Orient Heights Redevelopment Project

East Boston, Massachusetts

Expanded Project Notification Form
Environmental Notification Form

May 25, 2016

submitted to the **Boston Redevelopment Authority**
and the **Executive Office of Energy and Environmental Affairs**

submitted by **Trinity Orient Heights Limited Partnership**
in collaboration with the **Boston Housing Authority**
and the **East Boston Community Development Corporation**

prepared by **Fort Point Associates, Inc.**

in association with **ICON Architecture, Inc.**
Deborah Myers Landscape Architecture
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Petersen Engineering, Inc.

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

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PROJECT SUMMARY

CHAPTER 1: PROJECT SUMMARY

1.1 PROJECT IDENTIFICATION

Project Name: Orient Heights Redevelopment Project

Address/Location: 160-228 Faywood Avenue, East Boston, MA 02128
1-70 Vallar Road, East Boston, MA 02128
160-250 Waldemar Avenue, East Boston, MA 02128

Proponent: Trinity Orient Heights Limited Partnership

Assessor's Parcel Number: 0102280000

1.2 PROJECT SITE

The Orient Heights Redevelopment Project (the "Project") is located on an approximately 653,763 square foot (approximately 15 acres) site in East Boston and is bound by Faywood Avenue and housing to the south and east, Waldemar Avenue and Suffolk Downs to the north, and is separated from Route 1A to the west by 100 feet of open hillside (the "Project Site"). The adjacent neighborhood is characterized by one- to three-story residences on moderate-sized urban lots. The Project Site is owned by the Boston Housing Authority (BHA) and is the current location of the Orient Heights state public housing development, which consists of thirteen (13) three-story masonry buildings, seven two-story masonry townhouse blocks, a community center, a decommissioned central boiler plant, and five large structural retaining walls that support steep grade changes on the Project Site. The Massachusetts Bay Transportation Authority (MBTA) Suffolk Downs Blue Line station is located within an approximately 10-minute walk northeast of the Project Site. See Figure 1-1, Locus Map and Figure 1-2, Aerial View of Existing Site.

1.2.1 SITE CONTROL

Trinity Orient Heights Limited Partnership or its affiliates (collectively the "Proponent") will enter as lessee into various long-term ground leases with the Boston Housing Authority (BHA), through its instrumentality as lessor, to construct and manage the housing units and amenities under each lease. The Project Site will be developed and managed by the Proponent or its affiliates for the term of each lease.

1.2.2 LEGAL INFORMATION

The Proponent is not aware of any legal judgments in effect or legal actions pending that are adverse to the Project. The Proponent is not in tax arrears on any property owned within the City of Boston.

1.2.3 EASEMENTS

Subject to confirmation by a full title search currently underway, the Proponent is not aware of any utility or other easements on or through the Project Site, which would impair a redevelopment of the Project Site.

1.3 PROJECT SUMMARY

The Project involves the construction of new residential buildings and hardscape ranging from two to five stories, as well as a new community center and landscaped public areas including a new public park. Significant roadway and connectivity improvements, including the removal of the cul-de-sac at the end of Vallar Road, a new connection northward to Waldemar Avenue, and the construction of on-street and off-street parking spaces, will be made as part of the Project.

A total of 373 new housing units are proposed, replacing the existing 331 obsolete 1950s-era BHA public housing units on a one-to-one basis, with an additional 42 units of non-public housing to create a revitalized mixed-income community. The Project will accommodate 194 units in midrise buildings and 179 units in townhouses. The Project will be constructed in multiple phases beginning in 2016 and completed by approximately 2024 depending on available financial resources and market conditions. The Proponent will comply with the City of Boston's Inclusionary Development Policy as applicable. See Figure 1-3, Project Site Plan.

1.4 COMMUNITY PROCESS

The first in a series of community meetings regarding the Project was held in May 2015. Additional meetings have been held as outlined below. The Proponent will continue to work with the City and the neighborhood to gather feedback and develop a project that will benefit the Orient Heights community.

- Resident Meeting I - May 7, 2015
- Resident Meeting II - May 31, 2015
- Orient Heights Neighborhood Council Meeting I - June 15, 2015
- Resident Meeting III - October 28, 2015

- Orient Heights Neighborhood Council Meeting II - November 16, 2015
- Resident Design Charrette & Relocation Fair - January 9, 2016
- Orient Heights Neighborhood Council Meeting III - January 11, 2016

1.5 PUBLIC AND COMMUNITY BENEFITS

The Project includes a wide variety of public and community benefits, as outlined below:

- Replacement of obsolete public housing units with new housing public housing units on a one-to-one basis, featuring modern buildings and unit designs and new energy-efficient systems;
- Creation of a revitalized mixed-income community by including approximately 42 new non-public housing units on the Project Site;
- Reinforcement of transit-oriented development by increasing residential density in proximity to the MBTA rail and bus services, shared cars, and by accommodating bicycle storage on-site;
- Support of the City's goals for a sustainable future through the development of energy-efficient and environmentally friendly buildings that will be certifiable as LEED Silver at a minimum;
- Construction of a new public park, public plazas, and a new community center to create an inviting transition to the community at-large and blending passive and active recreation opportunities;
- Reconstruction of Vallar Road to remove the existing dead-end cul-de-sac and connect the existing street grid to improve access for vehicles, bicycles, and pedestrians;
- Increase in property tax revenues to the City; and
- Provision of approximately 238 full-time equivalent construction-related jobs, 8 full-time equivalent permanent jobs, and stimulation of the local and regional economies.

1.6 SUMMARY OF REQUIRED PERMITS AND APPROVALS

Review under the Massachusetts Environmental Policy Act (MEPA) is required for projects that receive state financial assistance and exceed certain review thresholds. The anticipated Chapter 121A real estate tax agreement in support of affordable housing constitutes state financial assistance, triggering full-scope MEPA jurisdiction. The Project exceeds the applicable threshold of a Chapter 121A project consisting of 100 or more dwelling units.

Accordingly, MEPA review of an Environmental Notification Form is required for the Project and will run concurrently with the Boston Redevelopment Authority's (BRA) Large Project Review.

The table below presents a preliminary list of anticipated reviews and approvals of the Project by governmental agencies based on available information. It is possible that some of the listed reviews and approvals will not be required, or that additional reviews or approvals that will be required are not listed below.

Table 1-1: Anticipated Project Approvals

Agency	Approval
Local	
Boston Redevelopment Authority	• Article 80-B Large Project Review • Cooperation Agreement • Boston Residents Construction Employment Plan
City of Boston	• 121A Agreements
Boston Civic Design Commission	• Recommendation to the BRA Board
Interagency Green Building Committee	• Article 37 Green Buildings Compliance Review
Boston Landmarks Commission	• Article 85 Demolition Delay Review
Boston Transportation Department	• Transportation Access Plan Agreement • Construction Management Plan
Boston Water and Sewer Commission	• Site Plan Approval • Water and Sewer Connection Permits • Temporary Construction Dewatering Permit • General Service Application
Public Improvement Commission	• Specific Repair Plan Approval • Curb Cut Permit • Line and Grade Layout Plan
Boston Fire Department	• Flammable Storage Permit • Approval of Fire Safety Equipment
Inspectional Services Department	• Building Permit • Certificate of Occupancy
State	
Massachusetts Department of Environmental Protection	• Notification Prior to Construction or Demolition
Executive Office of Energy and Environmental Affairs	• Secretary's Certificate
Massachusetts Historical Commission	• Finding of No Adverse Effect
Federal	
Environmental Protection Agency	• NPDES Construction/Stormwater General Permit

Federal Aviation Administration (FAA)	• FAA Approval for Midrise Buildings and Construction Crane
Department of Housing and Urban Development	• Finding of No Significant Impact

1.7 PROJECT TEAM

Proponent	Trinity Orient Heights Limited Partnership 75 Federal Street, 4th Floor Boston, MA 02110 Eva Erlich Vice President, Development eerlich@trinityfinancial.com 617-398-2528
Planning and Permitting	Fort Point Associates, Inc. 31 State Street, 3rd Floor Boston, MA 02109 Robert Ricchi, AICP, LEED AP Senior Planner/Project Manager rricchi@fpa-inc.com 617-357-7044 x209
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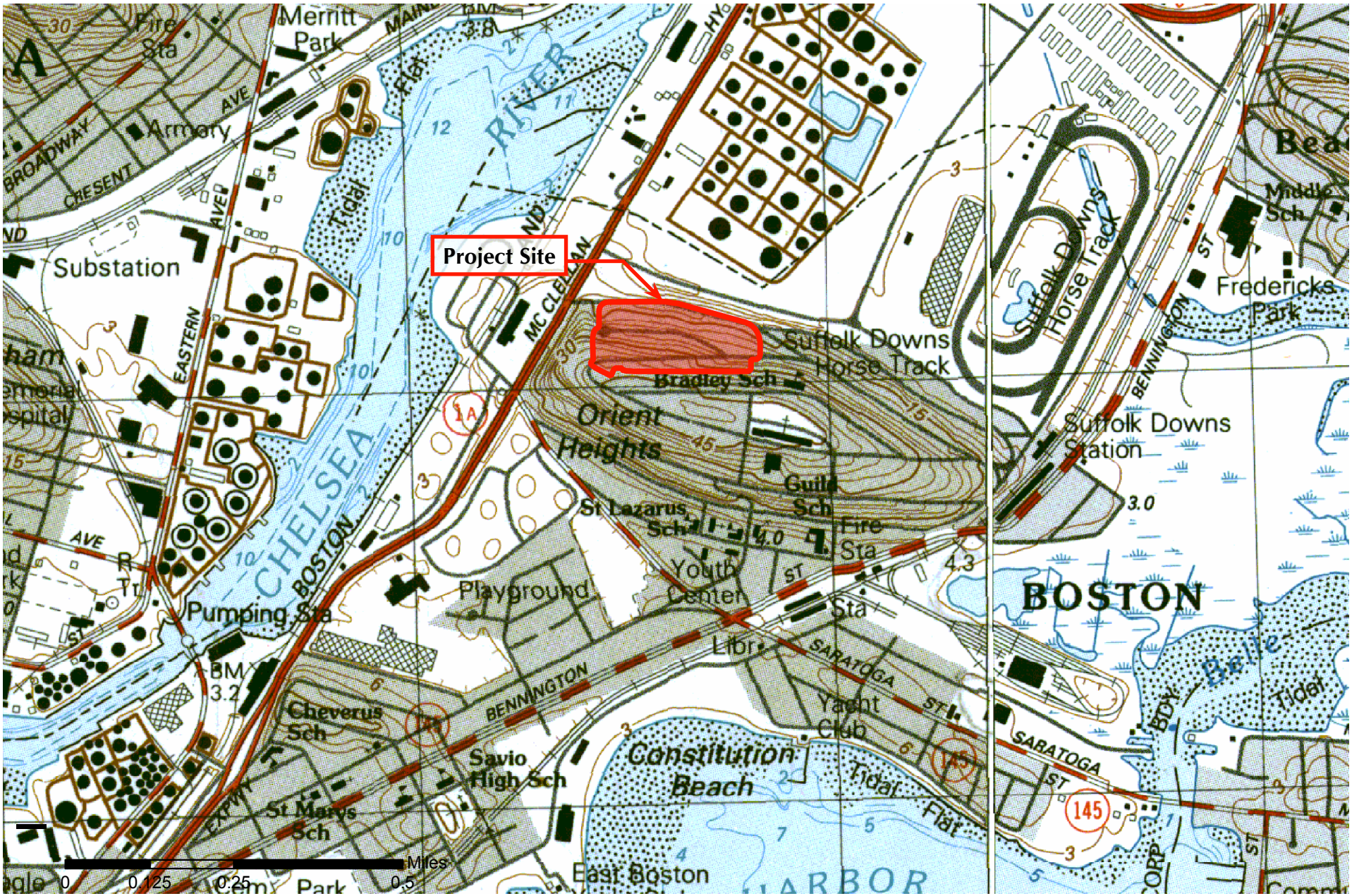
Landscape Architecture	Deborah Myers Landscape Architecture 60 Glen Road, Suite 108 Brookline, MA 02445 Deborah Myers Principal deb@dm-la.com 617-922-6741
Civil Engineering	Nitsch Engineering 2 Center Plaza, Suite 430 Boston, MA 02108 Deborah Danik, PE Project Manager ddanik@nitscheng.com 617-338-0063
Transportation	Nitsch Engineering 2 Center Plaza, Suite 430 Boston, MA 02108 Nick Havan, PE, PTOE Project Manager nhavan@nitscheng.com 617-338-0063
Legal	Goulston & Storrs 400 Atlantic Avenue Boston, MA 02110 Matthew Kiefer Director mkiefer@goulstonstorrs.com 617-574-6597

Geotechnical	McPhail Associates, LLC 2269 Massachusetts Avenue Cambridge, MA 02140 Peter DeChaves, LSP Associate pd@mcphail.com 617-349-7343
MEP	Petersen Engineering, Inc. 335 Maplewood Avenue Portsmouth, NH 03801 James Petersen, PE Principal james@petersenengineering.com 603-436-4233
Sustainability	New Ecology, Inc. 15 Court Square, Suite 420 Boston, MA 02108 Tom Chase Project Manager chase@newecology.org 617-557-1700 x7061



East Boston, Massachusetts

Figure 1-1
Locus Map
Source: USGS

East Boston, Massachusetts

Figure 1-2
Aerial View of Existing Site
Source: Google; Fort Point Associates, Inc., 2016

East Boston, Massachusetts

Figure 1-3
Project Site Plan
Source: ICON Architecture, Inc., 2016

Chapter 2

PROJECT DESCRIPTION

CHAPTER 2: PROJECT DESCRIPTION

2.1 PROJECT SITE AND SURROUNDINGS

The Project Site is located on an approximately 653,763 square foot (approximately 15 acres) site in East Boston and is bound by Faywood Avenue and housing to the south and east, Waldemar Avenue and Suffolk Downs to the north, and is separated from Route 1A to the west by 100 feet of open hillside. The adjacent neighborhood is characterized by one- to three-story residences on moderate-sized urban lots. The Project Site contains the Orient Heights state public housing development, which consists of 331 housing units across thirteen (13) three-story buildings and seven (7) two-story townhouse blocks. The current development also contains a community center and a decommissioned central boiler plant.

When the public housing development was constructed in the early 1950s, the Orient Heights hillside was modified with retaining walls to provide three relatively level terraces upon which to build. The tall retaining walls, which rise up to approximately 29 feet in height, extend throughout the Project Site to facilitate the transition in grades moving south to north across the Project Site. Readily visible from the northern (downhill) side of the Project Site, the existing conditions of the walls affects to the existing development's appearance. The walls effectively divide the Project Site into upper and lower areas, preventing easy internal circulation for pedestrians, cyclists, or vehicles. Residents must traverse a long path through the neighborhood to walk from one side of the Project Site to the other. The Vallar Road dead end and one-way street network on Faywood Avenue does not easily connect into the greater neighborhood grid, requiring vehicles to travel in a circuitous path to enter or leave the Project Site. Existing parking is generally limited to parallel parking on local streets. The Suffolk Downs MBTA Blue Line station is located within an approximately 10-minute walk northeast of the Project Site. See Figure 2-1, Aerial View of Existing Site; Figure 2-2, Existing Conditions Plan; and Figures 2-3 through 2-6, Existing Conditions Photographs.

2.1.2. EXISTING BUILDING CONDITIONS

Originally built in the early 1950s, the existing three-story (plus basement) multi-family and townhouse buildings are constructed on concrete foundations built into the hillsides. Although still occupied, the Project Site and buildings have received limited renovations since their construction over 60 years ago. The most recent substantial interior modernization efforts were completed 20 years ago on only a portion of the existing buildings, while heating systems have been upgraded during the last decade. However, the existing buildings, systems, and infrastructure are obsolete and no longer provide residents with the quality or type of housing they need. Significant concerns regarding the existing development include the following:

- The existing unit design and layout does not meet contemporary living standards. In addition to being small, the units have poor layouts and lack adequate kitchens and family dining areas;

- The units have little or no relationship to useable exterior open space;

- Obsolete building systems including mechanical, plumbing, and electrical building infrastructure have served beyond their useful life;

- Energy efficiency is insufficient throughout the development. The existing development was built before energy efficiency measures were standard practice and the buildings are largely uninsulated;

- Resident health is a concern. Water infiltration into some of the buildings has resulted in mold formation; and

- Accessibility is insufficient and not compliant with current regulations. There are few buildings that are compliant with the Americans with Disabilities Act (ADA) in the existing development. All buildings sit approximately four feet above grade and are accessed by stairs. Many units are not accessible to persons with disabilities.

2.2 PROPOSED PROJECT

The Project entails the construction of new residential and community buildings ranging in height from two-to-five stories in a combination of townhouses and midrises. A total of approximately 373 housing units are proposed to replace the 331 existing public housing units on a one-to-one basis plus an additional 42 units of non-public housing to create a revitalized mixed-income community. The Project also includes the construction of a new community center and management office, a new public park, and significant roadway connectivity improvements and enhancements that will improve circulation, safety, and access for vehicles, pedestrians, and cyclists. Parking on the Project Site will be accommodated through a combination of off-street and on-street parking spaces. The Project will be constructed to high sustainability and energy efficiency standards with a minimum target of LEED Silver certifiability.

2.2.1 REDEVELOPMENT OBJECTIVES

The Project program and design is guided by the following objectives:

- Transform a disconnected public housing development with obsolete buildings into an active and attractive residential community;

- Create new open spaces for residents and the greater Orient Heights neighborhood;
- Provide improved pedestrian, bicycle, and vehicle connections from Faywood Avenue to Waldemar Avenue;
- Construct new housing that is energy and water efficient, environmentally sustainable, and meets the spatial needs of contemporary families;
- Strengthen public ways by fronting buildings on improved streets and sidewalks; and
- Provide for the potential to include non-public housing units in the development.

2.2.2 PROJECT PROGRAM

The Proponent envisions a Project composed of new buildings, modern housing units with layouts that meet current standards, enhanced streets and pedestrian connections, and attractive common open spaces for passive and active recreation along with private rear yards for townhouse units. The building program includes the construction of 51 new buildings in total, of which some will be townhouses and some midrise apartment buildings. A total of 373 new units are proposed (331 public housing units and 42 non-public units), in addition to a community center/management office and a park at the center of the Project Site. Approximately 318 parking spaces will be provided for residents and visitors in on and off-street parking arrangements. The following table summarizes the proposed program.

Table 2-1: Project Program

Project Element	Count
Residential • One-Bedroom • Two-Bedroom • Three-Bedroom • Four-Bedroom • Five-Bedroom	373 total units (331 public and 42 non-public) • 80 units • 140 units • 117 units • 25 units • 11 units
Community Center/ Management Office	approximately 8,000 sf
Vehicle Parking	318 spaces (212 off-street, 106 on-street)
Bicycle Parking • Covered Spaces • Uncovered Space	388 Total Spaces • 373 Covered Spaces • 15 Uncovered Spaces
Project Gross Square Footage	approximately 420,000 sf

2.2.2.1 PROPOSED BUILDING TYPES

The proposed buildings will address the development objectives by providing flexible unit layouts, a mix of unit sizes, energy efficient building systems, and a variety of open space areas. The general character of this portion of the neighborhood will be dramatically enhanced with buildings that support a strong street wall and a mix of residential housing types that complement the residential character of Orient Heights and greater East Boston neighborhood.

Midrises

Three new midrise apartment buildings, four-to-five stories in height, are proposed to announce the primary approaches to the Project Site and align with the new public open spaces. Midrise buildings will primarily accommodate smaller units of one- and two-bedrooms. Where midrise buildings align with streets, ground level townhouses with stoops will be created to reinforce the scale character of the residential street. The Project's central midrise building (Midrise C) will contain a new community center at its lower level which will open onto a public open space area. Midrise buildings have been strategically sited into the hillsides to create transitions between levels within the Project Site and reduce the visual impact of the existing retaining walls. A mix of various siding materials will distinguish the midrise buildings as they step up the hillside.

Townhouses

Townhouse style buildings will contain two-, three-, four-, and five-bedroom units and will line the new and expanded roadway network with inviting front door stoops and private rear yards for each unit. Although building heights will vary from two- to three-stories, the individual townhouse widths are expressed through the use of bays and varying roof forms. Each unit will be clearly marked with its own front door off the sidewalk. Cementitious siding will be the primary exterior material, highlighted by varied bays and window systems. The townhouse buildings are designed to maximize the potential for solar energy production, with the majority of roof areas facing south.

Non-public housing will be available through the construction of 42 additional townhouses along Faywood Avenue. These two- to three-bedroom units will have private yards and on-street parking, enjoying views across the new public open space and overlooking open spaces beyond.

2.2.2.2 SITE ACCESS AND CIRCULATION

Improved site access and circulation is a primary goal of the Project. A revised roadway network has been designed to connect Vallar Road at the center of the Project Site to Waldemar Avenue along its northern edge. This new connection will allow pedestrians, bicyclists, and vehicles to circulate freely through the Project Site, forging a connection between the upper and lower areas of the development that is currently missing. Additionally, Faywood Avenue, along the Project Site's southern edge, will be widened to allow two-way traffic to provide a better connected street grid. The enhanced network of renovated and new streets will provide improved access to and from the new homes and improved circulation for the greater Orient Heights community.

The streetscape will be defined with new parallel parking on both sides of the streets, reinforced by widened sidewalks and street tree plantings. Parking is provided within the new access network and throughout the Project Site at a ratio of approximately 0.85 cars per unit. Approximately eight (8) accessible spaces will be provided for vehicles throughout the Project Site.

2.2.2.3 LANDSCAPE AND OPEN SPACE

At the heart of the Project, a new public park, tentatively called "Gateway Park," will be programmed for active and passive recreation with multigenerational uses for all residents and the greater neighborhood. The park will include playground equipment for a range of ages. Comfortable seating and gathering spaces will be incorporated to balance active uses while providing a landscaped garden to buffer the park from the adjacent roadways.

The landscape character of the Project Site will be in keeping with the surrounding Orient Heights neighborhood. Townhouses will include both a private front yard and rear yard, well-defined and landscaped to provide exterior green space. The rear yards will have a patio space and storage shed.

A new pedestrian plaza along Waldemar Avenue (east of Midrise A) will be framed by an existing retaining wall. This open space will be visually connected to an overlook along Vallar Road (south of Midrise A), allowing long views out to the surrounding areas of East Boston and Revere. The south facing plaza and play area will provide ample gathering and seating opportunities. The proposed plantings will provide shade and seasonal interest for residents and visitors.

All public open space areas will be connected by the proposed network of sidewalks to link these critical spaces with the Orient Heights community making them destinations for the Project's residents, as well as its neighbors.

2.2.3 PHASING/CONSTRUCTION PLAN

Construction phasing is a major component of the Project. A strategic phasing plan has been developed to maximize retention of current residents, minimize disruption to the current residents of the Project Site, and minimize disruption to the surrounding community. The construction phasing plan is described below and shown in Figure 2-7, Construction Phasing Plan.

Phase One

The first phase will include the demolition of existing structures (five buildings) at the northern edge of the Project Site along Waldemar Avenue and is scheduled to begin in fall 2016. Construction of 120 new dwelling units will be completed as part of Phase One comprising a mix of midrise and townhouses ranging from one- to five-bedroom units. All landscaping for this area will be completed as part of Phase One. During Phase One, residents currently living in the affected portion of the Project Site will be temporarily relocated on- and off-site with relocation assistance and moving services provided by the BHA and its consultants. Upon completion of Phase One, relocated former residents will have the option to return to the Project Site and move into the newly completed units. Remaining unoccupied units will be advertised and occupied in accordance with the phase's Tenant Selection Plan. Phase One construction is anticipated to be completed in 2018.

Phase Two

The second phase will include the demolition of existing structures (four buildings) at the northwestern edge of the Project Site and is expected to begin in 2018 or when financial resources are available. Construction of 92 new dwelling units will be completed as part of Phase Two, comprising a mix of midrise and townhouse buildings ranging from one-bedroom to five-bedroom units. Roadway improvements, including the connection of Vallar Road to Waldemar Avenue would be completed at this time. All landscaping for this area will be completed as part of Phase Two. During Phase Two, residents currently living in the affected portion of the Project Site will be temporarily relocated on- and off-site with relocation assistance and moving services a service provided by the BHA and its consultants. Upon completion of Phase Two, relocated former residents will have the option to return to the Project Site and move into the newly completed units. Remaining unoccupied units will be advertised and occupied in accordance with

the phase's Tenant Selection Plan. Phase Two construction is anticipated to be completed in 2020.

Phase Three

The third phase will include the demolition of the existing structures (five buildings) at the interior of the Project Site and will begin sometime after 2020 or when financial resources are available. Construction of 119 new dwelling units will be completed as part of Phase Three comprising a mix of midrise and townhouse buildings ranging from one-bedroom to five-bedroom units. The new community center/management office and improvements to Vallar Road and Faywood Avenue will be completed as part of Phase Three. All landscaping for this area will be completed as part of Phase Three, including the new Gateway Park. During Phase Three, residents currently living in the affected portion of the Project Site will be temporarily relocated on- and off-site with relocation assistance and moving services provided by the BHA and its consultants. Upon completion of Phase Three, relocated former residents will have the option to return to the Project Site and move into the newly completed units. Remaining unoccupied units will be advertised and occupied in accordance with the phase's Tenant Selection Plan. Phase Three construction is anticipated to be completed in 2022-2023.

Phase Four

The fourth and final phase will include the demolition of the existing structures (six buildings) at the southern edge of the Project Site along Faywood Avenue and is expected to commence in 2023 or thereafter. Construction of 42 dwelling units will be completed as part of Phase Four, comprising two-bedroom and three-bedroom townhouses. Phase Four will include the construction of non-public housing units. All landscaping for this area will be completed as part of Phase Four. During Phase Four, residents currently living in the affected portion of the Project Site will be temporarily relocated on- and off-site with relocation assistance and moving services provided by the BHA and its consultants. Upon completion of Phase Four, relocated former residents will have the option to return to the Project Site and move into an available unit. Phase Four construction is anticipated to be completed within 18-24 months after construction has commenced.

2.3 ALTERNATIVES ANALYSIS

In January 2015, the BHA designated Trinity Financial and the East Boston Community Development Corporation as the development team to complete the redevelopment of the Orient Heights state public housing development. The Proponent commissioned an Architectural and Engineering Study to evaluate alternatives for redevelopment of the Project Site. The study investigated the feasibility of rehabilitation and new construction

options for the existing development, but alternatives were limited to those that provided a minimum of 100% replacement of existing state public housing units.

Three study options were developed, each of which was comparable in quality (including site and landscape improvements), total units, unit mix, layouts, and finishes. Each option was modeled, evaluated, and estimated for cost and measured against the ability to meet the defined project objectives. The unit distribution for all scenarios was virtually uniform. The study's three options, as well as a no-build option, are evaluated in this section.

2.3.1 NO-BUILD ALTERNATIVE

In the No-Build Alternative, the Project Site would remain as is, dominated by obsolete 1950s-era public housing units, an outdated community center, a decommissioned central boiler plant, and large retaining walls. The No-Build Alternative would not improve the state public housing units, HVAC or energy systems, or roadways. The No-Build Alternative would not provide for new mixed incoming housing to be built on the Project Site. Under the No-Build Alternative, the Project Site would remain unchanged.

2.3.2 COMPREHENSIVE MODERNIZATION ALTERNATIVE

The Proponent considered a comprehensive modernization program, which would rehabilitate a majority of the existing building while preserving the building's structural frames to the maximum extent possible. The Comprehensive Modernization Alternative aims to reduce the amount of demolition and new construction that would be necessary, limiting the number of residential buildings to be demolished to just three. In this alternative, 17 existing buildings would be stripped down to their structural frame and re-clad with new siding, windows, bays, porches, and stoops. Additionally, this scenario included the construction of two new apartment buildings with below-grade parking and five new townhouse style buildings. A total of 400 housing units would be accommodated in this alternative.

The Comprehensive Modernization Alternative would severely limit the Proponent's ability to make important changes to the Project Site layout and design including improved roadway connections and a new public park. Constrained to working within the existing building footprints, the buildings would maintain their awkward relationship to the sidewalks and roadways. The Comprehensive Modernization Alternative would also constrain unit sizes and layouts to more closely resemble the existing conditions.

2.3.3 HYBRID DESIGN ALTERNATIVE

The Proponent considered a hybrid design alternative, which included new construction as needed to optimize building configuration and internal circulation within the Project Site, with a significant number of buildings comprehensively renovated. The Hybrid Design Alternative included the demolition of seven existing residential buildings. In this alternative, 13 existing buildings would be stripped down to their structural frame and re-clad with new siding, windows, bays, porches, and stoops. Additionally, this scenario included the construction of two new midrise apartment buildings with below-grade parking and new townhouse style buildings. This alternative provides for the reconstruction of Vallar Road to more provide improved intersections at Faywood Road and Waldemar Avenue. A total of 400 housing units would be accommodated in this alternative.

This alternative presents many challenges similar to the comprehensive modernization alternative. Reuse of the existing structural frames limits the extent to which the new development will effectively meet the street due to the existing awkward configuration of buildings on the Project Site. After careful analysis and extensive consultation with the community, it was determined that the Hybrid Design Alternative would not meet redevelopment objectives and this alternative was dismissed.

2.3.4 NEW CONSTRUCTION ALTERNATIVE

The New Construction Alternative is the Proponent's preferred alternative and consistent with the Project as described in this document. This alternative would create a completely new, modernized development with new buildings, environmentally-friendly HVAC and energy systems, appropriately sized dwelling units, enhanced streets and pedestrian connections, and attractive common open space. Demolition and reconstruction on the Project Site offered the best solution for achieving the Project's objectives. Without the constraints of working within the existing development framework, the Proponent is best able to address the significant challenges posed by the steep grade changes across the Project Site, existing poor circulation, and the energy efficiency concerns of the BHA.

The alternatives described in Section 2.3 were presented at community meetings during the summer and fall of 2015. Feedback was received from current Orient Heights residents and the broader community of abutters and East Boston neighbors. At the community meetings a clear preference was expressed for the New Construction Alternative, which fully demolishes the existing buildings and builds a contemporary, mixed income community with a combination of public and non-public housing units and a total of 373 housing units.

2.4 COMPLIANCE WITH BOSTON ZONING CODE

The Project is subject to land use controls contained in the City of Boston Zoning Code (the "Code"). Under Article 80B of the Code, Large Project Review is required by the Boston Redevelopment Authority for any new construction equal to or greater than 50,000 square feet of gross floor area. The Project exceeds this threshold and is therefore subject to Large Project Review.

Under Article 28 of the Code, the Boston Civic Design Commission reviews the schematic design of projects that affect the public realm with a gross floor area in excess of 100,000 square feet. Accordingly, the Project will be reviewed by the Boston Civic Design Commission prior final approval by the Boston Redevelopment Authority Board.

Article 37 of the Code requires that proposed projects subject to Large Project Review meet standards for certification under the United States Green Building Council Leadership in Energy and Environmental Design (LEED) program. A LEED Checklist and a Climate Change Preparedness and Resiliency Checklist will be submitted to the Interagency Green Building Committee as part of Large Project Review. Additional details are provided in Chapter 4, Sustainability.

Article 85 of the Code requires that existing structures that were constructed 50 or more years ago must undergo review by the Boston Landmarks Commission prior to demolition and may be subject to a demolition delay. The Proponent will submit an application to the Boston Landmarks Commission for review and approval prior to commencement of any demolition.

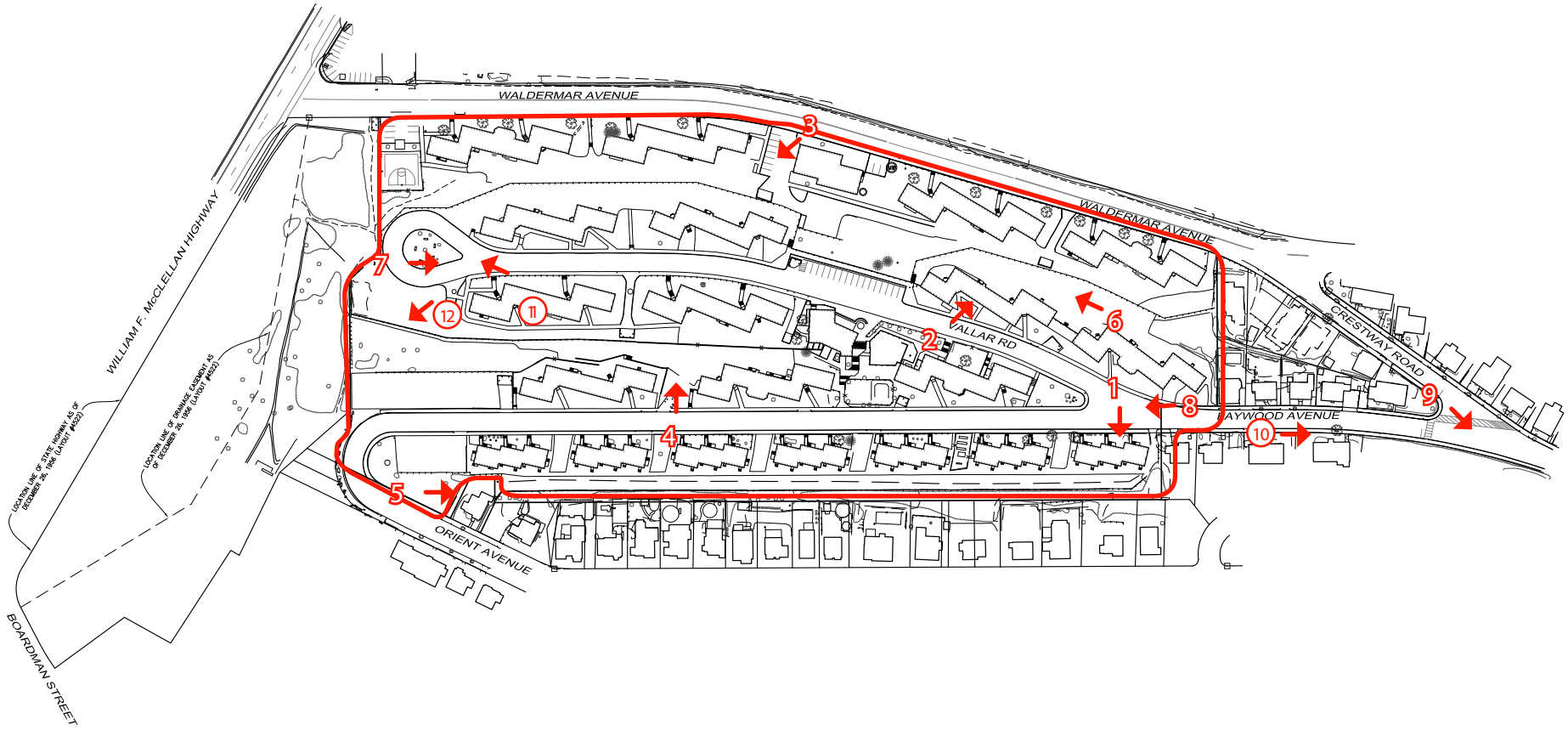
The Project Site is currently zoned as a Multifamily Residential subdistrict within the East Boston Neighborhood District (Article 53 of the Code). Multifamily dwelling and townhouse uses are allowed by right, together with accessory uses ordinarily incident to such main uses, provided that dwelling units are forbidden in basements. The maximum allowed building height and floor area ratio (FAR) are 3 stories (35 feet) and 1.0, respectively. Parking and loading requirements will be determined through Large Project Review. Certain applicable use and dimensional requirements will be met by right and others will require zoning relief on a phase-by-phase basis. The Proponent proposes to achieve zoning relief by way of Chapter 121A deviations as part of real estate tax agreements in support of the affordable housing components of the Project.

East Boston, Massachusetts

Figure 2-1
Aerial View of Existing Site
Source: Google; Fort Point Associates, Inc., 2016

East Boston, Massachusetts

Figure 2-2
Existing Conditions Plan
Source: Nitsch Engineering, 2016



East Boston, Massachusetts

Figure 2-3
Photograph Locations Key
Source: Nitsch Enginerring; Fort Point Associates, Inc., 2016

Figure 2-4
Existing Conditions Photographs
Source: Fort Point Associates, Inc., 2016


Photograph 5


Photograph 6


Photograph 7

Photograph 8

Figure 2-5
Existing Conditions Photographs
Source: Fort Point Associates, Inc., 2016

Photograph 9

Photograph 10


Photograph 11


Photograph 12

East Boston, Massachusetts

Figure 2-6
Existing Conditions Photographs
Source: Fort Point Associates, Inc., 2016

East Boston, Massachusetts

Figure 2-7
Construction Phasing Plan
Source: ICON Architecture, Inc., 2016

Chapter 3

URBAN DESIGN

CHAPTER 3: URBAN DESIGN

3.1 INTRODUCTION

The Proponent envisions the Project as a vibrant modernized community where residents will thrive. This chapter presents an overview of the urban design elements that define the Project.

3.2 DESIGN ELEMENTS

The Project's most significant design elements include the following:

- **A new vision for the neighborhood** – New construction of the residential buildings will provide a healthy atmosphere for residents to thrive. Unit sizes will meet modern standards with floor plans that facilitate contemporary lifestyles. Interior finishes and state-of-the-art HVAC systems will provide incomparable upgrades over the existing housing development. The Project aims to achieve a high level of sustainability across the Project Site and throughout the design of the buildings and building systems. The Project is targeting a minimum of LEED Silver certifiability.

- **New Gateway Park and new community center** – The new Gateway Park and community center will create an inviting site entry for the residential community and visitors, blending indoor and outdoor recreation and activities. The ground level community center will open onto the center of the Project Site and onto the new public park. The new community center will serve as the core public amenity of the neighborhood, offering gracious meeting spaces, including a reservable community room with a kitchenette that may be scheduled for family gatherings. Adjacent to community center will be the management office and maintenance area. The Gateway Park will provide a central open space, with walkways, a play area, and active and passive areas for residents and visitors to enjoy.

- **Extension and reconstruction of Vallar Road to improve connectivity** – Vallar Road will be lengthened, reconfigured, and partially regraded to provide proper intersections at both Faywood Avenue and Waldemar Avenue. The Faywood Avenue intersection will have a tightened turning radius for improved access and safety and a perpendicular intersection is also proposed at Waldemar Avenue. The extended roadway length will accommodate a roadway slope of 5% to 8%, and the entire length will be widened to accommodate two-way travel with street parking on both sides. The improvements to Vallar Road will benefit vehicles, cyclists, and pedestrians.

- **New midrise buildings integrate into the existing slope** – The three new midrise buildings on the Project Site have been strategically sited to integrate into the existing slope to minimize height and moderate steep grade changes. Along Waldemar Avenue, a new midrise will be four stories tall, occupying the land near where the decommissioned boiler plant is currently located. A second four-story midrise will be located at the corner of Waldemar Avenue at the extension of Vallar Road, creating a welcoming entry to the development from the west. Between Vallar Road and Faywood Avenue, a third midrise will frame the new public park, while stepping up the hillside.

- **New townhouses front on new streets** – Two types of townhouse buildings will be constructed on the Project Site. The first type will be a typical townhouse layout including front stoop, living and kitchen areas on the first floor, and bedrooms above. The second type of townhouse will mitigate the slope of the Project Site by locating the kitchen and living area on the lowest level (one level below the sidewalk), which will open onto a backyard private outdoor patio space at grade level. In these homes, the bedrooms will be on the first floor and above.

  Stepping down the hillside and along the improved streets, the new townhouses will create a consistent street wall with stoops and front doors meeting the public street. The new street wall created by consistent building frontage is a critical component to meeting the urban design goals of the project. Stoops and porches will enhance the neighborhood's character and provide a balanced residential feeling to connect residents to the public realm.

- **Widened Faywood Avenue** – Demolition of the existing state public housing units along Faywood Avenue will allow for the portion of Faywood Avenue fronting the Project Site to be widened to allow two-way access. This improvement will allow residents who live and park along Faywood Avenue to access their homes more directly rather than driving through an extensive one-way street system. The improved access into and out of the Project Site will enhance neighborhood connectivity for all transportation modes. The Project will widen Faywood Avenue into the curve towards Orient Avenue to accommodate two-way traffic.

- **Improvement of existing retaining walls** – The existing retaining walls have a dominant impact on the urban landscape on the Project Site. The Project will reduce the visual impact of the retaining walls with a variety of mitigating measures. While the existing retaining walls will largely remain in place, plantings and landscaping will obscure height and a mix of evergreen and deciduous trees and shrubs will be used to screen the walls. Earth slopes abutting the retaining walls will also decrease the effective height of the walls. At the top of each retaining wall, landscape plantings will visually screen a secure fence-line.

3.3 MASSING

The Project has been designed to address the significant challenges posed by the steep grades throughout the Project Site. Building placement and orientation has been the subject of significant discussion and analysis. The resulting plan presents a community with a few midrise buildings to anchor the Project Site and a series of townhouses to form a consistent street edge with an appropriately-scaled residential character.

The steep hillsides of the Project Site range in grade from relatively gentle grades along Waldemar Avenue to significant slopes on upper streets, culminating in a grade change of over 85 feet from the southern point to the northern point. The Project Site is highly visible from the southbound lanes of Route 1A. The hillsides generally face north and the streets generally run in and east/west direction. The proposed buildings are designed to face the streets and sidewalks. The proposed midrise buildings' massing is designed to integrate with the existing slopes on the Project Site to minimize height impact and mitigate the steep transition in grades.

Wherever possible, the street facade of the midrises will have two-story townhouse style units with stoops and front doors to animate the streetscape. One midrise will be located along Waldemar Avenue, sited where the existing decommissioned boiler building is currently located. The second midrise will be located at the intersection of Waldemar Avenue at the proposed extension of Vallar Road. Between Vallar Road and Faywood Avenue, the third midrise will frame the new park while stepping up the hillside. This building will utilize the slope to create a unique structure that stands four stories above ground level on Vallar Road and three stories on Faywood Avenue. See Figure 3-1, Project Site Plan and Figure 3-2, Open Space Detail Plan.

3.4 CHARACTER AND MATERIALS

This re-invigorated community will highlight the BHA's commitment to sustainable housing. The form of the new buildings will be contemporary, but with materials that refer to a traditional residential character and materials.

Townhouse buildings will set up a residential-scaled rhythm that complement local streetscapes. Front porches and stoops will mark each residential entry. Building materials will consist of cementitious siding and asphalt shingle roofing. Trim and accent elements will highlight entries and windows. The proposed midrise buildings will be primarily clad in cementitious siding. See Figures 3-3 through 3-12 for Perspective Views and Sections.

3.5 LANDSCAPE AND STREETSCAPE

The proposed landscape and streetscape improvements are described in this section.

3.5.1 LANDSCAPE DESIGN

The landscape and streetscape improvements will transform the existing disjointed Project Site into a cohesive and sustainable neighborhood that will integrate into the surrounding Orient Heights community. The use of pavement will be minimized through careful circulation planning and placement of shade trees strategically to limit the effect of reflected heat. The majority of the proposed plantings will be native, naturalizing, or adapted species for an urban site in New England. Drip irrigation will be utilized, where feasible, with weather sensors and other water efficiency measures installed as well.

Each residential entry in the lowrise townhouse buildings will have a private walk entering off a public or semi-public sidewalk from the street. Shade trees and shrub plantings will be used to create pockets of green space surrounding each midrise apartment building. In addition to plantings, lighting, curbs, and fencing will define space and reinforce yard ownership. In many instances for the townhouses, private backyards will be accessed from lower-level living areas. A small patio for private use will be adjacent to many units, defined with a combination of fencing and plant materials. A variety of landscape materials will be used to create a sense of privacy for each townhouse unit. See Figure 3-2, Open Space Detail.

3.5.1.1 RETAINING WALLS

Due to the steep grades throughout the Project Site, retaining walls are a required element of the Project. Most of the existing retaining walls on the Project Site will remain in place, but will be improved through landscaping and mitigating measures. The proposed work involves partial demolition of the existing retaining wall to the south of Waldemar Avenue to allow for the construction of the Vallar Road extension and new residential buildings. Several of the existing retaining walls will need to be modified and strengthened to meet current building code requirements. A hands-on inspection and material testing of all existing walls has been executed by Project engineers to determine their structural fitness for reuse. It is the Proponent's priority to ameliorate the character of the walls and various landscape design treatments are being explored as previously described.

3.5.2 STREETSCAPE

The proposed buildings will face streets in a more traditional urban design orientation than the current angled configuration of the existing buildings on the Project Site. Buildings will be set back approximately 10 feet from the edge of the sidewalk. Each townhouse will enjoy a private front stoop with porch or canopy cover. Street trees will be located in pits along the sidewalk as an additional buffer next to parallel parking. Lining the streets, small front yard gardens and stoop plantings will reinforce a pedestrian and residential scale. High-quality lighting, sidewalk furniture, and landscaping treatments will create an inviting streetscape for residents and for the surrounding Orient Heights community. The Project has been designed to implement a streetscape that is consistent with Boston's Complete Street guidelines for streets of a similar scale.

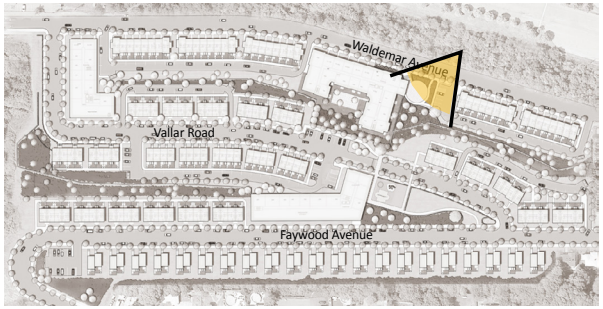
East Boston, Massachusetts

Figure 3-1
Project Site Plan
Source: ICON Architecture, Inc., 2016






Figure 3-2
Open Space Detail Plan
Source: ICON Architecture, Inc., 2016



East Boston, Massachusetts

Figure 3-3
Proposed View of the Plaza
Source: ICON Architecture, Inc., 2016

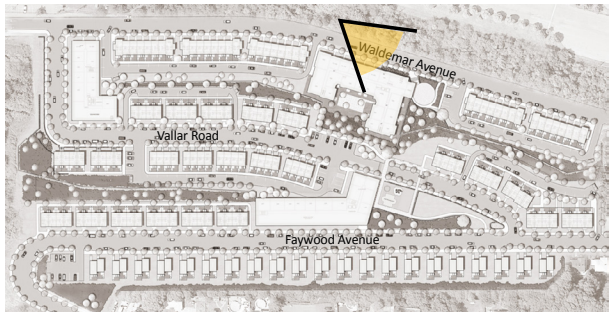


Figure 3-4
Proposed View on Waldemar Avenue
Source: ICON Architecture, Inc., 2016

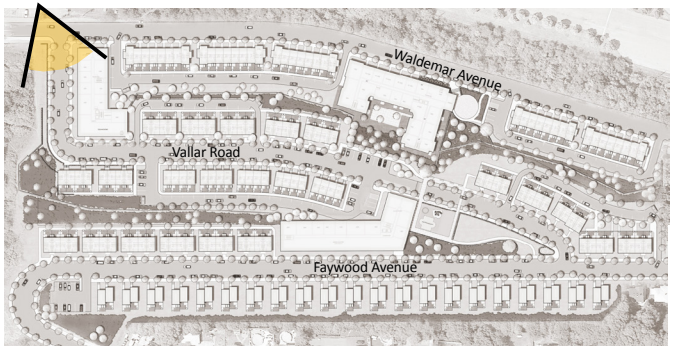


Figure 3-5
Proposed View of Vallar Road Extension
Source: ICON Architecture, Inc., 2016

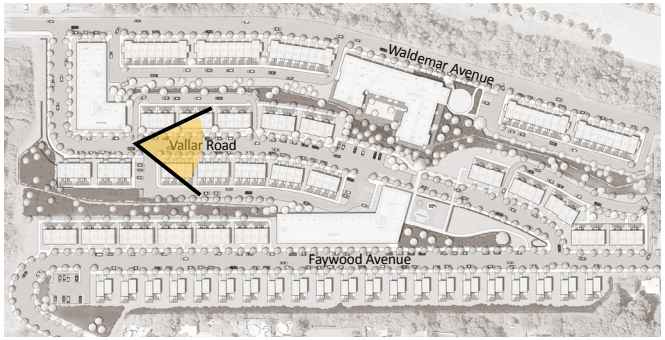


Figure 3-6
Proposed View of Vallar Road
Source: ICON Architecture, Inc., 2016

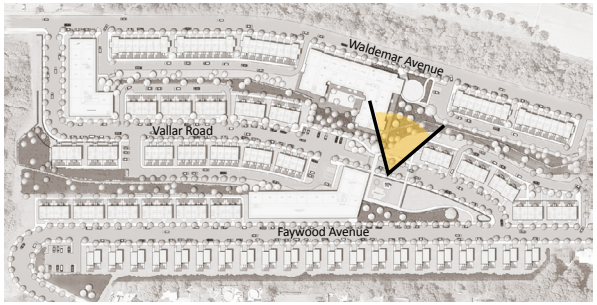


Figure 3-7
Proposed View of Overlook from Vallar Road
Source: ICON Architecture, Inc., 2016

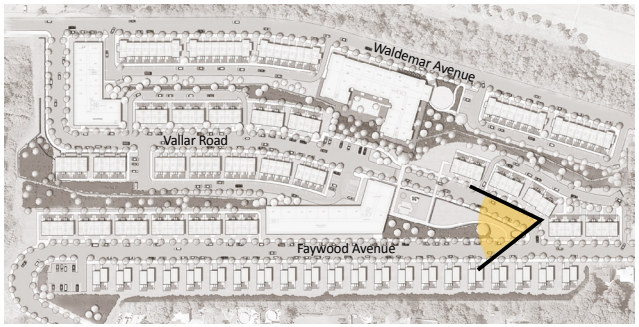


Figure 3-8
Proposed View of Gateway Park
Source: ICON Architecture, Inc., 2016

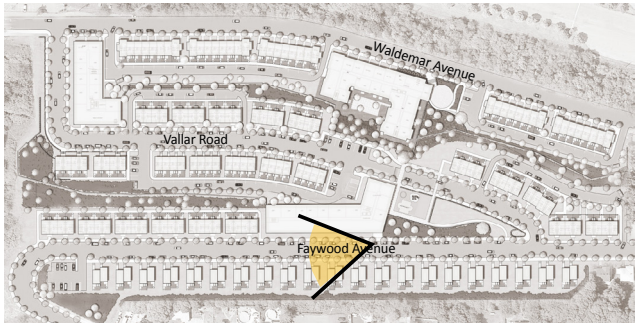


Figure 3-9
Proposed View of Faywood Avenue
Source: ICON Architecture, Inc., 2016

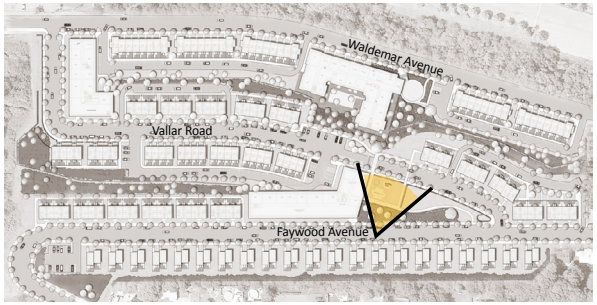
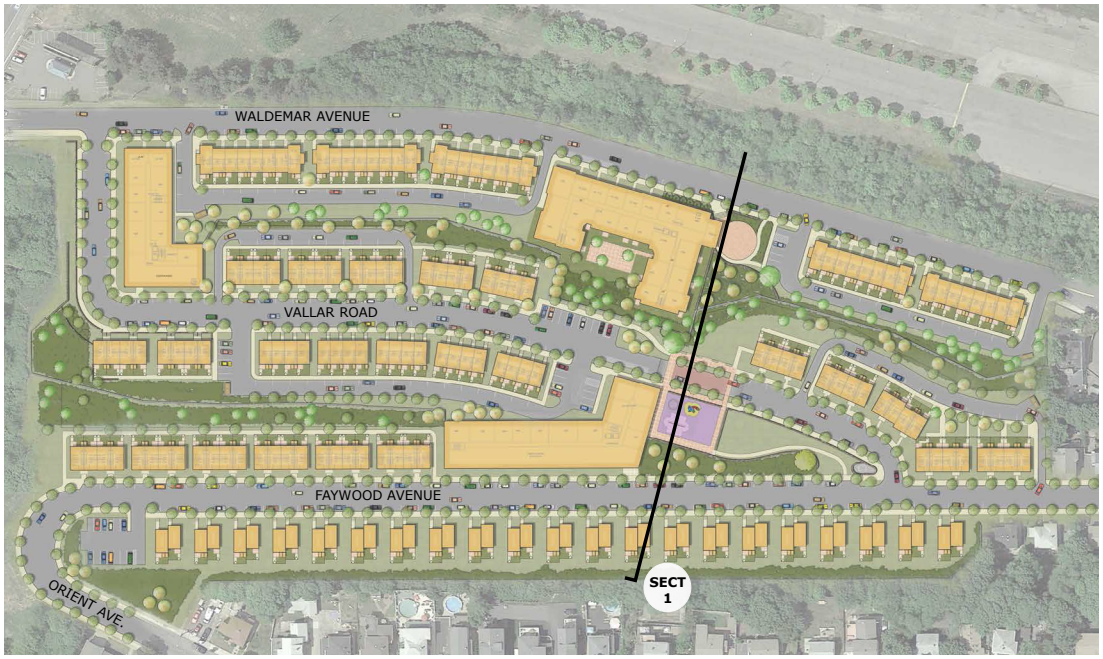
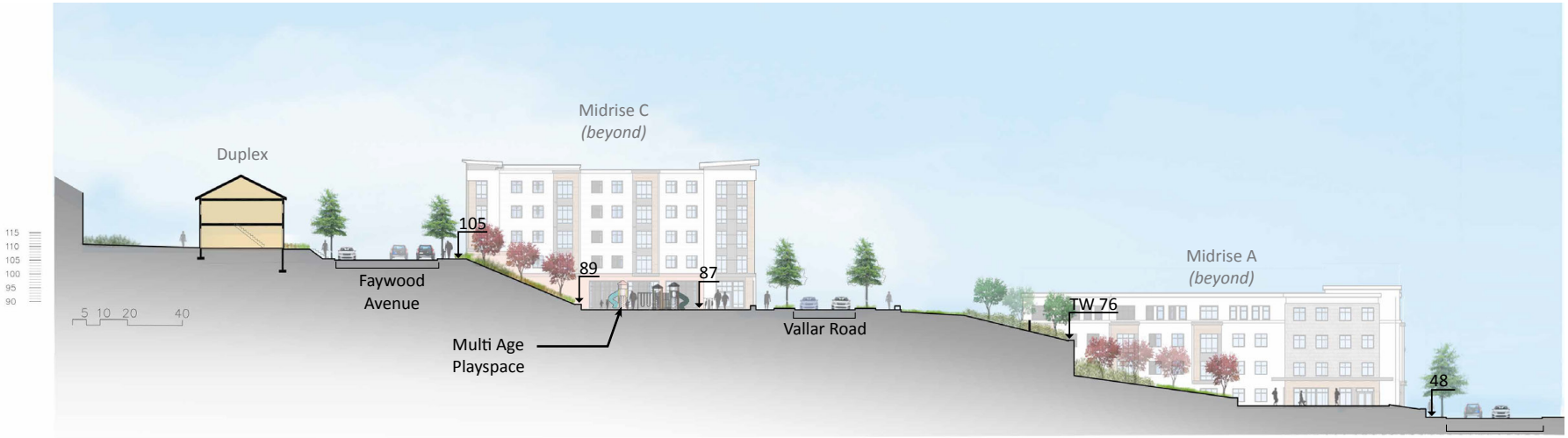


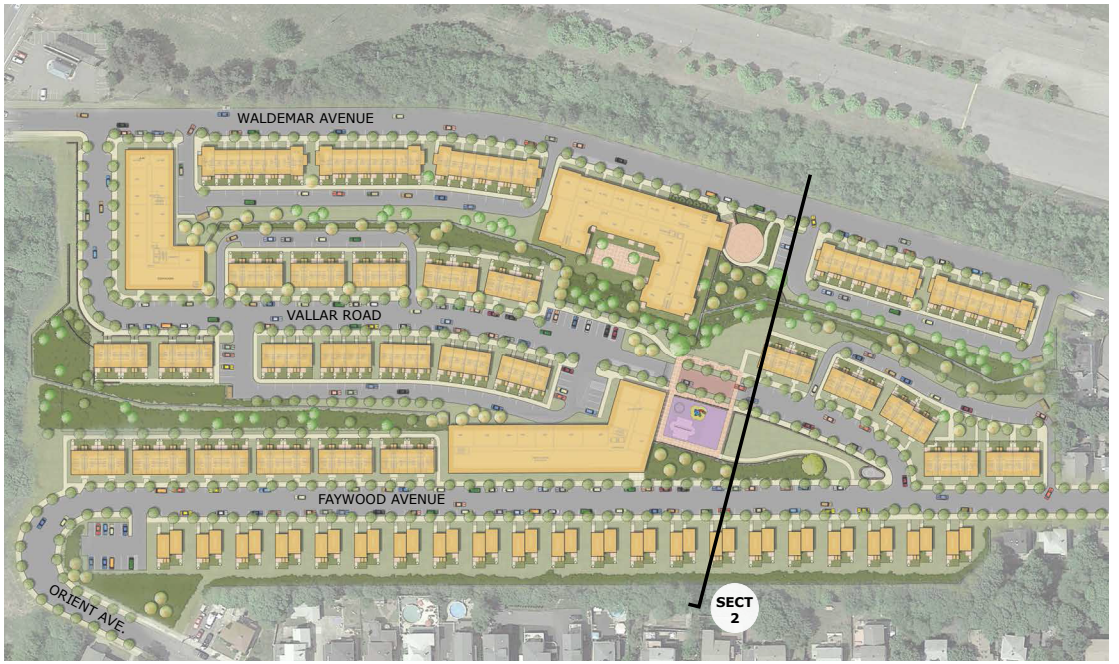
Figure 3-10
Proposed View of Play Area from Faywood Avenue
Source: ICON Architecture, Inc., 2016

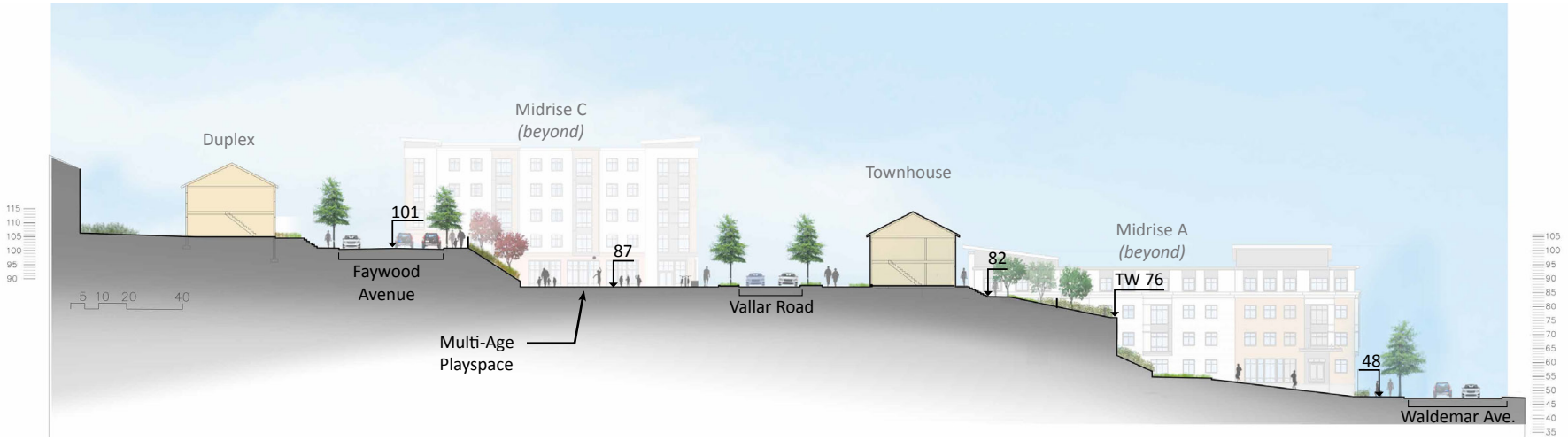




East Boston, Massachusetts

Figure 3-11
Sections
Source: ICON Architecture, Inc., 2016





East Boston, Massachusetts

Figure 3-12
Sections
Source: ICON Architecture, Inc., 2016

Chapter 4

SUSTAINABILITY

CHAPTER 4: SUSTAINABILITY

4.1 SUSTAINABLE DESIGN

The Proponent has incorporated sustainable principles into its design, and will embed sustainable practices into the construction and operation of the Project. The Project will meet the Code's Article 37 requirement, with each building achieving a minimum of LEED Silver level certifiability through the United States Green Building Council's (USGBC) LEED for Homes (LEED H) rating system. Two separate LEED H checklists have been prepared for the first phase of the Project (approximately 120 units), one for the townhouse units and one for the midrise units. The midrise building is eligible to use the LEED H rating system, as each unit will be provided with individual HVAC systems. Implementation of LEED H certifiability ensures the Project design includes the following sustainable principles:

- An integrated team, members of which will be in constant communication throughout the design and construction process;
- Environmentally friendly site design and consideration of landscaping that benefits both residents and the surrounding habitats;
- Efficient water use that minimizes waste and maximizes applicable technology;
- Energy efficiency through installation of high-efficiency equipment and a right-sized system design;
- Healthy materials and finishes throughout all interior spaces, reducing negative health effects on residents; and
- Effective ventilation and exhaust systems designed to ensure continued health and air quality throughout the life of each building.

The Proponent has retained New Ecology, Inc. (NEI) as its dedicated green building consultant to facilitate the implementation and compliance process. The narrative below details the strategies by which the Project will meet various prerequisite and credit requirements under this rating system.

4.2 ARTICLE 37/LEED COMPLIANCE

This section outlines the LEED H certifiability compliance strategy for the Project. See Figure 4-1, LEED Checklist - Townhouses and Figure 4-2, LEED Checklist - Midrise, for the preliminary checklists.

4.2.1 INNOVATION AND DESIGN PROCESS

IDp1.1 Integrated Project Planning – Preliminary Rating: The Project design is currently tracking LEED Silver certifiability for both the townhouses and the midrise buildings. Both building types currently demonstrate 69 points, with an additional 19 points still under consideration that will be confirmed as the Project design progresses. The Silver level threshold is 68 points and the Gold level threshold is 83 points for the townhouses (dependent on Homes Size Adjustment Factor). For midrise buildings, the Silver level threshold is 58.5 and the Gold level threshold is 73.5 (due to the smaller average unit sizes).

IDc1.2 Integrated Project Planning – Integrated Project Team: The Project team will incorporate individuals from at least three applicable skill sets. These team members will meet at least once per month to review overall Project status and effective systems integration.

IDc1.3 Integrated Project Planning – Professional Credentialed with Respect to LEED for Homes : Lauren Baumann, of NEI, holds a LEED AP Homes credential and is an integrated member of the Project team.

IDc1.4 Integrated Project Planning – Design Charrette: The Project team participated in a full-day design charrette to discuss systems design and integration of sustainability and efficiency goal. The charrette discussion will inform all future decisions.

IDc1.5 Integrated Project Planning – Building Orientation for Solar Design: The buildings are oriented to meet the following requirements:

- Glazing on the north/south walls is greater than that on the east/west walls;
- The east-west axis is within 15-degrees of due east-west;
- At least 450 square feet of the south-facing roof area is oriented for solar applications; and
- Approximately 90% of the south-facing glazing is shaded in summer and un-shaded in winter.

ID p2.1 Quality Management for Durability – Durability Planning: The Project will complete a Durability Risk Evaluation for the surrounding Project Site and proposed construction methodology. This evaluation will inform the Durability Checklist, which tracks designed risk mitigation features to be confirmed for installation during construction.

IDp2.2 Quality Management for Durability – Durability Management: Throughout the construction process, New Ecology will conduct monthly inspections to ensure adequate installation of proposed durability risk mitigation strategies.

IDc3.1 Innovative or Regional Design – Trades Training: The construction team will conduct a full-day training with all sub-contractors, particularly the plumbing, mechanical systems, and insulation installers. This meeting will review LEED-requirements and installation techniques.

4.2.2 LOCATION AND LINKAGES

The Location and Linkages (LL) category addresses reduction of urban sprawl and rewards development on and near previously existing infrastructure, public transportation, and developed land.

LLc2 Site Selection: The Project is located on an urban infill location and does not include any area in the following categories: below the 100-year FEMA floodplain, habitat for threatened or endangered species, within 100-feet of water, public parkland, and/or prime, unique, or significant soils.

LLc3.2 Preferred Locations – Infill Site: The Project is located on an urban infill location and is surrounded by previously developed urban land.

LLc3.3 Preferred Locations – Previously Developed: The Project Site consists of at least 75% previously developed land.

LLc4 Infrastructure – Existing Infrastructure: The Project is served by existing utility lines.

LLc5.1 Community Resources/Transit – Basic Community Resources: The Project is located within one-half mile walking distance of transit service providing at least 30 rides per weekday.

LLc6 Access to Open Space: The Project includes a park and open spaces, which in total are greater than three-quarters of an acre in size.

4.2.3 SUSTAINABLE SITES

The Sustainable Sites (SS) category addresses environmental issues related to landscape and site design, ensuring a seamless co-existence between the built environment and the natural environment.

SSp1.1 Site Stewardship – Erosion Controls During Construction: The Project team will create a Stormwater Pollution Prevention Plan (SWPPP) to minimize runoff and

wind erosion from the Site throughout construction. Daily, weekly, and monthly inspections will ensure that installed mechanisms are kept in good condition.

SSc1.2 Site Stewardship – Minimize Disturbed Area: The Project will achieve a density greater than seven units per acre.

SSp2.1 Landscaping – No Invasive Plants: The Project team will not install any invasive plantings on-site.

SSc2.2: Landscaping – Basic Landscaping Design: The Project team is evaluating landscaping options to include drought-tolerant turf, no turf installed in densely shaded areas, no turf in areas of slope greater than or equal to 25%, added mulch or soil amendments where necessary, and all compacted soil to be tilled to at least six inches.

SSc2.3 Landscaping – Limit Conventional Turf: The Project team will evaluate minimizing turf installation to 60% or less of all softscape areas on-site.

SSc2.4 Landscaping – Drought-Tolerant Plants: The Project's landscaping plan will include at least 50% drought-tolerant plantings, based on total plant count.

SSc3 or 3.1 Reduce Local Heat Island Effects: The Project team will evaluate installing light-colored, high-albedo materials for at least 50% of the proposed hardscapes.

SSc4.1 Surface Water Management - Permeable Lot: The Project team will evaluate designing at least 70% of the site area to be permeable material.

SSc4.2 Surface Water Management – Permanent Erosion Controls: The Project is designed with terracing and retaining walls at two steep slopes.

SSc4.3 Surface Water Management- Management of Runoff from Roof: The Project's stormwater system will be designed by a professional to manage runoff on-site.

SSc5 Nontoxic Pest Control – Pest Control Alternatives: The Project will include the following pest-deterrent design methodology:

- Seal all external cracks;
- Include no wood-to-concrete connections without sill seal material; and/or
- Install landscaping so mature plants are at least 24-inches from home.

SSc6. 2 Compact Development – High Density: The Project will achieve a density of at least 10 units/acre.

4.2.4 WATER EFFICIENCY

The Water Efficiency (WE) category addresses environmental degradation related to overuse of potable water within residential buildings and irrigation systems.

WEc2.2 Irrigation System – Third-Party Inspection: The Project's irrigation system will be inspected by a third party for compliance with the following installation requirements:

- All spray heads are operating and delivering water only to intended zones;
- Any switches or shut-off valves are working properly;
- Any timers or controllers are set properly;
- Any irrigation systems are located at least 2-feet from the home; and
- Irrigation spray does not hit the home.

WEc3.2 Indoor Water Use – Very High-Efficiency Fixtures and Fittings: The Project will utilize water fixtures with the following flow rates:

- Lavatory Faucets: 1.5 gpm
- Showers: 1.75 gpm
- Toilets: 1.1 gpf

4.2.5 ENERGY AND ATMOSPHERE

The Energy and Atmosphere (EA) category addresses ongoing energy usage and continued building performance.

EAp1.1 Optimize Energy Performance – Minimum Energy Performance: The Project will meet all applicable requirements of the Massachusetts Stretch Energy Code, and will be certified under the ENERGY STAR for New Homes rating system.

EAc1.2 Exceptional Energy Performance: The Project will achieve a HERS Index of 70 or better, representing at least a 30% reduction in total Energy Usage from a baseline building.

EAc7.1 Water Heating – Efficient Hot Water Distribution System: The Project team will design the Hot Water Distribution System to be a central manifold distribution system if hot water is provided centrally, or to be of compact design if individual systems are provided.

EAc7.2 Water Heating – Pipe Insulation: The Project will design all domestic hot water piping to include continuous, minimum R-4 insulation.

EAp11.1 Residential Refrigerant Management – Refrigerant Charge Test: All installed refrigerant equipment will be tested upon installation to ensure charge is within the acceptable range.

EAc11.2 Residential Refrigerant Management – Appropriate HVAC Refrigerants: All installed refrigerant equipment will utilize environmentally friendly refrigerants, such as R410A or Puron.

4.2.6 MATERIALS AND RESOURCES

The Materials and Resources (MR) category addresses all installed materials, including framing and interior finishes, as well as diversion of waste from landfills.

MRc1.5 Material Efficient Framing – Off-site Fabrication: The Project will utilize panelization of framing elements, where possible and feasible.

MRp2.1 Environmentally Preferable Products – FSC Certified Tropical Wood: The Project will utilize non-tropical wood products or utilize Forestry Stewardship Council (FSC)-certification for necessary woods from tropical countries.

MRc2.2 Environmentally Preferable Products: Finish materials will be chosen for environmental benefits, where feasible, including the following:

- Regional sourcing within 500-miles of the Project Site;
- Low Volatile Organic Compound (VOC) release;
- Green certifications for improved indoor air quality and health benefits;
- Paints, primers, adhesives, sealants will be reviewed for VOC compliance with the South Coast Air Quality Management District Rule #1113 and #1168; and
- All flooring materials will include Green Label Plus certification (rugs) or FloorScore certification (resilient flooring), as applicable.

MRp3.1 Waste Management – Construction Waste Management Planning: The Project will provide a Construction Waste Management Plan which identifies all waste types to be generated, hired waste hauler transportation plan and disposal location, as well as final destinations and recycling methodology for all generated materials.

MRc3.2 Waste Management – Construction Waste Reduction: During demolition and construction, all waste produced will be tracked to maximize diversion from landfills. The Project will achieve a minimum diversion rate of 75% during construction.

4.2.7 INDOOR ENVIRONMENTAL QUALITY

The Indoor Environmental Quality (IEQ) category addresses the exhaust and ventilation of all interior spaces within the building, ensuring a consistent healthy environment for building residents.

IEQp2.1 Combustion Venting – Basic Combustion Venting Measures: All installed combustion equipment will be directly vented to the exterior and each floor of each unit, as well as all common spaces, will be equipped with combination smoke and carbon dioxide detectors.

IEQc2.2 Combustion Venting – Enhanced Combustion Venting Measures: The Project will not install woodstoves or fireplaces.

IEQc3 Moisture Control – Moisture Load Control: The Project includes HVAC equipment with additional controls to operate in dehumidification mode.

IEQp4.1 Outdoor Air Ventilation – Basic Outdoor Air Ventilation: The Project will design all residential areas to meet the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) 62.2-2007 standard and all common spaces areas to meet the ASHRAE 62.1-2007 standard.

IEQc4.2 Outdoor Air Ventilation – Enhanced Outdoor Air Ventilation : The Project will include a continuously operating Heat Recovery System (HRV) to minimize heating and cooling energy losses due to ventilation and exhaust.

IEQc4.3 Outdoor Air Ventilation – Third-Party Performance Testing : A third-party will verify the Project's ventilation system for compliance with the design.

IEQp5.1 Local Exhaust – Basic Local Exhaust: The Project will design all residential areas to meet the ASHRAE 62.2-2007 standard and all common spaces areas to meet the ASHRAE 62.1-2007 standard.

IEQc5.2 Enhanced Local Exhaust: The Project will install continuously operating bath and kitchen ventilation in each unit.

IEQc5.3 Local Exhaust – Third-Party Performance Testing: A third-party will verify the Project's ventilation system for compliance with the design.

IEQp6.1 Distribution of Space Heating and Cooling – Room-by-Room Load Calculations: All ductwork will be designed in accordance with the Air Conditioning Contractors of America (ACCA) Manual J Heating and Cooling Loads, and Manual D Duct Sizing, standards.

IEQc7.3 Air Filtering – Best Filters: All installed mechanical equipment will include minimum MERV 13 filtration media to ensure that harmful particulates are filtered out of the air stream, prior to entry into the interior spaces.

IEQc8.1 Contaminant Control – Indoor Contaminant Control during Construction: During Project construction, all installed ductwork will be protected from contamination; protection will be implemented from delivery through to final cleaning.

IEQc8.2 Contaminant Control – Indoor Contaminant Control: The Project includes permanent walk-off mats for each unit or at all central entryways.

IEQp9.1 Radon Protection – Radon-Resistant Construction in High -Risk Areas: The Project is not located within a high-risk radon area.

IEQp10.1 Garage Pollutant Protection – No HVAC in Garage: The Project does not include garage space.

IEQc10.4 Garage Pollutant Protection – Detached Garage or No Garage: The Project does not include garage space.

4.2.8 AWARENESS AND EDUCATION

The Awareness and Education (AE) category ensures that the owner, building residents, and maintenance staff are aware of the installed equipment and materials-especially those conditions unique to sustainable and environmentally conscious development.

AEp1.1 Education of the Homeowner or Tenant – Basic Operations Training: NEI will work with the Proponent to develop an Operations Training Manual that describes the sustainable aspects of installed systems. Additionally, all operations staff will participate in a one-hour training walk through to view and inspect installed equipment.

AEc1.2 Education of the Homeowner or Tenant – Enhanced Training: In addition to AEp1.1, the Project will conduct a two-hour training session with operations staff.

AEc1.3 Education of the Homeowner or Tenant – Public Awareness: The Project will include the following outreach activities throughout the construction phase:

- A website that includes features and benefits of LEED H certification;
- A newspaper article about the project; and/or
- Display LEED signage on a portion of the Project.

AEc2.1 Education of the Building Manager – Education of the Building Manager: NEI will work with the Proponent to develop a Resident Green Guide to be distributed to applicable staff and/or residents at building occupancy. Distribution will be accompanied by a one-hour walk-through of the building and units to highlight installed LEED-related items.

LEED for Homes Simplified Project Checklist

for Homes

Builder Name:	
Project Team Leader (if different):	*Tim Smith, Trinity Financial*
Home Address (Street/City/State):	*, Boston, Massachusetts*

Project Description:

Building type: ***Multi-family*** Project type: ***Multi-family Dev***

\# of units: ***48*** Avg. Home Size Adjustment: ***8***

Adjusted Certification Thresholds

Certified: ***53.0*** Silver: ***68.0*** Gold: ***83.0*** Platinum: ***98.0***

Project Point Total

Prelim: ***69 + 19 maybe pts*** Final: ***15.5***

Certification Level

Prelim: ***Silver*** Final: ***Not Certified***

Final Credit Category Total Points

ID: 0 ***SS: 0*** ***EA: 13*** ***EQ: 0***

LL: 0 ***WE: 0*** ***MR: 2.5*** ***AE: 0***

Minimum Point Thresholds Not Met for Final Rating

date last updated :
last updated by :

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Innovation and Design Process (ID)		(No Minimum Points Required)		Max				
1. Integrated Project Planning	1.1	Preliminary Rating		Prereq	Y			
	1.2	Integrated Project Team		1	0	0		0
	1.3	Professional Credentialed with Respect to LEED for Homes		1	1	0		0
	1.4	Design Charrette		1	1	0		0
	1.5	Building Orientation for Solar Design		1	0	1		0
2. Durability Management Process	2.1	Durability Planning		Prereq	Y			
	2.2	Durability Management		Prereq				
	2.3	Third-Party Durability Management Verification		3	0	0		0
3.Innovative or Regional Design	3.1	Innovation #1 ***Trades Training***		1	1	0		0
	3.2	Innovation #2		1	0	0		0
	3.3	Innovation #3		1	0	0		0
	3.4	Innovation #4		1	0	0		0
		Sub-Total for ID Category:		***11***	*3*	*1*		***0***
Location and Linkages (LL)		(No Minimum Points Required)	*OR*	Max				
1. LEED ND	1	LEED for Neighborhood Development	**LL2-6**	10	0	0		0
2. Site Selection	2	Site Selection		2	2	0		0
3. Preferred Locations	3.1	Edge Development	**LL 3.2**	1	0	0		0
	3.2	Infill		2	2	0		0
	3.3	Previously Developed		1	1	0		0
4. Infrastructure	4	Existing Infrastructure		1	1	0		0
5. Community Resources/ Transit	5.1	Basic Community Resources / Transit	**LL 5.2, 5.3**	1	1	0		0
	5.2	Extensive Community Resources / Transit	**LL 5.3**	2	0	2		0
	5.3	Outstanding Community Resources / Transit		3	0	0		0
6. Access to Open Space	6	Access to Open Space		1	0	1		0
		Sub-Total for LL Category:		***10***	*7*	*3*		***0***
Sustainable Sites (SS)		(Minimum of 5 SS Points Required)	*OR*	Max				
1. Site Stewardship	1.1	Erosion Controls During Construction		Prereq	Y			
	1.2	Minimize Disturbed Area of Site		1	1	0		0
2. Landscaping	2.1	No Invasive Plants		Prereq	Y			
	2.2	Basic Landscape Design	**SS 2.5**	2	0	2		0
	2.3	Limit Conventional Turf	**SS 2.5**	3	0	3		0
	2.4	Drought Tolerant Plants	**SS 2.5**	2	1	1		0
	2.5	Reduce Overall Irrigation Demand by at Least 20%		6	0	0		0
3. Local Heat Island Effects	3	Reduce Local Heat Island Effects		1	0	1		0
4. Surface Water Management	4.1	Permeable Lot		4	0	1		0
	4.2	Permanent Erosion Controls		1	1	0		0
	4.3	Management of Run-off from Roof		2	0	2		0
5. Nontoxic Pest Control	5	Pest Control Alternatives		2	1.5	0.5		0
6. Compact Development	6.1	Moderate Density	**SS 6.2, 6.3**	2	0	0		0
	6.2	High Density	**SS 6.3**	3	3	0		0
	6.3	Very High Density		4	0	0		0
		Sub-Total for SS Category:		***22***	*7.5*	*10.5*		***0***

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Water Efficiency (WE)		(Minimum of 3 WE Points Required)	*OR*	Max				
1. Water Reuse	1.1	Rainwater Harvesting System	**WE 1.3**	4	0	0	N	0
	1.2	Graywater Reuse System	**WE 1.3**	1	0	0	N	0
	1.3	Use of Municipal Recycled Water System		3	0	0	N	0
2. Irrigation System	2.1	High Efficiency Irrigation System	**WE 2.3**	3	0	0		0
	2.2	Third Party Inspection	**WE 2.3**	1	0	1		0
	2.3	Reduce Overall Irrigation Demand by at Least 45%		4	0	0		0
3. Indoor Water Use	3.1	High-Efficiency Fixtures and Fittings		3	0	0		0
	3.2	Very High Efficiency Fixtures and Fittings		6	6	0		0
		Sub-Total for WE Category:		***15***	*6*	*1*		***0***
Energy and Atmosphere (EA)		(Minimum of 0 EA Points Required)	*OR*	Max				
1. Optimize Energy Performance	1.1	Performance of ENERGY STAR for Homes		Prereq				
	1.2	Exceptional Energy Performance		34	13	0		13
7. Water Heating	7.1	Efficient Hot Water Distribution		2	2	0		0
	7.2	Pipe Insulation		1	1	0		0
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq				
	11.2	Appropriate HVAC Refrigerants		1	1	0		0
		Sub-Total for EA Category:		***38***	*17*	*0*		***13***

				Max	Y/Pts	Maybe	No	Y/Pts
Materials and Resources (MR)		(Minimum of 2 MR Points Required)	*OR*					
1. Material-Efficient Framing	1.1	Framing Order Waste Factor Limit		Prereq	Y			
	1.2	Detailed Framing Documents	**MR 1.5**	1	0	0		0
	1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	0	0		0
	1.4	Framing Efficiencies	**MR 1.5**	3	0	0		0
	1.5	Off-site Fabrication		4	4	0		0
2. Environmentally Preferable Products	2.1	FSC Certified Tropical Wood		Prereq	Y			
	2.2	Environmentally Preferable Products		8	4	0		0
3. Waste Management	3.1	Construction Waste Management Planning		Prereq	Y			
	3.2	Construction Waste Reduction		3	2.5	0.5		2.5
		Sub-Total for MR Category:		***16***	*10.5*	*0.5*		***2.5***
Indoor Environmental Quality (EQ)		(Minimum of 6 EQ Points Required)	*OR*	Max				
1. ENERGY STAR with IAP	1	ENERGY STAR with Indoor Air Package		13	0	0		0
2. Combustion Venting	2.1	Basic Combustion Venting Measures	**EQ 1**	Prereq	Y			
	2.2	Enhanced Combustion Venting Measures	**EQ 1**	2	2	0		0
3. Moisture Control	3	Moisture Load Control	**EQ 1**	1	0	1		0
4. Outdoor Air Ventilation	4.1	Basic Outdoor Air Ventilation	**EQ 1**	Prereq	Y			
	4.2	Enhanced Outdoor Air Ventilation		2	2	0		0
	4.3	Third-Party Performance Testing	**EQ 1**	1	1	0		0
5. Local Exhaust	5.1	Basic Local Exhaust	**EQ 1**	Prereq	Y			
	5.2	Enhanced Local Exhaust		1	1	0		0
	5.3	Third-Party Performance Testing		1	1	0		0
6. Distribution of Space Heating and Cooling	6.1	Room-by-Room Load Calculations	**EQ 1**	Prereq	Y			
	6.2	Return Air Flow / Room by Room Controls	**EQ 1**	1	1	0		0
	6.3	Third-Party Performance Test / Multiple Zones	**EQ 1**	2	2	0		0
7. Air Filtering	7.1	Good Filters	**EQ 1**	Prereq	Y			
	7.2	Better Filters	**EQ 7.3**	1	0	0		0
	7.3	Best Filters		2	2	0		0
8. Contaminant Control	8.1	Indoor Contaminant Control during Construction	**EQ 1**	1	1	0		0
	8.2	Indoor Contaminant Control		2	0	1		0
	8.3	Preoccupancy Flush	**EQ 1**	1	0	0		0
9. Radon Protection	9.1	Radon-Resistant Construction in High-Risk Areas	**EQ 1**	Prereq	Y			
	9.2	Radon-Resistant Construction in Moderate-Risk Areas	**EQ 1**	1	0	0		0
10. Garage Pollutant Protection	10.1	No HVAC in Garage	**EQ 1**	Prereq	Y			
	10.2	Minimize Pollutants from Garage	**EQ 1, 10.4**	2	0	0		0
	10.3	Exhaust Fan in Garage	**EQ 1, 10.4**	1	0	0		0
	10.4	Detached Garage or No Garage	**EQ 1**	3	3	0		0
		Sub-Total for EQ Category:		***21***	*16*	*2*		***0***
Awareness and Education (AE)		(Minimum of 0 AE Points Required)		Max				
1. Education of the Homeowner or Tenant	1.1	Basic Operations Training		Prereq	Y			
	1.2	Enhanced Training		1	1	0		0
	1.3	Public Awareness		1	0	1		0
2. Education of Building Manager	2	Education of Building Manager		1	1	0		0
		Sub-Total for AE Category:		***3***	*2*	*1*		***0***

LEED for Homes Simplified Project Checklist

Addendum: Prescriptive Approach for Energy and Atmosphere (EA) Credits

Points cannot be earned in both the Prescriptive (below) and the Performance Approach (pg 2) of the EA section.

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Energy and Atmosphere (EA)		(No Minimum Points Required)	*OR*	Max				
2. Insulation	2.1	Basic Insulation		Prereq				
	2.2	Enhanced Insulation		2	0	0		0
3. Air Infiltration	3.1	Reduced Envelope Leakage		Prereq				
	3.2	Greatly Reduced Envelope Leakage		2	0	0		0
	3.3	Minimal Envelope Leakage	**EA 3.2**	3	0	0	N	0
4. Windows	4.1	Good Windows		Prereq				
	4.2	Enhanced Windows		2	0	0		0
	4.3	Exceptional Windows	**EA 4.2**	3	0	0	N	0
5. Heating and Cooling Distribution System	5.1	Reduced Distribution Losses		Prereq				
	5.2	Greatly Reduced Distribution Losses		2	0	0		0
	5.3	Minimal Distribution Losses	**EA 5.2**	3	0	0		0
6. Space Heating and Cooling Equipment	6.1	Good HVAC Design and Installation		Prereq	Y			
	6.2	High-Efficiency HVAC		2	0	0		0
	6.3	Very High Efficiency HVAC	**EA 6.2**	4	0	0	N	0
7. Water Heating	7.1	Efficient Hot Water Distribution		2	0	0	N	0
	7.2	Pipe Insulation		1	0	0	N	0
	7.3	Efficient Domestic Hot Water Equipment		3	0	0		0
8. Lighting	8.1	ENERGY STAR Lights		Prereq	Y			
	8.2	Improved Lighting		2	0	0		0
	8.3	Advanced Lighting Package	**EA 8.2**	3	0	0		0
9. Appliances	9.1	High-Efficiency Appliances		2	0	0		0
	9.2	Water-Efficient Clothes Washer		1	0	0		0
10. Renewable Energy	10	Renewable Energy System		10	0	0	N	0
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq	Y			
	11.2	Appropriate HVAC Refrigerants		1	0	0		0
		Sub-Total for EA Category:		***38***	*17*	*0*		***13***

Figure 4-1
LEED Checklist - Townhouses
Source: New Ecology, Inc., 2016

for Homes

LEED for Homes Simplified Project Checklist

Builder Name:	
Project Team Leader (if different):	*Tim Smith, Trinity Financial*
Home Address (Street/City/State):	*, Boston, Massachusetts*

Project Description:

Building type: ***Multi-family*** Project type: ***Multi-family De***

# of units: ***72*** Avg. Home Size Adjustment: ***-1.5***

Adjusted Certification Thresholds

Certified: ***43.5*** Silver: ***58.5*** Gold: ***73.5*** Platinum: ***88.5***

Project Point Total

Prelim: ***69 + 19 maybe pts*** Final: ***15.5***

Certification Level

Prelim: ***Silver*** Final: ***Not Certified***

Final Credit Category Total Points

ID: 0 ***SS: 0*** ***EA: 13*** ***EQ: 0***

LL: 0 ***WE: 0*** ***MR: 2.5*** ***AE: 0***

Minimum Point Thresholds Not Met for Final Rating

date last updated :
last updated by :

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Innovation and Design Process (ID)		(No Minimum Points Required)		Max				
1. Integrated Project Planning	1.1	Preliminary Rating		Prereq	Y			
	1.2	Integrated Project Team		1	0	0		0
	1.3	Professional Credentialed with Respect to LEED for Homes		1	1	0		0
	1.4	Design Charrette		1	1	0		0
	1.5	Building Orientation for Solar Design		1	0	1		0
2. Durability Management Process	2.1	Durability Planning		Prereq	Y			
	2.2	Durability Management		Prereq				
	2.3	Third-Party Durability Management Verification		3	0	0		0
3.Innovative or Regional Design	3.1	Innovation #1 ***Trades Training***		1	1	0		0
	3.2	Innovation #2		1	0	0		0
	3.3	Innovation #3		1	0	0		0
	3.4	Innovation #4		1	0	0		0
		Sub-Total for ID Category:		***11***	*3*	*1*		***0***
Location and Linkages (LL)		(No Minimum Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND	1	LEED for Neighborhood Development	**LL2-6**	10	0	0	N	0
2. Site Selection	2	Site Selection		2	2	0		0
3. Preferred Locations	3.1	Edge Development	**LL 3.2**	1	0	0		0
	3.2	Infill		2	2	0		0
	3.3	Previously Developed		1	1	0		0
4. Infrastructure	4	Existing Infrastructure		1	1	0		0
5. Community Resources/ Transit	5.1	Basic Community Resources / Transit	**LL 5.2, 5.3**	1	1	0		0
	5.2	Extensive Community Resources / Transit	**LL 5.3**	2	0	2		0
	5.3	Outstanding Community Resources / Transit		3	0	0		0
6. Access to Open Space	6	Access to Open Space		1	0	1		0
		Sub-Total for LL Category:		***10***	*7*	*3*		***0***
Sustainable Sites (SS)		(Minimum of 5 SS Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship	1.1	Erosion Controls During Construction		Prereq	Y			
	1.2	Minimize Disturbed Area of Site		1	1	0		0
2. Landscaping	2.1	No Invasive Plants		Prereq	Y			
	2.2	Basic Landscape Design	**SS 2.5**	2	0	2		0
	2.3	Limit Conventional Turf	**SS 2.5**	3	0	3		0
	2.4	Drought Tolerant Plants	**SS 2.5**	2	1	1		0
	2.5	Reduce Overall Irrigation Demand by at Least 20%		6	0	0		0
3. Local Heat Island Effects	3	Reduce Local Heat Island Effects		1	0	1		0
4. Surface Water Management	4.1	Permeable Lot		4	0	1		0
	4.2	Permanent Erosion Controls		1	1	0		0
	4.3	Management of Run-off from Roof		2	0	2		0
5. Nontoxic Pest Control	5	Pest Control Alternatives		2	1.5	0.5		0
6. Compact Development	6.1	Moderate Density	**SS 6.2, 6.3**	2	0	0		0
	6.2	High Density	**SS 6.3**	3	3	0		0
	6.3	Very High Density		4	0	0		0
		Sub-Total for SS Category:		***22***	*7.5*	*10.5*		***0***

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Water Efficiency (WE)		(Minimum of 3 WE Points Required)	*OR*	Max				
1. Water Reuse	1.1	Rainwater Harvesting System	**WE 1.3**	4	0	0	N	0
	1.2	Graywater Reuse System	**WE 1.3**	1	0	0	N	0
	1.3	Use of Municipal Recycled Water System		3	0	0	N	0
2. Irrigation System	2.1	High Efficiency Irrigation System	**WE 2.3**	3	0	0		0
	2.2	Third Party Inspection	**WE 2.3**	1	0	1		0
	2.3	Reduce Overall Irrigation Demand by at Least 45%		4	0	0		0
3. Indoor Water Use	3.1	High-Efficiency Fixtures and Fittings		3	0	0		0
	3.2	Very High Efficiency Fixtures and Fittings		6	6	0		0
		Sub-Total for WE Category:		***15***	*6*	*1*		***0***
Energy and Atmosphere (EA)		(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance	1.1	Performance of ENERGY STAR for Homes		Prereq				
	1.2	Exceptional Energy Performance		34	13	0		13
7. Water Heating	7.1	Efficient Hot Water Distribution		2	2	0		0
	7.2	Pipe Insulation		1	1	0		0
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq				
	11.2	Appropriate HVAC Refrigerants		1	1	0		0
		Sub-Total for EA Category:		***38***	*17*	*0*		***13***

				Max	Y/Pts	Maybe	No	Y/Pts
Materials and Resources (MR)		(Minimum of 2 MR Points Required)	*OR*					
1. Material-Efficient Framing	1.1	Framing Order Waste Factor Limit		Prereq	Y			
	1.2	Detailed Framing Documents	**MR 1.5**	1	0	0		0
	1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	0	0		0
	1.4	Framing Efficiencies	**MR 1.5**	3	0	0		0
	1.5	Off-site Fabrication		4	4	0		0
2. Environmentally Preferable Products	2.1	FSC Certified Tropical Wood		Prereq	Y			
	2.2	Environmentally Preferable Products		8	4	0		0
3. Waste Management	3.1	Construction Waste Management Planning		Prereq	Y			
	3.2	Construction Waste Reduction		3	2.5	0.5		2.5
		Sub-Total for MR Category:		***16***	*10.5*	*0.5*		***2.5***
Indoor Environmental Quality (EQ)		(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. ENERGY STAR with IAP	1	ENERGY STAR with Indoor Air Package		13	0	0		0
2. Combustion Venting	2.1	Basic Combustion Venting Measures	**EQ 1**	Prereq	Y			
	2.2	Enhanced Combustion Venting Measures	**EQ 1**	2	2	0		0
3. Moisture Control	3	Moisture Load Control	**EQ 1**	1	0	1		0
4. Outdoor Air Ventilation	4.1	Basic Outdoor Air Ventilation	**EQ 1**	Prereq	Y			
	4.2	Enhanced Outdoor Air Ventilation		2	2	0		0
	4.3	Third-Party Performance Testing	**EQ 1**	1	1	0		0
5. Local Exhaust	5.1	Basic Local Exhaust	**EQ 1**	Prereq	Y			
	5.2	Enhanced Local Exhaust		1	1	0		0
	5.3	Third-Party Performance Testing		1	1	0		0
6. Distribution of Space Heating and Cooling	6.1	Room-by-Room Load Calculations	**EQ 1**	Prereq	Y			
	6.2	Return Air Flow / Room by Room Controls	**EQ 1**	1	1	0		0
	6.3	Third-Party Performance Test / Multiple Zones	**EQ 1**	2	2	0		0
7. Air Filtering	7.1	Good Filters	**EQ 1**	Prereq	Y			
	7.2	Better Filters	**EQ 7.3**	1	0	0		0
	7.3	Best Filters		2	2	0		0
8. Contaminant Control	8.1	Indoor Contaminant Control during Construction	**EQ 1**	1	1	0		0
	8.2	Indoor Contaminant Control		2	0	1		0
	8.3	Preoccupancy Flush	**EQ 1**	1	0	0		0
9. Radon Protection	9.1	Radon-Resistant Construction in High-Risk Areas	**EQ 1**	Prereq	Y			
	9.2	Radon-Resistant Construction in Moderate-Risk Areas	**EQ 1**	1	0	0		0
10. Garage Pollutant Protection	10.1	No HVAC in Garage	**EQ 1**	Prereq	Y			
	10.2	Minimize Pollutants from Garage	**EQ 1, 10.4**	2	0	0		0
	10.3	Exhaust Fan in Garage	**EQ 1, 10.4**	1	0	0		0
	10.4	Detached Garage or No Garage	**EQ 1**	3	3	0		0
		Sub-Total for EQ Category:		***21***	*16*	*2*		***0***
Awareness and Education (AE)		(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	1.1	Basic Operations Training		Prereq	Y			
	1.2	Enhanced Training		1	1	0		0
	1.3	Public Awareness		1	0	1		0
2. Education of Building Manager	2	Education of Building Manager		1	1	0		0
		Sub-Total for AE Category:		***3***	*2*	*1*		***0***

LEED for Homes Simplified Project Checklist

Addendum: Prescriptive Approach for Energy and Atmosphere (EA) Credits

Points cannot be earned in both the Prescriptive (below) and the Performance Approach (pg 2) of the EA section.

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Energy and Atmosphere (EA)		(No Minimum Points Required)	*OR*	Max				
2. Insulation	2.1	Basic Insulation		Prereq				
	2.2	Enhanced Insulation		2	0	0		0
3. Air Infiltration	3.1	Reduced Envelope Leakage		Prereq				
	3.2	Greatly Reduced Envelope Leakage		2	0	0		0
	3.3	Minimal Envelope Leakage	**EA 3.2**	3	0	0	N	0
4. Windows	4.1	Good Windows		Prereq				
	4.2	Enhanced Windows		2	0	0		0
	4.3	Exceptional Windows	**EA 4.2**	3	0	0	N	0
5. Heating and Cooling Distribution System	5.1	Reduced Distribution Losses		Prereq				
	5.2	Greatly Reduced Distribution Losses		2	0	0		0
	5.3	Minimal Distribution Losses	**EA 5.2**	3	0	0		0
6. Space Heating and Cooling Equipment	6.1	Good HVAC Design and Installation		Prereq	Y			
	6.2	High-Efficiency HVAC		2	0	0		0
	6.3	Very High Efficiency HVAC	**EA 6.2**	4	0	0	N	0
7. Water Heating	7.1	Efficient Hot Water Distribution		2	0	0	N	0
	7.2	Pipe Insulation		1	0	0	N	0
	7.3	Efficient Domestic Hot Water Equipment		3	0	0		0
8. Lighting	8.1	ENERGY STAR Lights		Prereq	Y			
	8.2	Improved Lighting		2	0	0		0
	8.3	Advanced Lighting Package	**EA 8.2**	3	0	0		0
9. Appliances	9.1	High-Efficiency Appliances		2	0	0		0
	9.2	Water-Efficient Clothes Washer		1	0	0		0
10. Renewable Energy	10	Renewable Energy System		10	0	0	N	0
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq	Y			
	11.2	Appropriate HVAC Refrigerants		1	0	0		0
		Sub-Total for EA Category:		***38***	*17*	*0*		***13***

Figure 4-2
LEED Checklist - Midrise
Source: New Ecology, Inc., 2016

Chapter 5

TRANSPORTATION

CHAPTER 5: TRANSPORTATION

5.1 INTRODUCTION

The transportation chapter provides an assessment of existing and future vehicular, bicycle, and pedestrian circulation; existing and future site access; existing and future parking supply; loading operations; safety; car sharing; and transportation demand management for the proposed Orient Heights Redevelopment Project.

This assessment evaluates both the existing and projected traffic operations at key intersections in the vicinity of the Project Site with and without the proposed redevelopment. The evaluations will utilize data collected on September 15, September 22, and December 15, all in 2015. To assess weekday morning and evening peak hour impacts associated with the Orient Heights Redevelopment Project, these data included traffic and pedestrian volumes, parking utilization and turnover counts, the projected generated uses of the development, and existing safety characteristics of the Project Site's surroundings.

5.2 PROJECT SITE AND SURROUNDINGS

Partnering with the BHA, the Proponent intends to revitalize and redevelop Orient Heights, a state public housing development in East Boston. See Figure 5-1, Locus Map. As seen in Figure 5-2, Project Limits, the Project area is generally bound by Waldemar Avenue to the north, just south of Faywood Avenue to the south, and just east of the intersection of Vallar Road at Faywood Avenue to the east. The MBTA's Orient Heights and Suffolk Downs Stations provide multi-modal access to subway (Blue Line), and bus services connecting subway service to downtown Boston and Revere and are located on the north and south sides of the Project Site.

5.3 PROJECT DESCRIPTION

The Project involves the construction of new two to five story buildings in a combination of midrises (194 units) and townhouses (179 units). A total of 373 new housing units are proposed, replacing obsolete 1950s-era BHA public housing units on a one-to-one basis (331 units) with the addition of a small non-public housing component (42 units) to create a revitalized mixed-income community.

The Proponent also proposes 106 off-street parking spaces and 212 on-street parking spaces for a total of 318 spaces (approximately 0.85 spaces per residential unit). A new community center is planned between Vallar Road and Faywood Avenue. Secure, covered parking for 373 bicycles will be provided for residents and visitors. Approximately 15 uncovered bicycle parking spaces will be available for visitors.

The Project includes the following modifications to Faywood Avenue and Vallar Road with the objective of improving traffic flows within the immediate development as well as throughout the surrounding neighborhood:

1. Widening Faywood Avenue between Orient Avenue and Vallar Road for safe two-way traffic;

2. Widening the hair-pin turn on Faywood Avenue at Orient Avenue for enhanced safety;

3. Extending Vallar Road to improve connectivity and create a new intersection with Waldemar Avenue; and

4. Reconfiguring the intersection of Vallar Road and Faywood Avenue for better sight lines, and enhanced pedestrian safety.

Creating an improved, consistent urban street edge with residential buildings will have a traffic calming effect and improve conditions for pedestrians. Intersection improvements, including roadway curb extensions (bump outs) and enhanced pedestrian accommodations will comply with the Americans with Disabilities Act (ADA) guidelines.

The proximity of the Project to the Suffolk Downs and Orient Heights MBTA Stations, the availability of quality public transportation, access to neighborhood services, and the walkability of the neighborhood reduces dependence on automobile travel and provides an opportunity for the Project to have a transformative effect on the community.

5.3.1 STUDY AREA

The primary area of study encompasses Faywood Avenue between Crestway Road and Orient Avenue, but includes the intersecting streets of Vallar Road, Orient Avenue, and Crestway Road, as well as Waldemar Avenue and Walley Street. See Figure 5-2, Project Limits.

48-hour automatic traffic recorder (ATR) counts were performed at the following locations:

- Waldemar Avenue (Approximately 100 feet west of Crestway Road);
- Faywood Avenue (Approximately 50 feet east of Crestway Road);
- Faywood Avenue (Approximately 200 feet west of Vallar Road); and
- Vallar Road (Approximately 200 feet west of Faywood Avenue).

Morning and evening peak hour (7:00 AM to 9:00 AM, and 4:00 PM to 6:00 PM) Turning Movement Count (TMC) data was collected at the intersection of Faywood Avenue and Vallar Road. In addition, 11-hour TMC data was collected at the following intersections:

- Waldemar Avenue at Crestway Road;
- Waldemar Avenue at Route 1A; and
- Waldemar Avenue at Orient Avenue.

5.3.2 STUDY METHODOLOGY

In accordance with the Boston Transportation Department (BTD) Transportation Access Plan Guidelines (2001), the Project Team conducted a transportation analysis for the proposed Project. The analysis is summarized in the following sections:

Existing Conditions

The first section comprises an inventory of existing transportation conditions, including roadway and intersection conditions; parking, transit, pedestrian, and bicycle circulation; loading; and site conditions.

Future Conditions

The second section evaluated future transportation conditions and assesses potential traffic impacts associated with the Project and other planned projects in the area. Long-term impacts are evaluated for the year 2025, based on a ten-year horizon from 2015, the Project's base year. Expected roadway, parking, transit, pedestrian, and loading capacities and deficiencies are identified. This section includes the following scenarios:

The No-Build Scenario (2025) includes baseline background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the Project Site; and

The Build Scenario (2025) includes specific travel demand forecasts for the Project.

Mitigation

A third section identifies appropriate measures to mitigate Project-related impacts identified in the previous phase.

Construction Related Impacts

Finally, an evaluation of short-term traffic impacts associated with construction activities is also included.

5.4 EXISTING CONDITIONS

The existing Orient Heights development comprises 331 units of state-funded public housing in 20 separate buildings terraced into a steep hillside in East Boston. Originally built in 1951, the Project Site and its buildings have received limited renovation over the decades. The last substantial modernization efforts were completed 20 years ago and benefited only a portion of the Project Site. Existing structures, systems, and infrastructure are obsolete and no longer provide residents with quality housing.

5.4.1 EXISTING ROADWAY CONDITIONS

The following are general descriptions of the characteristics of the roadways within the study area.

Faywood Avenue

Faywood Avenue is functionally classified by the Massachusetts Department of Transportation (MassDOT) as a local roadway and a Neighborhood Residential Street under the City of Boston Complete Streets Guidelines. The roadway is approximately 0.6 miles in length and runs in the east-west direction with both its eastern and western termini at Orient Avenue.

Faywood Avenue is one-way westbound west of Vallar Road and one-way eastbound east of Crestway Road, with a short section of two-way traffic between Vallar Road and Crestway Road. At the west end of the roadway at its transition to Orient Avenue, a hairpin turn is present where the roadway becomes two-way travel along Orient Avenue.

The land use along the roadway is primarily residential. Faywood Avenue is maintained by the City of Boston and has no posted speed limit, with the exception of the school zone for Manassah E. Bradley School, which is posted as 20 miles per hour (mph).

Vallar Road

Vallar Road is functionally classified by MassDOT as a local roadway and as a Neighborhood Residential Street under the City of Boston Complete Street Guidelines. The roadway is approximately 0.2 miles in length and runs in the east-west direction with its eastern terminus at Faywood Avenue and its western

terminus as a cul-de-sac. The land use along the roadway is primarily residential. Vallar Road is maintained by the City of Boston and has no posted speed limit.

Crestway Road

Crestway Road is functionally classified by MassDOT as a local roadway and as a Neighborhood Residential Street under the City of Boston Complete Street Guidelines. The roadway is approximately 0.08 miles in length and runs in the southeast-northwest direction with its southeastern terminus at Faywood Avenue and its northwestern terminus at Waldemar Avenue. The land use along the roadway is primarily residential. Crestway Road is maintained by the City of Boston and has no posted speed limit.

Waldemar Avenue

Waldemar Avenue is functionally classified by MassDOT as an urban collector, and a Neighborhood Residential Street under the City of Boston Complete Streets Guidelines. The roadway is approximately 0.75 miles in length and runs in the east-west direction with its eastern terminus at Walley Street and its western terminus at William F. McClellan Highway (Route 1A). The land use along the roadway is primarily residential. Waldemar Avenue is maintained by the City of Boston and has no posted speed limit.

Orient Avenue

Orient Avenue is functionally classified by MassDOT as an urban collector, and a Neighborhood Residential Street under the City of Boston Complete Streets Guidelines. The roadway is approximately 0.75 miles in length and runs in the east-west direction with its eastern terminus at Walley Street and its western terminus at Faywood Avenue. The land use along the roadway is primarily residential. Orient Avenue is maintained by the City of Boston and has no posted speed limit.

5.4.2 EXISTING INTERSECTION CONDITIONS

Faywood Avenue at Vallar Road

Faywood Avenue and Vallar Road intersect to form a three-way "T"-type unsignalized intersection, with Faywood Avenue approaching from the east and west, and Vallar Road approaching from the north. Due to the orientation of Vallar Road, the two roadways intersect at an acute angle. Faywood Avenue operates freely with no control and Vallar Road operates under "STOP" control.

From the east, Faywood Avenue is 27 feet wide and permits two-way travel, though there is no center line marking. The roadway consists of a parking lane in each direction and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is unrestricted on both sides of the roadway in the vicinity of the intersection.

From the west, Faywood Avenue is 27 feet wide and permits one-way travel in the westbound direction. The roadway consists of a general purpose lane due west away from the intersection with bus stops along the north side of the roadway and parking lanes on both sides of the roadway. Parking is unrestricted on both sides of the roadway in the vicinity of the intersection with the exception of the bus stop located on the northwest corner, where parking is prohibited. Approximately 1000 feet west of the intersection with Vallar Road, Faywood Avenue transitions to Orient Avenue by a hairpin turn where Orient Avenue becomes two-way travel.

From the north, Vallar Road is 27 feet wide and permits two-way travel, although there is no center line marking. The roadway consists of a parking lane in each direction and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is unrestricted on both sides of the roadway in the vicinity of the intersection.

Concrete sidewalks are present along both sides of Faywood Avenue and both sides of Vallar Road. No crosswalks or bicycle accommodations are present in the vicinity of the intersection. Pedestrian ramps are present on both sides of Faywood Avenue approaching from the west and both sides of Vallar Avenue; however, they are not compliant with current ADA regulations.

Faywood Avenue at Crestway Road

Faywood Avenue and Crestway Road intersect to form a three-way "T"-type unsignalized intersection, with Faywood Avenue approaching from the east and west, and Crestway Road approaching from the north. Due to the orientation of Crestway Road, the two roadways intersect at an acute angle. Both Faywood Avenue and Crestway Road operate under "STOP" control.

From the west, Faywood Avenue is 27 feet wide and permits two-way travel, though there is no center line marking. The roadway consists of a parking lane in each direction and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is unrestricted on both sides of the roadway in the vicinity of the intersection except the southern side of the intersection of Faywood Avenue and Crestway Road.

From the east, Faywood Avenue is 27 feet wide and permits one-way travel in the eastbound direction. The roadway consists of a general purpose lane due east away

from the intersection with parking lanes on both sides of the roadway. Parking is unrestricted on both sides of the roadway in the vicinity of the intersection.

From the north, Crestway Road is 27 feet wide and permits two-way travel, although there is no center line marking. The roadway consists of a parking lane in westbound direction, a bus stop in the eastbound direction, and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is strictly residential on north side of the roadway.

Concrete sidewalks are present along both sides of Faywood Avenue and both sides of Crestway Road. No bicycle accommodations are present in the vicinity of the intersection. Crosswalk and pedestrian ramps are present at the intersection on both sides of Faywood Avenue approaching from the west and both sides of Crestway Road, they are not compliant with current ADA regulations.

Orient Avenue at Waldemar Avenue and Walley Street

Orient Avenue, Waldemar Avenue, and Walley Street intersect to form a four-way unsignalized intersection, with Waldemar Avenue approaching from the north, Orient Avenue approaching from the northwest, and Walley Street approaching from northeast and south. Orient Avenue right turn and Waldemar Avenue operate freely with no control and Orient Avenue left turn and Walley Street operate under "STOP" control.

From the northwest, Orient Avenue is 40 feet wide and permits two-way travel, separated by a double yellow center line. The roadway consists of a parking lane in each direction. Parking is restricted to residential permit on both sides of the roadway.

From the north, Waldemar Avenue is 32 feet wide and permits two-way travel, separated by a double yellow center line. The roadway consists of a parking lane in each direction. Parking is restricted to residential permit on both sides of the roadway.

From the northeast, Walley Street is 35 feet wide and permits two-way travel, although there is no center line marking. Parking is prohibited on both sides of the roadway.

From the south, Walley Street is 38 feet wide and permits two-way travel, separated by a double yellow center line marking. The roadway consists of a parking lane in northbound direction which is strictly residential.

Concrete sidewalks are present along both sides of Orient Avenue, Waldemar Avenue, and Walley Street northbound, and on the east side of Walley Street

southbound. Pedestrian crosswalks and ramps are present across Walley Street northbound approach, and Orient Avenue southbound left turn. No bicycle accommodations are present in the vicinity of the intersection.

Waldemar Avenue at Crestway Road

Waldemar Avenue and Crestway Road intersect to form a three-way "T"-type unsignalized intersection, with Waldemar Avenue approaching from the east and west, and Crestway Road approaching from the south. Due to the orientation of Crestway Road, the two roadways intersect at an acute angle. Waldemar Avenue operates freely with no control and Crestway Road operates under "STOP" control.

From the west, Waldemar Avenue is 30 feet wide and permits two-way travel, separated by a double yellow center line. The roadway consists of a parking lane and bus stop on the south side and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is unrestricted on the south side of the roadway and restricted on the north side.

From the east, Waldemar Avenue is 30 feet wide and permits two-way travel, separated by a double yellow center line. The roadway consists of a parking lane on the south side and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is unrestricted on south side of the roadway and restricted during the snow emergencies on the north side.

From the south, Crestway Road is 27 feet wide and permits two-way travel, although there is no center line marking. The roadway consists of a parking lane in westbound direction and a wide general purpose lane that accommodates travel in both directions due to the relatively low volume of vehicles. Parking is strictly residential on both sides of the roadway.

Concrete sidewalks are present along the south side of Waldemar Avenue and on both sides of Crestway Road. No pedestrian (crosswalks and ramps) or bicycle accommodations are present in the vicinity of the intersection.

5.4.3 CRASH SUMMARY

Crash data available from MassDOT for the three most available recent years (2011 to 2013) was collected and reviewed for the study area intersections. The total crashes, severity, manner of collision, and percentage that occurred during peak hours or wet/icy weather conditions for each intersection are presented in Table 5-1, Crash Summary. Morning and afternoon peak hours were assumed to be 7:30 AM – 8:30 AM and 4:00 PM – 5:00 PM respectively. A copy of the crash data is included in the Appendix.

As indicated on Table 5-1, two crashes were reported in the vicinity of the Orient Heights Redevelopment from 2011 to 2013, both of which occurred on Waldemar Avenue.

Table 5-1: Crash Summary

Location	Number of Crashes			Severity				Manner of Collision					Percent During	
	Year	Total Crashes	Average	PD[a]	PI[b]	NR[c]	F[d]	A[e]	RE[f]	HO[g]	Other[h]	Incl. Ped-Bike[j]	Peak Hours[k]	Wet/Icy Conditions
Orient Heights Redevelopment	2011	1	0.67	0	1	0	0	1	0	0	0	0	0%	0%
	2012	1		1	0	0	0	0	0	0	1	0	0%	0%
	2013	0		0	0	0	0	0	0	0	0	0	0%	0%
Total	ALL	**2**	**0.67**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	0%	0%

[a]Property Damage Only; [b]Personal Injury Only (non-Fatal Injury); [c]Not Reported; [d]Fatality; [e]Angle; [f]Rear end; [g]Head on; [h]Sideswipe, opposite direction; sideswipe, same direction, single vehicle crash, rear-to-rear, not reported, unknown, etc.; [j]Includes pedestrian or cyclist; [k]Occurred between 7-9am or 4-6pm

In terms of severity, one reported property damage only and one reported personal injury. In terms of the type of collision, one reported an angle collision and one reported a sideswipe. Neither of the collisions occurred during wet/icy conditions nor during peak hours.

5.4.4 EXISTING TRAFFIC CONDITIONS

Traffic Volume Data

Nitsch Engineering completed a data collection effort to collect traffic data in the vicinity of the study area, including both Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMCs).

Automatic Traffic Count (ATR) Data

PDI collected ATR counts for a continuous 48-hour period at four locations within the study area. The ATR counts at three of the locations were collected from Tuesday, September 15, 2015 to Wednesday, September 16, 2015, and the remaining ATR count was collected from Tuesday, September 22, 2015 to Wednesday, September 23, 2015. The goal of the ATR is to establish an Average Daily Traffic (ADT) and to note the fluctuation in traffic throughout the day. The traffic counts between the two daily 24-hour periods were averaged. The ATR counts are summarized in Table 5-2 and shown graphically in Figure 5-3, 2015 Existing Peak Hour Vehicle Volumes. Additional detail is available in the Appendix.

Table 5-2: Automatic Traffic Recorder (ATR) Summary

LOCATION	PERIOD	ADT[a]		PEAK HOUR TRAFFIC			K factor[d]
		VOLUMES (vpd)[b]	DIRECTIONAL DISTRIBUTION	PERIOD	VOLUMES (vph)[c]	DIRECTIONAL DISTRIBUTION	
Waldemar Avenue west of Crestway Road	Weekday	3,509	51% WB	Morning	246	69% WB	0.07
				Evening	262	54% EB	0.07
Vallar Road north of Faywood Avenue	Weekday	854	50% NB	Morning	53	51% NB	0.06
				Evening	70	53% NB	0.08
Faywood Avenue west of Vallar Road	Weekday	703	95% WB	Morning	64	97% WB	0.09
				Evening	66	97% WB	0.09
Faywood Avenue east of Crestway Road	Weekday	614	99% EB	Morning	36	100% EB	0.06
				Evening	66	100% EB	0.11

[a] Average Daily Traffic; [b] Vehicles per day; [c] Vehicles per hour; [d] Percent of daily traffic

Turning Movement Count (TMC) Data

PDI collected Turning Movement Count (TMC) data at the intersection of Faywood Avenue and Vallar Road. TMC data was collected on Wednesday, September 16, 2015 from 7:00 AM - 12:45 PM to capture the weekday morning traffic peak hours and from 12:45 PM - 6:00 PM to capture the weekday evening traffic peak hours. During the count, vehicles, bicycles, and pedestrians were counted. Figure 5-3, 2015 Existing Peak Hour Vehicle Volumes, presents the 2015 Existing Peak Hour Vehicle Volumes and Figure 5-4, 2015 Existing Peak Hour Pedestrian and Bicycle Volumes, presents the 2015 Existing Peak Hour Pedestrian and Bicycle Volumes. A copy of the traffic count data is included in the Appendix.

In addition, Nitsch Engineering also collected TMC data at the following intersections:

- Waldemar Avenue at Crestway Road;
- Waldemar Avenue at Route 1A; and
- Waldemar Avenue at Orient Avenue.

TMC data was collected on Tuesday, December 15, 2015 from 7:00 AM - 6:00 PM to capture the weekday morning and evening traffic peak hours.

Based on the counts, the AM peak hour is from 7:30 AM - 8:30 AM and the PM peak hour is from 4:00 PM - 5:00 PM.

Seasonal Adjustment

Nitsch Engineering used the MassDOT 2007 Weekday Seasonal Adjustment Factors and MassDOT statewide traffic data to establish if the traffic counts needed to be seasonally adjusted. Each data set is included in the Appendix.

MassDOT 2007 Weekday Seasonal Factors

For the MassDOT 2007 Weekday Seasonal Factors, the composition of the study area falls within "Group 6 – Urban Arterials, Collectors, and Rural Arterials". Counts within Group 6 collected during the month of September experience 8% higher than average counted volumes.

MassDOT Traffic Count Station Data

For MassDOT traffic count station data, we reached stations in the vicinity of the Project area. Count Station 8087 is located in the City of Revere along Route 1A, located north of the Project area. Table 5-3 presents the Monthly Average Daily Traffic (ADT) comparison.

Table 5-3: Monthly ADT Comparison

COUNT STATION	ADT[1] 2005-2009		
	September	Annual	Delta
Station 8087 - Revere - Route 1A - North of Boston C.L.	55,153	54,803	0.6%
[1]Average Daily Traffic (ADT) [2]MassDOT 2009 Monthly Comparison			

From Table 5-3, the count station indicates September counts are approximately 0.6% higher than average counted volumes.

Seasonal Adjustment Summary

Both the MassDOT 2007 Weekday Seasonal Factors and MassDOT Traffic Count Station Data for the month of September were both higher than the annual average. In order to present conservative traffic volumes in this study, Nitsch Engineering made no reduction in the counted volumes.

Intersection Operations

A Level of Service (LOS) analysis is a quantitative assessment of traffic operations at an intersection. Nitsch Engineering conducted a LOS analysis at the study area intersections using the procedures outlined in the 2010 Highway Capacity Manual

(HCM)[1]. The intersections were analyzed using SYNCHRO Version 8 computer software, which conforms to MassDOT requirements. The HCM bases its LOS results on average delay experienced by vehicles at intersections. The HCM categorizes LOS by letters A through F, with LOS A representing minimum delays and good service, and LOS F representing significant delays and poor service. MassDOT considers, LOS A, B, C, and D as acceptable in urban/suburban areas, and LOS E and F as unacceptable. Table 5-4 shows the LOS criteria for signalized and un-signalized intersections.

Table 5-4: Level of Service Conditions for Intersections

Signalized Intersections		Un-signalized Intersections	
Level of Service[1]	**Stopped Delay per Vehicle[1](Seconds)**	**Level of Service[1]**	**Stopped Delay per Vehicle[1](Seconds)**
A	0 to 10	A	0 to 10
B	>10 to 20	B	>10 to 15
C	>20 to 35	C	>15 to 25
D	>35 to 55	D	>25 to 35
E	>55 to 80	E	>35 to 50
F	Over 80	F	Over 50

[1]Reference: 2010 Highway Capacity Manual, TRB

5.4.5 EXISTING TRAFFIC OPERATIONS

Nitsch Engineering analyzed the existing 2015 traffic operations at the study intersections. Table 5-5 summarizes the 2015 existing condition traffic operations.

Table 5-5: Level of Service Summary – 2015 Existing Conditions

LOCATION	DIRECTION / MOVEMENT[1]	WEEKDAY MORNING PEAK HOUR				WEEKDAY EVENING PEAK HOUR			
		V/C[2]	DELAY[3]	LOS[4]	95th Q[6]	V/C[2]	DELAY[3]	LOS[4]	95th Q[6]
Faywood Avenue at Vallar Road	Faywood Ave EB[7] - LT	0.01	6.4	A	1	0.00	1.5	A	0
	Faywood Ave WB - TR	0.07	0.0	A	0	0.07	0.0	A	0
	Vallar Rd SE - LR	0.04	9.4	A	3	0.05	9.4	A	4
Orient Avenue at Waldemar Avenue	Waldemar Ave SB[7] - LTR	0.02	0.0	A	0	0.02	0.0	A	0
	Walley St NB - LTR	0.06	3.4	A	5	0.06	3.4	A	5
	Walley St SW - TR	0.01	11.6	B	1	0.01	11.3	B	1
	Orient Ave EB - L	0.09	11.8	B	7	0.10	12.0	B	9

[1]*2010 Highway Capacity Manual;* Transportation Research Board.

	Orient Ave EB - TR	0.13	9.0	A	11	0.16	9.2	A	14
Waldemar Avenue at Crestway Road	Waldemar Ave EB[7] - RT	0.06	0.0	A	0	0.08	0.0	A	0
	Waldemar Ave WB[7] - TL	0.02	1.5	A	2	0.05	0.4	A	4
	Crestway Road NW - LR	0.05	10.6	B	4	0.05	10.9	A	4

[1] EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, NE = Northeast, NW = Northwest, SE = Southeast, SW = Southwest, L = Left-turn, T = Through movement, R = Right-turn; [2] Volume to Capacity Ratio; [3] Vehicle Delay, measured in seconds; [4] Level Of Service; [5] 50th Percentile Queue (in feet); [6] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; # = volume exceeds capacity, queue may be longer; m = Volume for 95th percentile queue is metered by upstream intersection

Table 5-5 shows that all intersections operate at acceptable levels of service (LOS) during both AM and PM peak hours under the existing conditions. All individual approaches at the intersection operate at LOS B or better.

5.4.6 EXISTING PARKING AND CURB USE

On-street parking and curbside use was inventoried along the study area roadways. Figure 5-5, Existing Parking and Curb Use, graphically indicates the curb side use and parking regulations within the study area. Two-hour regulated parking exists on the following locations:

- Northerly segments of Faywood Avenue and Waldemar Avenue;
- Southerly segment of Faywood Avenue at the intersection of Faywood Avenue at Orient Avenue; and
- Northerly segment of Orient Avenue at the intersection of Faywood Avenue at Orient Avenue.

Residential permit parking exists on the easterly segment of Crestway Road. The rest of the on-street parking along the study area roadways consist of unrestricted parking.

Table 5-6 summarizes the existing parking (on-street and off-street) along the Project Site.

Table 5-6: Existing Parking Summary

Off street		On street		Random	Total Existing
#	Street	#	Street		
8	Waldemar	46	Waldemar	17	
8	Waldemar	37	Vallar N		
17	Vallar Center	38	Vallar S		
11	Faywood	35	Faywood N		
		42	Faywood S		
44		198		17	**259**

5.4.7 EXISTING PUBLIC TRANSPORTATION FACILITIES

The Project Site is well served by transit and bus public transportation. The Project Site is within walking distance of the MBTA's Orient Heights and Suffolk Downs Stations, both providing Blue Line subway service to Downtown Boston and Revere. In addition there are five bus routes currently operating in the vicinity of the Project Site that provide service to surrounding communities.

Table 5-7: Bus Route Summary

Route #	Start Point	End Point	Via	Weekday Frequency	Weekend Frequency
120	Orient Heights (Blue Line)	Maverick Station (Red Line)	Bennington Street	16 min, (peak), 25 min (off-peak), 60 min (nights)	30 min (Saturdays) 60 min (Saturday nights/Sun)
450	Salem Commuter Rail Station	Haymarket (Green and Orange Lines)	Western Ave at MBTA Garage	10-15 min (peak), 55-60 min (off-peak)	55 min (Saturdays) 60 min Sundays
459	Salem Commuter Rail Station	Downtown Crossing(Green, Red and Orange Lines)	Western Ave at MBTA Garage	10-15 min (peak)	
712	Point Shirley	Orient Heights	Teragram Street	20-30 min	
713	Point Shirley	Orient Heights	Teragram Street	15-30 min	

Figure 5-6, Public Transportation in the Study Area, illustrates the available bus and other transportation services adjacent to the Project Site.

5.4.8 EXISTING PEDESTRIAN FACILITIES

Sidewalks are provided on both sides of all study intersections except on northern edge of Waldemar Avenue between 97 Waldemar Avenue and Route 1A. Handicapped-accessible ramps and crosswalks are provided at the following intersections:

- Crestway Road at Faywood Avenue;
- Faywood Avenue at Orient Avenue; and
- Walley Street at Orient Avenue;

Sidewalks are provided on southerly side of the Waldemar Avenue from 97 Waldemar Avenue to the Intersection of Waldemar Avenue and Route 1A. A crosswalk is provided at the intersection of Waldemar Avenue and Route 1A; however there are no ramps at this intersection. There are no ramps or crosswalks along the rest of Waldemar Avenue.

The pedestrian movements for this analysis were obtained in June 2014 and September 2015 and are included in the Appendix.

5.4.9 EXISTING BICYCLE FACILITIES

The Project Site is conveniently located within a mile from the East Boston Greenway Parkway, which when complete will provide approximately 3.3 miles of biking, walking, and jogging paths connecting neglected portions of East Boston's historic waterfront to the Piers Park, the Boston Parks stadium and two Urban Wilds known as Wood Island Bay Marsh and Belle Isle Marsh.

The roadways adjacent to the Project Site have no designated bicycle lanes or markings. Currently there are no Hubway stations (shared bicycle) within the Project area. The roadways in the study area have not been rated for type of bicyclist (children, beginner cyclist, cyclist with limited or some on-road experience, and experienced cyclist) suitability levels.

Figure 5-4 illustrates the 2014 Existing AM and PM peak-hour bicycle turning movement counts at the intersection of Faywood Avenue and Vallar Road. Detailed bicycle counts are provided in the Appendix.

5.4.10 EXISTING CAR SHARING FACILITIES

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who do not own cars. 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.

The nearby Zipcar service provides an important transportation option and reduces the need for private vehicle ownership. As shown on Figure 5-6 and summarized in Table 5-8, Zipcar has three locations in the vicinity of the Project Site with a combined total of 4 vehicles within the study area.

Table 5-8: Car Sharing Services -Zipcar

Facility Location	Number of Vehicles	Distance from Project Site
St. Joseph & Lazarus Church (59 Ashley Street)	1	0.8 mile
Orient Heights T Station	3	0.9 mile
Total	**4**	

5.5 FUTURE CONDITIONS

Nitsch Engineering used the 2015 existing traffic volumes as the baseline for projecting traffic volumes to the future 2025 condition. To determine the future 2025 condition, the following steps are included:

- Project existing 2015 traffic volumes ten years in the future to the horizon year (2025) using an annual background traffic growth factor;
- Add traffic volumes associated with any planned developments that may impact the study area;
- Include any planned roadway improvements that may affect traffic volumes; and
- Analyze the study area location to determine future operational statistics.

Background Growth

MassDOT records traffic volumes at various stations throughout the Commonwealth over multiple years to establish the growth rate and identify regional shifts in traffic. Nitsch Engineering researched MassDOT count stations in the vicinity of the study area, limiting the search to stations that included data for multiple years in order to determine a traffic volume trend and to calculate the growth rate. There are two (2) stations in the vicinity of the study area. Table 5-9 depicts the traffic volumes and the calculated growth rate for the given period for each station.

Table 5-9: Background Traffic Growth Rate

COUNT LOCATION	AADT[1], YEAR			5-YEAR GROWTH RATE, 2009-2014	10-YEAR GROWTH RATE, 2004-2014
	2004	2009	2014		
Lee Burbank Highway, north of Tomesello Way, Revere	60,908	54,448	60,916	2.27%	0.00%
Saratoga Street, south of Boardman Street, Boston	8,693	5,879	6,152	0.91%	-3.40%

[1]Annual Average Daily Traffic (AADT) is the average traffic volume for the entire given calendar year.

Source: Massachusetts Department of Transportation (MassDOT)

Table 5-9 shows that traffic along Lee Burbank Highway in Revere increased for a five-year horizon and remained the same over a ten-year horizon. Traffic along Saratoga Street in Boston increased mildly for a five-year horizon, but decreased over a ten-year horizon. In order to remain conservative and to be consistent with the recommendation by the BRA, we elected to use a 0.5% annual increase in traffic over the ten-year design period for this Project.

Additional Development

Nitsch Engineering researched the BRA website and various news outlets to establish any planned developments that may impact each of the study locations in the immediate future. We note the following projects:

<u>415 McClellan Highway</u>

The proposed development at 415 McClellan Highway located approximately 0.25 miles from the Project Site is currently under construction. As of the filing of the Project Notification Form (PNF) in September 2012, the project consists of a 177-room business hotel, two restaurant/retail sites; associated entry drives, parking areas containing a total of 346 spaces, and pedestrian walks, landscaping and lighting. The property is located at the corner of McClellan Highway and Boardman Street, south of the Project Site, and consists of approximately six acres of vacant land. The proposed development will contain a total of 112,830 square feet of building area, including 102,525 square foot five-story hotel, a 4,034 square foot one-story retail space, and a 6,270 square foot one-story restaurant.

917 Bennington Street

The proposed development at 917 Bennington Street located approximately one mile from the Project Site is currently Board Approved, and has yet to begin construction. As of the filing of the PNF in October 2013, the project will consist of the removal of an existing funeral home, and the construction of a proposed five-story, 45 unit residential building, which includes a parking garage with 27 spaces and a roof deck. The property is located on Bennington Street adjacent to Constitution Beach, just south of the Orient Heights Redevelopment project area, and consists of 16,153 square feet of land. The proposed development will contain approximately 49,775 square feet of gross floor area.

1181 Bennington Street

The proposed development at 1181 Bennington Street located approximately one half of a mile from the Project Site is currently under review. Should the project be approved, as of the filing of the Project Notification Form (PNF) in May 2015, it would consist of the demolition of an existing auto repair shop and a multifamily dwelling, and the construction of a proposed four-story, 44 unit residential structure with on-site parking for at least 44 vehicles beneath. The property is located at the corner of Bennington Street and Palermo Street, on the other side of the MBTA light rail tracks adjacent to the Orient Heights Redevelopment project area, and consists of 18,000 square feet of land. The proposed development would contain approximately 49,000 square feet of gross floor area.

Suffolk Downs

Suffolk Downs is a thoroughbred race track located just north of the project area. In 2013, the owners of Suffolk Downs vied for a casino license under the 2011 Massachusetts Expanded Gaming Act. In November 2013, East Boston voters rejected the Suffolk Downs' proposal. As a result, Suffolk Downs decided to close in October 2014.

Wynn Resort

Wynn Resort in Everett is a planned resort casino to be built in the adjacent City of Everett approximately three miles from the Project Site. It will be located on the south side of the City abutting the Mystic River. Wynn Everett submitted a Second Supplemental Final Environmental Impact Report (SSFEIR) on July 15, 2015 that outlined the latest casino plans and proposed project mitigation.

According to the SSFEIR, the project will be a $1.6 billion resort casino on a 33.9 acre parcel. The casino will consist of 629 hotel rooms, a gaming area, retail space, food and beverage outlets, convention and meeting space, a spa and gym and a parking garage.

The project will include off-site roadway and transportation improvements within the immediate casino study area and none specifically to the Orient Heights Development

project area. The Orient Heights Development may realize a small increase in traffic volumes, which could be incorporated in the proposed 0.5% background growth, as explained in Section 5.1.

Planned Roadway Improvements

Nitsch Engineering contacted MassDOT and City of Boston and researched various news outlets to establish any planned improvements that may impact the study area in the immediate future.

The intersection of Faywood Avenue at Crestway Road, located within the project area and east of the intersection of Faywood Avenue at Vallar Road, was reconstructed in the fall of 2015 as part of the City of Boston Public Works Department (BPWD) Neighborhood Safety Project.

Also of note, Faywood Avenue was recently overlaid and is on the Guaranteed Street List through July 2020.

5.5.1 NO-BUILD CONDITIONS

Nitsch Engineering did not incorporate any additional trips to the study area as a result of the planned developments listed above. We believe the 0.5% annual increase for background vehicle traffic will adequately account for future development. Therefore, we applied the 0.5% annual increase to the 2015 existing traffic volumes to yield the 2025 No-Build traffic volumes. Bicycle and pedestrian traffic counts were not projected to future year 2025. Figure 5-7 shows the 2025 No-Build Volumes used in the traffic analysis and Table 5-10 summarizes the result of the 2025 No-Build traffic analyses.

Table 5-10: Level of Service Summary – 2025 No-Build Conditions

LOCATION	DIRECTION / MOVEMENT[1]	WEEKDAY MORNING PEAK HOUR				WEEKDAY EVENING PEAK HOUR			
		V/C[2]	DELAY[3]	LOS[4]	95th Q[6]	V/C[2]	DELAY[3]	LOS[4]	95th Q[6]
Faywood Avenue at Vallar Road	Faywood Avenue EB[7] - LT	0.01	6.4	A	1	0.00	1.5	A	0
	Faywood Avenue WB - TR	0.07	0.0	A	0	0.08	0.0	A	0
	Vallar Road SE - LR	0.04	9.4	A	3	0.05	9.4	A	4
Orient Avenue at Waldemar Avenue	Waldemar Ave SB[7] - LTR	0.03	0.0	A	0	0.03	0.0	A	0
	Walley St NB - LTR	0.06	3.4	A	5	0.06	3.4	A	5
	Walley St SW - TR	0.01	11.9	B	1	0.01	11.4	B	1
	Orient Ave EB - L	0.09	12.1	B	8	0.11	12.3	B	9
	Orient Ave EB - TR	0.13	9.1	A	12	0.17	9.3	A	15
Waldemar Avenue at Crestway Road	Waldemar Ave EB[7] - RT	0.07	0.0	A	0	0.00	1.5	A	0
	Waldemar Ave WB[7] - TL	0.03	1.5	A	2	0.07	0.0	A	0
	Crestway Road NW - LR	0.05	10.7	B	4	0.05	9.4	A	4

[1] EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, NE = Northeast, NW = Northwest, SE = Southeast, SW = Southwest, L = Left-turn, T = Through movement, R = Right-turn; [2] Volume to Capacity Ratio; [3] Vehicle Delay, measured in seconds; [4] Level Of Service; [5] 50th Percentile Queue (in feet); [6] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; # = volume exceeds capacity, queue may be longer; m = Volume for 95th percentile queue is metered by upstream intersection

Table 5-10 shows that under the 2025 No-Build conditions, all intersections will continue to operate at acceptable LOS during AM and PM peak hours. All individual approaches at the intersection will operate at LOS B or better.

5.5.2 BUILD CONDITIONS

Site Access and Circulation

The Project will simplify and improve vehicular circulation by addressing a number of existing traffic-related conditions. The following proposed improvements are expected to improve overall traffic flow in the immediate and surrounding neighborhood:

1. Widening Faywood Avenue between Orient Avenue and Vallar Road for safe two-way traffic;

2. Widening the hair-pin turn on Faywood Avenue at Orient Avenue for enhanced safety;

3. Extending Vallar Road to a new intersection with Waldemar Avenue; and

4. Reconfiguring the intersection of Vallar Road and Faywood Avenue for better sight lines and enhanced pedestrian safety.

Trip Generation

Nitsch Engineering used the Institute of Transportation Engineers (ITE) publication Trip Generation, 9th Edition to estimate the vehicle trip rates for the proposed development, and establish the net trips as a result of the proposed development replacing the existing. The proposed Orient Heights development consists of three components:

- 195 midrise apartment units;
- 178 townhouse units; and
- a community center.

Trip generation rates for the midrise apartments were based on Land Use Code (LUC) 223 (Midrise Apartment). Trip generation rates for the townhouses were based on LUC 230 (Residential Condominiums/Townhouse). Trip generation rates for the community center were based on LUC 495 (Recreational Community Center). The unadjusted vehicle trips calculated by the ITE trip generation rates were then converted into person trips using the 1995 National Personal Transportation Survey (NPTS) vehicle occupancy rate of 1.14 persons per vehicle. Table 5-11 summarized the total Project generated person trips for the daily and morning and evening peak hours.

Table 5-11: Site Generated Person Trips

TYPE	EXISTING TRIPS	PROPOSED TRIPS			NET CHANGE (PERSON TRIPS) (1)
	LUC 220 - APARTMENT	LUC 223 - MIDRISE APARTMENT	LUC 230 - TOWNHOUSE	LUC 495 - COMMUNITY CENTER	
Weekday Daily[a]	2,201	708	1,457	325	291
Entering[a]	1,101	354	729	163	146
Exiting[a]	1,101	354	729	163	145
Weekday Morning Peak[b]	182	62	111	19	12
Entering[b]	53	19	19	13	0
Exiting[b]	129	43	92	6	12
Weekday Evening Peak[b]	222	80	131	26	15
Entering[b]	135	47	88	13	13
Exiting[b]	87	33	43	13	2

(1) Where the net is negative, we used zero (0).

As illustrated in Table 5-11, approximately 291 net new daily person trips (145 trips in and 145 trips out) are expected to be generated by the Project, with 10 net new person trips (-2 in and 12 out) during the AM peak hour and 15 net new person trips

(13 in and 2 out) during the PM peak hour (increase of approximately four trips per minute during the AM and six trips per minute during the PM peak periods on the adjacent roadway network).

The Boston Transportation Department (BTD) mode split and distribution information for Zone 7, which covers the Project location, was used to develop the proposed travel mode characteristics of the 291 net new daily trips. Table 5-12 summarizes the anticipated travel mode splits for the Project.

Table 5-12: Anticipated Travel Mode Characteristics

Time Period	Walking/Bicycle	Transit	Auto	Vehicle Occupancy
Weekday Daily				
	35%	13%	52%	1.14
Weekday AM Peak				
Enter	40%	10%	50%	1.14
Exit	32%	24%	44%	1.14
Weekday PM Peak				
Enter	32%	24%	44%	1.14
Exit	40%	10%	50%	1.14

Non-Auto Site Generated Trips

Using the values for the walking/bicycle and transit mode splits in Table 5-12, and applying them to the total site-generated person trips presented in Table 5-11 the non-auto site generated trips were developed, and are summarized in Table 5-13.

Table 5-13: Additional Non-Auto Site-Generated Trips

Time Period	Walking/Bicycle Trips	Transit Trips	Total Non-Auto Trips
Weekday Daily			
Enter	51	19	70
Exit	51	19	70
Total	102	38	140
Weekday AM			
Enter	0	0	0
Exit	4	3	7
Total	4	3	7
Weekday PM			
Enter	4	3	7
Exit	1	1	2
Total	5	4	9

Auto Trips

The number of auto trips arriving and departing the Project Site by auto was calculated by applying the auto mode split to the person trips. In order to calculate the number of vehicle trips to the site, the local vehicle occupancy rate of 1.14 passengers per car was applied to the auto trips. Table 5-14 summarizes the anticipated additional site-generated auto trips for the Project.

Table 5-14: Additional Site-Generated Auto Trips

Time Period	Additional Auto Trips
Weekday Daily	
Enter	66
Exit	66
Total	132
Weekday AM	
Enter	0
Exit	4
Total	4
Weekday PM	
Enter	5
Exit	0
Total	5

Project Trip Distribution

The Project vehicle trips (from Table 5-14) were distributed and assigned to the surrounding roadway network based on existing travel patterns at the study area intersections. The Project trip distributions are illustrated in Figure 5-8. The Project trip assignments are illustrated in Figure 5-9**.**

2025 Build Traffic Analysis

The assigned Project related trips were added to the 2025 No-Build peak hour traffic volumes to reflect the 2025 Build peak hour volumes. Because of the new Vallar Road extension that will intersect Waldemar Avenue at the Build Condition, the volumes were further redistributed to account for pass-by cut through traffic. The analysis for the 2025 Build conditions uses the same methodology as the 2015 Existing and 2025 No-Build conditions analyses. Figure 5-10 shows the 2025 build volumes used in the traffic analysis and table 5-15 summarizes the result of the 2025 Build traffic analyses.

Table 5-15 - Level of Service Summary – 2025 Build Conditions

LOCATION	DIRECTION / MOVEMENT[1]	WEEKDAY MORNING PEAK HOUR				WEEKDAY EVENING PEAK HOUR			
		V/C[2]	DELAY[3]	LOS[4]	95th Q[6]	V/C[2]	DELAY[3]	LOS[4]	95th Q[6]
Faywood Ave at Vallar Road	Faywood Avenue EB[7] - LT	0.06	6.9	A	5	0.08	6.8	A	6
	Faywood Avenue WB - TR	0.01	0.0	A	0	0.01	0.0	A	0
	Vallar Road SE - LR	0.08	9.5	A	7	0.11	9.7	A	10
Orient Avenue at Waldemar Avenue	Waldemar Ave SB[7] - LTR	0.01	0.4	A	0	0.00	0.2	A	0
	Walley St NB - LTR	0.07	3.8	A	5	0.08	4.3	A	6
	Walley St SW - TR	0.01	12.0	B	1	0.01	11.6	B	1
	Orient Ave EB - L	0.02	11.7	B	2	0.05	9.4	B	4
	Orient Ave EB - TR	0.13	9.1	A	12	0.17	9.4	A	15
Waldemar Avenue at Crestway Road	Waldemar Ave EB[7] - RT	0.03	0.0	A	0	0.04	0.0	A	0
	Waldemar Ave WB[7] - TL	0.01	1.0	A	1	0.02	1.4	A	1
	Crestway Road NW - LR	0.01	9.4	A	1	0.01	9.7	A	1
Waldemar Avenue at Vallar Road	Waldemar Ave EB[7] - RT	0.07	0.0	A	0	0.09	0.0	A	0
	Waldemar Ave WB[7] - TL	0.00	0.3	A	0	0.01	0.1	A	1
	Vallar Road NB - LR	0.09	10.3	B	7	0.09	10.4	B	8

[1] EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, NE = Northeast, NW = Northwest, SE = Southeast, SW = Southwest, L = Left-turn, T = Through movement, R = Right-turn; [2] Volume to Capacity Ratio; [3] Vehicle Delay, measured in seconds; [4] Level Of Service; [5] 50th Percentile Queue (in feet); [6] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; # = volume exceeds capacity, queue may be longer; m = Volume for 95th percentile queue is metered by upstream intersection

As shown on Table 5-15, under the 2025 Build conditions all intersections will continue to operate at acceptable LOS (at LOS B or better) during AM and PM peak hours. All individual approaches at the intersections will also operate at LOS B or better.

A comparison of the delay, level of service, and queue length indicated in Table 5-7 (2025 No Build) and Table 5-14 (2025 Build) reveal that the proposed development has negligible impact to the majority of studied intersections.

Again all of the intersections and approaches will continue to operate at acceptable LOS after the development is built.

5.5.3 PARKING

The Project, when complete, will provide 59 additional on-street and off-street parking spaces. Table 5-16 summarizes proposed parking (on-street and off-street) along the Project Site.

Table 5-16: Proposed Parking Summary

Off-street		On-street		
#	**Street**	**#**	**Street**	**Total Proposed**
24	Waldemar West	40	Waldemar	
32	Building A	42	Vallar N	
16	Waldemar East	46	Vallar S	
16	Vallar West	41	Faywood N	
15	Building B	42	Faywood S	
21	Vallar Center			
18	Building C			
13	Faywood			
106		212		**318**

5.5.4 BICYCLE ACCOMMODATIONS

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements (TAPA) to provide secure bicycle parking for residents and employees and short-term bicycle racks for visitors. The Project will provide 373 covered and secure bicycle storage spaces on-site. Additional storage will be provided by outdoor bicycle racks accessible to visitors to the Project Site in accordance with BTD guidelines. All bicycle racks, signs, and parking areas will conform to BTD guidelines and be located in safe, secure locations. The Proponent will work with BTD to identify the most appropriate quantity and location for bicycle racks on the Project Site as part of the Transportation Access Plan Agreement (TAPA) process.

5.6 TRANSPORTATION MITIGATION MEASURES

In response to both existing transportation conditions and future needs, Orient Heights Redevelopment has developed a comprehensive package of mitigation as part of the Project. This section describes the proposed strategies organized under the following three categories:

- Transportation infrastructure and operational improvements;
- Transportation Demand Management (TDM); and
- Short term impacts and construction management.

5.6.1 TRANSPORTATION INFRASTRUCTURE AND OPERATIONAL IMPROVEMENTS

It is the intention of the proposed Orient Height Redevelopment Project to include the following street and public right-of-way improvements:

Faywood Avenue:

- Widen the street at the existing hairpin turn as it connects to Orient Avenue;
- Modify the width of the street between Orient Avenue and Vallar Road to permit safe two-way travel; and
- Reconfigure the intersection at Vallar Road to achieve a 90-degree "T"-type intersection.

Vallar Road:

- Extend the existing roadway past the cul-de-sac to intersect with Waldemar Avenue as a new 90-degree "T"-type unsignalized intersection; and
- Intersection improvements will also be included, including roadway curb extensions (bump outs) and enhanced pedestrian accommodations to comply with the Americans with Disabilities Act (ADA) guidelines.

5.6.2 TRANSPORTATION DEMAND MANAGEMENT

The Project Proponent is committed to implementing Travel Demand Management (TDM) measures to reduce dependence on automobiles. TDM will be facilitated by the nature and location of the Project.

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

The Proponent is prepared to take advantage of the good transit access in marketing the Project Site to future residents by working with them to implement demand management measures to encourage the use of non-vehicular modes of travel.

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

- On-site Orientation and Information Packets - Orientation packets will be provided to new residents and tenants by the Proponent. The packets will contain information on available transportation choices, including transit routes/schedules and nearby Zipcar locations. On-site management will

cooperate with residents and tenants to help facilitate transportation for new arrivals.

- Electric Vehicle Charging Stations - The Proponent will explore the feasibility of providing electric vehicle charging stations on-site.

- Bicycling incentives and amenities - Bicycle storage will be provided in secure, sheltered areas for residents. To encourage bicycling as an alternative mode of transportation, secure bicycle storage will also be made available to employees of the residential portion of the Project Site. Bicycle racks for the general public and visitors will be placed near building entrances (subject to necessary approvals).

- Information dissemination and Website - The website will include transportation-related information for residents, workers, and visitors.

5.6.3 SHORT TERM IMPACTS AND CONSTRUCTION MANAGEMENT

Development on tight sites in the City of Boston, combined with concerns for avoiding traffic congestion and hazards to pedestrian and vehicular traffic, has led to increasing requirements for sophisticated construction period traffic management plans, known as Construction Management Plans (CMPs), which need to be approved by Boston Transportation Department (BTD) as a precondition to the issuance of a building permit for the development. The CMP will discuss and address the following in detail:

- Construction activity schedule;
- Construction staging area;
- Delivery schedule;
- Pedestrian and public safety;
- Perimeter protection;
- Employee parking;
- Material handling;
- Truck routes;
- Police details;
- Utilities;

- Construction noise;
- Construction air quality;
- Street cleaning and snow removal;
- Rodent control; and
- Site dewatering

The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.

To minimize transportation impacts during the construction period, the following measures will be incorporated into the CMP:

- Construction workers will be encouraged to use public transportation and/or carpool;
- A subsidy for MBTA passes will be considered for full-time employees; and
- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the Project Site each day.

5.7 SUMMARY

Per the contents and analysis of this study, the proposed Orient Heights Redevelopment Project will have negligible impact to the intersections within the Project area and all intersections and approaches will continue to operate at the acceptable LOS levels after the development is built. Furthermore, the roadway improvements, widening, extensions, and reconfigurations will enhance traffic safety for drivers, pedestrians, and cyclists in this neighborhood.

East Boston, Massachusetts

Figure 5-1
Locus Map
Source: Nitsch Engineering, 2016

East Boston, Massachusetts

Figure 5-2
Project Limits
Source: Nitsch Engineering, 2016

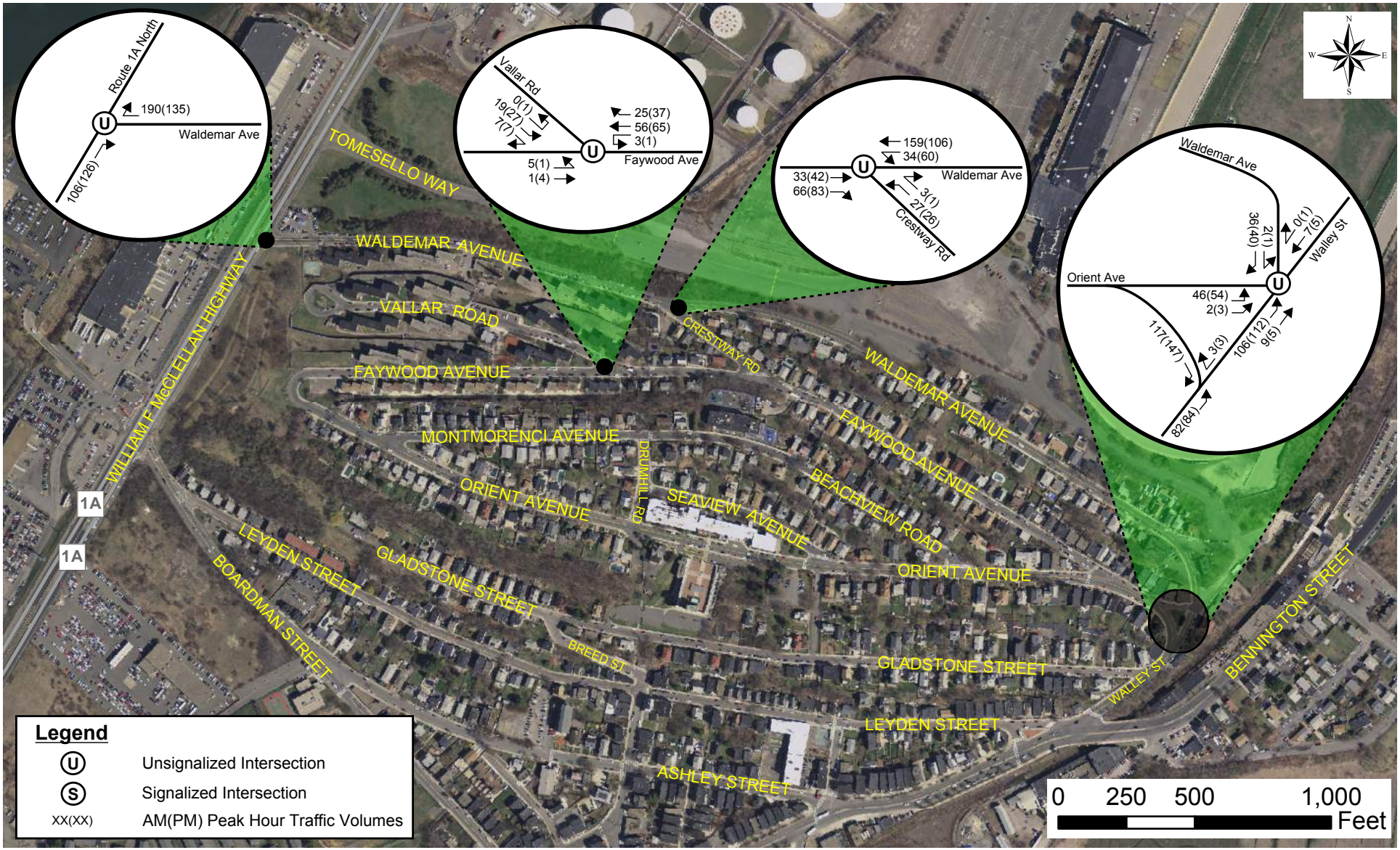


Figure 5-3
Existing Peak Hour Vehicle Volume
Source: Nitsch Engineering, 2016

Figure 5-4
Existing Peak Hour Pedestrian and Bicycle Volumes
Source: Nitsch Engineering, 2016

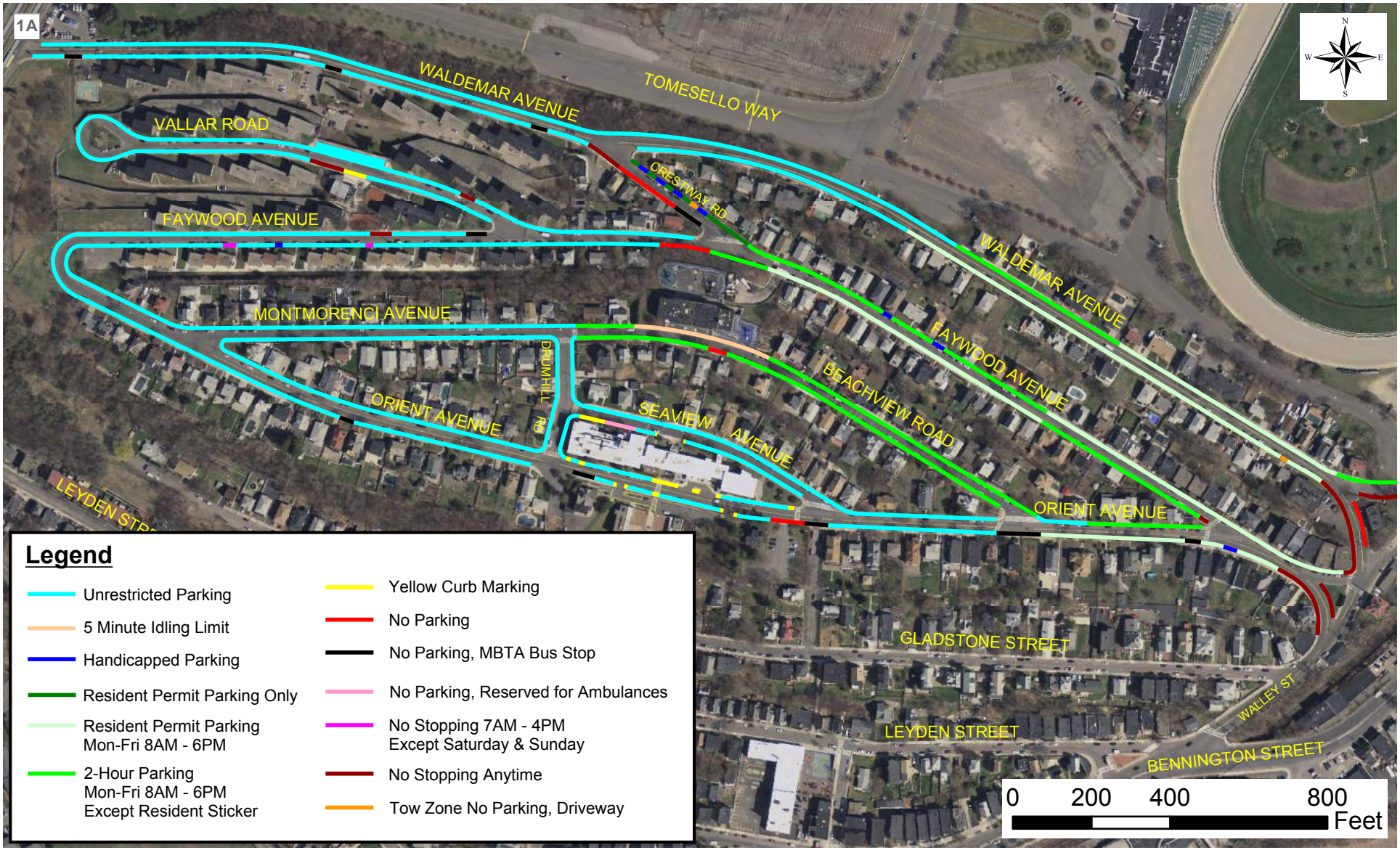


Figure 5-5
Existing Parking and Curb Use
Source: Nitsch Engineering, 2016

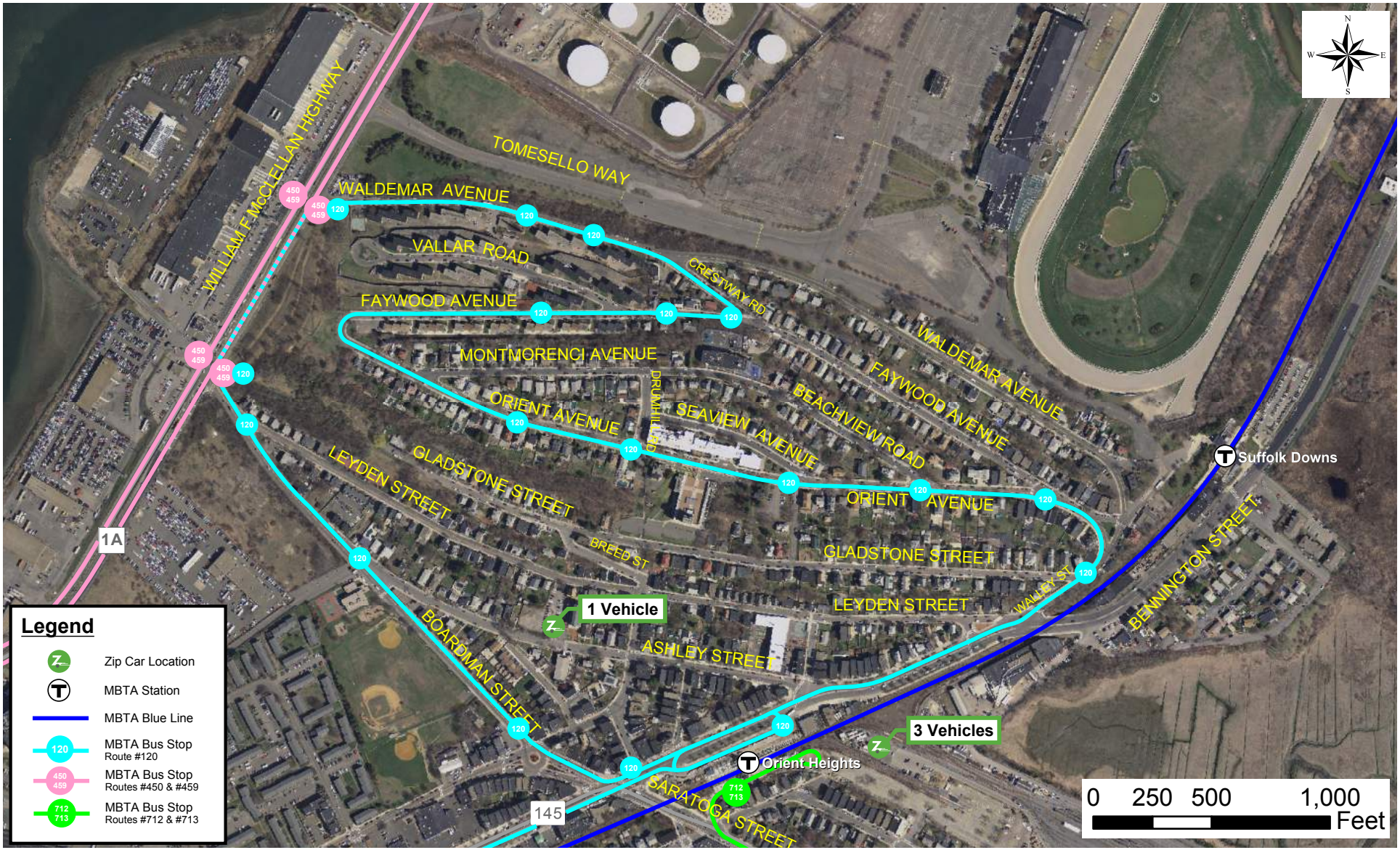


Figure 5-6
Public Transportation in the Study Area
Source: Nitsch Engineering, 2016

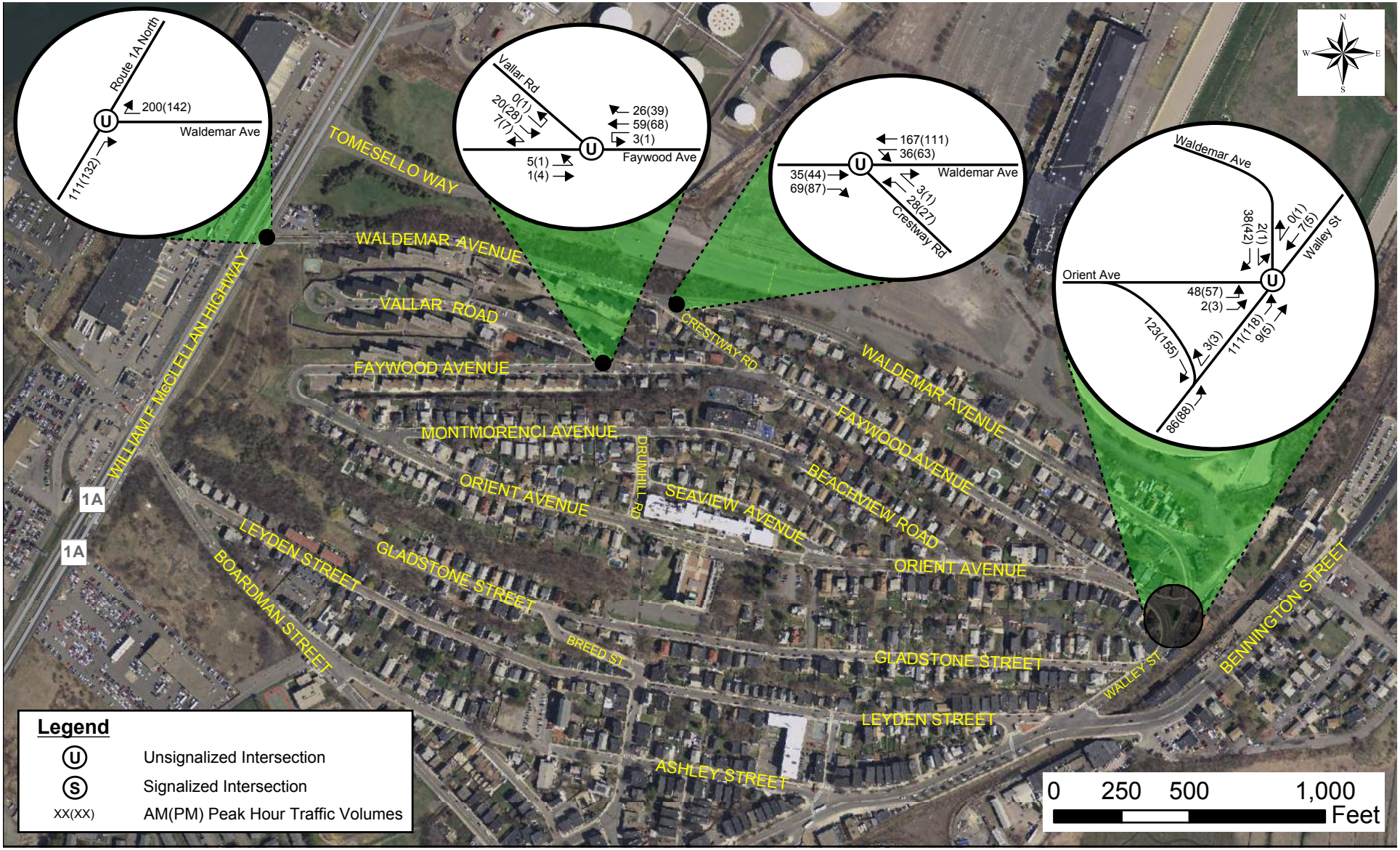


Figure 5-7
Future No-build Peak Hour Vehicle Volumes
Source: Nitsch Engineering, 2016

Figure 5-8
Trip Distribution
Source: Nitsch Engineering, 2016

East Boston, Massachusetts

Figure 5-9
Trip Assignment
Source: Nitsch Engineering, 2016

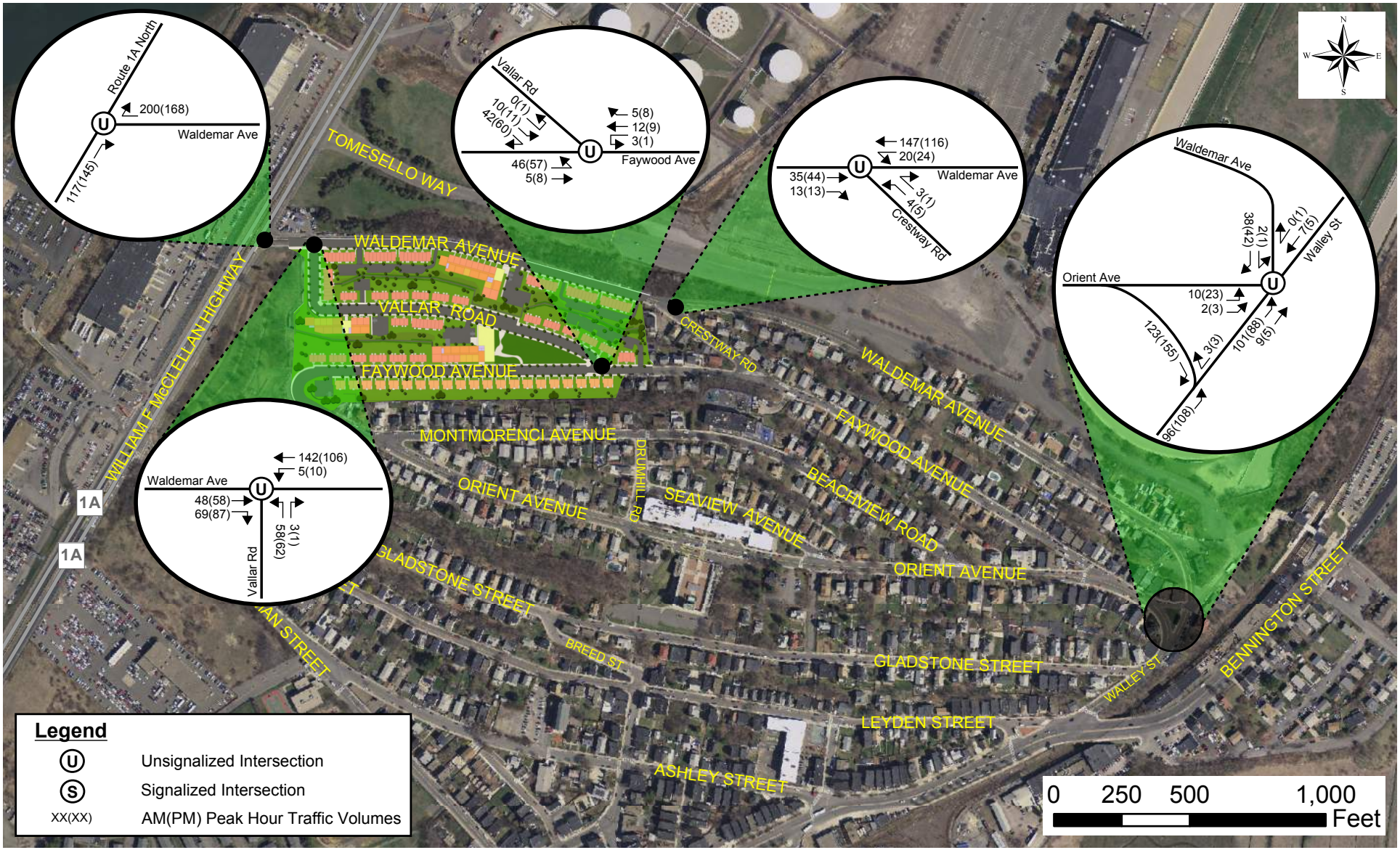


Figure 5-10
Future Build Peak Hour Vehicle Volumes
Source: Nitsch Engineering, 2016

Chapter 6

ENVIRONMENTAL PROTECTION

CHAPTER 6: ENVIRONMENTAL PROTECTION

6.1 INTRODUCTION

The Project will be built in full compliance with local, state, and federal environmental regulations. The Project will not create undue wind, shadow, noise, solar glare, or air quality impacts in the surrounding area. An appropriate Construction Management Plan to avoid and mitigate construction period impacts will be approved by the Boston Transportation Department and followed for the full construction term.

6.2 WIND

The Project is not expected to have adverse pedestrian-level wind impacts adjacent to or in the vicinity of the Project Site due to the plan to demolish existing buildings and replace them with buildings of similar sizes. As a result of the placement of the proposed new buildings in the existing context, pedestrian level winds along adjacent sidewalks are not anticipated to exceed BRA guidelines.

6.3 SHADOW

A shadow analysis was conducted for the Project to evaluate the potential shadow impacts in the vicinity of the Project Site. Table 6-1, Shadow Study Dates and Times, identifies the dates and times for which shadow conditions have been simulated.

Table 6-1: Shadow Study Dates and Times

Date	Time
Vernal Equinox — March 20	9:00 a.m., 12:00 p.m., 3:00 p.m., 6:00 p.m.
Summer Solstice — June 20	9:00 a.m., 12:00 p.m., 3:00 p.m., 6:00 p.m.
Autumnal Equinox — September 22	9:00 a.m., 12:00 p.m., 3:00 p.m., 6:00 p.m.
Winter Solstice — December 21	9:00 a.m., 12:00 p.m., 3:00 p.m.

The analysis is focused on the Project's impact to the neighboring residential properties, proposed pedestrian areas and sidewalks, and future conditions on the Project Site. The analysis was completed using a general massing of the Project's proposed buildings. Shadows have been determined using the applicable altitude and azimuth data for the City of Boston.

The following summary references the images show in Figures 6-1 through 6-4, Shadow Studies. All net new shadows are shown in beige and existing shadow is shown in gray.

Vernal Equinox — March 20

New shadows at the Vernal Equinox are minor and remain on the Project Site with the exception of new shadows at 9:00 a.m. falling on the open hillside west of the future Vallar Road/Waldemar Avenue intersection and on Waldemar Avenue at 6:00 p.m.

Summer Solstice — June 20

New shadows at the Summer Solstice are minor and remain on the Project Site with the exception of new shadows at 9:00 a.m. falling on the future Vallar Road connection south of Waldemar Avenue.

Autumnal Equinox — September 22

New shadows during the Autumnal Equinox are minor and remain on the Project Site with the exception of new shadows at 9:00 a.m. falling on the future Vallar Road connection south of Waldemar Avenue and on Waldemar Avenue at 6:00 p.m.

Winter Solstice — December 21

The Project will create a minor increase in shadow coverage across Waldemar Avenue and the open hillside west of the Project Site. There will also be some new shadow on Faywood Avenue from the proposed townhouses.

6.4 DAYLIGHT

The Project will be constructed in a developed urban area consisting mostly of residential structures. It is not expected to have adverse impacts to daylight along public ways due to the plan to demolish existing buildings that will be replaced with buildings of similar sizes.

6.5 SOLAR GLARE

A solar glare analysis is intended to measure potential reflective glare from the buildings onto streets, public open spaces, and sidewalks in order to determine the likelihood of visual impairment or discomfort due to reflective spot glare. As a result of the design and use of generally non-reflective materials, it is not anticipated that the Project will have adverse solar glare impacts or create solar heat buildup in nearby buildings.

6.6 AIR QUALITY

This section provides a qualitative review of air quality sources and impacts as a result of the Project from traffic, parking, and heating and mechanical ventilation systems. Impacts from construction and operations are addressed in Section 6.11, Construction Impacts.

6.6.1 EXISTING AIR QUALITY

The Project is not expected to adversely impact air quality in the vicinity of the Project Site. The Project will replace existing outdated structures with new buildings equipped with modern mechanical technology and HVAC systems.

6.6.2 TRAFFIC SOURCES

During a typical day, there is not expected to be a change in the level of service of surrounding intersections after the Project is built. The Project will result in a net increase of 42 housing units over the existing condition. Those additional 42 units are expected to generate an additional 132 vehicle trips per day.

The Project is located within a ten minute walk to the Suffolk Downs MBTA Blue Line station, which provides subway service between Downtown Boston and Revere. Many residents of the Project will utilize public transportation to and from the Project Site.

Transportation Demand Management (TDM) strategies are a significant component of this Project and are anticipated to assist in minimizing adverse air quality impacts. The following TDM strategies will be implemented to encourage residents and visitors of the Project to minimize single-occupancy vehicle trips:

- **On-Site Orientation and Information Packets**
  Orientation packets will be provided to new residents and tenants by the Proponent. The packets will contain information on available transportation choices, including transit routes/schedules and nearby Zipcar locations. Management will cooperate with residents and tenants to help facilitate transportation for new arrivals.

- **Information Dissemination and Website**
  The website will include transportation-related information for residents, workers, and visitors.

- **Bicycling Incentives and Amenities**
  Bicycle storage will be provided in secure, sheltered areas for residents. To encourage bicycling as a viable mode of transportation, secure bicycle storage will also be made available to employees of the residential portion of the Project Site. Bicycle racks for the general public and visitors will be placed near building entrances.

6.6.3 PARKING SOURCES

The existing Project Site contains approximately 259 parking spaces. The Project will provide approximately 318 parking spaces (212 spaces on-street, 106 spaces off-street) upon completion of all construction phases. The increase in parking spaces is not anticipated to have a significant impact on the existing air quality in or around the Project Site. In addition, the Project will encourage the use of bicycle, walking, and public transportation to minimize air quality impacts related to parking. The Project will provide 15 visitor bicycle parking spaces interspersed throughout the Project Site and provide one covered bicycle parking space per residential unit.

6.6.4 BUILDING OPERATION SOURCES

The Project will replace existing outdated structures with new, energy efficient buildings equipped with modern mechanical technology and HVAC systems. The Project's building operations are expected to improve air quality on and around the Project Site as a result of new high efficiency mechanical systems. The emergency generator will be located and vented at grade level. The Project's mechanical systems will be vented through the roofs of the buildings. Despite an increase in the unit count on the Site, the Project will deliver more efficient operations and improved air quality as a result of the new building systems that will outweigh the minor increase in energy loads required by the additional units.

6.7 NOISE

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

The primary sources of exterior sound for the Project will include individual unit heating and cooling systems, located at grade behind the townhouses, individual condensing units for the apartments on midrise roofs, and a minimal number of rooftop condensing units serving common areas. Energy recovery ventilation systems will also be located on the roof of the midrise buildings. Based on the general equipment design, the rooftop equipment is

not expected to produce significant sound levels at the building property lines, though noise control measures will be provided if required.

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

6.8 FLOOD ZONES

As part of its administration of the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) publishes flood hazard maps known as Flood Insurance Rate Maps (FIRM). The purpose of the FIRM is to show the areas in a community that are subject to flooding and the risk associated with these flood hazards. The most recent FIRM (Map No. 25025C0019J, revised March 16, 2016) for the area indicates the Project Site is not within a flood zone.

6.9 GEOTECHNICAL

This section discusses existing geotechnical conditions on the Project Site and potential impacts from the Project.

6.9.1 SUBSURFACE SOIL CONDITIONS

Fill Material

In general, the surface treatments surrounding the existing buildings across the Project Site consist of an approximate 2-inch thickness of asphalt in paved areas or an approximate 0.5 to 1-foot thickness of topsoil in landscaped areas. The underlying fill material generally consists of loose to compact, gray-brown, sand and gravel with some silt. Portions of the fill encountered in the borings were observed to contain traces of ash, cinders, wood, and concrete. The thickness of the fill material has been observed to vary from 1.8 to 22.6 feet.

Glacial Deposits

The glacial soils encountered in the explorations were primarily classified as glacial till and were observed to consist of a compact to very dense, red-brown, silt, and sand with some gravel varying to a well-graded mixture of silt, sand, and gravel. A glacial outwash deposit was encountered at limited portions of the Site at an approximate depth of 15 feet below the existing ground surface. The glacial outwash deposit was observed to consist of a dense to very dense, brown sand with some gravel and silt.

6.9.2 GROUNDWATER CONDITIONS

In general, groundwater levels at the Site are estimated at depths ranging from 7.5 feet to 15 feet below ground surface. The groundwater gradient is likely in a north-northwesterly direction, which is consistent with the ground surface topography. It is anticipated that future groundwater levels across the Project Site may vary from those reported herein due to factors such as normal seasonal changes, periods of heavy precipitation, and alterations of existing drainage patterns.

6.9.3 FOUNDATION DESIGN AND CONSTRUCTION

Based on the proposed scope of the Project and the subsurface conditions described above, it is recommended that the proposed buildings and any new retaining walls be founded on the existing glacial soil deposits underlying the Project Site. Specifically, it is recommended that the proposed buildings and retaining walls be founded on a spread footing foundation system with soil-supported slabs-on-grade for the lowest level slabs of the proposed buildings.

Footings should be proportioned utilizing a net allowable design bearing pressure of five tons per square-foot (tsf) and bear directly on the undisturbed, natural glacial deposits underlying the Project Site. In areas where the design elevation of the bottom of the footing is above the surface of the glacial soil deposit, it is recommended that the existing surface treatments, fill, and subsoil, if present, be over-excavated to the top of the undisturbed glacial soil deposit and be backfilled with compacted structural fill.

Preparation of building pad subgrades should include removal of all existing bituminous pavements, existing building and/or retaining wall foundations, and surficial topsoil from the entire proposed building footprints. The existing fill may remain in place beneath the slabs-on-grade. Existing fill material shall be proof-compacted prior to placement of structural fill.

6.10 SOLID AND HAZARDOUS WASTE

The section discusses existing contamination and solid and hazardous waste conditions on the Project Site.

Based on a review of local, state, and federal databases, the Project Site was inspected for the presence of lead-based paint from 1990 through 2015. Hazards were encountered during 1990, 2005, 2014, and 2015 inspections at units 1 through 11. EDR did not indicate that regulatory compliance had been achieved in any of the units. A review of the Massachusetts Childhood Lead Poisoning Prevention Program (MCLPPP) indicated that violations were reported in units 1 through 11 given the presence of a lead hazard.

Abatement of all lead-based paint is to be conducted prior to renovation/demolition of the existing buildings.

Radon gas sampling kits were placed in select basement areas of the Project Site for testing. Based on the levels of radon gas detected during the survey, no further action is required for the renovation of the current basement areas into residential units. However, mitigation measures may be considered for Buildings #6, #8 and #12 due to radon levels at 2 pico Curies per liter (pCi/L). National Protocols indicate that for detected concentrations of radon gas between 2 pCi/L and 4 pCi/L, corrective action should be considered. Re-testing for the presence of radon should be conducted upon completion of renovations and/or new construction.

Any material leaving the Project Site will be required to be legally transported in accordance with local, state, and federal requirements. In addition, any regulated soil conditions related to oil and hazardous materials will be managed in accordance with appropriate Massachusetts Department of Environmental Protection (DEP) regulatory requirements.

6.10.1 SITE HISTORY AND COMPLIANCE WITH MA CONTINGENCY PLAN

The approximately 15-acre Site is currently occupied by a complex of 20 existing residential structures containing 331 units and two structures used for management and childcare activities, and a former boiler/maintenance room.

Historical records indicated that two roadways, identified as Waldemar Avenue and Farrington Street, crossed the Project Site in the 1900s. Between the 1920s and 1950, the roads were identified as Overlook Street and Faywood Avenue and the Project Site was developed with residential structures and associated garages listed as 166, 230, and 254 Waldemar Avenue and 125 Faywood Avenue. By 1951, the roadways were identified as Vallar Road and Faywood Avenue and the Project Site was redeveloped with the existing Orient Heights Housing Development consisting of three approximately 20-foot high retaining walls, 20 residential buildings, several parking areas, a management office, and a boiler house/repair shop with an adjoining brick chimney to the east. In addition, City of Boston directories identified several non-residential operations at the Project Site between 1974 and 2013, which included:

- St. Wilfred FD Dstbtn. in 1974 (250 Waldemar Avenue);
- Boston Hang Task Force in 1984 (199 Faywood Avenue);
- Wah Chong Cleaning Service in 1992 (230 Waldemar Avenue); and
- School/day care facilities in 1995-2013 (171 and 191 Faywood Avenue).

The Project Site is a DEP-listed disposal site with a Release Tracking Number (RTN) of 3-24112 in the DEP release site database as defined in the Massachusetts Contingency Plan. A Class A-2 Response Action Outcome (RAO) was filed with DEP for the release site as a result of a petroleum release to soil from two No. 2 fuel oil and No. 6 fuel oil leaking underground storage tanks (USTs). Based on the DEP status of the release, a permanent solution has been achieved and a condition of no significant risk exists and no further action is required for RTN 3-24112.

6.11 CONSTRUCTION IMPACTS

The following section describes the impacts likely to result from the Project's construction and steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will designate a construction manager who is responsible for developing a construction phasing plan and for coordinating construction activities with all appropriate regulatory agencies.

As the Project will be conducted in four phases, some residents will remain on the Project Site while construction is on-going. Minimization of impacts to those residents is a high priority for the Project. Methods to avoid and mitigate impacts to residents living on the Project Site during construction are described below and will be vetted to the community.

6.11.1 CONSTRUCTION MANAGEMENT PLAN

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

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

6.11.2 CONSTRUCTION ACTIVITY SCHEDULE

Phase One's construction is expected to last approximately 18 months, beginning in fall 2016 and reaching completion by summer 2018. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions. Subsequent construction phases would follow and would be coordinated with appropriate City of Boston agencies.

6.11.3 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 perimeter of the Project Site. Barricades and secure fencing will be used to isolate construction areas from pedestrian traffic along sidewalks and pathways as appropriate for construction phasing. 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.

6.11.4 CONSTRUCTION TRAFFIC IMPACTS

Designated truck routes will be established to govern where construction trucks access and egress the Project Site. Potential truck routes will be discussed with the Boston Transportation Department (BTD). A detailed CMP will be developed and submitted under separate cover. The Proponent will work closely with the BTD in developing the CMP and will include more detail on construction phasing, number of trips, haul routes, hours of operation, and ways to minimize impacts to residents and neighbors.

6.11.5 CONSTRUCTION WORKER PARKING AND STAGING

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

The general contractor will be responsible for educating all construction workers about public transit options and encouraging the use of high occupancy vehicles. All construction workers will be encouraged to utilize mass transit and ridesharing options to access the Project Site and to minimize vehicle traffic and parking on the local streets. As part of the program to promote public transportation, the following will be implemented:

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

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

6.11.6 CONSTRUCTION AIR QUALITY

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

6.11.7 CONSTRUCTION NOISE IMPACTS

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

6.11.8 SEDIMENT CONTROL MEASURES

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

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

- Stacked hay bales and/or silt fence barriers will be installed at the base of stockpiled soils and at erosion-prone areas throughout the construction phase of the Project;
- Erosion controls will be maintained and replaced as necessary to ensure their effectiveness;
- Where necessary, temporary sedimentation basins will be constructed to prevent the transport of sediment off-site;
- Measures to control dust will be implemented during renovations— all debris will be properly contained on the Project Site; and
- Erosion controls will be maintained and replaced as necessary until the installation of pavement and the establishment of stabilized vegetation at the Project Site.

6.11.9 RODENT CONTROL

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

6.12 HISTORIC AND ARCHAEOLOGICAL RESOURCES ON THE PROJECT SITE

The Project is located in the hilly Orient Heights neighborhood of East Boston, which was developed by immigrants in the later 19th and early 20th centuries. No one architectural style dominates the landscape surrounding the Project Site. A mix of styles including Romanesque Gothic, Classic Revival, Art Deco, and modern structures are displayed throughout the neighborhood. The Project will replace the existing concrete and brick buildings with contextually appropriate, residential scale housing units. The Project will not have an impact on any historic resources in the vicinity of the Project Site.

6.12.1 HISTORIC AND ARCHEOLOGICAL RESOURCES ON THE PROJECT SITE

There are no historic or known archeological resources on the Project Site. The Project will be constructed on a developed site. The existing concrete and brick buildings on the Project Site will be demolished in multiple phases prior to

construction of the Project. An application for a finding of no adverse affect will be submitted to the Boston Landmarks Commission pursuant to Article 85 of the Code.

6.12.2 HISTORIC RESOURCES IN THE VICINITY OF THE PROJECT SITE

Described below are historic resources within one-quarter mile of the Project Site that are listed on the Massachusetts Inventory of Historic and Archaeological Assets of the Commonwealth and the State and National Registers of Historic Places. The Project will reinvigorate the neighborhood with a mix of new residential structures, roadway improvements, and a new public park. The Project will not impact any of the historic resources in the vicinity of the Project Site. Figure 6-5 illustrates the historic resources in the vicinity of the Project Site.

Table 6-2: Historic Resources in the Vicinity of the Project Site

MACRIS ID	Address/Name
BOS.WA	Saint Joseph and Lazarus Roman Catholic Church
BOS.Q	2-8 Montmorenci & 228-252 Orient Avenue
BOS.ABQ	Suffolk Downs
BOS.110	Don Orione Rest Home
BOS.111	Franciscan Sisters of Mary Convent
BOS.112	75-79 Orient Avenue
BOS.113	Don Orione Nursing Home
BOS.114	Madonna Queen Shrine Chapel
BOS.186	15 Seaview Street
BOS.902	Madonna, Queen of the Universe Statue

BOS.WA: Saint Joseph and Lazarus Roman Catholic Church

The Saint Joseph and Lazarus Roman Catholic Church complex (the "Roman Catholic Complex") includes the Saint Lazarus Church at 61 Ashley Street, the attached rectory at 59 Ashley Street, and the Reverend Louis Toma Youth Center at 54 Ashley Street. Directed by the Archdiocese of Boston, the Roman Catholic Complex is the result of merger of two existing parishes based in Orient Heights: Saint Lazarus Church, which largely served the Italian communities of Orient Heights, Revere, and Winthrop, and Saint Joseph Parish, which was a territorial parish. The structures within the complex were constructed between 1911 and 1961 and provide a variety of architectural styles including Arts and Crafts, Classic Revival, and Modern. The northernmost boundary of the Roman Catholic Complex is located nearly a quarter-mile south of the Project Site and will not be affected by shadows caused by the Project. The Project will have no adverse affect on the Roman Catholic Complex.

BOS.Q: 2-8 Montmorenci and 228-252 Orient Avenue

The structures at 2-8 Montmorenci and 228-252 Orient Avenue represent a collection of 11 Picturesque Tudor houses constructed during the later 1930s. The homes in this area were designed and constructed by several architects including Edward B. Stratton, whose notable work throughout Boston includes the Nationally Registered Vermont Building in the North End and the Edward B. Stratton House in Newton. The houses in this area feature steeply pitched gable entrance pavilions. This collection of homes is located directly south of the Project Site. The Project will not have an adverse impact on this collection of homes.

BOS.ABQ: Suffolk Downs

Suffolk Downs comprises 161 acres of land directly north of the Project Site in Boston and the City of Revere. The property encompasses the racetrack, clubhouse and grandstand, administration building, approximately 30 wood-frame barns, and ancillary support buildings. The structures within Suffolk Downs were constructed during the middle of the 20th century, the oldest of which were built in 1935. The main buildings (the Grandstand, Clubhouse, and Administration Building) were all constructed to support the racetrack in 1935 and emphasize Art Deco and International Style architecture. The supporting structures and barns are wood-framed and were constructed between the 1930s and the 1950s.

Though the sport has suffered severe decline in recent decades, horse racing was immensely popular at the turn of the 20th century. The Commonwealth of Massachusetts created the State Racing Commission in 1934, immediately after which Suffolk Downs founder and owner Charles F. Adams commissioned Mark Linenthal to design a race track for the site in East Boston. Mark Linenthal would go on to design several other racing facilities throughout New England. Racing commenced at Suffolk Downs during World War II and flourished up until the 1970s. Since the 1990s, some of the structures have suffered from neglect, and in 2012, the roof of the Administration Building collapsed. The Administration Building has been condemned and is scheduled to be demolished.

The future of Suffolk Downs is unclear. Though limited racing activities continue at the track, the site has been considered for a variety of other uses in recent years. The Project will not have a significant negative impact on the Suffolk Downs structures.

BOS.110: Don Orione Rest Home

The Don Orione Rest Home (120 Orient Avenue) is a Second Empire style house built in the 1880s and currently used as a nursing and rehabilitation home. The structure is red brick with mansard roof and notable cornice details, pointed arch windows, and an offset square tower. In conjunction with the structure at 150

Orient Avenue, the building was once used as a convent for the Franciscan Sisters of Mary and was converted for use as an orphanage run by the Franciscan Sisters of Mary until 1949. The Don Orione Fathers/Sons of Divine Providence converted the structure to a home for the elderly in 1950. The Project is located northeast of the Don Orione Home and will not be adversely affected by the Project.

BOS.111: Franciscan Sisters of Mary Convent

The Franciscan Sisters of Mary Convent (150 Orient Avenue) was constructed in the 1880s in the Italianate style with a cupola. The building has been altered from its original state and is now clad in vinyl siding and updated windows. The main architectural elements of the structure including the paired brackets at the cornice, cupola, and arched windows remain intact. The Project is located northeast of the Franciscan Sisters of Mary Convent and will not be adversely affected by the Project.

BOS.112: 75-79 Orient Avenue

The structure at 75-79 Orient Avenue is a Colonial Revival stucco house constructed in the 1910s. The house is in fair condition and contains a four-bay façade and a one-story full width porch with a balustrade. Stone steps flanked with two robust stone columns mark the entry to the house, which front the corner of Orient Avenue and Beachmont Street. The Project is located nearly one-quarter mile northeast of this property. The property will not be adversely impacted by the Project.

BOS.113: Done Orione Nursing Home

The Done Orione Nursing Home (111 Orient Avenue) is a three-story Modern-style building constructed in the early 1950s to support the Don Orione Fathers/Sons of Divine Providence elderly care facilities. The structure is built of steel and reinforced concrete with recessed bands of floor-to-ceiling windows between cantilevered concrete floors. The Don Orione Home represents one of the few modern buildings in East Boston outside of Logan International Airport. Several additions have been constructed since the original opening of the home, including a 95-bed wing. The Project is located northeast of the Don Orione Home and will not negatively impact the property.

BOS.114: Madonna Queen Shrine Chapel

The Madonna Queen Shrine Chapel is located across the street from the Don Orione Home and is a large religious shrine and plaza. The main feature of the plaza is a 35-foot tall bronze and brass religious statue, which sits atop a six-foot sphere set into a concrete and steel tower. The tower is flanked by a large colonnade, which forms and open-air basilica. The shrine was sculpted by Arrigo

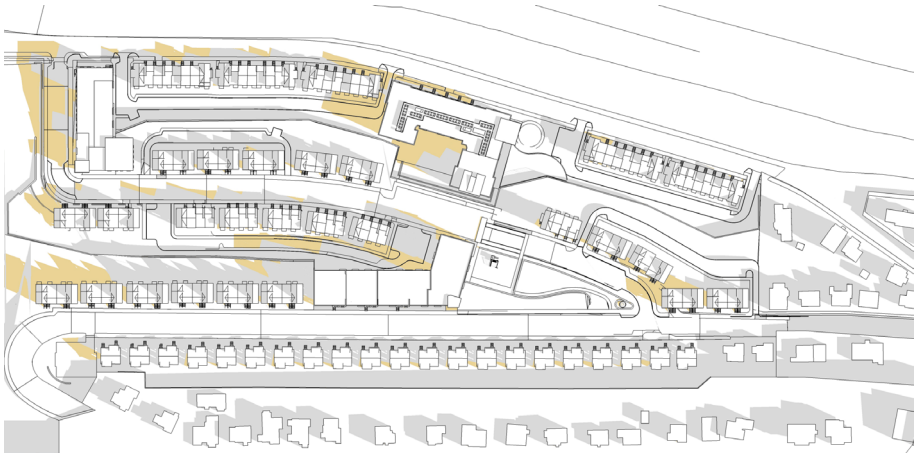
Minerbi, an Italian Jewish sculptor who took refuge with the Don Orione Fathers during Nazi occupation in World War II. The shrine was presented to the Don Orione Fathers in 1954 as a token of gratitude for their protection. The Project is located northeast of the chapel and will not negatively impact the property.

BOS.186: 15 Seaview Street

The structure at 15 Seaview Street was constructed in 1882 in the Victorian Gothic style. The house is distinguished by its mansard roof, paired framed windows, and a tower. The property is located southeast of the Project and will not be adversely impacted by the Project.

BOS.902: Madonna, Queen of the Universe Statue

The Madonna, Queen of the Universe Statue is contained within the Madonna Queen Shrine Chapel plaza, described above. The sculpture is a 35-foot bronze and brass Madonna statue in traditional robes standing atop a six-foot sphere. The statue is set within a 90-foot tall tower topped with a gold-plated, multi-spired crown. As mentioned above, the statute was presented to the Done Orione Fathers in recognition of their protection to the Italian Jewish sculptor, Arrigo Minerbi, who took refuge with the Don Orione Fathers during Nazi occupation in World War II. The statue is located southeast of the Project and will not be negative impacted by the Project.



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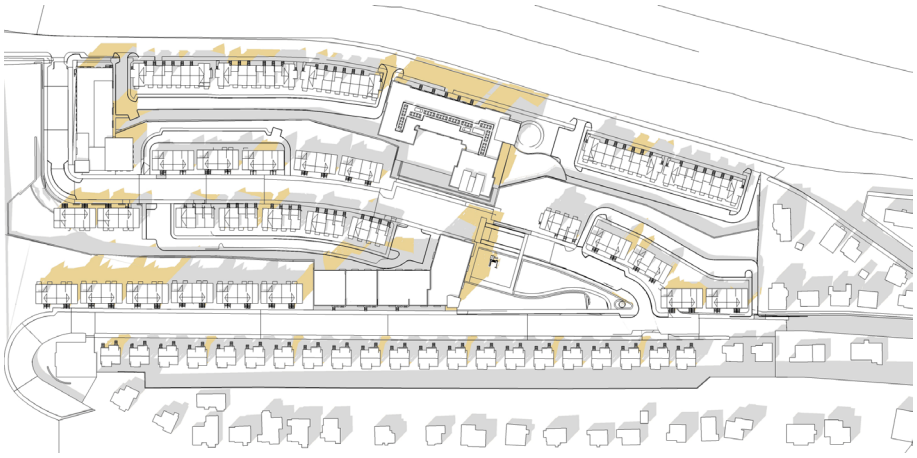

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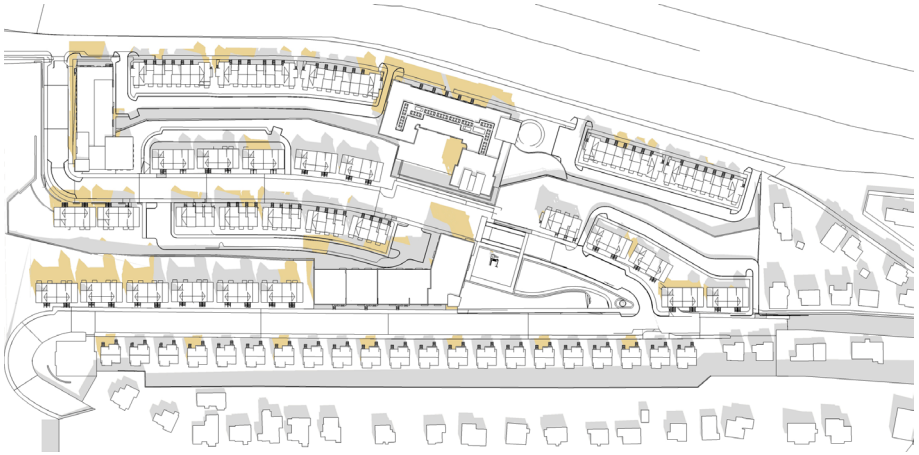

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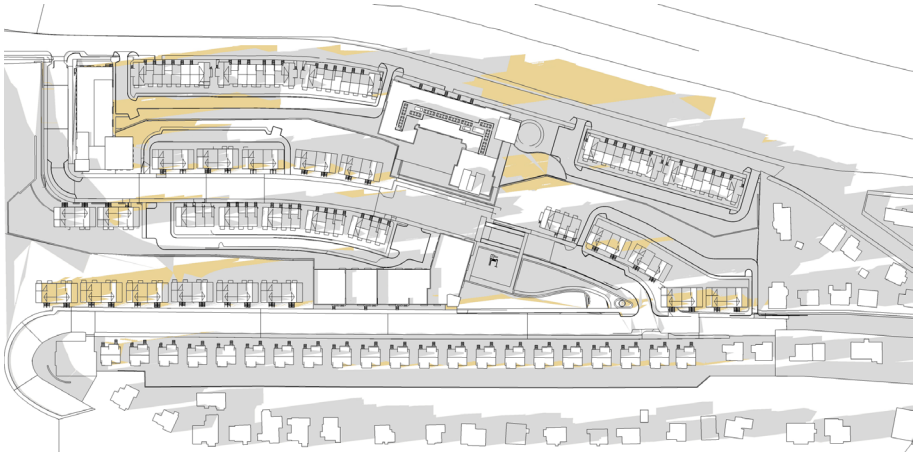

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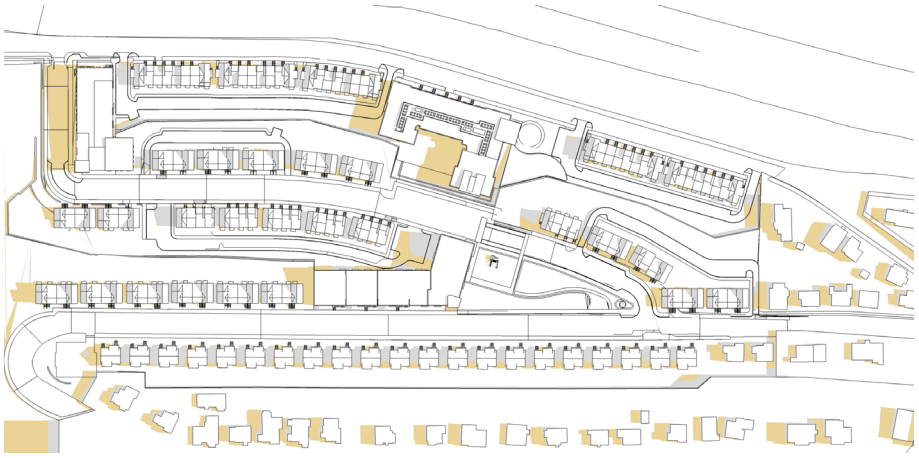
Net New Shadow

Figure 6-1
Shadow Study - Vernal Equinox
Source: ICON Architecture, Inc., 2016



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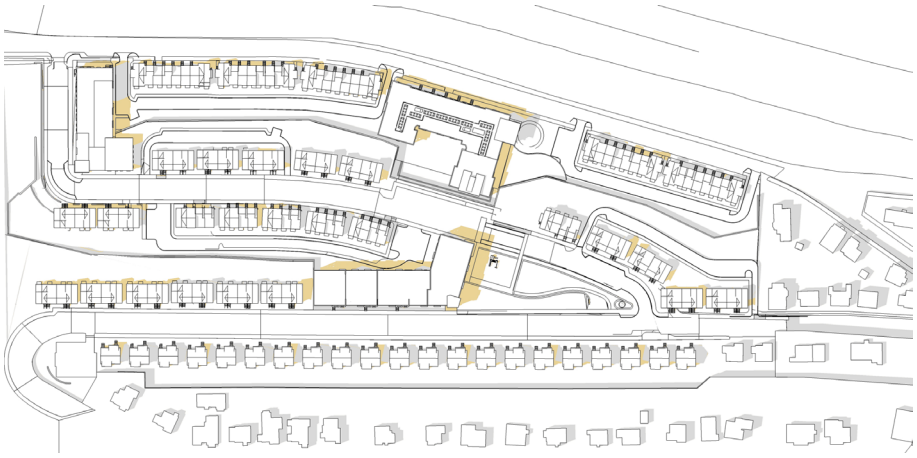

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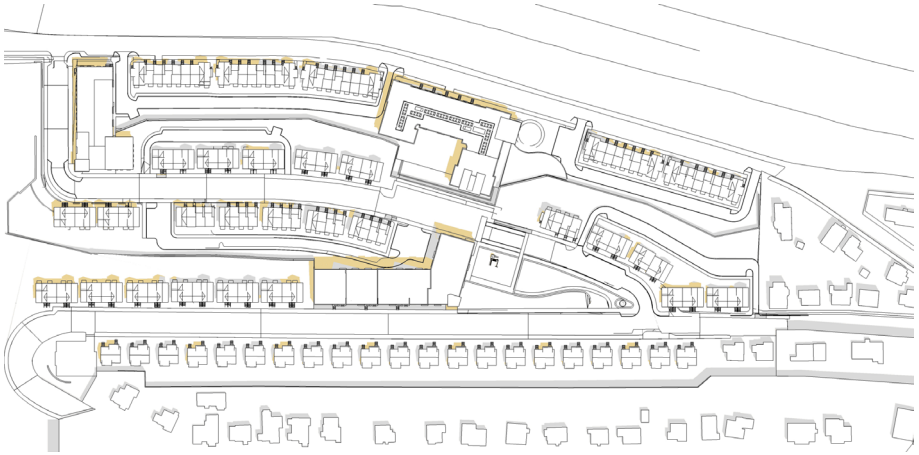

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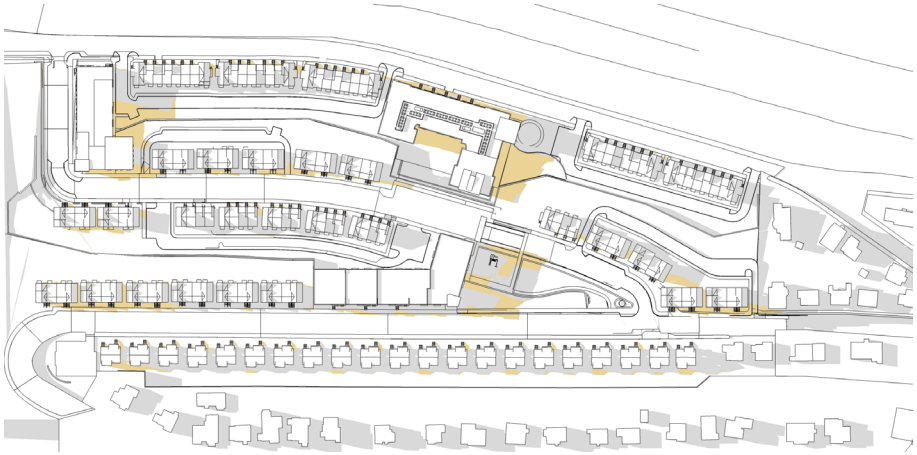

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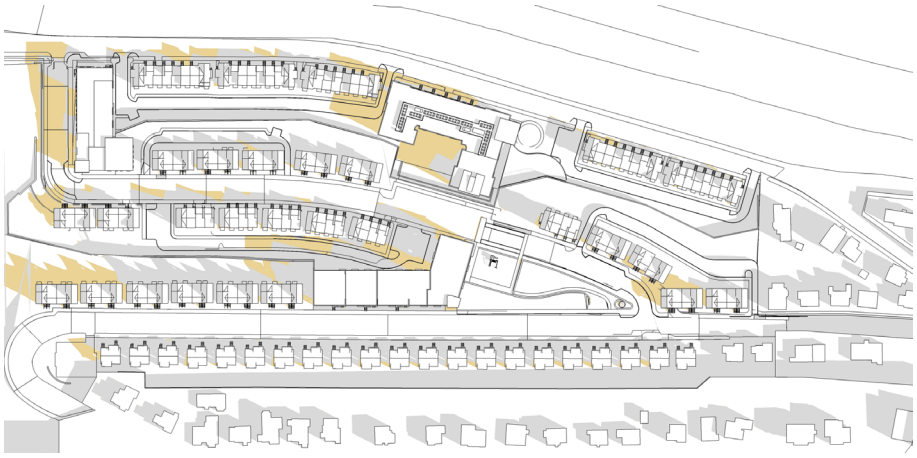
Net New Shadow

East Boston, Massachusetts

Figure 6-2
Shadow Study - Summer Solstice
Source: ICON Architecture, Inc., 2016



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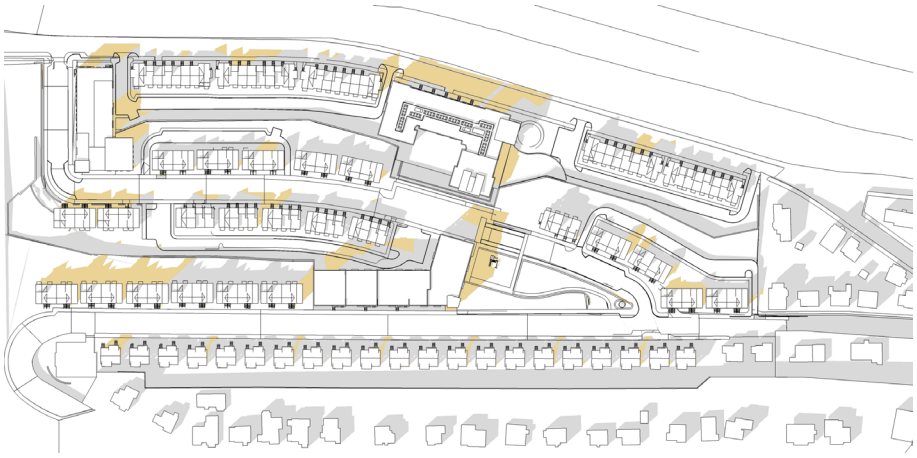

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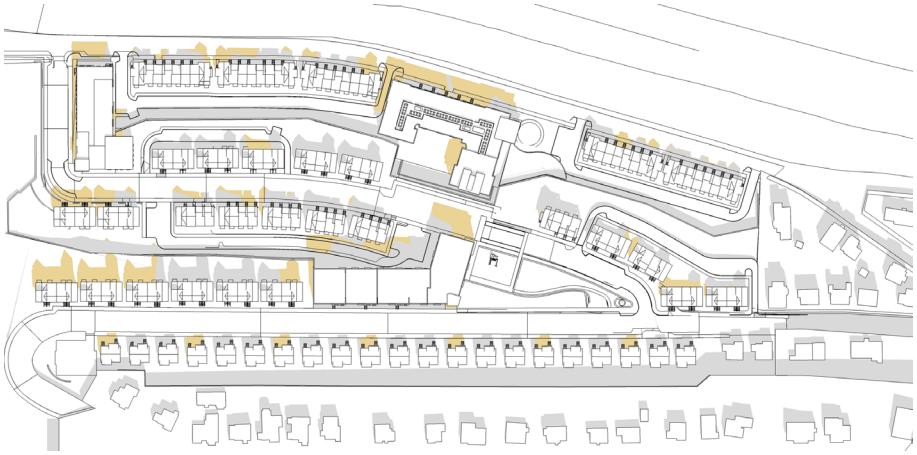

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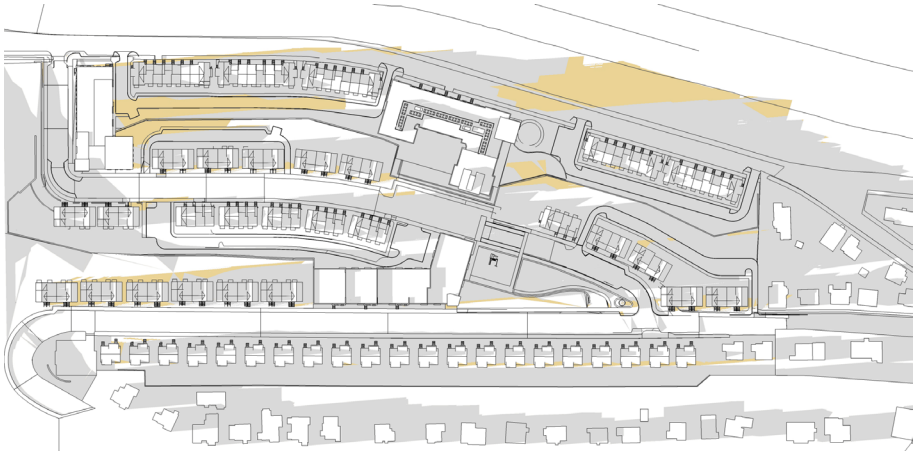

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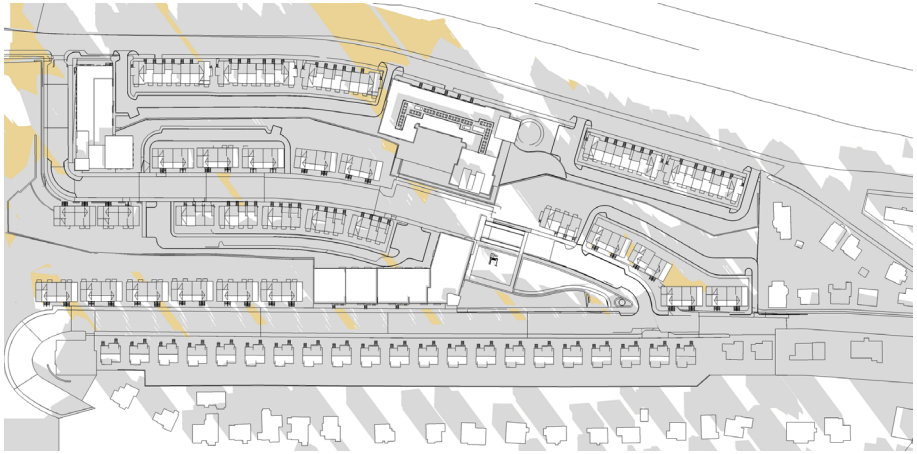
Net New Shadow

East Boston, Massachusetts

Figure 6-3

Shadow Study - Autumn Equinox

Source: ICON Architecture, Inc., 2016



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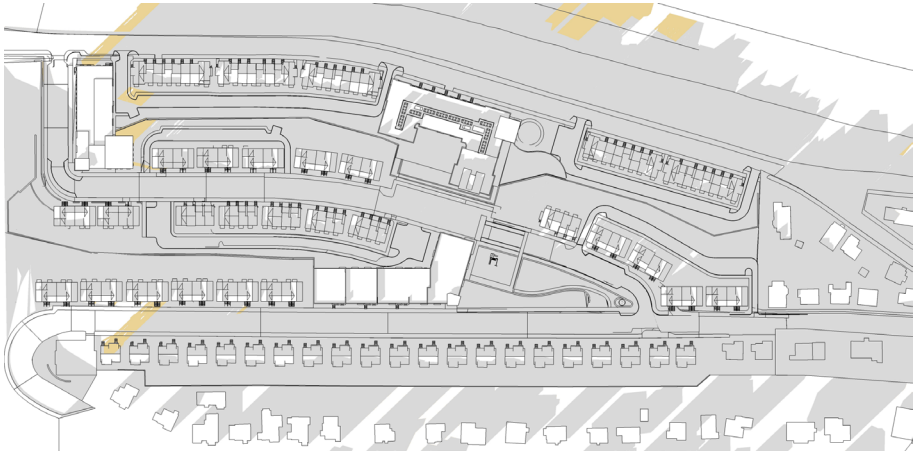

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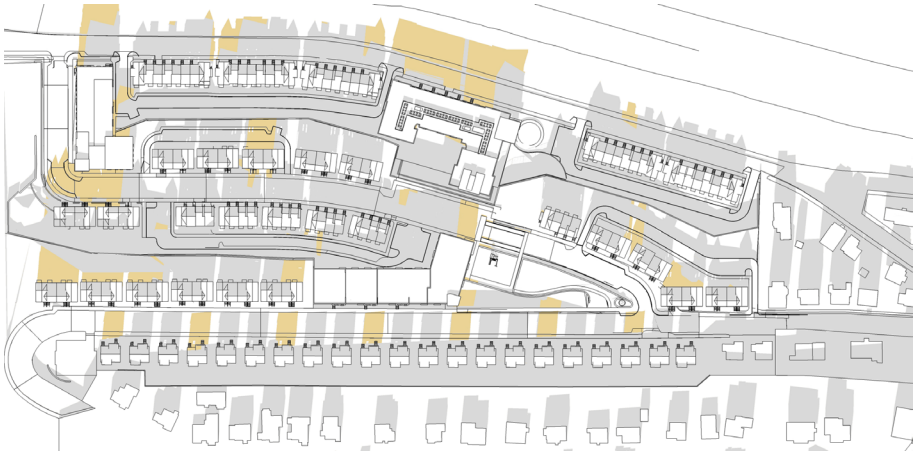

12:00 p.m.

Net New Shadow

East Boston, Massachusetts

Figure 6-4
Shadow Study - Winter Solstice
Source: ICON Architecture, Inc., 2016

Figure 6-5
Historic Resources
Source: Fort Point Associates, Inc., 2016

Chapter 7

INFRASTRUCTURE

CHAPTER 7: INFRASTRUCTURE

7.1 INTRODUCTION

The following analysis describes the existing utility systems servicing the Project Site and surrounding area, discusses the Project's potential impacts on these utilities, and identifies mitigation measures to address potential impacts.

The Project Site is approximately 15 acres and is bounded by the public way of Faywood Avenue and residential housing to the south and east, Waldemar Avenue and Suffolk Downs to the north, Route 1A to the west, and residential housing to the east. Vallar Road, a public way, runs through the Project Site. The proposed project includes the demolition of the existing residential buildings, construction of new residential buildings, and the reconstruction of a portion of Vallar Road to provide a roadway connection to Waldemar Avenue.

7.2 WASTEWATER

7.2.1 EXISTING SEWER SYSTEM

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

There are existing BWSC sanitary sewer mains in Faywood Avenue, Vallar Road, and Waldemar Avenue and within the Project Site. There is a 10-inch BWSC sanitary sewer main in the southwest corner of the Project Site at Orient Avenue and Faywood Avenue, a 10-inch BWSC sanitary sewer main in Faywood Avenue, a 12-inch BWSC sanitary sewer main in Vallar Road, a 12-inch BWSC sanitary sewer main running through northwest corner of the Project Site, and a BWSC 12-inch sanitary sewer main in Waldemar Avenue.

The 10-inch sanitary sewer main on the southwest corner of the Project Site at Orient Avenue and Faywood Avenue flows northerly to the 10-inch sanitary sewer main in Faywood Avenue which flows easterly off-site. The 12-inch sanitary sewer main in Vallar Road flows westerly to the 12-inch sanitary sewer main in the northwest corner of the Project Site which flows northerly, and connects to the 12-inch sanitary sewer main in Waldemar Avenue which flows easterly off-site. These BWSC sanitary sewer mains are ultimately directed to the Deer Island Wastewater

Treatment Plan for treatment and disposal. The existing BWSC sanitary sewer system is shown in Figure 7-1, Existing Drainage, Sewer, and Water Systems.

The Project's projected sanitary flows were estimated using 310 CMR 15, the Massachusetts Department of Environmental Protection (MassDEP) "The State Environmental Code, Title 5" design criteria for residential, office and commercial uses consistent with the current proposed building programs. 310 CMR 15.203 lists typical sewage generation values by the proposed building use and are conservative values for estimating the sewage flows from buildings. The 310 CMR 15.203 values are used to evaluate new sewage flows or, in this case, an increase in sewer flows to existing sewer connections. The same method was applied to estimate the proposed sanitary flows from the Project Site.

There are 20 existing residential apartment buildings on-site with 761 bedrooms total. The existing average daily sewage generation is estimated to be approximately 83,710 gallons per day (gpd).

7.2.2 PROJECTED SANITARY SEWER FLOW

The Project will consist of a mix of midrise buildings and townhouse buildings. The development will include 194 apartment units and 179 townhouse units.

System Sewage Flow Design Criteria calculated with 310 CMR15.203 values and the proposed development program is summarized in Table 7-1. The total estimated proposed sewage flow for the Projects is 94,870 (gpd), or an increase of approximately 11,160 gpd compared to the existing condition. Of the total estimated proposed sewage flow, approximately 29,260 gpd contributes to the 12" BWSC sanitary sewer main in Waldemar Avenue, 35,360 gpd contributes to the 10" sanitary sewer main in Faywood Avenue, and 30,250 gpd contributes to the 12" BWSC sanitary sewer main in Vallar Road.

Table 7-1: Estimated Sewage Flow

Proposed Use	Units/Size	Design Flow Rate (GPD/unit)	Proposed Sanitary Flows (GPD)
Faywood Avenue			
Residential	316 bedrooms	110/bedroom	34,760
Community Center/ Management Office	8,000 sf	75/1,000sf	600
Proposed Sanitary Flow			**35,360**
Vallar Road			
Residential	275 bedrooms	110/bedroom	30,250
Proposed Sanitary Flow			**30,250**
Waldemar Avenue			
Residential	266 bedrooms	110/bedroom	29,260
Proposed Sanitary Flow			**29,260**
TOTAL PROPOSED SANITARY FLOW			**94,870**
Existing Use	**Units/Size**	**Design Flow Rate (GPD/unit)**	**Existing Sanitary Flows (GPD)**
Faywood Avenue			
Residential	302 bedrooms	110/bedroom	33,220
Vallar Road			
Residential	255 bedrooms	110/bedroom	28,050
Waldemar Avenue			
Residential	204 bedrooms	110/bedroom	22,440
TOTAL EXISTING SANITARY FLOW			**83,710**
Increase in Flow to Faywood Avenue			2,140
Increase in Flow to Vallar Road			2,200
Increase in Flow to Waldemar Avenue			6,820
TOTAL INCREASE IN SEWER FLOWS			**11,160**

7.2.3 PROPOSED SANITARY SEWER IMPROVEMENTS

The reconstruction of Vallar Road to connect to Waldemar Avenue will require the construction of approximately 475 linear feet of new 12-inch BWSC sanitary sewer main in Vallar Road. The new 12-inch main will replace the existing 12-inch main

in the realigned roadway and will connect into the existing 12-inch sanitary sewer main in Waldemar Avenue in approximately the same location. New buildings on Vallar Road will require the construction of approximately 225 linear feet of new 12-inch sanitary sewer main on the eastern side of Vallar Road (up to the corner of Faywood Avenue). New sewer manholes will be installed at a maximum of 200-foot spacing along the new sanitary sewer main and at changes in location. The proposed conceptual BWSC sanitary sewer main improvements are shown in Figure 7-2, Proposed Drainage, Sewer, and Water Systems.

The Proponent will coordinate with the BWSC on the design and capacity of the proposed connections to the BWSC sewer system. In total, the complete Project sewer generation is expected to increase wastewater flows by approximately 11,160 gpd for the whole Project. Approval for the increase in sanitary flow will come from BWSC.

The Project's impact on the existing BWSC systems in Faywood Avenue, Vallar Road, and Waldemar Avenue were analyzed. The existing sewer system capacity calculations are presented in Table 7-2.

Table 7-2: Sewer Hydraulic Capacity Analysis

BWSC Sewer Manhole**	Slope (%)*	Dia. (inches)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
Faywood Avenue					
130 to 129	2.5%	10	0.013	3.50	2.26
129 to 133	5.2%	10	0.013	4.98	3.22
			Minimum Flow Analyzed:	3.50	2.26
Vallar Road					
265 to 256	1.2%	12	0.013	3.89	2.52
256 to 254	0.04%	12	0.013	0.71	0.46
			Minimum Flow Analyzed:	0.71	0.46
Waldemar Avenue					
10 to 5	0.4%	12	0.013	2.11	1.36
5 to 6	0.2%	12	0.013	1.38	0.89
			Minimum Flow Analyzed:	1.38	0.89

*Slope was calculated with inverts obtained from the survey entitled "Existing Conditions, Orient Heights", prepared by Nitsch Engineering, dated 6/09/2015

** BWSC sewer manhole numbers are from BWSC GIS Sewer Maps

Table 7-2 indicates the flow (hydraulic) capacity of the 10-inch sanitary sewer main in Faywood Avenue, the 12-inch sanitary sewer main in Vallar Road, and the 12-inch sanitary sewer main in Waldemar Avenue calculated using the Manning Equation. The minimum flow capacity is 2.26 million gallons per day (mgd) or 3.50 cubic feet per second (cfs) for the 10-inch main in Faywood Avenue, 0.46 MGD or

0.71 cfs for the 12-inch system in Vallar Road, and 0.89 MGD or 1.38 cfs for the 12-inch system in Waldemar Avenue.

The approximate proposed increase in sewage flow is 2,140 gpd or 0.0021 (mgd) in Faywood Avenue, 2,200 gpd or 0.0022 mgd in Vallar Road, and 6,820 gpd or 0.0068 mgd in Waldemar Avenue.

Based on an increase in average daily flow of 0.0020 MGD; and with a factor of safety of 10 (total estimate = 0.0021 MGD x 10 = 0.02 MGD), no capacity problems are expected for the sewer mains in Faywood Avenue. Based on an increase in average daily flow of 0.0022 MGD and with a factor of safety of 10 (total estimate = 0.0022 MGD x 10 = 0.022 MGD), no capacity problems are expected for the sewer mains in Vallar Road. Based on an increase in average daily flow of 0.0068 MGD; and with a factor of safety of 10 (total estimate = 0.0068 MGD x 10 = 0.068 MGD), no capacity problems are expected for the sewer mains in Waldemar Avenue.

The sewer services for the Project will connect to the existing BWSC sanitary sewer mains in Faywood Avenue, Waldemar Avenue, Vallar Road, and the proposed sewer main in the realigned Vallar Road.

The proposed Project will require new sanitary sewer connections to the BWSC sewer system. Improvements to and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. This process will include a comprehensive design review of the proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts. Coordination with BWSC will include review and approval of the design, capacity, connections, and flow increases resulting from the proposed discharges to the sanitary sewer system.

7.3 WATER SYSTEM

7.3.1 EXISTING WATER SYSTEM

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

There are existing BWSC cast iron water mains in the Faywood Avenue, Vallar Road, and Waldemar Avenue. There is an 8-inch main in the southwest corner of the Project Site and Faywood Avenue (NH 8 CICL 1952). There is an 8-inch main in

Vallar Road and the northwest corner of the Project Site (NH 8 CI 1937 (2000)). There is also a 12-inch main in Waldemar Avenue (NH 12 CICL 1951 (1981)). The 8-inch water main in Faywood Avenue connects to the 8-inch water main in Vallar Road. The 8-inch water main in Vallar Road and the northwest side of the Project Site connects to the 12-inch water main in Waldemar Avenue.

Record drawings indicate that each existing building has one water service point. The existing buildings connect into the 8-inch water main in Faywood Avenue, the 8-inch water main in Vallar Road, and 12-inch water main in Waldemar Avenue.

The Project's existing water demand estimate for domestic service is based on the Project's estimated existing sewage generation, described in the previous section. A conservative factor of 1.1 (110%) is applied to the estimated existing average daily sewage flows to account for consumption, system losses and other usages to estimate an average daily water demand. The estimate is used to compare the proposed average daily water demand to the existing conditions. The existing buildings water usage is estimated to be approximately 92,081 gallons per day (gpd). The existing BWSC water system is shown in Figure 7-1, Existing Drainage, Sewer, and Water systems.

7.3.2 ANTICIPATED WATER CONSUMPTION

The Project's water demand estimate for the domestic services is based on the Project's estimated sewage generation, described in the previous section. A conservative factor of 1.1 (110%) is applied to the estimated daily sewage flows, calculated in Table 7-1 to account for consumption system losses, and other usages to estimate an average daily water demand. The estimated proposed domestic water demand is approximately 104,357 gpd.

7.3.3 PROPOSED WATER SERVICE

The proposed reconstruction of Vallar Road to connect to Waldemar Avenue will require the construction of approximately 475 linear feet of a new 8-inch Cement Lined Ductile Iron Class 56 water main. New hydrants will be installed at a maximum spacing of 300 or as otherwise required. The proposed conceptual BWSC water main improvements are shown in Figure 7-2, Proposed Drainage, Sewer, and Water Systems.

Each of the new buildings will require a domestic water service connection. There will be fire protection services as required by the Fire Protection Engineer. The water services to each building will connect to the BWSC water mains in Faywood Avenue, Vallar Road, and Waldemar Avenue.

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

7.3.4 WATER SUPPLY CONSERVATION AND MITIGATION MEASURES

Measures to reduce water consumption will be incorporated into the Project design. The State Building Code requires the use of water-conserving fixtures. Water conservation measures such as low-flow toilets and restricted flow faucets will help reduce the domestic water demand on the existing distribution system. The installation of sensor-operated sinks with water conserving aerators and sensor-operated toilets in public restrooms will be incorporated into the design plans for the Project as applicable.

New water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at both domestic and fire protection service connections. New meters will be installed with Meter Transmitter Units ("MTUs") as part of the BWSC's Automatic Meter Reading (AMR) system. If individual occupants of a unit intend to perform operations that will require significantly more water consumption than the average values assumed for the design, they will be required to provide information on their process and associated water conservation measures.

7.4 STORM DRAINAGE SYSTEM

7.4.1 EXISTING STORM DRAINAGE SYSTEM

The existing site is comprised of building roof, paved roadways, walkways, parking lots, grass and other landscaped areas. The existing Project Site is approximately 64% impervious, including its public ways.

There are existing BWSC storm drain mains in Faywood Avenue, Vallar Road, and Waldemar Avenue and private drainage structures within the Project Site. There is a 10-inch BWSC storm drain main in the southwest corner of the Project Site near Orient Avenue, a 12-inch BWSC storm drain main in Faywood Avenue, a 12-inch BWSC storm drain main in Vallar Road, a 12-inch BWSC storm drain main in the northwest corner of the Project Site, and a BWSC 15-inch storm drain main in

Waldemar Avenue. There are several 12-inch private storm drain mains within the Project Site which connect to the BWSC systems.

Stormwater runoff from the high side of the Project Site along the southern portion of the Project Site, Faywood Avenue public way, and surrounding areas are collected and directed into the BWSC drain main in Faywood Avenue. The stormwater runoff from the existing building roofs on Faywood Avenue and the private drains in landscaped areas are directed to the BWSC main in Faywood Avenue. The 12-inch BWSC storm drain main in Faywood Avenue flows easterly off-site, continues flowing to the storm drain outfall at Constitution Beach, and ultimately discharges to the Boston Harbor.

Stormwater runoff from the middle and northern portion of the Project Site is collected and directed to the 12-inch BWSC storm drain main in Vallar Road and/or the 15-inch BWSC storm drain main in Waldemar Avenue. Stormwater from Vallar Road is collected and directed to the 15-inch BWSC storm drain main in Waldemar Avenue. There are 12-inch private storm drain mains which flow through the Project Site and connect to the BWSC storm drain mains in Waldemar Avenue. The 15-inch storm drain main in Waldemar Avenue connects to the 15-inch storm drain main on the northern side of the site and continues flowing northerly off-site, continues flowing to the storm drain outfall by the McLellan Highway (Route 1A), and ultimately discharges to the Chelsea River.

The existing BWSC Storm Drainage System is shown in Figure 7-1, Existing Drainage, Sewer, and Water Systems.

7.4.2 PROPOSED DRAINAGE IMPROVEMENTS

The proposed reconstruction of Vallar Road to connect to Waldemar Avenue will require the construction of approximately 475 linear feet of a new 12-inch PVC storm drain main. New buildings on Vallar Road will require the construction of approximately 150 linear feet of new 12-inch PVC storm drain main on the eastern side of Vallar Road (up to the corner of Faywood Avenue). New drain manholes and catch basins will be installed along the new storm drain at a maximum of 200 foot spacing and as required at changes in direction or elevation. The proposed BWSC drain system is shown in Figure 7-2, Proposed Drainage, Sewer, and Water Systems.

The proposed design will be approximately 55% impervious, or a decrease of approximately 9% compared to the existing condition. The proposed impervious area will consist mostly of roadways and building roofs and associated paved parking and pedestrian walkway areas. The Project will be designed to meet or reduce stormwater runoff peak rates and volumes, and to minimize the loss of annual stormwater recharge to groundwater through the use of on-site infiltration measures to the greatest extent practicable.

The Project design will include private closed drainage systems that will be adequately sized for the site's expected stormwater flows, and will direct stormwater to the on-site infiltration systems for groundwater recharge prior to overflow to the BWSC systems to the maximum extent practicable. Overflow connections to the BWSC storm drain mains will be provided for greater stormwater flows. The on-site infiltration systems will strive to infiltrate one-inch of stormwater runoff from impervious areas to the greatest extent practicable, in order to meet the BWSC stormwater quality and stormwater recharge requirements. The Project is not located within the Groundwater Conservation Overlay District.

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

7.4.3 MITIGATION MEASURES

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

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

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

Compliance: The proposed design will comply with this standard. The design does not propose new stormwater conveyances and no new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the Project.

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

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

Standard #3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Compliance: The Project will comply with this standard to the maximum extent practicable.

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

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

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

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

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

Standard #5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the

Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

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

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

Compliance: Not Applicable. The proposed Project is not within an Outstanding Resource Area.

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

Compliance: The Project will comply with this standard to the maximum extent practicable.

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

Compliance: The proposed design will comply with this standard. A plan to control temporary construction-related impacts including erosion, sedimentation, and other

pollutant sources during construction and land disturbing activities will be developed and implemented.

Standard #9: A long-term operation and maintenance (O&M) plan shall be developed and implemented to ensure that stormwater management systems function as designed.

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

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

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

7.5 ELECTRICAL SERVICES

Eversource owns the existing above-grade electrical system in the in the public ways of Faywood Avenue, Waldemar Avenue, and Vallar Road. It is expected that adequate service is available in the existing electrical system for Project improvements. The Proponent will work with Eversource to determine the infrastructure improvements needed to meet the Vallar Road reconstruction and confirm adequate system capacity for the Project as the design is finalized.

The Proponent is committed to taking an integrated and comprehensive approach to energy planning which is sensitive to high and rising energy prices and growing concern over global climate change. The highest priority, and most cost-effective approach, is to make the Project's buildings energy efficient. In addition, as the Project's electric load and energy requirements are calculated and assessed, the Proponent will undertake an energy planning process, working closely with the City of Boston and Eversource.

7.6 TELECOMMUNICATIONS SYSTEM

There is an existing above-grade telecommunication system to provide telephone, cable and data services in the in the public ways of Faywood Avenue, Waldemar Avenue, and Vallar Road with service provided by private telecommunication companies. It is expected that adequate service is available in the existing system for the Project improvements. The Proponent will work with the private telecommunication companies to determine the infrastructure improvements needed to meet the Vallar Road reconstruction, confirm

adequate system capacity for the Project, coordinate service connection locations, and obtain appropriate approvals.

7.7 GAS SYSTEMS

National Grid owns the existing underground gas system in the in the public ways of Faywood Avenue, Waldemar Avenue, and Vallar Road. It is expected that adequate service is available in the existing system for the Proposed Project improvements. The Proponent will work with National Grid to determine the infrastructure improvements needed to meet the Vallar Road reconstruction and confirm adequate system capacity for the Proposed Project as the design is finalized. As noted above with respect to electricity, the Proponent is committed to taking a comprehensive and integrated approach to energy planning, one which will also include working closely with the City of Boston and National Grid with respect to gas usage.

7.8 UTILITY PROTECTION DURING CONSTRUCTION

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

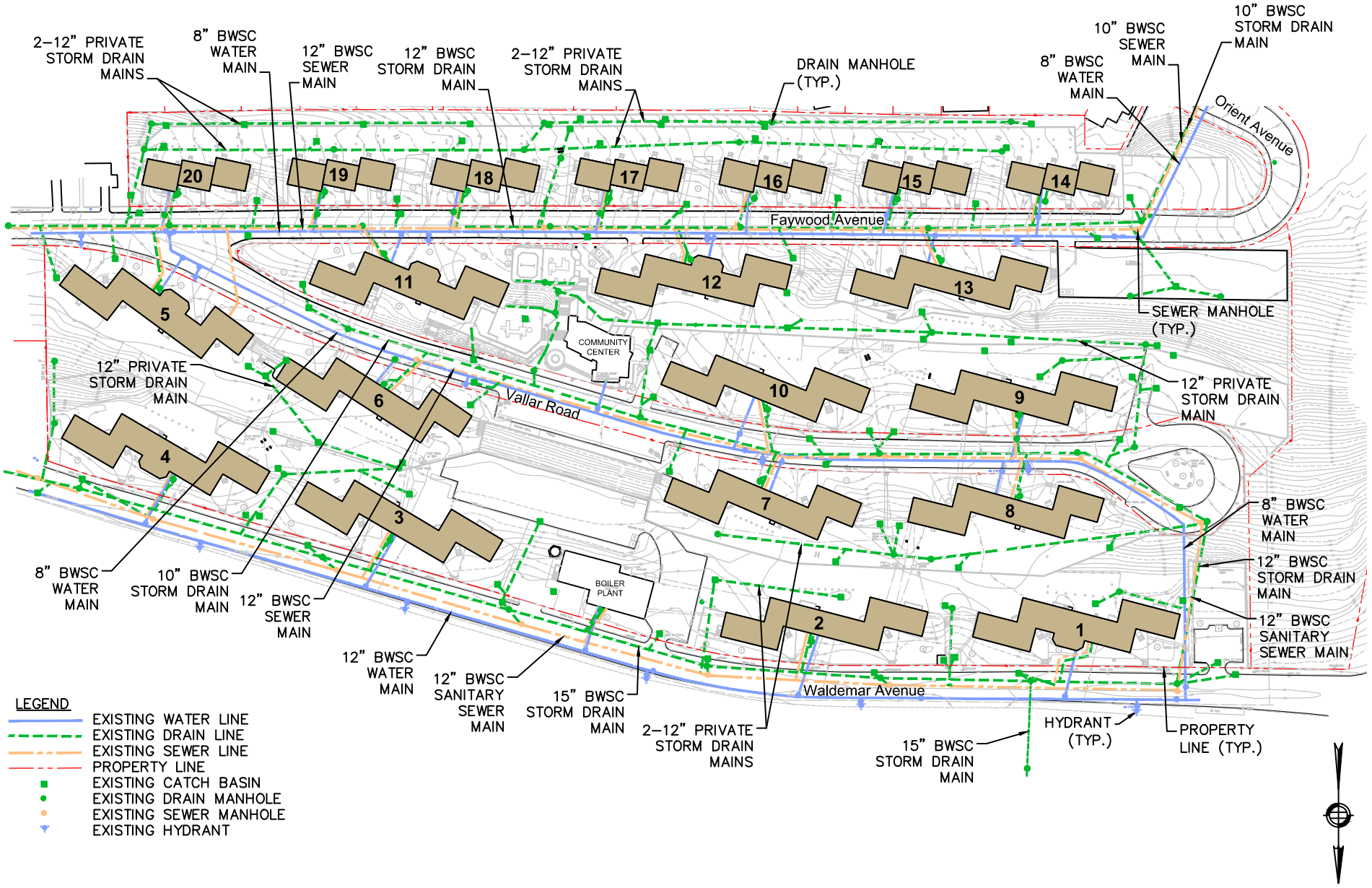

Figure 7-1

Existing Drainage, Sewer, and Water Systems

Source: Nitsch Engineering, 2016

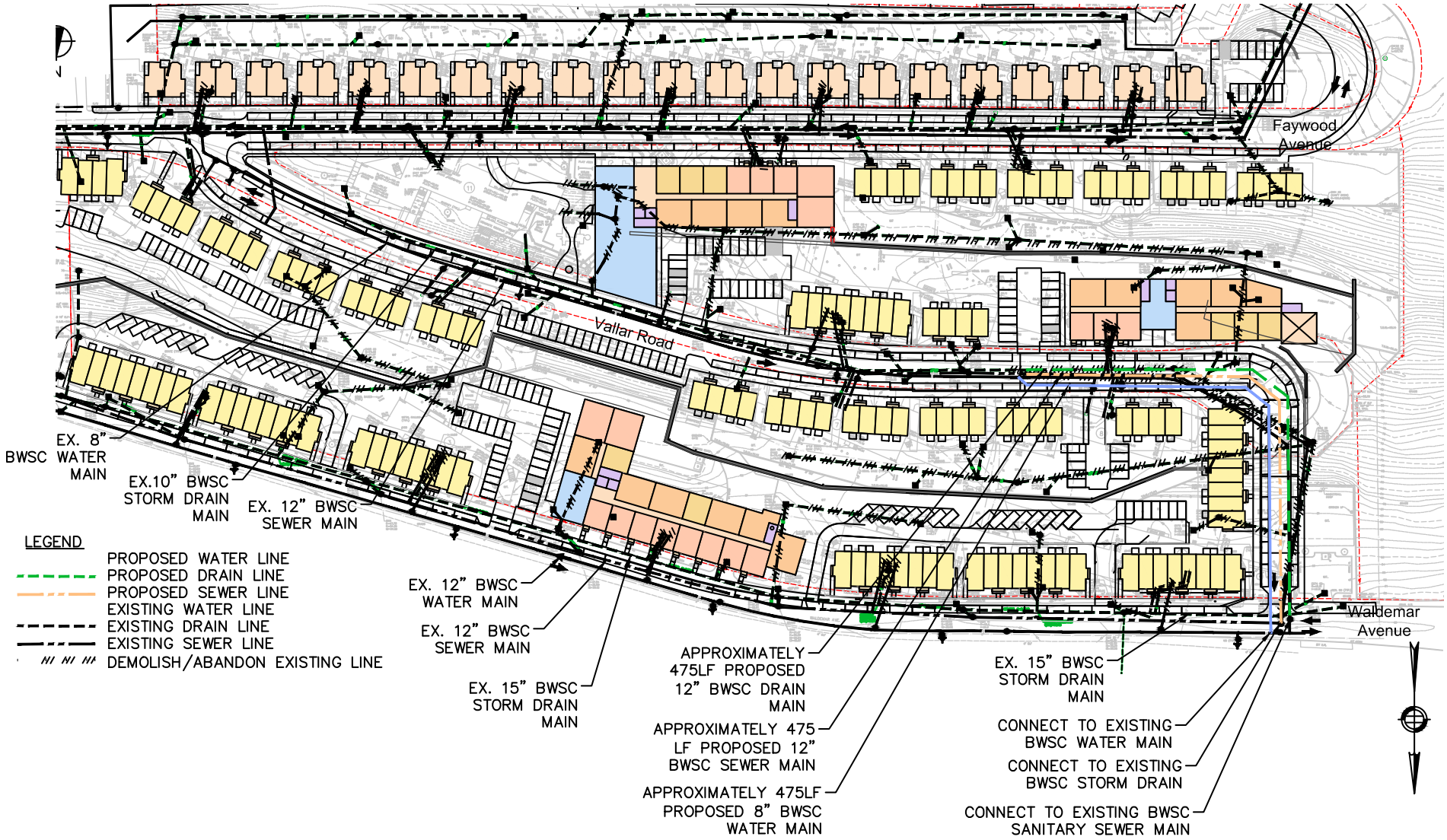

Figure 7-2

Proposed Drainage, Sewer, and Water Systems

Source: Nitsch Engineering, 2016

Appendix 1

ENF FORM

Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: _____

MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **Orient Heights Redevelopment Project**		
Street Address: **160-228 Faywood Avenue, 1-70 Vallar Road, and 160-250 Waldemar Avenue, East Boston, MA 02128**		
Municipality: **East Boston**	Watershed: **Boston Harbor**	
Universal Transverse Mercator Coordinates: **334998 E, 4695315 N**	Latitude: **42°23′33″N** Longitude: **71°0′30″W**	
Estimated commencement date: **2016**	Estimated completion date: **2024**	
Project Type: **Residential**	Status of project design: **40** %complete?	
Proponent: **Trinity Orient Heights Limited Partnership**		
Street Address: **75 Federal Street, 4th Floor**		
Municipality: **Boston**	State: **MA**	Zip Code: **02110**
Name of Contact Person: **Robert Ricchi**		
Firm/Agency: **Fort Point Associates, Inc.**	**Street Address: 31 State Street, 3rd Floor**	
Municipality: **Boston**	State: **MA**	Zip Code: **02109**
Phone: **(617) 357-7044 ext. 209**	Fax:	E-mail: **rricchi@fpa-inc.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☐**Yes** ☒**No**

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) ☐**Yes** ☐**No**
a Special Review Procedure? (see 301CMR 11.09) ☐**Yes** ☐**No**
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☐**Yes** ☐**No**
a Phase I Waiver? (see 301 CMR 11.11) ☐**Yes** ☐**No**
(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

- **301 CMR 11.03(1)(b)6 – Approval in accordance with M.G.L. c. 121A of a New urban redevelopment project or a fundamental change in an approved urban redevelopment project, provided that the Project consists of 100 or more dwelling units or 50,000 or more sf of non-residential space.**

Which State Agency Permits will the project require?

- **Massachusetts Historical Commission- Finding of No Adverse Effect**

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

- **Department of Housing and Community Development- $32.75 million funding for Phase 1 construction**

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	15.0 ± [a]		
New acres of land altered		15.0 ± [a]	
Acres of impervious area	9.6 ±	1.3 ±	8.3 ±
Square feet of new bordering vegetated wetlands alteration		0	
Square feet of new other wetland alteration		0	
Acres of new non-water dependent use of tidelands or waterways		0	
STRUCTURES			
Gross square footage	304,000 ± GSF	+116,000 ± GSF	420,000 ± GSF
Number of housing units	331	42 ±	373 ±
Maximum height (feet)	45'0" ±	+25'0"	70'0"
TRANSPORTATION			
Vehicle trips per day	2,201[b]/1,004[c]	+291[b]/+132[c]	2,492[b]/1,136[c]
Parking spaces	259	+59	318
WASTEWATER			
Water Use (Gallons per day)	92,081±	+12,111±	104,357±
Water withdrawal (GPD)	N/A	N/A	N/A
Wastewater generation/treatment (GPD)	83,710±	+11,160±	94,870±
Length of water mains (feet)	3,890	+25[d]	3,915
Length of sewer mains (feet)	3,580	+250[e]	3,605

Has this project been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

Has any project on this site been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

[a] Area includes Faywood Avenue and Vallar Road roadways adjacent to the Project Site. All land is currently developed.
[b] Unadjusted trips based on ITE codes.
[c] Adjusted trips based on transit credits, etc.
[d] The Project proposes removal and disposal of approximately 450 lf of existing water main to be replaced with approximately 475 lf of relocated water main.
[e] The Project proposes removal and disposal of approximately 450 lf of existing sewer main to be replaced with approximately 475 lf of relocated sewer main, in addition to approximately 225 lf of new sewer main.

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site:

The Project Site consists of approximately 653,763 square feet (15 acres) and is bound by Faywood Avenue and residential housing to the south and east, Waldemar Avenue and Suffolk Downs to the north, and open hillside and Route 1A to the west. The local area is characterized by one- to three-story residences on well-sized urban lots, with landscaped yards, more typical of Boston's outer urban neighborhoods. The Project Site is currently developed as the Orient Heights state public housing development consisting of 13 three-story buildings, 7 two-story townhouse blocks, a community center, a decommissioned central boiler plant, and a few large retaining walls to support a variety of steep grade changes moving south to north. The Suffolk Downs MBTA Blue Line station is located within an approximately 10-minute walk northeast of the Project Site.

Describe the proposed project and its programmatic and physical elements:

The Project involves the construction of new two-five story buildings, in a combination of townhouses and midrises. A total of approximately 373 housing units are proposed, replacing obsolete 1950s-era state public housing units on a one-to-one basis with the addition of a small non-public housing component to create a revitalized mixed-income community. A combination of off-street and on-street parking spaces will be provided. The Project also includes the construction of a new community center/management office, a new public park, and roadway connectivity improvements and enhancements. See Chapters 1 and 2 for more information.

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reason(s) that they were not selected as the preferred alternative:

The Proponent considered severval alternatives to the Project. See Chapter 2 for an alteratives analysis.

NOTE*: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

The Project is designed with modern, energy efficient systems and will be LEED certifiable at a level of Silver at a minimum. The Proponent will construct a new public park to provide residents and the greater community new passive and active recreation opportunities. The local street network will be improved with enhanced connectivity to benefit vehicles, cyclists, and pedestrians.

If the project is proposed to be constructed in phases, please describe each phase:

The Project will be constructed in four phases. See Chapter 2 for an overview of construction phasing.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:
Is the project within or adjacent to an Area of Critical Environmental Concern?
☐Yes (Specify_____)
☒No
If yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;
If yes, describe how the project complies with this plan.
_____
Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.
_____

RARE SPECIES:
Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (See http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)
☐Yes (Specify_____) ☒No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:
Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes (Specify_____) ☒No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify_____) ☐No

WATER RESOURCES:
Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site?___Yes_X__No
if yes, identify the ORW and its location:_____

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ___Yes _X_No

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

The Project will be designed to meet MassDEP's Stormwater Management Standards. See Chapter 7, Infrastructure.

MASSACHUSETTS CONTINGENCY PLAN:
Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? _X__Yes ___ No; if yes, please describe the current status of the Site (including Release Tracking Number (RTN), cleanup phase, and Response
Action Outcome classification):_____

The Project Site is a DEP listed disposal site with a Release Tracking Number (RTN) of 3-24112 in the DEP release database as defined in the Massachusetts Contingency Plan. A Class A-2 Response Action Outcome (RAO) was filed with DEP for the release site as a result of a petroleum release to soil from two No. 2 fuel oil and No. 6 fuel oil leaking underground storage tanks (USTs). Based on the DEP status

of the release, a permanent solution has been achieved and a condition of no significant risk exists. No further action is required for RTN 3-24112.

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ No _X__;
if yes, describe which portion of the site and how the project will be consistent with the AUL: _____.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN?
Yes ___ No _X__ ; if yes, please describe:_____

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:_____

(NOTE: Asphalt pavement, brick, concrete and metal is banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes _X__ No ____
if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

The Proponent will comply with standard precautions for handling asbestos-containing materials.

Describe anti-idling and other measures to limit emissions from construction equipment: _____

The Proponent expects its contractors to have a strict no-idling policy and to use post-2007 diesel vehicles retrofit to the US Environmental Protection Agency's standards.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No _X__ ;
if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River?
Yes ___ No ___ ; if yes, specify name of river and designation: _____;
if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ;
if yes, describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS: (See Table of Contents)

1. List of all attachments to this document.
2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries.
3.. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.
4 Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts.

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase).
6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).
7. List of municipal and federal permits and reviews required by the project, as applicable.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes _X_ No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	2.6	+0.8	3.4
Internal roadways	2.4	+0.6	3.0
Parking and other paved areas	4.6	-2.7	1.9
Other altered areas	5.4	+1.3	6.7
Undeveloped areas	0	0	0
Total: Project Site Acreage	15	0	15

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes _X__ No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes _X__ No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes _X__ No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ___ Yes___ No; if yes, does the project involve the release or modification of such restriction? ___ Yes _X__ No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? _X__ Yes ___ No; if yes, describe:

The Proponent will seek a 121A approval for the Project.

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No _X__; if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan
Title: Date:

The Boston Redevelopment Authority does not have a municipal comprehensive land use plan.

B. Describe the project's consistency with that plan with regard to:
1) economic development _____
2) adequacy of infrastructure _____
3) open space impacts _____
4) compatibility with adjacent land uses_____

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: Metropolitan Area Planning Council

Title: Metro Future **Date:** May 2008

D. Describe the project's consistency with that plan with regard to:

1) economic development

The Project will demolish 331 existing state public housing units and construct 373 new units, consisting of 331 replacement public housing units and 42 non-public housing units in a combination of townhouses and midrise buildings. The Project will add new economic activity to East Boston in close proximity to multiple transit modes.

2) adequacy of infrastructure

The Project will utilize existing, adequate infrastructure including water supply, wastewater, and stormwater infrastructure. Roadway infrastructure will be upgraded and enhanced with connectivity improvements. The Project is served by MBTA bus lines and Suffolk Downs MBTA Blue Line station is located within an approximately 10-minute walk northeast of the Project Site.

3) open space impacts

The Project includes the construction of a new public park at the center of the Project Site.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes _X__ No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes _X_ No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes _X__ No.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes __X__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes __X__ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ___ Yes _X__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes _X_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ___ Yes _X__ No; if yes, specify, in quantitative terms:

Note: traffic generated in Phase 1 will not exceed review thresholds

B. Does the project require any state permits related to **state-controlled roadways**? ___Yes __X_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	_____	_____	_____
Number of vehicle trips per day	_____	_____	_____
ITE Land Use Code(s):	_____	_____	_____

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement.

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes __X__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes _X__ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

B. Will the project involve any

1. Alteration of bank or terrain (in linear feet)? _____
2. Cutting of living public shade trees (number)? _____
3. Elimination of stone wall (in linear feet)? _____

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ___ Yes __X__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes __X__ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes __X__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes __X__ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes _X__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? ___ Yes _X___No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ___ Yes__X__ No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes ____ No; if yes, attach correspondence

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes __X__ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes ___ No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes__X__ No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes ___ No; if yes, please describe:

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   (Name) Boston Herald (Date) May 27, 2016

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

		5/25/16	
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing ENF (if different from above)

Patrick Lee	Robert Ricchi
Name (print or type)	Name (print or type)
Trinity Orient Heights Limited Partnership	Fort Point Associates, Inc.
Firm/Agency	Firm/Agency
75 Federal Street, 4th Floor	31 State Street, 3rd Floor
Street	Street
Boston, MA 02110	Boston, MA 02109
Municipality/State/Zip	Municipality/State/Zip
(617) 720-8400	(617) 357-7044 Ext. 209
Phone	Phone

Appendix 2

CLIMATE CHANGE PREPAREDNESS AND RESILIENCY CHECKLIST

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	**Orient Heights Redevelopment Project**
Project Address Primary:	**160-228 Faywood Avenue, 1-70 Vallar Road, 160-250 Waldemar Avenue, East Boston, MA 02128**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Eva Erlich, VP Development, Trinity Financial, eerlich@trinityfinancial.com, 617-720-8400** **Andre White, Project Manager, Trinity Financial, awhite@trinityfinancial.com, 617-720-8400**

A.2 - Team Description

Owner / Developer:	**Orient Heights Limited Partnership**
Architect:	**ICON Architecture, Inc.**
Engineer (building systems):	**Petersen Engineering, Inc.**
Sustainability / LEED:	**New Ecology, Inc.**
Permitting:	**Fort Point Associates, Inc.**
Construction Management:	**TBD**
Climate Change Expert:	**TBD**

A.3 - Project Permitting and Phase

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

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

A.4 - Building Classification and Description

List the principal Building Uses:	Residential
List the First Floor Uses:	Lobby, Residential Units, Community Center, Management Office

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

Wood Frame	Masonry	Steel Frame	Concrete

Describe the building?

Site Area:	***653,763 SF***	Building Area:	***+/-420,000 SF***
Building Height:	***+/-35 - 70' Ft.***	Number of Stories:	***2 - 5 Flrs.***
First Floor Elevation (reference	***51.5' Elev.***	Are there below grade spaces/levels,	***No /***

Boston City Base):		if yes how many:	*Number of Levels*

A.5 - Green Building

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

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

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

Registered:	*Yes* / **No**	Certified:	*Yes* / **No**

A.6 - Building Energy

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

Electric:	**TBD** *(kW)*	Heating:	**0.6** *(MMBtu/hr)*
What is the planned building Energy Use Intensity:	**TBD** *(kbut/SF or kWh/SF)*	Cooling:	**72** *(Tons/hr)*

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

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

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

Electrical Generation:	**TBD** *(kW)*		Fuel Source:	**TBD**
System Type and Number of Units:	Combustion Engine	Gas Turbine	Combine Heat and Power	*(Units)*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

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

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

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

What time span of future Climate Conditions was considered?

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

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

7/ 91 Deg.

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

TBD *Deg.*	*Days*	*Events / yr.*

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

TBD *Days*	*Events / yr.*

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

TBD *Inches / yr.*	*Inches*	*Events / yr.*

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

TBD *Peak Wind*	*Hours*	*Events / yr.*

B.2 - Mitigation Strategies

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

Building energy use below code:	**30** *%*
How is performance determined:	

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

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

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

Roof:	*R = 40*	Walls / Curtain Wall Assembly:	*R = 27*
Foundation:	*R = 10*	Basement / Slab:	*R =10*
Windows:	*U = .3 max.*	Doors:	*R = / U =*

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

On-site clean	Building-wide	Thermal energy	Ground source

	energy / CHP system(s)	power dimming	storage systems	heat pump
	On-site Solar PV	On-site Solar Thermal	Wind power	**None**
Describe any added measures:				

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

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

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

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

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

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

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

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

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

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

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

	*Yes / **No***

Describe site conditions?

Site Elevation – Low/High Points:	*Low: El. 48.0'* *High: El. 140.0'*
Building Proximity to Water:	*1/3 mile*

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

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

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

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

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

1/3 mile

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

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

C.3 - Building Flood Proofing

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

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

Flood Proof Elevation:	*Ft.)*	First Floor Elevation:	*(Ft.)*

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

Yes / No	If Yes, to what elevation	*Boston City Base*

			Elev. (Ft.)
If Yes, describe:			

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

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

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

Yes / No

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

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

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

Yes / No	
If Yes, describe:	

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

Yes / No	If Yes, for how long:	*days*

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

C.4 - Building Resilience and Adaptability

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

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

Select appropriate:	*Yes / No*	Hardened / Resilient Ground Floor Construction	Temporary shutters and or barricades	Resilient site design, materials and construction

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

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

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

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

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

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

Appendix 3

ACCESSIBILITY CHECKLIST

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

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

Project Information

Project Name:	**Orient Heights Redevelopment Project**
Project Address Primary:	**160-228 Faywood Avenue, 1-70 Vallar Road, 160-250 Waldemar Avenue, East Boston, MA 02128**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Eva Erlich, VP Development, Trinity Financial, eerlich@trinityfinancial.com, 617-720-8400** **Andre White, Project Manager, Trinity Financial, awhite@trinityfinancial.com, 617-720-8400**

Team Description

Owner / Developer:	**Trinity Orient Heights Limited Partnership**
Architect:	**ICON Architecture, Inc.**
Engineer (building systems):	**Petersen Engineering, Inc.**
Sustainability / LEED:	**New Ecology, Inc.**
Permitting:	**Fort Point Associates, Inc.**
Construction Management:	**TBD**

Project Permitting and Phase

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

PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BRA Board Approved

Article 80 | ACCESSIBILITY CHECKLIST

BRA Design Approved	Under Construction	Construction just completed:

Building Classification and Description

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

	Residential – One to Three Unit	**Residential - Multi-unit, Four +**	Institutional	Education
	Commercial	Office	Retail	Assembly
	Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List)	*Residential Lobby, Residential Units, Amenity Space, Community Space, Maintenance*			

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	Concrete

Describe the building? Three Apartment Buildings and 48 Low-rise townhouse buildings are proposed.

Site Area:	*+/- 653,763 SF*	Building Area:	+/- 420,000 SF
Building Height:	*Max 70 Ft.*	Number of Stories:	*Ranges from Two to Five stories.*
First Floor Elevation:	*FFE Varies: Lowest Floor Elevation will be at el 52'.*	Are there below grade spaces:	*No.*

Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and proximate institutions such as, but not limited to

hospitals, elderly and disabled housing, and general neighborhood information. The proponent should identify how the area surrounding the development is accessible for people with mobility impairments and should analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the development neighborhood and identifying characteristics.	The local area is characterized by one to three-story residences on well-sized urban lots with landscaped yards, driveways, and on-street parking. The Project Site's primary identifying characteristic is extreme grade change and tall retaining walls, ranging from 10 to 25 feet in height.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	The Project Site is near the Suffolk Downs and Orient Heights MBTA Blue Line Stations. The Project Site is a 10 minute walk to Suffolk Downs and the MBTA Blue Line Train. The MBTA station offers elevator and escalator access to the train platforms. While there are no bus lines at Suffolk Downs Station, the Orient Heights MBTA Station, also nearby, provides bus transit. In addition there are five bus routes currently operating in the vicinity of the Project Site that provide service to surrounding communities.
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	The Manassah E Bradley Elementary School is located just to the east of the Project Site, with a drive access off Faywood Avenue. The Curtis Guild Elementary School is 8/10 mile walk from the Project Site. Don Orione Home is a half mile drive up to the top of the hill.
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	The Orient Heights Community Center is currently on the Project Site. This community center is proposed to be replaced as part of the Project.

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	The Project Site is spread across a steep hillside, with different grades. There are sidewalks and pedestrian ramps scattered across the Project Site.

If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	Sidewalks are concrete and mostly are deteriorated. Streets and sidewalks will be rebuilt as part of the Project.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	Public sidewalks will be rebuilt as part of the Project. They are not currently compliant with accessibility and Complete Streets standards.
Is the development site within a historic district? **If yes,** please identify.	No.

Surrounding Site Conditions – Proposed

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

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	Proposed public sidewalks aim to meet Complete Street Guidelines.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Public Streets aim to be designed as a Neighborhood Residential Street Type.
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Sidewalk width will be 8' from the inside of the curb. 3' wide tree planting strips will be placed within this width.
List the proposed materials for each Zone. Will the proposed materials be on private property or will the	Sidewalks will be rebuilt of concrete paving with curbs and are expected to be on BHA property and in the City's right-of-way.

proposed materials be on the City of Boston pedestrian right-of-way?	
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	The Proponent intends to seek a pedestrian easement with the City of Boston PIC.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No.
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	Not applicable.

Proposed Accessible Parking:

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

What is the total number of parking spaces provided at the development site parking lot or garage?	318 parking spaces in a combination of small off-street lots and on-street spaces.
What is the total number of accessible spaces provided at the development site?	8 accessible parking spaces will be provided throughout the Project Site.
Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	Accessible spaces will be provided in off-street parking lots.
Where is accessible visitor parking located?	No designated accessible visitor parking is provided.

Has a drop-off area been identified? **If yes,** will it be accessible?	No drop-off area has been identified.
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	See attached Accessibility Diagram.

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	See attached Accessibility Diagram.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	This Project has several different building types – • Midrise buildings will have an accessible entry and route to elevators • Townhouses will have stair/stoop entries. Some percentage of the townhouses will be accessible at the front door or at the back door, depending on their position on the site plan
Are the accessible entrance and the standard entrance integrated?	Yes, in the midrise buildings.
If no above, what is the reason?	Not applicable.
Will there be a roof deck or outdoor courtyard space? **If yes,** include diagram of the accessible route.	See attached Accessibility Diagram.
Has an accessible routes way-finding and signage package been developed? **If yes,** please describe.	No wayfinding or signage package has been developed at this time.

Accessible Units: (If applicable)

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

What is the total number of proposed units for the development?	Up to 373 residential apartments are proposed on the Project Site.
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	The 331 replacement units will be for rent for households qualifying for public housing. An additional 42 units of non-public housing are proposed to create a revitalized mixed-income community.
How many accessible units are being proposed?	18 accessible units are proposed overall, or 5% of the 331 total units.
Please provide plan and diagram of the accessible units.	Please refer to Accessibility Diagram.
How many accessible units will also be affordable? If none, please describe reason.	All accessible units are affordable.
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason.	All units in midrise elevator buildings will be designed to meet MAAB/ADA Group 1 accessibility. Townhouses will have stair/stoop entries either at the front or back of unit, depending on where they sit on the Project Site.
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	No, but the Proponent will plan to meet with the Commission.
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 applicable at this time.

Thank you for completing the Accessibility Checklist!

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

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

Midrise A:
- All 80 Apartments Visitable
- 2x HP 1Bedroom
- 2x HP 2Bedroom
- 2x HP 3Bedroom
- 1x HP 5Bedroom

Midrise B:
- All 48 Apartments Visitable
- 1x HP 1Bedroom
- 2x HP 2Bedroom
- 1x HP 3Bedroom
- 1x HP 4Bedroom

Midrise C:
- All 71 Apartments Visitable
- 2x HP 1Bedroom
- 2x HP 2Bedroom

Accessible Route

Accessible Parking Space (8 on site)

Orient Heights

East Boston, Massachusetts

E-ICON ARCHITECTURE DM LA

Site Plan - Accessibility

Expanded Project/ Environmental Notification Form

Appendix 4

DISTRIBUTION LIST

APPENDIX 4: DISTRIBUTION LIST

STATE AGENCIES

Executive Office of Energy and Environmental Affairs	Secretary Matthew A. Beaton Executive Office of Energy and Environmental Affairs Attn: MEPA Office 100 Cambridge Street, Suite 900 Boston, MA 02114
Massachusetts Department of Environmental Protection	Massachusetts Department of Environmental Protection Commissioner's Office One Winter Street Boston, MA 02108
Massachusetts Department of Environmental Protection – Northeast Regional Office	MA DEP/Northeast Regional Office Attn: MEPA Coordinator 205B Lowell Street Wilmington, MA 01887
Massachusetts Department of Transportation	Massachusetts Department of Transportation Public/Private Development Unit 10 Park Plaza Boston, MA 02116
Massachusetts Department of Transportation – District 6 Office	Massachusetts Department of Transportation/District #6 Attn: MEPA Coordinator 185 Kneeland Street Boston, MA 02111
Massachusetts Historical Commission	Massachusetts Historical Commission MA Archives Building 220 Morrissey Boulevard Boston, MA 02125
Metropolitan Area Planning Council	Metropolitan Area Planning Council 60 Temple Place/6th floor Boston, MA 02111
Coastal Zone Management	Coastal Zone Management Attn: Project Review Coordinator 251 Causeway Street, Suite 800 Boston, MA 02114

Division of Marine Fisheries (North Shore)	Division of Marine Fisheries (North Shore) Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930
Department of Public Health	Department of Public Health Director of Environmental Health 250 Washington Street Boston, MA 02115
Massachusetts Water Resources Authority	Massachusetts Water Resources Authority Attn: MEPA Coordinator 100 First Avenue Charlestown Navy Yard Boston, MA 02129

LOCAL AGENCIES

City of Boston	Mayor Martin Walsh Boston City Hall One City Hall Square, Suite 500 Boston, MA 02201
Boston City Council	Michelle Wu Boston City Council President One City Hall Square, Suite 550 Boston, MA 02201 Michael Flaherty Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Annissa Essaibi George Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Ayanna Pressley Boston City Council One City Hall Square, Suite 550 Boston, MA 02201

	Salvatore LaMattina Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Bill Linehan Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Frank Baker Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Andrea Campbell Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Timothy McCarthy Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Matt O'Malley Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Tito Jackson Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Josh Zakim Boston City Council One City Hall Square, Suite 550 Boston, MA 02201 Mark Ciommo Boston City Council One City Hall Square, Suite 550 Boston, MA 02201

Boston Redevelopment Authority	Brian Golden Boston Redevelopment Authority One City Hall Square, 9th Floor Boston, MA 02201
Boston Conservation Commission	Boston Conservation Commission One City Hall Square, Room 709 Boston, MA 02201
Boston Public Health Commission	Boston Public Health Commission 1010 Massachusetts Avenue, 6th Floor Boston, MA 02118
Boston Housing Authority	Joe Bamberg and Kate Bennett Boston Housing Authority 52 Chauncy Street Boston, MA 02111
City of Boston Department of Neighborhood Development	Beverly Estes-Smargiassi Department of Neighborhood Development 26 Court Street, 8th Floor Boston, MA 02108
Boston Public Library East Boston Branch	Boston Public Library Attn: Director 365 Bremen Street East Boston, MA 02128
East Boston Community Development Corporation	Al Caldarelli 72 Marginal Street East Boston, MA 02128
City of Boston Impact Advisory Group	Dan Portella 32 Montmorenci Avenue East Boston, MA 02128 Gladys Oliveros 80 Webster Street, #3 East Boston, MA 02128 Gail Miller 232 Orient Avenue East Boston, MA 02128 Anne Marie Lara 174 Faywood Avenue, #345 East Boston, MA 02128

	Mike Sulprizio 28 Montmorenci Avenue East Boston, MA 02128 Amelia Perez 240 Waldemar Avenue, #21 East Boston, MA 02128 Janet Comfrey 179 Faywood Avenue, #260 East Boston, MA 02128 May Huang 178 Faywood Avenue, #344 East Boston, MA 02128 Joseph Ruggiero 2 St. Andrews Road East Boston, MA 02128 Kathleen Hardaway 118 Bayswater Street East Boston, MA 02128

Appendix 5

TRANSPORTATION APPENDIX

TRANSPORTATION APPENDIX

The Transportation Appendix is available under separate cover.