



Expanded Project Notification Form

600 Harrison

Submitted to:
Boston Redevelopment Authority
Pursuant to Article 80 of the
Boston Zoning Code

Submitted by:
New Atlantic Development

November 12, 2013

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1.0 PROJECT SUMMARY

1.1 Project Identification

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Location: 600 Harrison Avenue, Boston (South End) MA 02118

1.2 Project Team

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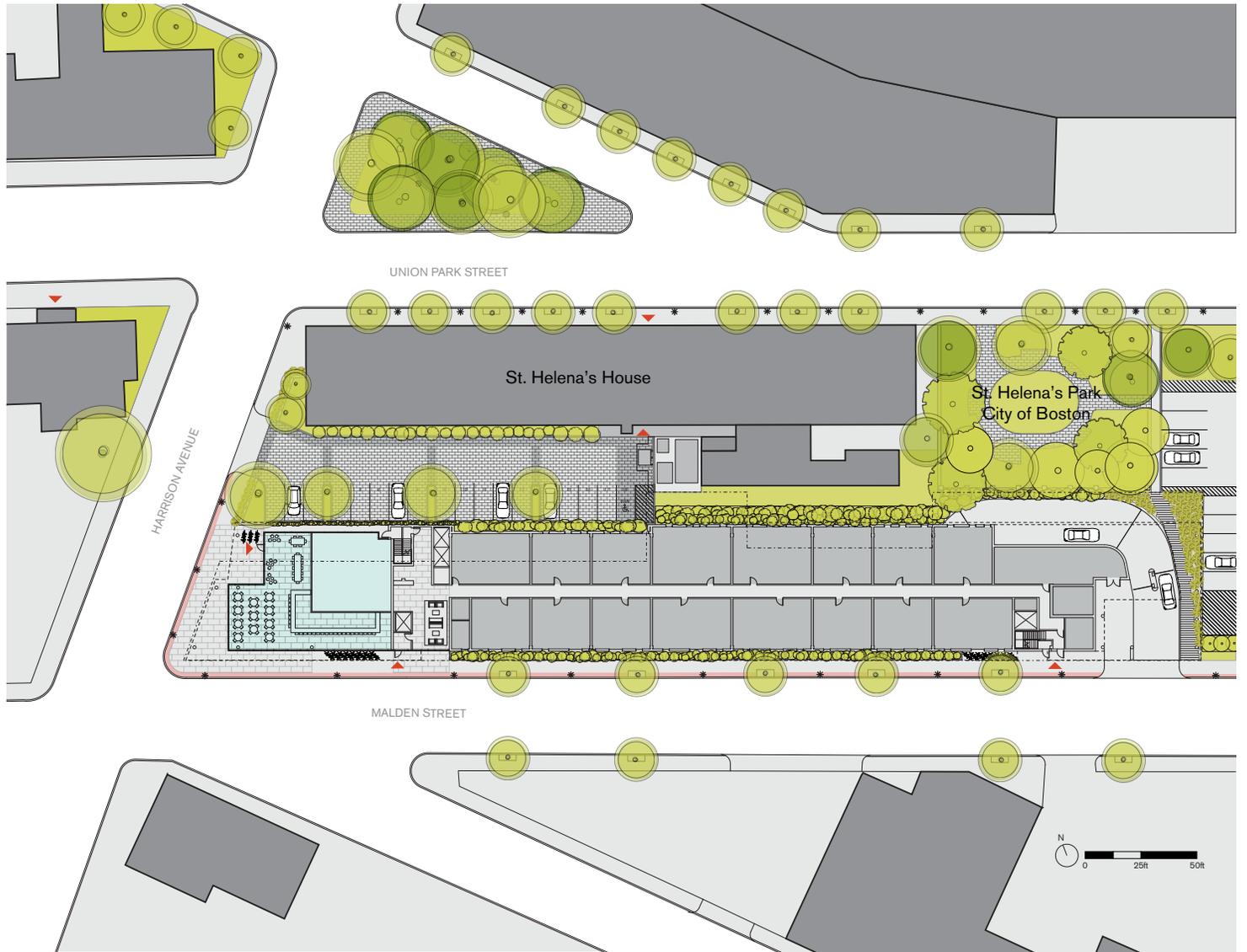
1.3 Project Overview

New Atlantic Development Corporation (the project “Proponent”) is proposing to construct an exciting new mixed-use residential project for Boston’s vibrant South End Neighborhood. The development will consist of a multifamily apartment building totaling approximately 193,264 square feet of gross floor area, which will contain approximately 160 dwelling units and incorporate typical multifamily accessory uses such as a leasing office, resident fitness facility and gathering spaces, and rooftop outdoor amenity space, active ground-floor uses, and accessory and public parking. The approximately 3,600-square foot, ground-floor retail area dedicated to commercial uses may include typical small-scale, neighborhood amenities such as a bakery, a restaurant (including a small or large take-out restaurant), or a local retail shop. A three-level below-grade parking structure is proposed that will contain approximately 236 spaces. Certain of the Project’s off-street parking spaces may be leased to a car-sharing service such as Zipcar.

1.4 Project Site & Surrounding Area Description

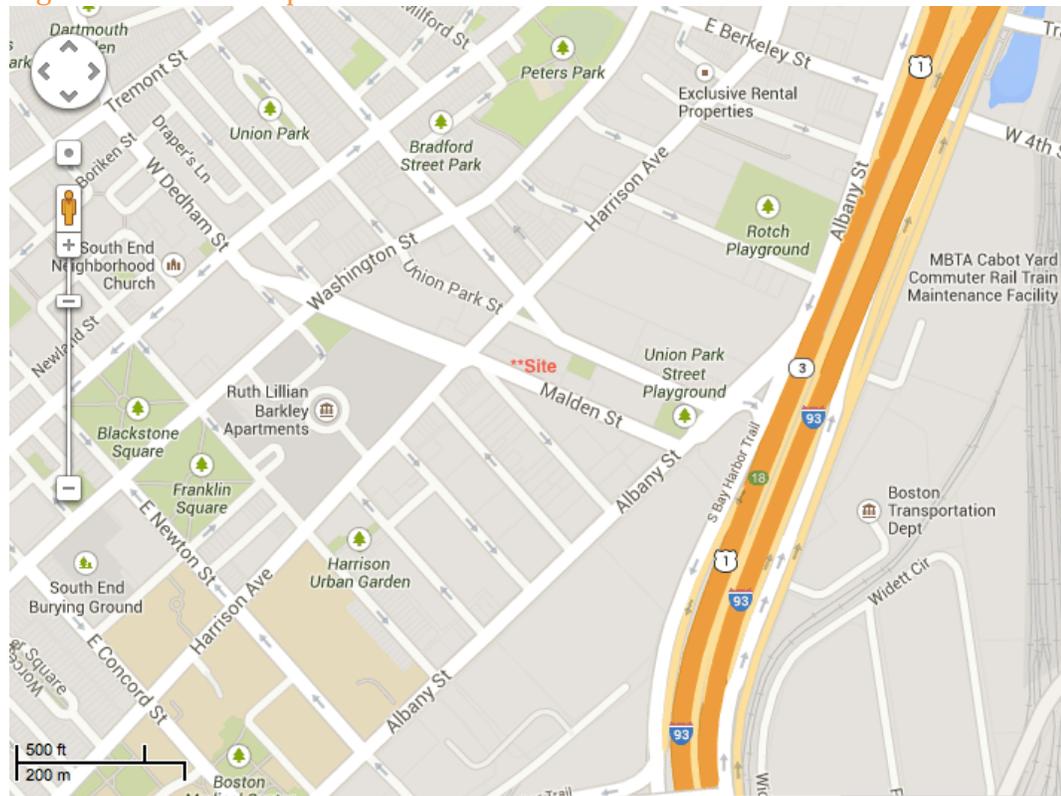
The proposed project is to be located at the corner of Harrison Avenue and Malden Street in Boston’s South End District. 600 Harrison Avenue is an approximately 25,496 square-foot parcel that runs along Malden Street from the corner of Harrison Avenue to the Boston Water & Sewer Commission facility at 120 Malden Street. This property is currently occupied by a surface parking lot owned by the Roman Catholic Archdiocese of Boston (“RCAB”), which supports the operations of the adjacent Cathedral of the Holy Cross. The project structure will also extend across an irregular

Figure 1-1 Site Plan



property boundary into an area of ground-leased land within the contiguous property located at 89 Union Park Street, which contains the existing six-story St. Helena’s House senior housing community. Together, 600 Harrison Avenue and the pertinent portions of the 89 Union Park Street parcel constitute the “Site.” The Site is further identified as Boston Assessing parcel nos. 0801100000, 0801100001, 0801101000, 0801102000, 0801103000, and 0801080000.

Figure 1-2 Locus Map



The uses surrounding the Site include the aforementioned St. Helena’s House to the North, a Boston Water and Sewer Commission facility to the East, the Boston Fire Department Firehouse – Engine 3 across Malden Street to the South, and the Cathedral of the Holy Cross site across Harrison Avenue to the West.

1.5 Development Program

The Project will include the construction of a single new seven-story residential building totaling approximately 193,264 gross square feet, which includes approximately 3,600 of ground-level retail space and approximately 160 apartments. The building will include a range of resident amenities, including a lobby with co-working space and management offices, a fitness

Figure 1-3 Malden Street Rendering at Dusk



Figure 1-4 St. Helena's House Parking



center, a penthouse level common entertaining area, and rooftop open space amenities. The apartments will range in size from a 600 square foot studio to a 1,600 square foot three bedroom penthouse apartment, with an average apartment area of approximately 853 square feet. Twenty-one of the apartments will be affordable in compliance with the Mayor's Inclusionary Development Policy.

The retail component of the project has been designed to activate the corner of Harrison Avenue, where it intersects with Monsignor Reynolds Way and Malden Street, with a spacious glass-fronted two-story high retail space that spills out to an open plaza at the corner. This space will provide a warm and inviting beacon of activity at this important corner, effectively announcing the southern gateway to the bustling SOWA district, and adding to the public use destinations along the Harrison Avenue Cultural Corridor. Additional Site amenities include an inviting mid-block connector, allowing pedestrians to connect through the long block from Malden Street to St. Helena's Park and Union Park Street.

The Proponent is proposing to construct a three-level underground garage containing approximately 236 parking spaces, enclosed secure bicycle parking, and mechanical spaces. The vehicular entrance and exit to and from the below-grade parking is located mid-block at the east end of the Site, to avoid any unnecessary impact to vehicles queuing at the intersections at the ends of the block. A covered off-street loading bay is located next to the parking entrance/exit, and a service elevator is located just inside the building from the loading bay to facilitate resident move-in and move-out. Eighty of the below-grade parking spaces will be made available for rent to residents of the building, providing a ratio of 0.5 parking spaces per dwelling unit. Seventy of the below-grade parking spaces will be under the control of the adjacent Cathedral of the Holy Cross, who will use them as ancillary parking for staff, parishioners, Cathedral High School faculty and staff, and those worshipping or attending events at the Cathedral. In addition to the 70 spaces reserved for Cathedral use, 86 public parking will be provided - to be used by employees and patrons of area businesses, residents in the neighborhood who do not have private parking, and tourists and visitors to the vibrant SOWA district. The ancillary and public parking areas will be served by a separate passenger elevator located in a separate, public elevator lobby. This will separate public and private vertical circulation, to ensure the privacy and security of the residents of the building.

Additional improvements associated with the Project include the reconstruction and re-landscaping, at the sole expense of the Proponent, of the existing 18-space parking lot serving the neighboring St. Helena's House, an affordable residential community serving the elderly. The new parking lot will incorporate high quality paving materials, tree islands, a low wall

Figure 1-5 Malden Street Daytime Rendering



Figure 1-6 Malden Street Cross-Block Connector



defining the entrance to the parking lot from Harrison Avenue, and a new enclosure to more effectively screen the St. Helena's House dumpster, emergency generator, and mechanical equipment. In addition to the reconstruction of the parking lot, the Proponent will be constructing, at its sole expense, a stormwater infiltration system for the benefit of the St. Helena's House site, bringing this neighboring building up to the current requirements of the Groundwater Conservation Overlay District and the Boston Water and Sewer Commission.

1.6 Public Benefits

New Atlantic Development has a 20-year history of constructing and rehabilitating buildings in the City of Boston with the goal of creating and preserving vibrant and diverse communities. The public benefits to result from the 600 Harrison project include:

- Creation of an attractive, contemporary building where a surface parking lot currently exists;
- Enhancing vitality and safety to the immediate neighborhood by increasing the number of residents, visitors, and activity at an important corner in the Harrison Avenue Cultural Corridor;
- Enhancing the southern "gateway" to the vibrant SOWA district with an active retail corner and plaza area at the intersection of Harrison Avenue with Monsignor Reynolds Way and Malden Street;
- Creation of a substantial number of construction and permanent jobs;
- Increasing tax revenue to the City of Boston;
- Creation of 160 new apartments to address the city's shortage of quality, rental housing, including 21 units of affordable rental housing;
- Creating additional public parking to support area businesses and residents;
- Creating an attractive and inviting mid-block connector linking Malden Street and the neighborhood south and east of the site to the St. Helena's Park and SOWA district to the north;
- Reducing stormwater run-off with below-grade stormwater infiltration systems for not only the new building and related site areas, but also the adjacent St. Helena's House property;
- Generation of financial support for the adjacent Cathedral of the Holy Cross, the neighborhood's most significant historic asset.

2.0 PUBLIC COORDINATION

2.1 Public Review Process

The Proponent has already begun reaching out to community stakeholders to inform them about the proposed redevelopment and solicit their comments and questions outside of the formal public review process. This informal outreach process will continue now that the Expanded Project Notification Form has been filed with the Boston Redevelopment Authority. Following is a list of community stakeholders with which the Proponent has already met, or will meet in the following weeks, in connection with its sharing of information about the proposal outside the formal public review process:

Resident Groups and Neighborhood Associations:

- Residents of St. Helena’s House
- Residents of 27 Wareham Lofts
- Tenants of 535 Albany Street
- Tenants of 560 Harrison Avenue
- Residents of the Ruth Barkley Apartment Community (Cathedral)
- Blackstone Franklin Square Neighborhood Association
- Union Park Neighborhood Association
- Old Dover Neighborhood Association
- Residents of Union Park Street east of Harrison Avenue

Civic, Business, Environmental, Religious & Historical Groups:

- Boston Groundwater Trust
- Washington Gateway Main Street, Inc.
- South End Historical Society
- Boston Preservation Alliance
- South End Business Alliance
- GTI Properties
- Cathedral of the Holy Cross

Elected Officials:

- Mayor Thomas M. Menino
- City Councilor Bill Linehan
- City Councilor John Connolly
- City Councilor Ayanna Pressley
- State Representative Byron Rushing
- State Senator Sonia Chang-Diaz

City Agencies:

- Boston Parks Department

- Department of Neighborhood Development
- Boston Water and Sewer Commission
- South End Landmark District Commission

2.1.1 City of Boston Article 80 Review Process

This Expanded Project Notification Form is being submitted to the BRA as part of the Article 80B Large Project Review process, and initiates the public review process for the proposed 600 Harrison project. A scoping session and a community meeting are expected to occur during the public comment period and prior to the issuance of a Scoping Determination. The following section identifies the agencies that will review the project in conjunction with the permitting of the project.

2.1.2 South End Landmarks Commission

The project will be subject to review by the South End Landmark District Commission as the project is located in the local South End Landmark District. The Proponent will seek a Certificate of Appropriateness.

2.1.3 Boston Civic Design Commission

It is anticipated that the project will be subject to schematic design review by the Boston Civic Design Commission (BCDC) under Article 28. As part of this process, the Proponent will meet with the BCDC to review and discuss the project plans. The BCDC will provide a recommendation to the BRA Board.

2.1.4 Boston Zoning Board of Appeals

The project will seek zoning relief as detailed in Section 1.5

2.1.5 Boston Water and Sewer Commission

The project will require site plan approval as well as approval of a general service application, and review for compliance with the requirements of Art. 32, or the Groundwater Conservation Overlay District provisions. Once approved, permits will be sought for sewer and cross connections.

2.1.6 Boston Groundwater Trust

Proponents have already met with representatives of the Boston Groundwater Trust to discuss the project, and will be sharing detailed

information with BGT as the civil/geotechnical design work ensues and stormwater infiltration system details are prepared for BWSC filing.

2.1.7 Boston Parks Commission

Because the proposed 600 Harrison project abuts a public park, the project will require review by the Boston Parks Commission in connection with potential impacts on St. Helena's Park.

2.2 Compliance with Boston Zoning Code

Map 1P of the Boston Zoning Maps indicates that the 600 Harrison Avenue portion of the Site, which extends along Malden Street, is located within the EDA (Economic Development Area) Central subdistrict of the South End Neighborhood District, Article 64 of the Boston Zoning Code (the "Code"). The portion of the Project that extends into the SHH Parcel is located within an MFR, or Multifamily Residential, subdistrict. The entire Site is additionally located within the Restricted Parking Overlay District and the Groundwater Conservation Overlay District. Since the Project involves new construction in excess of 50,000 square feet of gross floor area, it will be subject to the provisions of Article 80B of the Code, Large Project Review. The Project is additionally subject to the provisions of Article 37 of the Code, Green Buildings.

The Project abuts both Harrison Avenue and Malden Street. The definition of "Lot Line, Front," in Code Article 2A states in pertinent part that "[t]he owner of a lot abutting on two or more streets may designate as the front lot line whichever of the two widest streets he chooses." For zoning review purposes, the Appellant has designated the Harrison Avenue street line as the Project's front lot line.

2.2.1 Boston Zoning Code Relief

Based on the requirements of the Code applicable to the Project and Site, the Project will require several variances and conditional use permits. The variances needed for the Project are as follows:

Use

The Project includes an approximately 3,600-square foot ground-floor commercial component, a portion of which will be located within the MFR subdistrict. This commercial area will contain uses that are forbidden within the MFR subdistrict. Such Project uses that are designated as forbidden with the MFR subdistricts include: restaurant; both "small" (*i.e.*, occupying no

more than 2,500 square feet of gross floor area) and “large” (occupying more than 2,500 square feet of gross floor area) take-out restaurant; and local retail use.

Building Height

All Project facades will comply with the 70-foot building height (measured as the vertical distance from grade to the top of the highest point of the roof beams) in both subdistricts where the Site is located, but certain of the Project’s roof access head houses, which may be deemed to contain occupiable space, may reach up to 84 feet in height. In addition, pursuant to Code Section 64-34, “[r]oof structures, headhouses, and mechanical equipment normally built above the roof and not designed or used for human occupancy shall be included in measuring the building height if the total area of such roof structures . . . exceeds in the aggregate . . . ten percent (10%) of the total roof area of the building, if such total roof area is greater than 3,300 square feet.” The total area of the project’s rooftop mechanical areas slightly exceeds ten percent of the building’s rooftop area. A variance for building height is required for both of the above reasons.

Floor Area Ratio

The construction proposed in connection with the Project will not only require relief for FAR within the 600 Harrison Avenue lot, but will also increase the nonconforming pre-existing FAR of the SHH Parcel to the extent indicated.

Usable Open Space

The extensive open space that the Project will supply to residents on the roof of the building technically does not qualify as “usable” within the EDA subdistrict: there, only outdoor space located on “balconies of main buildings, or on the roofs of wings of main buildings, or on the roofs of accessory buildings” may be counted as “usable open space.” The Project has requested a variance with respect to all required usable space in both subdistricts, however, to have flexibility in the allocation and location of the building’s rooftop resident amenity area. In addition, construction of the Project will reduce the existing usable open space within the 89 Union Park Street lot from the preexisting nonconforming figure of 6,107 square feet, to not less than 4,000 square feet.

Rear Yard Setback

Within the MFR subdistrict, a rear yard setback of 20 feet is required. The Inspectional Services Department has determined that the existing St.

Helena’s House building fronts on Union Park Street, and the rear lot line for the 89 Union Park Street parcel is therefore its boundary with the 600 Harrison Avenue property. Because the portion of the Project located at 89 Union Park Street will be constructed within that lot’s mandatory 20-foot rear-yard setback area, this aspect of the Project requires a variance.

Screening and Buffering

ISD has determined that the Project does not comply with the screening and buffering requirements of Code Section 64-33 applicable to a parking facility within an EDA abutting a residential subdistrict or residential use.

Two or More Buildings on One Lot

ISD has determined that the Project involves the creation of “two or more Main Buildings other than Dwellings” on “one Lot,” contrary to Code Section 64-37.10.

Cathedral Parish and Public Parking Spaces

Code Section 64-36, Off-Street Parking and Loading Requirements, provides that “[f]or any Proposed Project that is subject to . . . Large Project Review, required off-street parking spaces and off-street loading facilities shall be determined through such review in accordance with the provisions of Article 80” (emphasis added). As noted above, the Project is subject to Large Project Review. Hence, no relief is required for the Project’s off-street accessory residential parking. The Project will also, however, incorporate underground spaces to replace 70 of the existing 79 spaces used by the adjacent Cathedral Parish at 600 Harrison Avenue. These underground spaces will be used both to support operations at the nearby Cathedral of the Holy Cross and Cathedral High School faculty and staff as the surface lot currently does, and for parking by neighborhood institutions, businesses, and residents during times the spaces are not needed by the Cathedral Parish. In addition to these 70 spaces, 86 public parking spaces will be provided. Table C to Article 64 designates a parking garage as a conditional use within the EDA Central subdistrict, but Footnote 19 to this use states that this designation is “[p]rovided that the parking facility is not open to the general public and otherwise conforms to the City of Boston’s ‘Downtown Park Freeze’ administered by the Air Pollution Control Commission.” A variance for the Project’s parking garage use is thus required in this subdistrict. Pursuant to Table A to Article 64, a parking garage is a forbidden use within the MFR subdistricts.

Car Sharing Spaces

The Project will include one or more spaces designated for use by Zipcar or a similar car-sharing service. ISD has determined that because this Project component is not a listed use, it is forbidden, and requires a variance within both zoning subdistricts.

Parking Space Dimensions

The Project will involve reconstructing the preexisting nonconforming surface parking spaces serving the St. Helena's House facility at 89 Union Park Street in order to install groundwater recharge tanks for both the Project and the St. Helena's House building. These parking spaces today do not comply with the requirements of Code subsections 64-36.5. After the Project's groundwater recharge systems have been completed, these parking spaces will be replaced at their current sizes.

Dwelling to Rear of Another

Portions of the Project will be located at the rear of the SHH Parcel, and thus to the rear of the existing St. Helena's House. A conditional use permit pursuant to Code Section 64-37.9 is therefore required for this aspect of the Project.

Restricted Parking Overlay District

Pursuant to Table C, a parking garage is a conditional use within the EDA Central subdistrict. In addition, Code Section 3-1A.c provides that, "[i]n a restricted parking district, off-street parking facilities, including parking lots, parking garages, and parking accessory or ancillary to any use other than Use Items numbered 1 through 15, shall be conditional uses."

GCOD

Because the Project is located within the Groundwater Conservation Overlay District ("GCOD"), it will require a conditional use permit pursuant to Code Article 32. The Project will not only meet the GCOD compliance obligations associated with the new building identified as 600 Harrison Avenue, but will further involve the construction of an underground rainwater storage and recharge system sized to meet Article 32's rainfall capture standards for the existing St. Helena's House facility at 89 Union Park Street.

2.3 Summary of Required Permits and Approvals

The Proponent expects to secure many local, state and federal permits and approvals prior to commencement of construction. The following is a list of the anticipated permits/approvals:

Federal

- Environmental Protection Agency – NPDES Notice of Intent for Construction Dewatering
- Environmental Protection Agency – NPDES Notice of Intent for Stormwater Management
- Environmental Protection Agency – Remediation General Permit

State

- Department of Environmental Protection – Notice of Construction
- Department of Environmental Protection – Underground Injection Control Permit
- Department of Environmental Protection – BRP WP 73 Compliance Certificate

Local

- Boston Redevelopment Authority – Article 80 Large Project Review
- Boston Redevelopment Authority – Cooperation Agreement
- Boston Transportation Department – Transportation Access Plan Agreement
- South End Landmarks Commission – Design Review approval
- Boston Civic Design Commission – Recommendation Pursuant to Article 80
- Boston Water & Sewer Commission – Site Plan Approval
- Boston Water & Sewer Commission – General Service Application
- Boston Water & Sewer Commission – Sewer Connection Permit
- Boston Water & Sewer Commission – Cross Connection Permit
- Boston Inspectional Services Department – Building Permit
- Boston Zoning Board of Appeals – Zoning Relief
- Boston Zoning Board of Appeals – Article 32 Compliance
- Boston Department of Public Works – Curb Cut Application
- Boston Public Improvements Commission – Site Plan Approval
- Boston Parks Commission Approval

3.0 URBAN DESIGN COMPONENT

3.1 Introduction

The proposed design of the Project will have many positive impacts on the surrounding neighborhood. Key components such as active ground-floor uses, cross-block connections, carefully located vehicle access and proximity to public transportation have all been thoughtfully considered to reduce the negative impacts and enhance the positive impacts of the Project. 600 Harrison will meet the Massachusetts Stretch Energy Code, and achieve a high level of energy efficiency and environmental performance. The Project team is familiar with the recommendations and principals contained in the Harrison-Albany Strategic Plan of June 2012 (hereafter referred to as the “Strategic Plan”) and the South End Landmark District Standards and Criteria and has taken every opportunity to integrate these principals into the Project.

3.2 Design Principles

3.2.1 Urban Design Principles

Place-Making Opportunities – Small Business, Visual Access to Ground Floor Use

In keeping with the Strategic Plan’s stated goal of bolstering place-making opportunities along Harrison Avenue near the intersection of Harrison and Union Park, the Project proposes to provide approximately 3,600 square feet of commercial/retail space at the highly visible intersection of Harrison and Malden Streets. The retail entry is set back from both Harrison Ave and Malden Street creating a public plaza at the corner, which would be ideal for outdoor dining or other uses increasing the public profile and urban realm opportunities on the Site. The retail storefronts are proposed to be constructed of glass curtain wall providing high visual access to the ground floor uses. This will also further enhance and anchor the Harrison Avenue Creative Use Corridor in the Sowa district of the Strategic Plan.

The residential lobby is located along Malden street near the Harrison Avenue intersection with glass storefront windows, accent lighting and a canopy to mark the entry and bring a pedestrian scale to the streetscape. A second pedestrian entrance is located further south to draw pedestrian activity along the currently underused Malden Street sidewalks. With its 160 apartments and ground floor retail the Project will create a strong pedestrian presence at its edges.

Figure 3-1 Harrison Avenue Corridor Uses



Recreational and Green Space Connections

The Project will house indoor storage for approximately 120 bicycles to encourage their use as primary transportation, and will also accommodate an additional 32 covered bike rack spaces at grade at several points around the perimeter of the Project. The Project's location provides residents with quick and direct access to the South Bay Harbor Bike Trail, which connects Dudley Square to the waterfront. The Project is also proximate to both St Helena's Park and Union Park Street Playground. Each park is distinct in its nature, one contemplative, the other active, and benefits the Project's open space needs. The Project also proposes to create an extension of the St Helena's Park with a through-block connection incorporating a landscaped path that connects the park to Malden Street and links into the Secondary Green Corridor Access as recommended by the Strategic Plan. With a large number of apartments facing St. Helena's park, the Project will help to secure the park by increasing its visibility and public oversight.

Streetscape/Open Space

As stated above the Project will provide a public plaza at the corner of Harrison and Malden. This will be in keeping with the Strategic Plan's stated goal of improving the pedestrian realm and will create a usable, accessible street level activity hub that anchors the southwest end of the Creative Use Corridor in the SOWA district. The sidewalk along the Malden Street edge of the Site will be replaced and additional street trees will be planted single file along the street. The sidewalk dimension along Malden Street will vary from 8' - 12' and will generally comply with the Type B sidewalk as set forth in the Strategic Plan. The storefront at the ground level retail is set back 4' from the building façade above to create a 12' wide sidewalk along this higher intensity use. Adjacent to ground level apartment farther down Malden Street, a 4' wide irrigated planter separates the 8' sidewalk from the building face to provide a privacy buffer and further vegetate the streetscape. Along both sidewalks the building will also maintain a continuous street wall as recommended by the Strategic Plan's Guidelines for New Buildings.

Creative Corridor Uses – Support/Small Business Opportunity

The approximately 3,600 square feet of commercial/retail space at the corner of Harrison and Malden Streets will offer a new opportunity for a small business which is either a Creative Use or in support of the Creative uses in the area.

Figure 3-2 Building Elevations



Proximity to Public Transit and Alternate Transportation

The Project will take full advantage of its proximity to public transit and is within close range of 6 different bus lines and the Silver Line. Additionally the Project plans to provide enclosed parking/storage for approximately 120 bicycles, and offers 32 spaces in bike racks around the perimeter of the building for guests and visitors. This will reduce overall trips generated from the Site and reduce pressures on the busy through-traffic moving along Wareham Street from the Back Bay and the South End toward the Expressway. Please refer to the Traffic narratives for more detailed information regarding this issue.

3.2.2 Building Exterior Design Principles

Summary

The Site sits within the South End neighborhood and is under the purview of the South End Landmark District Commission. Because the proposed building is detached new construction with the closest neighboring building 42 feet away, the Project falls within review parameters for New Construction -Category B structures. As such, the design team has approached the design of the facades as a contemporary interpretation of the historic vernacular. The facades of the buildings are driven by factors ranging from historic references to urban-scaled responses to adjacent conditions, as well as more sustainable criteria such as maximizing the benefits of the sun.

Scale and Bulk

The southeast side of Harrison Avenue was at one time part of Boston's industrial waterfront and was characterized by long brick dock buildings. Some of these dock buildings can still be found as one walks along Harrison Ave looking southeast. The scale and elongated shape of these buildings provides a meaningful historic precedent for our Site, which was at one time in a similar condition. That being said, the design remains mindful of the varying scales in the neighborhood and responds. The design treats the building as a series of smaller components which help to breakdown the scale of the structure while also being considerate of the buildings texture, relief, shadow lines and relationship to the sidewalk.

The height of the proposed Project falls into the 30'-70' range as set by the Landmarks Guidelines and it similar in height to its closest nearby building the St. Helena House which is a Project of similar bulk and use.

The Proposed Project will occupy the full width of its primary frontages on Harrison Avenue and Malden Street. The Project is on a corner lot and proposes to build out to the lot line along Harrison Avenue and Malden Street on the upper levels. It will however step back on the lower floors to create more useable public space along the sidewalks and at the corner in front of the proposed retail space. The setbacks of the Project on Harrison Avenue are intended to respect the current angled setback of the St. Helena House which reflect its location at the confluence of the two distinct South End street grids.

Materiality

The historic buildings in the neighborhood are primarily constructed of brick masonry and larger scaled stone masonry. Historically brick tends to be the material of the single-family rowhouses that line the ladder streets and the stone masonry tends to appear on more civic buildings. Within the facades of many of these buildings can also be found secondary panelized systems of painted wood or metal which form bays or groupings of windows. The Proponent is proposing a two-story base of masonry which will anchor the building at street level and serve as a durable yet textured street wall where it will have the most impact on the character of the sidewalk. The masonry base will have coursing, texture and tonality similar to adjacent buildings. The masonry base will be interrupted at key locations by a retail storefront and the residential entries with floor to ceiling glass on Malden Street as well as at the fenestration into the lower units. Above the second floor the long southern and northern facades are broken down into two main components clad in different materials. The most prominent corners at Harrison Ave and Malden Street and also facing St Helena's Park will deploy a carefully textured and detailed metal panel façade system which articulates the corners as separate and objectified from the body of the building. The balance of the building is proposed to be a more robust integrally colored composite panel system. The windows will be of anodized aluminum of a muted charcoal color.

Other Design Features

The windows of the building will have vertical dimensions greater than horizontal. They are similar in size and number to adjacent buildings. The building's residential entry will be recessed and will have a protective entry canopy marking the entrance. The buildings facades are broken down into three distinct massings. The longest facades of the building are proposed to be organized into vertically proportioned bays defined and separated by the alignment of the living area windows. The sidewalks will have a 24" perimeter strip of brick adjacent to the curb at the edge of sidewalk closest to the street. The sidewalks will then typically be concrete except at key

locations around the building. Specifically at the pedestrian plaza in front of the retail space, the area directly in front of the residential entry and at the mid-block pedestrian connector, the design team proposes to use an architectural pre-cast paver. Raised planters are proposed along Malden Street in front of the residential apartments, providing greater privacy but also softening the sidewalk environment with plantings. Any potential outdoor furniture located around the building will be of dark color and would most likely be located at the pedestrian plaza on Harrison Avenue allowing for potential outdoor dining. All utilities coming into the building will do so directly from the street under the sidewalk creating no new utility poles or overhead wires. The buildings transformer will be concealed within the building. Trash and recycling will be stored within the building until it is to be picked up.

3.3 Sustainable Design

The proposed design will meet the Massachusetts Stretch Energy Code as well as the Green Building LEED Certifiable requirements as set forth in Article 37 of the Boston Zoning Code; as envisioned, the Project should achieve a LEED Silver certifiable rating. The Site's unique location provides inherent sustainability benefits. Density, proximity to public transit, storm water mitigation as required by GCOD, bicycle storage, accommodation for fuel efficient vehicles are all part of the Site design. The heating and cooling energy demands will be reduced through high-performance insulation strategies, carefully selected glass specifications and reduced water use fixtures. The Project will provide internal space for trash and recycling and will divert much of the construction waste from landfills. Indoor air quality will be controlled through the use of an energy recovery ventilator providing tempered outdoor air to all habitable spaces as well as low emitting paints and sealants. Urban heat island effect will be mitigated through the use of light colored roofing materials as well as rooftop terraces with extensive planted areas. The Leadership in Energy and Environmental Design (LEED) for New Construction rating system will be used as a framework to track the various sustainable features of the Project. The system is broken down into the following categories: Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; Innovation in Design; and Regional Priority Credits.

Sustainable Sites

Construction Activity Pollution Prevention (Prerequisite): A construction activity pollution prevention plan is proposed to be developed and implemented during the construction phase.

Figure 3-3 LEED Checklist

		Y		2		N			
LEED 2009 for New Construction and Major Renovations									
Project Checklist									
600 Harrison Avenue Oct. 4									
21 3 2 Sustainable Sites Possible Points: 26									
Y	1	Prereq 1	Construction Activity Pollution Prevention						
	1	Credit 1	Site Selection						1
	5	Credit 2	Development Density and Community Connectivity						5
	1	Credit 3	Brownfield Redevelopment						1
	6	Credit 4.1	Alternative Transportation—Public Transportation Access						6
	1	Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms						1
	3	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles						3
	2	Credit 4.4	Alternative Transportation—Parking Capacity						2
	1	Credit 5.1	Site Development—Protect or Restore Habitat						1
	1	Credit 5.2	Site Development—Maximize Open Space						1
	1	Credit 6.1	Stormwater Design—Quantity Control						1
	1	Credit 6.2	Stormwater Design—Quality Control						1
	1	Credit 7.1	Heat Island Effect—Non-roof						1
	1	Credit 7.2	Heat Island Effect—Roof						1
	1	Credit 8	Light Pollution Reduction						1
3 1 6 Water Efficiency Possible Points: 10									
Y	4	Prereq 1	Water Use Reduction—20% Reduction						2 to 4
	2	Credit 1	Water Efficient Landscaping						2
	2	Credit 2	Innovative Wastewater Technologies						2 to 4
	3	Credit 3	Water Use Reduction						2 to 4
5 4 12 Energy and Atmosphere Possible Points: 35									
Y	1	Prereq 1	Fundamental Commissioning of Building Energy Systems						
Y	1	Prereq 2	Minimum Energy Performance						
Y	1	Prereq 3	Fundamental Refrigerant Management						
	5	Credit 1	Optimize Energy Performance						1 to 19
	7	Credit 2	On-Site Renewable Energy						1 to 7
	2	Credit 3	Enhanced Commissioning						2
	2	Credit 4	Enhanced Refrigerant Management						2
	3	Credit 5	Measurement and Verification						3
	2	Credit 6	Green Power						2
7 1 7 Materials and Resources Possible Points: 14									
Y	3	Prereq 1	Storage and Collection of Recyclables						1 to 3
	3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof						1 to 3
	1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements						1
	3	Credit 2	Construction Waste Management						1 to 2
	2	Credit 3	Materials Reuse						1 to 2
2 2 2 Materials and Resources, Continued									
Y	2	Credit 4	Recycled Content						1 to 2
	2	Credit 5	Regional Materials						1 to 2
	1	Credit 6	Rapidly Renewable Materials						1
	1	Credit 7	Certified Wood						1
10 4 1 Indoor Environmental Quality Possible Points: 15									
Y	1	Prereq 1	Minimum Indoor Air Quality Performance						
	1	Prereq 2	Environmental Tobacco Smoke (ETS) Control						
	1	Credit 1	Outdoor Air Delivery Monitoring						1
	1	Credit 2	Increased Ventilation						1
	1	Credit 3.1	Construction IAQ Management Plan—During Construction						1
	1	Credit 3.2	Construction IAQ Management Plan—Before Occupancy						1
	1	Credit 4.1	Low-Emitting Materials—Adhesives and Sealants						1
	1	Credit 4.2	Low-Emitting Materials—Paints and Coatings						1
	1	Credit 4.3	Low-Emitting Materials—Flooring Systems						1
	1	Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products						1
	1	Credit 5	Indoor Chemical and Pollutant Source Control						1
	1	Credit 6.1	Controlability of Systems—Lighting						1
	1	Credit 6.2	Controlability of Systems—Thermal Comfort						1
	1	Credit 7.1	Thermal Comfort—Design						1
	1	Credit 7.2	Thermal Comfort—Verification						1
	1	Credit 8.1	Daylight and Views—Daylight						1
	1	Credit 8.2	Daylight and Views—Views						1
3 Innovation and Design Process Possible Points: 6									
	1	Credit 1.1	Innovation in Design: Efficient Steel Construction						1
	1	Credit 1.2	Innovation in Design: Energy Star Appliances						1
	1	Credit 1.3	Innovation in Design: Specific Title						1
	1	Credit 1.4	Innovation in Design: Specific Title						1
	1	Credit 1.5	Innovation in Design: Specific Title						1
	1	Credit 2	LEED Accredited Professional						1
2 2 Regional Priority Credits Possible Points: 4									
	1	Credit 1.1	Regional Priority: SSC3						1
	1	Credit 1.2	Regional Priority: SSC6.1						1
	1	Credit 1.3	Regional Priority: SSC7.1						1
	1	Credit 1.4	Regional Priority: SSC7.2						1
51 15 28 Total Possible Points: 110									
Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110									

Site Selection (Credit 1): The site is located in a dense area of the South End with numerous public transportation, retail and open space amenities in close proximity. The current asphalt parking lot use is ideal for redevelopment.

Development Density (Credit 2): The site was previously developed and is located in a dense area of the South End with numerous public transportation, retail and open space amenities in close proximity

Brownfield Redevelopment (Credit 3): A soils analysis of the site has not been completed at the time of submission.

Alternative Transportation (Credits 4.1, 4.2, 4.3): The site is located less than a ¼ mile to the Silver Line and numerous MBTA local and crosstown buses. The Project proposes indoor secured bicycle storage well above the 15% of building occupants LEED requirement. The Project will investigate providing preferred parking for low-emitting and fuel-efficient vehicles.

Site Development (Credits 5.1 and 5.2): The Project proposes a partially vegetated roof and will explore using native or adapted vegetation that provides habitat and promotes biodiversity.

Stormwater Design (Credits 6.1, 6.2): The site is currently an impervious asphalt parking lot. The Project proposes a groundwater recharge program in compliance with the Groundwater Conservation Overlay District. The Project will investigate stormwater mitigation strategies to reduce discharge and suspended solids.

Heat Island Effects (Credits 7.1, 7.2): The Project will reduce the heat island effect. The proposed parking is located underground to reduce the non-roof heat island contribution. The roof will be a combination of high-albedo materials and vegetation to reduce the roof heat island contribution.

Water Efficiency

Water Use Reduction (Prerequisite 1, Credits 3.1, 3.2): The Project proposes to specify low-flow, high-efficiency toilets, lavatories and showers to reduce water consumption.

Energy and Atmosphere

Fundamental Commissioning (Prerequisite 1): The Project's mechanical and electrical systems are proposed to be commissioned in accordance with the Massachusetts Stretch Energy Code.

Minimum Energy Performance (Prerequisite 2): The Project proposes to develop an energy model in accordance with ASHRAE 90.1 and the Massachusetts Stretch Energy Code. The mechanical, electrical and building envelope systems are proposed to result in a 20% energy use reduction from the baseline example.

Refrigerant Management (Prerequisite 3): The Project does not propose any CFC-based refrigerants.

Optimize Energy Performance (Credit 1): The Project proposes to develop an energy model in accordance with ASHRAE 90.1 and the Massachusetts Stretch Energy Code. The mechanical, electrical and building envelope systems are proposed to result in a 20% energy use reduction from the baseline example.

Enhanced Commissioning (Credit 3): The Project will investigate enhanced commissioning of the mechanical and electrical systems.

Enhanced Refrigerant Management (Credit 4): The Project will investigate selecting mechanical equipment that minimizes or eliminates refrigerants following the LEED credit thresholds.

Materials and Resources

Storage and Collection of Recyclables (Prerequisite): The Project proposes recycling collection in a central closet on each residential floor.

Construction Waste Management (Credits 2.1, 2.2): The Project proposes to divert at least 75% of construction and demolition debris from landfills.

Recycled Content (Credits 4.1, 4.2): The Project proposes to include specifications for materials with high recycled content.

Regional Materials (Credits 5.1, 5.2): The Project proposes to include specifications for materials extracted and manufactured within 500 miles of Boston, MA.

Certified Wood (Credit 7): The Project will investigate the use of wood from FSC-certified sources.

Indoor Environmental Quality

Minimum IAQ Performance (Prerequisite 1): The Project proposes to follow the ventilation rate procedure detailed in ASHRAE 62.1.

Environmental Tobacco Smoke Control (Prerequisite 2): The Project proposes to prohibit smoking in all common areas of the building.

Construction IAQ Management Plan (Credit 3.1): The Project proposes to develop an indoor air quality management plan during the construction phase.

Low-Emitting Materials (Credits 4.1, 4.2, 4.3, 4.4): The Project proposes to include specifications for adhesives and sealants that meet SCAQMD Rule #1168 limits for VOCs; paints and coatings that meet applicable Green Seal and SCAQMD standards; flooring systems that meet Green Label Plus, FloorScore and SCAQMD standards; and composite wood with no added urea-formaldehyde.

Indoor Chemical and Pollutant Source Control (Credit 5): The Project proposes to use permanent entryway systems to capture dirt and particulates at regularly used exterior entries; exhaust garage and housekeeping areas in accordance with LEED criteria; and provide filtration media in accordance with LEED criteria.

Controllability of Systems (Credit 6.1): The Project proposes to provide a high level of lighting system control by individual occupants to suit individual tasks and preferences.

Thermal Comfort (Credit 7.1): The Project will investigate designing HVAC systems and the building envelope to meet ASHRAE 55 standards.

Daylight and Views (Credits 8.1, 8.2): The Project proposes providing windows of sufficient size and geometry to provide daylight and reduce electrical lighting demand to at least 75% of regularly occupied areas as well as to provide views to the exterior for 90% of regularly occupied areas.

Innovation in Design

Innovative Structural Steel Design (Credit 1): The Project proposes to use a steel design that reduces steel tonnage and erection duration compared to similar conventional construction.

LEED Accredited Professional (Credit 2): The Project team includes at least one LEED Accredited Professional with a specialty in Building Design and Construction.

Regional Priority Credits

Heat Island Effects (SS Credits 7.1, 7.2): The Project will reduce the heat island effect. The proposed parking is located underground to reduce the non-roof heat island contribution. The roof will be a combination of high-albedo materials and vegetation to reduce the roof heat island contribution.

Boston Green Building Credits

In addition to the LEED credits outlined above, the Project will explore complying with the Boston Green Building Credits in an effort to respond to local sustainability initiatives. In particular, the Project will investigate compliance with Credit 4: Modern Mobility. The Project will designate an on-site transportation coordinator; post information about public transportation and car-sharing options; provide transit, bike and pedestrian access information on the building's website; provide on-site bicycle racks for visitors and covered secure bicycle storage for occupants; comply with parking ratios developed in the Article 80 process and join a Transportation Management Association. In addition, the Project will price parking spaces separately from dwelling units; provide on-site electric charging plug-in stations for 1% of building occupants; and on-site amenities such as an ATM or dry cleaning pick-up / drop-off to reduce short car trips.

4.0 HISTORIC RESOURCES

4.1 South End Landmark District

The proposed 600 Harrison project is located within the South End Landmark District, a Local Historic District established on November 14, 1983. (It should be noted that the site is not within the boundary of the adjacent South End National Register Historic District.) Described as “the largest remaining Victorian Urban residential neighborhood in the United States,” the South End neighborhood was planned in 1848 and constructed over the next three decades on partially filled land. A mixture of architectural styles such as Greek Revival, Renaissance Revival and Second Empire are united by the mostly consistent use of the brick bow front row house with Mansard roof and the brick flat-fronted row house featuring an oriel on the façade, lending a visual cohesiveness to the area. These long, dense blocks of brick row houses are interspersed with urban squares and long parks, designed as respite from the urban environment.

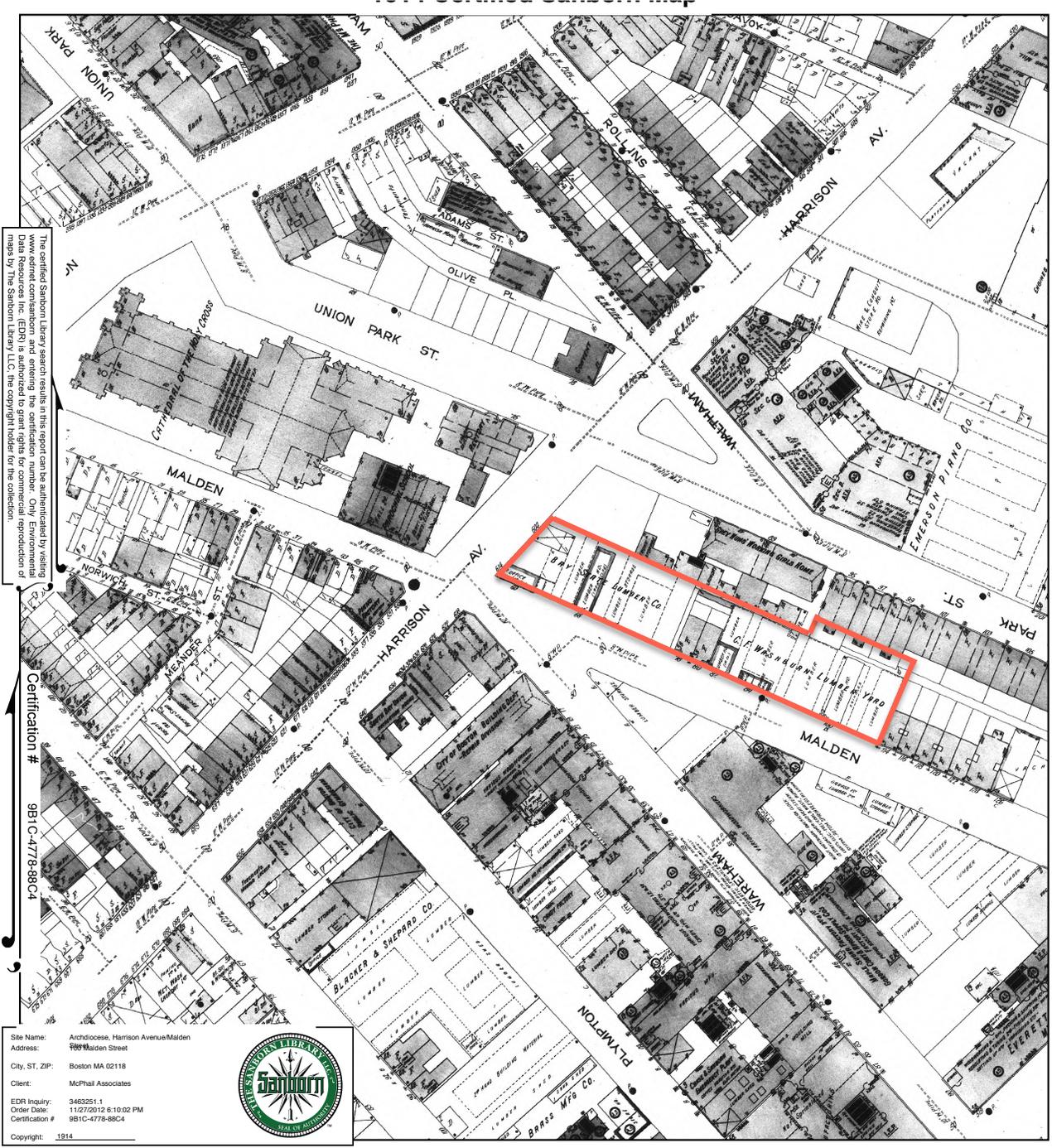
While currently there are no structures on the Site, Sanborn insurance maps indicate that the 600 Harrison site was once improved with two rowhouses at #78 and #80 Malden Street, which were flanked by lumber yards on either side. The 1938 Sanborn map makes no reference to the lumberyards shown on previous insurance maps, but does show the two rowhouses standing as of that date. These structures were removed prior to 1951, as the Sanborn map of that date shows no structures on the Site.

Since the Site is within the local South End Landmark District, the design of the proposed new structure will be subject to design review using the SELD Standards and Criteria for new structures in the district. Because the proposed new building will not abut an existing historic structure, the standards for review set forth as New Construction Category B apply. These standards address height (70 ft.), setback (under ten feet), lot coverage, building materials, and design features. Narrative addressing the design of the proposed project relative to the SELD Standards and Criteria can be found in the Urban Design Component of this document.

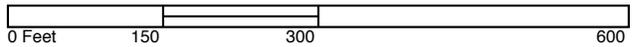
4.2 Proximate Historic Resources

Being located within the South End Landmark District, there are a number of notable historic structures in the immediate area of the project Site. The most significant of these is the Cathedral of the Holy Cross, located immediately across Harrison Avenue from the Site. Completed in 1875, the Cathedral of the Holy Cross is said to be the largest religious structure in New England. This 120 foot high structure, constructed in the Gothic Revival style

Figure 4-1 1914 Sanborn Map



This Certified Sanborn Map combines the following sheets. Outlined areas indicate map sheets within the collection.



- Volume 2, Sheet 16
- Volume 2, Sheet 17
- Volume 2, Sheet 19
- Volume 2, Sheet 20
- Volume 2, Sheet 24



of grey limestone and Roxbury puddingstone, is located on a block with the much more modest brick and cast stone Parish House built in the English cottage style, and a school building, which was constructed of brick and stucco in an eclectic style.

Immediately to the northeast of the project site on the same block, and facing Union Park Street, are two contiguous but distinct brick structures, one five story and one six story. The earlier, larger structure to the east (away from Harrison Avenue) was constructed by Archbishop Williams in the early 1890's as the Grey Nun's Working Girl's Home, which housed young women immigrating from Europe to earn their living in the United States. This red brick structure has a pitched roof with dormers, and has a two-story flat-roofed addition to its rear. The later structure, with frontage on Harrison Avenue, was built in the late 1920's or early 1930's as St. Helena's House. This five-story structure has a flat roof, and two-story high brick-arched windows on three sides. Today these contiguous structures operate as one, and are used as affordable housing for the elderly.

Figure 4-2 Aerial View of Site and St. Helena's House

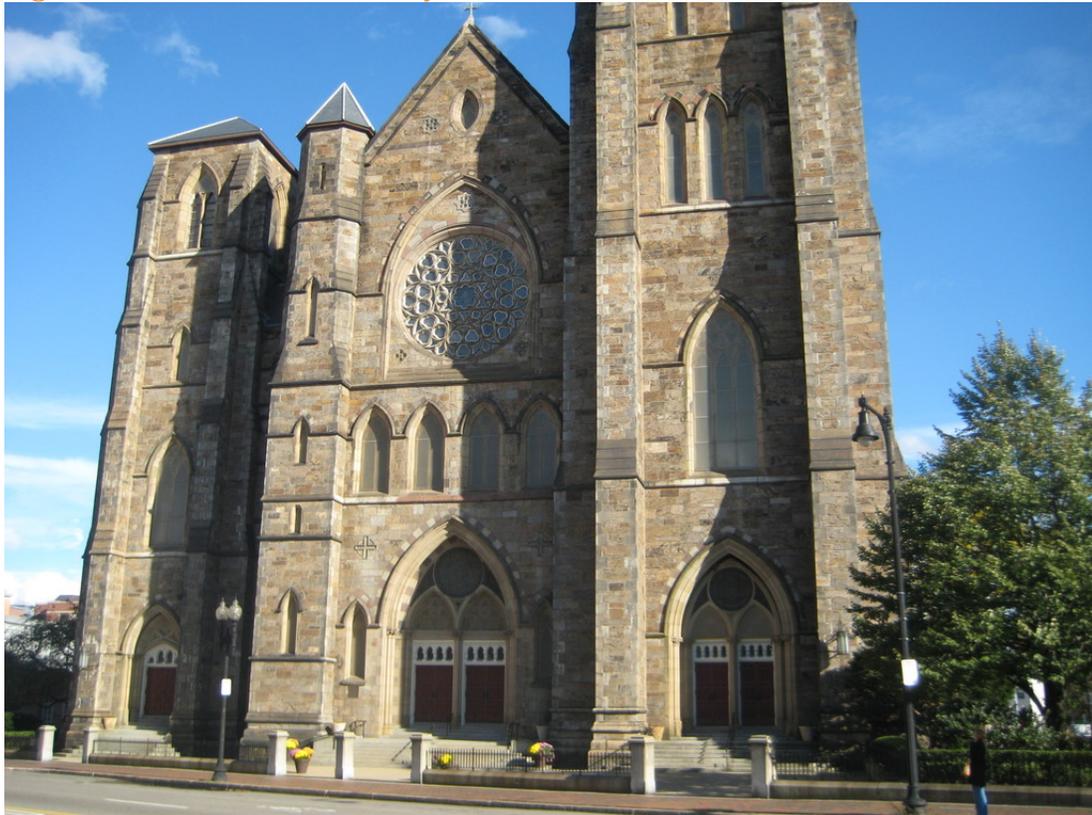


Within a three-block radius around the site one can find a number of historic brick structures, mostly two to six story warehouses, originally built to manufacture or warehouse goods, most likely to be shipped out on cargo vessels tied up in the adjacent South Bay canal located only several hundred yards to the Southeast, now long-since filled in and built out with roadways, an interstate highway interchange, and a range of mid-20th century industrial structures of varying sizes and qualities. There are no known archeological assets in the immediate area.

4.3 Project Impact on Historic and Cultural Resources

The 600 Harrison project has been designed to provide financial support for the most important historic asset in the area, a positive impact that should not be underestimated.

Figure 4-3 Cathedral of the Holy Cross



The proposed new building will cast shadows on the adjacent St. Helena’s House parking lot much of the year, and will cast net new shadow on its two story “wing” and the base of the south face of the main building at certain times during the winter. However, the Proponent’s agreement with St. Helena’s House includes maintenance and snow removal support for the parking lot and grounds impacted by net new shadow, as well as an annual payment meant to assist St. Helena’s House with maintenance of its building. This mitigation will relieve St. Helena’s House of any negative impact the project might have relative to net new shadows on its building and grounds, and improve its operating performance in a meaningful way.

Visually, the proposed project will provide a carefully designed contemporary structure in place of a surface parking facility, which will

greatly improve the appearance of this part of the South End neighborhood. The contemporary nature of the new building will provide a handsome foil to the historic building fabric around it, while its scale, proportions, and design elements reflect many of the principles underlying the architecture of the district as a whole, and reflect special design features of buildings in its immediate context.

5.0 TRANSPORTATION

5.1 Introduction

In accordance with the Boston Transportation Department’s (BTD) *Transportation Access Plan Guidelines* (2001) and the Boston Redevelopment Authorities (BRA) *Development Review Guidelines* (2006), this chapter describes roadway, pedestrian, and bicycle conditions; transportation issues; parking and loading; pedestrian and bicycle circulation; proposed mitigation; and transportation goals for 600 Harrison Avenue (the “Project”).

5.1.1 Project Description

The Project Site is located in the South End neighborhood of Boston and is bounded by the Boston Water and Sewer Commission Union Park facility to the east, Harrison Avenue to the west, St. Helena’s House and St. Helena’s Park to the north, and Malden Street to the south. The Site is currently an 80-space surface parking lot for the Cathedral of the Holy Cross and used by the Archdiocese for cathedral activities such as mass, choir and religious education. Parking spaces are also rented to various users within the neighborhood.

The Project proposes to construct a new building containing approximately 160 residential units and 3,600 square feet (sf) of ground-floor retail space. Parking for approximately 236 vehicles would be provided within a below-grade parking structure for use by Project residents, the Cathedral, and commercial/public parking. The Project would also provide secure covered storage for 120 bicycles within the building. **Table 5-1** summarizes the Proposed Development Program used in the transportation analysis.

Table 5-1 Proposed Development Program

Program Description	Size (approximate)
Residential Housing	160 units
Retail	3,600 sf
Parking Spaces	236 spaces ¹
Secured Covered Bicycle Storage	120 bicycles
Outdoor Bicycle Storage	33 bicycles

1.Includes 80 spaces for Project residents, 70 spaces for the Cathedral, and 86 commercial/public parking spaces.

The primary pedestrian entrance to the building will be provided on Malden Street, adjacent to the Project’s retail area. Pedestrian access will also be

provided along Harrison Avenue for the retail space. Access to the below-grade parking garage and loading area will be provided from Malden Street.

Service and loading demands for the residential use will be accommodated on-site within the designated loading area off Malden Street.

5.1.2 Methodology

This transportation study was conducted in accordance with BTM guidelines and is described below.

The Existing Condition analysis includes an inventory of the existing (2013) transportation conditions such as roadway and intersection conditions, parking and curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project and other neighboring projects. Long-term impacts are evaluated for the year 2018, based on a five-year horizon from the existing year (2013). Expected roadway, parking, transit, pedestrian, bicycle accommodations, and loading conditions and deficiencies are identified. This section includes the following scenarios:

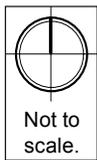
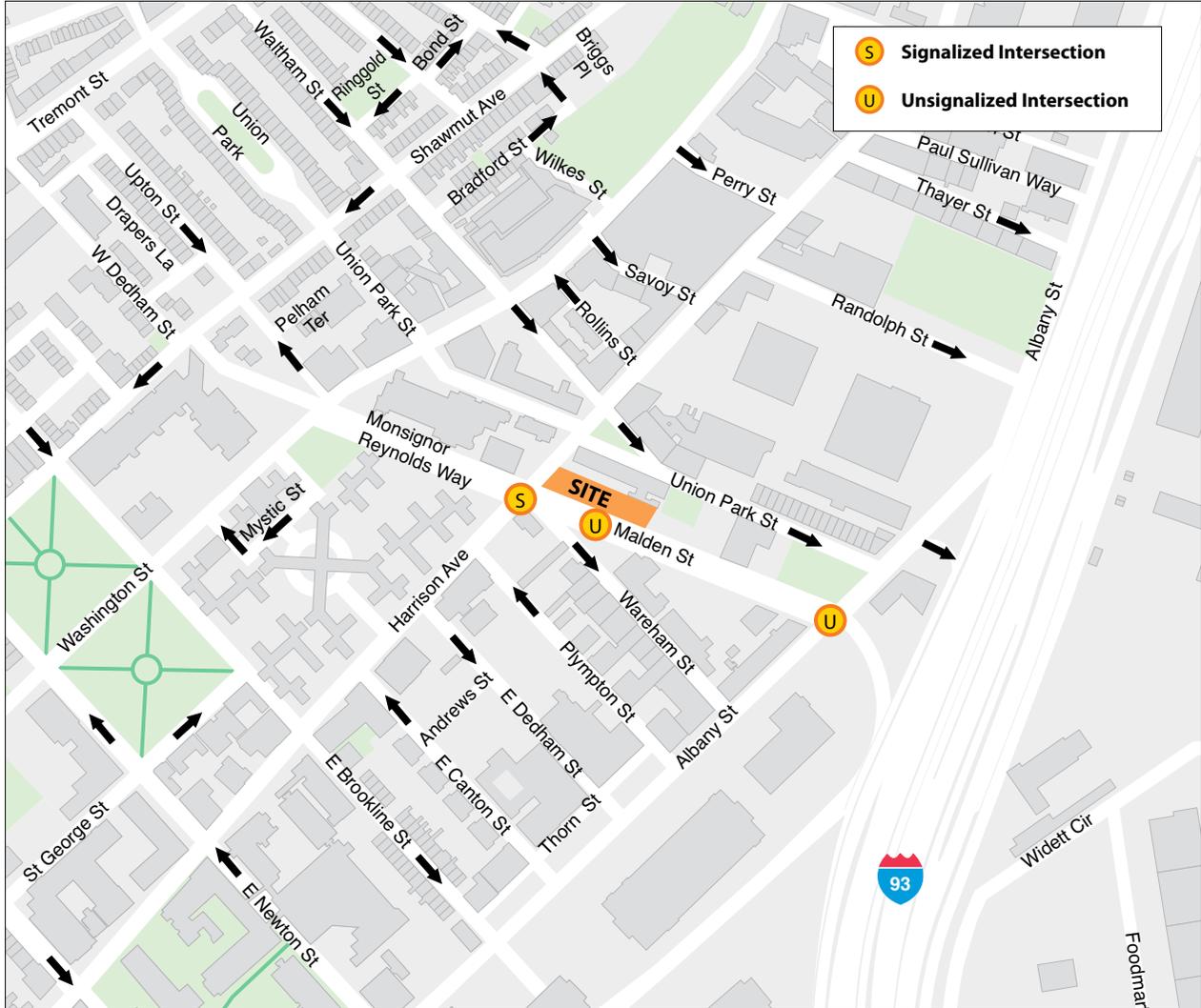
- The 2018 No-Build Condition scenario includes both general background traffic growth and traffic growth associated with specific developments that are planned in the vicinity of the Project. Transportation infrastructure improvements in the study area are identified and incorporated into the 2018 No-Build Conditions.
- The 2018 Build Condition scenario includes Project-generated traffic volume estimates added to the traffic volumes developed as part of the 2018 No-Build Conditions scenario. This section also details parking, loading operations, bicycle storage, Transportation Demand Management (TDM) measures to reduce dependence on automobiles, and any appropriate mitigation measures.

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

5.1.3 Study Area

The study area for which a detailed transportation analysis was performed is depicted in **Figure 5-1** and includes the following three (3) intersections:

Figure 5-1. Study Area Intersections



Howard/Stein-Hudson Associates, Inc.

- Harrison Avenue/Monsignor Reynolds Way/ Malden Street (signalized);
- Malden Street/Site Driveway (unsignalized); and
- Albany Street/Malden Street (unsignalized).

5.2 Existing Conditions

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

5.2.1 Roadway Conditions

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

Harrison Avenue is an urban minor arterial roadway that runs north-south within the study area from Essex Street in the north to Warren Street in Roxbury to the south. Harrison Avenue provides one travel lane in each direction near the Site. Parking is permitted on both sides of the street with left turning lanes at the intersection of Monsignor Reynolds Way/Malden Street. Bus stops are located regularly on both sides of Harrison Avenue. Sidewalks on each side range in width from 9 to 11 feet.

Monsignor Reynolds Way is an urban minor arterial roadway that runs east-west within the study area from West Dedham Street in the west to Harrison Avenue in the east. Monsignor Reynolds Way provides two travel lanes in each direction near the Site and is separated by a median. Sharrow pavement markings are provided along both directions of travel along the roadway providing shared bicycle accommodation. Parking is permitted on both sides of the street. Sidewalks on each side range in width from 6 to 8 feet.

Malden Street is an urban minor arterial roadway that runs east-west within the study area from Harrison Avenue in the west to Albany Street in the east. Malden Street provides one travel lane in each direction near the Site. Parking is permitted on both sides of the street. Sidewalks on each side range in width from 8 to 10 feet.

Albany Street is an urban minor arterial roadway that runs north-south within the study area from South Station Connector in the north to Eustis Street in the south. Albany Street provides one travel lane in each direction

near the Site. Parking is permitted along either side of the street. Sidewalks on each side range in width from 8 to 10 feet.

5.2.2 Intersection Conditions

Signalized Intersections

Harrison Avenue/Monsignor Reynolds Way/ Malden Street is a signalized intersection with four approaches. The Monsignor Reynolds Way eastbound approach consists of an 11 foot shared left-turn/through lane and an 11 foot right-turn lane. The Malden Street westbound approach consists of an 11 foot shared left-turn/through/right-turn lane. The Harrison Avenue northbound approach consists of an 11 foot left-turn lane and a 12 foot through lane. The Harrison Avenue southbound approach consists of an 11 foot left-turn lane and an 11 foot through lane. A six foot brick median separates the north-south direction of travel at the southbound approach.

Parking is prohibited along the Harrison Avenue approaches; however, parking is provided on both sides of Monsignor Reynolds Way and Malden Street. Crosswalks and wheelchair ramps are maintained on all legs of the intersection, as are countdown pedestrian signal indications. The pavement and pavement markings are in fair condition.

As part of the Boston Transportation Department's City-wide Traffic Signal Optimization effort, the intersection of Monsignor Reynolds Way/Harrison Avenue/Malden Street recently underwent signal timing improvements. Additional long-term measures were also identified, as detailed in the No-Build Conditions section below, however a timeline for implementing these measures has not been determined.

Unsignalized Intersections

Malden Street/Site Driveway is an unsignalized intersection with three approaches. The Malden Street eastbound approach consists of one 11.5 foot shared left-turn/through lanes. The Malden Street westbound approach consists of a one 11.5 foot shared through/right-turn lane. The parking lot driveway southbound approach is 25 feet wide and operates under stop control.

There are no crosswalks along any of the intersection legs. On-street parking is allowed on both sides of Malden Street.

Albany Street/Malden Street is an unsignalized intersection with three approaches. The Malden Street eastbound approach consists of one shared left-turn/right-turn lane and operates under stop control. The Albany

Street northbound approach consists of one shared left-turn/through lane. The Albany Street southbound approach consists of one shared through/right-turn lane.

There is a 14 foot wide crosswalk with wheelchair ramps across the Malden Street northern leg.

5.2.3 Traffic Conditions

Vehicular, bicycle, and pedestrian counts were conducted on Wednesday, September 11, 2013 during the morning (7:00–9:00 a.m.) and evening (4:00–6:00 p.m.) peak periods. Based on this data, the peak hours were identified as 8:00–9:00 a.m. and 4:45–5:45 p.m. **Figure 5-2** and **Figure 5-3** show the existing peak-hour turning movement volumes for the a.m. and p.m. peak hours, respectively.

The traffic volumes were balanced to remove discrepancies between intersections. Complete traffic count data are provided in the Appendix.

5.2.4 Existing Traffic Operations

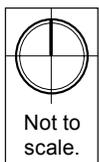
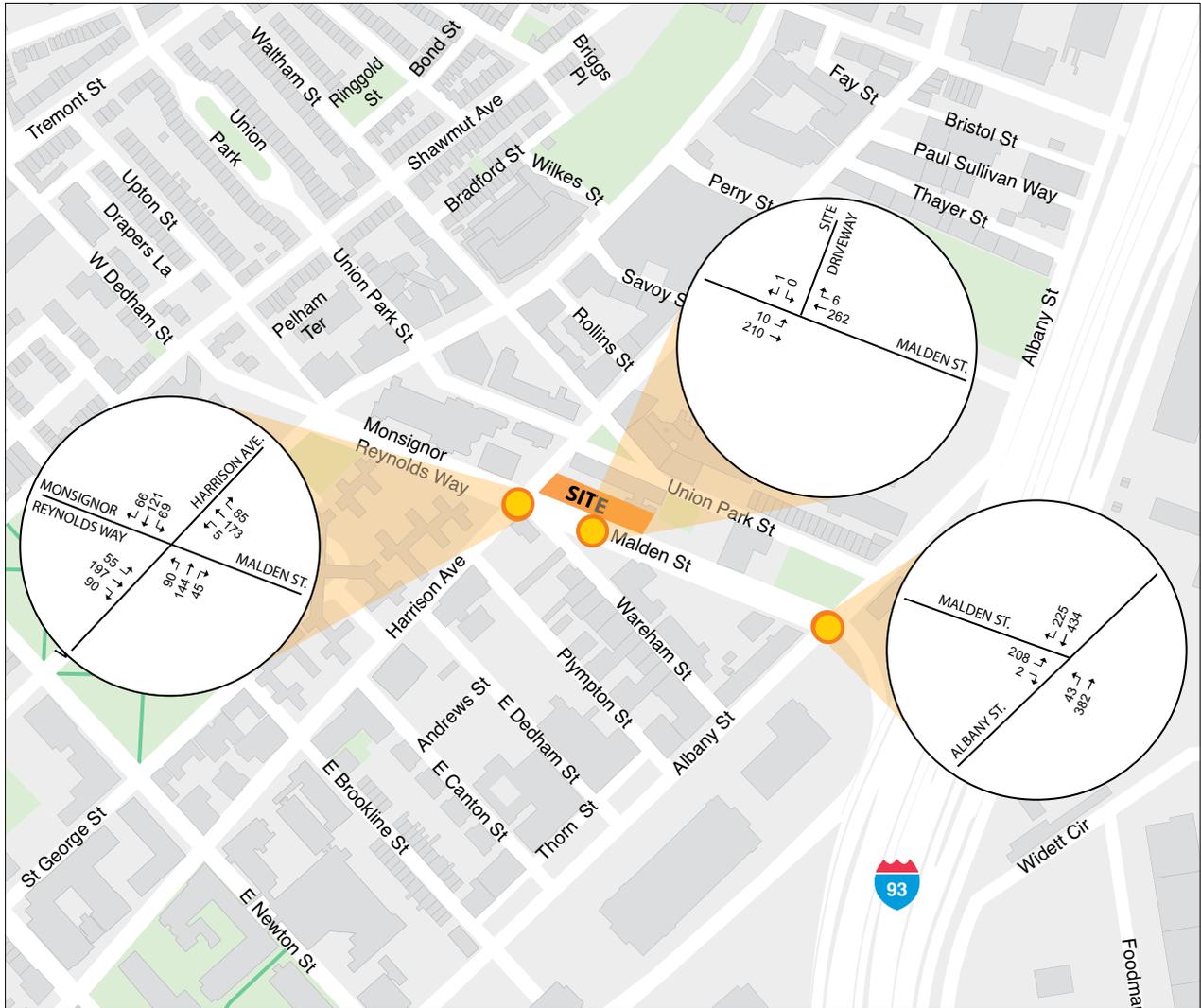
The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 6) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM).

The **volume-to-capacity (v/c)** ratio is a measure of congestion at an intersection approach. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The **50th percentile queue length**, measured in feet, represents the average extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 50 percent of all signal cycles. The 50th percentile queue will be seen during most cycles. The queue would be this long about 50 percent of the time and would typically occur during off-peak hours.

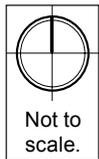
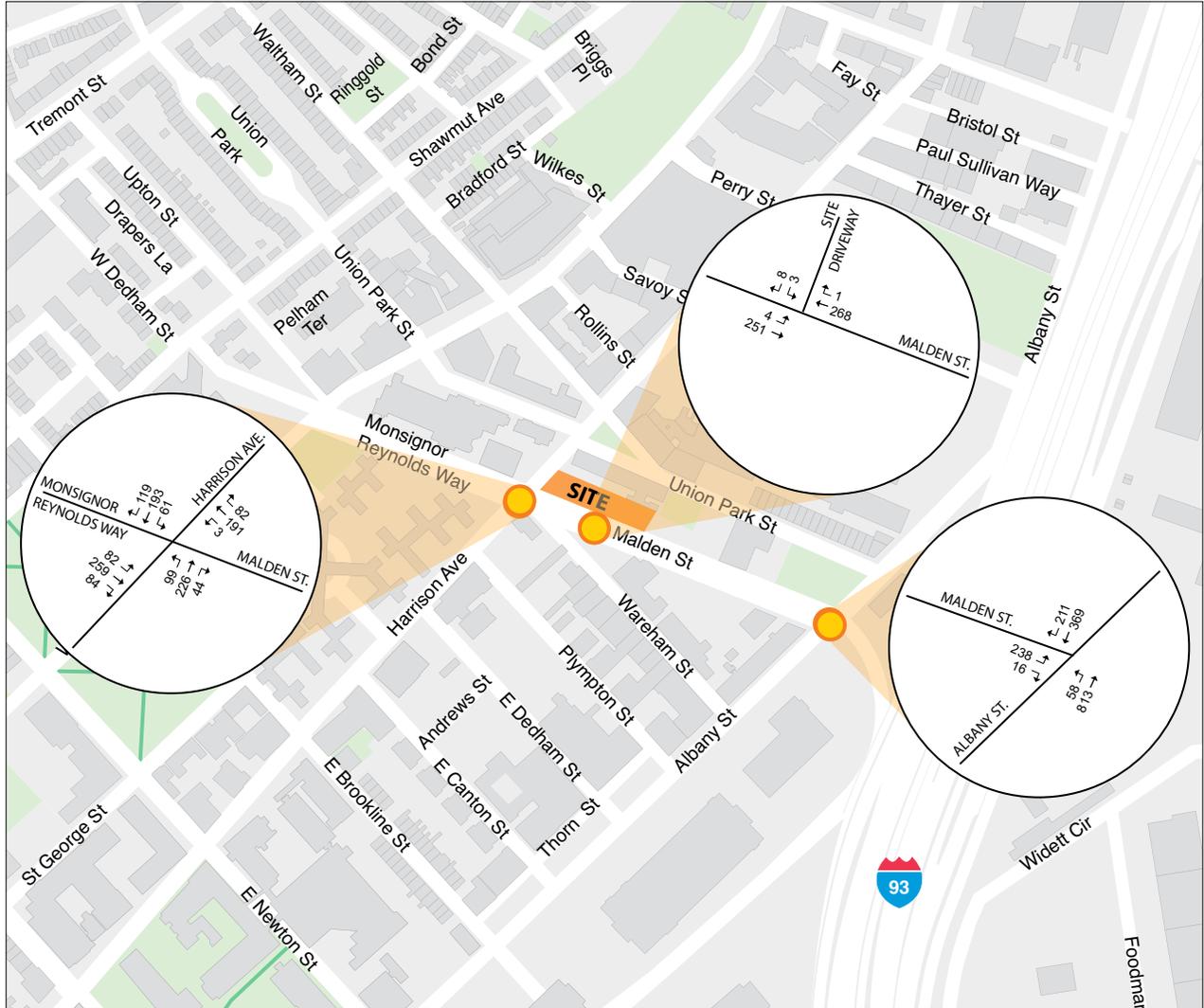
The **95th percentile queue length**, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 5 percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only 5 percent of the time and would typically not occur during off-peak hours.

Figure 5-2. Existing Conditions (2013) Traffic Volumes, a.m. Peak Hour (8:00 - 9:00 a.m.)



Howard/Stein-Hudson Associates, Inc.

Figure 5-3. Existing Conditions (2013) Traffic Volumes, p.m. Peak Hour (4:45 - 5:45 p.m.)



Howard/Stein-Hudson Associates, Inc.

Field observations were performed by HSH in September 2013 to collect intersection geometry such as number of turning lanes, lane length, and lane width. Signal timing and phasing used in this analysis were obtained from the BTD and confirmed through the field observations conducted by HSH.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 5-2** displays the intersection level of service criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

Table 5-2 Intersection Level of Service Criteria

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

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Table 5-3 and **Table 5-4** present the 2013 Existing Conditions operational analysis for the study area intersections during the a.m. and p.m. peak hours, respectively. The detailed analysis is provided in the Appendix.

Table 5-3 Existing Conditions (2013) Level of Service Summary, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 th Percentile Queue Length (feet)	95 th Percentile Queue Length (feet)
Signalized Intersections					
1. Harrison Avenue/Monsignor Reynolds Way/Malden Street	E	70.8	—	—	—
Reynolds EB left/thru	F	>80.0	>1.00	238	#311
Reynolds EB right	A	2.6	0.31	0	m0
Malden WB left/thru/right	F	>80.0	>1.00	~191	#344
Harrison NB left	A	7.8	0.21	23	m31
Harrison NB thru/right	B	13.6	0.30	79	m116
Harrison SB left	A	9.6	0.17	11	m25
Harrison SB thru/right	B	12.4	0.30	46	69
Unsignalized Intersections					
2. Malden Street/Site Driveway	—	—	—	—	—
Malden EB left/thru	A	0.4	0.01	-	1
Malden WB left/thru	A	0.0	0.19	-	0
Site Driveway SB left/right	B	10.1	0.01	-	0
3. Albany Street/ Malden Street	—	—	—	—	—
Malden EB left/right	F	>50.0	>1.00	-	242
Albany NB left/thru	A	0.7	0.18	-	5
Albany SB thru/right	A	0.0	0.43	-	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
 ~ = 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is sufficient for 1 cycle.
 m = Volume for the 95th percentile queue is metered by the upstream signal.
 Gray cell shading indicates an unacceptable LOS.

Table 5-4 Existing Conditions (2013) Level of Service Summary, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 th Percentile Queue Length (feet)	95 th Percentile Queue Length (feet)
Signalized Intersections					
1. Harrison Avenue/Monsignor Reynolds Way/Malden Street	E	70.0	—	—	—
Reynolds EB left/thru	F	>80.0	>1.00	~294	m#416
Reynolds EB right	A	2.3	0.21	0	m0
Malden WB left/thru/right	D	53.4	0.88	188	#239
Harrison NB left	B	13.2	0.40	27	M47
Harrison NB thru/right	B	19.8	0.42	121	#292
Harrison SB left	A	9.2	0.22	12	m23
Harrison SB thru/right	B	19.5	0.52	126	#101
Unsignalized Intersections					
2. Malden Street/Site Driveway	—	—	—	—	—
Malden EB left/thru	A	0.3	0.01	-	0
Malden WB left/thru	A	0.0	0.18	-	0
Site Driveway SB left/right	B	11.6	0.04	-	3
3. Albany Street/ Malden Street	—	—	—	—	—
Malden EB left/right	F	>50.0	>1.00	-	541
Albany NB left/thru	A	1.2	0.40	-	8
Albany SB thru/right	A	0.0	0.25	-	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
 ~ = 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is sufficient for 1 cycle.
 m = Volume for the 95th percentile queue is metered by the upstream signal.
 Gray cell shading indicates an unacceptable LOS.

The signalized intersection of Harrison Avenue/Monsignor Reynolds Way/Malden Street operates at a LOS E during the weekday a.m. and p.m. peak periods.

The following details the study area intersection, and individual approaches that operate at LOS E or worse:

- Monsignor Reynolds Way eastbound left/thru movement at the Harrison Avenue/Malden Street intersection operates at a LOS F during both the a.m. and p.m. peak hours. As noted, the intersection recently underwent signal timing optimization by BTM. Further improvements were identified but have not yet been implemented.
- Malden Street westbound left/thru/right movement at the Monsignor Reynolds Way/Harrison Avenue intersection operates at a LOS E during the p.m. peak hour.
- Malden Street eastbound left/right stop controlled movement at the Albany Street intersection operates at a LOS F during both the a.m. and p.m. peak hours. Field observations indicate that motorists

making a left-turn from Malden Street onto Albany Street northbound have difficulty entering the queue (that occasionally extends past Malden Street) or finding an adequate gap in the traffic stream. However when Albany Street at the intersection with Southbound Frontage Road has a red indication, gaps in the traffic stream are created generally allowing the Malden Street queue to clear.

5.2.5 Existing Parking Conditions

Off-Street Public Parking

Figure 5-4 illustrates the locations of the existing off-street public parking garages or surface lots within a quarter-mile of the Site. Within the quarter-mile radius, generally acknowledged as a reasonable walking distance, there are two public parking facilities. GTI Properties lot has 130 parking spaces with no overnight parking and the Boston Medical Center Doctor's Office Building (D.O.B.) Parking Garage has 230 parking spaces with overnight parking.

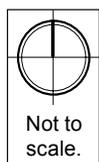
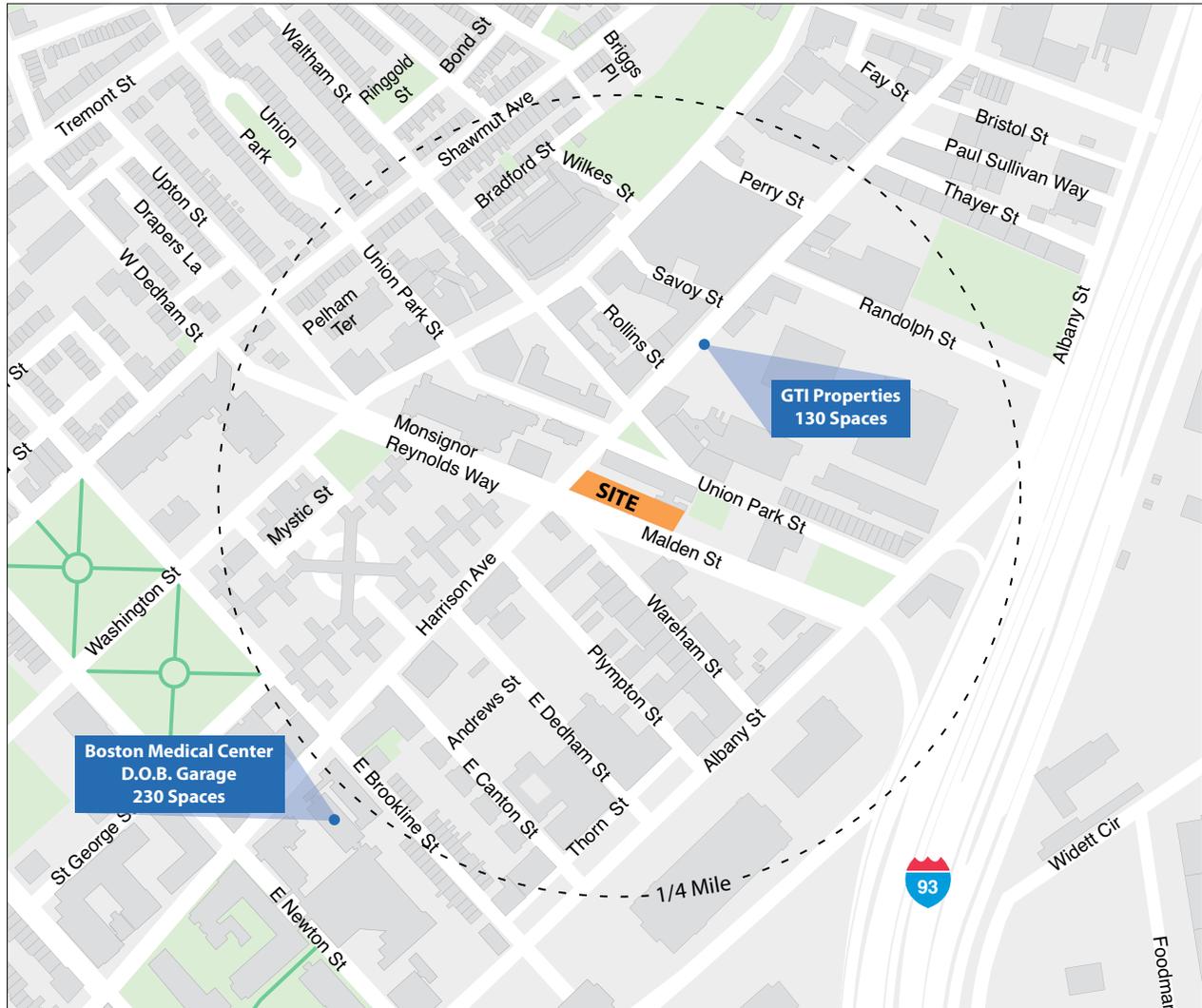
On-Street Parking

Figure 5-5 illustrates the curb use regulations adjacent to the Project Site include unrestricted, metered and no parking. Parking on Harrison Avenue, Albany Street, Malden Street, and Monsignor Reynolds Way consist mainly of no parking, and metered parking.

5.2.6 Existing Public Transportation

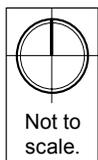
The Project Site is served by public transportation, including bus and rapid transit. The Massachusetts Bay Transportation Authority (MBTA) public transportation services are shown in **Figure 5-6** and summarized in **Table 5-5**. The following are detailed descriptions of the public transportation modes serving the project neighborhood.

Figure 5-4. Off-Street Public Parking



Howard/Stein-Hudson Associates, Inc.

Figure 5-5. Curbside Parking Inventory



Howard/Stein-Hudson Associates, Inc.

Table 5-5 Public Transportation in the Study Area

Train/Bus Route	Origin—Destination	Peak Headway* (minutes)
Rapid Transit Routes		
SL4	Dudley Square – South Station	10
SL5	Dudley Square – Downtown Crossing	7
Local Bus Routes		
8	Harbor Point/UMass – Kenmore Station	15-20
9	City Point Copley Square via Broadway Station	10
10	City Point Copley Square via Andrew Station	20
11	City Point Downtown BayView Route	6
43	Ruggles Station Park & Tremont Sts. Via Tremont St	12
47	Central Square Cambridge – Broadway Station	8-10
Regional Circumferential Bus Routes		
CT1	Crosstown Transit – Central Square Cambridge – BUMC/BMC via MIT	20
CT2	Beth Israel Deaconess Hospital – Andrew Station	20

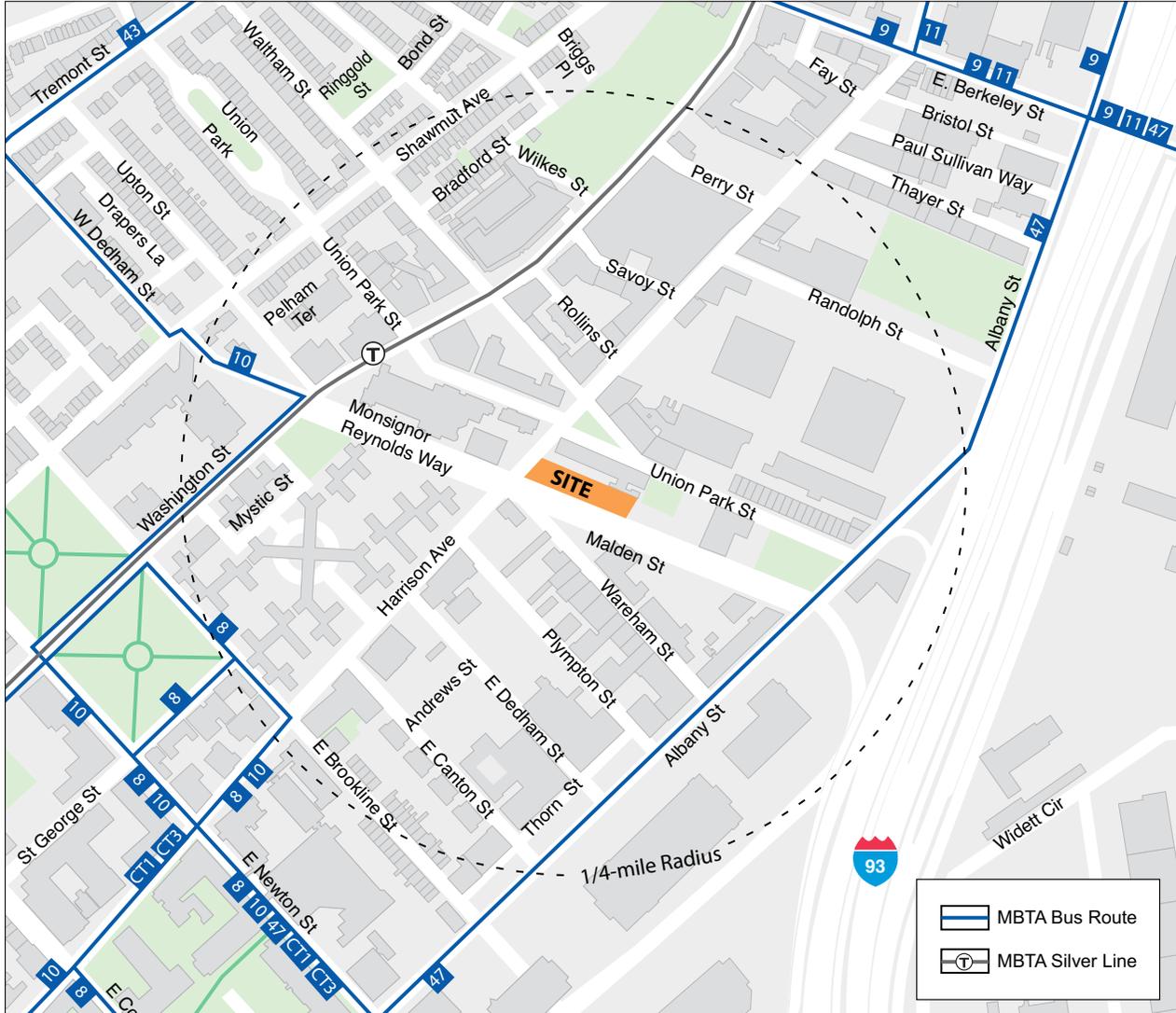
Source: *mbta.com*, accessed September 2013.

* Headway is the scheduled time between rapid transit or buses, as applicable.

Rapid Transit Routes

In July 2002, Boston’s first Bus Rapid Transit service, the “Silver Line”, opened along Washington Street between Dudley Square and Downtown Crossing. In the fall of 2009, the route was extended and now runs between Dudley Square, Downtown Crossing, and South Station. A transit priority lane is provided in each direction between Melnea Cass Boulevard and the Massachusetts Turnpike along Washington Street (the lane is shared with general traffic turning right). The Silver Line replaces the existing Route #49 bus, which previously operated on Washington Street, and operates at 8-10 minute headways during peak periods. The Silver Line stops closest to the Site are on Washington Street at Union Park Street and Washington Street at Mystic Street, approximately a five-minute (one-quarter mile) walk, or two blocks from the intersection of Harrison Avenue and Monsignor Reynolds Way/Malden Street.

Figure 5-6. Public Transportation in the Study Area



Not to scale.

Howard/Stein-Hudson Associates, Inc.

MBTA Bus Routes

Located within a 5-10 minute walk of the project Site are several bus stops with shelters on Washington Street, Massachusetts Avenue, Harrison Avenue, and Albany Street.

5.2.7 Pedestrian Conditions

Pedestrian counts were conducted on September 11, 2013. **Figure 5-7** illustrates the a.m. and p.m. peak hour pedestrian volumes. Detailed pedestrian count data is provided in the Appendix. Crosswalks and handicapped-accessible ramps are generally provided at all study area intersections.

The local roadways near the Project Site provide good pedestrian access for the light pedestrian activity along Albany Street and the moderate level along Harrison Avenue. There is also a direct pedestrian connection, just east of the Site, off Malden Street to the St. Helena's Park.

5.2.8 Bicycle Conditions

Sharrow pavement markings are provided on Malden Street and Monsignor Reynolds Way allowing for shared on-street bicycle accommodation. Dedicated bicycle lanes are provided along each side of the roadway on Albany Street. **Figure 5-8** illustrates existing a.m. and p.m. peak hour bicycle volumes; bicycle volumes are low in the vicinity of the Site. Detailed bicycle count data is provided in the Appendix.

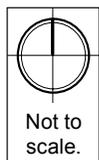
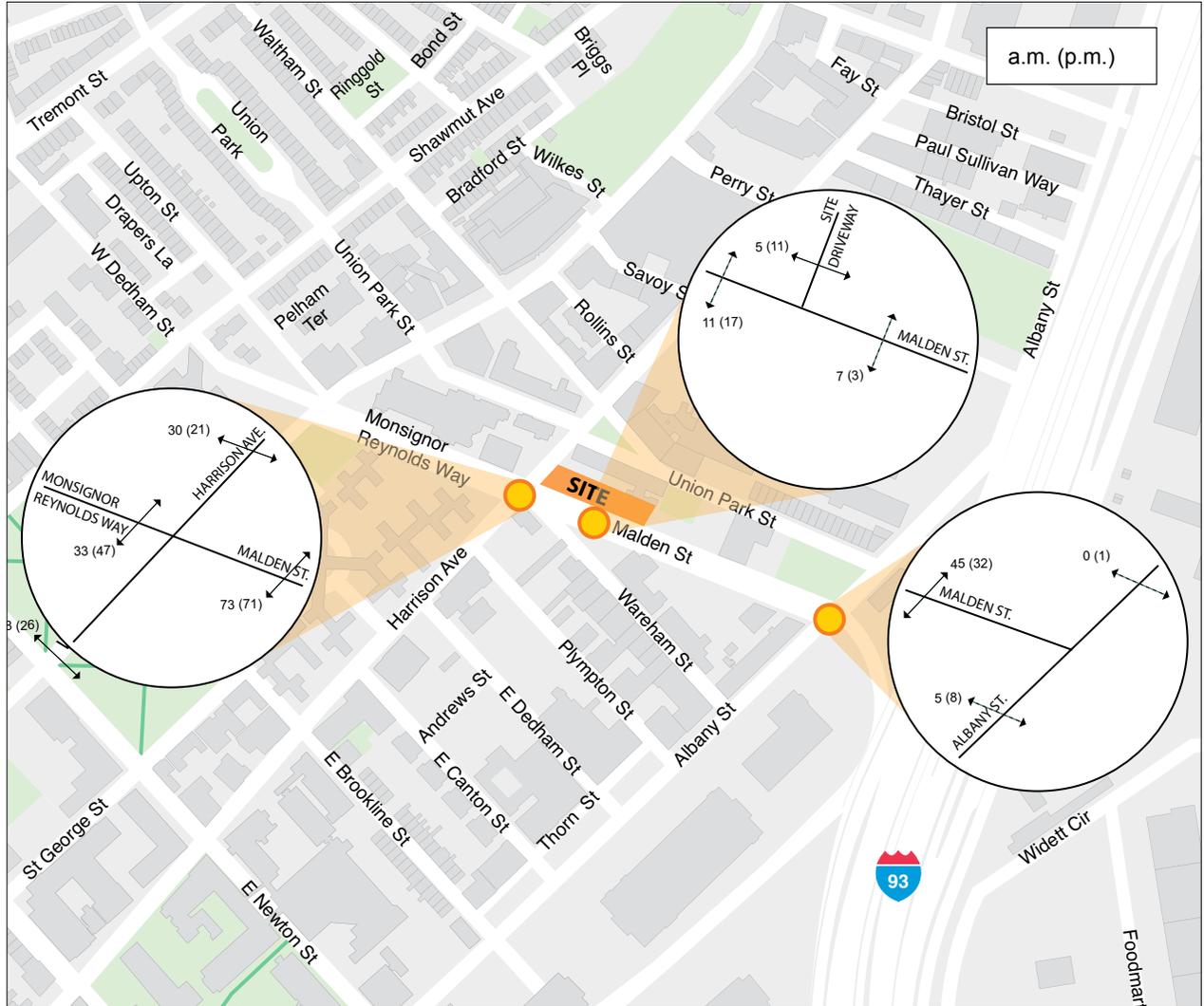
Hubway is a bicycle sharing system in Metro Boston, which was launched in July 2011 and now has more than 100 stations with 1,000 bicycles available throughout Boston, Brookline, Cambridge, and Somerville. Hubway bicycles are available during the spring, summer, and fall seasons (the system is shut down in the winter). Within a quarter-mile of the Project Site, there is a Hubway station at the corner of Washington Street and Waltham Street that has approximately eleven bicycle docks. There are also four other Hubway stations within a half-mile from the Site with about fifteen bicycle docks each.

Figure 5-9 presents Hubway facilities within walking distance to the Site.

5.2.9 Car Sharing

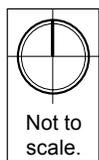
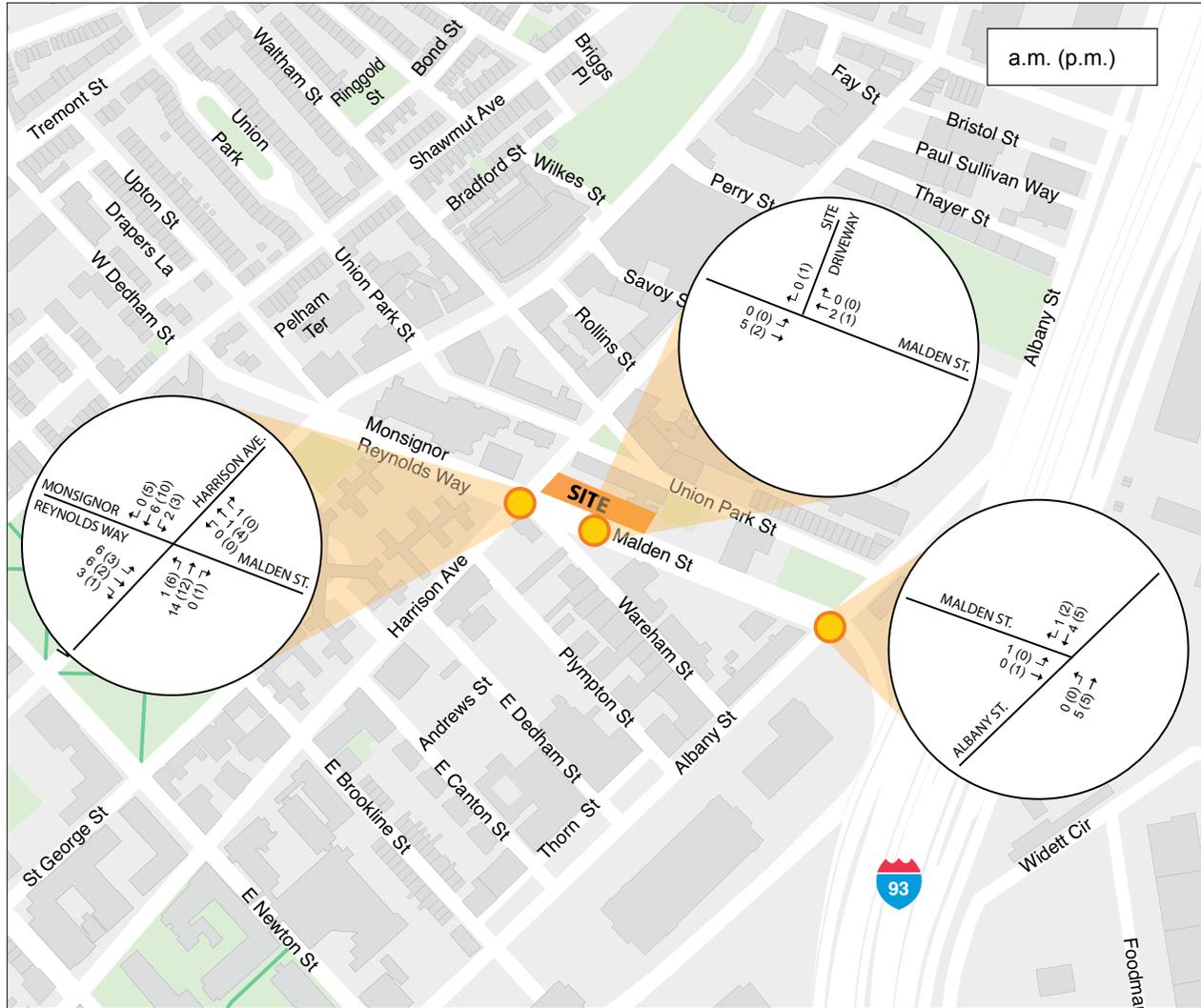
Car sharing is predominately provided by ZipCar in the Boston area and supplies easy access to vehicular transportation for those who do not own cars. Vehicles are rented on an hourly or daily basis with all vehicle costs (gas, maintenance, insurance, and parking) included in the rental fee.

Figure 5-7. Existing Conditions (2013) Pedestrian Volumes, a.m. and p.m. Peak Hour



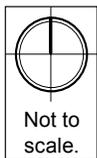
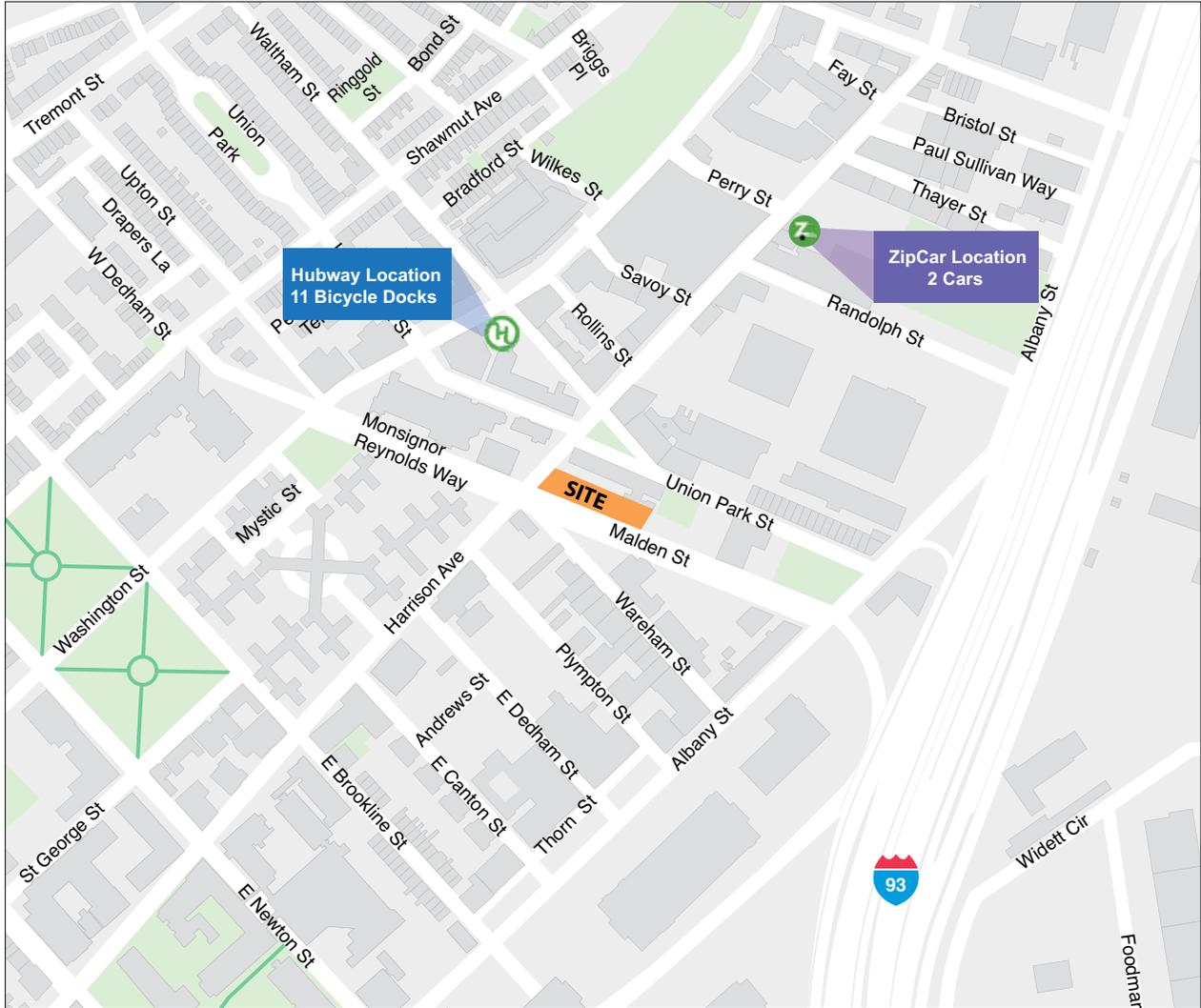
Howard/Stein-Hudson Associates, Inc.

Figure 5-8. Existing Conditions (2013) Bicycle Volumes, a.m. and p.m. Peak Hour



Howard/Stein-Hudson Associates, Inc.

Figure 5-9. Hubway and ZipCar Locations



Howard/Stein-Hudson Associates, Inc.

Vehicles are checked out for a specific time period and returned to their designated location. Within about a quarter-mile radius of the Site, there is one ZipCar locations with approximately two vehicles available for use.

Figure 5-9 presents car sharing facilities within walking distance to the Site.

5.2.10 Loading and Service

Currently there is no loading or service activity on the Project Site since it is a surface parking lot.

5.3 Evaluation of Long-Term Impacts

For transportation impact analyses, it is standard practice to evaluate two future conditions: No-Build Conditions (without the proposed project) and Build Conditions (with the proposed project). In accordance with BTM guidelines, these conditions are projected to a future date five years from the Existing Conditions year. For the evaluation of this Project, 2018 was selected as the horizon year for the future conditions analyses.

This section presents a description of the 2018 future condition and includes an evaluation of the transportation facilities under the No-Build and Build Conditions. The methodology is consistent with the City of Boston's *Transportation Access Plan Guidelines*.

5.3.1 No Build Conditions

The No-Build Conditions reflect a future scenario that incorporates any anticipated traffic volume changes, independent of the Project, and any planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements. Traffic volume changes are based on two factors: an annual growth rate and growth associated with specific developments near the project.

To develop the background growth rate, the study team compared existing volumes with historic count data to account for changes in demographics, auto usage, and ownership. Comparison of this data indicates that traffic volumes have varied in recent years. However, to provide a conservative estimate of future traffic growth, a background growth factor of 1% per year was selected for the project, consistent with BTM approved rates for current development projects in the area. All existing traffic volumes were then increased by 1% per year for a period of 5 years.

To provide a conservative analysis, the no-build scenario also adds traffic contributions from specific projects approved and/or under construction. The following projects, which are depicted in **Figure 5-10**, are located in the vicinity of the study area and, where appropriate, traffic volumes associated with these projects were also incorporated into the future conditions traffic volumes. Traffic volumes from the following projects were specifically traced through the study area traffic network:

- **275 Albany Street** – This project consists of a 19-story tower containing 220 residential units and an 11-story tower containing up to 180 residential rooms.
- **345 Harrison Avenue** – This project proposes two residential buildings including 560 rental units and 30,000 sf of ground floor retail space.
- **Ink Block** – This six-acre development is currently under construction and includes 471 residential units with ground floor retail and restaurant space including a 50,000 sf grocery store.
- **BioSquare II** – Boston Medical Center (BMC) and Boston University have engaged in a joint development project at BioSquare for research and business that will facilitate collaboration between researchers and clinicians. BioSquare currently consists of three biomedical research buildings plus two parking garages and some retail spaces. The biomedical research park in the South End may ultimately include up to 1.2 million square feet of research, laboratory, and office space.
- **Boston Medical Institutional Master Plan** – Distinct from BioSquare, the Boston University Medical Center (BUMC) submitted a new 10-year Institutional Master Plan and PNF for a new 48,000 sf energy facility, administration/clinical building, and new inpatient building.

A review of other nearby projects was conducted to account for any additional traffic growth expected from any projects that have been proposed. The following nearby projects are proposed in the area of the Project Site, but are not expected to add significant traffic to the study area intersections and are assumed to be included in the general background growth rate of 1% per year:

- **5-10 George Street** – This project is currently under construction and consists of 33 residential apartment units and approximately 22 underground parking spaces.
- **477-481 Harrison** – The proposed project consists of 18 condominium units and 20 parking spaces.
- **199 West Brookline Street** – The proposed project consists of approximately 9 residential units and 21 below-grade parking spaces within the existing Concord Baptist Church.

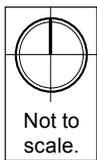
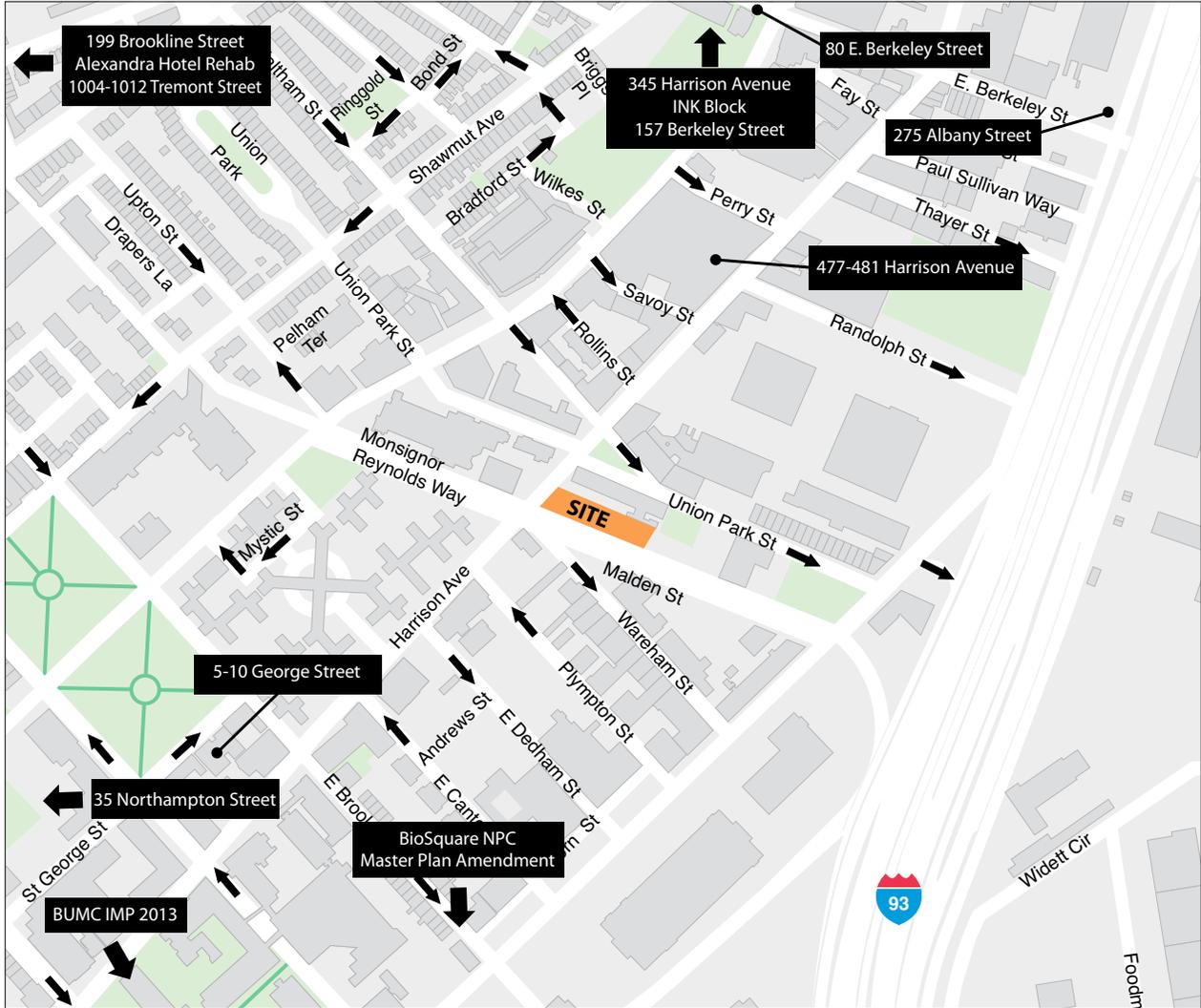
- **35 Northampton Street** – The proposed project includes the rehabilitation of an existing 29-story, 165,000 square foot residential and office building to 245 affordable residential units.
- **Alexandra Hotel Rehab** – The proposed project will renovate The Alexandra Project to the Church of Scientology’s new 45,000 square foot headquarter with ground floor retail.
- **1004-1012 Tremont Street** – The proposed project includes 7 residential rental units, approximately 2,000 square feet of ground floor retail space, and 6 surface parking spaces.
- **80 East Berkeley Street** – This proposed project will consist of an approximately 11-story office building with ground floor retail/restaurant uses.
- **157 Berkeley Street (Liberty Mutual)** – This project includes a new 22-story building with 590,000 sf of office space and 205 parking spaces. The building is currently under construction, with completion expected in December 2013.

Planned Infrastructure Improvement Projects

In addition, the following planned infrastructure improvement projects was taken into account in developing the No-Build network:

- **BTD Traffic Signal Optimization.** As part of the Boston Transportation Department’s City-wide Traffic Signal Optimization effort, the intersection of Monsignor Reynolds Way/Harrison Avenue/Malden Street recently underwent signal timing improvements. Additional long-term measures were identified; however a timeline for implementing these measures has not been determined. The additional measures include removal of the protected/permissive signal phasing, , modifications to the yellow, all-red and flashing don’t walk clearance intervals, and additional modifications to the cycle length and offsets along the corridor. These improvements would decrease overall delays on a network-wide basis. These improvements we not included in the future conditions analysis as a timeline for implementation has not been defined.
- **Southbound Frontage Road Connection.** The BioSquare Phase II project proposed a curb cut connection from BioSquare Drive to the Frontage Road Southbound. The curb cut has been designed, however it is unclear when it will be built. This improvement would likely reduce traffic volumes along Albany Street, allowing direct access to Interstate 93 for all visitors, employees, and patients surrounding the Boston Medical Campus.

Figure 5-10. Area Development Projects



Howard/Stein-Hudson Associates, Inc.

No-Build (2018) Conditions Traffic Volumes

To develop the 2018 No-Build Conditions traffic volumes at the study area intersections, the 1% per year annual growth rate was applied to the 2013 Existing Conditions traffic volumes, then the traffic volumes associated with the background development projects listed above were added.

The 2018 No-Build a.m. and p.m. peak hour traffic volumes are shown in **Figure 5-11** and **Figure -12**, respectively.

No-Build (2018) Traffic Operations

The 2018 No-Build Conditions scenario analysis uses the same methodology as the 2013 Existing Conditions scenario analysis. **Table 5-6** and **Table 5-7** present the 2018 No-Build Conditions operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a decrease in LOS between the 2013 Existing Conditions and the 2018 No-Build Conditions. The detailed analysis is provided in the Appendix.

Table 5-6 No-Build Conditions (2018) Level of Service Summary, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 th Percentile Queue Length (feet)	95 th Percentile Queue Length (feet)
Signalized Intersections					
1. Harrison Avenue/Monsignor Reynolds Way/ Malden Street	F	>80.0	—	—	—
Reynolds EB left/thru	F	>80.0	>1.00	~259	#337
Reynolds EB right	A	2.9	0.32	0	0
Malden WB left/thru/right	F	>80.0	>1.00	~218	#375
Harrison NB left	A	8.8	0.24	28	m37
Harrison NB thru/right	B	17.0	0.38	106	m176
Harrison SB left	B	10.4	0.21	12	29
Harrison SB thru/right	B	14.6	0.34	52	79
Unsignalized Intersections					
2. Malden Street/Site Driveway	—	—	—	—	—
Malden EB left/thru	A	0.4	0.01	-	1
Malden WB left/thru	A	0.0	0.20	-	0
Site Driveway SB left/right	B	10.3	0.01	-	0
3. Albany Street/ Malden Street	—	—	—	—	—
Malden EB left/right	F	>50.0	>1.00	-	377
Albany NB left/thru	A	0.9	0.20	-	6
Albany SB thru/right	A	0.0	0.51	-	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

~ = 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is sufficient for 1 cycle.

m = Volume for the 95th percentile queue is metered by the upstream signal.

Gray cell shading indicates a decrease in LOS from Existing Conditions.

Table 5-7 No-Build Conditions (2018) Level of Service Summary, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 th Percentile Queue Length (feet)	95 th Percentile Queue Length (feet)
Signalized Intersections					
1. Harrison Avenue/Monsignor Reynolds Way/Malden Street	F	>80.0	—	—	—
Reynolds EB left/thru	F	>80.0	>1.00	~334	#463
Reynolds EB right	A	2.1	0.22	0	m2
Malden WB left/thru/right	E	70.2	0.97	205	#281
Harrison NB left	B	18.7	0.49	30	m#67
Harrison NB thru/right	C	25.5	0.60	181	#457
Harrison SB left	B	13.6	0.31	12	27
Harrison SB thru/right	C	23.3	0.60	155	#363
Unsignalized Intersections					
2. Malden Street/Site Driveway	—	—	—	—	—
Malden EB left/thru	A	0.3	0.01	-	0
Malden WB left/thru	A	0.0	0.19	-	0
Site Driveway SB left/right	B	11.1	0.04	-	3
3. Albany Street/ Malden Street	—	—	—	—	—
Malden EB left/right	F	>50.0	>1.00	-	690
Albany NB left/thru	A	1.5	0.48	-	9
Albany SB thru/right	A	0.0	0.27	-	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

~ = 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is sufficient for 1 cycle.

m = Volume for the 95th percentile queue is metered by the upstream signal.

Gray cell shading indicates a decrease in LOS from Existing Conditions

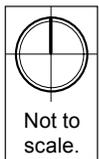
Under No-Build Conditions, the signalized intersection of Harrison Avenue/Monsignor Reynolds Way/Malden Street decreases from a LOS E to a LOS F during the weekday a.m. and p.m. peak periods.

The individual approach on Malden Street westbound left/thru/right movement at the Monsignor Reynolds Way/Harrison Avenue intersection decreased from a LOS E to a LOS F during the p.m. peak hour.

5.3.2 Build Conditions

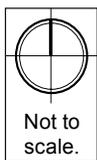
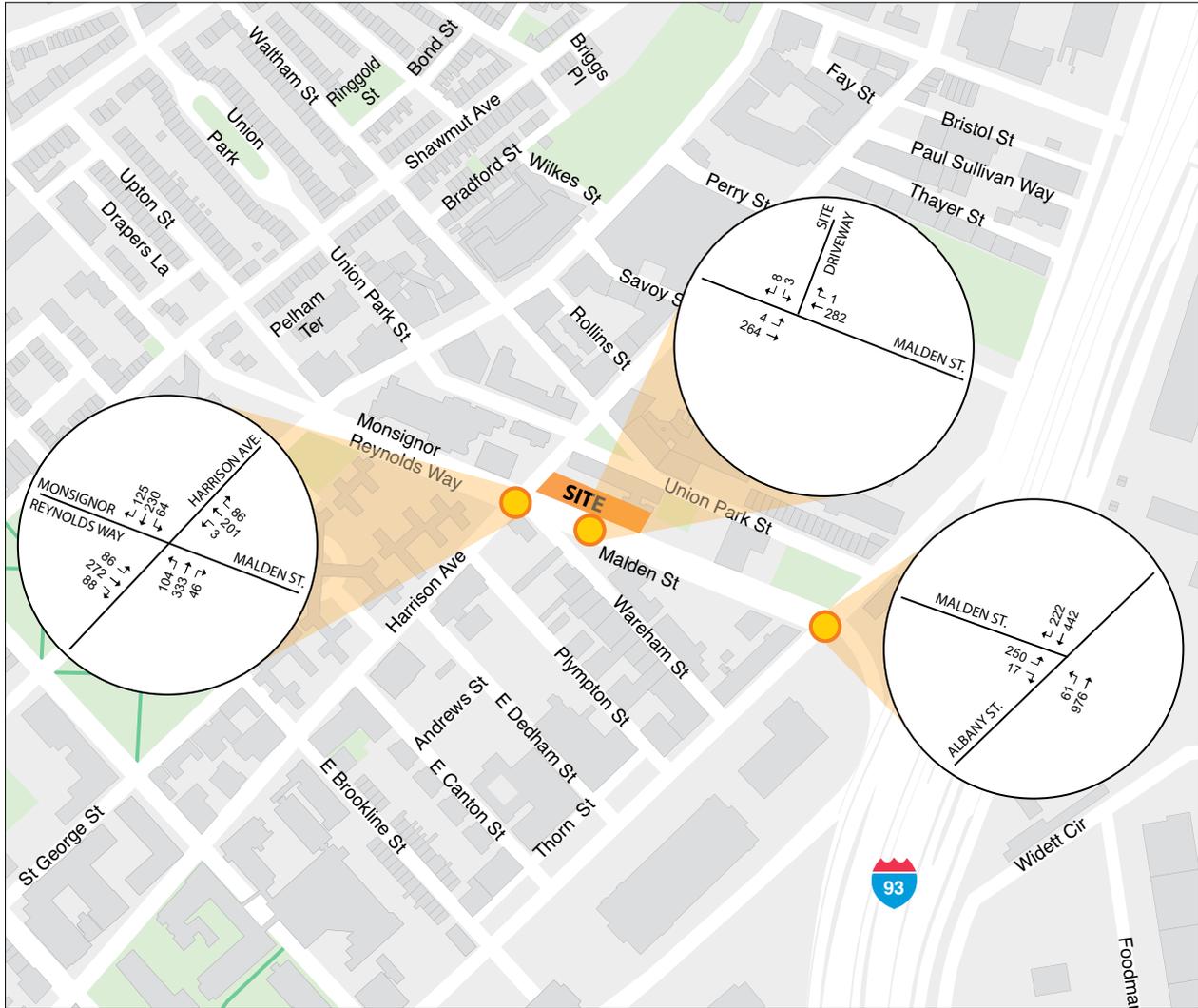
The Project will result in the construction of approximately 160 residential units, and approximately 3,600 square feet of ground-floor retail space. On-site parking will include approximately 236 parking spaces within a three-level parking structure beneath the building, including 80 accessory parking spaces for the residential use, 70 ancillary/commercial parking spaces for the Cathedral, and 86 public/commercial parking spaces. The Project will also provide secure covered storage for approximately 120 bicycles. The site plan is shown in **Figure 5-13**. The 2018 Build Conditions reflect a future

Figure 5-11. No-Build Conditions (2018) Traffic Volumes, a.m. Peak Hour



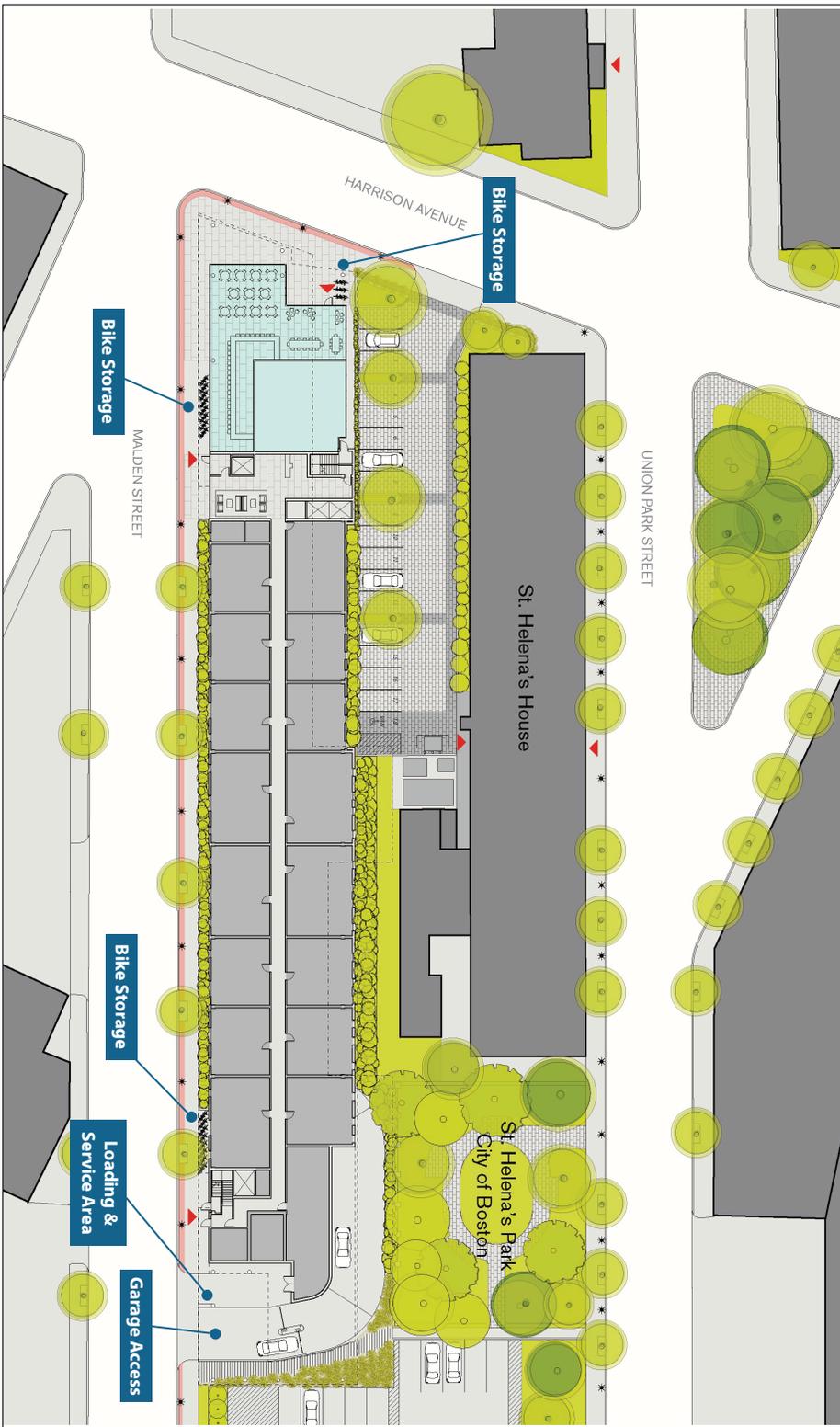
Howard/Stein-Hudson Associates, Inc.

Figure 5-12. No-Build Conditions (2018) Traffic Volumes, p.m. Peak Hour



Howard/Stein-Hudson Associates, Inc.

Figure 5-13. Site Plan



Not to scale.

Howard/Stein-Hudson Associates, Inc.

scenario that adds anticipated Project-generated trips to the 2018 No-Build Conditions traffic volumes.

Site Access and Circulation

The Project Site is currently provided vehicular access via two curbs, including one on Malden Street, approximately 115 feet east of the Harrison Avenue, and a second curb cut on Harrison Avenue approximately 35 north of Malden Street. The curb cut on Harrison Avenue is not used and was chained off at the time of the study.

The Project proposes to close the curb cut on Harrison Avenue and relocate the existing curb cut on Malden Street to the eastern edge of the property, approximately 300 feet east of its current location. This curb cut would provide vehicular access and egress to the below-grade parking garage and the dedicated loading and service area. No vehicular access will be provided on Harrison Avenue.

Trip Generation

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

To estimate the number of existing trips at the Project Site, peak-hour counts were conducted at the Site on September 2013. The peak hour data is then used to determine the net new trips generated by the proposed Project Site, since the existing surface lot will be eliminated.

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual, 9th Edition* and other readily available were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well served by transit, adjustments are necessary to account for vehicle occupancy and other travel modes such as walking, bicycling, and transit.

Trip generation estimates for the Project were derived using the following Land Use Codes (LUC):

- **LUC 220 – Apartment.** The apartment land use can be a rental dwelling unit located within the same building with at least three other dwelling units. The fitted curve equations were used to estimate person trips associated with the apartment use.

- **LUC 820 – Shopping Center.** A shopping center land use is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. It provides on-site parking facilities sufficient to serve its own parking demands.
- **Commercial Parking.** The commercial parking land use is a facility that rents out parking spaces on an hourly or monthly basis. An average rate was developed based on counts collected by HSH at other similar parking facilities throughout the City of Boston.
- **Archdiocese Parking.** The archdiocese parking would continue to be used for cathedral activities, such as mass, choir and religious education as well as commercial parking during off-peak periods for the Cathedral. The trip generation was obtained through existing traffic counts that were conducted in September 2013.

Mode Split

BTD publishes transit, walk/bike, and vehicle mode split rates for different areas of Boston and the Project is located within designated Area 15. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA). The BTD’s travel mode share data for Area 15 are shown in **Table 5-8**.

Table 5-8 BTD Area 15 Mode Shares

Land Use	Period/ Direction	Vehicle Trips	Transit Trips	Bike/Walk/Oth er Trips
Daily				
Residenti al	In	57%	17%	26%
	Out	57%	17%	26%
Retail	In	56%	17%	27%
	Out	56%	17%	27%
a.m. Peak Hour				
Residenti al	In	54%	19%	27%
	Out	44%	29%	27%
Retail	In	53%	20%	27%
	Out	44%	28%	28%
p.m. Peak Hour				
Residenti al	In	44%	29%	27%
	Out	54%	19%	27%
Retail	In	44%	28%	28%
	Out	53%	20%	27%

Source: Boston Transportation Department mode share data for Area 15 for residential and retail.

Vehicle Trip Generation

The trip generation process described above yields the adjusted vehicle trips associated with the Project. The net new-generated vehicle trips are summarized in **Table 5-9** with detailed trip generation information provided in the Appendix.

Table 5-9 Vehicle Trip Generation Comparison

Period/Direction		Existing Vehicle Trips	Proposed Vehicle Trips	Net-New Vehicle Trips
Daily	In	25	590	565
	Out	14	579	565
	Total	39	1,169	1,130
a.m. Peak Hour	In	16	48	32
	Out	1	34	33
	Total	17	82	65
p.m. Peak Hour	In	5	47	42
	Out	11	49	38
	Total	16	96	80

Source:

Trip Generation based on ITE LUC-220, Apartment average rates for 160 units, ITE LUC 820, Shopping Center average rate for 3,600 sf, Commercial parking for 86 spaces, and Archdiocese parking for 70 spaces.

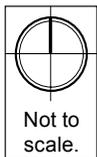
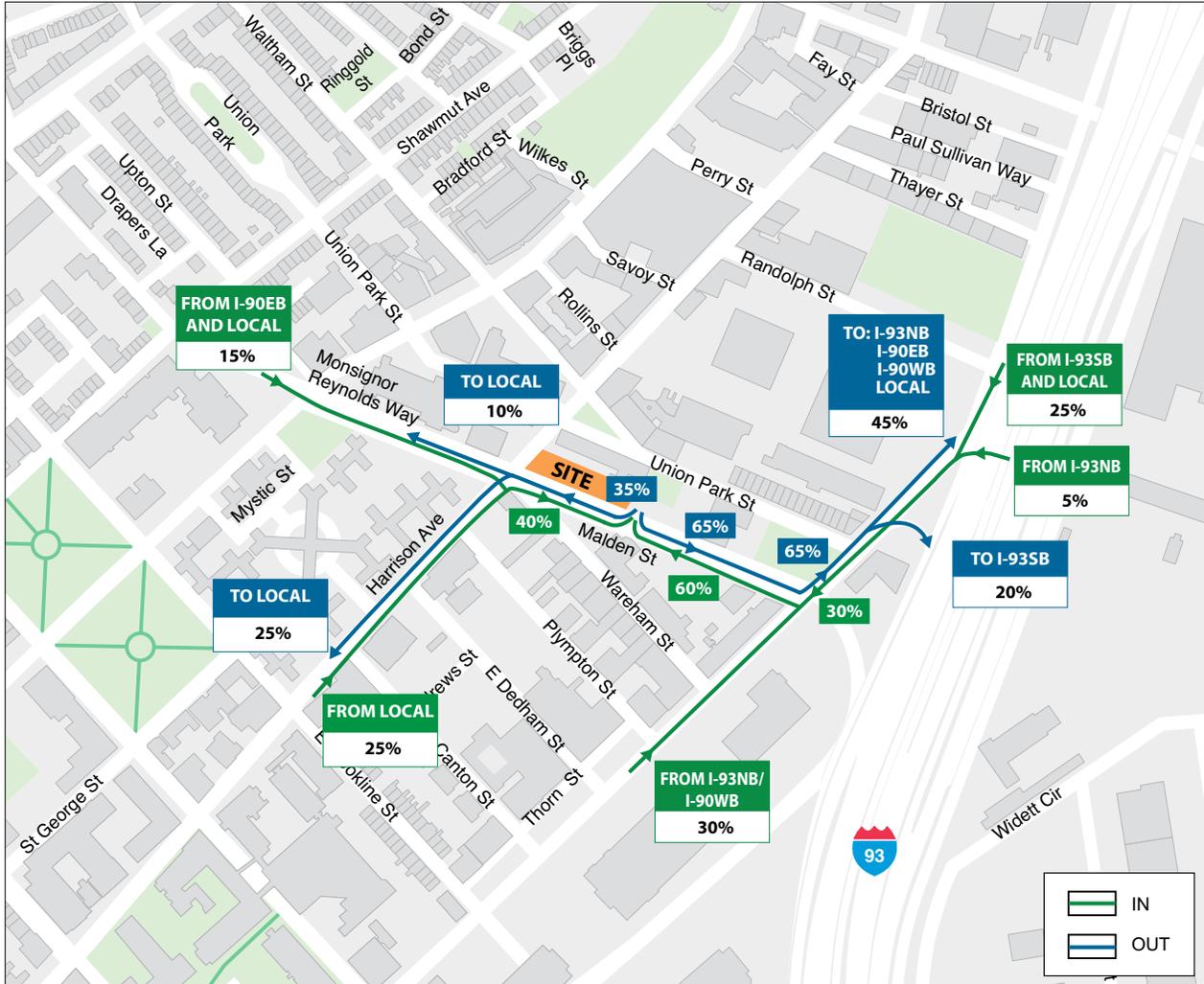
As shown in **Table 5-9**, the Project will only generate approximately 65 net new vehicle trips (32 trips entering and 33 trips exiting) during a.m. peak hour and 80 net new vehicle trips (42 trips entering and 38 trips exiting) during p.m. peak hour. This corresponds to only approximately one new vehicle trip per minute during the a.m. and p.m. peak hour on the adjacent roadway network, a negligible increase.

Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project Site. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 15. The trip distribution patterns were refined based on existing traffic patterns and review of the adjacent roadway network. The trip distribution pattern for the Project is illustrated in **Figure 5-14**.

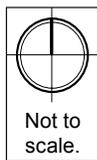
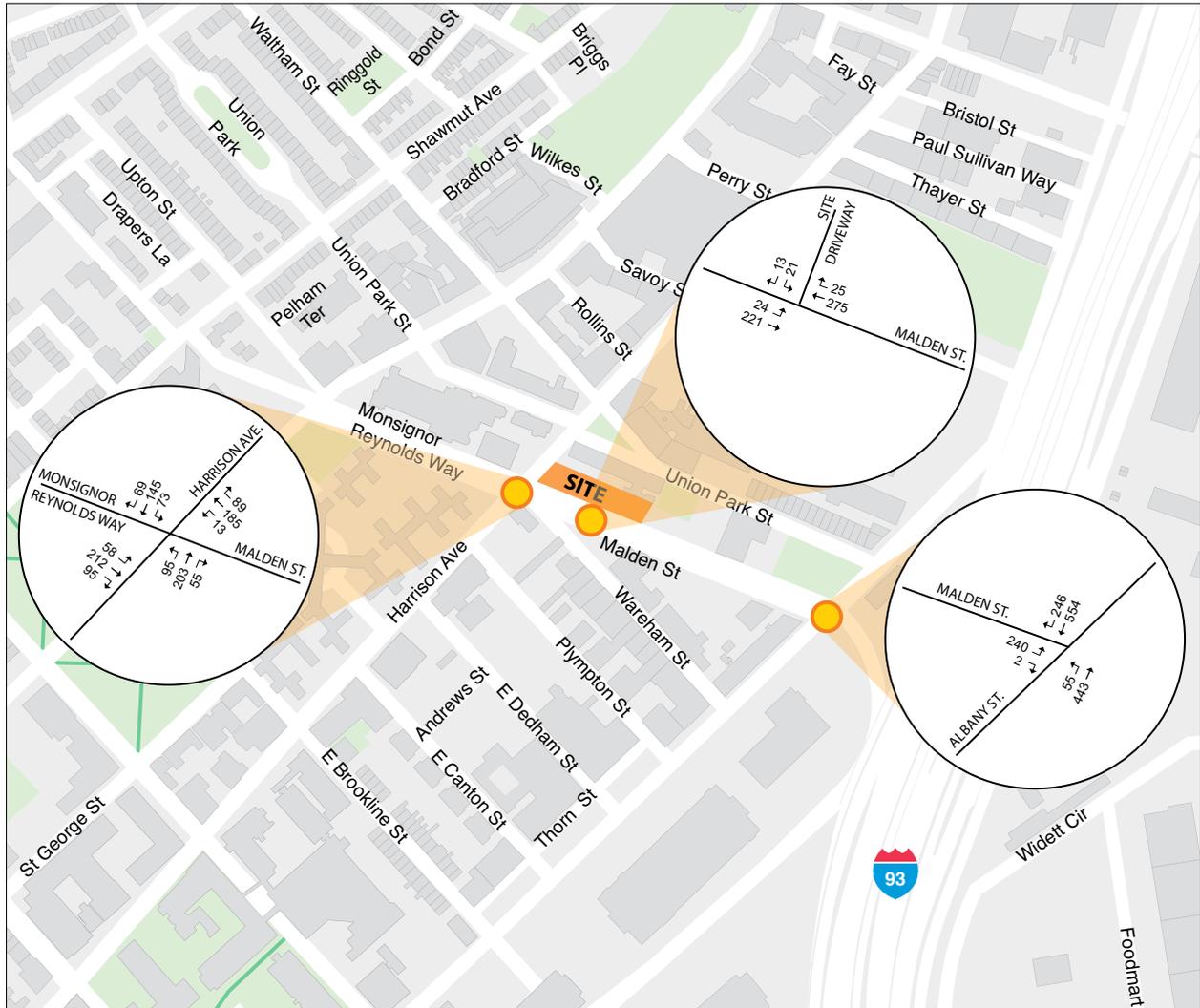
The net new Project-generated vehicle trips were assigned to the study area roadway network based on the trip distribution patterns. The net new Project-generated trips for the Build were added to the 2018 No-Build Conditions traffic volumes to develop the 2018 Build Conditions peak hour traffic volume network. **Figure 5-15** and **Figure 5-16** show the 2018 Build a.m. and p.m. peak hour traffic volumes, respectively.

Figure 5-14. Trip Distribution



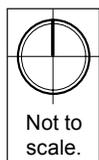
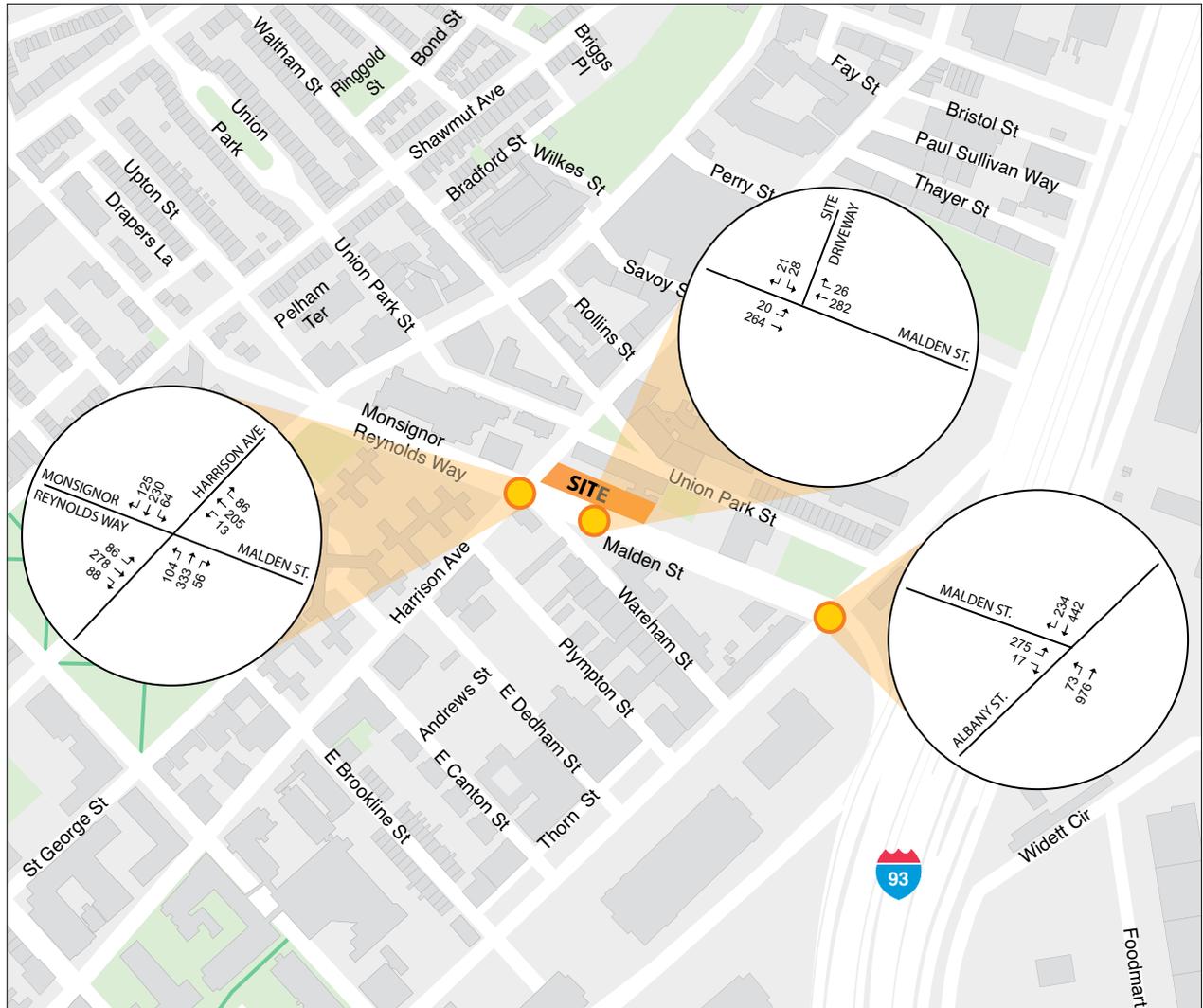
Howard/Stein-Hudson Associates, Inc.

Figure 5-15. Build Conditions (2018) Traffic Volumes, a.m. Peak Hour



Howard/Stein-Hudson Associates, Inc.

Figure 5-16. Build Conditions (2018) Traffic Volumes, p.m. Peak Hour



Howard/Stein-Hudson Associates, Inc.

Build (2018) Traffic Operations

The 2018 Build Conditions scenario analyses uses the same methodology as the 2013 Existing and 2018 No-Build Conditions scenario analyses. The results of the 2018 Build Conditions traffic analysis at study area intersections are presented in **Table 5-10** and **Table 5-11** for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a decrease in LOS between the 2018 No-Build Conditions and the 2018 Build Conditions. The detailed analysis sheets are provided in the Appendix.

Table 5-10 Build Conditions (2018) Level of Service Summary, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 th Percentile Queue Length (feet)	95 th Percentile Queue Length (feet)
Signalized Intersections					
1. Harrison Avenue/Monsignor Reynolds Way/Malden Street	F	>80.0	—	—	—
Reynolds EB left/thru	F	>80.0	>1.00	~266	#346
Reynolds EB right	A	2.9	0.32	0	0
Malden WB left/thru/right	F	>80.0	>1.00	~290	#449
Harrison NB left	A	8.9	0.24	28	m37
Harrison NB thru/right	B	17.3	0.40	108	m202
Harrison SB left	B	10.5	0.21	12	29
Harrison SB thru/right	B	14.6	0.34	78	151
Unsignalized Intersections					
2. Malden Street/Site Driveway	—	—	—	—	—
Malden EB left/thru	A	0.9	0.02	-	2
Malden WB left/thru	A	0.0	0.22	-	0
Site Driveway SB left/right	B	12.8	0.14	-	12
3. Albany Street/Malden Street	—	—	—	—	—
Malden EB left/right	F	>50.0	>1.00	-	465
Albany NB left/thru	A	1.3	0.20	-	8
Albany SB thru/right	A	0.0	0.52	-	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

~ = 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is sufficient for 1 cycle.

m = Volume for the 95th percentile queue is metered by the upstream signal.

Gray cell shading indicates a decrease in LOS from Existing Conditions.

Table 5-11 Build Conditions (2018) Level of Service Summary, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 th Percentile Queue Length (feet)	95 th Percentile Queue Length (feet)
Signalized Intersections					
1. Harrison Avenue/Monsignor Reynolds Way/Malden Street	F	>80.0	—	—	—
Reynolds EB left/thru	F	>80.0	>1.00	~340	#472
Reynolds EB right	A	2.2	0.22	0	m2
Malden WB left/thru/right	F	>80.0	>1.00	~300	#369
Harrison NB left	B	18.7	0.49	30	m#65
Harrison NB thru/right	C	26.1	0.62	188	#475
Harrison SB left	B	13.6	0.31	12	27
Harrison SB thru/right	C	23.3	0.60	155	#363
Unsignalized Intersections					
2. Malden Street/Site Driveway	—	—	—	—	—
Malden EB left/thru	A	2.0	0.06	-	5
Malden WB left/thru	A	0.0	0.72	-	0
Site Driveway SB left/right	F	>50.0	0.63	-	83
3. Albany Street/Malden Street	—	—	—	—	—
Malden EB left/right	F	>50.0	>1.00	-	-
Albany NB left/thru	A	1.8	0.48	-	11
Albany SB thru/right	A	0.0	0.28	-	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

~ = 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is sufficient for 1 cycle.

m = Volume for the 95th percentile queue is metered by the upstream signal.

Gray cell shading indicates a decrease in LOS from Existing Conditions

Under Build Conditions, all study area intersections continue to operate at the same overall and individual approach level of service during both a.m. and p.m. peak periods as under No-Build Conditions with the following individual approach exceptions: Malden Street westbound left/thru/right approach decreasing from a LOS E to a LOS F at the Harrison Avenue/Monsignor Reynolds Way/Malden Street during the p.m. peak hour and the Site Driveway southbound left/right approach decreases from a LOS B to LOS F during the p.m. peak hour.

The Harrison Avenue/Monsignor Reynolds Way/Malden Street traffic signal optimization has not implemented the Phase 2 improvements, which would remove the protected phasing at the intersection, recalculate the yellow, all-red and flashing don't walk clearance intervals and update the cycle length. It is unclear when these improvements will be implemented.

Parking Supply

The Project will provide approximately 236 parking spaces within a three-level, below-grade parking garage, including 80 accessory parking spaces for

the residential use, 70 ancillary/commercial parking spaces for the Cathedral, and 86 public/commercial parking spaces.

The parking for the 160 units corresponds to a ratio of 0.5 spaces per unit, which is consistent with the BTB district-based parking goals that identify a maximum parking ratio of 1.0 to 1.5 spaces.

The Project will also provide secure covered storage for approximately 120 bicycles for use by building residents, workers, and visitors.

Public Transportation

The Project will generate a combined estimated 334 daily transit trips; with approximately 31 transit trips (8 boarding and 23 alighting) during a.m. peak hour and 40 transit trips (26 boarding and 14 alighting) during p.m. peak hour. The small number of Project-generated transit trips is not expected to affect transit service adversely in the study area. The Proponent is committed to promoting transit use among Project residents and visitors, as discussed under the Transportation Demand Management section below.

Bicycle Accommodations

The Project will provide secure covered bicycle storage, for up to 120 bicycles, within the proposed building, available for building residents and tenants. Additional bicycle racks, accommodating up to 33 bicycles will also be provided near main entrances to the new building for workers, visitors, and guests. These racks will be covered and thereby protected from the elements.

All bicycle racks, signs, and parking areas will conform to BTB standards and be sited in safe, secure locations. The Proponent will work with BTB 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.

Pedestrians Access and Circulation

On a daily basis, the Project will generate a combined estimated 511 pedestrian and bicycle trips in addition to the 334 new transit trips that will require a walk to or from the Site. This result is an additional 845 new pedestrian or bicycle trips per day. The Project will generate approximately 34 walk/bicycle trips (12 trips entering and 22 trips exiting) during a.m. peak hour and 45 walk/bicycle trips (26 trips entering and 19 trips exiting) during p.m. peak hour. Pedestrian and bicycle trip generation is detailed in the appendix.

The Proponent is committed to promoting bicycle use among Project residents, workers and visitors, as discussed under the Transportation Demand Management section below.

Loading and Service

All recycling and trash collection for the proposed residential will occur inside the buildings and then wheeled/carried out to the curbside for pick-up. Service and loading activity for the residential units, including move-in/move-out will occur within the dedicated loading area. The loading area will be able to accommodate a vehicle as large as 36 feet in length. Most residential deliveries are made in smaller vehicles—cars, vans, or small panel trucks. Should residents require a vehicle larger than SU-36, residents will be required to obtain a temporary street occupancy permit from the City. Building management will proactively discourage move-in/move-out activity by vehicles larger than SU-36 and will be responsible for coordinating all residential move-in and move-out activity and schedule this activity during off-peak hours, when possible. Move-in and move-out activity is generally infrequent once the building is fully occupied.

Deliveries for the ground-floor retail use would occur curb-side and are expected to be infrequent given the limited size of the retail space. The Project Proponent will work with the BTM on the appropriateness of obtaining an on-street commercial loading zone adjacent to the Site to support commercial loading activity.

5.4 Transportation Demand Management

The Project Proponent is committed to implementing a transportation demand management (TDM) program in support the City's efforts to reduce dependency on the automobile. The Proponent will work with the Boston Transportation Department (BTM) as part of the Transportation Access Plan Agreement (TAPA) process to identify appropriate TDM measures.

TDM measures encourage travelers to use alternatives to driving, especially during peak periods and will be facilitated by the nature of the Project and its proximity to public transit. The Proponent will emphasize the Site's convenient transit and pedestrian access in marketing the Project to future residents and tenants.

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

- Orientation Packets: The Proponent will provide orientation packets to new residents and tenants containing information on available

transportation choices, including transit routes/schedules and nearby ZipCar locations. On-site management will work with residents and tenants as they move in to help facilitate transportation for new arrivals.

- **Bicycle Accommodation:** The Proponent will provide bicycle storage in secure, sheltered areas for residents and workers. Subject to necessary approvals, public use bicycle racks for visitors will be placed near building entrances.
- **Electric Vehicle Charging:** The Proponent will provide one electric vehicle charging stations within the garage, and will include the infrastructure to add additional such charging stations should demand warrant.
- **Shared-car Services:** The Proponent will work with a shared car provided (e.g., ZipCar, Hertz) to determine the appropriateness of providing shared vehicles on-site in an effort to discourage/reduce auto ownership among residents.
- **Transportation Coordinator:** The Proponent will designate a transportation coordinator to oversee transportation issues including parking, service and loading, and deliveries and will work with residents as they move in to raise awareness of public transportation, bicycling, and walking opportunities.
- **Project Web Site:** The web site will include transportation-related information for residents, workers, and visitors.

The proponents will work with BTM to determine an appropriate TDM program and will formalize this program in a Transportation Access Plan Agreement (TAPA).

5.5 Evaluation of Short-Term Construction Impacts

A Construction Management Plan (“CMP”) will be filed with BTM in accordance with the City’s requirements. The CMP will discuss measures for minimizing negative impacts associated with trucking activity, construction staging, and construction worker parking. As part of the CMP, the Proponent will continue to work closely with the City to ensure that the construction schedule for the proposed project is well coordinated with other construction activities in the area.

Construction activities will be accommodated within the current Site boundaries, where possible. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in the CMP.

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

- Transit use and car-pooling will be encouraged for construction workers;
- Secure spaces will be provided on-site for workers' supplies and tools, so that they do not have to be brought to the Site each day; and
- The development team will designate an individual as primary contact to work with appropriate public review agencies and surrounding businesses and communities. The liaison will ensure coordination with other development projects and will be able to provide construction information as required. The role of the liaison is to enable the construction period to run as smoothly as possible by serving as the point of contact for resolution of any issues that may arise.

6.0 ENVIRONMENTAL

6.1 Wind

The proposed residential building will reach 70 feet in height, on average, at the perimeter of the building, in conformance with height restrictions in the EDA zoning subdistrict. The new structure will cover most of the Project Site. The only public areas will be the retail plaza area along Huntington, and the mid-block connector along the BWSC facility site boundary, both of which are two-story high spaces covered by the structure above. Other buildings in the vicinity of the Project are about the same or significantly higher than the proposed Project. The adjacent St. Helena's House structure ranges between 60 and 75 feet in height, while the Cathedral of the Holy Cross across Harrison Street tops out at 120 feet in height.

As a result of the existing and proposed conditions, it is expected that none of the locations along the sidewalk will have pedestrian level winds (PLWs) that exceed the BRA guideline wind speed of 31 mph.

6.2 Shadow

6.2.1 Introduction and Methodology

A shadow impact analysis was conducted for the hours of 9:00 am, 12:00 noon, and 3:00 pm during the summer solstice (June 21), autumnal equinox (September 21), and the winter solstice (December 21). The vernal equinox shadow impacts were studied as if March 21 were still in Standard Time, meaning they are studied during the time periods of 10:00 am, 1:00 pm, and 4:00 pm. Impacts at 6:00 pm during the summer and autumn were also examined. The study used the applicable Altitude and Azimuth data for Boston presented in Appendix B of the BRA's 2006 Development Review Guidelines.

The shadow analysis presents existing shadow as well as net new shadow from the Project to illustrate the incremental impact of the Project. For the purposes of clarity, new shadow is shown in a blue tone while existing shadow is shown in gray. Results of the shadow impact study are discussed in the following sections, and are supported by **Figures 6.1 through 6.14**.

6.2.2 Results

In general, new shadow from the Project will largely be limited to the immediate surrounding public ways and sidewalks of Harrison Avenue, the adjacent St. Helena's House property parking lot, and portions of the adjacent

St. Helena's Park. Results for each of the 14 times studied are presented below.

Vernal Equinox (March 21)

At 10:00 am during the vernal equinox, shadow from the Project will be cast in a northwesterly direction. New shadow will be cast onto Harrison Avenue, portions of the parking area on the Cathedral site behind the Rectory, and a portion of the immediately adjacent St. Helena's House parking lot.

As the day progresses, the shadows become shorter, falling to the north. At 1:00 pm, new shadow from the Project will be cast onto portions of the Harrison Avenue sidewalk and inbound lanes, and onto the St. Helena's House parking lot. New shadow will also be cast on a portion of St. Helena's Park.

In the afternoon (4:00 pm), shadow will extend to the northeast. New shadow from the Project will be cast onto the St. Helena's House parking lot and the two story annex behind St. Helena's House, and into St. Helena's Park.

Summer Solstice (June 21)

At 9:00 am during the summer solstice, shadow will be cast in a westerly direction. New shadow from the Project will be cast into Harrison Avenue, and portions of the sidewalk along Malden Avenue adjacent to the Project will be in shadow.

As the day progresses, the shadows become shorter and swing to the north. At noon, shadow from the Project will place the sidewalk along the front of the Project on Harrison Avenue, and a portion of the St. Helena's House parking lot in shadow.

At 3:00 pm, shadow will extend to the northeast. Net new shadow from the Project will fall on much of the St. Helena's House parking lot, the southern edge of St. Helena's Park, and into a portion of the parking lot serving the BWSC facility.

At 6:00 pm, shadow will be cast to the east. New shadow from the Project will be cast across along the edge of the St. Helena's House property and southern edge St. Helena's Park, and onto approximately half of the BWSC parking area and loading zone.

Autumnal Equinox (September 21)

At 9:00 am during the autumnal equinox, net new shadow will be cast northwest across Harrison Avenue, on onto portions of Cathedral block

parking area across the street, behind the Rectory. A portion of the St. Helena's House parking lot will also be in new shadow.

At noon, new shadow from the Project will be cast onto portions of the Harrison Avenue sidewalk and inbound lane, and onto the St. Helena's House parking lot. New shadow will also be cast on a portion of St. Helena's Park.

In the afternoon (3:00 pm), new shadow will extend to the northeast. New shadow from the Project will be cast onto the St. Helena's House parking lot and the two story annex behind St. Helena's House, and into St. Helena's Park.

By 6:00 pm, the entire area is in existing shadow.

Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than in any other season, causing shadows to elongate.

At 9:00 am, the morning sun will cast new shadow from the Project to the northwest and will fall across Harrison Avenue, much of the Cathedral site behind the Rectory, and portions of the Rectory itself. The St. Helena's House parking lot is in new shadow, and approximately 25% of the St. Helena's Park is in new shadow.

At noon, shadow will extend directly to the north. New shadow will extend across Harrison Avenue and onto Union Park Street, and all of the St. Helena's House parking lot will be in shadow. Approximately 60% of the St. Helena's Park will be in net new shadow, as will portions of Union Park Street due north of the park.

At 3:00 pm, shadows elongate and extend northeast. New shadow will be cast diagonally, across the St. Helena's House parking lot, St. Helena's Park, portions of Union Park Street and the surface parking lot northeast of the park, and onto portions of the structure known as 560 Harrison. A sliver of new shadow extends beyond into the surface parking lot to the east of 560 Harrison.

Figure 6-1 Shadow Analysis - March 21, 10 am

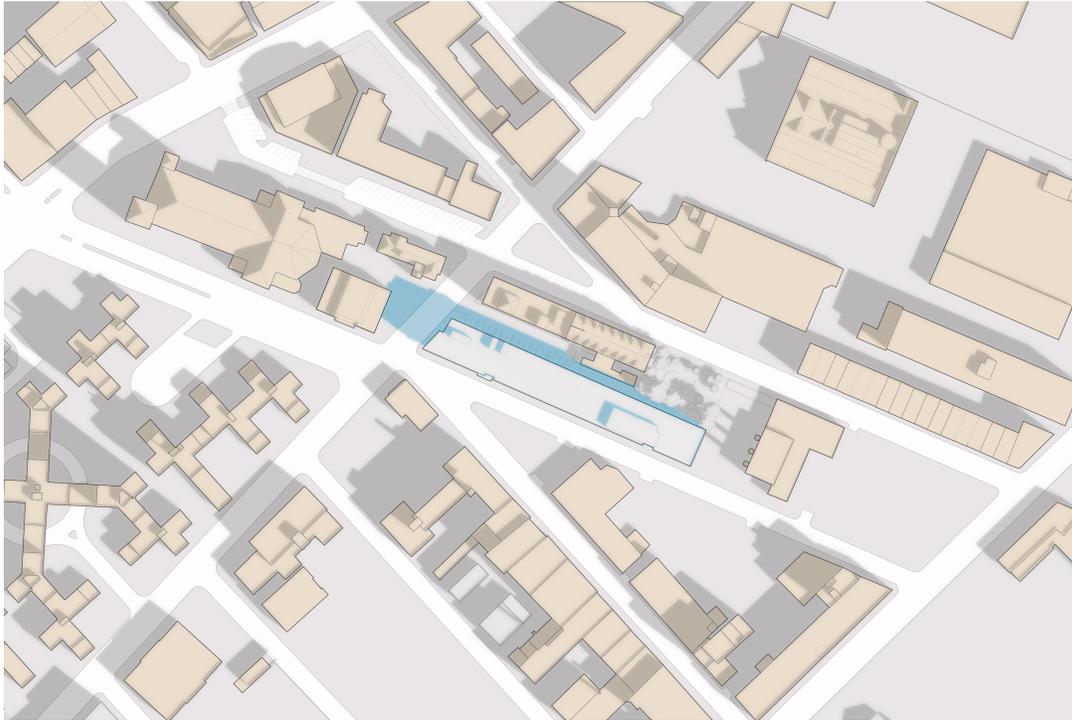


Figure 6-2 Shadow Analysis - March 21, 1 pm

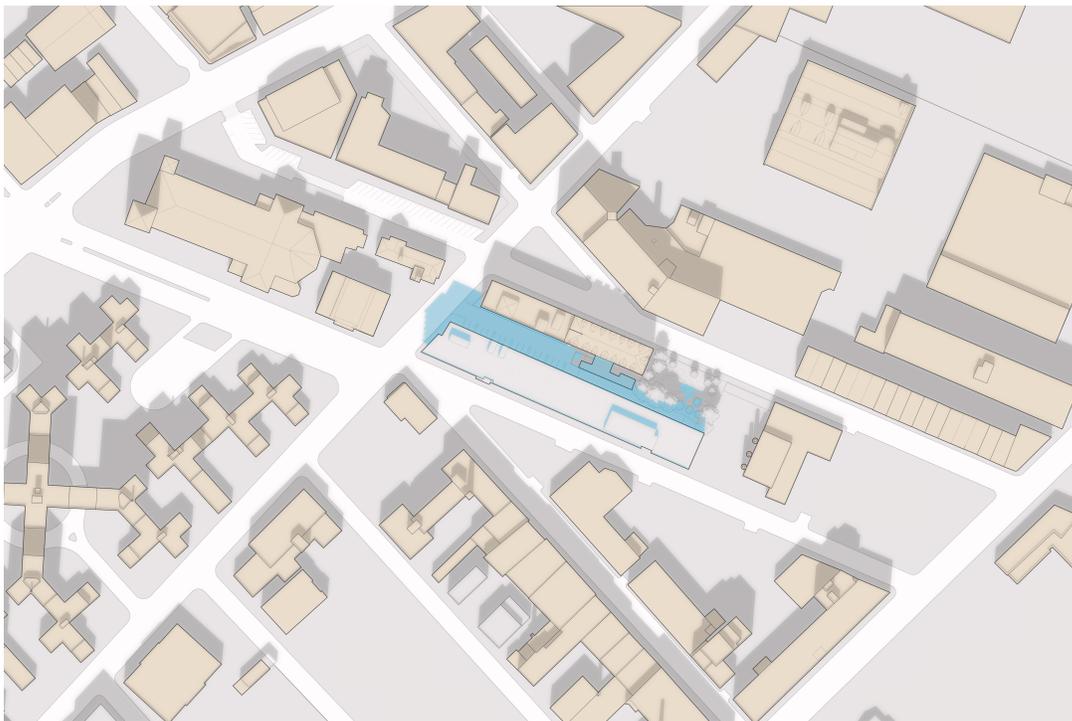


Figure 6-3 Shadow Analysis - March 21, 4 pm

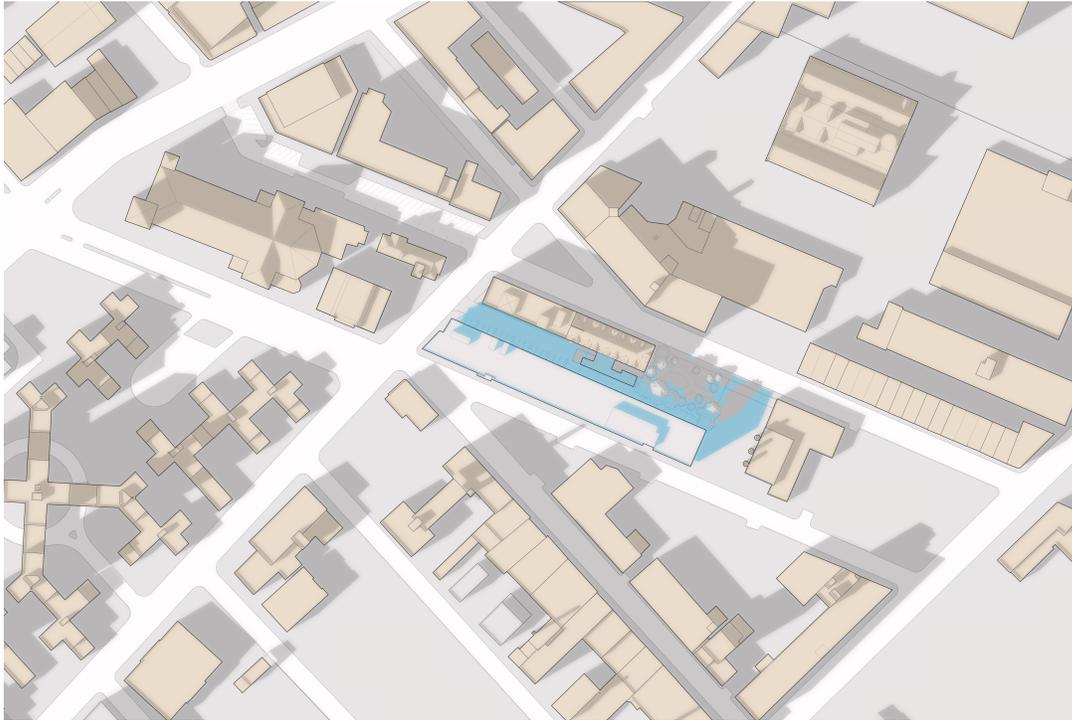


Figure 6-4 Shadow Analysis - June 21, 9 am

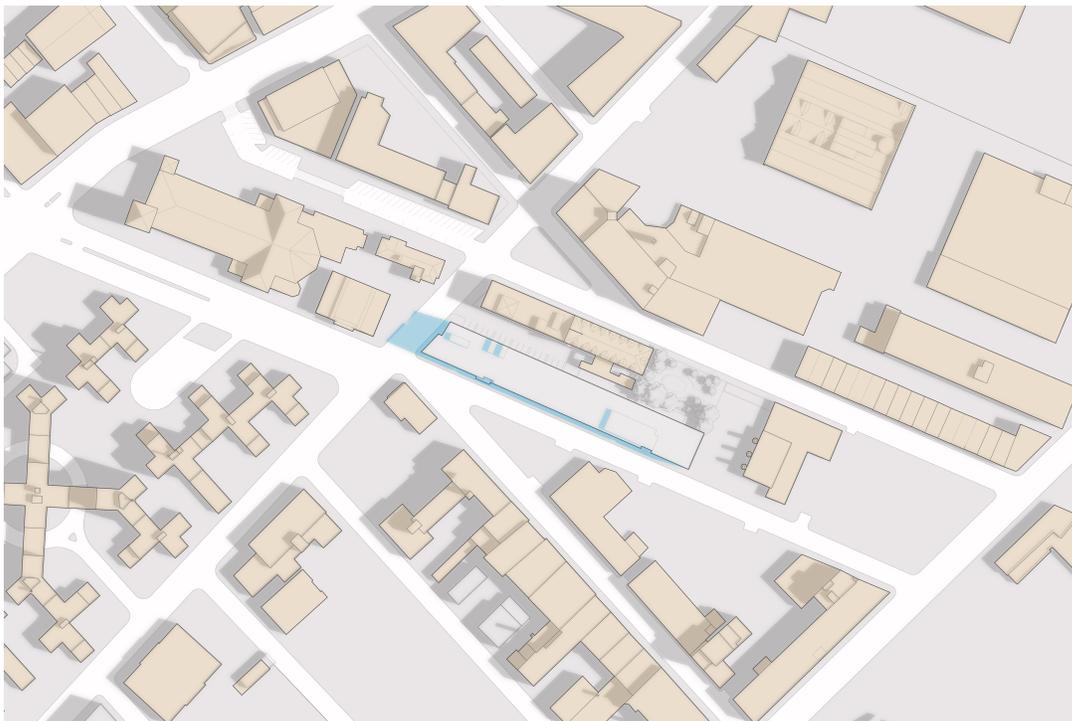


Figure 6-5 Shadow Analysis - June 21, 12 pm

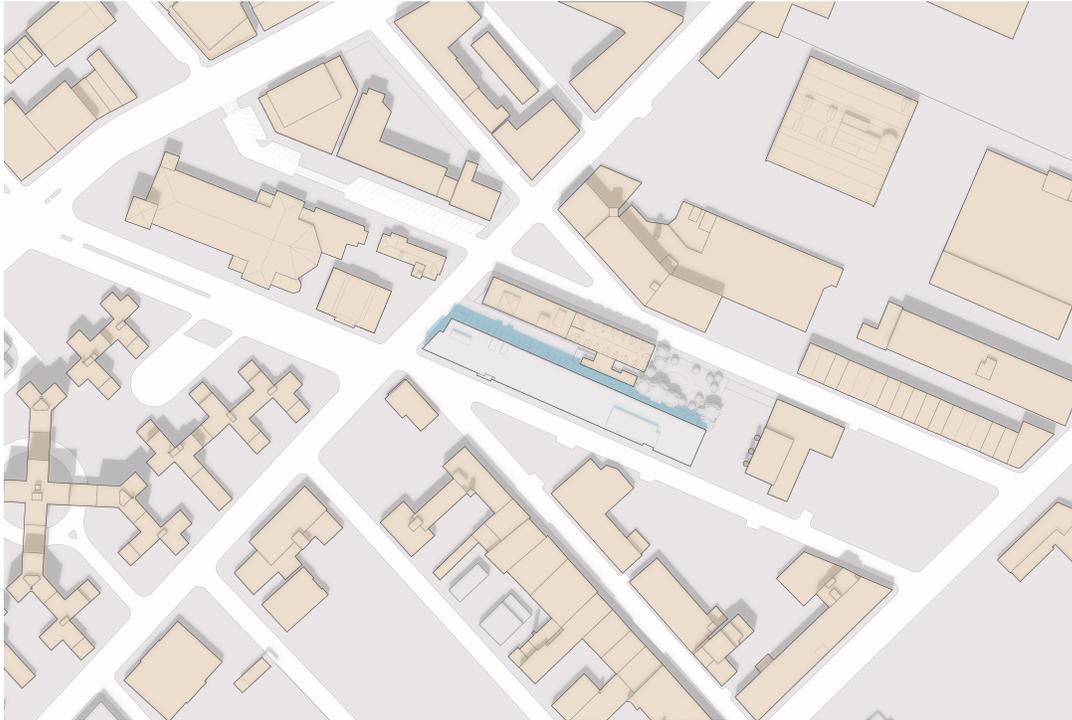


Figure 6-6 Shadow Analysis - June 21, 3 pm

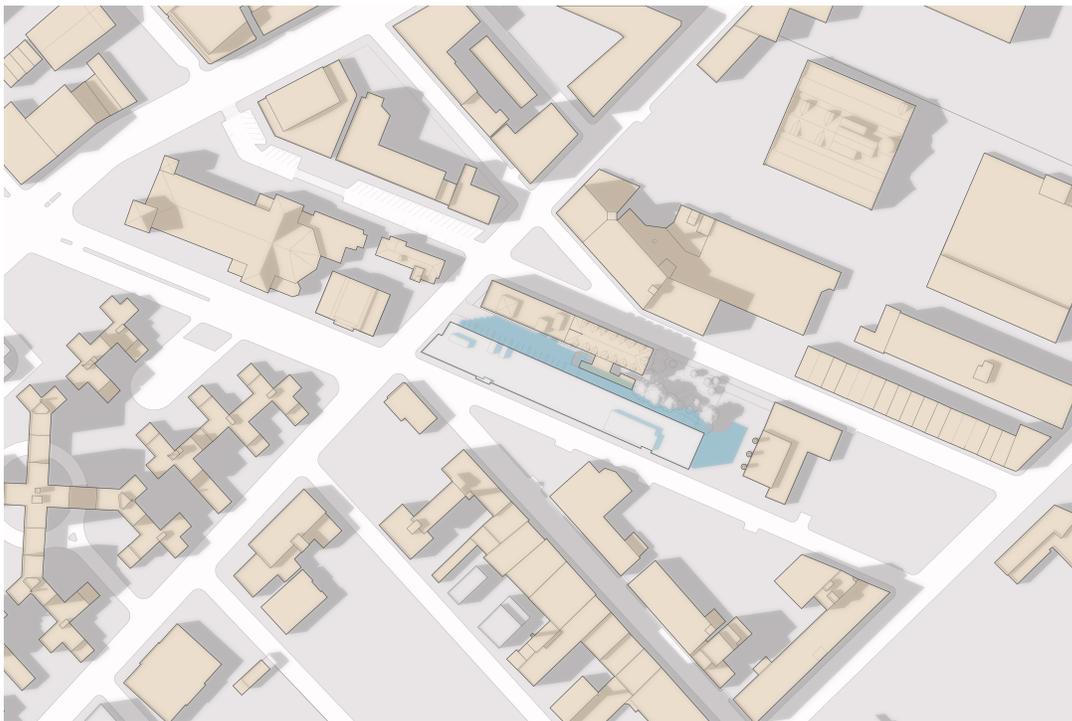


Figure 6-7 Shadow Analysis - June 21, 6 pm

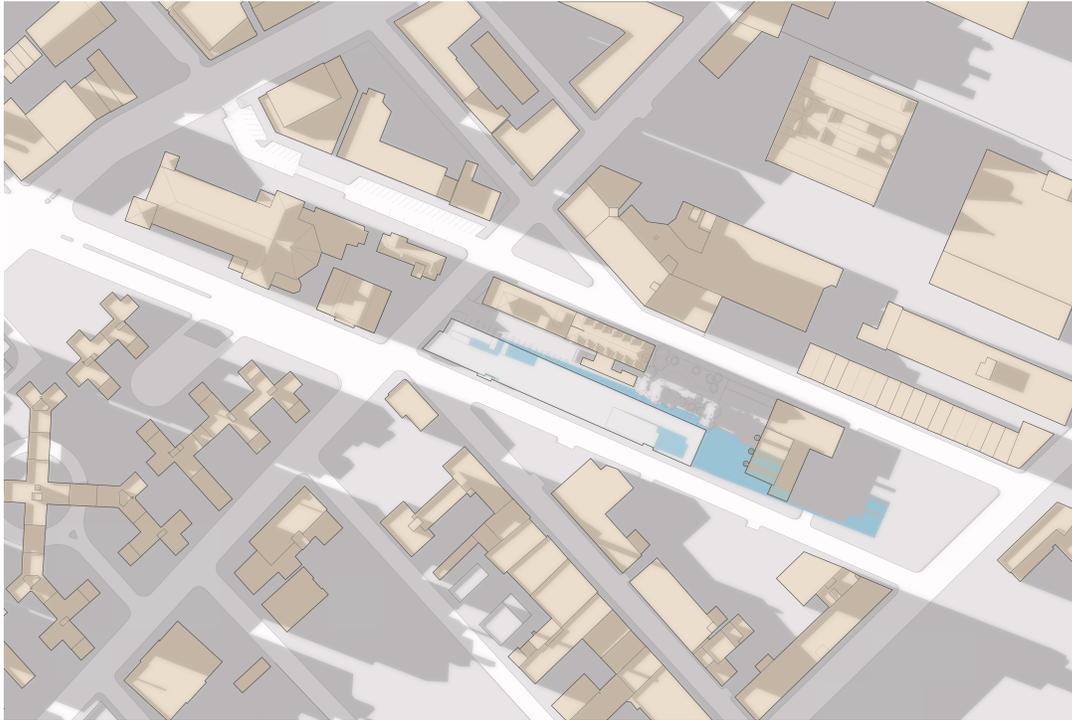


Figure 6-8 Shadow Analysis - September 21, 9 am

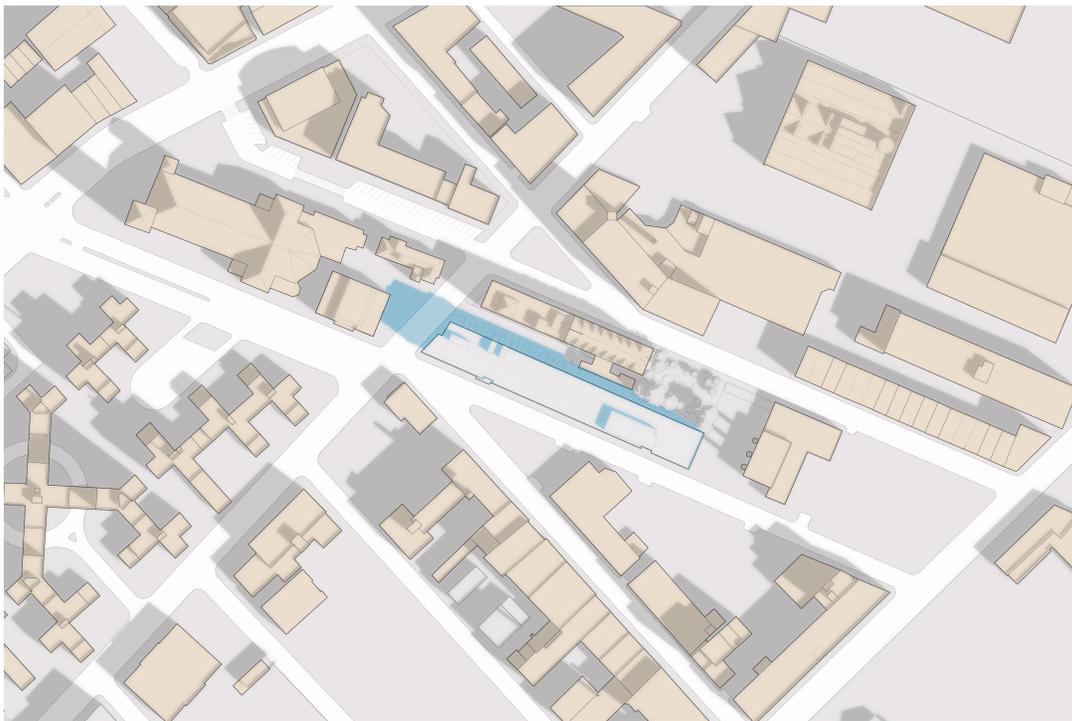


Figure 6-9 Shadow Analysis – September 21, 12 pm

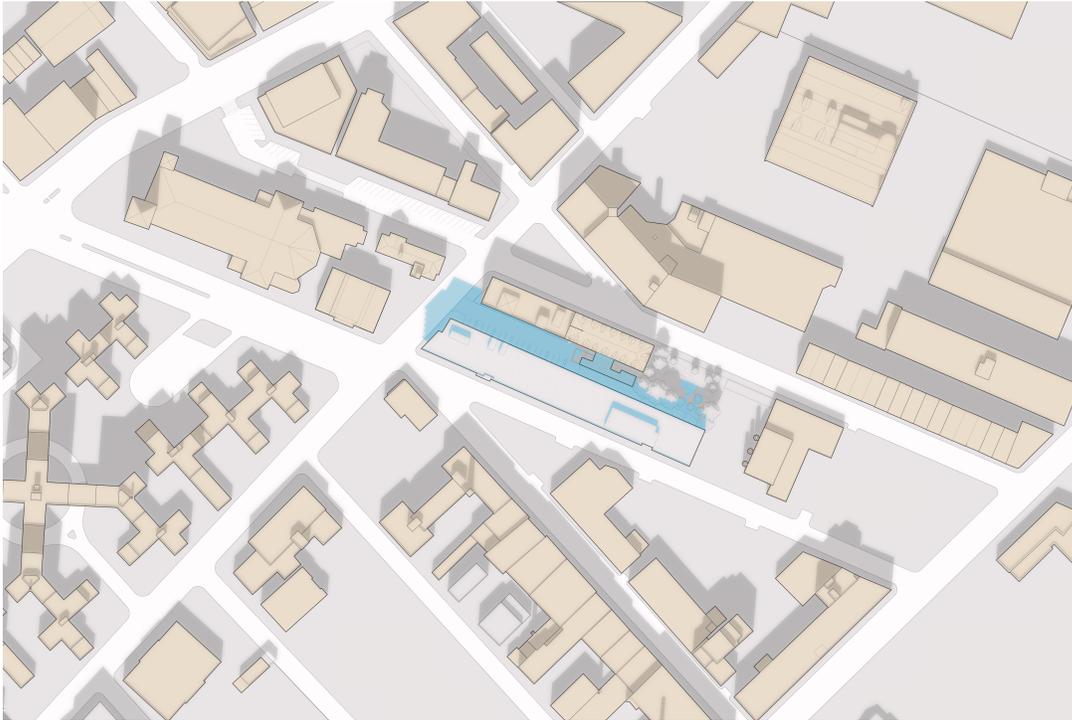


Figure 6-10 Shadow Analysis – September 21, 3 pm

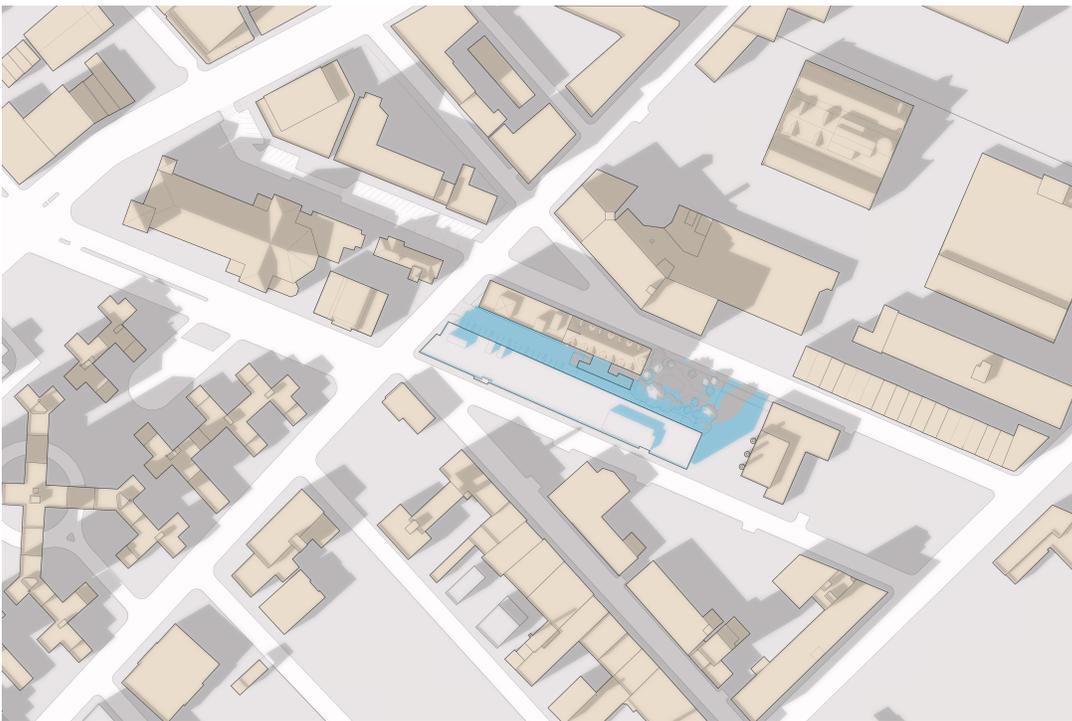


Figure 6-11 Shadow Analysis – September 21, 6 pm



Figure 6-12 Shadow Analysis – December 21, 9 am

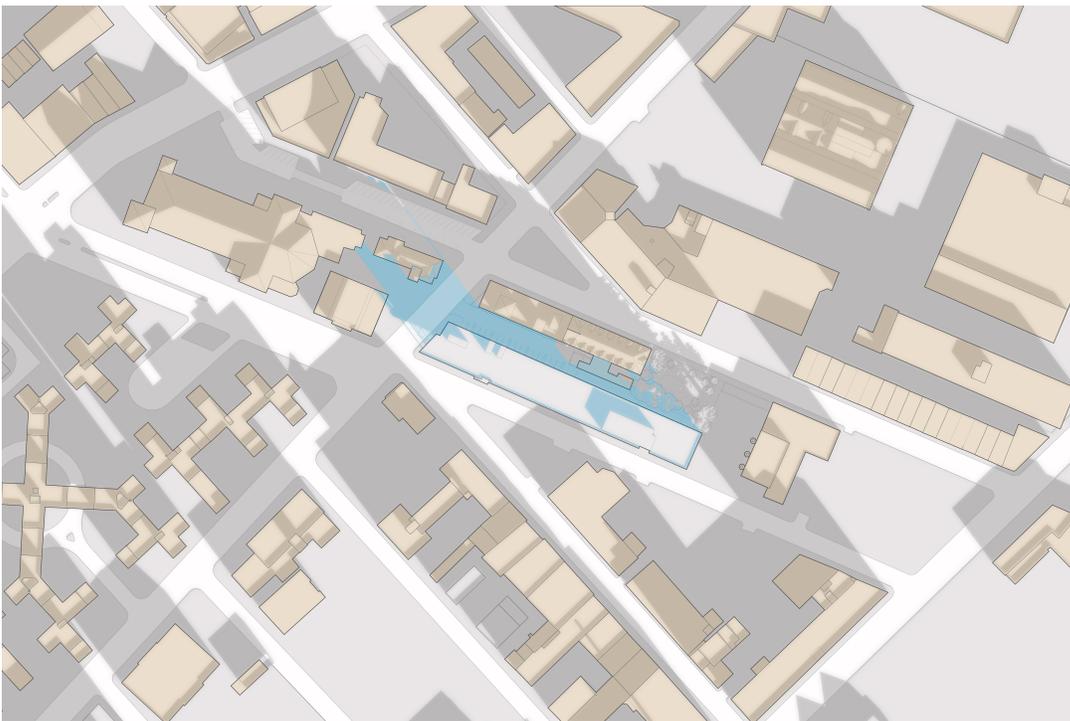
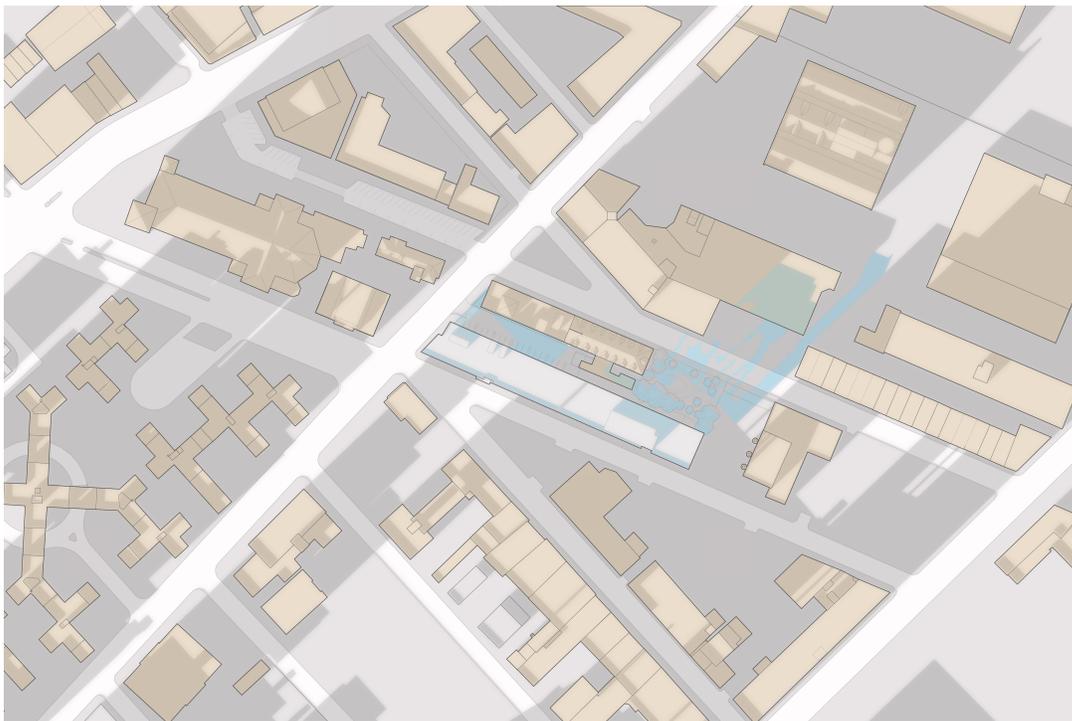


Figure 6-13 Shadow Analysis – December 21, 12 pm



Figure 6-14 Shadow Analysis – December 21, 3 pm



6.3 Daylight

The proposed 70-foot high structure will result in some daylight obstruction along Harrison Avenue and on the parking lot of the adjacent St. Helena's House Property, and on the adjacent St. Helena's Park in the afternoon. A separation of approximately 45 feet between the proposed structure and the existing St. Helena's House building, and the use of light-colored façade materials on the elevation facing St. Helena's House will substantially reduce this impact.

6.4 Solar Glare

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

6.5 Air Quality

This section provides a qualitative review of air quality sources and impacts as a result of the proposed Project from the parking and traffic sources. Impacts from construction operations are discussed in the Construction Impact Section 6.11.6. Although the heating and mechanical ventilation systems have not yet been designed, they will not impact pedestrian level air quality at all.

Existing Air Quality

The Site is currently occupied by a surface parking lot containing 79 spaces, which exert a relatively minor impact on air quality.

Parking And Loading

The proposed 236 vehicle spaces will be located below-grade under the proposed building. Though the system has not yet been fully designed, it is anticipated that the below grade garage shall be mechanically ventilated, with an air intake at grade toward Harrison Avenue, and discharge of garage ventilation air through diffusers in the two story parking and loading area at the rear of the building near the BWSC facility property line, which is open to air on three sides. Thus, motor vehicle emissions emanating from the below-grade parking structure will be widely dispersed prior to leaving the Site. Over the long term, air quality impacts from the below-grade parking facility are expected to decline as new vehicles become subject to more stringent

emission control requirements.

In addition, several design and program considerations will mitigate air quality impacts from the below-grade parking facility:

- Location of public use areas away from the ventilation discharge;
- Installation of parking spaces for shared-use vehicles;
- Installation of an electric vehicle charging station; and,
- Installation of covered and/or enclosed bicycle storage facilities for residents and guests.

Traffic

The Massachusetts Department of Environmental Protection (DEP) and the Boston Redevelopment Authority (BRA) typically require a future air quality CO analysis for any intersection where the level-of-service (LOS) is expected to fall to D and the proposed Project causes a 10% increase in traffic; or where the LOS is E or F and the Project contributes to a reduction in LOS.

The traffic engineers, Howard/Stein-Hudson Associates have performed a transportation study for the Project area. Each of three intersections was considered for a microscale CO air quality analysis. Based on intersection capacity analysis presented in this report, it does not appear as if any of the study area intersections meet the DEP/BRA criteria to trigger the requirement for a microscale analysis.

6.6 Noise

The proponent does not anticipate a significant increase in noise impacts associated with the proposed uses at the Project Site. The Boston Air Pollution Control Commission regulates noise in the City of Boston based on land use classification. The regulations establish a maximum sound level for residential areas such as the Project Site of 60 dBA during the day and 50 dBA at night. These limits do not apply to construction noise or motor vehicle traffic. The City of Boston has also established noise limits that apply to nine octave band center frequencies.

The primary sources of external mechanical noise will include the rooftop ventilation units and chiller. The Project may also include an emergency generator, which could also contribute to external mechanical noise. As rooftop equipment is not expected to exceed maximum sound levels, no mitigation is proposed. During the final design phase, appropriate low-noise mechanical equipment and noise control measures will be selected, as necessary, to ensure compliance with City of Boston noise regulations at all nearby sensitive locations.

6.7 Stormwater Management & Water Quality

The Project proposes a stormwater management program that will improve the quality of stormwater runoff and promote recharge. Practices to control pollution during construction will be implemented. A stormwater management system will be installed to treat and infiltrate stormwater supplemented with a long-term operation and maintenance plan.

Stormwater pollution prevention measures will include good housekeeping such as properly storing materials, spill prevention and response plans, and proper storage and disposal of solid wastes. Erosion and sediment controls, such as hay bales, silt fence, and catch basin filters, will be used during construction in order to stabilize the Site. The Contractor will also be responsible for controlling dust through the use of a stabilized construction entrance, street sweeping, and watering if necessary.

The stormwater management system will reduce the pollutant load to the municipal storm drain system. Deep sump catch basins and a water quality inlet will remove a portion of the total suspended solids inherent in surface parking runoff. Rooftop runoff will be directed to a subsurface infiltration system with overflows being directed to the municipal storm drain system.

The Project will yield a decrease in peak discharge rates and volumes of runoff and improve groundwater recharge. This is accomplished primarily by installing a stormwater infiltration system.

6.8 FEMA Flood Zones and ACECS

Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) for the City of Boston, Community Panel 79 of 51 for Suffolk County, Massachusetts (Map number 15025C0079G, effective date September 25, 2009) was reviewed to determine if the Project Site lies within the 100-year flood plain. The Site falls within a Zone C, defined by FEMA as an "area of minimal flooding." Thus, the Project will not lead to an increased flood or storm damage risk. No Areas of Critical Environmental Concern or State Certified Vernal Pools exist within the Site. Likewise, the Site is not included on the list of either Priority Habitats for State-Listed Rare Species or the list of Estimated Habitats for Rare Wildlife.

6.9 Geotechnical

Five test borings to evaluate the subsurface conditions were recently completed at the Site. Groundwater observation wells were installed in three (3) of the boreholes. The following geotechnical information is based on information gathered via these borings.

6.9.1 Geotechnical Conditions and Ground Water

Based on this test boring data, the Site subsurface conditions consist of the following major strata (in order of increasing depth below existing grade):

Fill

The fill soils were encountered beneath approximately 3 inches of asphalt paving. A layer of Fill was encountered extending to depths ranging from 12.5 to 18.5 feet below the existing ground surface within the parking lot, consisting of loose to medium dense, brown, fine to medium SAND with varying amounts of gravel, coarse sand, silt and construction debris (bricks, concrete, coal ash). In some borings a layer of Hydraulic Fill consisting of soft to firm marine clay up to three feet thick was found.

Organic Silt and Peat

Underlying the existing fill, a deposit of natural organics consisting of organic silt and peat was encountered in the borings. The thickness of this deposit ranged from about 16 feet to 20 feet.

Marine Clay

The marine clay stratum consists of blue or blue-yellow CLAY, the surface of which was encountered at approximately 25 to 34 feet beneath the existing grade. The consistency of the marine clay was determined to be stiff to medium stiff within the upper 10 to 15 feet of the deposit, which is commonly referred to as the Boston Blue Clay. Beneath the upper crust layer, the marine clay generally has a consistency that is soft to very soft. The Marine Clay stratum extended to depths ranging from approximately 42 to 62 feet below existing grade.

Borings were not advanced beyond the layer of marine clay based on the engineering team's preliminary analysis of likely foundation types for the Project, which would bear on the stiff marine clay found within 25 to 34 feet below the surface. Based upon available information, it is anticipated that the marine clay deposit extends to depths of about 80 to 100 feet below ground surface.

Groundwater and GCOD Compliance

Groundwater levels measured in the observation wells at the time of the subsurface investigation in June 2013 ranged from approximately 6 to 9 feet below the existing ground surface.

The Project will comply with the City's Groundwater Conservation Overlay District, established pursuant to Article 32 of the Boston Zoning Code. To recharge rainwater into the ground, one-inch of the proposed building roof area (drainage runoff) and other impervious areas (such as sidewalks) will be infiltrated on Site. The infiltration system will be connected to the BWSC 72-inch \emptyset storm drainage pipe in Harrison Ave. Construction of the proposed infiltration system will have positive effect on groundwater level at the Site.

6.9.2 Foundations & Below-Grade Construction

The excavation and foundation construction work will extend below Boston City Datum Elevation 7 to approximately 32 to 34 feet below the existing ground surface and terminating in a relatively impervious natural marine clay deposit. Temporary earth support is planned to consist of a continuous steel sheet pile cofferdam that will extend at least 10 feet below the bottom of the excavation into the marine clay deposit creating a continuous groundwater cut-off. The steel sheet pile cofferdam will remain in place upon completion of the project.

In addition to the steel sheet pile cofferdam, the perimeter foundation walls for the below-grade portion of the new structure will be keyed into the natural marine clay deposit creating a second, permanent groundwater cut-off. Continuous membrane waterproofing will be applied to the exterior of the new foundation walls. Accordingly, with the continuous steel sheet pile cofferdam and the building perimeter foundations keyed into the natural marine clay deposit, in conjunction with the proposed infiltration system, adverse impacts to groundwater levels at the Site are not anticipated.

A program of instrumentation will be implemented to monitor vibration during placement of the sheet pilings, and the performance of the earth retention system once complete while foundation elements and below-grade construction are underway.

6.9.3 Dewatering, Groundwater Observation Wells

Construction dewatering will be necessary to remove groundwater within the excavation and to remove rainwater following periods of precipitation. Measures will be implemented to maintain groundwater levels outside the property limits. Construction dewatering will be performed in accordance with applicable MWRA, EPA, BWSC and Massachusetts DEP regulations and permits.

Groundwater observation wells will be installed in the vicinity of the Project prior to commencement of any site excavation or dewatering to monitor the groundwater levels prior to, during, and following construction.

Groundwater observation wells will be installed in the vicinity of the Project prior to commencement of any site excavation or dewatering to monitor the groundwater levels prior to, during, and following construction.

During excavation, all soils necessary for export will be managed for off-site disposal in accordance with the current regulations and policies of the Massachusetts DEP.

6.10 Solid & Hazardous Materials

6.10.1 Solid Waste Generation during Operation, Recycling

The Project will generate solid waste typical of other residential projects. The Project will be constructed with a trash chute with access from each floor. The chute will terminate on the ground floor into a compactor. Solid waste will include wastepaper, cardboard, glass, and bottles. A portion of the waste will be recycled as described below. The remainder of the waste will be compacted into 2 yard rolling dumpsters to be picked up and emptied on a regular schedule. With the exception of “household hazardous wastes” typical of residential uses (for example, cleaning fluids and paint), the residential and ground floor uses will not generate hazardous waste. Separate containers will be provided for the disposal of materials such as turpentine and paints.

Recycling by residents will be encouraged and coordinated. To encourage recycling, the proponent will implement a recycling program throughout the Project. The Project will include space for recycling on each floor, and the loading/receiving area will include space for the storage and pick-up of recyclable materials. Recyclable materials are expected to continue to include newspaper, cardboard, cans, and bottles. The residential recycling program will be conducted in accordance with the City of Boston’s recycling regulations.

6.10.2 Solid Waste Generation during Construction, Recycling

Solid waste generated by construction will consist primarily of packaging and scrap materials (such as corrugated cardboard, glass, aluminum, scrap metal, and cable/wire) associated with new construction. Construction waste material from new construction will be recycled when possible (see below). For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per DEP’s Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract.

The proponent will take an active role with regard to the reprocessing and recycling of construction waste. An evaluation of the potential for recycling

will occur before the construction commences. Construction will be conducted so that some materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. A comprehensive recycling program will be included in the final Construction Management Plan. The Proponent will also coordinate with the Boston Materials Resource Center and direct materials to them where possible to reduce the amount of surplus building material that is sent to landfills. Materials that cannot be reused or recycled will be transported in covered trucks by a contract hauler to a licensed facility, per the MassDEP regulations for Solid Waste Facilities, 310 CMR 16.00.

6.10.3 Hazardous Materials

While currently there are no structures on the 600 Harrison Site, Sanborn insurance maps indicate that the Site was once improved with two rowhouses at #78 and #80 Malden Street, which were flanked by lumber yards on either side. The 1938 Sanborn map makes no reference to the lumberyards shown on previous insurance maps, but does show the two rowhouses standing as of that date. These structures were removed prior to 1951, as the Sanborn map of that date shows no structures on the Site.

No previous environmental investigations have been conducted on the Site. In 2013, a subsurface investigation included soil borings, installation of temporary groundwater monitoring wells and observation of soil and groundwater samples for potential petroleum hydrocarbon contamination. No obvious contamination was identified, however it is expected based on the use history of the Site that coal, wood ash and coal ash within the on-site fill material will be found when the soil is characterized prior to off-site disposal.

6.10.4 Building Construction

A soil and groundwater quality test will be conducted prior to construction to determine the options for reuse, recycling, disposal or treatment of excavated material. Groundwater testing will be conducted in support of obtaining temporary construction dewatering permits and to assess the need for on-site treatment to remove contaminants, if any are found.

Excavated soil will require characterization to assess its disposition for off-site reuse, disposal, treatment or recycling in accordance with DEP policy and the MCP. The construction contractor will be responsible for proper off-site removal of contaminated soil and disposal of construction and demolition debris.

6.11 Construction Impacts

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

6.11.1 Construction Management Plan

The proponent will require the general contractor to comply with applicable state and local regulations, as well as the Construction Management Plan ("CMP") developed with and approved by the Boston Transportation Department ("BTD") prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the Project and specific mitigation measures and staging plans to minimize impacts on abutters.

Proper pre-construction planning with the neighborhood will be essential to the Project is constructed safely and successfully. Signage will include construction manager contact information with emergency contact numbers.

6.11.2 Construction Activity Schedule

The construction period for the proposed Project is expected to last approximately 20 months, beginning in August 2014 and reaching completion by spring of 2016. The Project will comply with the City of Boston Noise and Work Ordinance. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions.

6.11.3 Perimeter Protection/Public Safety

The CMP will describe any sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary for safety around the Site perimeter. Barricades and secure fencing will isolate construction areas from pedestrian traffic. Sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety.

The proponent will continue to coordinate with all pertinent regulatory agencies and representatives of the surrounding neighborhoods to ensure

they are informed of any changes in construction activities.

6.11.4 Construction Traffic Impacts

Truck traffic will vary throughout the construction period, depending on activity. It is estimated that the highest amount of truck traffic will be for a short period during the excavation phase. Estimated truck deliveries and routes will be established with BTM through the CMP.

6.11.5 Construction Worker Parking

Measures will be employed during construction to minimize the impact of construction workers on the transportation network. Though the number of workers required for construction of the Project will vary during the construction period, the following measures will reduce construction impacts on the transportation system:

- Worker shifts will end and begin before the normal commuter hours.
- The Site's proximity to MBTA bus lines, the Silver Line Transit, and Back Bay Station will incentivize personnel to use those modes of transportation.

Lock-up facilities for work tools will be provided to make public transportation more convenient and desirable for workers. Terms and conditions related to workforce parking and public transportation use will be written into each subcontract.

These measures will be addressed in the Construction Management Plan (CMP) and reviewed by the Boston Transportation Department prior to commencement of construction activities.

6.11.6 Construction Air Quality

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

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

- Using wetting agents to control and suppress dust from construction debris;
- Ensuring that all trucks traveling to and from the Site will be fully

- covered;
- Removing construction debris regularly;
- Monitoring construction practices closely to ensure that any emissions of dust are negligible;
- Cleaning streets and sidewalks to minimize dust and dirt accumulation; and
- Wheel-washing trucks before they leave the Site during the excavation phase.

6.11.7 Construction Noise Impacts

Intermittent increases in noise levels will occur in the short-term during construction. Construction work will comply with the requirements of the City of Boston noise ordinance. Since there are residences in the adjacent building at 89 Union Park, this issue will be carefully addressed. To reduce the noise impacts of construction, a number of noise mitigation measures will be included in the CMP. Measures may be employed to reduce noise emissions include:

- Using mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on running equipment;
- Scheduling construction activities so as to avoid the simultaneous operation of the noisiest construction activities;
- Turning off all idling equipment;
- Locating noisy equipment away from abutters; and
- Shielding the noise generator by distance or enclosure.

6.11.8 Utility Protection During Construction

City infrastructure will be protected from construction hazards using sheeting and shoring, temporary relocations, and staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The contractor will also be required to provide adequate notification to the utility owner/operator prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during a switch-over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility owners/operators and Project abutters to minimize impacts and inconveniences accordingly.

6.11.9 Rodent Control

A rodent control program including inspection, monitoring, and treatment

will be implemented prior to, during, and after construction. The construction contractor will file a rodent extermination certificate, along with the building permit application, to comply with City regulations. A preliminary extermination treatment may be performed throughout the Project Site prior to construction. During the construction process, regular service visits will be made in order to maintain effective rodent control levels.

7.0 INFRASTRUCTURE

7.1 Sanitary Sewer System

The Project will generate an estimated 30,950 gallons per day (GPD) based on design sewer flows provided in 314 CMR 7.00-Sewer System Extension and Connection Permit Program as summarized in **Table 7-1**.

Table 7-1 Projected Sewer Generation

Use	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow
Residential Units	250 Bdrms	110 GPD/Bdrm	27,500 GPD
Residential Amenities	4,000 sf	75 GPD/1,000 sf	300 GPD
Retail/Restaurant *	90 seats (est.)	35 GPD/seat	3,150 GPD
TOTAL			30,950 GPD

* assuming 3,600 retail space is a 90 seat restaurant

The proposed sanitary sewer service for the building will connect to the existing 15" diameter sanitary sewer main located in Malden Street. There is sufficient capacity in the existing main to accommodate the Project's proposed sanitary flow.

7.2 Domestic Water and Fire Protection System

There are three water mains available in the immediate vicinity of the Site: a 12" dia. in Harrison Avenue, an 8" dia. in Malden Street and a 12" dia. at the intersection of Malden St. and Wareham Street. The preferred domestic water and fire protection services connection point would be to the 8" dia. main in Malden Street (if the pressure is adequate for the proposed fire protection service). There is enough capacity in the existing main(s) to accommodate the Project's water demand, which is projected to be 1.1 times the estimated sewer flow, or 34,045 GPD. Fire flow tests should be conducted in the next plan development phase in order to determine the viability of the existing main(s) from a flow and volume perspective to accommodate a fire protection system without a fire pump.

7.3 Storm Drainage System

The proposed building's roof drain, as well as the parking lot drainage, will be connected to the proposed infiltration systems located in the adjacent surface parking lot. To recharge rainwater into the ground, one-inch of the proposed building roof area (drainage runoff) and other impervious areas (such as sidewalks) will be infiltrated on site. The overflow pipe from the infiltration system will connect to the existing 72" dia. storm drainage main in Harrison Avenue. A second option would be connecting to the existing 84"

dia. combined sewer main at the intersection of Malden St. and Wareham St. There is enough capacity in both of the existing mains to accommodate the Project. It should be noted that the result of the infiltration system's construction, the actual stormwater flow to the City's drainage system will be reduced while recharge to the aquifer/groundwater will be enhanced.

7.4 Electrical System

NStar maintains electrical infrastructure to support the proposed Project in both Harrison Avenue and Malden Street. The Proponent anticipates connecting to the electrical grid in Malden Street via primary high voltage service to a transformer vault within the building footprint just west of the parking ramps and off-street loading area toward the east end of the property. Electric power will be distributed from switchgear and primary distribution equipment located in an adjacent electric service room on the first floor.

7.5 Telephone & Cable System

Data/cable and phone underground conduits are located in both Harrison Ave and Malden St. The Proponent does not anticipate any issue with these services.

7.6 Gas Service

There is a 6" gas main located in Malden Street and three gas mains: a 6" dia., a 10" dia. and an 18" dia. located in Harrison Ave. The Proponent believes that there is enough capacity in the existing main to accommodate the Project's gas requirements. The MEP engineer will confirm that the existing gas service is sufficient to handle any additional loads that the project may add to the existing demand once preliminary loads have been determined.

APPENDIX A – PROJECT CERTIFICATION

This Expanded Project Notification Form has been submitted to the Boston Redevelopment Authority pursuant to Article 80 of the Boston Zoning Code, as evidenced by Proponent's signature below.

New Atlantic Development Corporation



Peter D. Roth
President & CEO

Date: November 12, 2013