The Commons at Forest Hills Station

Jamaica Plain, Massachusetts

Expanded Project Notification Form

July 22, 2013

submitted to **Boston Redevelopment Authority**

submitted by **Forest Hills Arborway, LLC**

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

in association with **Utile, Inc.**
Howard/Stein-Hudson Associates, Inc.
H.W. Moore Associates, Inc.
Offshoots, Inc.
McPhail Associates, Inc.
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Fort Point Associates, Inc.
Urban Planning Environmental Consulting Project Permitting

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Chapter 1

PROJECT SUMMARY

CHAPTER 1: PROJECT SUMMARY

1.1 PROJECT IDENTIFICATION

Project Name: The Commons at Forest Hills Station

Address/Location: 3593-3615 Washington Street, Jamaica Plain, MA 02130

Assessor's Parcel Numbers: 1102617000, 1102617001

1.2 PROJECT SITE

Forest Hills Arborway, LLC (the "Proponent") proposes to construct The Commons at Forest Hills Station (the "Project") at 3593-3615 Washington Street on a 122,172 square foot (2.8 acre) parcel (the "Site"). The Site is located 0.15 miles from the MBTA's Forest Hills Station in Jamaica Plain and is bounded by Washington Street on the east; a retaining wall, ranging up to 18 feet in height, separating the MBTA Orange Line and Commuter Rail tracks to the west; Burnett Street and several multi-family houses on the north; and a small MBTA substation building on the south. The large MBTA Arborway bus yard lies directly across Washington Street. The Site is divided by a Boston Water and Sewer Commission (BWSC) easement that runs from east to west. Three partially-occupied one- and two-story brick industrial buildings surrounded by parking lots are located on the Site. Current land use activities include office space and the storage and sale of electrical equipment and building materials. See Figure 1-1, Locus Plan and Figure 1-2, Site Aerial.

1.3 PROJECT SUMMARY

The Proponent proposes to redevelop an underutilized industrial site on Washington Street, which was used for 100 years as a petroleum product distribution depot. The Site is within a short walk of MBTA mass transit service. The Project will create 280 rental apartment homes, 37 of which will be affordable units, active ground floor uses, and open space. Approximately 7,960 square feet (sf) of commercial/retail and amenity space is programmed in addition to publicly-accessible open space and streetscape improvements such as upgraded street trees, new lighting, and a bicycle lane on Washington Street.

In recognition of the goals of the Boston Redevelopment Authority's 2008 Forest Hills Improvement Initiative, which called for dense commercial and residential development in the publicly-owned underdeveloped parcels that surround the MBTA's Forest Hills Station and the planning principles developed by the Stonybrook Neighborhood Association survey, the Project will provide a focal point on Washington Street north of Forest Hills Station and give the neighborhood a more human scale with street-facing residential, commercial, and retail space. The Project will increase pedestrian activity in the area—

many residents and visitors will access the Site via transit or the nearby Southwest Corridor Park bicycle path. In addition, environmental quality will be enhanced on the Site— there has been an extensive five-year cleanup where in excess of 30,000 tons of contaminated soil has been removed.

The Proponent proposes to construct four main buildings on the Site. These include one smaller building on the south side of the BWSC easement and three attached buildings on the north side of the easement. Rental apartments will range in size from studios, to one-, two-, and three-bedroom units. The Project will incorporate multiple green building measures and will be Leadership in Energy and Environmental Design (LEED) certifiable as required by Article 37 of the City of Boston Zoning Code, with a goal of LEED Silver.

The site drive will be designed to move vehicles to on-site enclosed parking for the Project's residential uses and a small surface parking area for commercial/retail uses. The Project has been designed with a 0.6 ratio of parking spaces to housing units given its transit and bicycle orientation, where more parking spaces will be provided for bicycles than vehicles. In sum, there will be 250 bicycle and 185 vehicle parking spaces provided for residents and visitors. See Figure 1-3, Project Site Plan.

1.4 PUBLIC AND COMMUNITY BENEFITS

The Project will:

- Allow for construction of new residential buildings, which will bring more residents to the area and add to the diversity of the housing stock through the creation of 280 new apartments, including a total of 37 affordable units of mixed types
- Harmonize with the City's plans for the construction of new multi-family housing on Washington Street as outlined in the 2010 Forest Hills Improvement Initiative and the Stonybrook Neighborhood Association Planning Principles laid out in 2011
- Improve the urban design characteristics of the area by constructing a human-scaled building along Washington Street and transforming the use of an industrial site
- Enhance the pedestrian environment along Washington Street by improving aesthetics of the built environment and access to public open space, including the addition of new bike lane on Washington Street
- Add ground-floor commercial and retail space to activate the public realm
- Increase potential for future development along the Washington Street corridor
- Facilitate Transit Oriented Development (TOD) by increasing residential density in proximity to the multi-modal Forest Hills Station and Southwest Corridor Park and by accommodating bicycle storage on-site

- Support the City's goals for a sustainable future through the development of an energy-efficient and environmentally friendly building that will strive to be certified as LEED Silver
- Increase property tax revenues to the City
- Provide approximately 325 construction-related jobs and 15 full-time equivalent jobs and stimulate the local and regional economy

1.5 SUMMARY OF ANTICIPATED AND PERMITS AND APPROVALS

The following table is a list of anticipated approvals for the Project.

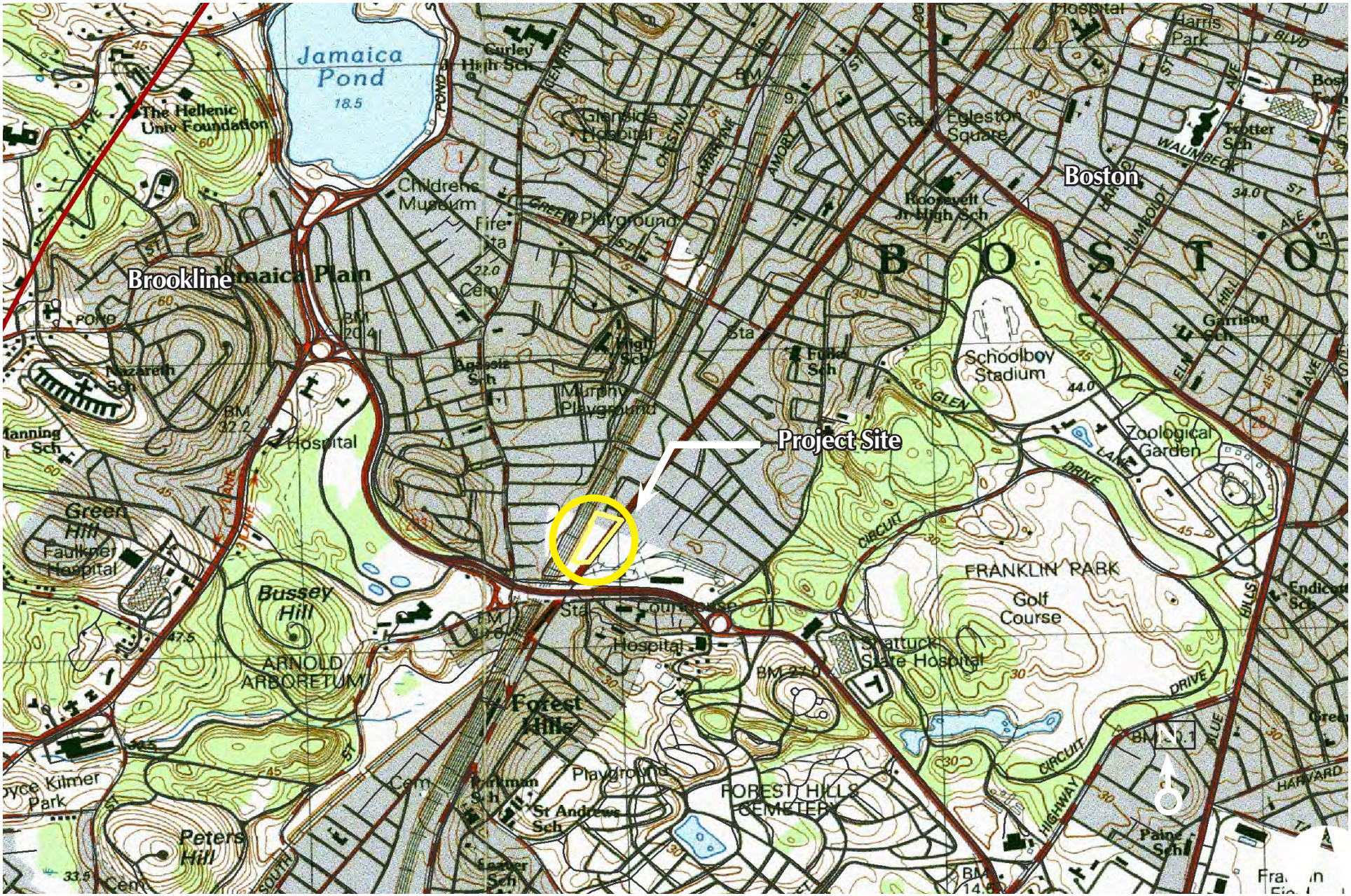
Table 1-1: Anticipated Project Approvals

Agency	Approval
Local	
Boston Redevelopment Authority (BRA)	• Article 80B Large Project Review • Cooperation Agreement • Boston Residents Construction Employment Plan • Certificate of Compliance with Article 80 • Affordable Rental Housing Agreement
Boston Civic Design Commission	• Recommendation to the BRA Board
Boston Zoning Board of Appeal	• Variance
Boston Transportation Department	• Transportation Access Plan Agreement • Construction Management Plan
Boston Water and Sewer Commission	• Site Plan Approval
Inspectional Services Department	• Building Permit • Certificate of Occupancy
State	
Massachusetts Department of Environmental Protection	• Source Registration for Sewer Discharge • Source Registration for Emergency Generator • Notification Prior to Construction or Demolition • Response Action Outcome Statement
Federal	
Environmental Protection Agency	• National Pollutant Discharge Elimination System Permit • Notice of Intent for Construction Stormwater

1.6 PROJECT TEAM

Proponent	Forest Hills Arborway, LLC Contact: Peter Mahoney Senior Project Director John M. Corcoran and Company 100 Grandview Road, Suite 203 Braintree, MA 02184 781-849-7111 pmahoney@corcoranmgmt.com Contact: Jack Brennan President The Brennan Group One Walnut Street Boston, MA 02108 617-305-4120 jackbrennan@brennangroup.org
Legal	Brennan, Dain, Le Ray, Wiest, Torpy & Garner, P.C. 129 South Street Boston, MA 02111 Contact: Donald W. Wiest Partner 617-542-4874 dwiest@bdlwtg.com
Planning and Permitting	Fort Point Associates, Inc. 33 Union Street, 3rd Floor Boston, MA 02108 Contact: Jamie M. Fay President 617-357-7044 x204 jfay@fpa-inc.com

Architect	Utile, Inc. 50 Summer Street Boston, MA 02110 Contact: Matthew Littell Principal 617-423-7200 littell@utiledesign.com
Landscape Architect	Offshoots, Inc. 547 Rutherford Avenue Charlestown, MA 02129 Contract: Kate Kennen 617-500-6530 kate@offshootsinc.com
Transportation	Howard/Stein-Hudson Associates, Inc. 38 Chauncy Street, 9th Floor Boston, MA 02111 Contact: Michael Santos Senior Transportation Engineer 617-482-7080 msantos@hshassoc.com
Civil Engineering	H.W. Moore Associates, Inc. 112 Shawmut Avenue Boston, MA 02118 Contact: Jim White Project Manager 617-357-8145 jwhite@hwmoore.com
Geotechnical	McPhail Associates, Inc. 2269 Massachusetts Avenue Cambridge, MA 02140 Contact: Tom Fennick 617-868-1420 tfennick@mcphailgeo.com

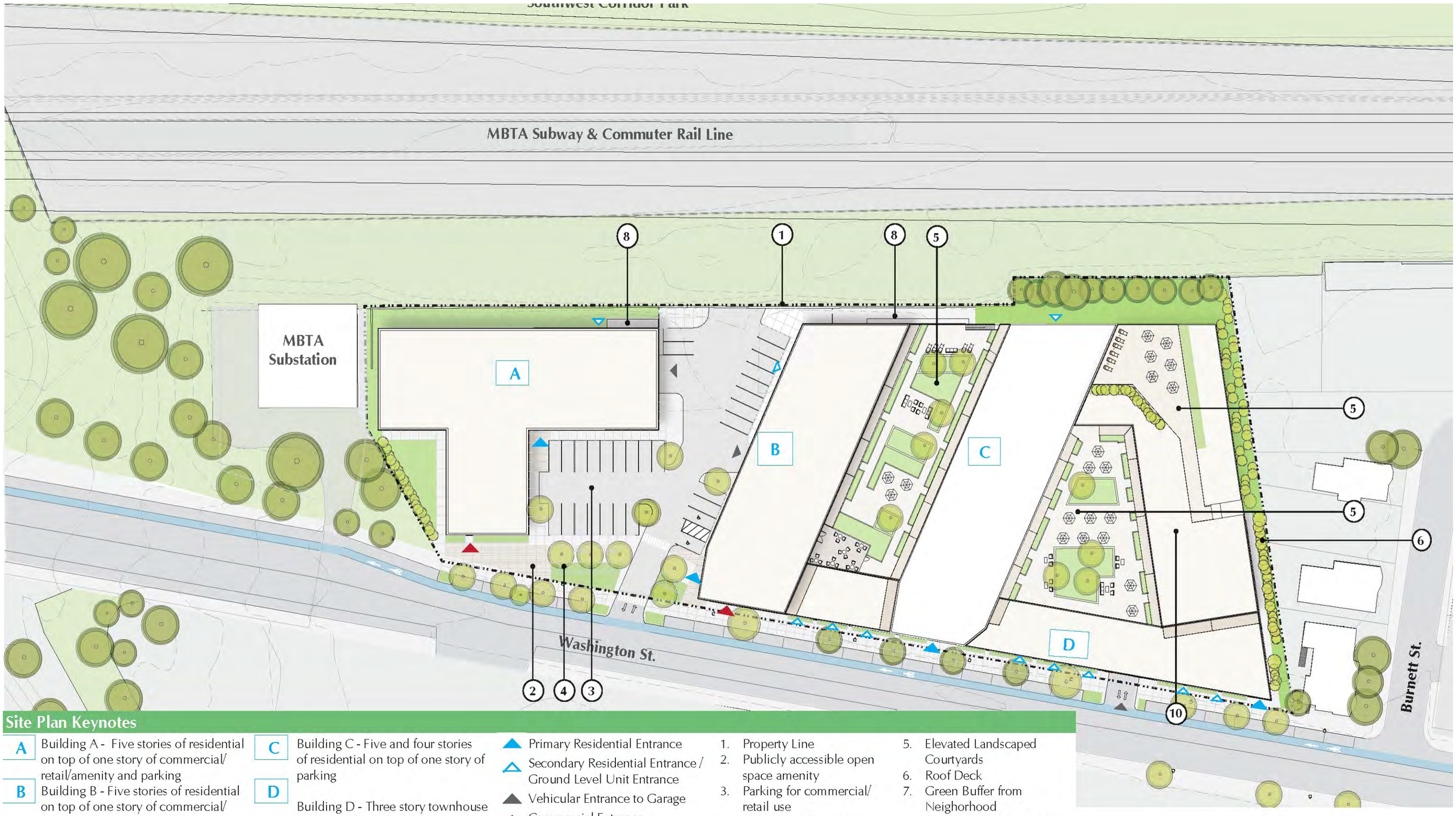


Jamaica Plain, Massachusetts

Figure 1-1
Locus Plan
Source: MassGIS, 2013

Jamaica Plain, Massachusetts

Figure 1-2
Site Aerial
Source: Utile, Inc., 2013



Site Plan Keynotes

A Building A - Five stories of residential on top of one story of commercial/ retail/amenity and parking

B Building B - Five stories of residential on top of one story of commercial/ retail/amenity and parking

C Building C - Five and four stories of residential on top of one story of parking

D Building D - Three story townhouse scale residential building

- Primary Residential Entrance
- Secondary Residential Entrance / Ground Level Unit Entrance
- Vehicular Entrance to Garage
- Commercial Entrance

1. Property Line
2. Publicly accessible open space amenity
3. Parking for commercial/ retail use
4. Public Bicycle Parking
5. Elevated Landscaped Courtyards
6. Roof Deck
7. Green Buffer from Neighorhood
8. Covered Bicycke Parking

Figure 1-3
Project Site Plan
Source: Utile, Inc., 2013

Chapter 2

PROJECT DESCRIPTION

CHAPTER 2: PROJECT DESCRIPTION

2.1 PROJECT SITE AND SURROUNDINGS

The Proponent proposes to redevelop a 122,172 square foot (2.8 acre) parcel (the "Site") bounded by Washington Street to the east, a retaining wall, ranging up to 18 feet separating the Massachusetts Bay Transportation Authority (MBTA) railway corridor to the west, Burnett Street and private residential parcels to the north, and a small MBTA substation to the south. The large MBTA Arborway bus yard lies directly across Washington Street from the Site. Three one-story and two-story brick buildings are located on the Site and are surrounded by paved lots. The Site has a 100-year history of bulk storage and distribution of petroleum products under the former Hughes Oil Company. Current activities on the Site include office space and the storage and sale of electrical equipment and building materials. See Figure 2-1, Oblique View of Existing Site and Figure 2-2, Existing Conditions Plan.

The Project Site is located less than 800 feet from the Forest Hills MBTA Orange Line and Commuter Rail Station. Site access and egress will be from Washington Street. Northwest of the Site lies the Southwest Corridor Park, which provides recreation space and an off-road bicycle trail to Back Bay. North of the park is a dense, established residential neighborhood. Several other area parks are within walking distance of the Site. Harvard University's Arnold Arboretum lies south of the Arborway, adjacent to the Forest Hills Station; Franklin Park is approximately 0.25 miles east of the Project Site, and to the south is Forest Hills Cemetery. A variety of local shops and restaurants are accessible by foot and bicycle on Centre/South Street, with Doyle's and Dogwood Café located less than 0.25 miles away. A Harvest Co-op Market grocery store opened in the neighborhood in the last two years on Washington Street, just south of the Arborway. See Figures 2-3 to 2-6, Existing Conditions Photographs.

2.2 PROPOSED PROJECT

The Project entails the construction of four new buildings. Building "A" is a T-shaped building on the southern part of the Site with 5 stories of apartments over ground-floor commercial/retail space and parking. Buildings "B", "C", and "D" are attached and are sited on the northern portion of the Site, separated by a small parking area and driveway, which sit a Boston Water and Sewer Commission (BWSC) easement, from Building A. Building B contains five stories of apartments above the ground level parking garage. Building D is three stories tall, forms the main frontage on Washington Street, and includes the Project's management office, ground floor commercial/retail and amenity space, and street-level entrances to apartments. Building C ranges in height and forms a U shape from the center of Building D to the Site's far northern boundary with its neighbors on Burnett Street at a lower elevation. Building C contains 5 levels of apartments over a parking level. Open space

courtyards fill the space on top of the parking level in between Buildings B and C, and C and D.

The buildings will contain 280 rental apartments, 37 of which will be affordable units. The Project will also include ground-level commercial/retail and amenity space and publicly-accessible open space. Most vehicle parking will be provided in an enclosed parking garage at the first level of the buildings, and bicycle parking will be provided in adjacent enclosures. The Project will provide 225 bicycle parking spaces and 169 vehicle parking spaces for residents. Site and vehicular access will be provided from Washington Street, a short distance north of the Arborway.

Due to its industrial nature, the existing Site does not currently lend a human-scale to Washington Street or encourage pedestrian activity. However, in the spirit of the City's Forest Hills Improvement Initiative and the Stonybrook Neighborhood Association's planning principles, the Project will provide enhanced pedestrian activation to nearby properties and public transportation. New open space will be created on the Site with direct access from the building's ground floor commercial/retail spaces. Courtyards, private decks, a common roof deck, and greenspace at the rear of the buildings are designed to provide private open space amenities for residents.

The total building footprint is approximately 84,385 sf, covering approximately 69% of the Site. The total gross floor area (GFA) of the buildings is approximately 300,733 sf, and the Project's Floor Area Ratio (FAR) is 2.5.

Table 2-1: Project Program

Project Component	Dimensions/Count
Site Size	122,172 sf (2.8 acre)
Gross Floor Area	300,733 sf
Floor Area Ratio	2.5
Residential	280 rental units
Bicycle Parking	250 secure spaces (225 for residents and 25 for visitors)
Vehicle Parking	169 residential spaces + 16 commercial/retail (including 12 accessible and 3 van accessible) = 185 spaces
Commercial/Retail/Amenity Space	7,960 sf
Open Space	42,393 sf

2.2.1 GROUND FLOOR USES

The proposed footprint for the Project is approximately 15,747 sf for Building A, and approximately 68,638 sf for Buildings B, C, and D combined. Buildings A, B,

and D will contain ground level commercial/retail space. The Project's ground floor will activate Washington Street by providing commercial/retail space, publically-accessible open space, upgraded street trees, and new street lights. Several residential units will have entrances directly on Washington Street.

On-site bicycle and vehicle parking will be at the ground level. A small 16-space vehicle area with short-term parking for the commercial/retail uses will be provided between Buildings A and B, which will be screened from Washington Street. A bicycle and vehicle parking garage for residents will occupy the rear ground floor of Buildings A, B, and C. See Figure 2-7, Ground Level Plan.

2.2.2 RESIDENTIAL USES

The proposed new apartments will provide a diverse mix of market-rate housing options, including affordable units, for the Forest Hills Station area of Jamaica Plain. It is expected these units will appeal to renters who appreciate the nearby transit access, the bicycle path, nearby shops and restaurants, and the neighborhood's abundant greenspace.

There will be a total of 280 residential apartments, which will consist of studios, one bedroom, and larger two- and three- bedroom units. A total of 37 units will be affordable under the Mayor's Inclusionary Zoning Ordinance. The layout and shape of the buildings is designed to make the most efficient use of the Site, provide public and private open space, and consistent frontage on Washington Street. See Figures 2-7 through 2-13, Floor Plans.

Table 2-2: Unit Mix

Level	Studio	1BR	2BR	3BR	Total Units
1	8	0	0	0	8
2	8	23	26	5	62
3	7	26	23	2	58
4	8	23	23	1	55
5	8	23	23	1	55
6	5	20	16	1	42
Total	**44**	**115**	**111**	**10**	**280**

2.2.3 PARKING AND ACCESS

Vehicular

Two main vehicular access points to the Project will be provided on Washington Street. The southern entrance, which is the main public entrance, lies between Buildings A and B, and leads to a small parking area with spaces for 16 vehicles.

This parking will be intended for short-term visitors of the commercial/retail tenants in the ground floor of Buildings A and B.

On the northeast side of the small surface parking area next to Building B is the entrance to the main parking garage, which will have parking for 127 residential cars. Access to the Building A garage is to just to the north of the surface parking area and will provide 28 residential parking spaces. This driveway will also accommodate deliveries, loading, and trash pick-up maneuvers.

The second vehicular access point lies on the northeastern part of Building D, fronting Washington Street. This will be a direct entry into the larger parking garage and will be accessible only to residents.

Bicycle

A total of 225 secure bicycle parking spaces will be available on Site for residents— 150 of these spaces will be in the rear of Buildings A and B under a canopy and 75 spaces will be within the garage of Buildings B and C.

The Project's visitors and customers of its commercial/retail tenants will be able to park bicycles at racks along Washington Street and adjacent to the open space near the commercial space in Building A. There will be approximately 25 spaces for visitors' bicycles.

Bicycle lanes will be provided on Washington Street in the vicinity of the Project. Traveling on Washington Street southbound, a new 5-foot wide bicycle lane will run along the Site. On Washington Street heading northbound, shared lane markings will be painted in the travel lane. See Figure 2-14, Washington Street Conceptual Plan.

Accessibility

There will be 12 accessible parking spaces on the Site, including at least 3 accessible to vans. On the surface lot, there will be two accessible parking spaces (both of which will be van accessible) intended for visitor use. The other nine accessible spaces (and a covered van accessible one) are intended for resident use and will be within the parking garage.

The Site's southern access point will contain a variety of traffic calming devices such as striped crosswalks and bollards to allow for the surface to be partially shared by pedestrians and cyclists. All of the Project's main entrances— both residential and commercial/retail— will be located at ground level and accessible by persons in wheelchairs.

2.2.4 OPEN SPACE AND LANDSCAPING

The public landscapes at the proposed Project will create a rich diversity of urban outdoor experiences. The most publicly-visible open space is centrally located at the heart of the Project, between the two commercial/retail functions and two of the three major building entries. The space is conceived as both a visual amenity and an urban plaza and gathering place where residents and visitors interact and animate the space. There will be hardscape elements suitable for pedestrian use, complemented by softer green elements, which are largely visual amenities that act as a buffer for the parking behind, and provide attractive seating areas. In addition, a dedicated outdoor space for the larger commercial/retail tenant is situated on the Project's sunny south side. This new engaging urban plaza will provide a lively, diversified amenity for the neighborhood.

Above the parking plinth in between Buildings B and C, residents will have access to two private open spaces that will provide seating areas and outdoor gathering spaces with plantings to give an environmental and visual buffer. It is anticipated that the edges of these spaces will be used by the residents in the units that immediately open to these courtyards. Orthogonal planters will be alternated with hardscape patio areas of varied sizes, which allow for smaller programmed seating areas to be created. In addition, a roof deck accessible on the sixth floor (fifth floor roof) is provided as a larger flexible open space for residents. These elevated outdoor spaces provide many different public areas for residents to enjoy time outdoors and socialize. See Figure 2-15, Landscape Plan.

2.3 FOREST HILLS IMPROVEMENT INITIATIVE

In 2008, the Boston Redevelopment Authority (BRA) undertook the Forest Hills Improvement Initiative (the "Initiative") to engage the residents, businesses, institutions, and organizations of Jamaica Plain in a community-based approach to improving the Forest Hills Station area and planning for the sale and development of several MBTA-owned parcels as well as other publicly-owned parcels around the Station. The BRA worked in partnership with the MBTA, the Forest Hills Task Force, and area residents, businesses, institutions, and organizations throughout the process.

The proposed Project is located across Washington Street from one of the MBTA parcels targeted for redevelopment in the Initiative's community process, known as the Arborway Yard Surplus Parcel. Use and Design Guidelines released for parcels in this district outlined a list of core principles to guide development, including the following:

- Improved traffic patterns,
- Vibrant mixed use district,
- Community orientation,
- Green/sustainable development, and

- Green space assets.

The Commons at Forest Hills Station advances the spirit of these core principles. The Project is a transit-oriented development located in proximity to area trains, buses, and on- and off-road bicycle paths. The development fosters a community orientation by its creating mixed-uses with housing, commercial/retail areas, and public and private open space. The Project is designed to provide a healthy and energy-efficient environment for residents and to meet the LEED Silver level, promoting the Initiative's sustainability principle. Lastly, the Project will have on-site open space for residents and guests and is a short walk from acres of greenspace in Jamaica Plain, including the Southwest Corridor Park, Arnold Arboretum, Franklin Park, and Forest Hills Cemetery.

2.4 STONYBROOK NEIGHBORHOOD ASSOCIATION

In 2011, Jamaica Plain's Stonybrook Neighborhood Association (SNA) conducted a survey among area residents to gain insight on the community's vision for the underdeveloped parcels located along Washington Street in the vicinity of the Forest Hills Station. The results of the survey indicated the neighborhood prefers development with a strong transit-, pedestrian-, and bicycle-orientation with a low dependence on automobile use.

The Project has been designed to take advantage of its close location to the MBTA's Orange Line and Commuter Rail service, and the Southwest Corridor Park's bicycle path to Back Bay. A ratio of 0.6 parking spaces per residential unit is planned for the Project. This on-site residential parking will be available for an additional monthly fee.

The SNA also indicated a preference for small parks and greenspace in local projects. A grassy area will be provided outside of the commercial/retail tenant space in Building A. The courtyard between Buildings A and B is designed to screen surface parking, calm traffic, and provide a welcoming area where residents and visitors can mingle outdoors and visit the commercial/retail tenants or the residential apartments.

2.5 COMPLIANCE WITH BOSTON ZONING CODE

The Project is subject to land use controls contained in the City of Boston Zoning Code (the "Code"). In accordance with Article 80B of the Code, the Project is subject to the requirements of Large Project Review because it exceeds 50,000 square feet of gross floor area. The Project will also be subject to review by the Boston Civic Design Commission under Article 28 and will be designed and constructed to be LEED-certifiable per Article 37, Green Buildings of the Code. A full description of its compliance with LEED credits will be addressed in Chapter 4, Sustainability.

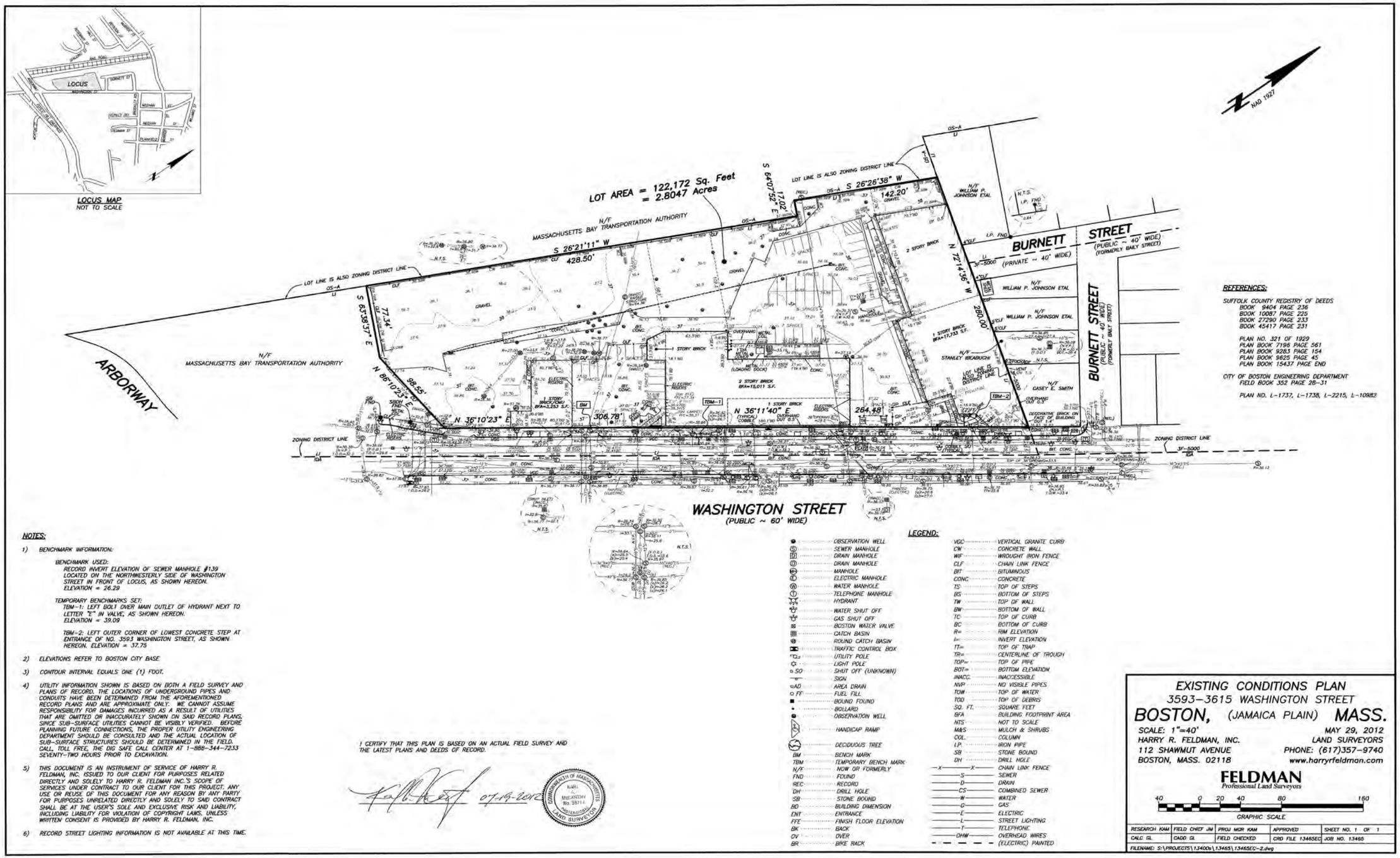
Map 9C of the Boston Zoning Maps indicates that the Project is located within an LI, or Local Industrial, subdistrict of Article 55 of the Boston Zoning Code, the Jamaica Plain

Neighborhood District. The Project is located outside of the Restricted Parking Overlay District, the Groundwater Conservation Overlay District, and the Greenbelt Protection Overlay District.

The Proponent anticipates that zoning relief will be required for the Project in connection with its principal use of multifamily residential housing, and also for certain other potential uses at the Site, including take-out restaurant, day care center, and fitness center. In addition, the Project will likely require dimensional zoning relief for its building height, floor area ratio, or FAR, front and rear yard setbacks, and the design of its off-street parking spaces.

Jamaica Plain, Massachusetts

Figure 2-1
Oblique View of Existing Site
Source: Utile, Inc., 2013



NOTES:

1) BENCHMARK INFORMATION:

BENCHMARK USED:
RECORD INVERT ELEVATION OF SEWER MANHOLE #139 LOCATED ON THE NORTHWESTERLY SIDE OF WASHINGTON STREET IN FRONT OF LOCUS, AS SHOWN HEREON.
ELEVATION = 26.29

TEMPORARY BENCHMARKS SET:
TBM-1: LEFT BOLT OVER MAIN OUTLET OF HYDRANT NEXT TO LETTER "E" IN VALVE, AS SHOWN HEREON.
ELEVATION = 39.09

TBM-2: LEFT OUTER CORNER OF LOWEST CONCRETE STEP AT ENTRANCE OF NO. 3593 WASHINGTON STREET, AS SHOWN HEREON. ELEVATION = 37.75

2) ELEVATIONS REFER TO BOSTON CITY BASE.

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

4) UTILITY INFORMATION SHOWN IS BASED ON BOTH A FIELD SURVEY AND PLANS OF RECORD. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM THE AFOREMENTIONED RECORD PLANS AND ARE APPROXIMATE ONLY. WE CANNOT ASSUME RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES THAT ARE OMITTED OR INACCURATELY SHOWN ON SAID RECORD PLANS. SINCE SUB-SURFACE UTILITIES CANNOT BE VISIBLY VERIFIED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED AND THE ACTUAL LOCATION OF SUB-SURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. CALL TOLL FREE, THE DIG SAFE CALL CENTER AT 1-888-344-7233 SEVENTY-TWO HOURS PRIOR TO EXCAVATION.

5) THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF HARRY R. FELDMAN, INC. ISSUED TO OUR CLIENT FOR PURPOSES RELATED DIRECTLY AND SOLELY TO HARRY R. FELDMAN INC.'S SCOPE OF SERVICES UNDER CONTRACT TO OUR CLIENT FOR THIS PROJECT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY REASON BY ANY PARTY FOR PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAWS. UNLESS WRITTEN CONSENT IS PROVIDED BY HARRY R. FELDMAN, INC.

6) RECORD STREET LIGHTING INFORMATION IS NOT AVAILABLE AT THIS TIME.

I CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY AND THE LATEST PLANS AND DEEDS OF RECORD.

07-19-2012

COMMONWEALTH OF MASSACHUSETTS KARL M. MACARTHY No. 38714 REGISTERED LAND SURVEYOR

REFERENCES:

SUFFOLK COUNTY REGISTRY OF DEEDS
BOOK 9404 PAGE 236
BOOK 10087 PAGE 225
BOOK 27290 PAGE 233
BOOK 45417 PAGE 231

PLAN NO. 321 OF 1929
PLAN BOOK 7196 PAGE 561
PLAN BOOK 9283 PAGE 154
PLAN BOOK 9625 PAGE 45
PLAN BOOK 15437 PAGE END

CITY OF BOSTON ENGINEERING DEPARTMENT
FIELD BOOK 352 PAGE 28-31

PLAN NO. L-1737, L-1738, L-2215, L-10982

LEGEND:

OBSERVATION WELL	VGC ..... VERTICAL GRANITE CURB
SEWER MANHOLE	CW ..... CONCRETE WALL
DRAIN MANHOLE	WIF ..... WROUGHT IRON FENCE
DRAIN MANHOLE	CLF ..... CHAIN LINK FENCE
MANHOLE	BIT ..... BITUMINOUS
ELECTRIC MANHOLE	CONC ..... CONCRETE
WATER MANHOLE	TS ..... TOP OF STEPS
TELEPHONE MANHOLE	BS ..... BOTTOM OF STEPS
HYDRANT	TW ..... TOP OF WALL
WATER SHUT OFF	BW ..... BOTTOM OF WALL
GAS SHUT OFF	TC ..... TOP OF CURB
BOSTON WATER VALVE	BC ..... BOTTOM OF CURB
CATCH BASIN	R= ..... RIM ELEVATION
ROUND CATCH BASIN	I= ..... INVERT ELEVATION
TRAFFIC CONTROL BOX	TT= ..... TOP OF TRAP
UTILITY POLE	TR= ..... CENTERLINE OF TROUGH
LIGHT POLE	TOP= ..... TOP OF PIPE
SHUT OFF (UNKNOWN)	BOT= ..... BOTTOM ELEVATION
SIGN	INACC. ..... INACCESSIBLE
AREA DRAIN	NVP ..... NO VISIBLE PIPES
FUEL FILL	TOW ..... TOP OF WATER
BOUND FOUND	TOD ..... TOP OF DEBRIS
BOLLARD	SQ. FT. ..... SQUARE FEET
OBSERVATION WELL	BFA ..... BUILDING FOOTPRINT AREA
HANDICAP RAMP	NTS ..... NOT TO SCALE
DECIDUOUS TREE	M&S ..... MULCH & SHRUBS
BENCH MARK	COL. ..... COLUMN
TEMPORARY BENCH MARK	I.P. ..... IRON PIPE
N/F NOW OR FORMERLY	SB ..... STONE BOUND
FND FOUND	DH ..... DRILL HOLE
REC RECORD	X X CHAIN LINK FENCE
DH DRILL HOLE	S SEWER
SB STONE BOUND	D DRAIN
BD BUILDING DIMENSION	CS COMBINED SEWER
ENT ENTRANCE	W WATER
FFE FINISH FLOOR ELEVATION	G GAS
BK BACK	E ELECTRIC
OV OVER	L STREET LIGHTING
BR BIKE RACK	T TELEPHONE
	OHW OVERHEAD WIRES
	(ELECTRIC) PAINTED

EXISTING CONDITIONS PLAN
3593-3615 WASHINGTON STREET
BOSTON, (JAMAICA PLAIN) MASS.

SCALE: 1"=40' MAY 29, 2012
HARRY R. FELDMAN, INC. LAND SURVEYORS
112 SHAWMUT AVENUE PHONE: (617)357-9740
BOSTON, MASS. 02118 www.harryrfeldman.com

FELDMAN
Professional Land Surveyors

40 0 20 40 80 160
GRAPHIC SCALE

RESEARCH KAM	FIELD CHIEF JN	PROJ MGR KAM	APPROVED	SHEET NO. 1 OF 1
CALC GL	CADD GL	FIELD CHECKED	CRD FILE 13465EC	JOB NO. 13465

FILENAME: S:\PROJECTS\13400s\13465\13465EC-2.dwg

Figure 2-2
Existing Conditions Plan
Source: Utile, Inc., 2013

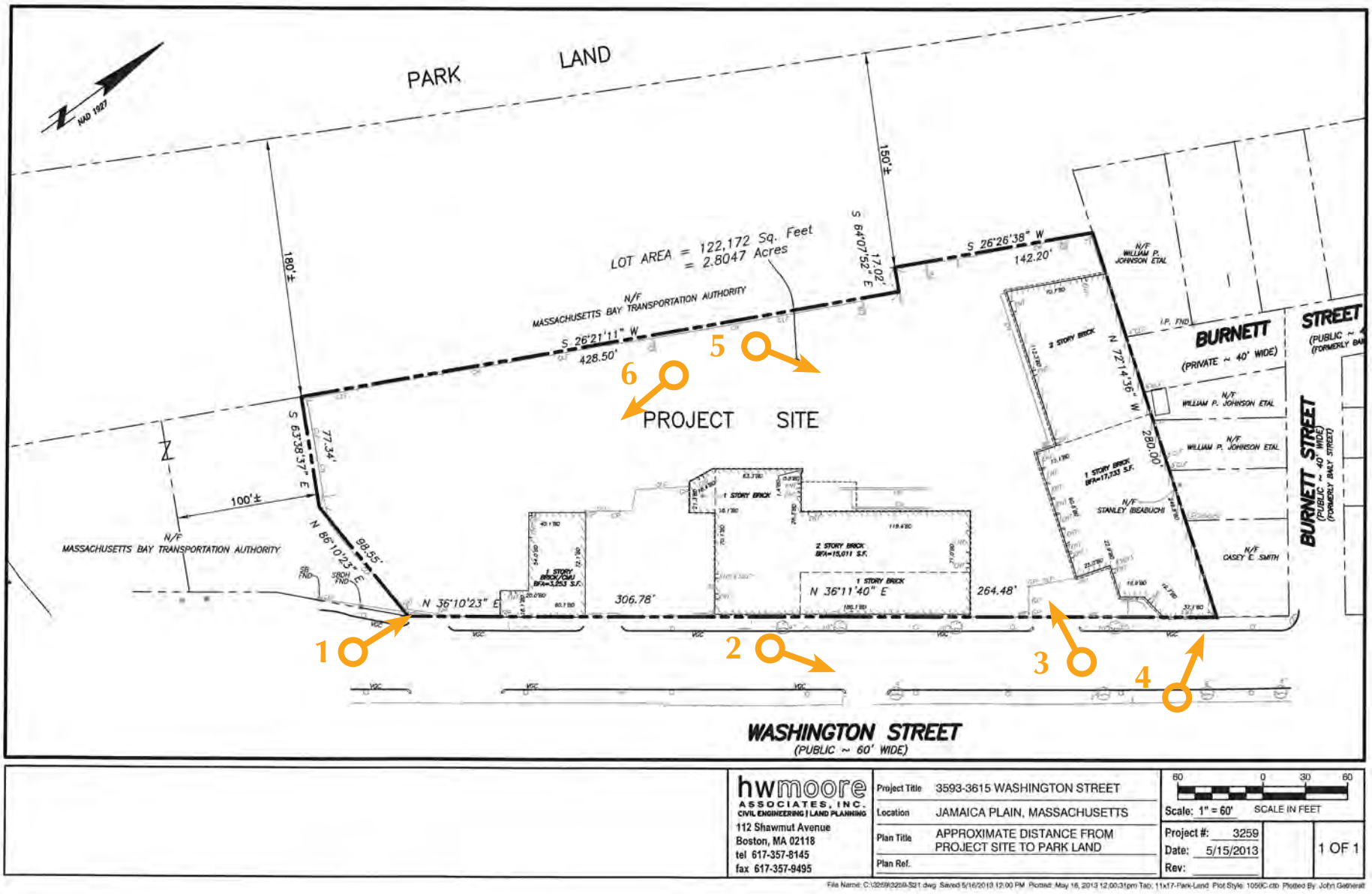


Figure 2-3
Photographic Locations Plan
Source: MassGIS, 2013

Photograph #1: Project Site looking north from the edge of Washington Street, adjacent to the MBTA sub station

Photograph #2: View of the Arborway Bus Depot looking northeast from the Site along Washington

Photograph #3: Project Site looking southwest from Washington Street

Photograph #4: Project Site looking northwest from Washington Street towards Burnett Street

Photograph #5: Interior of Project Site looking northeast towards Washington Street

Photograph #6: Interior of Project Site looking southwest towards the MBTA sub-station

Figure 2-7
Floor Plan - Ground Level
Source: Utile, Inc., 2013

Figure 2-8
Floor Plan - Second Level
Source: Utile, Inc., 2013

Jamaica Plain, Massachusetts

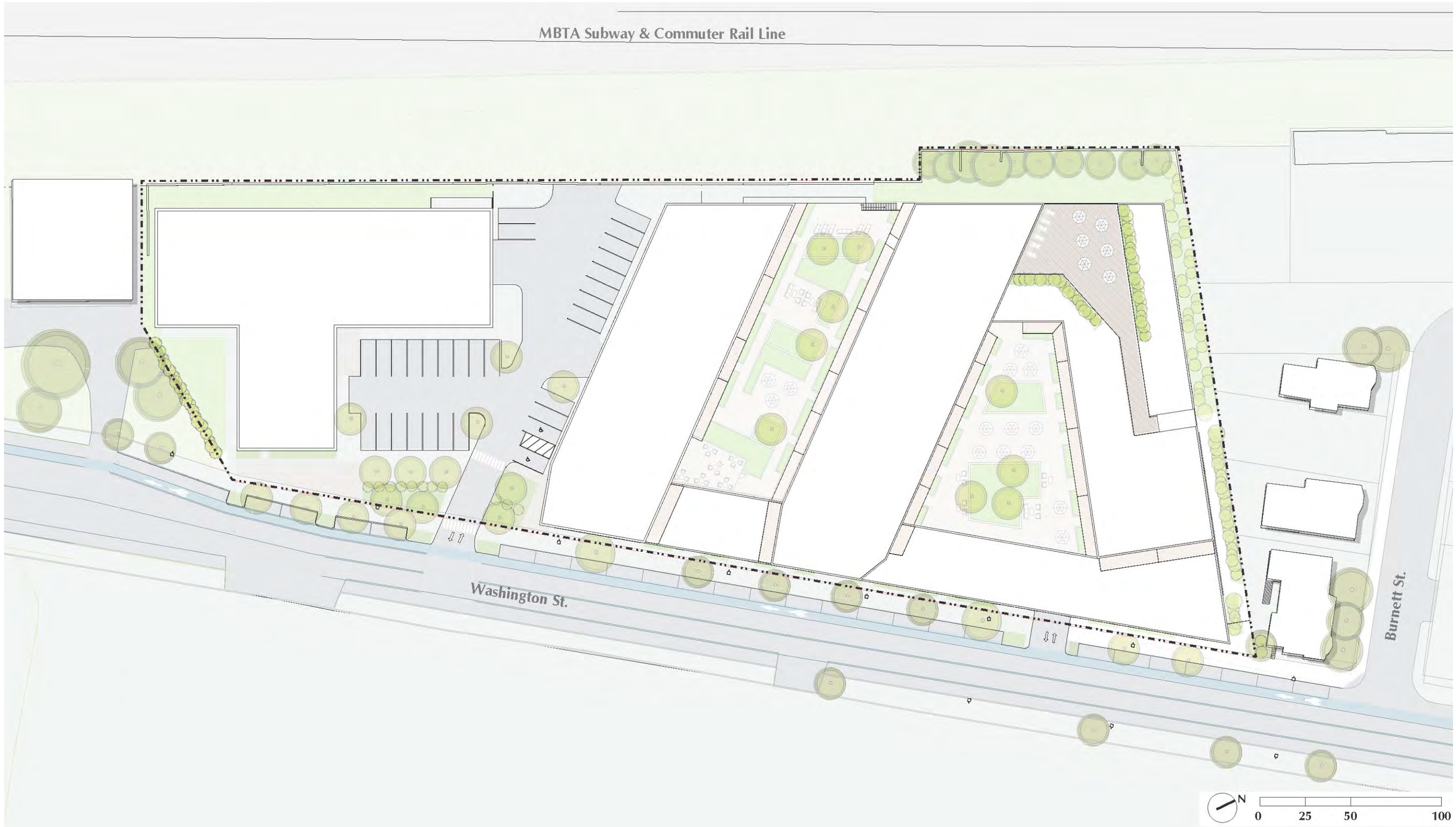
Figure 2-9
Floor Plan - Third Level
Source: Utile, Inc., 2013

Figure 2-10
Floor Plan - Fourth Level
Source: Utile, Inc., 2013

Jamaica Plain, Massachusetts

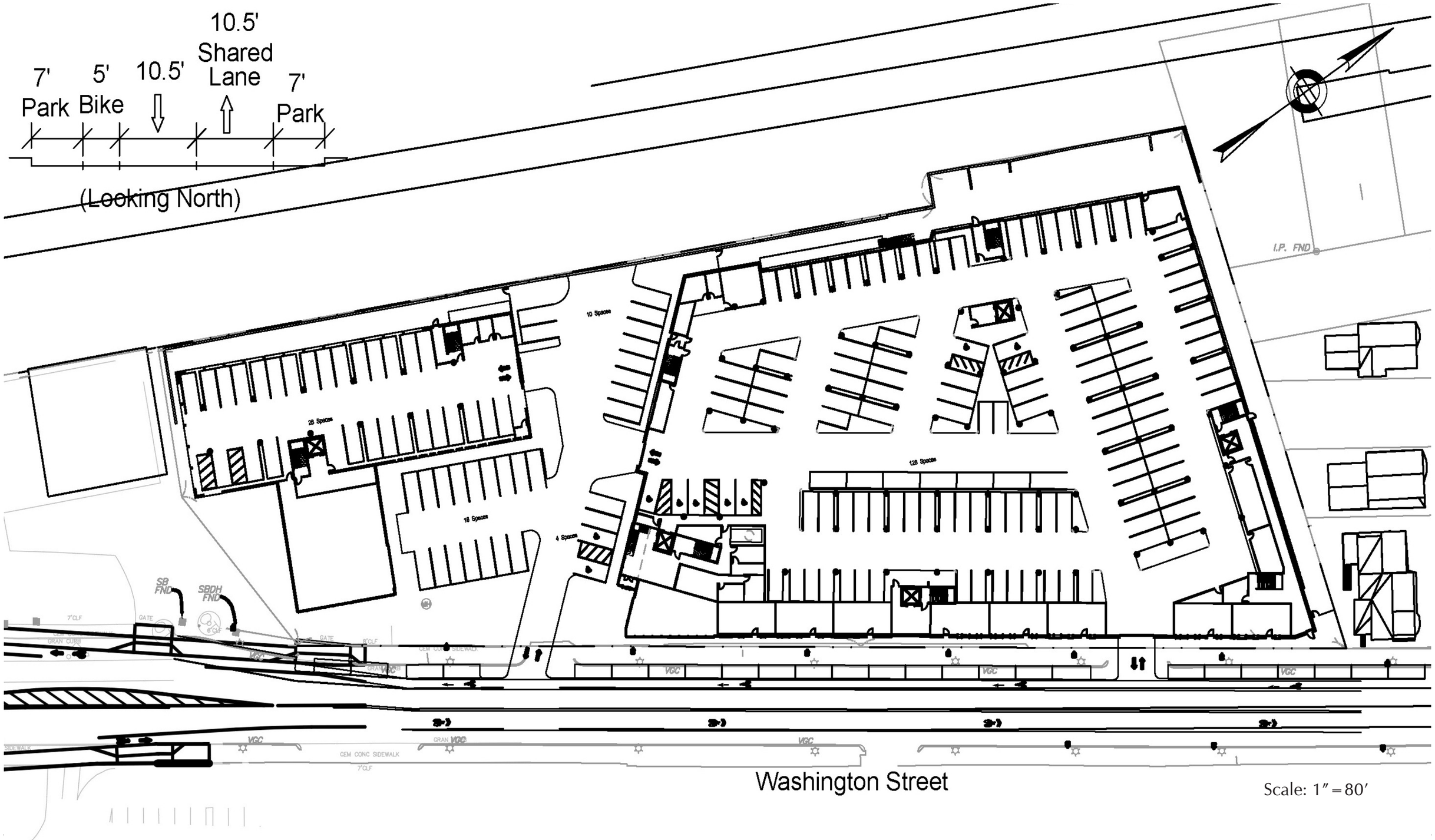
Figure 2-11
Floor Plan - Fifth Level
Source: Utile, Inc., 2013

Figure 2-12
Floor Plan - Sixth Level
Source: Utile, Inc., 2013



Jamaica Plain, Massachusetts

Figure 2-13
Roof Plan
Source: Utile, Inc., 2013



Jamaica Plain, Massachusetts

Figure 2-14
Washington Street Conceptual Plan
Source: Howard /Stein-Hudson Associates, Inc., 2013

Landscape Keynotes

1. Outdoor Space for Retail Tenant
2. 4' Screening Hedge for Retail Space
3. Retail Entry Courtyard with Decorative Paving
4. 4' Hedge to Screen Parking
5. New Streetlights at Existing Locations
6. Entry Courtyard
7. Repaved Sidewalks
8. Proposed Street Tree, Typ.
9. Existing Street Tree, Typ.
10. Planter at Ground Level Units
11. Raised Planter
12. Privacy Planting
13. Deck with Access to Units
14. 7-8' Evergreen Hedge
15. 4' Fence
16. Container Plantings
17. Roof Deck w/ Chaises & Tables
18. Existing Vegetation
19. Sedum Green Roof

Figure 2-15
Landscape Plan
Source: Offshoots, Inc., 2013

Chapter 3

URBAN DESIGN

CHAPTER 3: URBAN DESIGN

3.1 INTRODUCTION

The Commons at Forest Hills Station (the "Project") is conceived as the critical first phase of a long-term revitalization of Jamaica Plain's Washington Street corridor— reconnecting the Stony Brook neighborhood to Forest Hills. The Boston Redevelopment Authority's (BRA) Forest Hills Improvement Initiative (the "Initiative"), a community-based planning effort completed in 2010, and the Stonybrook Neighborhood Association's planning principles imagines a reactivated and continuous streetscape animated by retail and residential uses, and physically defined by building masses fronting the street. The full vision identifies the potential for multiple underutilized publicly-owned sites to transform the neighborhood from a scattering of industrial and infrastructure-related uses to a vital, mixed-use neighborhood anchored by a major transportation hub. Implementation of this vision has been slow, especially on the Washington Street parcels which remain either vacant, or in the case of the MBTA bus servicing facility abutting the Arborway, used for purposes that disrupt the neighborhood urban fabric. See Figure 3-1, Neighborhood Context.

The proposed Project will represent a major first step in realizing the goals of a reconnected neighborhood by transforming a nearly vacant, aging, and contaminated post-industrial site into a lively and dense residential community with added retail and community uses. Initially, as a first step and anchor in a longer term, parcel-by-parcel infill plan, the Project will need to create its own sense of place through a density of residents and associated uses. Because the Site is almost completely disconnected from the nearby residential neighborhoods, the Project must concentrate the uses to create "a there there." It will need to act as a destination that operates on both a regional scale as a Transit Oriented Development, and at a local scale, as a neighborhood destination and source of added residential life.

When completed, the Project will provide an improved corridor between the Burnett Street neighborhood and the Forest Hills Station by animating the edges of what is now a barren and uninviting sidewalk. New street trees and lighting, an on-road bicycle lane, multiple residential entries and lobbies, and commercial/retail and amenity spaces will activate the west side of Washington Street from the first day of completion. See Figure 3-2, Project Site Plan.

The majority of the street edge will be at three stories in order to establish the appropriate residential scale and a consistent base-line height. This podium is punctuated by the taller elements of the upper floors that appear in intervals and are set back from the Burnett Street neighborhood. The presence of these taller components on Washington Street is measured to enhance the sense of place by revealing the density of its occupation and to animate the streetscape at a larger scale.

Looking to the future development of the bus yards to the east of Washington Street as envisioned in the Initiative, it is anticipated the Project will evolve from a stand-alone, destination-oriented

development into a consistent and lively gateway to a two-sided Washington Street corridor. The architectural variety along the buildings' length anticipates a future when it will appear more as a stretch of urban fabric than a singular project. Allowing for this eventual transformation, the ground floor uses, layouts, and construction will be designed in a way that permits the adoption of future additional convenience commercial/retail and other elements that might be more viable in a more fully developed Washington Street corridor.

3.2 MASSING

The Project balances the need for density and a sense of place with a variety of distinct edge conditions. The greatest heights and densities are located at the Site's southern edge, where it marks the edge of the Arborway and announces an expanded and newly vitalized Washington Street corridor. There are no abutters at this end of the Site. As the Project moves north towards the residential neighborhood, the scale and height of the buildings step down, culminating in three stories at the Project's northeast corner (Building D) where it abuts a similarly-scaled residential enclave at Burnett Street.

The major public entry to the Project is coincidental with a water and sewer easement that runs diagonally northwest through the Site. At this juncture, which is the public "face" of the Project and the location of the major lobbies and retail entries, the full height of the buildings are perceived as they complement the most significant piece of publicly-visible open space. The physical densities at this location in combination with the open space and public uses create a strong sense of place and a neighborhood destination.

The remainder of the Washington Street edge moving north reduces in height to a three-story "townhouse-like" scale. For the rest of the Site, this provides a distinctly residential character, animated by individual unit entries and larger building lobbies. These smaller elements are woven into the larger elements that punctuate the Washington Street elevation and predominantly run east to west to avoid an overly imposing presence on the corridor. See Figures 3-3, Illustrative Aerial View Facing North, Figure 3-4, Illustrative Aerial View Facing South, Figure 3-5, Elevated Perspective, Figure 3-6, Perspective— Northwest, and Figure 3-7, Perspective— South.

3.3 CHARACTER AND MATERIALS

The character of the Project strives to be residential in its scale and urbanism, expressed in a contemporary architectural language. Buildings A and B are larger and contain more public elements at their ground levels and deploy material strategies more consistent with their mixed uses. The ground floor commercial/retail/amenity elements and the public lobbies will use glass storefronts and metal frame elements suitable for an urban public space. The upper portions of Buildings A and B combine brick and cementitious panels arranged in an expression that celebrates their size and multi-family occupancy. To provide a sense of scale and to negotiate the distinct uses at the ground and second levels, these taller buildings deploy a base-middle-top strategy in their

elevations, the top level distinguished in material use and color and more suggestive of roof functions than the middle levels.

The lower scale townhouse-like elements adopt a smaller scale grain, more indicative of single family occupancy and private thresholds at the edge of the public realm. These three story elements are expressed vertically, with bay windows and individual unit entries that "residentialize" those portions of Washington Street they abut. These portions present masonry elements at the ground level, and cementitious siding above, detailed and painted in a manner that is more overtly reminiscent of the scale (but not necessarily style) of traditional urban row houses. Each unit has a shallow but significant threshold space— a setback demarcated by a zone of planting and varied paving.

The overall design intent is to harmonize the various pieces at different scales and uses through a variety of façade treatments. These elements of different scale and the different buildings are distinguished in color, material, fenestration, and detailing. While the Project will be recognizable as a whole, the intent is to create enough difference along its length to foster the sense of variety that one finds in a traditional urban setting. The changing scales and materials anticipate the Project will not always be a stand-alone entity, but rather a critical edge of a future two-sided Washington Street corridor. See Figure 3-8, East Elevation and Building Section and Figure 3-9, West, South, and North Elevations.

3.4 VIEWS

As noted in Section 3.2, the Site presents a variety of edge conditions— the active (but unanimated) Washington Street corridor and Arborway Yard on one side and the MBTA's tracks on the other. The north and south edges are equally distinct, one being the busy Arborway and the other is the residential enclave at Burnett Street. The building massing has been crafted specifically to complement and enhance the views from each of these conditions.

The greatest visible building height is at the Arborway edge, where the Building A marks a new point in the Washington Street corridor, now closer to the Forest Hills Station. The prominence of the Building A from this vantage point is intended to enhance the sense of its proximity to the Forest Hills Station. From the north, where the buildings step down to three stories, the Project emerges from the mixed residential and commercial fabric. The east-west graining of the buildings is meant to allow some visual porosity from both the Washington Street side as well from the Southwest Corridor parks on the far side of the rail corridor.

3.5 OPEN SPACE

The most publicly visible open space is located adjacent to the most public portion of the site, between the commercial/retail/amenity functions and two of the three major building entries. The space is conceived as both a visual amenity as well as a gathering place where residents, visitors,

customers, and future residents interact and animate the space. There are hardscape elements suitable for pedestrian use and possible outdoor seating for a commercial/retail tenant. These are complemented by softer green elements, which are largely visual amenities that act as a buffer for the vehicle parking behind and may provide some attractive seating areas.

Above the parking plinth in between Buildings B and C, residents will have access to two open spaces that will provide seating areas, gathering spaces, as well as plantings provided as an environmental and visual buffer to Washington Street. It is anticipated that the edges of these spaces may be used by the residents in the units that immediately open to these courtyards. The center of the open spaces will combine passive and active planted areas that will provide shade and privacy for the residents. See Figure 3-10, Landscape Plan.

3.6 LANDSCAPE

3.6.1 WASHINGTON STREETSCAPE

Along Washington Street, the landscape design will create a pedestrian and bicycle oriented community corridor. New sidewalks will be installed between the existing mature street trees to provide smooth circulation areas with a 6-foot minimum width. New street trees will be added along the entire project length to create a consistent green canopy along Washington Street. To activate the street and create a more engaging public realm, access to ground level residential units in Building D is provided from the public sidewalk; planted areas along the building between each unit entry create attractive semi-private landscaped entrances. A dramatic aesthetic improvement along Washington Street will be provided with the installation of new light fixtures. The old street lights will be taken down along the length of the project, and new boulevard pendants will be added to match the public light fixtures along the Forest Hills retail corridor. The new lighting will help link local Forest Hills businesses to the new population of residents at the proposed Project.

3.6.2 COMMERCIAL/RETAIL/AMENITY SPACE AND ENTRY COURTYARD

Between Buildings A and B, an entry courtyard is created to engage the larger community with the Project. First, commercial/retail space is provided at the southwest entry corner of the Site, creating a community amenity for the neighborhood when walking to the MBTA station. The landscape opens out from the space with a broad, well landscaped urban plaza from the Building's front door to the sidewalk, inviting neighbors into the space. To the south of Building A, a ground-level outdoor area is provided for a potential commercial/retail tenant to create an environment with good solar exposure for outdoor use. Vehicle and bicycle entry to the parking garage and some limited parking to service the commercial/retail tenant is also provided in this area between Buildings A and B. The parking and automobile uses are well screened from the public corridor with a

generous layer of landscaping. A double allee of street trees paired with a four foot high evergreen hedge screens parked automobiles and creates an attractive entrance for residents arriving by car. Decorative crosswalks traverse the automobile curb cut to clearly define the pedestrian right of way. The residential lobbies in Buildings A and B are accessed from this courtyard, and roof overhangs and canopies emphasized with decorative paving materials invite visitors into the buildings. Ample bicycle parking is provided as part of this central courtyard landscape, both near the commercial/retail/amenity space and on the west side of Buildings A and B.

3.6.3 BUFFER PLANTINGS

Along the north property line, a hedge of 7- to 8-foot tall evergreens will provide privacy for the adjacent residents. The evergreens could eventually reach a height of 15 to 20 feet and provide a green screen. In the northwest corner of the site, the jog in the property line creates an opportunity for a small ground-level greenspace for residents. This greenspace could be used as a potential amenity for dog owners and passive outdoor activities. Along the rail corridor, the existing retaining wall and mature vegetation along the west side will remain.

3.6.4 RESIDENTIAL TERRACES

Two large outdoor roof terraces between Buildings B and C on the second floor are provided for residents. The landscape design for these two spaces employs a series of varied orthogonal planted green roofs, which allow for smaller programmed seating areas to be created. These "garden rooms" provide many different shared areas for residents to intermingle outdoors. Private decks are also provided for units directly opening to the terraces, and planted landscape buffers provide privacy from the public seating areas on the terrace. The green roof planting systems help evapotranspire storm water from what would normally be a large flat roof membrane, and urban heat contribution is avoided by the cooling vegetation.

3.6.5 COMMON ROOF DECK

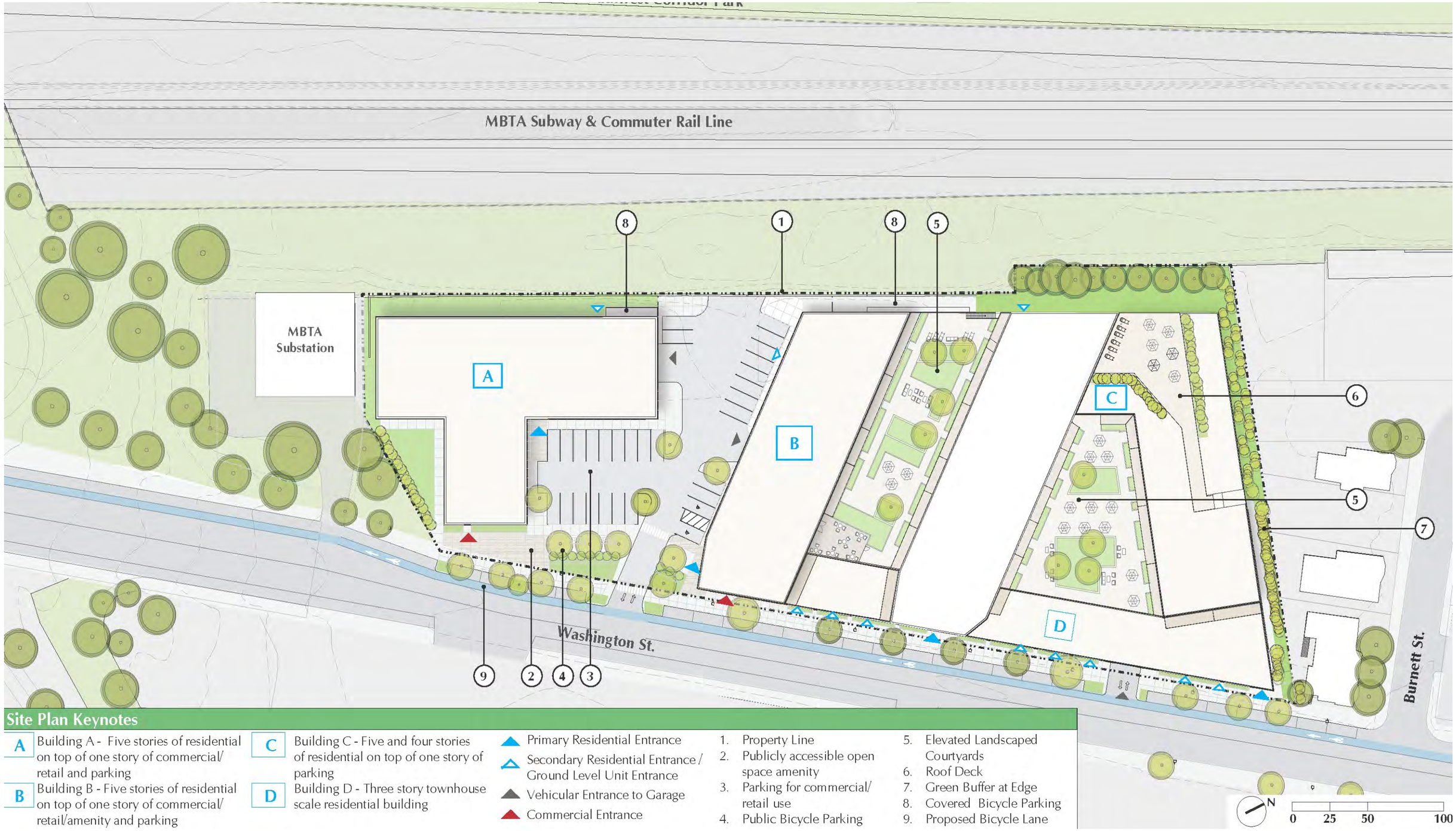
A roof deck on the fifth floor roof is additionally provided as an amenity for residents. This simple deck area with planters around the boundary will create a flexible outdoor gathering area.

3.7 VEHICULAR CIRCULATION AND PEDESTRIAN ENVIRONMENT

Vehicular circulation has been designed to minimize visual and functional impacts on the Washington Street edge. There are two access points, one a single door entry toward the northern end of the Site leading directly into the concealed parking area beneath Buildings B and C. The second entry is more public in nature and is sited between Buildings A and B. There is a two way surface access point that leads to the outdoor surface parking adjacent to the commercial/retail tenant, as well the parking spaces beneath Building A, B, and C. The outdoor surface parking areas are screened by plantings. This access point will contain a variety of traffic calming devices such as striped crosswalks and bollards to allow for the surface to be partially shared by pedestrian and cyclists. Those using the larger of the below-podium parking areas (beneath Buildings A, B, and C) will have two means of access to and from the street.

The pedestrian environment will be enhanced by nearly continuous animated building edges, including individual unit entries, lobbies, and retail and other public components. The public sidewalk areas will be improved with additional street trees and planters at the edges of the buildings. Internal to the Project at the major public entry point, special paving, striping, and bollards will be used to create a safe and attractive shared surface for vehicles and pedestrians. The shared-surface strategy will enhance the sense of this critical public moment as an extension of the public realm. Depending on the ultimate tenants in the commercial/retail areas, it is possible that café style outdoor seating will complement these spaces. See Figure 3-2, Project Site Plan.

Figure 3-1
Neighborhood Context
Source: MassGIS, 2013



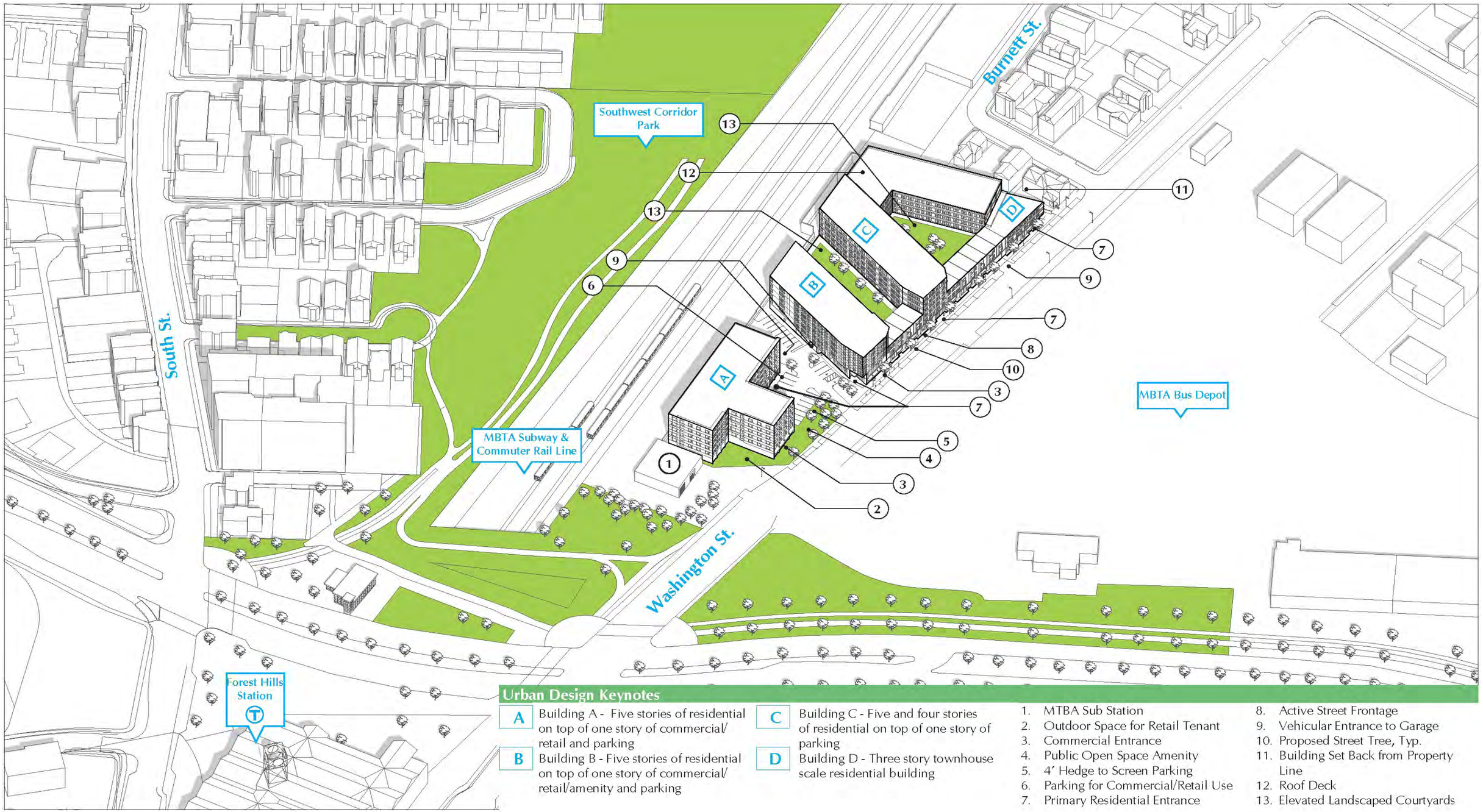
Site Plan Keynotes

- **A** Building A - Five stories of residential on top of one story of commercial/ retail and parking
- **B** Building B - Five stories of residential on top of one story of commercial/ retail/amenity and parking
- **C** Building C - Five and four stories of residential on top of one story of parking
- **D** Building D - Three story townhouse scale residential building

- Primary Residential Entrance
- Secondary Residential Entrance / Ground Level Unit Entrance
- Vehicular Entrance to Garage
- Commercial Entrance

1. Property Line
2. Publicly accessible open space amenity
3. Parking for commercial/ retail use
4. Public Bicycle Parking
5. Elevated Landscaped Courtyards
6. Roof Deck
7. Green Buffer at Edge
8. Covered Bicycle Parking
9. Proposed Bicycle Lane

Figure 3-2
Project Site Plan
Source: Utile, Inc., 2013

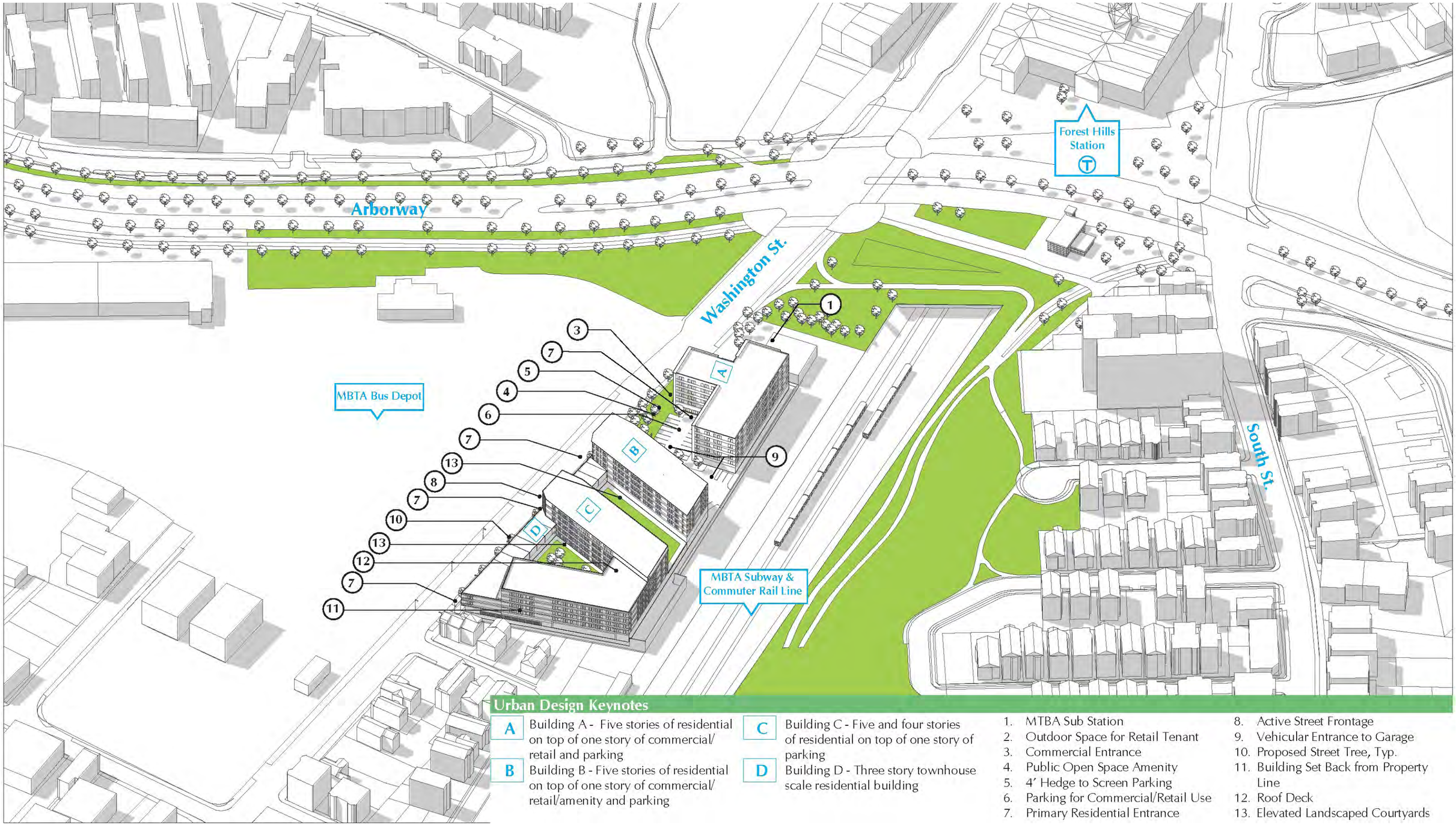


Urban Design Keynotes

- **A** Building A - Five stories of residential on top of one story of commercial/ retail and parking
- **B** Building B - Five stories of residential on top of one story of commercial/ retail/amenity and parking
- **C** Building C - Five and four stories of residential on top of one story of parking
- **D** Building D - Three story townhouse scale residential building

1. MTBA Sub Station
2. Outdoor Space for Retail Tenant
3. Commercial Entrance
4. Public Open Space Amenity
5. 4' Hedge to Screen Parking
6. Parking for Commercial/Retail Use
7. Primary Residential Entrance
8. Active Street Frontage
9. Vehicular Entrance to Garage
10. Proposed Street Tree, Typ.
11. Building Set Back from Property Line
12. Roof Deck
13. Elevated Landscaped Courtyards

Figure 3-3
Illustrative Aerial View Facing North
Source: Utile, Inc., 2013



Urban Design Keynotes

- **A** Building A - Five stories of residential on top of one story of commercial/ retail and parking
- **B** Building B - Five stories of residential on top of one story of commercial/ retail/amenity and parking
- **C** Building C - Five and four stories of residential on top of one story of parking
- **D** Building D - Three story townhouse scale residential building

1. MTBA Sub Station
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9. Vehicular Entrance to Garage
10. Proposed Street Tree, Typ.
11. Building Set Back from Property Line
12. Roof Deck
13. Elevated Landscaped Courtyards

Figure 3-4
Illustrative Aerial View Facing South
Source: Utile, Inc., 2013

Jamaica Plain, Massachusetts

Figure 3-5
Elevated Perspective
Source: Utile, Inc., 2013

Figure 3-6
Perspective - Northwest
Source: Utile, Inc., 2013

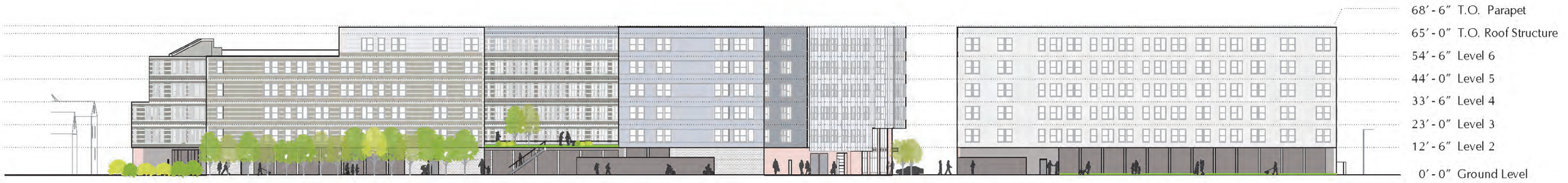
Jamaica Plain, Massachusetts

Figure 3-7
Perspective - South
Source: Utile, Inc., 2013

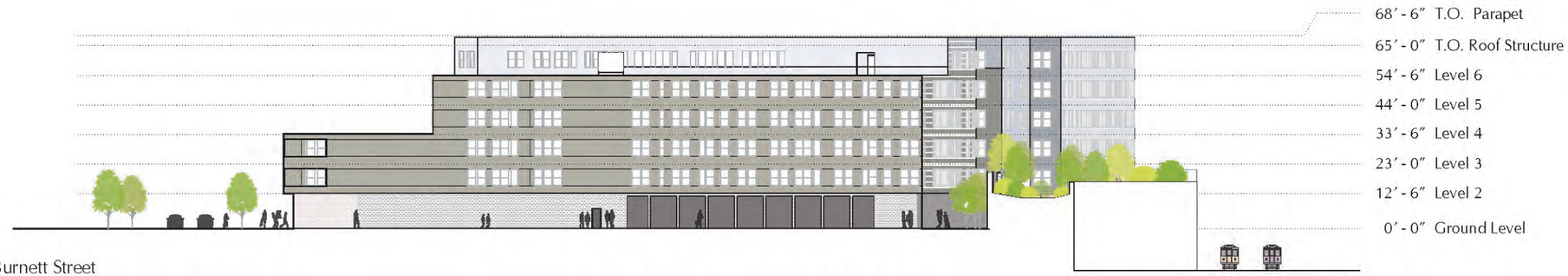
East Elevation - Washington Street

Longitudinal Section

Figure 3-8
East Elevation and Building Section
Source: Utile, Inc., 2013



West Elevation - From Southwest Corridor



North Elevation - From Burnett Street

South Elevation - From MBTA Substation

Figure 3-9
West, South, and North Elevations
Source: Utile, Inc., 2013

Landscape Keynotes

1. Outdoor Space for Retail Tenant
2. 4' Screening Hedge for Retail Space
3. Retail Entry Courtyard with Decorative Paving
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18. Existing Vegetation
19. Sedum Green Roof

Figure 3-10
Landscape Plan
Source: Offshoots, Inc., 2013

Chapter 4

SUSTAINABILITY

CHAPTER 4: SUSTAINABILITY

4.1 SUSTAINABLE DESIGN

The Commons at Forest Hills Station (the "Project") will incorporate multiple sustainability initiatives in its construction and operation. The Leadership in Energy and Environmental Design (LEED) rating system will be used as a framework to track the various sustainable features of the Project. This system is divided into the following categories: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality and Innovation in Design. The Project team will use a LEED scorecard to illustrate that the Project is certifiable under the LEED BD&C–NC 2009 framework. See Figure 4-1, LEED Scorecard.

4.2 ARTICLE 37 / LEED COMPLIANCE

4.2.1 SUSTAINABLE SITES

The Sustainable Sites category is intended to minimize disruption of the natural environment as the development will leverage the existing infrastructure with its close proximity to mass transit and encouraging alternative modes of transportation. The strategic location of the Project is a fundamental basis of the Project's sustainable strategy.

The Project is located in an urban environment, close to mass transit. Just footsteps away from the Forest Hills MBTA Station, the Site is 0.15 miles to the MBTA's Orange Line subway, commuter transit lines, and several key bus routes. The Project design aggressively promotes alternative and sustainable modes of transportation with a higher bicycle to vehicle parking ratio, as well as its proximity to bicycle paths and multiple forms of public transportation. There will be dedicated electric vehicle recharging stations as well as rentable Zipcars on-site.

In addition, the Project is located within walking distance of essential daily shopping on Centre/South Street, including a Harvest Co-op supermarket on Washington Street, and a few of the largest parks in the City. The Project directly abuts the Southwest Corridor Park, which can be used for walking, bicycle riding and commuting, and passive recreation.

The Site is well-served by existing utility infrastructure. However, the Site will require remediation to remove some environmental contaminants. Remediation is currently underway where over 30,000 tons of contaminated soil has been removed and will continue to improve the condition of the Site.

The Project would provide open space to its residents and the neighborhood at grade. Residents' courtyards and roof deck are intended to provide open space amenities with a considerable amount of vegetated space.

4.2.2 WATER EFFICIENCY

In order to meet the requirements of the Water Use Reduction Prerequisite and Credits, the Project proposes to reduce water consumption by 20%. Strategies to meet this goal include low-flow plumbing fixtures for water closets and faucets. All landscaping is intended to consist of drought-tolerant native species, allowing the Project to limit the use of potable water for landscape irrigation. These measures will increase the water efficiency for the Project as a whole and reduce the burden on municipal water supply and wastewater systems.

Another strategy for water conservation is to encourage tenant participation. Tenants will be billed by individual unit for water usage as a means to show them their consumption and encourage water conservation.

4.2.3 ENERGY AND ATMOSPHESE

Energy efficiency is central to the Project's design. The Project will comply with the Commonwealth's Stretch Energy Code and as such, will reduce energy use from the baseline energy conservation by 20%. The Project will feature high efficiency heating and cooling systems in each unit. Electricity and gas used will be billed directly to the tenants. The building envelope is anticipated to exceed the ASHRAE 90.1 performance standards by more than 20%. The wall construction will include a layer of continuous exterior insulation and units will be fully compartmentalized to allow for better thermal control for each unit.

Further, enhanced commissioning of the building systems will comply with LEED prerequisites and credits. This helps ensure that the systems are operating properly and at peak efficiency. A Measurement and Verification plan builds on this by extending accountability for these building systems over time. Enhanced refrigerant management measures will work to further reduce harmful emissions from the building.

4.2.4 MATERIALS AND RESOURCES

The construction process has a very significant impact on the amount of materials and resources that are both consumed and wasted. The Project will require recycling to divert materials from landfills during the construction process. Efforts will be made to use of locally-sourced materials. This will support the local economy and will minimize harmful emissions and energy consumption caused by transporting materials.

Material usage will focus on healthy products that minimize exposure to volatile organic compounds (VOCs) by the residents. Priority will be given to materials that maximize the use of recycled content where possible.

4.2.5 INDOOR ENVIRONMENTAL QUALITY

Enhancing the indoor air quality in buildings is critical to the comfort and well-being of the occupants. The quality of indoor air is linked to allergies, asthma, and other health ailments. As mentioned above, the Project will minimize VOCs by selecting low-VOC paints, sealants, and adhesives.

4.2.6 INNOVATION IN DESIGN

The Project is planning on achieving Innovation in Design credits for design features not explicitly categorized in the LEED rating system. This includes points for enhanced connections to nearby open space networks, education programs, and green housekeeping.

4.3 SUSTAINABLE PRACTICES

Sited off the Southwest Corridor and adjacent to several of Boston's treasured open space assets, The Commons at Forest Hills Station strives to encourage environmental stewardship and healthy living for its residents and visitors. Its design promotes meaningful engagement with the natural landscape. It celebrates alternative modes of transportation with a robust infrastructure for covered bicycle parking.

The Project features a select number of open staircases and day-lit stairs. These are designed to be attractive welcoming places to encourage people to circulate by stair instead of elevator. A fitness center for residents also works to promote healthy living.

As mentioned previously, all energy and water consumption will be sub-metered by unit. This serves to encourage environmental stewardship as residents are cognizant of their energy and water usage and thus, more likely to be mindful of consumption.

LEED 2009 for New Construction and Major Renovations

Project Checklist

The Commons at Forest Hills Station

Y	?	N			
21	**2**	**3**	**Sustainable Sites**	Possible Points:	**26**
Y			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
5		**5**	**Water Efficiency**	Possible Points:	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
2		**2**	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
3		**1**	Credit 3	Water Use Reduction	2 to 4
11		**24**	**Energy and Atmosphere**	Possible Points:	**35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
4		**15**	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
5		**9**	**Materials and Resources**	Possible Points:	**14**
Y			Prereq 1	Storage and Collection of Recyclables	
		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
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Y	?	N			
			Materials and Resources, Continued		
1		**1**	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
8	**1**	**6**	**Indoor Environmental Quality**	Possible Points:	**15**
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			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	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability 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
			Innovation and Design Process	Possible Points:	**6**
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1
		4	**Regional Priority Credits**	Possible Points:	**4**
		1	Credit 1.1	Regional Priority: Specific Credit	1
		1	Credit 1.2	Regional Priority: Specific Credit	1
		1	Credit 1.3	Regional Priority: Specific Credit	1
		1	Credit 1.4	Regional Priority: Specific Credit	1
50	**3**	**51**	**Total**	Possible Points:	**110**

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

Figure 4-1

LEED Scorecard

Source: U.S. Green Building Council, 2009

Chapter 5

TRANSPORTATION

CHAPTER 5: TRANSPORTATION

5.1 INTRODUCTION

Howard/Stein-Hudson Associates, Inc. (HSH) has conducted an evaluation of the transportation impacts of the Commons at Forest Hills Station, a proposed development containing 280 residential apartment units and approximately 7,960 square feet (sf) of commercial/retail/amenity space to be located at 3593-3615 Washington Street (the "Project" and/or the "Site") in Jamaica Plain. This transportation study adheres to the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* and Article 80 development review process. This study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian activity.

5.1.1 PROJECT DESCRIPTION

The Site is located at 3593-3615 Washington Street in Boston's Jamaica Plain neighborhood, just north of the Forest Hills Massachusetts Bay Transportation Authority (MBTA) Station. The Site is bounded by residential properties to the north; MBTA property to the south; Washington Street to the east; and an approximately 18 foot retaining wall separating the MBTA Orange Line and Needham and Stoughton/Providence Commuter Rail lines to the west. The Project Site currently contains a mix of office and industrial uses.

The Project includes the demolition of the existing buildings and the construction of four new buildings with approximately 280 residential apartment units, approximately 7,960 sf of commercial/retail/amenity space, secure storage for approximately 250 bicycles, and 185 vehicle parking spaces.

Vehicular access/egress will be provided by two full access driveways along Washington Street. The northerly driveway will be located at an existing curb cut approximately 200 feet south of Burnett Street and the southerly driveway will be located about 100 feet north of an existing curb cut, or approximately 450 feet south of Burnett Street. The northerly driveway will provide access to the residential parking area for the two buildings on the northerly portion of the Site. The southerly driveway will provide access to the residential parking areas, the commercial/retail parking spaces, and will accommodate deliveries, loading, and trash pick-up maneuvers.

5.1.2 STUDY AREA

The study area includes intersections along Washington Street in the vicinity of the Site and is bounded by Burnett Street to the north and Arborway/New Washington Street to the south. As shown in Figure 5-1, the study area includes the following four intersections:

- Washington Street/Rossmore Road/McBride Street (signalized)
- Washington Street/Brookley Road/Burnett Street (North) (unsignalized)
- Washington Street/Burnett Street (South) (unsignalized)
- Washington Street/Casey Arborway/New Washington Street (signalized)

5.1.3 METHODOLOGY

This transportation study and supporting analyses were conducted in accordance with BTD guidelines and is described below.

The existing conditions analysis includes an inventory of the existing (2013) transportation conditions such as roadway capacities, traffic characteristics, parking and curb usage, transit, pedestrian circulation, bicycle facilities, loading, and Site conditions. Existing vehicle, bicycle, and pedestrian counts were obtained from recent traffic studies conducted for projects in the vicinity of the study area. The traffic counts form the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. 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 accommodation, and loading capacities and deficiencies are identified. This section includes the following scenarios:

- The 2018 No-Build conditions scenario includes both general background traffic growth and traffic growth associated with specific developments that are planned in the vicinity of the Site. Transportation infrastructure improvements in the study area are identified and incorporated into the 2018 No-Build conditions.

- The 2018 Build conditions scenario includes Project-generated traffic volume estimates added to the traffic volumes developed as part of the 2018 No-Build conditions scenario.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or

construction related issues that are necessary to accommodate the Project. An evaluation of short-term traffic impacts associated with construction activities is also provided.

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 EXISTING ROADWAY CONDITIONS

The study area roadways are described below. The descriptions reflect functional classifications by the Massachusetts Department of Transportation (MassDOT) Highway Division's Office of Transportation Planning.

Washington Street borders the Site to the east, is classified as an urban principal arterial, and generally runs in a north-south direction through downtown Boston through the South End, Roxbury, and Jamaica Plain. In the vicinity of the Site, Washington Street consists of a single lane of travel in each direction, with a mix of unrestricted and two-hour parking provided along both sides of the street. Sidewalks are located on both sides along Washington Street.

Rossmore Road is a local road that runs one-way westbound from Forest Hills Street to Washington Street. Rossmore Road consists of a single lane of travel in the westbound direction. Within the study area, parking is generally unrestricted on both sides of the street and sidewalks are provided on both sides of the street.

McBride Street is a local road that runs in an east-west direction between Washington Street to South Street. McBride Street consists of a single lane and is one-way in the eastbound direction between South Street and Boynton Street. McBride Street consists of a single lane of travel in each direction and is two-way between Boynton Street and Washington Street. Within the study area, parking is prohibited at any time on both sides of the roadway and sidewalks are provided on both sides.

Brookley Road is a local road that runs in an east-west direction between Washington Street and Forest Hills Street. Brookley Road consists of a single lane of travel in each direction and is two-way between Washington Street and Stedman Street. Brookley Road consists of a single lane and is one-way eastbound between Stedman Street and Forest Hills Street. Within the study area, parking is prohibited at any time on both sides of the roadway. Sidewalks are provided on both sides of the roadway.

The Arborway is an urban principal arterial that runs in a southeast-northwest direction between Shea Circle/Morton Street to the east and the Jamaicaway near Jamaica Pond to the northwest. The majority of the Arborway is designated as Massachusetts State Route 203. The Arborway is elevated over Washington Street, the MBTA Orange Line, and the Commuter Rail lines via the Msgr. William Casey Overpass, south of the Site. The elevated section of the Arborway consists of two lanes in each direction and is currently in the design process of being replaced with a proposed multimodal at-grade boulevard known as the Casey Arborway.

New Washington Street is a local road that runs in an east-west direction between Washington Street and South Street. New Washington Street consists of two travel lanes in each direction, with additional turn lanes at intersections. Within the study area, parking is prohibited at any time and sidewalks are provided on both sides of the roadway. An MBTA bus station is located on the eastbound side of the roadway at the Southwest Corridor Park crossing.

5.2.2 EXISTING INTERSECTION CONDITIONS

Washington Street/Rossmore Road/McBride Street is a signalized intersection with four approaches. The McBride Street eastbound approach consists of a shared left-turn/right-turn lane. The Rossmore Road westbound approach consists of a shared left-turn/through/right-turn lane. The Washington Street northbound approach consists of a shared left-turn/through lane. However, field observations indicate that the approach generally operates as an exclusive left-turn lane and a through lane. The Washington Street southbound approach consists of a shared through/right-turn lane. Parking is allowed along both sides of Rossmore Road and Washington Street, north of the intersection. Crosswalks and wheelchairs ramps are provided across all legs of the intersection.

Washington Street/Arborway/New Washington Street is a signalized intersection with four approaches and is located just north of the Casey Overpass. The New Washington Street eastbound approach consists of an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. The Arborway westbound approach consists of a left-turn/through lane and a through/right-turn lane. The Washington Street northbound approach consists of a shared left-turn/through and a through lane. Washington Street northbound right-turning movements occur upstream of the intersection, south of the Casey Overpass. The Washington Street southbound approach consists of two through lanes and an exclusive right-turn lane. Parking is not allowed on any of the approaches to the intersection. Crosswalks are provided across both Washington Street legs and the Arborway eastbound departing leg of the intersection.

Washington Street/Brookley Road/Burnett Street (north) is an unsignalized intersection with four approaches. Burnett Street is offset from Brookley Road to the south by approximately 60 feet. Burnett Street and Brookley Road both consist of a shared left-turn/right-turn lane and operate under stop control, although stop signs are not provided. The Washington Street northbound and southbound approaches consist of single travel lanes. Parking is prohibited along Washington Street and Brookley Road and is allowed along the Burnett Street (North) eastbound approach. Bus stops are provided at the intersection along both sides of Washington Street.

Washington Street/Burnett Street (south) is an unsignalized intersection with three approaches. The Burnett Street eastbound approach consists of a shared left-turn/right-turn lane and operates under stop control, although a stop sign is not provided. The Washington Street northbound and southbound approaches consist of single travel lanes. Parking is provided along all legs off the intersection.

5.2.3 EXISTING TRAFFIC CONDITIONS

Traffic movement data were obtained from traffic studies conducted for two nearby projects: the Casey Arborway Project[1] and the proposed development at 3521-3529 Washington Street[2]. Traffic counts for the Washington Street/Arborway/New Washington Street intersection were conducted on February 28, 2012 and were obtained from the Casey Arborway Project study. The remaining traffic counts were conducted on May 24, 2011 and were obtained from the 3521-3529 Washington Street study.

To represent 2013 traffic volume conditions, an adjustment to the traffic data was necessary to account for traffic growth since 2011 and 2012; therefore a background traffic growth rate of 0.5 percent per year was applied to the 2011 and 2012 counts. A more detailed discussion of the background traffic growth rate is provided later in this chapter.

Based on the vehicle counts, the weekday morning and evening peak hours were identified as 7:45–8:45 a.m. and 5:00–6:00 p.m., respectively. Figure 5-2 and Figure 5-13 show the existing peak-hour turning volumes for the study area intersections for the a.m. and p.m. peak hours, respectively. 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

[1] http://www.massdot.state.ma.us/Portals/24/docs/BTDCountsJamaicaPlain.pdf
[2] Project Notification Form – 3521-3529 Washington Street; Boston, MA; Howard/Stein-Hudson Associates, Inc.; 2011.

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 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.

Field observations were performed by HSH 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 through the field observations conducted by HSH.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 5-1 displays the intersection level of service criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst (unacceptable) 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 5-1, Level of Service Criteria (HCM Excerpt)

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

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

Tables 5-2 through 5-3 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 sheets are provided in the Appendix.

Table 5-2, Existing (2013) Level of Service Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue length (feet)	95th Percentile Queue length (feet)
Signalized Intersections					
Washington St/McBride St/Rossmore Rd	**C**	**28.9**	-	-	-
McBride Street EB left/right	C	29.8	0.24	36	58
Rossmore Road WB left/thru/right	D	53.2	0.91	168	252
Washington Street NB left	B	12.6	0.08	4	25
Washington Street NB thru	C	23.6	0.78	267	#780
Washington Street SB thru/right	B	19.4	0.52	133	m351
Washington St/New Washington St/Arborway	**D**	**48.1**	-	-	-
New Washington Street EB left	E	64.5	0.75	150	226
New Washington Street EB bear right	E	74.7	0.85	176	#280
New Washington Street EB right	B	10.2	0.27	0	41
Arborway WB hard left/left/thru | thru/right	F	>80.0	>1.00	~272	#356
Washington Street NB left/thru | thru	B	19.3	0.52	182	231
Washington Street SB left/thru | thru	C	29.7	0.41	116	163
Washington Street SB right	A	2.2	0.15	0	26
Unsignalized Intersections					
Washington St/Burnett St (north)/Brookley Rd	**-**	**-**	-	-	-
Burnett Street EB left/thru/right	C	16.2	0.02	-	2
Brookley Road WB left/thru/right	D	28.5	0.07	-	6
Washington Street NB left/thru/right	A	0.0	0.00	-	0
Washington Street SB left/thru/right	A	1.5	0.06	-	4
Washington St/Burnett St (south)	**-**	**-**	-	-	-
Burnett Street EB left/right	D	29.7	0.10	-	8
Washington Street NB left/thru	A	0.3	0.01	-	1
Washington Street SB thru/right	A	0.0	0.28	-	0

~/# = 50th/95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

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

Gray shading indicates undesirable LOS.

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

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue length (feet)	95th Percentile Queue length (feet)
Signalized Intersections					
Washington St/McBride St/Rossmore Rd	**C**	**26.2**	-	-	-
McBride Street EB left/right	E	60.5	0.85	163	229
Rossmore Road WB left/thru/right	C	23.0	0.48	54	97
Washington Street NB left	B	19.3	0.24	6	41
Washington Street NB thru	B	16.0	0.58	155	#541
Washington Street SB thru/right	C	22.4	0.71	208	m#669
Washington St/New Washington St/Arborway	**C**	**34.5**	-	-	-
New Washington Street EB left	D	54.1	0.58	117	175
New Washington Street EB bear right	E	70.0	0.80	154	221
New Washington Street EB right	A	9.5	0.37	0	48
Arborway WB hard left/left/thru | thru/right	E	56.5	0.82	205	262
Washington Street NB left/thru | thru	B	19.5	0.49	134	195
Washington Street SB left/thru | thru	C	29.7	0.58	238	335
Washington Street SB right	A	1.9	0.18	0	28
Unsignalized Intersections					
Washington St/Burnett St (north)/Brookley Rd	**-**	**-**	-	-	-
Burnett Street EB left/thru/right	C	19.0	0.02	-	1
Brookley Road WB left/thru/right	F	>50.0	0.72	-	66
Washington Street NB left/thru/right	A	0.1	0.00	-	0
Washington Street SB left/thru/right	A	4.1	0.16	-	0
Washington St/Burnett St (south)	**-**	**-**	-	-	-
Burnett Street EB left/right	C	25.0	0.08	-	7
Washington Street NB left/thru	A	0.1	0.00	-	0
Washington Street SB thru/right	A	0.0	0.51	-	0

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by an upstream signal.
Gray shading indicates undesirable LOS.

During the a.m. peak hour, the signalized intersections operate at LOS D or better. However, some movements at the Washington Street/New Washington Street/Arborway intersection operate at LOS E or F. All movements at the unsignalized intersections operate at a LOS D or better.

During the p.m. peak hour, the signalized intersections both operate at LOS C, with some movements operating at LOS E. The Brookley Road westbound movements at Washington Street currently operate at LOS F. This is common for low volume side streets that intersect higher volume arterial roadways due to the limited number of gaps available in the traffic stream. Actual operations at the intersection of Washington Street/Burnett Street/Brookley Road intersection are metered by the

traffic signal at the intersection of Washington Street/McBride Street/Rossmore Road to the north, which provides sufficient available gaps for vehicles exiting Brookley Road.

5.2.5 EXISTING PARKING AND CURB USE

Figure 5-4 illustrates the on-street parking regulations in the vicinity of the study area. As shown in Figure 5-4, curb use regulations adjacent to the Project Site include unrestricted parking, 2-hour parking, and restricted parking. Parking is prohibited along McBride Street between Washington Street and the Southwest Corridor Park. Parking on Washington Street consists of a mix of unrestricted and two-hour parking south of Brookley Road. Parking is restricted along Washington Street between Brookley Road and McBride Street/Rossmore Road. North of Rossmore Road, parking is unrestricted along Washington Street. Three MBTA bus stops are provided along Washington Street northbound and one is provided along Washington Street southbound within the study area.

South of the site, the Forest Hills MBTA Station contains 206 publicly accessible parking spaces available at a rate of $6 per day. The Station also contains 32 bicycle parking spaces.

5.2.6 EXISTING PUBLIC TRANSPORTATION FACILITIES

The Project Site is well-served by public transportation and is less than a quarter mile north of the Forest Hills MBTA Station, which provides bus, rapid transit, and commuter rail service. The MBTA public transportation services are shown in Figure 5-5 and summarized in Table 5-4.

Table 5-4, MBTA Transit Services

Line/Route #	Description	Peak-hour Headways (minutes)[1]
Rapid Transit Routes		
Orange Line	Forest Hills – Oak Grove	5
Local Bus Routes		
#42	Forest Hills Sta. – Dudley or Ruggles Sta. via Washington St	15
Commuter Rail Routes[2]		
Needham	Needham – South Station	30-55

[1] Headway is the scheduled time between trains or buses. Source: www.mbta.com, May 2013

[2] Commuter rail routes have irregular headways; customers typically plan trips according to schedule rather than using walk-up services.

Rapid Transit Routes

The MBTA Orange Line subway provides service from Forest Hills Station in Jamaica Plain through downtown Boston to Oak Grove Station in Malden, Massachusetts. The Orange Line provides inbound and outbound service approximately every five minutes Monday through Friday and every ten minutes on Saturday and Sunday. The Project is located less than a quarter mile north of the Forest Hills MBTA Orange Line Station and approximately a half-mile south of the Green Street MBTA Orange Line Station. The most recent published passenger count data indicates that the Orange Line serves approximately 141,000 passengers per day[3].

Local Bus Routes

The Project Site is located within convenient walking distance to the following 16 MBTA bus routes:

#16 – Forest Hills Station – Andrew Station or UMass via Columbia Rd.
#21 – Ashmont Sta. – Forest Hills Sta. via Morton St.
#30 – Mattapan Sta. – Forest Hills Sta. via Cummins Hwy. and Roslindale Sq.
#31 – Mattapan Sta. – Forest Hills Sta. via Morton St.
#32 – Wolcott Sq. or Cleary Sq. – Forest Hills Sta. via Hyde Park Ave.
#34 – Walpole Center or Dedham Line – Forest Hills Sta. via Washington St.
#34E – Walpole Center or Dedham Line – Forest Hills Sta. via Washington St.
#35 – Dedham Mall/Stimson St. – Forest Hills Sta. via Belgrade Ave.
#36 – Charles River Loop or V.A. Hospital - Forest Hills Sta. via Belgrade Ave. and Centre St.
#37 – Baker & Vermont Sts. – Forest Hills Sta. via Belgrade Ave. and Centre St.
#38 – Wren St – Forest Hills Sta. via Centre and South Sts.
#39 – Forest Hills Sta. – Back Bay Sta. via Huntington Ave
#40 – Georgetowne – Forest Hills Sta. via Washington St. and West Boundary Rd.
#42 – Forest Hills Sta. – Dudley or Ruggles Sta. via Washington St.
#50 – Cleary Square – Forest Hills Sta. via Roslindale Sq.
#51 – Cleveland Circle – Forest Hills Sta. via Hancock Village

The primary MBTA bus route serving the Project Site is the #42 bus, which provides service between Forest Hills Station and Dudley/Ruggles Stations via Washington Street. The buses operate on 15-minute headways in the a.m. and p.m. peak periods and on 30-minute headways during off-peak periods. As previously mentioned, the Forest Hills MBTA Station is located less than a quarter-mile south of the Site and serves as a terminus for the bus routes listed above.

[3] Ridership and Service Statistics (13th Edition); Central Transportation Planning Staff; Boston, MA; 2010.

Commuter Rail Routes

The Needham MBTA commuter rail lines stops at Forest Hills Station. This train provides access between Needham Heights and South Station in downtown Boston. On a weekday, the Needham Line has 16 inbound trains that run between 6:37 a.m. and 10:35 p.m. and 14 outbound trains that run between 7:16 a.m. and 10:43 p.m. that stop at Forest Hills Station. There is no weekend commuter rail service at Forest Hills Station.

5.2.7 EXISTING PEDESTRIAN FACILITIES

Pedestrian counts were obtained from the traffic studies conducted for the Casey Arborway Project and the proposed development at 3521-3529 Washington Street. Like the traffic volume turning movement counts, the pedestrian counts for the Washington Street/Arborway/New Washington Street intersection were conducted on February 28, 2012. The remaining counts were conducted on May 24, 2011. The 2013 existing a.m. and p.m. peak-hour pedestrian volumes appear in Figure 5-6. Detailed pedestrian count data is provided in the Appendix.

As shown on Figure 5-6, pedestrian activity in the vicinity of the Project Site is relatively light, with the highest occurrence of pedestrians along the westerly side of Washington Street during the p.m. peak hour.

Sidewalks in the Project area are in good condition and supply adequate capacity. A site visit noted that in certain areas of the sidewalks along McBride Street and Burnett Street, tree roots and overgrown vegetation have created cracks and an uneven surface. In addition, the presence of utility poles, street lights, and overgrown vegetation greatly reduce the effective width of the sidewalk adjacent to the Project Site. Handicapped-accessible ramps and crosswalks are provided at most study area intersections.

5.2.8 EXISTING BICYCLE FACILITIES

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project Site is conveniently located adjacent to the Southwest Corridor Park, which provides approximately 4.7 miles of biking, walking, and jogging paths between Forest Hills and Back Bay.

The roadways adjacent to the Project Site have no designated bicycle lanes or markings. In the vicinity of the study area, Washington Street is designated as an advanced-level bike route suitable for experienced and traffic confident cyclists on the 2010-2011 Boston Bikes Map. The Southwest Corridor Path, McBride Street, and Rossmore Road are all designated as beginner-level bike routes suitable for all

types of cyclists including newer cyclists, cyclists with limited on-road experience, and/or children.

The 2013 Existing a.m. and p.m. peak-hour bicycle turning movement counts appear in Figure 5-7. Detailed bicycle counts provided in the Appendix.

5.2.9 CAR SHARING SERVICES

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who do not own cars. Vehicles are rented on an hourly or daily, and all vehicle costs (gas, maintenance, insurance, and parking) included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

The nearby Zipcar service provides an important transportation option and reduces the need for private vehicle ownership. As shown on Figure 5-8 and summarized in Table 5-5, Zipcar has two locations in the vicinity of the Project Site with a combined total of 12 vehicles within the study area.

Table 5-5, Shared Car Summary

Location	Number of Vehicles
Washington Street/Arborway	8
Forest Hills MBTA Station	4
Total	**12**

5.3 FUTURE CONDITIONS

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 BTD guidelines, these conditions are projected to a future date five years from the Existing conditions year. For this 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 conditions scenarios and includes an evaluation of the transportation facilities under the No-Build and Build conditions.

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.

Planned Infrastructure Improvements

The following public infrastructure project is planned to be implemented within the five-year analysis horizon of this traffic study.

Casey Arborway Project. This Project will replace the existing structurally deficient Casey Overpass with a proposed at-grade boulevard. The intersections of Washington Street at Arborway and South Street at Arborway will be reconstructed as at-grade, signalized intersections. Left-turns from the Arborway to Washington Street and South Street will be accommodated by two new u-turns that will be located east of Washington Street (for Arborway eastbound left-turns) and west of South Street (for Arborway westbound left-turns). A separate bus lane will be provided for the MBTA buses for the Arborway westbound left-turn movement to Washington Street southbound. The Casey Arborway Project will also improve the multi-use path connections between the Southwest Corridor Park and the adjacent transportation facilities (i.e. Washington Street, South Street, and the Forest Hills MBTA Station).

The Project is expected to commence between spring 2014 and fall 2016.

Background Traffic Growth

Two methodologies are used to account for future traffic growth, independent of the Project. The first methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. Based on an assessment of traffic volume data from 2008 to 2011 along Washington Street in the vicinity of the Project Site, traffic volumes have remained relatively constant in recent years. However, to account for any unforeseen growth, this analysis assumes a general background growth rate of one-half percent per year.

The second methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon. The following projects, which are depicted in Figure 5-9, 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.

154-160 Green Street Mixed-Use Project. This proposed mixed-use building consists of 13 units, retail space, and a 16-space underground parking garage. Additionally, 5-short-term on street parking spaces will be created by the realignment of the sidewalk along Green Street. Traffic volumes for this project were

assumed to be part of the general background traffic growth rate and were not added to the study area intersections.

Jamaica Park Condominium. This proposed development consists of 29 free standing condominium units to be located on Brookley Road, adjacent to the Forest Hills Street intersection. Traffic volumes for this project were assumed to be part of the general background traffic growth rate and were not added to the study area intersections.

Forest Hills Parcel V&W. This proposed commercial development consists of approximately 44,330 square-feet including 58 off-street parking spaces and related site improvements on the MBTA's Parcels V and W in the Forest Hills area of Jamaica Plain. Traffic volumes for this project were assumed to be part of the general background traffic growth rate and were not added to the study area intersections.

3521 Washington Street. This project includes the demolition of the existing vacant warehouses and the construction of a new approximately 130,000 square-foot self-storage facility, a new 2-story building consisting of approximately 28,000 square-feet of retail space, and 42 new residential units. Traffic volumes were obtained from the traffic study prepared for this project and added to the study area intersections.

No-Build Conditions Traffic Volumes

To develop the 2018 No-Build conditions traffic volumes at the study area intersections, with the exception of the new Washington Street/Casey Arborway intersection, the 0.5 percent 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.

For the Washington Street/Casey Arborway intersection, the projected future traffic volumes with the proposed Casey Arborway improvements in place were obtained from the traffic study[4] conducted for the Casey Arborway Project and were used as the No-Build traffic volumes. The traffic volumes at the Washington Street/Casey Arborway intersection also account for background growth and the reassignment of vehicles at the intersection.

The 2018 No-Build a.m. and p.m. peak hour traffic volumes are show in Figure 5-10 and Figure 5-11, respectively.

[4] Casey Overpass Project – Alternatives Analysis; McMahon Associates; October 18, 2011.

No-Build Conditions 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 worsening in LOS between the 2013 Existing conditions and the 2018 No-Build conditions. The detailed analysis sheets are provided in the Appendix.

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

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue length (feet)	95th Percentile Queue length (feet)
Signalized Intersections					
Washington St/McBride St/Rossmore Rd	**C**	**31.2**	-	-	-
McBride Street EB left/right	C	29.1	0.23	34	62
Rossmore Road WB left/thru/right	D	54.2	0.91	174	262
Washington Street NB left	B	12.9	0.09	5	28
Washington Street NB thru	C	28.3	0.85	326	#867
Washington Street SB thru/right	B	19.7	0.53	142	m353
Washington St/Casey Arborway[1]	**C**	**30.9**	-	-	-
Casey Arborway EB thru | thru | thru/right	C	25.8	0.81	275	438
Casey Arborway WB left [2]	E	57.9	0.34	12	39
Casey Arborway WB thru | thru | thru/right	C	34.8	0.97	~504	540
Washington Street NB left	C	22.8	0.34	33	80
Washington Street NB thru | thru/right	C	26.2	0.71	196	333
Washington Street SB left	F	>80.0	0.76	30	#115
Washington Street SB thru | thru/right	C	32.7	0.64	115	199
Unsignalized Intersections					
Washington St/Burnett St (north)/Brookley Rd	**-**	**-**	-	-	-
Burnett Street EB left/thru/right	C	19.8	0.06	-	4
Brookley Road WB left/thru/right	D	30.9	0.07	-	5
Washington Street NB left/thru/right	A	0.2	0.02	-	0
Washington Street SB left/thru/right	A	1.6	0.06	-	5
Washington St/Burnett St (south)	**-**	**-**	-	-	-
Burnett Street EB left/right	D	29.0	0.06	-	5
Washington Street NB left/thru	A	0.3	0.01	-	1
Washington Street SB thru/right	A	0.0	0.29	-	0

[1] Represents operations with proposed geometry.

[2] Buses only.

~/# = 50th/95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

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

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

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue length (feet)	95th Percentile Queue length (feet)
Signalized Intersections					
Washington St/McBride St/Rossmore Rd	**C**	**28.6**	-	-	-
McBride Street EB left/right	E	61.3	0.87	177	250
Rossmore Road WB left/thru/right	C	21.2	0.44	51	100
Washington Street NB left	C	26.1	0.36	5	m28
Washington Street NB thru	B	16.2	0.64	140	#591
Washington Street SB thru/right	D	27.7	0.80	244	m#784
Washington St/Casey Arborway[1]	**D**	**43.4**	-	-	-
Casey Arborway EB thru | thru | thru/right	D	42.7	1.00	479	#775
Casey Arborway WB left [2]	E	57.8	0.29	10	32
Casey Arborway WB thru | thru | thru/right	B	17.3	0.71	299	356
Washington Street NB left	F	>80.0	0.96	55	#158
Washington Street NB thru | thru/right	C	24.0	0.64	181	247
Washington Street SB left	E	56.2	0.70	46	m80
Washington Street SB thru | thru/right	F	>80.0	>1.00	~405	m#552
Unsignalized Intersections					
Washington St/Burnett St (north)/Brookley Rd	**-**	**-**	-	-	-
Burnett Street EB left/thru/right	D	32.4	0.13	-	11
Brookley Road WB left/thru/right	F	>50.0	0.94	-	69
Washington Street NB left/thru/right	A	0.9	0.03	-	2
Washington Street SB left/thru/right	A	4.4	0.16	-	15
Washington St/Burnett St (south)	**-**	**-**	-	-	-
Burnett Street EB left/right	D	28.9	0.09	-	7
Washington Street NB left/thru	A	0.4	0.01	-	1
Washington Street SB thru/right	A	0.0	0.55	-	0

[1] Represents operations with proposed geometry.

[2] Buses only.

~/# = 50th/95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

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

Gray shading indicates that LOS has worsened from Existing conditions.

As shown in Table 5-6, the signalized intersections will operate at an overall LOS D or better during the a.m. peak hour, with all movements at the unsignalized intersections operating at LOS D or better. The following summarizes the 2018 No-Build a.m. peak hour intersection operations:

Washington Street/McBride Street/Rossmore Road: This intersection will continue to operate at an overall LOS C. All movements at this intersection are expected to continue operating at the same LOS as the Existing conditions.

Washington Street/Casey Arborway: This intersection will operate at an overall LOS C, with most movements operating at LOS D or better. The bus-only westbound left-turn movement will operate at LOS E and the low-volume Washington Street southbound left-turn movement will operate at LOS F. The operations shown in Table 5-6 are generally consistent with the results presented in the Casey Arborway Project study.

Washington Street/Burnett Street (north)/Brookley Road: Operations at this unsignalized intersection will not change from the 2013 Existing conditions.

Washington Street/Burnett Street (south): Operations at this unsignalized intersection will not change from the 2013 Existing conditions.

As shown in Table 5-7, the signalized intersections will operate at an overall LOS D or better during the p.m. peak hour, with all movements at the unsignalized intersections operating at LOS D or better. The following summarizes the 2018 No-Build p.m. peak hour intersection operations:

Washington Street/McBride Street/Rossmore Road: This intersection will continue to operate at an overall LOS C. The Washington Street northbound left-turns will worsen to LOS C.

Washington Street/Casey Arborway: This intersection will operate at an overall LOS D, with some movements operating at LOS E and LOS F. The operations shown in Table 5-7 are generally consistent with the results presented in the Casey Arborway Project study.

Washington Street/Burnett Street (north)/Brookley Road: The Burnett Street eastbound approach will worsen from LOS C to LOS D and the Brookley Road westbound approach will continue to operate at LOS F. As previously mentioned, the traffic signal at the intersection to the north will meter the traffic along Washington Street and will create sufficient gaps for vehicles to exit the side streets.

Washington Street/Burnett Street (south): The Burnett Street eastbound approach will worsen from LOS C to LOS D. Due to the signalized intersections to the north and south, gaps will be created along Washington Street to allow vehicles to exit Burnett Street.

5.3.2 BUILD CONDITIONS

As previously summarized, the Commons at Forest Hills Station will consist of 280 residential apartment units and 7,960 sf of commercial/retail/amenity space. Parking for approximately 185 vehicles will be provided on-site with secure bicycle storage for approximately 250 bicycles. The 2018 Build conditions reflect a future scenario

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

Site Access and Circulation

Vehicular access and egress will be provided by two full access driveways along Washington Street. The northerly driveway will be located at an existing curb cut approximately 200 feet south of Burnett Street and the southerly driveway will be located about 100 feet north of an existing curb cut, or approximately 450 feet south of Burnett Street. The northerly driveway will provide access to the residential parking area for the buildings on the northerly portion of the Site. The southerly driveway will provide access to the residential parking areas, the retail parking spaces, and will accommodate loading and trash pick-up maneuvers. The proposed Site Access Plan is illustrated in Figure 5-12.

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 trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*[5] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

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 936 – Coffee/Donut Shop without Drive-Through Window. This land use includes single-tenant coffee and donut restaurants without drive-through windows. These establishments sell coffee, donuts, bagels, sandwiches, salads, and other hot and cold beverages and often have long store hours (over 15 hours per day), with

[5] *Trip Generation Manual*, 9th Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

early morning openings. The trip generation estimates are based on average vehicular rates per 1,000 square feet of floor area. This land use was selected to estimate the trips associated with the retail portion of the site over other retail-oriented land uses due to the higher trip generation characteristics, especially during the a.m. peak hour. The commercial/retail tenant of the Building A could potentially be a café or other similar use.

Pass-By Trips are those already in the transportation network and not specifically destined to the particular land use. A pass-by capture rate of 90 percent was applied to the retail/restaurant use on the Site. It is expected that the majority of the trips to/from the retail/restaurant use on the site will be pass-by trips, especially during the peak hours.

Existing Site Trip Generation. The existing uses on the Project Site will be eliminated. Therefore, to account for the trips currently being generated by the existing uses on the site, peak-hour counts were conducted at the existing site driveways in May 2013.

Mode Split

The BTD publishes vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located within designated Area 6. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[6]. The mode share assumptions for the retail/restaurant use were assumed to be much less auto-centric than those provided by BTD for retail uses. This commercial/retail use will serve the residences at the Project Site, other nearby residences, any future potential development within the study area, and by people using the Forest Hills MBTA station and trips to the retail/restaurant use are expected to be mostly pass-by trips. The BTD's travel mode share data for Area 6 and those adjusted for the commercial/retail use are shown in Table 5-8.

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

Table 5-8, Peak Hour Mode Split Assumptions

Land Use		Walk/Bike Share[1]	Transit Share[1]	Auto Share[1]	Local Vehicle Occupancy Rate[2]
Daily					
Residential	In	14%	25%	62%	1.13
	Out	14%	25%	62%	1.13
Retail	In	65%	10%	25%	1.78
	Out	65%	10%	25%	1.78
a.m. Peak Hour					
Residential	In	18%	26%	56%	1.13
	Out	12%	44%	44%	1.13
Retail	In	65%	10%	25%	1.78
	Out	65%	10%	25%	1.78
p.m. Peak Hour					
Residential	In	12%	44%	44%	1.13
	Out	18%	26%	56%	1.13
Retail	In	65%	10%	25%	1.78
	Out	65%	10%	25%	1.78

[1] Boston Transportation Department mode share data for Area 6 for the residential use.
[2] 2009 National Household Travel Survey.

Vehicle Trip Generation

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

Table 5-9, Project Vehicle Trip Generation

Time Period	Direction	Apartments [a]	Retail [b]	Total
Daily	**Total**	**1,146**	**106**	**1,252**
	In	573	53	626
	Out	573	53	626
a.m. Peak Hour	**Total**	**66**	**13**	**79**
	In	16	7	23
	Out	50	6	56
p.m. Peak Hour	**Total**	**85**	**4**	**89**
	In	50	2	52
	Out	35	2	37

a Based on ITE LUC 220 – Apartment.

b Based on ITE LUC 936 – Coffee/Donut Shop without Drive-Through Window; a 90 percent pass-by rate was applied to develop the new trips.

As shown in Table 5-9, the Project is expected to generate approximately 1,252 new daily vehicle trips (626 trips in and 626 trips out), with 79 new vehicle trips (23 in and 56 out) during the a.m. peak hour and 89 new vehicle trips (52 in and 37 out) during the p.m. peak hour – this corresponds to an increase of approximately 1 to 2 vehicle trips every minute on Washington Street and the adjacent roadway network during the peak periods.

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 6. 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 5-13.

The Project-generated vehicle trips were assigned to the study area roadway network based on the trip distribution patterns shown in Figure 5-13 and are shown in Figure 5-14 and Figure 5-15 for the a.m. and p.m. peak hours, respectively. The Project-generated trips were added to the 2018 No-Build conditions traffic volumes to develop the 2018 Build conditions peak hour traffic volume networks and are shown in Figure 5-16 and Figure 5-17 for the a.m. and p.m. peak hours, respectively.

Build Conditions 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 (2018) Level of Service Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue length (feet)	95th Percentile Queue length (feet)
Signalized Intersections					
Washington St/McBride St/Rossmore Rd	**C**	**32.1**	-	-	-
McBride Street EB left/right	C	29.1	0.23	34	62
Rossmore Road WB left/thru/right	D	54.2	0.91	174	262
Washington Street NB left	B	13.0	0.10	6	32
Washington Street NB thru	C	30.3	0.87	347	#898
Washington Street SB thru/right	B	19.7	0.53	140	m352
Washington St/Casey Arborway	**C**	**31.2**	-	-	-
Casey Arborway EB thru | thru | thru/right	C	25.8	0.81	275	438
Casey Arborway WB left	E	57.9	0.34	12	39
Casey Arborway WB thru | thru | thru/right	C	34.7	0.97	~503	540
Washington Street NB left	C	23.0	0.34	33	80
Washington Street NB thru | thru/right	C	26.2	0.70	196	333
Washington Street SB left	F	>80.0	0.86	35	#131
Washington Street SB thru | thru/right	C	32.8	0.65	118	204
Unsignalized Intersections					
Washington St/Burnett St (north)/Brookley Rd	**-**	**-**	-	-	-
Burnett Street EB left/thru/right	C	19.6	0.05	-	4
Brookley Road WB left/thru/right	D	31.8	0.07	-	5
Washington Street NB left/thru/right	A	0.2	0.01	-	0
Washington Street SB left/thru/right	A	1.6	0.06	-	5
Washington St/Burnett St (south)	**-**	**-**	-	-	-
Burnett Street EB left/right	D	28.0	0.06	-	5
Washington Street NB left/thru	A	0.3	0.01	-	1
Washington Street SB thru/right	A	0.0	0.29	-	0
Washington St/North Dr	**-**	**-**	-	-	-
North Driveway EB left/right	E	40.9	0.29	-	28
Washington Street NB left/thru	A	0.1	0.01	-	0
Washington Street SB thru/right	A	0.0	0.32	-	0
Washington St/South Dr	**-**	**-**	-	-	-
South Driveway EB left/right	F	>50.0	0.59	-	76
Washington Street NB left/thru	A	1.0	0.04	-	3
Washington Street SB thru/right	A	0.0	0.31	-	0

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by an upstream signal.
Gray shading indicates that LOS has worsened from No-Build conditions.

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

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue length (feet	95th Percentile Queue length (feet)
Signalized Intersections					
Washington St/McBride St/Rossmore Rd	**C**	**29.9**	-	-	-
McBride Street EB left/right	E	61.7	0.88	181	257
Rossmore Road WB left/thru/right	C	22.0	0.45	54	104
Washington Street NB left	C	27.6	0.38	5	m33
Washington Street NB thru	B	16.4	0.65	148	#601
Washington Street SB thru/right	C	30.2	0.83	259	m#815
Washington St/Casey Arborway	**D**	**44.4**	-	-	-
Casey Arborway EB thru | thru | thru/right	D	44.1	1.00	484	#782
Casey Arborway WB left	E	57.8	0.29	10	32
Casey Arborway WB thru | thru | thru/right	B	17.4	0.72	303	361
Washington Street NB left	F	>80.0	0.96	55	#158
Washington Street NB thru | thru/right	C	24.1	0.64	182	248
Washington Street SB left	E	60.7	0.73	48	m#87
Washington Street SB thru | thru/right	F	>80.0	>1.00	~410	m#553
Unsignalized Intersections					
Washington St/Burnett St (north)/Brookley Rd	**-**	**-**	-	-	-
Burnett Street EB left/thru/right	E	38.6	0.15	-	13
Brookley Road WB left/thru/right	F	>50.0	>1.00	-	77
Washington Street NB left/thru/right	A	1.0	0.03	-	3
Washington Street SB left/thru/right	A	4.6	0.17	-	15
Washington St/Burnett St (south)	**-**	**-**	-	-	-
Burnett Street EB left/right	D	>50.0	0.25	-	22
Washington Street NB left/thru	A	0.7	0.02	-	1
Washington Street SB thru/right	A	1.7	0.05	-	4
Washington St/North Dr	**-**	**-**	-	-	-
North Driveway EB left/right	E	49.9	0.26	-	24
Washington Street NB left/thru	A	1.3	0.04	-	3
Washington Street SB thru/right	A	0.0	0.61	-	0
Washington St/South Dr	**-**	**-**	-	-	-
South Driveway EB left/right	F	>50.0	0.38	-	38
Washington Street NB left/thru	A	0.7	0.03	-	2
Washington Street SB thru/right	A	0.0	0.55	-	0

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by an upstream signal.
Gray shading indicates that LOS has worsened from No-Build conditions.

As shown in Table 5-10, operations at the study area intersections will remain the same as the 2018 No-Build conditions during the a.m. peak hour.

The two site driveways are expected to operate at LOS E and LOS F during the a.m. peak hour. However, they will operate under capacity and as previously discussed,

the traffic signals to the north and south of the Project Site will meter the traffic along Washington Street, which will provide adequate gaps for vehicles to safely exit the Project Site.

As shown in Table 5-11, operations at the study area intersections will generally remain the same as the 2018 No-Build conditions during the p.m. peak hour. The Burnett Road (north) eastbound approach movement at Washington Street is expected to worsen from LOS D to LOS E between the 2018 No-Build and 2018 Build conditions. The approach will continue to operate well below its capacity and adequate gaps will continue to be provided due to the proximity to the traffic signal north of the intersection. This approach only carries 18 vehicles during the p.m. peak hour and will experience an average increase in delay of 6.0 seconds per vehicle.

The two site driveways are expected to operate at LOS E and LOS F during the p.m. peak hour. However, they will operate under capacity and as previously discussed, the traffic signals to the north and south of the Project Site will meter the traffic along Washington Street, which will provide adequate

Vehicle Parking

The Project will provide for a total of approximately 185 on-site parking spaces. Approximately 169 of those will be dedicated as residential parking— a ratio of 0.6 spaces per residential unit. In addition to the on-site parking spaces that will be provided, on-street parking will be maintained along both sides of Washington Street adjacent to the Project Site.

Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements (TAPA) to provide secure bicycle parking for residents and employees and short-term bicycle racks for visitors. The Project will provide 250 covered and secure bicycle storage spaces on-site. Additional storage will be provided by outdoor bicycle racks accessible to visitors to the site in accordance with BTD guidelines.

All bicycle racks, signs, and parking areas will conform to BTD guidelines and be located in safe, secure locations. The Proponent will work with BTD to identify the most appropriate quantity and location for bicycle racks on the Project Site as part of the Transportation Access Plan Agreement (TAPA) process.

Public Transportation

Based on the transit mode shares presented in Section 5.3.2, the future transit trips associated with the Project were estimated and are summarized in Table 5-12.

Table 5-12, Project Transit Trips

Time Period	Direction	Apartments	Retail	Total
Daily	**Total**	**522**	**76**	**598**
	In	261	38	299
	Out	261	38	299
a.m. Peak Hour	**Total**	**66**	**9**	**75**
	In	9	5	14
	Out	57	4	61
p.m. Peak Hour	**Total**	**74**	**4**	**78**
	In	56	2	58
	Out	18	2	20

As shown in Table 5-12, the Project will generate an estimated 598 new transit trips daily. Approximately 75 new transit trips (14 alighting and 61 boarding) will occur during the a.m. peak hour, and 78 new trips (58 alighting and 20 boarding) will occur during the p.m. peak hour.

Pedestrians

Based on the walk mode shares presented in Section 5.3.2, the future walk trips were estimated and are summarized in Table 5-13.

Table 5-13, Project Pedestrian Trips

Time Period	Direction	Apartments	Retail	Total
Daily	**Total**	**292**	**488**	**780**
	In	146	244	390
	Out	146	244	390
a.m. Peak Hour	**Total**	**21**	**60**	**81**
	In	6	31	37
	Out	15	29	44
p.m. Peak Hour	**Total**	**27**	**22**	**49**
	In	15	12	27
	Out	12	10	22

Over the course of a day, the Project will generate an estimated 780 new pedestrian trips and an additional 598 new transit trips that will require a walk to or from the Site. This results in an additional 1,378 new pedestrian trips per day. Approximately 81 new pedestrian trips will occur during the a.m. peak hour and 49 new pedestrian trips will occur during the p.m. peak hour.

Loading and Service Accommodations

Loading and service operations will occur on-site at designated parking spaces adjacent to the northerly side Building A. Access and egress will be provided via the proposed southerly site driveway. Two spaces will be designated for trash pick-up and resident move-in/out during business hours. Additional spaces will be made available for move-in/out operations by on-site management when necessary.

All recycling and trash collection for the proposed residences will occur inside the buildings and then be wheeled/carried out as needed during pick-up times. Most residential deliveries are made in smaller vehicles—cars, vans, or small panel trucks. Most of the commercial/retail deliveries will also be made with smaller vehicles such as vans or small panel trucks. Building management will coordinate 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.

5.3.3 TRANSPORTATION MITIGATION MEASURES

The Proponent has developed a conceptual design for parking, bicycle, and pavement marking improvements along Washington Street that will be integrated with the planned improvements for the Casey Arborway Project. The planned improvements will conform to the BTD's Complete Streets initiative and will enhance the multi-modal connectivity throughout the Washington Street corridor and the Southwest Corridor Park. The improvements include the following:

Parking will be retained along both sides of Washington Street. Marked 7-foot wide lanes will be provided for on-street parking.

A 5-foot wide bicycle lane will be provided in the southbound direction.

Two 10.5-foot wide travel lanes will be provided. The northbound travel lane will be marked with sharrows to clearly define it as a facility that is shared by bicycles and vehicles.

The existing sidewalk will be reconstructed along the site frontage and will enhance the pedestrian environment between Burnett Street and the Casey Arborway.

The proposed conceptual improvements are shown in Figure 5-18, Washington Street Conceptual Plan. The Proponent will continue to work with the City to further refine the proposed improvements along Washington Street.

Transportation Demand Management

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

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

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

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

- **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. Secure bicycle storage will also be made available to employees of the commercial/retail portion of the site to encourage bicycling as an alternative mode of transportation. Subject to necessary approvals, public use bicycle racks for visitors will be placed near building entrances.

- **Electric Vehicle Charging:** The Proponent is currently exploring the feasibility of providing electric vehicle charging stations on-Site.

- **Zipcar Facilities:** The Proponent is committed to working with Zipcar to provide two on-site spaces that will be accessible to the residents of the Site. See Figure 5-19, Zipcar Commitment Letter.

- **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.

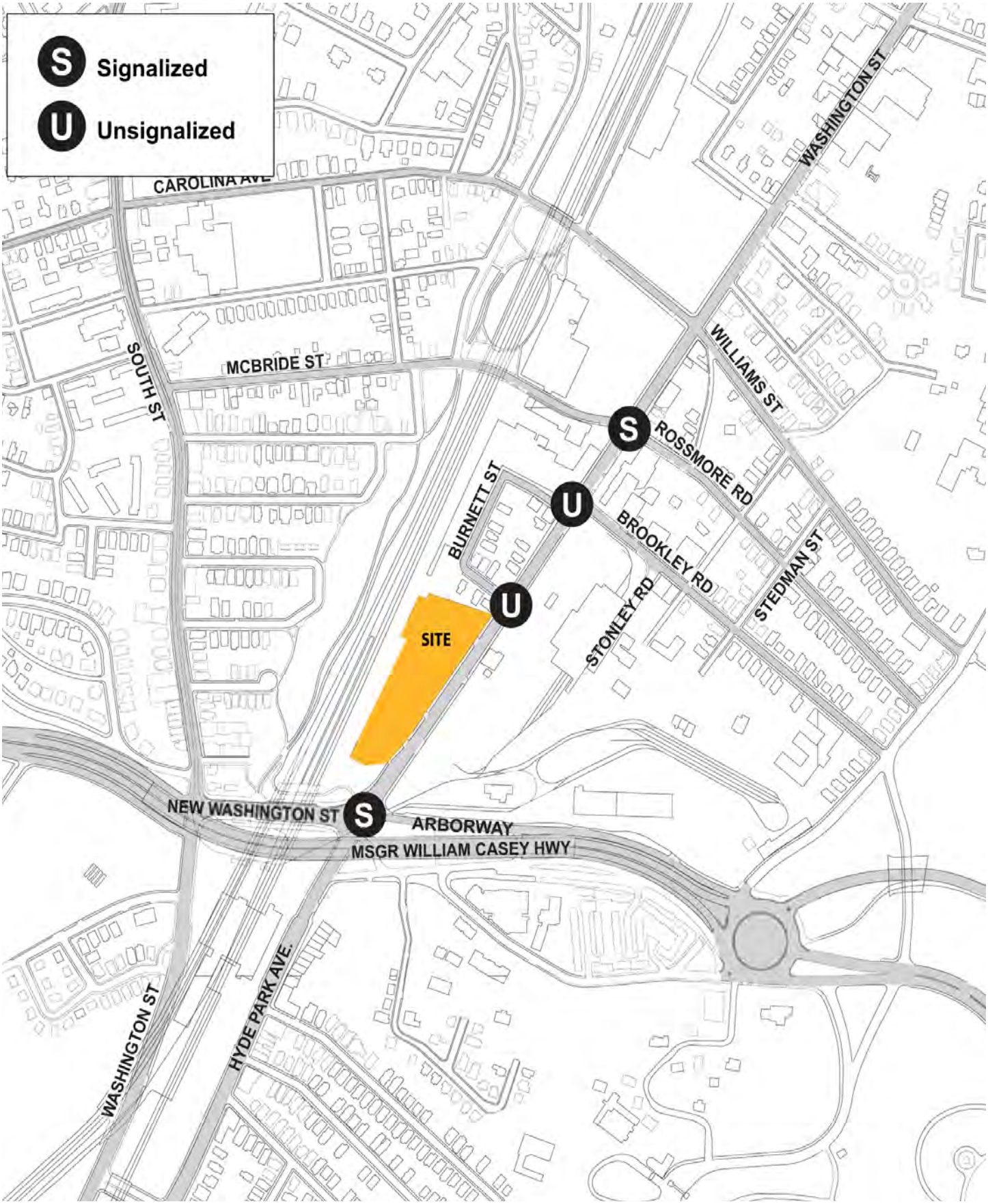
- **Project Website:** The web site will include transportation-related information for residents, workers, and visitors.

Evaluation of Short-Term Construction Impacts

Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lanes closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.

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

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



Jamaica Plain, Massachusetts

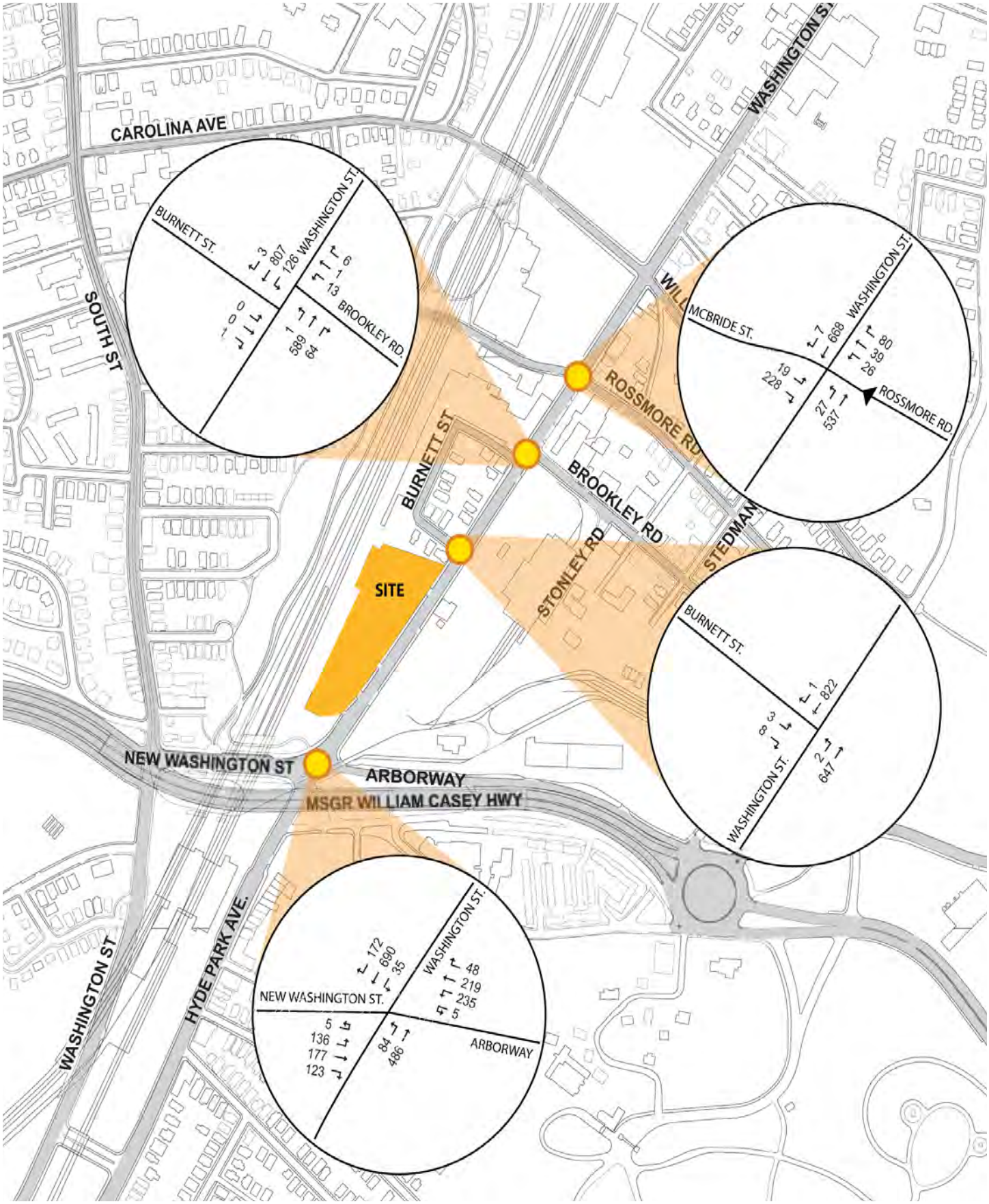
Figure 5-1
Study Area Intersections
Source: Howard /Stein-Hudson Associates, Inc., 2013

Jamaica Plain, Massachusetts

Figure 5-2

2013 Existing Morning Peak Hour Vehicle Traffic Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013

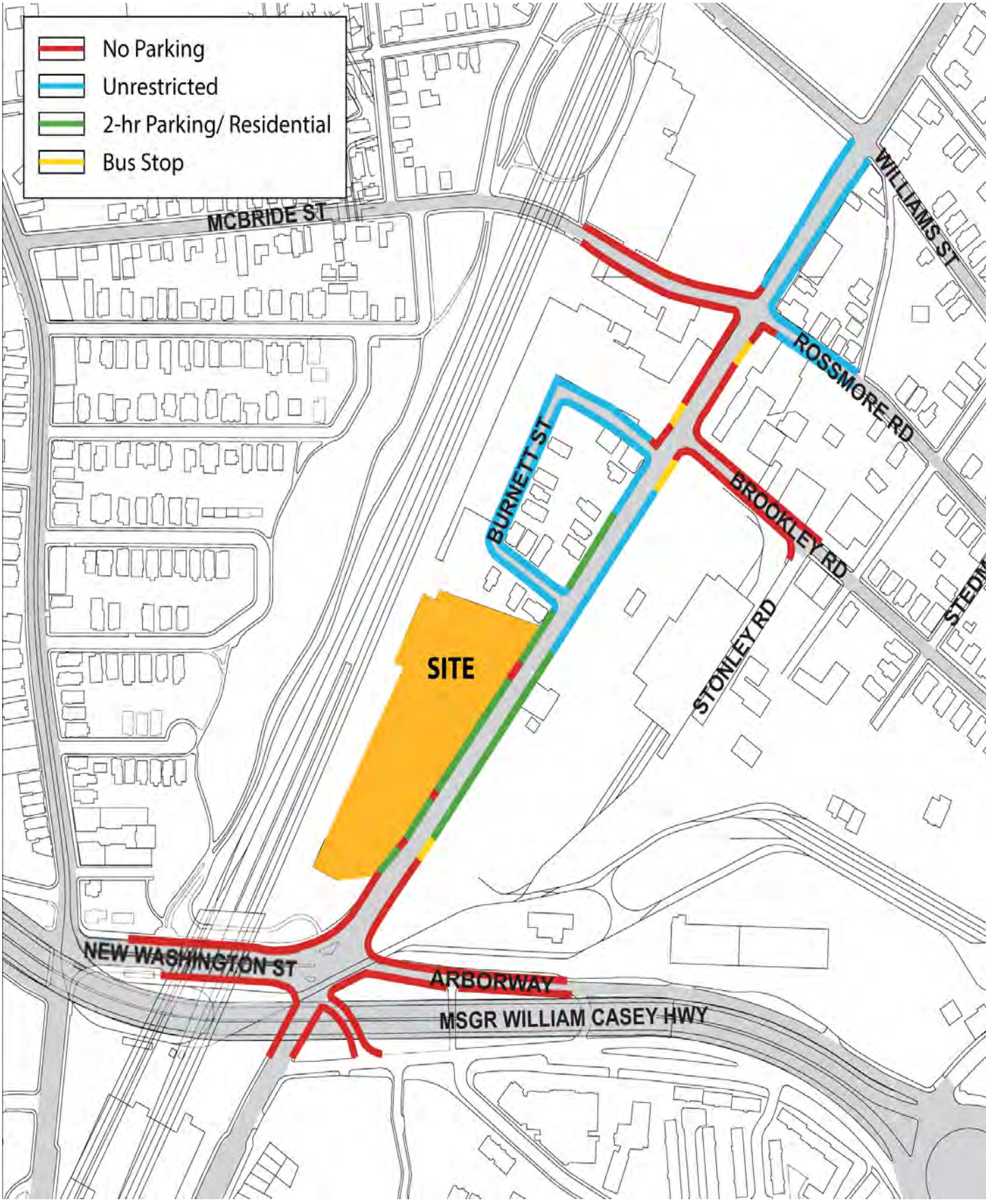


Jamaica Plain, Massachusetts

Figure 5-3

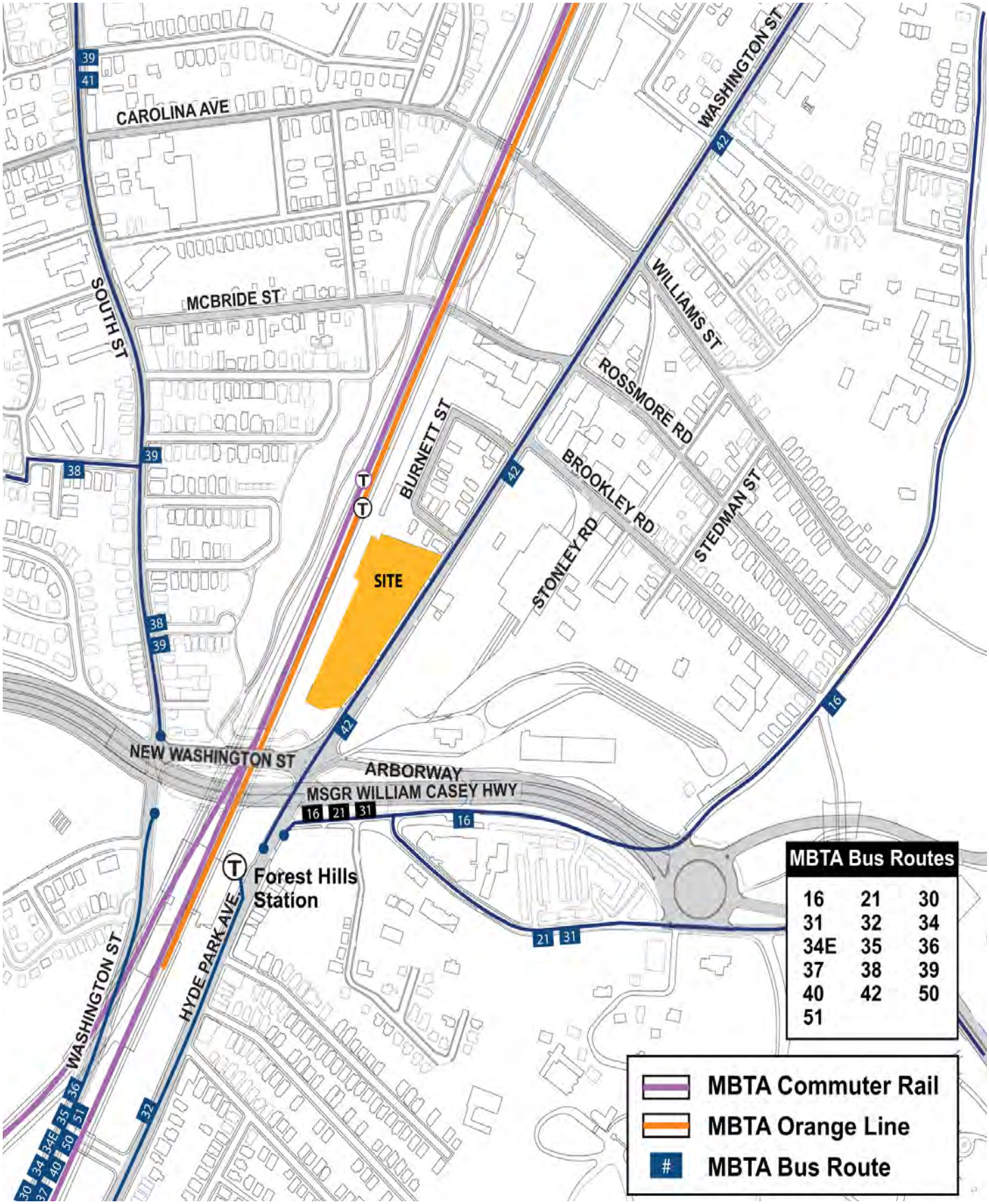
2013 Existing Evening Peak Hour Vehicle Traffic Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013



Jamaica Plain, Massachusetts

Figure 5-4
On Street Curbside Inventory
Source: Howard /Stein-Hudson Associates, Inc., 2013



Jamaica Plain, Massachusetts

Figure 5-5
Public Transportation Facilities
Source: Howard /Stein-Hudson Associates, Inc., 2013

Figure 5-6

2013 Existing Peak Hour Pedestrian Volume

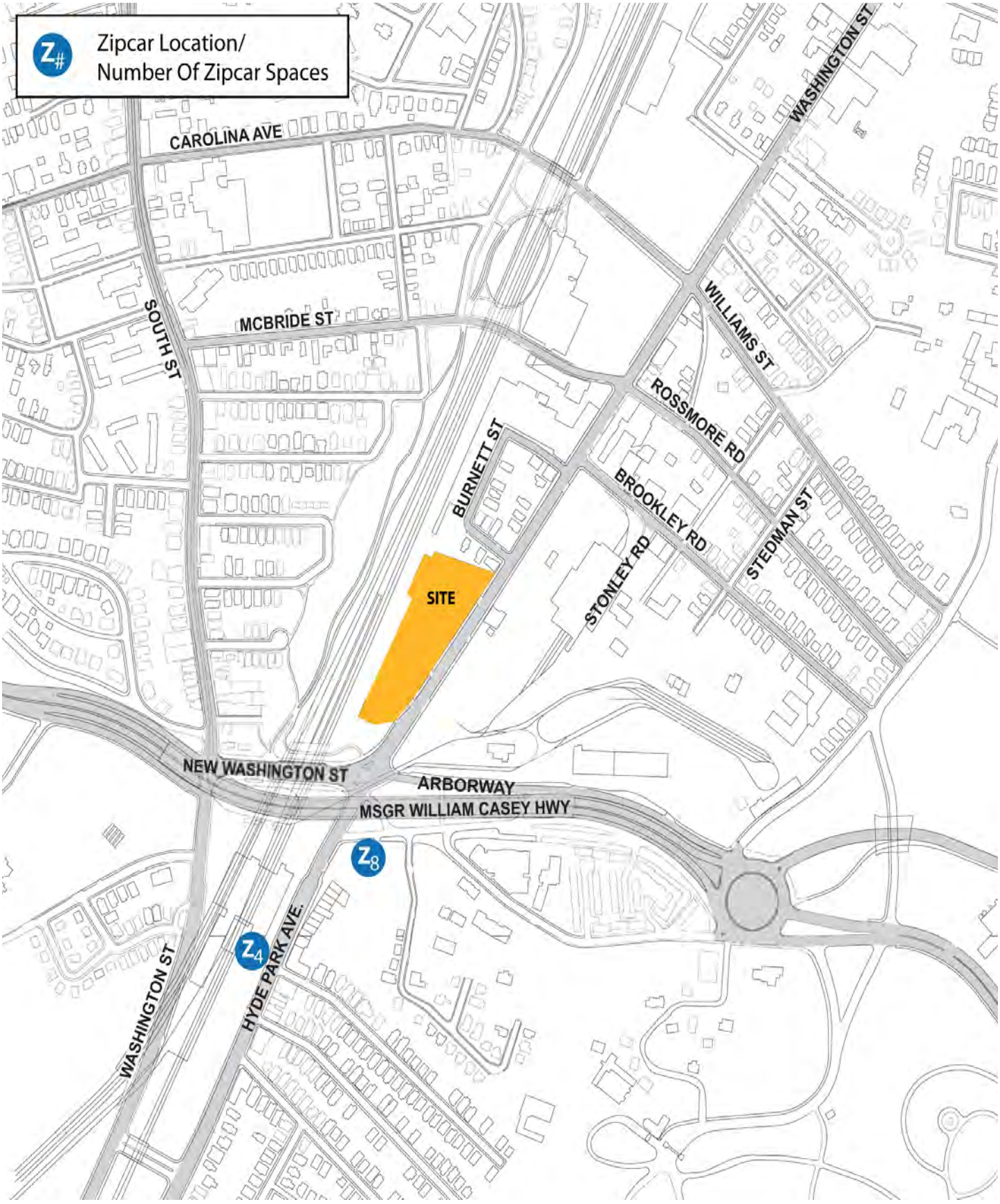
Source: Howard /Stein-Hudson Associates, Inc., 2013

Jamaica Plain, Massachusetts

Figure 5-7

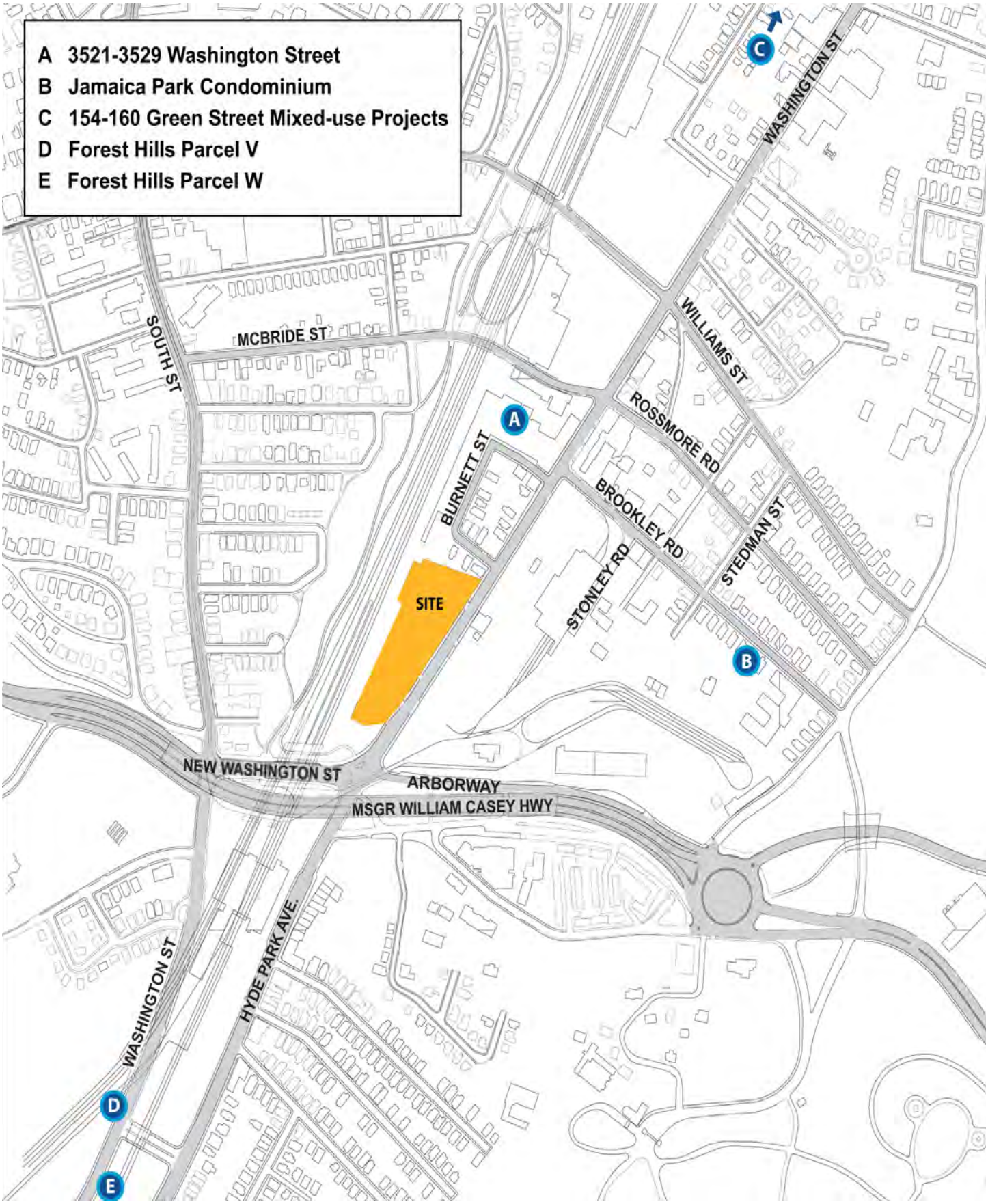
2013 Existing Peak Hour Bicycle Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013



Jamaica Plain, Massachusetts

Figure 5-8
Car Sharing Service Locations
Source: Howard /Stein-Hudson Associates, Inc., 2013



Jamaica Plain, Massachusetts

Figure 5-9
Background Area Projects
Source: Howard /Stein-Hudson Associates, Inc., 2013

Jamaica Plain, Massachusetts

Figure 5-10

No Build Conditions (2018), Morning Peak Hour Traffic Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013

Jamaica Plain, Massachusetts

Figure 5-11

No Build Conditions (2018), Evening Peak Hour Traffic Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013

Jamaica Plain, Massachusetts

Figure 5-12
Site Access Plan
Source: Howard /Stein-Hudson Associates, Inc., 2013

Figure 5-13
Trip Distribution Map
Source: Howard /Stein-Hudson Associates, Inc., 2013

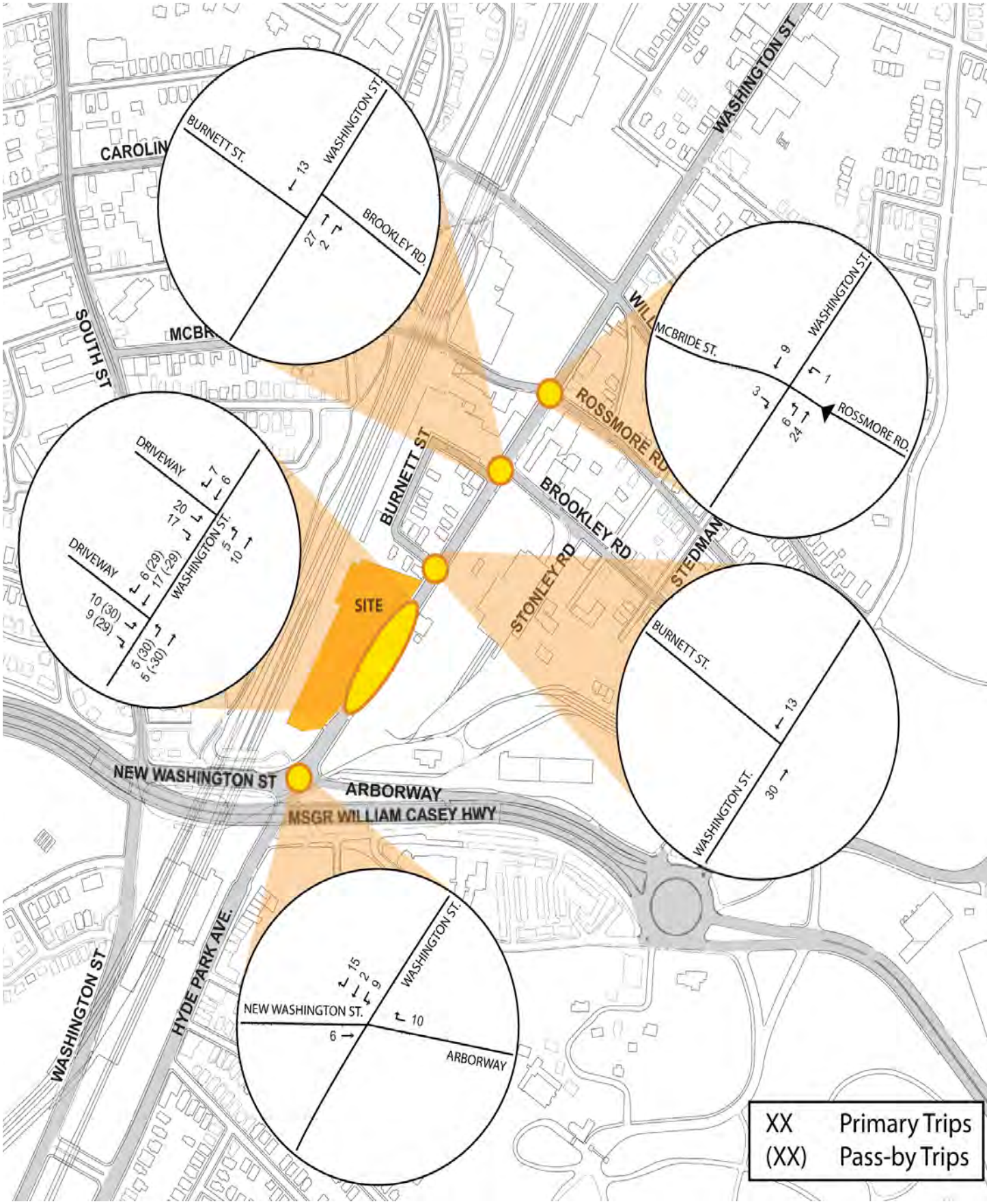


Figure 5-14

Project Generated Trips Morning Peak Hours

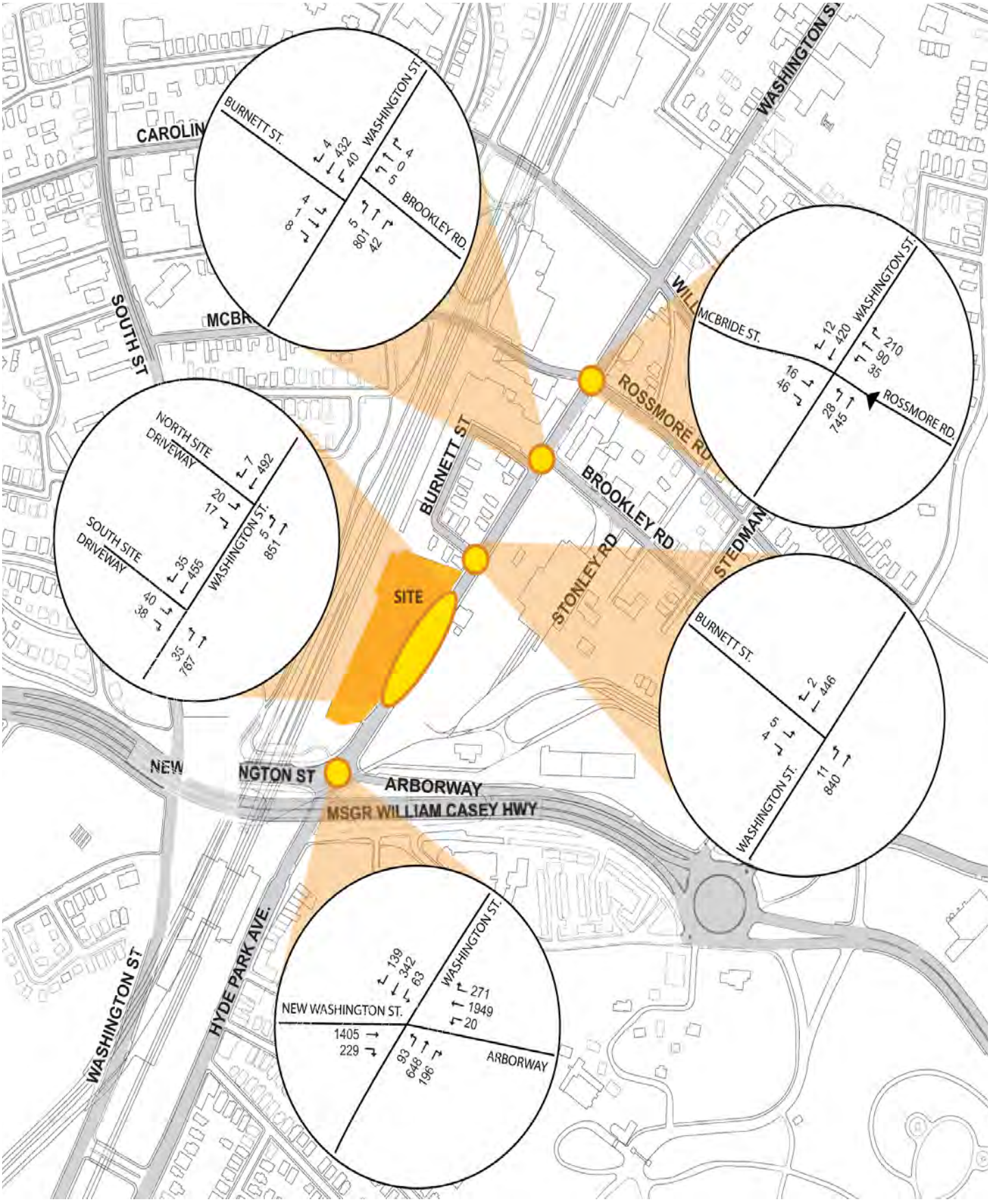
Source: Howard /Stein-Hudson Associates, Inc., 2013

Jamaica Plain, Massachusetts

Figure 5-15

Project Generated Trips Evening Peak Hours

Source: Howard /Stein-Hudson Associates, Inc., 2013

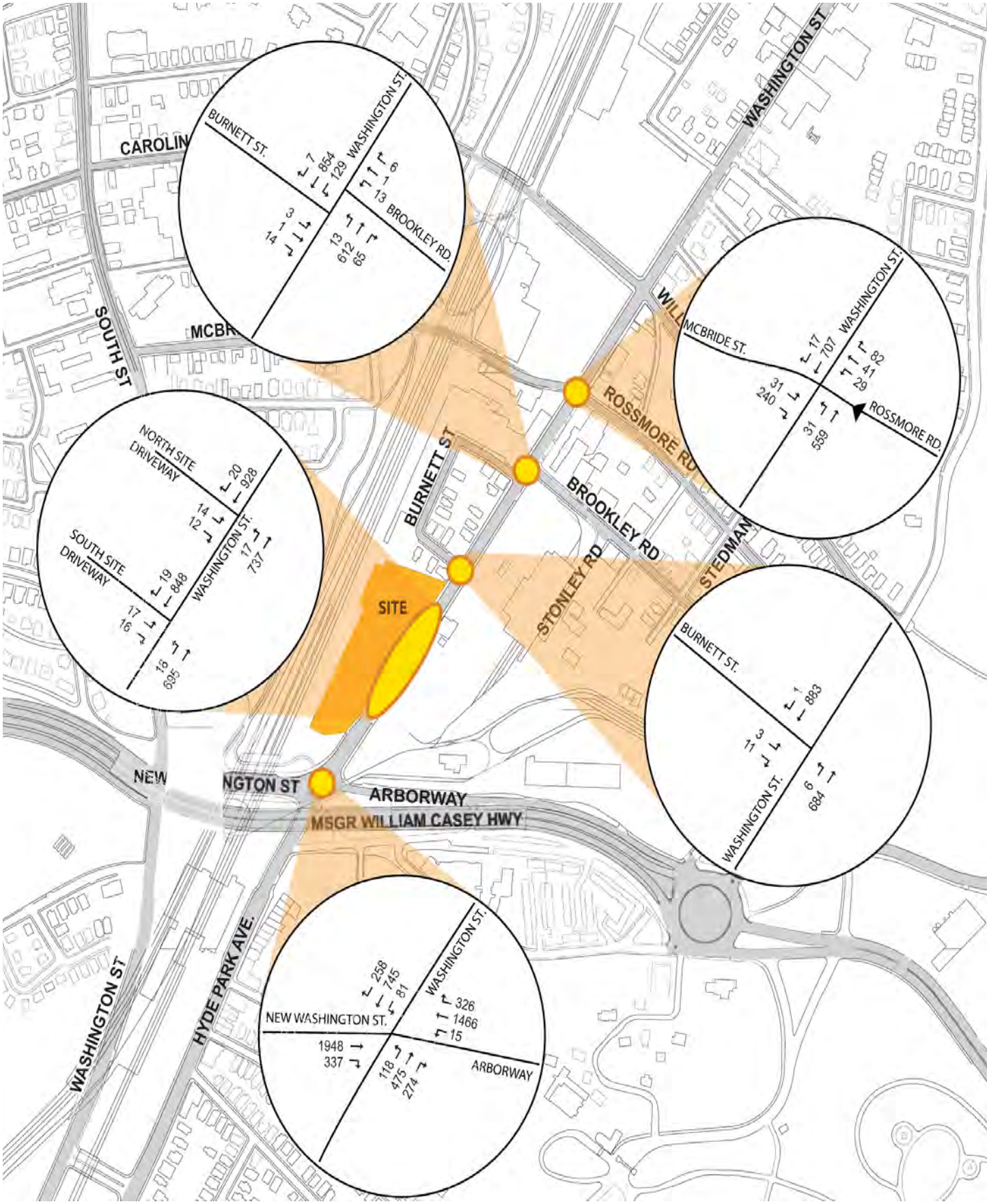


Jamaica Plain, Massachusetts

Figure 5-16

Build Conditions (2018), Morning Peak Hour Traffic Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013

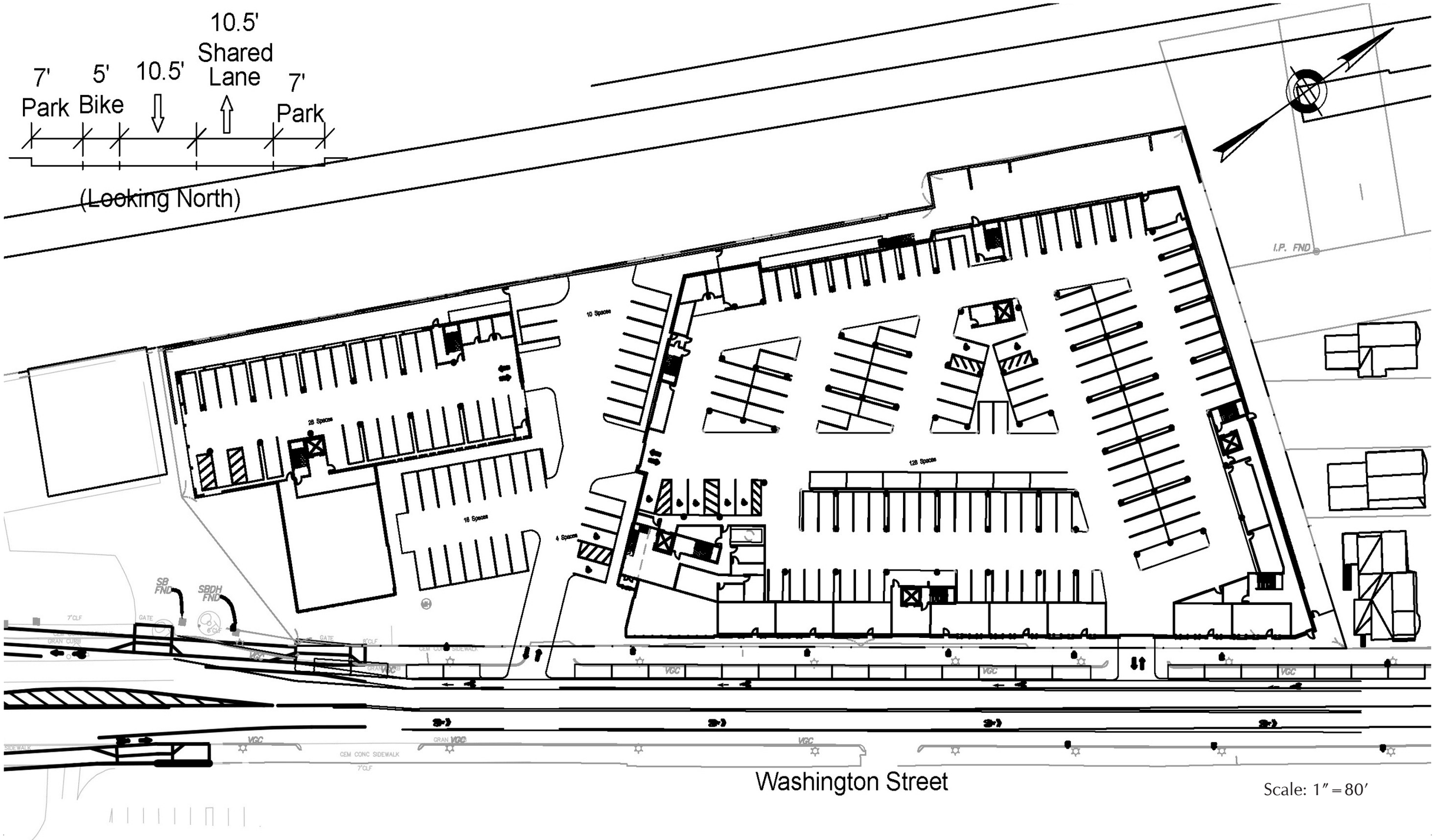


Jamaica Plain, Massachusetts

Figure 5-17

Build Conditions (2018), Evening Peak Hour Traffic Volume

Source: Howard /Stein-Hudson Associates, Inc., 2013



Jamaica Plain, Massachusetts

Figure 5-18
Washington Street Conceptual Plan
Source: Howard /Stein-Hudson Associates, Inc., 2013

zipcar

July 12, 2013

Peter Mahoney
Senior Project Director
John M. Corcoran and Company
100 Grandview Road, Suite 203
Braintree, MA 02184

Dear Peter:

Thank you for taking the time to express the interest in Zipcar.

As discussed, Zipcar is very interested in developing a stronger local membership and building upon the support of car-sharing in Jamaica Plain. With your proposed development site at 3595-3615 Washington Street, this is an ideal location for our expansion with its close proximity to the Forest Hills T Station. Zipcar is interested in providing on-site vehicles to serve the transportation needs of members at your residences and the immediate community. We ask that the development team provides at least two parking spots that would be easily accessible to both the surrounding area and residents.

Thanks again for your consideration. We look forward to working with your group.

Sincerely,

John Crooks
Locations Manager
Zipcar Boston
jcrooks@zipcar.com
617-933-5070

2 Liberty Square, Boston, MA 02109
t 617.933.5070 zipcar.com wheels when you want them™

Figure 5-19
Zipcar Commitment Letter
Source: Zipcar Boston, 2013

Chapter 6

ENVIRONMENTAL PROTECTION

CHAPTER 6: ENVIRONMENTAL PROTECTION

6.1 INTRODUCTION

The Commons at Forest Hills Station (the "Project") at 3593-3615 Washington Street, Jamaica Plain, will be built in full compliance with local, state, and federal environmental regulations and will substantially improve the environmental conditions of the Site. The Project will not create undue wind, shadow, noise, solar glare, or air quality impacts in the surrounding area. The Proponent will ensure the Site is clean prior to the commencement of construction. Should any contaminated soil conditions be encountered, they will be remediated as necessary. An appropriate construction management plan to avoid or mitigate construction period impacts will be followed.

6.2 WIND

The Project is not expected to have adverse pedestrian-level wind impacts adjacent to, and in the vicinity of, the Project Site due to its modest size and proximity to nearby buildings. As a result of the placement of the proposed new building in the existing context, Pedestrian Level Winds along adjacent sidewalks are not anticipated to exceed the BRA guidelines for wind speeds of 31 miles per hour.

6.3 SHADOW

A shadow analysis was conducted for the Project to ensure the proposed new buildings would not create adverse shadow impacts. Table 6-1, Shadow Study Dates and Times, identifies the dates and times for which shadow conditions have been simulated.

Table 6-1, Shadow Study Dates and Times

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

The following description is in reference to the shadow study images show in Figures 6-1 to 6-4. All net new shadows are shown in light blue and existing shadow is shown in gray. Areas where new shadow is captured within existing shadow is shown in a dark blue.

Vernal Equinox — March 21st (Figure 6-1)

At 9:00 a.m., the new shadow is cast in a northwesterly direction with the majority of the new shadow falling into the MBTA right-of-way.

At noon, the new shadows fall largely within the project's boundaries. There is some new shadow cast along the north edge of the property.

At 3:00 p.m., shadows are cast towards the northeast largely within the boundaries of the Site. There is a slight amount of new shadow cast along the north edge of the Site.

Summer Solstice — June 21st (Figure 6-2)

At 9:00 a.m., the new shadow is cast in a northwesterly direction with the majority of the new shadow falling into the MBTA right-of-way.

There is a small shadow at noon, largely all within the existing property.

At 3:00 p.m., shadows are cast towards the northeast with a small amount being cast onto Washington Street.

At 6:00 p.m. long shadows are cast easterly across Washington Street.

Autumnal Equinox — September 21st (Figure 6-3)

At 9:00 a.m., the new shadow is cast in a northwesterly direction with the majority of the new shadow falling into the MBTA right-of-way.

At noon, the new shadows fall largely within the Project's boundaries. There is some new shadow cast along the north edge of the property.

At 3:00 p.m., shadows are cast towards the northeast largely within the boundaries of the site. There is a slight amount of new shadow cast along the north edge of the property.

Winter Solstice — December 21st (Figure 6-4)

The longest shadows of the year will be on the winter solstice. At 9:00 a.m., the new shadow is cast in a northwesterly direction with the majority of the new shadow falling into the MBTA right-of-way.

At noon the shadows fall north with new shadow cast towards Burnett Street.

At 3:00 p.m. long shadows are cast towards the northwest. Shadows from the proposed Project fall largely within existing shadows.

Conclusions

The shadow study for the Project used computer modeling and color rendering to illustrate the new shadow created by the project.

- The largest areas of new shadow impact fall within the MBTA right-of-way or along Washington Street.
- The analysis reveals that there is already significant shadow cast into the backyards of the buildings on Burnett Street, particularly when the sun is at its lowest point in the winter months these existing houses on Burnett Street are mostly in shade.

6.4 DAYLIGHT

The Project is being constructed in relatively a low-density area for an urban setting. The width of Washington Street and the absence of a street wall on the other side of it will ensure adequate daylight on the east side of the building. The generous open space between the Project's proposed buildings ensures sufficient daylight will reach different surfaces.

6.5 SOLAR GLARE

A solar glare analysis is intended to measure potential reflective glare from the buildings onto streets, public open spaces, and sidewalks in order to determine the likelihood of visual impairment or discomfort due to reflective spot glare. As a result of the design and use of generally non-reflective materials and the distance between the new building and existing buildings, it is not anticipated that the Project will have adverse solar glare impacts or create solar heat buildup in nearby buildings. Trees in front of the buildings will further absorb sunlight to minimize its reflection off of the building onto the street and sidewalk.

6.6 AIR QUALITY

This section provides a qualitative review of air quality sources and impacts as a result of the Project from traffic, parking, and heating and mechanical ventilation systems. Impacts from construction and operations are addressed in Section 6.13, Construction Impacts.

6.6.1 TRAFFIC SOURCES

Due to the relatively modest number of new vehicle trips contributed to the local network by the Project, the impact of project trips on the performance of the transportation study area intersections relative to air quality is minor. The BRA typically requires a future air quality CO analysis for any intersection where the level of service (LOS) is expected to fall to a D or lower 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.

While the Burnett Street eastbound approach at the intersection of Washington Street/Burnett Street (north)/Brookley Road is anticipated to move from an LOS D to an LOS E during the p.m. peak hour, the intersection will continue to operate at well below its capacity and adequate gaps in traffic will be provided by a traffic signal north of the Site.

As shown in Chapter 4, there are no other intersections where LOS is expected to fall to a D or lower and there are no intersections where LOS is an E or an F and the project contributes to a reduction in LOS. For this reason, no mesoscale air quality analysis was performed for the Project.

Transportation Demand Management (TDM) strategies are a significant component of this Project and are anticipated to assist in minimizing traffic impacts and, by extension, air quality impacts. The following measures aim to keep traffic levels at acceptable volumes, promoting alternative means of transportation that have lesser impacts on overall air quality for the Project:

- Parking management
- Promotion of public transit and dissemination of transit information
- Secure, covered bicycle storage for Project's residents
- Publicly accessible bicycle storage for Project's visitors
- Zipcar parking on the Site

6.6.2 PARKING SOURCES

The Site is currently covered with three buildings and surface parking lots used storing vehicles, including heavy trucks and construction materials. The Project will remediate and enliven the Site with residential apartments, commercial/retail space, and open space and will include 225 covered bicycle and 155 covered vehicle parking spaces, and 25 surface bicycle and 30 surface vehicle parking spaces (including 12 accessible spaces and 3 van accessible spaces) overall.

In keeping with Boston's Complete Streets Guidelines, a high bicycle to vehicle/parking ratio will be used to encourage bicycle use and help reduce parking demand. Combined with the Project's proximity to transit, these factors will minimize air pollution from vehicle sources associated with the Project.

6.6.3 BUILDING OPERATION SOURCES

An emergency generator, if necessary, will be located on Project Site. It would be selected and sited to be in compliance with Department of Environmental Protection (DEP) standards, and its noise would be abated appropriately.

There will be individual heating and cooling units for each residential apartment, and a small number of condensers may be located on the roof for the commercial/retail/amenity and common areas of the buildings. In combination, these building operation factors are not expected to contribute to changes in air quality.

6.7 NOISE

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

The primary sources of exterior sound for the Project will include individual unit heating and cooling systems, and a minimal number of rooftop condensing units serving individual common areas and commercial areas. Based on the general equipment design, the rooftop equipment is not expected to produce significant sound levels at the building property lines, though noise control measures will be provided if required.

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

6.8 FLOOD ZONES

In the past decade, climate change adaptation has gained national attention as a critical environmental factor that must be addressed in new development projects. In Boston, sea level rise has become a serious concern as recent weather patterns and future modeling are demonstrating that storms impacting the city are likely to continue to intensify.

As part of its administration of the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) publishes flood hazard maps, called Flood Insurance Rate Maps (FIRM). The purpose of a FIRM is to show the areas in a community that are subject to flooding and the risk associated with these flood hazards. A new map was published in 2009 that updated the flood zones for this area. According to FEMA, the Project Site is not contained in a flood zone.

6.9 WATER QUALITY

During construction, best management practices (BMPs) will be used to limit the transportation of sediment off site. The Contractor will obtain a National Pollution Discharge Elimination System (NPDES) stormwater permit and implement Best Management Practices (BMPs) to minimize pollutant runoff. The Contractor will also use the following water quality related measures:

- Complying with all federal, state, and city codes, ordinances, and regulations governing the on-site discharge of construction dewatering effluent
- Using hay bales and silt fencing to prevent silt or soil from entering existing catch basins
- Using temporary wheel wash areas within the Site
- Using temporary gravel entrance berms at the main exits from the Site
- Isolating and protecting stockpiled materials
- Monitoring the proper use of tarpaulin covered trucks
- Preventing/controlling truck spillage
- Cleaning the adjacent portions of city streets entering and exiting the Project Site

6.10 GROUNDWATER

The proposed Project does not include below-grade space and the Project Site is not located within the Groundwater Conservation Overlay District as established by Article 32

of the City of Boston Zoning Code. Therefore, it is not anticipated that the scope of the proposed construction will impact groundwater levels at the site.

6.11 GEOTECHNICAL

This section addresses the foundation construction activities anticipated for the Project. It discusses existing soil and groundwater conditions; anticipated foundation construction methods and excavation work for the Project based on available subsurface information and a preliminary foundation design study. This section also addresses potential Project impacts and proposed mitigation measures.

6.11.1 SUBSURFACE SOIL CONDITIONS

Based upon soil borings completed at the Project Site, the ground surface is underlain by a 2 to 12-foot thickness of loose to compact granular fill. Directly underlying the surficial fill deposit are naturally deposited soils consisting of compact to dense glaciofluvial soils consisting of a coarse-grained sand and gravel, underlain by loose to compact fine-grained natural glaciuofluvial soils consisting of silt and fine sand. Although not encountered in the soil borings completed at the site, the glaciofluvial deposits are anticipated to be underlain by successive deposits of glacial till and Roxbury conglomerate bedrock.

6.11.2 GROUNDWATER CONDITIONS

Groundwater levels within the observation wells located at the site were observed at depths ranging from 9.3 to 11.7 feet below existing ground surface. The range of groundwater elevations was Elevation +25.8 to Elevation +27.0.

6.11.3 PROPOSED CONSTRUCTION

As discussed in greater detail previously, the proposed Project will include the construction of four multi-story mixed-use buildings that will occupy the majority of the Site's footprint. Further, the development plans do not include below-grade space. Rather, the ground level of both buildings will be used predominantly as parking areas that are coincident with the existing grade along Washington Street. The upper levels of the buildings will be constructed utilizing wood framing on top of a concrete-framed slab to be built at the first floor level, over the parking areas.

6.11.4 EXCAVATION AND FOUNDATION CONSTRUCTION

Based upon the subsurface conditions identified in the soil borings, foundation support for the proposed structures is anticipated to be provided utilizing a shallow foundation system consisting of conventional spread footing foundations and slab-on-grade construction for the lowest level slabs. Piles are not anticipated to be needed for the Project.

There will be no basement space beneath the ground level parking. Therefore, foundation drainage systems are not proposed for the Project. Excavation will be required to construct footings and to install utilities, but these excavations are anticipated to be relatively shallow and will generally not encounter groundwater. In the limited cases where groundwater is encountered or where excavations require local dewatering due to heavy storm events, the water will either be recharged back to the ground at the Site or discharged under a construction dewatering permit from the US Environmental Protection Agency (EPA). All construction dewatering discharge, if needed, will be performed in accordance with applicable Massachusetts Department of Environmental Protection (DEP) and US EPA regulations.

6.12 SOLID AND HAZARDOUS WASTE

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

6.12.1 SITE HISTORY AND COMPLIANCE WITH MA CONTINGENCY PLAN

As a former fuel oil storage and distribution facility that operated since the 1920s, the Project Site has been subject to assessment and remedial activities over the past 15-20 years. Based upon information contained in reports contained in the DEP's database, the Site has been utilized for the bulk storage and distribution of petroleum products, primarily fuel oil. Later, the property was operated by the Arborway Corporation and Hughes Oil.

The Site is listed as a Massachusetts DEP "Disposal Site" under Release Tracking Number (RTN) 3-2696. At the present time, the property is a Tier II site and in Phase IV status, due to the historic presence of petroleum hydrocarbons in soil and groundwater. It is understood that the same engineering firm has been managing Massachusetts Contingency Plan (MCP) compliance and remedial actions as the Licensed Site Professional (LSP) since the Site was originally reported to the DEP. The original DEP notification occurred in 1988.

Five circular aboveground bulk storage tanks (AST) ranging in capacity from 128,498 gallons to 734,445 gallons all containing fuel oil were situated along the northwestern portion of the Site near the MBTA tracks. Reportedly, gasoline was also stored on site in ASTs. All of the ASTs were constructed within a concrete containment dike having an "earthen" bottom.

In addition, nine 14,000 gallon storage tanks were located within a concrete vault that was situated at the northern portion of the Site that contained lubricating oil and fuel oil. A 3,000 gallon diesel fuel AST was also located at the southern portion of the Site.

In 2008, operation of the Site as a petroleum storage and distribution facility was terminated. Dismantling of the terminal components including tanks, bunkers, containment dikes, loading racks, and piping was performed during 2009 and 2010. Remedial activities,

which originally commenced in the 1990s, became more comprehensive at this time. Specifically, soil and groundwater remedial activities have included the excavation and off-site disposal of 21,200 tons of petroleum impacted soil, the removal and off-site disposal of approximately 1.5 million gallons of contaminated groundwater, and bioremediation treatment for soil and groundwater.

The most recent reports in the DEP files document that residual levels of dissolved petroleum hydrocarbons in groundwater are generally below the applicable risk-based standards, and floating petroleum product is limited to a localized area of the Site. The LSP has recommended that additional soil removal in this area of the Site in an attempt to remediate the floating petroleum product in this area. It has been reported that the majority of the residual levels of petroleum hydrocarbons in soil are below the applicable risk-based standards for unrestricted site use.

In summary, the LSP has reported that upon removal and off-site disposal of an additional 200-300 cubic yards of contaminated soil in the area where the residual floating petroleum product is present, it will be possible to submit a Class A-2 Response Action Outcome (RAO) documenting that "no significant risk of harm to human health, safety, welfare, or to the environment exists for the foreseeable future" as defined in the MCP and that no further actions are necessary. No Activity and Use Limitations (deed restrictions) are proposed for the Site.

6.12.2 EXISTING HAZARDOUS BUILDING MATERIALS

The existing buildings at the Site will be demolished to allow for the proposed Project. Prior to demolition, an asbestos and hazardous material evaluation will be conducted. If hazardous building materials are present, a Massachusetts licensed abatement contractor will be retained to remove and legally dispose of such materials.

6.13 CONSTRUCTION IMPACTS

6.13.1 CONSTRUCTION MANAGEMENT PLAN

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

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

building is in process, the Proponent has begun to develop a plan for how traffic, parking, and construction staging will be managed during construction.

6.13.2 CONSTRUCTION ACTIVITY SCHEDULE

The construction period for the proposed Project is expected to last approximately 24 months, beginning in late spring or early summer 2014 and reaching completion by 2016. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions.

6.13.3 CONSTRUCTION TRAFFIC IMPACTS

Designated truck routes will be established to govern where construction trucks access and egress the site. The primary, regional construction truck access/egress routes will be Route 203 via Interstate 93 to the east of the Site and Washington Street via Route 128/Interstate 95/Route 1 to the south of the Site. A detailed CMP will be developed and submitted under separate cover. The Proponent will work closely with the BTD in developing the CMP and will include more detail on construction phasing, number of trips, haul routes, and hours of operation.

Truck traffic will be heaviest during the excavation and concrete foundation work. During this period, it is expected that fewer than ten trucks, varying in size from small delivery trucks to 18-wheelers, will arrive and leave the Site each construction day. Thereafter, truck traffic will vary throughout the construction period, depending upon the activity.

6.13.4 CONSTRUCTION WORKER PARKING

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

The general contractor will be responsible for educating all construction workers about public transit options and encouraging the use of High Occupancy Vehicles (HOVs). All construction workers will be encouraged to utilize mass transit and ridesharing options to access the construction site and to minimize vehicle traffic and parking on the local streets. As part of the program to promote public transportation, the following will be implemented:

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

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

6.13.5 CONSTRUCTION AIR QUALITY

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

6.13.6 CONSTRUCTION NOISE IMPACTS

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

6.13.7 SEDIMENT CONTROL MEASURES

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

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

- Stacked hay bales and/or silt fence barriers will be installed at the base of stockpiled soils and at erosion-prone areas throughout the construction phase of the Project

- Erosion controls will be maintained and replaced as necessary to ensure their effectiveness
- Where necessary, temporary sedimentation basins will be constructed to prevent the transport of sediment off-site
- Measures to control dust will be implemented during renovations— all debris will be properly contained on the Site
- Erosion controls will be maintained and replaced as necessary until the installation of pavement and the establishment of stabilized vegetation at the Site

6.13.8 RODENT CONTROL

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

6.14 WILDLIFE HABITAT

The Site is fully developed with urban landscape materials and the Project will not impact important wildlife habitats. According to the latest Natural Heritage & Endangered Species Program maps, no Priority or Estimated Habitats are located on or near the Project Site.

6.15 HISTORIC RESOURCES

6.15.1 HISTORIC RESOURCES ON THE PROJECT SITE

The Site has been used for over 100 years by Hughes Oil for bulk storage and distribution of petroleum products. Currently, the site is used for office space and the sale and storage of electrical equipment and building materials. No historic resources are located on the Site, and due to the long-term use described above, no archeological resources are known to exist on the Site.

6.15.2 HISTORIC RESOURCES ON THE PROJECT SITE

Historic resources listed on the Massachusetts Inventory of Historic and Archaeological Resources and located in within 0.25 miles of the Project Site, are identified on Figure 6-1, Historic Resources. The John Ryan House and Thomas Lally Double House are located north of the Project Site, and to the west of the MBTA right-of-way. The Benjamin J. French Double House, Anton Koerner House, L.H. Ford House, and the John M. Costello House are located west of the Project Site and north of the Arborway. The Swedish Congregational Church, West Roxbury Courthouse, and the Thomas F. Minton Building are located south of the Project Site, and south of the Arborway. The John J. Brown Three Decker, Ellen N.

Poole House, and the N. Curtis House are located east of the Project Site, and north of the Arborway. No properties in the Project vicinity are designated as Local Landmarks.

The Arnold Arboretum is also located west of the Project Site, but south of the Arborway. The Arboretum is the only resource within the Project vicinity that is listed as a National Historic Landmark, and on the State and National Register of Historic Places.

No adverse impacts to the historic resources in the surrounding area will result from the proposed development. This includes no visual or shadow effects on the resources listed in Table 6-1.

Table 6-1, Historic Resources listed on the Massachusetts Inventory of Historic and Archaeological Resources

R#	Name	Location	Description of Resource	Impact of Project on Resource
BOS. 10049	John Ryan House	85 McBride Street	Historic single-family dwelling house	None
BOS. 10050	Thomas Lally Double House	101-103 McBride Street	Historic multi-family dwelling house	None
BOS. 10129	Benjamin J. French	19 Rosemary Street	Historic Queen Anne multi-family dwelling house	None
BOS. 10002	Anton Koerner House	27 Hampstead Road	Historic Colonial Revival multi-family dwelling house	None
BOS. 10001	L. H. Ford House	9 Hampstead Road	Historic Queen Anne single-family dwelling house	None
BOS. 10000	John M. Costello House	36 Hampstead Road	Historic Queen Ann, Colonial Revival single-family dwelling house	None
BOS. 9347	Arnold Arboretum	Arborway	Oldest public arboretum in the country, established in 1872	None
BOS. 10412	Swedish Congregational Church	455 Arborway	A pre-war church, also known as Covenant Congregational Church constructed in 1935	None

R#	Name	Location	Description of Resource	Impact of Project on Resource
BOS. 10411	West Roxbury District Courthouse	455 Arborway	Classical Revival courthouse constructed in 1922	None
BOS. 10583	Thomas F. Minton Building	2-16 Hyde Park Ave	Historic, Classical Revival apartment house	None
BOS. 10130	John J. Brown Three Decker	35 Rossmore Road	Historic Queen Anne multi-family home	None
BOS. 8859	Ellen. N Poole House	48 Brookley Road	Historic Queen Anne single-family dwelling house	None
BOS. 10088	N. Curtis House	31 Rosemary Street	Historic, Italianate Style single family dwelling house	None

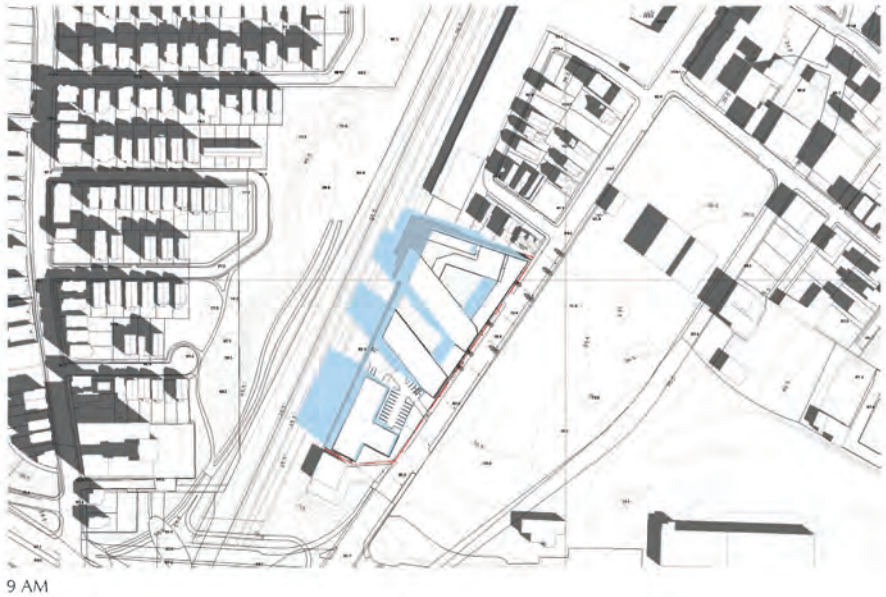
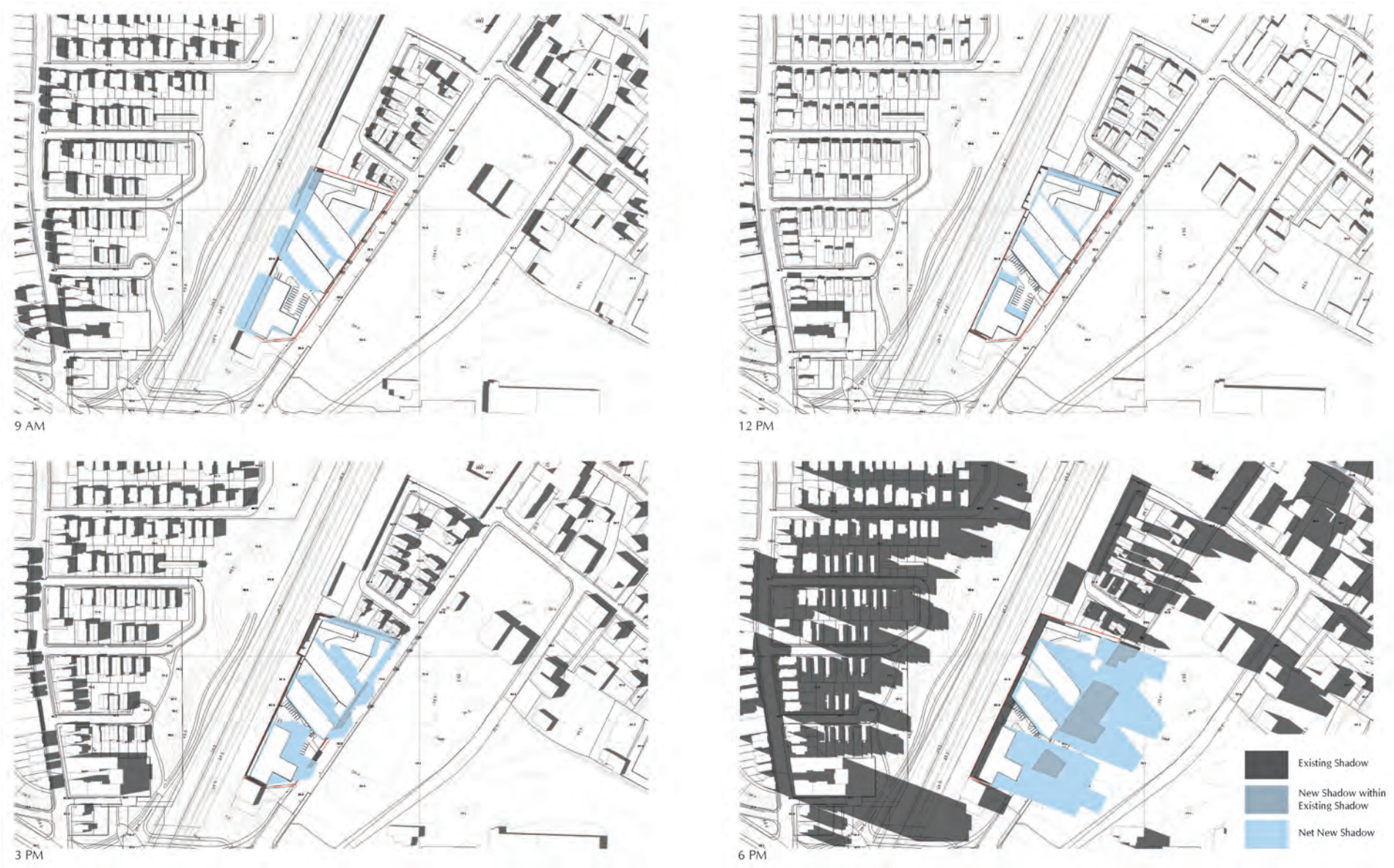


Figure 6-1
Shadow Studies - March 21
Source: Utile, Inc., 2013



Jamaica Plain, Massachusetts

Figure 6-2
Shadow Studies - June 21
Source: Utile, Inc., 2013

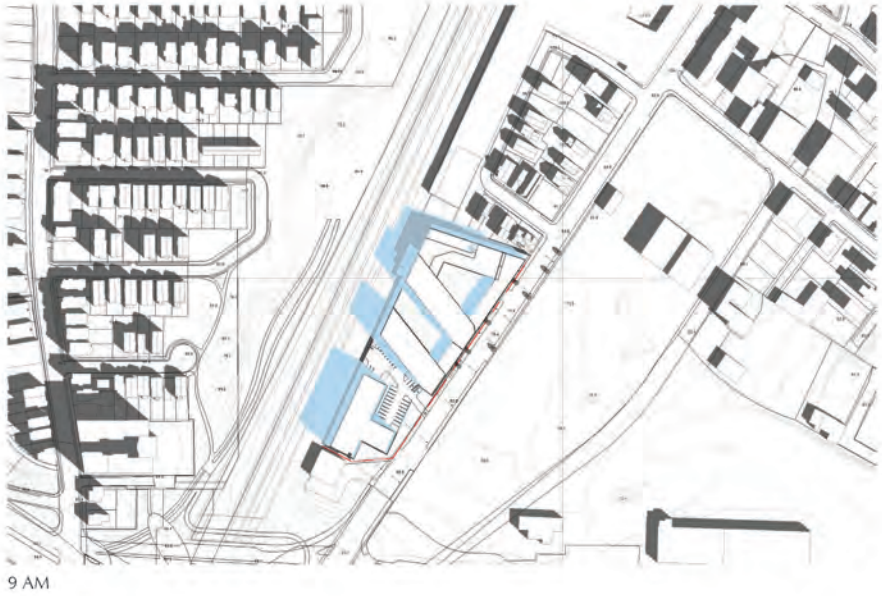
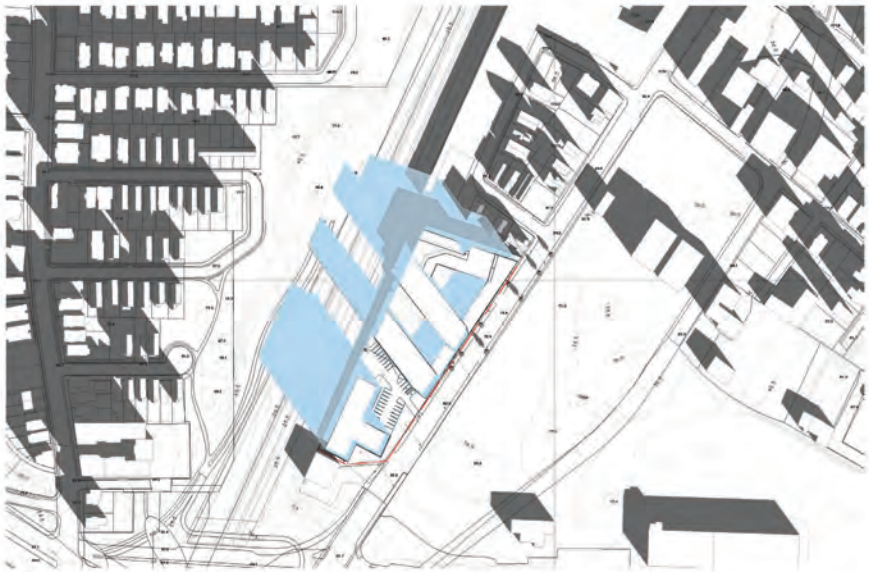
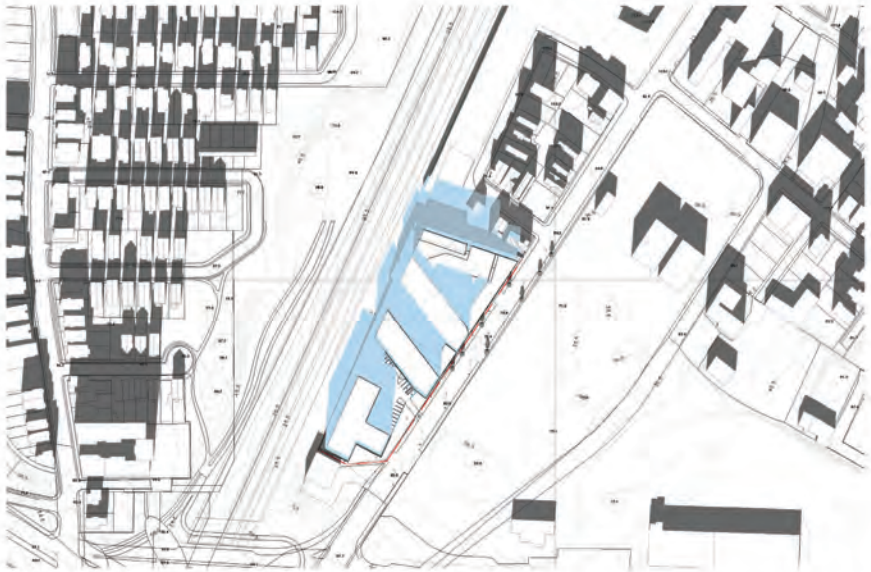
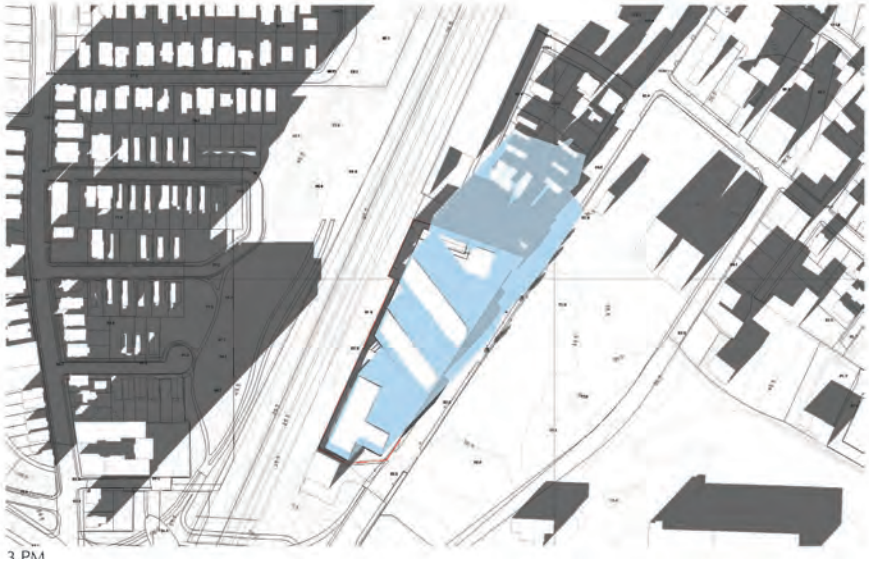


Figure 6-3
Shadow Studies - Sept 21
Source: Utile, Inc., 2013







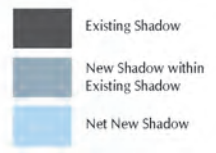
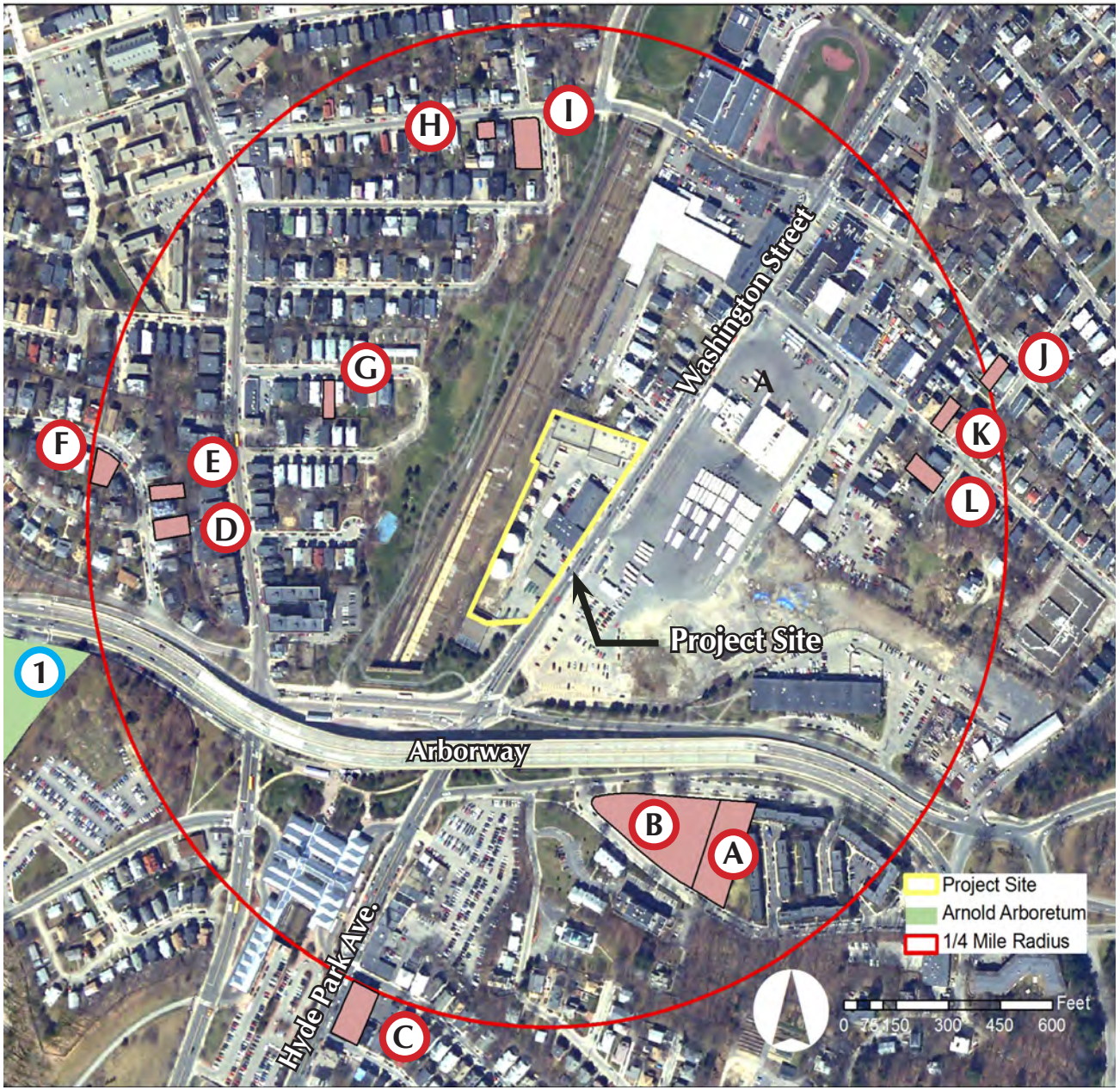


Figure 6-4
Shadow Studies - Dec 21
Source: Utile, Inc., 2013



Properties on the Inventory of Historical and Archaeological Assets of the Commonwealth

- **A** Swedish Congregational Church, 455 Arborway
- **B** W. Roxbury Dist. Court House, 455 Arborway
- **C** Thomas F. Minton Building, 16 Hyde Park Ave
- **D** L.H. Ford House, 9 Hampstead Road
- **E** Anton Koerner House, 27 Hampstead Road
- **F** John M. Costello House, 36 Hampstead Road
- **G** Benjamin J. French Double House, 19 Rosemary Street
- **H** John Ryan House, 85 McBride Street
- **I** Thomas Lally Double House, 101 McBride Street
- **J** John J. Brown Three Decker, 35 Rossmore Street
- **K** Ellen N. Poole House, 48 Brookley Street
- **L** N. Curtis House, 31 Plainfield Street

Properties Listed as a National Historic Landmark, and on the National and State Registers of Historic Places

- **1** Arnold Arboretum

Figure 6-5
Historic Resources
Source: MACRIS, 2013; MHC, 2013

Chapter 7

INFRASTRUCTURE

CHAPTER 7: INFRASTRUCTURE

7.1 INTRODUCTION

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

7.2 WASTEWATER

7.2.1 EXISTING SEWER SYSTEM

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

There is presently a 10-inch sewer line in the Washington Street sidewalk adjacent to the southerly portion of the Project Site. This sewer line begins at the Washington Street/Arborway intersection and runs northeasterly 370 feet to a 33-inch sewer main. There is also a 10-inch line which increases to a 12-inch line in the sidewalk adjacent to the northerly portion of the site which connects to the 33-inch main. There is a 33-inch sewer main that runs through the site in a southeasterly direction and connects to a 32-inch x 48-inch interceptor about 200 feet east of Washington Street. The interceptor runs in a northeasterly direction. Refer to Figure 7-1 for the BWSC Sewer Map on the Project Site.

7.2.2 PROJECTED SANITARY SEWER FLOW

The Project will include four multi-story mixed-use buildings with structured parking on the ground level. The development will include 280 rental apartment units, approximately 7,960 square feet of commercial/retail/amenity space, and parking for 250 bicycles and 185 vehicles.

The estimated sewerage flow for the Project has been estimated in accordance with 310 CMR 7.15.203: System Sewerage Flow Design Criteria and is summarized in Table 7-1. The total estimated sewerage flow for the Projects 46,050 gallons per day. The actual wastewater generation will be significantly less than the design flow stated above due to the use of low-flow plumbing fixtures.

Table 7-1, Estimated Sewerage Flow

Proposed Use	Number of Units	Unit Flow (gpd)	Sewerage flow (gpd)
Residential	410 Bedrooms	110/gpd/bedroom	45,100
Commercial/Retail/Amenity	7,960 sf	50 gpd/1000 sf	200
Restaurant	30 seats	25 gpd/seat	750
Total			46,050

7.2.3 SANITARY SEWER CONNECTION

The proposed Project's sewer connection will be an 8-inch connection from each building to the 10-inch sewer main in Washington Street. The floor drains in the parking structure will discharge to an oil and grease separator prior to connecting to the building sewer system in accordance with the Massachusetts Plumbing Code.

The sewer connection will comply with Boston Water and Sewer Commission requirements. Any abandoned utilities shall be cut and capped at the main. The sewerage flow from any future commercial kitchen will discharge to a grease trap prior to connecting to the building sewer system.

7.3 WATER SYSTEM

7.3.1 EXISTING WATER SYSTEM

The Boston Water and Sewer Commission (BWSC) provides water service to the City of Boston through a well developed network of pipes. BWSC is supplied water from the MWRA system.

BWSC has a 12-inch water main in Washington Street. This is a high pressure line constructed in 1988 of cement-lined ductile iron. At the southerly end of the property, the water line in Washington Street connects to a 12-inch PCI pipe constructed in 1888.

There is also a 36-inch x 40-inch combined sewer line that flows northeasterly in Washington Street.

7.3.2 ANTICIPATED WATER CONSUMPTION

Water consumption for the Project has been estimated based on 110% of the average daily estimated sewerage flow with the total estimated consumption of 50,655 gallons per day. This includes 49,610 gallons per day for the residential use and 220 gallons per day for the retail use. The actual water usage will be significantly less that the estimated design flow stated above due to the use of water saving devices which are described below.

7.3.3 PROPOSED WATER SERVICE

The proposed services will connect to the 12-inch water line in Washington Street. It is anticipated that there will be one domestic water service which will flow to a meter in the northerly building. There will be a domestic water line from the meter servicing both the north and south buildings. It is anticipated that there will a single fire service line servicing both buildings. The domestic water service will be metered in accordance with BWSC requirements. Backflow preventer devices will be installed on all fire service where required to protect from cross-connection hazards. Water supply systems servicing the will be gated so as to minimize public hazard or inconvenience on the event of a water main break. The Proponent will also submit a General Service Application and Site Plan to the BWSC for review and approval.

7.3.4 WATER SUPPLY CONSERVATION AND MITIGATION MEASURES

Conserving water, especially potable water, is an important element to the Project's sustainable design strategy. The State Building Code requires the use of water conserving fixtures. Water conservation measures such as low-flow water closets, low-flow faucet aerators and restricted flow showerheads will be used to reduce the domestic water demand. These systems will be installed in compliance with the code requirements

Water demands will be further reduced by the implementation Low Impact Development (LID) techniques during the site design phase of the project. These LID's will include the minimizing of lawn are, planting of native draught resistant plant and shrubs, limit irrigation and use only high efficiency irrigations.

7.4 STORM DRAINAGE SYSTEM

7.4.1 EXISTING STORM DRAIN SYSTEM

The Project Site is mostly paved and occupied by one- and two-story buildings. A portion of the westerly side of the site has a gravel surface. Most of the paved areas drain to catch basins which appear to be connected to the 36-inch x 40-inch combined sewer in Washington Street. The building roof drainage also appears to flow to the combined sewer.

7.4.2 PROPOSED DRAINAGE CONDITIONS

The proposed stormwater system will comply with the Department of Environmental Protection's Stormwater Management Regulations. Surface stormwater runoff from parking areas will flow to catch basins with deep sumps and oil trap hoods and then to a water quality device prior to discharging to a closed pipe system. Roof runoff, which is considered clean water, will flow directly to the closed pipe system to a below grade infiltration/detention system.

If acceptable to the BWSC, the stormwater will discharge through a pipe connection to the 33-inch drain which traverses the Project Site. The existing connections to the combined sewer line will be cut and capped at the main.

7.4.3 MITIGATION MEASURES

The Project presents a significant opportunity to substantially improve the stormwater runoff quality and peak rate of stormwater runoff from the Project Site. The Project will also eliminate the stormwater connections to the combined sewer line in Washington Street.

The proposed stormwater system will include Stormwater Best Management Practices (BMP) with consideration being given to application of Low Impact Development (LID) techniques to both reduce the quantity of runoff and improve water quality. LID minimizes adverse water quality impacts by mimicking the site's natural hydrologic conditions by infiltrating filtering, detaining, and evaporating stormwater runoff close to its source.

The proposed Project will significantly decrease the volume and peak rate of stormwater runoff from the Project Site due to the installation of below grade infiltration/detention systems which will infiltrate the first one inch of stormwater runoff and will mitigate the peak rate of runoff. Stormwater from pavement areas will flow to deep sump catch basins with oil trap hoods prior to flowing to a water treatment device.

Low Impact Development (LID) techniques will be used on the Project Site. These techniques may include minimizing lawn areas, reducing impervious surfaces, and the use of native plants. The Proponent will also explore the opportunities for Integrated Management Practices (IMP) which may include biorention cells, permeable pavement blocks, and soil amendments and below grade infiltration systems.

A Long-Term Pollution Prevention Plan will be developed for the Project, which will identify suitable practices for source control Stormwater Pollution Prevention as outlined in the DEP Stormwater handbook. The Long-Term Pollution Prevention Plan will address source control measures including street sweeping, snow and salt management, fertilizers, herbicides, pesticides stabilization of eroding surfaces, and maintenance of the stormwater management systems.

A Stormwater Pollution Prevention Plan (SWPPP) will be developed in conformance with the EPA, NPDES, and DEP Guidelines. The SWPPP will address sedimentation and erosion controls as well as material management practices and spill control practices during the construction period.

7.5 ELECTRICAL SERVICES

NSTAR provides electric service in the City of Boston. There in existing electric underground service conduits in Washington Street. All new electric service will be

installed underground from the Washington Street electric service. Electric power supply design will be further coordinated with NSTAR as the project design process continues and electric consumption is determined.

The Proponent is committed to taking an integrated and comprehensive approach to energy planning which is sensitive to high and rising energy prices and growing concern over global climate change. The highest priority, and most cost-effective approach, is to make the project's buildings energy efficient, exceeding the requirements of the State Building Code. In addition, as the project's electric load and energy requirements are calculated and assessed, the Proponent will undertake an energy planning process, working closely with the City of Boston and NSTAR. In addition to giving consideration to efficiency strategies, this planning process will evaluate the potential for meeting a portion of the Site's energy demand through options such as green power purchasing and on-site power generation.

7.6 TELECOMMUNICATIONS SYSTEM

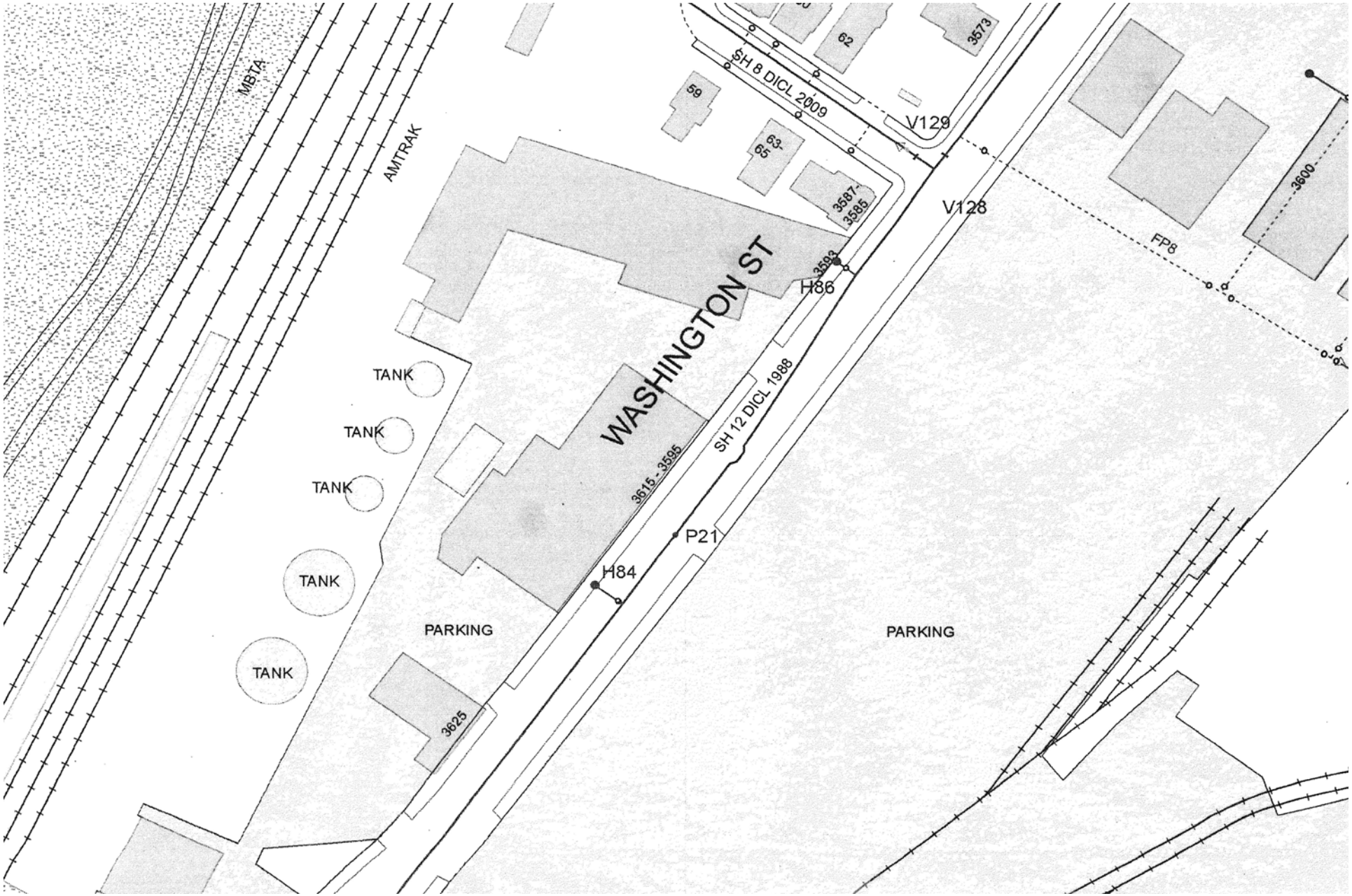
Verizon New England and Comcast provide telephone and cable television services in the Project area. There are underground telephone service conduits in Washington Street. It is anticipated that the new telephone services will be installed underground from Washington Street.

7.7 GAS SYSTEMS

NSTAR Energy delivery provides natural gas service in the Project area. There are two 12-inch gas mains and a 20-inch gas main in Washington Street. It is anticipated that the new gas services will connect to the mains in Washington Street. As noted above with respect to electricity, the Proponent is committed to taking a comprehensive and integrated approach to energy planning, one which will also include working closely with the City of Boston and NSTAR with respect to natural gas usage. In addition to giving consideration to efficiency strategies, this planning process will evaluate the potential for meeting a portion of the site's electric and thermal demand through options such as on-site generation.

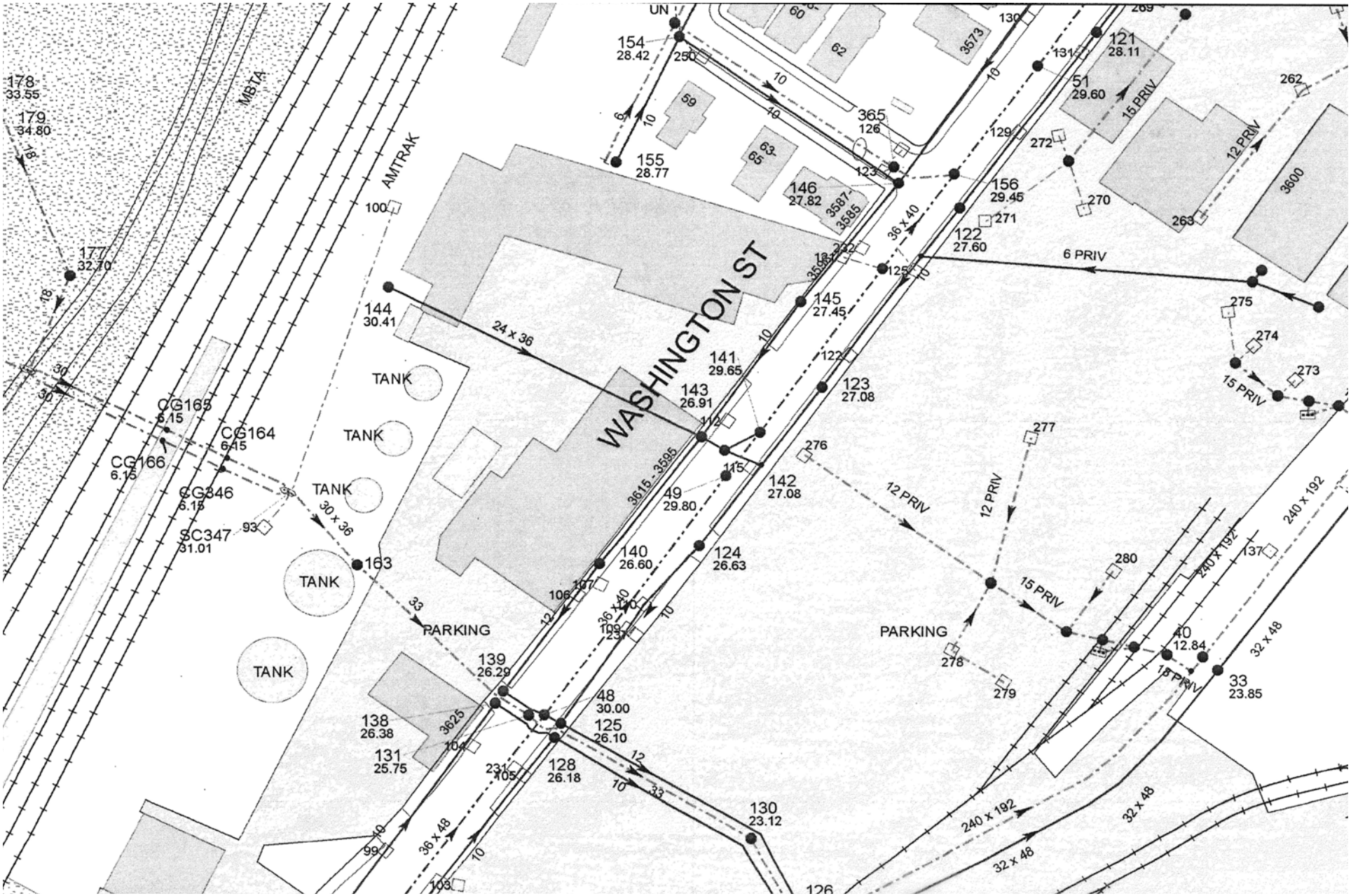
7.8 UTILITY PROTECTION DURING CONSTRUCTION

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



Jamaica Plain, Massachusetts

Figure 7-1
BWSC Water System Map
Source: U.S. Green Building Council, 2009



Jamaica Plain, Massachusetts

Figure 7-2
BWSC Sewer and Stormwater System Map
Source: U.S. Green Building Council, 2009

Appendix

TRANSPORTATION TECHNICAL APPENDIX

TRANSPORTATION TECHNICAL APPENDIX

The Traffic Counts, Trip Generation Calculations, and Intersection Capacity Analysis are included on the enclosed CD-ROM.