# Project Notification Form

Including Transportation Impact Analysis

Submitted Pursuant to Article 80 of the Boston Zoning Code

# WALK HILL RESIDENCES

ROSLINDALE, MASSACHUSETTS OCTOBER 20, 2016

*Submitted to:*

**BOSTON REDEVELOPMENT AUTHORITY**
One City Hall Square
Boston, MA 02201

*Submitted by:*

**THE RESIDENCE AT WALK HILL, LLC**

*Prepared by:*

**NORTHEAST STRATEGY AND COMMUNICATIONS GROUP**
Thomas Maistros, Jr. RA

*In Association with:*

***EMBARC, INC.***
***DESIGN CONSULTANTS, INC***

.

October 19, 2016

Brian P. Golden, Director
Boston Planning and Development Agency
Boston City Hall, 9th floor
Boston, MA 02201-1007
Attn: Philip Cohen

**RE: Article 80 Expanded Project Notification Form**
**289 Walk Hill Street, West Roxbury, MA**

Dear Director Golden:

On behalf of The Walk Hill Residences, LLC, we are pleased to submit the enclosed Expanded Project Notification Form for 289 Walk Hill Street, Roslindale.

The Walk Hill Residences is a proposed project of approximately 157,000 square feet of residential space (the "Proposed Project"). The Proposed Project is located at 289 Walk Hill Street in Roslindale. The proposed development includes the creation of new four/five story, multi-family residential building with approximately 167 underground parking spaces. The PNF is necessitated because the Project includes over 50,000 square feet of new construction.

The project site will be created by the combining four parcels that are currently developed with single story retail commercial uses and single family residential buildings. The proposed residential development site will have a total lot size of 87,631 square feet. All parcels are under the control of the proponent.

The Project team has had the opportunity to present its plans to the BPDA project and urban design staffs and the residents of the greater Roslindale neighborhood in order to identify issues/concerns as well as design requirements related to the Proposed Project. The Project summarized in the PNF is a result of six months of discussions about what is best for the site and the neighborhood and, while concerns remain, we believe it will bring needed multi-family housing to the neighborhood with minimal impacts.

Please contact either myself or Thomas Maistros, RA, author of the PNF, with any questions or comments. On behalf of the entire project team, we would like to thank you and the BPDA staff assigned to the Project for their input and assistance thus far on the design of this Project. We look forward to continuing to work with you and your staff on the Project, which will be a significant addition to the Roslindale neighborhood and the City of Boston.

Sincerely,

Nabil Boghos, Partner
Walk Hill Residences, LLC

Charles Gill, Partner
Walk Hill Residences, LLC

# TABLE OF CONTENTS

## TABLE OF CONTENTS (Continued) PAGE

# LIST OF FIGURES

# LIST OF TABLES

# 1.0 PROJECT SUMMARY

## 1.1 Project Identification

| | |
|---|---|
| Project Name: | Walk Hill Residences |
| Location: | The Project site is located at 289 Walk Hill Street, in the Roslindale Neighborhood of the City of Boston. The site is at the corner of Walk Hill Street, The American Legion Parkway and Canterbury Street. |
| Proponent: | Walk Hill Residences, LLC<br>52 English Commons<br>Topsfield, MA 001983<br>(978) 815-5036<br>Mr. Nabil Bogus<br>Mr. Charles Gill |
| Architects/Sustainability: | Embarc Studio<br>60 K Street, 3rd Floor<br>Boston, MA 02127<br>(617) 776-8330<br>Ms. Robert Del Savio, AIA |
| Permitting Consultants: | Northeast Strategy Communications Group<br>61 Warren Street<br>Cambridge, MA<br>(617) 653 0838<br>Mr. Thomas Maistros, RA |
| Civil, Geotechnical, Transportation, Parking Consultants: | Design Consultants, Inc.<br>1495 Hancock Street, Suite 205<br>Quincy, MA 02169<br>(617) 689-1010<br>Mr. Michael F. Clark, P.E., LEED-AP, CPESC |
| Mechanical, Plumbing & Fire Protection Engineer: | Wozny/Barbar & Associates, Inc.<br>1076 Washington Street<br>Hanover, MA 02339<br>(781) 826 4144<br>Mr. Zbigniew Wozny, PE |
| Landscape Architecture: | Kyle Zick Landscape Architecture, Inc.<br>36 Bromfield Street, Suite 202<br>Boston, MA 02210<br>(617) 451 1018<br>Mr. Kyle S. Zick, ASLA |
| Environmental Engineers: | Doyle Engineering, Inc.<br>14 Spring Street, First Floor<br>Waltham, MA 02451<br>(781) 850 2731<br>Mr. William Doyle, PE |

## 1.2 Project Description

### 1.2.1 Project Site

The Walk Hill Residences (the "Project") will be located at 289 Walk Hill Street in the Roslindale neighborhood of Boston, at the corner of Walk Hill Street and Canterbury Street. The site is made up of four individual properties currently improved with retail floral businesses that primarily cater to the local cemeteries, a restaurant and residential structures (on Canterbury Street). The site has a combined area of approximately 87,631 square feet and is bounded to the northeast by Walk Hill Street, to the northwest by Canterbury Street, and to the southeast by the American Legion Highway. The site abuts a residential property to the southwest that has recently received ZBA approval to be redeveloped into residential townhouses. The Canterbury Brook occupies an easement that extends along the eastern edge of the site parallel to the American Legion Highway.

The Proponent has all four properties under agreement conditioned on the development of a multi-family, residential development that would consist of approximately 136 units and 165 underground parking spaces. The current concept would be 153,650 square feet in a four/five story structure.

The Proponent has retained Embarc Studio as the project architect with Robert Del Savio, AIA Principal-in-Charge. Embarc has been involved with and created many multi-family projects in the Boston area and will work closely with the development team and the staff at the BRA to create a contextual, attractive asset to the Roslindale Neighborhood.

### 1.2.2 Proposed Development

The Walk Hill Residences, LLC (the "Proponent"), a Massachusetts company, is the developer of the Project. The Proponent has agreements with the current property owners to acquire the sites for the purpose of developing a four/five story, approximately 153,650 square foot residential structure with below grade parking. The Project will require the demolition of the existing commercial retail buildings and single family residences.

The residential program will consist of a total of approximately 136 units, 119 would be market-rate and 17 affordable. Housing opportunities within the design include traditional one, two and three-bedroom flats. 166 parking spaces will be provided in a below grade parking garage and on the courtyard (surface spaces). The parking will be accessed from a driveway off Canterbury Street on the western side of the site.

**Table 1-1 Approximate Project Dimensions**

| Project Element | Dimension |
|---|---|
| Project Site | 87,631 SF |
| Residential Space | 136 units/153,650 SF |
| Parking | 165 spaces (147 below grade) |
| Open Space | Approximately 32.426 SF (238 SF/unit) |
| Building Height | 64'-3" (max) |

**Figure 1-1 Locus Map**

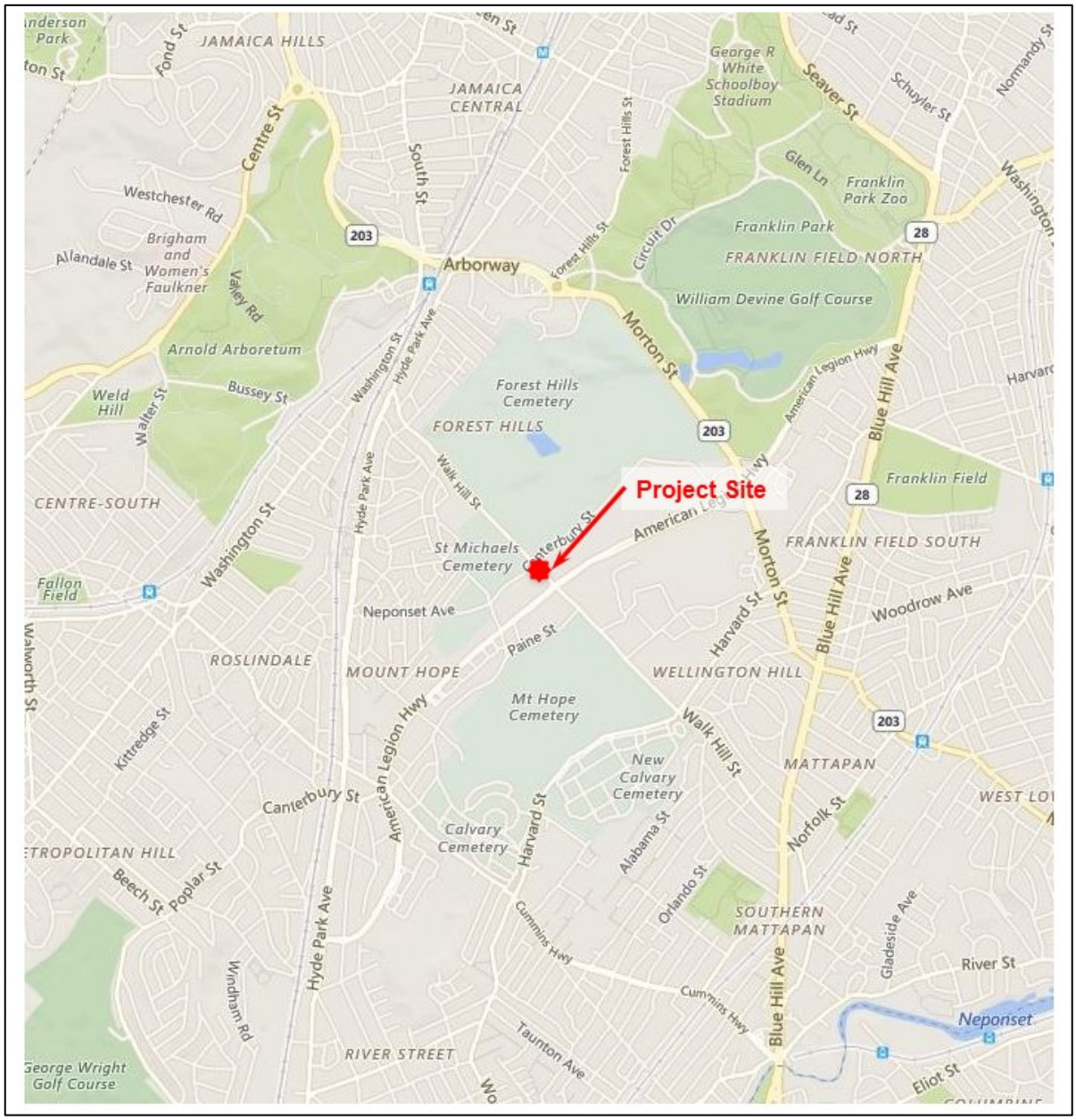
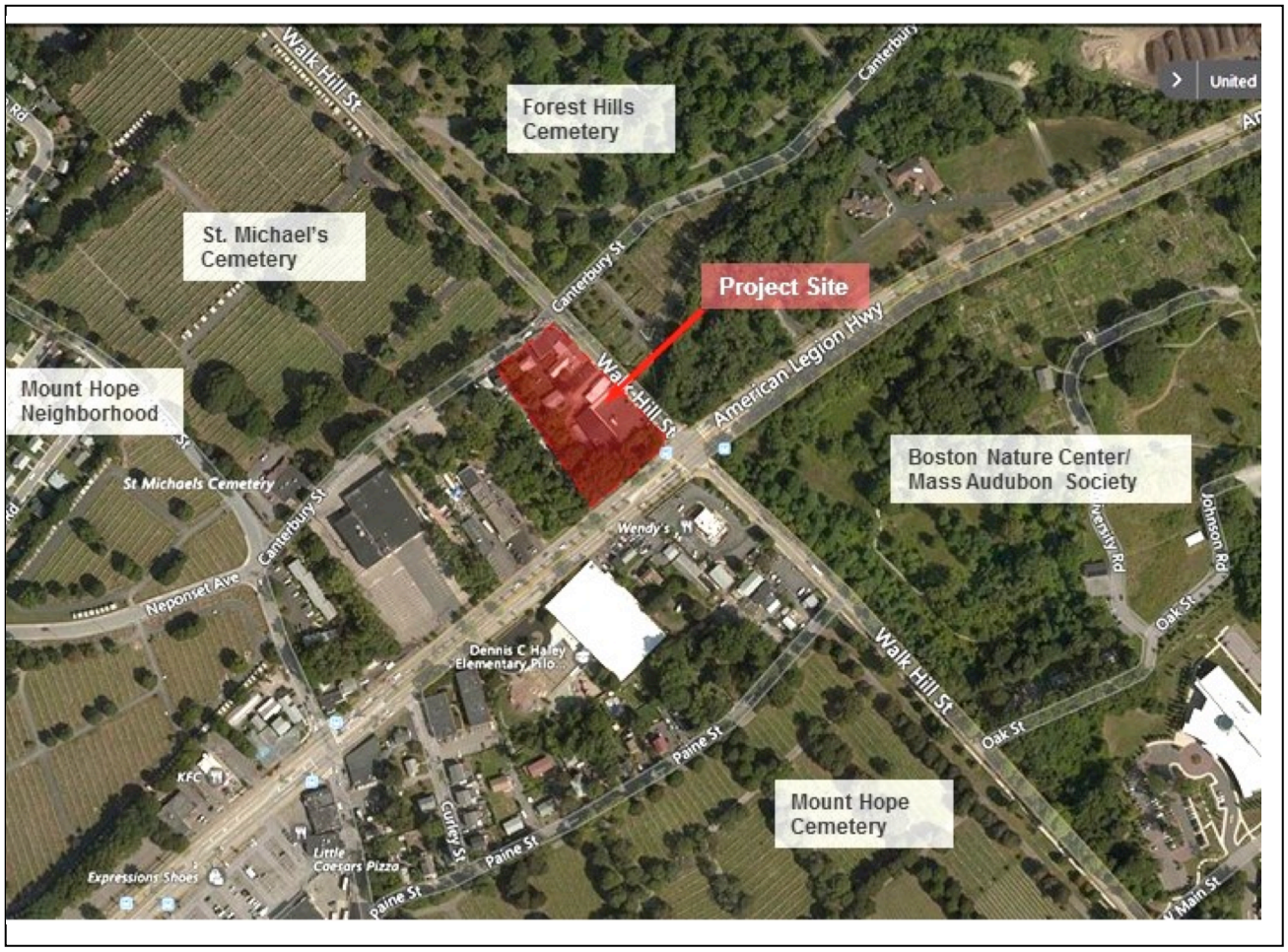


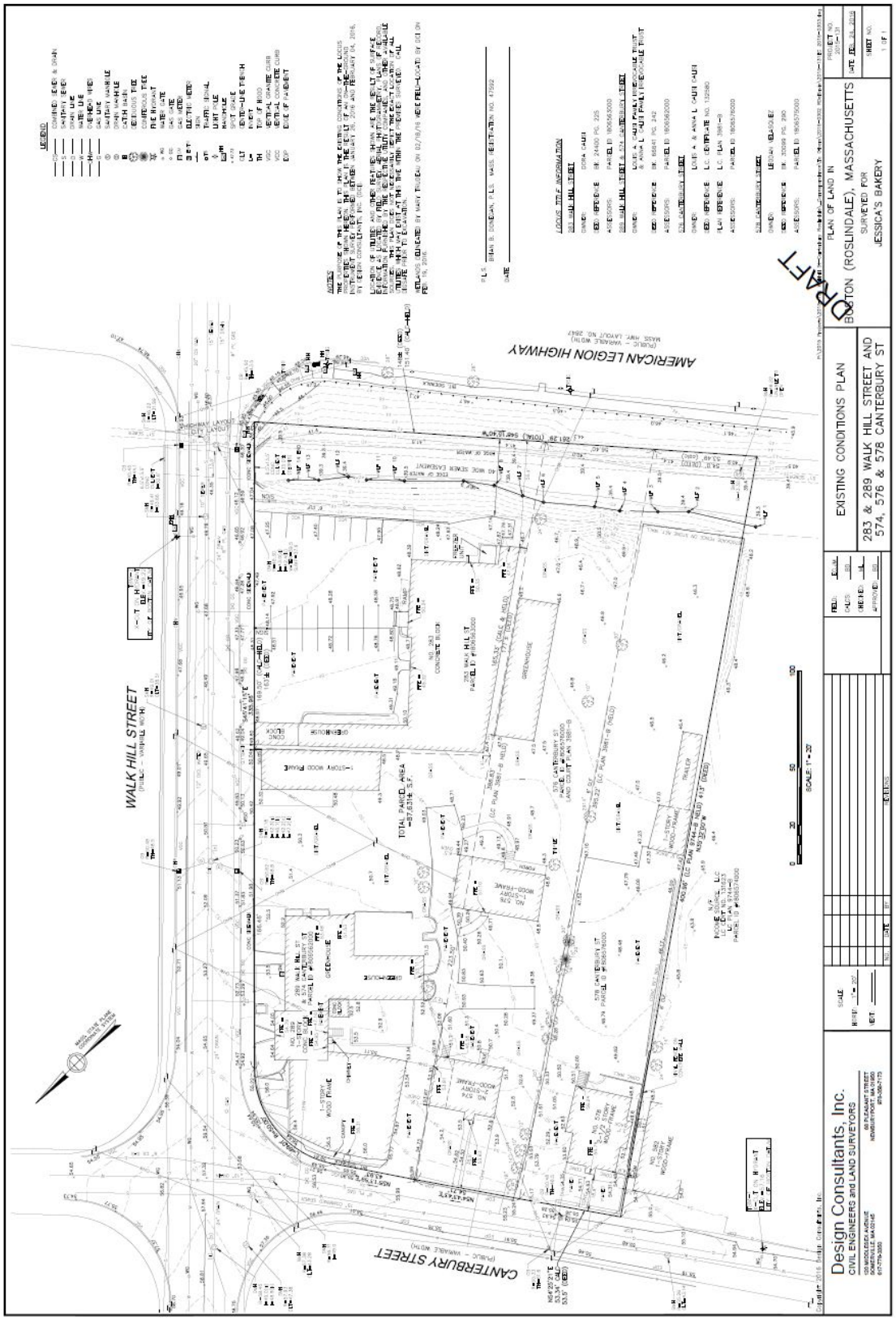
**Figure 1-2 Context Plan**




The new design will create a contemporary multi-family building that will bring new life and vitality to the nearby auto-oriented commercial retail uses on the American Legion Parkway. The Project is surrounded by open space, more specifically the Forest Hills and St Michael's Cemeteries, isolating it from the moderately scaled residential Mount Hope and Woodbourne Neighborhoods. While the Project is within walking distance of the Forest Hills MBTA Station (less than a mile northwest via Walk Hill Street), sufficient parking (1.22 spaces/unit) will be provided to meet the anticipated vehicle ownership demands.

Covered bicycle parking will be provided per the City's sustainable design standards. Trash compactors will be located inside the building and accessed via the ramp to the courtyard parking level.

**Figure 1-3 Existing Site Survey**



### 1.2.3 Public Review

Because the Project will exceed 100,000 square feet of gross floor area, it is subject to Large Project Review under Article 80B of the Boston Zoning Code (the "Code"). This PNF is being prepared to provide information on the Proposed Project as required under large project review.

The Proponent has been committed to a full community participation process. A series of meetings have been held to communicate the intended plans and solicit input and as a result the project program has undergone several revisions. The Project was first introduced to Boston Planning and Development Agency (former BRA) in March of 2016. Based on initial feedback concept including program refined and was presented to the Mount Hope Civic Association in April with follow-up presentations in June and July. Subsequent to each community presentation the Proponent met with the City to review comments and concerns. Several individual presentations were given to local elected officials.

The concept has been refined based on community input including building program, massing, façade treatments and parking/circulation. The most recent iteration saw the building massing reduced from 167,000 SF to 153,650 SF, a 10% reduction, and the off street park has been increase from 137 to 165 spaces an approximately 20% increase.

Letter of intent was filed in September of 2016.

At the conclusion of the public comment period the Proponent hopes to present the final concept in December, that concept including any additional modifications recommended by the BPDA/City agencies, to the BRA Board in November and the ZBA in December.

### 1.2.4 Public Benefits

The Project provides a number of public benefits to the City of Boston. The Project will replace the existing auto oriented, one story, retail commercial structures with a medium density multifamily residential development that will bring new housing opportunities and economic vitality to the community. is more consistent with the character of the adjacent residential neighborhood. The reuse of this site will result in the removal of deteriorating structures significantly enhancing the urban design and architectural character of the neighborhood.

Additional public benefits include:

- The Project will be certifiable under the U.S. Green Council's Leadership in Energy and Environmental Design (LEED) system.
- The Project will generate approximately $500,000 in annual property taxes.
- The Project will provide approximately 17 affordable units in accordance with the City's Inclusionary Housing Policies.
- The Project replaces a series of under-utilized, retail buildings with residential activity that will further support the adjacent shopping area.
- The Project will create approximately 300 construction jobs and will comply with the City of Boston standards for Boston resident and minority hiring.
- An improved public realm along Walk Hill and Canterbury Streets replacing the numerous curb cuts and deteriorated sidewalks that will be designed in conformance with the City's Complete Street guidelines.

- Restoration of Canterbury Brook creating an open space amenity to be enjoyed by both existing and new residents,
- Indoor parking scheme will minimize physical impacts on on-street resources and visual impacts to abutters.

## 1.3 Consistency with Zoning

The subject property has a street address of 289 Walk Hill Street (the Property), and is comprised of several existing individually owned parcels - a land area of approximately 87,631 square feet. The City of Boston Assessor's Office identifies it as Parcel 200881000.

| Address | Parcel Number | Area |
|---|---|---|
| 289 Walk Hill Street | 1806563000 | 21,780 SF |
| 283 Walk Hill Street | 1856562000 | 20,560 SF |
| 576 Canterbury Street | 1806576000 | 21,236 SF |
| 578 Canterbury Street | 1806575000 | 19,553 SF |

The combined property is located within the Roslindale Neighborhood Business Sub District identified as Community Commercial Sub District (CC), per Article 67, Roslindale Neighborhood District Map, as shown on Boston Zoning Map 10B. Generally, allowed uses in the CC subdistrict include restaurants, general and local retail business, office and other professional and service uses. Multi-family residential uses are forbidden (Refer to Table B, Article 67 Roslindale Neighborhood District).

Following the anticipated vote of the Zoning Board of Appeals and the passage of the requisite appeal period, the Property will be in conformance with all necessary zoning.

**TABLE 1.2 ZONING TABLE AND VARIANCES**

| | Zoning Requirement | Proposed |
|---|---|---|
| Maximum F.A.R. | 1.0 | 1.75 |
| Maximum Building Height | 35 Feet | 65'-3" |
| Maximum Stories | Three | Five |
| Minimum Lot Area | None | 87,631 SF |
| Min, Usable Open Space/D.U. | None | 238 SF/Unit (app) |
| Minimum Lot Width (Canterbury) | None | 160 Feet +/- |
| Minimum Frontage (Canterbury) | None | 160 Feet +/- |
| Minimum Front Yard | None | 5'-0" |
| Minimum Side Yard (Canterbury) | None | 5'-0" |
| Minimum Rear Yard | 10 Feet | N/A |
| Off-Street Parking | 1.5 Spaces/Unit | 1.2 Spaces/Unit |
| Off-Street Loading | 1 Bay | 0 Bays |
| Allowed Use | Community | Residential (Forbidden) |

Architectural Plans will be submitted to the Boston Inspectional Services Department to initiate the zoning review process and a determination of zoning variances has been provided. Based on that determination several actions will be required from the Zoning Board of Appeals including variances for Maximum FAR, for Maximum Height, for off-street parking and for Allowable Use.

## 1.4 Legal Information

- The Proponent knows of no judgments, which are adverse to the proposed project.
- The Proponent knows of no tax arrearages with respect to the property.
- The Proponent has agreements to acquire the individual parcels conditioned on approval of required zoning relief. Easements are limited to the existing Sewer Easement (Canterbury Brook) extending along the southeastern edge of the site.

## 1.5 Public Agencies

The following is a list of state and local agencies from which permits or other actions are expected to be required:

**TABLE 1.3 ANTICIPATED PERMITS AND APPROVALS**

| Agency Name | Permit / Approval |
|---|---|
| **STATE** | |
| Massachusetts Water Resources Authority | Sewer Use Discharge Permit |
| **LOCAL** | |
| Boston Civic Design Commission | Determination to Review |
| Boston Redevelopment Authority | Zoning variance recommendations<br>Article 80 Compliance |
| Boston Water and Sewer Commission | Sewer Use Discharge Permit;<br>Site Plan Approval;<br>Sewer Extension/ Connection Permit;<br>Stormwater Connection |
| City of Boston Inspectional Services Department | Building and Occupancy Permits |
| Boston Public Improvement Commission | Street and Sidewalk Occupation Permits;<br>Specific Repair Plan |
| Boston Board of Appeals | Variance Approvals |
| Boston Parks and Recreation Commission | Review and Approval |
| City of Boston Interagency Green Building Committee | Climate Change Checklist<br>Accessibility Checklist |
| Boston Transportation Department | Transportation Access Plan Agreement;<br>Construction Management Plan |

## 1.6 Schedule

Construction is expected to begin in the Spring of 2017 and will be completed for occupancy in 14 months (Summer 2018).

## 1.7 DESIGN

### 1.7.1 Design Objectives

The primary objective of the Project is to take advantage of underutilized parcels adjacent to Roslindale's American Legion Parkway shopping area to provide expanded housing opportunities to the residents of Boston. The site meets many of the sustainability goals set by contemporary planning. The Project has very good vehicular access being adjacent to the American Legion Parkway, a major arterial connecting to the City's Metro Parkway system. The parcel sits directly along a major MBTA bus route and is within walking distance to the MBTA Orange Line providing the opportunity to create a Transit Oriented Development.

The site is surrounded by cemeteries, a low activity open space resource, thus allowing the proposed medium density to have limited impact on the nearby single and two family residential neighborhoods. The site also directly abuts the neighborhood based Legion Shopping Center, a commercial center along American Legion Parkway, allowing future residents pedestrian access to needed local services. And the site is already developed so will not reduce the City's open space resources nor require new infrastructure.

While Roslindale is known primarily as a neighborhood of single, and two family homes, the Project will provide multi-family housing options for singles and new families hoping to enter this limited sub-urban market and for the community's native empty nesters looking to down-size but remain in the neighborhood. The site has an advantageous location along a major arterial with direct access to the local shopping district and current retail uses along the Parkway. The multi-family building also supports the general objectives established by the Smart Growth Policies advocated by the City and the Commonwealth by providing moderate-density housing to suburban sites with access to mass transit and existing City infrastructure. The project will also bring economic support to the adjacent shopping district as the development's residents will have direct pedestrian access to the adjacent community oriented retail as noted above.

Specific building design objectives are described in detail in the Urban Design Section 2.3.

### 1.7.2 Existing Conditions – Site Photographs

**Figure 1.4 Existing Condition – Context/Aerial View**


**Figure 1.5 Existing Condition – View of Site from American Legion/Walk Hill St. Intersection**

**Figure 1.6 Existing Condition – View of 289 Walk Hill Street**


**Figure 1.7 Existing Condition – View of 283 Walk Hill Street**

**Figure 1.8 Existing Condition – View of Canterbury Street looking south**

**Figure 1.9 Existing Context – View of 576 Canterbury Street**

**Figure 1.10 Existing Context – View of 578 Canterbury Street**

**Figure 1.11 Existing Context – View of 578 Canterbury Street (on Canterbury St. looking North)**

### 1.7.3 Design Exhibits

The Proponent has retained Embarc Studio as Project Architect. Embarc has prepared the following graphic materials including context photos and architectural plans, elevations and illustrations to further describe the proposed scope of improvements.

**Figure 1-12 Context Aerial**

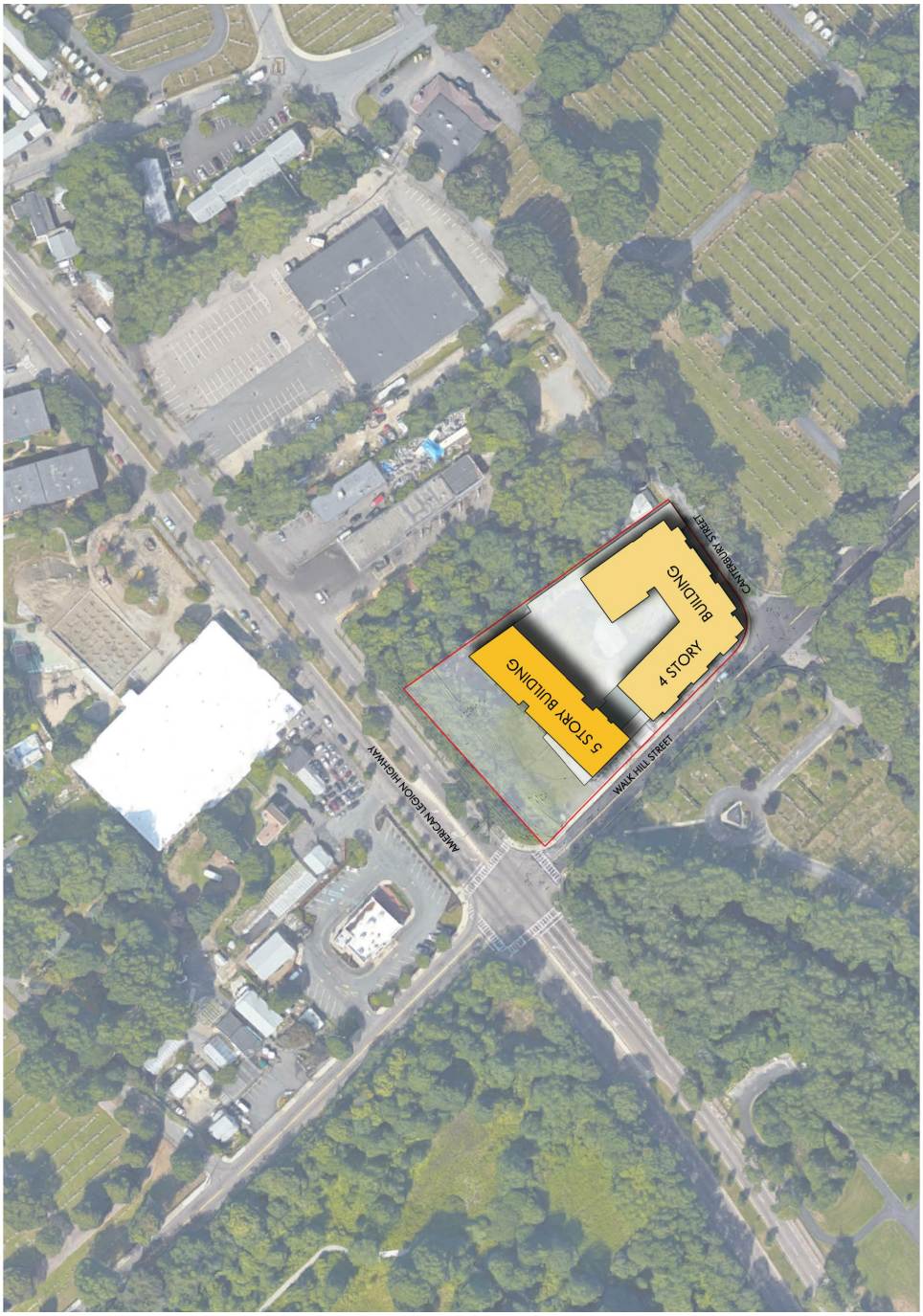


**Figure 1-13 Context – Bird's Eye View**

**Figure 1-14 Parking Level Plan**

**Figure 1-15 First Floor Plan**

**Figure 1-16 Typical Floor Plan**

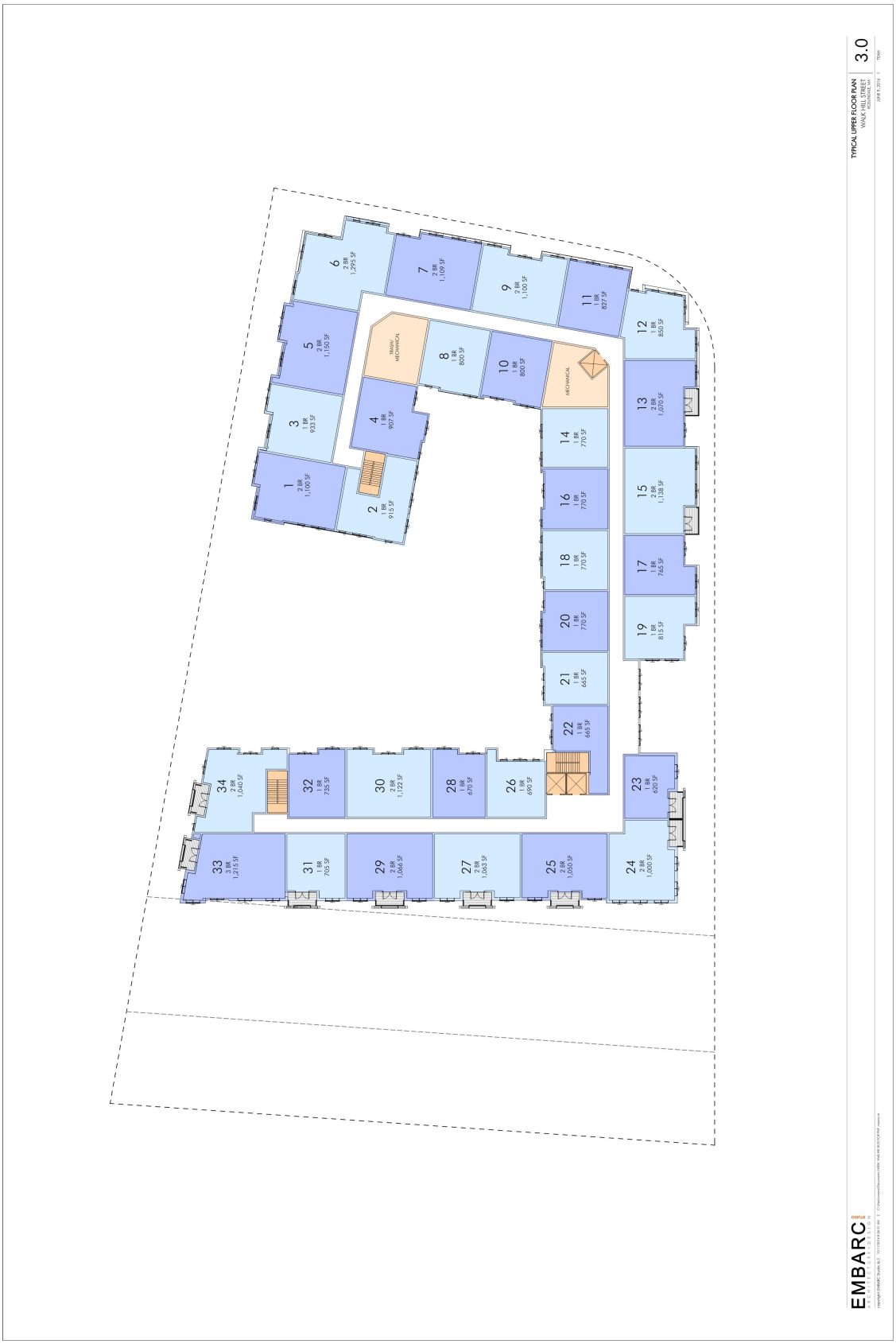


**Figure 1-17 Fifth Floor Plan**

**Figure 1-18 East/North (Walk Hill Street) Elevations**

**Figure 1-19 West (Canterbury Street)/South Elevations**

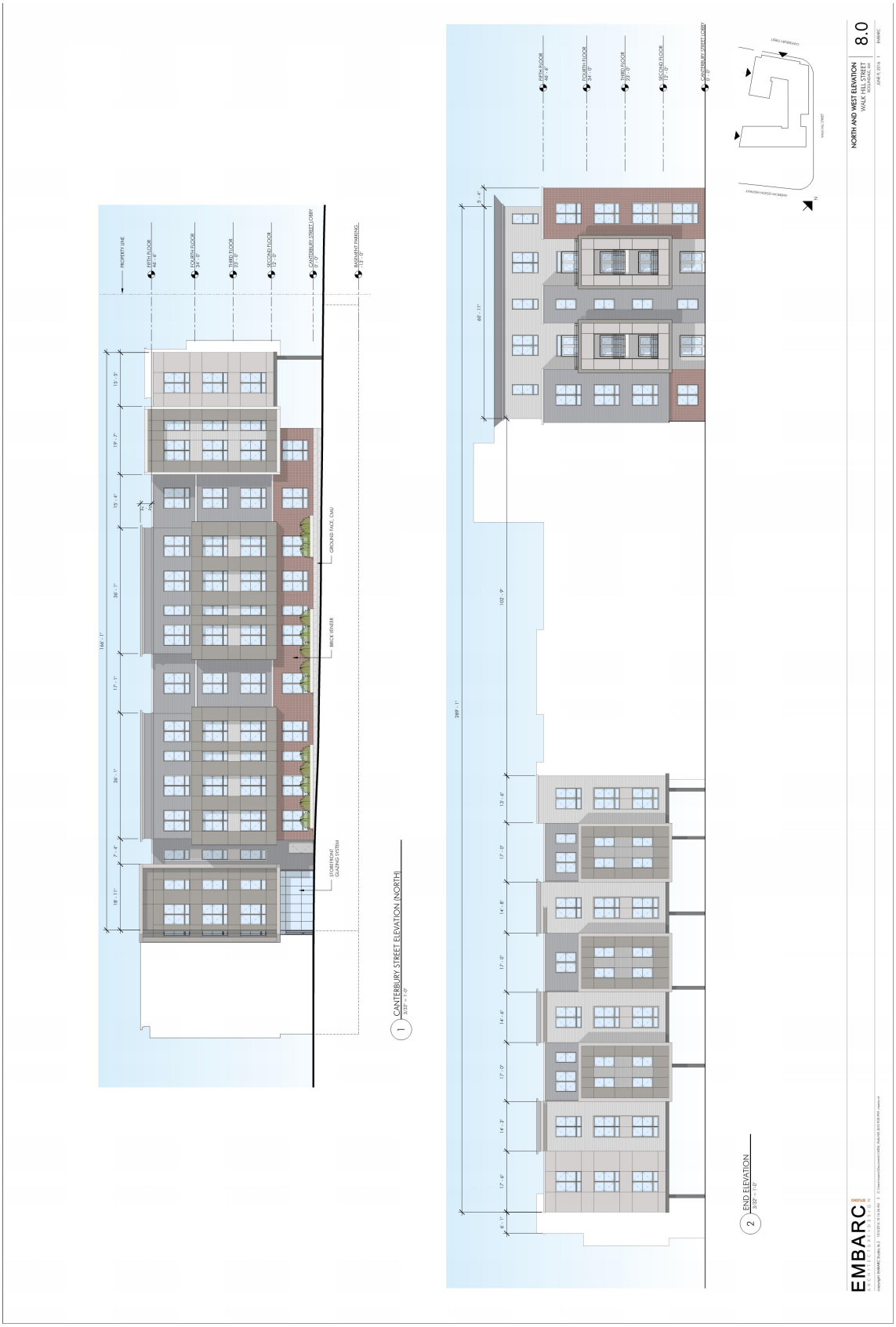


**Figure 1-20 Proposed development – View from American Legion Highway**

**Figure 1-21 Ground Level Perspective Views**

# 2.0 ASSESSMENT OF DEVELOPMENT REVIEW COMPONENTS

Article 80 of the Code specifies that the BRA may require a Scoping Determination that defines studies to be prepared by the Proponent to determine the direct or indirect impact to the environment reasonably attributable to a proposed project. The development review components include transportation, environmental protection, urban design, historic resources, and infrastructure systems. Where potential for direct or indirect impacts exist, design measures are required to mitigate the impacts, to the extent economically feasible. The following is an assessment of the potential impacts that could be attributed to the Project and proposed mitigation measures.

## 2.1 Transportation

Design Consultants, Inc. has conducted an evaluation of the transportation impacts of the proposed residential development ("Project") to be located at 283-289 Walk Hill Street in the Roslindale neighborhood of Boston, Massachusetts. This transportation study adheres to the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and the Boston Redevelopment Authority's (BRA) Article 80 development review process. This study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, pedestrian activity, and transit services.

### 2.1.1 Project Description

The Project site is located in the Roslindale neighborhood of Boston and is bordered by Canterbury Street in the north, Walk Hill Street in the east, American Legion Highway in the south, and a cemetery in the west. Land use surrounding the site is a mix of commercial and residential uses.

The proposed Project will demolish the existing buildings to construct a new residential building which will house 136 units. Site access will be provided via one new curb cut on Canterbury Street. The curb cut from Canterbury Street will provide access to an at-grade parking area providing 19 parking spaces and a below-grade parking area beneath the residential building providing 146 parking spaces, for a total of 165 parking spaces. This results in a parking ratio of 1.2 parking spaces per dwelling unit. Primary pedestrian access will be provided by a main entrance on Walk Hill Street. Sight distance analysis was carried out at the proposed location for the curb cut to ensure safe movements entering and exiting the site.

A safety analysis of the most recent three years of crash data was completed to point out possible existing safety issues within the study area that may need to be addressed as part of the traffic study. It was determined that none of the study intersections analyzed had crash rates above district or statewide averages. Capacity analyses of 2016 Existing, 2023 No-Build, and 2023 Build traffic conditions were carried out to assess the impact that the new development at 283-289 Walk Hill Street will have on local traffic operations.

### 2.1.2 Transportation System

#### 2.1.2.1 Study Area

The following two intersections in the Roslindale neighborhood of Boston, as agreed upon by the BTD, were examined in this traffic study:

- Walk Hill Street and Canterbury Street
- Walk Hill Street and American Legion Highway

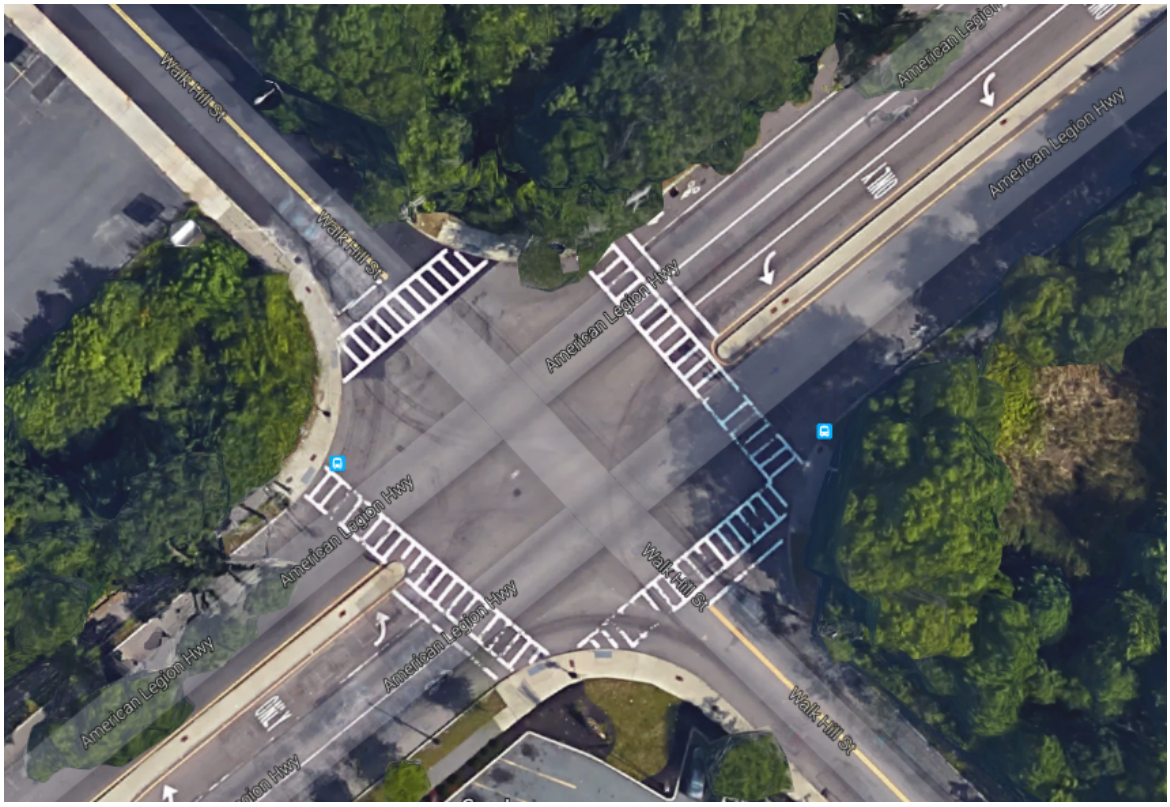
The intersection of Walk Hill Street and Canterbury Street is unsignalized, and the intersection of Walk Hill Street and American Legion Highway is signalized. Figures 2-1 and 2-2 depict the two study intersections and Figure 2-3 illustrates a map showing study locations relative to the Project site.

The intersection of Walk Hill Street and Canterbury Street is a four-way, unsignalized intersection. Walk Hill Street approaches from the northwest and southeast, and Canterbury Street runs southwest-northeast. There are no crosswalks at any approach at the intersection. Near the intersection, parking is allowed on both sides of Walk Hill Street. Sidewalks are located on the west side of Walk Hill Street.

**Figure 2-1: Intersection of Walk Hill Street and Canterbury Street**

The intersection of Walk Hill Street and American Legion Highway is a four-way, signalized intersection. The Walk Hill Street approach carries one lane in each direction. The American Legion Highway approach carries two through lanes and one exclusive left-turn only lane in each direction. Sidewalks are provided at all approaches to the intersection. Crosswalks are present across all approaches at the intersection.

**Figure 2-2: Intersection of Walk Hill Street and American Legion Highway**




### 2.1.2.2 Streets

**Walk Hill Street** is classified as an urban minor arterial by MassDOT and the Boston Transportation Department (BTD), and is under the jurisdiction of the City. It runs northwest-southeast through the study area, and carries one lane in each direction. Walk Hill Street is approximately 1.8 miles in length, and runs from its southeastern limit at its intersection with Blue Hill Avenue to its northwestern limit at its intersection with Hyde Park Avenue. Walk Hill Street has approximately a 30 foot wide traveled way in the vicinity of the study area. Parking is allowed on both sides of the street in the study area. The posted speed limit is 30mph. There are sidewalks on the west side of the street in the vicinity of the Project, as well as a bike-lane in the northwest-bound direction and southeast-bound direction. Land use on Walk Hill Street is mixed residential and commercial. Figure 2-4 illustrates a typical street view of Walk Hill Street.

**Figure 2-3: Study Intersections Relative to Project Site**

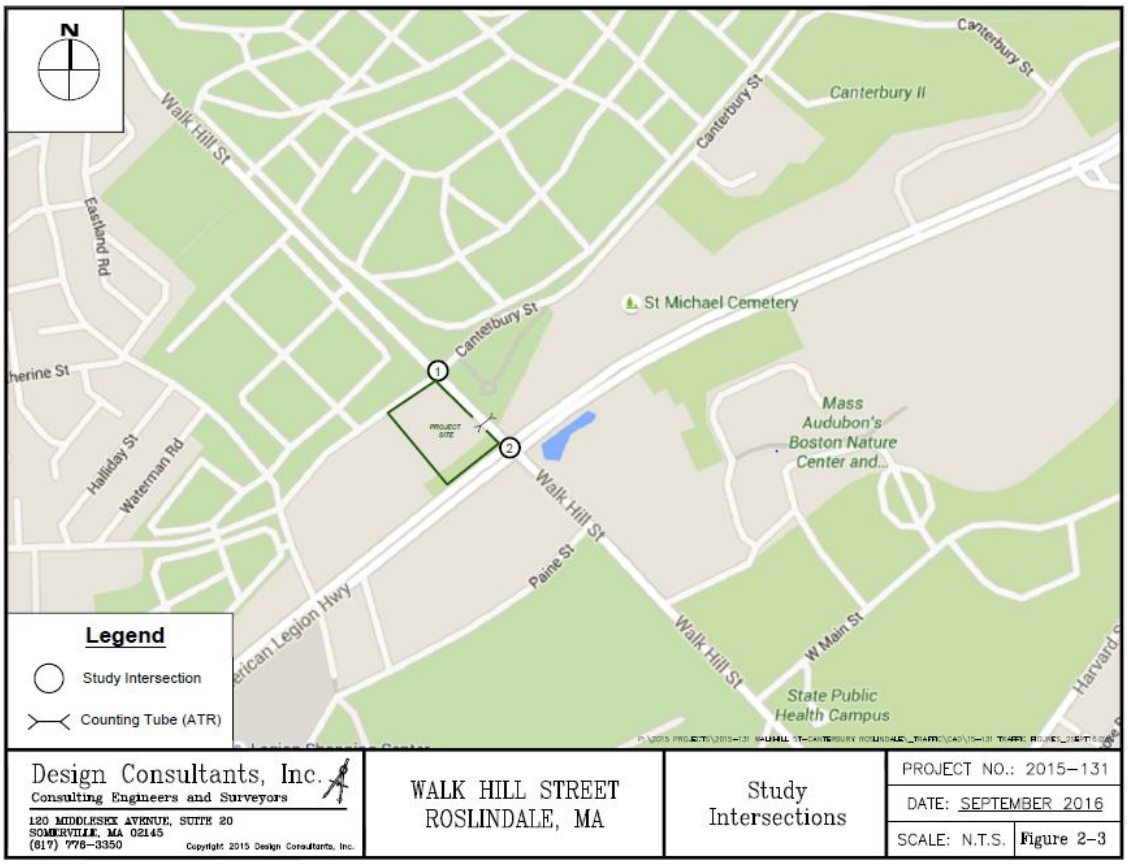



**Figure 2-4: Street View of Walk Hill Street**

**Canterbury Street** is classified as a local road according to MassDOT and by the BTD and is under City jurisdiction. It is a two-lane, two-way road in the vicinity of the Project. Canterbury Street runs primarily southwest-northeast and is approximately 1.4 miles in length. It intersects with Poplar Street and Grew Avenue at its southwest limit and Morton Street at its northeastern limit. There are no sidewalks provided on Canterbury Street in the vicinity of the Project site. Although there is a substandard pavement width on Canterbury Street near the Project site southwest of its intersection with Walk Hill Street, there are no signs prohibiting parking and on-street parking does occur. Land use along Canterbury Street is primarily used by cemeteries in the vicinity of the Project site. Figure 2-5 illustrates a typical street view of Canterbury Street.

**Figure 2-5: Street View of Canterbury Street**


American Legion Highway is classified as an urban minor arterial according to MassDOT and the BTD, and is under City jurisdiction. It carries two lanes in each direction. American Legion Highway is approximately 2.7 miles long, and runs from its southwestern limit with Hyde Park Avenue to its northeastern limit with Blue Hill Avenue. The posted speed limit on American Legion Highway is 30mph. There are sidewalks present on both sides in the vicinity of the site. Land use is primarily commercial. Figures 2-6 and 2-7 illustrate typical street views of American Legion Highway.

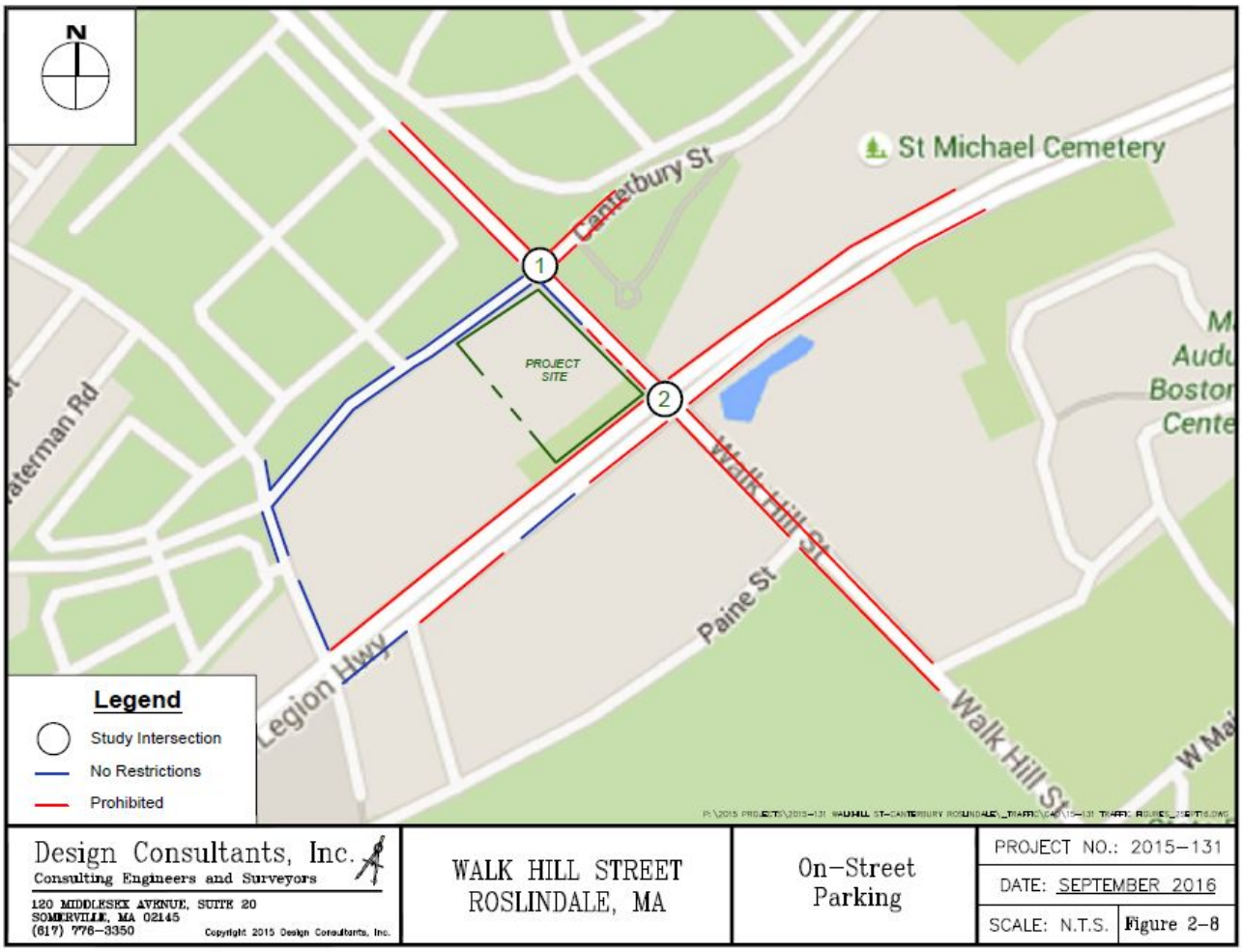
**Figure 2-6: Street View of American Legion Highway WB**


**Figure 2-7: Street View of American Legion Highway EB**

### 2.1.2.3 On-Street Parking

On-Street parking is limited near the Project site. Although there is a substandard pavement width on Canterbury Street near the Project site southwest of its intersection with Walk Hill Street, there are no signs prohibiting parking and on-street parking does occur. Parking is prohibited along both sides of Walk Hill Street north of its intersection with American Legion Highway, except for a stretch of approximately 150 feet on the west side between Canterbury Street and American Legion Highway. Parking is prohibited along American Legion Highway near the Project site, except for some parking on the south side of the Highway southwest of the project site. When parking is allowed, there are no restrictions for duration or who is allowed to park there. Figure 2-8 shows on-street parking near the Project site.

**Figure 2-8: Existing On-Street Parking**

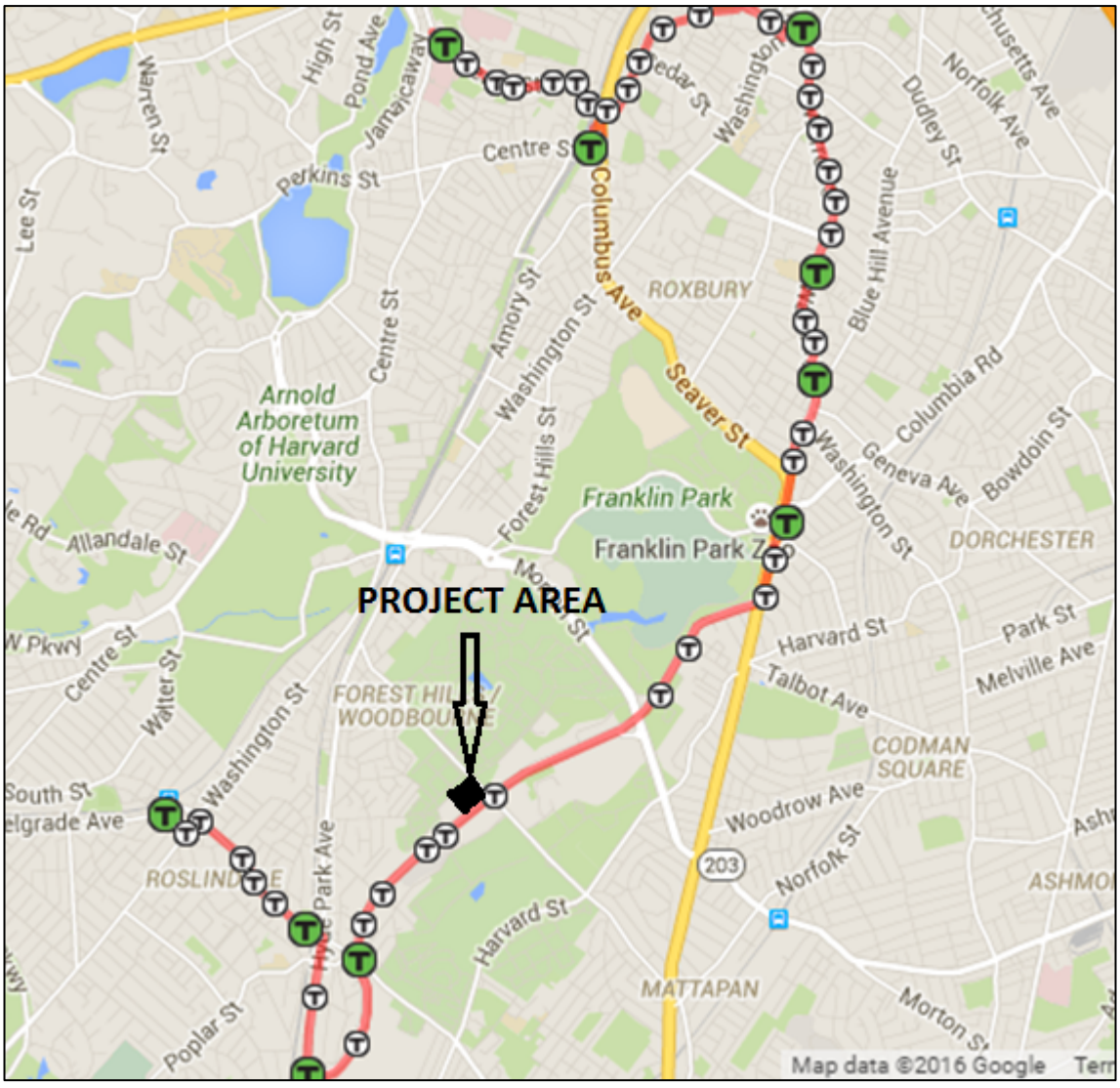


### 2.1.2.4 Transit

#### MBTA Bus Service

In the vicinity of the Project site, MBTA bus route 14 services the area. The route runs along American Legion Highway and has a stop at the corner of American Legion Highway and Walk Hill Street. Route 14 runs from Mission Hill in Boston to Belgrade Avenue & Robert Street in Roslindale. Bus route 14 stops at both Dudley Station and the Jackson Square Station on the Orange Line. Bus route 14 runs at approximately 35-40 minute intervals. Figure 2-9 shows a street map of Bus route 14.

**Figure 2-9: MBTA Bus Route**



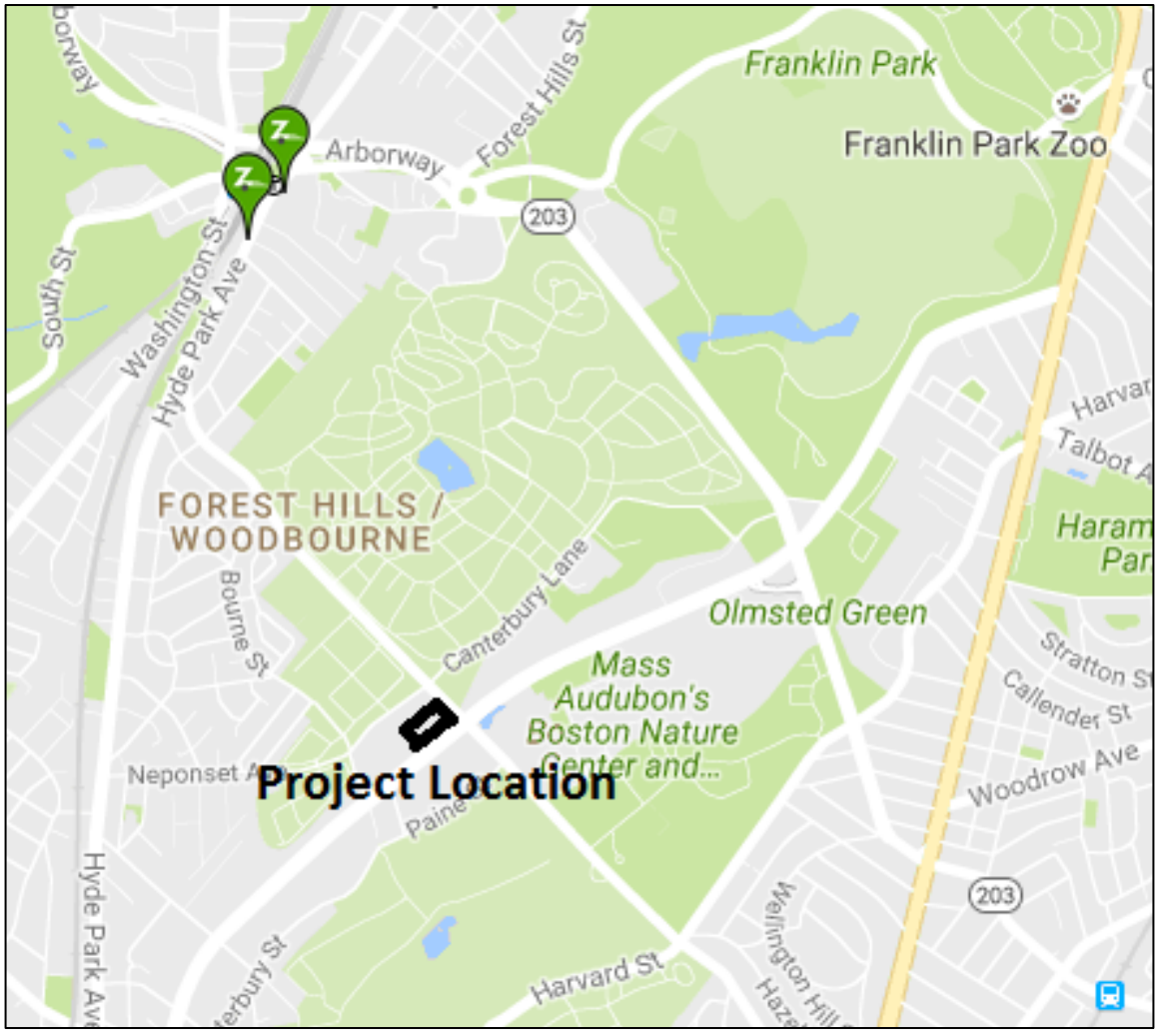
### 2.1.2.5 Bicycle Conditions and Facilities

There are no designated bicycle facilities along Canterbury Street. Along Walk Hill Street, there is a designated bike lane along the east side of the roadway and a 135-foot designated bike lane along the west side of the roadway north of its intersection with American Legion Highway. Along American Legion Highway, there are designated bicycle lanes east of its intersection with Walk Hill Street, and there are "sharrows" (shared lane marking) west of its intersection with Walk Hill Street.

### 2.1.2.6 Car Sharing

Car sharing refers to vehicles that are rented on an hourly or daily basis. The closest car sharing locations to the Project site are located near the Forest Hills stop on the Orange Line, approximately one mile from the intersection of Walk Hill Street and American Legion Highway. Figure 2-10 shows the location of the nearest car-sharing location relative to the Project location

**Figure 2-10: Car-Sharing Locations**



### 2.1.3 Traffic Analysis

#### 2.1.3.1 Study Methodology

This Access Plan follows a standard method to assess the transportation impacts of the proposed Project. Existing conditions are compared to four alternative future scenarios: a No-Build scenario, which takes into account traffic that will be generated by future development and overall growth; and a Build scenario, in which the proposed Project is also considered. The impacts of future developments are Project through a four-step process:

- Trip Generation
- Trip Distribution
- Mode Split
- Route Assignment

Trip Generation. The volume of vehicular trips that a land use will generate is projected on the basis of rates provided in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 9th Edition. The trip generation rates for the proposed Project were calculated using the ITE manual. As is standard for traffic studies, credit was taken for existing uses given that if current trips generated are close to projected trips, and the current buildings are demolished, then the net impact would be minimal. Consequently the existing trips were subtracted from the expected trips for the proposed Project and the net new number of trips was calculated. Tables 2-1 through 2-3 show the trip generation calculations for the existing land uses, Table 2-4 shows the trip generation calculations for the proposed land use, and Table 2-5 shows the net number of trips that will be used in further trip generation calculations. The square footages used for the calculations of both flower shops were gathered from the Boston Assessors website and can be found in the Appendix. Additionally, there was a sit-down restaurant on-site next to one of the flower shops. There was no credit taken for this restaurant as part of the trip generation calculations, thus providing a more conservative analysis.

***Table 2-1: ITE Trip Generation Rates for Existing Single-Family Houses***

| Land Use Code: 210 | Single-Family Housing | |
|---|---|---|
| | AM | PM |
| Dwelling Units (X) | 2 | 2 |
| Fitted Curve Equation | T = 0.70(X) + 9.74 | Ln(T) = 0.90 * Ln(X) + 0.51 |
| Total Trips (T) | **11** | **3** |
| Entering% | 25% | 63% |
| Exiting% | 75% | 37% |
| Entering Trips | 3 | 2 |
| Exiting Trips | 8 | 1 |

***Table 2-2: ITE Trip Generation Rates for Existing Flower Shop at 283 Walk Hill Street***

| Land Use Code: 817 | Nursery (Garden Center) |
|---|---|
| | AM | PM |
| Size (per 1000 square feet) | 3.6 | 3.6 |
| Average Rate | 2.43 | 6.94 |
| Total Trips | **9** | **25** |
| Entering% | 52% | 49% |
| Exiting% | 48% | 51% |
| Entering Trips | 5 | 12 |
| Exiting Trips | 4 | 13 |

***Table 2-3: ITE Trip Generation Rates for Existing Flower Shop at 289 Walk Hill Street***

| Land Use Code: 817 | Nursery (Garden Center) |
|---|---|
| | AM | PM |
| Size (per 1000 square feet) | 2.7 | 2.7 |
| Average Rate | 2.43 | 6.94 |
| Total Trips | **7** | **19** |
| Entering% | 52% | 49% |
| Exiting% | 48% | 51% |
| Entering Trips | 4 | 9 |
| Exiting Trips | 3 | 10 |

***Table 2-4: ITE Trip Generation Rates for Proposed 136-Unit Residential Building***

| Land Use Code: 223 | Mid-Rise Apartment |
|---|---|
| | AM | PM |
| Dwelling Units (X) | 136 | 136 |
| Fitted Curve Equation | T = 0.41(X) - 13.06 | T = 0.48(X) - 11.07 |
| Total Trips (T) | **43** | **54** |
| Entering% | 31% | 58% |
| Exiting% | 69% | 42% |
| Entering Trips | 13 | 31 |
| Exiting Trips | 30 | 23 |

***Table 2-5: Net Number of Trips***

| | AM | PM |
|---|---|---|
| Existing Trips | 27 | 47 |
| Proposed Trips | 43 | 54 |
| **Net Trips** | **16** | **7** |

These trip rates are unadjusted, as they only account for motorized traffic trips. Non-vehicle trips were deducted from the base trips in the Mode Split section below.

**Trip Distribution.** DCI estimated the trip distribution of Project-generated traffic from the site into the study area for the year 2023. The directional distribution of this Project-generated traffic is based on existing travel patterns, which were observed during the initial data collection in April 2016.

Moreover, DCI's experience shows that the standard practice is to employ the same trip distribution and assignment percentages for both inbound and outbound movements, acknowledging that the trip counts are estimates at this time. This technique accounts for nuances in estimating the future numbers. These nuances can include proximity to the transportation and roadway network intricacies. The trip distribution for this Project is shown graphically in Figure 2-11.

**Mode Split**. ITE's Trip Generation methods are typically based on data from suburban developments with no nearby transit service and no appreciable share of people walking or bicycling to or from the site. Commuting characteristics were analyzed from the 2010-2014 American Community Survey 5-Year Estimates. Census Data from the Census Tract for Roslindale was analyzed and used to estimate mode splits for journeys to work in the Project area. Table 2-6 displays estimated mode splits.

***Table 2-6: Mode Split Data for Residents of Roslindale***

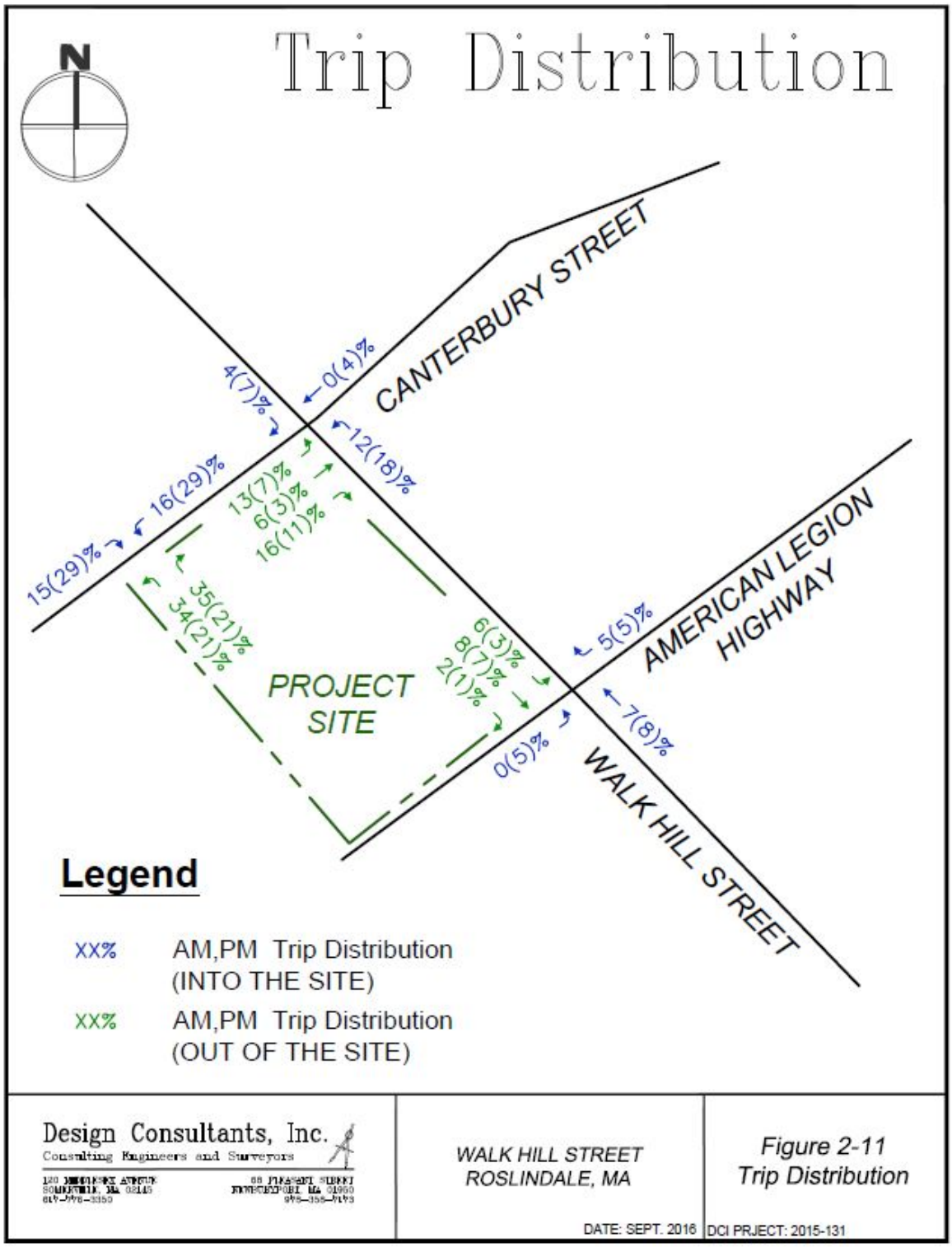
| MEANS OF TRANSPORTATION TO WORK | |
|---|---|
| Car, truck, or van | 67.6% |
| Drove alone | 54.6% |
| Carpooled: | 13.0% |
| In 2-person carpool | 10.4% |
| In 3-person carpool | 0.4% |
| In 4 person carpool | 2.2% |
| Public transportation (excluding taxicab) | 25.1% |
| Bicycle | 3.1% |
| Walked | 1.0% |
| Other means | 1.7% |
| Worked at home | 1.4% |

Based on the modal split data above an Average Vehicle Occupancy (AVO) rate of 1.3 persons per vehicle was calculated. The AVO of 1.3 persons per vehicle was applied to the preliminary trip generation calculations to determine the total number of Person-Trips that are expected to be generated by the Project. Then the number of non-vehicle trips was determined by multiplying the person-trips by the percentage expected to utilize transit, bicycling and walking to access the Project site. The US Census Journey to Work data for Roslindale is attached in the Appendix.

**Trip Generation Summary**

The public transit, walking, and biking mode share from the US Census Data for Roslindale was taken and applied to the total person trips. By applying this non-vehicular mode split to the Trip Generation calculations, the amount of expected vehicle traffic associated with the 283-289 Walk

**Figure 2-11: Trip Distribution**



Hill Street Project is reduced. The resulting adjusted vehicular traffic on the surrounding roadways was estimated and is summarized in Table 2-7.

***Table 2-7: Adjusted Trip Generation***

| | AM | PM |
|---|---|---|
| **Base Trips** | 16 | 7 |
| **Total Person-Trips** | 21 | 9 |
| **Total Vehicle Trips** | 11 | 5 |
| **Entering Vehicle-Trips** | 3 | 3 |
| **Exiting Vehicle-Trips** | 8 | 2 |
| | | |
| **Total Public Transportation Trips** | 5 | 2 |
| **Total Bicycle Trips** | 1 | 0 |
| **Total Walking Trips** | 0 | 0 |

As indicated in Table 2-7, the Project is expected to generate 11 net new vehicle-trips during weekday morning peak hour and five net new vehicle-trips during weekday evening peak hour. Generated new transit trips are expected to be five during the morning peak hour and two during the evening peak hour. New pedestrian trips are expected to be zero person-trips in both the morning and evening peak hours. It is estimated that there will be one new bicycle trip generated during the morning peak hour and zero new bicycle trips generated during the evening peak hour.

**Route Assignment**. Vehicles will primarily use the intersection of American Legion Highway and Walk Hill Street to access the Project site. However, there will be trips that will originate from Walk Hill Street from the north, and Canterbury Street from both the east and the west.

### 2.1.3.2 Existing Traffic

Turning movement counts were collected in April 2016. In order to provide accurate analysis for separate peak periods during the day, DCI collected two peak hours' data for both morning (7am to 9am) and evening (4pm to 6pm) peak hours on a typical Wednesday. The traffic counts collected turning movements at the intersections of Walk Hill Street and Canterbury Street, and Walk Hill Street and American Legion Highway.

In addition, to comply with MassDOT Transportation Impact Assessment (TIA) Guidelines, DCI also collected Automatic Traffic Recorder counts through two consecutive days during a Tuesday and Wednesday period in April 2016. The ATR collected traffic volume data, vehicular speed data, vehicle classification data, and the length of gaps in between vehicles. The counts are summarized in 15-minute, hourly, and daily intervals. ATR data was collected at the following location:

- Walk Hill Street between Canterbury Street and American Legion Highway

The ATR data collected on Walk Hill Street are summarized in Table 2-8.

**Table 2-8: ATR Data Summary**

| | | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| Location | ADT | Volume | K | Peak Direction | Volume | K | Peak Direction |
| Walk Hill Street between Canterbury Street and American Legion Highway | 9237 | 830 | 9% | 62% NB | 712 | 8% | 58% SB |

As indicated in Table 2-8, the average weekday daily traffic on Walk Hill Street is approximately 9,237 vehicles. The 85th percentile speed is defined as the speed at or below which 85% of the vehicles are travelling. Throughout an average weekday, the 85th percentile speed is 34 MPH and 32 MPH in the northbound and southbound directions, respectively.

Complete traffic count data are provided in the Appendix.

### Seasonal Adjustment

Roadway volumes vary throughout the year. According to *Traffic Impact Assessment (TIA) Guidelines and Traffic and Safety Engineering 25% Design Submission Guidelines*, both published by MassDOT, a seasonal factor may be applied to existing traffic volumes to compensate for this variation. Adjusting the collected data requires a comparison to annual trends. The factor should be based primarily upon a relevant MassDOT permanent count station.

Since there is no permanent count station in Roslindale, the counting station closest to the site was identified. Data from Count Station H8491 on Interstate 93 southbound just north of exit 12 to 3A South was utilized. Monthly data from years 2015 was used to calculate the seasonal factor. Based on this information, it is shown that volumes in April are higher than average conditions by 7.6%. Therefore, the unadjusted existing volumes were used for this report to provide a more conservative report. The MassDOT data examined for this seasonal adjustment is included in the Appendix.

The unadjusted existing traffic volumes for the morning and evening peak hours are shown in Figure 2-12.

**Existing Bicycle Traffic Volumes.** Bicycle traffic volumes in the study area are low. Table 2-9 shows the total numbers of bicycles passing through the American Legion Highway/Walk Hill Street intersection in each of the peak hours.

**Table 2-9: Bicycles at the Intersection of American Legion Highway and Walk Hill Street**

| | AM Peak Hour | PM Peak Hour |
|---|---|---|
| Number of Bicycles | 5 | 11 |

**Existing Pedestrian Traffic Volumes**. Pedestrian traffic is present in the study area at both of the study intersections. Figure 2-13 shows the total number of pedestrians that pass through the study intersections during each of the peak hours.

**Future Bicycle and Pedestrian Volumes**. With the construction of the Project, there will be an expected increase in the bicycle and pedestrian volumes in the area. The Project is set to add a secure bicycle parking area, which will promote bicycle usage by residents. The census data from the Census Tract for Roslindale shows that approximately 3.1% of residents bike to work and 1.0% walk to work. Given the number of expected trips generated by the Project, this would result in approximately 29 daily bicycle trips and nine daily walking trips for commuting. Given the proximity of Franklin Park and the cemetery, recreational biking and walking trips will likely be higher. Moreover, the Pew Research Center reports a 53% bicycle ownership in the United States.

The Proponent will abide by the Boston Complete Streets Guidelines for all modifications, such as potentially adding street trees, improving the streetscape, and incorporating curb and sidewalk improvements. These improvements will facilitate access to MBTA bus routes and shopping areas along American Legion Highway.

### 2.1.3.3 Capacity Analysis

According to the TIA guidelines, both signalized intersection capacity analyses and stop- and yield-controlled intersection capacity analyses should be used for traffic impact studies. The Highway Capacity Manual (HCM) published by Transportation Research Board provides methodologies on how to calculate motor vehicle Level of Service (LOS), average delay, and volume-to-capacity ratios. Those terms are commonly used to measure performance levels for freeway sections, ramp junctions, weave sections, and intersections, both signalized and unsignalized.

Level of Service (LOS) is a term used to denote different operating conditions that occur under various traffic volume loads. It is a qualitative measure of the effect of a number of factors including geometrics, speed, travel delay, freedom to maneuver, and safety. The LOS is divided into a range of six letter grades, ranging from A to F, with A being the best and F the worst. LOS E and F are generally considered inadequate traffic operations in suburban and urban areas. The delay ranges differ slightly between unsignalized and signalized intersections due to driver expectations and behavior for each LOS.

In this study, intersection performance measures were calculated in the form of volume to capacity (v/c) ratio, average intersection delay, 95th percentile queue lengths, level-of-service (LOS) of overall intersection LOS and the LOS of each approach. Synchro 8.0 was the software used to execute the intersection analysis. Synchro 8.0, a software program from Trafficware, uses the methodologies and thresholds outlined within the HCM. This is the preferred and recommended software of MassDOT. Traffic volume represents the travel demand observed and capacity represents the amount of traffic the intersection can accommodate under prevailing conditions. A volume to capacity ratio that approaches or exceeds 1.0 indicates traffic congestion or poor operating conditions.

Three types of Synchro reports were created to analyze and compare intersection performance in this study:

- Main report – "Int: Lanes, Volumes, Timings",
- Int: Queues

- HCM Signalized/Unsignalized Report

In Synchro's main report, LOS is estimated not by HCM formulas but by Synchro's own formulas. For signalized intersections, LOS is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. The LOS for each movement is calculated by determining the length of gaps that are available in the conflicting traffic stream.

In the HCM Unsignalized Report 95th percentile queue length is estimated.

In Synchro 8, HCM 2000 reports and HCM 2010 reports are both available. Both of them use HCM methodology to measure the performance of the intersection. See Table 2-10 below for intersection LOS thresholds.

**Table 2-10: Intersection LOS Thresholds**

| LOS | Signalized | Unsignalized |
|---|---|---|
| | Control Delay (sec/veh) | Control Delay (sec/veh) |
| A | 0-10 | 0-10 |
| B | >10-20 | > 10-15 |
| C | >20-35 | >15-25 |
| D | >35-55 | >25-35 |
| E | >55-80 | >35-50 |
| F | >80 | >50 |

Source: 2000 Highway Capacity Manual

**Existing Conditions**. The study intersections were analyzed for existing traffic conditions during the weekday morning and weekday evening peak hours. Existing intersection lane configurations and traffic control were modelled exactly the same as the current traffic operations which were field observed. The results of the existing conditions analysis are shown in Table 2-11 and volumes are shown in Figure 2-12. Detailed capacity analysis worksheets are included in the Appendix.

**Table 2-11: 2016 Existing Conditions LOS**

| ID | East-West Road | North-South Road | Lane | Existing | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) |
| 1 | Canterbury Street | Walk Hill Street | SEB LTR | 0.05 | 1.8 | A | 4 | 0.01 | 0.2 | A | 0 |
| | | | NWB LTR | 0.07 | 2.0 | A | 6 | 0.12 | 3.7 | A | 10 |
| | | | NEB LTR | 1.11 | >120 | F | 316 | 0.47 | 26.9 | D | 60 |
| | | | SWB LTR | 0.33 | 40.9 | E | 33 | 0.29 | 27.9 | D | 29 |
| | | | Overall | | -- | -- | | | -- | -- | |
| 2 | American Legion Highway | Walk Hill Street | SEB LTR | 1.94 | >120 | F | #737 | 1.38 | >120 | F | #807 |
| | | | NWB LTR | 1.54 | >120 | F | #1070 | 1.60 | >120 | F | #732 |
| | | | NEB L | 1.03 | >120 | F | #242 | 1.07 | >120 | F | #275 |
| | | | NEB TR | 1.01 | 74.0 | E | #845 | 0.98 | 65.3 | E | #682 |
| | | | SWB L | 1.02 | >120 | F | #249 | 2.33 | >120 | F | #564 |
| | | | SWB TR | 0.75 | 46.7 | D | 490 | 1.06 | 87.7 | F | #845 |
| | | | Overall | | >120 | F | | | >120 | F | |

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown in Table 2-11, the study intersections currently operate over capacity and were found to have inadequate levels of service. These conditions are existing and do not reflect any impact of the proposed Project. The operational issues that do exist were noted, and will be addressed as needed moving forward through the 2023 Build scenario.

**No-Build Scenario**. The study intersections were analyzed for estimated traffic conditions for year 2023 No-Build Conditions, during the weekday morning and weekday evening peak hours. Existing lane configurations and traffic control were assumed for this analysis.

**Regional Growth Rate**

Based on discussions with the Boston Transportation Department (BTD), and based on traffic volume data compiled by MassDOT from count stations, an annual traffic growth rate for Roslindale was chosen for analysis purposes. In order to provide an accurate and conservative analysis, a 1.0 percent compounded annual growth rate was used to account for general background traffic growth and development by others not yet identified.

These traffic conditions utilize the 2023 No-Build volumes shown in Figure 2-12. These volumes include a conservative regional growth rate of 1.0% per year combined with the existing traffic volumes. The results of the 2023 No-Build analysis are shown in Table 2-12. Detailed capacity analysis worksheets are included in the Appendix.

**Table 2-12: 2023 No-Build Conditions LOS**

| ID | East-West Road | North-South Road | Lane | No-Build | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) |
| 1 | Canterbury Street | Walk Hill Street | SEB LTR | 0.05 | 1.9 | A | 4 | 0.01 | 0.2 | A | 0 |
| | | | NWB LTR | 0.08 | 2.1 | A | 7 | 0.13 | 3.9 | A | 11 |
| | | | NEB LTR | 1.38 | >120 | F | 443 | 0.56 | 33.7 | D | 79 |
| | | | SWB LTR | 0.46 | 60.5 | F | 51 | 0.36 | 33.6 | D | 38 |
| | | | Overall | | -- | -- | | | -- | -- | |
| 2 | American Legion Highway | Walk Hill Street | SEB LTR | 2.15 | >120 | F | #806 | 1.49 | >120 | F | #885 |
| | | | NWB LTR | 1.67 | >120 | F | #1173 | 1.76 | >120 | F | #799 |
| | | | NEB L | 1.10 | >120 | F | #263 | 1.15 | >120 | F | #269 |
| | | | NEB TR | 1.08 | 95.1 | F | #950 | 1.05 | 83.0 | F | #770 |
| | | | SWB L | 1.10 | >120 | F | #269 | 2.50 | >120 | F | #603 |
| | | | SWB TR | 0.80 | 49.2 | D | 536 | 1.14 | 114.5 | F | #943 |
| | | | Overall | | >120 | F | | | >120 | F | |

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown above, there are movements that continue to operate at an LOS of F, and some movements that experience an increase in delay and a drop in level of service. The expected impact due specifically to the proposed development at 283-289 Walk Hill Street is reflected in any changes going from the 2023 No-Build to the 2023 Build scenarios.

**Build Scenario.** Figure 2-15 shows the projected trips generated by the residential Project in the morning and evening peak hours, based on the trip generation, mode split, trip distribution, and trip assignment analysis shown in the methodology section above. In order to analyze future traffic conditions following the completion of the 283-289 Walk Hill Street residential Project in the Roslindale neighborhood of Boston, year 2023 Build Scenario traffic volumes were calculated. To develop year 2023 Build traffic volumes, the 2023 No-Build traffic volumes (Figure 2-14) were summed with the calculated site-generated trips (Figure 2-15). The resulting volumes are shown in Figure 2-16. These volumes were used to carry out intersection capacity analysis for future Build conditions.

To summarize, the year 2023 Build Volumes encompass the following elements and adjustments to the measured 2016 traffic counts:

- Unadjusted existing 2016 traffic data
- Conservative background growth due to regional influences at 1.0% per year
- Trip Generation for the proposed Project site

The study intersections were analyzed for estimated traffic conditions for year 2023 Build Conditions, during the weekday morning and weekday evening peak hours. Existing lane configurations and traffic control were assumed for this analysis. The results of the 2023 Build analysis are shown in Table 2-13. Detailed capacity analysis worksheets are included in the Appendix.

**Table 2-13: 2023 Build Conditions LOS**

| ID | East-West Road | North-South Road | Lane | Build | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) |
| 1 | Canterbury Street | Walk Hill Street | SEB LTR | 0.05 | 1.9 | A | 4 | 0.01 | 0.2 | A | 0 |
| | | | NWB LTR | 0.08 | 2.2 | A | 7 | 0.13 | 4.0 | A | 12 |
| | | | NEB LTR | 1.42 | >120 | F | 462 | 0.57 | 34.2 | D | 81 |
| | | | SWB LTR | 0.48 | 63.6 | F | 53 | 0.36 | 34.1 | D | 39 |
| | | | Overall | | -- | -- | | | -- | -- | |
| 2 | American Legion Highway | Walk Hill Street | SEB LTR | 2.17 | >120 | F | #810 | 1.49 | >120 | F | #885 |
| | | | NWB LTR | 1.67 | >120 | F | #1176 | 1.76 | >120 | F | #801 |
| | | | NEB L | 1.10 | >120 | F | #263 | 1.15 | >120 | F | #296 |
| | | | NEB TR | 1.08 | 95.1 | F | #950 | 1.05 | 83.0 | F | #770 |
| | | | SWB L | 1.10 | >120 | F | #269 | 2.50 | >120 | F | #603 |
| | | | SWB TR | 0.80 | 49.3 | D | 536 | 1.14 | 114.7 | F | #944 |
| | | | Overall | | >120 | F | | | >120 | F | |

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown in Table 2-13, there are only minor increases in delay moving from the 2023 No-Build to 2023 Build conditions. During both the morning and evening peak hours, increases in delay are minimal. Although some movements experience an increase in delay, zero movements decrease in level of service going into the Build conditions.

**Figure 2-12: Year 2016 Existing Traffic Volumes**

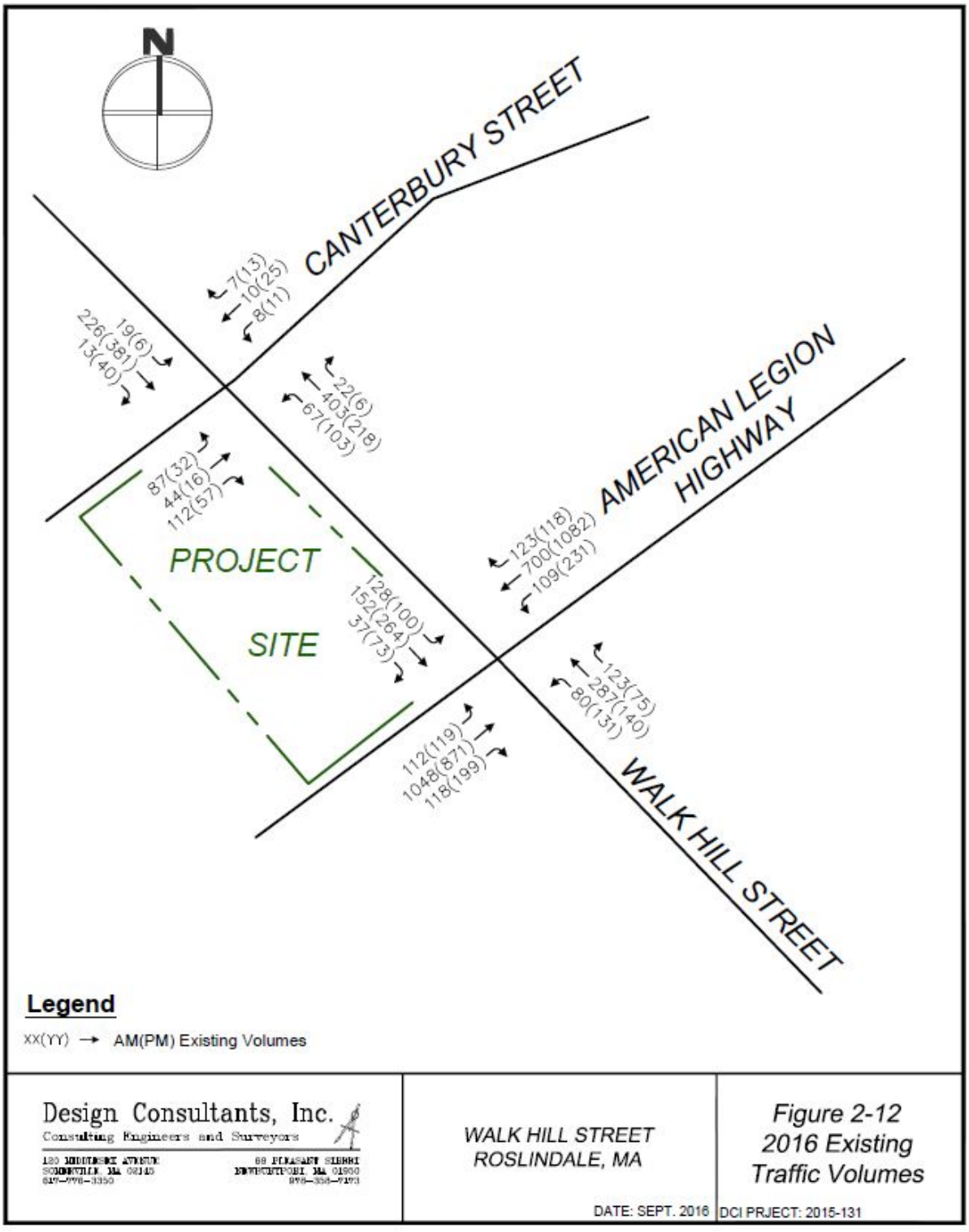


**Figure 2-13: Year 2016 Existing Pedestrian Volumes**

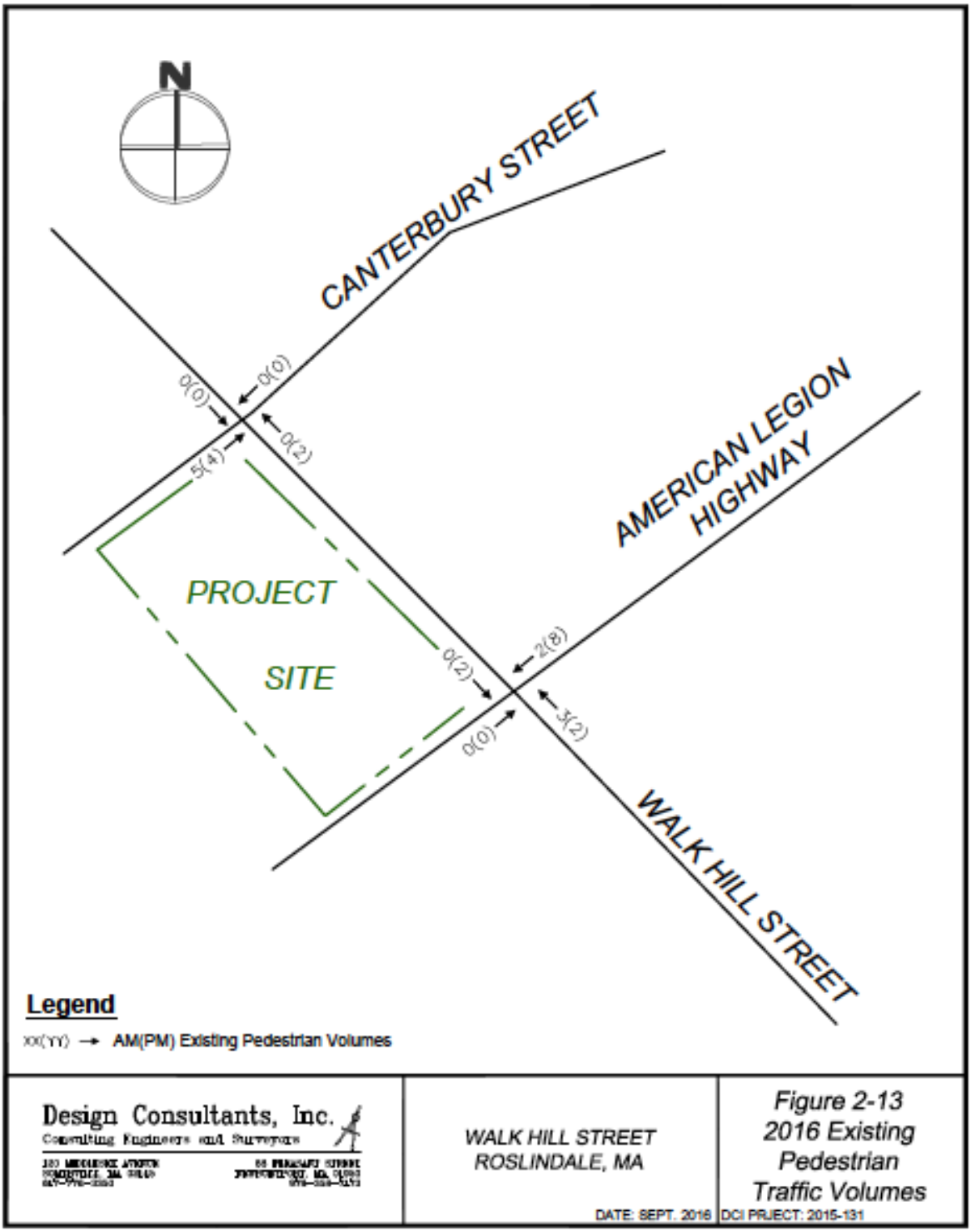


**Figure 2-14: Year 2023 No-Build Traffic Volumes**

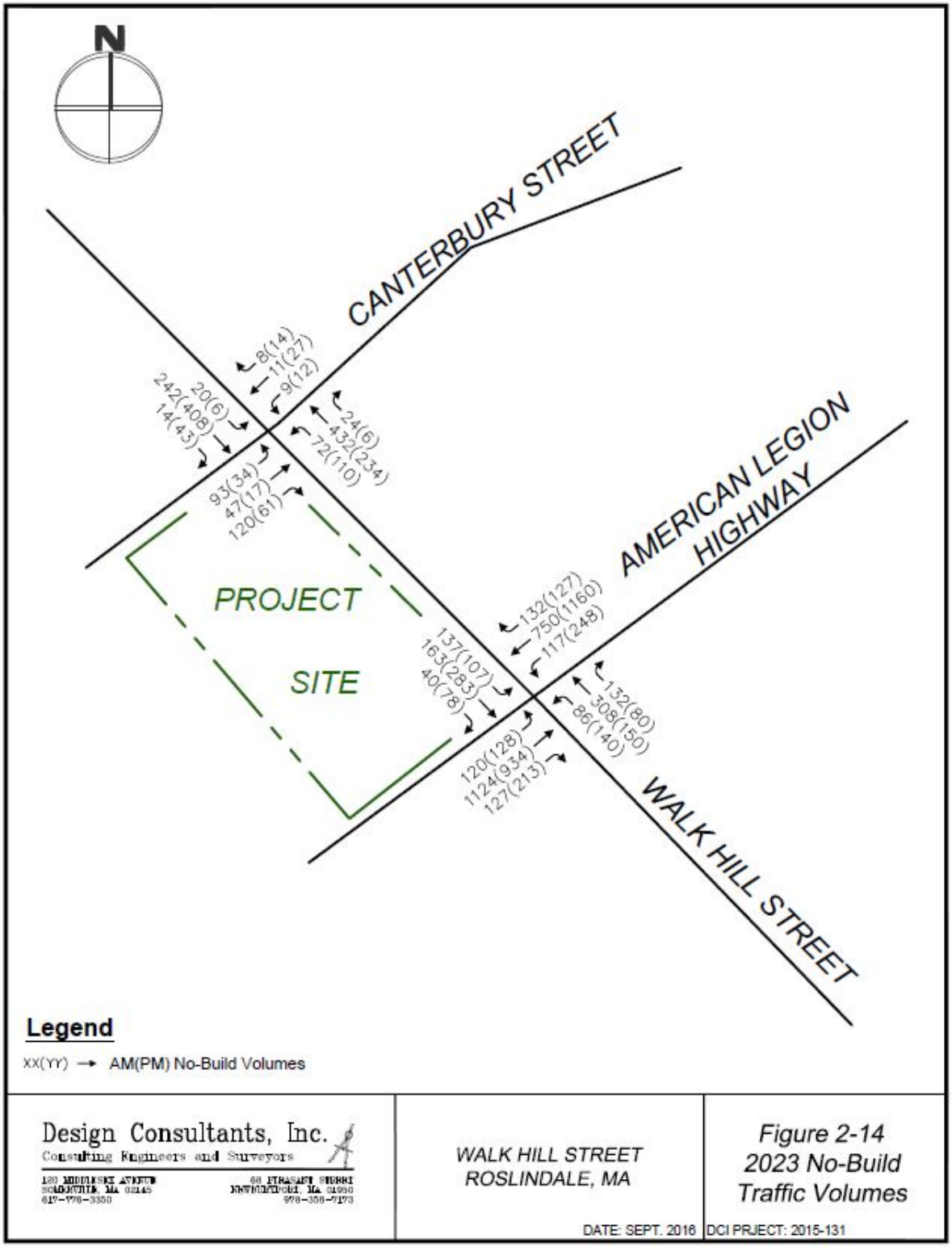


**Figure 2-15: Project Trips**

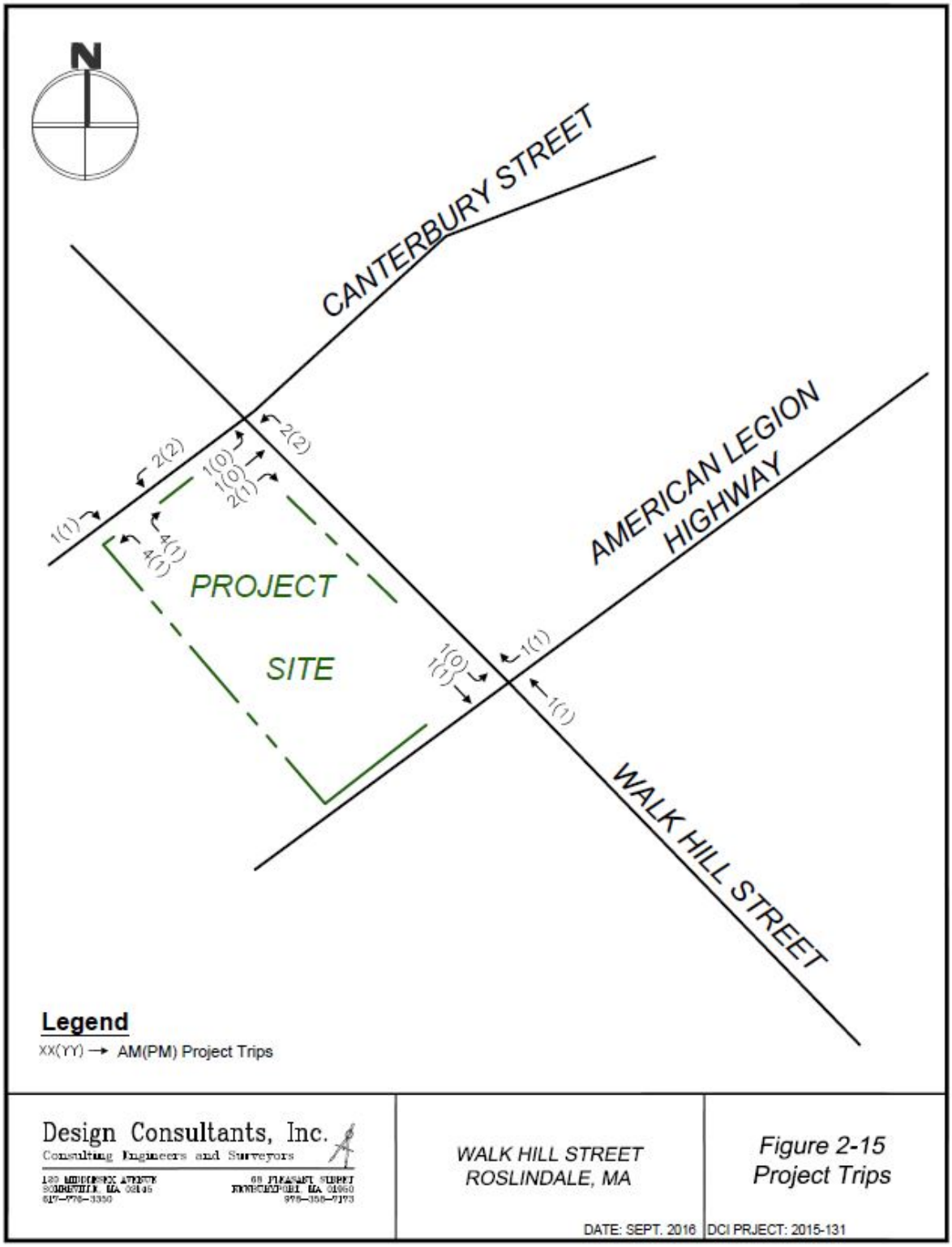
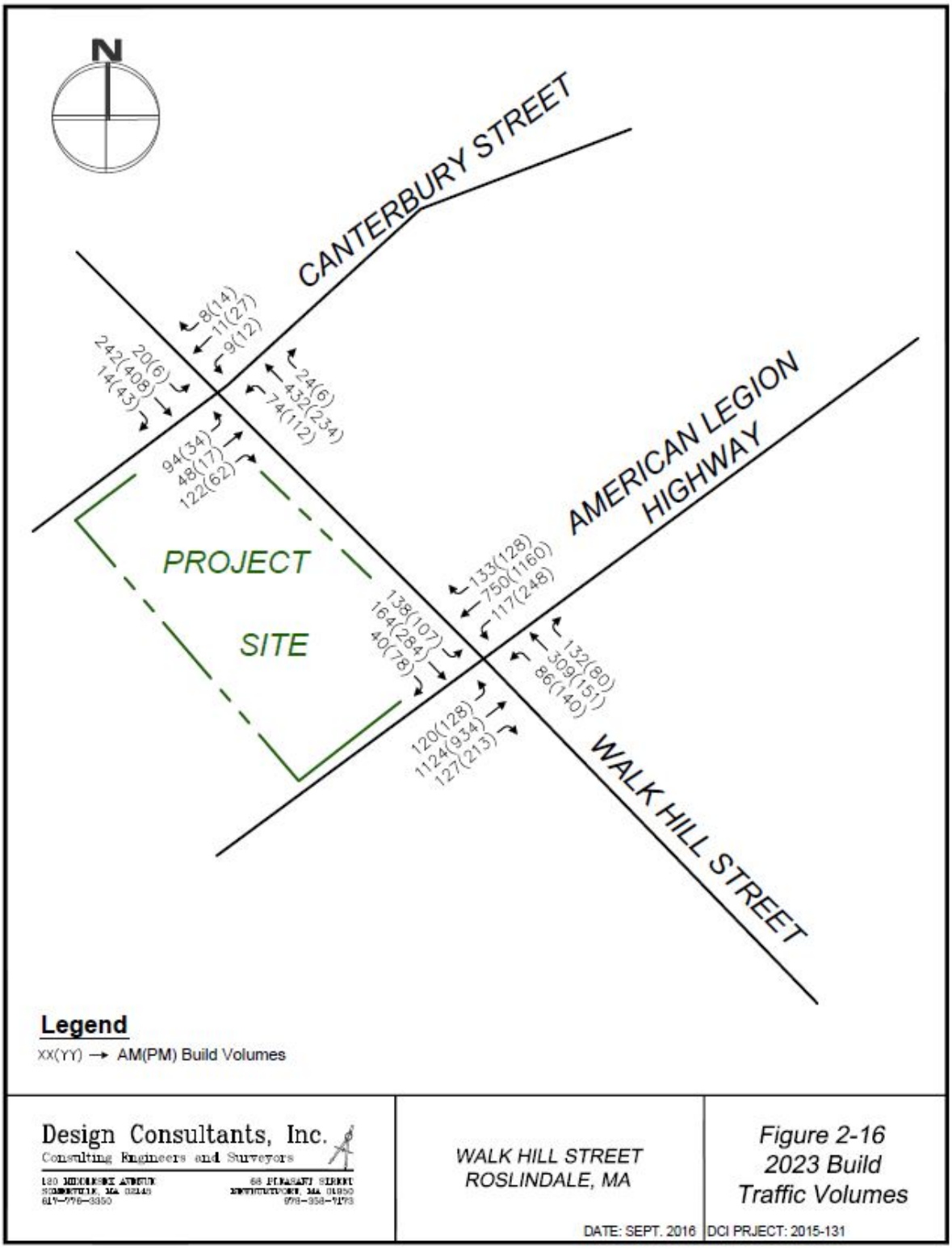


**Figure 2-16: Year 2023 Build Traffic Volumes**



### 2.1.4 Evaluation of Traffic Impacts

Table 2-14 shows level of service at each study intersection, in each peak hour and each scenario. The comparison shows that the residential Project will have minimal effect on traffic operations at both of the study intersections.

**Table 2-14: Level-of-Service Comparison: Existing, No-Build, Build Scenarios**

| *ID* | *East-West Road* | *North-South Road* | *Lane* | Existing | | No-Build | | Build | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | AM | PM | AM | PM | AM | PM |
| *1* | Canterbury Street | Walk Hill Street | *SEB LTR* | A | A | A | A | A | A |
| | | | *NWB LTR* | A | A | A | A | A | A |
| | | | *NEB LTR* | F | D | F | D | F | D |
| | | | *SWB LTR* | E | D | F | D | F | D |
| | | | *Overall* | -- | -- | -- | -- | -- | -- |
| *2* | American Legion Highway | Walk Hill Street | *SEB TR* | F | F | F | F | F | F |
| | | | *NWB TR* | F | F | F | F | F | F |
| | | | *NEB L* | F | F | F | F | F | F |
| | | | *NEB TR* | E | E | F | F | F | F |
| | | | *SWB L* | F | F | F | F | F | F |
| | | | *SWB TR* | D | F | D | F | D | F |
| | | | *Overall* | *F* | *F* | *F* | *F* | *F* | *F* |

LEGEND

| | |
|---|---|
| | LOS F in Existing Conditions |
| | LOS Declined from Previous Condition |
| | LOS Improved from Previous Condition |

As can be seen from Table 2-14 above, the development at 283-289 Walk Hill Street will have no significant impact on surrounding traffic networks. The direct impact of the Project on traffic conditions is reflected in the lack of change in Level of Service (LOS) between the No-Build and Build scenarios.

**Mitigation Scenarios.** Although the net new trips from the proposed Project do not warrant mitigation for the Build condition, the Proponent will work in conjunction with the BTD to evaluate mitigation strategies. Mitigation measures are explored in the Appendix for the No-Build condition.

### 2.1.5 Parking

The Project at 283-289 Walk Hill Street will consist of 136 dwelling units and 165 parking spaces. This results in a parking ratio of 1.2 parking spaces per dwelling unit. The resulting parking needs will be as follows.

**Table 2-15: Parking Need Calculation**

| Type | # of Units | Parking Spaces / Unit | Parking Spaces |
|---|---|---|---|
| **Affordable** | 18 | 1.0 | 18 |
| **Market** | 118 | 1.0 | 118 |
| **Total** | 136 | | **136** |

Based on the requirements set forth by the BTD, the Project at 283-289 Walk Hill Street will require 136 parking spaces, or a ratio of 1.0 parking spaces per unit, as agreed upon by the BTD. The proposed Project is set to provide 165 parking spaces, 29 more than required. Additionally, of those 165 parking spaces, 77 (47%) of them will be compact parking spaces.

### 2.1.6 Safety

#### 2.1.6.1 Crash Data and Analysis

Crash data from MassDOT for years 2012 through 2014 was reviewed within the jurisdiction of the Roslindale neighborhood of Boston. These are the most recent years of data available through the MassDOT crash database. The MassDOT crash records offered the following information:

- Crash Location (General or Specific) / Direction of vehicle(s)
- Date / Time
- Roadway surface conditions / Light conditions / Weather conditions
- Crash Severity / Manner of Collision

The summary of the state crash analysis are shown in Table 2-16. Detailed crash analysis worksheets for each intersection for years 2012 through 2014 are contained in the Appendix.

Table 2-16 is summarized below, and any notable trends or statistics from each intersection are pointed out.
The intersection of **Walk Hill Street and American Legion** Highway had six reported crashes over the three year study period. Two of the crashes resulted in property damage only, one resulted in non-fatal injuries, and two crashes resulted in fatal injuries. The six crashes at this intersection resulted in an average of 2.00 crashes per year, and a crash rate of 0.14 crashes per million entering vehicles (MEV). This crash rate is below the District 6 (0.70) and statewide (0.77) averages for signalized intersections.

The intersection of **Walk Hill Street and Canterbury Street** had one reported crash over the three year study period according to MassDOT crash records. The one crash was an angled collision. The one collision at this intersection resulted in non-fatal injury, and there were no fatal collisions. The intersection of Walk Hill Street and Canterbury Street had an average of 0.33 crashes per year, and a crash rate of 0.08 crashes per MEV. This rate is below the District 6 (0.53) and statewide (0.58) average for unsignalized intersections.

**Table 2-16: MassDOT Intersection Crash Summary**

| | ***Walk Hill St & American Legion Highway*** | ***Walk Hill St & Canterbury St*** |
|---|---|---|
| ***Crash Severity*** | | |
| Property Damage Only | 2 | 0 |
| Non-fatal Injury | 1 | 1 |
| Fatal Injury | 2 | 0 |
| Not Reported, Unknown | 1 | 0 |
| *Total* | *6* | *1* |
| ***Manner of Collision*** | | |
| Sideswipe, Same Direction | 0 | 0 |
| Sideswipe, Opposite Direction | 0 | 0 |
| Angle | 0 | 1 |
| Rear-end | 1 | 0 |
| Head-on | 0 | 0 |
| Single Vehicle | 2 | 0 |
| Other, not reported | 3 | 0 |
| *Total* | *6* | *1* |
| ***Crash Averages*** | | |
| Avg. Crashes per Year | 2.00 | 0.33 |
| Avg. Crash Rate (per MEV) | 0.14 | 0.08 |

Based on a review of the most recent available three years of data from MassDOT, it was determined that neither of the two study intersections have crash rates above the District 6 or statewide averages. Given this fact, it can be stated that there are not any salient existing safety deficiencies at the study intersections that need to be addressed as part of this study.

### 2.1.6.2 Sight Distance Analysis

#### Intersection Sight Distance

The location of the proposed site driveway on Canterbury Street was evaluated for available intersection sight distance (ISD). The sight distance analysis was carried out to ensure sufficient sight distance for turning maneuvers out of the site. The American Association of State Highway and Transportation Officials (AASHTO) required intersection sight distance requirements for various vehicle speeds are shown below in Table 2-17.

There is no posted speed limit on Canterbury Street. As Canterbury Street is a local road, the vehicle speed used for sight distance analysis was assumed to be 30 miles per hour. For a turning maneuver out of the site driveway, the required sight distance is 140 feet. Based on on-site measurements, the available sight distance for the proposed driveway is shown below in Table 2-20.

**Table 2-17: AASHTO Minimum Recommended ISD**

| Design Speed (mph) | Intersection Sight Distance for Crossover, Right-Turn & Left-Turn Manuevers (ft) |
|---|---|
| 15 | 70 |
| 20 | 90 |
| 25 | 115 |
| 30 | 140 |
| 35 | 165 |
| 40 | 195 |
| 45 | 220 |
| 50 | 245 |

**Table 2-18: Measured ISD at Canterbury Street Driveway**

| | Intersection Sight Distance for Crossover, Right-Turn & Left-Turn Manuevers (ft) | |
|---|---|---|
| | Looking East (For Left-Turn) | Looking West (For Right-Turn) |
| **Required at 30mph** | 140 | 140 |
| **Measured** | 140 | 380 |

As shown in Table 2-18, the proposed site driveway at 283-289 Walk Hill Street meets the AASHTO recommended sight distances for all turning maneuvers. The proposed driveway will be located approximately 140 feet west of the intersection of Canterbury Street and Walk Hill Street. Due to the fact that Canterbury Street is a local road with lower speeds, the sight distance for vehicles turning left out of the site driveway, although just meeting the minimum requirement, will be sufficient for this Project. These measurements were taken 15 feet back from the edge of traveled way, which is the standard and conservative location for intersection sight distance measurements. As proposed, the current plan does not require mitigation to improve intersection sight distance at the driveway for 283-289 Walk Hill Street.

### 2.1.7 Transportation & Parking Demand Management

In keeping with the City's efforts to reduce the dependency on automobile usage by encouraging travelers to use other alternatives to driving alone, the Proponent is committed to implementing Transportation Demand Management (TDM) measures to reduce dependency on autos and reduce parking demand. The nature and location of the proposed Project will facilitate TDM implementation. The site's proximity to an MBTA bus route and the MBTA Orange Line will contribute to reduced auto use by both residents and visitors. Since the Project is solely residential, its trip generation is already lower than that of a large retail or office-use project.

### 2.1.7.1 Access Plan Agreement

The Proponent is prepared to take advantage of the site's pedestrian and transit access in marketing to future residents. TDM measures may include, but will not be limited to, the following:

- Post MBTA bus and commuter rail schedules and maps in common areas of the proposed building to inform tenants about nearby public transit
- Cooperate with the MBTA to provide more frequent bus service near the Project site
- Potentially provide shuttle service to the MBTA Orange Line stop at Forest Hills
- Provide tenants with information and maps for nearby bicycle and pedestrian facilities in the area to promote pedestrian and bicycle travel
- Provide pedestrian facility improvements on Walk Hill Street and Canterbury Street to encourage pedestrian activity
- Provide priority parking spaces for carpools / ride-sharing vehicles
- Providing Zip cars to reduce trips, demand for parking, and automobile dependence
- Provide safe, secure bicycle storage conveniently located to encourage bicycle usage

### 2.1.7.2 Bicycle Accommodation

BTD has established guidelines requiring all projects that are subject to Transportation Access Plan Agreements (TAPA) to provide secure, covered bicycle parking for residents and employees, and short-term bicycle racks for visitors. Sufficient on-site, secure storage will be provided to meet those guidelines.

## 2.1.8 Evaluation of Short-term/Construction Impacts

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

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

- Limited construction worker parking will be permitted on-site; carpooling will be encouraged;
- A subsidy for MBTA passes will be considered for full-time employees; and
- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the Project site each day.

## 2.1.9 Conclusions

This Traffic Impact Study was created to analyze the expected impact on surrounding traffic networks of the proposed redevelopment of the site at 283-289 Walk Hill Street in the Roslindale neighborhood of Boston, Massachusetts. There are existing buildings on site, which will be

demolished to construct a 136 unit residential building. The site will be accessed via a curb cut on Canterbury Street, which will provide access to both an at-grade parking area and a below-grade parking area. There will be 165 parking spaces underneath the building and in a shared courtyard. This results in a parking ratio of 1.2 parking spaces per dwelling unit.

In terms of safety, it was determined that there are no existing issues that need to be addressed as part of this study. The most recently available three years of crash data from MassDOT, 2012 through 2014, were reviewed for both study intersections. Neither intersection was found to have a crash rate above the District 6 or statewide average. Additionally, the location of the proposed site driveway was analyzed for safe intersection sight distance. It was determined that the location provides sufficient sight distance based on AASHTO standards.

Capacity analyses were carried out for the two study intersections, Walk Hill Street and Canterbury Street, and Walk Hill Street and American Legion Highway, for 2016 Existing, 2023 No-Build, and 2023 Build conditions. The Project is expected to generate 11 net new vehicle-trips during the morning peak hour and five net new vehicle-trips during the evening peak hour. Based on the trip generation and capacity analyses carried out, it can be stated that the proposed redevelopment of the site at 283-289 Walk Hill Street will have minimal impact on surrounding traffic networks.

Given the lack of existing safety issues, acceptable location of the proposed site driveway, there are no safety mitigation measures proposed for this Project. Recognizing that the base condition level of service is and would continue to be failing, the Proponent will work in conjunction with the BTD to evaluate mitigation strategies. The most promising of the strategies being dedicated left-turn lanes at the Walk Hill Street approaches at its intersection with American Legion Highway. Based on the safety analyses and capacity analyses carried out for this study, the proposed redevelopment of 283-289 Walk Hill Street is not expected to have significant adverse impact on the surrounding traffic networks in the Roslindale neighborhood of Boston, Massachusetts.

### 2.1.10 Mitigation Options

**Mitigation Scenarios**. The proposed Project at 283-289 Walk Hill Street in the Roslindale neighborhood of Boston is expected to generate only 11 net new vehicle-trips during the morning peak hour and five net new vehicle-trips during the evening peak hour, which is not a significant amount. Therefore, no mitigation due to Project-generated trips is required. However, even without the proposed Project, traffic operations at the intersection of American Legion Highway and Walk Hill Street are substandard. Mitigation in the form of left-turn only lanes for the Walk Hill Street approaches could be considered if left-turn lanes can be installed in the existing 30-foot curb-to-cub section. If approved, a ten-foot turn lane would be installed next to ten-foot through lanes.

**Existing Conditions.** The study intersections were analyzed for existing traffic conditions during the weekday morning and weekday evening peak hours. Existing intersection lane configurations and traffic control were modeled exactly the same as the current traffic operations which were field observed. The results of the existing conditions analysis are shown in Table 2.19 and volumes are shown in Figure 2-12 in the main report. Detailed capacity analysis worksheets are included in the final section of the Appendix.

**Table 2.19: 2016 Existing Conditions LOS**

| ID | East-West Road | North-South Road | Lane | Existing | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) |
| 1 | Canterbury Street | Walk Hill Street | SEB LTR | 0.05 | 1.8 | A | 4 | 0.01 | 0.2 | A | 0 |
| | | | NWB LTR | 0.07 | 2.0 | A | 6 | 0.12 | 3.7 | A | 10 |
| | | | NEB LTR | 1.11 | >120 | F | 316 | 0.47 | 26.9 | D | 60 |
| | | | SWB LTR | 0.33 | 40.9 | E | 33 | 0.29 | 27.9 | D | 29 |
| | | | Overall | | -- | -- | | | -- | -- | |
| 2 | American Legion Highway | Walk Hill Street | SEB LTR | 1.94 | >120 | F | #737 | 1.38 | >120 | F | #807 |
| | | | NWB LTR | 1.54 | >120 | F | #1070 | 1.60 | >120 | F | #732 |
| | | | NEB L | 1.03 | >120 | F | #242 | 1.07 | >120 | F | #275 |
| | | | NEB TR | 1.01 | 74.0 | E | #845 | 0.98 | 65.3 | E | #682 |
| | | | SWB L | 1.02 | >120 | F | #249 | 2.33 | >120 | F | #564 |
| | | | SWB TR | 0.75 | 46.7 | D | 490 | 1.06 | 87.7 | F | #845 |
| | | | Overall | | >120 | F | | | >120 | F | |

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown in Table 2.19, the study intersections currently operate over capacity and were found to have inadequate levels of service. These conditions are existing and do not reflect any impact of the proposed Project. The operational issues that do exist were noted, and will be addressed as needed moving forward through the 2023 No-Build with Mitigation and 2023 Build with Mitigation scenarios.

**No-Build with Mitigation Scenario**. The study intersections were analyzed for estimated traffic conditions for year 2023 No-Build with Mitigation Conditions, during the weekday morning and weekday evening peak hours. For this scenario, left-turn only lanes were added to the Walk Hill Street approaches at its intersection with American Legion Highway, and signal timing adjustments were made. These traffic conditions utilize the same traffic volumes as the 2023 No-Build scenario. The results of the 2023 No-Build with Mitigation analysis are shown in Table 2.20. Detailed capacity analysis worksheets are included in the final section of the Appendix.

**Table 2.20: 2023 No-Build with Mitigation Conditions LOS**

| ID | East-West Road | North-South Road | Lane | No-Build with Mitigation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) |
| 1 | Canterbury Street | Walk Hill Street | SEB LTR | 0.05 | 1.9 | A | 4 | 0.01 | 0.2 | A | 0 |
| | | | NWB LTR | 0.08 | 2.1 | A | 7 | 0.13 | 3.9 | A | 11 |
| | | | NEB LTR | 1.38 | >120 | F | 442 | 0.56 | 33.7 | D | 79 |
| | | | SWB LTR | 0.46 | 60.1 | F | 51 | 0.36 | 33.6 | D | 38 |
| | | | Overall | | -- | -- | | | -- | -- | |
| 2 | American Legion Highway | Walk Hill Street | SEB L | 0.89 | 65.9 | E | #136 | 0.45 | 29.6 | C | 100 |
| | | | SEB TR | 0.33 | 17.7 | B | 133 | 0.70 | 32.1 | C | 283 |
| | | | NWB L | 0.33 | 26.7 | C | 76 | 1.00 | 105.3 | F | #209 |
| | | | NWB TR | 0.86 | 43.4 | D | #450 | 0.44 | 22.9 | C | 169 |
| | | | NEB L | 0.66 | 30.1 | C | 79 | 0.89 | 91.4 | F | #195 |
| | | | NEB TR | 1.03 | 60.7 | E | #597 | 1.00 | 55.0 | D | #515 |
| | | | SWB L | 0.76 | 41.7 | D | #99 | 0.93 | 74.3 | E | #301 |
| | | | SWB TR | 0.80 | 32.0 | C | 338 | 0.88 | 30.6 | C | #531 |
| | | | Overall | | 44.8 | D | | | 46.0 | D | |

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown above, many of the movements experience a decrease in delay, level of service, and 95th percentile queue length. This is due to the addition of the left-turn only lanes for the Walk Hill Street approach at its intersection with American Legion Highway and the optimized signal timings. The addition of the left-turn only lanes on the Walk Hill Street approaches and signal timing adjustments is recommended at the intersection of American Legion Highway and Walk Hill Street if the curb-to-curb width are considered sufficient. This is to mitigate the No-Build condition, as the Project is expected to generate a net of 11 morning and five evening peak trips, which are not a significant amount of trips to be put on the network. Mitigation is only for striping and signal timing.

**Build with Mitigation**. At the intersection of American Legion Highway and Walk Hill Street, there are movements in both the morning and evening peak hour that operate at sub-standard levels of service. The addition of the left-turn only lanes on the Walk Hill Street approaches and signal timing adjustments is recommended at the intersection of American Legion Highway and Walk Hill Street if the curb-to-curb width is considered sufficient. This is to mitigate the No-Build condition, as the Project is expected to generate a net of 11 morning and five evening peak trips, which is not a significant amount of trips to be put on the network. Mitigation is only for striping and signal timing. The results of the Build with Mitigation analysis is shown in Table 2.21. Detailed capacity analysis worksheets are included in the final section of the Appendix.

**Table 2.21: 2023 Build with Mitigation Conditions LOS**

| ID | East-West Road | North-South Road | Lane | Build with Mitigation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) | v/c | Avg. delay / veh (s) | LOS | 95th % Q (ft) |
| 1 | Canterbury Street | Walk Hill Street | SEB LTR | 0.05 | 1.9 | A | 4 | 0.01 | 0.2 | A | 0 |
| | | | NWB LTR | 0.08 | 2.2 | A | 7 | 0.13 | 4.0 | A | 12 |
| | | | NEB LTR | 1.39 | >120 | F | 453 | 0.57 | 34.2 | D | 81 |
| | | | SWB LTR | 0.46 | 59.7 | F | 51 | 0.36 | 34.1 | D | 39 |
| | | | Overall | | -- | -- | | | -- | -- | |
| 2 | American Legion Highway | Walk Hill Street | SEB L | 0.98 | 98.6 | F | #214 | 0.42 | 28.5 | C | 100 |
| | | | SEB TR | 0.35 | 21.2 | C | 152 | 0.67 | 30.7 | C | 284 |
| | | | NWB L | 0.33 | 23.9 | C | 74 | 0.89 | 76.7 | E | #202 |
| | | | NWB TR | 0.72 | 30.6 | C | 384 | 0.42 | 22.5 | C | 171 |
| | | | NEB L | 0.72 | 62.3 | E | #140 | 0.92 | 96.6 | F | #195 |
| | | | NEB TR | 1.01 | 58.4 | E | #626 | 1.03 | 62.0 | E | #515 |
| | | | SWB L | 0.86 | 87.3 | F | #175 | 0.95 | 79.7 | E | #301 |
| | | | SWB TR | 0.79 | 33.4 | C | 358 | 0.90 | 33.1 | C | #531 |
| | | | Overall | | 47.2 | D | | | 48.3 | D | |

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown in Table 2.21, many of the movements at the intersection of American Legion Highway and Walk Hill Street experience a reduction in delay and an improvement in level of service. The intersection in the morning peak hour experiences an overall reduction in delay of more than 70 seconds and goes from an LOS of F to an LOS of D. In the evening peak hour, there is an overall reduction in delay of more than 70 seconds.

## 2.1.Evaluation of Traffic Impacts

Table 2.22 shows level of service at each study intersection, in each peak hour and each scenario. The comparison shows that the residential Project will have minimal effect on traffic operations at both of the study intersections.

**Table 2.22: Level-of-Service Comparison: Existing, No-Build with Mitigation, and Build with Mitigation Scenarios**

| *East-West Road* | *North-South Road* | *Lane* | Existing | | No-Build w/ Mitigation | | Build w/ Mitigation | |
|---|---|---|---|---|---|---|---|---|
| | | | AM | PM | AM | PM | AM | PM |
| Canterbury Street | Walk Hill Street | *SEB LTR* | A | A | A | A | A | A |
| | | *NWB LTR* | A | A | A | A | A | A |
| | | *NEB LTR* | F | D | F | D | F | D |
| | | *SWB LTR* | E | D | F | D | F | D |
| | | *Overall* | -- | -- | -- | -- | -- | -- |
| American Legion Highway | Walk Hill Street | *SEB L* | *N/A* | *N/A* | E | C | F | C |
| | | *SEB TR* | F | F | B | C | C | C |
| | | *NWB L* | *N/A* | *N/A* | C | F | C | E |
| | | *NWB TR* | F | F | D | C | C | C |
| | | *NEB L* | F | F | C | F | E | F |
| | | *NEB TR* | E | E | E | D | E | E |
| | | *SWB L* | F | F | D | E | F | E |
| | | *SWB TR* | D | F | C | C | C | C |
| | | *Overall* | *F* | *F* | *D* | *D* | *D* | *D* |

LEGEND

| | |
|---|---|
| | LOS F in Existing Conditions |
| | LOS Declined from Previous Condition |
| | LOS Improved from Previous Condition |

As can be seen from Table 2.22 above, the mitigation at the intersection of American Legion Highway and Walk Hill Street would significantly improve traffic operations. The addition of the left-turn only lanes on the Walk Hill Street approaches and signal timing adjustments is recommended at the intersection of American Legion Highway and Walk Hill Street if the curb-to-curb width is considered sufficient. This is to mitigate the No-Build condition, as the Project is expected to generate a net of 11 morning and five evening peak trips, which is not a significant amount of trips to be put on the network. Mitigation is only for striping and signal timing.

## 2.2 Environmental Protection

### 2.2.1 Wind

The objective of a Wind Assessment is to determine the effect a proposed development would have on the pedestrian level winds in the vicinity of the Project. The primary criteria used to determine impacts are the surrounding terrain and the height and façade treatment of a proposed building. This analysis is required for new developments of 150 feet and taller.

The Project will be a four/five story building reaching a maximum height of approximately 65 feet on the Walk Hill Street frontage. At a maximum of 65 feet, the height of the proposed project is well below the 150 foot threshold that triggers a qualitative wind analysis. As a result, quantitative and qualitative wind studies are not required

### 2.2.2 Shadow

A shadow study indicates the potential impact of the Project on adjacent public spaces and properties. The Project is in a moderately developed sub-urban area consisting of one, two and three story residential, commercial and institutional buildings. The site is currently developed by a series of commercial buildings that are of similar scale to the proposed Project.

**Figure 2-17 September 22 – 9:00 AM**

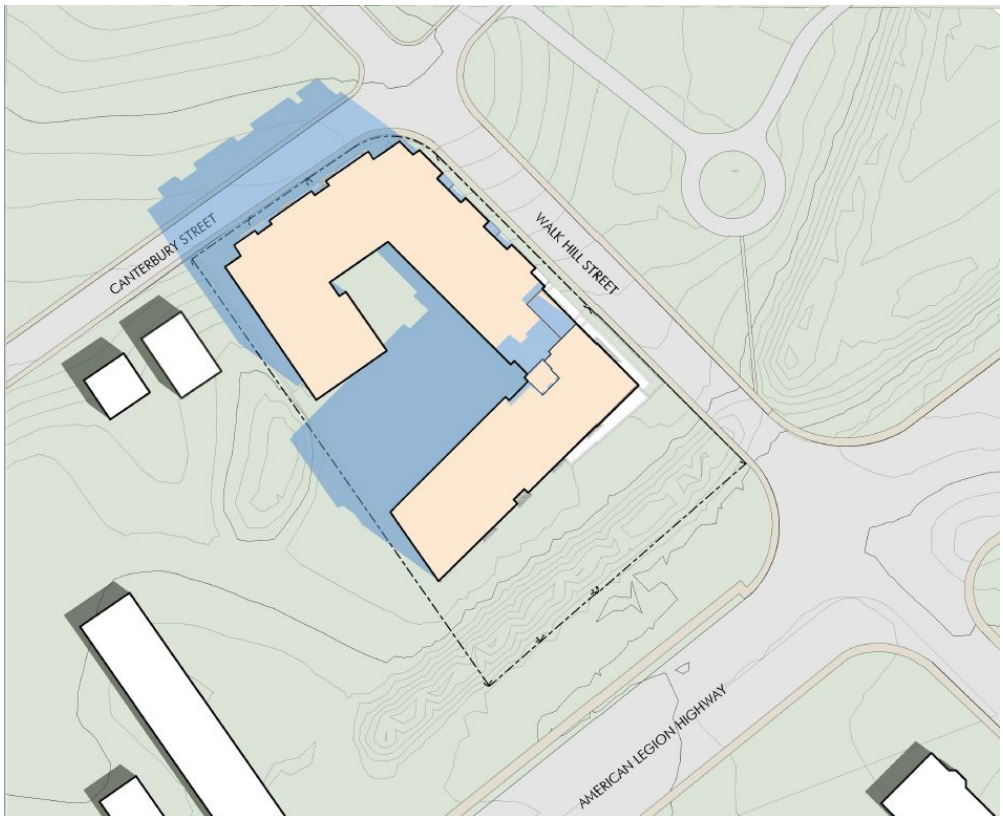


**Figure 2-18 September 22 – 12:00PM**

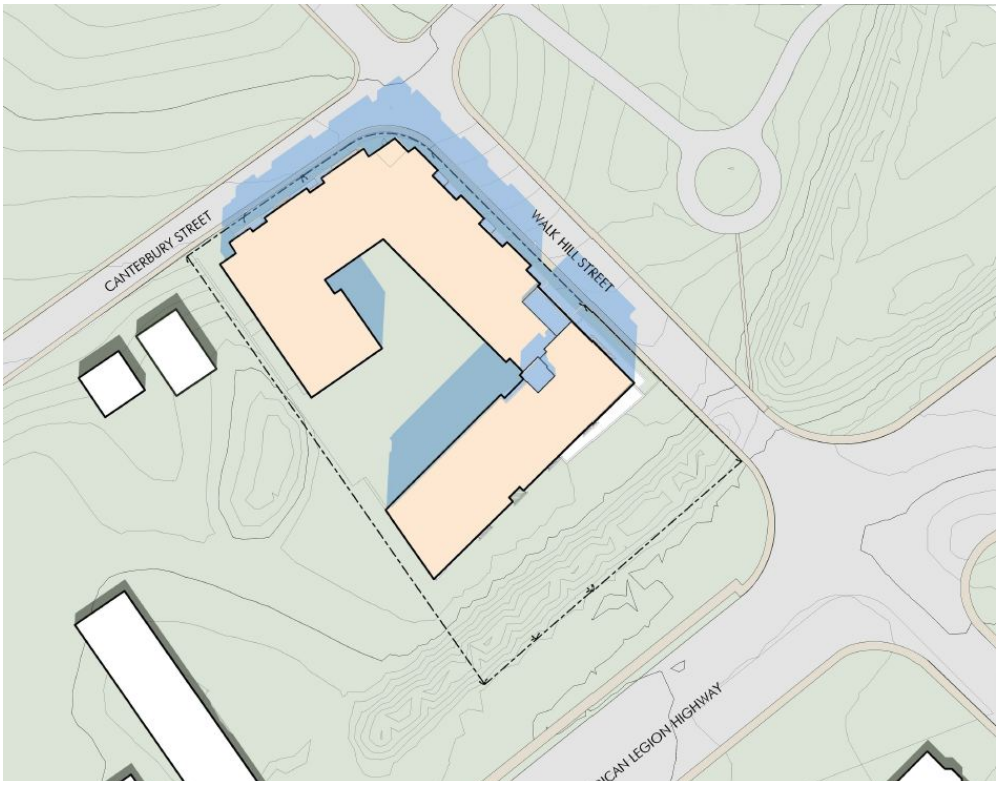



**Figure 2-19 September 22 – 3:00PM**

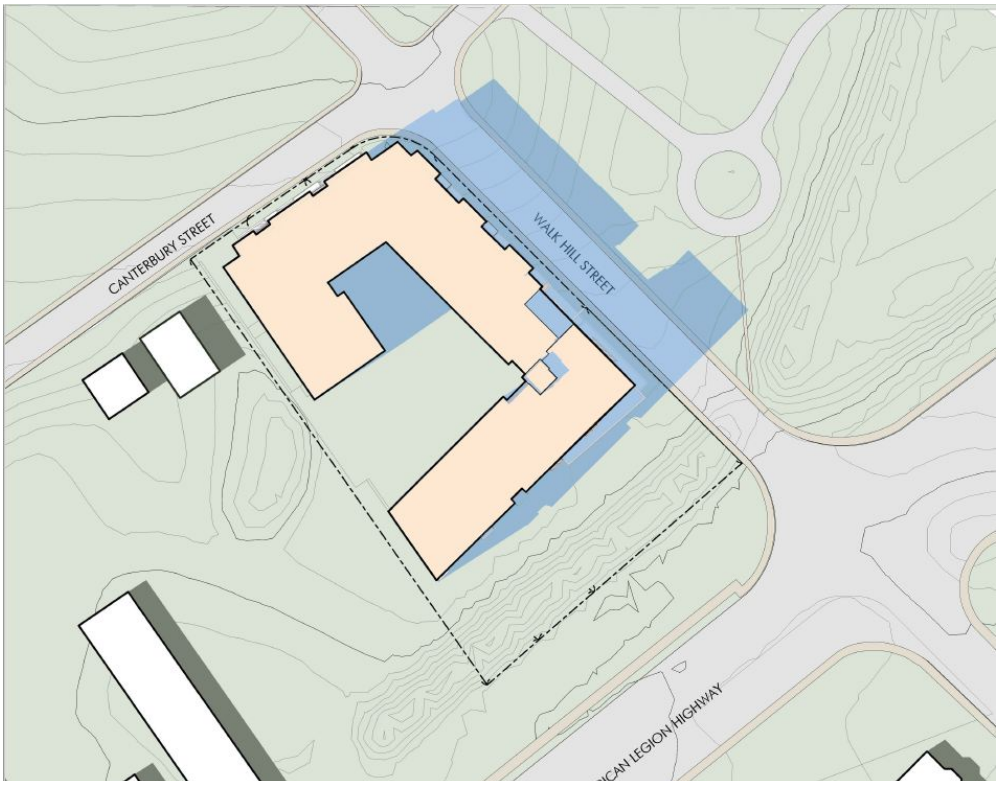


**Figure 2-20 September 23 – 6:00 PM**

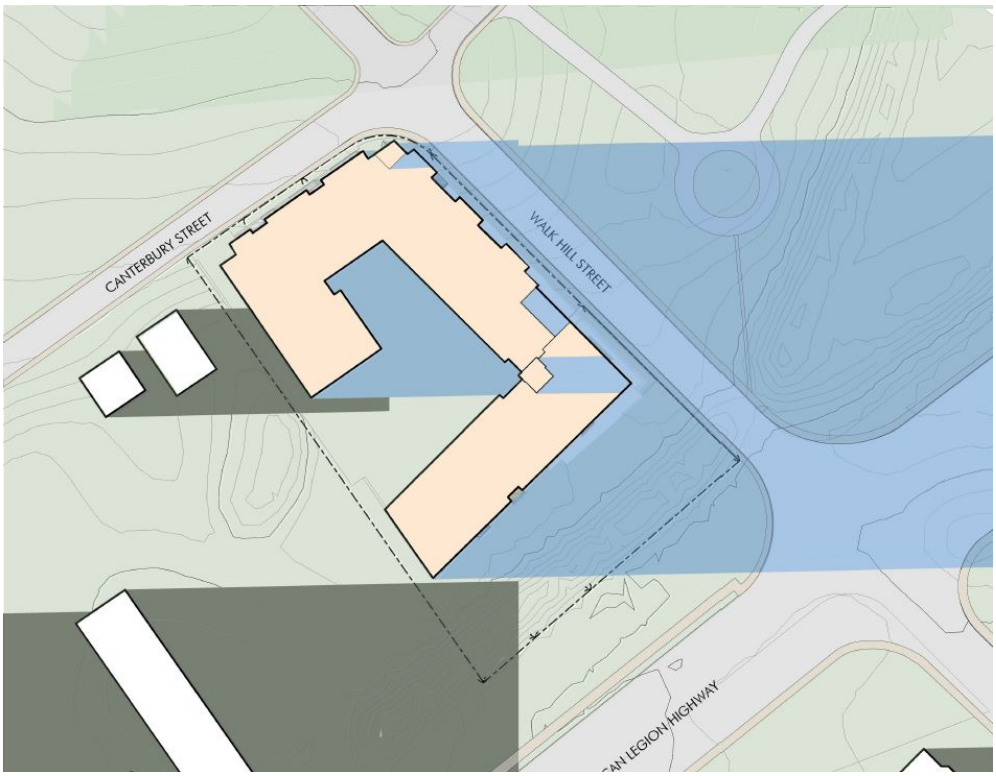



**Figure 2-21 Dec 21 – 9:00 AM**

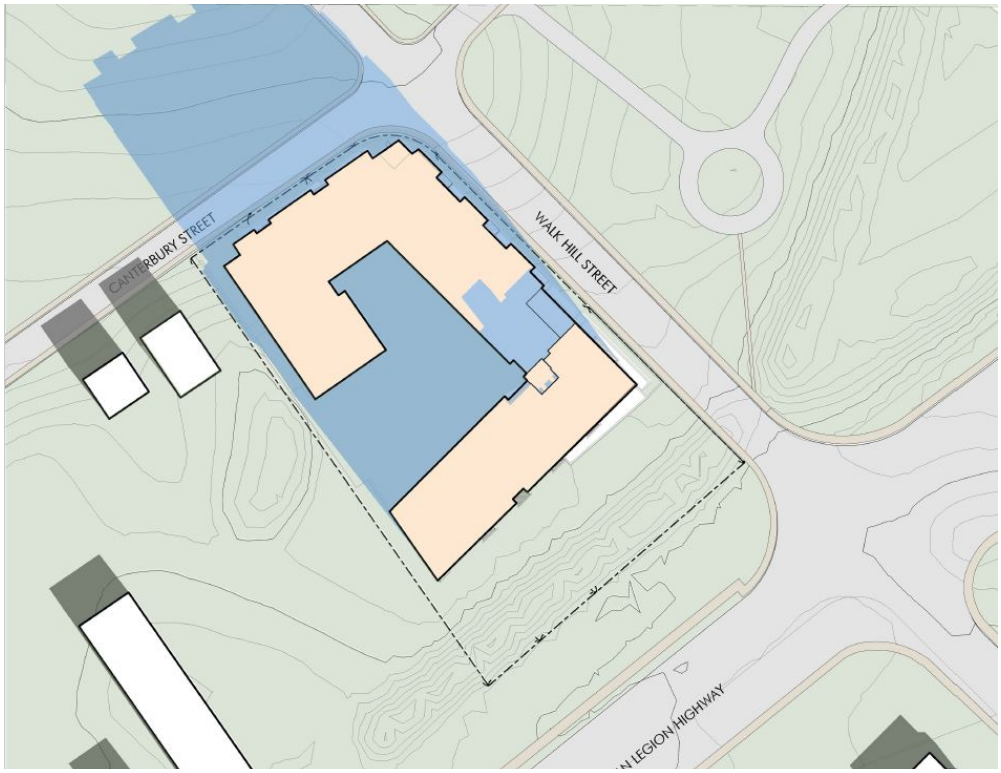


**Figure 2-22 Dec 21 – 12:00 PM**

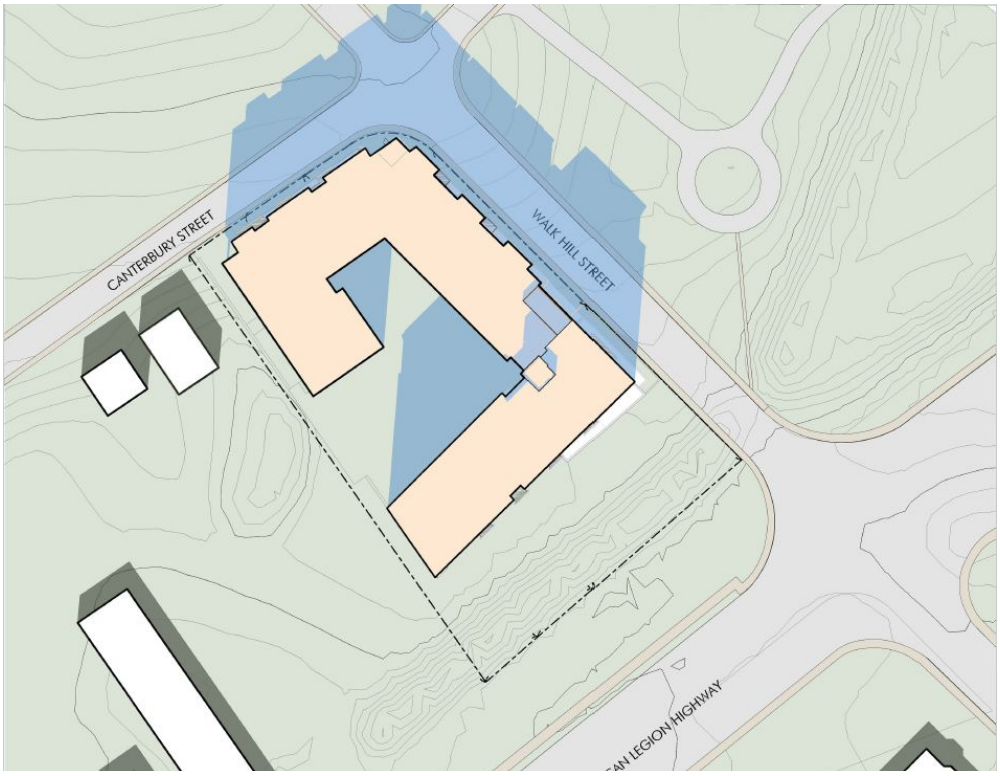



**Figure 2-23 Dec 21 – 3:00 PM**

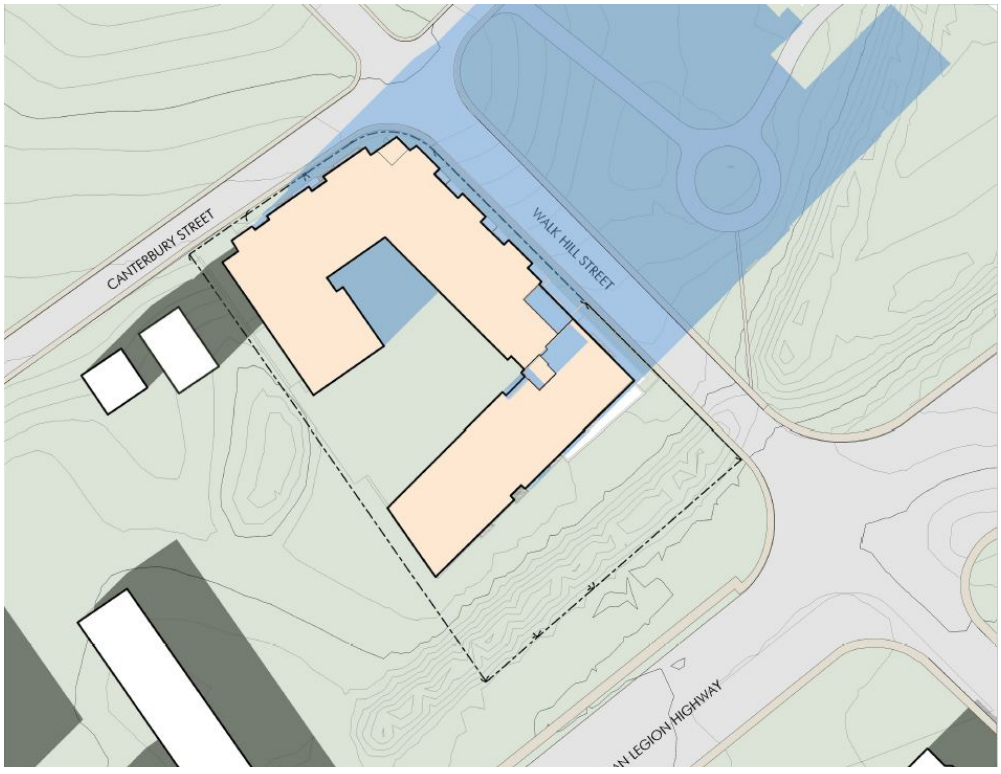


**Figure 2-24 June 21 – 9:00 AM**

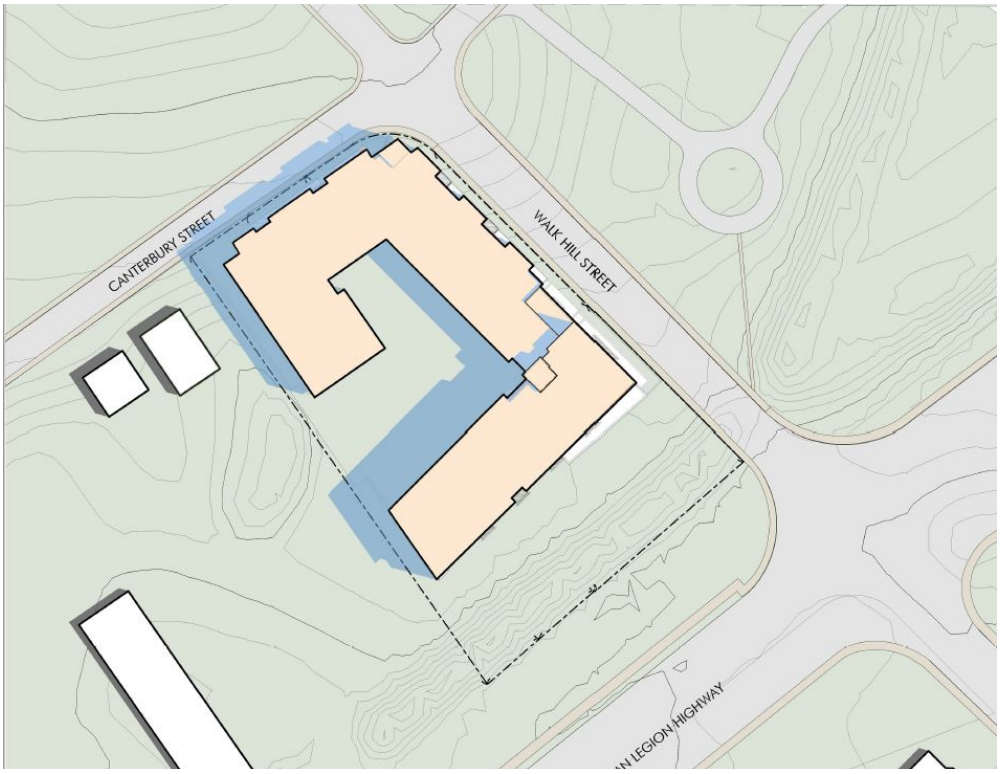



**Figure 2-25 June 21 – 12:00 PM**

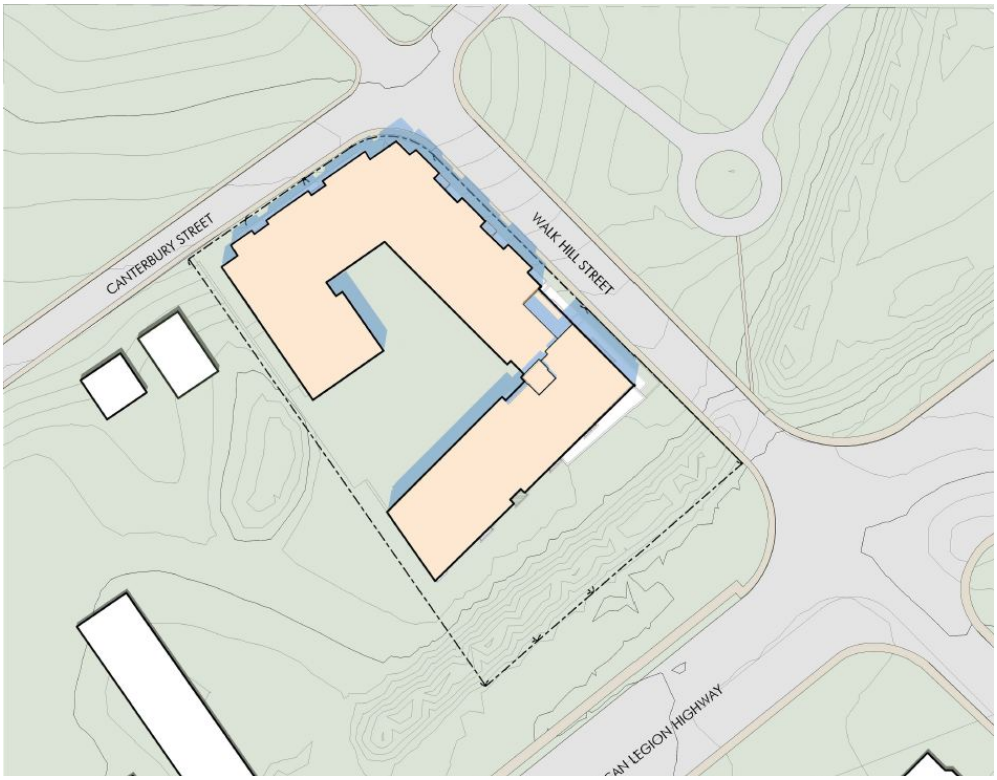


**Figure 2-26 June 21 – 3:00 AM**

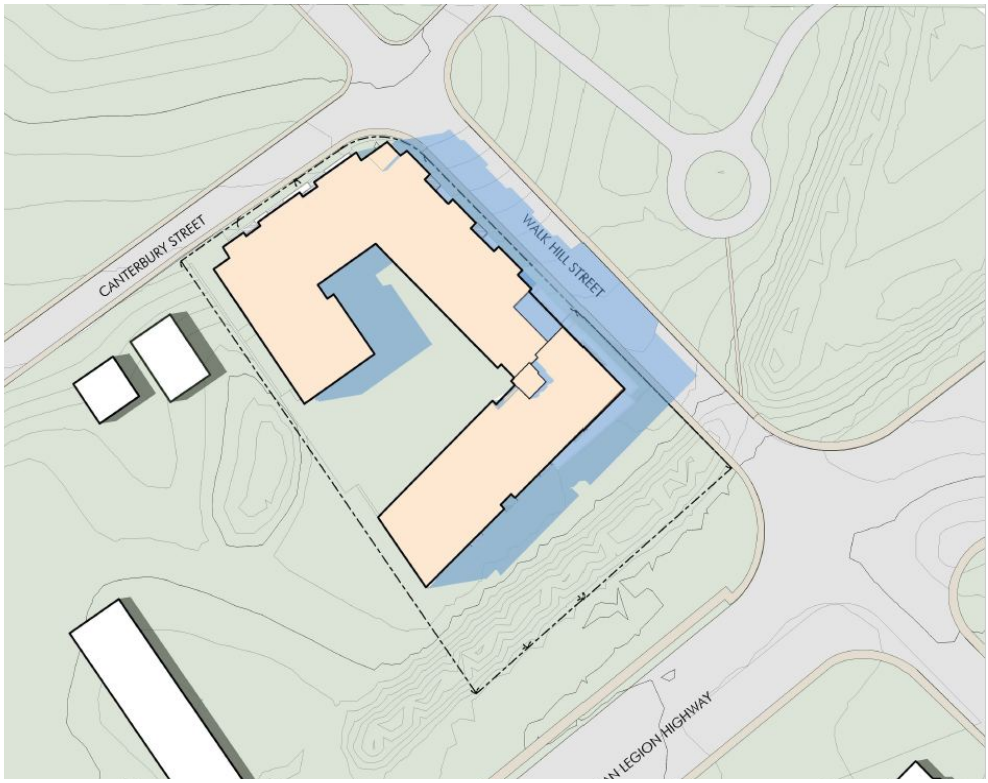
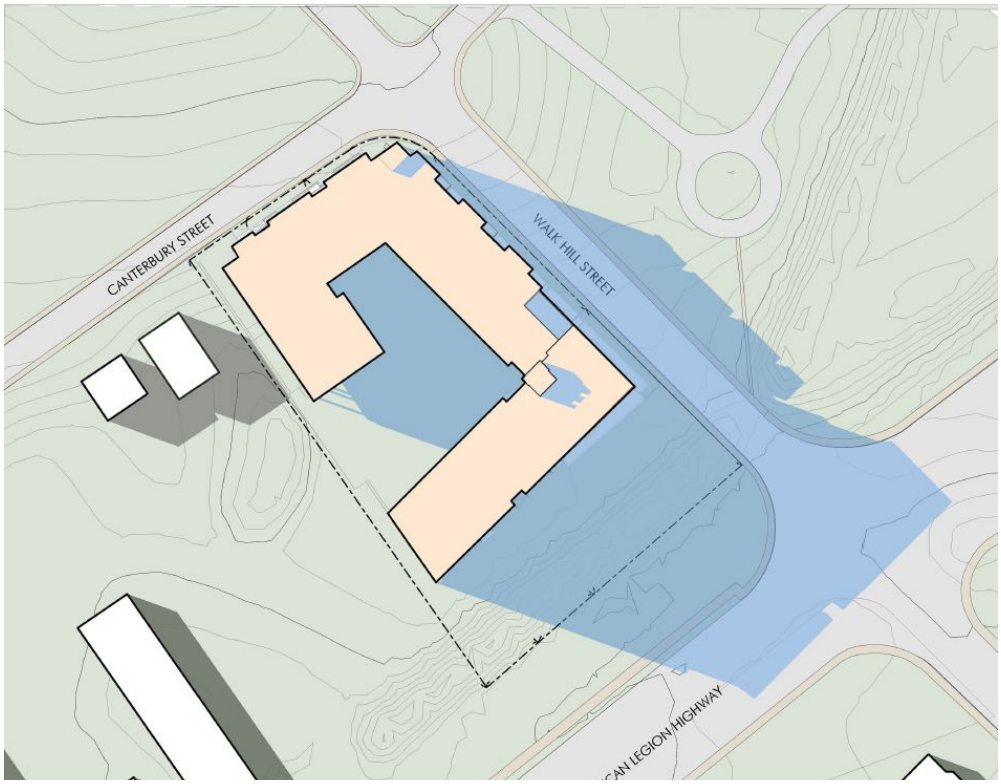



**Figure 2-27 June 21 – 6:00 AM**



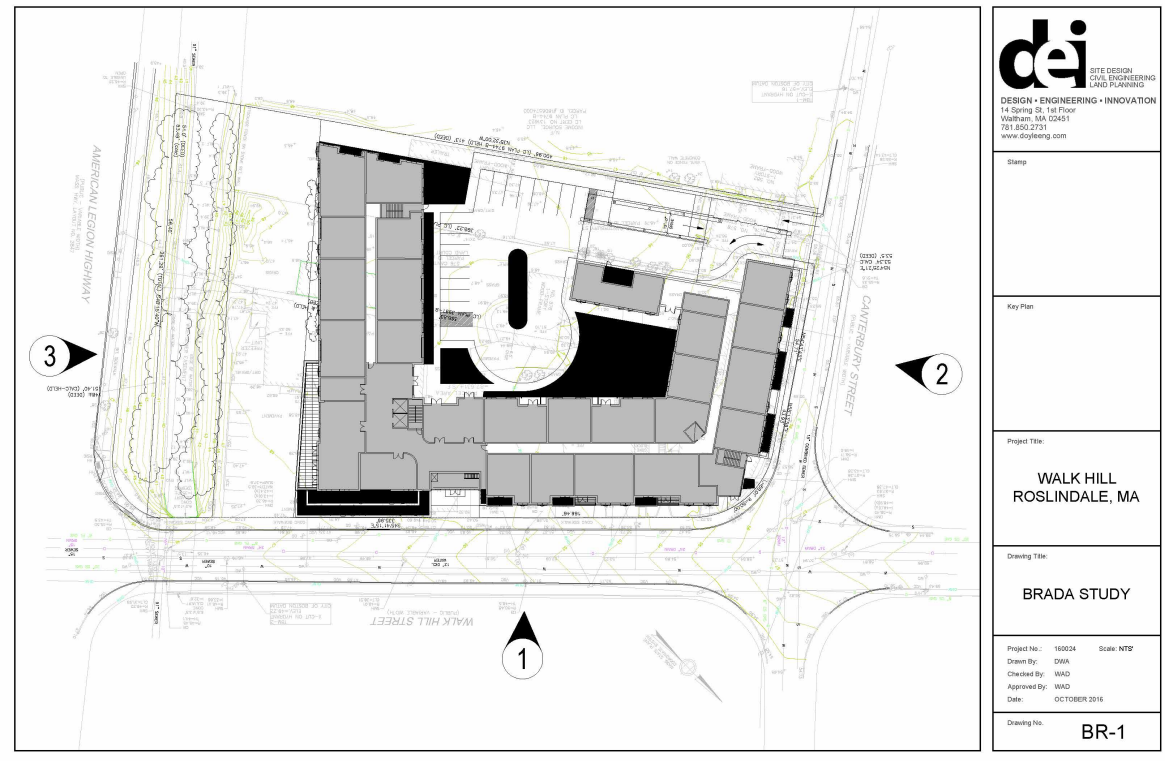
At four stories (50 feet) with a wing of the building reaching five and a half stories (65 feet), the Project will not create significant new shadows on the existing structures and private open spaces. The Project is on the south side of Walk Hill Street so there will be impacts on the common sidewalks along that corridor. The Forest Hill and St. Matthew's Cemeteries are separated from the proposed development by Walk Hill and Canterbury Streets. As a result, there are almost no shadow impacts on the Forest Hill Cemetery during all studied periods and impacts on St. Matthew's Cemetery will be minor even during the winter solstice when shadow impacts are most severe.

### 2.2.3 Daylight

The purpose of the daylight study is to estimate the extent to which the Proposed Project restricts the amount of light reaching the streets or pedestrian ways in the immediate vicinity of the Project Site. The impact is based on the length of façade on the public streets and the change in height of the facade from the existing condition.

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program. This program measures the percentage of sky-dome that is obstructed by a project.

**Figure 2-28 BRADA Site Plan**




Using BRADA, a centered silhouette view of the building is taken at ground level from the middle of adjacent city streets or open spaces. The façade of the building facing the viewpoint, including heights, setbacks, corners, and other features, is plotted onto a base map using lateral and

elevation angles. The two-dimensional base map generated by BRADA represents a figure of the building in the "sky-dome" from the viewpoint chosen. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of zero to one hundred based on the width of the view, distance between the viewpoint and the building, and the massing and setbacks incorporated into the building design; the lower the number, the lower the percentage of obstructed daylight from a given viewpoint.

The BRA requires that the analysis treat the following elements:

- Existing Condition;
- Proposed Condition; and
- The Context of the Area.

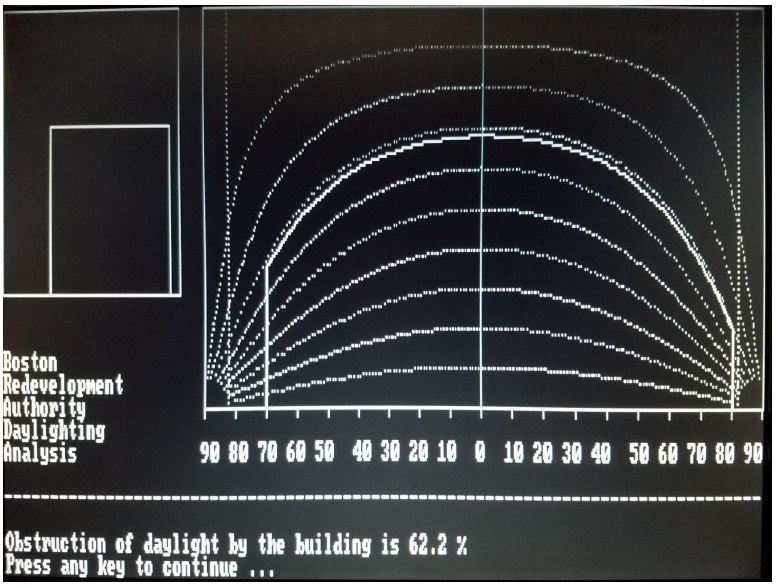
The daylight analysis examined daylight obstruction from four locations for the existing and proposed conditions for the residential building. Viewpoint 1 was taken from Walk Hill Street, Viewpoint 2 was taken from Canterbury Street and Viewpoint 3 was taken from American Legion Highway. There are currently only small, less then single story buildings on the Project Site, therefore the existing daylight obstruction is very small.

As a baseline the study considered area context points to provide a basis of comparison to existing conditions in the immediate vicinity of the Project Site. The area context viewpoints were taken from American Legion Highway south of the site and Canterbury Street west of the project site, see plan entitled EX-1

### Viewpoint 1

Viewpoint 1 was taken from the center of Walk Hill Street looking southwest at the building site. The daylight obstruction value for the proposed condition is 62.2%. Compared to existing viewpoints, this value is higher due to the proximity of the viewpoint to the proposed buildings and the proposed buildings height.

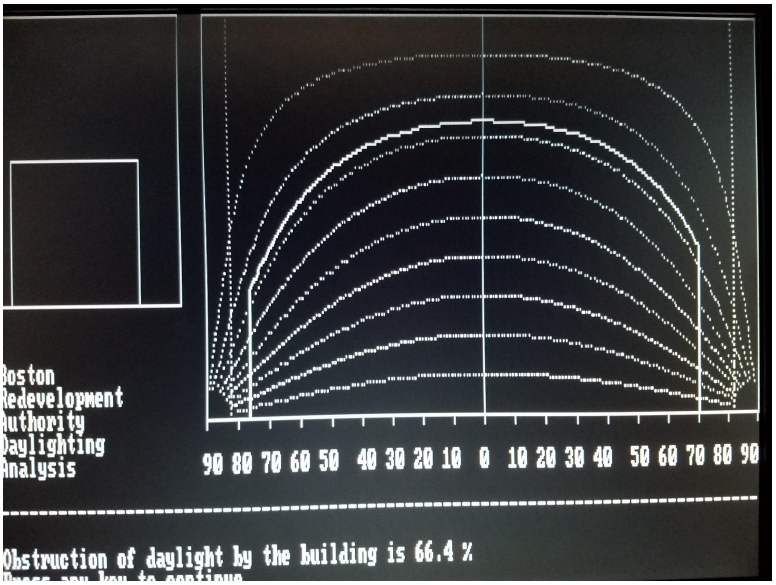
**Figure 2-29 Viewpoint 1 – 62.2% Obstruction**



### Viewpoint 2

Viewpoint 2 was taken from the center of Canterbury St. looking southeast at the building site. The proposed daylight obstruction value, 66.4%. Compared to existing viewpoints, this value is higher due to the proximity of the viewpoint to the proposed buildings and the proposed buildings height.

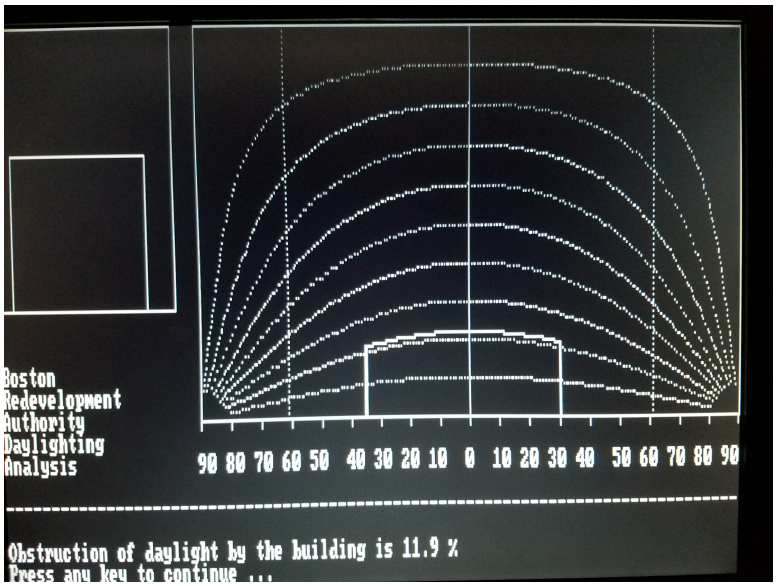
**Figure 2-30 Viewpoint 2 – 66.4% Obstruction**




### Viewpoint 3

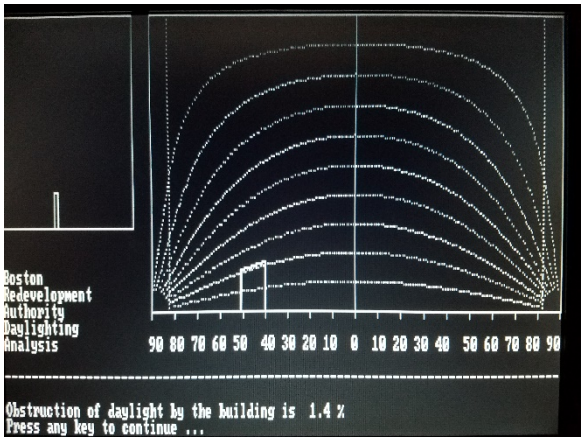
Viewpoint 3 was taken from the center of American Legion Highway looking northwest at the building site. The proposed daylight obstruction value, 11.9%. Compared to existing viewpoints, this value is higher due to the proximity of the viewpoint to the proposed buildings and the proposed buildings height.

**Figure 2-31 Viewpoint 3 – 11.9% Obstruction**



**Existing Viewpoints**

**Figure 2-32 Existing Viewpoints 1 & 2**



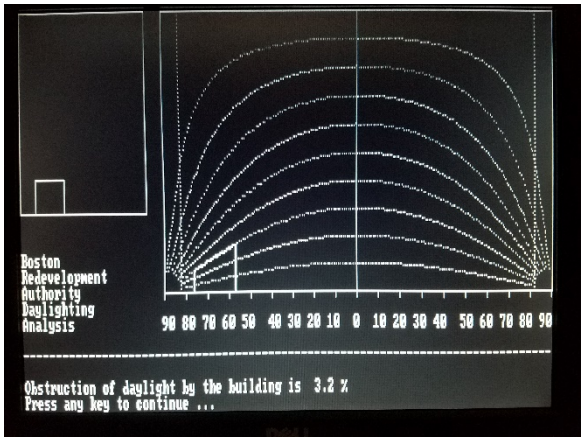
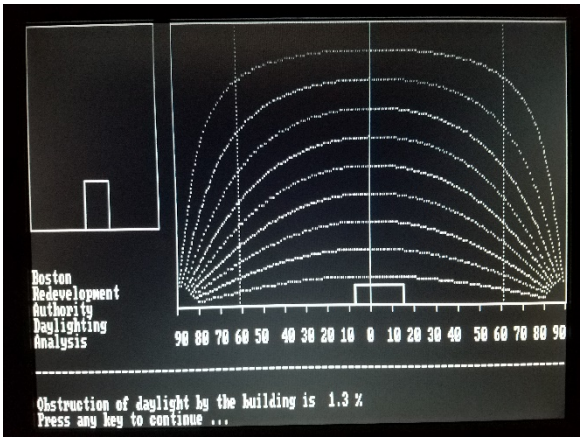




**Figure 2-33 Existing Viewpoint 3**

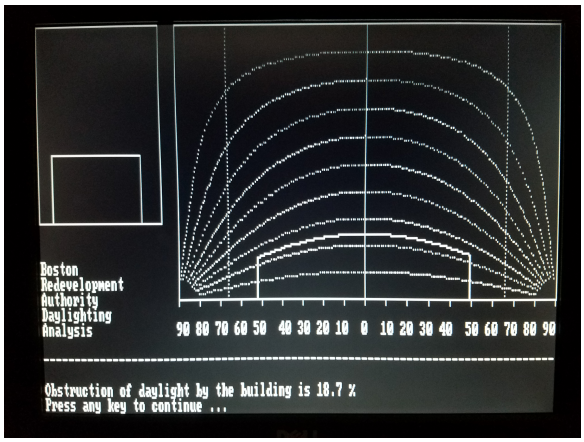


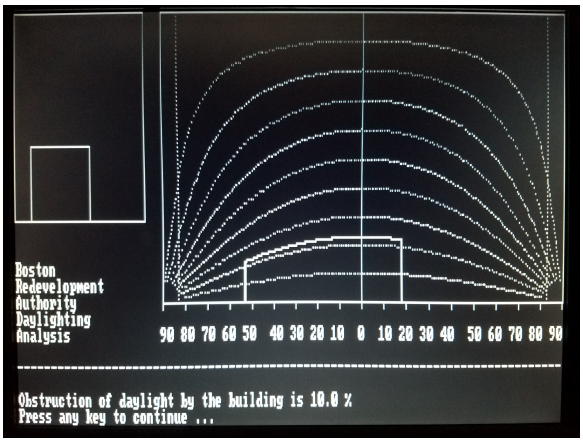

**Area Context Viewpoints**

The area surrounding the Project Site is largely cemetery with a small retail areas located south of American Legion Highway. The retail area contains several buildings with a mixture of building heights that have similar offsets to the public streets than the proposed buildings. Two viewpoints in the retail area were analyzed to find the approximate range of daylight obstruction values adjacent to the Project Site.

Context Viewpoint A was taken from the center of American Legion Highway looking southeast at the existing building identified on Plan EX-1. Context Viewpoint B was taken from the center of Canterbury Street looking southeast at the existing building identified on Plan EX-1

**Figure 2-34 Area Context Viewpoints – Building A & B**




### Daylight Analysis Results

Results for each viewpoint under each condition are described in the table below.

**Table 2-23 Day Light Analysis Results**

| | Existing | Proposed |
|---|---|---|
| Viewpoint 1 | 1.4% | 62.2% |
| Viewpoint 2 | 3.2% | 66.2% |
| Viewpoint 3 | 1.3% | 11.9% |
| Context Building A | 18.7% | - |
| Context Building B | 10.0% | - |

### Conclusions

The daylight analysis conducted for the Proposed Project describes proposed conditions at the residential building sites, as well as daylight obstruction values in the same location. Since the Project site is only improved with small single story buildings, the existing daylight obstruction values are very low. The proposed buildings have their frontage on Walk Hill and Canterbury Street with a significant setback from American Legion Highway. The Context buildings have similar building footprints however these buildings are not as tall as the proposed residential building and therefor have lower daylight obstruction values.

The proposed project will result in daylight obstruction values greater than exists at the project site and that exists in similar buildings in the immediate area. Overall, the daylight obstruction values for the proposed project site are typical of an urban area and similar to those in the region, however they are greater than what currently exists in this area largely comprised of open space in the form of cemeteries.

### 2.2.4 Solar Glare

The Solar Glare Analysis is intended to measure potential glare from buildings onto streets, public spaces and sidewalks in order to determine the potential visual impact or discomfort due to reflective spot glare as well as heat build-up on adjacent buildings. This analysis is required if a proposed project incorporates substantial glass facades as a part of the design.

The design of the proposed Project does not incorporate highly reflective glass or other highly reflective materials, nor does the Proponent anticipate the use of such materials. Reflective materials can create solar glare on area roadways and sidewalks as well as additional heat loading on neighboring buildings. The use of non-reflective materials mitigates this effect.

With regard to solar gain impacts, adjacent development is limited to a residential building that is slated to be removed and the site redeveloped for multi-story townhouses. As the proposed development will not use reflective materials and a landscape buffer is anticipated that will further screen the two developments, any reflectance is unlikely to reach the proposed townhouses. As a result, solar gain based on reflectance from the building would be limited.

Since the Project will not use reflective glass or other reflective materials on the building facades, there should not be any adverse impacts from reflected solar glare on adjacent buildings, streets and sidewalks.

### 2.2.5 Air Quality

Potential long-term air quality impacts are generally attributed to emissions from project-related mechanical equipment and pollutant emissions from vehicular traffic attributed to the proposed development.

The Project is too early in the design and permitting process to determine what the equipment requirements and the associated air quality impacts would be and, as a result, air quality analysis is not available at this time. However, since the Project intends to use water source heat pumps to heat and cool the units (reducing the size requirements for the roof-top HVAC equipment), the Project's mechanical equipment is not expected to result in a perceptible change in background air quality. If required, a supplemental analysis can be prepared to insure the Project's compliance with the NAAQS Standards.

Regarding potential vehicle related impacts, the traffic analysis shows that intersections in the vicinity of the Project do have a failing level of service however the proposed development does not contribute to further declines nor increases in intersection delays. The Proponents have also evaluated mitigation measures that would improve intersection LOS and will be reviewing those measures with BTD. Since the Project will not result in a further decline of intersection level of service, a microscale air quality analysis should not be required. As noted above regarding HVAC equipment, the Proponent will a supplemental air quality analysis should mitigation prove ineffective and alternative HVAC system be considered.

The Project will have an underground parking garage. Ventilation system has not been designed however it is anticipated Carbon Monoxide monitors and alarms will be provided to insure the safety of the residents and adjacent properties.

### 2.2.6 Stormwater/Water Quality

The Project should improve the water quality of nearby water bodies. Canterbury Brook (also called Stony Brook) flows above ground for approximately 3,800 linear feet where it flows underground through Dorchester and into the Neponset River. The Neponset River and its tributaries have a serious problem with bacteria pollution. The stormwater treatment practices proposed for the site, bioretention and infiltration, will significantly reduce the bacteria load leaving the site.

In general, the Project will comply with the Boston Water and Sewer Commission's regulations and standards regarding the design of the storm drainage system including methods to reduce the peak rates of runoff and improve the quality of the stormwater. Run-off from the existing Site flow untreated from paved and unpaved parking areas, a contractor's work yard and structures in the City's drainage system and directly into Canterbury Brook.

Improvements to Site stormwater collection and treatment system will result in an improvement to run-off from the Site. To prevent sediment from leaving the Site during construction, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented. The SWPPP is required under the U.S. Environmental Protection Agency's (EPA) Construction General Permit (CGP). The Best Management Practices (BMPs) implemented according to the SWPPP, will first be designed to minimize erosion on site and then capture any sediment prior to its leaving the site. BMPs to be utilized include: stabilized construction entrance; street sweeping (if necessary); perimeter controls such as silt fence and/or compost logs; catch basin inserts; soil stabilization; and other erosion and sediment control (ESCs) BMPs. These ESCss 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.

All necessary dewatering associated with construction activities will be conducted in accordance with applicable BWSC, United States Environmental Protection Agency (USEPA), Massachusetts Water Resources Authority (MWRA) regulations and other appropriate discharge permit requirements.

The existing storm drain utility infrastructure within Canterbury Street, Walk Hill Street and American Legion Highway surrounding the Site appears to provide adequate capacity to serve the needs of the Project. Best Management Practices (BMPs) and sustainable design will be incorporated into the Project wherever practical and applicable. The stormwater runoff will be managed through a recharge system (either bioretention or an infiltration system) that will utilize the newly created perimeter open space, landscape buffers and areas under the garage level. Overflows will utilize new connections to the Boston Water and Sewer Commission's drain lines under Walk Hill Street.

Stormwater management controls will be established in compliance with BWSC standards, and the Project will reduce stormwater flow, pollutants, or sediments that would potentially impact nearby water bodies.

An oil and grease separator will be provided in the garage as required to improve water quality prior to discharge into the sanitary sewer. Additionally, sediment and construction materials will be controlled during construction through a combination of hay bales, silt fence and catch basin filters.

The Project will yield a decrease in peak discharge rates and volumes of run-off and improve ground water recharge. This is accomplished primarily by installing a stormwater infiltration system.

All improvements and connections to BWSC infrastructure will be reviewed as part of the Commission's Site Plan Review process. The process includes a comprehensive design review of the proposed service connections, assessment of project demands, and system capacity.

Additionally, mitigation activities considered along the bank and within the brook include trash and debris removal, removal of invasive species, and native plantings. In addition, a vegetative buffer will be established between the brook and impervious systems.

### 2.2.7 Stormwater Management Standards

In January 2008, the DEP revised the Stormwater Management Policy. The Policy prescribes specific stormwater management standards for development projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of Best Management Practices (BMP's) in the stormwater management design. The Policy is administered locally pursuant to M.G.L. Ch. 131, s. 40.

A brief explanation of each Policy Standard and the system compliance is provided below:

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

Compliance: The proposed design will comply with this Standard. No new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the proposed Project.

*Standard #2: Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

Compliance: The proposed design will infiltrate the first inch of runoff according BWSC requirements thereby reducing peak discharge rates from the Site after construction.

*Standard #3: Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post*

*development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types.*

Compliance: The Project will include a groundwater recharge system based on BWSC standards (One inch of water over the entire impervious area on the site.) Soil types to assess perk rates will be determined by test borings and standard field- testing procedures.

*Standard #4: For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when:*

*(a) Suitable nonstructural practices for source control and pollution prevention are implemented;*

*(b) Stormwater management best management practices (BMPs) are sized to capture the prescribed runoff volume; and*

*(c) Stormwater management BMPs are maintained as designed.*

Compliance: The impervious surfaces are mostly roof deck and walkways with some minor areas of driveway and parking. The roof tops will be directed to the bio-retention/infiltration system, and parking and roadway areas will be pretreated and then discharged to the same system. TSS removal will be at least 80%.

*Standard #5: Stormwater discharges from areas with higher potential pollutant loads require the use of specific stormwater management BMPs (see chart on page 1-8). The use of infiltration practices without pretreatment is prohibited.*

Compliance: The Project is not associated with Higher Potential Pollutant Loads (per the Policy, Volume I, Page 1-8). This Project complies with this standard.

*Standard #6: Stormwater discharge to critical areas must utilize certain stormwater management BMPs approved for critical areas (see list on page 1-8). Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.*

Compliance: The Project will not discharge untreated stormwater to a sensitive area or any other area.

*Standard #7: Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.*

Compliance: The Project will meet or exceed all standards.

*Standard #8: Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

Compliance: The Project will comply with this standard. Sedimentation and erosion controls will be incorporated as part of the design of this Project and employed during Site construction.

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

Compliance: The project will comply with this standard. A long term maintenance plan will be submitted to the Boston Water & Sewer Commission for review and approval during the Site Plan Approval process.

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

Compliance: The project will comply with this standard.

### 2.2.8 Flood Hazard Zones/Wetlands

Canterbury Brook, an intermittent stream as designated on the USGS topographic maps, extends along the southern edge of the site. Wetlands associated with Canterbury Brook are limited to Bank resource areas, and any wetland vegetation observed within the section of the Brook proximate to the site occurred below the statutory Top of Bank. The site is highly disturbed, with altered Banks, debris and structures constructed along the Bank, and little native or indigenous vegetation. As previously mentioned, mitigation activities are being considered along the brook. These include debris and trash removal, invasive species removal, and planting native species. A vegetated buffer that will also provide stormwater management (i.e. bioretention) and passive recreation will be established.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the Site located in the City of Boston - Community Panel Number 25025C0086 G indicates the FEMA Flood Zone Designations for the Site area. The map shows that the Project is located in a Zone X, am area determined to be outside the 0.2% annual chance flood plain.

### 2.2.9 Geotechnical/Groundwater

This section addresses the below-grade construction activities anticipated for the Project. It discusses existing soil and groundwater conditions, anticipated foundation construction methods and excavation work anticipated for the Project based on available subsurface information and a conceptual foundation design study.

Exploratory borings indicate that the site is composed of several feet of man placed fill over sand over glacial till presumably allowing for a simple spread footing or matte foundation system. The depth of sand will also allow for simple cut excavation to accommodate the sublevel parking garage. As the building will have a below grade parking garage, it is expected that spread and strip footings will support the building on the sand and/or glacial till. As the building is close to the

project property lines, some type of support of excavation, either sheeting or soldier piles and lagging will be required. Easements may be required from the City if tiebacks are needed.

Initial geotechnical analysis indicates the Project Site is not located within area monitored by the Boston Ground Water Trust so review and permitting by this organization is not required. Test borings encountered ground water at depths of 6 to 10 feet below ground surface and as a result ground water dewatering may or may not be required during excavation. Project specifications will include provisions for remedial measures for the contractor to implement to mitigate any movement or lowering of groundwater levels should conditions warrant. Foundation excavation will be observed by an experienced geotechnical engineer for compliance with project specifications. The Proponent will secure all necessary construction dewatering and related permits from the City (BWSC) and State (MWRA) as required.

### 2.2.10 Solid and Hazardous Wastes

#### 2.2.10.1 Existing Hazardous Waste Conditions

A Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E-1527-13 was conducted at the Project Site in October 2015. This assessment consisted of a historical review, a sited inspection, and research of State and local files. The site is not listed on any EPA or DEP databases. However, Potential On-Site Environmental Concerns (PECs) identified during the site investigation included the presence of two 55-gallon drums of waste cooking oil observed to the southeast of the 289 Walk Hill Street structure and four 275-gallon fuel oil ASTs observed in the basement of the 289 Walk Hill Street structure. The drums were observed to be in good condition, with no significant evidence of any leaks, spills, or staining observed in their vicinity. Recognized Environmental Conditions (RECs) identified during the investigation include a 5,000-gallon fuel oil UST removed from the 289 Walk Hill Street property without evidence of confirmatory sampling and an abandoned-in-place 5,000-gallon fuel oil UST at the 283 Walk Hill Street property. No Historical RECs (HRECs) or Controlled RECs (CRECs) were identified during the investigation. Potential Off-site Environmental Concerns (PECs) identified during the investigation included the southeasterly adjoining State Disposal Site (RTN 3-24774) located at 530 American Legion Highway; the RCRA Generators located at 500 Canterbury Street (MV6175241036) and 570 American Legion Highway (MV6176358169), which abut the site to the northwest and south, respectively; and the RCRA Generator located at 565 American Legion Highway (MV6175229596), situated approximately 150 feet southwest of the subject site.

The Proponent has retained a Licensed Site Professional to perform pre-construction sampling in order to determine the limits of contamination, if any, related to the former underground storage tanks, characterize soils prior to excavation, and monitor all remediation and cleanup operations and will insure that all monitoring and reporting requirements are followed. To construction Prior All soils removed from the site during construction will be managed for off-site disposal in accordance the current regulations and policies of the Massachusetts DEP.

#### 2.2.10.2 Operational Solid and Hazardous Wastes

The Project will generate solid waste typical of other residential projects. Residents will take both non-recyclable waste to the basement level where material will be removed by a waste hauler contracted by the Project.

Solid waste will include wastepaper, cardboard, glass and bottles. The Proponent will coordinate with the City's recycling coordinator to develop and implement a recycling program to minimize solid waste. The Project will include space for recycling in the basement trash room and will provide space for the storage and pick-up of recyclable materials.

With the exception of "household hazardous wastes" typical of residential use (for example, cleaning fluids and paint), the residences will not generate hazardous waste.

### 2.2.11 Noise/Vibration

The noise analysis would be required to determine if the project generated noise, principally from the roof mounted HVAC equipment, would exceed the City of Boston Noise Zoning District Noise Standards for nighttime and residential zones, which are the most stringent of the applicable standards. The primary source of sound exterior to the Project will be the cooling towers that would be mounted on the roof. Noise generated from any rooftop units must be addressed, as the Site is within a residential neighborhood with existing residential buildings to the south and west.

The Project is too early in the design and permitting process to determine what the equipment requirements and the associated sound generation would be and, as a result, noise analysis is not available at this time. However, since the Project intends to use water source heat pumps to heat and cool the units (reducing the size requirements for the roof-top HVAC equipment) and any equipment would be screened with sound attenuation devises, the Project's mechanical equipment is not expected to result in a perceptible change in background noise levels. If required, a supplemental noise analysis can be prepared to insure the Project's compliance with the City of Boston Noise Ordinance.

### 2.2.12 Construction Impacts

Proper pre-construction planning with the neighborhood will be essential to the successful construction of this Project. Construction methodologies that ensure public safety and protect nearby businesses will be employed. Techniques such as barricades, walkways, painted lines, and signage will be used as necessary. Construction management and scheduling – including plans for construction worker commuting and parking, routing plans and scheduling for trucking and deliveries, protection of existing utilities, maintenance of fire access, and control of noise and dust -- will minimize impacts on the surrounding environment. Signage will include construction manager contact information with emergency contact numbers. The Proponent will also coordinate construction with other ongoing projects in the neighborhood.

The Proponent will comply with all applicable state and local regulations governing construction of the Proposed Project. The Proponent will require that the general contractor comply with the

Construction Management Plan, ("CMP") developed in consultation with and approved by the Boston Transportation Department ("BTD"), prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the Project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

A CMP will be submitted to the BTD for review and approval prior to issuance of a building permit. The CMP will include:

- A Construction Activity Schedule
- Defined Construction Staging Areas
- Parameters for the Demolition Phase
- Guidelines for Perimeter Protection/Public Safety
- Material Handling and Construction Waste Plan
- Construction Traffic Management including Worker Parking and Truck Routes
- Construction Air Quality and Noise management and mitigation

Throughout Project construction, a secure perimeter will be maintained to protect the public from construction activities.

### Construction Activity Schedule

The initial construction period for the proposed Project is expected to last approximately 18- 24 months, beginning in the Second Quarter 2017 and reaching initial completion in the Third or Fourth Quarter 2018. The City of Boston Noise and Work Ordinances will dictate the normal work hours, which will be from 7:00 AM to 6:00 PM, Monday through Friday.

### Perimeter Protection/Public Safety

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

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

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

### Construction Vehicle Routes

Specific truck routes will be established with BTD through the CMP. These established truck routes will prohibit travel on any residential side streets. Construction contracts will include clauses restricting truck travel to BTD requirements. Maps showing approved truck routes will be provided

to all suppliers, contractors, and subcontractors. It is anticipated that all deliveries will be via I-93, from Dorchester Avenue direct to the site, not passing through any residential areas.

### Construction Worker Parking

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

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

### Pedestrian Traffic

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

### Construction Air Quality

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

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

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

### Construction Noise Impacts

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

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

## 2.2.13 Rodent Control

The City of Boston has declared that the infestation of rodents in the City is a serious problem. In order to control this infestation, the City of enforces the requirements established under the Massachusetts State Sanitary Code, Chapter 11, 105 CMR 410.550 and the State Building Code, Section 108.6. Policy Number 87-4 (City of Boston) established that extermination of rodents shall be required for issuance of permits of demolition, excavation, foundation, and basement rehabilitation.

A rodent extermination certificate will be filed 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 proposed Project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the Site. During the construction process, regular service visits will be made by a certified rodent control firm to monitor the situation.

### 2.2.14 Wildlife Habitat

The Site is within a fully developed urban area and, as such, the proposed Project will not impact wildlife habitats. A review of the Natural Heritage and Endangered Species Program (NHESP) data layers on the MassGIS website indicate that there are no Priority Habitats of Rare Species, Estimated Habitats of Rare Wildlife, Certified or Potential Vernal Pools located within 5,000 feet of the Site. Plantings along Canterbury Brook will be native species, the bank will be cleared of debris and trash, erosion will be mitigated, and invasive plant species will be removed.

## 2.3 Urban Design

### 2.3.1 Design Concept

The goal of the proposed development is to redevelop an underutilized site in the Roslindale neighborhood into a sustainable, multifamily housing development – one that creates density in a location that takes advantage of the adjacent commercial spine and is sufficiently removed from lower density single and two family housing so as to not create a negative impact.

The building's four/five story scale is appropriate to the existing auto oriented shopping center where two and three story residential structures would tend to be dwarfed. The multi-family density also creates the economic leverage to support underground parking – a much better solution than expansive surface parking lots.

While the site does not directly abut a fixed rail mass transit line, it still addresses the objectives of transit oriented development being on a local bus route and only a mile from the Forest Hills Orange Line Station – a manageable 25 minute walk via Walk Hill Street.

Considering these factors: distance from low density housing, proximity to commercial spine, and accessibility to mass transit, it is in a prime location for a higher density multi-family style development supporting the Commonwealth's Smart Growth policies including Transit Oriented Development principles.

### 2.3.2 Relationship to Context/Site Plan

This underutilized site sits at the edge of two important suburban typologies – the auto-oriented shopping center on the American Legion Highway and the single/two family residential neighborhood west of the cemeteries. It creates the opportunity to bridge these two areas creating density near the auto-oriented use and while being sufficiently separated from the Mount Hope Neighborhood so as not to dominate that lower density enclave.

Specifically, the project occupies an area bounded by Walk Hill Street to the east, Canterbury Street to the north, abutting residential lots to the west and green space leading to the Brook along American Legion Parkway. Other than the abutting residential use to the west, the immediate abutting properties feature cemeteries and open park land.

The site plan was developed with an intent towards creating a more defined building line along Walk Hill and Canterbury Street compared to what exists now. In its present state, parking lots front

on Walk Hill with retail spaces that are far removed from the sidewalk. The proposal places the building approximately 15 feet back from the sidewalk along Walk Hill and 10 feet back along Canterbury Street.

Along Walk Hill Street, there are two building entrances. The primary entrance is oriented towards Walk Hill Street to reinforce primary pedestrian access points towards the bus stop and retail activity on American Legion Highway. The second entry is located on the corner of Walk Hill and Canterbury to serve as a connection from Forest Hills T and Hyde Park Ave/Washington Street retail and restaurants that are approximately a 25 minute walk away.

Both surface parking and the larger subterranean parking areas are accessed off of Canterbury Street which relieves potential impacts from accessing and egressing onto the busier Walk Hill corridor. This entrance is pulled back as far as possible from Canterbury/Walk Hill intersection again to minimize conflicts resulting from disputing traffic ques.

Improvements in the pedestrian right-of-way including street trees, period lighting and specialty paving will be provided on Walk Hill Street and Canterbury Street consistent with the City's Complete Streets Guidelines.

### 2.3.3 Height, Massing and Façade Treatment

The site has three unique faces and the massing of the building is a direct response to those conditions and varying scales. The portion of the building that is parallel to and set back from the expansive American Legion Parkway is the tallest portion of the building. Here the building is 5 stories atop a portion of the subterranean garage which is exposed at this end of the site. Along Walk Hill, the building steps down to four stories as it becomes closer to the residential neighborhoods that lie to the west. This change in building height also marks the entry to the building and helps reduce the apparent length of the building. The reduction in the height of the building closest to the Cemetery also reduces potential shadow impacts.

Continuing westerly along Walk Hill Street the building is punctuated by a series of protruding bays and recessed panels providing a rhythm and residential scale to the building along this prominent face. The recess in the building façade that marks the entry is clad with fiber cement panels and glazing on the first floor. It is the deep recess in the upper story volume of this piece that helps the break the massing of the building into its two discrete parts. These pieces in turn wrap around the site and form a courtyard that provides green space with a vehicular drop-off and an additional surface parking, all out of view from the street.

On the elevations, brick masonry captures the ground floor with a combination of clapboard and metal panel extending above. The balconies on the upper floors reinforce the residential nature of the building.

The overall building will be compatible with its neighbors in similar height, shape, form and texture. The window and bay proportion will be vertical in orientation and will be consistent in size and

proportion to the fenestration patterns of the traditional elements found in the nearby residential buildings.

### 2.3.3 Open Space/Landscape

The landscape vision for Walk Hill Street builds upon the existing sense of a natural landscape and transforms the space into a fully integrated semi-public amenity. The design promotes a clear sense of stormwater management and stewardship, while serving as a destination space for its residents and visitors. It aims to blur the boundaries between hardscape and vegetation by removing the hard edges and creating connected nodes of compact programmable spaces. The plan considers the sensitivity needed for the adjacent Canterbury Brook, and will aid in the cleaning of invasive plant species. Ultimately, the design creates a strong visual solution to stormwater management and embraces the opportunity to have a positive impact on the surrounding neighborhood.

The plan is a less constructed approach to stormwater management than typically seen. A centralized stormwater feature would be the focal point along the Canterbury Brook side of the building. This feature would be organic in shape and surrounded with swaths of native plantings. Users would be able to interact with the space through a pixilation of benches that go along the feature. An arcing path would wrap the feature and provide users with a space for lawn activities or serve as a dog run. The parking area would be separated from the courtyard with a pixilation of organic bandings. These bands could be a mix of different colored pavers to delineate parking from courtyard, or contain pockets of plantings that would add interest to the space. The proposed plan will explore the idea of including a complete street design along Walk Hill and Canterbury Street.

Upon its completion, the project will greatly improve the public realm with new and widened sidewalks that will encourage pedestrian activity and provide access to the resource area adjoining the Brook.

The relationship to the Forest Hills Cemetery must still be coordinated with the City's Parks Department and other historic resources groups.

## 2.4 Historic and Archaeological Resources

This Component addresses the potential impact of the proposed development on the City's historic resources located on or within a half of a mile of the site.

### 2.4.1 Historic Resources on the Project Site

The site is currently improved with a series of one story retail buildings and a two story residence. The retail buildings house florist services, much of their business catering to the nearby-by cemeteries, and a restaurant that is currently vacant. These retail structures were constructed between 1950 and 1960. The residential structures on Canterbury Street predate the retail structures being developed in the late 19th and early 20th centuries. The parcel faces Canterbury Street and Walk Hill Street which are early 19th century roadways that predate Roslindale's

transformation from agricultural and estate properties into moderate residential enclaves and an auto-oriented, neighborhood based commercial center, a development pattern common to the outer edges of urban Boston.

Originally part of Dorchester and Roxbury land grants, land in the immediate vicinity of the Site was used as farmland. The area was transformed during the middle of the 19th century with agriculture lands being purchased to create residential estates for wealthy and influential Boston families and the need to address overcrowding of urban burial grounds. The Woodbourne District to the west of the Site became the focus of the residential estates include properties developed by the Peters, Olney and Minot families. The Town of Roxbury, established in 1845, established the Forest Hills Cemetery in 1848 following a regional trend of developing rural cemeteries located outside the city limits. Mount Hope Cemetery was established in 1851 as a private cemetery then acquired by the City in 1857 when the area was annexed. The area saw rapid change due to annexation by the City of Boston which bought expanded services including institutional uses, and arrival of the street car suburbs through the creation of a street car route along the former route of the Boston Providence Railroad (Washington Street) in 1897.

Late nineteenth century efforts to address Boston's housing crisis lead to the creation philanthropic, investment inspired, worker housing. This suburbanization trend was followed by garden city movement with the goal of developing inexpensive homes in planned natural environments that could be purchased by workers of modest means. Influenced by these trends, the Woodbourne Area estates were subdivided and developed into single and two family homes during a period from the late 1800 through the middle of the Twentieth century. The construction of the American Legion Parkway in the 1930s reflected the influence of the automobile on the area's development climaxing with the strip shopping centers to the south east of the site.

### 2.4.2 Historic Areas and Properties within a Half Mile of the Site

The Proposed Project is located in the Roxbury Neighborhood of Boston. The designated Historic Districts within a half mile of the site include:

**Woodbourne National Register District** (this text is taken from the Woodbourne Historic District National Register of Historic Places Registration Form)

This residential district located in the Roslindale Neighborhood of the City of Boston (formerly Jamaica Plain). It encompasses Walk Hill Street, Bourne Street, Florian Street, Wachusett Street and Goodway Road. This 30-acre parcel was originally several separate mid-19th century estates. It is now a cohesive and harmonious enclave of buildings dating primarily from the first four decades of the 20th century. Woodbourne represents several important developments of early-20th-century housing - the transformation of country estates to housing, the culmination of Boston's long experiment with reform/model housing, the rise of streetcar suburbs and the early influence the automobile. This district is an almost intact example of the development of middle-class housing of New England in the first decades of the 20th century. The district was developed in three distinct patterns, but the result is a cohesive neighborhood with a range of housing styles that remains nearly intact from the early 20th century.

This district is sufficiently removed from the Project and is unlikely to be impacted by the Proposed Project.

**Forest Hill Cemetery (National Register Individual Property)**

Forest Hills Cemetery was established in 1848 as a municipal cemetery for the city of Roxbury. When Roxbury was annexed to Boston in 1868, Forest Hills became a private non-denominational cemetery, which it remains today. The cemetery was laid out in the rural cemetery tradition, inspired by Mount Auburn Cemetery established in 1831 in nearby Cambridge and Watertown. Forest Hills was one of the first municipally owned rural cemeteries, the site of the first crematory in New England, and an outstanding work of landscape and cemetery design that is also recognized for its architecturally significant buildings and structures and for its outstanding collection of 19th and 20thcentury sculptural monuments. It is the burial place of a remarkable cross-section of people that reflect almost every aspect of American life -- from statesmen to soldiers to industrialists to abolitionists to artists to poets. Those interred here also represent cultures from around the world. Forest Hill Cemetery was designed National Register Individual Property in 2004.

The Cemetery is separated from the Site by Walk Hill Street. Impacts will be limited to minor late morning shadows cast during Winter (see Shadow Studies).

**Mount Hope Cemetery (National Register Individual Property)**

Mount Hope Cemetery was consecrated in 1852 as a private cemetery and in 1857 was acquired by the City of Boston, its current owner. The cemetery was initially 85 acres and was expanded to its present 125 acres by 1929. As Boston's first publicly owned rural cemetery, it was a marked contrast to the city's bleak urban burial grounds. Mount Hope was inspired by the pastoral ideals of Mount Auburn Cemetery in Cambridge, Massachusetts (NHL), but was laid out in a more formal style that reflects slightly later ideas of cemetery and monument design. Although similar in design concept to Boston's private rural cemeteries, it has evolved differently because of its public function. It is also linked with the history of the Mattapan neighborhood and the city of Boston. Mount Hope has been Boston's largest and most active public cemetery for over 150 years. It remains an active cemetery, although new burial space is limited. As of 2008, there have been about 370,000 people buried here, including 64,000 designated as "city poor" and 10,000 veterans. The cemetery retains strong historical associations and distinctive landscape features dating from the mid-19th century to 1959. Changes since that time are considered noncontributing because of the 50-year cutoff used by the National Register. Mount Hope Cemetery was designated a National Register Individual Property in 2009.

This resource is sufficiently removed from the Project and will not to be impacted by the Proposed Project.

### 2.4.3 Historic Areas and Properties within a Mile of the Site

**Franklin Park National (Register District/Boston Landmark)**

Franklin Park is the terminus of the Olmstead Park System or Emerald Necklace. The Park was design by Fredrick Law Olmsted in 1885 as a large rural park especially for working class people. The largest area of the property, "The Country Park", was reserved exclusively "to provide opportunity for a form of recreation to be obtained only through the influence of pleasing natural scenery upon the sensibilities of those quietly contemplating it." "The Country Park" was converted into the William Devine Golf Course in 1896 and is the second oldest public course in the country.

Other areas were set aside for sports (the Playstead, currently White Stadium), a deer park (part of the Zoo) and a playground for small children. The only feature of the Park was a grand mall, called "The Greeting", designed for use as a promenade and meeting place. The Greeting has been incorporated into part of Zoo. Franklin Park was designated an Historic District in 1971 and a Boston Landmark in 1980.

This resource is sufficiently removed from the Project and will not to be impacted by the Proposed Project.

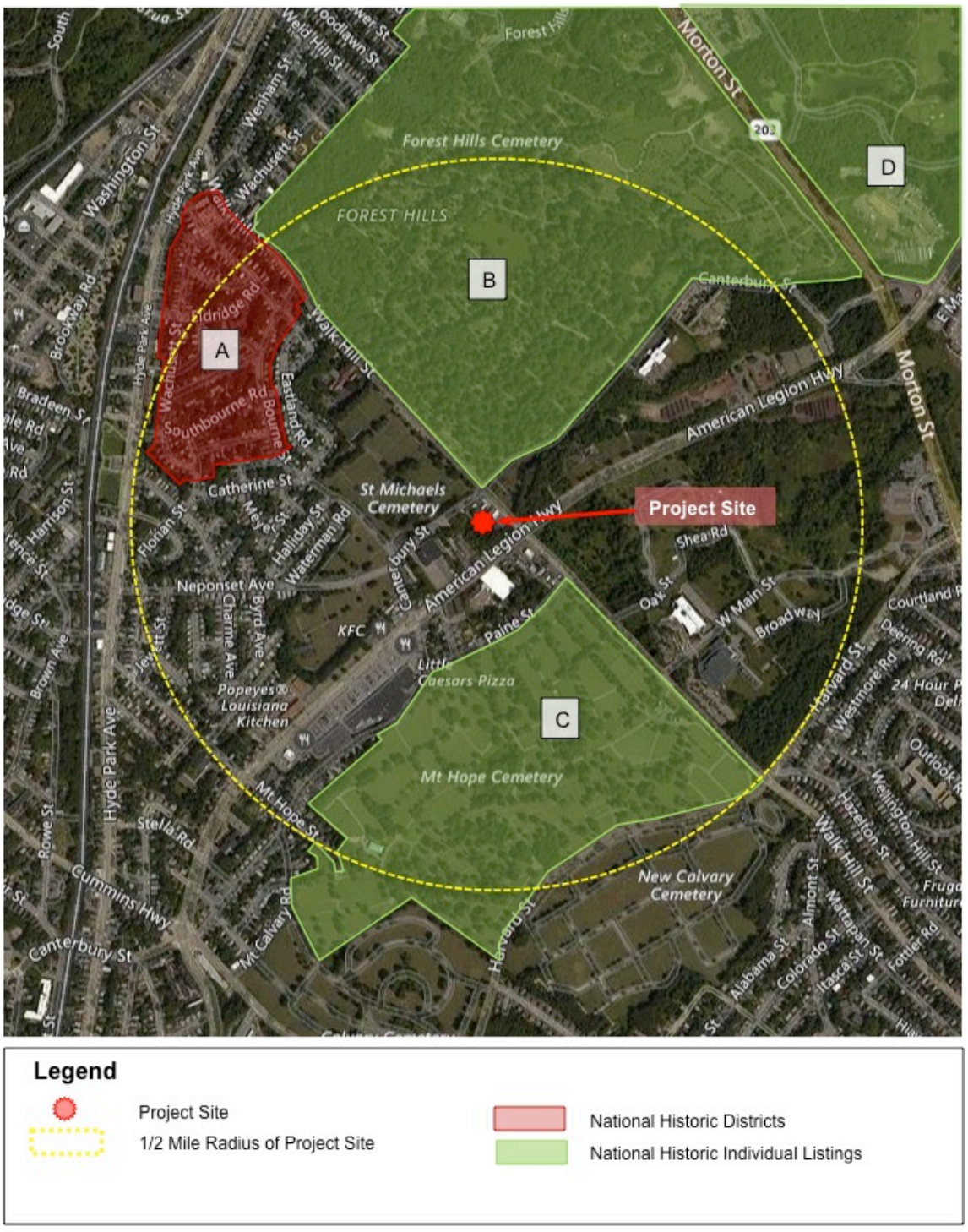
### 2.4.4 Historic Properties within a Mile of the Project Site

A complete list of properties and areas proximate to the site that are listed on the National Register of Historic Places and/or are designated Boston Landmarks are listed in Table 2-13 and located on Figure 2-34.

**Table 2-24 Designated Historic Resources**

| Key | Name |
|---|---|
| **National Register of Historic Places listings – Historic Districts** | |
| 1: | Woodbourne Historic District |
| **National Register of Historic Places/State Listings** | |
| A: | Forest Hills Cemetery |
| B. | Mount Hope Cemetery |
| C. | Franklin Park |
| D. | Morton Street |
| E. | Almont Apartments, 1439 Blue Hill Avenue |
| F. | Roslindale Congregational Church, 25 Cummins Highway |
| G. | Roslindale Baptist Church, 52 Cummins Highway |
| I. | Roslindale Substation, 4228 Washington Street |
| J. | Roslindale Village, Washington Street and Cummins Highway |
| **Boston Landmarks/Massachusetts Historic Districts and Structures** | |
| A: | Franklin Park |

**Figure 2-35 Designated Historic Resources**



### 2.4.5 Archaeological Resources

The Site consists of a previously developed urban parcel. Due to previous development activities and disturbances, it is expected that the Site does not contain significant archaeological resources.

### 2.4.6 Impacts to Historic Resources

As noted, the Roslindale neighborhood's development dates back to the 19th century with the immediate vicinity of the project site currently developed as a mid-20th century suburban commercial corridor with adjacent traditional late 19th and early 20th century residential neighborhood(s) with several individual properties of historic significance.

The Proposed Project will redevelop an underutilized parcel currently developed with retail and residential structures with a new mid-rise residential building. The redevelopment represents the evolving 21st century trend of improving existing under-developed urban parcels with medium density structures that expand multi-family housing opportunities in low density neighborhoods. The proposed structure is in keeping with the urban scale and building geometries found along commercial arterials throughout the City thereby linking higher density use to existing retail/commercial services.

The Proposed Project will impact the adjacent Forest Hill Cemetery casting new shadows primarily mid-day in the Spring and Fall, however these shadows will be minor considering the vast size of the cemetery and that as a cemetery there will be limited impact on active public use. Due to the proximity to a local landmark, the Boston Landmarks Commission will be consulted.

## 2.5 Infrastructure Systems

The following sections describe the existing water, sewer, and drainage systems surrounding the Site and explain how these systems will service the Project.

### 2.5.1 Sewage System

#### 2.5.1.1 Existing Conditions

The existing site is connected to water and sanitary sewer lines in Walk Hill Street. The site is also connected to natural gas supply lines in the same location. These services lines will be abandoned replaced with new connections to meet the capacity requirements of the proposed use.

#### 2.5.1.2 Existing Sewage Generation

The Project's sewage generation rates were estimated using Massachusetts State Environmental Code (Title 5) at 310 CMR 15.203. This reference lists typical values for the source listed in Table 2-12. Other wastewater generation includes the cooling system. As shown in Table 2-12, the estimated existing daily sewage flows are approximately 2,740 gpd of sanitary sewage.

**Table 2-25 Existing Sewage Generation**

| Use | Number | Sewage Generation Rate | Total gpd |
|---|---|---|---|
| Three Single Family Houses | 9 bedrooms | 110 GPD/BRM | 990 |
| Retail | App. 7,000 SF | 50 GPD/1,000SF | 350 GPD |
| Restaurant | 2,900 SF (40 seats est.) | 35 GPD/seat | 1,400 GPD |
| **Total** | | | 2,740 GPD |

The BWSC owns and maintains the sanitary sewer system adjacent to the Site. The sanitary sewer mains in the vicinity of the Project Site include: a 15-inch combined sewer (material not identified) in Canterbury Street and a 10-inch sanitary sewer in Walk Hill Street (material not identified). The sewer systems on Canterbury Street and Walk Hill Street do not appear to be connected.

### 2.5.1.3 Proposed Sewage Generation

The Project as currently proposed includes a 4-5 story residential apartment complex. The sewage flow for the project has been estimated in accordance with 310 CMR 7.15.203: System Sewage Flow Design Criteria and is summarized in Table 2-12 The Project will generate an estimated 21,780 gpd.

**Table 2-26 Project Sewage Generation**

| Use | Number | Sewage Generation Rate | Total gpd |
|---|---|---|---|
| 136 One, Two & Three Bedroom Units | 198 bedrooms | 110 GPD/BRM | 21,780 |
| **Total** | | | 21,780 |

The net change in sewage generation is presented below in Table 2-13.

**Table 2-27 Net Change in Sewage Generation**

| | Existing | Future | Net New Flow |
|---|---|---|---|
| **Estimated Sewage Flow** | 2,740 | 21,780 | 19,040 |

#### 2.5.1.4 System Connections

The Proponent will coordinate with BWSC on the design, capacity and connections of the proposed sanitary sewer system. The design anticipates the installation of a private sanitary sewer network in the Project Site with a single connection to the BWSC sewer to serve the 136-unit residential building. The private sanitary sewer network will collect sanitary sewage from the 136-unit residential building will convey the flows to the north to the existing 10-inch sanitary sewer located in Walk Hill Street. The Project's sewage and stormwater flows will connect to the BWSC infrastructure, and any illicit connections found during construction will be removed.

All improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. This process includes a comprehensive design review of the proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts.

#### 2.5.1.5 Sewer System Mitigation

The environmental design goals for the Proposed Project include reducing wastewater volumes by incorporating efficient fixtures into the design. Water conservation measures such as low-flow fixtures, aerated showerheads, dual-flush toilets and low consumption appliances are being considered to reduce water consumption and sewage generation.

Storm Drain lines will not be connected to separated BWSC sanitary sewer systems.

### 2.5.2 Water Supply System

#### 2.5.2.1 Existing Conditions

The water mains in the vicinity of the Project Site are owned and maintained by BWSC. There are five different water systems/service districts within the City, which provide service to portions of the City based on ground surface elevation. The five systems are southern low (commonly known as low service), southern high (commonly known as high service), southern extra high, northern low, and northern high. The water mains in the vicinity of the Project Site are part of the southern low service system. There is a 12-inch ductile iron cement-lined (DICL) water main located in Canterbury Street and an 8-inch ductile iron cement-lined (DICL) in Walk Hill Street.

According to BWSC's records, there are several existing services to the Project Site from Walk Hill Street. It is anticipated that these existing services will not be utilized as part of the proposed project.

There are approximately two (2) existing hydrants immediately adjacent to or within close proximity to the Project Site. The hydrants are located on Canterbury Street and Walk Hill Street. The Proponent will confirm that the hydrants are sufficient for the development and coordinate any proposed changes in locations with BWSC and the Boston Fire Department (BFD) during the detailed design phase. Hydrant flow tests will be conducted as part of the Project design.

#### 2.5.2.2 Proposed Water System

The Project's water demand estimates for domestic sources are based on the Project's estimated sewage generation. A conservative factor of 1.1 is applied to the average daily wastewater flows to estimate the average water use on a daily basis. This factor accounts for consumption and other miscellaneous losses. Therefore, it is estimated that the Project will consume approximately 20,944 gpd of domestic water. The water will be supplied by the BWSC.

Water capacity and pressure are not anticipated to be an issue for the Project based on the projected domestic and fire protection water demands. BWSC record flow data and hydrant flow test will be used to confirm that there is enough pressure in the existing water system to support the Project's needs.

#### 2.8.2.4 Water Supply System Mitigation

As discussed in the Sewer System Mitigation Section, water conservation measures such as low-flow fixtures, aerated showerheads, dual-flush toilets and low consumption appliances are being considered to reduce water consumption. Water usage for landscape irrigation will be significantly reduced by the selection of native and adaptive plantings, and using soil moisture sensors as part of the irrigation system.

### 2.5.3 Stormwater System

#### 2.5.3.1 Existing Condition

The Project Site is a 2.01 acre site comprised of four (4) parcels of land. Currently, the Site is occupied by two (2) small retail building with a restaurant/caterer, a florist and garden center with associated green houses, and three (3) single-family homes. One of the parcels containing a single family home has been mostly cleared and provides storage for construction related debris. With the exception of a small landscape area around the single family homes, and rows of trees and shrubs between the parcels and along the sewer easement alongside Canterbury Brook, the balance of the Site is paved or consists of other impervious material. There are no catch basins that exist on the Site today. There are no identified stormwater connections from Site to the BWSC drainage or sewer systems.

The Site generally slopes from the northwest (intersection of Canterbury and Walk Hill Streets) to the southeast towards Canterbury Brook. Site generated stormwater runoff drains predominantly to Canterbury brook with smaller areas draining to Canterbury and Walk Hill Streets. There are no existing detention, recharge or stormwater water quality facilities to mitigate stormwater runoff quantity or quality. The existing streets adjacent to the Project contain storm drains owned and maintained by the BWSC. Walk Hill Street contains separated storm and sanitary sewer lines that are believed to be of sufficient capacity to meet projected demands.

#### 2.5.3.2 Proposed Stormwater System

The proposed stormwater management systems will include a combination of catch basins with deep-sumps and oil trap hoods, water quality units and groundwater recharge systems. The

stormwater system structures will outlet to a bio-retention basin with native plants constructed in the disturbed buffer zone adjacent to Canterbury Brook. The groundwater recharge system will recharge 1-inch of runoff from impervious areas in accordance with BWSC requirements, where feasible. In addition to the decrease in stormwater runoff as a result of the groundwater recharge systems, the Project will result in a decrease in impervious area and therefore, a reduction of stormwater runoff. In addition to the reduction in the peak rate and volume of stormwater runoff, cleanup of debris, and native plantings surrounding Canterbury Brook, the Project is expected to improve stormwater quality. It is anticipated that the stormwater recharge systems will work to passively infiltrate runoff into the ground with a gravity recharge system. The underground recharge system, and any required site closed drainage systems, will be designed so that there will be no increase in the peak rate of stormwater discharge from the Project Site in the developed condition compared to the existing condition. In addition, for any portions of the project where recharge systems cannot be accommodated, water quality units will be installed to reduce pollutants in stormwater runoff per BWSC standards prior to discharge.

All improvements and connections to BWSC infrastructure will be reviewed as part of the Commission's Site Plan Review process. The process includes a comprehensive design review of the proposed service connections, assessment of project demands, and system capacity. The Project will meet the Department of Environmental Protection's (DEP) Stormwater Management Standards for redevelopment.

## 2.5.4 Energy Needs/Systems

### *2.5.4.1 Heating and Cooling*

An Aquatherm system will provide heating and cooling for the apartments. There will be a gas-fired heater in every unit. The heater will produce hot water for the plumbing fixtures and hot water coils of air handlers. Roof top units will provide heating and cooling for the common areas. The total electric consumption for cooling is estimated 150,000 kWH per year. The total heating (building heating and domestic water heating) is estimated at 220,000 therms per year. The estimated gas consumption for cooking is 470 therms/year and for dryers is 125 therms/year

### *2.5.4.2 Electrical Requirements*

The Project electrical load is estimated at a range of 1405 kW kW inclusive of energy required for the cooling. Eversource provides electric service in the City of Boston and has an underground service conduit located in Walk Hill street. It is anticipated that an Eversource Network Transformer Vault or a pad mounted transformer will be required either in the sidewalk or a dedicated space with in the Project. The final service approach and transformer location will be determined during the final design and discussions with Eversource.

### *2.5.4.3 Energy Conservation Measures*

Energy conservation measures will include the use of condensing type water heaters to maximize free cooling in the corridors.

#### *2.5.4.4 Telephone and Cable Systems*

Verizon and Comcast provide telephone, cable and internet services in the vicinity of the Project Site. The Proponent will select private telecommunications companies to provide telephone, cable, and internet services. Upon selection of a provider or providers, the Proponent will coordinate service connection locations and obtain appropriate approvals.

#### *2.5.4.5 Natural Gas System*

National Grid owns and maintains natural gas services in the public rights-of-way adjacent to the Project Site. The Project is expected to utilize natural gas for heating and domestic hot water. The actual size and location of the building services and gas meter locations will be coordinated with the project architect and National Grid.

#### *2.5.4.6 Utility Protection During Construction*

Existing public and private utility infrastructure located within adjacent public rights-of-way will be protected during the construction of the proposed Project. The installation of proposed utility connections within public rights-of-way will be undertaken in accordance with BWSC, Boston Public Works Department, Dig Safe and applicable private utility company requirements. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sanitary sewer, and storm drain facilities will be reviewed by BWSC as part of its Site Plan Review process. All necessary permits will be obtained before the commencement of work.

The Proponent will continue to work and coordinate with BWSC and the private utility companies to ensure safe and coordinate utility construction activities as part of the Proposed Project.

## 2.6 Sustainable Design

### 2.6.1 Sustainable Design/ Green Building

All developments proposed in the City of Boston must now follow the Boston Green Building Regulations including standards established under Article 37 of the Boston Zoning Code. The Project as currently conceived will meet or exceed the U.S. Green Council's Leadership in Energy and Environmental Design (LEED) system to achieve a Silver standard. A summary of how the project addresses each checklist category is included below with an expanded version to be prepared in accordance with the Article 37 regulations. A Climate Change Preparedness Questionnaire and Accessibility Checklist will also be prepared and submitted to the Interagency Green Building Committee as required.

Our team is committed to incorporating environmentally sensitive, sustainable design elements into the proposed development. These elements will improve the quality of life for the residents of this project as well as the neighborhood, while helping to protect the global environment. Ultimately they will also reduce operating costs while increasing value for the project, improving its business viability. We are committed to identifying opportunities presented by the redevelopment by setting proactive goals and ensuring an undertaking that is LEED Silver certifiable as a minimum and satisfies the requirements of the City of Boston Environment Department.

The proponent has set proactive goals to ensure an undertaking that is LEED certifiable and satisfies the requirements of the City of Boston Environment Department, and has assembled an architectural and engineering team familiar with implementing these goals. Embarc Architects, Inc.'s own LEED accredited personnel is working in concert with innovative LEED accredited engineers (mechanical, electrical and plumbing engineers.) In turn, the team will actively involve the selected contractor in turning this commitment into reality. Please see Appendix I for a LEED Scorecard.

The following sections outline the team's approach to individual LEED Credits:

### 2.6.2 City of Boston Article 37

The Project will include the following Prerequisite Boston Green Building Credits:

Boston Public Health Development Prerequisite Credits:

*Prerequisite Diesel Retrofit of Construction Vehicles*
Retrofit of all diesel construction vehicles from the United States Environmental Protection Agency approved retrofit technologies, or a contribution of a comparable amount to the Air Pollution Control Commission Abatement Fund.
*Prerequisite Outdoor Construction Management Plan*
An outdoor construction management plan including provisions for wheel washing, site vacuuming, truck covers and anti-idling signage.
*Prerequisite Integrated Pest Management Plan*
The Project will include Item No. 3 and 4 listed below, of the Boston Credits.

Boston Credits:

A. Modern Grid Credit; Not applicable for this Project.
B. Historic Preservation Credit; Not applicable for this Project.
C. Groundwater Recharge Credit; Yes
   1. The Project will capture rainwater including landscape irrigation.
D. Modern Mobility Credit Yes

*Prerequisites:*

1. Designate an on-site transportation coordinator in the management office.
2. Post information about public transportation and car-sharing options.
3. Provide transit, bike and pedestrian access information on building website.
4. Provide on-site, external bicycle racks for visitors and covered secure bicycle storage for the building occupants. 15% residential and 5% other uses.
5. Comply with Boston Transportation Department district parking ratios.
6. Join a Transportation Management Association (for mixed-use projects).

For Residential Projects:

1. Provide preferred parking spaces for a car-sharing service capable of serving 1% of building occupants.

2. Residential parking spaces required by zoning may only be purchased and used by building tenants/unit owners.
3. On-site electric charging plug-in stations for plug-ins capable of serving 1% of the building occupants.

### 2.6.3 LEED Narrative

The Project as currently conceived will meet or exceed the U.S. Green Council's Leadership in Energy and Environmental Design (LEED) system to achieve a Silver standard. A summary of how the project addresses each checklist category is included below with an expanded version to be prepared in accordance with the Article 37 regulations. A Climate Change Preparedness Questionnaire and Accessibility Checklist will also be prepared and submitted to the Interagency Green Building Committee as required.

At this early stage of the design process, specific building system specifications have not yet been determined. System design solutions will be developed in an effort to achieve the targeted LEED credits. The final design and construction of the Project will create a sustainable building that promotes a healthy environment for the residents, enhances the surrounding neighborhood locally, and reduces environmental impacts globally.

#### 2.6.3.1 Innovation and Design Process (ID)

ID 1.1 Preliminary Rating (Prerequisite): A Green Rater has not yet been chosen as a team member however once this consultant is chosen, The Project team will review the Checklist prepared to date with the Green Rater. It is intention of the Team that the Project at a minimum achieve a Certified Level.

ID 1.2 Energy Expertise for Mid-Rise (Prerequisite): The Project Team includes a team member familiar with Mid-Rise Energy systems and components as well as energy modeling per ASHRAE 90.1.

ID 1.3 Professional Credentialed with Respect to LEED for Homes:

ID 1.4 Design Charette (1 Credit): Conduct at least one design workshop with the design team in order to implement sustainable strategies across all aspects of the building design.

#### 2.6.3.2 Location and Linkages (LL)

LL 4 Existing Infrastructure (1 credit): The parcel of land upon which the Project will be constructed is within ½ mile of existing utilities including water and sewer service lines.

LL 5.1 – 5.3 Community Resources/Public Transit (3 credits): The site is well connected by mass transportation lines.

LL 6 Access to Open Space (1 credit): The site will meet the requirement for being within ¼ of mile to open spaces that is greater than ¾ acre.

### 2.6.3.3 Sustainable Sites (SS)

SS 1.1 Erosion Controls during Construction (Prerequisite): The Project team will design and plan appropriate erosion control features. Fulfillment of this point will continue through the construction phase and will include such things as protection and reuse of existing on site topsoil, controlling run-off, protection of on-site sewer inlets and most importantly streams and diverting of surface water run-off.

SS 1.2 Minimize Disturbed Area of Site for Mid-Rise (1 credit): The density of the Project is currently +/- 68 units/acre and will therefore be in excess of the 40 units/acre threshold.

SS 2.1 No invasive plants (Prerequisite): No invasive species will be specified on the Planting Plan.

SS 2.2 Basic Landscape Design (1 credit): Specified turf will be drought-tolerant, will not be used in densely shaded areas, and will not be placed on slope with a slope greater than 25%. Mulch, or soils amendments will be used as appropriate, and compacted soil will be tilled to at least six inches.

SS 2.3 Limit Conventional Turf for Mid-Rise (1 credit): The Landscaping design will limit the use of conventional turf in the designed landscape softscapes.

SS 3.2 Reduce Roof Heat Island Effects (1 credit): The roof will be installed with high albedo roofing system material on more than 75% of the roof surface.

SS 4.2 Permanent Erosion Controls (1 credit): The Project will plant one tree, four 5-gallon shrubs or 50SF of native groundcover per 500SF of disturbed lot area.

SS 4.3 Storm Water Quality Control for Mid-Rise (2 credits): The Project will use a implement a water management plan designed in accordance with the Commonwealth of Massachusetts and local City ordinances and standards.

SS 5 Nontoxic Pest Control (2 credits): The construction phase activities for the Project will meet all of the pest-control alternatives listed within this section.

SS 6.1 – 6.3 Compact Development, Moderate Density (2 credits): The Project will have approximately 68 units per acre, meeting the standard for the Moderate Density threshold of 60 units/acre.

SS 7.2 Bicycle Storage for Mid-Rise (1 credit): At least one covered bicycle storage space for each dwelling unit will be provided, exceeding the requirement mandated under LEED.

### 2.6.3.4 Water Efficiency (WE)

WE 3.2 Indoor water Use-Very High Efficiency Fixtures and Fittings (6 credits): The Project will select shower heads with 1.75 or less gallons per minute (GPM), lavatory faucets with 0.5 or less GPM, and toilets equal to or less than 1.10 gallons per flush.

WE 3.3 Water Efficient Appliances for Mid-Rise (2 credits): The Project will use high efficiency clothes washing machines and dishwashers.

### 2.6.3.5 Energy and Atmosphere (EA)

EA 1.1 Minimum Energy Performance for Mid-Rise (Prerequisite): The Project will exceed the 18% minimum reduction in energy use according to the ASHRAE 90.1 simulation: Appendix G, well in excess of the LEED minimum threshold.

EA 1.2 Testing and Verification for Mid-Rise (Prerequisite): The Project will comply with Option 1, EPA MFHR Testing & Verification protocol.

EA 7.2 Pipe Insulation (1 credit): All domestic hot water piping shall have R-4 insulation. The insulation will be properly installed on all pipe elbows to insulate the 90 degree bend.

EA 11.1 Refrigerant Charge Test (Prerequisite): Proper refrigerant charge of the cooling system will be performed.

EA 11.2 Appropriate HVAC Refrigerants (1 credit): R410A refrigerant will be used in conjunction with the specified cooling systems.

### 2.6.3.6 Materials and Resources (MR)

MR 1.1 Framing Order Waste Factor (Prerequisite): Limit the overall estimated waste factor to 10%.

MR 1.4 Framing Efficiencies (1 credit): Framing Efficiencies will be achieved and will include such things as pre-cut framing packages, open-web floor trusses, ceiling/floor/roof joist spacing in excess of 16" OC.

MR 2.1 FSC Certified Tropical Woods (Prerequisite): Should tropical woods be used, FSC Certified Wood will be used.

MR 2.2 Environmentally Preferable Products (min. 3 credits): The Project will specify and approve during the submittal process products that environmentally preferable in accordance with the EPP Table. Anticipated credits will be 3.

MR 3.1 Construction Waste Management Planning (Prerequisite): The Project will investigate and document local options for diversion of all anticipated major constituents of the project waste stream.

MR 3.2 Construction Waste Reduction (1.5 credits): The Project will increase its waste diversion by targeting a 50% reduction.

### 2.6.3.7 Indoor Environmental Quality (EQ)

EQ 2.1 Basic Combustion Venting Measures (Prerequisite): These requirements, no unvented combustion appliances, CO monitoring on each floor, space heating equipment that is closed combustion are basic requirements of the State Building Code and will be incorporated into the work.

EQ 4.1 Basic Outdoor Air Ventilation (Prerequisite): Continuous ventilation shall be provided to each dwelling unit to meet the ASHRAE Standard.

EQ 5.1 Basic Local Exhaust (Prerequisite): Bathroom exhaust fans and kitchen exhaust fans will be ASHRAE compliant and the requirements of LEED will be met.

EQ 5.2 Enhanced Local Exhaust (1 Credit): Continuously operating exhaust fans will be specified. Fans will operate continuously at 20% and ramp up to 100% when activated to meet the ventilation requirement.

EQ 6.1 Room by Room Load Calculations (Prerequisite): Perform room by room load calculations and install system accordingly. Calculations will be performed by the mechanical engineer of record for the project.

EQ 7.1 Air Filtering (prerequisite): Install air filters with a minimum efficiency reporting value of MERV 8 filters and ensure that air handlers can maintain adequate pressure and air flow.

EQ 7.2 Air Filtering (prerequisite): MERV 10 filters will be installed and adequate pressures and air flow will be maintained.

EQ 8.1 Indoor Contaminant Control During Construction (1 credit): Upon installation all ductwork will be sealed to minimize contamination during construction.

EQ 8.3 Preoccupancy Flush (1 credit): A flushing out of airborne contaminants per LEED standards will be conducted.

EQ 10.1 No HVAC in Garage (Prerequisite): The garage will not HVAC equipment other than that required for mechanical (CO) ventilation in which the make-up air will not be conditioned.

EQ 10.2 Minimize Pollutants from Garage (2 Credits): The Garage will be tightly sealed from occupied spaces that occur above the garage level and the ventilation requirements of ASHRAE will be met.

EQ 11 Environmental Tobacco Smoke Control, a) Reduce smoke exposure and transfer (0.5 credit): Restrictions will be placed on residents that include prohibiting of smoking in all common areas both interior and exterior.

EQ 12.1 Compartmentalization of Units (Prerequisite): Air-sealing protocol will be implemented to ensure leakage below .30 CFM50 per Square Foot of interior space.

### 2.6.3.8 Awareness and Education (AE)

AE 1.1 Education of the Homeowner (Prerequisite): A digital Operations and Maintenance Manual will be provided to each resident and will include such things as manuals and the energy efficient use of such equipment. In addition a 1-hour training/walk-through session will be conducted with the residents in groups to cover the following: identification of installed equipment, how to operate the equipment and how to maintain the equipment.

AE 1.3 Public Awareness (1 credit): The Proponent will promote general public awareness about LEED for Homes that include a website that will explain the features and benefits of LEED homes, a newspaper article on the sustainability measures included within the Project and signage indicating the LEED for Homes status of the Project.

AE 2 Education of the Building Manager (1 credit): An Operations and Maintenance Manual will be provided to the Building Manager and will include a copy of the accountability form, a copy of the durability checklist . A one-hour long walk through of the property featuring an explanation of the equipment, an in-depth training session on the operability and maintenance of the equipment.

## Figure 2-36 LEED Checklist

### LEED for Homes Mid-rise Simplified Project Checklist

*for Homes*

| | |
|---|---|
| **Builder Name:** | |
| **Project Team Leader (if different):** | |
| **Home Address (Street/City/State):** | *Walk Hill Street, Boston, MA* |

**Project Description:**

Building type: *Mid-rise multi-family* # of stories: *5*

# of units: *136* Avg. Home Size Adjustment: *-5*

**Adjusted Certification Thresholds**

Certified: *40.0* Gold: *70.0*

Silver: *55.0* Platinum: *85.0*

**Project Point Total**

Prelim: *41 + 14.5 maybe pts* Final: *4*

**Certification Level**

Prelim: *Certified* Final: *Not Certified*

**Final Credit Category Total Points**

*ID: 0* *SS: 4* *EA: 0* *EQ: 0*

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

*Minimum Point Thresholds Not Met for Final Rating*

date last updated :
last updated by :

| | | | | | Max Pts | Project Points Preliminary Y/Pts | Maybe | No | Final Y/Pts |
|---|---|---|---|---|---|---|---|---|---|
| **Innovation and Design Process (ID)** | | | (No Minimum Points Required) | | Max | Y/Pts | Maybe | No | Y/Pts |
| **1. Integrated Project Planning** | | 1.1 | Preliminary Rating | | Prereq | | | | |
| | | 1.2 | Energy Expertise for MID-RISE | | Prereq | | | | |
| | | 1.3 | Professional Credentialed with Respect to LEED for Homes | | 1 | *1* | *0* | | *0* |
| | | 1.4 | Design Charrette | | 1 | *1* | *0* | | *0* |
| | | 1.5 | Building Orientation for Solar Design | | 1 | *0* | *0* | | *0* |
| | | 1.6 | Trades Training for MID-RISE | | 1 | *0* | *0* | | *0* |
| **2. Durability Management Process** | | 2.1 | Durability Planning | | Prereq | | | | |
| | | 2.2 | Durability Management | | Prereq | | | | |
| | | 2.3 | Third-Party Durability Management Verification | | 3 | *0* | *0* | | *0* |
| **3.Innovative or Regional Design** | ✎ | 3.1 | Innovation #1 _____ | | 1 | *0* | *0* | | *0* |
| | ✎ | 3.2 | Innovation #2 _____ | | 1 | *0* | *0* | | *0* |
| | ✎ | 3.3 | Innovation #3 _____ | | 1 | *0* | *0* | | *0* |
| | ✎ | 3.4 | Innovation #4 _____ | | 1 | *0* | *0* | | *0* |
| | | | | *Sub-Total for ID Category:* | **11** | *2* | *0* | | *0* |
| **Location and Linkages (LL)** | | | (No Minimum Points Required) | *OR* | Max | Y/Pts | Maybe | No | Y/Pts |
| **1. LEED ND** | | 1 | LEED for Neighborhood Development | **LL2-6** | 10 | *0* | *0* | | *0* |
| **2. Site Selection** | ✎ | 2 | Site Selection | | 2 | *0* | *0* | | *0* |
| **3. Preferred Locations** | | 3.1 | Edge Development | | 1 | *0* | *0* | | *0* |
| | | 3.2 | Infill | **LL 3.1** | 2 | *0* | *0* | | *0* |
| | | 3.3 | Brownfield Redevelopment for MID-RISE | | 1 | *0* | *0* | | *0* |
| **4. Infrastructure** | | 4 | Existing Infrastructure | | 1 | *1* | *0* | | *0* |
| **5. Community Resources/ Transit** | | 5.1 | Basic Community Resources for MID-RISE | | 1 | *1* | *0* | | *0* |
| | | 5.2 | Extensive Community Resources for MID-RISE | **LL 5.1, 5.3** | 2 | *0* | *0* | | *0* |
| | | 5.3 | Outstanding Community Resources for MID-RISE | **LL 5.1, 5.2** | 3 | *0* | *0* | | *0* |
| **6. Access to Open Space** | | 6 | Access to Open Space | | 1 | *1* | *0* | | *0* |
| | | | | *Sub-Total for LL Category:* | **10** | *3* | *0* | | *0* |
| **Sustainable Sites (SS)** | | | (Minimum of 5 SS Points Required) | *OR* | Max | Y/Pts | Maybe | No | Y/Pts |
| **1. Site Stewardship** | | 1.1 | Erosion Controls During Construction | | Prerequisite | | | | |
| | | 1.2 | Minimize Disturbed Area of Site for MID-RISE | | 1 | *0* | *0* | | *0* |
| **2. Landscaping** | ✎ | 2.1 | No Invasive Plants | | Prerequisite | | | | |
| | ✎ | 2.2 | Basic Landscape Design | **SS 2.5** | 1 | *1* | *0* | | *0* |
| | ✎ | 2.3 | Limit Conventional Turf for MID-RISE | **SS 2.5** | 2 | *1* | *0* | | *1* |
| | ✎ | 2.4 | Drought Tolerant Plants for MID-RISE | **SS 2.5** | 1 | *0* | *0* | | *0* |
| | ✎ | 2.5 | Reduce Overall Irrigation Demand by at Least 20% for MID-RISE | | 3 | *0* | *0* | | *0* |
| **3. Local Heat Island Effects** | ✎ | 3.1 | Reduce Site Heat Island Effects for MID-RISE | | 1 | *0* | *0* | | *0* |
| | ✎ | 3.2 | Reduce Roof Heat Island Effects for MID-RISE | | 1 | *1* | *0* | | *0* |
| **4. Surface Water Management** | ✎ | 4.1 | Permeable Lot for MID-RISE | | 2 | *0* | *0* | | *0* |
| | | 4.2 | Permanent Erosion Controls | | 1 | *1* | *0* | | *0* |
| | ✎ | 4.3 | Stormwater Quality Control for MID-RISE | | 2 | *2* | *0* | | *0* |
| **5. Nontoxic Pest Control** | | 5 | Pest Control Alternatives | | 2 | *1* | *0* | | *0* |
| **6. Compact Development** | | 6.1 | Moderate Density for MID-RISE | | 2 | *2* | *0* | | *0* |
| | | 6.2 | High Density for MID-RISE | **SS 6.1, 6.3** | 3 | *3* | *0* | | *3* |
| | | 6.3 | Very High Density for MID-RISE | **SS 6.1, 6.2** | 4 | *0* | *0* | | *0* |
| **7. Alternative Transportation** | | 7.1 | Public Transit for MID-RISE | | 2 | *0* | *0* | | *0* |
| | | 7.2 | Bicycle Storage for MID-RISE | | 1 | *1* | *0* | | *0* |
| | | 7.3 | Parking Capacity/Low-Emitting Vehicles for MID-RISE | | 1 | *0* | *1* | | *0* |
| | | | | *Sub-Total for SS Category:* | **22** | *11* | *1* | | *4* |

## LEED for Homes Mid-rise Pilot Simplified Project Checklist (continued)

| | | | | | Max Pts | Project Points Preliminary Y/Pts | Maybe | No | Final Y/Pts |
|---|---|---|---|---|---|---|---|---|---|
| **Water Efficiency (WE)** | | | (Minimum of 3 WE Points Required) | *OR* | Max | | | | |
| **1. Water Reuse** | | 1 | Water Reuse for MID-RISE | | 5 | 0 | 0 | | 0 |
| **2. Irrigation System** | | 2.1 | High Efficiency Irrigation System for MID-RISE | **WE 2.2** | 2 | 2 | 0 | | 0 |
| | | 2.2 | Reduce Overall Irrigation Demand by at Least 45% for MID-RISE | | 2 | 0 | 0 | | 0 |
| **3. Indoor Water Use** | | 3.1 | High-Efficiency Fixtures and Fittings | | 3 | 0 | 0 | | 0 |
| | | 3.2 | Very High Efficiency Fixtures and Fittings | | 6 | 6 | 0 | | 0 |
| | | 3.3 | Water Efficient Appliances for MID-RISE | | 2 | 2 | 0 | | 0 |
| | | | *Sub-Total for WE Category:* | | **15** | 10 | 0 | | 0 |
| **Energy and Atmosphere (EA)** | | | (Minimum of 0 EA Points Required) | *OR* | Max | | | | |
| **1. Optimize Energy Performance** | | 1.1 | Minimum Energy Performance for MID-RISE | | Prereq | | | | |
| | | 1.2 | Testing and Verification for MID-RISE | | Prereq | | | | |
| | | 1.3 | Optimize Energy Performance for MID-RISE | | 34 | 0 | 0 | | 0 |
| **7. Water Heating** | | 7.1 | Efficient Hot Water Distribution | | 2 | 0 | 2 | | 0 |
| | | 7.2 | Pipe Insulation | | 1 | 1 | 0 | | 0 |
| **11. Residential Refrigerant Management** | | 11.1 | Refrigerant Charge Test | | Prereq | | | | |
| | | 11.2 | Appropriate HVAC Refrigerants | | 1 | 0 | 0 | | 0 |
| | | | *Sub-Total for EA Category:* | | **38** | 1 | 2 | | 0 |
| **Materials and Resources (MR)** | | | (Minimum of 2 MR Points Required) | *OR* | Max | | | | |
| **1. Material-Efficient Framing** | | 1.1 | Framing Order Waste Factor Limit | | Prereq | | | | |
| | | 1.2 | Detailed Framing Documents | **MR 1.5** | 1 | 0 | 0 | | 0 |
| | | 1.3 | Detailed Cut List and Lumber Order | **MR 1.5** | 1 | 0 | 0 | | 0 |
| | | 1.4 | Framing Efficiencies | **MR 1.5** | 3 | 1 | 0.5 | | 0 |
| | | 1.5 | Off-site Fabrication | | 4 | 0 | 4 | | 0 |
| **2. Environmentally Preferable Products** | | 2.1 | FSC Certified Tropical Wood | | Prereq | | | | |
| | | 2.2 | Environmentally Preferable Products | | 8 | 2.5 | 0 | | 0 |
| **3. Waste Management** | | 3.1 | Construction Waste Management Planning | | Prereq | | | | |
| | | 3.2 | Construction Waste Reduction | | 3 | 1.5 | 1.5 | | 0 |
| | | | *Sub-Total for MR Category:* | | **16** | 5 | 5.5 | | 0 |
| **Indoor Environmental Quality (EQ)** | | | (Minimum of 6 EQ Points Required) | *OR* | Max | | | | |
| **2. Combustion Venting** | | 2 | Basic Combustion Venting Measures | | Prereq | | | | |
| **3. Moisture Control** | | 3 | Moisture Load Control | | 1 | 0 | 0 | | 0 |
| **4. Outdoor Air Ventilation** | | 4.1 | Basic Outdoor Air Ventilation for MID-RISE | | Prereq | | | | |
| | | 4.2 | Enhanced Outdoor Air Ventilation for MID-RISE | | 2 | 0 | 2 | | 0 |
| | | 4.3 | Third-Party Performance Testing for MID-RISE | | 1 | 0 | 1 | | 0 |
| **5. Local Exhaust** | | 5.1 | Basic Local Exhaust | | Prerequisite | | | | |
| | | 5.2 | Enhanced Local Exhaust | | 1 | 1 | 0 | | 0 |
| | | 5.3 | Third-Party Performance Testing | | 1 | 0 | 0 | | 0 |
| **6. Distribution of Space Heating and Cooling** | | 6.1 | Room-by-Room Load Calculations | | Prereq | | | | |
| | | 6.2 | Return Air Flow / Room by Room Controls | | 1 | 0 | 0 | | 0 |
| | | 6.3 | Third-Party Performance Test / Multiple Zones | | 2 | 0 | 2 | | 0 |
| **7. Air Filtering** | | 7.1 | Good Filters | | Prereq | | | | |
| | | 7.2 | Better Filters | **EQ 7.3** | 1 | 1 | 0 | | 0 |
| | | 7.3 | Best Filters | | 2 | 0 | 0 | | 0 |
| **8. Contaminant Control** | | 8.1 | Indoor Contaminant Control during Construction | | 1 | 1 | 0 | | 0 |
| | | 8.2 | Indoor Contaminant Control for MID-RISE | | 2 | 0 | 1 | | 0 |
| | | 8.3 | Preoccupancy Flush | | 1 | 0 | 0 | | 0 |
| **9. Radon Protection** | | 9.1 | Radon-Resistant Construction in High-Risk Areas | | Prereq | | | | |
| | | 9.2 | Radon-Resistant Construction in Moderate-Risk Areas | | 1 | 0 | 0 | | 0 |
| **10. Garage Pollutant Protection** | | 10.1 | No HVAC in Garage for MID-RISE | | Prereq | | | | |
| | | 10.2 | Minimize Pollutants from Garage for MID-RISE | **EQ 10.3** | 2 | 2 | 0 | | 0 |
| | | 10.3 | Detached Garage or No Garage for MID-RISE | | 3 | 0 | 0 | | 0 |
| **11. ETS Control** | | 11 | Environmental Tobacco Smoke Reduction for MID-RISE | | 1 | 1 | 0 | | 0 |
| **12. Compartmentalization of Units** | | 12.1 | Compartmentalization of Units | | Prereq | | | | |
| | | 12.2 | Enhanced Compartmentalization of Units | | 1 | 0 | 0 | | 0 |
| | | | *Sub-Total for EQ Category:* | | **21** | 6 | 6 | | 0 |
| **Awareness and Education (AE)** | | | (Minimum of 0 AE Points Required) | | Max | | | | |
| **1. Education of the Homeowner or Tenant** | | 1.1 | Basic Operations Training | | Prereq | | | | |
| | | 1.2 | Enhanced Training | | 1 | 1 | 0 | | 0 |
| | | 1.3 | Public Awareness | | 1 | 1 | 0 | | 0 |
| **2. Education of Building Manager** | | 2 | Education of Building Manager | | 1 | 1 | 0 | | 0 |
| | | | *Sub-Total for AE Category:* | | **3** | 3 | 0 | | 0 |

# 3.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

## 3.1 Massachusetts Environmental Policy Act

The Project does not meet the thresholds for review under the Massachusetts Environmental Policy Act (MEPA) so an Environmental Notification Form (ENF) will not be filed.

## 3.2 Massachusetts Historical Commission

The Project does not require any state permits but is adjacent to a National Register listed property. The Massachusetts Historical Commission (MHC) will be contacted regarding potential review by that agency.

## 3.3 Boston Landmarks Commission

The Project is not a designated landmark nor is it in a designated historic district however proximity to the Forest Hills Cemetery may require review by the Boston Landmark Commission. The Proponent will notify the Environment Department of the proposed development and comply with any determination made regarding review by the BLC.

## 3.4 Architectural Access Board Requirements

The Project will comply with the requirements of the Architectural Access Board and the standards of the Americans with Disabilities Act.

## 3.5 Boston Civic Design Commission

Article 28 of the Boston Zoning Code stipulates that projects over 100,000 square feet shall be subject to review by the Boston Civic Design Commission. Preliminary determination by the BPDA is that this project does not meet that threshold and therefore BCDC review is not required.

## 3.6 Other Permits and Approvals

Section 1.5 of this PNF lists agencies from which permits and approvals for the Project will be sought.

## 3.7 Community Outreach

The Proponent is committed to effective community outreach and will engage the community to ensure public input on the Project.

# 4.0 PROJECT'S CERTIFICATION

This form has been circulated to the Boston Redevelopment Authority as required by the Boston Zoning Code, Article 80.

Signature of Proponent's Representative

Nabil Bogus
Walk Hill Residences, LLC

October 20, 2016

Signature of Proponent's Representative

Charles D. Gill
Walk Hill Residences, LLC

October 20. 2017

Signature of Preparer

Thomas Maistros, Jr, RA
Northeast Strategies and Communication Group

October 20, 2016

# 5.0 APPENDICES

Accessibility Checklist

Climate Change/Preparedness and Resiliency Checklist

Ownership Disclosure Statement

Traffic Counts (Under Separate Cover)

Historical Data (Traffic) (Under Separate Cover)

Trip Generation (Traffic) (Under Separate Cover)

Safety Analysis (Traffic) (Under Separate Cover)

Capacity Analysis (Traffic) (Under Separate Cover)

Transportation Study Appendices are forwarded directly to the Boston Transportation Department – Copies are available on request.

# Accessibility Checklist

(To be added to the BRA Development Review Guidelines)

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

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

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

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

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

## Accessibility Analysis Information Sources:

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

## Project Information

| | |
|---|---|
| Project Name: | **Walk Hill Residences** |
| Project Address Primary: | **289 Walk Hill Street** |
| Project Address Additional: | **Roslindale, MA** |
| Project Contact (name / Title / Company / email / phone): | **Nabil Bogus, Partner, Walk Hill Residences LLC, 978 815 5036 NabilB@JessicasBrickOven.com** |

## Team Description

| | |
|---|---|
| Owner / Developer: | **Walk Hill Residences, LLC** |
| Architect: | **Embarc Studio** |
| Engineer (building systems): | **Wozny/Barbar & Associates, Inc.** |
| Sustainability / LEED: | **n/a** |
| Permitting: | **Thomas Maistros, Jr, RA** |
| Construction Management: | **TBD** |

## Project Permitting and Phase

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

| | | |
|---|---|---|
| Small Project Review Application | **Draft / Final Project Impact Report Submitted** | BRA Board Approved |
| BRA Design Approved | Under Construction | Construction just completed: |

## Building Classification and Description

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

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

What is the Construction Type – select most appropriate type?

| | | | | |
|---|---|---|---|---|
| | Wood Frame<br>2 Family Townhouse | Masonry | **Steel Frame** | Concrete |

Describe the building**s**?

**Community Center**

| | | | |
|---|---|---|---|
| Site Area: | ***87,631 SF*** | Building Area: | ***153,650 GSF*** |
| Building Height: | ***64 Ft.*** | Number of Stories: | ***4/5 Floors*** |
| First Floor Elevation: | ***+/- 54 Ft Elev.*** | Are there below grade spaces: | ***Yes/Parking*** |

## Assessment of Existing Infrastructure for Accessibility:

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

| | |
|---|---|
| Provide a description of the development neighborhood and identifying characteristics. | The Proposed Site is within the Roslindale Neighborhood near the American Legion Highway and the Legion Shopping Center. The immediate area is predominantly open space/cemetery with auto-oriented commercial retail to the southeast. The Mount Hope residential neighborhood consisting of single and two family homes is located nearby to the west and southwest. The Forest Hills T Station is approximately a mile to the east via Walk Hill |

| | |
|---|---|
| | Street. |
| List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc. | The Forest Hills T Station is approximately a mile to the east via Walk Hill Street. MBTA Bus Route #14 runs along American Legion Highway with a stop within 100 yards of the site. |
| List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc. | Public institutions near the site are limited to the Shattuck Hospital approximately 1.5 miles to the north, the Mattapan Health Center approximately 1.2 miles to the east via Walk Hill Street and the Haley Elementary School located approximately 100 yards to the east on the American Legion Highway. |
| Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities. | We do not believe the site is located on a priority accessible route. Roslindate Village is located approximately 1.5 miles due west where a public library and RMV branch are located. Recreational facilities include the Healy Playground, approximately .75 mile west of the site and Franklin Park to the north, the edge of that park is about a mile away but its recreational facilities are considerably farther away. |

## Surrounding Site Conditions – Existing:

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

| | |
|---|---|
| Are there sidewalks and pedestrian ramps existing at the development site? | Sidewalks on the south side of Walk Hill Street only – no sidewalks on Canterbury Street. Accessible curb cuts are limited. To Crosswalks at the American Legion Highway |
| ***If yes above***, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site. | Concrete curb cuts and concrete sidewalks. Sidewalks are in poor condition. |
| Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report. | The sidewalks adjacent to the site are not existing-to-remain. The Proposed Development will be reconstructing the sidewalks on Walk Hill Street adjacent to the site and creating new sidewalks on Canterbury. Sidewalks will comply with the City's Complete Street Guidelines. |
| Is the development site within a historic district? **If yes,** please identify. | No |

### Surrounding Site Conditions – Proposed

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

| | |
|---|---|
| Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org | No |
| ***If yes above***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, and Boulevard. | N/A |
| What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone. | Proposed:<br>Sidewalks are not yet designed but proponent believes 6'+ wide side walks can be created along Walk Hill Street and Canterbury Street. |
| List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way? | Paving materials fort eh sidewalks will be cast concrete. Curbs and edging are proposed to be granite. Paving, curbing and tree pit materials on the public property will meet all MA codes and comply with ADA. |
| If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission? | N/A |
| Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? | No |
| **If yes above,** what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be? | N/A |

## Proposed Accessible Parking:

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

| | |
|---|---|
| What is the total number of parking spaces provided at the development site parking lot or garage? | 165 spaces |
| What is the total number of accessible spaces provided at the development site? | 16 space (10%) |
| Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need? | No |
| Where is accessible visitor parking located? | Surface spaces are provided in the building's courtyard accessible from Canterbury street. Some of these spaces are proposed to be for visitors. |
| Has a drop-off area been identified? **If yes,** will it be accessible? | Yes – via the interior courtyard. |
| Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances. | TBD |

## Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to accommodate persons of all abilities that allow for universal access to entryways, common spaces and the visit-ability* of neighbors.

**Visit-ability – Neighbors ability to access and visit with neighbors without architectural barrier limitations*

| | |
|---|---|
| Provide a diagram of the accessible route connections through the site. | TBD |

| | |
|---|---|
| Describe accessibility at each entryway: Flush Condition, Stairs, Ramp and Elevator. | All entrances will be a flush condition. The main entrance from Walk Hill Street (nearest American Legion Hwy) will include a lift to bring disabled from street level up approximately a half level to the first floor and the elevator banks (as well as the interior courtyard). |
| Are the accessible entrance and the standard entrance integrated? | Yes |
| **If no above**, what is the reason? | |
| Will there be a roof deck or outdoor courtyard space? **If yes,** include diagram of the accessible route. | Outdoor courtyard will be accessible from the building lobby located on the first floor. |
| Has an accessible routes way-finding and signage package been developed? **If yes,** please describe. | To Be Designed |

## Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

| | |
|---|---|
| What is the total number of proposed units for the development? | 136 |
| How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown? | Development is proposed as condominiums. The proposal must comply with the City's Inclusionary Housing Policy so a minimum of 13% or approximately 17 units will be affordable. |
| How many accessible units are being proposed? | The unit plans have not been developed. |
| Please provide plan and diagram of the accessible units. | The unit plans have not been developed |
| How many accessible units will also be affordable? If none, please describe reason. | The unit plans have not been developed |
| Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at | The unit plans have not been developed |

| | |
|---|---|
| entry or step to balcony. **If yes,** please provide reason. | |
| Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board? | No |
| Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible? | N/A |

Thank you for completing the Accessibility Checklist!

For questions or comments about this checklist or accessibility practices, please contact:

kathryn.quigley@boston.gov | Mayors Commission for Persons with Disabilities

# Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

## Climate Change Analysis and Information Sources:

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

## Checklist

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

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

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

## A.1 - Project Information

| | |
|---|---|
| Project Name: | **Walk Hill Residences** |
| Project Address Primary: | **289 Walk Hill Street, Roslindale, MA** |
| Project Address Additional: | |
| Project Contact (name / Title / Company / email / phone): | **Nabil Bogus, Partner, Walk Hill Residences LLC, 978 815 5036 NabilB@JessicasBrickOven.com** |

## A.2 - Team Description

| | |
|---|---|
| Owner / Developer: | **Walk Hill Residences, LLC** |
| Architect: | **Embarc Studios** |
| Engineer (building systems): | **Wozny /Barbar & Associates, Inc.** |
| Sustainability / LEED: | **Embarc Studios** |
| Permitting: | **Thomas Maistros** |
| Construction Management: | **N/A** |
| Climate Change Expert: | **Embarc Studios** |

## A.3 - Project Permitting and Phase

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

| | | | |
|---|---|---|---|
| Small Project Review Application | **Draft / Final Project Impact Report Submission** | BRA Board Approved | Notice of Project Change |
| Planned Development Area | BRA Final Design Approved | Under Construction | Construction just completed: |

## A.4 - Building Classification and Description

| | |
|---|---|
| List the principal Building Uses: | **Residential w/ Underground Parking** |
| List the First Floor Uses: | ***Residential*** |

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

| | | | |
|---|---|---|---|
| Wood Frame | Masonry | ***Steel Frame*** | Concrete |

Describe the building?

| | | | |
|---|---|---|---|
| Site Area: | ***87,631 SF*** | Building Area: | ***153,650 SF*** |
| Building Height: | ***64 Ft.*** | Number of Stories: | ***4/5 Flrs.*** |
| First Floor Elevation (reference Boston City Base): | ***54 ft Elev.*** | Are there below grade spaces/levels, if yes how many: | **Yes/one parking level** |

## A.5 - Green Building

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

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

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

| | | | |
|---|---|---|---|
| Registered: | **No** | Certified: | **No** |

## A.6 - Building Energy

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

| | | | |
|---|---|---|---|
| Electric: | ***1405** (kW)* | Heating: | ***220,000 Therms/yr*** |
| What is the planned building Energy Use Intensity: | ***TBD** kWh/SF/Yr* | Cooling: | ***300** (Tons/hr)* |

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

| | | | |
|---|---|---|---|
| Electric: | *N/A* | Heating: | ***TBD** (MMBtu/hr)* |
| | | Cooling: | ***TBD** (Tons/hr)* |

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

| | | | | |
|---|---|---|---|---|
| Electrical Generation: | *None (kW)* | | Fuel Source: | |
| System Type and Number of Units: | Combustion Engine | Gas Turbine | Combine Heat and Power | *(Units)* |

## B - Extreme Weather and Heat Events

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

## B.1 - Analysis

What is the full expected life of the project?

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

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

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

What time span of future Climate Conditions was considered?

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

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

| |
|---|
| *7F/87F Deg.* |

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

| | | |
|---|---|---|
| *N/A Deg.* | *N/A Days* | *N/A Events / yr.* |

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

| | |
|---|---|
| *N/A Days* | *N/A Events / yr.* |

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

| | | |
|---|---|---|
| *N/A Inches / yr.* | *N/A Inches* | *N/A Events / yr.* |

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

| | | |
|---|---|---|
| *N/A Peak Wind* | *N/A Hours* | *N/A Events / yr.* |

## B.2 - Mitigation Strategies

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

| | |
|---|---|
| Building energy use below code: | *At least 20%* |
| How is performance determined: | ASHRAE Energy Modeling |

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

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

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

| | | | |
|---|---|---|---|
| Roof: | *R = **38*** | Walls / Curtain Wall Assembly: | *R = **20*** |
| Foundation: | *R = **10*** | Basement / Slab: | *R =**19*** |
| Windows: | *R = / U =* | Doors: | *R = / U =* |

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

| | | | | |
|---|---|---|---|---|
| | On-site clean energy / CHP system(s) | Building-wide power dimming | Thermal energy storage systems | Ground source heat pump |
| | On-site Solar PV | On-site Solar Thermal | Wind power | None |
| Describe any added measures: | | | | |

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

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

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

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

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

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | Solar oriented – longer south walls | Prevailing winds oriented | External shading devices | Tuned glazing, |
| | Building cool zones | **Operable windows** | **Natural ventilation** | Building shading |
| | Potable water for drinking / food | Potable water for sinks / sanitary | Waste water | High Performan |

| | | | | |
|---|---|---|---|---|
| | preparation | systems | storage capacity | ce Building Envelop |
| Describe any added measures: | | | | |

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

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

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

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

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

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

## C - Sea-Level Rise and Storms

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

### C.1 - Location Description and Classification:

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

| |
|---|
| *Yes / **No*** |

Describe site conditions?

| | |
|---|---|
| Site Elevation – Low/High Points: | *Boston City Base Elev.(54 Ft.)* |
| Building Proximity to Water: | *>500 Ft.* |

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

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

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

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

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

*>500 Ft.*

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

## C - Sea-Level Rise and Storms

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

### C.2 – Analysis

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

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

### C.3 - Building Flood Proofing

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

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

| | | | |
|---|---|---|---|
| Flood Proof Elevation: | *Boston City Base Elev.( Ft.)* | First Floor Elevation: | *Boston City Base Elev. (* |

| | | | |
|---|---|---|---|
| | | | *Ft.)* |

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

| | | | |
|---|---|---|---|
| *Yes / No* | If Yes, to what elevation | *Boston City Base Elev. ( Ft.)* |
| If Yes, describe: | | | |

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

| | | | |
|---|---|---|---|
| Systems located above 1st Floor. | Water tight utility conduits | **Waste water back flow prevention** | **Storm water back flow preventio n** |

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

| |
|---|
| *Yes / No* |

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

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

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

| | |
|---|---|
| *Yes / No* | |
| If Yes, describe: | |

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

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

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

| |
|---|
| |

## C.4 - Building Resilience and Adaptability

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

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

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

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

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

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

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

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

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

APPENDIX C - Disclosure Statement Concerning Beneficial Interests as Required by Article 80, Section 80B-8, of the Boston Zoning Code

(1) Name of Project: Residences at Walk Hill LLC

(2) Location: 289 Walk Hill Street, Roslindale MA

(3) Applicant: Residence at Walk Hill LLC

(4) I hereby state, under the penalties of perjury, that the true names and addresses of all Persons who have a Beneficial Interest (including the amount of their Beneficial Interest accurate to within one-tenth of one percent if such interest exceeds one percent) in the above-listed property are listed below in compliance with the provisions of Article 80, Section 80B-8, of the Boston Zoning Code.

NAME AND RESIDENCE OF EACH PERSON WITH SAID BENEFICIAL INTEREST (continue on separate sheet if necessary):

| | | |
|---|---|---|
| NAME: | Nabil Bogus | Percentage Interest |
| ADDRESS: | 52 English Commons, Topsfield, MA | 50% |
| NAME: | Charles Gill | Percentage Interest |
| ADDRESS: | 60 Chatham Street, Lowell, MA 01851 | 50% |
| NAME: | _____ | Percentage Interest |
| ADDRESS: | _____ | |
| NAME: | _____ | Percentage Interest |
| ADDRESS: | _____ | |
| NAME: | _____ | Percentage Interest |
| ADDRESS: | _____ | |

(5) The undersigned also acknowledges and states that except as stated below, none of the above-listed individuals is an official elected to public office in the Commonwealth of Massachusetts, nor is an employee of the State Department of Capital Planning and Operations.

(6) I hereby state, under the penalties of perjury, that the names and addresses of all firms and professional corporations employing attorneys, real estate brokers, architects, engineers, planners, or surveyors, and all other agents who have acted on behalf of any of the foregoing with respect to the application for Zoning Relief on the above-listed property are listed below in compliance with the provisions of Article 80, Section 80B-8, of the Boston Zoning Code.

NAMES AND ADDRESSES OF ALL FIRMS AND PROFESSIONAL CORPORATIONS, AND AGENTS WHO HAVE ACTED ON SAID APPLICATION
(continue on separate sheet if necessary):

| | |
|---|---|
| NAME: | Embarc Studios, Inc |
| ADDRESS: | 60 K Street, Third Fl., Boston, MA 02127 |

| | |
|---|---|
| NAME: | Northeast Strategies and Communications Group |
| ADDRESS: | 1049 Adams Street, Dorchester, MA, 02124 |

| | |
|---|---|
| NAME: | Design Consultants, Inc. |
| ADDRESS: | 1495 Hancock Street, Suite 205, Quincy, MA 02169 |

| | |
|---|---|
| NAME: | Doyle Engineering, Inc |
| ADDRESS: | 14 Spring Street, First Fl., Waltham, MA 02451 |

| | |
|---|---|
| NAME: | Kyle Zick Landscape Architecture, Inc |
| ADDRESS: | 36 Bromfield Street, Suite 202, Boston, MA 02210 |

| | |
|---|---|
| NAME: | Wozny/ Barbar & Associates, Inc |
| ADDRESS: | 1076 Washington Street, Hanover, MA 02339 |

**SIGNED** under the penalties of perjury.

Signature: _____

Name Printed: Nabil Boghos

Date: October 20, 2016

Signature: _____

Name Printed: Charles Gill

Date: October 20, 2016