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

April 26, 2018

Brian P. Golden, Director
Attention: Raul Duverge
Boston Planning & Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Notice of Project Change – Orient Heights Redevelopment Project

Dear Director Golden:

This letter is submitted on behalf of Trinity Orient Heights Limited Partnership (the "Proponent") to notify you of a Project Change in the above-referenced project located at 160-228 Faywood Avenue, 1-70 Vallar Road, and 160-250 Waldemar Avenue, East Boston, MA 02128 (the "Original Project" and "Revised Project"). 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 obsolete 1950s-era BHA public housing units.

This Notice of Project Change (NPC) is submitted pursuant to Section 80A-6 of the Boston Zoning Code, and the Project Team respectfully requests the Boston Redevelopment Authority (d/b/a the Boston Planning & Development Agency (BPDA)) make a determination that no further review is required under Article 80B of the Boston Zoning Code (the "Code") as the changes are insignificant and does not generate additional impacts.

The Project's impacts have been adequately considered in the Expanded Project Notification Form (EPNF) submitted to the BPDA on May 25, 2016. The Boston Redevelopment Authority's Board approved the Original Project on August 11, 2016, which contained the following program:

- the demolition of the existing three hundred thirty-one (331) state public housing units and the construction of three hundred thirty-one (331) direct replacement units and forty-two (42) non-public housing units, for a total of three hundred seventy-three (373) units, in a combination of townhouse and midrise buildings;
- approximately three hundred six (306) on-street and off-street parking spaces;
- a community center;
- a public park and public plazas; and
- public way improvements including a new connection between Waldemar Avenue and Vallar Road.

The Original Project was anticipated to be completed in four phases between 2016 and 2024. The construction of 120 replacement units for Phase One started in early 2017 and will be ready for occupancy in April 2018. The Proponent anticipates starting construction on Phase Two in fall 2018, completing it in approximately 2020. Phase Three would now be the final phase and would start in approximately 2021 and be complete in approximately 2023. See Figure 1, Original Project Site Plan.

See Table 1, Project Program comparison for a summary of the 2016 BRA Board-approved Original Project and the 2018 Revised Project described in this letter.

Table 1: Project Program Comparison

Project Element	Original Project (2016)	Revised Project (2018)
Residential Units		
Phase One	120 units	120 units
Phase Two	92 units	88 units
Phase Three	119 units	123 units
Phase Four	42 units	0 units
Total:	373 units (331 public housing units and 42 non-public housing units)	331 units (331 public housing units and 0 non-public housing units)
Vehicle Parking		
Phase One	72 spaces	77 spaces
Phase Two	78 spaces	76 spaces
Phase Three	109 spaces	112 spaces
Phase Four	14 spaces	0 spaces
	306 spaces	265 spaces
Bicycle Parking		
Total:	388 spaces	331 spaces
Other Program Items		
Community Center	Approximately 8,000 sf, delivered in Phase Three	Approximately 1,000 sf in Phase Two (Midrise) and approximately 5,200 sf in Phase Three

Project Element	Original Project (2016)	Revised Project (2018)
Roadway Improvements	Connection of Vallar Road and Waldemar Avenue, delivered in Phase Two	No Connection of Vallar Road and Waldemar Avenue in the Revised Project. Improvements to portions of the existing Vallar Road will be made as part of Phase 2.
Public Park/ Public Plazas	Delivered in Phase Three, approximately 19,134 sf	Delivered in Phase Three, approximately 25,032 sf
Open Space	Approximately 87,985 sf	Approximately 161,275 sf

The Project Change is limited to the following minor modifications:

- Elimination of 42 non-public housing units in former Phase Four of the Original Project, reducing the Revised Project to three phases (or more depending on the availability and timing of funding), and focusing on one-for-one replacement of the existing public housing units.
- The existing Community Center will now be renovated rather than newly constructed; new community space will also be provided in the Phase Two midrise building.
- Improvements to open space on the Project Site's northwest corner bordering Waldemar Avenue will be delivered as part of Phase Two.
- Elimination of the connection of Vallar Road and Waldemar Avenue in the Project, due to cost constraints and the challenges of a large grade change between the two roadways. The Revised Project has been designed so this roadway connection could potentially be made in the future by the City of Boston.
- Reduction of some vehicle parking spaces since 42 non-public housing units were eliminated. The approximate parking space ratio from the Original Project has been maintained in the Revised Project.

See Figure 2, Revised Project Site Plan; Figure 3, Phase Two Site Plan; Figure 4 through Figure 6, Perspectives; Figure 7, Midrise Elevations; Figure 8 and Figure 9, Townhouse Elevations; Figure 10, Phase Two Midrise Plaza Design. See Appendix 1, Project Team and Appendix 2, Accessibility Checklist.

The Proponent will comply with the provisions of Article 37 Green Buildings and is targeting the Revised Project to be LEED Gold certifiable overall. The Project's soon-to-be complete Phase One will achieve LEED Platinum certifiability. See Appendix 3, Sustainability and Green Building.

EVALUATION OF PROJECT CHANGE

This Project Change does not result in significant impacts as compared to the approved Project described in the EPNF for the reasons outlined below.

INCREASE IN PROJECT SIZE OR INTENSITY OF USE/EXPANSION OF PROJECT

The Revised Project will result in a decrease in overall residential units.

GENERATION OF ADDITIONAL OR GREATER IMPACTS

The Project Change will not generate additional or greater impacts in terms of wind, shadow, public realm, or urban design.

INCREASE IN TRAFFIC IMPACTS OR THE NUMBER OF VEHICLE PARKING SPACES

This Project Site is located within an approximately 10-minute walk from the MBTA's Suffolk Downs Blue Line station and it is anticipated many residents and visitors will use transit. The number of vehicle parking spaces will decrease from approximately 306 to up to 265 spaces (approximately 0.8 ratio spaces:units).

Transportation Analysis

The EPNF contained a detailed transportation analysis prepared by Nitsch Engineering that studied the intersections adjacent to the Project Site. The EPNF also provided measures to mitigate the traffic impacts of the Original Project. Existing conditions were documented in terms of traffic and pedestrian volumes, public transportation, parking, and loading and service. Traffic analysis was completed for Existing Conditions (2015), Future Conditions (2025) with background traffic growth, and Build Conditions (2025) with the Original Project in place. The Institute of Transportation Engineers (ITE) data along with Boston Transportation Department data and other sources were used to estimate trip generation, trip distribution, and mode choice.

Trip Generation

The EPNF's estimated vehicle trip generation will decrease because the Revised Project contains 42 fewer units compared to the Original Project. Vehicle trip generation for this NPC will be estimated using the ITE Trip Generation, 9th Edition.

Traffic Impacts

The analysis in the EPNF indicated Original Project could be accommodated in the study area intersections and roadways with the proposed mitigation. The transportation impacts of the

Revised Project are less than those reported in the EPNF. The Revised Project's transportation analysis was revised since the planned connection of Vallar Road and Waldemar Avenue has been removed. See Appendix 4, Transportation Study for more details.

CHANGE IN EXPECTED COMMENCEMENT OR COMPLETION DATE

The Original Project's Phase One is nearly complete and will be ready for occupancy in late April 2018. The Project Change will allow the Proponent to move forward with Phase Two and Phase Three and obtain financing from MassHousing and other project lenders.

CHANGE IN PROJECT SITE

The location of the Project Site has not changed.

NEED FOR ADDITIONAL ZONING RELIEF/NEW PERMIT OR REQUEST FOR FINANCIAL ASSISTANCE OR LAND TRANSFER

The Project does not require any new zoning relief besides the new 121A agreements contemplated with the Original Project for Phase Two and Phase Three.

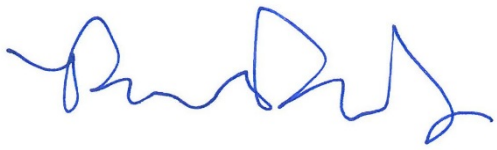
CHANGES IN SURROUNDING AREA/AMBIENT ENVIRONMENT

There have been no significant changes to the surrounding area since the EPNF was filed in May 2016.

Based on the above analysis, we request a determination that no further review is required pursuant to Article 80, Section 80A-6 (2) of the Code. We look forward to working with you and your staff on the continued design review for the Orient Heights Redevelopment Project.

If you have any questions, please feel free to contact me at (617) 357-7044 x209 or via email at rricchi@fpa-inc.com.

Sincerely,



Robert Ricchi
Senior Planner

cc: Eva Erlich, Trinity Financial
Al Caldarelli, East Boston CDC
Joseph Bamberg, Boston Housing Authority

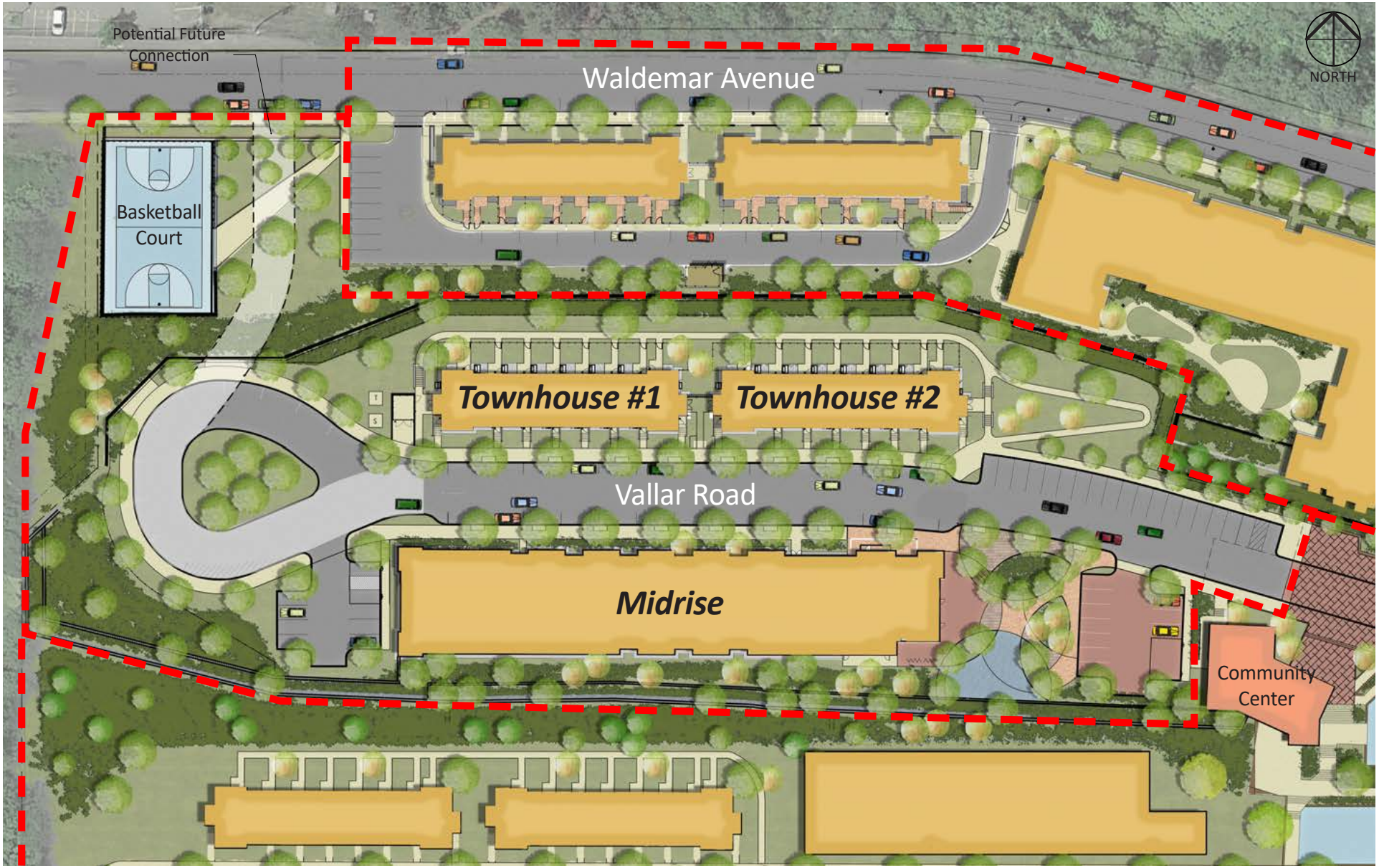
Encl: Figures
Appendix 1, Project Team
Appendix 2, Accessibility Checklist
Appendix 3, Sustainability and Green Building
Appendix 4, Transportation Study

FIGURES

East Boston, Massachusetts

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

Figure 2
Revised Project Site Plan
Source: ICON Architecture, Inc., 2018



East Boston, Massachusetts

Figure 3
Phase Two Site Plan
Source: ICON Architecture, Inc., 2018

Figure 4
View of Midrise looking up Vallar
Source: ICON Architecture, Inc., 2018

East Boston, Massachusetts

Figure 5
View of Midrise from Cul De Sac
Source: ICON Architecture, Inc., 2018

Figure 6
View of Townhouses on Vallar Extension
Source: ICON Architecture, Inc., 2018

Figure 7
Midrise Elevations
Source: ICON Architecture, Inc., 2018

Figure 8
Townhouse #1 Elevations
Source: ICON Architecture, Inc., 2018

Figure 9
Townhouse #2 Elevations
Source: ICON Architecture, Inc., 2018

Figure 10
Phase Two Midrise Plaza Design
Source: ICON Architecture, Inc., 2018

Appendix 1

PROJECT TEAM

APPENDIX 1: PROJECT TEAM

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
Architect	ICON Architecture, Inc. 101 Summer Street Boston, MA 02110 Nancy Ludwig, FAIA, LEED AP President/Senior Principal nludwig@iconarch.com 617-451-3333
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
Hazmat Consultant	The Vertex Companies, Inc. 398 Libbey Industrial Pkwy Weymouth, MA 02189 Vincent Agostino Division Manager vagostino@vertexeng.com 781-952-6006

Appendix 2

ACCESSIBILITY CHECKLIST

Article 80 – Accessibility Checklist

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

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

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

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

Accessibility Analysis Information Sources:

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

Glossary of Terms:

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

1. Project Information:

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

Project Name:	**Orient Heights Phase Two Redevelopment Project**
Primary Project Address:	160-228 Faywood Avenue, East Boston, MA 02128 1-70 Vallar Road, East Boston, MA 02128 160-250 Waldemar Avenue, East Boston, MA 02128
Total Number of Phases/Buildings:	**Three midrise buildings, eight townhouse buildings and twentyone duplexes**
Primary Contact (Name / Title / Company / Email / Phone):	**Eva Erlich, VP Development, Trinity Financial, eerlich@trinityfinancial.com, 617-720-8400**
Owner / Developer:	**Trinity Orient Heights Limited Partnership**
Architect:	**ICON Architecture, Inc**
Civil Engineer:	**Nitsch Engineering. Inc.**
Landscape Architect:	**Deb Myers Landscape Architecture, Inc.**
Permitting:	**Fort Point Associates, Inc.**
Construction Management:	**TBD**

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

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

Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? ***If yes,*** identify and explain.	***No variances are anticipated at this time.***

2. Building Classification and Description:

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

What are the dimensions of the project?				
Site Area:	***+/-653,763 SF***	Building Area:		***+/- 410,000 GSF***
Building Height:	***Up to 55' FT.***	Number of Stories:		***Ranges from two to four stories***
First Floor Elevation:	***FFE Varies: Lowest Floor Elevation will be at el 52'.***	Is there below grade space:		*Yes / **No***
What is the Construction Type? (Select most appropriate type)				
	Wood Frame	Masonry	Steel Frame	Concrete
What are the principal building uses? (IBC definitions are below – select all appropriate that apply)				
	Residential – One - Three Unit	**Residential - Multi-unit, Four +**	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		
List street-level uses of the building:				

3. Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	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 accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	The Project Site is near Suffolk Downs and Orient Heights MBTA Blue Line Stations. The Project Site is a 10 minute walk to the 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, elderly and disabled housing developments, educational facilities, others:	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.

List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	The Orient Heights Community Center is currently on the Project Site. This community center is proposed to be renovated as part of the Project.
4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a historic district? ***If yes,*** identify which district:	No.
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	Yes. The Project Site is spread across a steep hillside, with different grades. There are sidewalks and pedestrian ramps scattered across the Project Site. Existing apartments are typically accessed via steps and bituminous walks in relatively poor condition.
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	No. Sidewalks are concrete and mostly are deteriorated. Public sidewalks will be rebuilt as part of the Project. They are not currently compliant with accessibility and Complete Streets standards.
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	Yes. Proposed public sidewalks aim to meet Complete Street Guidelines. Public streets aim to be designed as Neighborhood Residential Street Type.

What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	Sidewalk width 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 proposed materials be on the City of Boston pedestrian right-of-way?	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.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	The Proponent intends to seek a pedestrian easement with the City of Boston PIC.
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	Yes.
6. Accessible Parking: *See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability – Disabled Parking Regulations*.	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	265 parking spaces will be provided 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? How many of these are "Van Accessible" spaces with an 8 foot access aisle?	A minimum of eight accessible parking spaces will be provided on site, at least one will be van accessible.

Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	No on street accessible parking spaces will be required.
Where is the 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.
7. Circulation and Accessible Routes: *The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors.*	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	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 entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	Yes, in the midrise buildings. The midrise buildings will provide full accessibility throughout common spaces.
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	No wayfinding or signage package has been developed at this time.
8. Accessible Units (Group 2) and Guestrooms: (If applicable) *In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.*	
What is the total number of proposed housing units or hotel rooms for the development?	Up to 331 residential apartments are proposed on the Project Site.
If a residential development, how many units are for sale? How many	The 331 replacement units will be for rent for households qualifying for public housing.

are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	All units will be affordable.
If a residential development, how many accessible Group 2 units are being proposed?	Phase 1 will provide 7 accessible units; Phase 2 will provide 9 accessible units; Phase 3 will provide the required number of accessible units.
If a residential development, how many accessible Group 2 units will also be IDP units? ***If none***, describe reason.	All accessible units are affordable/IDP.
If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? ***If yes,*** provide amount and location of equipment.	NA
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs / thresholds at entry, step to balcony, others. ***If yes***, provide reason.	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.
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? ***If yes***, describe:	Yes, the midrise buildings will include elevators providing access to all floor levels.
9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.*	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	Yes, the redevelopment includes street and sidewalk widening, new street lighting and street trees. Significant open space and play areas for children are included in the project scope.

What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	All common spaces within the midrise buildings, including community rooms, laundry rooms, offices will all be fully accessible to persons with disabilities. Outdoor spaces around the site, including children's play areas are also designed to maximize usage for all abilities.
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Yes, public restrooms will be accessible.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	No, but the Proponent will plan to meet with the Commission.
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this project more accessible?	No, but the Proponent will plan to meet with the Advisory Board.

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Please refer to attached Accessibility Diagram.

Provide a diagram of the accessible route connections through the site, including distances.
Please refer to attached Accessibility Diagram.

Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable) **NA**
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry. **Please refer to attached Accessibility Diagram. Accessible units are provided in midrise buildings.**
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. **Please refer to other graphics.**

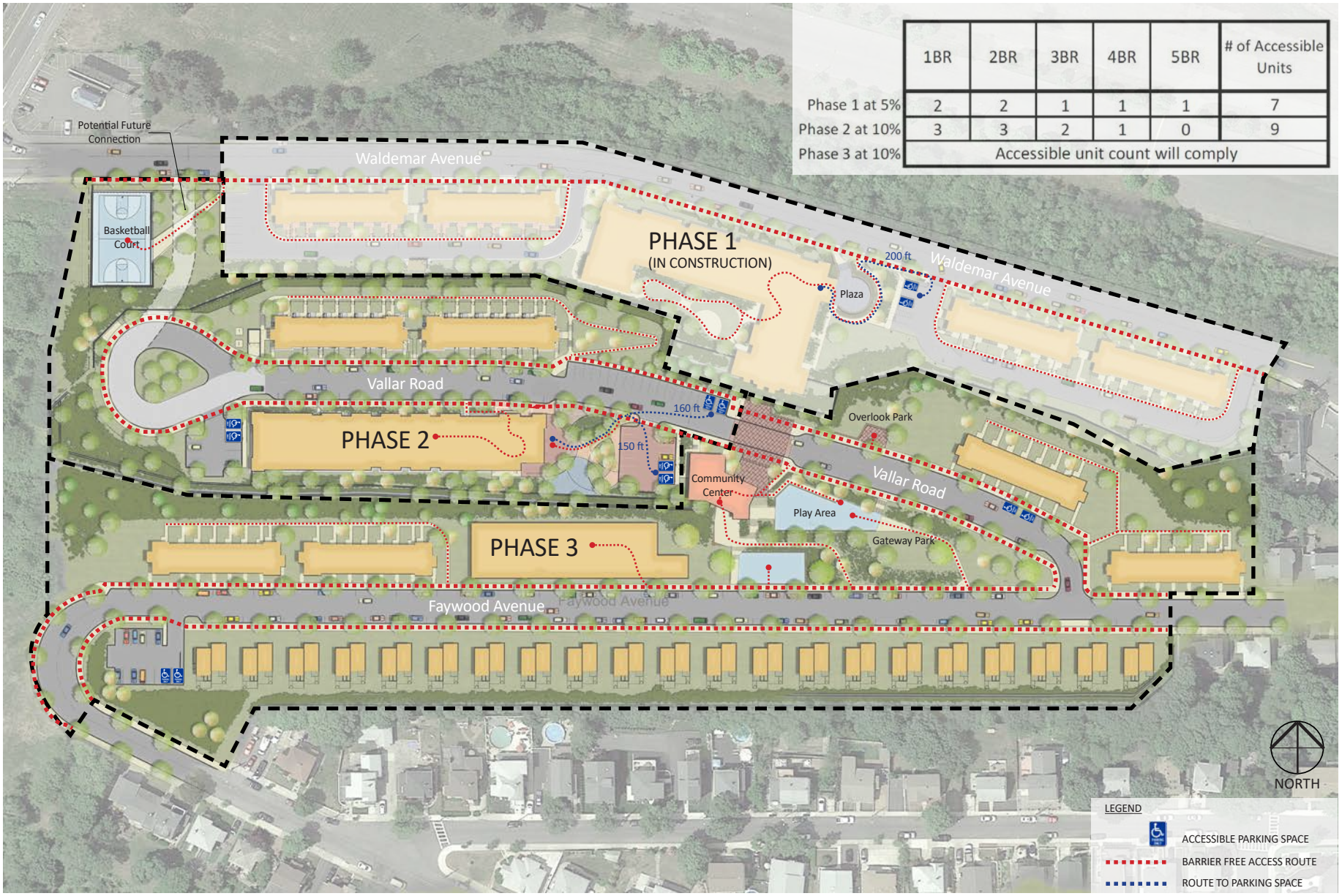
This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open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

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

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

Architectural Access staff can be reached at:

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



	1BR	2BR	3BR	4BR	5BR	# of Accessible Units
Phase 1 at 5%	2	2	1	1	1	7
Phase 2 at 10%	3	3	2	1	0	9
Phase 3 at 10%	Accessible unit count will comply					

Appendix 2
Accessibility Diagram
Source: ICON Architecture, Inc., 2018

Appendix 3

SUSTAINABILITY AND GREEN BUILDING

NEW ECOLOGY

Community-Based Sustainable Development

Orient Heights Redevelopment: Phase Two

Sustainability and Green Building

Notice of Project Change Submission

April 25, 2018

Table of Contents

1. SUSTAINABLE DESIGN

The Project Team will incorporate sustainable principles into its design, construction, and operation of the Orient Heights Redevelopment Project, Phase Two. The Project will meet the Boston Zoning Code's Article 37 requirement, with each building achieving a certifiability at least at the certified level through the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Building Design and Construction (BD+C) for Homes Version 4 (LEED H) or for Multifamily Midrise Version 4 (LEED MR) rating systems. Two separate LEED checklists have been prepared for Phase Two (88 units), one for the townhome units and one for the midrise units. Implementation of LEED 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 health effects on residents; and
- Effective ventilation and exhaust systems design to ensure continued health and air quality throughout the life of each building.

Phase Two townhomes and midrise buildings will also be certified through the 2015 Enterprise Green Communities Criteria, which requires greater energy efficiency and additional healthy housing and resiliency standards be adhered to in addition to those required by Version 4 of LEED H and LEED MR.

The Proponent has retained New Ecology, Inc. (NEI) as its 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 LEED H and LEED MR.

2. ARTICLE 37/LEED COMPLIANCE: TOWNHOMES

This section outlines the LEED H certifiability compliance strategy for the Phase Two townhome buildings. See Appendix A, LEED Checklist for Townhome Units.

INTEGRATIVE PROCESS

IPc Integrative Process

The Project team includes members whose capabilities include architectural design, mechanical engineering, building science, green building and sustainable design, landscape architecture, and civil engineering. Additionally, all team members were or will be involved in schematic design, design development, final design, and LEED planning.

LOCATION AND TRANSPORTATION

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

LTp Floodplain Avoidance

The Project is located on an urban infill location and does not include any area in the 100-year FEMA floodplain.

LTc Site Selection

The Project is located on a lot that is at least 75% previously developed and with a perimeter of >75% previously developed land; this qualifies as infill land. Additionally, Project residents have nearby (within ½-mile walking distance) access to open space at least ¾ acre in size.

LTc Compact Development

The townhome buildings contain more than 20 dwelling units and are located on less than 1 acre of buildable land.

LTc Community Resources

The Project is located within 1/2-mile walking distance of at least 8 community resources.

LTc Access to Transit

The Project is located within 1/2-mile of the Suffolk Downs MBTA station and several MBTA bus stops, providing at least 144 weekday and 108 weekend trips.

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.

SSp Construction Activity Pollution Prevention

The Project will create a Stormwater Pollution Prevention Plan (SWPPP) to minimize runoff and erosion from the site throughout construction. Daily, weekly, and monthly inspections will ensure that installed methodology is kept in good condition. Additionally, the plan will address the following requirements, as applicable:

- Protection of stockpiles and disturbed soil during on-site storage for reuse,
- Control of path and velocity of runoff from site,

- Protection of on-site storm sewer inlets and water bodies,
- Diversion of runoff from site hillsides,
- Protection of erosion from site slopes 15%, or greater, and
- Prevention of air pollution from dust and particulate matter.

SSp No Invasive Plants

The Project will not install any invasive plantings on-site.

SSc Heat Island Reduction

The townhome buildings will include ENERGY STAR qualified high-albedo roofing materials.

SSc Nontoxic Pest Control

The Project will include the following pest-deterrent design methodology:

- Seal all external cracks,
- Design discharge points for rain gutters such that discharge is at least 24-inches from home,
- Include a 6-inch inspection space between the planned surface of the grade and non-masonry siding, and
- Install landscaping so mature plants are at least 18-inches from home.

WATER EFFICIENCY

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

WEp Water Metering

The Project's will include at least one whole-house water meter for each building.

WEc Indoor Water Use

The Project will utilize water fixtures with the following flow rates:

- Lavatory Faucets: 0.5 gpm
- Showers: 1.5 gpm
- Toilets: 1.28 gpf

The Project will also utilize ENERGY STAR clothes washers.

WEc Outoor Water Use

The Project will install less than 40% turf grass and at least 50% native or adapted plantings as a percentage of landscaped area.

ENERGY AND ATMOSPHERE

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

EAp Minimum Energy Performance

The townhomes will meet all applicable requirements of the Massachusetts Stretch Energy Code, and will be certified under the ENERGY STAR for New Homes rating system. Preliminary model results, attached below, show a HERS 41 rating for the worst-case unit, a significant savings beyond Stretch Code, LEED, and ENERGY STAR requirements.

EAp Energy Metering

The townhomes will include individual electric meters for each residential unit as well as a central gas meter for each building.

EAp Education of the Homeowner, Tenant, or Building Manager

At construction completion, NEI will work with Metro Trinity Management Company, LLC to develop an Operations Training Manual that describes the sustainable aspects of installed systems and assemblies. All operations staff will participate in a 1-hour training walk through to view and inspect installed equipment.

Additionally, NEI will work with Metro Trinity Management Company, LLC to develop a Resident Green Guide to be distributed to applicable staff and/or residents at building occupancy. Distribution will be accompanied by copies of all LEED and Energy Star checklists as well as a 1-hour walk-through of the building and units to highlight installed LEED-related items.

EAc Annual Energy Use

The townhomes will meet all applicable requirements of the Massachusetts Stretch Energy Code, achieving a HERS score of 55 or better, and will be certified under the ENERGY STAR for New Homes rating system. In combination with the LEED Home Size Adjustment Factor, the townhome buildings will receive significant LEED points for this credit. Preliminary model results, attached below, show a HERS 41 rating for the worst-case unit, a significant savings beyond Stretch Code, LEED, and ENERGY STAR requirements.

EAc Efficient Hot Water Distribution System

The Project will design all domestic hot water piping to include continuous, minimum R-4 insulation.

EAc Advanced Utility Tracking

The Project will include whole-building and individual unit electric, gas, and water meters and all data will be reported to the management staff through the Wegowise online utility data tracking system.

EAc Active Solar Ready Design

The townhome buildings will be designed to be solar photovoltaic-ready, in compliance with Massachusetts Building Code solar-ready requirements.

EAc HVAC Start-Up Credentialing

The HVAC contractor for this Project will be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization.

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.

MRp Certified Tropical Wood

The Project will utilize non-tropical wood products or utilize Forestry Stewardship Council (FSC)-certification for necessary woods from tropical countries.

MRp Durability Management

The Project meet the requirements of the ENERGY STAR for Homes Version 3 Water Management System Builder Checklist. Additionally, the following interior water management measures will be installed:

- Nonpaper-faced backer boards or mold-resistant board will be installed at bathtubs and showers.
- Water resistant flooding will be installed in kitchens, bathrooms, and laundry areas.
- There are no water heaters located in or over living space.
- A drain or drain pan will be installed at all clothes washers in or over living spaces.
- All conventional clothes dryers will be exhausted directly to the outdoors.

MRc Durability Management Verification

NEI will verify all of the measures listed in the ENERGY STAR for Homes Version 3 Water Management System Builder Checklist.

MRp Construction Waste Management

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

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.

EQp Ventilation

The Project will design and install a whole-unit ventilation system for each individual dwelling unit, complying with the mechanical ventilation requirements of ASHRAE 62.2-2010. Non-unit spaces will meet the minimum requirements of ASHRAE 62.1-2010.

This includes provision of direct exhaust air to each residential unit, and confirmation that all inlets are located at least 10-feet away from all known sources of contamination, including exhaust outlets.

EQp Combustion Venting

The Project will design the residential units without unvented combustion appliances, fireplaces, and with Carbon Monoxide (CO) monitors on each floor of all units.

EQp Garage Pollutant Protection

The Project does not include a garage.

EQp Radon-Resistant Construction

The Project is not located within a high-risk radon area (i.e Environmental Protection Agency (EPA) Zone 1), excluding it from the prerequisite requirements.

EQp Air Filtering

All Project mechanical ventilation ductwork and equipment will include minimum MERV 8 filtration media to ensure that harmful particulates are filtered out of the air stream, prior to entry into the interior spaces.

EQp Environmental Tobacco Smoke

The Project will be entirely non-smoking, to be instituted through lease language. Smoking will be prohibited within 25-feet of all building entries, air intakes, and operable windows.

EQp Compartmentalization

The Project will meet the Massachusetts Stretch Energy Code air sealing requirement of 3 ACH50, exceeding the LEED requirement, to be demonstrated through blower door testing at construction completion.

EQc Enhanced Ventilation

The Project will include continuously operating balanced exhaust and supply ventilation.

EQc Balancing of Heating and Cooling Distribution Systems

The Project will meet the requirements of this credit by providing multiple zones with individual thermostatic controls and bedrooms will be pressure balanced with the rest of the home using transfer grilles.

EQc Combustion Venting

All installed combustion equipment will include directly vented supply and exhaust.

EQc Enhanced Garage Pollutant Protection

The Project does not include garage space.

EQc Low-Emitting Products

The Project team will install finishing products that are compliant with the credit standard: CA Section 01350. This standard regulates Volatile Organic Chemicals (VOC) emissions levels for the following items:

- Composite wood,
- Adhesives and sealants,
- Paints or Coatings, and
- Flooring.

INNOVATION

The Innovation category encourages projects to achieve greater reductions in environmental and human health impact by testing and implementing strategies outside of the LEED framework or by ensuring that at least one team member has extensive LEED experience.

INc LEED Accredited Professional

Tom Chase, of NEI, holds a LEED AP Homes credential and is an integrated member of the Project Team.

3. ARTICLE 37/LEED COMPLIANCE: MIDRISE

This section outlines the LEED MR certifiability compliance strategy for the Project. See Appendix B, LEED Checklist for Midrise Units for the preliminary checklist.

INTEGRATIVE PROCESS

IPc Integrative Process

The Project team includes members whose capabilities include architectural design, mechanical engineering, building science, green building and sustainable design, landscape architecture, and civil engineering. Additionally, all team members were or will be involved in schematic design, design development, final design, and LEED planning.

LOCATION AND TRANSPORTATION

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

LTp Floodplain Avoidance

The Project is located on an urban infill location and does not include any area in the 100-year FEMA floodplain.

LTc Site Selection

The Project is located on a lot that is at least 75% previously developed and with a perimeter of >75% previously developed land; this qualifies as infill land. Additionally, Project residents have nearby (within ½-mile walking distance) access to open space at least ¾ acre in size.

LTc Compact Development

The midrise building contains more than 55 dwelling units and is located on less than 1 acre of buildable land.

LTc Community Resources

The Project is located within 1/2-mile walking distance of at least 8 community resources.

LTc Access to Transit

The Project is located within 1/2-mile of the Suffolk Downs MBTA station and several MBTA bus stops, providing at least 144 weekday and 108 weekend trips.

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.

SSp Construction Activity Pollution Prevention

The Project will create a Stormwater Pollution Prevention Plan (SWPPP) to minimize runoff and erosion from the site throughout construction. Daily, weekly, and monthly inspections will ensure that installed methodology is kept in good condition. Additionally, the plan will address the following requirements, as applicable:

- Protection of stockpiles and disturbed soil during on-site storage for reuse,
- Control of path and velocity of runoff from site,
- Protection of on-site storm sewer inlets and water bodies,
- Diversion of runoff from site hillsides,
- Protection of erosion from site slopes 15%, or greater, and
- Prevention of air pollution from dust and particulate matter.

SSp No Invasive Plants

The Project will not install any invasive plantings on-site.

SSc Heat Island Reduction

The midrise building will include ENERGY STAR qualified high-albedo roofing materials.

SSc Nontoxic Pest Control

The Project will include the following pest-deterrent design methodology:

- Seal all external cracks,
- Design discharge points for rain gutters such that discharge is at least 24-inches from home,
- Include a 6-inch inspection space between the planned surface of the grade and non-masonry siding, and
- Install landscaping so mature plants are at least 18-inches from home.

WATER EFFICIENCY

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

WEp Water Metering

The Project's will include at least one whole-house water meter for the midrise building.

WEc Indoor Water Use

The Project will utilize water fixtures with the following flow rates:

- Lavatory Faucets: 0.5 gpm
- Showers: 1.5 gpm
- Toilets: 1.28 gpf

The Project will also utilize ENERGY STAR clothes washers.

WEc Outoor Water Use

The Project will install less than 40% turf grass and at least 50% native or adapted plantings as a percentage of landscaped area.

ENERGY AND ATMOSPHERE

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

EAp Minimum Energy Performance

The midrise building will meet all applicable requirements of the Massachusetts Stretch Energy Code as well as the LEED requirement of 5% improvement over ASHRAE 90.1-2010.

EAp Energy Metering

The midrise building will include individual electric meters for each residential unit as well as central gas and electric meters for common loads in the building.

EAp Education of the Homeowner, Tenant, or Building Manager

At construction completion, NEI will work with Metro Trinity Management Company, LLC to develop an Operations Training Manual that describes the sustainable aspects of installed systems and assemblies. All operations staff will participate in a 1-hour training walk through to view and inspect installed equipment.

Additionally, NEI will work with Metro Trinity Management Company, LLC to develop a Resident Green Guide to be distributed to applicable staff and/or residents at building occupancy. Distribution will be accompanied by copies of the LEED checklist as well as a 1-hour walk-through of the building and units to highlight installed LEED-related items.

EAc Annual Energy Use

The midrise building will meet all applicable requirements of the Massachusetts Stretch Energy Code as well as the LEED requirement of 5% improvement over ASHRAE 90.1-2010. Preliminary energy model results are attached below.

EAc Efficient Hot Water Distribution System

The Project will design all domestic hot water piping to include continuous, minimum R-4 insulation.

EAc Advanced Utility Tracking

The Project will include whole-building and individual unit electric, gas, and water meters and all data will be reported to the management staff through the Wegowise online utility data tracking system.

EAc Active Solar Ready Design

The midrise building will be designed to be solar photovoltaic-ready, in compliance with Massachusetts Building Code solar-ready requirements.

EAc HVAC Start-Up Credentialing

The HVAC contractor for this Project will be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization.

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.

MRp Certified Tropical Wood

The Project will utilize non-tropical wood products or utilize Forestry Stewardship Council (FSC)-certification for necessary woods from tropical countries.

MRp Durability Management

The Project meet the requirements of the ENERGY STAR for Homes Version 3 Water Management System Builder Checklist. Additionally, the following interior water management measures will be installed:

- Nonpaper-faced backer boards or mold-resistant board will be installed at bathtubs and showers.
- Water resistant flooding will be installed in kitchens, bathrooms, and laundry areas.
- There are no water heaters located in or over living space.
- A drain or drain pan will be installed at all clothes washers in or over living spaces.
- All conventional clothes dryers will be exhausted directly to the outdoors.

MRc Durability Management Verification

NEI will verify all of the measures listed in the ENERGY STAR for Homes Version 3 Water Management System Builder Checklist.

MRp Construction Waste Management

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

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.

EQp Ventilation

The Project will design and install a whole-unit ventilation system for each individual dwelling unit, complying with the mechanical ventilation requirements of ASHRAE 62.2-2010. Non-unit spaces will meet the minimum requirements of ASHRAE 62.1-2010.

This includes provision of direct exhaust air to each residential unit, and confirmation that all inlets are located at least 10-feet away from all known sources of contamination, including exhaust outlets.

EQp Combustion Venting

The Project will design the residential units without unvented combustion appliances, fireplaces, and with Carbon Monoxide (CO) monitors on each floor of all units.

EQp Garage Pollutant Protection

The Project does not include a garage.

EQp Radon-Resistant Construction

The Project is not located within a high-risk radon area (i.e Environmental Protection Agency (EPA) Zone 1), excluding it from the prerequisite requirements.

EQp Air Filtering

All Project mechanical ventilation ductwork and equipment will include minimum MERV 8 filtration media to ensure that harmful particulates are filtered out of the air stream, prior to entry into the interior spaces.

EQp Environmental Tobacco Smoke

The Project will be entirely non-smoking, to be instituted through lease language. Smoking will be prohibited within 25-feet of all building entries, air intakes, and operable windows.

EQp Compartmentalization

The Project will meet the LEED requirement for 0.23 CFM50 per square foot of unit enclosure, to be demonstrated through blower door testing at construction completion.

EQc Enhanced Ventilation

The Project will include continuously operating balanced exhaust and supply ventilation.

EQc Balancing of Heating and Cooling Distribution Systems

The Project will meet the requirements of this credit by ensuring bedrooms will be pressure balanced with the rest of the home using transfer grilles.

EQc Combustion Venting

All installed combustion equipment will include directly vented supply and exhaust.

EQc Enhanced Garage Pollutant Protection

The Project does not include garage space.

EQc Low-Emitting Products

The Project team will install finishing products that are compliant with the credit standard: CA Section 01350. This standard regulates Volatile Organic Chemicals (VOC) emissions levels for the following items:

- Composite wood,
- Adhesives and sealants,
- Paints or Coatings, and
- Flooring.

INNOVATION

The Innovation category encourages projects to achieve greater reductions in environmental and human health impact by testing and implementing strategies outside of the LEED framework or by ensuring that at least one team member has extensive LEED experience.

INc LEED Accredited Professional

Tom Chase, of NEI, holds a LEED AP Homes credential and is an integrated member of the Project Team.

APPENDIX A: TOWNHOMES LEED CHECKLIST

LEED BD+C: Homes and Multifamily Lowrise v4 - LEED v4

Orient Heights Phase Two: Townhomes Scorecard (ID: N/A)

Project Address **TBD, Boston, MA , USA**

Note: The information on this tab is READ-ONLY. To edit this information, see the Credit Category tabs.

Integrative Process		**Preliminary**	Y 1 of 2	M	*1*	**Verified**	0
IPc	**Integrative Process**		1 of 2		*1*		
Location and Transportation		**Preliminary**	Y 13 of 15	M	*0*	**Verified**	0
LTp	Floodplain Avoidance		Required				Not Verified
Performance Path							
LTc	LEED for Neighborhood Development		0 of 15		*0*		
Prescriptive Path							
LTc	Site Selection		7 of 8		*0*		
LTc	Compact Development		3 of 3		*0*		
LTc	Community Resources		1.5 of 2		*0*		
LTc	Access to Transit		1.5 of 2		*0*		
Sustainable Sites		**Preliminary**	Y 3 of 7	M	*1*	**Verified**	0
SSp	Construction Activity Pollution Prevention		Required				Not Verified
SSp	No Invasive Plants		Required				Not Verified
SSc	Heat Island Reduction		1 of 2		*0*		
SSc	Rainwater Management		0 of 3		*1*		
SSc	Nontoxic Pest Control		2 of 2		*0*		
Water Efficiency		**Preliminary**	Y 7 of 12	M	*0*	**Verified**	0
WEp	Water Metering		Required				Not Verified
Performance Path							
WEc	Total Water Use		0 of 12		*0*		
Prescriptive Path							
WEc	Indoor Water Use		5 of 6		*0*		
WEc	Outdoor Water Use		2 of 4		*0*		
Energy and Atmosphere		**Preliminary**	Y 36.5 of 38	M	*0*	**Verified**	0
EAp	Minimum Energy Performance		Required				Not Verified
EAp	Energy Metering		Required				Not Verified
EAp	Education of the Homeowner, Tenant or Building Manager		Required				Not Verified
Performance Path							
EAc	Annual Energy Use		31.5 of 29		*0*		
Performance and Prescriptive Paths							
EAc	Efficient Hot Water Distribution System		2 of 5		*0*		
EAc	Advanced Utility Tracking		1 of 2		*0*		
EAc	Active Solar-Ready Design		1 of 1		*0*		
EAc	HVAC Start-Up Credentialing		1 of 1		*0*		
Prescriptive Path							
EAp	Home Size		Required				Not Verified
EAc	Building Orientation for Passive Solar		0 of 3		*0*		
EAc	Air Infiltration		0 of 2		*0*		
EAc	Envelope Insulation		0 of 2		*0*		
EAc	Windows		0 of 3		*0*		
EAc	Space Heating & Cooling Equipment		0 of 4		*0*		
EAc	Heating & Cooling Distribution Systems		0 of 3		*0*		
EAc	Efficient Domestic Hot Water Equipment		0 of 3		*0*		
EAc	Lighting		0 of 2		*0*		
EAc	High-Efficiency Appliances		0 of 2		*0*		
EAc	Renewable Energy		0 of 4		*0*		
Materials and Resources		**Preliminary**	Y 2 of 10	M	*0*	**Verified**	0

MRp	Certified Tropical Wood		Required				Not Verified
MRp	Durability Management		Required				Not Verified
MRc	Durability Management Verification		1 of 1		*0*		
MRc	Environmentally Preferable Products		0 of 4		*0*		
MRc	Construction Waste Management		1 of 3		*0*		
MRc	Material-Efficient Framing		0 of 2		*0*		

Indoor Environmental Quality		**Preliminary**	Y 10 of 16	M	*1*	**Verified**	0
EQp	Ventilation		Required				Not Verified
EQp	Combustion Venting		Required				Not Verified
EQp	Garage Pollutant Protection		Required				Not Verified
EQp	Radon-Resistant Construction		Required				Not Verified
EQp	Air Filtering		Required				Not Verified
EQp	Environmental Tobacco Smoke		Required				Not Verified
EQp	Compartmentalization		Required				Not Verified
EQc	Enhanced Ventilation		2 of 3		*1*		
EQc	Contaminant Control		0 of 2		*0*		
EQc	Balancing of Heating and Cooling Distribution Systems		2 of 3		*0*		
EQc	Enhanced Compartmentalization		0 of 1		*0*		
EQc	Combustion Venting		2 of 2		*0*		
EQc	Enhanced Garage Pollutant Protection		2 of 2		*0*		
EQc	Low-Emitting Products		2 of 3		*0*		

Innovation		**Preliminary**	Y 1 of 6	M	*0*	**Verified**	0
INp	Preliminary Rating		Required				Not Verified
INc	Innovation		0 of 5		*0*		
INc	LEED Accredited Professional		1 of 1		*0*		

Regional Priority		**Preliminary**	Y 0 of 4	M	*0*	**Verified**	0
RPc	Regional Priority		0 of 4		*0*		

Point Floors	
The project earned at least 8 points total in Location and Transportation and Energy and Atmosphere	No
The project earned at least 3 points in Water Efficiency	No
The project earned at least 3 points in Indoor Environmental Quality	No

Total		**Preliminary**	Y 73.5 of 110	M	3	**Verified**	0

Certification Thresholds Certified: 40-49, Silver: 50-59, Gold: 60-79, Platinum: 80-110

APPENDIX B: MIDRISE LEED CHECKLIST

LEED BD+C: Multifamily Midrise v4 - LEED v4

Orient Heights Phase Two: Midrise Scorecard

Location: **TBD, Boston, MA , USA**

Note: The information on this tab is READ-ONLY. To edit this information, see the Credit Category tabs.

Integrative Process		**Preliminary**	Y 1 of 2	M	*1*	**Verified**	0
IPc	**Integrative Process**		1 of 2		*1*		
Location and Transportation		**Preliminary**	Y 12 of 15	M	*1*	**Verified**	0
LTp	Floodplain Avoidance		Required				Not Verified
Performance Path							
LTc	LEED for Neighborhood Development		0 of 15		*0*		
Prescriptive Path							
LTc	Site Selection		7 of 8		*0*		
LTc	Compact Development		2 of 3		*1*		
LTc	Community Resources		1.5 of 2		*0*		
LTc	Access to Transit		1.5 of 2		*0*		
Sustainable Sites		**Preliminary**	Y 3 of 7	M	*0*	**Verified**	0
SSp	Construction Activity Pollution Prevention		Required				Not Verified
SSp	No Invasive Plants		Required				Not Verified
SSc	Heat Island Reduction		1 of 2		*0*		
SSc	Rainwater Management		0 of 3		*0*		
SSc	Nontoxic Pest Control		2 of 2		*0*		
Water Efficiency		**Preliminary**	Y 7 of 12	M	*0*	**Verified**	0
WEp	Water Metering		Required				Not Verified
Performance Path							
WEc	Total Water Use		0 of 12		*0*		
Prescriptive Path							
WEc	Indoor Water Use		5 of 6		*0*		
WEc	Outdoor Water Use		2 of 4		*0*		
Energy and Atmosphere		**Preliminary**	Y 14.5 of 37	M	*0*	**Verified**	0
EAp	Minimum Energy Performance		Required				Not Verified
EAp	Energy Metering		Required				Not Verified
EAp	Education of the Homeowner, Tenant or Building Manager		Required				Not Verified
EAc	Annual Energy Use		11.5 of 30		*0*		
EAc	Efficient Hot Water Distribution System		2 of 5		*0*		
EAc	Advanced Utility Tracking		1 of 2		*0*		
Materials and Resources		**Preliminary**	Y 0 of 9	M	*0*	**Verified**	0
MRp	Certified Tropical Wood		Required				Not Verified
MRp	Durability Management		Required				Not Verified
MRc	Durability Management Verification		0 of 1		*0*		
MRc	Environmentally Preferable Products		0 of 5		*0*		
MRc	Construction Waste Management		0 of 3		*0*		
Indoor Environmental Quality		**Preliminary**	Y 10 of 18	M	*0*	**Verified**	0
EQp	Ventilation		Required				Not Verified
EQp	Combustion Venting		Required				Not Verified
EQp	Garage Pollutant Protection		Required				Not Verified
EQp	Radon-Resistant Construction		Required				Not Verified
EQp	Air Filtering		Required				Not Verified
EQp	Environmental Tobacco Smoke		Required				Not Verified

EQp	Compartmentalization	Required				Not Verified
EQc	Enhanced Ventilation	2 of 3	*0*			
EQc	Contaminant Control	0.5 of 2	*0*			
EQc	Balancing of Heating and Cooling Distribution Systems	1 of 3	*0*			
EQc	Enhanced Compartmentalization	0 of 3	*0*			
EQc	Combustion Venting	2 of 2	*0*			
EQc	Enhanced Garage Pollutant Protection	1 of 1	*0*			
EQc	Low-Emitting Products	2.5 of 3	*0*			
EQc	No Environmental Tobacco Smoke	1 of 1	*0*			

Innovation

Preliminary Y 1 of 6 M *0* **Verified** 0

INp	Preliminary Rating	Required				Not Verified
INc	Innovation	0 of 5	*0*			
INc	LEED Accredited Professional	1 of 1	*0*			

Regional Priority

Preliminary Y 0 of 4 M *0* **Verified** 0

RPc	Regional Priority	0 of 4	*0*

Point Floors

The project earned at least 8 points total in Location and Transportation and Energy and Atmosphere	No
The project earned at least 3 points in Water Efficiency	No
The project earned at least 3 points in Indoor Environmental Quality	No

Total

Preliminary Y 48.5 of 110 M 2 **Verified** 0

Certification Thresholds Certified: 40-49, Silver: 50-59, Gold: 60-79, Platinum: 80-110

APPENDIX C: CLIMATE RESILIENCY CHECKLIST

boston planning & development agency

Climate Resiliency Checklist

NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

A.1 - Project Information

Project Name:	Orient Heights Phase Two			
Project Address:	Vallar Road, East Boston, MA			
Project Address Additional:				
Filing Type (*select*)	*Initial NPC*			
Filing Contact	*Thomas Chase*	*New Ecology, Inc.*	*chase@newecology.org*	*617-557-1700*
Is MEPA approval required	*No*		*N/A*	

A.3 - Project Team

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

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential
List the First Floor Uses:	Residential
List any Critical Site Infrastructure and or Building Uses:	None

Site and Building:

Site Area:	*TBD SF*	Building Area:	*74,840 SF (midrise), 21,532 (townhomes)*
Building Height:	*42Ft 8In (midrise), 36Ft (townhomes)*	Building Height:	*4 Stories (midrise), 3 Stories (townhomes)*
Existing Site Elevation – Low:	*74.5 Ft BCB*	Existing Site Elevation – High:	*103.9 Ft BCB*
Proposed Site Elevation – Low:	*74.5 Ft BCB*	Proposed Site Elevation – High:	*103.9 Ft BCB*
Proposed First Floor Elevation:	*86Ft (midrise), 75Ft (townhomes) BCB*	Below grade levels:	*0 Stories*

Article 37 Green Building:

LEED Version - Rating System :	LEED BD+C v4 Multifamily Midrise, LEED BD+C v4 Homes and Multifamily Lowrise	LEED Certification:	*No*
Proposed LEED rating:	*Certified (midrise) Gold (townhome)*	Proposed LEED point score:	*48.5 - 73.5 Pts.*

Building Envelope

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

Roof:	*R-25 (midrise)-R-57 (townhoms)(R)*	Exposed Floor:	*R-30 (R)*
Foundation Wall:	*R-10 (R)*	Slab Edge (at or below grade):	*R-10 (R)*

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

Area of Opaque Curtain Wall & Spandrel Assembly:	*N/A*	Wall & Spandrel Assembly Value:	*N/A*
Area of Framed & Insulated / Standard Wall:	*70 (%)*	Wall Value	*R-20 + R7.5 c.i (R)*
Area of Vision Window:	*30 %*	Window Glazing Assembly Value:	*U-0.15 (U)*
		Window Glazing SHGC:	*0.50 (SHGC)*
Area of Doors:	*2 %*	Door Assembly Value:	*TBD (U)*

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	*Energy loads for the midrise building were modeled in eQuest following ASHRAE 90.1-2010 modeling guidelines per LEED BD+C v4 Multifamily Midrise, energy loads for the townhome buildings were modled in Ekotrope following HERS guidelines.*		
Annual Electric:	*556,652kWh (midrise) 86,800kWh (townhomes)*	Peak Electric:	*TBD (kW)*
Annual Heating:	*TBD (MMbtu/hr)*	Peak Heating:	*TBD (MMbtu)*
Annual Cooling:	*TBD (Tons/hr)*	Peak Cooling:	*TBD (Tons)*
Energy Use - Below ASHRAE 90.1 - 2013:	*12.7% (midrise)*	Have the local utilities reviewed the building energy performance?:	*No*
Energy Use - Below Mass. Code:	*12.7% (midrise), 25% (townhomes)*	Energy Use Intensity:	*38 kBtu/SF (midrise) 24 kBtu/SF (townhomes)*

Back-up / Emergency Power System

Electrical Generation Output:	*N/A*	Number of Power Units:	*N/A*
System Type:	*N/A*	Fuel Source:	*N/A*

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

Electric:	*N/A*	Heating:	*N/A*
		Cooling:	*N/A*

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

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

B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions: *196.7 (midrise)*
44.1 (townhomes)

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

Building energy performance is a major driving factor of design. Attention to insulation, air sealing, materials, equipment, and mechanical design were considerations in making design choices throughout.

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

The buildings in this filing have superior envelope improvements including high performance windows and above-code insulation.

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

Buildings use highly efficient air source heat pumps for all heating and cooling. High efficiency ventilation systems are used.

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

N/A

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

N/A

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

The project will receive MassSave incentive funds as well as MA CEC Air Source Heat Pump incentives.

B.2 - GHG Reduction - Adaptation Strategies

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

In the future, gas-fired domestic hot water systems may be replaced by all electric systems. The roofs of the buildings have been designed to be solar ready.

C - Extreme Heat Events

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

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low:	*7 Deg.*	Temperature Range - High:	*91 Deg.*
Annual Heating Degree Days:	5,659	Annual Cooling Degree Days	899

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

Days - Above 90°:	*11#*	Days – Above 100°:	*3#*
Number of Heatwaves / Year:	*3#*	Average Duration of Heatwave (Days):	*3#*

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

Building roofs will use ENERGY STAR high SRI roofing products and site is landscaped intensively.

C.2 - Extreme Heat – Adaptation Strategies

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

The building systems are designed to handle future higher temperatures, adapting to provide more cooling and less heating annually within the current configuration.

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

The high-performance building envelope is the most important component supporting building functionality during extended interruptions in service at this project.

D - Extreme Precipitation Events

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

D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm:	*0.89 In.*

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

Storm water is collected from storm drains from roofs and extensive landscaping will capture significant runoff.

D.2 - Extreme Precipitation - Adaptation Strategies

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

N/A

E – Sea Level Rise and Storms

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

Is any portion of the site in a FEMA SFHA?	*No*	What Zone:	N/A
		Current FEMA SFHA Zone Base Flood Elevation:	*N/A*

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online BPDA SLR-FHA Mapping Tool to assess the susceptibility of the project site.	*No*

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX D: PRELIMINARY TOWNHOME HERS CERTIFICATES

Home Energy Rating Certificate

Projected Report

Rating Date:
Registry ID: Unregistered
Ekotrope ID: q2RJowG2

HERS® Index Score:

40

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$2,148

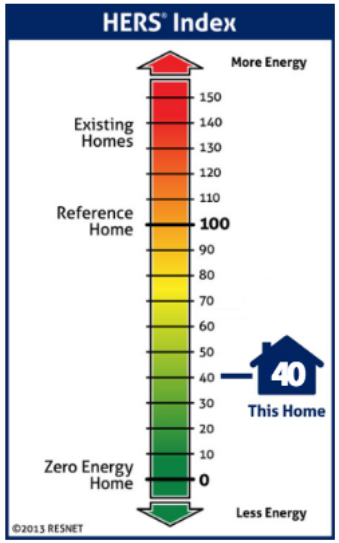
*Relative to an average U.S. home

Home:
Vallar Rd, East Boston, MA 02128

Builder:
Suffolk

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	2.8	$172
Cooling	0.7	$35
Hot Water	9.6	$45
Lights/Appliances	15.0	$844
Service Charges		$194
Generation (e.g. Solar)	0.0	-$0
Total:	**28.0**	**$1,289**



Home Feature Summary:

Home Type:	Townhouse, inside unit
Conditioned Floor Area:	1,365 sq. ft.
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 3.14 COP
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER
Primary Water Heating:	Water Heater • Natural Gas • 0.86 Energy Factor
House Tightness:	3 ACH50
Duct Leakage to Outside:	Untested
Above Grade Walls:	R-29
Ceiling:	Attic, R-57
Window Type:	U-Value: 0.150, SHGC: 0.500
Foundation Walls:	R-23

This home meets or exceeds the criteria of the following:

Energy Star v3
Energy Star v3.1

Rating Completed by:

Energy Rater: Zach McDonald
RESNET ID:7945150

Rating Company: New Ecology
15 Court Sq. Boston, MA 02108

Rating Provider: Building Efficiency Resources
PO Box 180 Cedar Mountain, NC 28718
800-399-9620

Zach McDonald, Certified Energy Rater
Date: 4/23/18 at 2:43 PM

ENERGY STAR V3.1 Home Report

Property
Suffolk
Vallar Rd
East Boston, MA 02128

Prelim 3BR (Inside)
Orient Heights TH #1 P2 (3BR)

Organization
New Ecology
Zach McDonald

Builder
Suffolk

Inspection Status
Results are projected

Mandatory Requirements

- ✓ Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
- ✓ Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
- ✓ Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
- ✓ Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
- ✓ Windows meet the 2009 IECC Requirements - Table 402.1.1.
- ✓ Duct insulation meets the EPA minimum requirements of R-6.
- ✓ Mechanical ventilation system is installed in the home.
- ✓ ENERGY STAR Checklists fully verified and complete.

HERS Index Target

Reference Home HERS	66
SAF (Size Adjustment Factor)	1.00
SAF Adjusted HERS Target	66
As Designed Home HERS	40
As Designed Home HERS w/o PV	40

Normalized, Modif ed End-Use Loads (MBtu / year)

	ENERGY STAR	As Designed
Heating	11.7	4.1
Cooling	1.8	2.0
Water Heating	9.5	2.9
Lights and Appliances	17.0	15.0
Total	39.9	24.0

This home MEETS or EXCEEDS the energy efficiency requirements for designation as an EPA ENERGY STAR Qualified Home under Version 3.1

Pollution Prevented

Type of Emissions	*Reduction*
Carbon Dioxide (CO2) - tons/yr	1.5

Energy Cost Savings $/yr

Heating	232
Cooling	-4
Water Heating	38
Lights & Appliances	116
Generation Savings	0
Total	383

The energy savings and pollution prevented are calculated by comparing the Rated Home to the ENERGY STAR Version 3.1 Reference Home as defined in the ENERGY STAR Qualified Homes HERS Index Target Procedure for National Program Requirements, Version 3.1 promulgated by the Environmental Protection Agency (EPA). In accordance with the ANSI/RESNET/ICC 301-2014 Standard, building inputs affecting setpoints infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads

Home Energy Rating Certificate

Projected Report

Rating Date:
Registry ID: Unregistered
Ekotrope ID: 7d1Epyrd

HERS® Index Score:

41

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$3,228

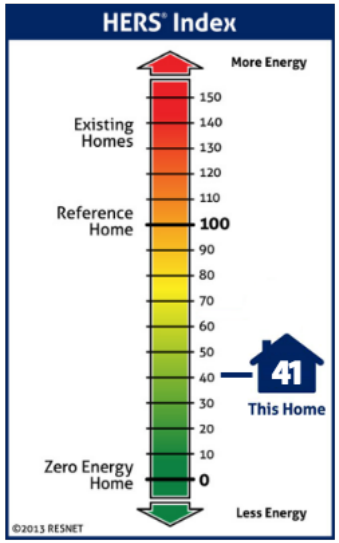
*Relative to an average U.S. home

Home:
Vallar Rd, East Boston, MA 02128

Builder:
Suffolk

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	4.9	$307
Cooling	1.1	$57
Hot Water	21.7	$116
Lights/Appliances	18.5	$1,045
Service Charges		$194
Generation (e.g. Solar)	0.0	-$0
Total:	**46.2**	**$1,719**



Home Feature Summary:

Home Type:	Townhouse, end unit
Conditioned Floor Area:	1,942 sq. ft.
Number of Bedrooms:	4
Primary Heating System:	Air Source Heat Pump • Electric • 3.14 COP
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER
Primary Water Heating:	Water Heater • Natural Gas • 0.86 Energy Factor
House Tightness:	3 ACH50
Duct Leakage to Outside:	Untested
Above Grade Walls:	R-29
Ceiling:	Attic, R-57
Window Type:	U-Value: 0.150, SHGC: 0.500
Foundation Walls:	R-23

This home meets or exceeds the criteria of the following:

Energy Star v3
Energy Star v3.1

Rating Completed by:

Energy Rater: Zach McDonald
RESNET ID:7945150

Rating Company: New Ecology
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PO Box 180 Cedar Mountain, NC 28718
800-399-9620

Zach McDonald, Certified Energy Rater
Date: 4/23/18 at 2:37 PM

ENERGY STAR V3.1 Home Report

Property
Suffolk
Vallar Rd
East Boston, MA 02128

Prelim 4BR (End)
Orient Heights TH #1 P2 (4BR)

Organization
New Ecology
Zach McDonald

Builder
Suffolk

Inspection Status
Results are projected

Mandatory Requirements

- ✓ Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
- ✓ Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
- ✓ Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
- ✓ Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
- ✓ Windows meet the 2009 IECC Requirements - Table 402.1.1.
- ✓ Duct insulation meets the EPA minimum requirements of R-6.
- ✓ Mechanical ventilation system is installed in the home.
- ✓ ENERGY STAR Checklists fully verified and complete.

HERS Index Target

Reference Home HERS	64
SAF (Size Adjustment Factor)	1.00
SAF Adjusted HERS Target	64
As Designed Home HERS	41
As Designed Home HERS w/o PV	41

Normalized, Modif ed End-Use Loads (MBtu / year)

	ENERGY STAR	As Designed
Heating	21.3	7.3
Cooling	3.1	3.3
Water Heating	11.4	6.9
Lights and Appliances	20.8	18.5
Total	56.5	36.0

This home MEETS or EXCEEDS the energy efficiency requirements for designation as an EPA ENERGY STAR Qualified Home under Version 3.1

Pollution Prevented

Type of Emissions	*Reduction*
Carbon Dioxide (CO2) - tons/yr	1.7

Energy Cost Savings

	$/yr
Heating	466
Cooling	-3
Water Heating	-21
Lights & Appliances	134
Generation Savings	0
Total	577

The energy savings and pollution prevented are calculated by comparing the Rated Home to the ENERGY STAR Version 3.1 Reference Home as defined in the ENERGY STAR Qualified Homes HERS Index Target Procedure for National Program Requirements, Version 3.1 promulgated by the Environmental Protection Agency (EPA). In accordance with the ANSI/RESNET/ICC 301-2014 Standard, building inputs affecting setpoints infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads

APPENDIX E: PRELIMINARY MIDRISE ENERGY ANALYIS RESULTS

Orient Heights Phase Two Midrise - Preliminary Energy Analysis Results						
4/20/18						
Table 1 : Energy Cost and Consumption by Energy Type						
Baseline Results	**Natural Gas**	**Natural Gas**	**Electricity**	**Electricity**	**Total $**	**Total Energy**
	Therms/Yr	**$/Yr**	**kWh/Yr**	**$/Yr**	**$/Yr**	**MMBtu**
Baseline (0)	14,962	$13,870.0	551,538	$86,040.0	$99,910.0	3,378
Baseline (90)	15,021	$13,924.0	584,154	$91,128.0	$105,052.0	3,495
Baseline (180)	14,951	$13,859.0	552,357	$86,168.0	$100,027.0	3,380
Baseline (270)	14,856	$13,771.0	586,558	$91,503.0	$105,274.0	3,487
Baseline Average	**14,948**	**$13,856.0**	**568,652**	**$88,709.8**	**$102,565.8**	**3,435**
Proposed	**9,292**	**$8,613.0**	**556,342**	**$86,789.0**	**$95,402.0**	**2,827**
% Savings	**37.8%**	**37.8%**	**2.2%**	**2.2%**	**7.0%**	**17.7%**

NEW ECOLOGY

Community-Based Sustainable Development

Building Component	Baseline Design	Proposed Design
Walls (above and below grade wall construction and U-value)	Above Grade: Stucco, gypsum board, R-13 steel frame, R-7.5 ci, gypsum board (U-0.064)	Above Grade: 2x6 wood studs with R-21open cell spray foam insulation and R-7.9 Ecomax Insulated Panel (U-0.040)
Doors	Entry doors per ASHRAE 90.1-2010 U-0.50	Same as baseline
Windows (window-to-wall-ratio, frame material, U-Value and SHGC)	WWR (Window to Wall Ratio) = 25.3%, Vinyl frame, U-0.35, SHGC*-0.40 *SHGC: Solar Heat Gain Coefficient	WWR (Window to Wall Ratio) = 25.3%, Vinyl Frame, Triple Glazed, U-0.152 (whole assembly), SHGC-0.4 (assumed)
Floor (U-Value and construction for exposed floor and slabs)	6" concrete slabs with R-30 insulation U-0.038	same as baseline
Slab-on-Grade Floor	R-10 for 24 inches F-0.540	R-10 for 24 inches (F-0.540) and R-10 under slab insulation
Roof (U-Value and construction)	R-20 insulation entirely above deck with a U-factor of 0.048	R-40 insulation entirely above deck with a U-factor of 0.025
Lighting Power Density	Residential LPD* = 1.1 W/SF Corridors/Transition LPD = 0.66 W/SF Lobby LPD = 0.90 W/SF Stairs-Active LPD = 0.69 W/SF *LPD: Lighting Power Density	Residential LPD* = 0.99 W/SF Corridors/Transition LPD = 0.59 W/SF Lobby LPD = 0.90 W/SF Stairs-Active LPD = 0.62 W/SF Note: 10% LPD reduction assumed for major spaces
Daylighting Controls	Not Modeled (Info not avaiable)	Not Modeled (Info not avaiable)
Other Lighting Controls	Occupancy Sensors/controls not modeled (Info not available)	Same as baseline
Exterior Lighting	Not Modeled (Info not avaiable)	Same as baseline
Process Lighting	N/A	N/A
Misc. Plug Loads	Residential EPD = 1.5 W/SF Common Areas EPD = 0.2 W/SF Lobby = 0.5 W/SF	Residential EPD = 1.5 W/SF Common Areas EPD = 0.2 W/SF Lobby = 0.5 W/SF Note: In Unit washer/dryer
Renewable Systems	N/A	N/A
Primary Heating System Description	Table G3.1.1-3 **Residential Units, Corridors, Amenity :** System #1- Packaged Terminal Air Conditioner (PTAC) 9.51 EER*, Heating on Hot Water Boiler (80% Ec) (eQUEST cooling EIR): 0.3051 EER*:Energy Efficiency Ratio COP*:Coefficient of Performance	**Residential, Amenity Units:** VRF Air Source Heat Pump, 7 outdoor condenser units, indoor ducted fan coil units in each apartment 11.6 EER, 3.56 COP (eQUEST cooling EIR 0.2426) (eQUEST heating EIR 0.2497) OA for residential units, corridors, amenity spaces are provided by Make Up Air Units MAU-1: 2,345 CFM, 112 MBH Cool Cap, 205 MBH Heat Cap., EER 11.8, 91% Et., MAU-2: 2,230 CFM, 112 MBH Cool Cap., 205 MBH Cap., EER 11.8, 91% Et. OA*: Outside Air

Other Heating System Description	**Heated only spaces:** System#9 - Heating & Ventilation - Warm Air Furnace, Electric	**Heated only spaces:** System#9 - Heating & Ventilation - Warm Air Furnace, Electric
Boiler Parameters	(2) Identical nat gas, nat draft HW boilers, 80% Et	N/A
Hot Water Loop and Pump Parameters	180F supply temp, 50F dT, 19 W/gpm	N/A
Cooling System Description	Table G3.1.1-3 Residential Units, Corridors, Amenity : System #1- Packaged Terminal Air Conditioner (PTAC) 9.51 EER*, Heating on Hot Water Boiler (80% Ec) (eQUEST cooling EIR): 0.3051	**Residential, Amenity Units:** VRF Air Source Heat Pump, 7 outdoor condenser units, indoor ducted fan coil units in each apartment 11.6 EER, 3.56 COP (eQUEST cooling EIR 0.2426) (eQUEST heating EIR 0.2497) OA for residential units, corridors, amenity spaces are provided by Make Up Air Units MAU-1: 2,345 CFM, 112 MBH Cool Cap, 205 MBH Heat Cap., EER 11.8, 91% Et., MAU-2: 2,230 CFM, 112 MBH Cool Cap., 205 MBH Cap., EER 11.8, 91% Et.
Chiller Parameters	N/A	N/A
Chilled Water Loop and Pump Parameters	N/A	N/A
Condenser Water Loop and Pump Parameters	N/A	N/A
Ventilation Exhaust/Supply Volume and System Description. (include code reference for baseline)	Continuous bath exhaust, 30 CFM, OA as per ASHRAE 62	Continuous bath exhaust, 30 CFM, balanced supply air from roof mounted make-up air units
Demand Control Ventilation	Not modeled (Info not avaiable)	same as baseline
Fan and Pump description	Supply and return fans operate continuously during occupied hours and cycle to meet heating and cooling loads during unoccupied hours	Same as baseline
Fan Power	As per ASHRAE 90.1-2013, Section G3.1.2.9, PTAC fan power = 0.0003 kW/cfm System 9 fan power: 0.0003 kW/CFM	Residential Units, Corridors, Amenity: 0.0003 kW/cfm Bathroom Exhaust: 30 CFM each, 0.0001 kW/CFM Heating only areas: 0.0003 kW/CFM
Economizer Control	Fixed dry bulb	Fixed dry bulb (assumed)
Domestic Water Heating (include system type, efficiency, and hot water demand)	Gas DHW, 80% Er, peak demand = 8.1 gpm	2 Central Condensing gas DHW system (Lochinvar, AWN 285), 95% AFUE, peak demand = 8.1 gpm 2" insulation on 119 gallon storage tanks (3) at 140F, 1" insulation on DHW piping

Energy Rates

Electricity (baseline)	$0.1560	$/kWh
Electricity (proposed)	$0.1560	$/kWh
Natural Gas (baseline)	$0.927	$/therm
Natural Gas (proposed)	$0.927	$/therm

Note:
Commerical Rates
Rates based on DOE EIA website

Appendix 4

TRANSPORTATION STUDY

Nitsch Engineering

Notice of Project Change
Transportation Component

Orient Heights Redevelopment Project

April 18, 2018

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1. INTRODUCTION

The transportation component of the Notice of Project Change (NPC) provides a reassessment 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 reassessment evaluates both the existing and projected traffic operations at key intersections surrounding the Project Site with and without the proposed redevelopment. The evaluations will utilize data collected on September 15, 2015; September 22, 2015; December 15, 2015; January 31, 2018; and March 16, 2018. To assess weekday morning and evening peak hour impacts associated with the Orient Heights Redevelopment Project, the 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.

2. PROJECT SITE AND SURROUNDINGS

Partnering with the Boston Housing Authority (BHA) and the East Boston CDC, the Proponent intends to revitalize and redevelop Orient Heights, a large housing development in East Boston. See Figure 1, Locus Map. As seen in Figure 2, Project Limits, the Project area is generally bound by Waldemar Avenue to the north, just south of Faywood Avenue to the south, just east of the intersection of Vallar Road at Faywood Avenue to the east, and private sites/Orient Avenue to the west. The Massachusetts Bay Transportation Authority's (MBTA) 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 to the east of the Project Site.

3. PROJECT DESCRIPTION

The original Boston Planning and Development Agency (BPDA) Board-approved Project involved the construction of new two- to five-story buildings in a combination of mid-rises (194 units) and townhouses (179 units). A total of 373 new housing units were 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 (approximately 42 units) to create a revitalized mixed-income community.

The original Project also included 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 of the hair-pin turn on Faywood 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.

The Revised Project eliminates the 42 non-public housing units from the redevelopment program, and further reduces the number of units at Vallar Road by shifting 30 units to Waldemar Avenue. The Revised Program also eliminates the Vallar Road extension to Waldemar Avenue, and proposes a combination of approximately 265 off-street and on-street parking spaces (approximately 0.80 spaces per residential unit). The existing 5,200 square foot community center is proposed to be renovated and a new 1000 gross square foot community center will be constructed, a net gain of 1000 square feet of community space. The Project will provide parking for 331 bicycles for residents and visitors.

The new project includes the following modifications to Faywood Avenue and Vallar Road with the objective of improving safety and 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, if requested by the City;
2. Widening the hair-pin turn on Faywood at Orient Avenue within the BPDA property for enhanced safety, if required;
3. Reconfiguring the intersection of Vallar Road and Faywood Avenue for better sight lines, and enhanced pedestrian safety; and
4. Widening and rebuilding Vallar Road to meet City of Boston Complete Streets Guidelines.

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.

3.1 STUDY AREA

The primary area of study encompasses Faywood Avenue between Crestway Road and Orient Avenue, and includes the intersecting streets of Vallar Road, Orient Avenue, and Crestway Road, as well as Waldemar Avenue and Walley Street. See Figure 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).

11-hour Turning Movement Count (TMC) data was collected at the following intersections:

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

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 assessed 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 seven-year horizon from 2018, 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 general background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the Project Site;
- The Build (2025) Scenario 1 – One-way Faywood Avenue includes specific travel demand forecasts for the Project; and
- The Build (2025) Scenario 2 – Two-way Faywood Avenue 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.

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.

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 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.

Montmorenci Avenue

Montmorenci Avenue is functionally classified by MassDOT as a local roadway and a Neighborhood Residential Street under the City of Boston Complete Streets Guidelines. The roadway is approximately 0.2 miles in length and runs one-way in the west-east direction with its western terminus at Orient Avenue and its eastern terminus at Drumlin Road. The land use along the roadway is primarily residential. Montmorenci Avenue is maintained by the City of Boston and has no posted speed limit.

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 1,000 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.

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 the northbound 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 the 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. Crosswalks and pedestrian ramps are present at the intersection on both sides of Faywood Avenue approaching from the west and both sides of Crestway Road, though 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. The Orient Avenue right-turn and Waldemar Avenue operate freely with no control and the 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 a travel lane in each

direction. Parking is unrestricted on the south side of the roadway and restricted during the snow emergencies 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 and a travel lane in each direction. 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.

4.3 CRASH SUMMARY

Crash data available from MassDOT for the three most available recent years – 2013 to 2015 – 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 1 – Crash Summary. Morning and afternoon peak hours were assumed to be 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM respectively. A copy of the crash data is included in the Appendix.

As indicated on Table 1, two crashes were reported in the vicinity of the Orient Heights Redevelopment from 2013 to 2015, one occurred on Waldemar Avenue at Crestway Road, the other at Feywood Avenue at Crestway Road.

Table 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	Peak Hours[i]	Wet/Icy Condi-tions
Waldemar Avenue at Crestway Road	2013	0	0.33	0	0	0	0	0	0	0	0	0	0%	0%
	2014	1		0	0	0	1	0	0	0	1	1	0%	0%
	2015	0		0	0	0	0	0	0	0	0	0	0%	0%
Faywood Avenue at Crestway Road	2013	0	0.33	0	0	0	0	0	0	0	0	0	0%	0%
	2014	0		0	0	0	0	0	0	0	0	0	0%	0%
	2015	1		1	0	0	0	0	0	1	0	0	0%	0%
Orient Avenue at Montmorenci Avenue	2013	0	0.00	0	0	0	0	0	0	0	0	0	0%	0%
	2014	0		0	0	0	0	0	0	0	0	0	0%	0%
	2015	0		0	0	0	0	0	0	0	0	0	0%	0%
Waldemar Avenue at Orient Avenue	2013	0	0.00	0	0	0	0	0	0	0	0	0	0%	0%
	2014	0		0	0	0	0	0	0	0	0	0	0%	0%
	2015	0		0	0	0	0	0	0	0	0	0	0%	0%
Total	ALL	2		1	0	0	1	0	0	1	1	1	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.; [i]Occurred between 7-9am or 4-6pm

In terms of severity, one reported property damage only and one reported a fatality. In terms of the type of collision, one reported a head on and one reported as other. Neither of the collisions occurred during wet/icy conditions or during peak hours.

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 Recorder Count (ATR) Data

Precision Data Industries, LLC (PDI) of Berlin, Massachusetts 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 ATRs 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 2. Additional detail is available in the Appendix.

Table 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 11-hour Turning Movement Count (TMC) data at the following intersections:

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

TMC data was collected on Wednesday, January 31, 2018, and Monday, March 16, 2018 all from 7:00 AM – 6:00 PM. During the count, vehicles, bicycles, and pedestrians were counted. Figure 3, 2018 Existing Traffic Volumes, presents the 2018 Existing Peak Hour Vehicle Volumes and Figure 4, 2018 Existing Pedestrian & Bicycle Volumes, presents the 2018 Existing Peak Hour Pedestrian and Bicycle Volumes. A copy of the traffic count data is included in the Appendix.

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.

4.5 SEASONAL ADJUSTMENT

Nitsch Engineering used the MassDOT 2013 Weekday Seasonal Adjustment Factors to establish if the traffic counts needed to be seasonally adjusted. The data set is included in the Appendix.

MassDOT 2013 Weekday Seasonal Factors

For the MassDOT 2013 Weekday Seasonal Factors, the composition of the study area falls within "U4-7 – Urban Arterials, and Collectors." Counts within Group U4-7 collected during the month of January are equal to the average counted volume, and counts collected during March experience 2% higher than average counted volumes.

Seasonal Adjustment Summary

The MassDOT 2013 Weekday Seasonal Factors for the months of January, March and September were all higher than the annual average. In order to present conservative traffic volumes in this study, Nitsch Engineering made no reduction in the counted volumes.

4.6 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 3 shows the LOS criteria for signalized and unsignalized intersections.

Table 3 – Level of Service Conditions for Intersections

Signalized Intersections		Unsignalized 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

4.7 EXISTING TRAFFIC OPERATIONS

Nitsch Engineering analyzed the existing 2018 traffic operations at the study intersections. Table 4 summarizes the 2018 existing condition traffic operations.

Table 4 – Level of Service Summary – 2018 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 Ave at Vallar Rd	Faywood Ave WB - TR	0.08	0.0	A	0	0.10	0.0	A	0
	Vallar Rd SE - LR	0.05	9.3	A	4	0.05	9.5	A	4
Faywood Ave at Crestway Rd	Faywood Ave EB - LT	0.01	3.5	A	1	0.01	3.4	A	1
	Crestway Rd SE - LR	0.14	9.0	A	12	0.18	9.2	A	16
Waldemar Ave at Crestway Rd	Waldemar Ave EB - RT	0.05	0.0	A	0	0.08	0.0	A	0
	Waldemar Ave WB - TL	0.03	1.5	A	2	0.04	2.7	A	3
	Crestway Rd NW - LR	0.04	10.8	B	4	0.05	10.9	B	4
Orient Ave at Waldemar Ave/Walley St	Waldemar Ave SB - LTR	0.00	0.0	A	0	0.00	0.0	A	0
	Walley St NB - LTR	0.06	2.6	A	5	0.06	3.3	A	5
	Walley St SW - TR	0.01	11.9	B	1	0.01	11.6	B	0
	Orient Ave EB - L	0.11	12.9	B	9	0.13	12.1	B	11
	Orient Ave EB - TR	0.13	9.1	A	11	0.16	9.3	A	15
Orient Ave at Montmorenci	Orient Ave EB - TL	0.05	0.0	A	0	0.04	0.0	A	0
	Orient Ave WB - RT	0.01	8.7	A	1	0.02	8.6	A	2

[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; [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 4 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.

4.8 EXISTING PARKING AND CURB USE

On-street parking and curb side use was inventoried along the study area roadways. Figure 5, Parking and Restrictions, 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;
- Northerly segment of Orient Avenue at the intersection of Faywood Avenue at Orient Avenue; and
- Southerly segment of Faywood Avenue at the intersection of Faywood Avenue at Crestway Road.

Residential permit parking exists on the easterly segment of Crestway Road. The rest of the on-street parking along the study area roadways consists of unrestricted parking. Table 5 summarizes the existing parking (on-street and off-street) along the Project Site.

Table 5 – Existing Parking Summary

Off-street		On-street		Total Existing
#	Street	#	Street	
8	Waldemar	46	Waldemar	
8	Waldemar	37	Vallar N	
17	Vallar Center	38	Vallar S	
11	Faywood	35	Faywood N	
		42	Faywood S	
44		198		**242**

4.9 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 6 – 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 6, Public Transportation and Zip Car Locations illustrates the available bus and other transportation services adjacent to the Project Site.

4.10 EXISTING PEDESTRIAN FACILITIES

Sidewalks are provided on both sides of all study intersections except on the 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 the 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 on January 31, 2018 and are included in the Appendix. Figure 4 illustrates the 2015 Existing AM and PM peak-hour pedestrian movement counts.

4.11 EXISTING BICYCLE FACILITIES

The Project Site is conveniently located within a mile of 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 — 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 4 illustrates the 2018 Existing AM and PM peak-hour bicycle turning movement counts at the study intersection of Faywood Avenue and Vallar Road. Detailed bicycle counts are provided in the Appendix.

4.12 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 6 and summarized in Table 7, Zipcar has two locations in the vicinity of the Project Site with a combined total of four vehicles within the study area.

Table 7 – Car Sharing Services -Zipcars

Facility Location	Number of Vehicles
St. Joseph & Lazarus Church (59 Ashley Street)	1
Orient Heights T Station	3
Total	**4**

5. FUTURE CONDITIONS

Nitsch Engineering used the 2018 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 2018 traffic volumes seven years in the future to the horizon year (2025) using 0.5% 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.

5.1 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 8 depicts the traffic volumes and the calculated growth rate for the given period for each station.

Table 8 – 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 daily traffic volume for the entire given calendar year.
Source: Massachusetts Department of Transportation (MassDOT)

Table 8 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 BPDA, we elected to use a 0.5% annual increase in traffic over the seven-year design period for this Project.

5.2 ADDITIONAL DEVELOPMENT

Nitsch Engineering researched the BPDA 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:

415 McClellan Highway

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 a 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 Project Notification Form (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 Blue Line 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 Suffolk Downs' proposal. As a result, Suffolk Downs decided to close in October 2014.

The Suffolk Downs Redevelopment Project involves redevelopment of the 161-acre site. The Project will include development of a mixed-use neighborhood, and a 40-acre publicly accessed open space system.

Wynn Resort in Everett

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 Redevelopment project area. The Orient Heights Redevelopment 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.

5.3 PLANNED ROADWAY IMPROVEMENTS

Nitsch Engineering contacted MassDOT and the City of Boston and researched various news outlets to establish any planned roadway 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.

5.4 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 2018 existing traffic volumes to yield the 2025 No-Build traffic volumes. Bicycle and pedestrian traffic counts were not projected to future year 2025. Figure 7 shows the 2025 Future No-Build Traffic Volumes used in the traffic analysis and Table 9 summarizes the result of the 2025 No-Build traffic analyses.

Table 9 – 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 Ave at Vallar Rd	Faywood Ave WB - TR	0.08	0.0	A	0	0.10	0.0	A	0
	Vallar Rd SE - LR	0.05	9.3	A	4	0.05	9.5	A	4
Faywood Ave at Crestway Rd	Faywood Ave EB - LT	0.01	3.4	A	1	0.02	3.9	A	1
	Crstway Rd SE - LR	0.14	9.0	A	12	0.18	9.3	A	17
Waldemar Ave at Crestway Rd	Waldemar Ave EB - RT	0.06	0.0	A	0	0.08	0.0	A	0
	Waldemar Ave WB - TL	0.03	1.5	A	2	0.04	2.8	A	3
	Crestway Rd NW - LR	0.05	10.9	B	4	0.05	11.0	B	4
Orient Ave at Waldemar Ave/Walley St	Waldemar Ave SB - LTR	0.00	0.0	A	0	0.00	0.0	A	0
	Walley St NB - LTR	0.06	2.7	A	5	0.06	3.3	A	5
	Walley St SW - TR	0.01	12.0	B	1	0.01	11.4	B	1
	Orient Ave EB - L	0.12	13.1	B	10	0.14	12.3	B	12
	Orient Ave EB - TR	0.13	9.1	A	12	0.17	9.3	A	15
Orient Ave at Montmorenci	Orient Ave EB - TL	0.06	0.0	A	0	0.04	0.0	A	0
	Orient Ave WB - RT	0.01	8.7	A	1	0.02	8.6	A	2

[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; [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 9 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 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 at Orient Avenue for enhanced safety;
3. Reconfiguring the intersection of Vallar Road and Faywood Avenue for better sight lines and enhanced pedestrian safety; and
4. Widening and rebuilding Vallar Road to meet City of Boston Complete Street Guildelines.

Trip Generation

Nitsch Engineering used the Institute of Transportation Engineers (ITE) publication Trip Generation, 10th 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 Redevelopment consists of two components:

- 331 new low-rise apartments; and
- Two community centers totaling 6,200 square feet.

Trip generation rates for the low-rise apartments were based on Land Use Code (LUC) 220 (Multifamily Housing -Low-Rise). 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 10 summarizes the total Project generated person trips for the daily, morning, and evening peak hours.

Table 10 – Site Generated Person Trips

TYPE	EXISTING TRIPS		PROPOSED TRIPS		NET CHANGE (PERSON TRIPS)
	LUC 220 – Multifamily Housing LR	LUC 495 - Community Center	LUC 220 – Multifamily Housing LR	LUC 495 - Community Center	
Weekday Daily[a]	2806	154	2806	184	30
Entering	1403	77	1403	92	15
Exiting	1403	77	1403	92	15
Weekday Morning Peak	211	9	211	11	2
Entering	59	6	59	7	1
Exiting	152	3	152	4	1
Weekday Evening Peak	253	12	253	14	2
Entering	149	5	149	6	1
Exiting	104	7	104	8	1

As illustrated in Table 10, approximately 30 net new daily person trips (15 trips in and 15 trips out) are expected to be generated by the Project, with only two net new person trips (one in and one out) during the AM peak hour and two net new person trips (one in and one out) during the PM peak hour.

The 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 30 daily trips. Table 11 summarizes the anticipated travel mode splits for the Project.

Table 11 – 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 11 and applying them to the total site-generated person trips presented in Table 10, the non-auto site generated trips were developed and are summarized in Table 12.

Table 12 – Additional Non-Auto Site-Generated Trips

Time Period	Walking/Bicycle Trips	Transit Trips	Total Non-Auto Trips
Weekday Daily			
Enter	5	2	7
Exit	5	2	7
Total	10	4	14
Weekday AM			
Enter	1	0	1
Exit	0	0	0
Total	1	0	1
Weekday PM			
Enter	0	0	0
Exit	1	0	1
Total	1	0	1

Auto Trips

The number of 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 13 summarizes the anticipated additional site-generated auto trips for the Project.

Table 13 – Additional Site-Generated Auto Trips

Time Period	Additional Auto Trips
Weekday Daily	
Enter	8
Exit	8
Total	16
Weekday AM	
Enter	0
Exit	1
Total	1
Weekday PM	
Enter	1
Exit	0
Total	1

Project Trip Distribution

The Project vehicle trips (from Table 13) were distributed and assigned to the surrounding roadway network based on existing travel patterns at the study area intersections, relocation of 30 units from Vallar Road to Waldemar Avenue, and the following two alternatives:

Alternative 1. Faywood Avenue remains one-way west of Vallar Road; and

Alternative 2. The existing one-way section of roadway between Vallar Road and Montmorenci Avenue that consists of Faywood Avenue and Orient Avenue becomes two-way.

The Alternative 1 project trip distributions are illustrated in Figure 8. The Project trip assignments are illustrated in Figure 9.

The Alternative 2 project trip distributions are illustrated in Figure 11. The Project trip assignments are illustrated in Figure 12. For Alternative 2, the volumes were further redistributed to account for a two-way Faywood Avenue, and pass-by cut through traffic.

5.6 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 for both alternatives. The analysis for the 2025 Build conditions uses the same methodology as the 2018 Existing and 2025 No-Build conditions analyses.

Figure 10 shows the 2025 build volumes used in the traffic analysis for Alternative 1, and Table 14 summarizes the result of the 2025 Build traffic analyses for Alternative 1.

Figure 13 shows the 2025 build volumes used in the traffic analysis for Alternative 2, and Table 15 summarizes the result of the 2025 Build traffic analyses for Alternative 2.

Table 14 – Level of Service Summary – 2025 Build Alternative 1 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 Rd	Faywood Ave WB - TR	0.07	0.0	A	0	0.09	0.0	A	0
	Vallar Rd SE - LR	0.04	9.3	A	3	0.04	9.4	A	3
Faywood Ave at Crestway Rd	Faywood Ave EB - LT	0.01	3.2	A	1	0.01	3.9	A	1
	Crstway Rd SE - LR	0.13	9.0	A	11	0.17	9.2	A	15
Waldemar Ave at Crestway Rd	Waldemar Ave EB - RT	0.05	0.0	A	0	0.08	0.0	A	0
	Waldemar Ave WB - TL	0.03	1.3	A	2	0.04	2.5	A	3
	Crestway Rd NW - LR	0.04	10.7	B	3	0.04	10.9	B	3
Orient Ave at Waldemar Ave/Walley St	Waldemar Ave SB - LTR	0.00	0.4	A	0	0.00	0.0	A	0
	Walley St NB - LTR	0.06	2.7	A	5	0.06	3.4	A	5
	Walley St SW - TR	0.01	12.0	B	1	0.01	11.8	B	0
	Orient Ave EB - L	0.12	13.2	B	10	0.14	12.4	B	12
	Orient Ave EB - TR	0.13	9.2	A	11	0.17	9.3	A	15
Orient Ave at Montmorenci	Orient Ave EB - TL	0.06	0.0	A	0	0.04	0.0	A	0
	Orient Ave WB - RT	0.01	8.6	A	1	0.02	8.6	A	2

[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; [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 in Table 14, under the 2025 Build – Alternative 1 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 9 (2025 No Build) and Table 15 (2025 Build - Alternative 1) reveals that the proposed development has very little or no impact to the studied intersections.

Table 15 – Level of Service Summary – 2025 Build Alternative 2 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 Rd	Faywood Ave EB - LT	0.00	0.0	A	0	0.00	7.6	A	0
	Faywood Ave WB - TR	0.05	0.0	A	0	0.06	0.0	A	0
	Vallar Rd SE - LR	0.05	9.3	A	3	0.04	9.2	A	3
Faywood Ave at Crestway Rd	Faywood Ave EB - LT	0.01	3.3	A	1	0.01	3.9	A	1
	Crstway Rd SE - LR	0.11	9.0	A	9	0.15	9.1	A	13
Waldemar Ave at Crestway Rd	Waldemar Ave EB - RT	0.05	0.0	A	0	0.08	0.0	A	0
	Waldemar Ave WB - TL	0.01	0.6	A	1	0.02	1.3	A	1
	Crestway Rd NW - LR	0.06	10.6	B	5	0.04	10.3	B	3
Orient Ave at Waldemar Ave/Walley St	Waldemar Ave SB - LTR	0.00	0.4	A	0	0.00	0.0	A	0
	Walley St NB - LTR	0.12	4.3	A	10	0.08	4.5	A	7
	Walley St SW - TR	0.02	14.0	B	1	0.00	12.2	B	0
	Orient Ave EB - L	0.13	11.0	C	11	0.15	13.0	B	13
	Orient Ave EB - TR	0.13	12.0	A	12	0.17	9.4	A	15
Orient Ave at Montmorenci	Orient Ave NB - RT	0.04	0.0	A	0	0.04	0.0	A	0
	Orient Ave SB - TL	0.03	8.8	A	3	0.06	8.8	A	5

[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; [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 in Table 15, under the 2025 Build – Alternative 2 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 9 (2025 No Build) and Table 15 (2025 Build – Alternative 2) reveals that the proposed development has very little or no impact at all to the studied intersections.

5.7 PARKING

The Project, when complete, will provide 197 on-street, and 68 off-street parking spaces.

5.8 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 331 bicycle storage spaces on-site. 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.

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 four categories:

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

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:

- Within the BHA property widen the street at the existing hairpin turn as it connects to Orient Avenue, as required;
- If requested by the City of Boston, modify the width of the street between Orient Avenue and Vallar Road to permit safe two-way travel (Alternative 2); and
- Reconfigure the intersection at Vallar Road to achieve a 90-degree "T"-type intersection.

Vallar Road

- Widening and rebuilding Vallar Road to meet City of Boston Complete Street Guidelines.

Intersection improvements will also be included to comply with the Americans with Disabilities Act (ADA) guidelines.

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 Project 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 the following 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 Packages:
  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. The 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.

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 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.

7. SUMMARY

Partnering with the Boston Housing Authority (BHA) and East Boston CDC, the Proponent intends to revitalize and redevelop Orient Heights, a large housing development in East Boston. A total of 331 new housing units are proposed, replacing obsolete 1950s-era BHA public housing units on a one-to-one basis. The project reduces the number of units at Vallar Road by shifting 30 units to Waldemar Avenue, and proposes a combination of approximately 265 off-street and on-street parking spaces (approximately 0.80 spaces per residential unit). The Project includes renovating the existing community center (5,200 square feet GFA), and constructing a new additional community center containing 1,000 square feet GFA, a net gain of 1000 square feet. The Project will provide parking for 331 bicycles for residents and visitors.

The future conditions were examined based on the following two alternatives:

Alternative 1. Faywood Avenue remains one-way west of Vallar Road; and

Alternative 2. The existing one-way section of Faywood Avenue between Vallar Road and Montmorenci Avenue/Orient Avenue would change to two-way roadway.

Per the contents and analysis of this study, the revised program for the Orient Heights development project will have minimum impacts on the intersections within the project area for both alternatives, and all intersections will continue to operate at the acceptable LOS for the build conditions. Furthermore, shifting 30 units to Waldemar Avenue will reduce the number of vehicular trips through the community and lessen impacts. The roadway improvements, widening, and reconfigurations will improve traffic safety for drivers, pedestrians, and bicyclists in this neighborhood. Nitsch Engineering recommends Alternative 2 consisting of making Faywood Avenue two-way, because it provides the neighborhood with a better access for traffic coming from the southern side of East Boston (Bennington Street).

Figure 1
Locus Map
Source: MassGIS

Figure 2
Project Limits
Source: MassGIS

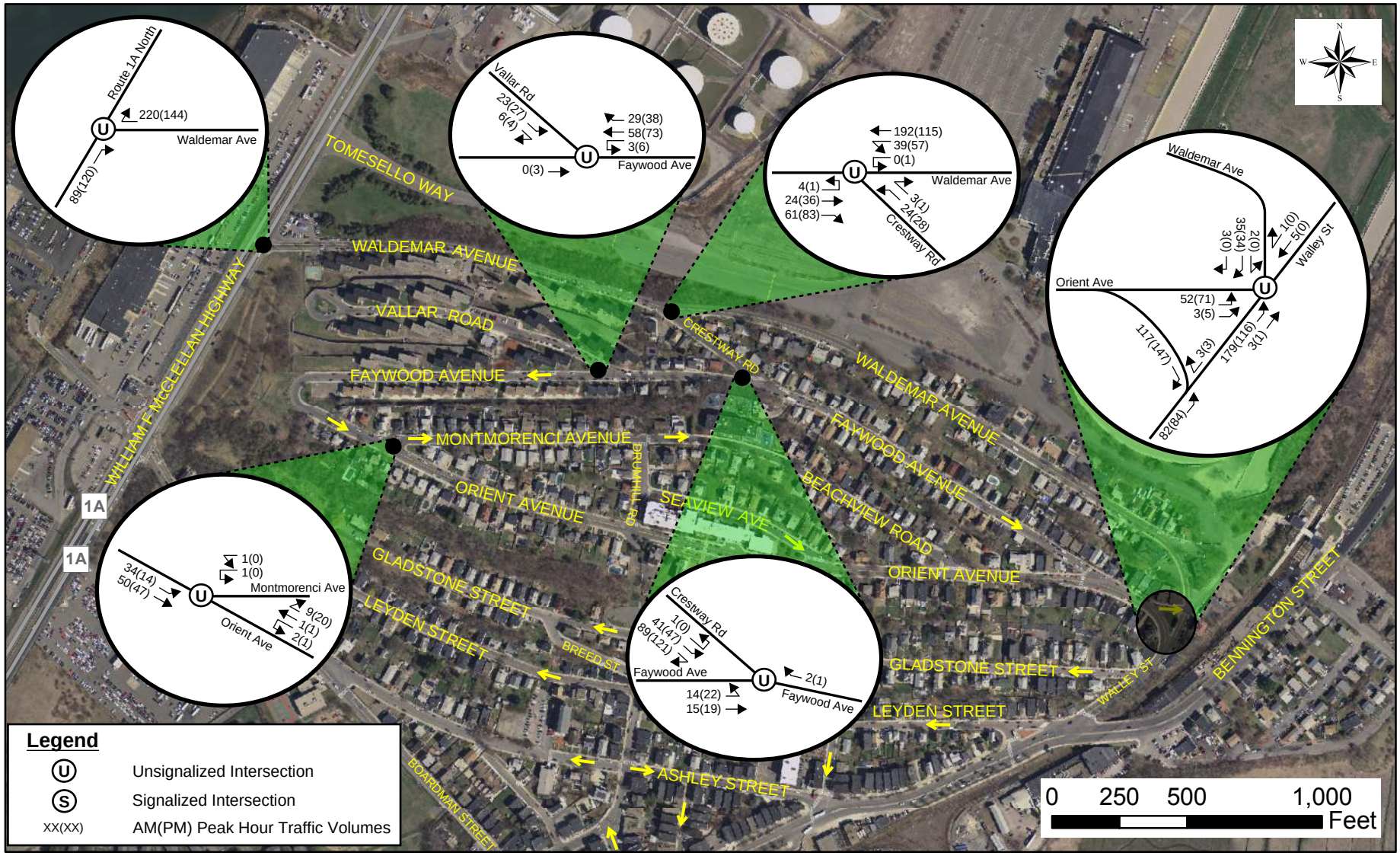

Figure 3
2018 Existing Traffic Volumes
Source: MassGIS

Figure 4
2018 Existing Pedestrian & Bicycle Volumes
Source: MassGIS

Figure 5
Parking and Restrictions
Source: MassGIS

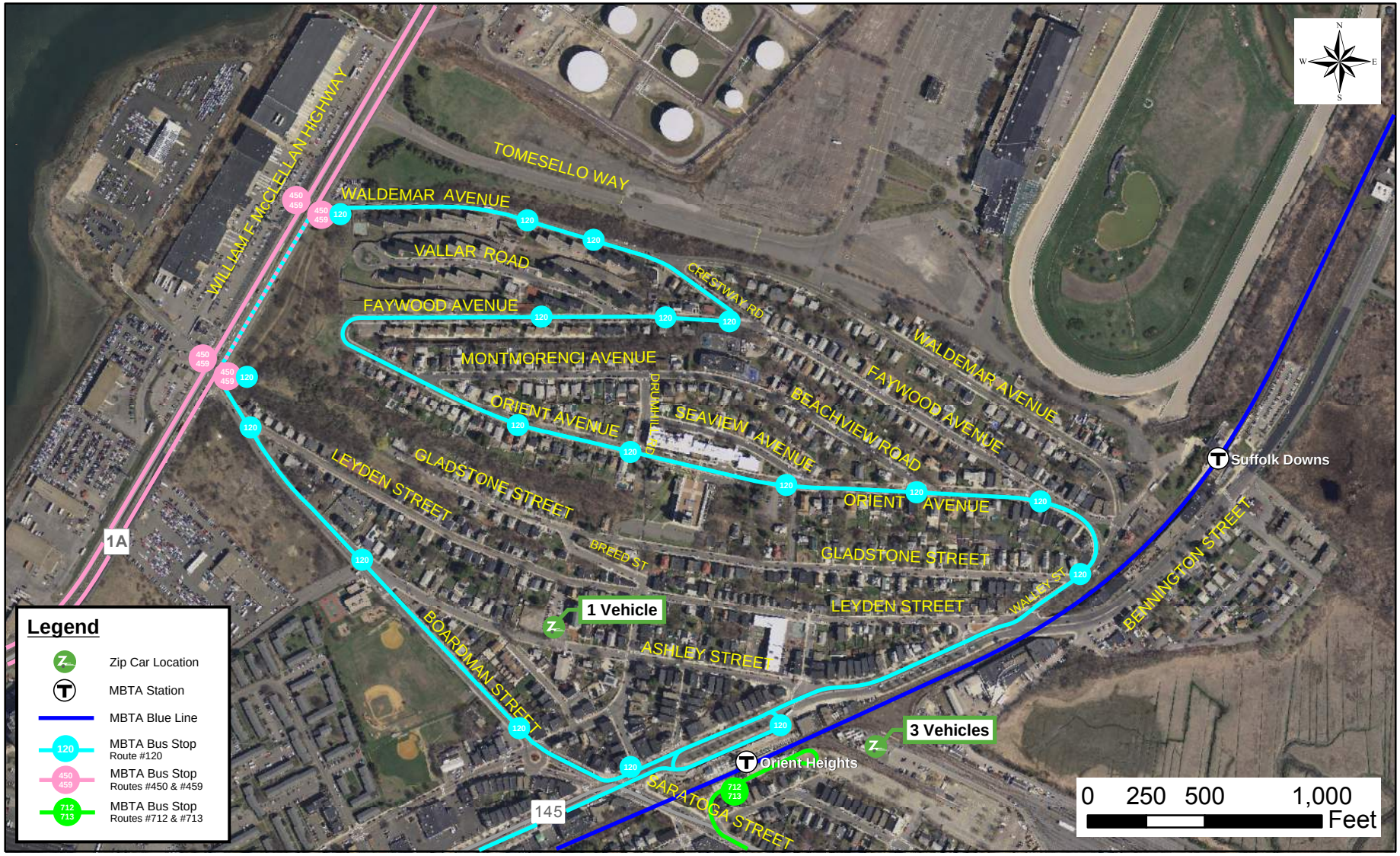

Figure 6
Public Transportation and Zipcar Locations
Source: MassGIS

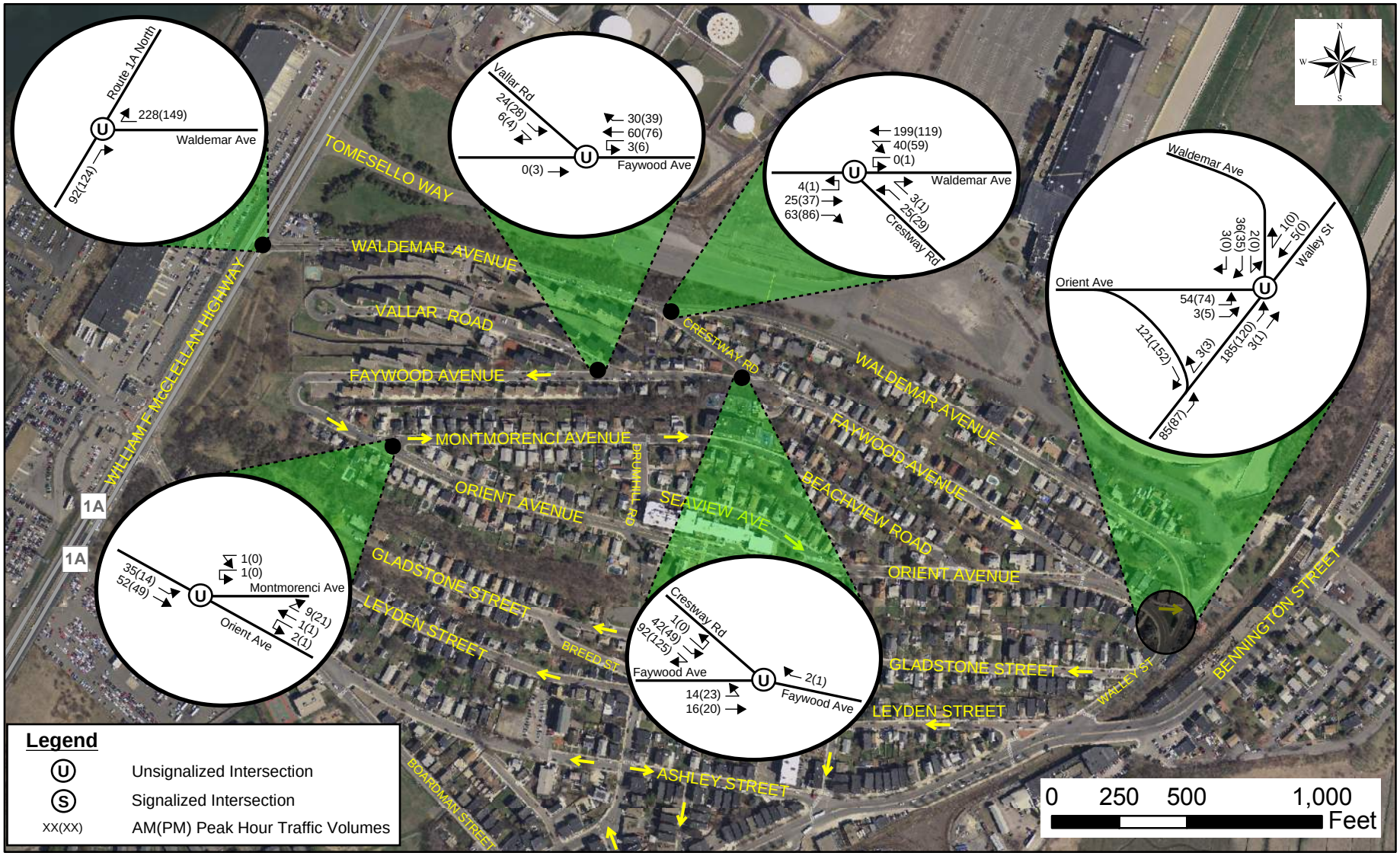

Figure 7
2025 Future No-Build Traffic Volumes
Source: MassGIS

Figure 8
Trip Distribution – Alternative 1
Source: MassGIS

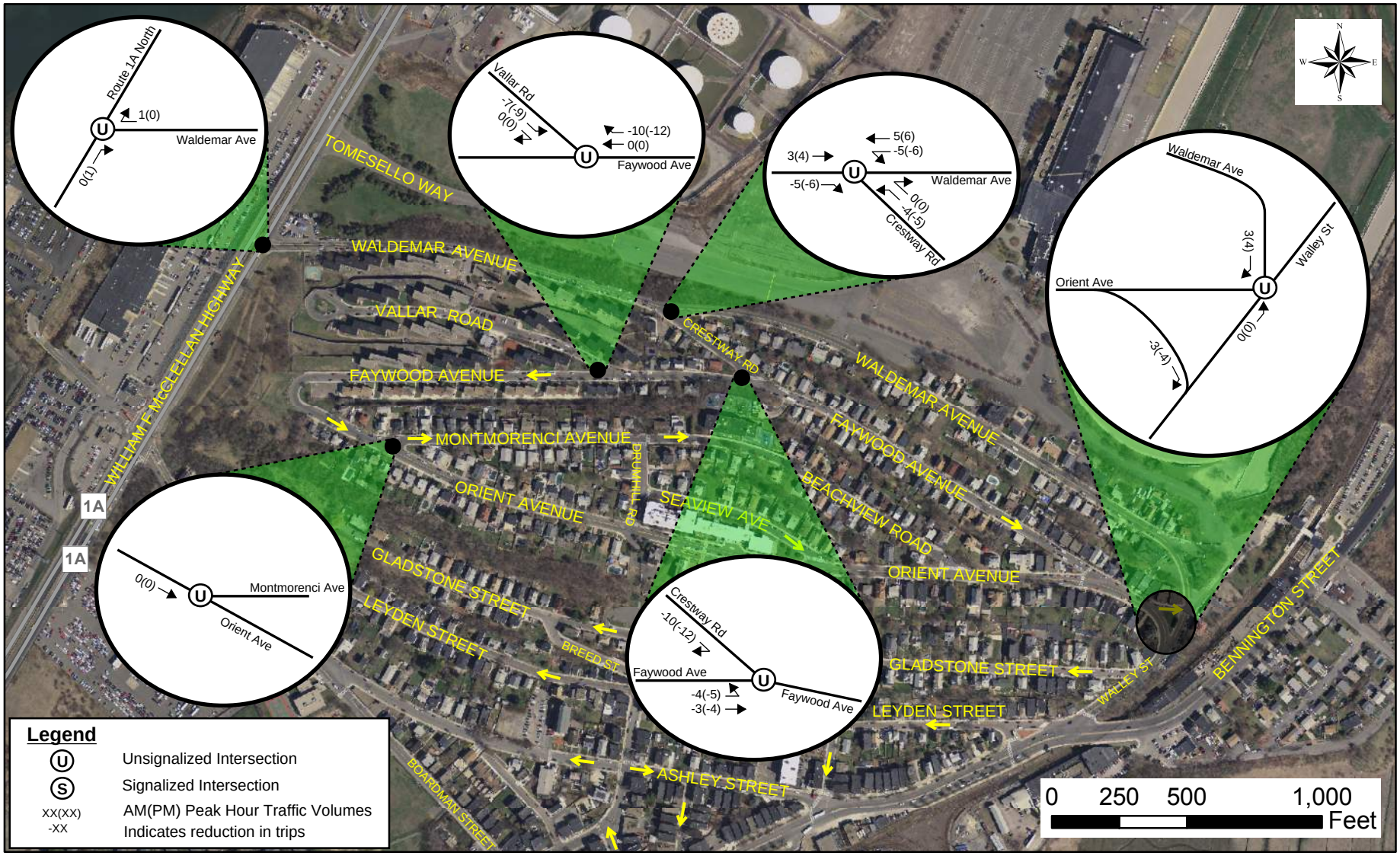

Figure 9
Trip Assignment – Alternative 1
Source: MassGIS

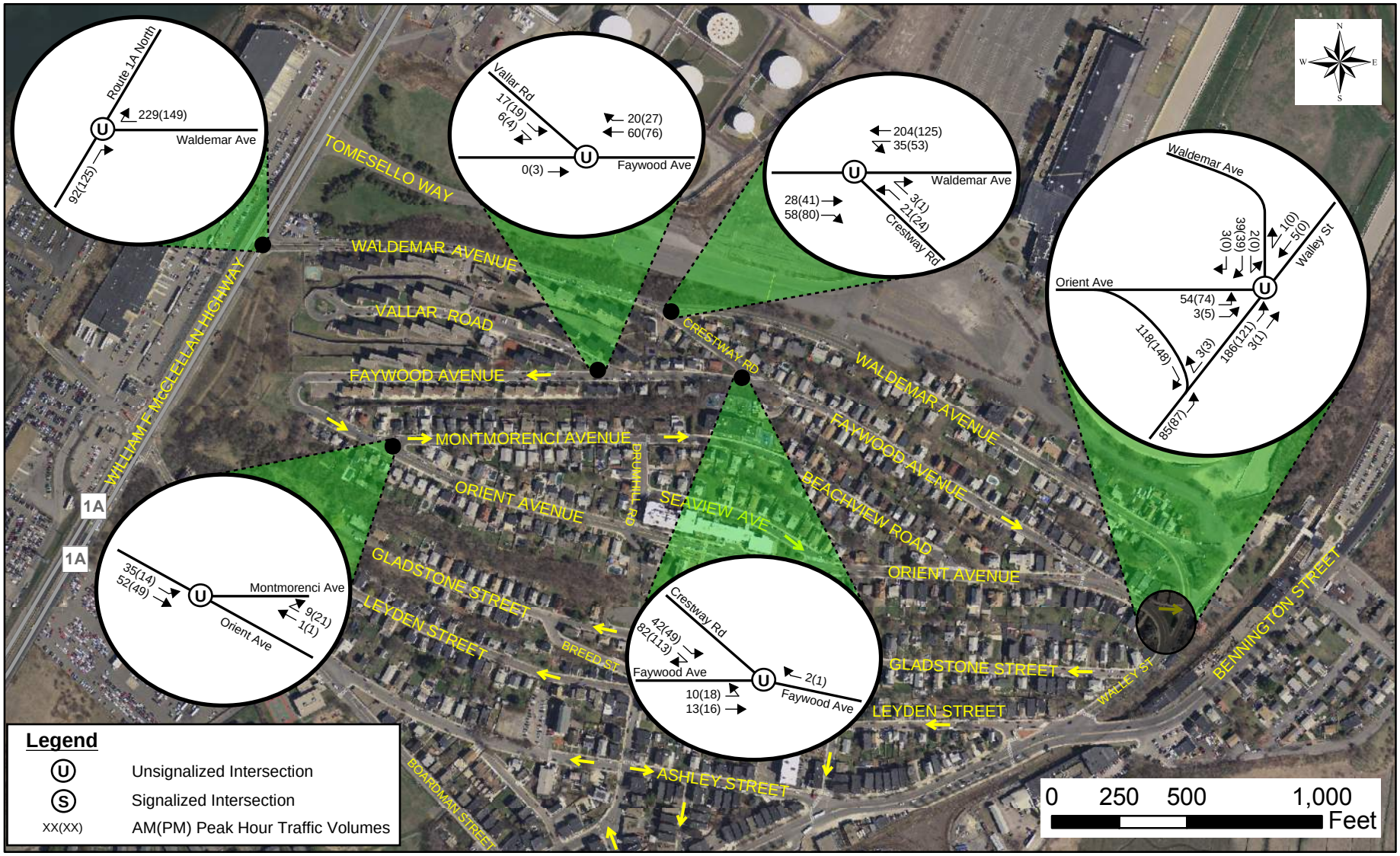

Figure 10
2025 Future Build Traffic Volumes – Alternative 1
Source: MassGIS

Figure 11
Trip Distribution – Alternative 2
Source: MassGIS

Figure 12
Trip Assignment – Alternative 2
Source: MassGIS

Figure 13
2025 Future Build Traffic Volumes – Alternative 2
Source: MassGIS