES

Article 80 – Accessibility Checklist

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

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

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

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

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/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/ocabr/government/oca-agencies/dpl-lp/opsi/ma-state-building-code-780-cmr.html
4. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
5. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
   www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
   http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

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

1. Project Information:

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

Project Name:	**26 Heron Street Multifamily Residences**
Primary Project Address:	**26 Heron Street, West Roxbury**
Total Number of Phases/Buildings:	1
Primary Contact (Name / Title / Company / Email / Phone):	**Peter Heaney**
Owner / Developer:	**Peter Haney**
Architect:	**Lucio Trabucco** **Nunes Trabucco Architects** **109 Highland Avenue** **Needham, MA 02494**
Civil Engineer:	**J.M. Grenier Associates Inc.** **787 Hartford Turnpike** **Shrewsbury , MA 01545**
Landscape Architect:	**MDLA Michael D'Angelo Landscape Architects LLC** **732 East Broadway #3** **Boston, MA 02127**
Permitting:	**Mitchell L. Fischman ("MLF") Consulting LLC** **41 Brush Hill Road** **Newton, MA 02461**
Construction Management:	**Patrick D. O'Donnell** **O'Donnell Construction Services** **140 Charles Street** **Boston, MA 02114**

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	**No**

Access Board (MAAB)? ***If yes,*** identify and explain.				
2. Building Classification and Description: *This section identifies preliminary construction information about the project including size and uses.*				
What are the dimensions of the project?				
Site Area:	***22,787 SF***	Building Area:		***37,464 GSF***
Building Height:	***Average 49.10 FT.***	Number of Stories:		***4-Flrs.***
First Floor Elevation:	**Entry Level 214.0 ft**	Is there below grade space:		***No***
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:	***Entry Lobby, parking, mechanical spaces and trash/recycling rooms***			
3. Assessment of Existing Infrastructure for Accessibility: *This section explores the proximity to accessible transit lines and institutions, such as (but not limited to) hospitals, elderly & disabled housing, and general neighborhood resources. Identify how the area surrounding the development is accessible for people with mobility impairments and analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.*				
Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	**Heron Street is a dead-end street in a neighborhood consisting of:** **North west and south east of multi-family structures** **North west and north east of single-family residences.** **The site is a sloped site with a grade change from elevation 213 ft on the south east to 207 ft. elevation on the north west of the site.**			

List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	**The site is within walking distance to MBTA bus service along Washington Street and West Roxbury Needham Line Commuter Rail**
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	**Hospitals: Faulkner Hospital, Roslindale Pediatrics Associates.** **Educational Facilities: Roxbury Latin High School, Catholic Memorial High School, Beethoven Public Elementary School, Edelweiss Village Assisted Living Facility and rehabilitee.** **Boston Housing Authority Public Housing, Georgetown Homes**
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	**West Roxbury Branch Public Library** **Dedham Health and Athletic Complex** **Knights of Columbus** **Parkway Community YMCA**
4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a historic district? ***If yes,*** identify which district:	**No.**
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	**No.**

Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	**No.**
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	**Yes.** **City of Boston Guidelines**
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	**Sidewalk width = 5'-0" plus an additional 4'-0" for tree plantings** **Slope will be less than 5% and less than 2% horizontally.** **No.**

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?	C.O.B R.O.W
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No.
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.	No.

6. Accessible Parking:

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

What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	**24 Parking spaces under building totally enclosed and 9 surface Parking Spaces.**
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?	**Two Handicap space Indoor and one Handicap Space outdoor, Outdoor space is van accessible Space to be 8 feet wide with a 5 feet wide drop-off Van Accessible to be 8 feet wide with an 8 feet wide drop-off.**
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	**No.**
Where is the accessible visitor parking located?	**Inside the parking level adjacent to elevator lobby.**
Has a drop-off area been identified? ***If yes,*** will it be accessible?	**No, and yes.**

7. Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors.

Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	**Entryway will have a slope less than 5% leading to main lobby with stair and elevator access.**
Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	**Yes, all entrances are accessible**
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	**Yes.**
8. Accessible Units (Group 2) and Guestrooms: (If applicable) *In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.*	
What is the total number of proposed housing units or hotel rooms for the development?	**32 Residential units,**
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?	**For Sale or Rental Still Being Determined (There will be a total of 32 Units).** **There will be 4 affordable units.**

If a residential development, how many accessible Group 2 units are being proposed?	**Two.**
If a residential development, how many accessible Group 2 units will also be IDP units? *If none*, describe reason.	**Two.**
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.	
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, development will be equipped with an elevator.**

9. Community Impact:

Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.

Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	**We will add trees along the new sidewalk along the property.** **We will also extend the sidewalk to Washington Street so that tenants will have an accessible route to major arteries.** **We will also reconstruct Heron Street, review and modify existing drainage system and construct new sewer and water lines**
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?	**Development will have common areas above main lobby area fully accessible. In addition, the project will provide walkways around the building, fully accessible, for access to open area at rear of structure.** **Outdoor seating and barbeque area will be located at rear of structure.**
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. Development will have meeting area and exercise area in spaces at third and fourth floor adjacent to lobby area which can be used by residents or guests.**

Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	**Only has been presented at a BPDA Scoping Session.**
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this project more accessible?	**Not yet.**

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project. ***See Attachment Figures F-1, F-2 and F-3.***

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

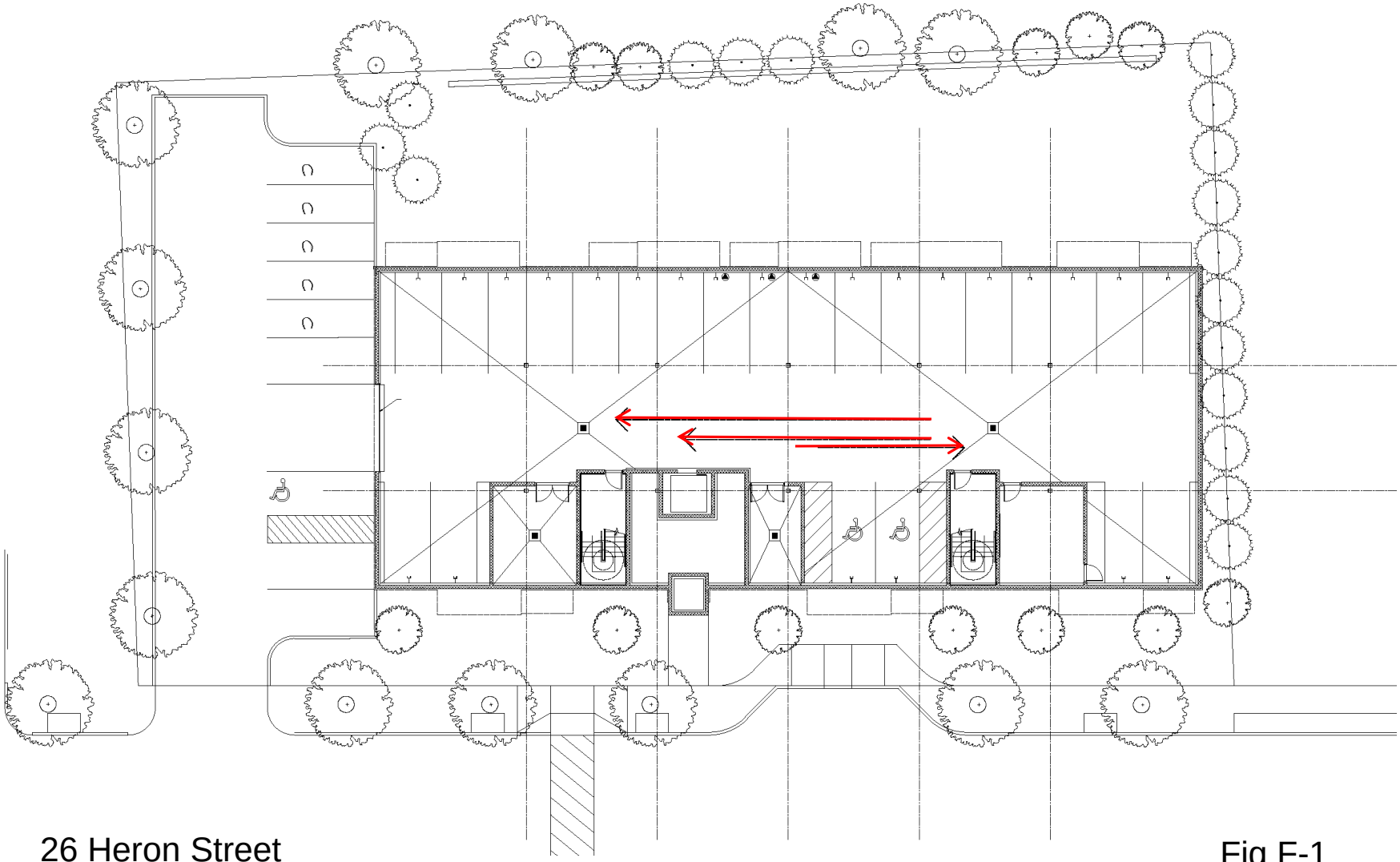
This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open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

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

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

Architectural Access staff can be reached at:

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

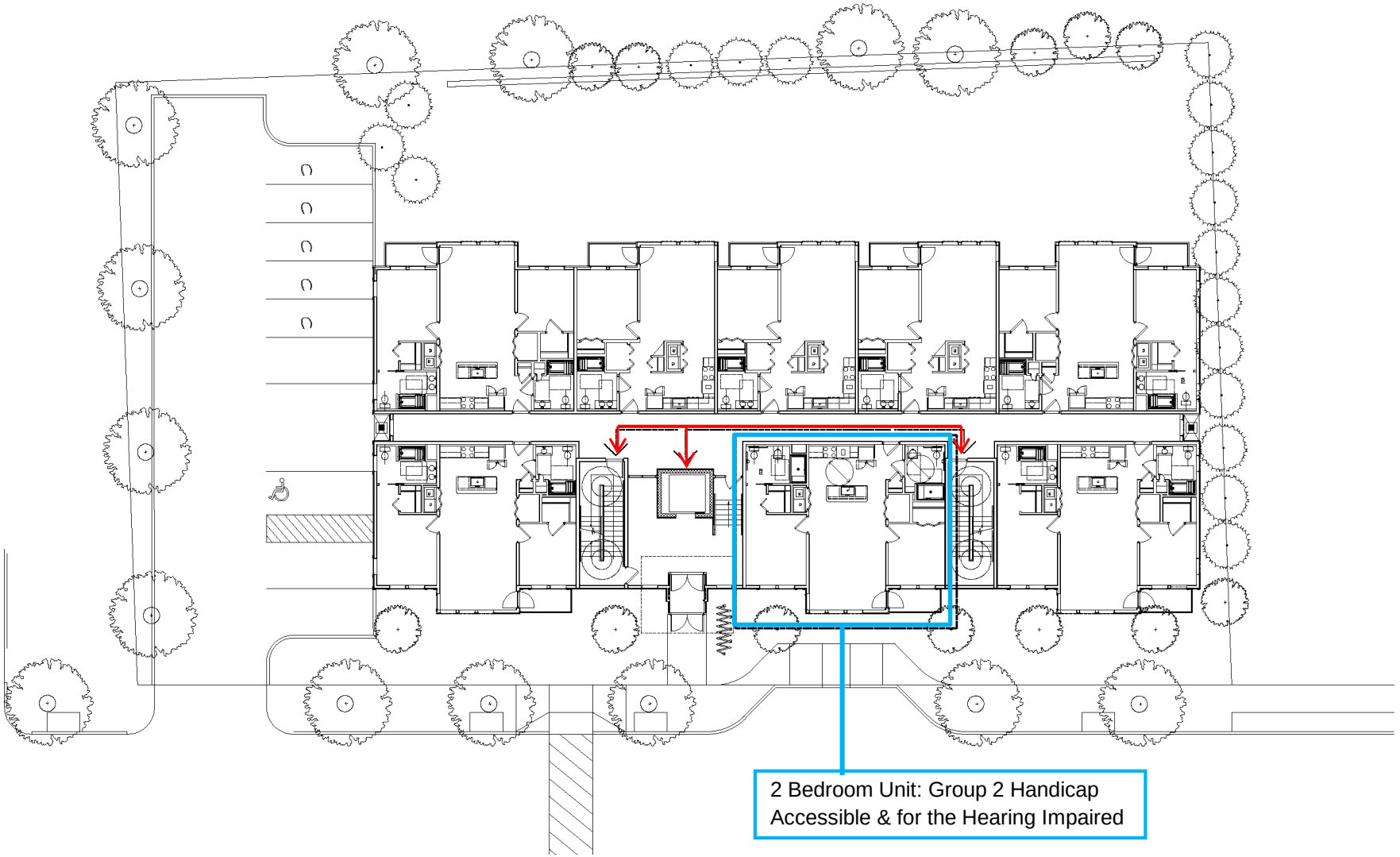


26 Heron Street

Parking Level –Accessible Floor Plan

Fig F-1

NUNES TRABUCCO ARCHITECTS

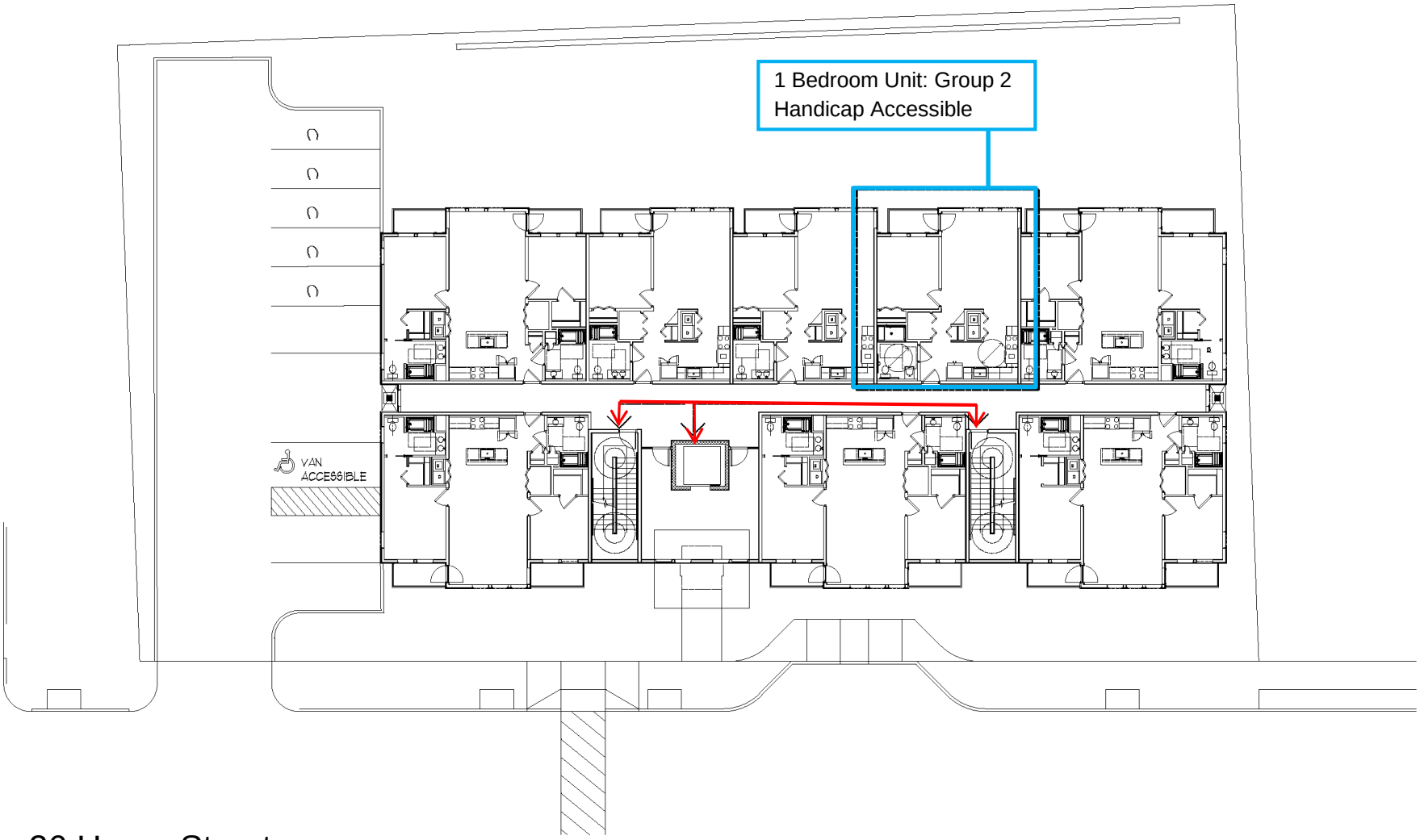


26 Heron Street

Ground Floor–Accessible Floor Plan

Fig F-2

NUNES TRABUCCO ARCHITECTS



26 Heron Street

Typical Floor–Accessible Floor Plan

Fig F-3

NUNES TRABUCCO ARCHITECTS

Article 80 – Accessibility Checklist

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

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3. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/ma-state-building-code-780-cmr.html
4. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
5. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
   www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
   http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

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

1. Project Information:

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

Project Name:	**11 Heron Street Multifamily Residences**
Primary Project Address:	**11 Heron Street West Roxbury**
Total Number of Phases/Buildings:	**1**
Primary Contact (Name / Title / Company / Email / Phone):	**Peter Heaney**
Owner / Developer:	**Peter Heaney**
Architect:	**Lucio Trabucco** **Nunes Trabucco Architects** **109 Highland Avenue** **Needham, MA 02494**
Civil Engineer:	**J.M. Grenier Associates Inc.** **787 Hartford Turnpike** **Shrewsbury , MA 01545**
Landscape Architect:	**MDLA Michael D'Angelo Landscape Architects LLC** **732 East Broadway #3** **Boston, MA 02127**
Permitting:	**Mitchjell L. Fischman ("MLF") Consulting LLC** **41 Brush Hill Road** **Newton, MA 02461**
Construction Management:	**Patrick D. O'Donnell** **O'Donnell Construction Services** **140 Charles Street** **Boston, MA 02114**

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	**No**

Massachusetts Architectural Access Board (MAAB)? ***If yes,*** identify and explain.	

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:	***29,275 SF***	Building Area:	***46,984 GSF***
Building Height:	***Average 50.10 FT.***	Number of Stories:	***4-Flrs.***
First Floor Elevation:	**Entry Level 211.5 ft**	Is there below grade space:	***No***

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:	***Entry Lobby***

3. Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	**Heron Street is a dead-end street in a neighborhood consisting of:** **North west and south east of multi-family structures** **North west and north east of single-family residences.** **The site is a sloped site with a grade change from elevation 213 ft on the south east to 207 ft. elevation on the north west of the site.**

List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	**The site is within a short walking distance to MBTA bus service along Washington Street and within 10 minutes of West Roxbury Needham Line Commuter Rail.**
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	**Hospitals: Faulkner Hospital, Roslindale Pediatrics Associates.** **Educational Facilities: Roxbury Latin High School, Catholic Memorial High School, Beethoven Public Elementary School, Edelweiss Village Assisted Living Facility and rehabilitee.** **Boston Housing Authority Public Housing, Georgetowne Homes**
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	**West Roxbury Branch Public Library** **Dedham Health and Athletic Complex** **Knights of Columbus** **Parkway Community YMCA**
4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a historic district? ***If yes,*** identify which district:	**No.**
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	**No.**

Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	**No.**
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	**Yes.** **City of Boston Guidelines**
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	**Sidewalk width = 5'-0" plus an additional 4'-0" for tree plantings** **Slope will be less than 5% and less than 2% horizontally.** **No.**

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?	C.O.B. R.O.W.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No.
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.	No.

6. Accessible Parking:

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

What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	**33 Parking spaces under building totally enclosed and 19 surface Parking Spaces.**
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?	**Two Handicap space Indoor and one Handicap Space outdoor, Outdoor space is van accessible space to be 8 feet wide with a 5 feet wide drop-off van Accessible to be 8 feet wide with an 8 feet wide drop-off.**
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	**No**
Where is the accessible visitor parking located?	**Inside the parking level adjacent to elevator lobby,**
Has a drop-off area been identified? ***If yes,*** will it be accessible?	**No, and yes.**

7. Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors.

Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	**Entryway will have a slope less than 5% leading to main lobby with stair and elevator access.**
Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	**Yes, all entrances are accessible,**
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	**Yes.**
8. Accessible Units (Group 2) and Guestrooms: (If applicable) *In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.*	
What is the total number of proposed housing units or hotel rooms for the development?	**40 Multifamily residential units.**
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?	**Rental or Homeownership units have not been determined as yet; total units are (40 Units). There will be 5 affordable units.**

If a residential development, how many accessible Group 2 units are being proposed?	**Two.**
If a residential development, how many accessible Group 2 units will also be IDP units? *If none*, describe reason.	**Two.**
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.	
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, development will be equipped with an elevator.**

9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.*	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	**We will add trees along the new sidewalk along the property.** **We will also extend the sidewalk to Washington Street so that tenants will have an accessible rote to major arteries.** **We will also reconstruct Heron Street, review and modify existing drainage system and construct new sewer and water lines**
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?	**Development will have common areas above main lobby area fully accessible. In addition, the Project will provide walkways around the building, fully accessible, for access to open area at rear of structure.**
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.	**Development will have common areas above main lobby area fully accessible. In addition, the Project will provide walkways around the building, fully accessible, for access to open area at rear of structure.** **Outdoor seating and barbeque area will be located at rear of structure.**

Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	**Only has been presented at a BPDA Scoping Session.**
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this project more accessible?	**Not yet.**

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project. ***See Attachment Figures F-4, F-5, and F-6.***

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

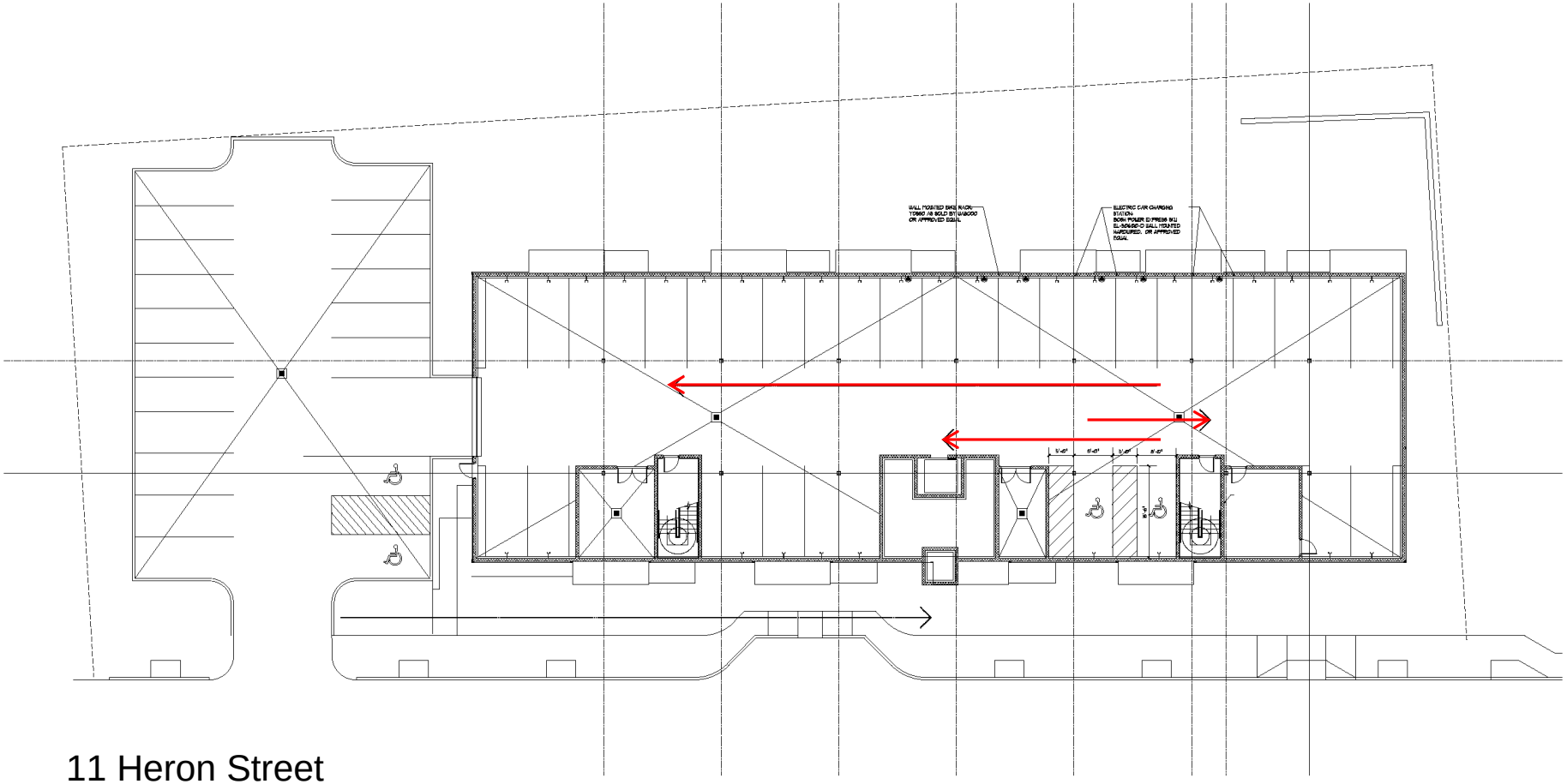
This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open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

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

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

Architectural Access staff can be reached at:

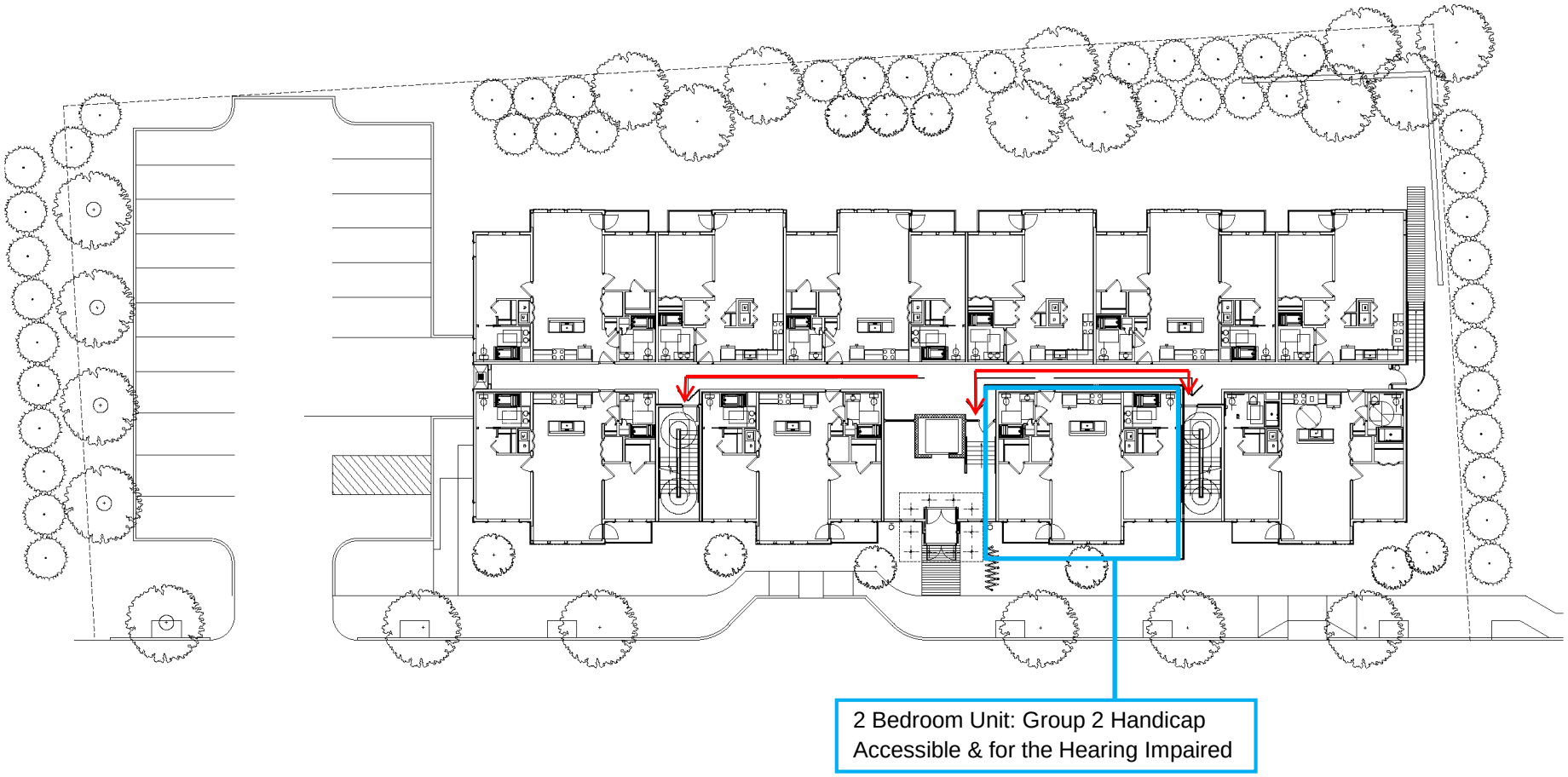
accessibility@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov | 617-635-3682



11 Heron Street

Parking Level –Accessible Floor Plan

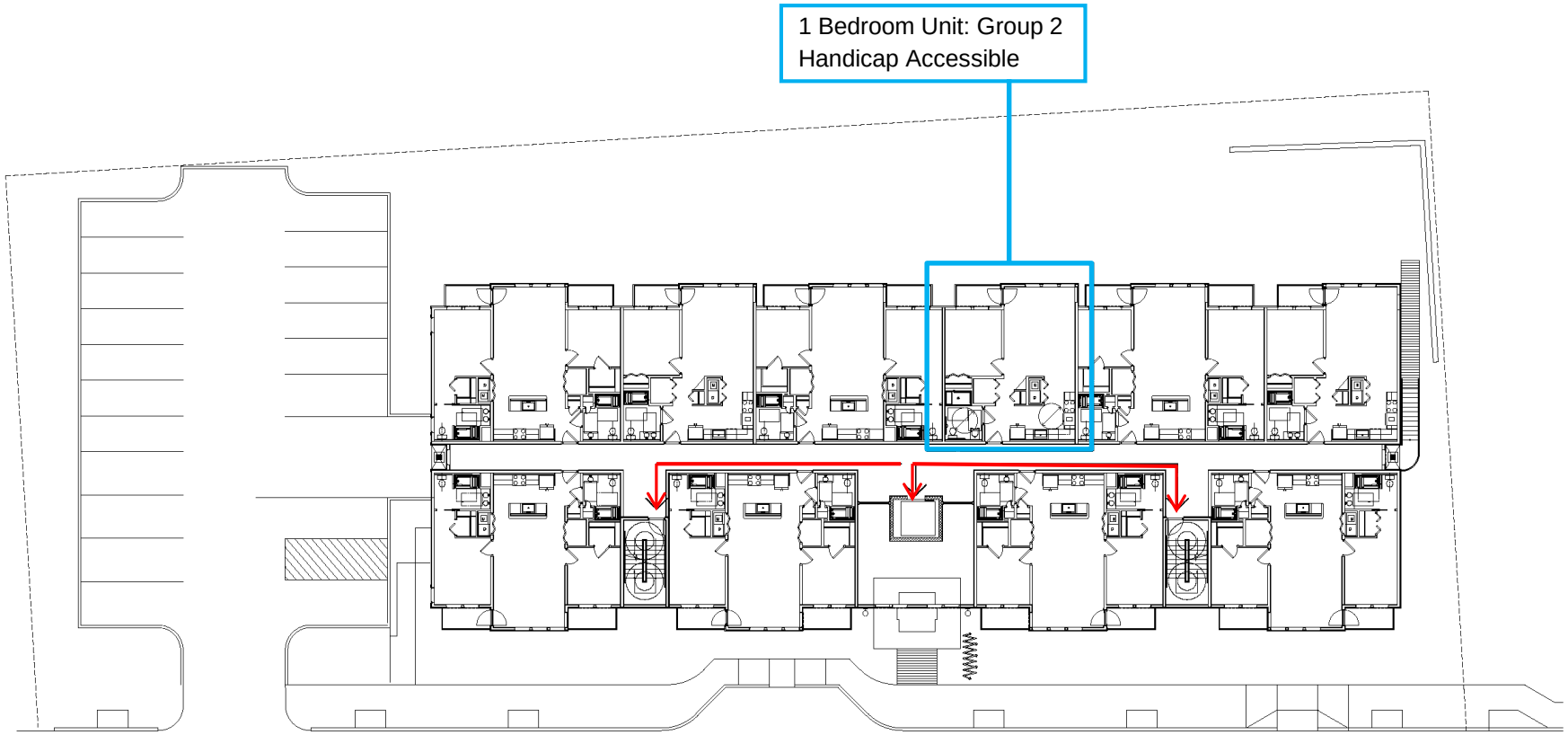
Fig F-4



11 Heron Street
Ground Floor–Accessible Floor Plan

Fig F-5

NUNES TRABUCCO ARCHITECTS



11 Heron Street
Typical Floor–Accessible Floor Plan

Fig F-6

NUNES TRABUCCO ARCHITECTS

APPENDIX G – RESPONSE TO BPDA BROADBAND QUESTIONNAIRE

Appendix G
Broadband Ready Buildings Questionnaire
11-26 Heron Street, West Roxbury

The City of Boston is working to cultivate a broadband ecosystem that serves the current and future connectivity needs of residents, businesses, and institutions. The real estate development process offers a unique opportunity to create a building stock in Boston that enables this vision. In partnership with the development community, the Boston Planning and Development Authority and the City of Boston will begin to leverage this opportunity by adding a broadband readiness component to the Article 80 Design Review. This component will take the form of a set of questions to be completed as part of the Project Notification Form. Thoughtful integration of future-looking broadband practices into this process will contribute to progress towards the following goals:

1. Enable an environment of competition and choice that results in all residents and businesses having a choice of 2 or more wireline or fixed wireless high-speed Internet providers
2. Create a built environment that is responsive to new and emerging connectivity technologies
3. Minimize disruption to the public right of way during and after construction of the building

The information that is shared through the Project Notification Form will help BPDA and the City understand how developers currently integrate telecommunications planning in their work and how this integration can be most responsive to a changing technological landscape.

Upon submission of this online form, a PDF of the responses provided will be sent to the email address of the individual entered as Project Contact. Please include this PDF in the Project Notification Form packet submitted to BPDA.

Section 1: General Questions

For consistency, general intake questions below are modeled after Boston Planning and Development Agency Climate Change Resiliency and Preparedness Checklist.

Project Information

- Project Name: **11-26 Heron Street, West Roxbury**
- Project Address Primary: **11-26 Heron Street, West Roxbury**
- Project Address Additional:
- Project Contact: **Peter Heaney, peter@onsitebuilders.net, Tel: 781-727-1308**
- Expected completion date: **2021**

Team Description

- Owner / Developer: **Onsite Builders & Development, LLC**
- Architect: **Nunes Trabucco Architects**
- Engineer (building systems): **J.M. Grenier Associates, Inc.**
- Permitting: **Mitchell L. Fischman ("MLF") Consulting LLC**
- Construction Management: **Onsite Builders & Development, LLC**

Section 2: Right of Way to Building

Point of Entry Planning

Point of entry planning has important implications for the ease with which your building's telecommunications services can be installed, maintained, and expanded over time.

#1: Please provide the following information for your building's point of entry planning (conduits from building to street for telecommunications). Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- Number of Points of Entry: **Unknown**
- Locations of Points of Entry: **Heron Street**
- Quantity and size of conduits: **Unknown**
- Location where conduits connect (e.g. building-owned manhole, carrier-specific manhole or stubbed at property line): **Unknown**
- Other information/comments: **Unknown**

#2: 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**
- No
- Unknown

Section 3: Inside of the Building

Riser Planning

Riser capacity can enable multiple telecom providers to serve tenants in your building.

#3: Please provide the following information about the riser plans throughout the building. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- Number of risers: **Unknown**
- Distance between risers (if more than one): **Unknown**
- Dimensions of riser closets: **Unknown**
- Riser or conduit will reach to top floor: **Unknown**
- Number and size of conduits or sleeves within each riser: **Unknown**

- Proximity to other utilities (e.g. electrical, heating): **Unknown**
- Other information/comments: **Unknown**

Telecom Room

A well designed telecom room with appropriate security and resiliency measures can be an enabler of tenant choice and reduce the risk of service disruption and costly damage to telecom equipment.

#4: Please provide the following information about the telecom room plans. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- What is the size of the telecom room? **Unknown**

- Describe the electrical capacity of the telecom room (i.e. # and size of electrical circuits) **Unknown**

- 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**
  - No
  - Unknown

- If the building is within a flood-prone geographic area, will the telecom equipment will be located above the floodplain?
  - **Yes**
  - No
  - Unknown

- Will the telecom room be located on a floor where water or other liquid storage is present?
  - Yes
  - **No**
  - Unknown
- Will the telecom room contain a flood drain?
  - Yes
  - No
  - **Unknown**

- Will the telecom room be single use (telecom only) or shared with other utilities?
  - Telecom only
  - Shared with other utilities
- U**nknown**

Delivery of Service Within Building (Residential Only)

Please enter 'unknown' if these decisions have not yet been made or you are presently unsure. Questions 5 through 8 are for residential development only.

#5: Will building/developer supply common inside wiring to all floors of the building?

- Yes
- No
- **Unknown**

#6: If so, what transmission medium (e.g. coax, fiber)? Please enter 'unknown' if these decisions have not yet been made or you are presently unsure. **Unknown**

#7: Is the building/developer providing wiring within each unit?

- **Yes**
- No
- Unknown

#8: If so, what transmission medium (e.g. coax, fiber)? Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

Section 4: Accommodation of New and Emerging Technologies

Cellular Reception

The quality of cellular reception in your building can have major impacts on quality of life and business operations.

Please provide the following information on your plans to facilitate high quality cellular coverage in your building. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

#9: Will the building conduct any RF benchmark testing to assess cellular coverage?

- **Yes**
- No
- Unknown

#10: Will the building allocate any floor space for future in-building wireless solutions (DAS/small **cell/booster equipment)?**

- **Yes**
- No
- Unknown

#11: Will the building be providing an in-building solution (DAS/ Small cell/ booster)?

- **Yes**
- No
- Unknown

#12: If so, are you partnering with a carrier, neutral host provider, or self-installing?

- Carrier
- Neutral host provider
- **Self-installing**

Rooftop Access

Building rooftops are frequently used by telecommunications providers to install equipment critical to the provision of service to tenants.

Please provide the following information regarding your plans for roof access and usage. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

#13: Will you allow cellular providers to place equipment on the roof?

- Yes
- No
- **Unknown**

#14: Will you allow broadband providers (fixed wireless) to install equipment on the roof?

- Yes
- No
- **Unknown**

Section 5: Telecom Provider Outreach

Supporting Competition and Choice

Having a choice of broadband providers is a value add for property owners looking to attract tenants and for tenants in Boston seeking fast, affordable, and reliable broadband service. In addition to enabling tenant choice in your building, early outreach to telecom providers can also reduce cost and disruption to the public right of way. The following questions focus on steps

that property owners can take to ensure that multiple wireline or fixed wireless broadband providers can access your building and provide service to your tenants.

#15: (Residential Only) Please provide the date upon which each of the below providers were successfully contacted, whether or not they will serve the building, what transmission medium they will use (e.g. coax, fiber) and the reason they provided if the answer was 'no'.
TO BE COMPLETED DURING DESIGN DEVELOPMENT

- Comcast - enter contact info
- RCN - enter contact info
- Verizon - enter contact info
- Wicked Broadband - enter contact info
- WebPass
- Starry
- Level 3
- Cogent
- Lightower
- XO Communications
- AT&T
- Zayo
- Other(s) - please specify - enter contact info

#16: Do you plan to abstain from exclusivity agreements with broadband and cable providers?

- **Yes**
- No
- Unknown

#17: Do you plan to make public to tenants and prospective tenants the list of broadband/cable providers who serve the building?

- Yes
- No
- **Unknown**

Section 6: Feedback for Boston Planning and Development Agency

The Boston Planning and Development Agency looks forward to supporting the developer community in enabling broadband choice for resident and businesses. Please provide feedback on your experience completing these questions. **Some of these questions are difficult to respond to at this point in the design process.**

11-26 Heron Street, West Roxbury (Boston)

MLF
CONSULTING LLC