

# BOSTON COLLEGE RECREATION CENTER

## EXPANDED PROJECT NOTIFICATION FORM



SUBMITTED TO

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Boston Redevelopment Authority  
Boston, Massachusetts

SUBMITTED BY

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Boston College  
140 Commonwealth Avenue  
Chestnut Hill, Massachusetts

MAY 2016

# Boston College Recreation Center

Brighton, Massachusetts

SUBMITTED TO **Boston Redevelopment Authority**

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Boston, MA 02201

PROPONENT **Trustees of Boston College**

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# 1

## Project Description

### 1.1 Introduction

The Proponent, Trustees of Boston College ("Boston College" or the "University") is submitting this Expanded Project Notification Form (EPNF) in accordance with Article 80B, Large Project Review of the Boston Zoning Code (the "Code"). The purpose of this filing is to commence review of the proposed Recreation Center on St. Thomas More Road at the present site of Edmond's Hall within Boston College's Lower Campus in the Brighton neighborhood of Boston. Refer to Figure 1.1 for the site location.

Separately, an Institutional Master Plan Notification Form (IMPNF) for Amendment is being submitted by the Proponent to update the current 10-year Boston College Institutional Master Plan (the "IMP") based on the actual Project. The Project is primarily consistent with the institution's goals and objectives of its original 10-year IMP approved by the BRA in June 2009 and last renewed in May of 2013.

### 1.2 Proposed Institutional Project Overview and Purpose

Boston College is proposing to construct a Recreation Center on the site of the existing Edmond's Hall student residence building (the "Project"). As previously contemplated in the IMP, this facility will be located at the east edge of the Lower Campus along St. Thomas More Road. The project area is generally bounded by Campanella Way to the south, the Flynn Recreation Complex and Modular Apartments to the west, Walsh Hall to the north and St. Thomas More Road to the east (the "Project Site"). Edmond's Hall will be demolished beginning in summer of 2016 to be replaced by the Project.

The new Recreation Center, which replaces the use of the outdated Flynn Recreation Complex, will provide students, faculty, and staff, gymnasium space with multipurpose courts, indoor tennis courts, natatorium, fitness space, jogging track, locker rooms, and administrative offices. The Project is being designed to target Leadership in Energy and Environmental Design® (LEED) Silver certification exceeding the City's requirements under Article 37, Green Buildings, of the Code.

#### 1.2.1 Project Purpose & Need

A key goal of Boston College's IMP (described further below) is to contribute to the intellectual, religious, ethical and personal development of its students, enabling the institution to fulfill its commitment to become a contemporary model of student formation among American colleges and universities. Projects to support this goal

include new academic buildings, residence halls, athletic fields, and the new Recreation Center, or the Project, as described and assessed herein.

The purpose of the Project is to provide new/modern recreation facilities to approximately 14,000 undergraduate and graduate/professional students, and 786 full-time faculty and 2,600 staff.<sup>1</sup> The Project also enables construction of the planned University Center at the site of the existing Flynn Recreation Complex.

### 1.3 Institutional Master Plan Overview

In the spring of 2004, Boston College embarked on a comprehensive strategic planning initiative to assess its academic program and to set institutional goals for the next decade and beyond. A committee of 200 faculty, staff and students engaged in a process that resulted in a strategic plan that outlined seven strategic directions for the future of Boston College. This document calls for Boston College to become a leader in liberal arts education, student formation, selected natural sciences, resolving urgent societal problems and the world's leading Catholic university and theological center.

Upon the completion of the plan, Boston College developed a long-range campus master plan to enhance its campus and reinforce its mission. During this process, the University established six guiding principles:

1. **Create One Campus**—That the former Archdiocesan property become fully integrated with the Boston College Campus, and that the 120-acre Chestnut Hill Campus, the 40-acre Newton Campus and the 65-acre Brighton Campus each provide a notable setting that contributes to the campus learning environment and the life of the University.
2. **Develop Mixed Campus Uses**—That the Boston College Campus hosts a mix of academic, residential and co-curricular facilities, and provide open space areas that foster a vibrant and engaged University community.
3. **Emulate the Character of the Middle Campus**—That the new facilities on the Lower Campus reflects the distinctive character of the Middle Campus with its combination of Gothic architecture and collegiate open spaces, linked quadrangles, and walkways.
4. **Provide Appropriate Campus Density**—That campus development follows the Middle Campus' proportion of open space to building dimensions, reflecting the Middle Campus height (four to five stories) and open-space pattern, while respecting the character of the surrounding community.
5. **Promote Student Formation**—That the Lower and Brighton Campuses develop undergraduate student housing reflecting the University's commitment to student formation that supports intellectual development and responsible student behavior in smaller living communities.

<sup>1</sup> Trustees of Boston College, *Boston College Fact Book*, 2015-2016.

6. **Achieve Sustainability**—That development on each campus achieves higher levels of energy efficiency and champions the natural environment, and that sustainability goals be carefully considered with each project.

### **1.3.1 Status of the 10-Year Plan Projects**

In summary, the 10-Year Plan called for the creation of 21<sup>st</sup>-century classrooms and laboratories, replacement of a 55-year-old student center and a 44-year-old recreation complex, the addition of much-needed playing fields and athletic facilities and bringing approximately 1,200 undergraduate students living off-campus into University housing. Additionally, the plan proposed the development of an integrated campus with linked quadrangles, pedestrian walkways, and buildings in the tradition of the campus' distinct Collegiate Gothic architecture. The following is a list of renovation and new construction projects that have been completed or are in progress in Boston and Newton:

#### **Boston**

1. Renovation of 129 Lake Street (formerly known as Bishop Peterson Hall) for administrative office space completed in 2011.
2. Renovation of the Cadigan Alumni Center at 2121 Commonwealth Avenue (formerly known as the Chancery) for administrative offices for University Advancement completed in 2012.
3. Renovation of 2101 Commonwealth Avenue (formerly known as the Cardinal's Residence) for the relocated McMullen Art Museum and University Conference Center completed in January of 2016.
4. Construction of 2150 Commonwealth Avenue Residence Hall consisting of 490 student beds and the University Health Center is ongoing with expected completion in August of 2016.
5. Renovation and conversion of 2000 Commonwealth Avenue for a 540-bed student residence hall is ongoing with expected completion in August of 2016.

#### **Newton**

1. Construction of Stokes Hall, a 183,000-square foot, academic humanities building with classrooms and faculty offices completed in 2012.
2. Renovation of St. Mary's Hall for Jesuit Community residence and academic space for the University's Woods College of Advancing Studies, and the Communications and Computer Science departments completed in 2015.

### **1.3.2 Consistency with the IMP**

The Project as proposed herein is materially consistent with the IMP for the following reasons:

- › It is located at the same site on the eastern edge of the Lower Campus, which requires demolition of Edmond's Hall.

- › It is to be constructed to replace the outmoded 44-year-old Flynn Recreation Complex also located on Lower Campus.
- › It will have a reduced footprint approximately 30 percent of the existing size of the Flynn Recreation Complex, allowing valuable land in the Lower Campus to be developed as a future student center and open green space.
- › It will include gymnasium space with multipurpose courts, indoor tennis courts, natatorium, fitness space, an elevated jogging track, locker rooms and administrative offices.
- › As with the Flynn Recreation Complex, the University will offer summer access to the Recreation Center to Allston-Brighton residents who register with the Office of Governmental and Community Affairs.
- › The facility will achieve significant levels of energy efficiency.

As stated in the IMP, the University plans to demolish Edmond's Hall because the approximately 41-year-old residence hall is obsolete and in need of extensive repairs. Additionally, the Edmond's Hall location is the best site for the Project because of its proximity to the center of Lower Campus, the existing Corcoran Commons dining facility, and the future University Center. An additional benefit of this location is its close proximity to the Chestnut Hill Reservoir, a popular recreational site used by the University and general community.

While the siting and general uses are consistent, the overall size of the Project is larger than what was proposed in the IMP (approximately 214,000 gross square feet compared to the estimated 200,000 gross square feet).<sup>2</sup> The proposed building height of 71.34 feet (based on the difference between the average grade and the building mean roof elevation) is higher by approximately one foot than what was previously contemplated in the IMP (up to 70 feet) and includes one additional building floor (for a total of four instead of three floors, not including the mechanical penthouse). Therefore, an IMPNF for Amendment is being submitted by the Proponent to update the current 10-year IMP based on the proposed project. Note, the Project is not considered a high-rise building, per the state building code (refer to Section 1.81 for further details).

## **1.4 Existing Site Conditions**

### **1.4.1 Site Context**

Figure 1.2 shows the Project context. The Project Site is within the Lower Campus south of Commonwealth Avenue located on the west side of St. Thomas More Road, a Massachusetts Department of Conservation and Recreation (DCR) roadway. It is surrounded to the north and west by other University buildings that were constructed during the same time period as Edmond's Hall. Walsh Hall is an eight-

<sup>2</sup> Project size as defined by the Code, which excludes building space for mechanical, circulation, general storage, etc. Also referred to as zoning gross floor area.

story residence hall built in 1980 that sits just north of the Project Site along St. Thomas More Road. To the west of Edmond's Hall are the 1972 Flynn Recreation Complex and the 1970s Modular Apartments. South of Edmond's Hall lies the DCR property, including Pine Tree Preserve. To the northeast across St. Thomas More Road is the Evergreen Cemetery. Further east and south is the Chestnut Hill Reservoir. Further west is the Middle Campus, constructed on a hilltop during the early 20th century, and approximately a quarter-mile northeast of the Project Site is the University's Brighton Campus and St. John's Seminary.

#### **1.4.2 Existing On-Site Properties/Uses**

Located at 200 St. Thomas More Road, Edmond's Hall was built in 1975. It is an approximately 245,078-gross square foot nine-story (approximately 85 feet tall) residence hall with a T-shaped footprint providing approximately 790 beds in apartment-style rooms. An iron fence extends along the sidewalk on St. Thomas More Road and paved parking lots totaling approximately 105 spaces are located behind the building on both sides of the rear wing. Figure 1.3 presents the existing conditions site plan. Figure 1.4 includes photographs of the existing conditions.

An easement for the Massachusetts Water Resource Authority (MWRA) runs along the westernmost edge of the Project Site (Figure 1.3). This area also includes the Cochituate Aqueduct Linear District, a historic resource listed in the National and State Registers of Historic Places, and the Intermediate Gatehouse on St. Thomas More Road. A portion of the aqueduct pipe runs along the west side of the Project Site (Figure 1.3). Section 4.13 of Chapter 4, *Environmental Protection*, provides additional information about the on-site and surrounding historic resources.

### **1.5 Project Description**

As contemplated in the approved IMP and shown on Figures 1.5 and 1.6, the new Recreation Center will replace the existing Flynn Recreation Complex built in 1972, which will be removed after completion of the Project. Many of the activity and support spaces in the existing recreation center are undersized and outdated to meet the current and future needs of the campus community. The Project will replace the existing facility and provide increased meeting and lounge spaces, as well as opportunities to engage in physical activities currently not provided in the existing recreation center, such as an elevated jogging track, golf simulator, and fitness ramp. The organization of the program components are arranged to take advantage of the geometries of the existing site boundaries and the exterior views out to the Chestnut Hill Reservoir and the Lower Campus.

The exterior building materials are under review and may include a combination of brick, stone, and precast concrete. The exterior design may incorporate a mix of punched windows and curtainwall, and a combination of flat and mansard roofs. Figures 1.7a-d depict preliminary Project renderings from various viewpoints. Additional information on architectural design is provided in Chapter 2, *Urban*

*Design.* The Project is being designed to target LEED Silver certification, as described further in Chapter 5, *Sustainability*.

### **1.5.1 Proposed Program**

The new Recreation Center will house a variety of physical activity and support spaces for campus recreation, intramurals, club, and varsity sports programs. The proposed development program for the approximately 240,000-gross square foot, four-story<sup>3</sup> building includes six multi-purpose courts, a natatorium with indoor lap and recreational swimming pools, three indoor tennis courts, squash/racquetball courts, weights and fitness space, multi-purpose rooms, administrative space, and building support space. The building will have a single point of entry where visitors will be required to check in and show identification prior to entering the activity spaces. Refer to Section 2.3.1 of Chapter 2, *Urban Design* for further details on the proposed uses and overall building design.

Table 1-1 below presents the proposed development program for the Project.

### **1.5.2 Site Improvements**

The proposed landscaping and access improvement plan presented in Figure 2.5 improves the pedestrian connections and circulation, both on-campus and along the public way of St. Thomas More Road. The grade at the entry to the Recreation Center is raised to meet the new finished floor elevation without stairs. New circulation paths are placed along the desired lines of pedestrian circulation. The elimination of vehicular circulation (with the exception of emergency vehicles) towards the west of the building further enhances the quality of the pedestrian experience. The proposed site design replaces the current parking lot with landscaping, multiple seating areas, and a flexible open space. Refer to Chapter 2, *Urban Design* for further details.

<sup>3</sup> Not including the mechanical penthouse.

**Table 1-1 Proposed Development Program**

<b>Use</b>	<b>Size (Square Feet)</b>	<b>Quantity</b>
Gymnasium Space	73,000	4 basketball courts 2 multi-activity courts 3 tennis courts
Activity Space <sup>1</sup>	37,000	NA
Natatorium	24,000	2 swimming pools
Locker Rooms/Laundry	18,000	NA
Administrative Office <sup>2</sup>	8,000	NA
Lobby/Lounge	6,000	NA
Building Circulation/Envelope	48,000	NA
<b>Total Building Area, per zoning</b>	<b>214,000 GFA<sup>3</sup></b>	NA
Mechanical/Storage	26,000	NA
<b>Overall Total</b>	<b>240,000 GSF<sup>4</sup></b>	<b>4 basketball courts 2 multi-activity courts 3 tennis courts 2 swimming pools</b>

1 Includes fitness and multi-purpose activity space.

2 Includes office/administrative space for club sports and wellness services.

3 Represents Gross Floor Area based on the Code definition, which excludes building space for mechanical, basement accessory use, general storage, etc.

4 Represents Gross Square Feet, which includes all building spaces.

### 1.5.3 Vehicular Access and Parking

No on-site vehicle parking will be provided and, therefore, the need for vehicular access will be diminished as a result of the elimination of the existing on-site parking lots. Building service and loading will take place at the entry level on the north side adjacent to Walsh Hall. The existing service driveway to the north of the Project Site, as shown on Figure 1.3, will be maintained for use by emergency and servicing vehicles.

### 1.5.4 Sustainable Development Approach

The Project will incorporate sustainable design and construction principles and practices in accordance with the requirements of Article 37 of the Code relative to the City's Green Building policies and procedures. The Project will take the appropriate measures to target a LEED Silver certified project. As part of the specifications for the Project, for example, use of rapidly renewable and recycled materials will be encouraged, construction and demolition debris will be recycled or reused, and provisions will be made for the storage and recycling of waste materials. The Project will incorporate sustainable design features, including the use of a sustainable site, increased water and energy efficiency, use of renewable and recycled materials, and improved indoor air quality.

### **1.5.5 Project Schedule**

Abatement activities are required prior to demolition of the existing Edmond's Hall building. This is anticipated to begin in June 2016 and will take approximately two months. Once abatement is completed, building demolition will begin in summer 2016 with the goal of fully demolishing the building before students return for fall semester. Foundation and site work activities are anticipated to occur in fall 2016, and the Recreation Center structure is anticipated to be completed in December 2018.

## **1.6 Project Benefits**

The University enjoys a strong relationship with its host communities of Boston and Newton, and enriches the vibrancy of these cities through its academic, cultural and recreational resources, community partnerships and volunteer service programs.

Project benefits include a new and modern recreational facility and the benefits summarized below:

### **Institutional Planning**

- › Allows construction of a new recreation center for use by students, faculty, and staff to replace the outmoded 44-year-old Flynn Recreation Complex.
- › Supports the Strategic Plan direction by providing high-quality and modernized recreational opportunities on-campus to support the existing and planned expansion of undergraduate student housing.
- › Allows for valuable land in the Lower Campus to be developed as future buildings, including a future new University Center and open space, as contemplated in the IMP, by replacing the existing Flynn Recreation Complex (106,000 square feet), with a building footprint that is approximately one-third smaller (71,600-square feet).

### **Urban Design/Public Realm**

- › Provides an appropriately designed building that will help preserve the academic campus setting and blend with the character of the Lower Campus.
- › Replaces the outdated Flynn Recreation Center with a new visually transparent and open/active recreation center to serve the entire campus community.
- › Preserves the campus architectural vocabulary by providing an exterior design materials that respect the guiding principles from the Campus Master Plan while featuring active uses within the building.
- › Improves the pedestrian experience by strengthening campus connections and incorporating site landscaping around the Project Site.
- › Provides visual links to the adjacent Pine Tree Preserve and Chestnut Hill Reservoir with the incorporation of new site landscaping.
- › Enhances the Project Site's eastern edge along St. Thomas More Road by replacing the existing oak trees and supplementing the landscape with the addition of evergreen shrubs and groundcovers to create a multi-layered landscape edge.



**Transportation**

- › Since the users of the Project will primarily be the same users of the existing Flynn Recreation Complex, and are already travelling to and from the vicinity of the Project Site, limited new vehicle trips will be generated. The cumulative impacts of the Project, and other individual IMP projects, have already been presented and reviewed in the 2009 IMP.
- › Strengthens and improves the internal pedestrian connections, circulation, and experiences, as well as those along the public way of St. Thomas More Road and Campanella Way (a private way).
- › Includes bicycle accommodations in accordance with the *City of Boston Bicycle Parking Guidelines*.
- › Utilizes an existing service driveway and loading area shared with Walsh Hall.
- › Benefits from the diverse range of Transportation Demand Management initiatives aimed at reducing single occupancy vehicle trips to the Chestnut Hill Campus.

**Environmental/Sustainability**

- › Incorporates an on-site stormwater management system designed to collect runoff from proposed paved surfaces and roof area and route it through subsurface infiltration systems to filter/treat and reduce the peak rate of runoff from the Project Site. This system will be designed in compliance with Boston Water and Sewer Commission (BWSC) standards and the 2008 MassDEP Stormwater Management Policy and Standards.
- › Captures and filters site runoff prior to discharging to subsurface infiltration systems, which are designed to infiltrate one inch of runoff, in accordance with BWSC regulations.
- › Creates some amount of net new sunlight under all conditions as a result of the reduced building height.
- › Limits the amount of obstructed skydome along adjacent roadways due to a reduced building height compared to the taller existing Edmond's Hall building.
- › Limits the amount of reflective glass in the building facades to avoid solar glare impacts.
- › Results in negligible localized air quality impacts, including no significant production of CO, associated with vehicle trips to/from the new Recreation Center, as no net new vehicle trips are expected to be generated as a direct result of the Project.
- › Shields building mechanical equipment and service/loading activities so that increased noise levels to nearby sensitive receptor locations are expected to be negligible.
- › Improves the visual connection between the Project Site and surrounding historic buildings by incorporating architecture of the Collegiate Gothic buildings designed between 1909 and 1950 that characterize the nearby Boston College nearby historic core.
- › Creates an energy-efficient and environmentally-friendly building designed to target LEED Silver certification in exceedance of the Article 37 requirement.

- › Reduces water usage through installation of low-flow and low-consumption plumbing fixtures, in compliance with Article 37 of the Code.
- › Supports Boston's Greenhouse Gas (GHG) emissions reduction goals by achieving an energy use savings of approximately 23.0 percent when compared to the Base Case, resulting in a GHG emissions reduction of 24.7 percent.
- › Considers potential impacts associated with predicted increased frequency and intensity of precipitation events by raising the grade at the building entry.

### **Community & Economic Benefits**

- › Continue to provide use of the new facility for residents of Allston-Brighton as currently provided under the Flynn Recreation Complex Summer Program, local senior citizens and youth groups, as well as charitable organizations for University sanctioned programs and events.
- › Continue to provide the community and public benefits outlined in Chapter 13 of the University's approved 2009 Institutional Master Plan and 2014 Cooperation Agreement, including educational partnerships and scholarship aid, community development assistance and grant funding, volunteer service programs, and access to cultural, sports and recreational programs. (Refer to Appendix D for IMP Chapter 13 and excerpt from the Cooperation Agreement.)
- › Provides approximately 395 construction-related jobs in all trades.
- › Implements the Boston Residents Job Policy to meet employment goals. Under that policy, a goal of 50 percent of the construction jobs will be intended for Boston residents, 25 percent for minorities, and 10 percent for women during the approximately 2-year construction period.
- › Maintains the University's strong contribution to the growth of the local and regional economies. Boston College is a major employer in the City of Boston and has an estimated regional economic impact of \$1.3 billion annually.

## **1.7 Community Outreach**

The University is committed to continuing its public outreach with the Allston-Brighton Boston College Community Task Force (the "Task Force") and the community-at-large. The Task Force is comprised of representatives from various community and civic organizations in Allston and Brighton. At the Task Force meeting held on April 6, 2016, the University provided an overview and update on construction and renovation projects completed since the approval of the IMP in 2009, as well as ongoing projects, and a preliminary presentation on the new Recreation Center. Additional Task Force meetings will be scheduled during the Article 80 public review process.

## **1.8 Regulatory Context**

This section describes how the Project is consistent with the City of Boston zoning requirements and ordinances.

### **1.8.1 Conformance with Zoning**

The Project will house a variety of physical activity and support spaces for campus recreation, intramurals, club, and varsity sports programs. The proposed structure is slightly larger and taller than originally contemplated in the IMP, as describe further in the following sections.

#### **Uses and Size**

The proposed recreational uses are generally consistent with the uses stated in the original 10-year IMP approved in 2009. Design changes to the Project include an additional approximately 14,000 square feet (approximately 214,000 gross floor area based on the Code definition, which excludes building space for mechanical, basement accessory use, general storage, etc. compared to the estimated 200,000 gross floor area).

#### **Height**

The height of the proposed building can be measured in several ways. This section addresses the height as measured in accordance with the definitions contained in Article 2A of the Code and the Massachusetts State Building Code.

The Code defines height as the vertical distance from grade to the top of the highest roof beam of a flat roof, or the mean level of a gable, or of the slope of a hip roof, excluding roof structures and penthouses normally built above the roof and not used or designed to be used for human occupancy, provided that the total area of such roof structures and penthouses does not exceed 33.3 percent of the total roof area. Grade is defined as the average elevation of the nearest sidewalk at the line of the street or streets which the building abuts.

Based on the Boston City Base (BCB) elevation data, the average grade of the Project Site as measured at the sidewalk along St. Thomas More Road is at elevation 139.99 feet BCB. Based on the Code, the building height as measured to the mean level of the highest gable is at elevation 211.33 feet BCB. Therefore, the building height is 71.34 feet, which is the difference between the average grade and the building mean roof elevation. This represents a slight increase in height of just over one foot (from 70 to 71.34 feet) and one additional building story compared to what was stated in the original 10-year IMP approved in 2009.

Under the Massachusetts State Building Code, building height is calculated as the measurement of the vertical distance from grade plane to the average height of the highest roof structure. Grade plane is defined as being a reference plane representing the average of finished ground level adjoining the building at exterior walls. Based on this definition, the building height is 66'-6", which is not considered a high-rise structure.

### **1.8.2 Massachusetts Historical Commission**

Because a state agency action in the form of permits from DCR and the Massachusetts Water Resources Authority (MWRA) is required for the Project, the

Proponent intends to submit a Project Notification Form (PNF) to the Massachusetts Historical Commission (MCH) for review under Chapter 9, Section 26-27, as amended by Chapter 254 of the Acts of 1988.

### **1.8.3 Boston Landmarks Commission**

The Boston Landmarks Commission (BLC) will review the proposed demolition of Edmond's Hall through the Article 85 Demolition Delay Review (Article 85 review). Every building in Boston that is proposed for demolition is subject to the Article 85 review, which seeks to provide a predictable process for reviewing requests to demolish buildings. The Proponent will follow the requirements of the Article 85 review when project planning and timing require the submission of an Article 85 application to the BLC.

### **1.8.4 Boston Parks and Recreation Commission Ordinance**

The Project must comply with the City of Boston Municipal Code of Ordinances, specifically the requirements of Section 7-4.11, Permission for Construction Near Parks or Parkways. Section 7-4.11 establishes that permission from the Boston Parks and Recreation Commission is required to erect a building or structure within a distance of 100 feet from a park or parkway. Because St. Thomas More Road is a DCR parkway and Evergreen Cemetery is a park, Boston College intends to comply with these ordinances by seeking approval from the Commission.

### **1.8.5 Article 80 – Development Review and Approval**

The Project exceeds the threshold of 50,000 square feet of development, which requires Large Project Review by the BRA pursuant to Article 80B of the Code. The Proponent will initiate Large Project Review by filing this EPNF with the BRA.

This EPNF aims to meet requirements of the City of Boston Article 80B, Large Project Review by presenting details about the Project and providing detailed impact analyses of transportation, environmental protection, infrastructure, and other components of the Project in order to inform city agencies and neighborhood residents about the Project, its potential impacts, and mitigation proposed to address potential impacts. Based on a comprehensive approach to address potential impacts similar to the level of information normally presented in a Draft Project Impact Report, the Proponent requests that the BRA, after reviewing public and agency comments on this EPNF and any further responses to comments made by the Proponent, issue a Scoping Determination Waiving Further Review pursuant to the Article 80B process.

### **Institutional Master Plan Amendment**

The Project is described as an approved "Proposed Institutional Project" in the IMP. While the current Project uses and general program and design is in keeping with the intent of what was described in the IMP, the design and program of the Project has evolved since the preparation of the IMP in 2009 and is not completely consistent with proposed size, as described in the IMP. However, only de minimus

dimensional changes to the height and size of the building are being proposed. Therefore, in a filing separate from this document, Boston College has submitted an IMPNF for Amendment and Renewal seeking an amendment to the IMP as an update to the details of the Recreation Center and a waiver of further review of unchanged plans. In addition, the IMPNF filing requests to renew the IMP, which is required every four years by Article 51, Allston-Brighton Neighborhood District zoning.

### **Development Impact Project**

The Project is a Development Impact Project (DIP) within the meaning of Section 80B-7 (Development Impact Project Exactions). Based on a preliminary estimate, approximately \$1.2 million will be provided to the City as a result of the Project.

## **1.8.6 Article 37 – Green Buildings**

The Project must conform to Article 37, Green Buildings, of the Code. Article 37 requires all projects over 50,000 gross square feet to meet LEED certification standards by either certifying the project or demonstrating that the project would meet the minimum requirements to achieve a LEED Certified level (all LEED Pre-requisites and at least 40 points on the LEED project checklist) without registering the project with the USGBC (“LEED certifiable”).

The Project is anticipated to achieve LEED Silver certification, exceeding the requirements of Article 37. A more detailed explanation of the LEED credits can be found in Chapter 5, *Sustainability*.

## **1.9 Anticipated Permits and Approvals**

Table 1-2 below presents a list of federal, state, and local permits and approvals anticipated for the Project.

### **1.9.1 Agency Outreach and Coordination**

The Proponent has begun outreach and coordination efforts with agencies of the City of Boston and the Commonwealth. In February 2016, the Proponent met with MWRA staff regarding existing water lines and easement in vicinity of the Project Site. On March 29, 2016, a meeting was held with the DCR Commissioner and staff to present the Project and discuss the Construction Access Permit Application. Also on March 29<sup>th</sup>, an introductory project meeting was held with the ISD Building Commissioner and the Director of Fire Code Review to discuss potential building code issues and variances based on early design. On March 31, 2016, the Proponent met with the BRA Development Review and Urban Design staff to introduce the Project and describe its consistency with the approved IMP. Additional agency coordination meetings anticipated to be held include:

- › MHC for project review through submission of the PNF;
- › Boston Parks and Recreation Commission; and
- › Boston Transportation Department for approval of the TAPA.

**Table 1-2 Anticipated Project Permits and Approvals**

<b>Agency/Department</b>	<b>Permit/Approval/Action</b>
<b>Federal</b>	
U.S. Environmental Protection Agency	NPDES Construction Stormwater General Permit
<b>Commonwealth of Massachusetts</b>	
Massachusetts Department of Conservation and Recreation	Construction and Access Permit
Massachusetts Water Resources Authority	8(m) Permit
	Sewer Use Discharge Permit for swimming pool (if required)
	MWRA Temporary Construction Site Dewatering Permit
Massachusetts Historical Commission	Determination of No Adverse Effect (if required)
Massachusetts Department of Environmental Protection, Division of Water Pollution Control	Connection and Extension Permit (if required)
Massachusetts Department of Environmental Protection, Division of Air Quality Control	Construction Notice
<b>City of Boston</b>	
Boston Redevelopment Authority	Article 80B, Large Project Review
	IMPNF for Amendment
	Article 37 – Green Buildings Review
	Cooperation and other Article 80 Agreements
	Certificate of Consistency with IMP
Boston Civic Design Commission	Schematic Design Review/Recommendation
Boston Parks and Recreation Commission	Approval for project adjacent to parkways and within 100 feet of a park
Boston Landmarks Commission	Review pursuant to Article 85 of the Boston Zoning Code for demolition of Edmond's Hall
Boston Transportation Department	Transportation Access Plan Agreement
	Construction Management Plan
Boston Water and Sewer Commission	Site Plan Review and Approval
	Excavation/Retention Permit
Boston Inspectional Services Department	Foundation and Building Permit
	Certificates of Occupancy
Boston Fire Department	Asbestos Permit (if required)
	Flammable Storage Permit/License
	Asbestos Removal Notification (if required)
NPDES National Pollutant Discharge Elimination System IMP Institutional Master Plan IMPNF Institutional Master Plan Notification Form	

## 1.10 Project Team

### Proponent

Trustees of Boston College  
140 Commonwealth Avenue  
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### Legal Counsel

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David Trumble, Senior Associate

### Civil Engineering, Transportation, Permitting, Historic Advisor

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Senior Environmental Planner  
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### Landscape Architect

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Glen Valentine, Principal

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Contact: Marya Gorczyca, Senior Vice President

### Construction Manager

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Contact: Joseph Breen, Senior Vice President/  
Project Executive

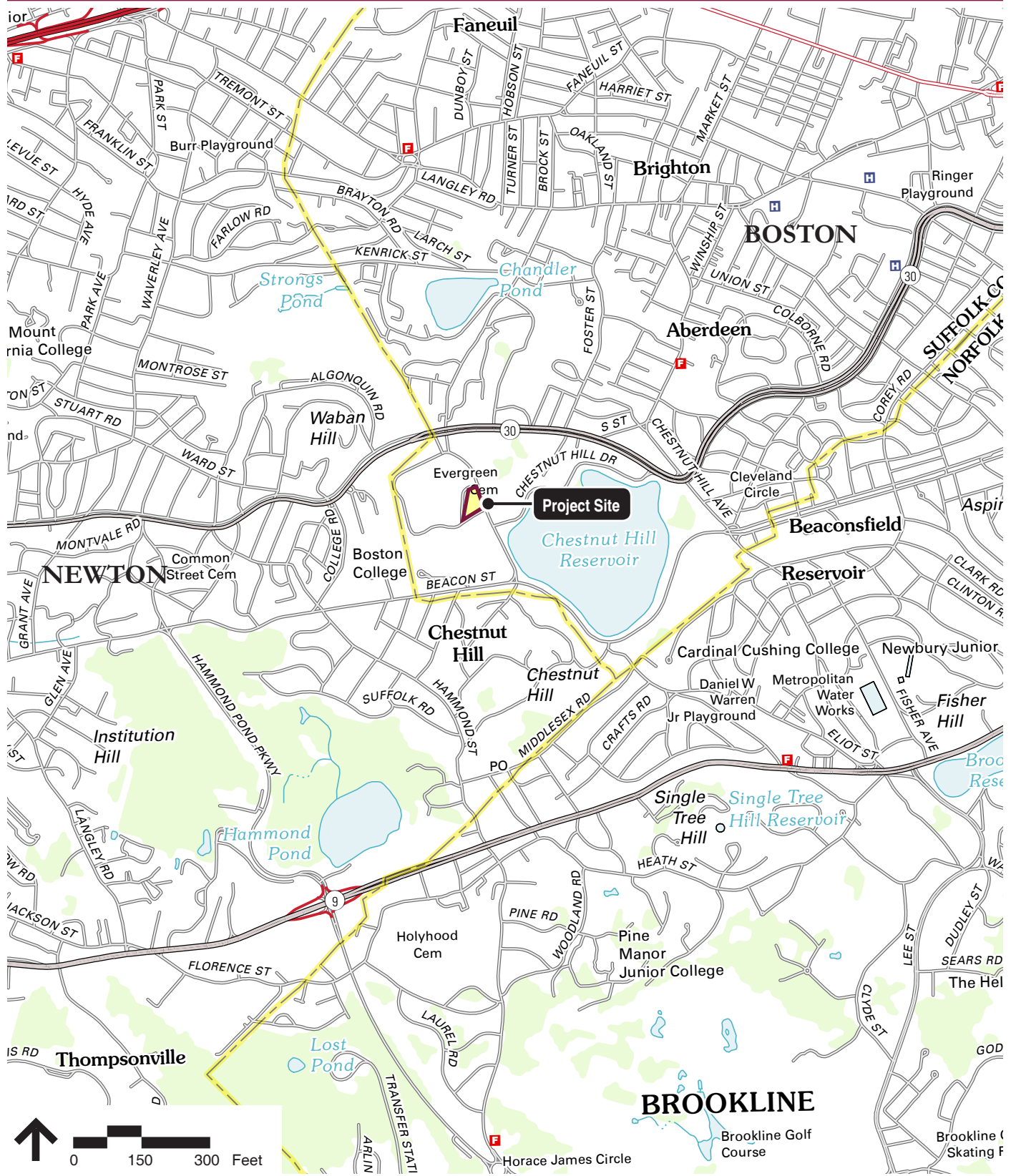


Figure 1.1

Site Location Map

**Boston College Recreation Center  
Brighton, Massachusetts**



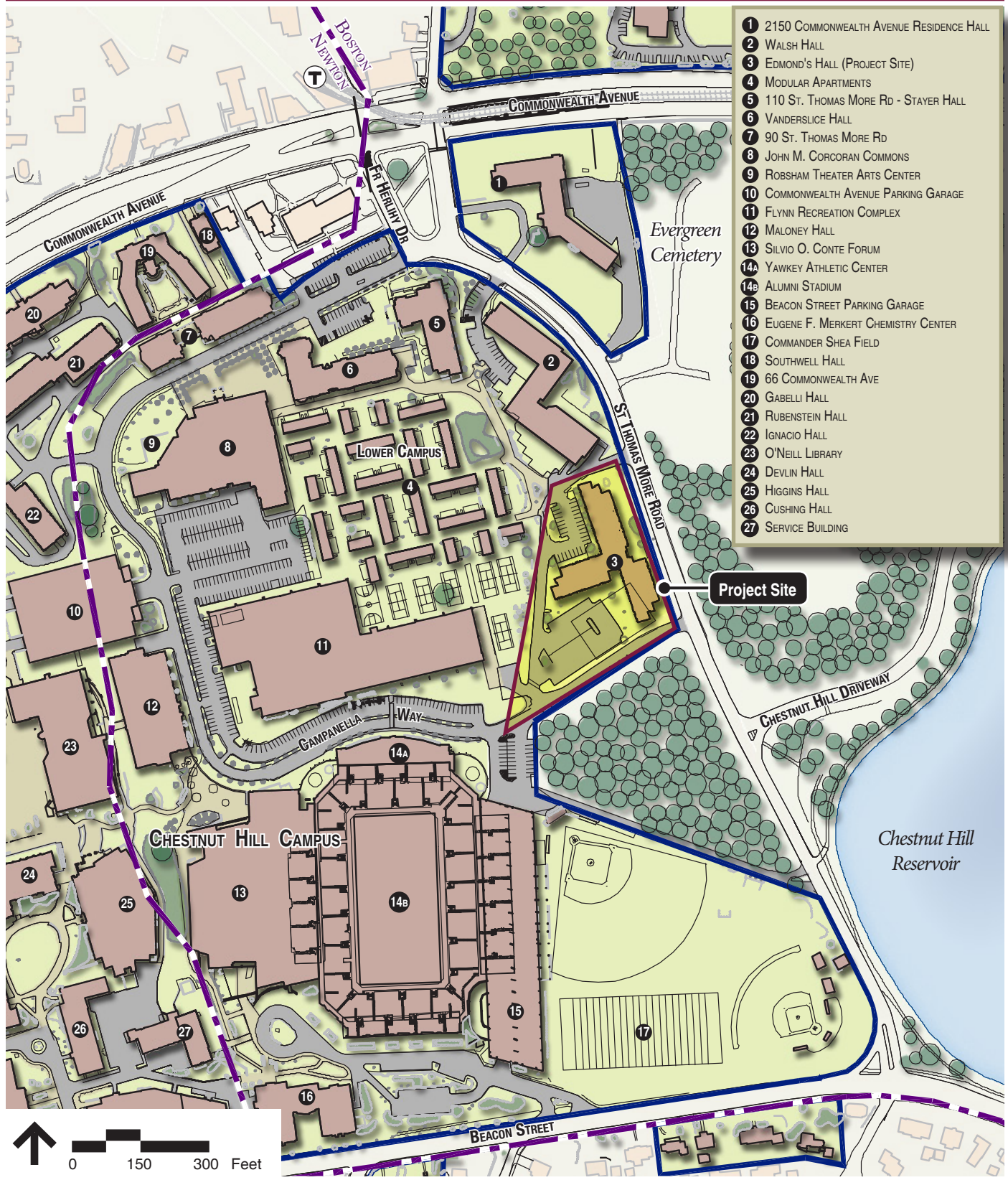
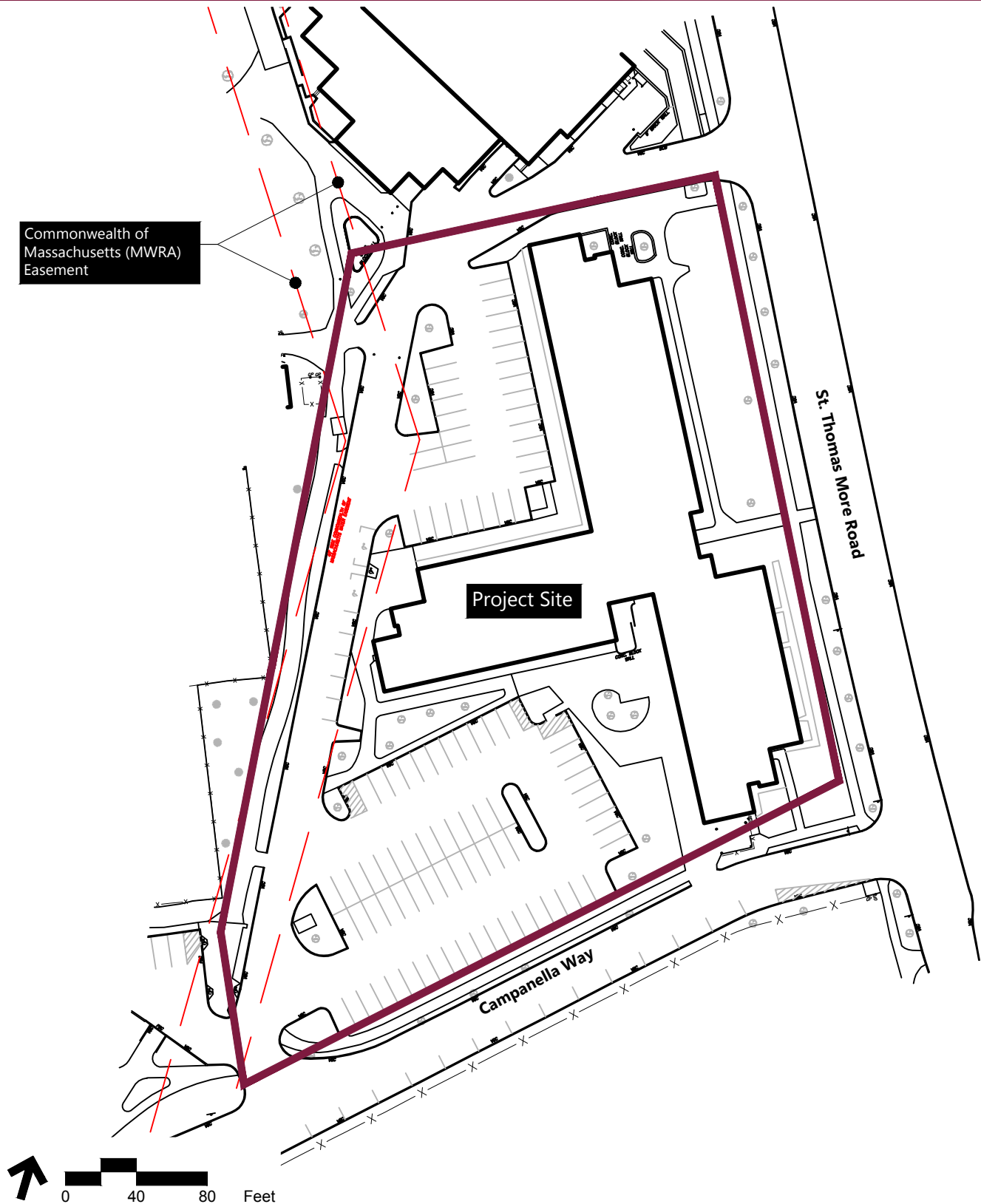


Figure 1.2  
Project Context

**Boston College Recreation Center  
Brighton, Massachusetts**



Source: Feldman Land Surveyors

Figure 1.3  
Existing Site Conditions

**Boston College Recreation Center  
Brighton, Massachusetts**





View of Edmond's Hall, east façade and south elevation from St. Thomas More Road, facing NW



View of Edmond's Hall, east façade and north elevation from St. Thomas More Road, facing SW



View of Edmond's Hall, west elevation and rear surface parking area, facing NE



View of Edmond's Hall, along St. Thomas More Road from Boston College Walsh Hall, facing S



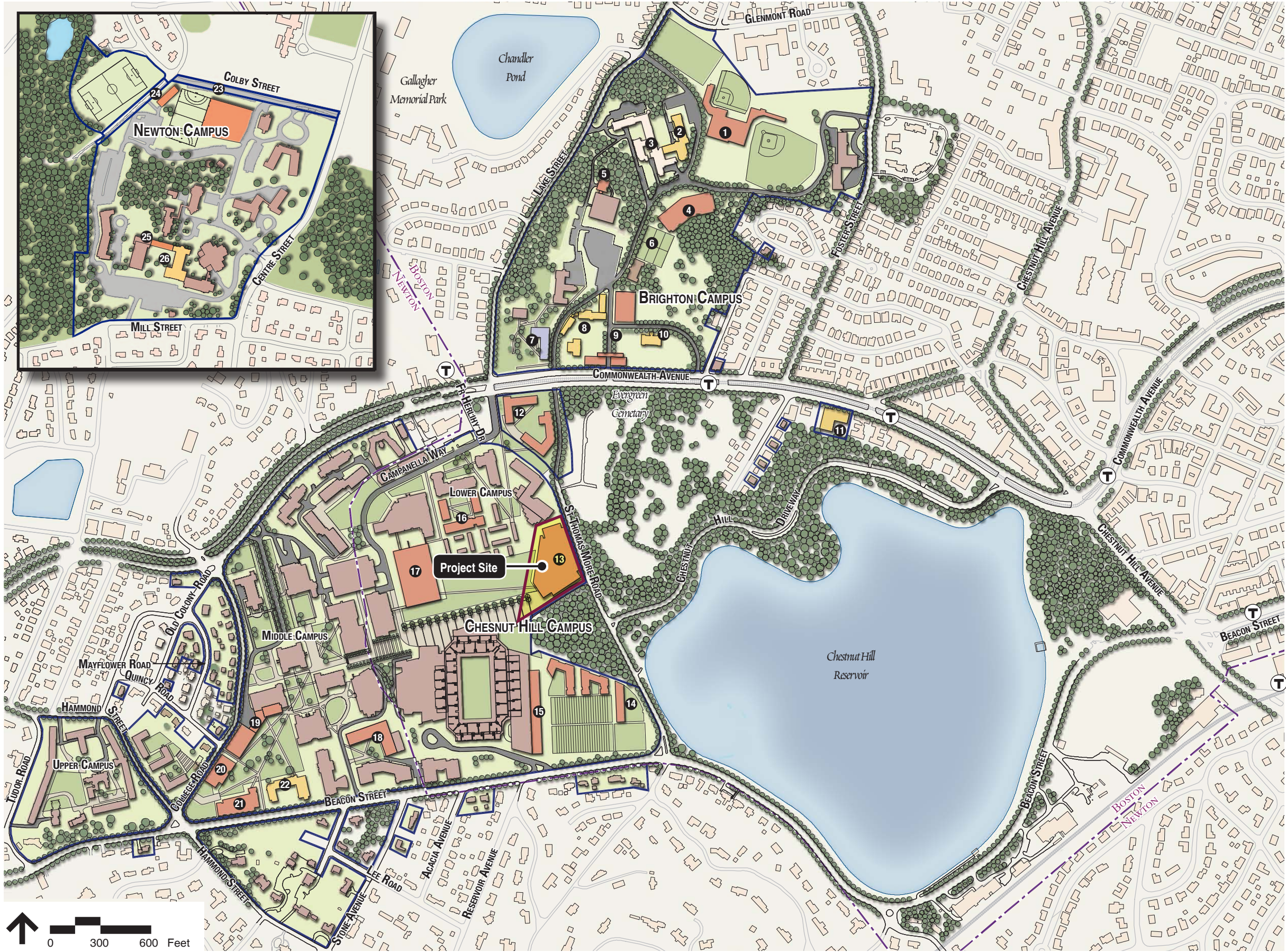
View of Edmond's Hall, from rear elevation of Walsh Hall, facing SE



View of Edmond's Hall, from interior of Campus, facing E

Figure 1.4  
Site Photographs of Existing Conditions





PROPOSED INSTITUTIONAL PROJECTS	
BOSTON PROPERTIES	
1	BRIGHTON ATHLETICS CENTER
2	BISHOP PETERSON HALL
3	ST. JOHN'S HALL
4	PARKING GARAGE
5	LIBRARY STORAGE
6	TENNIS COURTS
8	CHANCERY/CREAGH LIBRARY RENOVATION
9	FINE ARTS DISTRICT
10	CARDINAL'S RESIDENCE RENOVATION
11	UNDERGRADUATE HOUSING
12	UNDERGRADUATE HOUSING
13	RECREATION CENTER
14	UNDERGRADUATE HOUSING
15	BEACON STREET GARAGE ADDITION
16	UNDERGRADUATE HOUSING
17	UNIVERSITY CENTER
PROJECT UNDER ADVISEMENT*	
BOSTON PROPERTY	
7	UNDERGRADUATE HOUSING
PROPOSED PROJECTS	
NEWTON PROPERTIES	
18	INTEGRATED SCIENCE CENTER
19	STOKES COMMONS
20	ACADEMIC BUILDING
21	ACADEMIC BUILDING
22	CARNEY HALL RENOVATION
23	SURFACE PARKING
24	RECREATION/ATHLETICS BUILDING
25	SMITH WING REPLACEMENT
26	STUART HALL RENOVATION

\*PROJECT TAKEN UNDER ADVISEMENT BY BRA BOARD FOR FURTHER CONSIDERATION BY THE AUTHORITY. NOT UNDER CONSIDERATION BY THE ZONING COMMISSION AT THIS TIME.

Figure 1.5  
Boston College Ten-Year Plan Institutional Projects  
  
Boston College Recreation Center  
Brighton, Massachusetts





Figure 1.6  
Proposed Conditions





Figure 1.7a  
View from Campus Interior  
West Elevation  
**Boston College Recreation Center  
Brighton, Massachusetts**





Figure 1.7b  
View from Northeast Corner

**Boston College Recreation Center  
Brighton, Massachusetts**





Figure 1.7c  
View from Southeast Corner

**Boston College Recreation Center  
Brighton, Massachusetts**





Figure 1.7d  
View from Southwest Corner

**Boston College Recreation Center  
Brighton, Massachusetts**

# 2

## Urban Design

### 2.1 Introduction

This chapter provides a detailed description of the visual and architectural features of the proposed Recreation Center as well as public realm and site improvements with supporting graphics.

#### 2.1.1 Key Findings and Benefits

Key findings related to urban design include:

- › Provides an appropriately designed building that will help preserve the academic campus setting and blend with the character of the Lower Campus.
- › Replaces the outdated Flynn Recreation Center with a new visually transparent and open/active Recreation Center to serve the entire campus community.
- › Preserves the campus architectural vocabulary by providing an exterior design materials palette that respects the guiding principles from the Campus Master Plan while adding distinct features that accommodate the proposed activities within the building.
- › Improves the pedestrian experience by strengthening campus connections and incorporating enhanced landscaping around the Project Site.
- › Provides visual links to the adjacent Pine Tree Preserve and Chestnut Hill Reservoir with the incorporation of new site landscaping.
- › Enhances the Project Site's eastern edge along St. Thomas More Road by replacing the existing oak trees, and supplementing the landscape with the addition of evergreen shrubs and groundcovers to create a multi-layered landscape edge.

### 2.2 Site Context

The Project Site context is presented in Figure 1.2. The existing urban fabric surrounding the Project Site features a mix of building materials and design elements that create a diverse architectural vocabulary on Lower Campus. Land uses immediately adjacent to the Project Site include two residential buildings to the north and northwest: Walsh Hall, built in 1980, is an eight-story red brick clad building; the Modular Apartments are two-story wood-framed structures. Directly to the west of the Project Site is the existing Flynn Recreation Center, which will be removed after completion of the Project.

The most relevant architectural palette for the Recreation Center is embodied in Stayer Hall and, the more recently constructed 2150 Commonwealth Avenue project. Located further north, these residential buildings display a combination of gabled elements clad in stone and brick facades. Specifically, the vertical proportions of Stayer Hall and the balance of curtainwall elements and gabled facades provide a stylistic source of inspiration for new buildings on Lower Campus.

## **2.3 Design Approach**

The Project has been designed to respect the historic architecture at Boston College by utilizing Gothic-inspired features, materials, and proportions while featuring more contemporary detailing to achieve a modernized Gothic look and feel. New walkways will tie into existing pedestrian corridors and landscaping will reinforce the character of the historic portion of the Boston College Campus.

### **2.3.1 Proposed Building Uses**

The proposed building floor plans are provided in Figures 2.1a through 2.1f. Users of the Project will enter the building on the west side on Level 01, which will be roughly at the same elevation as the surrounding grade and entry plaza. Upon entering the Recreation Center, the central circulation spine will be the primary organizing element for the building, orienting users moving through the building and serving as a social gathering space. On Level 01, the central zone will connect users to locker rooms, equipment check out, and the natatorium and multi-activity courts as well as outdoor recreation. Further reinforcing the central circulation spine will be the main stairway connecting upper levels of the Recreation Center both physically and visually. Level 02 will include fitness areas, two multipurpose rooms, and the recreation department offices. A significant portion of Level 02 will be open to the natatorium and pool below. The two other large spaces for tennis and basketball courts will be located on Level 03. Additional fitness areas and multipurpose rooms will also be dispersed throughout Level 03. Level 04 will include two racquetball and two squash courts, a jogging track that circulates above the basketball courts and racquet courts. Additional fitness and group exercise spaces will also be located on Level 04. Similar to Level 02, this level consists of large areas that are open to the tennis and basketball courts below. Level 05 is the mechanical penthouse that contains a majority of the buildings mechanical equipment. The pool equipment and filtration support space is located at the basement level, or Level 00. The basement also contains mechanical rooms and a storage space, accessory to the operation of the Recreation Center.

### **2.3.2 Height and Massing**

The Recreation Center consists of a basement, four levels above grade, and a mechanical penthouse. As described in Section 1.8.1 of Chapter 1, *Project Description*, and the height of the proposed building, as determined by the Massachusetts State Building Code, is the vertical distance from grade plane to the



average height of the highest roof structure. Grade plane is defined as being a reference plane representing the average finished ground level adjoining the building at exterior walls. Based on this, the building height is 66'-6".

The proposed building massing follows the setback restrictions in a traditional form with gable ends at key corners and a sloped mansard roof screening mechanical equipment and penthouse. Figure 2.2 shows the building in section view.

### **2.3.3 Character and Materials**

Primary materials may consist of a precast concrete base, detailed and colored to resemble the limestone bases of the original Maginnis and Walsh buildings in Middle Campus, with stone and brick masonry above. The University envisions additional precast elements as architectural details, such as lintels over window and door openings, window sills, gable accents, string coursing. Figures 2.3a and 2.3b present the building elevations with proposed exterior materials.

### **2.3.4 View Corridors and Access**

Primary views of the Project will be from the east at St. Thomas More Road, from the south at Campanella Way, and from the west along the approach from Middle Campus. Pedestrian access to the building will be in the center of the west façade. Access for loading and maintenance vehicles will be on the north side from the service road between the new Recreation Center and existing Walsh Hall. View perspectives of the Project are shown in Figure 2.4.

## **2.4 Public Realm**

The proposed site improvement plan strengthens campus connections while providing an enhanced circulation experience along the Project Site's eastern edge at St. Thomas More Road. A tree canopy provides selective screening of the Project while framing longer views out to the Chestnut Hill Reservoir, and offers seasonal interest as well as increased shading along the Project Site's sidewalk edge.

### **2.4.1 Pedestrian Access and Circulation/Accessibility**

The Project provides increased circulation between the building and landscape through ADA-accessible walkways and building points of entry. A paved corridor on the Project Site's western edge provides a strong pedestrian spine, connecting north from Walsh Hall and the Modular Apartments to the adjacent Pine Tree Preserve and Stadium at the south. The main pathway connects to a paved plaza leading to the Recreation Center's main entry, which is sloped at less than two percent to ensure full accessibility and ease of circulation while enabling increased opportunities for flexible use. Smaller paved pathways provide additional ADA-accessible connections throughout the Project Site, and to and from the building. ADA-accessible points of egress are located on the building's north and east façades, with additional egress

doors to the north and south of the building. The Project Site's lawn areas provide additional opportunities for informal circulation and flexible programming.

Refer to Figure 2.5 for the proposed site improvements and pedestrian connections. For additional information on accessibility, refer to the completed Accessibility Checklist provided in Appendix C.

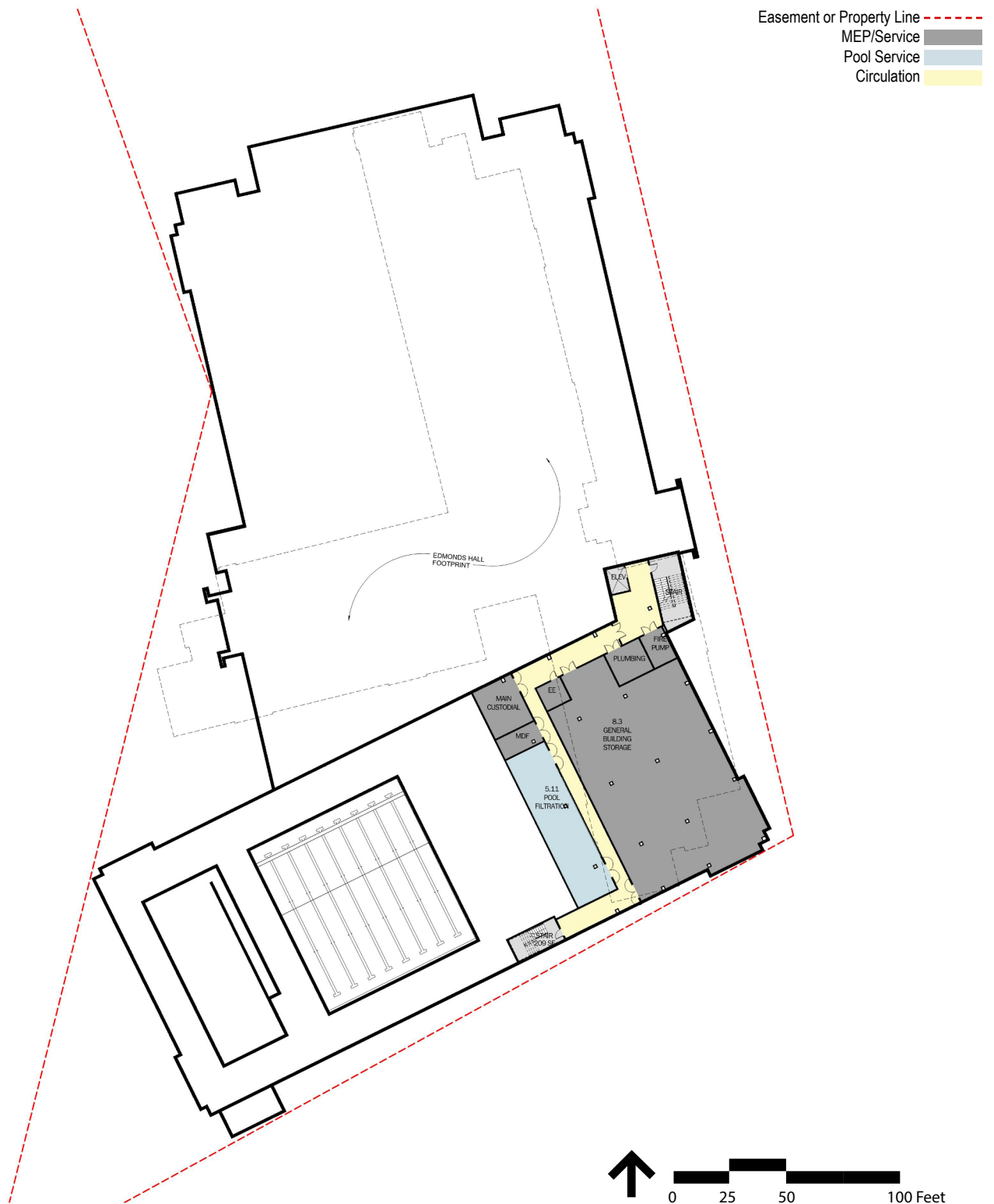
## **2.5 Landscaping**

The Proponent is committed to remaining consistent with the Boston College Campus' award-winning landscape design for the Project.<sup>1</sup> The proposed landscape design, as shown in Figure 2.5, aims to strengthen campus connections while providing spaces for both passive and active use. Visual links to the adjacent Pine Tree Preserve and nearby Chestnut Hill Reservoir are made through landscape enhancements along the proposed streetscape along St. Thomas More Road.

At the building's front entry, pedestrian access and use is prioritized through plazas, walkways, and open lawn spaces. Plaza terrace paving connects the proposed pedestrian corridor at the Project Site's western edge to the building's main entry, enabling opportunities for fully accessible, high-traffic circulation. Open lawns at the front entry offer areas for gathering and recreation, while plantings along the building offer seating areas and provide a transitional buffer between building and lawn.

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<sup>1</sup> In 2016, Boston College won the SCUP Excellence in Landscape Architecture – Open Space Planning and Design award for the Boston College Middle Campus project.



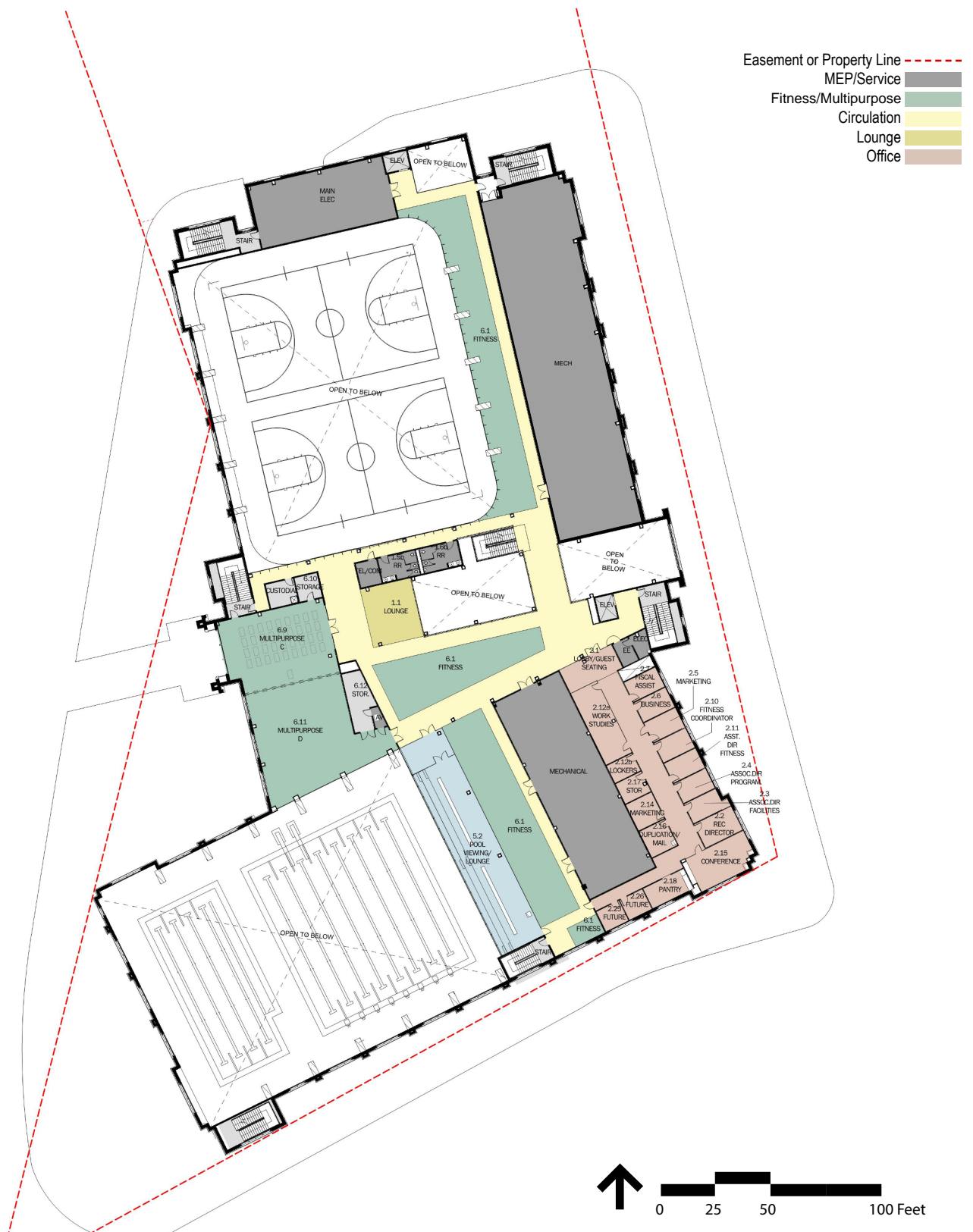
Source Info

Figure 2.1a

Building Floor Plans  
Level 00

**Boston College Recreation Center  
Brighton, Massachusetts**





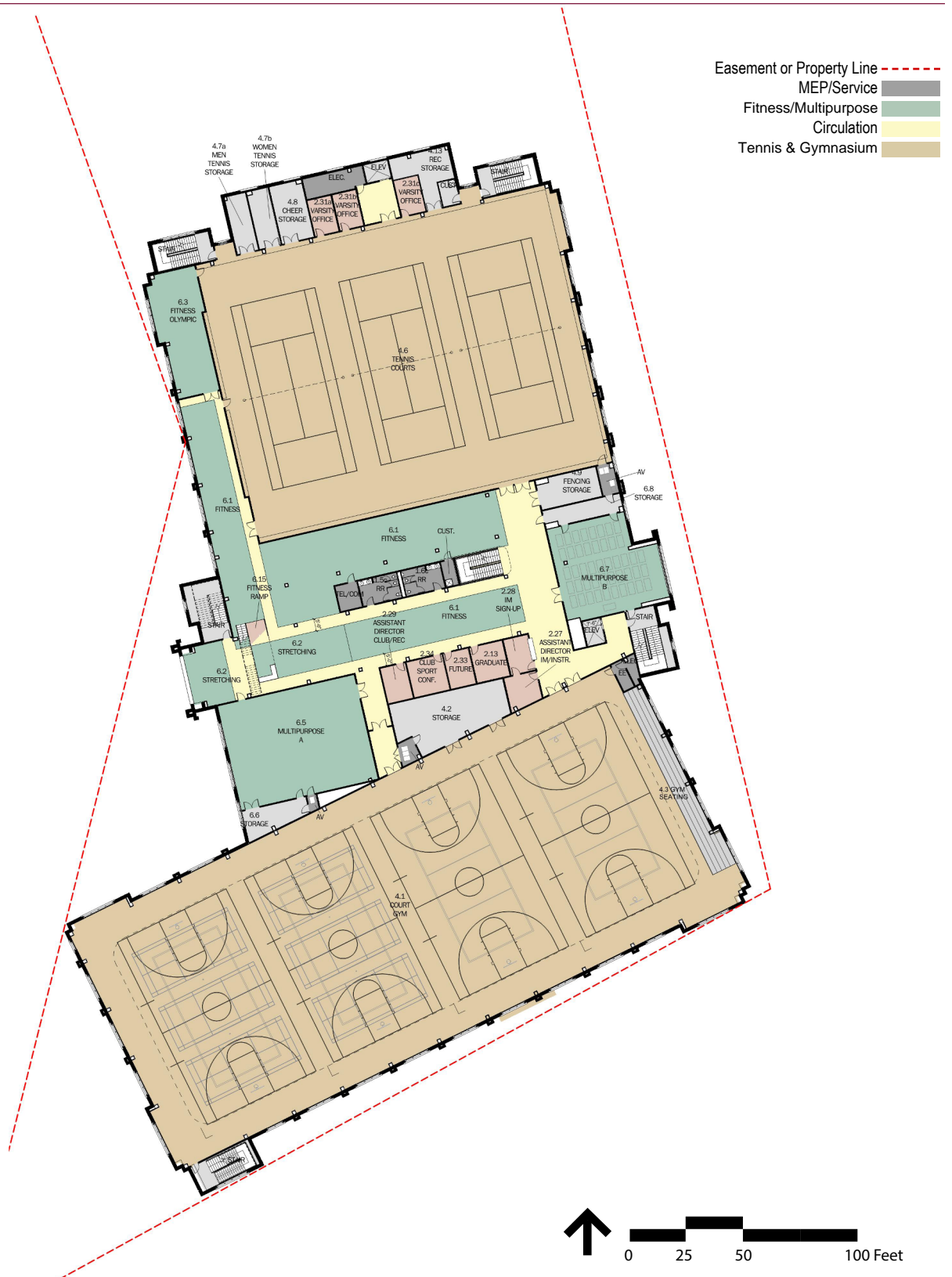
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Figure 2.1c

Building Floor Plans  
Level 02

**Boston College Recreation Center  
Brighton, Massachusetts**



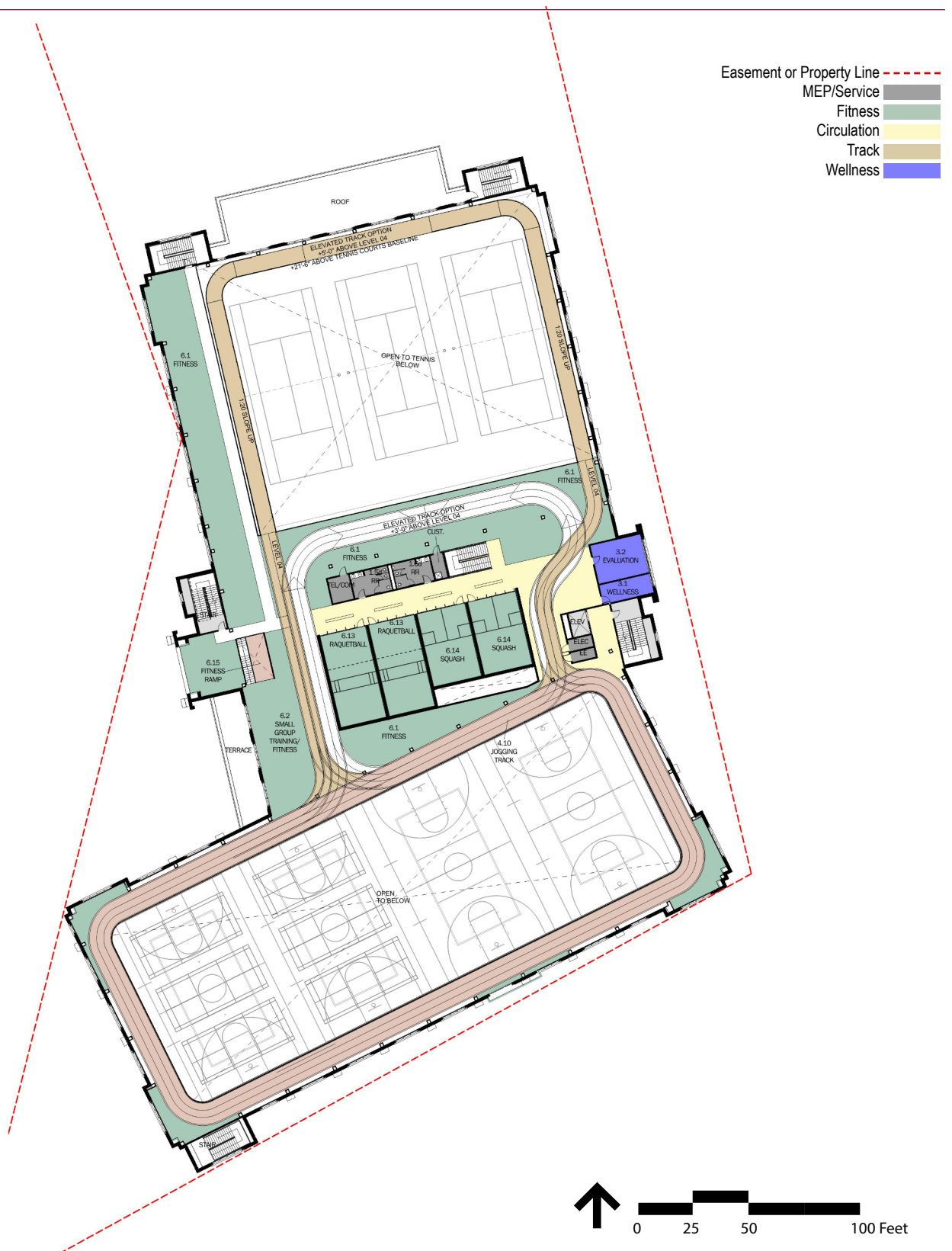


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Figure 2.1d

Building Floor Plans  
Level 03

**Boston College Recreation Center  
Brighton, Massachusetts**

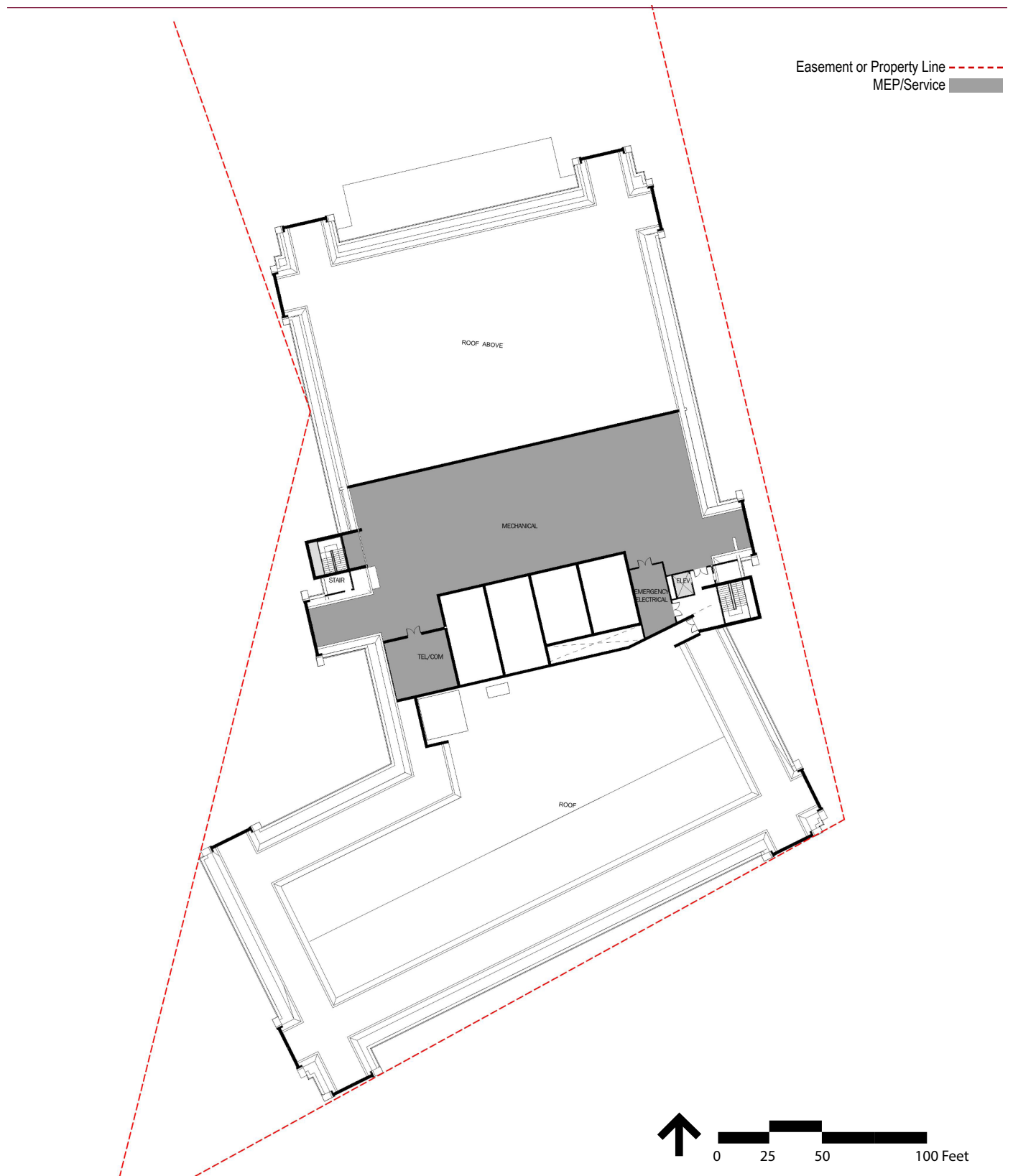


Source Info

Figure 2.1e

Building Floor Plans  
Level 04

**Boston College Recreation Center  
Brighton, Massachusetts**

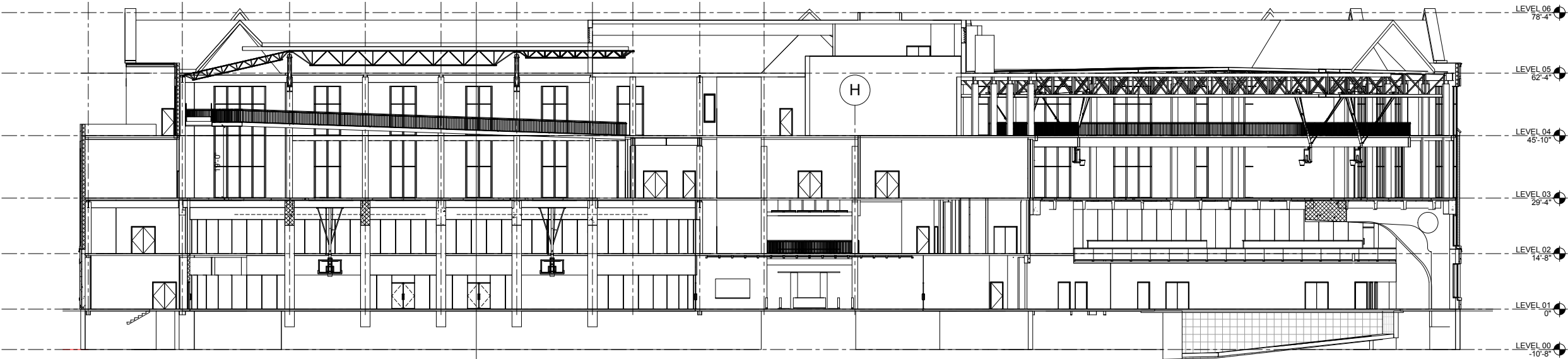


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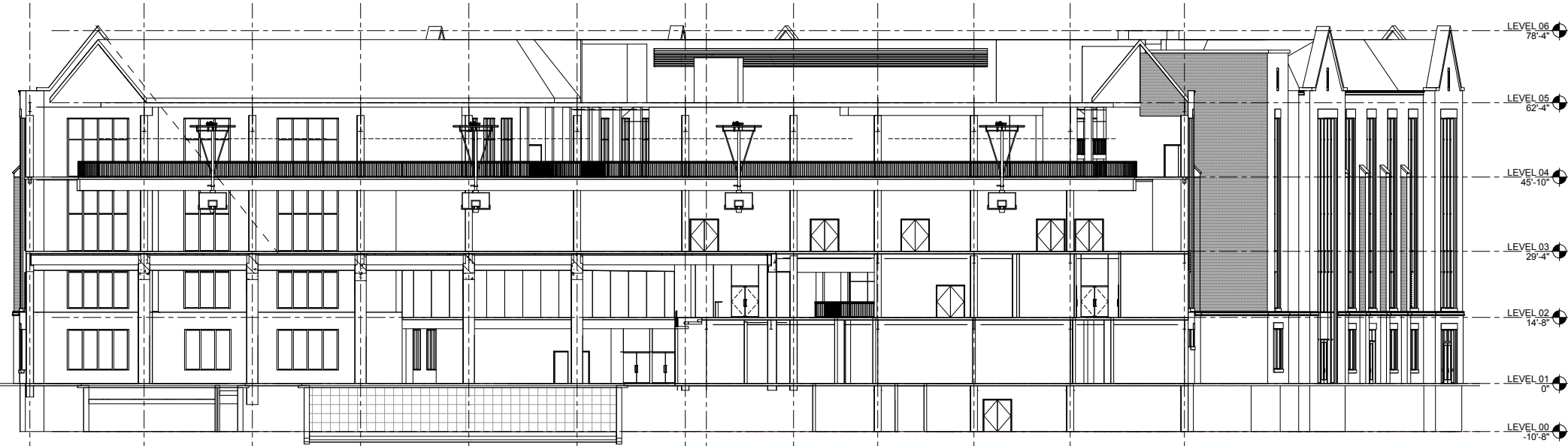
Figure 2.1f

Building Floor Plans  
Level 05

**Boston College Recreation Center  
Brighton, Massachusetts**



N-S SECTION THROUGH MAC



E-W SECTION THROUGH NATATORIUM

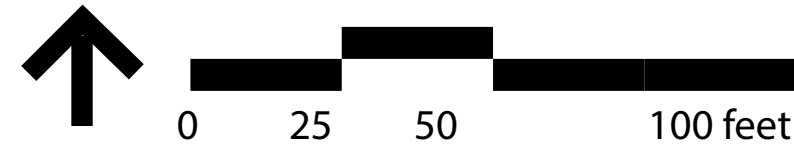


Figure 2.2  
Building Sections

**Boston College Recreation Center  
Brighton, Massachusetts**





NORTH ELEVATION (FROM WALSH HALL)



EAST ELEVATION (FROM ST. THOMAS MORE RD)

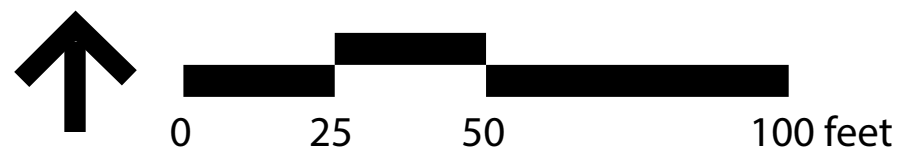


Figure 2.3a  
Building Elevations

**Boston College Recreation Center  
Brighton, Massachusetts**



SOUTH ELEVATION (FROM CAMPANELLA WAY)



WEST ELEVATION (FROM INTERIOR OF CAMPUS)

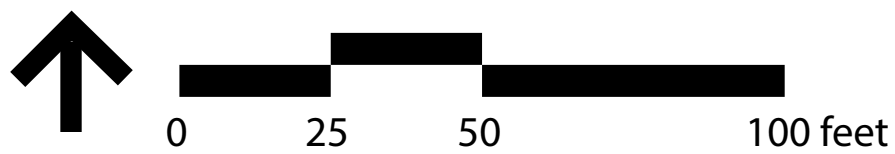


Figure 2.3b  
Building Elevations

**Boston College Recreation Center  
Brighton, Massachusetts**



VIEW FROM NORTHWEST



VIEW FROM NORTHEAST

Figure 2.4  
View Perspectives





Figure 2.5  
Landscape Plan



# 3

## Transportation

### 3.1 Introduction

The following transportation analysis reviews the potential transportation-related impacts of the Project. The analysis considers all modes of transportation service and operations, including:

- › Vehicular Traffic
- › Parking
- › Transit
- › Bicycle
- › Pedestrian
- › Transportation Demand Management
- › Loading and Servicing

#### 3.1.1 Key Findings and Benefits

The key findings related to transportation include:

- › As a replacement for the existing Flynn Recreation Center, which is located immediately to the west of the Project Site, the proposed Recreation Center is not expected to generate new trips to the Boston College campus. The users of the Project will be the same users of the existing Flynn Recreation Complex, and are already travelling to and from the vicinity of the Project Site. The cumulative impacts of the Project, and other individual IMP projects, have already been presented and reviewed in the IMP itself.
- › The proposed site improvements aim to strengthen and improve the pedestrian connections, circulation, and experiences internally, as well as along the public way of St. Thomas More Road and Campanella Way (a private way).
- › The Project will include bicycle accommodations in accordance with the *City of Boston Bicycle Parking Guidelines*.
- › Utilizes an existing service driveway and loading area shared with Walsh Hall.
- › The Recreation Center, as an integral part of the Lower Campus, will contribute to and benefit from the diverse range of Transportation Demand Management initiatives.

## **3.2 Methodology**

The analysis presented herein is consistent with the transportation analysis supporting the IMP, which provides a campus-wide evaluation of the IMP encompassing all three campuses: Chestnut Hill, Newton, and Brighton. The analysis focuses on the transportation needs of the Project and identifies any changes in potential impacts associated with the Project as currently proposed.

## **3.3 Existing Conditions**

This section describes existing conditions relative to the Project, and provides current traffic, bicycle and pedestrian data.

### **3.3.1 Existing Roadway Network and Site Access**

The Project Site abuts the west side of St. Thomas More Road adjacent to its intersection with Campanella Way (south). Edmond's Hall, which houses undergraduate students, currently occupies the Project Site. There are approximately 105 surface parking spaces in two lots accessed from both Campanella Way (one-way eastbound) and a service driveway on St. Thomas More Road to the north. Both intersections with St. Thomas More Road are under Stop sign control, which requires drivers exiting onto St. Thomas More Road to stop and give priority to vehicles travelling on St. Thomas More Road. The existing parking, and vehicular access and circulation is shown in Figure 3.1.

### **3.3.2 Existing Traffic Volumes**

To help identify any trends in traffic volumes on the roadway network supporting the campus, traffic volumes were collected in the St. Thomas More Road corridor during the week commencing May 4, 2015 when classes were still in session. The locations of the traffic counts are shown in Figure 3.2, and the count program comprised the following:

- › Automatic traffic recorder (ATR) counts for a continuous 2-day (48-hour) period on St. Thomas More Road south of Commonwealth Avenue, Commonwealth Avenue east of St. Thomas More Road, and Lake Street north of Commonwealth Avenue. These locations were chosen to enable comparison with previous ATR counts conducted in 2008 and 2013 at these locations.
- › Weekday peak period (7-9 a.m. and 4-6 p.m.) turning movement counts (TMC) at intersections on St. Thomas More Road including the following:
  1. Beacon Street
  2. Chestnut Hill Driveway
  3. Campanella Way north
  4. Commonwealth Avenue
  5. Service Driveway on north side of Project Site
  6. Campanella Way south

Previous TMC's conducted in 2008 and 2013 are available for the Commonwealth Avenue intersection.

Table 3-1 presents a comparison of Existing (2015) traffic volumes with corresponding volumes from the 2008 and 2013 conditions, where available. The weekday morning and evening peak hour traffic turning movements are presented in Figures 3.3 and 3.4, respectively. The traffic data collection sheets are included in Appendix A.

As shown in Table 3-1, the comparison of daily (24-hour) traffic volumes indicates that there has been a small decrease in volumes since 2013, continuing that trend from 2008. The exception is on Lake Street, where daily volumes decreased between 2008 and 2013, but increased between 2013 and 2015. Similar trends are generally reflected in the peak hour data, with the exception of St. Thomas More Road south of Chestnut Hill Driveway where the volumes in the evening peak hour have increased slightly. At the Commonwealth Avenue/St. Thomas More Road/Lake Street intersection, total turning movements have remained relatively constant during the morning peak hour but have decreased in the evening peak hour.

**Table 3-1 Existing Traffic Volumes and Historic Comparison**

		Average Daily Traffic			Morning Peak Hour			Evening Peak Hour		
Roadway/Intersection	Direction	2008	2013	2015	2008	2013	2015	2008	2013	2015
Automatic Traffic Recorder (ATR) counts (daily by hour)										
Commonwealth Ave., east of Lake Street	Eastbound	6,673	7,045	6,319	571	586	587	569	582	550
	Westbound	11,913	10,445	10,492	1,060	921	807	1,063	865	819
	Total	18,586	17,490	16,811	1,631	1,507	1,394	1,632	1,447	1,369
Lake Street	Northbound	5,886	5,688	6,495	488	441	555	505	507	547
St. Thomas More Rd., south of Chestnut Hill Driveway	Northbound	5,776	5,633	5,671	416	442	423	462	432	541
	Southbound	2,540	2,476	2,150	181	211	150	217	212	170
	Total	8,316	8,109	7,821	597	653	573	679	644	711
Turning Movement Counts (TMC) (peak periods)										
Commonwealth Ave. at St. Thomas More Road and Lake Street	Eastbound	—	—	—	840	807	929	665	690	613
	Westbound	—	—	—	915	931	827	1,020	1,069	902
	Northbound	—	—	—	278	302	297	479	377	487
	Total				2,033	2,040	2,053	2,164	2,136	2,002

### 3.3.3 Existing Parking and Traffic Generation

Overall person trip generation for the Project Site is associated substantially with its current use as undergraduate housing. As noted previously, there are approximately 105 surface parking spaces on the Project Site, which are controlled by Boston College's Parking Office. While there are parking spaces on Campanella Way (also controlled by permit), on-street parking on St. Thomas More Road outside the campus is not permitted.

As a limited number of students have access to permits to park on-campus, activity associated with student housing is predominantly pedestrian rather than vehicular.

Therefore, because Edmond's Hall houses undergraduate students, vehicle trip generation is relatively low, particularly in the peak traffic periods. Based on the 2015 counts traffic volumes on the service driveway north of the Project Site are limited to approximately 14 and 31 trips in the morning and evening peak hours, respectively.

### 3.3.4 Existing Public Transit

The Boston College Campus is well served by MBTA transit and bus services. As shown in Figure 3.5, Boston College is located at the terminus of the MBTA's Green Line Boston College B Branch. The Boston College station is located on the north side of Commonwealth Avenue, just west of the Brighton Campus. There are three Green Line branches, as follows:

- › **Boston College B Branch** operates between Boston College and Government Center on 7-minute headways during rush hours and on 8-minute headways throughout the day on weekdays. Weekend service is provided with 7-minute headways throughout Saturday and 7-minute to 10-minute headways on Sunday. Service from the Boston College stop is provided between 5:01 a.m. and 12:10 a.m. during the Monday through Thursday, between 5:01 a.m. and 1:30 a.m. Fridays, between 4:45 a.m. and 1:30 a.m. on Saturdays, and between 5:20 a.m. and 12:10 a.m. on Sundays.
- › **Cleveland Circle C Branch** operates between Cleveland Circle and North Station on 6-minute headways during rush hours and 7-minute to 8-minute headways throughout the day on weekdays. Weekend service is provided with 8-minute to 10-minute headways throughout Saturday and 10-minute headways on Sunday. The Cleveland Circle stop is located within one mile of the Brighton Campus. Service is provided between 5:01 a.m. and 12:10 a.m. Monday through Thursday, between 5:01 a.m. and 1:10 a.m. Fridays, between 4:50 a.m. and 1:10 a.m. on Saturdays, and between 5:30 a.m. and 12:10 a.m. on Sundays.
- › **Riverside D Branch** operates between Riverside and Government Center on 7-minute headways during rush hours and on 8-minute headways throughout the day on the weekdays. Weekend service is provided with 8-minute to 10-minute headways throughout Saturday and 10-minute headways on Sunday. The Reservoir stop is located just east of the Cleveland Circle stop on the C Branch. Service is provided between 4:56 a.m. and 12:05 a.m. Monday through Thursday, between 4:56 a.m. and 1:05 a.m. Fridays, between 4:55 a.m. and 1:05 a.m. on Saturdays, and between 5:25 a.m. and 12:00 a.m. on Sundays.

In 2014, the MBTA started a one-year pilot program offering late-night service as a way to boost the region's economy and provide affordable transportation options to students traveling through the city and employees working late evening shifts. Although the pilot program was approved to be extended through the 2016 fiscal year with slight modifications in service, the MBTA recently decided to terminate the program as of March 18, 2016.

The MBTA Green Line and local bus services are supplemented by Boston College shuttles to the Cleveland Circle stop on the C Line, and the Reservoir stop on the D Line.

### 3.3.5 Existing Boston College Shuttle Bus Service

Boston College provides shuttle bus services for students and employees of the Chestnut Hill, Brighton, and Newton Campuses. These services are illustrated in Figure 3.6, and are described below.

The Brighton Shuttle provides a van service between the Brighton Campus and the Chestnut Hill Campus Monday through Friday from 8:40 a.m. to 6:10 p.m. Service is provided every 30 minutes except on University holidays when classes are not in session.

The **Boston/Commonwealth Avenue Shuttle** service provides a Boston Direct Route and an All Stops route that run every 10-15 minutes. The Brighton Campus is served by the Greycliff Hall stop. The Boston Direct Route stops at Conte Forum, Commonwealth Avenue opposite Greycliff Hall (outbound), 2000 Commonwealth Avenue, the Reservoir Green Line stop at Cleveland Circle, Bank of America on Chestnut Hill Avenue, Chiswick Road, the corner of Commonwealth Avenue and Chestnut Hill Avenue, South Street, Greycliff Hall, and Robsham Theater. The All Stops route makes all of these stops plus McElroy Commons on Boylston Street, Donaldson House on College Road, and the Main Gate at the Chestnut Hill Campus. The various shuttle routes run from 7:00 a.m. to 2:00 a.m. on weekdays and 8:00 a.m. to 1:45 a.m. on weekends. Shuttle times and schedule are subject to change when school is out of session.

The **Newton Shuttle** transports students and employees between the Boston College Newton Campus and Chestnut Hill Campus via Commonwealth Avenue. Service is provided every 10-15 minutes from 7:00 a.m. to 2:00 a.m. on weekdays and from 8:00 a.m. to 2:00 a.m. on weekends. Five distinct routes are provided depending on the day of the week and time of day.

The **Shopping Shuttle** provides a service connecting the Chestnut Hill Campus to retail facilities at Chestnut Hill Mall, Chestnut Hill Square and The Street (Chestnut Hill), with stops on-campus at Alumni Stadium, the Boston College Main Gate and the Robsham Theater. Service is provided Thursday through Sunday, with 6 trips per day between 4:00 p.m. and 10:00 p.m. on Thursday and Friday, and 5 trips per day between 11:00 a.m. and 5:00 p.m. on Saturday and Sunday.

### 3.3.6 Existing Pedestrian Circulation

Pedestrian circulation on the Chestnut Hill Campus is shown in Figure 3.7. The Project Site is well connected to the core of the campus along Campanella Way, which has a continuous sidewalk along its northern side. There is also a pedestrian pathway connecting Edmond's Hall to Stayer Hall and Vanderslice Hall at the main campus entry close to Commonwealth Avenue. Off-campus, there are continuous

sidewalks on both sides of St. Thomas More Road, and a crosswalk is located just south of the intersection with Campanella Way (see Figure 3.1). St. Thomas More Road provides an off-campus route connecting to the Brighton Campus, and also connects to the Chestnut Hill Driveway sidewalks and the paths around the Chestnut Hill Reservoir. A major goal for the University, as stated in the 2009 IMP, is to strengthen pedestrian connections between Lower and Brighton Campuses. Blue light emergency call stations are located throughout the campus to enhance safety.

The turning movement counts identified in Section 3.3.2 included pedestrian crossing volumes at each intersection along the St. Thomas More Road/Chestnut Hill Driveway corridor. The morning and evening peak hour pedestrian crossing volumes are shown in Figures 3.8 and 3.9, respectively.

### **3.3.7 Existing Bicycle Facilities**

Boston College has numerous safe, clean and strategically located bicycle racks throughout its properties. On the Newton Campus, space is available for 110 bicycles and showers are available in the Quonset Hut building. On the Chestnut Hill Campus, there are 342 bicycle spaces available in 12 locations. Showers are available in the Flynn Recreation Complex for members and in Maloney Hall for those without membership. Additional bicycle racks have been installed at 129 Lake Street and Cadigan Alumni Center. Showers are located in the ground level of 129 Lake Street.

The existing Edmond's Hall is currently supported by 20 bicycle parking spaces. The University offers services to bicyclists to aid in their commute and secure their equipment, and supports initiatives to create a bike-friendly campus. Boston College participates in the MassRIDES Bike to Work Week (BTWW) Challenge to promote bicycling as a viable commute option.

The turning movement counts identified in Section 3.3.2 included bicycle movements at each intersection along the St. Thomas More Road/Chestnut Hill Driveway corridor. The morning and evening peak hour bicycle volumes are shown in Figures 3.10 and 3.11, respectively.

### **3.3.8 Existing Loading and Service**

There are currently no dedicated loading or service facilities on the Project Site, other than a trash collection/pick-up area at the end of Edmond's Hall fronting Campanella Way (Figure 3.1).

### **3.3.9 Existing Transportation Demand Management**

Boston College actively supports efforts to reduce automobile use by faculty, staff, students and visitors traveling to the campus. Many actions to support this goal are actively employed by Boston College, and existing measures include:

- › **Information Dissemination:** Boston College promotes all forms of alternative transportation through the Office of Transportation and Parking. The Office

provides a comprehensive website for the University community and the public that details transportation and parking policies (see [www.bc.edu/transportation](http://www.bc.edu/transportation)).

- › **Transit:** Boston College is served by the MBTA Green Line B Branch and provides shuttle bus service to the Cleveland Circle and Reservoir MBTA stops on the C and D Branches of the Green Line. In 2010, the University instituted a pre-tax T-pass sales program for full-time employees. Students can purchase a semester pass through the University and receive an 11 percent discount on MBTA passes.
- › **Ride matching:** In conjunction with MassRIDES, Boston College assists in the creation of carpools and vanpools, providing employees with a cost-effective and ecologically friendly alternative to drive-alone commutes. A discounted parking permit rate is available for those who sign up for ride matches. Carpoolers are guaranteed a prime parking location on-campus.
- › **Shuttle Bus System:** Boston College operates and promotes a free 13-bus shuttle system to link the campus with the Green Line at the Cleveland Circle and Reservoir stops.
- › **Guaranteed Ride Home:** Pre-registered employees who utilize alternative transportation can take advantage of a guaranteed ride home when a personal or family illness or unplanned overtime interrupts their regular commute.
- › **Eagle Escort Service:** Operated by the Boston College Police, the Eagle Escort service transports individual members of the Boston College community who are concerned for their personal safety and well-being. The service operates throughout the campus, 24 hours a day, 7 days a week, except for school holidays and breaks of four or more days.

### 3.4 Future Conditions

As described in Section 3.3, currently the Project Site is occupied by Edmond's Hall, which houses undergraduate students, and approximately 105 surface parking spaces controlled by Boston College's Parking Office. There is sufficient existing parking capacity in existing parking garages or surface lots to accommodate displaced parkers.

The Project will replace the outdated Flynn Recreation Complex, which is currently located in close proximity to the west of the Project Site. The new Recreation Center will provide an extensive array of activities to students, essentially replacing and upgrading the functions and activities of the existing Flynn Recreation Complex. The Project also enables construction of the planned University Center at the site of the existing Flynn Recreation Complex. A full description of the Project within the context of the IMP is presented in Chapter 1, *Project Description*. The proposed conditions site plan is presented in Figure 1.6.

### **3.4.1 Project Traffic Generation**

The majority of trips associated with both the existing Flynn Recreation Complex and the proposed Recreation Center are predominantly shared trips with other campus land uses. Therefore, the majority of users are arriving from or departing to other destinations on the Boston College Campus, and are not single destination trips with off-campus origins or destinations. Apart from drop-off or pick-up trips, most vehicle trips are not generated at the Flynn Recreation Complex itself, but to and from parking facilities throughout the campus arriving at or departing the Flynn Recreation Complex as pedestrian trips.

As a replacement project, the Recreation Center is not expected to generate new trips to the Boston College Campus. The users of the Project will be the same users of the existing Flynn Recreation Complex, and are already travelling to and from the vicinity of the Project Site. The cumulative impacts of the Project, and other individual Master Plan projects, have already been presented and reviewed in the Institutional Master Plan itself.

There will be some small reduction in vehicle activity in the local vicinity of the Project Site as a result of the elimination of the existing on-site parking lot. However, any changes associated with the relocation of both the Edmond's Hall residents and the adjacent parking spaces elsewhere are expected to be limited. Such changes are already accounted for in the approved IMP.

### **3.4.2 Proposed Vehicle Access and Parking**

As described previously, the existing parking on the Project Site is accessed from both Campanella Way (one-way eastbound) and a service driveway to the north off St. Thomas More Road. Because no on-site parking is proposed, the need for vehicular access will be diminished as a result of the elimination of the existing on-site parking lots. Any parking associated with the Recreation Center will continue to be served by existing parking.

As shown in Figure 1.6, the existing Campanella Way roadway will be maintained for use by emergency and maintenance vehicles.

### **3.4.3 Proposed Pedestrian Circulation Improvements**

As shown in Figure 1.6, the proposed site improvements aim to improve pedestrian connections, circulation, and experiences internally and also along the public ways of St. Thomas More Road and Campanella Way. The at-grade entry to the Recreation Center eliminates the need for stairs. Further, the elimination of vehicular circulation (with exception of emergency and maintenance vehicles) to the west of the building further enhances the quality of pedestrian experience. Refer to Chapter 2, *Urban Design*, for further description of proposed pedestrian improvements.



#### **3.4.4 Proposed Bicycle Accommodations**

In accordance with the *City of Boston Bicycle Parking Guidelines*, the Project will provide the following bicycle accommodations:

- › 20 outdoor bicycle parking spaces on-site;
- › Shower/changing facilities in the locker rooms on the first level of the Recreation Center; and
- › Secured/covered bicycle parking is currently being reviewed by the University to determine an appropriate location.

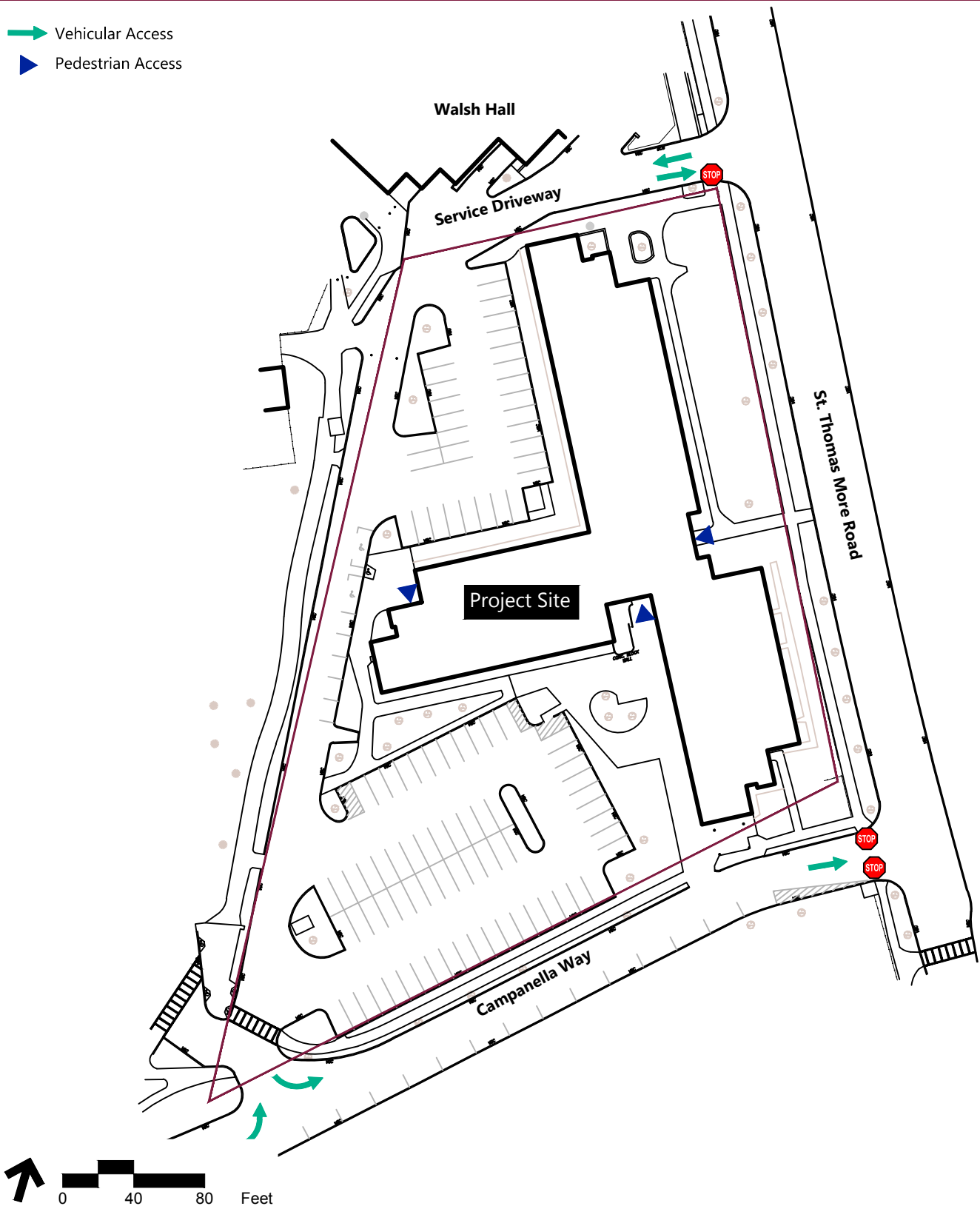
#### **3.4.5 Proposed Loading and Servicing**

As shown in Figure 1.6, the Recreation Center will be serviced at loading dock proposed on the north end of the building opposite the existing Walsh Hall loading facilities. Service vehicles will access the loading via the existing service driveway off St. Thomas More Road. While a small increase in deliveries is expected for the new Recreation Center compared to the Flynn Recreation Complex, the level of activity will continue to be relatively limited and will be adequately accommodated by the proposed loading dock.

Truck/van delivery/service activity, such as trash and recycling removal, package and supply deliveries, fitness equipment and pool maintenance, and catering is anticipated to be relatively modest (equivalent to an average of approximately 13 truck/vans per week, or 2 per day). Student move-in/move-out activities associated with Edmond's Hall will be eliminated with the Project.

#### **3.4.6 Transportation Demand Management**

Boston College is committed to a comprehensive program of Transportation Demand Management (TDM) strategies and initiatives to reduce automobile use by faculty, staff, and students. The Recreation Center will benefit from the diverse range of TDM initiatives, as described in detail in Section 3.3.9.



Source: Feldman Land Surveyors

Figure 3.1  
Existing Site Access and Parking

**Boston College Recreation Center  
Brighton, Massachusetts**

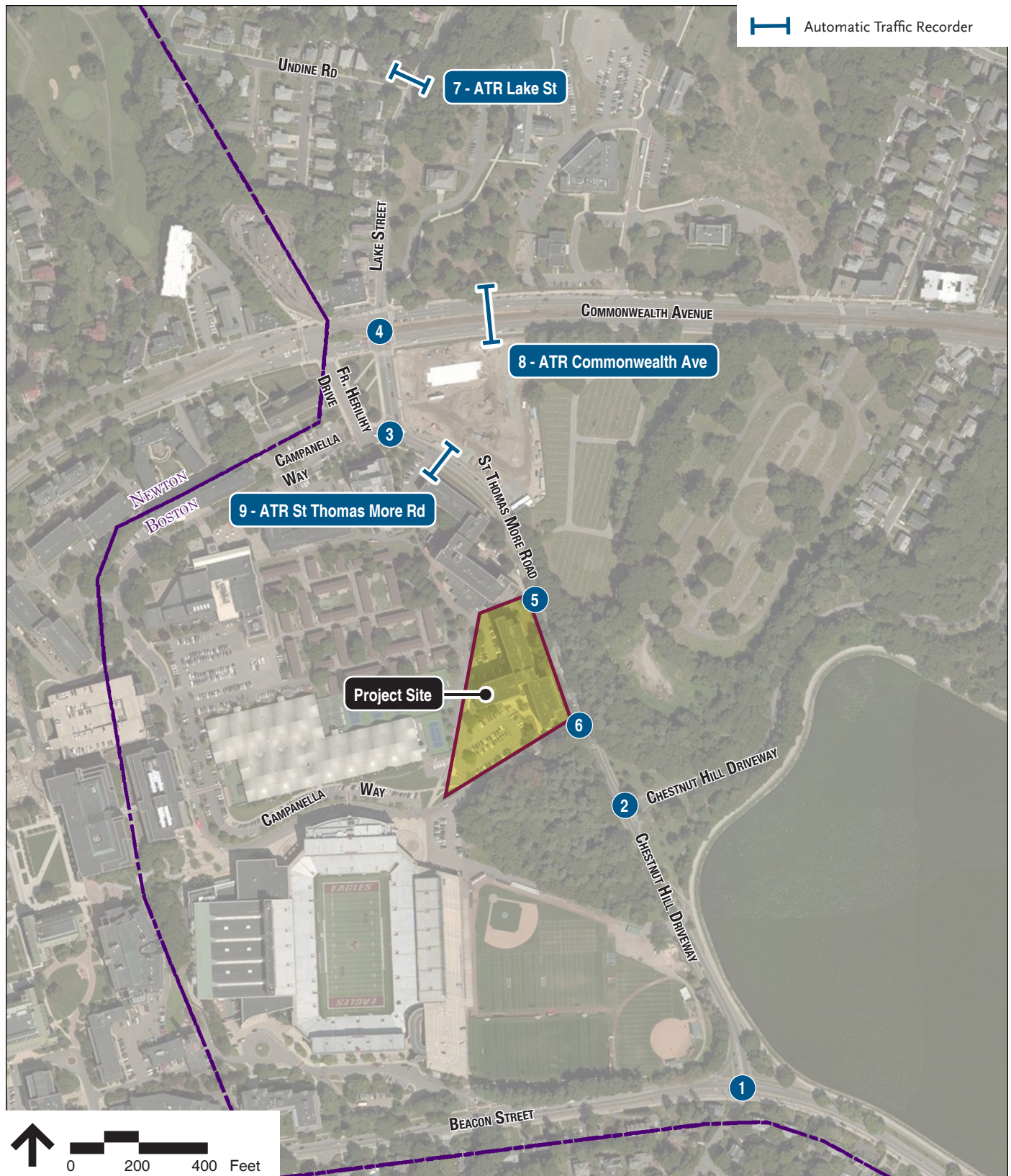
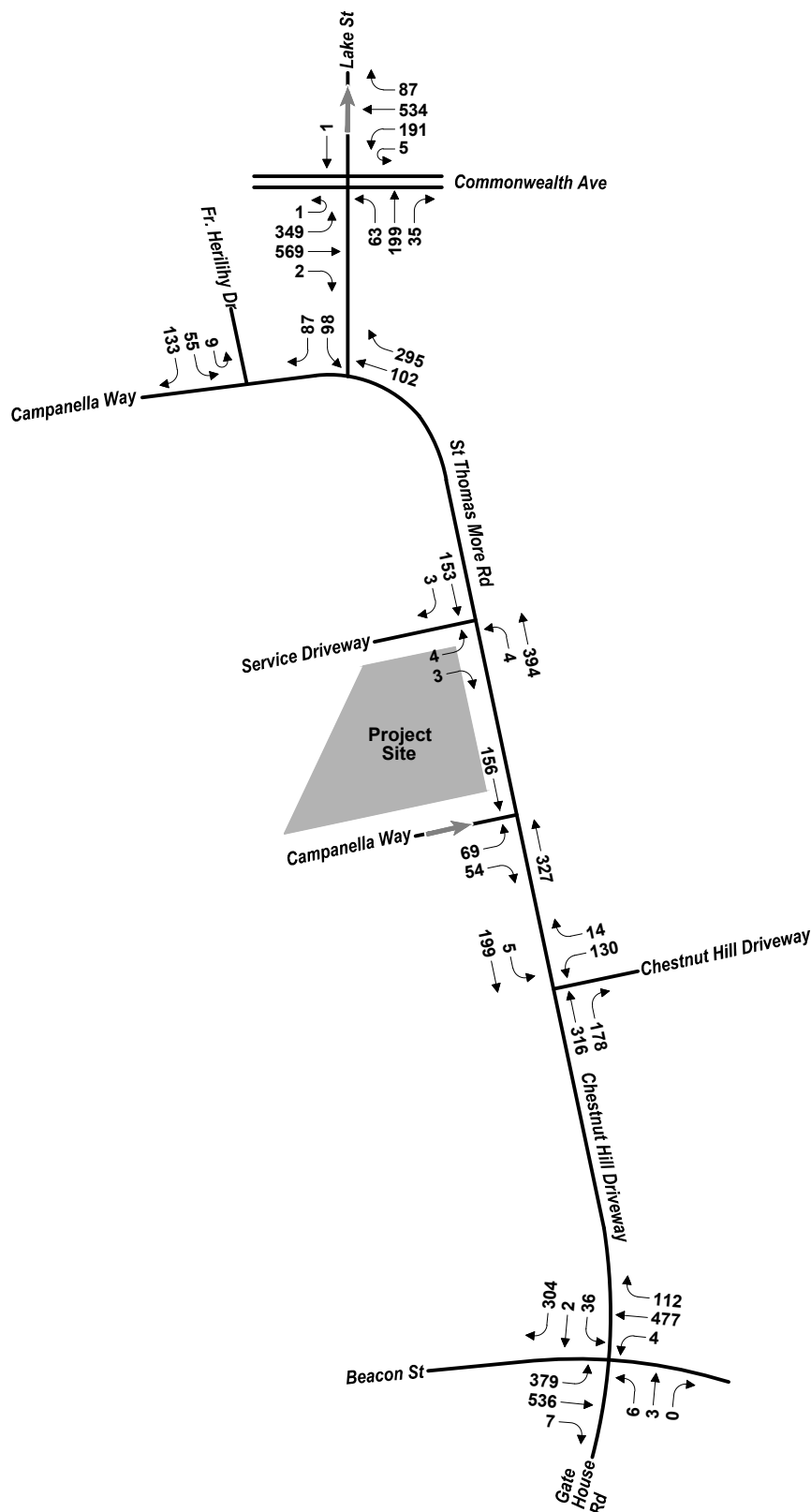


Figure 3.2  
Traffic Count Locations

**Boston College Recreation Center  
Brighton, Massachusetts**

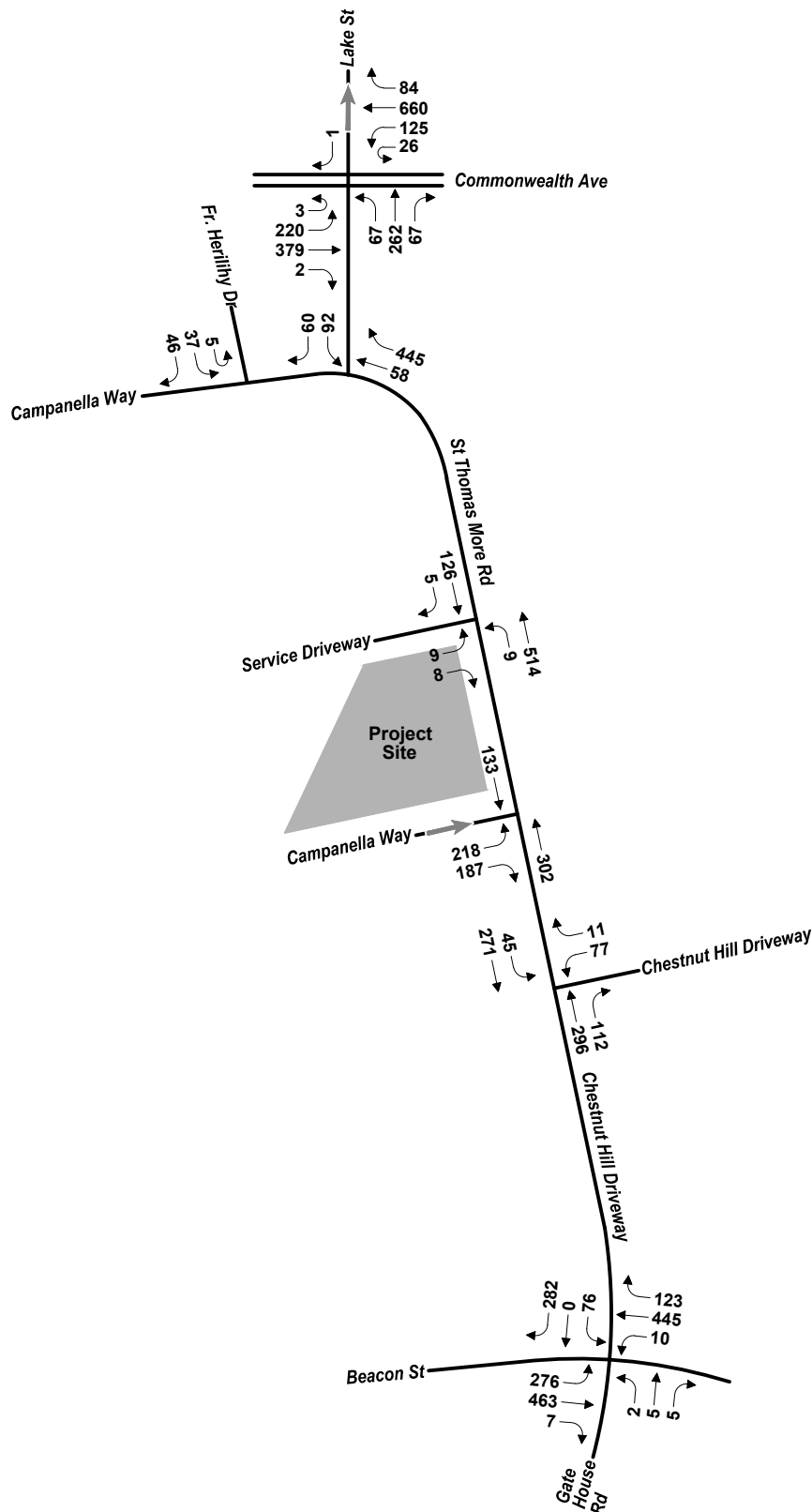


↑  
Not to Scale

Figure 3.3

Morning Peak Hour (7:45 AM-8:45 AM)  
Existing Traffic Volumes

**Boston College Recreation Center  
Brighton, Massachusetts**



↑  
Not to Scale

Figure 3.4

Evening Peak Hour (4:45 PM-5:45 PM)  
Existing Traffic Volumes

**Boston College Recreation Center  
Brighton, Massachusetts**





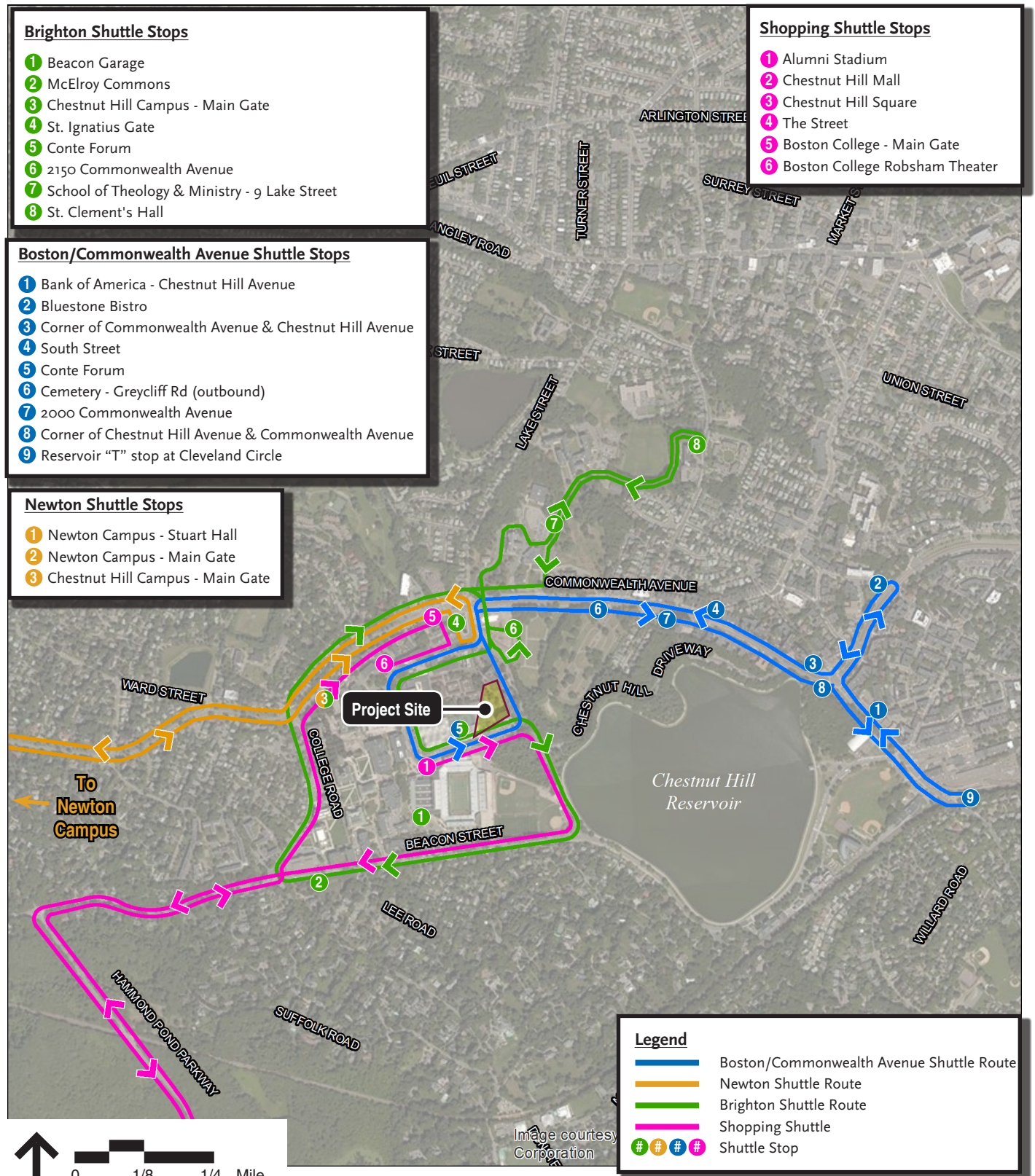
Source: MBTA

— Green Line  
— Bus Route

Figure 3.5  
Public Transportation

**Boston College Recreation Center  
Brighton, Massachusetts**





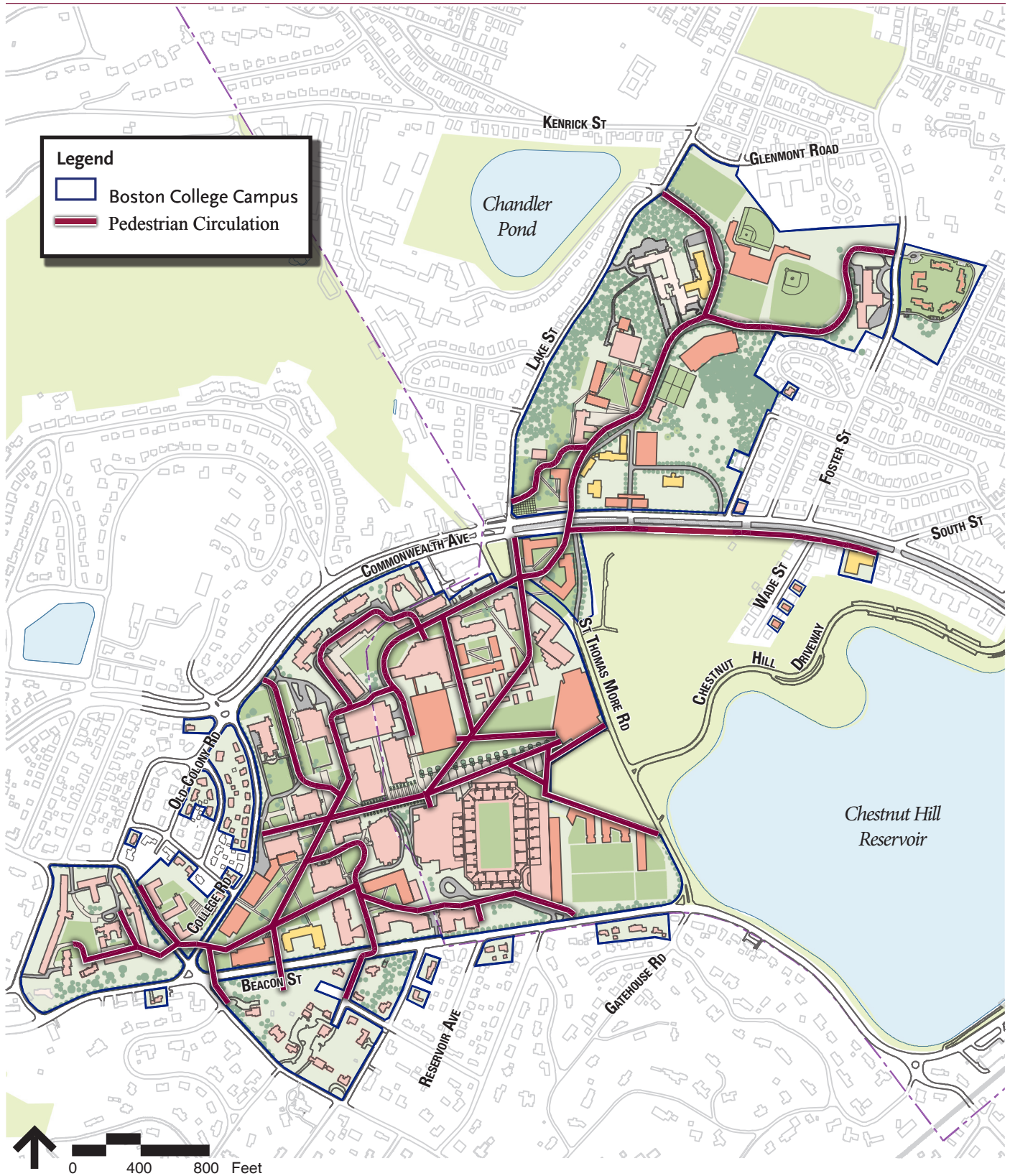
Source: Boston College Institutional Master Plan, 2009

Figure 3.6

Boston College Shuttle Bus Service

**Boston College Recreation Center  
Brighton, Massachusetts**





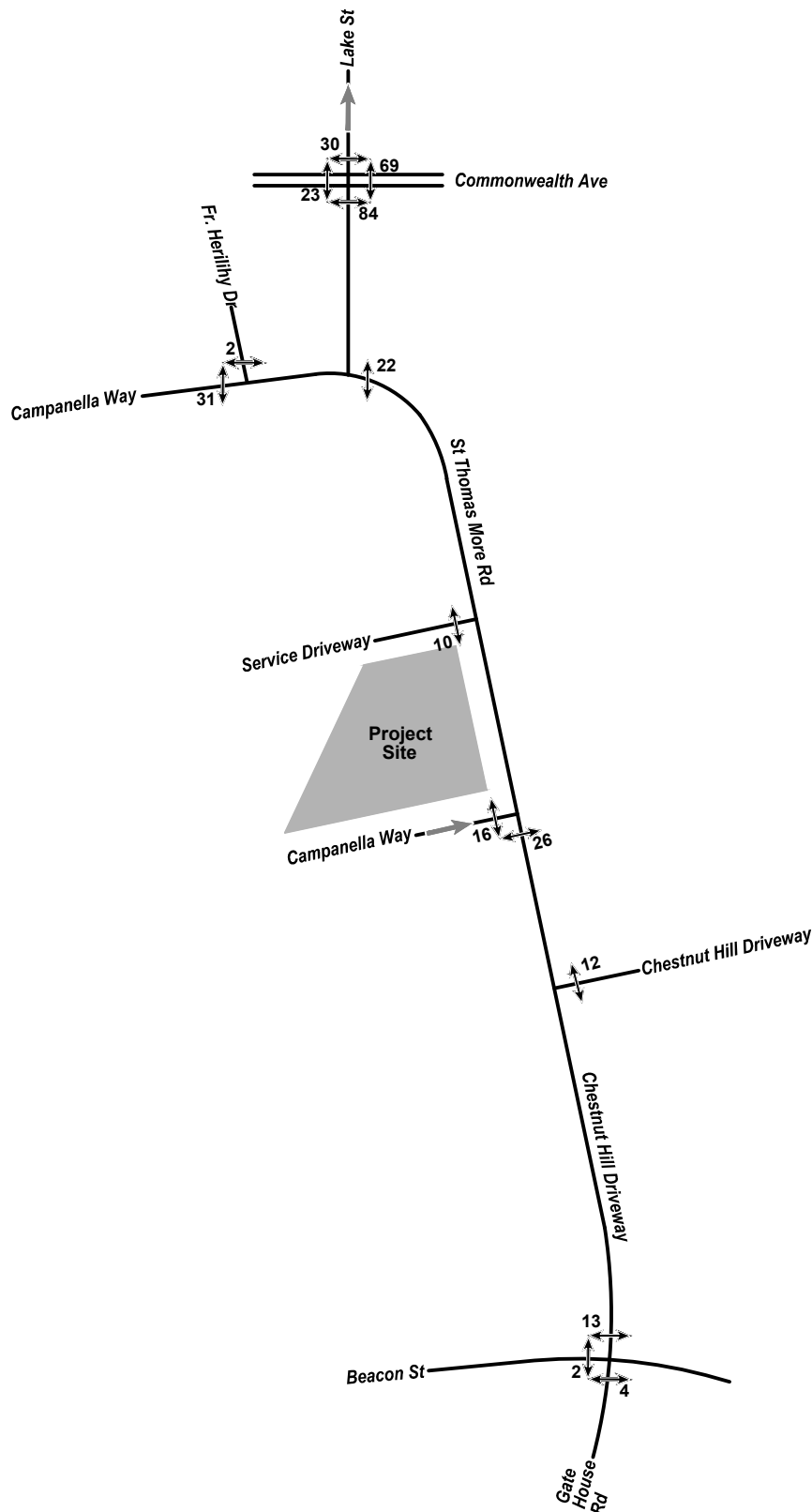
Source: Boston College Institutional Master Plan, 2009

Figure 3.7

Primary Pedestrian Circulation Routes  
Chestnut Hill Campus

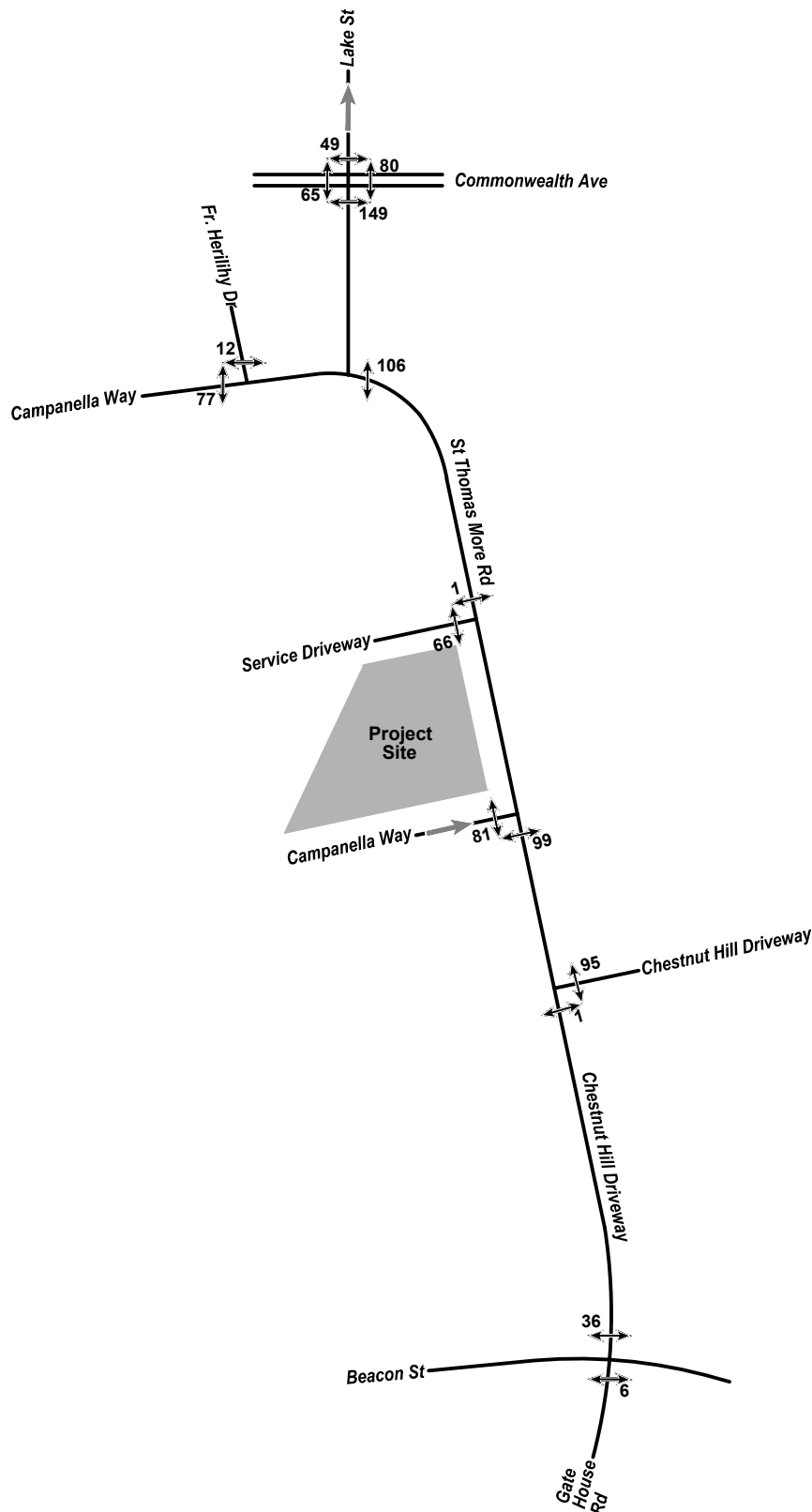
**Boston College Recreation Center  
Brighton, Massachusetts**





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Not to Scale

Figure 3.8  
Morning Peak Hour (7:45 AM-8:45 AM)  
Existing Pedestrian Volumes  
**Boston College Recreation Center  
Brighton, Massachusetts**

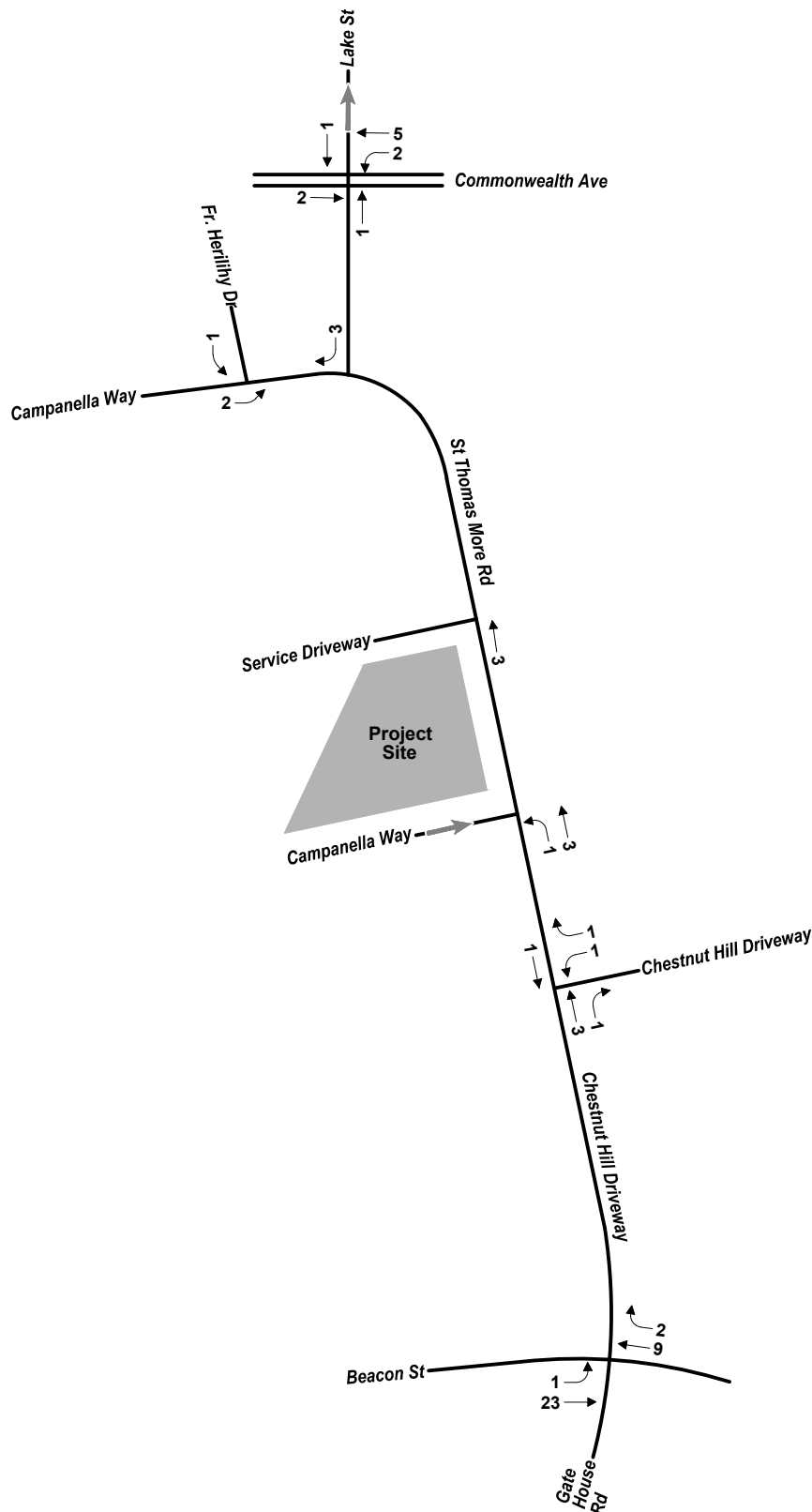


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Figure 3.9

Evening Peak Hour (4:45 PM-5:45 PM)  
Existing Pedestrian Volumes

**Boston College Recreation Center  
Brighton, Massachusetts**



↑  
Not to Scale

Figure 3.10

Morning Peak Hour (7:45 AM-8:45 AM)  
Existing Bicycle Volumes

**Boston College Recreation Center  
Brighton, Massachusetts**

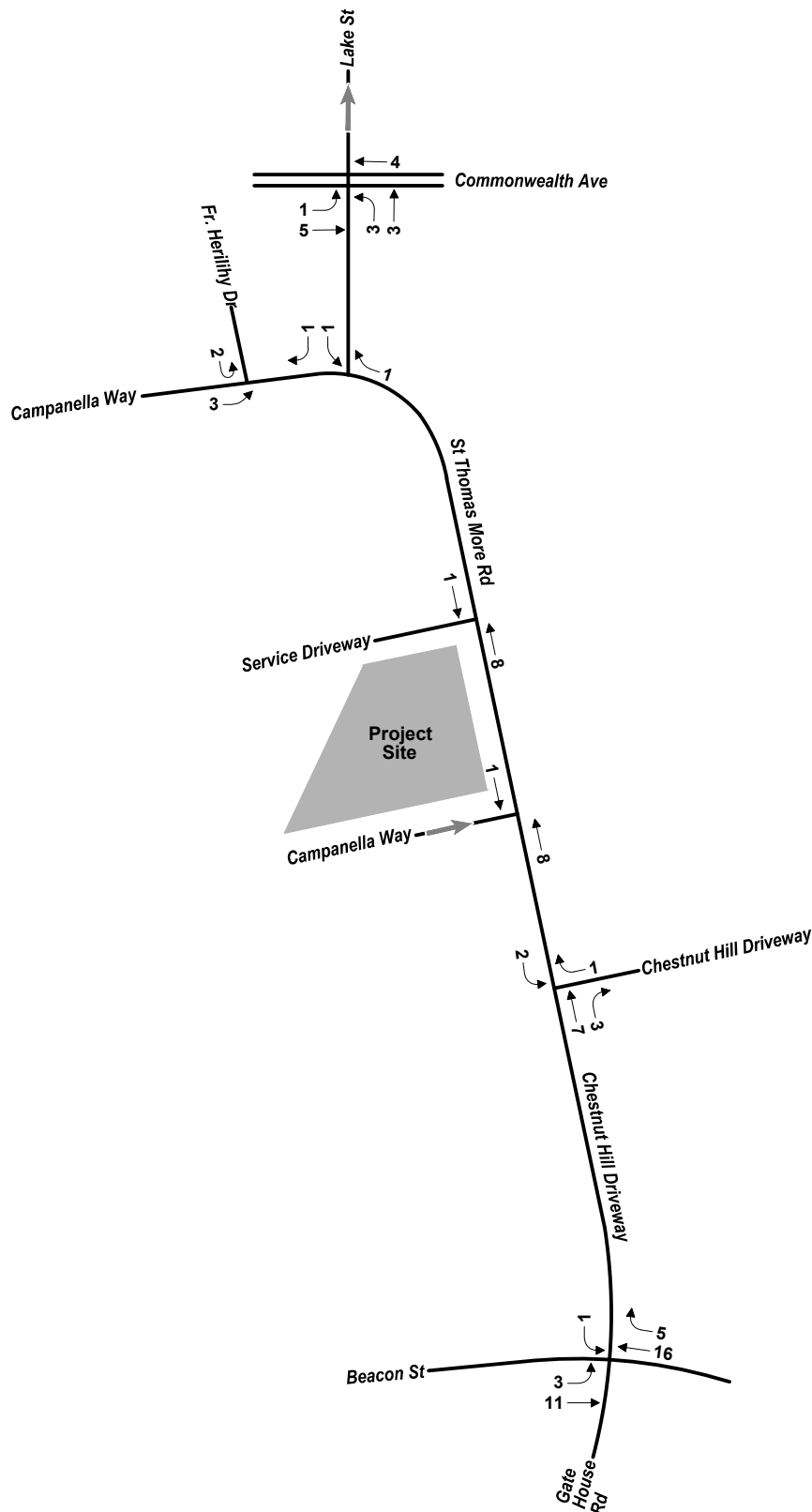


Figure 3.11

Evening Peak Hour (4:45 PM-5:45 PM)  
Existing Bicycle Volumes

**Boston College Recreation Center  
Brighton, Massachusetts**

# 4

## Environmental Protection

### 4.1 Introduction

This chapter presents information on the existing environmental conditions in the vicinity of the Project Site and the potential changes that may occur as a result of the Project. The goal of the Project is to provide a new and modern recreation facility while remaining within the campus footprint and avoiding or minimizing potential adverse environmental impacts to the Project area to the greatest extent feasible.

In accordance with Article 80 of the Boston Zoning Code, this EPNF considers the potential for project impacts in the following Large Project Review categories:

- › Shadow
- › Daylight
- › Solar Glare
- › Air Quality
- › Water Quality
- › Flood Hazard
- › Noise
- › Solid and Hazardous Waste
- › Groundwater/Geotechnical
- › Construction
- › Post-Construction Rodent Control
- › Historic Resources

Analysis of pedestrian wind impacts is not required since the Project is below the height threshold of 150 feet. As demonstrated in the following sections, all identified impacts will be avoided, minimized and/or mitigated to the extent feasible and as required by local, state, and federal regulation. Temporary construction-period impacts will be managed to minimize disruption to students, faculty and staff on campus and in the surrounding community.

The Project will incorporate the latest in building design methods and technology to ensure minimal impact and meet the criteria for LEED certification targeting a Silver rating, which exceeds the requirements of Article 37, Green Buildings, of the Code. Refer to Chapter 5, *Sustainability*, for additional information, as well as a discussion of climate change preparedness and resiliency.

#### 4.1.1 Key Findings and Benefits

The key findings related to environmental protection include:

- › While shadows are expected from the Recreation Center, some amount of net new sunlight will be created under all conditions as a result of the reduced building height.

- › The amount of daylight obstructed at the centerline of Campanella Way will be reduced slightly due to a reduced building height compared to the taller existing Edmond's Hall building. Alternatively, the amount of obstructed daylight from the center of St. Thomas More Road will increase due to the shift of building massing closer to the roadway.
- › While the exterior building materials have not yet been finalized, it is unlikely that highly reflective glass will be employed in any of the building facades. As design progresses, the design team will consider low-/non-reflecting exterior building materials.
- › As demonstrated by the transportation analysis presented in Chapter 3, *Transportation*, no net new vehicle trips are expected to be generated as a direct result of the Project, and the localized air quality impacts associated with vehicle trips to/from the new Recreation Center are expected to be negligible. No significant localized CO will be created by Project-related mobile sources.
- › All stormwater runoff from the Project Site will be captured and filtered prior to discharging to subsurface infiltration systems, which are designed to infiltrate one inch of runoff, in accordance with BWSC regulations.
- › The Project Site is located outside any designated flood zone areas.
- › Any noise associated with the building equipment will be attenuated with the mechanical penthouse located on the roof of the proposed building. Additional noise reduction is expected due to the roof top serving as an obstruction between the noise sources and the nearby sensitive receptors.
- › Since loading activities will be shielded by surround buildings and will be managed, noise impacts to the sensitive receptor locations are expected to be negligible.
- › There are two previous listed Release Tracking Number (RTNs) associated with the Project Site. There are no Activity and Use Limitations (AULs) at the property and no additional response actions are necessary and these releases are not anticipated to impact construction.
- › Subsurface investigations have been completed to define existing conditions for project design and construction, including a series of test borings, groundwater monitoring wells, and excavated test pit.
- › Construction-related impacts are temporary in nature and are typically related to truck traffic, air (dust), noise, stormwater runoff, solid waste and vibration. All temporary construction-period impacts associated with the Project will be managed to minimize disruption to the surrounding neighborhood through a comprehensive Construction Management Plan and in coordination with the appropriate state and city agencies (DCR and MWRA).
- › There are several properties located in the vicinity of the Project Site listed in the Inventory of Historic and Archaeological Assets of the Commonwealth, including five districts listed in the National Register of Historic Places. On the western edge of the Project Site lies a small portion of the Cochituate Aqueduct resource (a concrete pipe 48 inches in diameter), which extends along the Project Site.

- › The proposed architectural design aims to improve the visual connection between the Project Site and surrounding historic buildings by incorporating architecture of the Collegiate Gothic buildings that characterize the nearby Boston College nearby historic core.

## **4.2 Shadow**

This section describes the anticipated changes to shadows in the Project area as a result of the Project. The net new shadows are presented in Figures 4.1a through 4.1d.

### **4.2.1 Methodology**

The assessment of net new shadow resulting from the Project has been conducted in accordance with Section 80B-2 of the City of Boston Zoning Code with particular emphasis on sidewalks, public plazas, and other public open spaces as well as nearby buildings of historical importance.

The assessment provides a comparison of the No-Build and Build Conditions accomplished by using a three-dimensional model of the Project area referencing the BRA's 3D massing model for the Boston College Chestnut Hill and Brighton Campuses. The study was completed using standard sun altitude and azimuth data for each study date estimated to occur at latitude 42.335100N and longitude 71.170400W. Times were adjusted for daylight savings time as appropriate. The conditions were compared for the spring and fall equinoxes, and the summer and winter solstices at 9:00 a.m., 12:00 Noon and 3:00 p.m. Additional shadows were estimated for summer solstice and the equinoxes at 6:00 p.m.

### **4.2.2 Findings**

The study of net shadows indicates that the reduced height of the Recreation Center relative to the existing residence hall generally results in a smaller maximum extent of shadows in the mornings and evenings, reducing impact on the adjacent buildings and on Evergreen Cemetery during these times. The increased footprint of the new building does result in additional shadow area on adjacent landscaping and roads to the west and north, but this does not generally cause any significant impact on adjacent buildings or Evergreen Cemetery. Mid-day and afternoon shadows around the new building appear to be confined to immediately adjacent roads and landscape only except during the time around the winter solstice.

#### **March 21**

The Project will reduce the maximum extent of the shadows relative to the existing residence hall in the morning and in the evening, as shown by the studies for 9 a.m. and 6 p.m. . In particular, at 6 p.m. the existing shadow will be reduced significantly over Evergreen Cemetery. In the morning, some additional new shadow is created to the west of the building over the existing tennis court area, but this should impact the early morning only. During the middle of the day the shadows are increased

slightly at noon relative to those existing, but decreased by 3 p.m. In both cases the mid-day shadows only impact the roads and the landscaping immediately adjacent to the new building. Overall, the new building seems to generate a slight reduction of shadow impact on adjacent areas at this time of year.

### **June 21**

During this time of year, the Project will slightly increase shadow to the west in the morning and to the south in the evening as shown by the 9 a.m. and 6 p.m. studies. However, the shadows will not have significant impact during the middle of the day due to the high angle of the sun and should only impact landscape immediately adjacent to the buildings.

### **September 21**

At the fall equinox, some additional shadow area will occur to the west of the building in the morning as shown by the 9 a.m. study, but the maximum extent of the shadow will decrease from existing conditions and should only impact the tennis courts and adjacent roads to the west and northwest. Mid-day shadows remain largely the same with slightly more shadow on immediately adjacent landscape at noon and a slight reduction of shadows to the east around 3 p.m. The 6 p.m. study shows that evening shadow over Evergreen Cemetery will be reduced significantly, although some new shadows will be cast to the southeast of the proposed building.

### **December 21**

In winter, the Project will generate more shadows in the morning and will partially shade the southwest façade of Walsh Hall as shown in the 9 a.m. study. The extent of the shadows will be reduced slightly at noon except in landscaping areas immediately adjacent to the building. As with the other times of year, the maximum extent of shadows over Evergreen Cemetery are reduced significantly later in the day.

## **4.3 Daylight**

The following section describes the anticipated effect on daylight coverage at the Project Site as a result of the Project. An analysis of the percentage of skydome obstructed under the Build and No-Build conditions is a requirement of the Article 80B, Large Project Review, per Section 80B-2(c) of the Code. The daylight analysis was prepared using the BRA's Daylight Analysis Program (BRADA) and has been completed in accordance with the requirements of Article 80 of the Code. The results of the analysis are presented in Figure 4.2.

### **4.3.1 Methodology**

The Project was analyzed using the BRADA program comparing the Existing/No-Build and Build Conditions. The BRADA program was developed in 1985 by the Massachusetts Institute of Technology to estimate the pedestrian's view of the



skydome taking into account the massing and building materials used. The software approximates a pedestrian's view of a site based on input parameters such as: location of viewpoint, length and height of buildings and the relative reflectivity of the building facades. The model typically uses the midpoint of an adjacent right-of-way or sidewalk as the analysis viewpoint. Based on these data, the model calculates the perceived skydome obstruction and provides a graphic depicting the analysis conditions.

The model inputs used for the study presented herein were taken from a combination of the BRA's City of Boston model data, an existing conditions survey prepared by VHB, Inc., and schematic design plans prepared by Cannon Design dated June 2015. As described above, the BRADA software considers the relative reflectivity of building facades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skydome obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building facades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

### Viewpoints

The following viewpoints were used for this daylight analysis:

- › Campanella Way – This viewpoint is located on the centerline of the street on the southern façade of the proposed building.
- › St. Thomas More Road – This viewpoint is located on the centerline of the street on the western façade of the proposed building.

The viewpoint represents existing and proposed building façades when viewed from the adjacent public way.

### 4.3.2 Daylight Conditions

Table 4-1 below presents the percentage of skydome that is expected to be obstructed with and without the Proposed Project from each viewpoint. Figures 4.2a-b graphically represent the Project-related daylight impacts for the viewpoints from adjacent public streets.

**Table 4-1 Existing/No-Build and Build Daylight Conditions**

<b>Viewpoint</b>	<b>Existing/No-Build Daylight Obstruction</b>	<b>Build Daylight Obstruction</b>
Campanella Way	71.3%	67.4%
St. Thomas More Road	38.6%	64.5%

Under the Existing/No-Build Condition, the majority of the skydome is already obstructed from Campanella Way due to the height and density of the existing Edmond's Hall (over 70 percent). Under the Build Condition, the amount of obstructed skydome is reduced slightly at the centerline of Campanella Way due to

a reduced building height. Refer to Figure 4.2a for the daylight analysis results for Campanella Way.

From the St. Thomas More Road viewpoint, the Project is expected to increase the amount of skydome obstruction from approximately 39 percent to 65 percent due to the shift of building massing closer to the roadway (Figure 4.2b). This change as well as from the other adjacent public streets is well within the expected level of view obstruction when considered in the context of BC's long-term campus planning objectives. Consistent with the approved IMP, the desire for a modern recreation facility necessitates obstructing a portion of daylight at the Project Site.

#### **4.4 Solar Glare**

The Project will be designed to minimize the potential for solar glare that could adversely impact traffic safety along nearby roadways and solar heat gain in nearby buildings. The exterior building materials have not yet been finalized, however, it is unlikely that highly reflective glass will be employed in any of the building facades. As design progresses, the design team will consider low-/non-reflecting exterior building materials.

Summer heat gain at the façades of nearby buildings can be caused by the selective reflection of infrared frequencies of the sun's light by a building's glazing. Heat gain is most associated with south and southwest facing façades. The south and southwest faces of the Project are not likely to cause any undue heat gain because there are no nearby buildings and they are surrounded by surface parking, a service driveway, and undeveloped land/open space.

#### **4.5 Air Quality**

This section discusses the potential for localized air quality impacts associated with carbon monoxide (CO) emissions from vehicular traffic as a result of the Project. The purpose of the air quality assessment is to demonstrate that the Project satisfies applicable local, state and federal requirements, and whether it complies with the 1990 Clean Air Act Amendments (CAAA) following the local and the U.S. Environmental Protection Agency (EPA) policies and procedures.

As a replacement for the existing Flynn Recreation Center, which is located immediately to the west of the Project Site, the Recreation Center is not expected to generate new trips to the Boston College Campus, as demonstrated by the transportation analysis presented in Chapter 3, *Transportation*. The users of the Project will be primarily the same users of the existing Flynn Recreation Complex and are already travelling to and from the vicinity of the Project Site. Therefore, localized air quality impacts are expected to be negligible.

### 4.5.1 Regulatory Context

#### Air Quality Standards

The CAAA resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. Air quality control regions are classified and divided into one of three categories: attainment, non-attainment, and maintenance areas depending upon air quality data and ambient concentrations of pollutants. Attainment areas are regions where ambient concentrations of a pollutant are below the respective National Ambient Air Quality Standards (NAAQS); non-attainment areas are those where concentrations exceed the NAAQS. A maintenance area is an area that used to be non-attainment, but has demonstrated that the air quality has improved to attainment. After 20 years of clean air quality, maintenance areas can be re-designated to attainment. Projects located in maintenance areas are required to evaluate their carbon monoxide (CO) concentrations compared to the NAAQS.

The Project is located in the City of Boston, which, under the EPA designation, is a CO Maintenance area. As such, CO concentrations should be evaluated and discussed for this Project.

The EPA has established the NAAQS to protect the public health. Massachusetts has adopted similar standards as those set by the EPA for carbon monoxide. Table 4-2 presents the NAAQS for CO.

**Table 4-2 National Ambient Air Quality Standards for Carbon Monoxide**

Pollutant	Primary Standards	
	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m <sup>3</sup> )	8-hour
	35 ppm (40 mg/m <sup>3</sup> )	1-hour

CO is directly emitted by motor vehicles, and the predominant source of air pollution anticipated from typical project developments is emissions from Project-related motor vehicle traffic. A product of incomplete combustion, CO is a colorless and odorless gas that prevents the lungs from passing oxygen to the blood stream. Brief exposure to high levels of CO can also impair vision, physical coordination, and the perception of time. According to the EPA, 60 percent of CO emissions result from motor vehicle exhaust, while other sources of CO emissions include industrial processes, non-transportation fuel combustion and natural sources (i.e., wildfires). In cities, as much as 95 percent of CO emissions result from mobile sources.<sup>1</sup>

<sup>1</sup> Environmental Protection Agency, *National Air Quality and Emissions Trends Report*, 1999, March 2001.

**City of Boston Microscale Requirements**

The BRA Development Review Guidelines require “a microscale analysis predicting localized carbon monoxide concentrations should be performed, including identification of any locations projected to exceed the National or Massachusetts Ambient Air Quality Standards, for projects in which:

- › Project traffic would impact intersections or roadway links currently operating at Level of Service D, E, or F or would cause Level of Service (LOS) to decline to D, E, or F; or
- › Project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is fewer than 100 vehicles per hour); or
- › The Project will generate 3,000 or more new average daily trips on roadways providing access to a single location.”

**4.5.2 Air Quality Analysis Findings****Existing Conditions/Background Levels**

The Massachusetts Department of Environmental Protection (MassDEP) maintains an air quality monitoring system that collects concentrations of various pollutants within the state. The monitoring data was used to define the existing air quality levels, or background concentrations, within the study area. Background concentrations are ambient pollution levels from other stationary, mobile, and area sources.

A review of the MassDEP monitoring data indicates that the closest monitoring site to the subject property, which monitors CO, is the Kenmore Square site. The 1-hour and 8-hour CO background concentration is at 1.3 ppm and 0.9 ppm, respectively. These represent an assessment of the latest three years of monitoring data available (2012 through 2014). The background concentrations are well below the NAAQS of 9 ppm and 35 ppm for the 1-hour and 8-hour CO concentrations, respectively.

**Future Conditions**

The CAAA resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. The Project is located in the Boston Metropolitan area, which has been classified as a “Maintenance” area for CO and requires assessment of localized CO emissions due to project vehicular traffic.

As a replacement for the existing Flynn Recreation Center, which is located immediately to the west of the Project Site, the proposed Recreation Center is not expected to generate new trips to the Boston College Campus, as demonstrated by the transportation analysis presented in Chapter 3, *Transportation*. The users of the Project will be the same users of the existing Flynn Recreation Complex, and are already travelling to and from the vicinity of the Project Site and, therefore, localized air quality impacts are expected to be negligible. Furthermore, the elimination of on-

site surface parking further reduces vehicle trips and air emissions associated with the Project.

An evaluation of the traffic analysis was conducted under the review guidelines developed by the BRA for determination of potential for CO impacts. It was determined that:

- › Project traffic would not impact intersections or roadway links currently operating at Level of Service (LOS) D, E, or F and would not cause LOS to decline to D, E, or F. The Project is not producing vehicle trips that would affect or worsen LOS.
- › Project traffic would not increase traffic volumes on nearby roadways by 10 percent or more (the increase in traffic volume is fewer than 100 vehicles per hour). There are no generated trips associated with the Project and thus no increase in traffic volumes on nearby roadways.
- › The Project will not generate 3,000 or more new average daily trips on roadways providing access to a single location. The Project will generate fewer than 3,000 average daily trips.

Thus, under BRA Review Guidelines, the Project is not expected to cause or contribute to a violation of the NAAQS and a quantitative microscale analysis is not required.

Violation of the CO standard set by the NAAQS has become increasingly infrequent. This is due to a number of factors. Primarily, the vehicular emission rates of CO have decreased and will continue to decrease with the passage of time due to newer, more controlled vehicles entering the fleet<sup>2</sup>. Additionally, the CO background concentration in Boston has decreased with time<sup>3</sup>.

Under consideration of these three controlling factors for the determination of CO impact (Project traffic, background concentration, and emission rates), it is highly unlikely for CO impacts to exist or to be created with the introduction of the Project. The Project will generate no vehicular activity in the surrounding network. The CO emission rates of the fleet will decrease over time, and the background CO concentration is a relatively small four percent and 10 percent of the respective 1-hour and 8-hour NAAQS.

### **Conclusion**

As demonstrated by the transportation analysis presented in Chapter 3, *Transportation*, no net new vehicle trips are expected to be generated as a direct result of the Project, the localized air quality impacts associated with vehicle trips to/from the new Recreation Center are expected to be negligible. No significant localized CO will be created by Project-related mobile sources.

<sup>2</sup> "Transportation Air Quality Facts and Figures" *Vehicle Emissions*, Federal Highway Administration. January 2006.  
<[https://www.fhwa.dot.gov/environment/air\\_quality/publications/fact\\_book/page15.cfm](https://www.fhwa.dot.gov/environment/air_quality/publications/fact_book/page15.cfm).>

<sup>3</sup> "Massachusetts Annual Air Quality Report" *Department of Environmental Protection, Bureau of Air and Waste, Division of Air and Climate Programs*. Multiple Years.

## 4.6 Water Quality

The proposed drainage conditions will be upgraded to comply with MassDEP stormwater standards and BWSC regulations. As discussed more fully in Chapter 6, *Infrastructure*, the drainage from the paved surfaces will be collected with catch basins with deep sumps and hoods. All site runoff will be captured and filtered prior to discharging to subsurface infiltration systems, which are designed to infiltrate 1 inch of runoff, in accordance with BWSC regulations. Overflow from the infiltration systems will be routed to the 24-inch pipe to the southeast of the Project Site to match existing conditions.

## 4.7 Flood Hazard

The Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") indicates the FEMA Flood Zone Designations for the Project Site (City of Boston, Community-Panel Numbers 25025C0058G, and dated September 25, 2009). It demonstrates that the Project Site does not contain any flood zone areas. Refer to Figure 4.3 for the extent of the nearby floodplain associated with the Chestnut Hill Reservoir. Therefore, it is not anticipated that the Project Site will be susceptible to conditions of flooding. In addition, the Project finished floor elevation is raised above surrounding grades to protect against any potential localized flooding in the vicinity of the proposed building.

## 4.8 Noise

The noise impact assessment evaluated the potential noise impacts associated with the Project's activities, including mechanical equipment (e.g., HVAC units, cooling tower) and loading activities. This section discusses the noise background, noise impact criteria, noise analysis methodology, and potential noise impacts. Noise monitoring was conducted to determine existing ambient sound levels. The analysis demonstrates that the Project will comply with City of Boston noise regulations.

### 4.8.1 Noise Analysis Background

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, communication, work, or recreation. How people perceive sound depends on several measurable physical characteristics, which include the following:

- › Intensity - Sound intensity is often equated to loudness.
- › Frequency - Sounds are comprised of acoustic energy distributed over a variety of frequencies. Acoustic frequencies, commonly referred to as tone or pitch, are typically measured in Hertz. Pure tones have all their energy concentrated in a narrow frequency range.

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from

the threshold of hearing (zero dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two equal sound levels creates a 3 dB increase in the overall level. Research indicates the following general relationships between sound level and human perception:

- › A 3 dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person.
- › A 10 dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person.

The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A weighted [dB(A)] is used to evaluate environmental noise levels. Table 4-3 presents a list of common outdoor and indoor sound levels.

**Table 4-3 Common Outdoor and Indoor Sound Levels**

Outdoor Sound Levels	Sound Pressure ( $\mu$ Pa)*	Sound Level dB(A)**	Indoor Sound Levels
	6,324,555	110	Rock Band at 5 m
Jet Over Flight at 300 m		105	
	2,000,000	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		95	
	632,456	90	Food Blender at 1 m
Diesel Truck at 15 m		85	
Noisy Urban Area—Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		65	Normal Speech at 1 m
	20,000	60	
Quiet Urban Area—Daytime		55	Quiet Conversation at 1 m
	6,325	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		45	
	2,000	40	Empty Theater or Library
Quiet Suburb—Nighttime		35	
	632	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		25	Empty Concert Hall
Rustling Leaves	200	20	
		15	Broadcast and Recording Studios
	63	10	
		5	
Reference Pressure Level	20	0	Threshold of Hearing

Source: Highway Noise Fundamentals. Federal Highway Administration, September 1980.

\*  $\mu$ PA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.

\*\* dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20  $\mu$ Pa (the reference pressure level).

A variety of sound level indicators can be used for environmental noise analysis. These indicators describe the variations in intensity and temporal pattern of the sound levels. The following is a list of other sound level descriptors:

- › L90 is the sound level which is exceeded for 90 percent of the time during the time period. The L90 is generally considered to be the ambient or background sound level.
- › Leq is the A-weighted sound level, which averages the background sound levels with short-term transient sound levels and provides a uniform method for comparing sound levels that vary over time.

#### **4.8.2 Methodology**

The noise analysis evaluated the potential noise impacts associated with the Project's operations, which include mechanical equipment and loading dock activities. The noise analysis included measurements of existing ambient background sound levels and a qualitative evaluation of potential noise impacts associated with the proposed mechanical equipment (heating, ventilation, and air conditioning (HVAC) systems, and emergency generators) and loading activities. The study area was evaluated and sensitive receptor locations in the vicinity of the Project were identified and examined. The proposed site layout and building design, as it relates to the loading area and management of deliveries at the Project Site, were also considered. The analysis considered sound level reductions due to distance, proposed building design, and blockages from the surrounding structures.

##### **Receptor Locations**

The noise analysis included an evaluation of the study area to identify nearby sensitive receptor locations, which typically include areas of sleep and areas of outdoor activities that may be sensitive to noise associated with the Project. The noise analysis identified three nearby sensitive receptor locations in the vicinity of the Project. As shown on Figure 4.4, the receptor locations include the following:

- › M1 – Project property line to the south adjacent to the Pine Tree Preserve (a DCR park);
- › M2 – Residential use to the west (on-campus Modular housing units); and
- › M3 – Project property line to the east (Chestnut Hill Reservoir).

These receptor locations, selected based on land use considerations, represent the most sensitive locations in the vicinity of the Project Site.

##### **City of Boston Noise Impact Criteria**

The City of Boston has developed noise standards that establish noise thresholds deemed to result in adverse impacts. The noise analysis for the Project used these standards to evaluate whether the proposed development will generate sound levels that result in adverse impacts.



Under Chapter 40, Section 21 of the General Laws of the Commonwealth of Massachusetts and Title 7, Section 50 of the City of Boston Code, the Air Pollution Control Commission of the City of Boston has adopted Regulations for the Control of Noise in the City of Boston. These regulations establish maximum allowable sound levels based upon the land use affected by the proposed development. Table 4-4 summarizes the maximum allowable sound levels that should not be exceeded.

**Table 4-4 City of Boston Noise Standards by Zoning District**

<b>Land Use Zone District</b>	<b>Daytime (7:00 a.m. – 6:00 p.m.)</b>	<b>All Other Times (6:00 p.m. – 7:00 a.m.)</b>
Residential	60 dB(A)	50 dB(A)
Residential/Industrial	65 dB(A)	55 dB(A)
Business	65 dB(A)	65 dB(A)
Industrial	70 dB(A)	70 dB(A)

Source: Regulations for the Control of Noise in the *City of Boston, Air Pollution Control Commission*.

For a residential zoning district, the maximum noise level affecting residential uses shall not exceed the Residential Noise Standard. The residential land use noise standard is 60 dB(A) for daytime periods (7:00 a.m. to 6:00 p.m.) and 50 dB(A) for nighttime conditions (6:00 p.m. to 7:00 a.m.).

### 4.8.3 Existing Noise Conditions

A noise monitoring program was conducted to establish existing sound levels. The existing sound levels were measured using a Type 1 sound analyzer (Larson Davis SoundExpert LXT and Larson Davis 831). Measurements were conducted during the weekday daytime period (3:00 p.m. to 4:00 p.m.) and late night period (3:00 a.m. to 4:00 a.m.) in the vicinity of the sensitive receptor locations on April 29, 2015 and April 30, 2015, respectively. The measured sound levels data under existing conditions was composed of noise from vehicles on local roadways, mechanical equipment from nearby buildings, and general campus activities.

The existing measured sound level data are presented in Table 4-5. The L90 sound levels range from 46 dB(A) to 51 dB(A) during the daytime period and from 41 dB(A) to 44 dB(A) during the nighttime period. These sound levels are representative of a typical active urban area. The result of the noise monitoring program indicates that the sound levels within the study area are currently below the City of Boston's daytime standard of 60 dB(A) for a Residential District as well as the nighttime standard of 50 dB(A).

**Table 4-5 Existing Measured Sound Levels, dB(A)**

Location	City of Boston Residential District Noise Criteria		Measured L90 Sound Levels	
	Daytime	Nighttime	Daytime	Nighttime
M1 – Pine Tree Preserve	60	50	46	41
M2 – Modular Housing	60	50	50	44
M3 – Edmond’s Hall/ Chestnut Hill Reservoir	60	50	51	42

Source: VHB, Inc.

Note: Refer to Figure 4.4 for monitoring locations.

#### 4.8.4 Future Noise Conditions

The noise analysis evaluated the potential noise impacts associated with the Project’s proposed mechanical equipment and loading activities. The analysis determined the potential sound level impacts at the nearby sensitive receptor locations.

##### **Mechanical Equipment**

Since the Project is in the early stages of the design process, the specific details related to the potential mechanical equipment are unknown at the time of this noise assessment. The Project is expected to include the following mechanical equipment:

- › One 700 ton chiller;
- › Three 8,000 MBH gas fired hot water boilers;
- › Twelve air handling units; and
- › Ventilation systems for the mechanical rooms.

The sound from the equipment will be attenuated with the mechanical penthouse located on the roof of the proposed building. With the height of the proposed building at approximately 70 feet tall, additional noise reduction is expected due to the roof top serving as an obstruction between the noise sources and the nearby sensitive receptors. During the final design and selection process, the appropriate low-noise mechanical equipment will be selected and incorporate, if necessary, noise attenuation measures to comply with City of Boston’s noise criteria at the sensitive receptor locations. With the equipment located in a penthouse on the roof, the sound levels associated with the Project’s mechanical equipment is expected to be negligible at the surrounding sensitive receptor locations.

##### **Service and Loading Activities**

As discussed previously, all building loading and servicing activities associated with the Project will be located on the northern side of the new Recreation Center across from the existing Walsh Hall loading dock (Figure 1.6). The proposed layout of the building will provide shielding to sensitive receptor locations.

The anticipated service and loading activities are described in Section 3.4.5 of Chapter 3, *Transportation*. Consistent with the existing Flynn Recreation Center, such activities are expected to consist of vans and box trucks. Daily activities utilizing the loading dock would be associated with maintenance vehicles and small package deliveries by FedEx/UPS. The University will manage loading dock activities so that service and loading operations do not impact the circulation roadway within the Project Site. The area between the Project Site and Walsh Hall currently experiences noise associated with loading activities. Since loading activities will be shielded by surround buildings and will be managed, noise impacts to the sensitive receptor locations is expected to be negligible.

#### **4.8.5 Conclusion**

The noise analysis evaluated the sound levels associated with the Project's operations. Due to the design of the proposed building and the location of the mechanical equipment within the penthouse on the roof, the sound levels associated with the Project's operations are expected to have negligible noise impacts on the existing background sound levels at nearby sensitive receptor locations.

### **4.9 Solid and Hazardous Waste**

There are two previous listed Release Tracking Numbers (RTNs) associated with the Project Site. RTN 3-16890 from 1998 was associated with fuel oil from an emergency generator released to the underlying paved and/or concrete surface areas and no subsurface soil and/or groundwater was impacted. Class A-1 Response Action Outcome (RAO) Statement was filed closing out the RTN in June 1998. RTN 3-12833 was associated with release of a small quantity of fuel oil during removal of an underground storage tank (UST). Impacted soil was excavated and disposed off-site. A Class A-2 RAO Statement was submitted to the MassDEP in October 1995. Each of these Disposal Sites has achieved a Permanent Solution and a Condition of No Significant Risk. There are no Activity and Use Limitations (AULs) at the property and no additional response actions are necessary and these releases are not anticipated to impact construction.

Environmental characterization of the soil and groundwater at the Project Site has not been conducted to date. Excavation for below-grade and foundation construction will generate excess soil requiring off-site transport. Chemical testing of the material will be undertaken prior to construction to define soil environmental quality and provide data required by receiving facilities for acceptance of the material. Material leaving the Project Site will be legally transported in accordance with local, state, and federal requirements. All work will be conducted in accordance with MassDEP requirements.

Asbestos containing material (ACM) has been identified within Edmond's Hall and will be handled appropriately prior to the structural demolition of the building, and in accordance with state and local regulations. Work plans will be prepared by appropriately licensed professionals to identify the means and methods for safe

removal and legal disposal or recycling of these materials. Abatement and disposal of hazardous materials will be performed by specialty contractors experienced and licensed in handling materials of this nature.

Construction debris generated during excavation may include asphalt, wood, concrete, brick, granite and other building materials. The Proponent will ensure that waste removal and disposal during construction and operation will be in conformance with the City's requirements and DEP's Regulations for Solid Waste.

## 4.10 Groundwater/Geotechnical

This section describes existing site conditions, subsurface soil and groundwater conditions, and planned foundation and below-grade construction.

### 4.10.1 Existing Site Conditions

As shown on Figure 1.3, the Project Site is currently occupied by the existing 9-story Edmond's Hall, parking areas immediately south and west of Edmond's Hall, and some landscaped areas. In general, site grades are relatively flat, ranging between approximately El. 138 and El. 141 Boston City Base (BCB) Datum.

### 4.10.2 Subsurface Soil and Bedrock Conditions

Subsurface investigations completed for Project design and construction include a series of test borings, groundwater monitoring wells, and excavated test pit to define existing conditions. Subsurface conditions, which are summarized in Table 4-6 below, consist of fill soils (Fill and Blast Rock Fill) overlying glacial soils and/or bedrock. The Blast Rock Fill consists of angular pieces of crushed rock placed to fill the historic Lawrence Basin reservoir to create the Lower Campus. Bedrock consisting of Conglomerate and Volcanic Tuff underlies the glacial deposits at elevations from El. 100 +/- to El. 120 +/- BCB, corresponding to depths between 20 to 40 feet below existing site grades. Bedrock outcrops are visible at off-site locations in the surrounding area.

**Table 4-6 Subsurface Conditions**

<b>Stratum/Subsurface Unit</b>	<b>Elevation Top of Stratum (BCB)</b>	<b>Range in Thickness (ft)</b>
Fill	El. 135.7 to 140.5	1 to 18
Blast Rock Fill	El. 129 to 138.2	Less than 4 to 22
Glacial Outwash/ Glaciolacustrine	El. 117.2 to 124.3	6.3 to 12
Glacial Till	El. 106.5 to 135.5	2.7 to 19.5
Bedrock	El. 98.0 to 119*	n/a

Source: Haley & Aldrich, Inc.

#### **4.10.3 Groundwater**

Groundwater levels were measured in groundwater observation wells on the Project Site between El. 130 and El. 132.3 BCB (corresponding to depths of 8 to 10 feet below existing site grades.) The Project Site is located outside the limits of the Groundwater Conservation Overlay District (GCOD). Accordingly, the Project is not required to comply with Article 32 of the Boston Zoning Code. Groundwater management practices will be employed during construction.

#### **4.10.4 Nearby Existing Below-Grade Utilities**

As shown on Figure 1.3, a 48-inch diameter MWRA water main is located along the western edge of the Project Site. The top of the pipe has been reported by the MWRA to be within a few feet of the ground surface. In addition, by 1916 the Cochituate Aqueduct was constructed below the roadway that is now St. Thomas More Road, connecting with gatehouse structures located south of Beacon Street. The dimensions, depth and construction of this MWRA structure are not known. The location of the MWRA infrastructure will be considered for the project design and construction, including monitoring movement and vibration generated during construction to assure that the facilities are adequately protected. An 8(m) Permit will be applied for at which time methods to ensure protection of the existing water line, if required, will be developed by the Proponent.

#### **4.10.5 Proposed Foundation Construction**

New foundation construction at the Project Site will require demolition and removal of portions of the existing foundations and substructure for below-grade walls and foundation installation. The Project is anticipated to be supported on Pressure Injected Footings (PIFs) bearing on competent glacially deposited soils.

Excavation for construction of the one level of below-grade space for pools and basement will be to depths of approximately 5 to 16 feet, the deeper portions of which are below site groundwater levels. Excavation for building basement construction will be conducted within a temporary earth support system designed and constructed to provide adequate support of the adjacent ground and be compatible with the subsurface conditions. The temporary earth support system will also act as a groundwater seepage cut-off wall to assist in controlling groundwater levels outside of the excavation. Temporary construction dewatering of the excavation will be conducted within the earth support system to drain the site soils prior to excavation. The dewatering will be conducted in accordance with appropriate permits to be obtained from city, state, and federal agencies, as applicable, to discharge into adjacent storm drain systems. It is anticipated that temporary construction dewatering permits will be obtained from the Environmental Protection Agency through the required National Pollutant Discharge Elimination System (NPDES) permit and by the BWSC.

#### **4.10.6 Considerations of Off-Site Impacts and Mitigation Measures**

Based on the design and construction methodology developed for the Project, potential impacts to abutting or off-campus facilities, from foundation construction, such as ground movement, vibration, and groundwater lowering are anticipated to be negligible.

### **4.11 Construction**

Construction-related impacts associated with the Project construction activities are temporary in nature and typically related to truck traffic, air (dust), noise, stormwater runoff, solid waste and vibration. As the design of the Project progresses, the Construction Manager (CM) will prepare a Construction Management Plan ("CMP"), in compliance with the City of Boston's Construction Management Program, to address sub-phases and reflect the input of the regulatory authorities having jurisdiction over such plans, including the Boston Fire Department (BFD) and BTM. The CMP will include detailed information on construction activities, specific construction mitigation measures, and construction materials access and staging area plans to minimize impact on the surrounding neighborhood.

Construction methodologies that ensure public safety and protect nearby residents will be employed. Techniques such as barricades, walkways, and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and control of noise and dust. The following section generally describes the potential construction-period impacts and proposed CMP elements, which are subject to refinement and modification as the design of the Project progresses.

#### **4.11.1 Construction Sequencing**

As described in Chapter 1, *Project Description*, the Project includes demolition of the existing Edmond's Hall and construction of a Recreation Center set within Lower Campus south of Commonwealth Avenue located on the west side of St. Thomas More Road. The total construction duration is anticipated to be approximately 29 months with abatement activities starting in June 2016 followed by demolition through the summer with substantial structure completion in December 2018.

Demolition will be completed utilizing large specialized excavators to remove the existing residence hall. The Recreation Center will be erected with a large crawler crane and supplemental assist cranes will be required at periodic times. The construction area work zone will be confined by jersey barriers and fencing.

Typical hours of construction are from 7:00 a.m. to 6:00 p.m., Monday through Friday. There may be occasions where work on selected Saturdays is necessary. These specific instances will be identified and necessary permits will be obtained from the City of Boston.

#### **4.11.2 Site Preparation and Staging**

Construction site access will be from either Commonwealth Avenue or Beacon Street via St. Thomas More Road, to be determined as part of the final CMP. The construction area work zone will be confined by jersey barriers and fencing along Campanella Way.

Prior to the start of construction, existing utilities will be surveyed and mapped. No excavations will be performed until Dig Safe has been notified, and utilities marked. Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with the MWRA, BWSC, Boston Public Works, Dig Safe and the governing utility company requirements, as applicable. All necessary permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities will be reviewed by BWSC as part of its Site Plan Review process.

#### **4.11.3 Pedestrian Safety and Access**

Public safety is the primary consideration in all our construction planning and building processes. Specific pedestrian crosswalks and re-routing measures will be taken to allow for adequate egress around the active construction zones.

The sidewalk along the west side of St. Thomas More Road and north side of Campanella Way will be closed during construction; there is also anticipated intermittent closures of this sidewalk during demolitions. Pedestrians will be re-routed to the south side of Campanella Way, with a walkway protected by jersey barriers at the current parking lane. A fenced lay down and work area will be established to separate construction activity from day-to-day pedestrian and vehicular traffic on-campus. Police detail will be provided, as required by the approved CMP.

#### **4.11.4 Construction Traffic and Parking**

Construction truck routes are expected to be St. Thomas More Road to Beacon Street and/or Commonwealth Avenue, subject to the approved CMP. Best efforts will be made to schedule major deliveries on non-peak traffic hours. Signage will be prevalent throughout the Project Site and surrounding streets informing vehicular and construction truck traffic alike of detours, as needed. Also, a security detail will be utilized to safely direct and manage construction-related traffic as well as routine campus traffic. The intent of the construction truck route will be to minimize the impact of construction truck traffic in the Project area and on off-campus roadways.

##### **4.11.4.1 Construction Worker Parking**

No on-site construction parking will be made available to sub-contractors and all trade workers will be encouraged to utilize accessible public transit or carpool. Limited construction worker parking will also be provided on-campus.

#### **4.11.5 Air Quality/Dust**

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

The state's anti-idling law will be enforced during construction of the Project with the installation of on-site anti-idling signage at loading and drop-off/pick-up/waiting areas. In addition, the Proponent is committed to meeting the requirements of the DEP State Revolving Fund (SRF) for diesel construction equipment. These require that all non-road diesel equipment rated 50 horsepower or greater that will be used on a construction site meet EPA's Tier 4 emission limits or be retrofitted with appropriate emission reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified or DEP-approved diesel oxidation catalysts or diesel particulate filters.

#### **4.11.6 Construction Noise**

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

#### **4.11.7 Stormwater Runoff/Erosion Control**

A federal National Pollutant Discharge Elimination System (NPDES) General Construction Permit is required because construction of the Project is anticipated to disturb over an acre of land and, therefore, the CM will be required to take measures to prevent erosion and to control sediments during the construction phase. An overall site-specific Storm Water Pollution Prevention Plan (SWPPP) will be developed in accordance with local (BWSC) regulatory agency requirements.

During demolition of Edmond's Hall and construction, erosion and sediment control measures will be implemented to minimize the transport of Project Site soils to off-site areas and BWSC storm drain systems. The existing catch basins will be protected



with filter fabric or silt sacks to provide for sediment removal from runoff. These controls will be inspected and maintained throughout the construction phase until all areas of disturbance have been stabilized through the placement of pavement, structure or vegetative cover.

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

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

#### **4.11.8 Construction Waste Management**

The CM will take an active role in regard to the processing and recycling of construction waste and will have in-place a Construction Waste Management Plan (CWMP) for the Project. The CWMP will require the CM to contract with a licensed waste hauler that has off-site sorting capabilities. All construction debris will be taken off-site by the waste hauler, sorted as either recycled debris or waste debris and sent to the proper recycling center or waste facility. Construction debris shall be wetted and covered to minimize air born dust particles. Prior to construction, in accordance with the LEED goals established (discussed in Chapter 5, *Sustainability*) construction and demolition debris will be diverted away from landfills and incineration facilities, and will be sought to reuse materials. A 90 to 95 percent recycling/diversion rate will be targeted based on recent construction projects.

Asbestos containing material (ACM) has been identified within Edmond's Hall and will be handled appropriately prior to the structural demolition of the building, and in accordance with state and local regulations.

#### **4.11.9 Odor and Rodent Control**

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

## **4.12 Post-Construction Rodent Control**

Trash and solid waste removal will be handled by the campus maintenance staff. The University will maintain a service contract with a professional pest control firm to address rodent/pest control during the operational phase of the Project, as needed. In addition, no open top dumpsters will be allowed as an additional precaution to deter infestation.

## **4.13 Historic Resources**

This chapter identifies properties located within and in close proximity to the Project Site that are listed in the National and State Registers of Historic Places and/or included in the Inventory of Historic and Archaeological Assets of the Commonwealth. The chapter also describes potential effects to these properties, and Project-related benefits.

A search of the Massachusetts Historical Commission's (MHC) Massachusetts Cultural Resource Information System (MACRIS) database and mapping tool was completed to identify previously recorded above-ground and archaeological resources located on or within a ¼-mile radius of the Project Site, the results of which are detailed in 4.13.3. Figure 4.5 shows the location and proximity of these properties to the Project Site. Figure 4.6a-c includes photographs of the surrounding historic resources with a map key.

### **4.13.1 Historic Context**

The Project Site is located at the edge of the Chestnut Hill Campus, on the west side of St. Thomas More Road in a concentration of campus buildings constructed during the 20<sup>th</sup> century. In addition to the 1975 Edmond's Hall on the Project Site, these include Walsh Hall, an eight-story residence hall built in 1980 north of the Project Site on St. Thomas More Road; and the 1972 Flynn Recreation Complex and 1970s Modular Apartments, both located west of Edmond's Hall. Further west is the Chestnut Hill Campus, and approximately a quarter-mile northeast of the Project Site is the Brighton Campus, consisting of the former St. John's Seminary complex. In contrast to the campus buildings located north and west of the Project Site, the northeast, east, and south are characterized by recreational/open space areas. South of Edmond's Hall is Pine Tree Preserve (a DCR park). Northeast across St. Thomas More Road are Evergreen Cemetery and the Chestnut Hill Reservation which lie east and southeast of the Project Site (Figure 1.2).

### **4.13.2 On-Site Conditions and Resources**

#### **Edmond's Hall**

The Project Site contains Edmond's Hall, a nine-story residence hall constructed in 1975 between St. Thomas More Road and Campanella Way (see Figure 1.4 for current photographs). The building has a T-shaped footprint composed of three wings radiating

from a central concrete shaft, which contains the elevator; two of the wings are parallel to St. Thomas More Road, while the third rear wing extends west at 90-degree angle, parallel to Campanella Way. There is a concrete stair shaft near the end of each wing. The building has a flat parapet roof, which has a flush concrete cornice along the roofline.

The elevations of each wing are separated by slightly-projecting full-height bays, which contain single and paired 1/1 metal sash windows. The windows on each story are connected to those above and below by metal spandrels, creating a continuous column of windows in each projecting bay and emphasizing the verticality of the building. In some bays, the metal spandrels have been replaced by concrete panels. The recessed main entrance in the central shaft contains two metal doors and is marked with the street number of the building in metal numerals. An iron fence extends along the sidewalk on St. Thomas More Road and paved parking lots are located behind the building on both sides of the rear wing.

#### **Cochituate Aqueduct Linear District (BOS.LY, NWT.AS)**

A small portion of the Cochituate Aqueduct, which includes a concrete pipe 48 inches in diameter, sits within the MWRA easement that extends along the west side of the Project Site (Figure 1.3). This linear resource has been listed in the National Register as part of the Water Supply System of Metropolitan Boston Thematic Resource Area, which is discussed in more detail below.

### **4.13.3 Resources in Site Vicinity**

As shown in Table 4-7 and Figure 4.5, there are several properties located in the vicinity of the Project Site listed in the Inventory of Historic and Archaeological Assets of the Commonwealth, including five districts listed in the National Register of Historic Places. Several of the areas and districts overlap one another. All of the resources discussed in this section are within a quarter-mile radius of the Project Site, with one exception. The discussion includes the Boston College Main Campus area (NWT.DI), which includes several buildings located just outside of the quarter-mile radius, but is sited on a hill that has visibility of the Project Site. Figures 4.6a-c include photographs of the surrounding historic resources with a map key.

**Table 4-7 Massachusetts Historical Commission Inventoried and Listed Resources**

District/Area Name	Location	MHC Inventory No.	Designation
Lake Street – Chandler’s Pond Area	Lake Street, north of Commonwealth Avenue	BOS.JV	INV
Saint John’s Roman Catholic Seminary Complex	Commonwealth Avenue, east of Lake Street	BOS.JW	INV
Upper Chestnut Hill – Evergreen Area	Commonwealth Avenue and Chestnut Hill Avenue	BOS.JX	INV
Evergreen Cemetery	2060 Commonwealth Avenue	BOS.ZJ / NR #9000612	NRIND
Chestnut Hill Reservoir and Pumping Stations	Beacon Street	BOS.LW	LL
Chestnut Hill Reservoir Historic District	Beacon Street	BOS.LX / NR #89002271 and #64500254 TRA	NRDIS/NRTRA
Cochituate Aqueduct Linear District	Wayland, Natick, Wellesley, Newton, Boston, Brookline	BOS.LY, NWT.AS / #64500254 TRA	NRDIS/NRTRA
Sudbury Aqueduct Linear District	Newton, Wellesley, Natick, Sherborn, Framingham	BOS.SK, NWT.AQ / NR #89002293 and #64500254 TRA	NRDIS/NRTRA
Commonwealth Avenue – Brighton	Commonwealth Avenue	BOS.YY	INV
Boston College Main Campus	Beacon Street and College Road	NWT.DI	INV
Boone Trail Highway Historic Marker	Commonwealth Avenue	NWT.973	INV
Boston College MBTA Station	Commonwealth Avenue	NWT.924 / BOS.9328	INV
Saint Ignatius of Loyola Church	24 Commonwealth Avenue	NWT.2610	INV
Baptist House	66 (formerly 56) Commonwealth Avenue	NWT.2611	INV

NRIND National Register of Historic Places, Individual Listing

NRDIS National Register of Historic Places, District

NRTRA National Register of Historic Places, Thematic Resource Area

LL Local Landmark

INV Listed in the Inventory of Historic and Archaeological Assets of the Commonwealth, no current designation

**Water Supply System of Metropolitan Boston Thematic Resource Area – Districts**

The Water Supply System of Metropolitan Boston Thematic Resource Area (TRA) submission provides a context (#64500254) under which several independently designated historic districts and individual properties were listed in the National Register at one time, in January 1990. Each of these listed districts and resources contributes to the complex and interconnected infrastructure developed to provide Boston-area residents with a reliable water supply, and represents both above-ground structures and underground aqueduct systems. Most prominent in the vicinity of the Project Site is the **Chestnut Hill Reservoir Historic District (BOS.LX / NR #89002271)**, comprising the large reservoir east of St. Thomas More Road and a

number of associated structures on the surrounding roads, such as the Intermediate Gatehouse on St. Thomas More Road and the Sudbury Terminal Chamber at the intersection of Beacon Street and St. Thomas More Road. This district is roughly contiguous with a BLC locally designated district, named the **Chestnut Hill Reservoir and Pumping Stations (BOS.LW)**. The **Cochituate Aqueduct Linear District (BOS.LY**, no district form or NR reference number) includes an aqueduct under the campus as well as the Intermediate Gatehouse on St. Thomas More Road. An engineering survey commissioned by the University in May 2015 identified the aqueduct pipe along the west side of the Project Site, as shown on Figure 1.3.<sup>4</sup> Also located in the vicinity of the Project Site is the **Sudbury Aqueduct Linear District (BOS.SK, NWT.AQ/NR #89002293)**, which extends under Beacon Street at the south end of the campus.

#### **Upper Chestnut Hill – Evergreen Area (BOS.JX)**

This area of primarily early 20<sup>th</sup>-century apartment houses was largely prompted by the extension of the streetcar along Commonwealth Avenue, which increased the ease of commuting to downtown Boston. The Boston Landmarks Commission, in its role as a Certified Local Government, determined that the area is eligible for listing as a National Register district in 2006, and the MHC concurred.

This area also includes **Evergreen Cemetery (BOS.ZJ/NR #9000612)**, located east of the Project Site across St. Thomas More Road. The cemetery was individually listed in the National Register in 2009. It was established in 1850 as Brighton's second municipal cemetery; the southwest portion of the cemetery, located closest to the Project Site, was developed during the 1970s and is considered to be a non-contributing element.

#### **Boston College Main Campus (NWT.DI)**

Boston College is located in Boston and Newton. Boston College was established in 1863 and relocated to Chestnut Hill after the purchase of then-rural land in 1907. The Collegiate Gothic buildings, designed between 1909 and 1950, are sited on the top of a hill and arrayed around a central grassy common area.

#### **Commonwealth Avenue Properties**

The quarter-mile radius includes a number of properties adjacent to Commonwealth Avenue on the north edge of the radius. These include **Commonwealth Avenue through Brighton (BOS.YY)**, with a concentration of development dating to the early 20<sup>th</sup> century introduction of the streetcar along the road. The MHC issued a favorable eligibility opinion for this area in 2007. On an elongated traffic island located in the center of Commonwealth Avenue, just west of the Newton town boundary, is the **Boone Trail Highway Historic Marker (NWT.973)**. This stone monument carved to represent a Native American projectile point was installed in 1934, as one of more than 350 markers across the country dedicated to the story of early American pioneers such as Daniel Boone.

<sup>4</sup> Conversely, this linear resource is mapped in MACRIS under St. Thomas More Road and the northeast corner of the Project Site.

Extending north of Commonwealth Avenue is **Saint John's Roman Catholic Seminary Complex (BOS.JW)**, a concentration of buildings dating from 1881-1967, sited on a 65-acre campus acquired by Boston College that now forms the bulk of its Brighton Campus. The 19<sup>th</sup> and 20<sup>th</sup> century residential **Lake Street – Chandler's Pond Area (BOS.JV)** extends north along Lake Street, just west of the seminary complex.

West of the intersection of St. Thomas More Road are the **Saint Ignatius of Loyola Church (24 Commonwealth Avenue, NWT.2610)**, designed by the firm of Desmond and Lord in the Neo-Gothic Revival style and built 1947-1951; the 1928 Georgian Revival **Baptist House (66 [formerly 56] Commonwealth Avenue, NWT.2611)**. On the north side of Commonwealth Avenue, a triangular concrete subway pickup area appears to be the only remnant of the original **Boston College MBTA Station (BOS.9228/NWT.924)**.

#### 4.13.4 Potential Impacts to On-site Resources

##### Urban Design

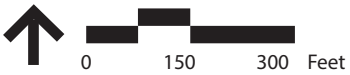
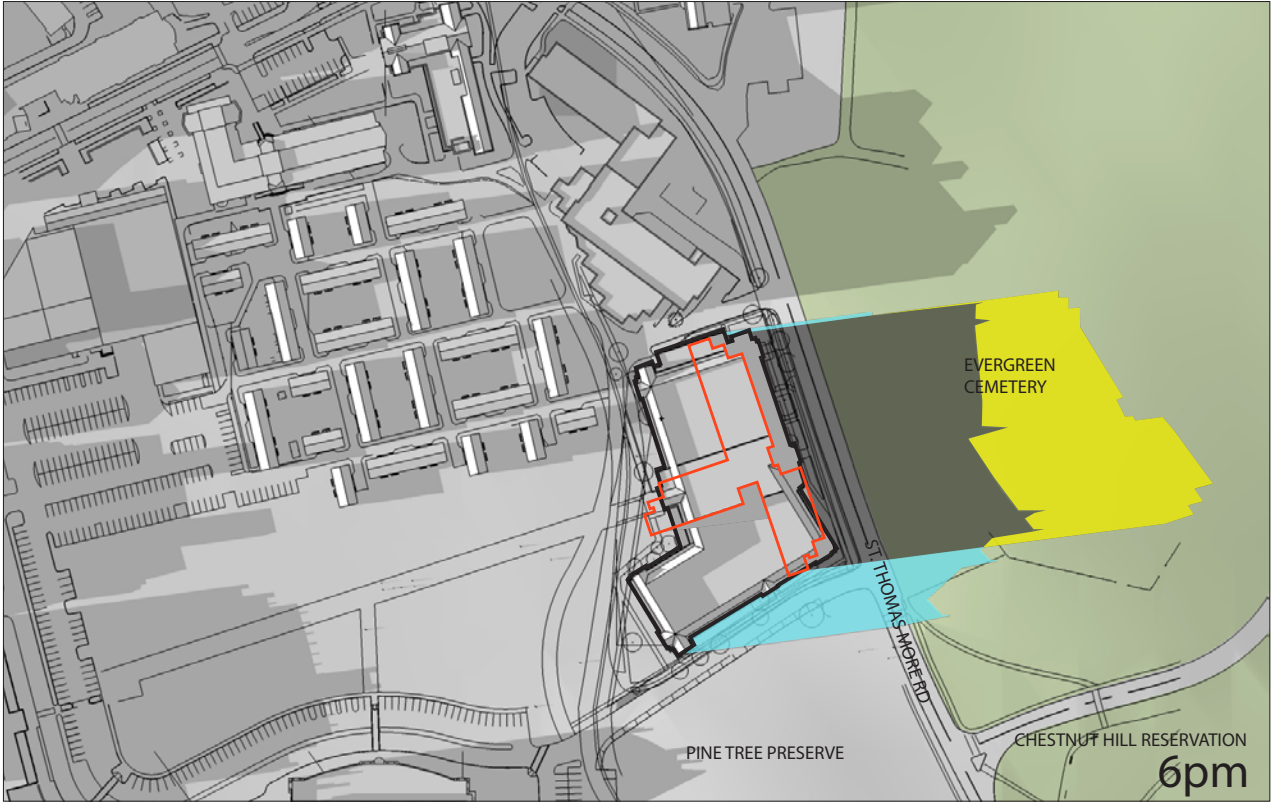
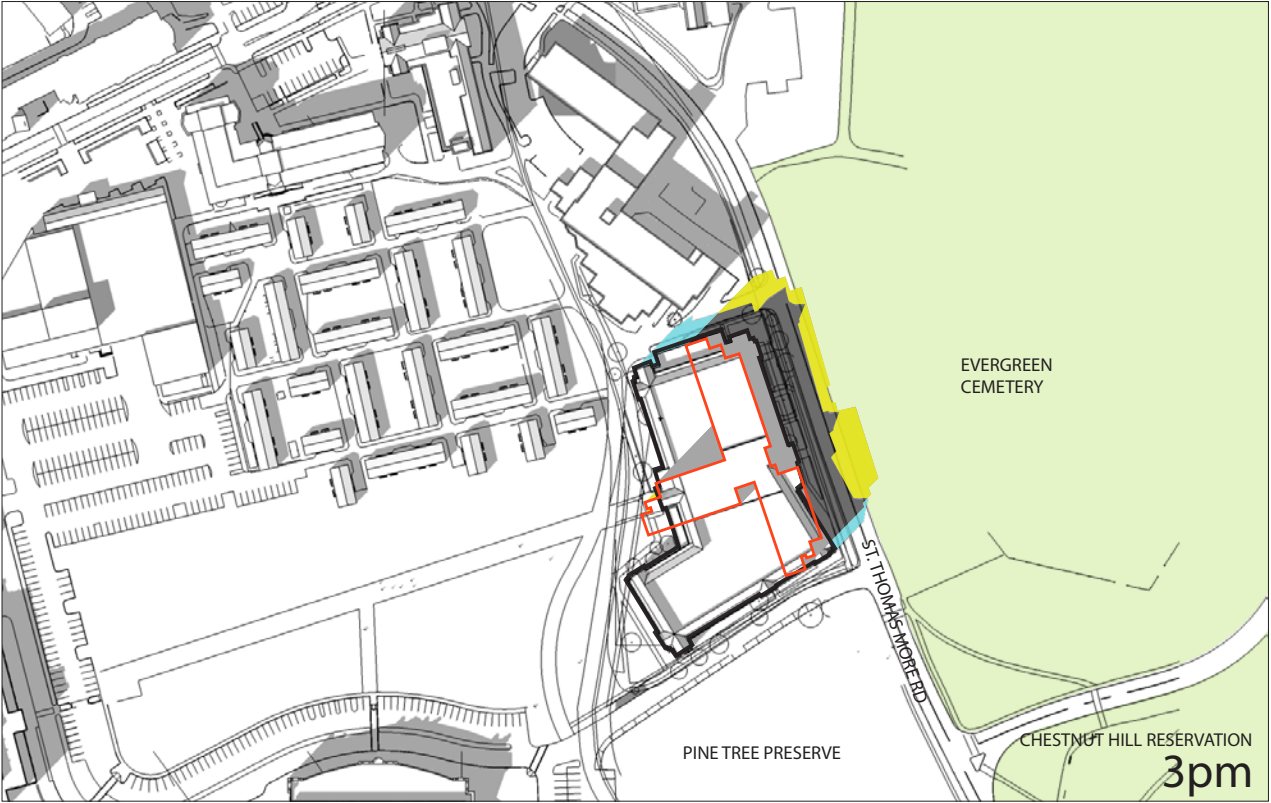
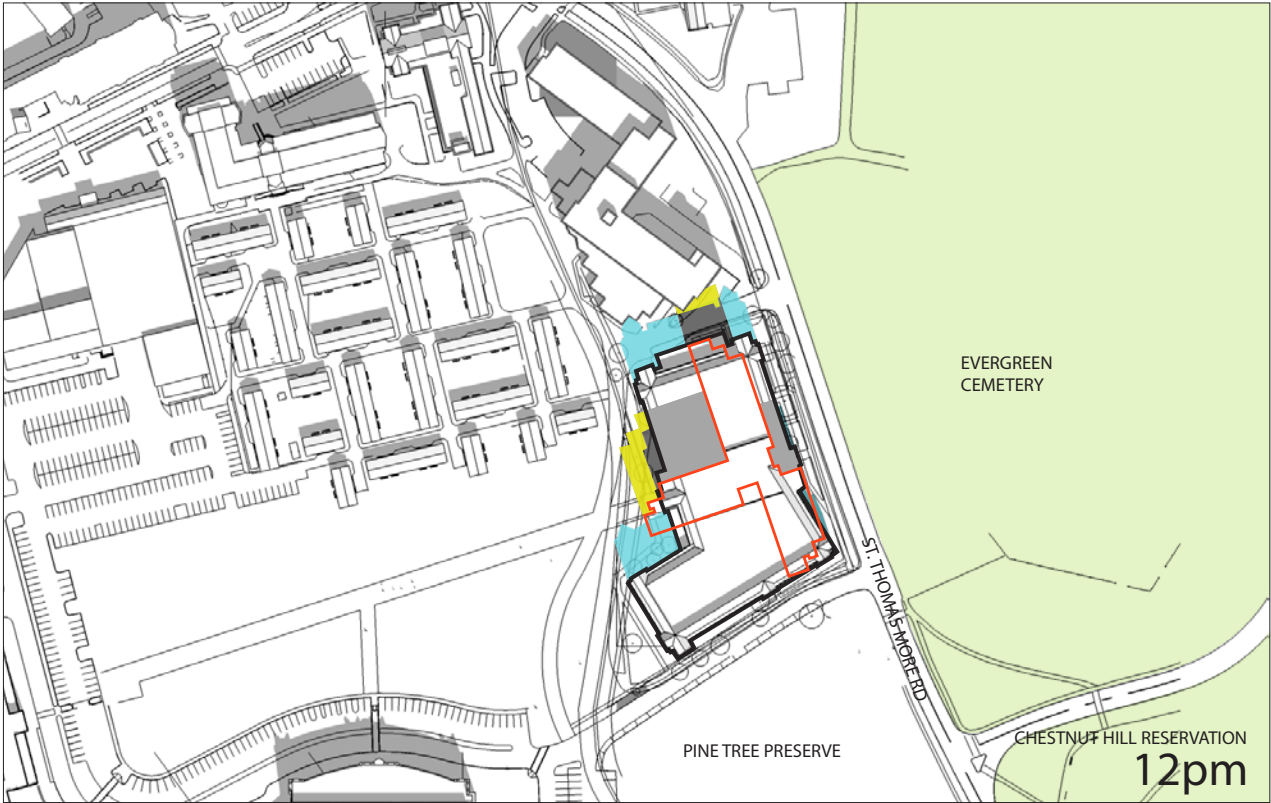
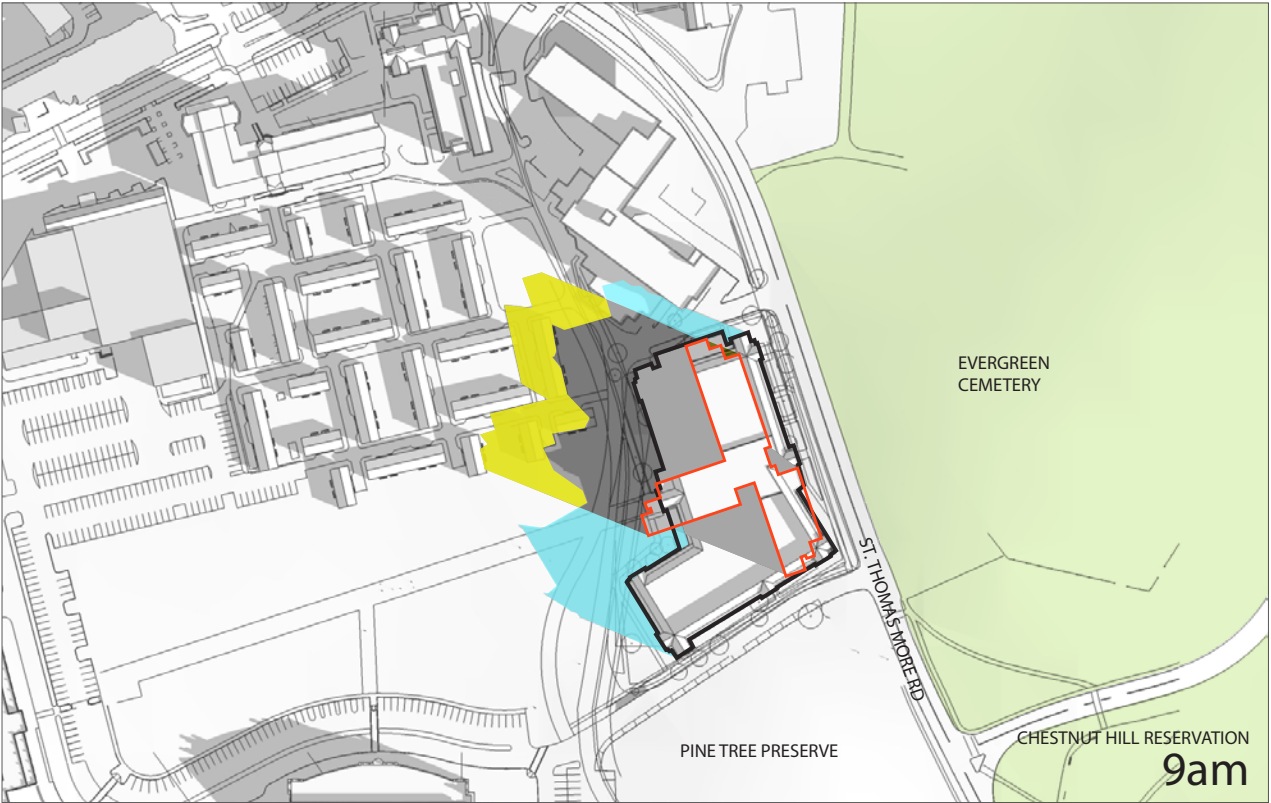
As discussed in Chapter 2, *Urban Design*, the proposed architectural design aims to complement the architecture of Boston College's nearby historic core (NWT.DI), enhancing and improving the visual connection between the Project Site and the buildings that characterize the campus. The design utilizes pointed Gothic style arches, buttresses, and pilasters while featuring modern details, such as broad expanses of windows to define each bay. Precast concrete bases with stone and brick on the upper stories will echo the limestone and masonry construction of other campus buildings, with lintels, window sills, gable accents, and stringcourses intended to create visual interest. A sloped mansard roof will screen rooftop utilities. Along St. Thomas More Road, landscaping enhancements will provide selective view corridors toward the National Register-listed reservoir and Evergreen Cemetery. Pedestrian walkways, plazas, and open lawn spaces will connect these nearby recreational spaces to both the proposed building as well as the campus beyond, creating a more cohesive transition between nearby historic recreational spaces and the campus core.

##### Shadow

As demonstrated by the shadow studies presented in Section 4.2, the proposed 4-story Recreation Center, (with a fifth story mechanical penthouse) compared to the nine-story existing Edmond's Hall, results in minimal net new shadow and creates some amount of net new sunlight under all conditions (Figures 4.1a-d).

Much of the net new shadow is anticipated in the late-20th century Modular Apartments area, extending the current shadow during the early morning, but resulting in net new sunlight during later hours in most seasons. In comparison, the lower rise of the proposed Project will result in a large gain of net new sunlight in the Evergreen Cemetery or Chestnut Hill Reservation, and along some of the pedestrian paths surrounding the Project Site, throughout much of the year.

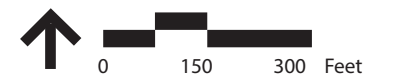
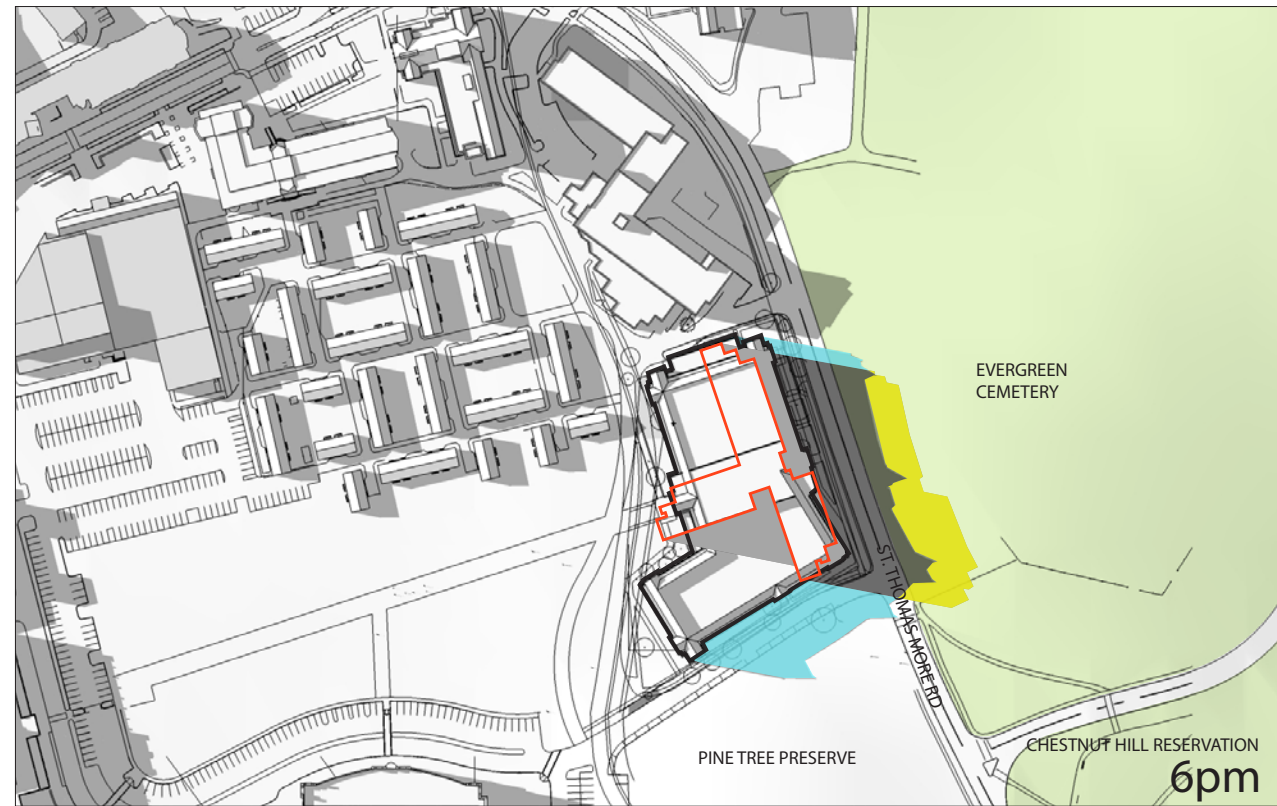
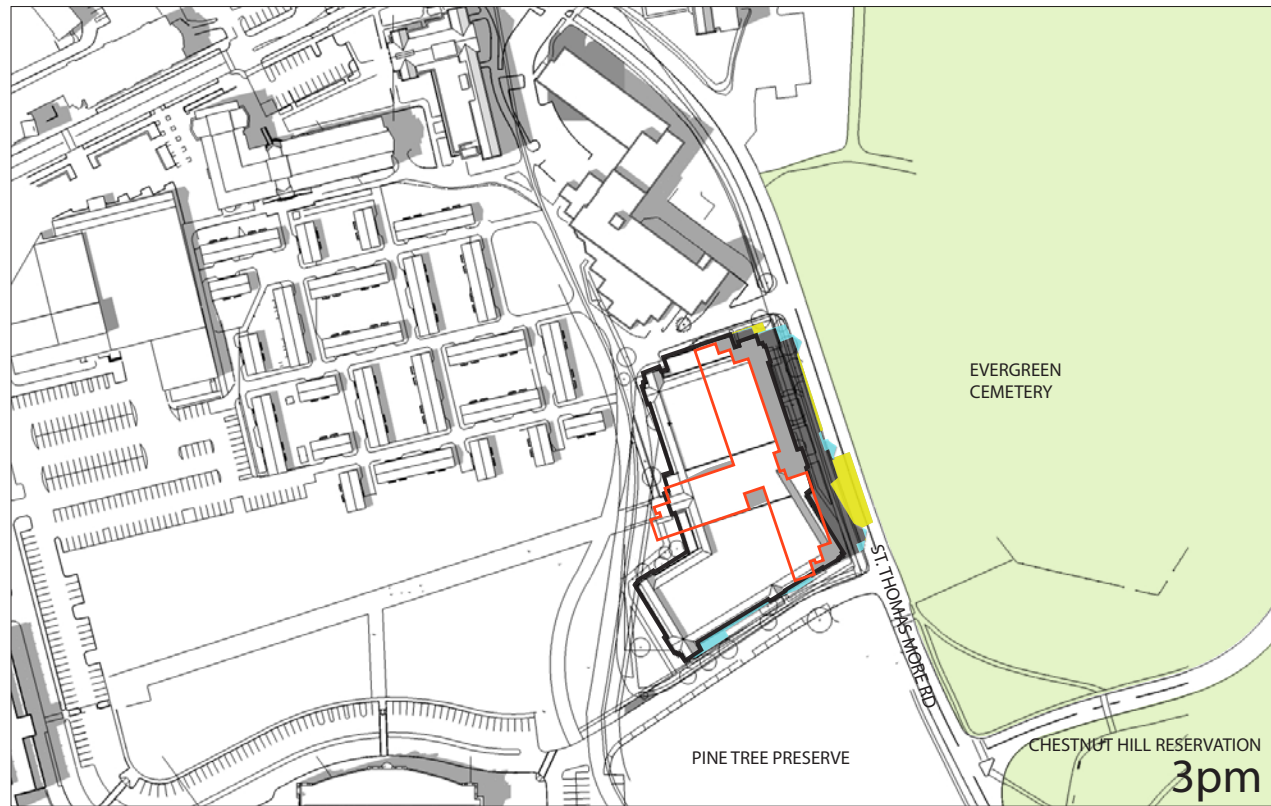
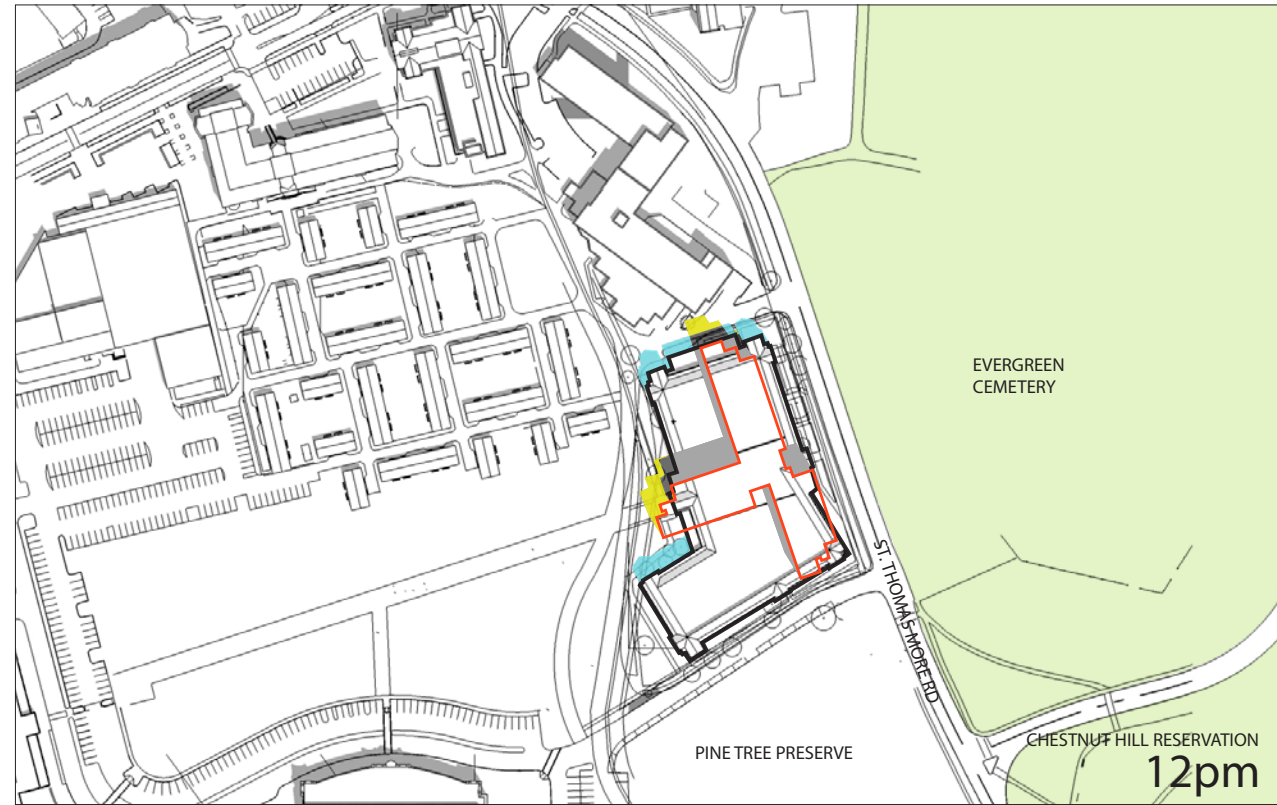
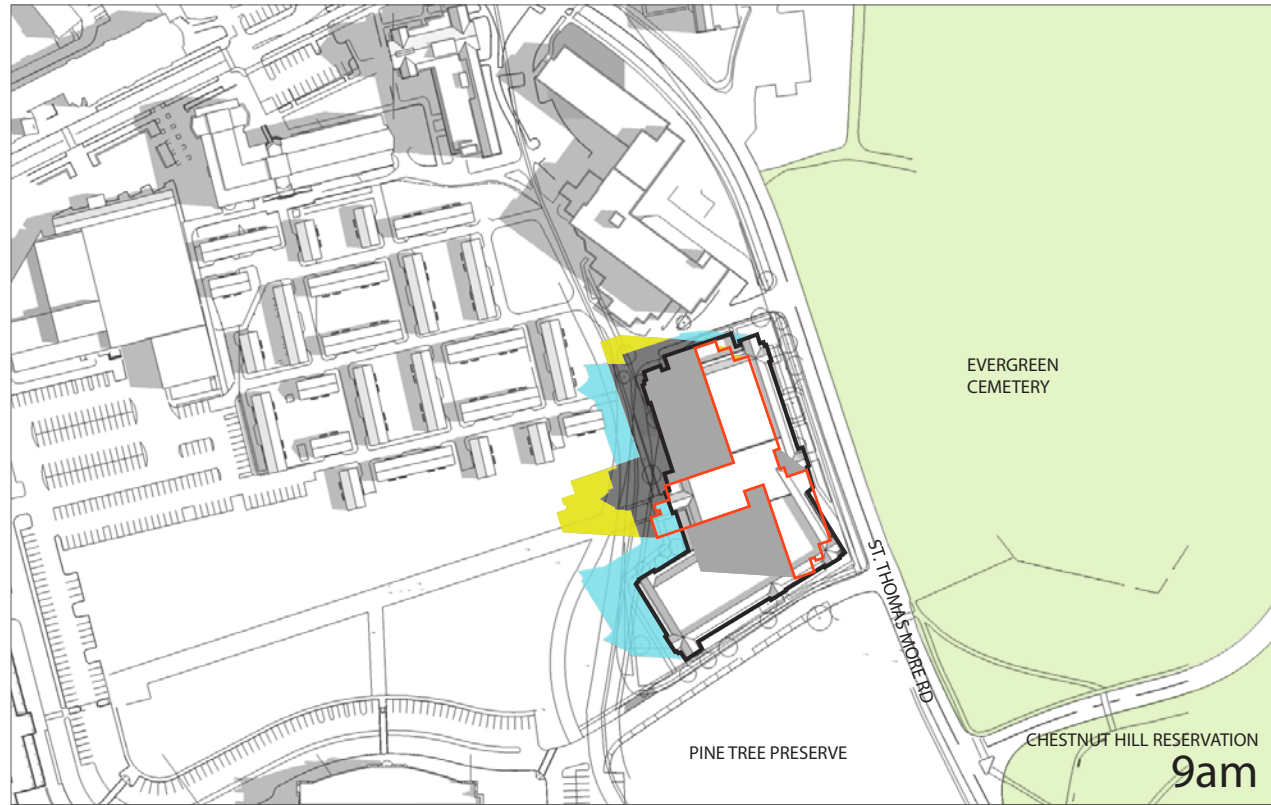




- Existing Building Footprint
- Existing Shadow
- Existing/New Shadow Overlap
- Net New Shadow
- Net New Sunlight
- Public Green Space

Figure 4.1 a  
 Shadow Study  
 March 21  
**Boston College Recreation Center  
 Brighton, Massachusetts**

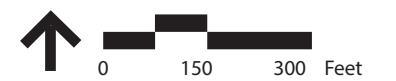
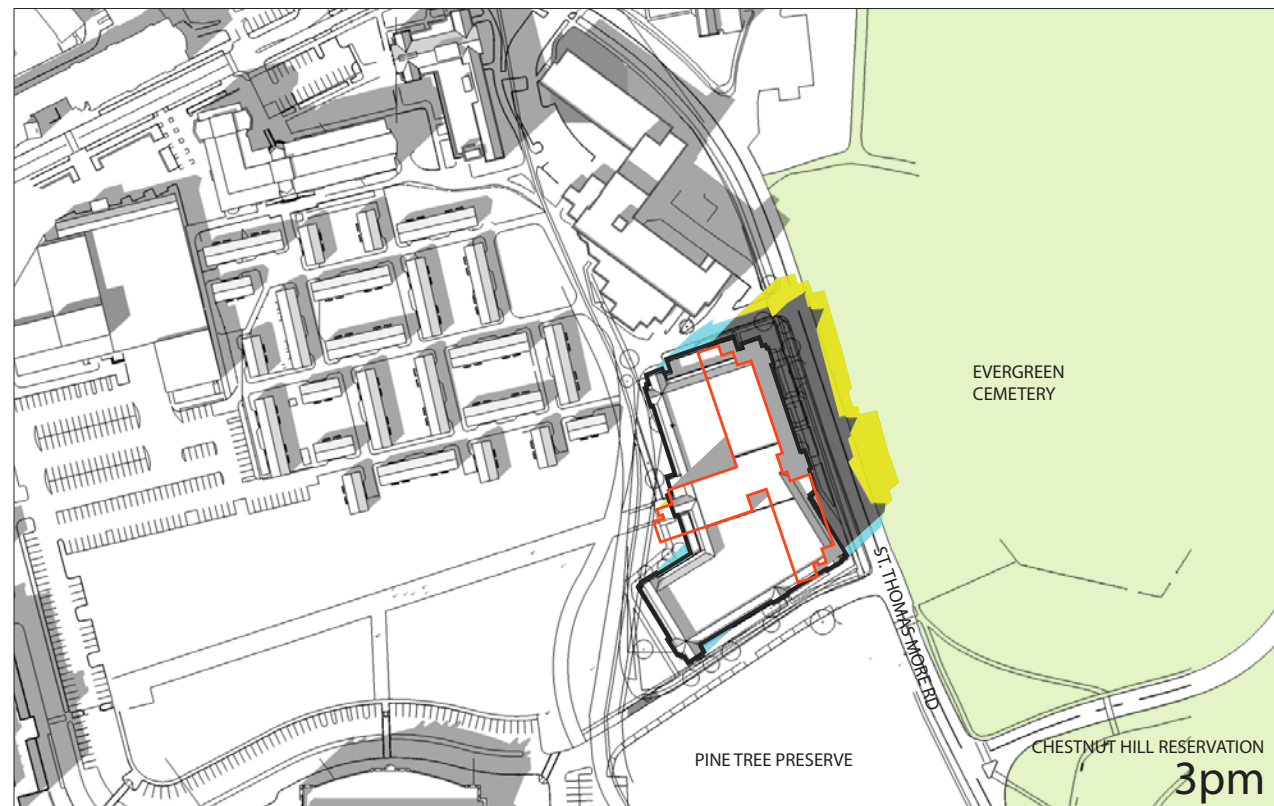
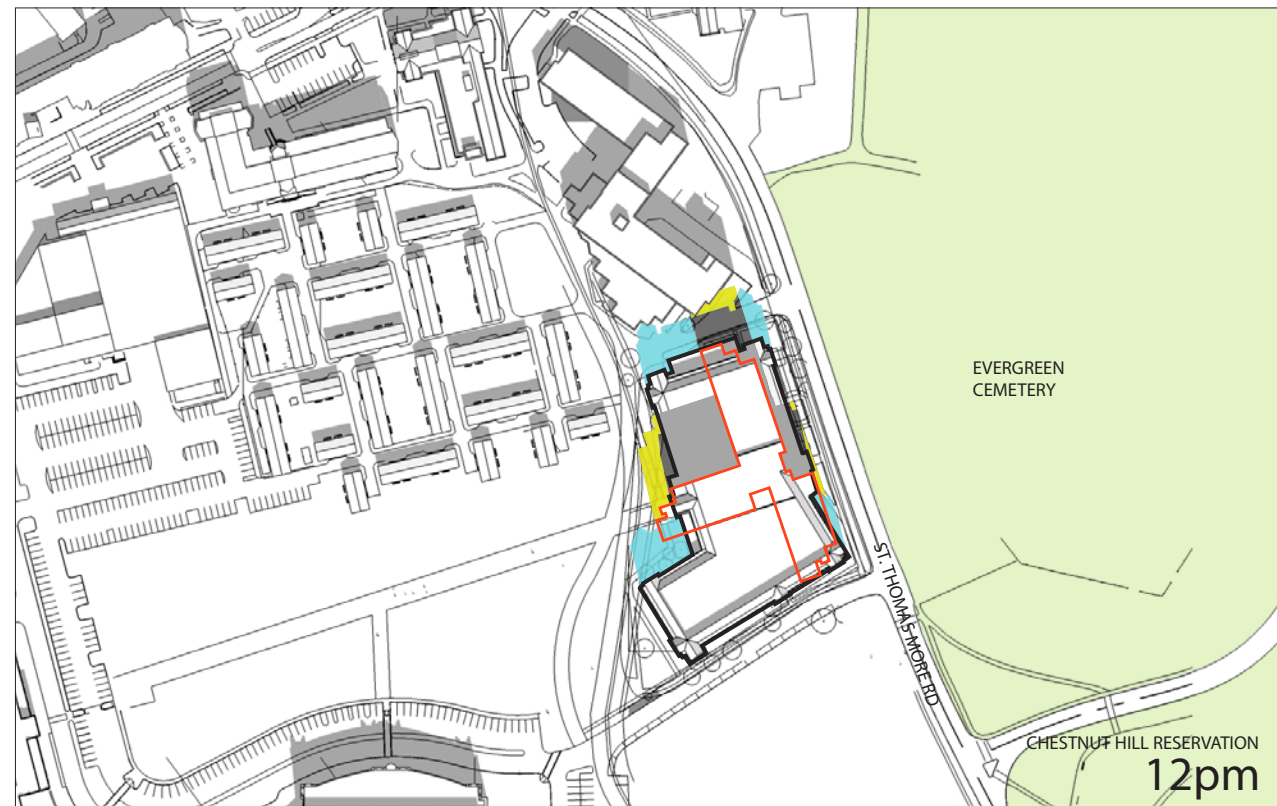
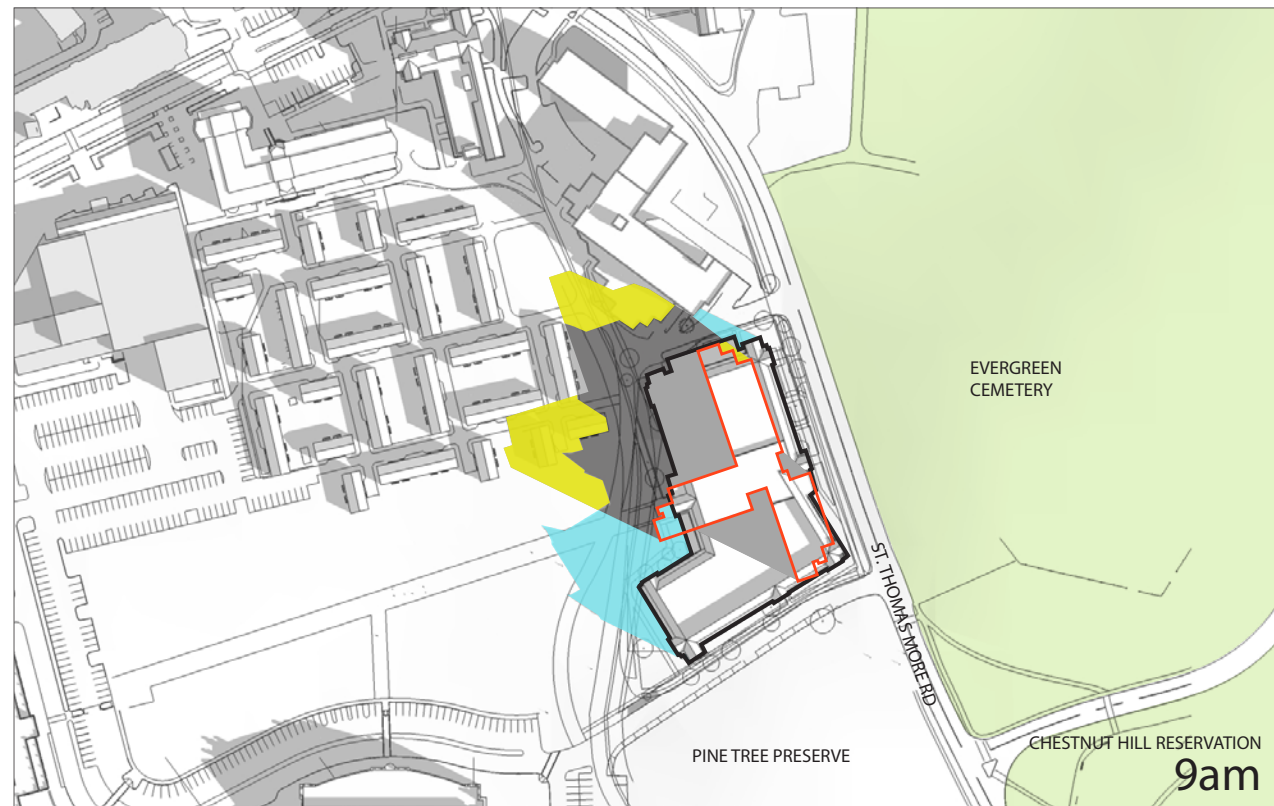




- Existing Building Footprint
- Existing Shadow
- Existing/New Shadow Overlap
- Net New Shadow
- Net New Sunlight
- Public Green Space

Figure 4.1 b  
Shadow Study  
June 21  
**Boston College Recreation Center  
Brighton, Massachusetts**





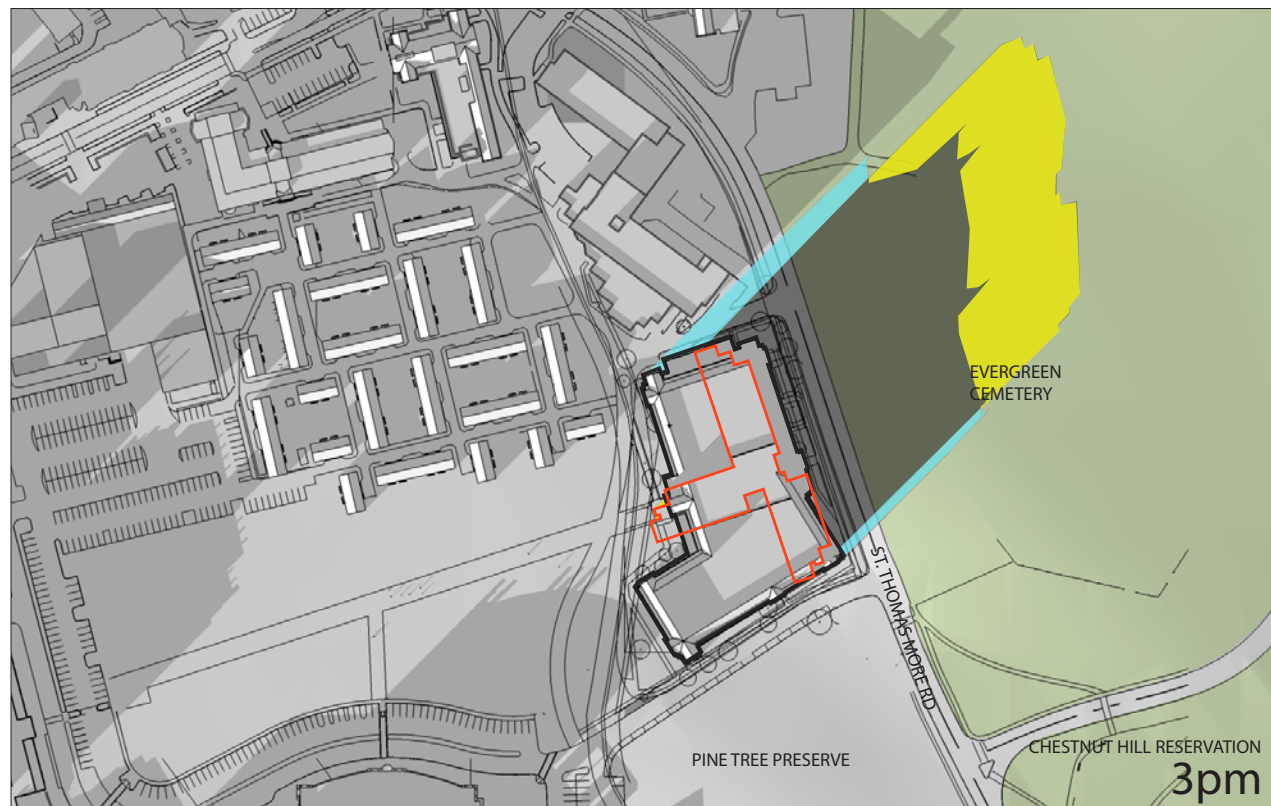
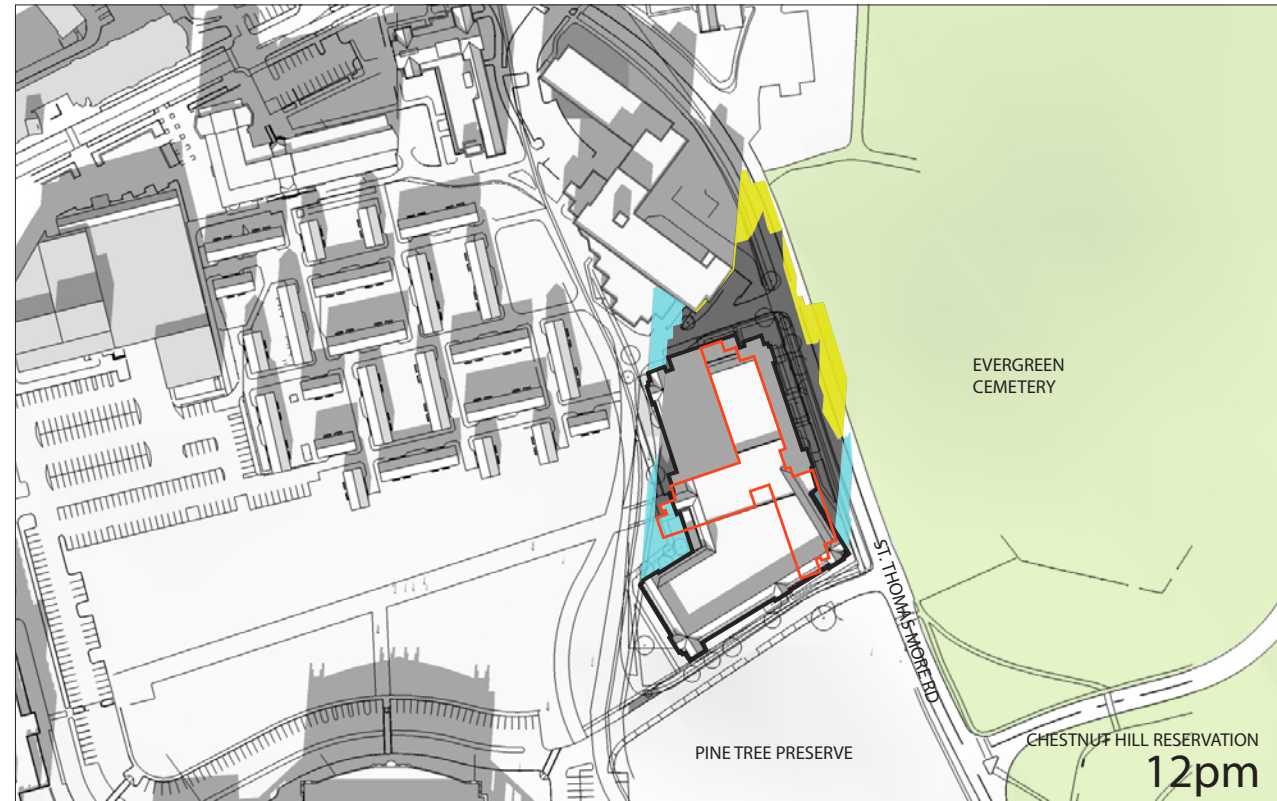
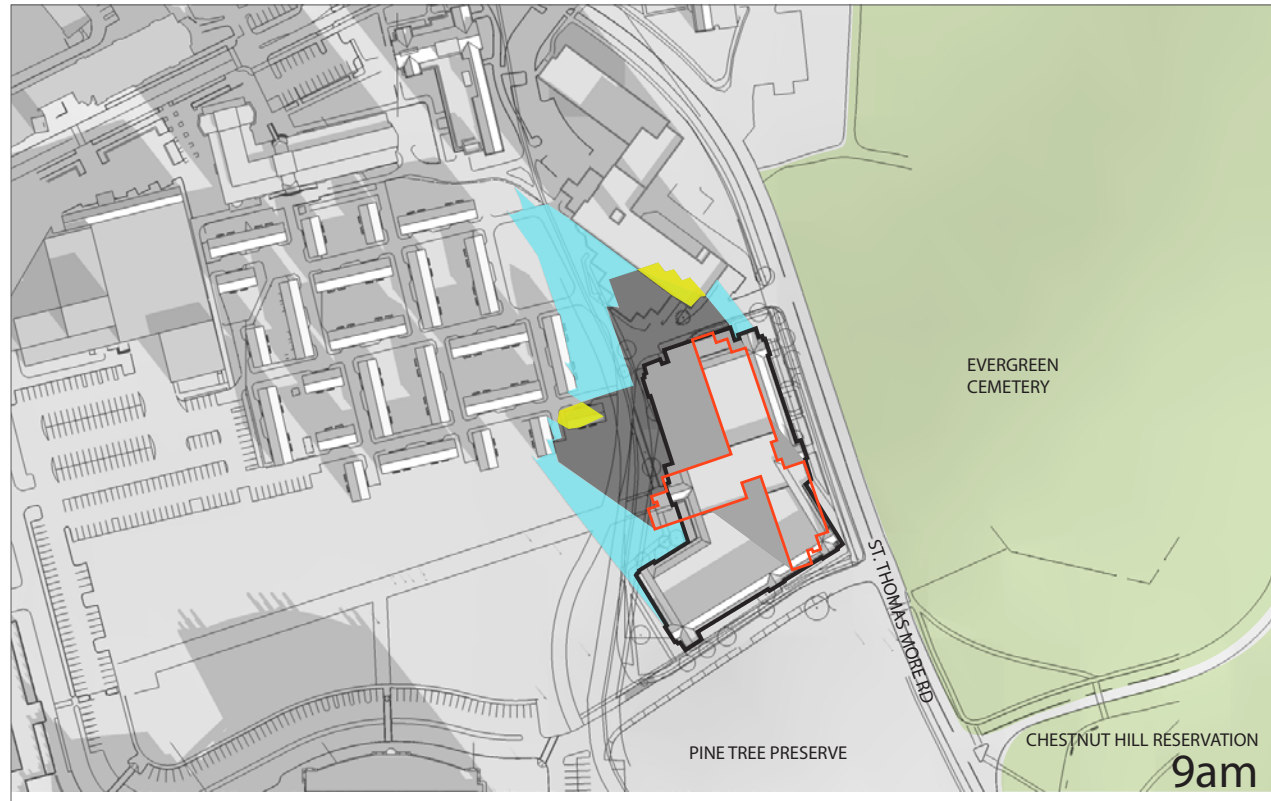
- Existing Building Footprint
- Existing Shadow
- Existing/New Shadow Overlap
- Net New Shadow
- Net New Sunlight
- Public Green Space

Figure 4.1 c

Shadow Study  
September 21

**Boston College Recreation Center  
Brighton, Massachusetts**





- Existing Building Footprint
- Existing Shadow
- Existing/New Shadow Overlap
- Net New Shadow
- Net New Sunlight
- Public Green Space

Figure 4.1 d

Shadow Study  
December 21

**Boston College Recreation Center  
Brighton, Massachusetts**

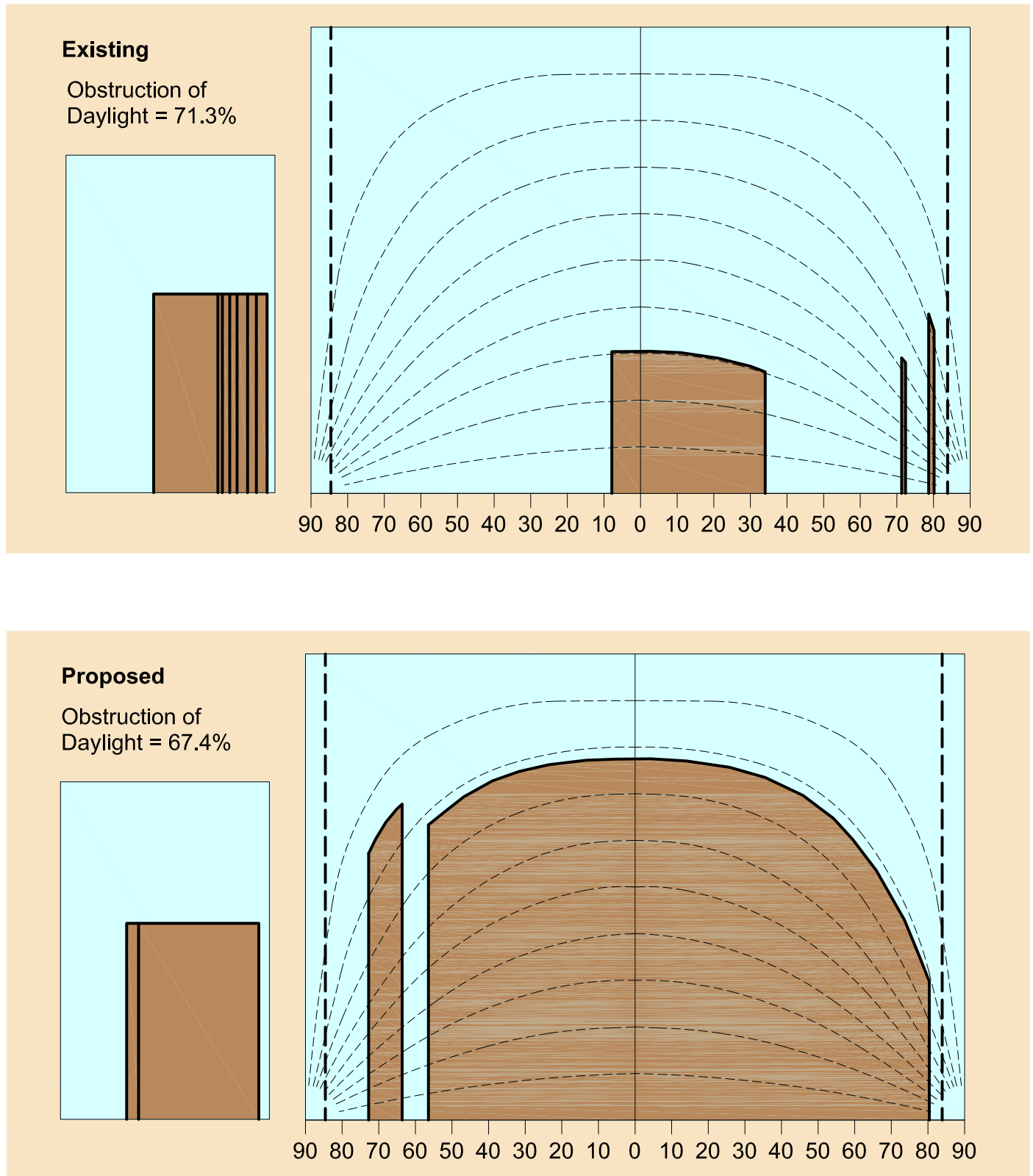


Figure 4.2a

Daylight Analysis -  
Center of Campanella Way

**Boston College Recreation Center  
Brighton, Massachusetts**

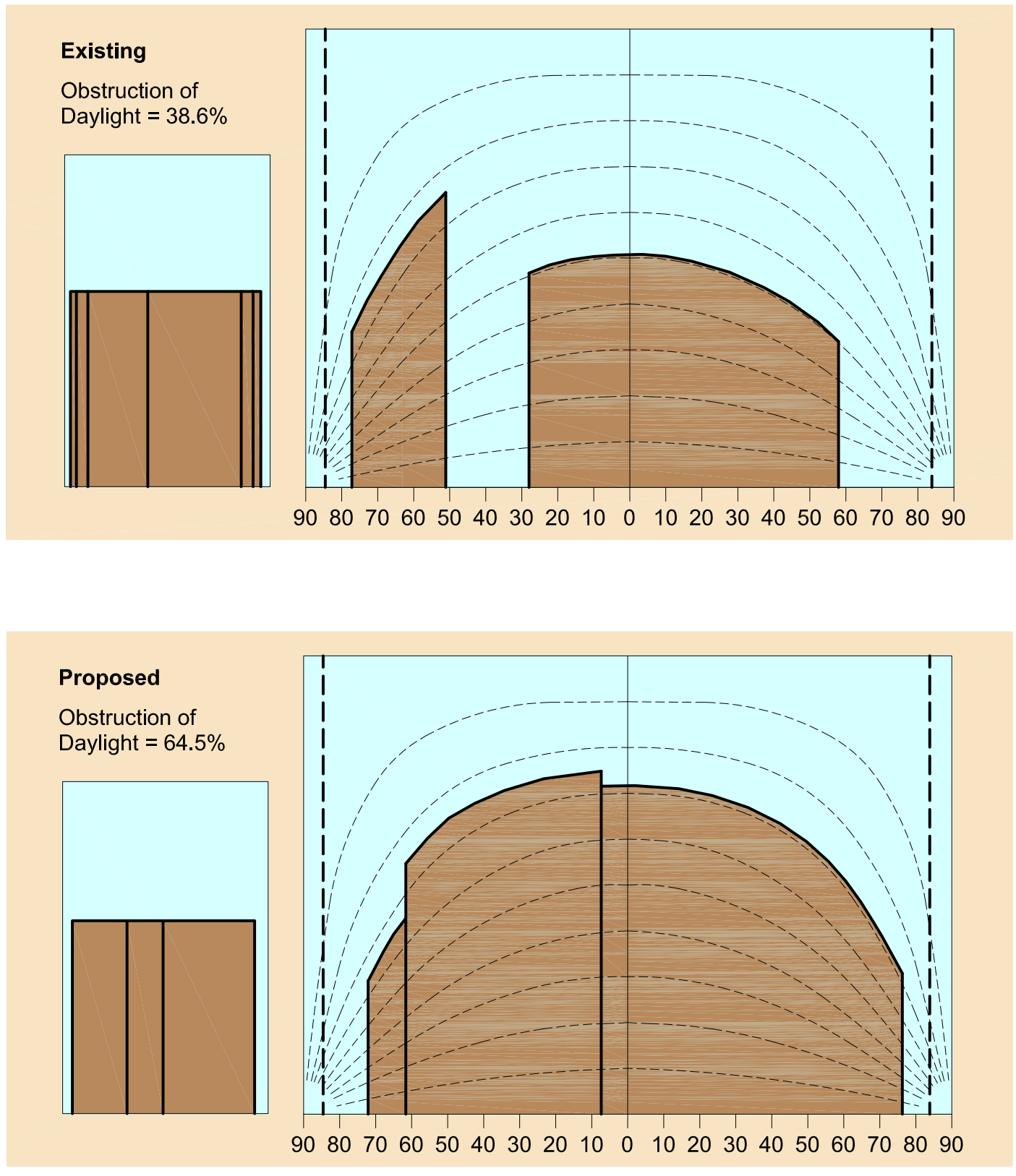


Figure 4.2b

Daylight Analysis -  
Center of St. Thomas More Road

**Boston College Recreation Center  
Brighton, Massachusetts**



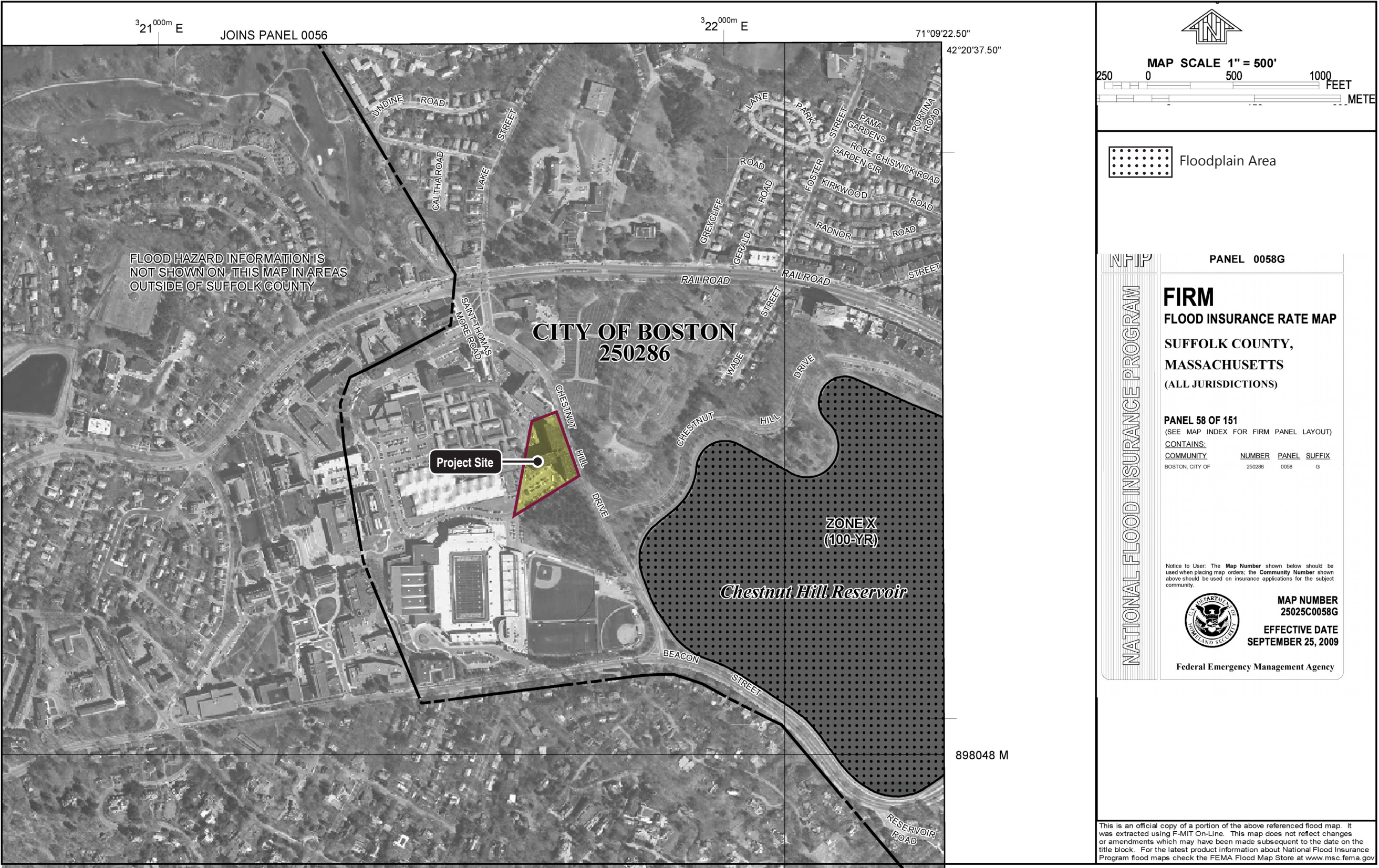


Figure 4.3  
Existing Floodplain

Boston College Recreation Center  
Brighton, Massachusetts



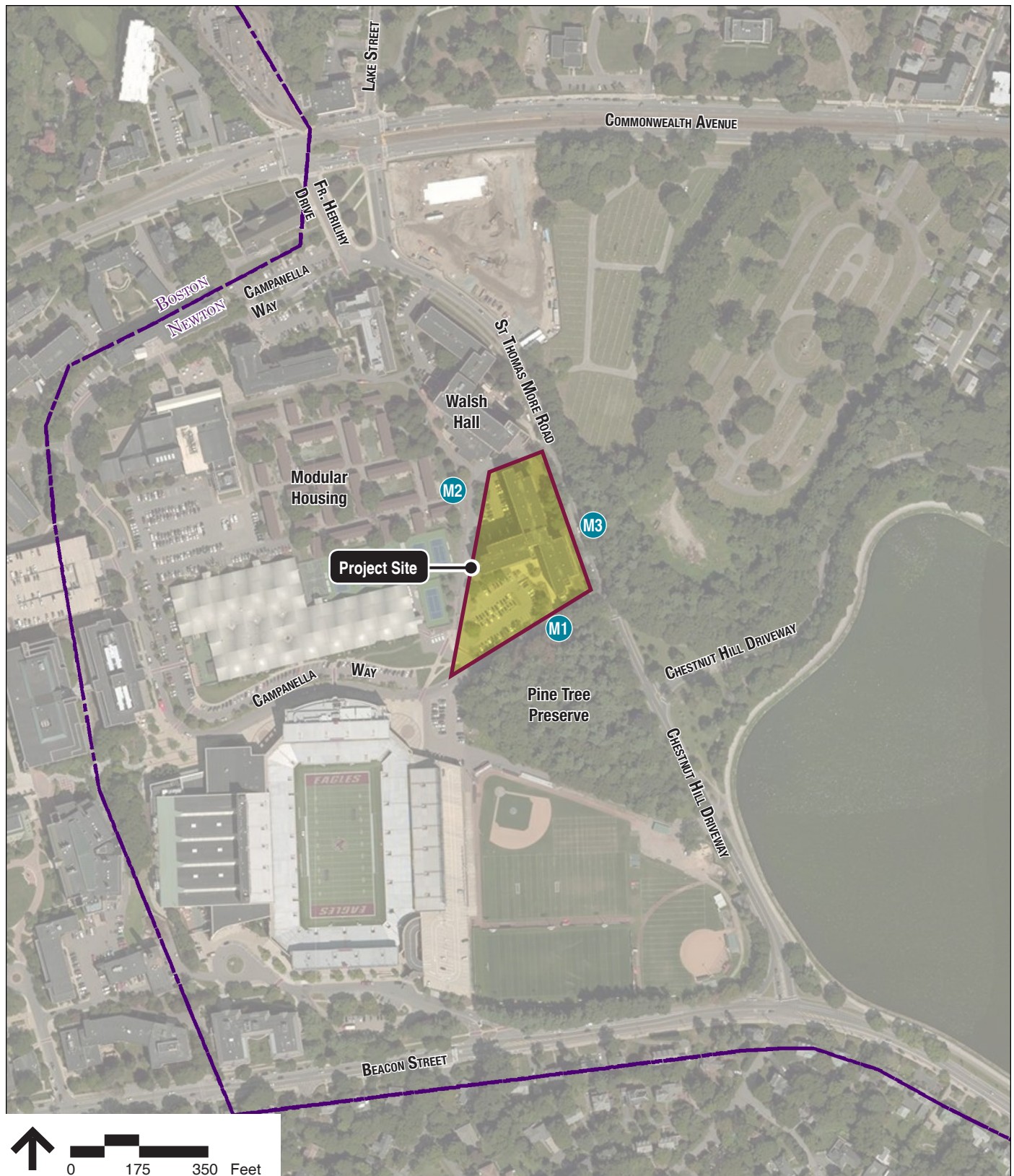
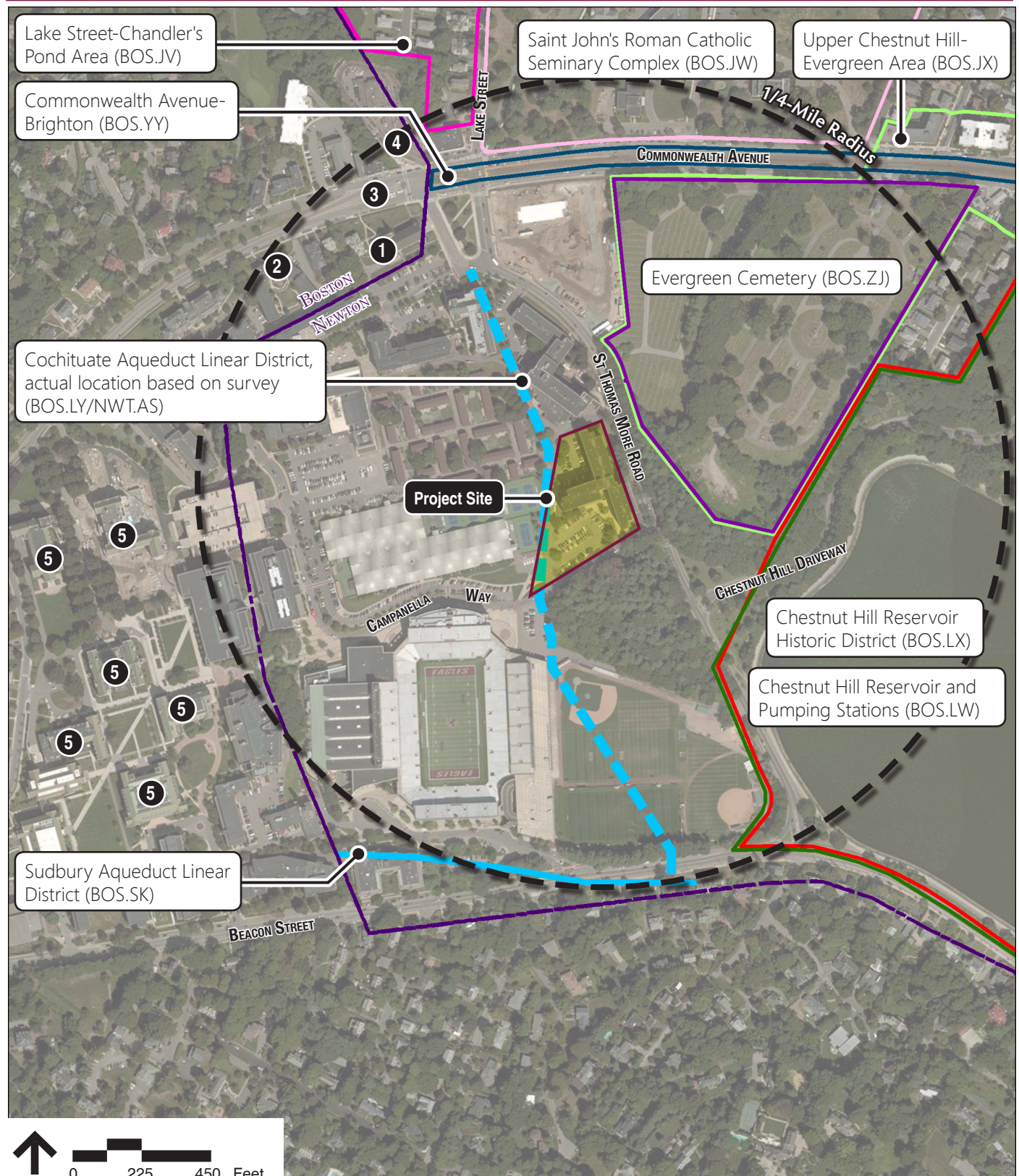


Figure 4.4  
Noise Receptor Locations

**Boston College Recreation Center  
Brighton, Massachusetts**





- 1 Saint Ignatius of Loyola Church (NWT.2610)
- 2 Baptist House (NWT.2611) - 66 Commonwealth Avenue
- 3 Boone Trail Highway Historic Marker (NWT.973)
- 4 Boston College MBTA Station (BOS.9228/NWT.924)
- 5 Boston College Campus (NWT.DJ)

Figure 4.5

Historic Properties in the Vicinity of the Project Site

**Boston College Recreation Center  
Brighton, Massachusetts**



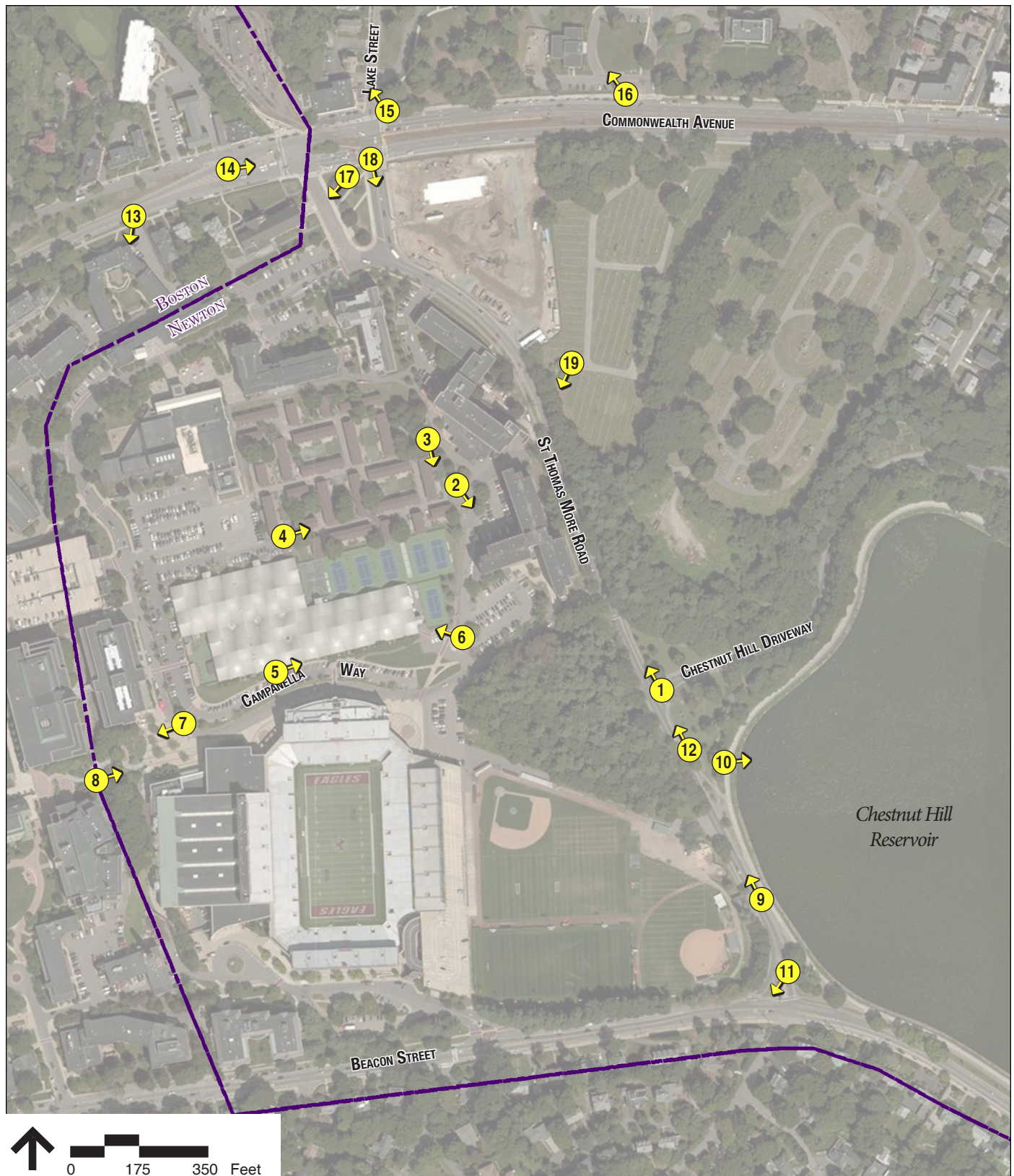


Figure 4.6a

Key Map of Photographs of Historic Resources in the Vicinity of the Project Site

**Boston College Recreation Center  
Brighton, Massachusetts**





**Photo 1**  
View of Edmond's Hall, along St. Thomas More Road from intersection of Chestnut Hill Driveway, facing N



**Photo 2**  
View of Edmond's Hall, from rear elevation of Walsh Hall, facing SE



**Photo 3**  
View of Edmond's Hall, from Boston College Modular Housing complex (east end), facing SE



**Photo 4**  
View of Edmond's Hall, from Boston College Modular Housing complex (west end), facing E



**Photo 5**  
View of Edmond's Hall, from Boston College Flynn Recreation Center, facing E



**Photo 6**  
View of Edmond's Hall, toward Boston College central campus (NWT.DI) from Project Site, facing W



**Photo 7**  
View showing Boston College Main Campus (NWT.DI) on top of hill, facing W



**Photo 8**  
View of Edmond's Hall, from Boston College central campus (NWT.DI), facing E



**Photo 9**  
View along Chestnut Hill Driveway toward Project Site, showing Chestnut Hill Reservoir Intermediate Gatehouse (BOS.9324: part of BOS.LW and BOS.LY, NR #64500254 and BOS.LX, NR#89002271), facing NW



**Photo 10**  
View across Chestnut Hill Reservoir from Chestnut Hill Driveway (BOS.9324: part of BOS.LW and BOS.LY, NR #64500254 and BOS.LX, NR#89002271), facing E



**Photo 11**  
View along Beacon Street at east end of Chestnut Hill Local Historic District (NWT.DY), from intersection of Chestnut Hill Driveway. Sudbury Aqueduct Historic District (BOS.SK, NR#89002243) underground in this area. Facing SW

Figure 4.6b  
Photographs of Historic Resources in the Vicinity of the Project Site  
**Boston College Recreation Center  
Brighton, Massachusetts**





**Photo 12**  
View along St. Thomas More Road from intersection of Beacon Street, facing N



**Photo 13**  
View of Baptist House-66 Commonwealth Avenue (NWT.2611, 66 Commonwealth Avenue), facing SW



**Photo 14**  
View of Boone Trail Highway historic marker (NWT.973), showing west end of Commonwealth Avenue area (BOS.YY), facing E



**Photo 15**  
View of south end of Lake Street-Chandler Pond area (BOS.JV), facing N on Lake Street



**Photo 16**  
View of Saint John's Roman Catholic Seminary Complex (BOS.JW), facing N from Commonwealth Avenue



**Photo 17**  
View of St. Ignatius of Loyola Church (BOS.2610), facing W



**Photo 18**  
View along St. Thomas More Road from intersection of Commonwealth Avenue, facing S



**Photo 19**  
View of Edmond's Hall, (background center) from Evergreen Cemetery (BOS.ZJ, NR #9000612 and part of BOS.JX), facing SW

Figure 4.6c  
Photographs of Historic Resources in the Vicinity of the Project Site  
**Boston College Recreation Center  
Brighton, Massachusetts**



# 5

## Sustainability

### 5.1 Introduction

This section provides an overview of the sustainable design elements proposed as part of the Project's preliminary design. It demonstrates that the Project will meet the requirements of Article 37, Green Buildings, of the Code, and will contribute to the sustainable development goals of the IMP. In addition to compliance with Article 37, the Project will strive for LEED Silver certification.

The design team for the Project includes several LEED Accredited Professionals (AP BD+C), including the following: Bassem Almuti, James Bones, John Isbell, Charles Leahy, Colleen McKenna, Christine Reinders, Sara Schonour, Philip Smith, Roland Lemke, Lindsay Mitchell, and David Przeklasa. Other team members with LEED accreditation include the permitting consultant, Lauren DeVoe, AICP, LEED BD+C, a Senior Environmental Planner with VHB. The Proponent and project design team will continue to evaluate and incorporate sustainable design and energy conservation measures as the design process continues.

#### 5.1.1 Key Findings and Benefits

The key findings and benefits related to sustainability/Green Building design and climate change preparedness include:

- › The Project's sustainability begins with its siting. It aims to utilize land efficiently through redevelopment of a previously developed site in close proximity to complementary uses in the central campus, as well as the Chestnut Hill Reservoir multi-use path.
- › The Project will target a LEED Silver Certified rating, as demonstrated by the draft LEED scorecard (Figure 5.1). This represents a noteworthy increase in LEED points compared to 40 points for a Certified level rating, as required by Article 37.
- › Based on a preliminary building energy model, the estimated energy use savings of approximately 23.0 percent demonstrates that it is feasible for the Project to comply with both the LEED Pre-requisite and current Stretch Energy Code requirements.
- › Based on the preliminary design parameters assumed in the Design Case, the Project would result in a GHG emissions reduction of 24.7 percent as compared to the Base Case.

- › Potential impacts associated with predicted increased frequency and intensity of precipitation events, and extreme heat events to the Project were considered during early stages of design.

## **5.2 Regulatory Context**

### **5.2.1 Massachusetts Stretch Energy Code**

As part of the Green Communities Act of 2008, Massachusetts developed an optional building code that gives cities and towns the ability to increase energy efficiency requirements over those of the state building code (the “Stretch Energy Code”). Codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA of the 8th edition Massachusetts Building Code, the Stretch Energy Code is an appendix to the Massachusetts building code, based on further amendments to the International Energy Conservation Code (IECC). The Stretch Energy Code increases the energy efficiency code requirements for new construction and major residential renovations or additions in municipalities that adopt it. The Stretch Energy Code applies to both residential and commercial buildings and, specifically, for new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three stories.

In 2010, the City of Boston was designated a Green Community under the Green Communities Designation and Grant Program, an initiative of the Massachusetts Department of Energy Resources. In order to be designated a Green Community and, therefore, eligible for annual grants, communities are required to meet five rigorous qualification criteria. One criterion is minimizing life-cycle costs, which can be accomplished by adopting and implementing the Stretch Energy Code. The goal of the grant program is to provide grants to assist residents, businesses, and municipal departments/facilities to reduce energy use or install renewable energy systems. The Stretch Energy Code was adopted and became mandatory on July 1, 2011 in the City of Boston.

The current Stretch Energy Code requires projects to achieve at minimum a 20 percent increase in energy efficiency compared to the state’s energy code (the “Base Energy Code”) by either meeting the performance standard of 20 percent better than ASHRAE 90.1-2007, or using a prescriptive energy code. On July 1, 2014, the IECC 2009 and ASHRAE 90.1-2007 ceased to be a code option for non-Stretch Energy Code communities, and the IECC 2012 and ASHRAE standard 90.1-2010 became the new/updated state-wide Base Energy Code. It is expected that an updated Stretch Energy Code, if/when enacted, will require additional energy reductions beyond these standards and that Green Communities, such as Boston, will automatically adopt any updates to the Stretch Energy Code (unless they vote to change their bylaw to no longer be a stretch code community). At the time of this EPNF filing, the updated Stretch Energy Code requirements remain unknown.

### **5.2.2 City of Boston Article 37 – Green Buildings**

The stated purpose of Article 37, Green Buildings, of the Code is as follows:

“...to ensure that major building projects are planned, designed, constructed, and managed to minimize adverse environmental impacts; to conserve natural resources; to promote sustainable development; and to enhance the quality of life in Boston.”

Any project that is subject to Article 80B, Large Project Review, is also subject to the requirements of Article 37, which includes demonstrating that a project would meet the minimum requirements to achieve a LEED Certified level (all LEED pre-requisites and at least 40 points). Projects are not required to be registered with the USGBC, and therefore only need to be “LEED certifiable.”

The Boston Interagency Green Building Committee advises the BRA on a proposed project’s compliance with the provisions of the article. The Committee consists of representatives of city agencies including the BRA, BED, BTB, the Inspectional Services Department and the Mayor’s Office.

### **5.2.3 Boston Green Building Credits**

Appendix A of Article 37 lists Boston Green Building Credits, which are credits that may be included in the calculation toward achieving a LEED certifiable project. These credits were developed by the city and are intended to address local issues unique to development within Boston. The credits include the following categories: Modern Grid; Historic Preservation; Groundwater Recharge; and Modern Mobility.

## **5.3 Sustainability at Boston College**

### **5.3.1 IMP Sustainability Goals**

Chapter 10 of the IMP presents an overview of the sustainable principles and goals guiding Boston College’s long-term planning and the University’s current activities and future plans for on-campus sustainable practices. In the IMP, Boston College committed to developing a Sustainability Policy and Plan within one year, and to designing and constructing all new buildings to target a LEED Silver certification or higher where practicable. In addition, the University committed to calculating its current and projected greenhouse gas emissions, and to develop a plan within two years to reduce those emissions.

The IMP focused on the following areas related to sustainability goals:

- › Leadership
- › Green Buildings
- › Energy and Climate Change
- › Water Conservation



- › Waste Reduction and Recycling
- › Air Quality
- › Stormwater Management
- › Landscape and Natural Features
- › Transportation
- › Education and Outreach
- › Procurement
- › Performance Standards and Indicators

### **5.3.2 Current Campus-wide Sustainable Development Initiatives**

The following is a summary of current campus-wide sustainability initiatives as they relate to the design, construction, and operation of on-campus buildings:

#### **LEED Certification**

Since the IMP, the University has upheld its commitment, having achieved LEED Silver-level status for all new construction projects.

#### **Transportation**

The University continues its campus-wide Transportation Demand Management program, which is detailed in Chapter 3, *Transportation*.

#### **Stormwater Management**

In an effort to improve its existing stormwater infrastructure, Boston College developed a campus-wide analytical stormwater model of both existing conditions and full build-out of projects presented in the IMP to identify specific improvements that will both alleviate current problems and create opportunities for innovative stormwater management. Best management practices (BMPs) and Low Impact Development (LID) techniques have been employed and continue to be evaluated for new projects as part of its stormwater management plan through the full build-out under the IMP.

#### **Greenhouse Gases**

The University has experienced a 20 percent reduction in Greenhouse Gas (GHG) emissions from stationary carbon sources since 2006. The University continues to track and reduce GHG emissions.

#### **Waste Reduction and Recycling**

The University has undertaken a number of measures to reduce waste through recycling and reuse, specifically through single-stream recycling and student-led initiatives.

The University has a goal of recycling or diverting at least 75 percent of construction and demolition materials associated with construction/major renovation projects from landfills. Contractors are encouraged to find ways to target a 90-95 percent recycling/diversion rate. During operations, the University implements a permanent recycling plan appropriate to the needs of the facility, aiming for recycling of at least 50 percent of non-construction waste. The dining halls provide “to go” container reduction education and implement organic waste composting, which resulted in the collection of over 300 tons of waste in the 2014 Fiscal Year.

**Energy Conservation**

For existing buildings, capital funds have been dedicated to the advancement of energy efficient projects. Projects address lighting, variable speed drives, energy management control systems, metering and efficient HVAC equipment, renewable energy purchasing, residence halls sub-metering and student awareness.

For new construction, all new buildings must comply with the current MA Stretch Energy Code requirement of exceeding ASHRAE 90.1-2007 by a minimum of 20 percent. Building energy modeling is used as a tool to test energy conservation measures, such as high-efficiency building systems and lighting.

**Water Conservation**

Existing residence halls and new student living areas created through renovations utilize low-flow toilets and shower heads, faucet aerators and water- and energy-efficient laundry equipment. In addition, the dining and athletic facilities, and Merkert Chemistry Center have been retrofitted with extensive water conservation measures. For new construction, water conservation measures, such as low-flow plumbing fixtures, are required to be considered by the design team to achieve a minimum 20 percent water-use efficiency with a target of 35 to 40 percent efficiency.

For landscape irrigation, the University uses underground sprinkler systems with water sensors across campus, and incorporates native plants and/or natural landscaping in new landscape and planting plans.

**Procurement**

The University purchases environmentally preferable products and services as part of a campus-wide sustainable purchasing effort.

**Indoor Air Quality**

The University considers occupant comfort (acoustics, thermal comfort, composition of building materials and daylighting) when designing and constructing new or renovated facilities.

## **5.4 Project Sustainable Development/Green Building**

The Project is inherently sustainable as it aims to utilize land efficiently through redevelopment of a previously developed site with a 41-year-old obsolete residence hall in need of extensive repairs with the new Recreation Center in close proximity to complementary uses on central campus and the Chestnut Hill Reservoir multi-use path consistent with the IMP.

In addition to compliance with Article 37, consistent with the approved IMP and its Sustainability Policy, the University intends to target a LEED Silver certification for the Recreation Center.

### **5.4.1 Sustainable Development Approach**

Consistent with the University's commitment of achieving LEED certification for all new construction projects, this Project will employ appropriate sustainable design principles that align with current LEED design strategies. As part of the specifications for the Project, for example, use of rapidly renewable and recycled materials will be encouraged, construction and demolition debris will be recycled or reused, and provisions will be made for the storage and recycling of waste materials. The Project will incorporate sustainable design features, including the use of a sustainable site, increased water and energy efficiency, use of renewable and recycled materials, and improved indoor air quality.

Consistent with the overall sustainability goals, the University will commit to the following practices for the Project:

- › Implementation of the University sustainability policy and plan;
- › Storage and Collection of Recyclables; and
- › Indoor Chemical and Pollutant Source Control.

The Project will target LEED Silver certification, as demonstrated by the preliminary LEED checklist provided in Figure 5.1. In addition, the University is committed to reducing GHG emissions through thoughtful design and efficient operations of the new Recreation Center.

The University and Project design team have identified a number of credits that are potentially available for the Project based on schematic design. As the design progresses, the University will select the final design elements to continue to target LEED Silver certification.

### **5.4.2 Project Compliance with Article 37**

The Project team intends to implement sustainable design and construction principles and practices for the Project, which include implementing the requirements of Article 37 of the Boston Zoning Code relative to the City's Green Building policies and procedures. The Proponent will take appropriate measures to target a LEED Silver certified project. The preliminary LEED Scorecard is tracking 53

'yes' points for a Silver rating and 35 'maybe' points (Figure 5.1). The 'maybe' points represent credits that will continue to be evaluated as design progresses. This represents a noteworthy increase in LEED points compared to 40 'yes' points for a Certified rating, as required by Article 37.

### **Sustainable Sites (SS)**

- › **SSp1 Construction Activity Pollution Prevention** – The Construction Manager (CM) will create and implement an Erosion and Sedimentation Control (ESC) plan for all construction activity associated with the Project. The plan will meet the requirements of the EPA Construction General Permit of 2003 at minimum as well as comply with local requirements.
- › **SSc1 Site Selection** – The Project Site meets the required criteria of this credit (not within wetland resource area, not designated parkland or farmland, etc.).
- › **SSc2 Development Density and Community Connectivity** – The Project will pursue Option 2 under this credit as it is located on a previously developed site, is within ½-mile of a residential area with an average density of 10 units per acre, and is within ½-mile of at least 10 basic services with pedestrian access between the proposed building and these services.
- › **SSc3 Brownfield Development** – Asbestos was found on-site in the Edmond's Hall and will be removed prior to demolition.
- › **SSc4.1 Alternative Transportation – Public Transportation Access** – As discussed in Chapter 3, *Transportation*, the Project is accessible by a number of public transit options. The closest is the MBTA B line at Boston College, which is a 0.2-mile walk from the Project Site, in compliance with Option 1.
- › **SSc4.2 Alternative Transportation – Bicycle Storage and Changing Rooms** – The University strives to provide adequate bicycle storage on-campus and will aim to provide bicycle storage for 5 percent of all users of the Recreation Center. This calculation will depend on the final full time equivalent (FTE) occupants. Shower and changing facilities will be provided within the building for 0.5 percent of FTE occupants in the form of locker rooms.
- › **SSc4.4 Alternative Transportation – Parking Capacity** – The Project includes the elimination of the approximately 105 surface parking spaces on-site and no replacement parking will be provided, in compliance with Case 1, Option 3 of the credit criteria.
- › **SSc6.1 & 6.2 Stormwater Design – Quantity & Quality Control** – The Project will incorporate an on-site stormwater management system designed to infiltrate the stormwater into the groundwater and provide a reduction to the peak rate of runoff from the Project Site, in compliance with local and state regulations. Further calculations must be run in order to determine if the Project meets the LEED credit requirements.
- › **SSc7.2 Heat Island Effect – Roof** – The Project has a roof that is primarily low sloped with some minimal portions around the exterior that have a steeper slope. Therefore, at least 75 percent of the roof area meets the low slope criteria



under Option 1 for this credit, and that the Solar Reflectance Index (SRI) of the roofing material will meet at least the SRI value of 78.

- › **SSc8 Light Pollution Reduction** – The design team will endeavor to meet the light pollution reduction requirements through the specification of compliant exterior (building and site) light fixtures to minimize light trespass from the Project Site.

#### **Water Efficiency (WE)**

- › **WEc1 Water Efficient Landscaping** – The Project at minimum will reduce potable water use consumption for irrigation by 50 percent for 2 points. The design team will continue to evaluate if the use of potable water for irrigation could be eliminated to achieve all 4 points.
- › **WEp1/WEc3 Water Use Reduction** – Low-flow plumbing fixtures for toilets, urinals, faucets, and showerheads will be used throughout the building. This will result in at least a 30 percent reduction in water use from the EPA baseline for 2 points. Upon a final calculation the reduction may increase to up to 35 percent or 40 percent for up to 4 points.

#### **Energy & Atmosphere (EA)**

- › **EAp2 & EAc1 Optimize Energy Performance** – Several energy saving strategies have been incorporated in the design of the Project, which are described in the ‘Energy Conversation Approach’ in Section 5.5.1 below.  
The preliminary building energy model is tracking a goal of achieving between 23 percent and 26 percent energy cost savings resulting in up to 6-8 points and exceeding the current MA Stretch Energy Code requirements.
- › **EAp1 & EAc1 Enhanced Commissioning** – The University will engage a Commissioning Agent (CxA) to first conduct a design review and also review the Basis of Design (BOD) document and Owners Project Requirements (OPR). Then the CxA will lead, review, and oversee the completion of all commissioning process activities, including all MEP systems as well as the envelope to meet the enhanced commissioning requirements.
- › **EAp3 & EAc4 Enhanced Refrigerant Management** – To comply with the pre-requisite no CFC-based refrigerants will be used on-site. The chiller and pool unit selections will have the refrigerant calculation performed to confirm that the threshold for ozone depletion and global warming potential is not exceeded.
- › **EAc2 On-Site Renewable Energy** – The opportunity to utilize a cogeneration (or “cogen”) unit to generate both heating and power to support heating, cooling, and power systems serving the natatorium is being investigated (as discussed further below in Section 5.5.2).

The cogen unit would be supplied by natural gas. It is anticipated the pool will operate year round and will have minimal shutdown, therefore, by incorporating a cogen unit as part of the pool system, there could be a high potential for energy savings, which is why it has been recommended for further study. Based on preliminary findings, the expected energy savings could be at least 1 percent

of the total energy consumption of the Project with up to seven additional possible points.

- › **EAc5 Measurement and Verification** – A Measurement & Verification (M&V) plan will be developed for the Project, per the savings estimation method 2, as specified in IPMVP for at least 1 year of post-occupancy data.
- › **EAc6 Green Power** – The Proponent may decide to enter into a minimum 2-year agreement to purchase green power for at least 35 percent of the overall energy demand for the Project. Achievement of this credit will be determined based on the additional cost of purchasing green power.

#### **Materials and Resources (MR)**

- › **MRp1 Storage & Collection of Recyclables** – Approximately 500 square feet of space within the building will be dedicated for the storage and collection of recyclables per the credit requirement for a building of over 200,000 square feet.
- › **MRc2 Construction Waste Management** – The University will require the CM to develop and implement a Construction Waste Management (CWM) plan for the Project with the goal of recycling and/or diverting at least 75 percent of the demolition and construction waste from landfills. The CM will further target a higher 90-95 percent recycling/diversion rate, which has been achieved on recent similar projects.
- › **MRc4 Recycled Content** – The design team will specify materials containing recycled content for the Project. The sum of post-consumer recycled content plus half the pre-consumer content will aim to constitute at least 20 percent based on cost of the total value of materials on the Project for 2 points.
- › **MRc5 Regional Materials** – A target of incorporating at least 20 percent of materials based on cost of total material value will be extracted, harvested, recovered, and manufactured within 500 miles of the Project Site for 2 points.
- › **MRc6 Rapidly Renewable Materials** – Use rapidly renewable building materials and products for 2.5 percent of the total value of all building materials and products used in the Project, based on cost. Rapidly renewable building materials and products are made from agricultural products that are typically harvested within a 10-year or shorter cycle.
- › **MRc7 Certified Wood** – Use a minimum of 50 percent (based on cost) of wood-based materials and products that are certified in accordance with the Forest Stewardship Council's principles and criteria, for wood building components. These components include at a minimum, structural framing and general dimensional framing, flooring, sub-flooring, wood doors, and finishes.

#### **Indoor Environmental Quality (IEQ)**

- › **IEQp1 Minimum Indoor Air Quality Performance** – The ventilation design of the building will at minimum meet ASHRAE standard 62.1; the building is not currently pursuing increased ventilation but will exceed 62.1 ventilation levels in some spaces based on cooling load requirements.

- › **IEQp2 Environmental Tobacco Smoke Control** – Smoking will be prohibited within the building and within 25 feet of entries, outdoor air intakes, and operable windows. Signage will be provided by the University.
- › **IEQc1 Outdoor Air Delivery Monitoring** – CO<sub>2</sub> sensors will be used in all densely occupied spaces and outdoor airflow measuring devices will be used on all applicable air-handling units.
- › **IEQc3.1 Construction IAQ Management Plan – During Construction** – During construction the CM will oversee that the control measures of SMACNA IAQ guidelines are either met or exceeded. Any air handlers used during construction will use at least MERV 8 filters and all filters must be replaced prior to occupancy.
- › **IEQc3.2 Construction IAQ Management Plan – Before Occupancy** – In order to comply the building will usually have a flush out pre-occupancy or will have air testing performed to insure IAQ standards are met.
- › **IEQc4.1 Low-Emitting Materials – Adhesives and Sealants** – The adhesives and sealants specified to be used inside the building will be low VOC content that meet SCAQMD Rule #1168.
- › **IEQc4.2 Low-Emitting Materials – Paints and Coatings** – Paints and coatings specified to be used inside the building will comply with low-VOC criteria, in accordance with Green Seal Standard GS-11, Green Seal Standard GC-03, and SCQAMD Rule #1113.
- › **IEQc4.3 Low-Emitting Materials – Flooring Systems** – Carpet, hardwood, and other flooring surfaces specified to be installed inside the building will meet appropriate sustainable certification level for their industry, such as Green Label, or FloorScore in accordance with this credit.
- › **IEQc4.4 Low-Emitting Materials – Composite Wood and Agrifiber Products** – Composite products specified to be installed inside the building will not contact urea-formaldehyde resins.
- › **IEQc5 Indoor Chemical and Pollutant Source Control** – Entryway systems will be installed at least 10 feet from doors and any hazardous areas are exhausted at least 0.5 CFM per square foot. MERV 13 filters will be used in all ventilation equipment, and contaminants will be properly stored.
- › **IEQc6.1 Controllability of Systems – Lighting** – Individual task lighting controls will be available for at least 90 percent of individual occupants to suit individual task needs and preferences. Independent lighting controls will also be available for multi-occupant spaces to enable adjustments by groups using these spaces.
- › **IEQc6.2 Controllability of Systems – Thermal Comfort** – Individual comfort controls will be provided by zoning at least 50 percent of individual spaces and 100 percent of multi-occupant spaces on their own thermal comfort control.
- › **IEQc7.1 Thermal Comfort – Design** – The HVAC design of the building will meet the requirements of ASHRAE standard 55.

- › **IEQc7.2 Thermal Comfort – Verification** – The University will conduct a thermal comfort survey for building users (to remain anonymous) within 6 to 18 months after occupancy. The survey must demonstrate that at least 80 percent of building occupants are satisfied with the indoor environment (i.e., temperature, humidity).
- › **IEQc8.2 Daylight and Views – Views** – Achieve a direct line of sight to the outdoor environment via vision glazing between 30 inches and 90 inches (between 0.8 meters and 2.3 meters) above the finish floor for building occupants in 90 percent of all regularly occupied areas.

#### **Innovation in Design (ID)**

- › **IDc1.1 Innovation in Design: Low Mercury Content** – All lamps within the proposed building will be LED eliminating mercury content by not using any fluorescent lamps, meeting LEED-NC version 4 requirements for PBT source reduction.
- › **IDc1.2 Innovation in Design: Exemplary Lighting Power** – Under LEED-Commercial Interiors (CI), the credit of Optimize Energy Performance is defined by Lighting Power, by reducing the energy lighting power further, having a lower lighting power density earns exemplary performance, and innovation under LEED-NC. COMcheck will be used to prove the lighting power on the Project to achieve this credit.
- › **IDc1.3 Innovation in Design: Integrative Process** – Integrative process is a new credit for new LEED version 4, under the current version 3 this is an option for innovation in design. This project has gone through a series of charrettes that examined energy and water consumptions and strategies to reduce them.
- › **IDc1.4 Green Housekeeping** – The Proponent may consider implementing a green cleaning program for the Project.
- › **IDc2 LEED Accredited Professional** – The project team has multiple LEED Accredited Professionals working on the Project, as listed in the first paragraph of this chapter.

#### **Regional Priority Credits (RPCs)**

By achieving the following credits, additional points may be achieved based on regional priority for the Project Site being located in Brighton:

- › **RPc1.1 Regional Priority: Stormwater Design – Quantity Control**
- › **RPc1.2 Regional Priority: Heat Island Effect – Brownfield Redevelopment**
- › **RPc1.3 Regional Priority: Heat Island Effect – Roof**
- › **RPc1.4 Regional Priority: On-Site Renewable Energy**

#### **Boston Green Building Credits**

At this preliminary design stage, the Project will evaluate achieving two of the four available Boston Green Building credits (Appendix A of Article 37):



- › Groundwater Recharge: While the Project Site is not within the Groundwater Conservation Overlay District (GCOD) as defined in Article 32 of the Code, the stormwater management system will be designed to capture and infiltrate one inch of rainwater across the Project Site. Refer to Section 6.3.2 of Chapter 6, *Infrastructure* for calculations confirming this.
- › Modern Mobility: The University will implement TDM measures in order to reduce single-occupancy vehicle trips to and from the Project. The Project satisfies the pre-requisites and eight TDM required components under Article 37. Refer to Chapter 3, *Transportation*, for further detail on the proposed TDM Plan.

## 5.5 Greenhouse Gas Emissions Reductions Strategies

In support of Boston's GHG reduction goals, the University has evaluated and incorporated strategies to minimize energy consumption associated with the Project through early building energy modeling based on conceptual design. It has also considered clean/renewable energy sources. The University and Project design team have begun to engage utility providers to better understand available alternative/cleaner energy sources and grants/rebates.

### 5.5.1 Preliminary Building Energy Model

#### Energy Conservation Approach

Using the energy modeling program eQuest, three energy models were built reflecting three different design options. The first energy model represented a geothermal option providing heating and cooling via loop-to-loop heat pump. The second model provided heating and cooling via evaporative condensing chillers and high efficiency condensing boilers using natural gas. The third option matched the second in equipment selection, but used oil as the fuel source. The second option (natural gas) resulted in a relatively low energy cost, as well as the lowest first cost and lowest total life cycle cost and is referred to herein as the Design Case.

#### Greenhouse Gas Emissions Analysis

The GHG analysis was based on the energy use modeling in the program eQuest with a base case established as 23 percent energy increase over the Design Case. The Design Case is based on providing heating and cooling via evaporative condensing chillers and high-efficiency condensing boilers using natural gas.

The Design Case has been modeled to show at least 20 percent energy savings over the Base Case, in accordance with the current MA Stretch Energy Code. The noteworthy building design improvements assumed for the Project are presented in Table 5-1 below. Key energy-saving features include high-efficiency hot water boilers and more efficient cooling chillers. Specific improvements to achieve GHG emissions reductions may be subject to design modification based on the final building program and design. In addition, use of EnergyStar-rated efficient

equipment could result in additional electricity savings, although EnergyStar equipment was not modeled in this analysis.

**Table 5-1 Summary of Key Energy Model Assumptions**

<b>Key Assumptions</b>	<b>Design Case</b>
<b>Cooling Source and Distribution</b>	
Source	Multiple Evaporative Cooled Chillers
Pumping System	Two Base-Mounted, End-Suction Centrifugal Pumps Chilled Water Chemical Treatment System
<b>Heating Source and Distribution</b>	
Source	Three High-Efficiency Gas-Fired Hot Water Boilers
Peak Heating Capacity	8,000 MBH
Distribution	Two Base-Mounted, End-Suction Centrifugal Pumps; Separate Hot Water Pumps for Perimeter Heating; Individual In-Line Centrifugal Pumps for Coil Freeze-Up Prevention

The Project was modeled as one building with energy use of the swimming pools as a separate sub-category. The total estimated annual electricity use and natural gas consumption, and associated emissions for the Recreation Center and swimming pool uses (the Full Project), are presented in Table 5-2 below. For the new Recreation Center, under the Base Case, the CO<sub>2</sub> emissions are estimated to be 4,508 tons per year. With the currently proposed building design and system improvements, the estimated energy use reduction for the Recreation Center is 23 percent, which equates to a 24.7 percent reduction in stationary source CO<sub>2</sub> emissions when compared to the Base Case. The stationary source CO<sub>2</sub> emissions percent reduction for the Recreation Center under the Design condition was quantified as follows:

$$1,115 / 4,508 = 0.247 \times 100 = 24.7\%.$$

$$\text{Reduction Percentage} = \frac{\text{Emissions Reductions Due to Improvements (End Use Savings)}}{\text{Project-Generated Emissions (Base Case Emissions)}}$$

**Table 5-2 Recreation Center Stationary Source CO<sub>2</sub> Emissions**

	<b>Energy Consumption</b>			<b>CO<sub>2</sub> Emissions</b>		
	<b>Electricity (kWh/yr)</b>	<b>Natural Gas (MBtu/yr)</b>	<b>Total (MBtu/yr)</b>	<b>Electricity (tons/ yr)<sup>1</sup></b>	<b>Natural Gas (tons/ yr)</b>	<b>Total (tons/ yr)</b>
Base Case	6,077,965	39,349	60,088	2,206	2,302	4,508
Design Case	4,191,700	31,991	46,294	1,522	1,871	3,393
End-Use Savings	1,886,265	7,358	13,794	685	430	1,115
<b>Percent Savings</b>			<b>23.0%</b>			<b>24.7%</b>

<sup>1</sup> tons/yr = short tons per year

Note: The Design Case is based on typical improvements used by the MEP and the requirements of ASHRAE 90.1-2007. The Base Case is shown as a 23 percent total energy increase over the Design Case.

The Proponent is also considering on a preliminary basis at this time the following sustainable mitigation options:

- › Building-Wide Power Dimming
- › High-Efficiency Lighting Controls
- › High-Efficiency CLS3 Type Transformers
- › Building-Wide Energy Metering

These additional mitigation options have not yet been quantified in the energy and GHG analysis presented above. These systems have the potential to result in further GHG emissions reductions and currently are in the process of being evaluated for feasibility and cost-effectiveness.

### **Conclusion**

The Project's projected energy use has been quantified and used to analyze potential stationary source GHG emissions resulting from indirect and direct GHG emitting sources. The Project has shown compliance with the Massachusetts Stretch Energy Code by saving 23.0 percent energy over the Base Case, greater than the 20 percent required. Additionally, these energy savings are expected to translate into 24.7 percent CO<sub>2</sub> savings because of high efficiency equipment selected for space conditioning and other design improvements. Finally, the University and the Project design team are committed to evaluating multiple sustainable mitigation options for feasibility and cost-effectiveness to further GHG emissions reductions associated with the Project.

## **5.5.2 Clean and Renewable Energy**

As demonstrated in the following sections, the University has considered and evaluated a number of clean and renewable energy strategies for the Project.

### **Solar Tube Natural Lighting**

The use of a Solar Tube lighting system has been considered which would provide natural daylighting into the four-court gym space. The lighting system would provide even light level across the entire floor plane with a high color rendition, however carries with it a high initial cost, additional solar heat gain, and the protrusions above the roofline may be visible from higher elevations on-campus. Therefore, this option has been rejected.

### **Solar Thermal Domestic Water Heating – Plumbing Fixtures**

Preliminary research has been performed for this Project to determine whether using solar energy collected on site could efficiently provide supplemental heating of domestic water within the building to supply hand wash sinks, service sinks, showers, and laundry functions. A calculation was performed to size a solar thermal system for this demand and it was determined that a system comprised of (6) 40 square feet evacuated tube solar panels would provide the required energy to supplement the

water heating. Since the solar energy system is only a supplement to the primary system and exact output may vary throughout the year, a primary natural gas-fired domestic water heater and storage tank would still be required. Structural implications may exist as well due to the mounting of the solar panels on the roof. Based on Return on Investment (ROI) payback period this does not seem to be a viable consideration.

### **Solar Thermal Domestic Water Heating – Swimming Pool**

Preliminary research has also been performed for this Project to determine whether using solar energy collected on site could efficiently provide supplemental heating for the swimming pool(s). A calculation was performed to size a solar thermal system for this demand and it was determined that a system comprised of (12) 40 square feet evacuated tube solar panels would provide the required energy to supplement the pool water heating in the Boston area. Again, since the solar energy system is only a supplement to the primary system and exact output may vary throughout the year, a primary natural gas-fired domestic water heater and storage tank will still be required. Structural implications may exist as well due to the mounting of the solar panels on the roof. Based on ROI payback period this does not seem to be a viable consideration.

### **Solar Photovoltaic**

An array of solar photovoltaic (PV) collectors, covering 14,200 square feet of roof area, would provide an estimated 330,000 kWh per year. The array would have to be located above the four-court gym and tennis courts. The current array accounts for only roughly 8 percent of the total energy consumed on site. Given the limited area for installation and ROI payback period, this does not seem to be a viable consideration.

### **Geothermal**

Two geothermal design options were reviewed; a geothermal system that covered the total heating and cooling load of the Project, and a geothermal system that covered approximately 80 percent of the heating and cooling load with supplementary heating and cooling. The proposed geothermal systems would have the capability to simultaneously heat and cool the new Recreation Center. This would be accomplished utilizing modular heat pumps/chillers, which would either reject heat to, or obtain heat from, the ground adjacent to the Project Site. The heating and cooling sources would be provided via modular geothermal heat pumps with dedicated heating and cooling loops, as well as dedicated pumping and pipe distribution to coils out in the system. Given the distance to the well field and difficulties in crossing the MWRA line as well as the availability of gas to the site, these options have been deemed not viable.



### **Natatorium Cogeneration System**

An option has been investigated to provide a cogeneration unit to generate both heating and power to support heating, cooling, and power systems serving the natatorium. This unit will be supplied by natural gas. It is anticipated the pool will operate year round and will have minimal shutdown. Incorporating a cogeneration unit as part of the pool system appears to have a high potential for energy savings and could significantly reduce the energy consumption for the Project and has been recommended for further study and possible incorporation into the Project through Design Development.

### **5.5.3 Energy Efficiency Assistance**

Boston College currently has a Memorandum of Understanding with Eversource that stipulates that the University will invest in over \$1 million of demand side management type projects each year. In return, the utility provides enhanced rebates for energy savings. In the past 5 years, Boston College has saved over 2 million kWh each year, or 10 million kWh. Similarly, with National Grid the University currently participates in demand-side management projects where over 21,818 MMBtu has been saved over the past 5 years.

The above-mentioned programs are anticipated to be extended to the proposed Recreation Center. In addition, the Proponent will continue to work with these utilities throughout the design process for the Project to evaluate additional energy conservation strategies so that additional energy savings and associated GHG emissions reductions may be achieved. The following list identifies potential energy efficiency assistance opportunities known to be provided by utilities:

- › Lighting controls
- › Daylight harvesting
- › Luminaire technology (LED)
- › Variable frequency drives (VFD)
- › High efficiency condensing boilers
- › High efficiency rooftop equipment (evaporative condensing chillers)
- › High efficiency motors (i.e. ECM, etc.)

### **5.5.4 Water Conservation**

In addition to energy conservation, as demonstrated in the following sections, the University has considered and evaluated ways to reduce potable water use for the Project.

#### **Grey Water Reuse**

A grey water collection system was investigated. The system would collect water from showers, hand wash sinks, and laundry to provide supplemental water within the building for HVAC equipment, toilet flushing, and irrigation purposes. A 250-

gallon storage tank would be anticipated for the HVAC equipment alone. Toilet flushing and irrigation would require additional piping, collection/storage, filtration, and pumping equipment. Special permits would also be required by the State Building Code. The annual savings per year was determined not significant enough for the initial investment and, therefore, this measure has been dismissed.

#### **Rainwater Reuse**

A study was undertaken to review the viability of reusing rainwater collected from the roof of the building to supplement supply water for HVAC equipment, toilet flushing, and irrigation purposes. This system would include extensive collection and storage, filtration/treatment and pumping equipment. Given the limited site area and ground water issues costs associated with an exterior cistern as well as maintenance upkeep, it has been determined the payback period to be very high and, therefore, not a viable option for further consideration.

## **5.6 Climate Change Preparedness and Resiliency**

Climate change is expected to result in rising sea levels, more frequent extreme storms, and more extreme weather events. As required by the BRA for all Large Project Review projects, the Project team has considered anticipated changes in climate and is planning for resilience during the early stages of planned and design. The BRA Climate Change Preparedness and Resiliency Checklist has been completed and is provided in Appendix B.

### **5.6.1 Sea Level Rise/Flooding**

The Project Site is outside of the 100-year floodplain associated with the Chestnut Hill Reservoir, as shown previously in Figure 4.3, and is not located within a coastal zone. Therefore, is not anticipated to be susceptible to conditions of flooding or predicted Sea Level Rise.

### **5.6.2 Extreme Weather Conditions**

In addition to increased precipitation and flooding, additional climate change issues predicted for Massachusetts, per the 2011 Massachusetts Climate Change Adaptation Report, include an increase in extreme weather events, which could consist of drought, tropical rainfall patterns (i.e., increased precipitation), extreme heat and cold stretches, increases in the number of days with extreme heat (i.e., temperatures greater than 90°F and 100°F) and/or fewer days of snow, yet increased winter precipitation.

### **5.6.3 Potential Resiliency Measures**

The Climate Change Preparedness and Resiliency Checklist provides a framework for considering present and future climate conditions in assessing projects' environmental impacts including building passive survivability, long-term integrity,

and the safety of inhabitants. The following sections summarize the potential site and building resiliency measures, which is detailed in the completed checklist in Appendix C.

### **Site Resiliency Measures**

Heat island effect will be addressed with the incorporation of reflective paving and roof materials, and shade trees and shrubs. On-site stormwater retention systems and infiltration will be employed to accommodate severe rain events.

Drought tolerance will be addressed in project site design through a combination of plants that require less water and maintenance as well as an efficient irrigation system to reduce water needs by up to 50 percent.

### **Building Resiliency Measures**

Project-related resiliency measures aimed at addressing potential extreme weather events include:

- › Elevating the finished floor elevation above surrounding grades to protect against any potential localized flooding in the vicinity of the proposed building.
- › Utilizing durable exterior materials of brick, precast concrete and stone on a steel and concrete structure for a life expectancy of at least 50 years.
- › Using the following extreme heat event characteristics for project planning: 88°DB/74°WB Peak high with a 14.6 days duration and a frequency of 5 events per year.
- › Elevating Level 01 to 142 feet BCB to mitigate the impact of extreme rain events.
- › Elevating the main electrical room and substation to Level 02 to maintain building operation during extreme weather events and flooding.
- › Elevating mechanical rooms above Level 1 to maintain operation during extreme weather events and flooding.
- › Reducing building energy consumption through the following measures: High performance building envelope, high performance lighting and controls, daylighting, EnergyStar equipment, high performance HVAC equipment and energy recovery ventilation.



LEED 2009 for New Construction and Major Renovations

Project Checklist

BOSTON COLLEGE RECREATION CENTER

DRAFT MAY 2016

15 5 6 Sustainable Sites Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
	1		Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
	1		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
		3	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
		1	Credit 5.2	Site Development—Maximize Open Space	1
	1		Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
		1	Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1

4 4 2 Water Efficiency Possible Points: 10

Y	?	N			
Y			Prereq 1	Water Use Reduction—20% Reduction	
2	2		Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4

10 19 6 Energy and Atmosphere Possible Points: 35

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
6	13		Credit 1	Optimize Energy Performance	1 to 19
	1	6	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

6 2 6 Materials and Resources Possible Points: 14

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
	1		Credit 6	Rapidly Renewable Materials	1
	1		Credit 7	Certified Wood	1

12 1 2 Indoor Environmental Quality Possible Points: 15

Y	?	N			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
		1	Credit 8.1	Daylight and Views—Daylight	1
	1		Credit 8.2	Daylight and Views—Views	1

4 2 Innovation and Design Process Possible Points: 6

Y	?	N			
1			Credit 1.1	Innovation in Design:Low Mercury Content	1
1			Credit 1.2	Innovation in Design: Exemplary Lighting Power	1
1			Credit 1.3	Innovation in Design: Integrative Process	1
	1		Credit 1.4	Innovation in Design: Green Housekeeping	1
	1		Credit 1.5	Innovation in Design: TBD	1
1			Credit 2	LEED Accredited Professional	1

2 2 Regional Priority Credits Possible Points: 4

Y	?	N			
	1		Credit 1.1	Regional Priority: Stormwater Design - Quantity Control	1
1			Credit 1.2	Regional Priority: Brownfield Redevelopment	1
1			Credit 1.3	Regional Priority: Heat Island Effect - Roof	1
	1		Credit 1.4	Regional Priority: On-Site Renewable Energy	1

53 35 22 Total Possible Points: 110

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

Figure 5.1  
LEED Scorecard

Boston College Recreation Center  
Brighton, Massachusetts



# 6

## Infrastructure

### 6.1 Introduction

The Project Site is currently served by existing utility infrastructure. The infrastructure systems described below include stormwater management, water, wastewater and other utilities, such as natural gas, electricity, and telecommunications. These systems are owned or managed by the Boston Water and Sewer Commission (BWSC), the Massachusetts Water Resources Authority (MWRA), the University, and private utility companies. The Project design team will be in close coordination with these entities as design progresses and during construction of the Project. The Proponent met with MWRA staff to discuss the overall intent of the Project and solicit any pertinent utility information with regards to the Project Site.

The construction of the new building will require upgrades and/or replacement of the connections and portions of the systems. All water, sewer and storm drainage lines in the area of the Project will be upgraded to meet the demands of the Project.

#### 6.1.1 Key Findings and Benefits

The key findings related to infrastructure systems include:

- › Construction of the Project will incorporate an on-site stormwater management system designed to infiltrate the stormwater into the groundwater and provide a reduction to the peak rate of runoff from the Project Site. This system will be designed to comply with the 2008 MassDEP Stormwater Management Policy and Standards.
- › The Project Site is currently serviced by the University-owned and -maintained domestic and fire protection water distribution system, and sanitary sewer system infrastructure within the Lower Campus in the vicinity of the Project Site. The 48-inch MWRA water main that passes along the Project Site to the west of Edmond's Hall does not service the campus.
- › Based upon MassDEP generation rates (310 CMR 15.203.f), the Project is estimated to decrease sewer generation by approximately 28,640 gallons per day (net new) and will decrease water demand by approximately 31,500 gallons per day (net new) for the Project Site.
- › In order to reduce water usage, the University is planning to install low-flow and low-consumption plumbing fixtures to achieve a minimum 20 percent water use efficiency (targeting a 35-40 percent efficiency), in compliance with Article 37 of the Zoning Code.

## 6.2 Regulatory Context

All connections will be designed and constructed in accordance with applicable city, state and federal standards. The final design process for the Project will include required engineering analyses and will adhere to applicable protocols and design standards, ensuring that the proposed building is properly supported by, and in turn properly use the utility infrastructure of the City and private utilities. Detailed design of the Project-related utility systems will proceed in conjunction with the final design of the building and its interior mechanical systems.

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

- › Work within the Commonwealth of Massachusetts Water Easement that runs through the westernmost edge of the Project Site (Figure 1.3) will require an 8M permit.
- › The city requires all new developments mitigate their contributions at a ratio of 4:1 to stormwater infiltration and inflow (I/I) in their neighborhood sanitary sewers. As such, the Proponent will need to negotiate with the city to determine the best way to reduce the amount of I/I equivalent to four (4) times the Project wastewater generation.
- › The Boston Fire Department (BFD) will review the Project with respect to fire protection measures such as access, hydrants, siamese connections, and standpipes.
- › Design of the site access, hydrant locations, and energy systems (gas and electric) will also be coordinated with the respective system owners.
- › Where new utility connections are needed and existing connections are to be capped, any work within the right of way of St. Thomas More Road will be authorized by the Massachusetts Department of Conservation and Recreation (DCR), as required.

## 6.3 Stormwater Management

### 6.3.1 Existing Drainage Conditions

The existing stormwater system of the Lower Campus is owned and maintained by the University. The BWSC owns and maintains the stormwater systems in the public streets surrounding the campus.

The Project Site is currently approximately 75 percent impervious. Currently, site runoff is collected in catch basins and does not provide specialized treatment for the removal of pollutants, such as nutrients, gas, and oil from the paved surfaces. As shown in Figure 6.1, the stormwater is conveyed through a closed drainage system consisting of 12-inch and 15-inch pipes around the perimeter of the building which discharge to the drainage in St. Thomas More Road (DP-1) and a 24-inch pipe at the southwest corner of the Project Site near Campanella Way (DP-2). Formal on-site

infiltration is not provided. Permeable surface is limited to the small existing landscape areas. As previously mentioned, no formal stormwater treatment currently exists on the Project Site.

### 6.3.2 Proposed Stormwater Management Measures

The proposed drainage conditions will be upgraded to comply with BWSC requirements and the DEP stormwater standards and BWSC regulations. The drainage from proposed paved surfaces will be collected via catch basins and routed through subsurface infiltration systems (refer to Figure 6.2). The roof drainage will also be routed through the infiltration systems. These systems will be designed in accordance with BWSC regulations, to infiltrate the first one inch of rainfall over the proposed impervious on-site area. Overflow from the infiltration system will be directed to the two existing design points, St. Thomas More Road and the 24-inch pipe at the southwest corner of the Project Site to mimic existing drainage patterns.

As mentioned above, the proposed infiltration systems are designed, to infiltrate 1 inch of rainfall over the proposed impervious on-site area. This equates to approximately 6,800 cubic feet of stormwater volume. Water quality treatment is provided on the inlet side of the infiltration systems via an Isolator Row® which is a pretreatment device, and via infiltration. Storms greater than 1 inch will bypass the infiltration system and be directed to the existing site discharge points.

The stormwater management measures proposed will also provide a reduction to the peak rates of runoff from the Project Site for the 2-, 10-, and 25-year 24-hour design storms. While there is an increase in the peak discharge rate to DP-1 in the 100-year storm, the total runoff volume is significantly decreased, demonstrating that the system will improve downstream conditions for this event.

**Table 6-1 Peak Discharge Rates (cfs\*)**

<b>Design Point</b>	<b>2-year</b>	<b>10-year</b>	<b>25-year</b>	<b>100-year</b>
<b>DP-1: St. Thomas More Road</b>				
Existing	0.5	1.3	1.9	2.7
Proposed	0.0	0.1	1.4	5.4
<b>DP-2: 24-inch drain to Southwest</b>				
Existing	7.4	13.9	18.0	24.4
Proposed	6.1	10.4	13.2	17.5

\* All rates provided in cubic feet per second.

**Table 6-2 Runoff Volumes (cf)**

<b>Design Point</b>	<b>2-year</b>	<b>10-year</b>	<b>25-year</b>	<b>100-year</b>
<b>DP-1: St. Thomas More Road</b>				
Existing	1,650	3,930	5,550	8,200
Proposed	0	320	2,530	6,450
<b>DP-2: 24-Inch Drain to Southwest</b>				
Existing	22,670	42,810	56,010	76,720
Proposed	6,740	20,210	29,750	45,600

\* All volumes provided in cubic feet.

## 6.4 Water and Wastewater

### 6.4.1 Existing Water and Wastewater Service

#### Water Service

The University owns and maintains the domestic and fire protection water distribution system components within the Lower Campus in the vicinity of the Project Site with the exception of the 48-inch MWRA water main that passes along to the west of Edmond's Hall. No service to the campus is provided directly off of this main. The existing on-campus water infrastructure near the Project Site includes a 12-inch water main located within St. Thomas More Road, a 12-inch water line running along the east side of Edmond's Hall, which turns west and travels along Campanella Way to the south of the Project Site. At the southern end of the building there are two services to Edmond's Hall from the on-site 12-inch water main. These service connections loop around the south wing of the building and connect to the east end of the west wing. There are fire hydrants in the northeast, northwest, and southeast corners of the Project Site. In addition, there is an 8-inch water line that runs parallel to the west side of the 48-inch MWRA line that services the modular housing to the west. Figure 6.3 shows the existing potable water service infrastructure.

#### Wastewater Service

The existing sanitary sewer system infrastructure in the vicinity of the Project Site is owned and maintained by the University. A 6-inch wastewater force main runs along the west side of Edmond's Hall to a manhole at the southwest corner of Walsh Hall. In addition, a 10-inch wastewater lateral services the north end of Edmond's Hall. This lateral flows westerly to the manhole at the southwest corner of Walsh Hall where it combines with the flow from the 6-inch force main and is conveyed northerly. Refer to Figure 6.4 for the existing sanitary sewer system for the Project Site.

BWSC owns and maintains the sewer systems in the public streets surrounding the campus, to which the University's infrastructure ultimately connects.



## **6.4.2 Proposed Water and Wastewater Service and Generation**

For the proposed Recreation Center, a new 4-inch domestic water and 8-inch fire service connection will be constructed to connect the building to the existing campus 12-inch line to the east of the building (refer to Figure 6.5). It is assumed that portions of the 12-inch line will be relocated through the Project Site to accommodate construction.

The Project is estimated to require approximately 25,700 gallons per day (gpd) of domestic water based on MassDEP generation rates.

The Project will have a new 8-inch sanitary sewer service, which will discharge flow from the building to the existing 10-inch sanitary sewer at the northwest corner of the Project Site. An existing sewer force main which conveys flow from Yawkey Center to the existing 10-inch main in the northwest corner of the Project Site will be relocated to the west of the site to enable construction. These improvements are illustrated in Figure 6.6.

The estimated sanitary sewer generation from the Project based on MassDEP generation rates is 23,360 gpd. The proposed sanitary sewer flow from the existing Edmond's Hall is estimated to be approximately 52,000 gpd resulting in a net new decrease of 28,640 gpd for the Project. However, it is important to note that the overall campus wastewater generation is expected to remain generally consistent with the existing conditions as the student population will remain the same.

Consistent with the LEED prerequisite for a 20 percent reduction in water use, the Project will incorporate water use reduction measures including low-flow toilets and shower heads, faucet aerators and water-efficient laundry equipment. Through Design Development, the design team will consider additional measures targeting a 35-40 percent water efficiency. In addition, the University will continue to emphasize water efficient landscaping by using underground sprinkler systems with water sensors for landscape irrigation across campus, and incorporating native plants, and/or natural landscaping in new landscape and planting plans.

## **6.5 Other Utilities**

### **6.5.1 Electric**

The Lower Campus is served by individual building transformers on the campus distribution loop. Edmond's Hall is currently serviced from an electric manhole located in the island on the west side of the existing southern parking lot. From this manhole the electric service enters the building on the southwest side, close to the center of the building.

Currently, there is an electric line that runs along the west part of the Project Site and enters a manhole near St. Thomas More Road to the north part of the Project Site in between Edmond's Hall and Walsh Hall.

The building will connect out to the campus electric service loop. Additionally, the Recreation Center will have an emergency generator.

### **6.5.2 Telecommunications**

The Lower Campus is supplied with telecommunications carrier service from Verizon, AT&T, and PaeTec Services, which includes local, long distance, and 800 telephone services, as well as a variety of carrier services for data communications. The fire alarm and telecommunications services are privately owned and maintained by the University. The telecommunications and data systems are distributed throughout all on-campus buildings in conduit systems owned by the University.

The Project Site is serviced from the west where cable is fed from a manhole in the southwest corner to the south side of the existing building. The telephone service is from the same manhole in the southwest corner to the northwest corner of the building, close to the middle of the building.

### **6.5.3 Gas**

The Lower Campus is supplied with gas by National Grid via Commonwealth Avenue, St. Thomas More Road, and Beacon Street.

An 8-inch gas main is located in St. Thomas More Road to the east of the Project Site. A 4-inch gas line tees off this main just south of Edmond's Hall and extends to the west along the south side of the Project Site.

The proposed Project will be supplied by a new service from St. Thomas More Road to the east side of the building, on the south end. The existing 4-inch gas service will be re-routed to the south of the proposed building and re-feed the campus system.

### **6.5.4 Heating Hot Water**

The existing Edmond's Hall is currently serviced by medium temperature hot water from the west side of the building. This feed will be cut and capped as part of the Project.

### **6.5.5 Utility Protection During Construction**

During construction, infrastructure will be protected using sheeting and shoring, temporary, relocations, and/or construction staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The contractor will also be required to provide adequate notification to the utility owner prior to any work commencing on their utility.

## Existing Stormwater Management System

**Boston College Recreation Center  
Brighton, Massachusetts**





Figure 6.2  
Proposed Stormwater Managment Improvements



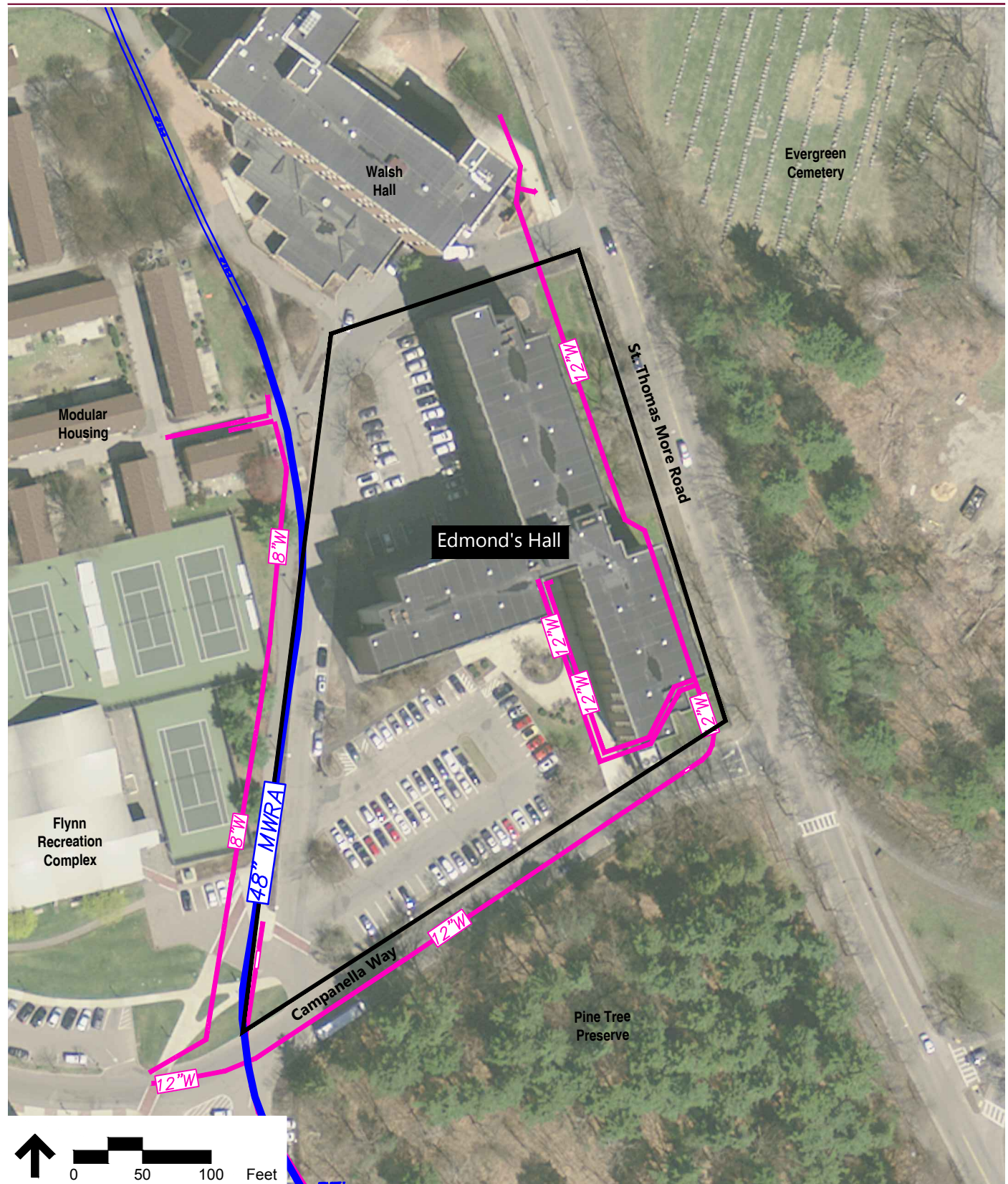
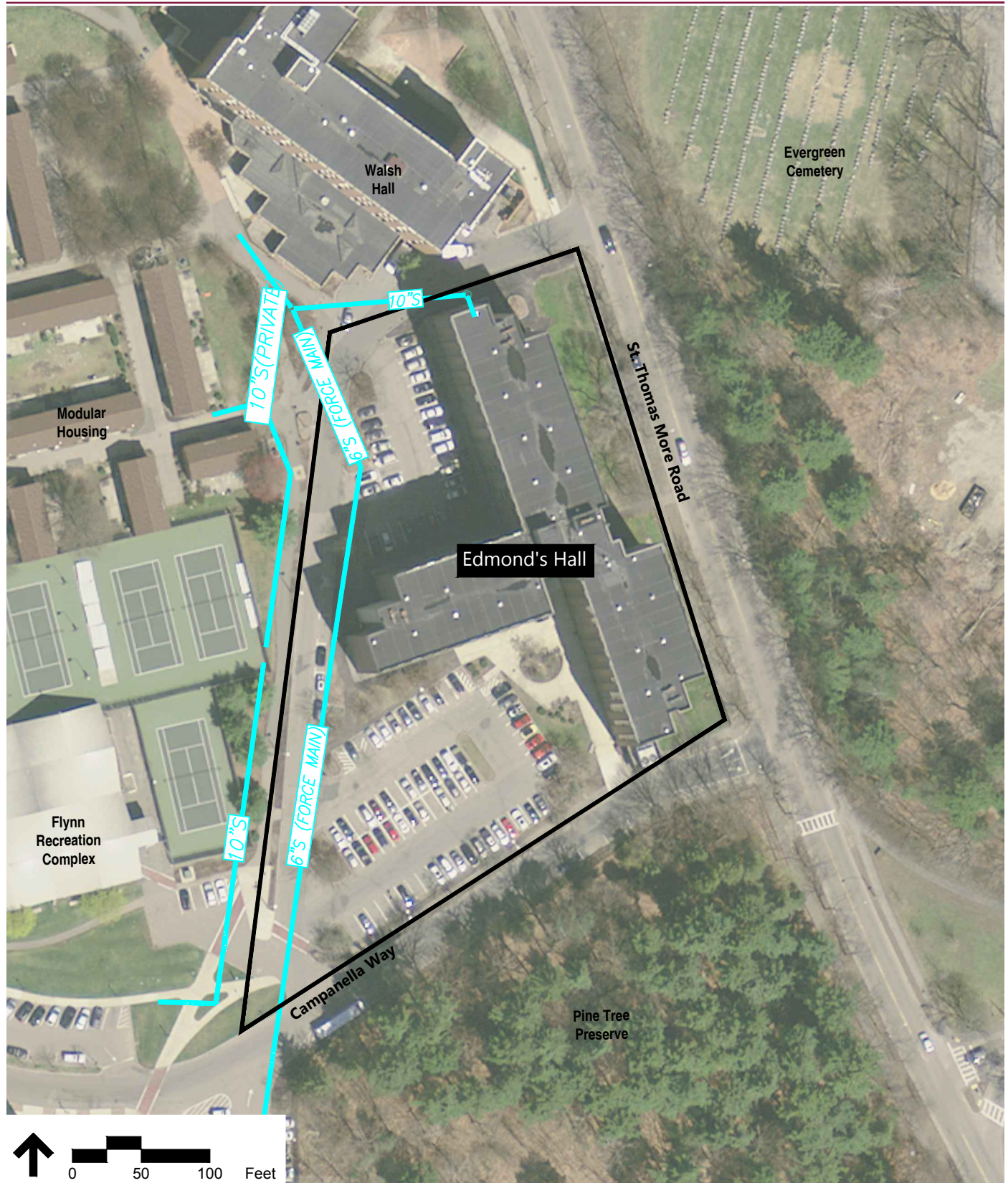


Figure 6.3  
Existing Water Service

**Boston College Recreation Center  
Brighton, Massachusetts**





Existing Sanitary Sewer Service

Figure 6.4  
Existing Sanitary Sewer Service

**Boston College Recreation Center  
Brighton, Massachusetts**

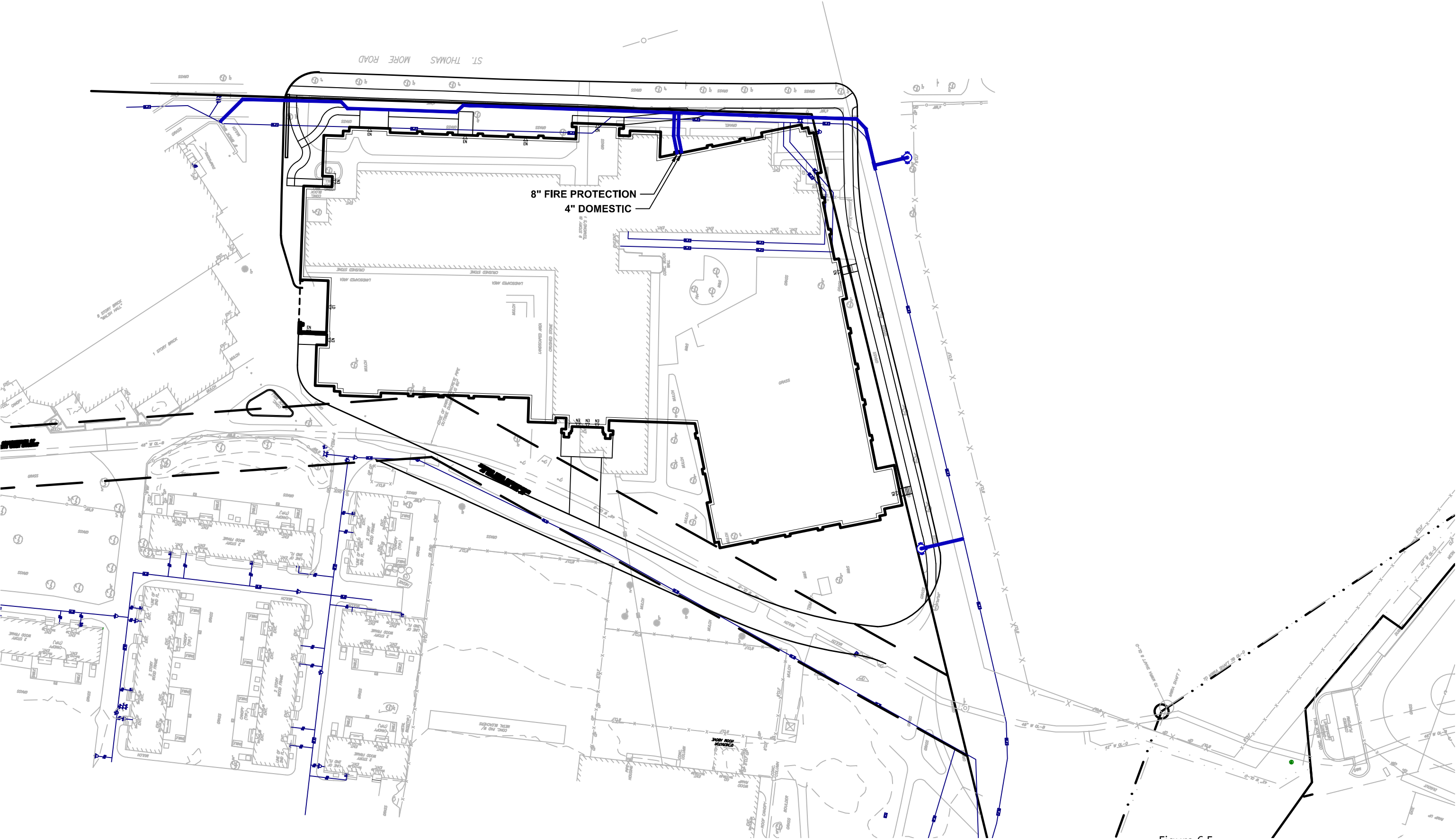


Figure 6.5  
Proposed Water Service Connections



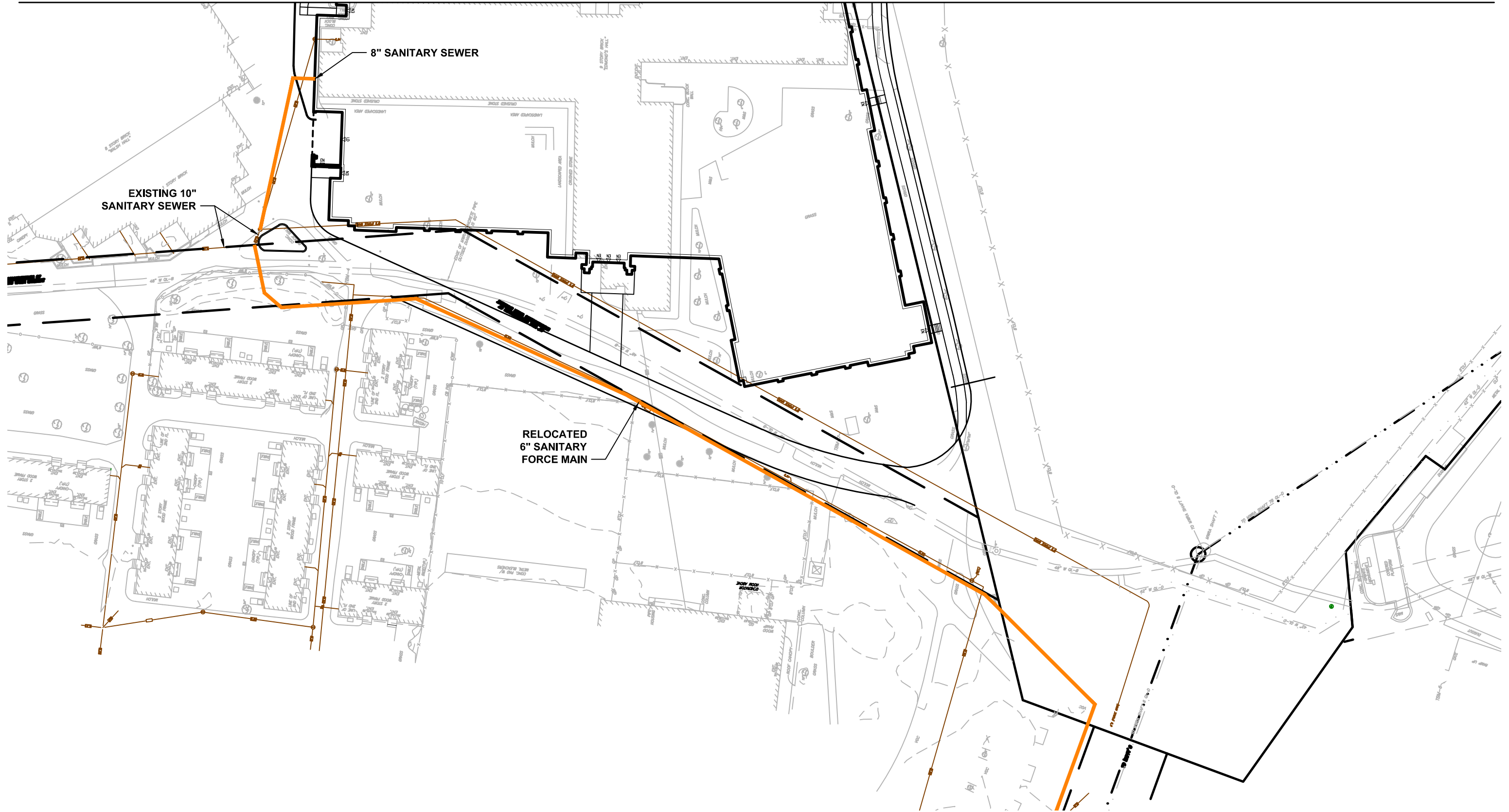


Figure 6.6  
Proposed Sanitary Sewer Service Connections

Boston College Recreation Center  
Boston, Massachusetts

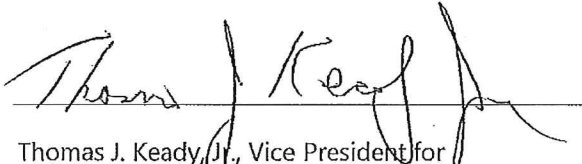


7

## Project Certification


This EPNF has been submitted to the Boston Redevelopment Authority, as required by Article 80B of the Zoning Code, on the 19<sup>th</sup> of May, 2016.

Proponent  
Trustees of Boston College



Thomas J. Keady, Jr., Vice President for  
Governmental Relations & Community Affairs

Preparer  
Vanasse Hangen Brustlin, Inc.



Lauren DeVoe, AICP, LEED AP-BD+C, Senior  
Environmental Planner

# **APPENDIX A: Transportation Supporting Documentation**



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# **Traffic Data Collection Sheets**

## **Automatic Traffic Recorders - May 2015**

Lake Street  
north of Undine Road  
City, State: Brighton, MA  
Client: VHB/ S. Mandzo-Predzic



PRECISION  
D A T A  
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 A Class  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/05/1														
5	2	29	2	0	0	0	0	0	0	0	0	0	0	33
01:00	0	27	1	0	0	0	0	0	0	0	0	0	0	28
02:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
03:00	0	12	1	0	0	0	0	0	0	0	0	0	0	13
04:00	0	9	2	0	0	0	0	0	0	0	0	0	0	11
05:00	0	50	9	0	3	0	0	0	0	0	0	0	0	62
06:00	2	184	34	0	7	0	0	2	0	0	0	0	0	229
07:00	1	451	45	2	6	0	0	2	0	0	0	0	0	507
08:00	2	462	45	1	5	0	0	0	1	0	0	0	0	516
09:00	1	345	49	1	12	0	0	0	0	0	0	0	0	408
10:00	3	218	44	0	7	0	0	1	0	0	0	0	0	273
11:00	0	250	39	0	6	1	0	0	0	0	0	0	0	296
12 PM	7	271	24	1	6	0	0	0	0	0	0	0	0	309
13:00	1	283	30	0	6	0	0	0	0	0	0	0	0	320
14:00	6	347	54	1	5	0	0	0	0	0	0	0	0	413
15:00	6	400	46	0	3	0	0	0	0	0	0	0	0	455
16:00	1	492	43	0	2	0	0	2	0	0	0	0	0	540
17:00	9	472	24	0	0	0	0	0	0	0	0	0	0	505
18:00	4	416	29	0	2	1	0	0	0	0	0	0	0	452
19:00	3	323	14	0	5	0	0	0	0	0	0	0	0	345
20:00	2	272	8	0	0	0	0	0	0	0	0	0	0	282
21:00	3	254	8	0	0	0	0	0	0	0	0	0	0	265
22:00	2	148	10	0	1	0	0	0	0	0	0	0	0	161
23:00	5	85	5	0	0	0	0	0	0	0	0	0	0	95
Total	60	5807	567	6	76	2	0	7	1	0	0	0	0	6526
Percent	0.9%	89.0%	8.7%	0.1%	1.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	08:00	09:00	07:00	09:00	11:00		06:00	08:00					08:00
Vol.	3	462	49	2	12	1		2	1					516
PM Peak	17:00	16:00	14:00	12:00	12:00	18:00		16:00						16:00
Vol.	9	492	54	1	6	1		2						540



Lake Street  
north of Undine Road  
City, State: Brighton, MA  
Client: VHB/ S. Mandzo-Predzic



PRECISION  
D A T A  
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 A Class  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/06/1														
5	3	51	1	0	1	0	0	0	0	0	0	0	0	56
01:00	0	35	1	0	0	0	0	0	0	0	0	0	0	36
02:00	0	14	1	0	1	0	0	0	0	0	0	0	0	16
03:00	0	11	1	0	0	0	0	0	0	0	0	0	0	12
04:00	1	17	0	0	0	1	0	0	0	0	0	0	0	19
05:00	1	57	10	0	1	0	0	0	0	0	0	0	0	69
06:00	3	180	41	0	5	2	0	1	0	0	0	0	0	232
07:00	4	451	55	3	4	0	0	0	0	0	0	0	0	517
08:00	4	452	47	1	2	0	0	1	0	0	0	0	0	507
09:00	7	299	35	2	6	1	0	0	0	0	0	0	0	350
10:00	2	256	42	1	7	1	0	1	0	0	0	0	0	310
11:00	1	255	32	0	4	1	0	0	0	0	0	0	0	293
12 PM	1	270	40	1	11	2	0	0	0	0	0	0	0	325
13:00	4	283	38	0	5	0	0	0	0	0	0	0	0	330
14:00	5	301	44	0	6	0	0	1	0	0	0	0	0	357
15:00	6	371	46	0	1	0	0	2	0	0	0	0	0	426
16:00	10	429	47	0	8	0	0	0	0	0	0	0	0	494
17:00	8	515	25	0	1	0	0	0	0	0	0	0	0	549
18:00	6	388	26	0	5	0	0	1	0	0	0	0	0	426
19:00	9	322	17	0	3	0	0	0	0	0	0	0	0	351
20:00	3	277	13	0	0	0	0	1	0	0	0	0	0	294
21:00	2	207	8	0	0	0	0	0	0	0	0	0	0	217
22:00	1	171	9	0	0	0	0	0	0	0	0	0	0	181
23:00	3	88	6	0	0	0	0	0	0	0	0	0	0	97
Total	84	5700	585	8	71	8	0	8	0	0	0	0	0	6464
Percent	1.3%	88.2%	9.1%	0.1%	1.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	07:00	07:00	10:00	06:00		06:00						07:00
Vol.	7	452	55	3	7	2		1						517
PM Peak	16:00	17:00	16:00	12:00	12:00	12:00		15:00						17:00
Vol.	10	515	47	1	11	2		2						549
Total		11507	1152	14	147	10	0	15	1	0	0	0	0	12990

Lake Street  
north of Undine Road  
City, State: Brighton, MA  
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154431 A Speed  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
05/05/																
15	0	2	3	16	8	3	1	0	0	0	0	0	0	33	33	29
01:00	0	1	3	14	9	1	0	0	0	0	0	0	0	28	32	28
02:00	1	2	0	3	2	0	0	0	0	0	0	0	0	8	31	23
03:00	0	0	1	7	3	1	1	0	0	0	0	0	0	13	34	30
04:00	0	0	0	4	3	4	0	0	0	0	0	0	0	11	36	32
05:00	0	1	2	16	31	8	4	0	0	0	0	0	0	62	35	31
06:00	1	5	16	106	93	7	1	0	0	0	0	0	0	229	32	29
07:00	0	17	75	301	107	6	1	0	0	0	0	0	0	507	30	27
08:00	2	27	139	274	71	3	0	0	0	0	0	0	0	516	28	26
09:00	0	9	89	209	94	7	0	0	0	0	0	0	0	408	31	27
10:00	1	10	56	151	49	6	0	0	0	0	0	0	0	273	30	27
11:00	1	10	53	172	57	3	0	0	0	0	0	0	0	296	30	27
12 PM	1	13	49	168	74	4	0	0	0	0	0	0	0	309	31	27
13:00	1	6	50	185	70	8	0	0	0	0	0	0	0	320	31	27
14:00	2	15	67	245	74	10	0	0	0	0	0	0	0	413	30	27
15:00	2	7	58	258	120	8	2	0	0	0	0	0	0	455	31	28
16:00	0	8	99	332	94	7	0	0	0	0	0	0	0	540	30	27
17:00	0	17	106	285	91	6	0	0	0	0	0	0	0	505	30	27
18:00	0	13	121	236	77	5	0	0	0	0	0	0	0	452	29	26
19:00	2	7	69	188	71	8	0	0	0	0	0	0	0	345	30	27
20:00	2	4	38	168	64	6	0	0	0	0	0	0	0	282	31	27
21:00	2	9	46	142	56	9	1	0	0	0	0	0	0	265	31	27
22:00	0	7	14	86	46	7	1	0	0	0	0	0	0	161	32	28
23:00	2	3	11	50	18	11	0	0	0	0	0	0	0	95	33	28
Total	20	193	1165	3616	1382	138	12	0	0	0	0	0	0	6526		
%	0.3%	3.0%	17.9%	55.4%	21.2%	2.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	08:00	07:00	07:00	05:00	05:00							08:00		
Vol.	2	27	139	301	107	8	4							516		
Midda y Peak	14:00	14:00	14:00	14:00	12:00	14:00								14:00		
Vol.	2	15	67	245	74	10								413		
PM Peak	15:00	17:00	18:00	16:00	15:00	23:00	15:00							16:00		
Vol.	2	17	121	332	120	11	2							540		
% ile				15th Percentile :		22 MPH										
				50th Percentile :		26 MPH										
				85th Percentile :		31 MPH										
				95th Percentile :		33 MPH										

Stats

10 MPH Pace Speed :	25-34 MPH
Number in Pace :	4998
Percent in Pace :	76.6%
Number of Vehicles > 30 MPH :	1256
Percent of Vehicles > 30 MPH :	19.2%
Mean Speed(Average) :	27 MPH

Lake Street  
north of Undine Road  
City, State: Brighton, MA  
Client: VHB/ S. Mandzo-Predzic



PRECISION  
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Email: datarequests@pdillc.com

154431 A Speed  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th % ile	Ave Speed
05/06/																
15	0	1	7	23	19	4	1	1	0	0	0	0	0	56	33	29
01:00	0	1	4	10	16	3	1	1	0	0	0	0	0	36	33	30
02:00	0	0	1	7	7	1	0	0	0	0	0	0	0	16	32	30
03:00	0	1	0	4	7	0	0	0	0	0	0	0	0	12	32	29
04:00	1	0	4	3	4	4	3	0	0	0	0	0	0	19	39	30
05:00	0	4	6	27	27	5	0	0	0	0	0	0	0	69	33	29
06:00	1	7	29	103	81	10	1	0	0	0	0	0	0	232	32	28
07:00	0	16	60	273	158	10	0	0	0	0	0	0	0	517	31	28
08:00	2	17	106	301	72	9	0	0	0	0	0	0	0	507	29	26
09:00	1	11	56	192	74	15	1	0	0	0	0	0	0	350	31	27
10:00	0	18	59	143	84	6	0	0	0	0	0	0	0	310	31	27
11:00	0	4	47	180	60	2	0	0	0	0	0	0	0	293	30	27
12 PM	0	10	65	172	72	5	1	0	0	0	0	0	0	325	31	27
13:00	0	9	48	183	86	3	1	0	0	0	0	0	0	330	31	27
14:00	2	7	61	208	67	11	1	0	0	0	0	0	0	357	30	27
15:00	1	6	65	260	86	7	0	1	0	0	0	0	0	426	30	27
16:00	1	11	98	302	78	4	0	0	0	0	0	0	0	494	29	27
17:00	1	12	166	285	76	8	1	0	0	0	0	0	0	549	29	26
18:00	0	16	104	229	69	5	2	1	0	0	0	0	0	426	29	26
19:00	4	18	65	189	66	8	1	0	0	0	0	0	0	351	30	27
20:00	2	9	68	148	62	5	0	0	0	0	0	0	0	294	30	27
21:00	1	9	20	136	46	4	0	1	0	0	0	0	0	217	31	27
22:00	0	2	28	105	37	6	3	0	0	0	0	0	0	181	31	28
23:00	1	5	17	38	25	9	2	0	0	0	0	0	0	97	33	28
Total	18	194	1184	3521	1379	144	19	5	0	0	0	0	0	6464		
%	0.3%	3.0%	18.3%	54.5%	21.3%	2.2%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	08:00	08:00	07:00	09:00	04:00	00:00						07:00		
Vol.	2	17	106	301	158	15	3	1						517		
Midda y Peak	14:00	12:00	12:00	14:00	13:00	14:00	12:00							14:00		
Vol.	2	10	65	208	86	11	1							357		
PM Peak	19:00	19:00	17:00	16:00	15:00	23:00	22:00	15:00						17:00		
Vol.	4	18	166	302	86	9	3	1						549		
% ile			15th Percentile :			22 MPH										
			50th Percentile :			26 MPH										
			85th Percentile :			31 MPH										
			95th Percentile :			33 MPH										

Stats      10 MPH Pace Speed :      25-34 MPH  
                  Number in Pace :      4900  
                  Percent in Pace :      75.8%  
          Number of Vehicles > 30 MPH :      1271  
          Percent of Vehicles > 30 MPH :      19.7%  
          Mean Speed(Average) :      27 MPH

Lake Street  
north of Undine Road  
City, State: Brighton, MA  
Client: VHB/ S. Mandzo-Predzic



PRECISION  
D A T A  
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 A Volume  
Site Code: 10039.00  
Date Start: 05-May-15

Start	NB												Tue	
Time	A.M.	P.M.											05-May-15	
12:00	14	85												
12:15	8	75												
12:30	7	76												
12:45	4	73	33	309										
01:00	11	84												
01:15	6	88												
01:30	5	73												
01:45	6	75	28	320										
02:00	1	96												
02:15	1	107												
02:30	1	115												
02:45	5	95	8	413										
03:00	3	121												
03:15	4	110												
03:30	1	108												
03:45	5	116	13	455										
04:00	2	137												
04:15	2	129												
04:30	3	124												
04:45	4	150	11	540										
05:00	5	125												
05:15	17	146												
05:30	22	114												
05:45	18	120	62	505										
06:00	33	137												
06:15	51	102												
06:30	59	125												
06:45	86	88	229	452										
07:00	98	86												
07:15	136	97												
07:30	130	93												
07:45	143	69	507	345										
08:00	142	83												
08:15	132	75												
08:30	126	54												
08:45	116	70	516	282										
09:00	120	73												
09:15	112	65												
09:30	89	75												
09:45	87	52	408	265										
10:00	69	50												
10:15	81	46												
10:30	55	37												
10:45	68	28	273	161										
11:00	81	35												
11:15	66	27												
11:30	70	22												
11:45	79	11	296	95										
Total	2384	4142												
Percent		100.0%	0.0%	0.0%										
Day Total		6526												
Peak	07:15	-	04:30	-	-	-	-	-	-	-	-	-	-	
Vol.	551	-	545	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.963		0.908											



Lake Street  
north of Undine Road  
City, State: Brighton, MA  
Client: VHB/ S. Mandzo-Predzic



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154431 A Volume  
Site Code: 10039.00  
Date Start: 05-May-15

Start		NB													Wed
Time	A.M.		P.M.												06-May-15
12:00	13		83												
12:15	10		89												
12:30	15		67												
12:45	18	56	86	325											
01:00	11		89												
01:15	8		78												
01:30	9		86												
01:45	8	36	77	330											
02:00	7		79												
02:15	4		86												
02:30	3		105												
02:45	2	16	87	357											
03:00	3		111												
03:15	1		102												
03:30	2		98												
03:45	6	12	115	426											
04:00	1		149												
04:15	5		125												
04:30	2		112												
04:45	11	19	108	494											
05:00	7		128												
05:15	21		139												
05:30	15		151												
05:45	26	69	131	549											
06:00	30		112												
06:15	52		109												
06:30	81		111												
06:45	69	232	94	426											
07:00	107		101												
07:15	136		80												
07:30	136		83												
07:45	138	517	87	351											
08:00	149		73												
08:15	125		80												
08:30	124		71												
08:45	109	507	70	294											
09:00	105		60												
09:15	101		60												
09:30	72		42												
09:45	72	350	55	217											
10:00	79		58												
10:15	74		52												
10:30	92		36												
10:45	65	310	35	181											
11:00	77		28												
11:15	70		28												
11:30	67		25												
11:45	79	293	16	97											
Total	2417		4047												
Percent			100.0%	0.0%	0.0%										
Day Total		6464													
Peak	07:15	-	05:00	-	-	-	-	-	-	-	-	-	-	-	
Vol.	559	-	549	-	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.938		0.909												

Commonwealth Avenue (Route 30) EB  
east of Lake Street  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



PRECISION  
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INDUSTRIES, LLC

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154431 B EB Class  
Site Code: 10039.00  
Date Start: 05-May-15

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/05/1														
5	2	47	0	0	4	1	0	0	0	0	0	0	0	54
01:00	0	28	3	0	5	0	0	0	0	0	0	0	0	36
02:00	0	24	1	0	2	0	0	0	0	0	0	0	0	27
03:00	0	16	0	0	1	0	0	0	0	0	0	0	0	17
04:00	0	8	7	0	1	0	0	0	0	0	0	0	0	16
05:00	1	21	7	0	1	0	0	0	0	0	0	0	0	30
06:00	4	151	15	0	3	3	0	1	0	0	0	0	0	177
07:00	1	400	39	0	6	2	0	4	3	0	0	0	0	455
08:00	3	537	21	5	12	3	0	4	0	0	1	0	0	586
09:00	0	350	33	0	15	1	1	4	1	0	0	0	0	405
10:00	0	250	28	4	16	2	2	3	0	0	0	0	0	305
11:00	1	247	26	0	14	0	0	2	0	0	0	0	0	290
12 PM	2	284	28	2	12	2	0	0	2	2	1	0	0	335
13:00	1	264	31	0	14	1	1	4	0	0	0	0	0	316
14:00	0	279	18	2	12	1	0	1	0	0	0	0	0	313
15:00	0	318	28	1	10	0	0	1	0	0	0	0	1	359
16:00	8	351	22	0	9	0	0	0	0	0	0	0	0	390
17:00	1	472	17	1	6	1	0	0	0	1	1	0	0	500
18:00	9	529	18	0	8	0	0	0	0	0	0	0	0	564
19:00	5	307	9	0	4	1	0	0	0	0	0	0	0	326
20:00	0	240	3	0	4	0	0	1	1	0	0	0	0	249
21:00	3	208	6	0	6	0	0	1	0	0	0	0	0	224
22:00	1	159	8	0	6	0	0	0	0	0	0	0	0	174
23:00	3	99	6	0	4	0	0	0	0	0	0	0	0	112
Total	45	5589	374	15	175	18	4	26	7	3	3	0	1	6260
Percent	0.7%	89.3%	6.0%	0.2%	2.8%	0.3%	0.1%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	08:00	07:00	08:00	10:00	06:00	10:00	07:00	07:00		08:00			08:00
Vol.	4	537	39	5	16	3	2	4	3		1			586
PM Peak	18:00	18:00	13:00	12:00	13:00	12:00	13:00	13:00	12:00	12:00	12:00		15:00	18:00
Vol.	9	529	31	2	14	2	1	4	2	2	1		1	564

Commonwealth Avenue (Route 30) EB  
east of Lake Street  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 B EB Class  
Site Code: 10039.00  
Date Start: 05-May-15

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/06/1														
5	0	86	5	0	4	0	0	0	0	0	0	0	0	95
01:00	0	54	5	0	5	0	0	0	0	0	0	0	0	64
02:00	1	27	1	0	2	0	0	0	1	0	0	0	0	32
03:00	0	21	2	1	0	0	0	0	0	0	0	0	0	24
04:00	0	15	4	0	1	0	0	0	0	0	0	0	0	20
05:00	0	36	7	0	0	0	0	0	0	0	0	0	0	43
06:00	3	164	23	1	4	2	0	1	0	0	1	0	0	199
07:00	1	447	36	1	14	0	0	3	0	0	1	0	1	504
08:00	5	488	22	1	17	3	0	3	1	2	1	2	0	545
09:00	0	365	36	0	19	2	0	5	0	0	0	0	0	427
10:00	1	222	21	0	9	4	0	1	0	0	0	0	0	258
11:00	1	299	22	1	17	0	0	1	1	0	0	0	0	342
12 PM	0	253	30	1	14	1	0	3	0	1	0	0	0	303
13:00	1	257	31	0	17	0	0	1	0	0	0	0	0	307
14:00	2	281	20	0	9	0	0	1	1	0	0	0	0	314
15:00	1	340	24	0	11	0	0	2	1	0	0	0	0	379
16:00	3	315	15	0	9	0	0	2	0	0	1	0	1	346
17:00	6	458	11	0	7	0	0	3	1	1	0	0	0	487
18:00	2	484	14	2	6	1	0	1	0	0	1	0	0	511
19:00	3	317	8	0	10	0	0	0	0	0	0	0	0	338
20:00	5	263	12	0	6	1	0	1	0	0	0	0	0	288
21:00	4	232	5	0	5	0	0	1	0	0	0	0	0	247
22:00	1	189	14	0	5	0	0	0	0	0	0	0	0	209
23:00	0	89	3	0	4	0	0	0	0	0	0	0	0	96
Total	40	5702	371	8	195	14	0	29	6	4	5	2	2	6378
Percent	0.6%	89.4%	5.8%	0.1%	3.1%	0.2%	0.0%	0.5%	0.1%	0.1%	0.1%	0.0%	0.0%	
AM Peak	08:00	08:00	07:00	03:00	09:00	10:00		09:00	02:00	08:00	06:00	08:00	07:00	08:00
Vol.	5	488	36	1	19	4		5	1	2	1	2	1	545
PM Peak	17:00	18:00	13:00	18:00	13:00	12:00		12:00	14:00	12:00	16:00		16:00	18:00
Vol.	6	484	31	2	17	1		3	1	1	1		1	511
Total		11291	745	23	370	32	4	55	13	7	8	2	3	12638

Commonwealth Avenue (Route 30) EB  
 east of Lake Street  
 City, State: Brighton, MA  
 Client: VHB / S. Mandzo-Prelidzic



PRECISION  
 D A T A  
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
 Office: 508.481.3999 Fax: 508.545.1234  
 Email: datarequests@pdillc.com

154431 B EB Speed  
 Site Code: 10039.00  
 Date Start: 05-May-15

EB	Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
		14	19	24	29	34	39	44	49	54	59	64	69	9999			
05/05/																	
15	0	0	1	13	25	10	5	0	0	0	0	0	0	0	54	37	32
01:00	1	0	2	7	16	8	2	0	0	0	0	0	0	0	36	36	31
02:00	0	0	1	9	14	2	0	1	0	0	0	0	0	0	27	33	31
03:00	0	0	2	5	6	3	1	0	0	0	0	0	0	0	17	36	31
04:00	0	0	1	2	7	5	1	0	0	0	0	0	0	0	16	37	33
05:00	0	1	1	5	10	7	4	2	0	0	0	0	0	0	30	40	34
06:00	2	5	3	13	113	30	8	2	1	0	0	0	0	0	177	36	32
07:00	0	1	11	96	218	103	22	4	0	0	0	0	0	0	455	36	32
08:00	0	2	16	139	286	127	13	3	0	0	0	0	0	0	586	36	32
09:00	1	3	15	91	205	76	14	0	0	0	0	0	0	0	405	35	32
10:00	0	1	14	77	133	64	14	2	0	0	0	0	0	0	305	36	32
11:00	1	1	7	78	136	48	18	1	0	0	0	0	0	0	290	36	32
12 PM	0	1	14	78	151	75	15	0	1	0	0	0	0	0	335	36	32
13:00	0	2	17	65	136	76	20	0	0	0	0	0	0	0	316	37	32
14:00	0	3	9	65	168	54	10	4	0	0	0	0	0	0	313	35	32
15:00	1	1	8	78	160	89	20	2	0	0	0	0	0	0	359	37	32
16:00	0	2	7	75	167	108	29	1	1	0	0	0	0	0	390	37	33
17:00	1	1	8	91	251	127	18	3	0	0	0	0	0	0	500	36	33
18:00	2	2	6	83	281	167	18	3	2	0	0	0	0	0	564	37	33
19:00	1	1	13	68	137	87	14	5	0	0	0	0	0	0	326	37	32
20:00	0	0	15	51	124	49	10	0	0	0	0	0	0	0	249	36	32
21:00	1	4	6	28	107	63	14	1	0	0	0	0	0	0	224	37	33
22:00	1	1	2	45	77	35	12	1	0	0	0	0	0	0	174	37	32
23:00	0	0	1	26	51	27	5	2	0	0	0	0	0	0	112	37	33
Total	12	32	180	1288	2979	1440	287	37	5	0	0	0	0	0	6260		
%	0.2%	0.5%	2.9%	20.6%	47.6%	23.0%	4.6%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	06:00	06:00	08:00	08:00	08:00	08:00	07:00	07:00	06:00						08:00		
Vol.	2	5	16	139	286	127	22	4	1						586		
Midda y Peak	11:00	14:00	13:00	11:00	14:00	13:00	13:00	14:00	12:00						12:00		
Vol.	1	3	17	78	168	76	20	4	1						335		
PM Peak	18:00	21:00	20:00	17:00	18:00	18:00	16:00	19:00	18:00						18:00		
Vol.	2	4	15	91	281	167	29	5	2						564		
% ile				15th Percentile :			26 MPH										
				50th Percentile :			31 MPH										
				85th Percentile :			36 MPH										
				95th Percentile :			39 MPH										

Stats      10 MPH Pace Speed :      30-39 MPH  
 Number in Pace :      4419  
 Percent in Pace :      70.6%  
 Number of Vehicles > 35 MPH :      1481  
 Percent of Vehicles > 35 MPH :      23.7%  
 Mean Speed(Average) :      32 MPH



Commonwealth Avenue (Route 30) EB  
 east of Lake Street  
 City, State: Brighton, MA  
 Client: VHB / S. Mandzo-Prelidic



PRECISION  
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 INDUSTRIES, LLC

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154431 B EB Speed  
 Site Code: 10039.00  
 Date Start: 05-May-15

Email: datarequests@pdillc.com																
Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th % ile	Ave Speed
05/06/15	0	2	5	25	40	17	6	0	0	0	0	0	0	95	36	31
01:00	1	0	1	14	34	12	1	1	0	0	0	0	0	64	35	32
02:00	0	0	0	11	16	3	1	1	0	0	0	0	0	32	34	32
03:00	0	0	2	6	13	3	0	0	0	0	0	0	0	24	33	31
04:00	0	1	0	7	6	5	1	0	0	0	0	0	0	20	37	31
05:00	0	0	2	4	16	17	2	1	0	1	0	0	0	43	38	34
06:00	1	7	7	23	89	56	12	3	1	0	0	0	0	199	37	33
07:00	0	1	18	97	220	136	30	2	0	0	0	0	0	504	37	33
08:00	1	1	40	153	242	85	22	1	0	0	0	0	0	545	35	31
09:00	0	1	14	107	211	78	15	1	0	0	0	0	0	427	35	32
10:00	0	2	12	81	96	58	9	0	0	0	0	0	0	258	36	31
11:00	0	0	14	82	154	72	15	3	2	0	0	0	0	342	36	32
12 PM	3	3	6	64	148	60	18	1	0	0	0	0	0	303	36	32
13:00	0	2	14	54	157	64	11	4	1	0	0	0	0	307	36	32
14:00	0	1	17	60	151	66	16	3	0	0	0	0	0	314	36	32
15:00	2	2	7	77	162	112	16	0	0	1	0	0	0	379	37	33
16:00	1	1	5	44	155	115	18	6	1	0	0	0	0	346	37	34
17:00	0	0	7	85	215	147	30	3	0	0	0	0	0	487	37	33
18:00	1	1	3	58	267	149	26	3	3	0	0	0	0	511	37	33
19:00	2	1	5	45	169	85	27	3	1	0	0	0	0	338	37	33
20:00	0	0	14	71	137	60	4	2	0	0	0	0	0	288	35	32
21:00	1	3	8	71	109	42	9	2	1	1	0	0	0	247	36	31
22:00	1	0	7	49	92	54	5	1	0	0	0	0	0	209	36	32
23:00	0	0	5	17	40	21	8	4	1	0	0	0	0	96	38	33
Total %	14 0.2%	29 0.5%	213 3.3%	1305 20.5%	2939 46.1%	1517 23.8%	302 4.7%	45 0.7%	11 0.2%	3 0.0%	0 0.0%	0 0.0%	0 0.0%	6378		
AM Peak	01:00	06:00	08:00	08:00	08:00	07:00	07:00	06:00	06:00	05:00	08:00					
Vol.	1	7	40	153	242	136	30	3	1	1	545					
Midda y Peak	12:00	12:00	14:00	11:00	13:00	11:00	12:00	13:00	11:00	11:00						
Vol.	3	3	17	82	157	72	18	4	2	342						
PM Peak	15:00	21:00	20:00	17:00	18:00	18:00	17:00	16:00	18:00	15:00	18:00					
Vol.	2	3	14	85	267	149	30	6	3	1	511					
% ile	15th Percentile :			26 MPH												
	50th Percentile :			31 MPH												
	85th Percentile :			37 MPH												
	95th Percentile :			39 MPH												
Stats	10 MPH Pace Speed :			30-39 MPH												
	Number in Pace :			4456												
	Percent in Pace :			69.9%												
	Number of Vehicles > 35 MPH :			1575												
	Percent of Vehicles > 35 MPH :			24.7%												
	Mean Speed(Average) :			32 MPH												

Commonwealth Avenue (Route 30) EB  
 east of Lake Street  
 City, State: Brighton, MA  
 Client: VHB / S. Mandzo-Prelidzic



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154431 B EB Volume  
 Site Code: 10039.00  
 Date Start: 05-May-15

Start		EB													Tue 05-May-15	
Time	A.M.		P.M.													
12:00	20		84													
12:15	16		75													
12:30	10		95													
12:45	8	54	81	335												
01:00	16		63													
01:15	10		94													
01:30	5		79													
01:45	5	36	80	316												
02:00	12		78													
02:15	5		75													
02:30	8		74													
02:45	2	27	86	313												
03:00	3		100													
03:15	4		100													
03:30	5		74													
03:45	5	17	85	359												
04:00	2		94													
04:15	5		94													
04:30	4		90													
04:45	5	16	112	390												
05:00	4		102													
05:15	3		128													
05:30	9		141													
05:45	14	30	129	500												
06:00	21		152													
06:15	38		165													
06:30	58		121													
06:45	60	177	126	564												
07:00	90		96													
07:15	102		94													
07:30	118		72													
07:45	145	455	64	326												
08:00	152		72													
08:15	144		68													
08:30	153		53													
08:45	137	586	56	249												
09:00	128		65													
09:15	102		51													
09:30	91		61													
09:45	84	405	47	224												
10:00	75		41													
10:15	63		57													
10:30	74		45													
10:45	93	305	31	174												
11:00	66		33													
11:15	68		30													
11:30	78		23													
11:45	78	290	26	112												
Total	2398		3862													
Percent			100.0%	0.0%	0.0%											
Day Total		6260														
Peak	07:45	-	05:30	-	-	-	-	-	-	-	-	-	-	-		
Vol.	594	-	587	-	-	-	-	-	-	-	-	-	-	-		
P.H.F.	0.971		0.889													

Commonwealth Avenue (Route 30) EB  
 east of Lake Street  
 City, State: Brighton, MA  
 Client: VHB / S. Mandzo-Prelidzic



PRECISION  
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 INDUSTRIES, LLC

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 Office: 508.481.3999 Fax: 508.545.1234  
 Email: datarequests@pdillc.com

154431 B EB Volume  
 Site Code: 10039.00  
 Date Start: 05-May-15

Start		EB													Wed
Time	A.M.		P.M.												06-May-15
12:00	20		92												
12:15	23		62												
12:30	24		66												
12:45	28	95	83	303											
01:00	20		73												
01:15	14		81												
01:30	18		74												
01:45	12	64	79	307											
02:00	13		71												
02:15	8		82												
02:30	7		90												
02:45	4	32	71	314											
03:00	5		79												
03:15	5		100												
03:30	5		104												
03:45	9	24	96	379											
04:00	5		86												
04:15	7		69												
04:30	3		78												
04:45	5	20	113	346											
05:00	7		115												
05:15	7		127												
05:30	13		127												
05:45	16	43	118	487											
06:00	23		135												
06:15	50		133												
06:30	62		120												
06:45	64	199	123	511											
07:00	110		101												
07:15	96		79												
07:30	133		78												
07:45	165	504	80	338											
08:00	143		73												
08:15	139		77												
08:30	128		67												
08:45	135	545	71	288											
09:00	122		63												
09:15	118		61												
09:30	96		67												
09:45	91	427	56	247											
10:00	64		41												
10:15	66		59												
10:30	54		55												
10:45	74	258	54	209											
11:00	101		24												
11:15	72		27												
11:30	81		20												
11:45	88	342	25	96											
Total	2553		3825												
Percent			100.0%	0.0%	0.0%										
Day Total		6378													
Peak	07:30	-	05:30	-	-	-	-	-	-	-	-	-	-	-	
Vol.	580	-	513	-	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.879		0.950												

Commonwealth Avenue (Route 30) WB  
east of Lake Street  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 B WB Class  
Site Code: 10039.00  
Date Start: 05-May-15

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/05/1														
5	1	54	5	0	4	0	0	0	0	0	0	0	0	64
01:00	0	53	6	0	4	0	0	0	0	0	0	0	0	63
02:00	1	17	5	0	1	0	0	0	0	0	0	0	0	24
03:00	1	20	2	0	1	0	0	0	0	0	0	0	0	24
04:00	0	20	6	0	0	2	0	0	0	0	0	0	0	28
05:00	0	74	11	0	0	1	0	0	0	0	0	0	0	86
06:00	3	246	38	0	7	4	0	2	0	0	0	0	0	300
07:00	5	630	54	4	15	4	0	4	0	0	1	0	0	717
08:00	4	674	55	5	20	3	0	2	2	1	0	0	0	766
09:00	3	526	60	5	23	4	0	3	3	0	0	0	0	627
10:00	2	380	63	3	26	0	0	2	1	0	0	0	0	477
11:00	3	407	71	0	21	2	0	6	1	0	0	0	0	511
12 PM	2	497	60	2	21	1	1	3	0	0	0	0	0	587
13:00	5	473	73	2	17	0	0	3	0	0	0	0	0	573
14:00	3	572	76	1	11	1	1	8	1	0	0	0	0	674
15:00	6	665	80	2	19	1	0	5	0	0	1	0	0	779
16:00	3	721	60	0	15	2	0	7	0	1	0	0	0	809
17:00	9	738	28	2	7	2	0	2	0	0	0	0	0	788
18:00	7	672	41	0	7	1	0	2	1	0	0	0	0	731
19:00	9	595	24	0	8	1	0	1	0	0	0	0	0	638
20:00	3	379	21	0	5	0	0	0	0	0	0	0	0	408
21:00	2	326	15	0	6	0	0	1	0	0	0	0	0	350
22:00	2	272	20	0	6	1	0	0	0	0	0	0	0	301
23:00	2	166	22	0	5	0	0	0	0	0	0	0	0	195
Total	76	9177	896	26	249	30	2	51	9	2	2	0	0	10520
Percent	0.7%	87.2%	8.5%	0.2%	2.4%	0.3%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	11:00	08:00	10:00	06:00		11:00	09:00	08:00	07:00			08:00
Vol.	5	674	71	5	26	4		6	3	1	1			766
PM Peak	17:00	17:00	15:00	12:00	12:00	16:00	12:00	14:00	14:00	16:00	15:00			16:00
Vol.	9	738	80	2	21	2	1	8	1	1	1			809



Commonwealth Avenue (Route 30) WB  
east of Lake Street  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 B WB Class  
Site Code: 10039.00  
Date Start: 05-May-15

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/06/1														
5	1	108	9	0	5	0	0	0	0	0	0	0	0	123
01:00	1	74	3	0	4	0	0	0	0	0	0	0	0	82
02:00	2	35	4	0	1	0	0	0	0	0	0	0	0	42
03:00	0	23	2	1	1	0	0	0	0	0	0	0	0	27
04:00	0	24	10	0	0	0	0	0	0	0	0	0	0	34
05:00	0	81	12	0	0	2	0	1	0	0	0	0	0	96
06:00	5	274	43	0	4	2	0	1	0	0	0	0	0	329
07:00	2	690	58	6	16	1	0	3	0	1	0	0	0	777
08:00	2	648	59	3	22	5	0	4	0	1	0	0	0	744
09:00	4	476	49	6	28	5	0	2	0	1	0	0	0	571
10:00	2	376	58	4	29	9	1	5	0	0	0	1	0	485
11:00	2	497	60	5	20	2	0	3	0	1	0	0	0	590
12 PM	1	499	67	4	24	4	0	2	0	0	0	0	0	601
13:00	1	507	74	0	25	1	1	2	0	1	0	0	0	612
14:00	5	540	84	1	18	0	0	6	0	0	0	1	0	655
15:00	5	635	71	0	21	1	0	7	0	0	0	0	0	740
16:00	12	626	41	0	10	5	0	3	2	0	1	0	0	700
17:00	18	609	19	0	5	7	0	3	1	1	2	0	0	665
18:00	13	682	36	0	7	2	0	0	0	0	0	0	0	740
19:00	4	510	25	1	9	0	0	1	0	1	0	0	0	551
20:00	5	407	23	1	7	0	0	0	0	0	0	0	0	443
21:00	0	318	19	0	5	0	0	2	0	0	0	0	0	344
22:00	1	272	17	0	8	1	0	0	0	0	0	0	0	299
23:00	1	185	21	0	5	1	0	0	0	0	0	0	0	213
Total	87	9096	864	32	274	48	2	45	3	7	3	2	0	10463
Percent	0.8%	86.9%	8.3%	0.3%	2.6%	0.5%	0.0%	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	11:00	07:00	10:00	10:00	10:00	10:00		07:00		10:00		07:00
Vol.	5	690	60	6	29	9	1	5		1		1		777
PM Peak	17:00	18:00	14:00	12:00	13:00	17:00	13:00	15:00	16:00	13:00	17:00	14:00		15:00
Vol.	18	682	84	4	25	7	1	7	2	1	2	1		740
Total		18273	1760	58	523	78	4	96	12	9	5	2	0	20983

Commonwealth Avenue (Route 30) WB  
 east of Lake Street  
 City, State: Brighton, MA  
 Client: VHB / S. Mandzo-Prelidic



PRECISION  
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 INDUSTRIES, LLC

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 Office: 508.481.3999 Fax: 508.545.1234  
 Email: datarequests@pdillc.com

154431 B WB Speed  
 Site Code: 10039.00  
 Date Start: 05-May-15

WB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
05/05/																
15	0	3	5	21	19	9	5	2	0	0	0	0	0	64	37	31
01:00	0	0	3	20	28	6	6	0	0	0	0	0	0	63	36	31
02:00	1	2	3	8	8	0	1	1	0	0	0	0	0	24	33	28
03:00	1	0	2	7	6	6	1	1	0	0	0	0	0	24	37	31
04:00	0	0	2	10	6	4	3	2	1	0	0	0	0	28	42	33
05:00	1	2	9	15	28	26	4	1	0	0	0	0	0	86	37	32
06:00	0	3	22	80	134	50	11	0	0	0	0	0	0	300	35	31
07:00	18	44	114	266	213	54	6	2	0	0	0	0	0	717	32	28
08:00	14	49	157	339	174	28	5	0	0	0	0	0	0	766	31	27
09:00	3	11	109	281	179	39	5	0	0	0	0	0	0	627	32	28
10:00	1	6	46	183	182	50	6	3	0	0	0	0	0	477	33	30
11:00	0	10	61	186	193	53	8	0	0	0	0	0	0	511	33	29
12 PM	2	14	79	245	182	53	11	1	0	0	0	0	0	587	33	29
13:00	3	13	68	203	212	60	14	0	0	0	0	0	0	573	33	29
14:00	1	15	76	274	211	83	13	0	1	0	0	0	0	674	33	29
15:00	18	35	150	292	223	48	11	2	0	0	0	0	0	779	32	27
16:00	56	90	233	252	144	30	4	0	0	0	0	0	0	809	30	24
17:00	184	80	258	172	75	13	6	0	0	0	0	0	0	788	28	21
18:00	27	51	162	246	204	38	3	0	0	0	0	0	0	731	32	26
19:00	9	32	115	225	194	54	8	1	0	0	0	0	0	638	33	28
20:00	2	3	40	174	140	46	3	0	0	0	0	0	0	408	33	29
21:00	0	5	31	100	156	45	13	0	0	0	0	0	0	350	34	30
22:00	2	2	21	98	128	40	9	1	0	0	0	0	0	301	34	30
23:00	1	5	30	64	68	24	1	2	0	0	0	0	0	195	33	29
Total	344	475	1796	3761	3107	859	157	19	2	0	0	0	0	10520		
%	3.3%	4.5%	17.1%	35.8%	29.5%	8.2%	1.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	08:00	08:00	08:00	07:00	07:00	06:00	00:00	04:00					08:00		
Vol.	18	49	157	339	213	54	11	2	1					766		
Midda y Peak	13:00	14:00	12:00	14:00	13:00	14:00	13:00	12:00	14:00					14:00		
Vol.	3	15	79	274	212	83	14	1	1					674		
PM Peak	17:00	16:00	17:00	15:00	15:00	19:00	21:00	15:00						16:00		
Vol.	184	90	258	292	223	54	13	2						809		
% ile			15th Percentile :			21 MPH										
			50th Percentile :			27 MPH										
			85th Percentile :			33 MPH										
			95th Percentile :			36 MPH										

Stats 10 MPH Pace Speed : 25-34 MPH  
 Number in Pace : 6868  
 Percent in Pace : 65.3%  
 Number of Vehicles > 30 MPH : 3523  
 Percent of Vehicles > 30 MPH : 33.5%  
 Mean Speed(Average) : 28 MPH

Commonwealth Avenue (Route 30) WB  
 east of Lake Street  
 City, State: Brighton, MA  
 Client: VHB / S. Mandzo-Prelidzic



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154431 B WB Speed  
 Site Code: 10039.00  
 Date Start: 05-May-15

WB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th % ile	Ave Speed
05/06/																
15	0	0	11	38	51	13	7	2	0	1	0	0	0	123	35	31
01:00	0	0	4	25	36	14	2	0	1	0	0	0	0	82	35	31
02:00	0	0	2	5	21	11	3	0	0	0	0	0	0	42	37	33
03:00	0	0	3	7	12	4	1	0	0	0	0	0	0	27	35	31
04:00	0	0	3	13	13	2	3	0	0	0	0	0	0	34	33	30
05:00	2	2	5	14	48	20	4	1	0	0	0	0	0	96	36	32
06:00	1	2	23	89	130	73	10	1	0	0	0	0	0	329	36	31
07:00	6	20	92	316	269	63	10	0	1	0	0	0	0	777	33	29
08:00	8	20	141	283	234	53	4	1	0	0	0	0	0	744	32	28
09:00	5	10	58	225	207	58	8	0	0	0	0	0	0	571	33	29
10:00	3	13	56	173	170	64	5	1	0	0	0	0	0	485	33	29
11:00	2	16	80	213	206	70	3	0	0	0	0	0	0	590	33	29
12 PM	4	17	88	222	199	60	10	1	0	0	0	0	0	601	33	29
13:00	7	17	62	186	254	69	16	1	0	0	0	0	0	612	33	30
14:00	4	20	83	209	248	80	10	1	0	0	0	0	0	655	33	29
15:00	6	21	108	299	232	67	6	1	0	0	0	0	0	740	33	28
16:00	168	125	270	90	40	6	1	0	0	0	0	0	0	700	25	19
17:00	304	103	253	4	1	0	0	0	0	0	0	0	0	665	22	15
18:00	30	66	142	261	188	47	5	1	0	0	0	0	0	740	32	26
19:00	0	6	60	186	220	68	10	1	0	0	0	0	0	551	33	30
20:00	0	4	42	161	174	50	10	2	0	0	0	0	0	443	33	30
21:00	0	1	28	117	135	56	7	0	0	0	0	0	0	344	35	30
22:00	0	1	26	103	118	43	8	0	0	0	0	0	0	299	34	30
23:00	0	1	21	70	79	35	7	0	0	0	0	0	0	213	35	30
Total	550	465	1661	3309	3285	1026	150	14	2	1	0	0	0	10463		
%	5.3%	4.4%	15.9%	31.6%	31.4%	9.8%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	07:00	08:00	07:00	07:00	06:00	06:00	00:00	01:00	00:00				07:00		
Vol.	8	20	141	316	269	73	10	2	1	1				777		
Midda y Peak	13:00	14:00	12:00	12:00	13:00	14:00	13:00	12:00						14:00		
Vol.	7	20	88	222	254	80	16	1						655		
PM Peak	17:00	16:00	16:00	15:00	15:00	19:00	19:00	20:00						15:00		
Vol.	304	125	270	299	232	68	10	2						740		
% ile			15th Percentile :			20 MPH										
			50th Percentile :			27 MPH										
			85th Percentile :			33 MPH										
			95th Percentile :			37 MPH										

Stats      10 MPH Pace Speed :      25-34 MPH  
 Number in Pace :      6594  
 Percent in Pace :      63.0%  
 Number of Vehicles > 30 MPH :      3821  
 Percent of Vehicles > 30 MPH :      36.5%  
 Mean Speed(Average) :      28 MPH

Commonwealth Avenue (Route 30) WB  
east of Lake Street  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



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154431 B WB Volume  
Site Code: 10039.00  
Date Start: 05-May-15

Start	WB														Tue 05-May- 15
Time	A.M.		P.M.												
12:00	19		149												
12:15	19		141												
12:30	13		149												
12:45	13	64	148	587											
01:00	26		149												
01:15	17		146												
01:30	9		143												
01:45	11	63	135	573											
02:00	8		162												
02:15	8		157												
02:30	2		176												
02:45	6	24	179	674											
03:00	11		201												
03:15	3		196												
03:30	5		180												
03:45	5	24	202	779											
04:00	6		180												
04:15	1		211												
04:30	10		201												
04:45	11	28	217	809											
05:00	12		229												
05:15	21		155												
05:30	18		194												
05:45	35	86	210	788											
06:00	41		189												
06:15	57		180												
06:30	96		178												
06:45	106	300	184	731											
07:00	132		174												
07:15	176		150												
07:30	196		165												
07:45	213	717	149	638											
08:00	174		112												
08:15	195		96												
08:30	199		110												
08:45	198	766	90	408											
09:00	163		106												
09:15	147		78												
09:30	159		89												
09:45	158	627	77	350											
10:00	127		84												
10:15	109		98												
10:30	120		60												
10:45	121	477	59	301											
11:00	126		47												
11:15	114		43												
11:30	114		55												
11:45	157	511	50	195											
Total	3687		6833												
Percent			100.0%		0.0%				0.0%						
Day Total		10520													
Peak	07:45	-	04:15	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	781	-	858	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.917		0.937												



Commonwealth Avenue (Route 30) WB  
east of Lake Street  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



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154431 B WB Volume  
Site Code: 10039.00  
Date Start: 05-May-15

Start	WB												Wed	
Time	A.M.			P.M.									06-May-	
													15	
12:00	32			160										
12:15	31			148										
12:30	31			129										
12:45	29	123		164	601									
01:00	21			137										
01:15	22			144										
01:30	23			173										
01:45	16	82		158	612									
02:00	14			149										
02:15	15			163										
02:30	6			155										
02:45	7	42		188	655									
03:00	4			182										
03:15	7			200										
03:30	6			191										
03:45	10	27		167	740									
04:00	9			222										
04:15	10			188										
04:30	8			149										
04:45	7	34		141	700									
05:00	12			154										
05:15	19			163										
05:30	25			171										
05:45	40	96		177	665									
06:00	51			203										
06:15	63			198										
06:30	85			177										
06:45	130	329		162	740									
07:00	152			139										
07:15	178			145										
07:30	219			141										
07:45	228	777		126	551									
08:00	178			121										
08:15	207			106										
08:30	179			115										
08:45	180	744		101	443									
09:00	149			102										
09:15	144			80										
09:30	142			92										
09:45	136	571		70	344									
10:00	113			90										
10:15	136			83										
10:30	119			67										
10:45	117	485		59	299									
11:00	120			84										
11:15	157			59										
11:30	137			44										
11:45	176	590		26	213									
Total	3900			6563										
Percent				100.0%	0.0%	0.0%								
Day Total				10463										
Peak	07:30	-	03:15	-	-	-	-	-	-	-	-	-	-	-
Vol.	832	-	780	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.912		0.878											

St. Thomas More Road  
north of Walsh Hall Driveway  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



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154431 C Class  
Site Code: 10039.00  
Date Start: 05-May-15

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/05/1														
5	0	17	3	0	0	0	0	0	0	0	0	0	0	20
01:00	0	8	3	0	0	0	0	0	0	0	0	0	0	11
02:00	0	6	3	0	0	0	0	0	0	0	0	0	0	9
03:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
04:00	0	4	4	0	0	0	0	0	0	0	0	0	0	8
05:00	0	11	7	0	0	0	0	0	0	0	0	0	0	18
06:00	1	42	13	0	2	1	0	0	0	0	0	0	0	59
07:00	0	91	24	0	5	2	0	0	0	0	0	0	0	122
08:00	1	124	15	3	7	0	0	1	0	0	0	0	0	151
09:00	1	100	14	3	4	1	0	1	0	0	0	0	0	124
10:00	3	85	12	0	8	1	0	0	0	0	0	0	0	109
11:00	0	84	21	0	6	0	0	0	0	0	0	0	0	111
12 PM	2	111	28	0	4	2	0	0	0	0	0	0	0	147
13:00	0	110	21	0	8	0	0	0	0	0	0	0	0	139
14:00	0	127	17	0	5	0	0	0	0	0	0	0	0	149
15:00	1	139	24	0	4	1	0	0	0	0	0	0	0	169
16:00	2	113	21	0	6	0	0	0	0	0	0	0	0	142
17:00	2	120	9	0	8	2	0	0	0	0	0	0	0	141
18:00	1	136	10	0	2	0	0	0	0	0	0	0	0	149
19:00	1	98	7	0	0	0	0	0	0	0	0	0	0	106
20:00	2	83	6	0	1	1	0	0	0	0	0	0	0	93
21:00	1	49	6	0	0	0	0	0	0	0	0	0	0	56
22:00	1	42	5	0	2	0	0	0	0	0	0	0	0	50
23:00	0	44	4	0	2	0	0	0	0	0	0	0	0	50
Total	19	1746	279	6	74	11	0	2	0	0	0	0	0	2137
Percent	0.9%	81.7%	13.1%	0.3%	3.5%	0.5%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	08:00	07:00	08:00	10:00	07:00		08:00						08:00
Vol.	3	124	24	3	8	2		1						151
PM Peak	12:00	15:00	12:00		13:00	12:00								15:00
Vol.	2	139	28		8	2								169

St. Thomas More Road  
north of Walsh Hall Driveway  
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Client: VHB / S. Mandzo-Prelidzic



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154431 C Class  
Site Code: 10039.00  
Date Start: 05-May-15

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/06/1														
5	3	28	4	0	0	0	0	0	0	0	0	0	0	35
01:00	0	13	0	0	0	0	0	0	0	0	0	0	0	13
02:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
03:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
04:00	0	5	3	0	0	0	0	0	0	0	0	0	0	8
05:00	0	13	6	0	0	0	0	0	0	0	0	0	0	19
06:00	1	44	13	0	2	1	0	0	0	0	0	0	0	61
07:00	1	97	18	0	4	0	0	1	0	0	0	0	0	121
08:00	1	114	12	1	7	1	0	1	0	0	0	0	0	137
09:00	1	104	14	0	4	2	0	0	0	0	0	0	0	125
10:00	1	85	12	0	3	2	0	0	0	0	0	0	0	103
11:00	1	104	19	1	5	1	0	1	0	0	0	0	0	132
12 PM	2	123	22	0	5	1	0	0	0	0	0	0	0	153
13:00	3	115	11	0	9	2	0	1	0	0	0	0	0	141
14:00	0	117	26	0	5	0	0	0	0	0	0	0	0	148
15:00	2	131	18	0	4	1	0	0	0	0	0	0	0	156
16:00	2	101	18	0	5	2	0	0	0	0	0	0	0	128
17:00	1	126	8	0	6	0	0	0	0	0	0	0	0	141
18:00	1	144	10	0	4	1	0	0	0	0	0	0	0	160
19:00	1	88	6	0	1	1	0	0	0	0	0	0	0	97
20:00	2	70	4	0	2	1	0	0	0	0	0	0	0	79
21:00	0	74	6	0	1	2	0	0	0	0	0	0	0	83
22:00	2	48	4	0	2	0	0	0	0	0	0	0	0	56
23:00	2	49	3	0	0	0	0	0	0	0	0	0	0	54
Total	27	1804	239	2	69	18	0	4	0	0	0	0	0	2163
Percent	1.2%	83.4%	11.0%	0.1%	3.2%	0.8%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	00:00	08:00	11:00	08:00	08:00	09:00		07:00						08:00
Vol.	3	114	19	1	7	2		1						137
PM Peak	13:00	18:00	14:00		13:00	13:00		13:00						18:00
Vol.	3	144	26		9	2		1						160
Total		3550	518	8	143	29	0	6	0	0	0	0	0	4300

St. Thomas More Road  
north of Walsh Hall Driveway  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 C Class  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/05/1														
5	0	45	4	0	0	0	0	0	0	0	0	0	0	49
01:00	0	24	4	0	0	0	0	0	0	0	0	0	0	28
02:00	0	20	0	0	1	0	0	0	0	0	0	0	0	21
03:00	0	12	2	0	0	0	0	0	0	0	0	0	0	14
04:00	0	10	3	0	0	0	0	0	0	0	0	0	0	13
05:00	0	48	12	0	1	0	0	0	0	0	0	0	0	61
06:00	0	121	34	0	3	1	0	0	0	0	0	0	0	159
07:00	5	277	41	1	10	1	0	0	0	0	0	0	0	335
08:00	3	362	36	0	11	4	0	0	0	0	0	0	0	416
09:00	1	265	33	0	14	3	0	0	0	0	0	0	0	316
10:00	1	184	23	2	18	2	0	0	0	0	0	0	0	230
11:00	1	227	23	1	17	0	0	1	1	0	0	0	0	271
12 PM	2	277	27	0	12	1	0	0	0	0	0	0	0	319
13:00	0	261	34	2	19	1	0	1	0	0	0	0	0	318
14:00	0	306	31	1	13	1	0	1	0	0	0	0	0	353
15:00	4	350	40	2	12	1	0	0	0	0	0	0	0	409
16:00	2	461	32	0	17	0	0	1	0	0	0	0	0	513
17:00	4	483	18	0	5	0	0	0	0	0	0	0	0	510
18:00	2	366	21	0	2	2	0	1	0	0	0	0	0	394
19:00	0	276	10	0	4	0	0	0	0	0	0	0	0	290
20:00	3	191	7	0	2	1	0	0	0	0	0	0	0	204
21:00	4	195	5	0	2	0	0	0	0	0	0	0	0	206
22:00	3	134	7	0	1	1	0	0	0	0	0	0	0	146
23:00	1	78	2	0	2	0	0	0	0	0	0	0	0	83
Total	36	4973	449	9	166	19	0	5	1	0	0	0	0	5658
Percent	0.6%	87.9%	7.9%	0.2%	2.9%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	07:00	10:00	10:00	08:00		11:00	11:00					08:00
Vol.	5	362	41	2	18	4		1	1					416
PM Peak	15:00	17:00	15:00	13:00	13:00	18:00		13:00						16:00
Vol.	4	483	40	2	19	2		1						513



St. Thomas More Road  
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154431 C Class  
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NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
05/06/1														
5	3	55	4	0	0	0	0	0	0	0	0	0	0	62
01:00	2	43	4	0	1	0	0	0	0	0	0	0	0	50
02:00	3	18	1	0	1	1	0	0	0	0	0	0	0	24
03:00	0	18	0	0	0	0	0	0	0	0	0	0	0	18
04:00	0	21	6	0	0	0	0	0	0	0	0	0	0	27
05:00	1	51	8	0	1	0	0	0	0	0	0	0	0	61
06:00	3	124	40	1	1	1	0	0	0	0	0	0	0	170
07:00	4	278	33	1	9	3	0	1	0	0	0	0	0	329
08:00	3	360	32	1	15	1	0	0	0	0	0	0	0	412
09:00	1	220	29	2	14	1	0	1	0	0	0	0	0	268
10:00	2	207	37	1	13	2	0	1	0	0	0	0	0	263
11:00	4	196	28	0	15	0	0	0	0	0	0	0	0	243
12 PM	2	243	35	0	17	2	0	0	0	0	0	0	0	299
13:00	4	285	25	1	19	1	0	0	0	0	0	0	0	335
14:00	1	308	32	1	12	1	0	0	0	0	0	0	0	355
15:00	1	314	39	0	13	0	0	0	0	0	0	0	0	367
16:00	3	405	24	0	13	0	0	0	0	0	0	0	0	445
17:00	3	503	26	0	4	0	0	1	0	0	0	0	0	537
18:00	3	354	15	0	4	1	0	1	0	0	0	0	0	378
19:00	4	282	6	0	2	0	0	0	0	0	0	0	0	294
20:00	0	249	15	1	4	0	0	0	0	0	0	0	0	269
21:00	1	167	8	0	2	0	0	0	0	0	0	0	0	178
22:00	1	176	17	0	3	0	0	0	0	0	0	0	0	197
23:00	0	95	6	0	1	1	0	0	0	0	0	0	0	103
Total	49	4972	470	9	164	15	0	5	0	0	0	0	0	5684
Percent	0.9%	87.5%	8.3%	0.2%	2.9%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	06:00	09:00	08:00	07:00		07:00						08:00
Vol.	4	360	40	2	15	3		1						412
PM Peak	13:00	17:00	15:00	13:00	13:00	12:00		17:00						17:00
Vol.	4	503	39	1	19	2		1						537
Total		9945	919	18	330	34	0	10	1	0	0	0	0	11342

St. Thomas More Road  
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154431 C Speed  
Site Code: 10039.00  
Date Start: 05-May-15

SB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th % ile	Ave Speed
05/05/																
15	0	1	2	5	5	6	1	0	0	0	0	0	0	20	37	31
01:00	0	0	0	2	4	4	0	0	0	1	0	0	0	11	38	35
02:00	0	0	1	3	5	0	0	0	0	0	0	0	0	9	32	29
03:00	0	0	0	1	3	0	0	0	0	0	0	0	0	4	33	31
04:00	1	0	3	1	1	2	0	0	0	0	0	0	0	8	36	26
05:00	0	2	2	3	5	5	1	0	0	0	0	0	0	18	37	30
06:00	2	4	6	17	20	8	2	0	0	0	0	0	0	59	34	29
07:00	0	5	9	54	47	7	0	0	0	0	0	0	0	122	32	29
08:00	0	4	26	63	50	8	0	0	0	0	0	0	0	151	32	28
09:00	0	3	13	57	43	8	0	0	0	0	0	0	0	124	32	29
10:00	0	3	10	41	44	10	1	0	0	0	0	0	0	109	33	29
11:00	0	9	10	48	31	13	0	0	0	0	0	0	0	111	33	28
12 PM	0	2	15	67	51	12	0	0	0	0	0	0	0	147	33	29
13:00	2	2	12	40	57	23	2	1	0	0	0	0	0	139	35	30
14:00	0	6	8	50	62	19	3	1	0	0	0	0	0	149	34	30
15:00	2	11	15	50	63	25	3	0	0	0	0	0	0	169	34	29
16:00	1	5	4	42	70	19	1	0	0	0	0	0	0	142	33	30
17:00	0	6	5	47	63	19	0	1	0	0	0	0	0	141	33	30
18:00	4	6	11	41	58	25	2	2	0	0	0	0	0	149	35	30
19:00	2	5	7	35	38	17	2	0	0	0	0	0	0	106	34	30
20:00	2	4	15	32	30	9	1	0	0	0	0	0	0	93	33	28
21:00	2	3	7	20	20	4	0	0	0	0	0	0	0	56	32	28
22:00	0	6	14	10	16	4	0	0	0	0	0	0	0	50	32	27
23:00	1	4	5	11	17	11	1	0	0	0	0	0	0	50	36	30
Total	19	91	200	740	803	258	20	5	0	1	0	0	0	2137		
%	0.9%	4.3%	9.4%	34.6%	37.6%	12.1%	0.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	06:00	07:00	08:00	08:00	08:00	06:00	06:00			01:00				08:00		
Vol.	2	5	26	63	50	8	2			1				151		
Midda y Peak	13:00	11:00	12:00	12:00	14:00	13:00	14:00	13:00						14:00		
Vol.	2	9	15	67	62	23	3	1						149		
PM Peak	18:00	15:00	15:00	15:00	16:00	15:00	15:00	18:00						15:00		
Vol.	4	11	15	50	70	25	3	2						169		
% ile				15th Percentile :		24 MPH										
				50th Percentile :		29 MPH										
				85th Percentile :		33 MPH										
				95th Percentile :		37 MPH										

Stats      10 MPH Pace Speed :      25-34 MPH  
                  Number in Pace :      1543  
                  Percent in Pace :      72.2%  
          Number of Vehicles > 30 MPH :      926  
          Percent of Vehicles > 30 MPH :      43.4%  
          Mean Speed(Average) :      29 MPH

St. Thomas More Road  
north of Walsh Hall Driveway  
City, State: Brighton, MA  
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PRECISION  
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154431 C Speed  
Site Code: 10039.00  
Date Start: 05-May-15

SB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th % ile	Ave Speed
05/06/																
15	<b>1</b>	<b>8</b>	1	7	11	2	2	<b>1</b>	0	<b>2</b>	0	0	0	35	38	29
01:00	0	1	0	3	5	4	0	0	0	0	0	0	0	13	36	31
02:00	1	1	0	4	1	0	1	0	0	0	0	0	0	8	32	26
03:00	0	1	0	2	2	0	0	0	0	0	0	0	0	5	32	27
04:00	0	2	2	2	1	1	0	0	0	0	0	0	0	8	32	25
05:00	0	1	1	3	6	8	0	0	0	0	0	0	0	19	37	32
06:00	0	3	<b>9</b>	25	16	<b>6</b>	1	1	0	0	0	0	0	61	33	29
07:00	1	1	5	30	66	<b>16</b>	2	0	0	0	0	0	0	121	33	31
08:00	1	4	5	<b>42</b>	68	14	<b>3</b>	0	0	0	0	0	0	<b>137</b>	33	30
09:00	0	4	5	28	<b>71</b>	15	2	0	0	0	0	0	0	125	33	31
10:00	0	2	13	32	32	24	0	0	0	0	0	0	0	103	35	30
11:00	0	<b>7</b>	<b>20</b>	38	55	11	1	0	0	0	0	0	0	132	33	29
12 PM	1	5	12	<b>49</b>	63	19	<b>3</b>	<b>1</b>	0	0	0	0	0	<b>153</b>	34	30
13:00	1	4	15	29	<b>72</b>	17	2	0	<b>1</b>	0	0	0	0	141	33	30
14:00	<b>5</b>	2	12	42	61	<b>22</b>	3	1	0	0	0	0	0	148	34	30
15:00	3	6	<b>14</b>	<b>57</b>	55	19	2	0	0	0	0	0	0	156	33	29
16:00	1	2	3	36	54	<b>28</b>	<b>3</b>	<b>1</b>	0	0	0	0	0	128	36	31
17:00	3	2	11	54	55	16	0	0	0	0	0	0	0	141	33	29
18:00	3	<b>12</b>	8	44	<b>65</b>	26	2	0	0	0	0	0	0	<b>160</b>	34	29
19:00	<b>4</b>	6	11	30	37	8	1	0	0	0	0	0	0	97	33	28
20:00	2	7	8	29	23	8	1	1	0	0	0	0	0	79	33	28
21:00	2	7	4	31	30	7	2	0	0	0	0	0	0	83	33	28
22:00	1	6	8	18	16	6	1	0	0	0	0	0	0	56	33	28
23:00	0	3	4	15	23	9	0	0	0	0	0	0	0	54	34	30
Total	30	97	171	650	888	286	32	6	1	2	0	0	0	2163		
%	1.4%	4.5%	7.9%	30.1%	41.1%	13.2%	1.5%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%			
AM Peak	00:00	00:00	06:00	08:00	09:00	07:00	08:00	00:00		00:00				08:00		
Vol.	1	8	9	42	71	16	3	1		2				137		
Midda y Peak	14:00	11:00	11:00	12:00	13:00	14:00	12:00	12:00	13:00					12:00		
Vol.	5	7	20	49	72	22	3	1	1					153		
PM Peak	19:00	18:00	15:00	15:00	18:00	16:00	16:00	16:00						18:00		
Vol.	4	12	14	57	65	28	3	1						160		
% ile				15th Percentile :		24 MPH										
				50th Percentile :		29 MPH										
				85th Percentile :		34 MPH										
				95th Percentile :		37 MPH										

Stats      10 MPH Pace Speed :      25-34 MPH  
                  Number in Pace :      1538  
                  Percent in Pace :      71.1%  
          Number of Vehicles > 30 MPH :      1037  
          Percent of Vehicles > 30 MPH :      48.0%  
          Mean Speed(Average) :      30 MPH

St. Thomas More Road  
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154431 C Speed  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
05/05/																
15	2	1	6	25	13	2	0	0	0	0	0	0	0	49	31	27
01:00	0	3	3	12	9	1	0	0	0	0	0	0	0	28	32	27
02:00	0	1	2	11	7	0	0	0	0	0	0	0	0	21	31	28
03:00	0	1	3	6	1	1	1	1	0	0	0	0	0	14	38	29
04:00	0	1	0	3	4	4	1	0	0	0	0	0	0	13	37	32
05:00	0	4	3	15	23	13	3	0	0	0	0	0	0	61	36	31
06:00	1	10	34	68	41	5	0	0	0	0	0	0	0	159	31	27
07:00	6	12	97	169	50	1	0	0	0	0	0	0	0	335	29	26
08:00	7	12	124	214	57	2	0	0	0	0	0	0	0	416	28	26
09:00	3	19	75	170	45	4	0	0	0	0	0	0	0	316	29	26
10:00	1	7	57	117	41	7	0	0	0	0	0	0	0	230	30	27
11:00	2	21	60	134	51	3	0	0	0	0	0	0	0	271	30	26
12 PM	1	26	94	158	37	3	0	0	0	0	0	0	0	319	28	25
13:00	0	10	54	165	78	11	0	0	0	0	0	0	0	318	31	27
14:00	1	8	67	162	99	16	0	0	0	0	0	0	0	353	32	28
15:00	5	7	57	206	119	14	1	0	0	0	0	0	0	409	32	28
16:00	1	4	42	273	178	15	0	0	0	0	0	0	0	513	32	29
17:00	0	14	59	283	147	6	1	0	0	0	0	0	0	510	31	28
18:00	2	8	42	206	120	16	0	0	0	0	0	0	0	394	32	28
19:00	1	7	37	154	84	7	0	0	0	0	0	0	0	290	31	28
20:00	0	5	15	115	65	4	0	0	0	0	0	0	0	204	31	28
21:00	2	8	27	88	69	10	1	1	0	0	0	0	0	206	32	28
22:00	1	12	21	63	40	7	2	0	0	0	0	0	0	146	32	27
23:00	0	10	9	36	25	3	0	0	0	0	0	0	0	83	32	27
Total	36	211	988	2853	1403	155	10	2	0	0	0	0	0	5658		
%	0.6%	3.7%	17.5%	50.4%	24.8%	2.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	09:00	08:00	08:00	08:00	05:00	05:00	03:00						08:00		
Vol.	7	19	124	214	57	13	3	1						416		
Midda y Peak	11:00	12:00	12:00	13:00	14:00	14:00								14:00		
Vol.	2	26	94	165	99	16								353		
PM Peak	15:00	17:00	17:00	17:00	16:00	18:00	22:00	21:00						16:00		
Vol.	5	14	59	283	178	16	2	1						513		
% ile				15th Percentile :			22 MPH									
				50th Percentile :			26 MPH									
				85th Percentile :			31 MPH									
				95th Percentile :			33 MPH									

Stats      10 MPH Pace Speed :      25-34 MPH  
                                  Number in Pace :      4256  
                                  Percent in Pace :      75.2%  
                  Number of Vehicles > 30 MPH :      1289  
                  Percent of Vehicles > 30 MPH :      22.8%  
                  Mean Speed(Average) :      27 MPH

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154431 C Speed  
Site Code: 10039.00  
Date Start: 05-May-15

NB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th % ile	Ave Speed
05/06/																
15	0	10	13	20	16	3	0	0	0	0	0	0	0	62	32	26
01:00	1	1	7	25	11	4	1	0	0	0	0	0	0	50	32	28
02:00	1	1	2	10	10	0	0	0	0	0	0	0	0	24	32	27
03:00	0	1	2	9	4	2	0	0	0	0	0	0	0	18	33	28
04:00	0	1	3	8	8	5	1	1	0	0	0	0	0	27	36	31
05:00	0	2	4	17	25	11	2	0	0	0	0	0	0	61	35	31
06:00	3	10	24	81	46	6	0	0	0	0	0	0	0	170	31	27
07:00	2	11	28	164	108	16	0	0	0	0	0	0	0	329	32	28
08:00	2	6	54	197	142	10	1	0	0	0	0	0	0	412	32	28
09:00	1	5	32	135	77	14	3	1	0	0	0	0	0	268	32	28
10:00	4	4	36	128	80	11	0	0	0	0	0	0	0	263	32	28
11:00	0	10	29	122	67	15	0	0	0	0	0	0	0	243	32	28
12 PM	1	6	62	156	71	3	0	0	0	0	0	0	0	299	31	27
13:00	1	7	53	167	99	8	0	0	0	0	0	0	0	335	31	28
14:00	0	18	46	181	101	7	2	0	0	0	0	0	0	355	31	28
15:00	1	12	72	162	108	12	0	0	0	0	0	0	0	367	32	27
16:00	0	3	63	230	141	8	0	0	0	0	0	0	0	445	31	28
17:00	117	52	108	174	78	8	0	0	0	0	0	0	0	537	29	22
18:00	0	9	30	193	137	8	0	1	0	0	0	0	0	378	32	28
19:00	2	12	41	145	83	11	0	0	0	0	0	0	0	294	32	28
20:00	3	12	36	149	63	5	0	1	0	0	0	0	0	269	31	27
21:00	0	4	24	97	51	2	0	0	0	0	0	0	0	178	31	28
22:00	1	7	35	98	48	8	0	0	0	0	0	0	0	197	31	27
23:00	1	3	10	46	36	6	1	0	0	0	0	0	0	103	32	29
Total	141	207	814	2714	1610	183	11	4	0	0	0	0	0	5684		
%	2.5%	3.6%	14.3%	47.7%	28.3%	3.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	06:00	07:00	08:00	08:00	08:00	07:00	09:00	04:00						08:00		
Vol.	3	11	54	197	142	16	3	1						412		
Midda y Peak	12:00	14:00	12:00	14:00	14:00	11:00	14:00							14:00		
Vol.	1	18	62	181	101	15	2							355		
PM Peak	17:00	17:00	17:00	16:00	16:00	15:00	23:00	18:00						17:00		
Vol.	117	52	108	230	141	12	1	1						537		
% ile			15th Percentile :			22 MPH										
			50th Percentile :			27 MPH										
			85th Percentile :			31 MPH										
			95th Percentile :			33 MPH										

Stats      10 MPH Pace Speed :      25-34 MPH  
                  Number in Pace :      4324  
                  Percent in Pace :      76.1%  
          Number of Vehicles > 30 MPH :      1486  
          Percent of Vehicles > 30 MPH :      26.1%  
          Mean Speed(Average) :      27 MPH



St. Thomas More Road  
north of Walsh Hall Driveway  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidic



PRECISION  
D A T A  
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

154431 C Volume  
Site Code: 10039.00  
Date Start: 05-May-15

Start	SB				NB				Combin ed		05-May- 15 Tue		
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		
12:00	6		44		25		92		31		136		
12:15	3		33		7		70		10		103		
12:30	9		33		9		75		18		108		
12:45	2	20	37	147	8	49	82	319	10	69	119	466	
01:00	3		31		8		86		11		117		
01:15	6		38		9		75		15		113		
01:30	1		36		4		86		5		122		
01:45	1	11	34	139	7	28	71	318	8	39	105	457	
02:00	3		26		4		73		7		99		
02:15	4		34		3		89		7		123		
02:30	0		37		5		105		5		142		
02:45	2	9	52	149	9	21	86	353	11	30	138	502	
03:00	2		31		2		111		4		142		
03:15	0		45		5		105		5		150		
03:30	1		44		3		101		4		145		
03:45	1	4	49	169	4	14	92	409	5	18	141	578	
04:00	2		29		3		153		5		182		
04:15	1		37		3		121		4		158		
04:30	4		39		4		111		8		150		
04:45	1	8	37	142	3	13	128	513	4	21	165	655	
05:00	1		46		7		137		8		183		
05:15	5		26		12		141		17		167		
05:30	5		31		16		119		21		150		
05:45	7	18	38	141	26	61	113	510	33	79	151	651	
06:00	6		36		25		113		31		149		
06:15	21		33		30		97		51		130		
06:30	16		47		49		93		65		140		
06:45	16	59	33	149	55	159	91	394	71	218	124	543	
07:00	19		37		76		89		95		126		
07:15	25		23		91		77		116		100		
07:30	40		22		82		67		122		89		
07:45	38	122	24	106	86	335	57	290	124	457	81	396	
08:00	39		29		88		51		127		80		
08:15	44		22		104		59		148		81		
08:30	33		22		120		43		153		65		
08:45	35	151	20	93	104	416	51	204	139	567	71	297	
09:00	26		16		106		56		132		72		
09:15	33		16		86		50		119		66		
09:30	35		13		69		51		104		64		
09:45	30	124	11	56	55	316	49	206	85	440	60	262	
10:00	32		14		59		39		91		53		
10:15	25		14		52		45		77		59		
10:30	22		15		62		37		84		52		
10:45	30	109	7	50	57	230	25	146	87	339	32	196	
11:00	24		16		74		35		98		51		
11:15	24		9		58		20		82		29		
11:30	33		15		74		17		107		32		
11:45	30	111	10	50	65	271	11	83	95	382	21	133	
Total	746		1391		1913		3745		2659		5136		
Percent	28.1%		27.1%		71.9%		72.9%						
Day Total		2137				5658				7795			
Peak	07:30	-	02:45	-	08:15	-	04:45	-	08:15	-	04:30	-	
Vol.	161	-	172	-	434	-	525	-	572	-	665	-	
P.H.F.	0.915		0.827		0.904		0.931		0.935		0.908		

St. Thomas More Road  
north of Walsh Hall Driveway  
City, State: Brighton, MA  
Client: VHB / S. Mandzo-Prelidzic



PRECISION  
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154431 C Volume  
Site Code: 10039.00  
Date Start: 05-May-15

Start	SB				NB				Combin ed		06-May- 15 Wed	
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.	
12:00	14		37		14		78		28		115	
12:15	8		35		14		71		22		106	
12:30	5		37		13		82		18		119	
12:45	8	35	44	153	21	62	68	299	29	97	112	452
01:00	1		27		16		84		17		111	
01:15	4		31		11		74		15		105	
01:30	3		32		12		86		15		118	
01:45	5	13	51	141	11	50	91	335	16	63	142	476
02:00	4		33		11		89		15		122	
02:15	1		39		3		89		4		128	
02:30	2		31		5		98		7		129	
02:45	1	8	45	148	5	24	79	355	6	32	124	503
03:00	1		46		8		106		9		152	
03:15	1		42		2		87		3		129	
03:30	2		34		1		78		3		112	
03:45	1	5	34	156	7	18	96	367	8	23	130	523
04:00	2		24		3		123		5		147	
04:15	1		43		7		110		8		153	
04:30	4		26		6		92		10		118	
04:45	1	8	35	128	11	27	120	445	12	35	155	573
05:00	1		27		3		167		4		194	
05:15	2		42		8		133		10		175	
05:30	6		38		18		137		24		175	
05:45	10	19	34	141	32	61	100	537	42	80	134	678
06:00	14		46		32		100		46		146	
06:15	15		40		38		94		53		134	
06:30	14		41		51		88		65		129	
06:45	18	61	33	160	49	170	96	378	67	231	129	538
07:00	21		15		78		83		99		98	
07:15	31		24		87		76		118		100	
07:30	29		37		77		70		106		107	
07:45	40	121	21	97	87	329	65	294	127	450	86	391
08:00	30		17		94		72		124		89	
08:15	36		29		91		74		127		103	
08:30	31		17		116		58		147		75	
08:45	40	137	16	79	111	412	65	269	151	549	81	348
09:00	32		28		79		37		111		65	
09:15	33		17		59		45		92		62	
09:30	27		24		66		49		93		73	
09:45	33	125	14	83	64	268	47	178	97	393	61	261
10:00	21		13		72		72		93		85	
10:15	29		19		64		33		93		52	
10:30	28		11		68		50		96		61	
10:45	25	103	13	56	59	263	42	197	84	366	55	253
11:00	25		27		64		30		89		57	
11:15	29		14		66		28		95		42	
11:30	29		11		53		27		82		38	
11:45	49	132	2	54	60	243	18	103	109	375	20	157
Total	767		1396		1927		3757		2694		5153	
Percent	28.5%		27.1%		71.5%		72.9%					
Day Total		2163			5684				7847			
Peak	08:15	-	02:45	-	08:00	-	04:45	-	08:00	-	04:45	-
Vol.	139	-	167	-	412	-	557	-	549	-	699	-
P.H.F.	0.869		0.908		0.888		0.834		0.909		0.901	



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# **Traffic Data Collection Sheets**

## **Turning Movement Counts - May 2015**



PRECISION  
D A T A  
INDUSTRIES, LLC

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Email: datarequests@pdillc.com

N/S: Chestnut Hill Dwy/ Gate House Rd  
E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 A  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Chestnut Hill Driveway From North				Beacon Street From East				Gate House Road From South				Beacon Street From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	38	0	3	0	9	49	1	0	0	1	2	0	1	86	91	0	281
07:15 AM	51	0	4	0	24	64	0	0	5	1	0	0	2	122	92	0	365
07:30 AM	66	1	9	0	20	111	2	0	1	1	1	0	2	155	82	0	451
07:45 AM	78	2	10	0	24	135	2	0	0	1	1	0	0	157	88	0	498
Total	233	3	26	0	77	359	5	0	6	4	4	0	5	520	353	0	1595
08:00 AM	82	0	11	0	27	106	2	0	0	1	1	0	4	111	100	0	445
08:15 AM	75	0	8	0	28	116	0	0	0	1	1	0	3	133	98	0	463
08:30 AM	69	0	7	0	33	120	0	0	0	0	3	0	0	135	93	0	460
08:45 AM	68	0	4	0	27	108	1	0	0	0	0	0	2	109	91	0	410
Total	294	0	30	0	115	450	3	0	0	2	5	0	9	488	382	0	1778
Grand Total	527	3	56	0	192	809	8	0	6	6	9	0	14	1008	735	0	3373
Apprch %	89.9	0.5	9.6	0	19	80.2	0.8	0	28.6	28.6	42.9	0	0.8	57.4	41.8	0	
Total %	15.6	0.1	1.7	0	5.7	24	0.2	0	0.2	0.2	0.3	0	0.4	29.9	21.8	0	
Cars	512	3	54	0	189	804	8	0	6	6	9	0	14	992	722	0	3319
% Cars	97.2	100	96.4	0	98.4	99.4	100	0	100	100	100	0	100	98.4	98.2	0	98.4
Heavy Vehicles	15	0	2	0	3	5	0	0	0	0	0	0	0	16	13	0	54
% Heavy Vehicles	2.8	0	3.6	0	1.6	0.6	0	0	0	0	0	0	0	1.6	1.8	0	1.6

	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	78	2	10	0	90	24	135	2	0	161	0	1	1	0	2	0	157	88	0	245	498
08:00 AM	82	0	11	0	93	27	106	2	0	135	0	1	1	0	2	4	111	100	0	215	445
08:15 AM	75	0	8	0	83	28	116	0	0	144	0	1	1	0	2	3	133	98	0	234	463
08:30 AM	69	0	7	0	76	33	120	0	0	153	0	0	3	0	3	0	135	93	0	228	460
Total Volume	304	2	36	0	342	112	477	4	0	593	0	3	6	0	9	7	536	379	0	922	1866
% App. Total	88.9	0.6	10.5	0		18.9	80.4	0.7	0		0	33.3	66.7	0		0.8	58.1	41.1	0		
PHF	.927	.250	.818	.000	.919	.848	.883	.500	.000	.921	.000	.750	.500	.000	.750	.438	.854	.948	.000	.941	.937
Cars	294	2	35	0	331	110	474	4	0	588	0	3	6	0	9	7	527	374	0	908	1836
% Cars	96.7	100	97.2	0	96.8	98.2	99.4	100	0	99.2	0	100	100	0	100	100	98.3	98.7	0	98.5	98.4
Heavy Vehicles	10	0	1	0	11	2	3	0	0	5	0	0	0	0	0	0	9	5	0	14	30
% Heavy Vehicles	3.3	0	2.8	0	3.2	1.8	0.6	0	0	0.8	0	0	0	0	0	0	1.7	1.3	0	1.5	1.6



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Groups Printed- Cars

N/S: Chestnut Hill Dwy/ Gate House Rd  
E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 A  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Chestnut Hill Driveway From North				Beacon Street From East				Gate House Road From South				Beacon Street From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	36	0	2	0	8	48	1	0	0	1	2	0	1	84	89	0	272
07:15 AM	49	0	4	0	24	64	0	0	5	1	0	0	2	118	90	0	357
07:30 AM	66	1	9	0	20	111	2	0	1	1	1	0	2	155	81	0	450
07:45 AM	77	2	9	0	23	132	2	0	0	1	1	0	0	154	88	0	489
Total	228	3	24	0	75	355	5	0	6	4	4	0	5	511	348	0	1568
08:00 AM	79	0	11	0	26	106	2	0	0	1	1	0	4	110	97	0	437
08:15 AM	73	0	8	0	28	116	0	0	0	1	1	0	3	133	97	0	460
08:30 AM	65	0	7	0	33	120	0	0	0	0	3	0	0	130	92	0	450
08:45 AM	67	0	4	0	27	107	1	0	0	0	0	0	2	108	88	0	404
Total	284	0	30	0	114	449	3	0	0	2	5	0	9	481	374	0	1751
Grand Total	512	3	54	0	189	804	8	0	6	6	9	0	14	992	722	0	3319
Apprch %	90	0.5	9.5	0	18.9	80.3	0.8	0	28.6	28.6	42.9	0	0.8	57.4	41.8	0	
Total %	15.4	0.1	1.6	0	5.7	24.2	0.2	0	0.2	0.2	0.3	0	0.4	29.9	21.8	0	

	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	66	1	9	0	76	20	111	2	0	133	1	1	1	0	3	2	155	81	0	238	450
07:45 AM	77	2	9	0	88	23	132	2	0	157	0	1	1	0	2	0	154	88	0	242	489
08:00 AM	79	0	11	0	90	26	106	2	0	134	0	1	1	0	2	4	110	97	0	211	437
08:15 AM	73	0	8	0	81	28	116	0	0	144	0	1	1	0	2	3	133	97	0	233	460
Total Volume	295	3	37	0	335	97	465	6	0	568	1	4	4	0	9	9	552	363	0	924	1836
% App. Total	88.1	0.9	11	0		17.1	81.9	1.1	0		11.1	44.4	44.4	0		1	59.7	39.3	0		
PHF	.934	.375	.841	.000	.931	.866	.881	.750	.000	.904	.250	1.00	1.00	.000	.750	.563	.890	.936	.000	.955	.939





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Client: VHB/ S. Mandzo-Predzic

File Name : 154431 A  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Heavy Vehicles

	Chestnut Hill Driveway From North				Beacon Street From East				Gate House Road From South				Beacon Street From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	2	0	1	0	1	1	0	0	0	0	0	0	0	2	2	0	9
07:15 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	8
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	1	0	1	0	1	3	0	0	0	0	0	0	0	3	0	0	9
Total	5	0	2	0	2	4	0	0	0	0	0	0	0	9	5	0	27
08:00 AM	3	0	0	0	1	0	0	0	0	0	0	0	0	1	3	0	8
08:15 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
08:30 AM	4	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	10
08:45 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	1	3	0	6
Total	10	0	0	0	1	1	0	0	0	0	0	0	0	7	8	0	27
Grand Total	15	0	2	0	3	5	0	0	0	0	0	0	0	16	13	0	54
Apprch %	88.2	0	11.8	0	37.5	62.5	0	0	0	0	0	0	0	55.2	44.8	0	
Total %	27.8	0	3.7	0	5.6	9.3	0	0	0	0	0	0	0	29.6	24.1	0	

	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	0	3	0	0	3	9
08:00 AM	3	0	0	0	3	1	0	0	0	1	0	0	0	0	0	0	1	3	0	4	8
08:15 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
08:30 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	10
Total Volume	10	0	1	0	11	2	3	0	0	5	0	0	0	0	0	0	9	5	0	14	30
% App. Total	90.9	0	9.1	0		40	60	0	0		0	0	0	0		0	64.3	35.7	0		
PHF	.625	.000	.250	.000	.688	.500	.250	.000	.000	.313	.000	.000	.000	.000	.000	.000	.450	.417	.000	.583	.750



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Groups Printed- Peds and Bikes

File Name : 154431 A  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: Chestnut Hill Dwy/ Gate House Rd  
E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

Start Time	Chestnut Hill Driveway From North						Beacon Street From East						Gate House Road From South						Beacon Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB		Right	Thru	Left	Peds SB	Peds NB		Right	Thru	Left	Peds WB	Peds EB		Right	Thru	Left	Peds NB	Peds SB		
07:00 AM	0	0	0	1	1		1	0	0	0	0		0	0	0	1	1		0	4	0	0	0		9
07:15 AM	0	0	1	5	0		0	1	0	0	0		0	0	0	3	0		0	7	0	0	1		18
07:30 AM	0	0	0	2	2		0	1	0	0	0		0	0	0	0	1		0	9	1	0	0		16
07:45 AM	0	0	0	3	5		0	3	0	0	0		0	0	0	1	0		0	9	1	0	0		22
Total	0	0	1	11	8		1	5	0	0	0		0	0	0	5	2		0	29	2	0	1		65
08:00 AM	0	0	0	2	0		1	2	0	0	0		0	0	0	0	1		0	8	0	0	2		16
08:15 AM	0	0	0	0	2		1	1	0	0	0		0	0	0	0	1		0	2	0	0	0		7
08:30 AM	0	0	0	1	0		0	3	0	0	0		0	0	0	0	1		0	4	0	0	0		9
08:45 AM	0	0	1	1	3		1	2	0	0	0		0	0	0	2	0		0	2	0	0	0		12
Total	0	0	1	4	5		3	8	0	0	0		0	0	0	2	3		0	16	0	0	2		44
Grand Total	0	0	2	15	13		4	13	0	0	0		0	0	0	7	5		0	45	2	0	3		109
Apprch %	0	0	6.7	50	43.3		23.5	76.5	0	0	0		0	0	0	58.3	41.7		0	90	4	0	6		
Total %	0	0	1.8	13.8	11.9		3.7	11.9	0	0	0		0	0	0	6.4	4.6		0	41.3	1.8	0	2.8		

Start Time	Chestnut Hill Driveway From North						Beacon Street From East						Gate House Road From South						Beacon Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:15 AM																									
07:15 AM	0	0	1	5	0	6	0	1	0	0	0	1	0	0	0	3	0	3	0	7	0	0	1	8	18
07:30 AM	0	0	0	2	2	4	0	1	0	0	0	1	0	0	0	0	1	1	0	9	1	0	0	10	16
07:45 AM	0	0	0	3	5	8	0	3	0	0	0	3	0	0	0	1	0	1	0	9	1	0	0	10	22
08:00 AM	0	0	0	2	0	2	1	2	0	0	0	3	0	0	0	0	1	1	0	8	0	0	2	10	16
Total Volume	0	0	1	12	7	20	1	7	0	0	0	8	0	0	0	4	2	6	0	33	2	0	3	38	72
% App. Total	0	0	5	60	35		12.5	87.5	0	0	0		0	0	0	66.7	33.3		0	86.8	5.3	0	7.9		
PHF	.000	.000	.250	.600	.350	.625	.250	.583	.000	.000	.000	.667	.000	.000	.000	.333	.500	.500	.000	.917	.500	.000	.375	.950	.818



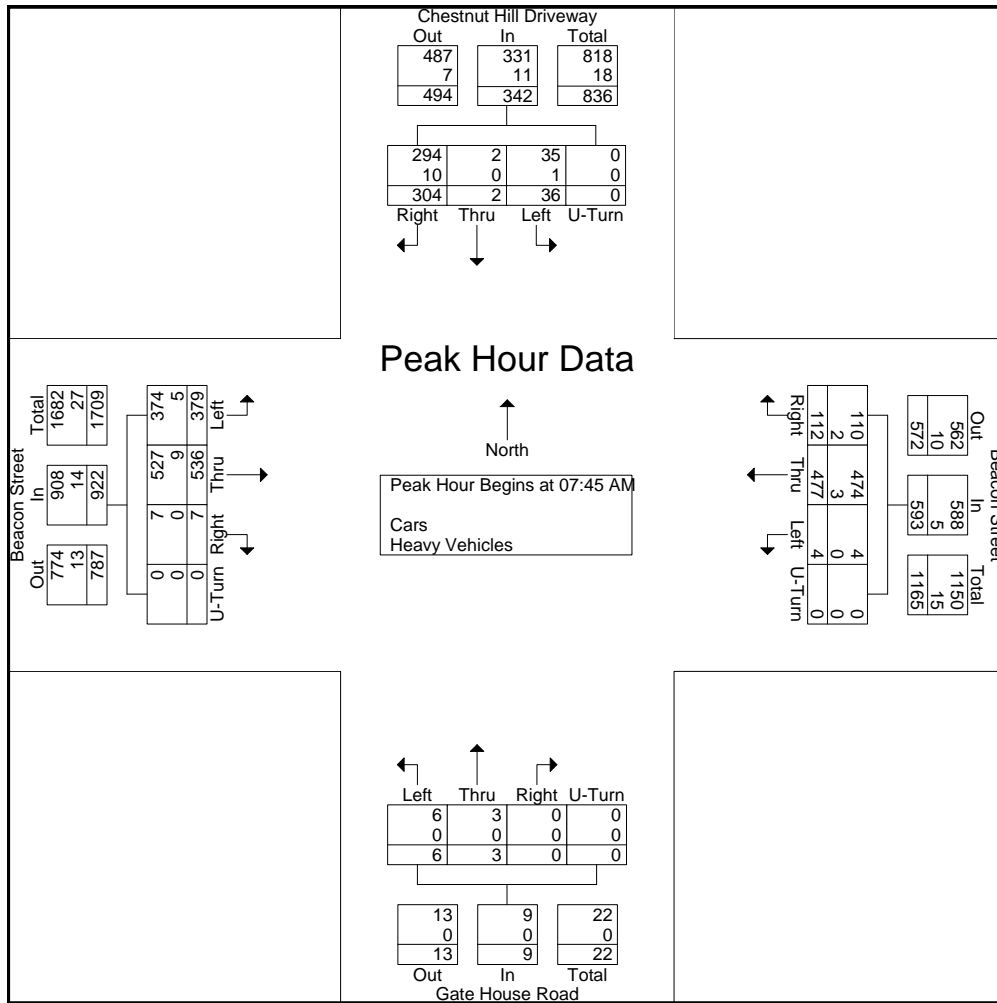
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N/S: Chestnut Hill Dwy/ Gate House Rd  
E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 A  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	78	2	10	0	90	24	135	2	0	161	0	1	1	0	2	0	157	88	0	245	498
08:00 AM	82	0	11	0	93	27	106	2	0	135	0	1	1	0	2	4	111	100	0	215	445
08:15 AM	75	0	8	0	83	28	116	0	0	144	0	1	1	0	2	3	133	98	0	234	463
08:30 AM	69	0	7	0	76	33	120	0	0	153	0	0	3	0	3	0	135	93	0	228	460
Total Volume	304	2	36	0	342	112	477	4	0	593	0	3	6	0	9	7	536	379	0	922	1866
% App. Total	88.9	0.6	10.5	0		18.9	80.4	0.7	0		0	33.3	66.7	0		0.8	58.1	41.1	0		
PHF	.927	.250	.818	.000	.919	.848	.883	.500	.000	.921	.000	.750	.500	.000	.750	.438	.854	.948	.000	.941	.937
Cars	294	2	35	0	331	110	474	4	0	588	0	3	6	0	9	7	527	374	0	908	1836
% Cars	96.7	100	97.2	0	96.8	98.2	99.4	100	0	99.2	0	100	100	0	100	100	98.3	98.7	0	98.5	98.4
Heavy Vehicles	10	0	1	0	11	2	3	0	0	5	0	0	0	0	0	0	9	5	0	14	30
% Heavy Vehicles	3.3	0	2.8	0	3.2	1.8	0.6	0	0	0.8	0	0	0	0	0	0	1.7	1.3	0	1.5	1.6





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### Groups Printed- Cars - Heavy Vehicles

[illegible]



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Groups Printed- Cars

N/S: Chestnut Hill Dwy/ Gate House Rd  
E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 AA  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Chestnut Hill Driveway From North				Beacon Street From East				Gate House Road From South				Beacon Street From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	66	0	18	0	39	92	1	0	0	2	0	0	2	98	62	0	380
04:15 PM	65	4	14	0	41	108	1	0	0	1	0	0	5	100	46	0	385
04:30 PM	65	4	21	0	40	116	2	0	1	1	2	0	0	91	62	0	405
04:45 PM	58	0	24	0	31	113	1	0	0	0	1	0	3	113	71	0	415
Total	254	8	77	0	151	429	5	0	1	4	3	0	10	402	241	0	1585
05:00 PM	86	0	20	0	26	99	2	0	2	1	0	0	2	96	66	0	400
05:15 PM	62	0	17	0	38	118	2	0	3	1	0	0	0	114	82	0	437
05:30 PM	68	0	15	0	26	111	5	0	0	2	1	0	2	138	57	0	425
05:45 PM	56	0	24	0	33	108	3	0	1	2	0	0	3	115	78	0	423
Total	272	0	76	0	123	436	12	0	6	6	1	0	7	463	283	0	1685
Grand Total	526	8	153	0	274	865	17	0	7	10	4	0	17	865	524	0	3270
Apprch %	76.6	1.2	22.3	0	23.7	74.8	1.5	0	33.3	47.6	19	0	1.2	61.5	37.3	0	
Total %	16.1	0.2	4.7	0	8.4	26.5	0.5	0	0.2	0.3	0.1	0	0.5	26.5	16	0	

	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	86	0	20	0	106	26	99	2	0	127	2	1	0	0	3	2	96	66	0	164	400
05:15 PM	62	0	17	0	79	38	118	2	0	158	3	1	0	0	4	0	114	82	0	196	437
05:30 PM	68	0	15	0	83	26	111	5	0	142	0	2	1	0	3	2	138	57	0	197	425
05:45 PM	56	0	24	0	80	33	108	3	0	144	1	2	0	0	3	3	115	78	0	196	423
Total Volume	272	0	76	0	348	123	436	12	0	571	6	6	1	0	13	7	463	283	0	753	1685
% App. Total	78.2	0	21.8	0		21.5	76.4	2.1	0		46.2	46.2	7.7	0		0.9	61.5	37.6	0		
PHF	.791	.000	.792	.000	.821	.809	.924	.600	.000	.903	.500	.750	.250	.000	.813	.583	.839	.863	.000	.956	.964





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Groups Printed- Heavy Vehicles

N/S: Chestnut Hill Dwy/ Gate House Rd  
E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 AA  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Chestnut Hill Driveway From North				Beacon Street From East				Gate House Road From South				Beacon Street From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	4
04:15 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
04:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	4
04:45 PM	2	0	0	0	0	2	0	0	0	1	0	0	0	2	0	0	7
Total	4	0	1	0	1	6	0	0	0	1	0	0	0	5	0	0	18
05:00 PM	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4
05:15 PM	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	4	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6
Total	10	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	16
Grand Total	14	0	1	0	3	10	0	0	0	1	0	0	0	5	0	0	34
Apprch %	93.3	0	6.7	0	23.1	76.9	0	0	0	100	0	0	0	100	0	0	
Total %	41.2	0	2.9	0	8.8	29.4	0	0	0	2.9	0	0	0	14.7	0	0	

	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	4
04:45 PM	2	0	0	0	2	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	7
05:00 PM	2	0	0	0	2	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
05:15 PM	2	0	0	0	2	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
Total Volume	7	0	0	0	7	3	4	0	0	7	0	1	0	0	1	0	4	0	0	4	19
% App. Total	100	0	0	0		42.9	57.1	0	0		0	100	0	0		0	100	0	0		
PHF	.875	.000	.000	.000	.875	.750	.500	.000	.000	.875	.000	.250	.000	.000	.250	.000	.500	.000	.000	.500	.679



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E/W: Beacon Street  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 AA  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	1	0	1	5	5	0	1	0	0	0	0	0	0	1	1	0	1	1	0	0	17
04:15 PM	4	0	0	4	3	1	5	0	0	0	0	0	0	1	1	0	2	0	1	0	22
04:30 PM	0	0	0	5	4	0	4	0	0	0	0	0	0	0	1	0	5	0	0	0	19
04:45 PM	0	0	0	3	2	0	3	0	0	0	0	0	0	1	0	0	1	1	0	0	11
Total	5	0	1	17	14	1	13	0	0	0	0	0	0	3	3	0	9	2	1	0	69
05:00 PM	0	0	1	9	5	0	3	0	0	0	0	0	0	0	1	0	2	0	0	0	21
05:15 PM	0	0	0	4	5	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	16
05:30 PM	0	0	0	7	1	5	7	0	0	0	0	0	0	1	1	0	6	2	0	0	30
05:45 PM	1	0	0	7	6	1	10	0	0	0	0	0	0	0	1	0	2	0	0	0	28
Total	1	0	1	27	17	6	23	0	0	0	0	0	0	3	3	0	12	2	0	0	95
Grand Total	6	0	2	44	31	7	36	0	0	0	0	0	0	6	6	0	21	4	1	0	164
Apprch %	7.2	0	2.4	53	37.3	16.3	83.7	0	0	0	0	0	0	50	50	0	80.8	15.4	3.8	0	
Total %	3.7	0	1.2	26.8	18.9	4.3	22	0	0	0	0	0	0	3.7	3.7	0	12.8	2.4	0.6	0	

Start Time	Chestnut Hill Driveway From North						Beacon Street From East						Gate House Road From South						Beacon Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	0	1	9	5	15	0	3	0	0	0	3	0	0	0	0	1	1	0	2	0	0	0	2	21
05:15 PM	0	0	0	4	5	9	0	3	0	0	0	3	0	0	0	2	0	2	0	2	0	0	0	2	16
05:30 PM	0	0	0	7	1	8	5	7	0	0	0	12	0	0	0	1	1	2	0	6	2	0	0	8	30
05:45 PM	1	0	0	7	6	14	1	10	0	0	0	11	0	0	0	0	1	1	0	2	0	0	0	2	28
Total Volume	1	0	1	27	17	46	6	23	0	0	0	29	0	0	0	3	3	6	0	12	2	0	0	14	95
% App. Total	2.2	0	2.2	58.7	37		20.7	79.3	0	0	0		0	0	0	50	50		0	85.7	14.3	0	0		
PHF	.250	.000	.250	.750	.708	.767	.300	.575	.000	.000	.000	.604	.000	.000	.000	.375	.750	.750	.000	.500	.250	.000	.000	.438	.792



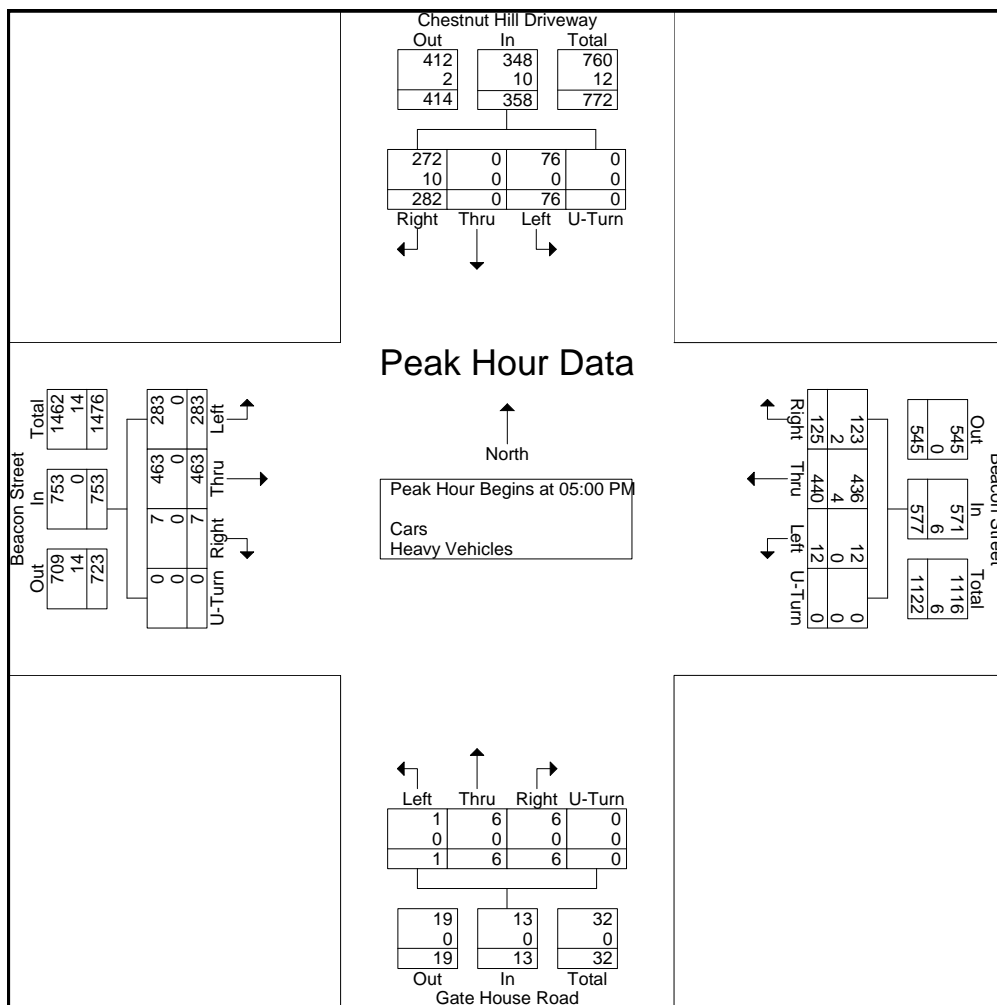
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	Chestnut Hill Driveway From North					Beacon Street From East					Gate House Road From South					Beacon Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	88	0	20	0	108	27	100	2	0	129	2	1	0	0	3	2	96	66	0	164	404
05:15 PM	64	0	17	0	81	39	119	2	0	160	3	1	0	0	4	0	114	82	0	196	441
05:30 PM	70	0	15	0	85	26	111	5	0	142	0	2	1	0	3	2	138	57	0	197	427
05:45 PM	60	0	24	0	84	33	110	3	0	146	1	2	0	0	3	3	115	78	0	196	429
Total Volume	282	0	76	0	358	125	440	12	0	577	6	6	1	0	13	7	463	283	0	753	1701
% App. Total	78.8	0	21.2	0		21.7	76.3	2.1	0		46.2	46.2	7.7	0		0.9	61.5	37.6	0		
PHF	.801	.000	.792	.000	.829	.801	.924	.600	.000	.902	.500	.750	.250	.000	.813	.583	.839	.863	.000	.956	.964
Cars	272	0	76	0	348	123	436	12	0	571	6	6	1	0	13	7	463	283	0	753	1685
% Cars	96.5	0	100	0	97.2	98.4	99.1	100	0	99.0	100	100	100	0	100	100	100	100	0	100	99.1
Heavy Vehicles	10	0	0	0	10	2	4	0	0	6	0	0	0	0	0	0	0	0	0	0	16
% Heavy Vehicles	3.5	0	0	0	2.8	1.6	0.9	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0.9





PRECISION  
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INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
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Email: datarequests@pdillc.com

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 C  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	St Thomas More Road From North				St Thomas More Road From South				More Drive From West				Fr Herlihy Drive From Northwest				Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	Thru	Bear Left	Left	U-Turn	Right	Left	Hard Left	U-Turn	Hard Right	Bear Right	Hard Left	Peds	
07:00 AM	0	19	17	0	62	0	22	0	0	0	0	0	15	6	1	0	142
07:15 AM	0	13	24	0	69	0	19	0	2	0	0	0	27	5	0	0	159
07:30 AM	0	9	30	0	71	0	12	0	1	1	0	0	15	7	1	0	147
07:45 AM	0	22	27	0	66	0	22	0	1	0	0	0	26	14	3	0	181
Total	0	63	98	0	268	0	75	0	4	1	0	0	83	32	5	0	629
08:00 AM	0	13	24	0	77	0	14	0	0	1	0	0	28	17	2	0	176
08:15 AM	0	19	28	0	79	1	29	0	2	0	0	0	32	12	3	0	205
08:30 AM	0	33	19	0	73	0	37	0	0	0	0	0	47	12	1	0	222
08:45 AM	0	40	25	0	73	0	35	0	0	0	0	0	62	13	3	0	251
Total	0	105	96	0	302	1	115	0	2	1	0	0	169	54	9	0	854
Grand Total	0	168	194	0	570	1	190	0	6	2	0	0	252	86	14	0	1483
Apprch %	0	46.4	53.6	0	74.9	0.1	25	0	75	25	0	0	71.6	24.4	4	0	
Total %	0	11.3	13.1	0	38.4	0.1	12.8	0	0.4	0.1	0	0	17	5.8	0.9	0	
Cars	0	159	179	0	545	1	181	0	6	2	0	0	248	80	2	0	1403
% Cars	0	94.6	92.3	0	95.6	100	95.3	0	100	100	0	0	98.4	93	14.3	0	94.6
Heavy Vehicles	0	9	15	0	25	0	9	0	0	0	0	0	4	6	12	0	80
% Heavy Vehicles	0	5.4	7.7	0	4.4	0	4.7	0	0	0	0	0	1.6	7	85.7	0	5.4

	St Thomas More Road From North					St Thomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	13	24	0	37	77	0	14	0	91	0	1	0	0	1	28	17	2	0	47	176
08:15 AM	0	19	28	0	47	79	1	29	0	109	2	0	0	0	2	32	12	3	0	47	205
08:30 AM	0	33	19	0	52	73	0	37	0	110	0	0	0	0	0	47	12	1	0	60	222
08:45 AM	0	40	25	0	65	73	0	35	0	108	0	0	0	0	0	62	13	3	0	78	251
Total Volume	0	105	96	0	201	302	1	115	0	418	2	1	0	0	3	169	54	9	0	232	854
% App. Total	0	52.2	47.8	0		72.2	0.2	27.5	0		66.7	33.3	0	0		72.8	23.3	3.9	0		
PHF	.000	.656	.857	.000	.773	.956	.250	.777	.000	.950	.250	.250	.000	.000	.375	.681	.794	.750	.000	.744	.851
Cars	0	101	87	0	188	287	1	110	0	398	2	1	0	0	3	167	52	0	0	219	808
% Cars	0	96.2	90.6	0	93.5	95.0	100	95.7	0	95.2	100	100	0	0	100	98.8	96.3	0	0	94.4	94.6
Heavy Vehicles	0	4	9	0	13	15	0	5	0	20	0	0	0	0	0	2	2	9	0	13	46
% Heavy Vehicles	0	3.8	9.4	0	6.5	5.0	0	4.3	0	4.8	0	0	0	0	0	1.2	3.7	100	0	5.6	5.4



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INDUSTRIES, LLC

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Groups Printed- Cars

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 C  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North				St Thomas More Road From South				More Drive From West				Fr Herlihy Drive From Northwest				
Start Time	Hard Right	Right	Thru	U-Turn	Thru	Bear Left	Left	U-Turn	Right	Left	Hard Left	U-Turn	Hard Right	Bear Right	Hard Left	Peds	Int. Total
07:00 AM	0	18	16	0	60	0	20	0	0	0	0	0	14	4	1	0	133
07:15 AM	0	13	21	0	66	0	18	0	2	0	0	0	27	4	0	0	151
07:30 AM	0	7	28	0	68	0	11	0	1	1	0	0	14	7	0	0	137
07:45 AM	0	20	27	0	64	0	22	0	1	0	0	0	26	13	1	0	174
Total	0	58	92	0	258	0	71	0	4	1	0	0	81	28	2	0	595
08:00 AM	0	13	19	0	74	0	12	0	0	1	0	0	27	15	0	0	161
08:15 AM	0	18	27	0	75	1	28	0	2	0	0	0	32	12	0	0	195
08:30 AM	0	32	16	0	68	0	35	0	0	0	0	0	46	12	0	0	209
08:45 AM	0	38	25	0	70	0	35	0	0	0	0	0	62	13	0	0	243
Total	0	101	87	0	287	1	110	0	2	1	0	0	167	52	0	0	808
Grand Total	0	159	179	0	545	1	181	0	6	2	0	0	248	80	2	0	1403
Apprch %	0	47	53	0	75	0.1	24.9	0	75	25	0	0	75.2	24.2	0.6	0	
Total %	0	11.3	12.8	0	38.8	0.1	12.9	0	0.4	0.1	0	0	17.7	5.7	0.1	0	

	St Thomas More Road From North					St Thomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	13	19	0	32	74	0	12	0	86	0	1	0	0	1	27	15	0	0	42	161
08:15 AM	0	18	27	0	45	75	1	28	0	104	2	0	0	0	2	32	12	0	0	44	195
08:30 AM	0	32	16	0	48	68	0	35	0	103	0	0	0	0	0	46	12	0	0	58	209
08:45 AM	0	38	25	0	63	70	0	35	0	105	0	0	0	0	0	62	13	0	0	75	243
Total Volume	0	101	87	0	188	287	1	110	0	398	2	1	0	0	3	167	52	0	0	219	808
% App. Total	0	53.7	46.3	0		72.1	0.3	27.6	0		66.7	33.3	0	0		76.3	23.7	0	0		
PHF	.000	.664	.806	.000	.746	.957	.250	.786	.000	.948	.250	.250	.000	.000	.375	.673	.867	.000	.000	.730	.831





PRECISION  
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INDUSTRIES, LLC

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Groups Printed- Heavy Vehicles

File Name : 154431 C  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

	St Thomas More Road From North				St Thomas More Road From South				More Drive From West				Fr Herlihy Drive From Northwest				Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	Thru	Bear Left	Left	U-Turn	Right	Left	Hard Left	U-Turn	Hard Right	Bear Right	Hard Left	Peds	
07:00 AM	0	1	1	0	2	0	2	0	0	0	0	0	1	2	0	0	9
07:15 AM	0	0	3	0	3	0	1	0	0	0	0	0	0	1	0	0	8
07:30 AM	0	2	2	0	3	0	1	0	0	0	0	0	1	0	1	0	10
07:45 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	1	2	0	7
Total	0	5	6	0	10	0	4	0	0	0	0	0	2	4	3	0	34
08:00 AM	0	0	5	0	3	0	2	0	0	0	0	0	1	2	2	0	15
08:15 AM	0	1	1	0	4	0	1	0	0	0	0	0	0	0	3	0	10
08:30 AM	0	1	3	0	5	0	2	0	0	0	0	0	1	0	1	0	13
08:45 AM	0	2	0	0	3	0	0	0	0	0	0	0	0	0	3	0	8
Total	0	4	9	0	15	0	5	0	0	0	0	0	2	2	9	0	46
Grand Total	0	9	15	0	25	0	9	0	0	0	0	0	4	6	12	0	80
Apprch %	0	37.5	62.5	0	73.5	0	26.5	0	0	0	0	0	18.2	27.3	54.5	0	
Total %	0	11.2	18.8	0	31.2	0	11.2	0	0	0	0	0	5	7.5	15	0	

	St Thomas More Road From North					St Thomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	5	0	5	3	0	2	0	5	0	0	0	0	0	1	2	2	0	5	15
08:15 AM	0	1	1	0	2	4	0	1	0	5	0	0	0	0	0	0	0	3	0	3	10
08:30 AM	0	1	3	0	4	5	0	2	0	7	0	0	0	0	0	1	0	1	0	2	13
08:45 AM	0	2	0	0	2	3	0	0	0	3	0	0	0	0	0	0	0	3	0	3	8
Total Volume	0	4	9	0	13	15	0	5	0	20	0	0	0	0	0	2	2	9	0	13	46
% App. Total	0	30.8	69.2	0		75	0	25	0		0	0	0	0		15.4	15.4	69.2	0		
PHF	.000	.500	.450	.000	.650	.750	.000	.625	.000	.714	.000	.000	.000	.000	.000	.500	.250	.750	.000	.650	.767



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Groups Printed- Peds and Bikes

File Name : 154431 C

Site Code : 10039.00

Start Date : 5/5/2015

Page No : 1

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

Start Time	St Thomas More Road From North					St Thomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
	Hard Right	Right	Thru	Peds EB	Peds WB	Thru	Bear Left	Left	Peds WB	Peds EB	Right	Left	Hard Left	Peds NB	Peds SB	Hard Right	Bear Right	Hard Left	Peds NEB	Peds SWB	
07:00 AM	0	0	0	0	0	0	0	0	2	4	0	0	0	3	3	0	0	0	0	0	12
07:15 AM	0	0	0	1	0	0	0	0	3	1	0	0	0	4	2	0	1	0	0	0	12
07:30 AM	0	1	0	0	0	0	0	0	5	2	0	1	0	5	1	0	0	0	0	0	15
07:45 AM	0	0	0	0	0	0	0	0	0	2	0	1	0	2	2	0	1	0	0	0	8
Total	0	1	0	1	0	0	0	0	10	9	0	2	0	14	8	0	2	0	0	0	47
08:00 AM	0	2	0	0	0	0	0	0	2	7	0	0	0	7	6	0	0	0	2	0	26
08:15 AM	0	1	0	0	0	0	0	0	5	1	0	0	0	3	2	0	0	0	0	0	12
08:30 AM	0	0	0	0	0	0	0	0	2	3	0	0	0	4	5	0	0	0	0	0	14
08:45 AM	0	0	0	0	0	0	0	0	3	4	0	0	0	3	3	1	0	0	0	0	14
Total	0	3	0	0	0	0	0	0	12	15	0	0	0	17	16	1	0	0	2	0	66
Grand Total	0	4	0	1	0	0	0	0	22	24	0	2	0	31	24	1	2	0	2	0	113
Apprch %	0	80	0	20	0	0	0	0	47.8	52.2	0	3.5	0	54.4	42.1	20	40	0	40	0	
Total %	0	3.5	0	0.9	0	0	0	0	19.5	21.2	0	1.8	0	27.4	21.2	0.9	1.8	0	1.8	0	

Start Time	St Thomas More Road From North						St Thomas More Road From South						More Drive From West						Fr Herlihy Drive From Northwest						Int. Total
	Hard Right	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Bear Left	Left	Peds WB	Peds EB	App. Total	Right	Left	Hard Left	Peds NB	Peds SB	App. Total	Hard Right	Bear Right	Hard Left	Peds NEB	Peds SWB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 08:00 AM																									
08:00 AM	0	2	0	0	0	2	0	0	0	2	7	9	0	0	0	7	6	13	0	0	0	2	0	2	26
08:15 AM	0	1	0	0	0	1	0	0	0	5	1	6	0	0	0	3	2	5	0	0	0	0	0	0	12
08:30 AM	0	0	0	0	0	0	0	0	0	2	3	5	0	0	0	4	5	9	0	0	0	0	0	0	14
08:45 AM	0	0	0	0	0	0	0	0	0	3	4	7	0	0	0	3	3	6	1	0	0	0	0	1	14
Total Volume	0	3	0	0	0	3	0	0	0	12	15	27	0	0	0	17	16	33	1	0	0	2	0	3	66
% App. Total	0	100	0	0	0		0	0	0	44.4	55.6		0	0	0	51.5	48.5		33.3	0	0	66.7	0		
PHF	.000	.375	.000	.000	.000	.375	.000	.000	.000	.600	.536	.750	.000	.000	.000	.607	.667	.635	.250	.000	.000	.250	.000	.375	.635



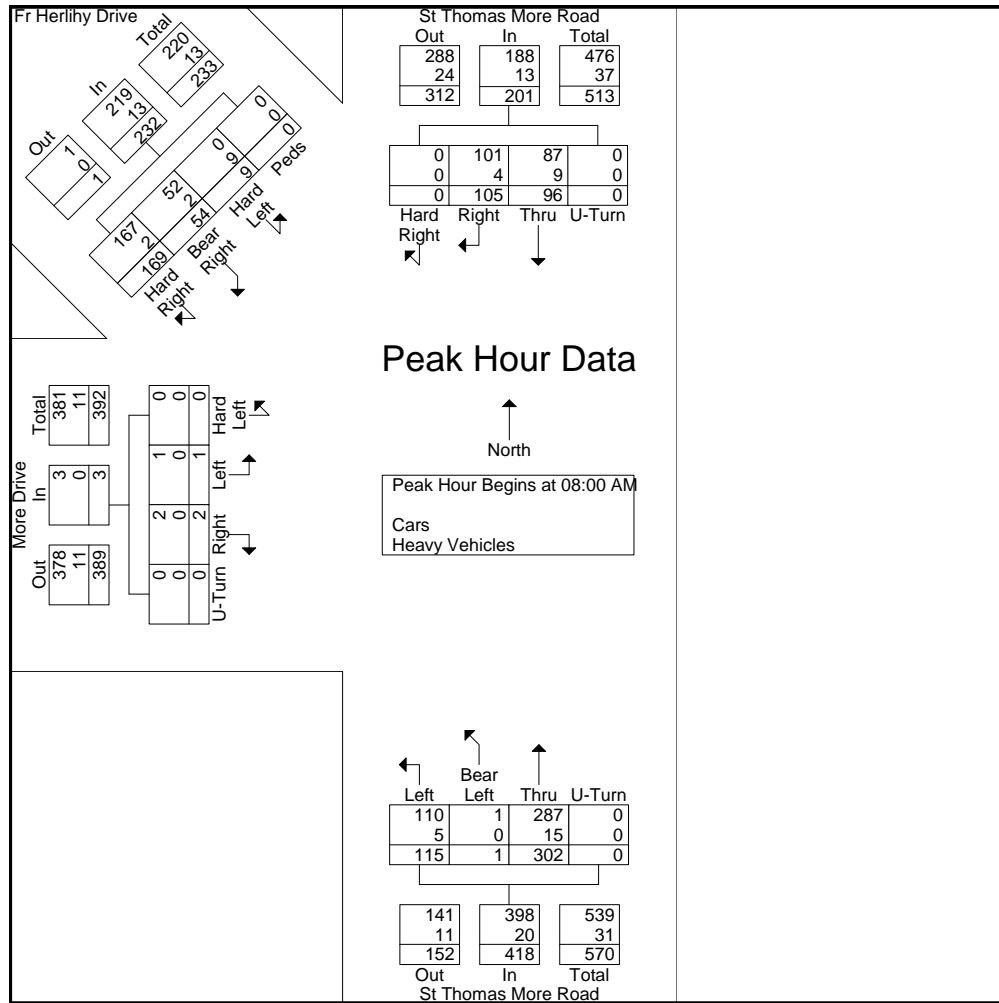
PRECISION  
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INDUSTRIES, LLC

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N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 C  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North					St Thomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	13	24	0	37	77	0	14	0	91	0	1	0	0	1	28	17	2	0	47	176
08:15 AM	0	19	28	0	47	79	1	29	0	109	2	0	0	0	2	32	12	3	0	47	205
08:30 AM	0	33	19	0	52	73	0	37	0	110	0	0	0	0	0	47	12	1	0	60	222
08:45 AM	0	40	25	0	65	73	0	35	0	108	0	0	0	0	0	62	13	3	0	78	251
Total Volume	0	105	96	0	201	302	1	115	0	418	2	1	0	0	3	169	54	9	0	232	854
% App. Total	0	52.2	47.8	0		72.2	0.2	27.5	0		66.7	33.3	0	0		72.8	23.3	3.9	0		
PHF	.000	.656	.857	.000	.773	.956	.250	.777	.000	.950	.250	.250	.000	.000	.375	.681	.794	.750	.000	.744	.851
Cars	0	101	87	0	188	287	1	110	0	398	2	1	0	0	3	167	52	0	0	219	808
% Cars	0	96.2	90.6	0	93.5	95.0	100	95.7	0	95.2	100	100	0	0	100	98.8	96.3	0	0	94.4	94.6
Heavy Vehicles	0	4	9	0	13	15	0	5	0	20	0	0	0	0	0	2	2	9	0	13	46
% Heavy Vehicles	0	3.8	9.4	0	6.5	5.0	0	4.3	0	4.8	0	0	0	0	0	1.2	3.7	100	0	5.6	5.4





PRECISION  
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N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 CC  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	St Tomas More Road From North				St Tomas More Road From South				More Drive From West				Fr Herlihy Drive From Northwest				Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	Thru	Bear Left	Left	U-Turn	Right	Left	Hard Left	U-Turn	Hard Right	Bear Right	Hard Left	Peds	
04:00 PM	0	19	15	0	132	0	18	0	0	7	0	0	14	12	1	0	218
04:15 PM	0	18	30	0	105	0	16	0	0	3	0	0	11	7	2	0	192
04:30 PM	0	13	32	0	113	0	9	0	0	7	0	0	14	14	1	0	203
04:45 PM	0	16	23	0	104	0	16	0	0	6	0	0	8	9	1	0	183
Total	0	66	100	0	454	0	59	0	0	23	0	0	47	42	5	0	796
05:00 PM	0	14	28	0	121	0	10	0	5	0	0	0	9	13	3	0	203
05:15 PM	0	18	15	0	126	0	15	0	0	0	0	0	15	10	1	0	200
05:30 PM	0	12	26	0	94	0	17	0	0	0	0	0	14	5	0	0	168
05:45 PM	0	21	21	0	94	0	20	0	3	0	0	0	23	18	0	0	200
Total	0	65	90	0	435	0	62	0	8	0	0	0	61	46	4	0	771
Grand Total	0	131	190	0	889	0	121	0	8	23	0	0	108	88	9	0	1567
Apprch %	0	40.8	59.2	0	88	0	12	0	25.8	74.2	0	0	52.7	42.9	4.4	0	
Total %	0	8.4	12.1	0	56.7	0	7.7	0	0.5	1.5	0	0	6.9	5.6	0.6	0	
Cars	0	120	187	0	870	0	118	0	8	23	0	0	105	81	3	0	1515
% Cars	0	91.6	98.4	0	97.9	0	97.5	0	100	100	0	0	97.2	92	33.3	0	96.7
Heavy Vehicles	0	11	3	0	19	0	3	0	0	0	0	0	3	7	6	0	52
% Heavy Vehicles	0	8.4	1.6	0	2.1	0	2.5	0	0	0	0	0	2.8	8	66.7	0	3.3

	St Tomas More Road From North					St Tomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	19	15	0	34	132	0	18	0	150	0	7	0	0	7	14	12	1	0	27	218
04:15 PM	0	18	30	0	48	105	0	16	0	121	0	3	0	0	3	11	7	2	0	20	192
04:30 PM	0	13	32	0	45	113	0	9	0	122	0	7	0	0	7	14	14	1	0	29	203
04:45 PM	0	16	23	0	39	104	0	16	0	120	0	6	0	0	6	8	9	1	0	18	183
Total Volume	0	66	100	0	166	454	0	59	0	513	0	23	0	0	23	47	42	5	0	94	796
% App. Total	0	39.8	60.2	0		88.5	0	11.5	0		0	100	0	0		50	44.7	5.3	0		
PHF	.000	.868	.781	.000	.865	.860	.000	.819	.000	.855	.000	.821	.000	.000	.821	.839	.750	.625	.000	.810	.913
Cars	0	61	98	0	159	440	0	56	0	496	0	23	0	0	23	45	41	0	0	86	764
% Cars	0	92.4	98.0	0	95.8	96.9	0	94.9	0	96.7	0	100	0	0	100	95.7	97.6	0	0	91.5	96.0
Heavy Vehicles	0	5	2	0	7	14	0	3	0	17	0	0	0	0	0	2	1	5	0	8	32
% Heavy Vehicles	0	7.6	2.0	0	4.2	3.1	0	5.1	0	3.3	0	0	0	0	0	4.3	2.4	100	0	8.5	4.0



PRECISION  
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INDUSTRIES, LLC

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Groups Printed- Cars

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 CC  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Tomas More Road From North				St Tomas More Road From South				More Drive From West				Fr Herlihy Drive From Northwest				Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	Thru	Bear Left	Left	U-Turn	Right	Left	Hard Left	U-Turn	Hard Right	Bear Right	Hard Left	Peds	
04:00 PM	0	18	15	0	126	0	17	0	0	7	0	0	12	12	0	0	207
04:15 PM	0	16	29	0	102	0	16	0	0	3	0	0	11	7	0	0	184
04:30 PM	0	12	32	0	111	0	8	0	0	7	0	0	14	13	0	0	197
04:45 PM	0	15	22	0	101	0	15	0	0	6	0	0	8	9	0	0	176
Total	0	61	98	0	440	0	56	0	0	23	0	0	45	41	0	0	764
05:00 PM	0	11	27	0	118	0	10	0	5	0	0	0	9	11	2	0	193
05:15 PM	0	17	15	0	125	0	15	0	0	0	0	0	15	9	1	0	197
05:30 PM	0	11	26	0	93	0	17	0	0	0	0	0	14	4	0	0	165
05:45 PM	0	20	21	0	94	0	20	0	3	0	0	0	22	16	0	0	196
Total	0	59	89	0	430	0	62	0	8	0	0	0	60	40	3	0	751
Grand Total	0	120	187	0	870	0	118	0	8	23	0	0	105	81	3	0	1515
Apprch %	0	39.1	60.9	0	88.1	0	11.9	0	25.8	74.2	0	0	55.6	42.9	1.6	0	
Total %	0	7.9	12.3	0	57.4	0	7.8	0	0.5	1.5	0	0	6.9	5.3	0.2	0	

	St Tomas More Road From North					St Tomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	
04:00 PM	0	18	15	0	33	126	0	17	0	143	0	7	0	0	7	12	12	0	0	24	207
04:15 PM	0	16	29	0	45	102	0	16	0	118	0	3	0	0	3	11	7	0	0	18	184
04:30 PM	0	12	32	0	44	111	0	8	0	119	0	7	0	0	7	14	13	0	0	27	197
04:45 PM	0	15	22	0	37	101	0	15	0	116	0	6	0	0	6	8	9	0	0	17	176
Total Volume	0	61	98	0	159	440	0	56	0	496	0	23	0	0	23	45	41	0	0	86	764
% App. Total	0	38.4	61.6	0		88.7	0	11.3	0		0	100	0	0		52.3	47.7	0	0		
PHF	.000	.847	.766	.000	.883	.873	.000	.824	.000	.867	.000	.821	.000	.000	.821	.804	.788	.000	.000	.796	.923

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM





PRECISION  
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INDUSTRIES, LLC

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Groups Printed- Heavy Vehicles

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 CC  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Tomas More Road From North				St Tomas More Road From South				More Drive From West				Fr Herlihy Drive From Northwest				Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	Thru	Bear Left	Left	U-Turn	Right	Left	Hard Left	U-Turn	Hard Right	Bear Right	Hard Left	Peds	
04:00 PM	0	1	0	0	6	0	1	0	0	0	0	0	2	0	1	0	11
04:15 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	2	0	8
04:30 PM	0	1	0	0	2	0	1	0	0	0	0	0	0	1	1	0	6
04:45 PM	0	1	1	0	3	0	1	0	0	0	0	0	0	0	1	0	7
Total	0	5	2	0	14	0	3	0	0	0	0	0	2	1	5	0	32
05:00 PM	0	3	1	0	3	0	0	0	0	0	0	0	0	2	1	0	10
05:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	3
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	3
05:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0	0	4
Total	0	6	1	0	5	0	0	0	0	0	0	0	1	6	1	0	20
Grand Total	0	11	3	0	19	0	3	0	0	0	0	0	3	7	6	0	52
Apprch %	0	78.6	21.4	0	86.4	0	13.6	0	0	0	0	0	18.8	43.8	37.5	0	
Total %	0	21.2	5.8	0	36.5	0	5.8	0	0	0	0	0	5.8	13.5	11.5	0	

	St Tomas More Road From North					St Tomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	1	0	0	1	6	0	1	0	7	0	0	0	0	0	2	0	1	0	3	11
04:15 PM	0	2	1	0	3	3	0	0	0	3	0	0	0	0	0	0	0	2	0	2	8
04:30 PM	0	1	0	0	1	2	0	1	0	3	0	0	0	0	0	0	1	1	0	2	6
04:45 PM	0	1	1	0	2	3	0	1	0	4	0	0	0	0	0	0	0	1	0	1	7
Total Volume	0	5	2	0	7	14	0	3	0	17	0	0	0	0	0	2	1	5	0	8	32
% App. Total	0	71.4	28.6	0		82.4	0	17.6	0		0	0	0	0		25	12.5	62.5	0		
PHF	.000	.625	.500	.000	.583	.583	.000	.750	.000	.607	.000	.000	.000	.000	.000	.250	.250	.625	.000	.667	.727



PRECISION  
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INDUSTRIES, LLC

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Groups Printed- Peds and Bikes

N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 CC  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Start Time	St Tomas More Road From North					St Tomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					Int. Total
	Hard Right	Right	Thru	Peds EB	Peds WB	Thru	Bear Left	Left	Peds WB	Peds EB	Right	Left	Hard Left	Peds NB	Peds SB	Hard Right	Bear Right	Hard Left	Peds NEB	Peds SWB	
04:00 PM	0	0	0	0	0	0	0	0	12	6	0	1	0	4	5	0	0	0	0	2	30
04:15 PM	0	0	2	0	0	0	0	0	7	11	0	0	0	3	7	3	0	0	0	0	33
04:30 PM	0	0	0	0	0	0	0	0	15	8	0	0	0	4	8	0	0	0	1	0	36
04:45 PM	0	0	0	0	0	0	0	0	10	20	0	1	0	4	8	0	0	0	2	0	45
Total	0	0	2	0	0	0	0	0	44	45	0	2	0	15	28	3	0	0	3	2	144
05:00 PM	0	1	0	0	0	0	0	0	14	16	0	0	0	12	3	1	0	0	0	1	48
05:15 PM	0	0	1	0	0	1	0	0	3	16	0	0	0	15	13	0	0	0	3	3	55
05:30 PM	0	0	0	0	0	0	0	0	12	15	0	2	0	7	15	1	0	0	0	3	55
05:45 PM	0	0	0	0	0	1	0	0	12	20	0	0	0	11	19	1	0	0	5	10	79
Total	0	1	1	0	0	2	0	0	41	67	0	2	0	45	50	3	0	0	8	17	237
Grand Total	0	1	3	0	0	2	0	0	85	112	0	4	0	60	78	6	0	0	11	19	381
Apprch %	0	25	75	0	0	1	0	0	42.7	56.3	0	2.8	0	42.3	54.9	16.7	0	0	30.6	52.8	
Total %	0	0.3	0.8	0	0	0.5	0	0	22.3	29.4	0	1	0	15.7	20.5	1.6	0	0	2.9	5	

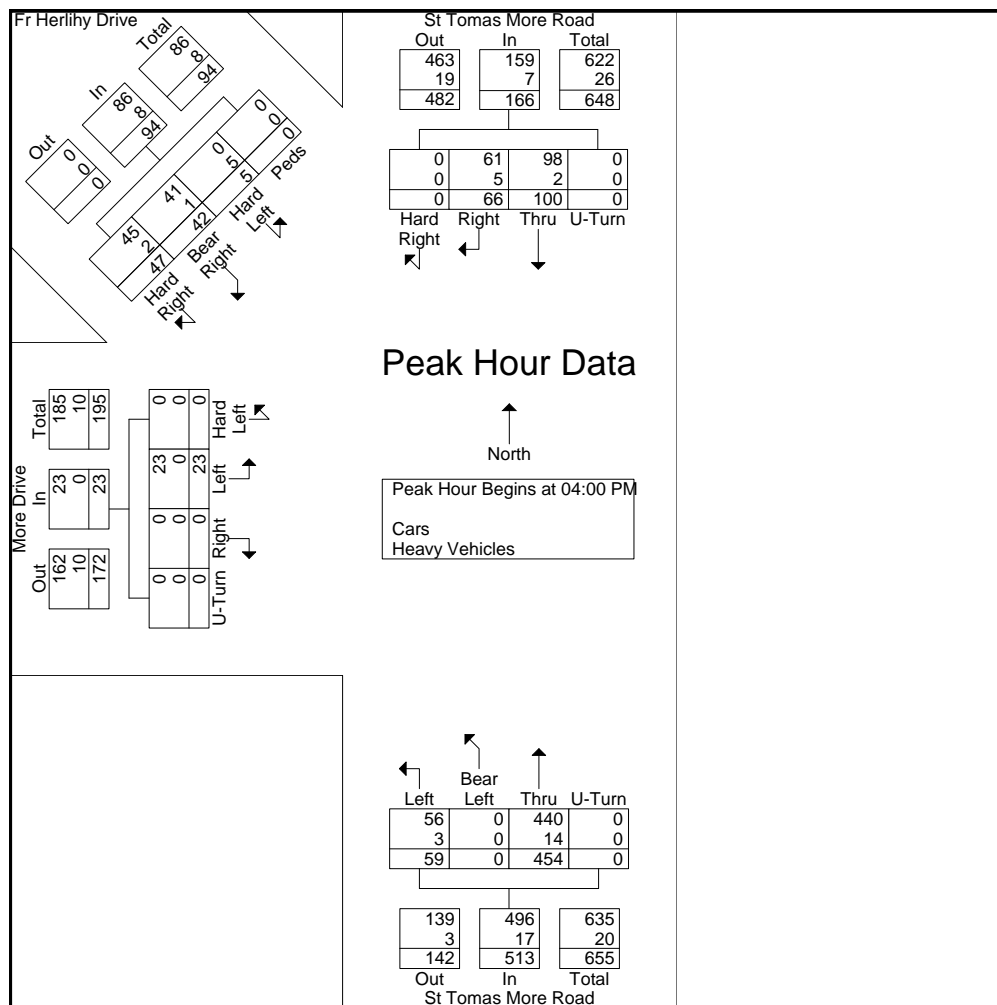
	St Tomas More Road From North						St Tomas More Road From South						More Drive From West						Fr Herlihy Drive From Northwest							
Start Time	Hard Right	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Bear Left	Left	Peds WB	Peds EB	App. Total	Right	Left	Hard Left	Peds NB	Peds SB	App. Total	Hard Right	Bear Right	Hard Left	Peds NEB	Peds SWB	App. Total	Int. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	0	1	0	0	0	1	0	0	0	14	16	30	0	0	0	12	3	15	1	0	0	0	1	2	48	
05:15 PM	0	0	1	0	0	1	1	0	0	3	16	20	0	0	0	15	13	28	0	0	0	3	3	6	55	
05:30 PM	0	0	0	0	0	0	0	0	0	12	15	27	0	2	0	7	15	24	1	0	0	0	3	4	55	
05:45 PM	0	0	0	0	0	0	1	0	0	12	20	33	0	0	0	11	19	30	1	0	0	5	10	16	79	
Total Volume	0	1	1	0	0	2	2	0	0	41	67	110	0	2	0	45	50	97	3	0	0	8	17	28	237	
% App. Total	0	50	50	0	0		1.8	0	0	37.3	60.9		0	2.1	0	46.4	51.5		10.7	0	0	28.6	60.7			
PHF	.000	.250	.250	.000	.000	.500	.500	.000	.000	.732	.838	.833	.000	.250	.000	.750	.658	.808	.750	.000	.000	.400	.425	.438	.750	



N/S: St Thomas More Road  
W/NW: More Drive/ Fr Herlihy Drive  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 CC  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Tomas More Road From North					St Tomas More Road From South					More Drive From West					Fr Herlihy Drive From Northwest					
Start Time	Hard Right	Right	Thru	U-Turn	App. Total	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	19	15	0	34	132	0	18	0	150	0	7	0	0	7	14	12	1	0	27	218
04:15 PM	0	18	30	0	48	105	0	16	0	121	0	3	0	0	3	11	7	2	0	20	192
04:30 PM	0	13	32	0	45	113	0	9	0	122	0	7	0	0	7	14	14	1	0	29	203
04:45 PM	0	16	23	0	39	104	0	16	0	120	0	6	0	0	6	8	9	1	0	18	183
Total Volume	0	66	100	0	166	454	0	59	0	513	0	23	0	0	23	47	42	5	0	94	796
% App. Total	0	39.8	60.2	0		88.5	0	11.5	0		0	100	0	0		50	44.7	5.3	0		
PHF	.000	.868	.781	.000	.865	.860	.000	.819	.000	.855	.000	.821	.000	.000	.821	.839	.750	.625	.000	.810	.913
Cars	0	61	98	0	159	440	0	56	0	496	0	23	0	0	23	45	41	0	0	86	764
% Cars	0	92.4	98.0	0	95.8	96.9	0	94.9	0	96.7	0	100	0	0	100	95.7	97.6	0	0	91.5	96.0
Heavy Vehicles	0	5	2	0	7	14	0	3	0	17	0	0	0	0	0	2	1	5	0	8	32
% Heavy Vehicles	0	7.6	2.0	0	4.2	3.1	0	5.1	0	3.3	0	0	0	0	0	4.3	2.4	100	0	8.5	4.0





PRECISION  
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N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 D  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles - Trams

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	9	81	34	0	16	34	6	0	0	75	69	0	324
07:15 AM	0	0	0	0	21	117	36	7	14	51	7	0	1	91	75	2	422
07:30 AM	0	0	0	0	22	134	39	4	10	52	14	0	0	115	78	1	469
07:45 AM	0	0	0	0	26	150	54	2	8	47	13	0	0	148	80	0	528
Total	0	0	0	0	78	482	163	13	48	184	40	0	1	429	302	3	1743
08:00 AM	0	1	0	0	29	127	36	0	11	57	19	0	1	137	76	1	495
08:15 AM	0	0	0	0	17	134	46	2	8	36	21	0	1	139	104	0	508
08:30 AM	0	0	0	0	15	133	55	1	8	59	10	0	0	153	89	0	523
08:45 AM	0	0	0	0	19	108	63	0	11	60	16	0	1	121	87	1	487
Total	0	1	0	0	80	502	200	3	38	212	66	0	3	550	356	2	2013
Grand Total	0	1	0	0	158	984	363	16	86	396	106	0	4	979	658	5	3756
Apprch %	0	100	0	0	10.4	64.7	23.9	1.1	14.6	67.3	18	0	0.2	59.5	40	0.3	
Total %	0	0	0	0	4.2	26.2	9.7	0.4	2.3	10.5	2.8	0	0.1	26.1	17.5	0.1	
Cars	0	1	0	0	150	945	340	15	70	392	83	0	4	937	641	5	3583
% Cars	0	100	0	0	94.9	96	93.7	93.8	81.4	99	78.3	0	100	95.7	97.4	100	95.4
Heavy Vehicles	0	0	0	0	8	24	23	1	16	4	23	0	0	24	17	0	140
% Heavy Vehicles	0	0	0	0	5.1	2.4	6.3	6.2	18.6	1	21.7	0	0	2.5	2.6	0	3.7
Trams	0	0	0	0	0	15	0	0	0	0	0	0	0	18	0	0	33
% Trams	0	0	0	0	0	1.5	0	0	0	0	0	0	0	1.8	0	0	0.9

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	26	150	54	2	232	8	47	13	0	68	0	148	80	0	228	528
08:00 AM	0	1	0	0	1	29	127	36	0	192	11	57	19	0	87	1	137	76	1	215	495
08:15 AM	0	0	0	0	0	17	134	46	2	199	8	36	21	0	65	1	139	104	0	244	508
08:30 AM	0	0	0	0	0	15	133	55	1	204	8	59	10	0	77	0	153	89	0	242	523
Total Volume	0	1	0	0	1	87	544	191	5	827	35	199	63	0	297	2	577	349	1	929	2054
% App. Total	0	100	0	0		10.5	65.8	23.1	0.6		11.8	67	21.2	0		0.2	62.1	37.6	0.1		
PHF	.000	.250	.000	.000	.250	.750	.907	.868	.625	.891	.795	.843	.750	.000	.853	.500	.943	.839	.250	.952	.973
Cars	0	1	0	0	1	84	522	180	4	790	28	197	48	0	273	2	553	342	1	898	1962
% Cars	0	100	0	0	100	96.6	96.0	94.2	80.0	95.5	80.0	99.0	76.2	0	91.9	100	95.8	98.0	100	96.7	95.5
Heavy Vehicles	0	0	0	0	0	3	12	11	1	27	7	2	15	0	24	0	16	7	0	23	74
% Heavy Vehicles	0	0	0	0	0	3.4	2.2	5.8	20.0	3.3	20.0	1.0	23.8	0	8.1	0	2.8	2.0	0	2.5	3.6
Trams	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	8	0	0	8	18
% Trams	0	0	0	0	0	0	1.8	0	0	1.2	0	0	0	0	0	0	1.4	0	0	0.9	0.9



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Groups Printed- Cars

File Name : 154431 D  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	9	79	31	0	15	33	5	0	0	71	67	0	310
07:15 AM	0	0	0	0	18	112	33	7	11	51	7	0	1	87	71	2	400
07:30 AM	0	0	0	0	21	129	35	4	6	52	13	0	0	110	77	1	448
07:45 AM	0	0	0	0	25	141	52	2	7	47	9	0	0	142	78	0	503
Total	0	0	0	0	73	461	151	13	39	183	34	0	1	410	293	3	1661
08:00 AM	0	1	0	0	27	125	34	0	9	56	14	0	1	133	76	1	477
08:15 AM	0	0	0	0	17	127	43	1	7	35	17	0	1	130	102	0	480
08:30 AM	0	0	0	0	15	129	51	1	5	59	8	0	0	148	86	0	502
08:45 AM	0	0	0	0	18	103	61	0	10	59	10	0	1	116	84	1	463
Total	0	1	0	0	77	484	189	2	31	209	49	0	3	527	348	2	1922
Grand Total	0	1	0	0	150	945	340	15	70	392	83	0	4	937	641	5	3583
Apprch %	0	100	0	0	10.3	65.2	23.4	1	12.8	71.9	15.2	0	0.3	59	40.4	0.3	
Total %	0	0	0	0	4.2	26.4	9.5	0.4	2	10.9	2.3	0	0.1	26.2	17.9	0.1	

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	25	141	52	2	220	7	47	9	0	63	0	142	78	0	220	503
08:00 AM	0	1	0	0	1	27	125	34	0	186	9	56	14	0	79	1	133	76	1	211	477
08:15 AM	0	0	0	0	0	17	127	43	1	188	7	35	17	0	59	1	130	102	0	233	480
08:30 AM	0	0	0	0	0	15	129	51	1	196	5	59	8	0	72	0	148	86	0	234	502
Total Volume	0	1	0	0	1	84	522	180	4	790	28	197	48	0	273	2	553	342	1	898	1962
% App. Total	0	100	0	0		10.6	66.1	22.8	0.5		10.3	72.2	17.6	0		0.2	61.6	38.1	0.1		
PHF	.000	.250	.000	.000	.250	.778	.926	.865	.500	.898	.778	.835	.706	.000	.864	.500	.934	.838	.250	.959	.975





PRECISION  
D A T A  
INDUSTRIES, LLC

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Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

File Name : 154431 D  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

Groups Printed- Heavy Vehicles

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	0	3	0	1	1	1	0	0	1	2	0	9
07:15 AM	0	0	0	0	3	3	3	0	3	0	0	0	0	2	4	0	18
07:30 AM	0	0	0	0	1	4	4	0	4	0	1	0	0	2	1	0	17
07:45 AM	0	0	0	0	1	7	2	0	1	0	4	0	0	4	2	0	21
Total	0	0	0	0	5	14	12	0	9	1	6	0	0	9	9	0	65
08:00 AM	0	0	0	0	2	1	2	0	2	1	5	0	0	2	0	0	15
08:15 AM	0	0	0	0	0	3	3	1	1	1	4	0	0	7	2	0	22
08:30 AM	0	0	0	0	0	1	4	0	3	0	2	0	0	3	3	0	16
08:45 AM	0	0	0	0	1	5	2	0	1	1	6	0	0	3	3	0	22
Total	0	0	0	0	3	10	11	1	7	3	17	0	0	15	8	0	75
Grand Total	0	0	0	0	8	24	23	1	16	4	23	0	0	24	17	0	140
Apprch %	0	0	0	0	14.3	42.9	41.1	1.8	37.2	9.3	53.5	0	0	58.5	41.5	0	
Total %	0	0	0	0	5.7	17.1	16.4	0.7	11.4	2.9	16.4	0	0	17.1	12.1	0	

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	1	4	4	0	9	4	0	1	0	5	0	2	1	0	3	17
07:45 AM	0	0	0	0	0	1	7	2	0	10	1	0	4	0	5	0	4	2	0	6	21
08:00 AM	0	0	0	0	0	2	1	2	0	5	2	1	5	0	8	0	2	0	0	2	15
08:15 AM	0	0	0	0	0	0	3	3	1	7	1	1	4	0	6	0	7	2	0	9	22
Total Volume	0	0	0	0	0	4	15	11	1	31	8	2	14	0	24	0	15	5	0	20	75
% App. Total	0	0	0	0		12.9	48.4	35.5	3.2		33.3	8.3	58.3	0		0	75	25	0		
PHF	.000	.000	.000	.000	.000	.500	.536	.688	.250	.775	.500	.500	.700	.000	.750	.000	.536	.625	.000	.556	.852



PRECISION  
D A T A  
INDUSTRIES, LLC

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Groups Printed- Trams

N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 D  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0	5
07:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
07:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	4
07:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
Total	0	0	0	0	0	7	0	0	0	0	0	0	0	10	0	0	17
08:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
08:15 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0	6
08:30 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0	5
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Total	0	0	0	0	0	8	0	0	0	0	0	0	0	8	0	0	16
Grand Total	0	0	0	0	0	15	0	0	0	0	0	0	0	18	0	0	33
Apprch %	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	45.5	0	0	0	0	0	0	0	54.5	0	0	

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
08:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
08:15 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	6
08:30 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Total Volume	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	8	0	0	8	18
% App. Total	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	1.00	.000	.000	1.00	.750



PRECISION  
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Groups Printed- Peds and Bikes

File Name : 154431 D  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

Start Time	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	0	1	0	1	0	2	0	0	1	0	3	2	0	0	0	4	2	16
07:15 AM	0	0	0	1	0	0	3	0	5	0	0	0	0	7	1	0	0	0	0	1	18
07:30 AM	1	0	0	1	5	0	1	0	5	0	0	0	0	14	3	0	1	0	1	2	34
07:45 AM	0	0	0	1	7	0	1	0	8	1	0	0	0	10	3	0	2	0	0	2	35
Total	1	0	0	3	13	0	6	0	20	1	0	1	0	34	9	0	3	0	5	7	103
08:00 AM	0	1	0	2	4	0	2	0	11	4	0	1	0	19	3	0	0	0	5	1	53
08:15 AM	0	0	0	2	3	0	1	1	15	6	0	0	0	17	3	0	0	0	3	5	56
08:30 AM	0	0	0	0	11	0	1	1	20	4	0	0	0	25	4	0	0	0	0	7	73
08:45 AM	0	0	0	1	11	0	2	0	12	3	0	0	0	17	7	0	0	0	5	7	65
Total	0	1	0	5	29	0	6	2	58	17	0	1	0	78	17	0	0	0	13	20	247
Grand Total	1	1	0	8	42	0	12	2	78	18	0	2	0	112	26	0	3	0	18	27	350
Apprch %	1.9	1.9	0	15.4	80.8	0	10.9	1.8	70.9	16.4	0	1.4	0	80	18.6	0	6.2	0	37.5	56.2	
Total %	0.3	0.3	0	2.3	12	0	3.4	0.6	22.3	5.1	0	0.6	0	32	7.4	0	0.9	0	5.1	7.7	

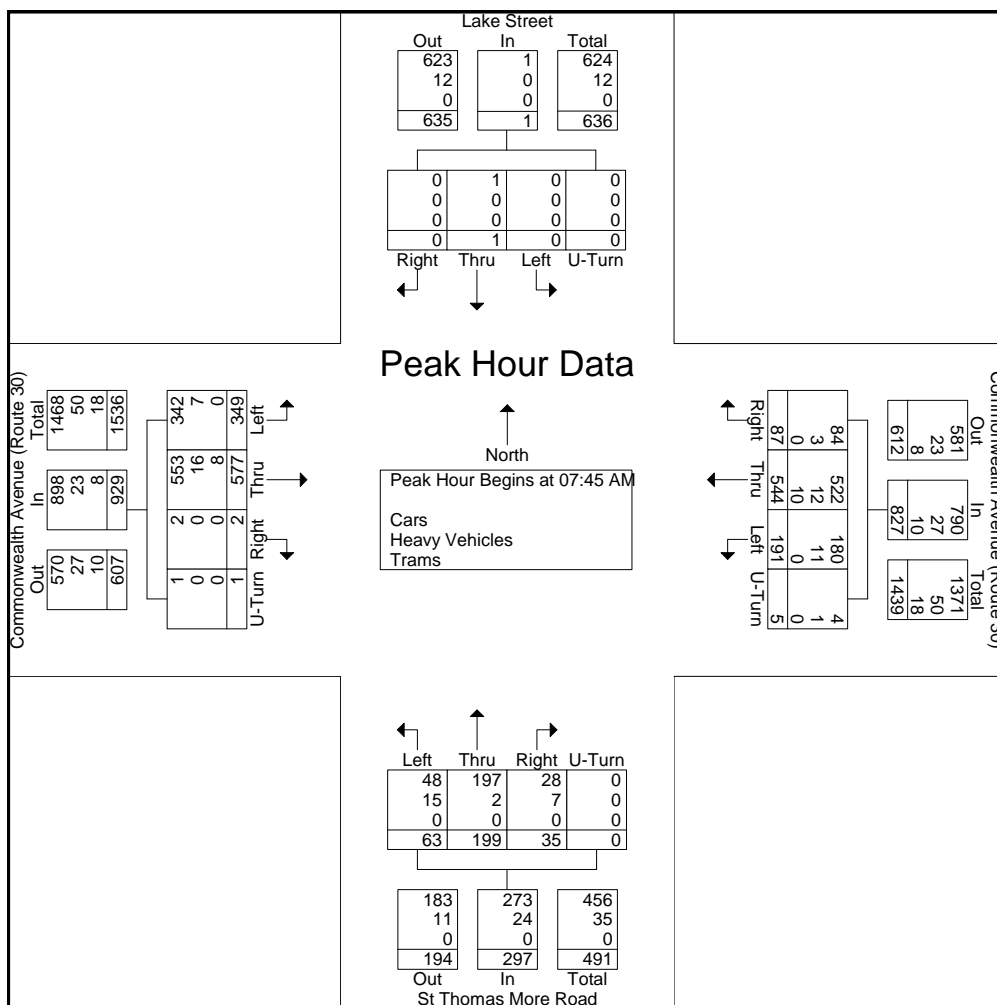
	Lake Street From North						Commonwealth Avenue (Route 30) From East						St Thomas More Road From South						Commonwealth Avenue (Route 30) From West							
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	1	0	2	4	7	0	2	0	11	4	17	0	1	0	19	3	23	0	0	0	5	1	6	53	
08:15 AM	0	0	0	2	3	5	0	1	1	15	6	23	0	0	0	17	3	20	0	0	0	3	5	8	56	
08:30 AM	0	0	0	0	11	11	0	1	1	20	4	26	0	0	0	25	4	29	0	0	0	0	7	7	73	
08:45 AM	0	0	0	1	11	12	0	2	0	12	3	17	0	0	0	17	7	24	0	0	0	5	7	12	65	
Total Volume	0	1	0	5	29	35	0	6	2	58	17	83	0	1	0	78	17	96	0	0	0	13	20	33	247	
% App. Total	0	2.9	0	14.3	82.9		0	7.2	2.4	69.9	20.5		0	1	0	81.2	17.7		0	0	0	39.4	60.6			
PHF	.000	.250	.000	.625	.659	.729	.000	.750	.500	.725	.708	.798	.000	.250	.000	.780	.607	.828	.000	.000	.000	.650	.714	.688	.846	



N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 D  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

### Peak Hour for Entire Intersection Begins at 07:45 AM





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N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 DD  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles - Trams

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	16	130	32	4	13	75	41	0	1	72	44	1	429
04:15 PM	0	0	0	0	12	142	42	0	9	75	38	0	1	83	48	0	450
04:30 PM	0	0	0	0	9	149	42	3	16	46	43	0	0	75	63	2	448
04:45 PM	0	0	0	0	13	166	39	8	11	76	38	0	0	95	66	1	513
Total	0	0	0	0	50	587	155	15	49	272	160	0	2	325	221	4	1840
05:00 PM	0	0	0	0	27	161	27	11	9	63	44	0	0	84	47	0	473
05:15 PM	0	0	0	0	14	165	22	4	24	71	42	0	1	99	58	1	501
05:30 PM	1	0	0	0	30	175	37	3	23	52	34	0	1	110	49	1	516
05:45 PM	0	0	0	0	22	138	42	2	11	50	32	0	0	115	59	0	471
Total	1	0	0	0	93	639	128	20	67	236	152	0	2	408	213	2	1961
Grand Total	1	0	0	0	143	1226	283	35	116	508	312	0	4	733	434	6	3801
Apprch %	100	0	0	0	8.5	72.7	16.8	2.1	12.4	54.3	33.3	0	0.3	62.3	36.9	0.5	
Total %	0	0	0	0	3.8	32.3	7.4	0.9	3.1	13.4	8.2	0	0.1	19.3	11.4	0.2	
Cars	1	0	0	0	143	1199	268	34	108	505	297	0	4	706	430	6	3701
% Cars	100	0	0	0	100	97.8	94.7	97.1	93.1	99.4	95.2	0	100	96.3	99.1	100	97.4
Heavy Vehicles	0	0	0	0	0	13	15	1	8	3	15	0	0	10	4	0	69
% Heavy Vehicles	0	0	0	0	0	1.1	5.3	2.9	6.9	0.6	4.8	0	0	1.4	0.9	0	1.8
Trams	0	0	0	0	0	14	0	0	0	0	0	0	0	17	0	0	31
% Trams	0	0	0	0	0	1.1	0	0	0	0	0	0	0	2.3	0	0	0.8

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	13	166	39	8	226	11	76	38	0	125	0	95	66	1	162	513
05:00 PM	0	0	0	0	0	27	161	27	11	226	9	63	44	0	116	0	84	47	0	131	473
05:15 PM	0	0	0	0	0	14	165	22	4	205	24	71	42	0	137	1	99	58	1	159	501
05:30 PM	1	0	0	0	1	30	175	37	3	245	23	52	34	0	109	1	110	49	1	161	516
Total Volume	1	0	0	0	1	84	667	125	26	902	67	262	158	0	487	2	388	220	3	613	2003
% App. Total	100	0	0	0		9.3	73.9	13.9	2.9		13.8	53.8	32.4	0		0.3	63.3	35.9	0.5		
PHF	.250	.000	.000	.000	.250	.700	.953	.801	.591	.920	.698	.862	.898	.000	.889	.500	.882	.833	.750	.946	.970
Cars	1	0	0	0	1	84	650	117	25	876	64	261	152	0	477	2	371	219	3	595	1949
% Cars	100	0	0	0	100	100	97.5	93.6	96.2	97.1	95.5	99.6	96.2	0	97.9	100	95.6	99.5	100	97.1	97.3
Heavy Vehicles	0	0	0	0	0	0	10	8	1	19	3	1	6	0	10	0	8	1	0	9	38
% Heavy Vehicles	0	0	0	0	0	0	1.5	6.4	3.8	2.1	4.5	0.4	3.8	0	2.1	0	2.1	0.5	0	1.5	1.9
Trams	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	16
% Trams	0	0	0	0	0	0	1.0	0	0	0.8	0	0	0	0	0	0	2.3	0	0	1.5	0.8





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Groups Printed- Cars

N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 DD  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	16	129	31	4	12	74	36	0	1	71	44	1	419
04:15 PM	0	0	0	0	12	139	39	0	7	74	36	0	1	80	48	0	436
04:30 PM	0	0	0	0	9	145	40	3	14	46	41	0	0	71	60	2	431
04:45 PM	0	0	0	0	13	161	36	7	9	76	37	0	0	92	66	1	498
Total	0	0	0	0	50	574	146	14	42	270	150	0	2	314	218	4	1784
05:00 PM	0	0	0	0	27	156	24	11	8	62	42	0	0	80	47	0	457
05:15 PM	0	0	0	0	14	161	21	4	24	71	40	0	1	94	57	1	488
05:30 PM	1	0	0	0	30	172	36	3	23	52	33	0	1	105	49	1	506
05:45 PM	0	0	0	0	22	136	41	2	11	50	32	0	0	113	59	0	466
Total	1	0	0	0	93	625	122	20	66	235	147	0	2	392	212	2	1917
Grand Total	1	0	0	0	143	1199	268	34	108	505	297	0	4	706	430	6	3701
Apprch %	100	0	0	0	8.7	72.9	16.3	2.1	11.9	55.5	32.6	0	0.3	61.6	37.5	0.5	
Total %	0	0	0	0	3.9	32.4	7.2	0.9	2.9	13.6	8	0	0.1	19.1	11.6	0.2	

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	13	161	36	7	217	9	76	37	0	122	0	92	66	1	159	498
05:00 PM	0	0	0	0	0	27	156	24	11	218	8	62	42	0	112	0	80	47	0	127	457
05:15 PM	0	0	0	0	0	14	161	21	4	200	24	71	40	0	135	1	94	57	1	153	488
05:30 PM	1	0	0	0	1	30	172	36	3	241	23	52	33	0	108	1	105	49	1	156	506
Total Volume	1	0	0	0	1	84	650	117	25	876	64	261	152	0	477	2	371	219	3	595	1949
% App. Total	100	0	0	0		9.6	74.2	13.4	2.9		13.4	54.7	31.9	0		0.3	62.4	36.8	0.5		
PHF	.250	.000	.000	.000	.250	.700	.945	.813	.568	.909	.667	.859	.905	.000	.883	.500	.883	.830	.750	.936	.963



PRECISION  
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INDUSTRIES, LLC

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N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 DD  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Heavy Vehicles

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	0	1	0	1	1	5	0	0	0	0	0	8
04:15 PM	0	0	0	0	0	1	3	0	2	1	2	0	0	1	0	0	10
04:30 PM	0	0	0	0	0	0	2	0	2	0	2	0	0	0	3	0	9
04:45 PM	0	0	0	0	0	3	3	1	2	0	1	0	0	1	0	0	11
Total	0	0	0	0	0	4	9	1	7	2	10	0	0	2	3	0	38
05:00 PM	0	0	0	0	0	3	3	0	1	1	2	0	0	2	0	0	12
05:15 PM	0	0	0	0	0	2	1	0	0	0	2	0	0	2	1	0	8
05:30 PM	0	0	0	0	0	2	1	0	0	0	1	0	0	3	0	0	7
05:45 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	4
Total	0	0	0	0	0	9	6	0	1	1	5	0	0	8	1	0	31
Grand Total	0	0	0	0	0	13	15	1	8	3	15	0	0	10	4	0	69
Apprch %	0	0	0	0	0	44.8	51.7	3.4	30.8	11.5	57.7	0	0	71.4	28.6	0	
Total %	0	0	0	0	0	18.8	21.7	1.4	11.6	4.3	21.7	0	0	14.5	5.8	0	

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	1	3	0	4	2	1	2	0	5	0	1	0	0	1	10
04:30 PM	0	0	0	0	0	0	0	2	0	2	2	0	2	0	4	0	0	3	0	3	9
04:45 PM	0	0	0	0	0	0	3	3	1	7	2	0	1	0	3	0	1	0	0	1	11
05:00 PM	0	0	0	0	0	0	3	3	0	6	1	1	2	0	4	0	2	0	0	2	12
Total Volume	0	0	0	0	0	0	7	11	1	19	7	2	7	0	16	0	4	3	0	7	42
% App. Total	0	0	0	0	0	0	36.8	57.9	5.3		43.8	12.5	43.8	0		0	57.1	42.9	0		
PHF	.000	.000	.000	.000	.000	.000	.583	.917	.250	.679	.875	.500	.875	.000	.800	.000	.500	.250	.000	.583	.875



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N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 DD  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Trams

	Lake Street From North				Commonwealth Avenue (Route 30) From East				St Thomas More Road From South				Commonwealth Avenue (Route 30) From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
04:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
04:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	8
04:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
Total	0	0	0	0	0	9	0	0	0	0	0	0	0	9	0	0	18
05:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
05:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0	5
05:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	5	0	0	0	0	0	0	0	8	0	0	13
Grand Total	0	0	0	0	0	14	0	0	0	0	0	0	0	17	0	0	31
Apprch %	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	45.2	0	0	0	0	0	0	0	54.8	0	0	

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
04:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
05:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
05:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	5
Total Volume	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	11	0	0	11	21
% App. Total	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	.688	.000	.000	.688	.656



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City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 DD  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	0	0	0	2	0	13	1	0	0	0	12	12	0	2	0	9	10	61
04:15 PM	0	0	0	1	4	0	0	0	3	4	0	1	0	8	8	0	1	0	8	6	44
04:30 PM	0	0	0	0	1	0	1	0	8	3	0	0	0	18	16	0	0	0	8	9	64
04:45 PM	0	0	0	1	2	0	2	0	11	12	0	0	0	16	16	0	4	0	12	1	77
Total	0	0	0	2	7	0	5	0	35	20	0	1	0	54	52	0	7	0	37	26	246
05:00 PM	0	0	0	8	9	0	1	0	14	10	0	0	0	14	26	0	0	0	14	6	102
05:15 PM	0	0	0	5	9	0	0	0	8	5	0	1	0	11	24	0	0	1	12	2	78
05:30 PM	0	0	0	6	9	0	1	0	8	12	0	2	3	16	26	0	1	0	11	7	102
05:45 PM	0	0	0	11	4	1	4	0	17	9	0	0	1	26	31	0	1	0	13	4	122
Total	0	0	0	30	31	1	6	0	47	36	0	3	4	67	107	0	2	1	50	19	404
Grand Total	0	0	0	32	38	1	11	0	82	56	0	4	4	121	159	0	9	1	87	45	650
Apprch %	0	0	0	45.7	54.3	0.7	7.3	0	54.7	37.3	0	1.4	1.4	42	55.2	0	6.3	0.7	61.3	31.7	
Total %	0	0	0	4.9	5.8	0.2	1.7	0	12.6	8.6	0	0.6	0.6	18.6	24.5	0	1.4	0.2	13.4	6.9	

	Lake Street From North						Commonwealth Avenue (Route 30) From East						St Thomas More Road From South						Commonwealth Avenue (Route 30) From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	0	0	8	9	17	0	1	0	14	10	25	0	0	0	14	26	40	0	0	0	14	6	20	102
05:15 PM	0	0	0	5	9	14	0	0	0	8	5	13	0	1	0	11	24	36	0	0	1	12	2	15	78
05:30 PM	0	0	0	6	9	15	0	1	0	8	12	21	0	2	3	16	26	47	0	1	0	11	7	19	102
05:45 PM	0	0	0	11	4	15	1	4	0	17	9	31	0	0	1	26	31	58	0	1	0	13	4	18	122
Total Volume	0	0	0	30	31	61	1	6	0	47	36	90	0	3	4	67	107	181	0	2	1	50	19	72	404
% App. Total	0	0	0	49.2	50.8		1.1	6.7	0	52.2	40		0	1.7	2.2	37	59.1		0	2.8	1.4	69.4	26.4		
PHF	.000	.000	.000	.682	.861	.897	.250	.375	.000	.691	.750	.726	.000	.375	.333	.644	.863	.780	.000	.500	.250	.893	.679	.900	.828



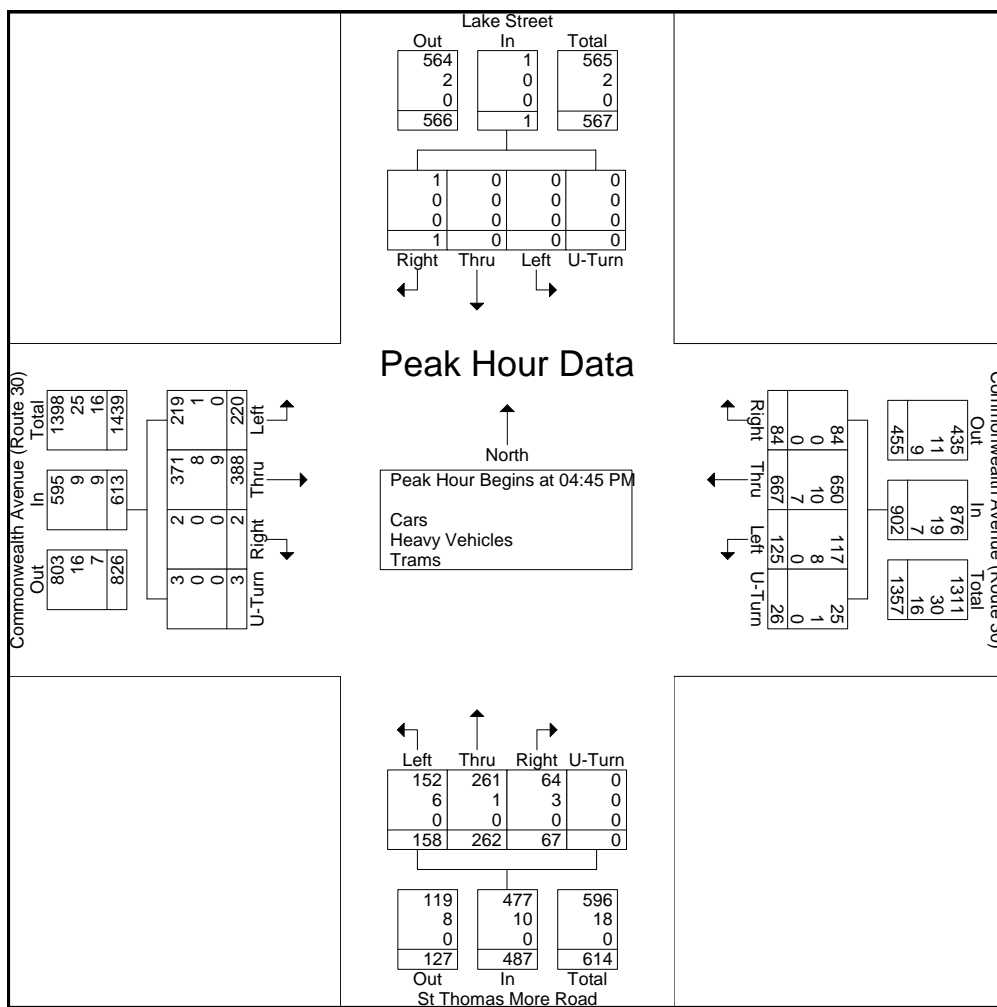
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N/S: Lake Street/ St Thomas More Road  
E/W: Commonwealth Avenue (Route 30)  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 DD  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	Lake Street From North					Commonwealth Avenue (Route 30) From East					St Thomas More Road From South					Commonwealth Avenue (Route 30) From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	13	166	39	8	226	11	76	38	0	125	0	95	66	1	162	513
05:00 PM	0	0	0	0	0	27	161	27	11	226	9	63	44	0	116	0	84	47	0	131	473
05:15 PM	0	0	0	0	0	14	165	22	4	205	24	71	42	0	137	1	99	58	1	159	501
05:30 PM	1	0	0	0	1	30	175	37	3	245	23	52	34	0	109	1	110	49	1	161	516
Total Volume	1	0	0	0	1	84	667	125	26	902	67	262	158	0	487	2	388	220	3	613	2003
% App. Total	100	0	0	0		9.3	73.9	13.9	2.9		13.8	53.8	32.4	0		0.3	63.3	35.9	0.5		
PHF	.250	.000	.000	.000	.250	.700	.953	.801	.591	.920	.698	.862	.898	.000	.889	.500	.882	.833	.750	.946	.970
Cars	1	0	0	0	1	84	650	117	25	876	64	261	152	0	477	2	371	219	3	595	1949
% Cars	100	0	0	0	100	100	97.5	93.6	96.2	97.1	95.5	99.6	96.2	0	97.9	100	95.6	99.5	100	97.1	97.3
Heavy Vehicles	0	0	0	0	0	0	10	8	1	19	3	1	6	0	10	0	8	1	0	9	38
% Heavy Vehicles	0	0	0	0	0	0	1.5	6.4	3.8	2.1	4.5	0.4	3.8	0	2.1	0	2.1	0.5	0	1.5	1.9
Trams	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	16
% Trams	0	0	0	0	0	0	1.0	0	0	0.8	0	0	0	0	0	0	2.3	0	0	1.5	0.8







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N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 E  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	St Thomas More Road From North			St Thomas More Road From South			Driveway North From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
07:00 AM	0	19	0	85	0	1	0	1	0	106
07:15 AM	0	29	0	83	0	0	0	1	0	113
07:30 AM	1	35	0	83	1	0	0	0	0	120
07:45 AM	1	37	0	89	0	0	0	1	0	128
Total	2	120	0	340	1	1	0	3	0	467
08:00 AM	1	43	0	90	3	0	1	2	0	140
08:15 AM	1	41	0	107	1	0	2	0	0	152
08:30 AM	0	31	0	108	0	0	0	1	0	140
08:45 AM	0	37	0	111	2	0	1	0	0	151
Total	2	152	0	416	6	0	4	3	0	583
Grand Total	4	272	0	756	7	1	4	6	0	1050
Apprch %	1.4	98.6	0	99	0.9	0.1	40	60	0	
Total %	0.4	25.9	0	72	0.7	0.1	0.4	0.6	0	
Cars	3	256	0	720	2	1	3	3	0	988
% Cars	75	94.1	0	95.2	28.6	100	75	50	0	94.1
Heavy Vehicles	1	16	0	36	5	0	1	3	0	62
% Heavy Vehicles	25	5.9	0	4.8	71.4	0	25	50	0	5.9

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	1	43	0	44	90	3	0	93	1	2	0	3	140
08:15 AM	1	41	0	42	107	1	0	108	2	0	0	2	152
08:30 AM	0	31	0	31	108	0	0	108	0	1	0	1	140
08:45 AM	0	37	0	37	111	2	0	113	1	0	0	1	151
Total Volume	2	152	0	154	416	6	0	422	4	3	0	7	583
% App. Total	1.3	98.7	0		98.6	1.4	0		57.1	42.9	0		
PHF	.500	.884	.000	.875	.937	.500	.000	.934	.500	.375	.000	.583	.959
Cars	2	140	0	142	399	2	0	401	3	2	0	5	548
% Cars	100	92.1	0	92.2	95.9	33.3	0	95.0	75.0	66.7	0	71.4	94.0
Heavy Vehicles	0	12	0	12	17	4	0	21	1	1	0	2	35
% Heavy Vehicles	0	7.9	0	7.8	4.1	66.7	0	5.0	25.0	33.3	0	28.6	6.0



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Client: VHB/ S. Mandzo-Predzic

File Name : 154431 E  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars

	St Thomas More Road From North			St Thomas More Road From South			Driveway North From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
07:00 AM	0	17	0	80	0	1	0	1	0	99
07:15 AM	0	28	0	78	0	0	0	0	0	106
07:30 AM	0	35	0	76	0	0	0	0	0	111
07:45 AM	1	36	0	87	0	0	0	0	0	124
Total	1	116	0	321	0	1	0	1	0	440
08:00 AM	1	38	0	85	1	0	1	2	0	128
08:15 AM	1	38	0	104	1	0	2	0	0	146
08:30 AM	0	27	0	103	0	0	0	0	0	130
08:45 AM	0	37	0	107	0	0	0	0	0	144
Total	2	140	0	399	2	0	3	2	0	548
Grand Total	3	256	0	720	2	1	3	3	0	988
Apprch %	1.2	98.8	0	99.6	0.3	0.1	50	50	0	
Total %	0.3	25.9	0	72.9	0.2	0.1	0.3	0.3	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	1	38	0	39	85	1	0	86	1	2	0	3	128
08:15 AM	1	38	0	39	104	1	0	105	2	0	0	2	146
08:30 AM	0	27	0	27	103	0	0	103	0	0	0	0	130
08:45 AM	0	37	0	37	107	0	0	107	0	0	0	0	144
Total Volume	2	140	0	142	399	2	0	401	3	2	0	5	548
% App. Total	1.4	98.6	0		99.5	0.5	0		60	40	0		
PHF	.500	.921	.000	.910	.932	.500	.000	.937	.375	.250	.000	.417	.938



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Groups Printed- Heavy Vehicles

File Name : 154431 E

Site Code : 10039.00

Start Date : 5/5/2015

Page No : 1

N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway North From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	0	2	0	5	0	0	0	0	0	7
07:15 AM	0	1	0	5	0	0	0	1	0	7
07:30 AM	1	0	0	7	1	0	0	0	0	9
07:45 AM	0	1	0	2	0	0	0	1	0	4
Total	1	4	0	19	1	0	0	2	0	27
08:00 AM	0	5	0	5	2	0	0	0	0	12
08:15 AM	0	3	0	3	0	0	0	0	0	6
08:30 AM	0	4	0	5	0	0	0	1	0	10
08:45 AM	0	0	0	4	2	0	1	0	0	7
Total	0	12	0	17	4	0	1	1	0	35
Grand Total	1	16	0	36	5	0	1	3	0	62
Apprch %	5.9	94.1	0	87.8	12.2	0	25	75	0	
Total %	1.6	25.8	0	58.1	8.1	0	1.6	4.8	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	5	0	5	5	2	0	7	0	0	0	0	12
08:15 AM	0	3	0	3	3	0	0	3	0	0	0	0	6
08:30 AM	0	4	0	4	5	0	0	5	0	1	0	1	10
08:45 AM	0	0	0	0	4	2	0	6	1	0	0	1	7
Total Volume	0	12	0	12	17	4	0	21	1	1	0	2	35
% App. Total	0	100	0		81	19	0		50	50	0		
PHF	.000	.600	.000	.600	.850	.500	.000	.750	.250	.250	.000	.500	.729



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Groups Printed- Peds and Bikes

File Name : 154431 E

Site Code : 10039.00

Start Date : 5/5/2015

Page No : 1

N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

St Thomas More Road From North					St Thomas More Road From South				Driveway North From West				Int. Total
Start Time	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	0	0	0	0	0	0	0	4	1	5
07:15 AM	0	1	1	0	0	0	0	0	0	0	4	3	9
07:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	1	1	0	0	0	0	0	0	0	11	5	18
08:00 AM	0	0	0	0	2	0	0	0	0	0	0	3	5
08:15 AM	0	0	0	0	1	0	0	0	0	0	1	1	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
08:45 AM	0	1	0	0	1	0	0	0	0	0	0	2	4
Total	0	1	0	0	4	0	0	0	0	0	4	6	15
Grand Total	0	2	1	0	4	0	0	0	0	0	15	11	33
Apprch %	0	66.7	33.3	0	100	0	0	0	0	0	57.7	42.3	
Total %	0	6.1	3	0	12.1	0	0	0	0	0	45.5	33.3	

	St Thomas More Road From North					St Thomas More Road From South					Driveway North From West					
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:00 AM																
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	5
07:15 AM	0	1	1	0	2	0	0	0	0	0	0	0	4	3	7	9
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	0	1	1	0	2	0	0	0	0	0	0	0	11	5	16	18
% App. Total	0	50	50	0		0	0	0	0		0	0	68.8	31.2		
PHF	.000	.250	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.688	.417	.571	.500



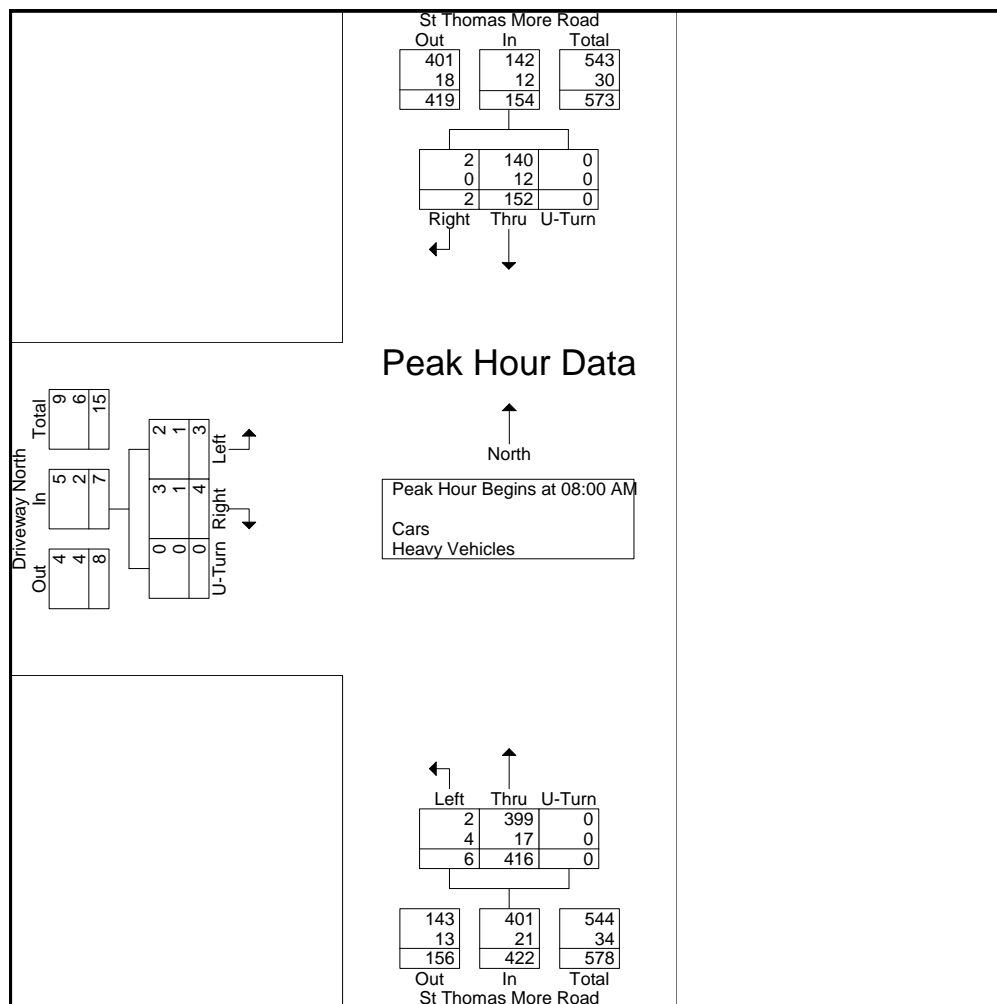
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N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 E  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	1	43	0	44	90	3	0	93	1	2	0	3	140
08:15 AM	1	41	0	42	107	1	0	108	2	0	0	2	152
08:30 AM	0	31	0	31	108	0	0	108	0	1	0	1	140
08:45 AM	0	37	0	37	111	2	0	113	1	0	0	1	151
Total Volume	2	152	0	154	416	6	0	422	4	3	0	7	583
% App. Total	1.3	98.7	0		98.6	1.4	0		57.1	42.9	0		
PHF	.500	.884	.000	.875	.937	.500	.000	.934	.500	.375	.000	.583	.959
Cars	2	140	0	142	399	2	0	401	3	2	0	5	548
% Cars	100	92.1	0	92.2	95.9	33.3	0	95.0	75.0	66.7	0	71.4	94.0
Heavy Vehicles	0	12	0	12	17	4	0	21	1	1	0	2	35
% Heavy Vehicles	0	7.9	0	7.8	4.1	66.7	0	5.0	25.0	33.3	0	28.6	6.0







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N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 EE  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway North From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	2	38	0	152	0	0	1	3	0	196
04:15 PM	1	37	0	120	0	0	0	1	0	159
04:30 PM	2	41	0	112	1	0	0	0	0	156
04:45 PM	1	32	0	124	2	0	2	2	0	163
Total	6	148	0	508	3	0	3	6	0	674
05:00 PM	2	40	0	138	2	0	0	3	0	185
05:15 PM	1	24	0	143	3	0	4	2	0	177
05:30 PM	3	30	0	109	2	0	2	2	0	148
05:45 PM	0	40	0	113	0	0	0	2	0	155
Total	6	134	0	503	7	0	6	9	0	665
Grand Total	12	282	0	1011	10	0	9	15	0	1339
Apprch %	4.1	95.9	0	99	1	0	37.5	62.5	0	
Total %	0.9	21.1	0	75.5	0.7	0	0.7	1.1	0	
Cars	10	274	0	992	9	0	9	12	0	1306
% Cars	83.3	97.2	0	98.1	90	0	100	80	0	97.5
Heavy Vehicles	2	8	0	19	1	0	0	3	0	33
% Heavy Vehicles	16.7	2.8	0	1.9	10	0	0	20	0	2.5

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	2	41	0	43	112	1	0	113	0	0	0	0	156
04:45 PM	1	32	0	33	124	2	0	126	2	2	0	4	163
05:00 PM	2	40	0	42	138	2	0	140	0	3	0	3	185
05:15 PM	1	24	0	25	143	3	0	146	4	2	0	6	177
Total Volume	6	137	0	143	517	8	0	525	6	7	0	13	681
% App. Total	4.2	95.8	0		98.5	1.5	0		46.2	53.8	0		
PHF	.750	.835	.000	.831	.904	.667	.000	.899	.375	.583	.000	.542	.920
Cars	5	132	0	137	507	7	0	514	6	5	0	11	662
% Cars	83.3	96.4	0	95.8	98.1	87.5	0	97.9	100	71.4	0	84.6	97.2
Heavy Vehicles	1	5	0	6	10	1	0	11	0	2	0	2	19
% Heavy Vehicles	16.7	3.6	0	4.2	1.9	12.5	0	2.1	0	28.6	0	15.4	2.8



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**Groups Printed- Cars**

N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 EE  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway North From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	2	38	0	147	0	0	1	2	0	190
04:15 PM	0	37	0	117	0	0	0	1	0	155
04:30 PM	2	39	0	109	0	0	0	0	0	150
04:45 PM	1	31	0	120	2	0	2	2	0	158
Total	5	145	0	493	2	0	3	5	0	653
05:00 PM	1	39	0	135	2	0	0	2	0	179
05:15 PM	1	23	0	143	3	0	4	1	0	175
05:30 PM	3	29	0	108	2	0	2	2	0	146
05:45 PM	0	38	0	113	0	0	0	2	0	153
Total	5	129	0	499	7	0	6	7	0	653
Grand Total	10	274	0	992	9	0	9	12	0	1306
Apprch %	3.5	96.5	0	99.1	0.9	0	42.9	57.1	0	
Total %	0.8	21	0	76	0.7	0	0.7	0.9	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	2	39	0	41	109	0	0	109	0	0	0	0	150
04:45 PM	1	31	0	32	120	2	0	122	2	2	0	4	158
05:00 PM	1	39	0	40	135	2	0	137	0	2	0	2	179
05:15 PM	1	23	0	24	143	3	0	146	4	1	0	5	175
Total Volume	5	132	0	137	507	7	0	514	6	5	0	11	662
% App. Total	3.6	96.4	0		98.6	1.4	0		54.5	45.5	0		
PHF	.625	.846	.000	.835	.886	.583	.000	.880	.375	.625	.000	.550	.925



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N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 EE  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

**Groups Printed- Heavy Vehicles**

	St Thomas More Road From North			St Thomas More Road From South			Driveway North From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
04:00 PM	0	0	0	5	0	0	0	1	0	6
04:15 PM	1	0	0	3	0	0	0	0	0	4
04:30 PM	0	2	0	3	1	0	0	0	0	6
04:45 PM	0	1	0	4	0	0	0	0	0	5
Total	1	3	0	15	1	0	0	1	0	21
05:00 PM	1	1	0	3	0	0	0	1	0	6
05:15 PM	0	1	0	0	0	0	0	1	0	2
05:30 PM	0	1	0	1	0	0	0	0	0	2
05:45 PM	0	2	0	0	0	0	0	0	0	2
Total	1	5	0	4	0	0	0	2	0	12
Grand Total	2	8	0	19	1	0	0	3	0	33
Apprch %	20	80	0	95	5	0	0	100	0	
Total %	6.1	24.2	0	57.6	3	0	0	9.1	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	5	0	0	5	0	1	0	1	6
04:15 PM	1	0	0	1	3	0	0	3	0	0	0	0	4
04:30 PM	0	2	0	2	3	1	0	4	0	0	0	0	6
04:45 PM	0	1	0	1	4	0	0	4	0	0	0	0	5
Total Volume	1	3	0	4	15	1	0	16	0	1	0	1	21
% App. Total	25	75	0		93.8	6.2	0		0	100	0		
PHF	.250	.375	.000	.500	.750	.250	.000	.800	.000	.250	.000	.250	.875



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Groups Printed- Peds and Bikes

N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 EE  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

St Thomas More Road From North					St Thomas More Road From South				Driveway North From West				Int. Total
Start Time	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
04:00 PM	0	2	0	0	1	0	0	0	0	0	6	5	14
04:15 PM	0	1	0	0	1	1	0	0	0	1	4	5	13
04:30 PM	0	0	0	0	0	0	0	0	0	0	4	4	8
04:45 PM	0	1	0	0	0	0	0	0	0	0	3	8	12
Total	0	4	0	0	2	1	0	0	0	1	17	22	47
05:00 PM	0	0	0	0	0	0	0	0	0	0	15	8	23
05:15 PM	0	0	0	0	2	0	0	0	0	0	12	6	20
05:30 PM	0	0	1	0	6	0	0	0	0	0	7	7	21
05:45 PM	0	0	0	0	0	0	0	0	0	0	11	10	21
Total	0	0	1	0	8	0	0	0	0	0	45	31	85
Grand Total	0	4	1	0	10	1	0	0	0	1	62	53	132
Apprch %	0	80	20	0	90.9	9.1	0	0	0	0.9	53.4	45.7	
Total %	0	3	0.8	0	7.6	0.8	0	0	0	0.8	47	40.2	

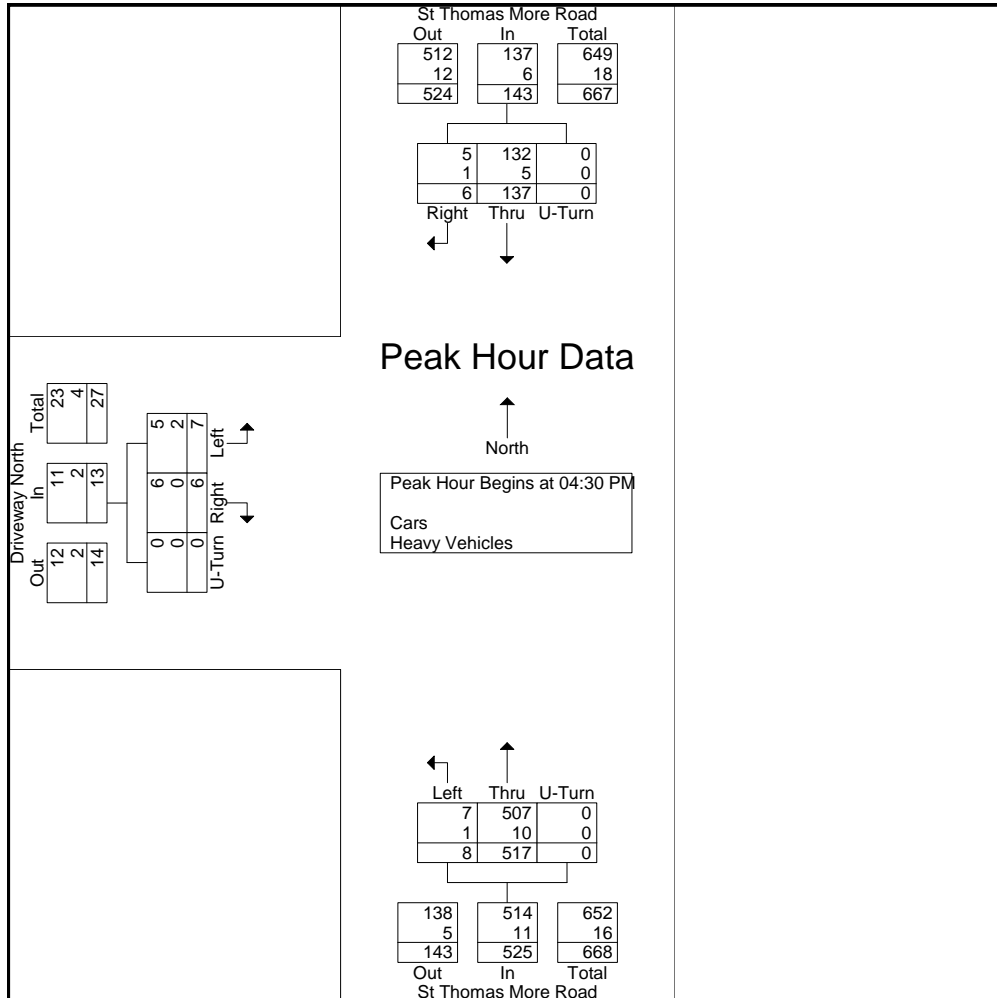
	St Thomas More Road From North					St Thomas More Road From South					Driveway North From West					
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	15	8	23	23
05:15 PM	0	0	0	0	0	2	0	0	0	2	0	0	12	6	18	20
05:30 PM	0	0	1	0	1	6	0	0	0	6	0	0	7	7	14	21
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	11	10	21	21
Total Volume	0	0	1	0	1	8	0	0	0	8	0	0	45	31	76	85
% App. Total	0	0	100	0		100	0	0	0		0	0	59.2	40.8		
PHF	.000	.000	.250	.000	.250	.333	.000	.000	.000	.333	.000	.000	.750	.775	.826	.924

N/S: St Thomas More Road  
W: Driveway North  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic



File Name : 154431 EE  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North				St Thomas More Road From South				Driveway North From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	2	41	0	43	112	1	0	113	0	0	0	0	156
04:45 PM	1	32	0	33	124	2	0	126	2	2	0	4	163
05:00 PM	2	40	0	42	138	2	0	140	0	3	0	3	185
05:15 PM	1	24	0	25	143	3	0	146	4	2	0	6	177
Total Volume	6	137	0	143	517	8	0	525	6	7	0	13	681
% App. Total	4.2	95.8	0		98.5	1.5	0		46.2	53.8	0		
PHF	.750	.835	.000	.831	.904	.667	.000	.899	.375	.583	.000	.542	.920
Cars	5	132	0	137	507	7	0	514	6	5	0	11	662
% Cars	83.3	96.4	0	95.8	98.1	87.5	0	97.9	100	71.4	0	84.6	97.2
Heavy Vehicles	1	5	0	6	10	1	0	11	0	2	0	2	19
% Heavy Vehicles	16.7	3.6	0	4.2	1.9	12.5	0	2.1	0	28.6	0	15.4	2.8







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N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 F  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway South From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	0	20	0	66	0	0	9	22	0	117
07:15 AM	0	29	0	71	0	0	16	13	0	129
07:30 AM	0	35	0	70	0	0	11	13	0	129
07:45 AM	0	37	0	73	0	0	14	13	0	137
Total	0	121	0	280	0	0	50	61	0	512
08:00 AM	0	44	0	83	0	0	11	13	0	151
08:15 AM	0	45	0	86	0	0	12	18	0	161
08:30 AM	0	30	0	85	0	0	17	25	0	157
08:45 AM	0	38	0	91	0	0	15	17	0	161
Total	0	157	0	345	0	0	55	73	0	630
Grand Total	0	278	0	625	0	0	105	134	0	1142
Apprch %	0	100	0	100	0	0	43.9	56.1	0	
Total %	0	24.3	0	54.7	0	0	9.2	11.7	0	
Cars	0	258	0	610	0	0	98	115	0	1081
% Cars	0	92.8	0	97.6	0	0	93.3	85.8	0	94.7
Heavy Vehicles	0	20	0	15	0	0	7	19	0	61
% Heavy Vehicles	0	7.2	0	2.4	0	0	6.7	14.2	0	5.3

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	44	0	44	83	0	0	83	11	13	0	24	151
08:15 AM	0	45	0	45	86	0	0	86	12	18	0	30	161
08:30 AM	0	30	0	30	85	0	0	85	17	25	0	42	157
08:45 AM	0	38	0	38	91	0	0	91	15	17	0	32	161
Total Volume	0	157	0	157	345	0	0	345	55	73	0	128	630
% App. Total	0	100	0		100	0	0		43	57	0		
PHF	.000	.872	.000	.872	.948	.000	.000	.948	.809	.730	.000	.762	.978
Cars	0	144	0	144	337	0	0	337	52	61	0	113	594
% Cars	0	91.7	0	91.7	97.7	0	0	97.7	94.5	83.6	0	88.3	94.3
Heavy Vehicles	0	13	0	13	8	0	0	8	3	12	0	15	36
% Heavy Vehicles	0	8.3	0	8.3	2.3	0	0	2.3	5.5	16.4	0	11.7	5.7



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Groups Printed- Cars

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 F  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North			St Thomas More Road From South			Driveway South From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
07:00 AM	0	18	0	63	0	0	8	21	0	110
07:15 AM	0	26	0	70	0	0	15	10	0	121
07:30 AM	0	34	0	69	0	0	11	10	0	124
07:45 AM	0	36	0	71	0	0	12	13	0	132
Total	0	114	0	273	0	0	46	54	0	487
08:00 AM	0	39	0	79	0	0	9	11	0	138
08:15 AM	0	43	0	85	0	0	12	16	0	156
08:30 AM	0	25	0	84	0	0	17	20	0	146
08:45 AM	0	37	0	89	0	0	14	14	0	154
Total	0	144	0	337	0	0	52	61	0	594
Grand Total	0	258	0	610	0	0	98	115	0	1081
Apprch %	0	100	0	100	0	0	46	54	0	
Total %	0	23.9	0	56.4	0	0	9.1	10.6	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	39	0	39	79	0	0	79	9	11	0	20	138
08:15 AM	0	43	0	43	85	0	0	85	12	16	0	28	156
08:30 AM	0	25	0	25	84	0	0	84	17	20	0	37	146
08:45 AM	0	37	0	37	89	0	0	89	14	14	0	28	154
Total Volume	0	144	0	144	337	0	0	337	52	61	0	113	594
% App. Total	0	100	0		100	0	0		46	54	0		
PHF	.000	.837	.000	.837	.947	.000	.000	.947	.765	.763	.000	.764	.952



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Groups Printed- Heavy Vehicles

File Name : 154431 F  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway South From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	0	2	0	3	0	0	1	1	0	7
07:15 AM	0	3	0	1	0	0	1	3	0	8
07:30 AM	0	1	0	1	0	0	0	3	0	5
07:45 AM	0	1	0	2	0	0	2	0	0	5
Total	0	7	0	7	0	0	4	7	0	25
08:00 AM	0	5	0	4	0	0	2	2	0	13
08:15 AM	0	2	0	1	0	0	0	2	0	5
08:30 AM	0	5	0	1	0	0	0	5	0	11
08:45 AM	0	1	0	2	0	0	1	3	0	7
Total	0	13	0	8	0	0	3	12	0	36
Grand Total	0	20	0	15	0	0	7	19	0	61
Apprch %	0	100	0	100	0	0	26.9	73.1	0	
Total %	0	32.8	0	24.6	0	0	11.5	31.1	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	5	0	5	4	0	0	4	2	2	0	4	13
08:15 AM	0	2	0	2	1	0	0	1	0	2	0	2	5
08:30 AM	0	5	0	5	1	0	0	1	0	5	0	5	11
08:45 AM	0	1	0	1	2	0	0	2	1	3	0	4	7
Total Volume	0	13	0	13	8	0	0	8	3	12	0	15	36
% App. Total	0	100	0		100	0	0		20	80	0		
PHF	.000	.650	.000	.650	.500	.000	.000	.500	.375	.600	.000	.750	.692



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Groups Printed- Peds and Bikes

File Name : 154431 F  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

St Thomas More Road From North					St Thomas More Road From South				Driveway South From West				Int. Total
Start Time	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	0	1	0	3	0	0	0	3	3	10
07:15 AM	0	1	0	0	0	0	6	6	0	0	4	9	26
07:30 AM	0	0	0	0	0	0	3	2	0	0	4	2	11
07:45 AM	0	0	0	0	0	0	3	0	0	0	0	1	4
Total	0	1	0	0	1	0	15	8	0	0	11	15	51
08:00 AM	0	0	0	0	2	0	7	3	0	0	4	3	19
08:15 AM	0	0	0	0	1	1	4	1	0	0	3	1	11
08:30 AM	0	0	0	0	0	0	6	2	0	0	1	3	12
08:45 AM	0	1	0	0	1	0	2	1	0	0	1	2	8
Total	0	1	0	0	4	1	19	7	0	0	9	9	50
Grand Total	0	2	0	0	5	1	34	15	0	0	20	24	101
Apprch %	0	100	0	0	9.1	1.8	61.8	27.3	0	0	45.5	54.5	
Total %	0	2	0	0	5	1	33.7	14.9	0	0	19.8	23.8	

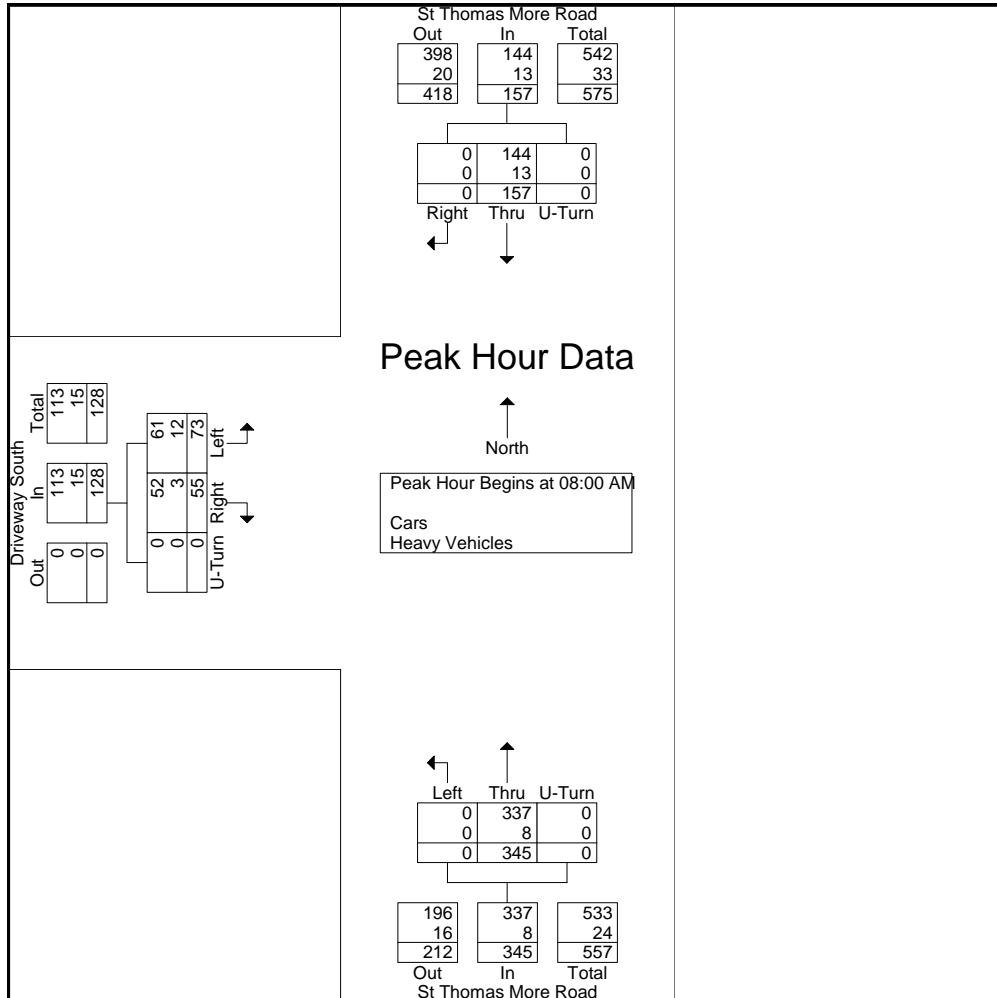
	St Thomas More Road From North					St Thomas More Road From South					Driveway South From West					
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:15 AM																
07:15 AM	0	1	0	0	1	0	0	6	6	12	0	0	4	9	13	26
07:30 AM	0	0	0	0	0	0	0	3	2	5	0	0	4	2	6	11
07:45 AM	0	0	0	0	0	0	0	3	0	3	0	0	0	1	1	4
08:00 AM	0	0	0	0	0	2	0	7	3	12	0	0	4	3	7	19
Total Volume	0	1	0	0	1	2	0	19	11	32	0	0	12	15	27	60
% App. Total	0	100	0	0		6.2	0	59.4	34.4		0	0	44.4	55.6		
PHF	.000	.250	.000	.000	.250	.250	.000	.679	.458	.667	.000	.000	.750	.417	.519	.577

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic



File Name : 154431 F  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	44	0	44	83	0	0	83	11	13	0	24	151
08:15 AM	0	45	0	45	86	0	0	86	12	18	0	30	161
08:30 AM	0	30	0	30	85	0	0	85	17	25	0	42	157
08:45 AM	0	38	0	38	91	0	0	91	15	17	0	32	161
Total Volume	0	157	0	157	345	0	0	345	55	73	0	128	630
% App. Total	0	100	0		100	0	0		43	57	0		
PHF	.000	.872	.000	.872	.948	.000	.000	.948	.809	.730	.000	.762	.978
Cars	0	144	0	144	337	0	0	337	52	61	0	113	594
% Cars	0	91.7	0	91.7	97.7	0	0	97.7	94.5	83.6	0	88.3	94.3
Heavy Vehicles	0	13	0	13	8	0	0	8	3	12	0	15	36
% Heavy Vehicles	0	8.3	0	8.3	2.3	0	0	2.3	5.5	16.4	0	11.7	5.7







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N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 FF  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway South From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	0	25	0	82	0	0	46	70	0	223
04:15 PM	0	38	0	85	0	0	34	43	0	200
04:30 PM	0	41	0	74	0	0	39	42	0	196
04:45 PM	0	33	0	69	0	0	38	51	0	191
Total	0	137	0	310	0	0	157	206	0	810
05:00 PM	0	40	0	73	0	0	62	73	0	248
05:15 PM	0	27	0	92	0	0	54	58	0	231
05:30 PM	0	33	0	68	0	0	33	36	0	170
05:45 PM	0	41	0	78	0	0	37	38	0	194
Total	0	141	0	311	0	0	186	205	0	843
Grand Total	0	278	0	621	0	0	343	411	0	1653
Apprch %	0	100	0	100	0	0	45.5	54.5	0	
Total %	0	16.8	0	37.6	0	0	20.8	24.9	0	
Cars	0	270	0	617	0	0	335	395	0	1617
% Cars	0	97.1	0	99.4	0	0	97.7	96.1	0	97.8
Heavy Vehicles	0	8	0	4	0	0	8	16	0	36
% Heavy Vehicles	0	2.9	0	0.6	0	0	2.3	3.9	0	2.2

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	41	0	41	74	0	0	74	39	42	0	81	196
04:45 PM	0	33	0	33	69	0	0	69	38	51	0	89	191
05:00 PM	0	40	0	40	73	0	0	73	62	73	0	135	248
05:15 PM	0	27	0	27	92	0	0	92	54	58	0	112	231
Total Volume	0	141	0	141	308	0	0	308	193	224	0	417	866
% App. Total	0	100	0		100	0	0		46.3	53.7	0		
PHF	.000	.860	.000	.860	.837	.000	.000	.837	.778	.767	.000	.772	.873
Cars	0	136	0	136	305	0	0	305	190	216	0	406	847
% Cars	0	96.5	0	96.5	99.0	0	0	99.0	98.4	96.4	0	97.4	97.8
Heavy Vehicles	0	5	0	5	3	0	0	3	3	8	0	11	19
% Heavy Vehicles	0	3.5	0	3.5	1.0	0	0	1.0	1.6	3.6	0	2.6	2.2



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Groups Printed- Cars

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

File Name : 154431 FF  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North			St Thomas More Road From South			Driveway South From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
04:00 PM	0	25	0	82	0	0	45	64	0	216
04:15 PM	0	38	0	84	0	0	33	42	0	197
04:30 PM	0	39	0	73	0	0	39	39	0	190
04:45 PM	0	32	0	68	0	0	38	48	0	186
Total	0	134	0	307	0	0	155	193	0	789
05:00 PM	0	39	0	72	0	0	61	71	0	243
05:15 PM	0	26	0	92	0	0	52	58	0	228
05:30 PM	0	32	0	68	0	0	32	35	0	167
05:45 PM	0	39	0	78	0	0	35	38	0	190
Total	0	136	0	310	0	0	180	202	0	828
Grand Total	0	270	0	617	0	0	335	395	0	1617
Apprch %	0	100	0	100	0	0	45.9	54.1	0	
Total %	0	16.7	0	38.2	0	0	20.7	24.4	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	39	0	39	73	0	0	73	39	39	0	78	190
04:45 PM	0	32	0	32	68	0	0	68	38	48	0	86	186
05:00 PM	0	39	0	39	72	0	0	72	61	71	0	132	243
05:15 PM	0	26	0	26	92	0	0	92	52	58	0	110	228
Total Volume	0	136	0	136	305	0	0	305	190	216	0	406	847
% App. Total	0	100	0		100	0	0		46.8	53.2	0		
PHF	.000	.872	.000	.872	.829	.000	.000	.829	.779	.761	.000	.769	.871



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File Name : 154431 FF  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

**Groups Printed- Heavy Vehicles**

Start Time	St Thomas More Road From North			St Thomas More Road From South			Driveway South From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	0	0	0	0	0	0	1	6	0	7
04:15 PM	0	0	0	1	0	0	1	1	0	3
04:30 PM	0	2	0	1	0	0	0	3	0	6
04:45 PM	0	1	0	1	0	0	0	3	0	5
Total	0	3	0	3	0	0	2	13	0	21
05:00 PM	0	1	0	1	0	0	1	2	0	5
05:15 PM	0	1	0	0	0	0	2	0	0	3
05:30 PM	0	1	0	0	0	0	1	1	0	3
05:45 PM	0	2	0	0	0	0	2	0	0	4
Total	0	5	0	1	0	0	6	3	0	15
Grand Total	0	8	0	4	0	0	8	16	0	36
Apprch %	0	100	0	100	0	0	33.3	66.7	0	
Total %	0	22.2	0	11.1	0	0	22.2	44.4	0	

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	0	0	0	0	1	6	0	7	7
04:15 PM	0	0	0	0	1	0	0	1	1	1	0	2	3
04:30 PM	0	2	0	2	1	0	0	1	0	3	0	3	6
04:45 PM	0	1	0	1	1	0	0	1	0	3	0	3	5
Total Volume	0	3	0	3	3	0	0	3	2	13	0	15	21
% App. Total	0	100	0		100	0	0		13.3	86.7	0		
PHF	.000	.375	.000	.375	.750	.000	.000	.750	.500	.542	.000	.536	.750



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Groups Printed- Peds and Bikes

File Name : 154431 FF

Site Code : 10039.00

Start Date : 5/5/2015

Page No : 1

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic

St Thomas More Road From North					St Thomas More Road From South				Driveway South From West				Int. Total
Start Time	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
04:00 PM	0	2	0	0	1	0	4	14	0	0	4	10	35
04:15 PM	0	1	0	0	1	0	9	8	0	0	9	9	37
04:30 PM	0	0	0	0	0	0	10	16	0	0	6	7	39
04:45 PM	0	1	0	0	0	0	9	12	0	0	7	17	46
Total	0	4	0	0	2	0	32	50	0	0	26	43	157
05:00 PM	0	0	0	0	0	0	19	14	0	0	12	17	62
05:15 PM	0	0	0	0	2	0	11	13	0	0	6	10	42
05:30 PM	0	0	0	0	5	0	9	12	0	0	6	6	38
05:45 PM	0	0	0	0	0	0	11	22	0	0	12	19	64
Total	0	0	0	0	7	0	50	61	0	0	36	52	206
Grand Total	0	4	0	0	9	0	82	111	0	0	62	95	363
Apprch %	0	100	0	0	4.5	0	40.6	55	0	0	39.5	60.5	
Total %	0	1.1	0	0	2.5	0	22.6	30.6	0	0	17.1	26.2	

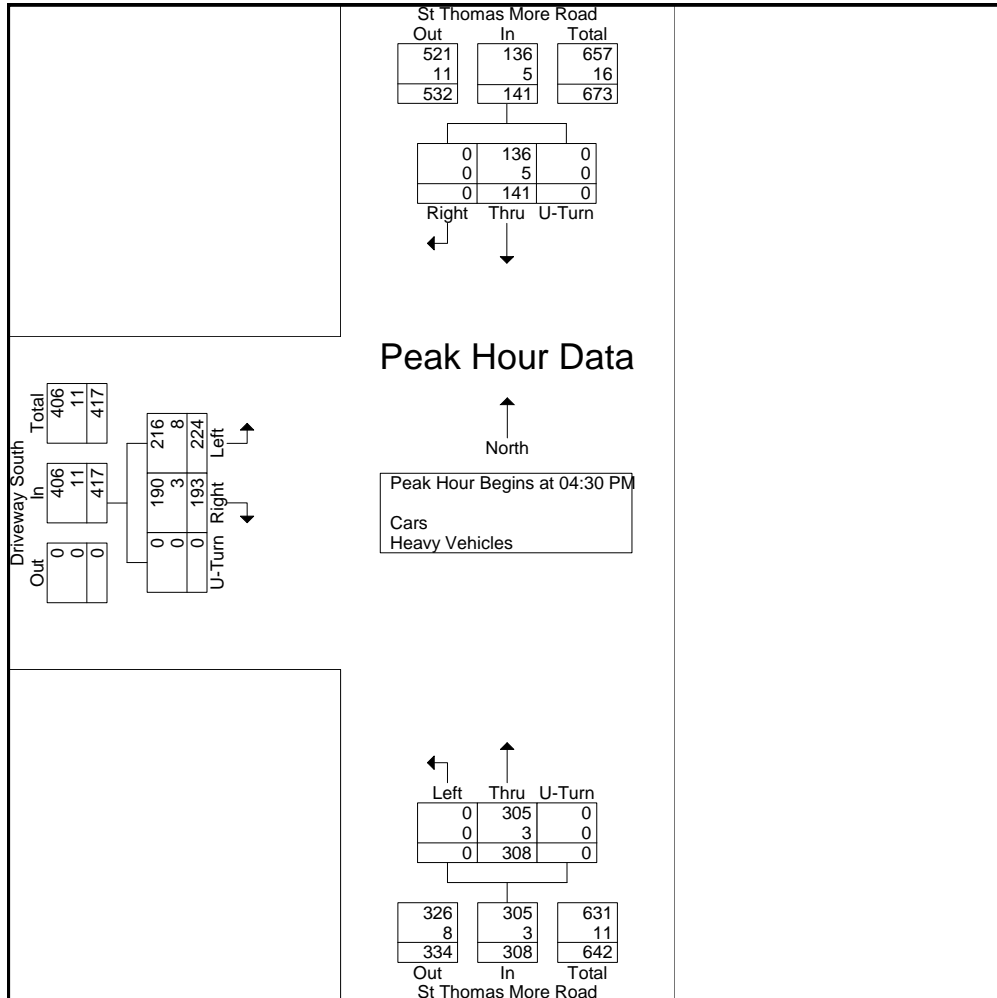
	St Thomas More Road From North					St Thomas More Road From South					Driveway South From West					
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	0	0	0	0	0	19	14	33	0	0	12	17	29	62
05:15 PM	0	0	0	0	0	2	0	11	13	26	0	0	6	10	16	42
05:30 PM	0	0	0	0	0	5	0	9	12	26	0	0	6	6	12	38
05:45 PM	0	0	0	0	0	0	0	11	22	33	0	0	12	19	31	64
Total Volume	0	0	0	0	0	7	0	50	61	118	0	0	36	52	88	206
% App. Total	0	0	0	0	0	5.9	0	42.4	51.7		0	0	40.9	59.1		
PHF	.000	.000	.000	.000	.000	.350	.000	.658	.693	.894	.000	.000	.750	.684	.710	.805

N/S: St Thomas More Road  
W: Driveway South  
City, State: Chestnut Hill, MA  
Client: VHB/ S. Mandzo-Predzic



File Name : 154431 FF  
Site Code : 10039.00  
Start Date : 5/5/2015  
Page No : 1

	St Thomas More Road From North				St Thomas More Road From South				Driveway South From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	41	0	41	74	0	0	74	39	42	0	81	196
04:45 PM	0	33	0	33	69	0	0	69	38	51	0	89	191
05:00 PM	0	40	0	40	73	0	0	73	62	73	0	135	248
05:15 PM	0	27	0	27	92	0	0	92	54	58	0	112	231
Total Volume	0	141	0	141	308	0	0	308	193	224	0	417	866
% App. Total	0	100	0		100	0	0		46.3	53.7	0		
PHF	.000	.860	.000	.860	.837	.000	.000	.837	.778	.767	.000	.772	.873
Cars	0	136	0	136	305	0	0	305	190	216	0	406	847
% Cars	0	96.5	0	96.5	99.0	0	0	99.0	98.4	96.4	0	97.4	97.8
Heavy Vehicles	0	5	0	5	3	0	0	3	3	8	0	11	19
% Heavy Vehicles	0	3.5	0	3.5	1.0	0	0	1.0	1.6	3.6	0	2.6	2.2





## **APPENDIX B: BRA Checklists**

**BRA Accessibility Checklist**

**BRA Climate Change Preparedness and Resilience Checklist**

## Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

### Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
  - a. [http://www.ada.gov/2010ADASTandards\\_index.htm](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](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](http://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/](http://www.mbta.com/about_the_mbta/accessibility/)

## Project Information

Project Name:	Boston College Recreation Center Project
Project Address Primary:	200 St. Thomas More Road
Project Address Additional:	NA
Project Contact (name / Title / Company / email / phone):	Thomas Keady, Vice President of the Office of Governmental and Community Affairs at Boston College <a href="mailto:keadyth@bc.edu">keadyth@bc.edu</a> (617) 552-4787

Owner / Developer:	Boston College
Architect:	Cannon Design
Engineer (building systems):	VHB, Inc. (site/civil) Cannon Design (building systems)
Sustainability / LEED:	Cannon Design
Permitting:	VHB, Inc.
Construction Management:	Skanska

## Project Permitting and Phase

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

PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BRA Board Approved
BRA Design Approved	Under Construction	Construction just completed:

## Building Classification and Description

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

## Article 80 | ACCESSIBILITY CHECKLIST

Residential – One to Three Unit	Residential - Multi-unit, Four +	<b>Institutional</b>	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
<b>Multi-Activity Court, Loading, Outdoor Recreation, Offices, Pool, Locker Room</b>			

First Floor Uses (List)

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	<b>Steel Frame</b>	Concrete
------------	---------	--------------------	----------

Describe the building?

Site Area:

**123,200 SF**

Building Footprint Area:

**71,600 SF**

Building Gross Square Footage:

**233,865 GSF**

Building Height:

**69'-10" Ft.**

Number of Stories:

**4 Flrs.**

First Floor Elevation (reference Boston City Base):

**139.90'**

Are there below grade spaces/levels, if yes how many:

**YES / 1 Level**

### 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 Project Site is set within the Boston College Lower Campus south of Commonwealth Avenue located on the west side of St. Thomas More Road—a Massachusetts Department of Conservation and Recreation (DCR) roadway. It is surrounded to the north and west by other institutional buildings/uses, including student dormitories. To the northeast across St. Thomas More Road lies the Evergreen Cemetery and further east and south of the Project Site is the Chestnut Hill Reservoir.**

List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.

**The Boston College Campus is well served by MBTA transit and bus services. Boston College is located at the terminus of the MBTA's Green Line Boston College B Branch, which is an ADA-compliant station. The Boston College station is located on the north side of Commonwealth Avenue, just west of the Brighton Campus.**

## Article 80 | ACCESSIBILITY CHECKLIST

List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.

**The Project is set within the Boston College Campus surrounded by institutional uses (student residence and dining halls, sports stadium, etc.).**

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.

**No, the Project is not on a priority accessible route to a key public use facility as it is set within the Boston College Campus. To the east and south of the Project Site across St. Thomas More Road lies the Chestnut Hill Reservation and Reservoir, which has a public multi-use path.**

### 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?

**Yes**

**If yes above**, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.

**Along St. Thomas Moore Road, the asphalt sidewalk and pedestrian ramp are in moderate condition.**

**Along Campanella Way, the asphalt sidewalk and ramp are in moderate condition. The asphalt sidewalk along existing parking lot in moderate 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.

**No, all existing sidewalks and curb cut ramps within Project Site will be re-built.**

Is the development site within a historic district? **If yes**, please identify.

**No, the Project Site is not within a designated historic district.**

### 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

## Article 80 | ACCESSIBILITY CHECKLIST

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 comfortably 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](http://www.bostoncompletestreets.org)

**If yes above**, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.

What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.

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?

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?

Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?

**If yes above**, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?

**Yes**

**Parkway**

**Frontage: 22'**  
**Pedestrian Zone: 6'**  
**Greenscape/ Furnishing Zone: 10'**

**Frontage: Falls within property line, consists of 6' wide path and 16' wide planted slope.**  
**Pedestrian Zone: Concrete? On City of Boston pedestrian right-of-way.**  
**Greenscape/ Furnishing Zone: Lawn with street trees (existing?)**

**No**

**No**

**Not Applicable (NA)**

**Proposed Accessible Parking:**



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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?

**No parking is proposed on-site.**

What is the total number of accessible spaces provided at the development site?

**Two (2) ADA-accessible parking spaces for the Project will be provided adjacent to the existing outdoor tennis court, as identified in the Accessibility Diagram attached.**

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?

**NA**

Where is accessible visitor parking located?

**NA**

Has a drop-off area been identified? **If yes**, will it be accessible?

**NA**

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.

**NA**

### Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.

**See attached diagram.**

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Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.

Entry A/ D – Flush  
Entry H/ G/F/D/E- Ramp (Cannon to confirm if entry H is accessible)  
Entry – Stairs

Are the accessible entrance and the standard entrance integrated?

Yes

If no above, what is the reason?

NA

Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.

No, all outdoor open spaces are accessible via the proposed pedestrian pathways, as shown on the attached diagram.

Has an accessible routes way-finding and signage package been developed? If yes, please describe.

NA

### 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?

No residential units are proposed as part of the Project.

How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?

NA

How many accessible units are being proposed?

NA

Please provide plan and diagram of the accessible units.

NA

How many accessible units will also be affordable? If none, please describe reason.

NA

Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility

NA

## Article 80 | ACCESSIBILITY CHECKLIST

impairments? Example: stairs at 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?

Did the Advisory Board vote to support this project? **If no**, what recommendations did the Advisory Board give to make this project more accessible?

No
NA

Thank you for completing the Accessibility Checklist!

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

[kathryn.quigley@boston.gov](mailto:kathryn.quigley@boston.gov) | Mayors Commission for Persons with Disabilities



- LEGEND**
- Terraces / Landings  
<2% slope
  - Walkways  
<5% slope
  - Pedestrian Corridor  
2-3% slope /  
2% max. cross slope
  - Stairs
  - Building Entry /  
Egress

Accessibility Diagram

**Boston College Recreation Center  
Brighton, Massachusetts**

# 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/](http://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](http://www.bostonredevelopmentauthority.org/planning/Hotspot%20of%20Accelerated%20Sea-level%20Rise%202012.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](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](#).



## Climate Change Resiliency and Preparedness Checklist

### A.1 - Project Information

Project Name:	Boston College Recreation Center Project
Project Address Primary:	200 St. Thomas More Road
Project Address Additional:	NA
Project Contact (name / Title / Company / email / phone):	Thomas Keady, Vice President of the Office of Governmental and Community Affairs at Boston College <a href="mailto:keadyth@bc.edu">keadyth@bc.edu</a> (617) 552-4787

### A.2 - Team Description

Owner / Developer:	Boston College
Architect:	Cannon Design
Engineer (building systems):	VHB, Inc. (site/civil) Cannon Design (building systems)
Sustainability / LEED:	Cannon Design
Permitting:	VHB, Inc.
Construction Management:	Skanska
Climate Change Expert:	VHB, Inc.

### A.3 - Project Permitting and Phase

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

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

### A.4 - Building Classification and Description

List the principal Building Uses:	Recreational use including basketball, swim/dive, weights and fitness and group exercise.
List the First Floor Uses:	Basketball courts, swimming pool, climbing wall: outdoor recreation programs, locker rooms, equipment issue, and loading.

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

Wood Frame	Masonry	Steel Frame	Concrete
------------	---------	-------------	----------

Describe the building?

Site Area:	123,200 SF	Building Footprint Area:	71,600 SF
		Building Gross Square Footage:	233,865 GSF
Building Height:	69'-10" Ft.	Number of Stories:	4 Flrs.
First Floor Elevation (reference Boston City Base):	139.90'	Are there below grade spaces/levels, if yes how many:	YES / 1 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:

<b>New Construction</b>	Core & Shell	Healthcare	Schools
Retail	Homes Midrise	Homes	Other
Select LEED Outcome:	Certified	Silver	Gold
			Platinum

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

Registered:

**Yes**

Certified:

**No**

## A.6 - Building Energy

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

Electric:

**4,191 (kWh)**

Heating:

**10,500  
(MMBtu/hr)**

What is the planned building  
Energy Use Intensity:

**198 kbt/SF**

Cooling:

**700 Tons**

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

Electric:

**150 (kW)**

Heating:

**0 (MMBtu/hr)**

Cooling:

**0 (Tons/hr)**

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

Electrical Generation:

**600 (kW)**

Fuel Source:

**Oil**

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	<b>50 Years</b>	75 Years
----------	----------	-----------------	----------

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

<b>91°DB (high) / 0°F (Low)</b>
-------------------------------------

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

<b>88°DB/74WB°</b>	<b>14.6 Days</b>	<b>5 Events / yr.</b>
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What Drought characteristics will be used for project planning – Duration and Frequency?

<i>Days</i>	<i>Events / yr.</i>
-------------	---------------------

**Drought tolerance will be addressed in project site design through a combination of plants that require less water and maintenance and designing efficient irrigation system to reduce water needs by 25% - 50%. This reduced irrigation will aim to satisfy the Water Efficient Landscaping LEED credit requirements.**

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

<b>±42 Inches.</b>	<b>1 Inch</b>	<b>10 Events / yr.</b>
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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?

<b>105 MPH Peak Wind</b>	<b>TBD - Hours</b>	<b>TBD - Events / yr.</b>
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## 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:

<b>23%</b>
------------

How is performance determined:

<b>EQUEST model of design in comparison to ASHRAE 90.1-2007</b>
---

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

Select all appropriate:

<b>High performance building envelop</b>	<b>High performance lighting &amp; controls</b>	<b>Building day lighting</b>	<b>EnergyStar equip. / appliances</b>
<b>High performance HVAC equipment</b>	<b>Energy recovery ventilation</b>	No active cooling	No active heating

Describe any added measures:

<b>NA</b>
-----------

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

Roof:	<b>R = 38</b>	Walls / Curtain Wall Assembly:	<b>R = 19</b>
Foundation:	<b>R = 10</b>	Basement / Slab:	<b>R = 0</b>
Windows:	<b>R = 3.45 / U = 0.29</b>	Doors:	<b>R = 3.45 / U = 0.29</b>

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

On-site clean energy / CHP system(s)	<b>Building-wide power dimming</b>	Thermal energy storage systems	Ground source heat pump
--------------------------------------	------------------------------------	--------------------------------	-------------------------

	On-site Solar PV	On-site Solar Thermal	Wind power	None
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Describe any added measures: **High Efficiency Lighting Controls, High Efficiency CLS3 Type Transformers, and Building Wide Energy Metering (Note: All energy reduction measure are in a study phase.)**

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

Select all appropriate:

<b>Connected to local distributed electrical</b>	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?

No	If yes, for how long:	Days
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If Yes, is building "Islandable?"

If Yes, describe strategies: **\*The emergency generator is provided for life safety systems at 90 minutes**

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	<b>External shading devices</b>	<b>Tuned glazing,</b>
Building cool zones	Operable windows	Natural ventilation	<b>Building shading</b>
Potable water for drinking / food preparation	Potable water for sinks / sanitary systems	Waste water storage capacity	<b>High Performance Building Envelop</b>

Describe any added measures: **Potable water for sinks/sanitary systems and waste water storage capacity are under consideration**

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

Select all appropriate:

<b>High reflective paving materials</b>	<b>Shade trees &amp; shrubs</b>	<b>High reflective roof materials</b>	Vegetated roofs
---	---------------------------------	---------------------------------------	-----------------

Describe other strategies: **NA**

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

Select all appropriate:

<b>On-site retention systems &amp; ponds</b>	<b>Infiltration galleries &amp; areas</b>	vegetated water capture systems	Vegetated roofs
--	---	---------------------------------	-----------------

Describe other strategies: **NA**

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

Select all appropriate:

<b>Hardened building structure &amp; elements</b>	<b>Buried utilities &amp; hardened infrastructure</b>	Hazard removal & protective landscapes	<b>Soft &amp; permeable surfaces (water infiltration)</b>
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Describe other strategies: **NA**

## 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 be susceptible to flooding now or during the full expected life of the building?

No

Describe site conditions?

Site Elevation – Low/High Points: 137'/144' Boston City Base Elev.(Ft.)

Building Proximity to Water: ±500'

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?

±100'

**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 1 <sup>st</sup> Floor.	Water tight utility conduits	Waste water back flow prevention	Storm water back flow prevention
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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:

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#### C.4 - Building Resilience and Adaptability

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

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

Select appropriate:	Yes / No	Hardened / Resilient Ground Floor Construction	Temporary shutters and or barricades	Resilient site design, materials and construction
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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](mailto:John.Dalzell.BRA@cityofboston.gov)



## **APPENDIX C: NOISE SUPPORTING DOCUMENTATION**



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## **Noise Monitoring Data Location M1 – East Property Line**

**Summary**

Filename	15042900.LD0
Serial Number	3502
Model	Model 831
Firmware Version	2.301
User	QT/JW
Location	East Property Line
Job Description	BC New Rec
Note	24 hr-Day 1
Measurement Description	
Start	2015/04/29 15:10:58
Stop	2015/04/30 0:00:00
Duration	8:49:01.3
Run Time	8:49:01.3
Pause	0:00:00.0

Pre Calibration	2015/04/29 15:08:47
Post Calibration	None
Calibration Deviation	---

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow

**Results**

LASeq	59.5 dB	
LASE	104.5 dB	
EAS	3.108 mPa <sup>2</sup> h	
LApeak (max)	2015/04/29 15:11:15	106.7 dB
LASmax	2015/04/29 23:15:16	83.0 dB
LASmin	2015/04/29 23:57:53	41.0 dB

**Statistics**

LAS5.00	66.1 dB
LAS10.00	62.4 dB
LAS15.00	59.7 dB
LAS50.00	52.7 dB
LAS70.00	50.1 dB
LAS90.00	46.7 dB

**Summary**

Filename	15043000.LD0
Serial Number	3502
Model	Model 831
Firmware Version	2.301
User	QT/JW
Location	East Property Line
Job Description	BC New Rec
Note	24hr-Day 2
Measurement Description	
Start	2015/04/30 0:00:00
Stop	2015/04/30 16:02:47
Duration	16:02:47.6
Run Time	16:02:47.6
Pause	0:00:00.0

Pre Calibration	2015/04/29 15:08:44
Post Calibration	2015/04/30 16:03:38
Calibration Deviation	-0.14 dB

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow

**Results**

LASeq	64.0 dB	
LASE	111.6 dB	
EAS	15.992 mPa <sup>2</sup> h	
LApeak (max)	2015/04/30 7:00:35	109.0 dB
LASmax	2015/04/30 8:19:26	86.8 dB
LASmin	2015/04/30 3:16:00	40.2 dB

**Statistics**

LAS5.00	70.1 dB
LAS10.00	68.7 dB
LAS15.00	67.6 dB
LAS50.00	56.0 dB
LAS70.00	47.0 dB
LAS90.00	41.4 dB

**Boston Recreation Center**  
**Noise Monitoring - M1**

Record #	Date	Time	Duration	Run Time	LASeq	LASmin	LASmax	LAS5.00	LAS10.00	LAS15.00	LAS50.00	LAS70.00	LAS90.00
1	2015/04/29	15:10:58	00:49:01.3	00:49:01.3	54.4	44.0	73.0	58.7	57.0	56.0	52.6	51.0	48.4
2	2015/04/29	16:00:00	01:00:00.0	01:00:00.0	59.8	45.0	73.3	64.5	63.5	62.7	57.0	54.5	51.9
3	2015/04/29	17:00:00	01:00:00.0	01:00:00.0	66.6	48.1	78.0	71.7	70.9	70.2	63.2	58.1	53.9
4	2015/04/29	18:00:00	01:00:00.0	01:00:00.0	56.1	44.3	77.0	60.8	57.7	56.4	53.0	51.4	48.9
5	2015/04/29	19:00:00	01:00:00.0	01:00:00.0	55.3	43.2	76.5	60.5	56.7	55.5	52.0	50.0	47.5
6	2015/04/29	20:00:00	01:00:00.0	01:00:00.0	54.7	43.1	73.3	59.9	56.7	55.4	51.1	49.0	46.1
7	2015/04/29	21:00:00	01:00:00.0	01:00:00.0	55.9	42.9	77.1	59.3	56.7	55.7	51.5	49.1	46.1
8	2015/04/29	22:00:00	01:00:00.0	01:00:00.0	54.5	43.3	75.3	58.2	56.0	55.0	50.6	48.5	47.3
9	2015/04/29	23:00:00	01:00:00.0	01:00:00.0	54.5	41.0	83.0	59.1	55.2	53.1	47.1	44.1	42.2
1	2015/04/30	00:00:00	01:00:00.0	01:00:00.0	52.0	40.6	76.5	57.6	52.5	50.3	43.1	41.9	41.4
2	2015/04/30	01:00:00	01:00:00.0	01:00:00.0	51.6	40.5	73.7	54.7	50.4	48.0	42.2	41.6	41.2
3	2015/04/30	02:00:00	01:00:00.0	01:00:00.0	47.0	40.5	65.7	50.9	47.5	45.6	41.8	41.4	41.1
4	2015/04/30	03:00:00	01:00:00.0	01:00:00.0	51.7	40.2	77.3	50.7	46.7	44.7	41.3	41.0	40.7
5	2015/04/30	04:00:00	01:00:00.0	01:00:00.0	47.8	40.2	67.6	52.3	50.9	50.0	42.2	41.2	40.8
6	2015/04/30	05:00:00	01:00:00.0	01:00:00.0	49.4	40.8	64.5	55.2	53.4	51.8	44.7	42.9	42.0
7	2015/04/30	06:00:00	01:00:00.0	01:00:00.0	58.4	42.7	84.5	61.8	58.4	56.9	52.6	50.7	47.4
8	2015/04/30	07:00:00	01:00:00.0	01:00:00.0	59.3	47.1	85.8	63.6	60.8	59.1	55.1	53.8	51.1
9	2015/04/30	08:00:00	01:00:00.0	01:00:00.0	61.9	45.7	86.8	67.4	64.0	63.0	55.0	53.1	50.9
10	2015/04/30	09:00:00	01:00:00.0	01:00:00.0	63.5	48.7	77.1	69.1	66.8	65.4	60.5	58.0	55.1
11	2015/04/30	10:00:00	01:00:00.0	01:00:00.0	64.2	50.8	77.4	69.5	67.6	66.2	61.5	59.6	57.5
12	2015/04/30	11:00:00	01:00:00.0	01:00:00.0	66.5	53.5	78.3	70.4	69.2	68.6	65.5	63.4	59.9
13	2015/04/30	12:00:00	01:00:00.0	01:00:00.0	67.9	56.8	79.9	71.4	70.0	69.2	66.9	65.9	64.3
14	2015/04/30	13:00:00	01:00:00.0	01:00:00.0	68.5	58.5	77.9	71.9	70.8	70.2	67.7	66.5	64.5
15	2015/04/30	14:00:00	01:00:00.0	01:00:00.0	68.2	56.9	78.9	71.9	70.8	70.2	67.2	65.6	63.5
16	2015/04/30	15:00:00	01:00:00.0	01:00:00.0	68.4	55.5	79.6	72.2	71.2	70.6	67.8	64.3	61.1
17	2015/04/30	16:00:00	00:02:47.6	00:02:47.6	67.1	58.2	74.9	72.9	71.1	69.8	64.6	63.1	61.0



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## **Noise Monitoring Data Location M2 - Mods**



**Summary**

Filename	15042900.LD0
Serial Number	3707
Model	SoundExpert™ LxT
Firmware Version	2.301
User	QT/JW
Location	Mods
Job Description	BC New Rec
Note	Daytime Measurment
Measurement Description	
Start	2015/04/29 15:21:31
Stop	2015/04/29 15:36:54
Duration	0:15:22.8
Run Time	0:15:22.8
Pause	0:00:00.0

Pre Calibration	2015/04/29 15:20:04
Post Calibration	2015/04/29 15:37:41
Calibration Deviation	-0.10 dB

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow

**Results**

LASeq	54.6 dB	
LASE	84.2 dB	
EAS	29.253 $\mu\text{Pa}^2\text{h}$	
LAPeak (max)	2015/04/29 15:36:30	96.4 dB
LASmax	2015/04/29 15:29:34	69.3 dB
LASmin	2015/04/29 15:34:57	47.5 dB

**Statistics**

LAS5.00	59.4 dB
LAS10.00	57.4 dB
LAS15.00	55.9 dB
LAS50.00	52.1 dB
LAS70.00	50.9 dB
LAS90.00	49.8 dB

**Summary**

Filename	15043000.LD0
Serial Number	3707
Model	SoundExpert™ LxT
Firmware Version	2.301
User	QT/JW
Location	Mods
Job Description	BC New Rec
Note	Night Measurement
Measurement Description	
Start	2015/04/30 3:04:11
Stop	2015/04/30 3:19:45
Duration	0:15:33.3
Run Time	0:15:33.3
Pause	0:00:00.0

Pre Calibration	2015/04/30 3:01:28
Post Calibration	2015/04/30 3:20:50
Calibration Deviation	-0.05 dB

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow

**Results**

LASeq	44.6 dB
LASE	74.3 dB
EAS	3.008 $\mu\text{Pa}^2\text{h}$
LApeak (max)	2015/04/30 3:10:57 72.3 dB
LASmax	2015/04/30 3:09:41 54.2 dB
LASmin	2015/04/30 3:07:43 43.2 dB

**Statistics**

LAS5.00	45.5 dB
LAS10.00	45.0 dB
LAS15.00	44.8 dB
LAS50.00	44.5 dB
LAS70.00	44.4 dB
LAS90.00	44.0 dB



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## **Noise Monitoring Data Location M3 – Chestnut Hill Reservoir**

**Summary**

Filename	15042901.LD0
Serial Number	3707
Model	SoundExpert™ LxT
Firmware Version	2.301
User	QT/JW
Location	Chesnut Hill Reservoir
Job Description	BC New Rec
Note	Daytime Measurement
Measurement Description	
Start	2015/04/29 15:41:21
Stop	2015/04/29 15:56:27
Duration	0:15:05.7
Run Time	0:15:05.7
Pause	0:00:00.0

Pre Calibration	2015/04/29 15:41:01
Post Calibration	2015/04/29 15:57:06
Calibration Deviation	-0.03 dB

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow

**Results**

LASeq	62.1 dB	
LASE	91.7 dB	
EAS	164.135 $\mu\text{Pa}^2\text{h}$	
LApeak (max)	2015/04/29 15:50:33	88.1 dB
LASmax	2015/04/29 15:50:33	76.0 dB
LASmin	2015/04/29 15:42:54	45.9 dB

**Statistics**

LAS5.00	66.7 dB
LAS10.00	65.1 dB
LAS15.00	64.0 dB
LAS50.00	60.2 dB
LAS70.00	57.1 dB
LAS90.00	50.7 dB

**Summary**

Filename	15043001.LD0
Serial Number	3707
Model	SoundExpert™ LxT
Firmware Version	2.301
User	QT/JW
Location	Chesnut Hill Reservoir
Job Description	BC New Rec
Note	Night Measurement
Measurement Description	
Start	2015/04/30 3:23:58
Stop	2015/04/30 3:39:02
Duration	0:15:04.6
Run Time	0:15:04.6
Pause	0:00:00.0

Pre Calibration	2015/04/30 3:23:33
Post Calibration	2015/04/30 3:39:38
Calibration Deviation	-0.05 dB

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow

**Results**

LASeq	53.1 dB	
LASE	82.6 dB	
EAS	20.355 $\mu\text{Pa}^2\text{h}$	
LApeak (max)	2015/04/30 3:37:22	87.1 dB
LASmax	2015/04/30 3:37:23	73.8 dB
LASmin	2015/04/30 3:23:58	40.7 dB

**Statistics**

LAS5.00	56.3 dB
LAS10.00	48.2 dB
LAS15.00	44.5 dB
LAS50.00	42.6 dB
LAS70.00	42.4 dB
LAS90.00	42.2 dB

## **APPENDIX D: COMMUNITY BENEFITS DOCUMENTATION**





# Chapter 13

## Community Benefits and Service Programs

### Introduction

Located in Boston and Newton, Boston College enjoys a special relationship with its host communities, enriching the vibrancy of these cities through its academic and financial resources, cultural and recreational offerings, community partnerships and volunteer service programs. Boston College's contributions to both cities reflect its mission as an institution of higher learning and its Jesuit tradition of forming students to be men and women in service to others.

As an active neighbor, Boston College is committed to making University resources available to residents of Allston-Brighton and Newton through the formal programs and partnerships described in this chapter, through the many campus activities and events open to local residents, and through the time, talents and energies of Boston College student, faculty and staff volunteers. Thanks to a culture of volunteerism where community service is encouraged, supported and valued, recent survey results indicate that Boston College students volunteer more than 444,000 hours of community service throughout the year, and that University employees volunteer an average of 4.8 hours a week, exceeding both the national and state averages of 2.5 and 1.9 hours per week. The University estimates that Boston College undergraduates provide \$3.5 million in service to the community and that faculty provide an additional \$1.5 million in annual volunteer service.

This chapter provides an overview of Boston College's community benefits programs offered in the following areas:

- Educational Partnerships and Scholarships
- Community Development Assistance

- Volunteer Service Programs
- Cultural Resources
- Athletic and Recreational Programs

### Educational Partnerships and Scholarship Aid

Through the dedicated efforts of the Lynch School of Education, Boston College is invested in a number of ongoing partnerships with the Boston Public Schools (BPS) and Catholic schools. These partnership programs address educational research, teacher induction and training, student teacher placements, curriculum development, professional development consultation and community and parental engagement. Over the years, hundreds of Boston College students have volunteered in public, private and parochial schools in Boston, Newton and throughout the Greater Boston area.

This section provides an overview of a number of innovative programs offered by the Lynch School of Education and other departments at the University. Additionally, the section describes the financial aid commitment of Boston College to students from Boston, and specifically from Allston-Brighton, to assist them in attending the University.

### Scholarship Aid

Boston College is committed to providing funds to meet the full-demonstrated need of every student applying for financial aid. In support of this commitment, Boston College grants institutional scholarships that come from a variety of sources, including 500 named scholarships. Table 13-1 provides a breakdown of the institutional aid received by students from Allston-Brighton and Boston.

#### Allston/Brighton Scholarship Program

The Allston/Brighton Boston College Scholarship Program provides 10 academically talented students from Allston/Brighton with scholarships to attend Boston College. To be eligible for the award, the students must be permanent residents of Allston/Brighton for a minimum of four years and be accepted for freshman admission. In the event that ten Allston/Brighton students do not meet the requirements, the scholarships are awarded to students from other Boston neighborhoods. Students must also complete the Boston College financial application process and have an institutionally determined need greater than \$10,000 to be considered.

For the academic year 2007-2008, seven scholarships were awarded to Allston/Brighton students and three to students in other Boston neighborhoods. The ten full tuition scholarships represent an annual commitment of approximately \$351,500 per year, or a four-year commitment of more than \$1.4 million in scholarship assistance.

**Table 13-1 Educational Aid to the Allston/Brighton Community and Boston**

<b>2006-2007</b>	<b>Allston-Brighton</b>	<b>Boston</b>
Number of undergraduates	122	356
Number receiving any aid	94	273
Dollar amount of aid	\$2,361,567	\$8,352,469
Average aid amount	\$25,123	\$30,595
Number receiving any grant	78	239
Dollar amount of grants	\$1,858,163	\$6,343,758
Average grant amount	\$23,823	\$26,543
Number receiving BC grant	74	232
Dollar amount of BC grants	\$1,654,847	\$5,303,907
Average BC grant amount	\$22,363	\$22,862

## Educational Partnerships

### Step Up Initiative

In conjunction with Boston, Harvard, Northeastern and Tufts universities, Boston College is collaborating in a new partnership to bring a comprehensive set of learning support services to 10 Boston Public Schools. Through the Step Up Initiative, BC's Lynch School of Education is paired and working closely with the Winthrop Elementary School and the Russell Elementary School located in Dorchester. Major areas that have been identified by the Superintendent of Schools, and where Boston College will be offering its resources, include professional development and instructional support in English language learning, cultural competency, and training principals and teacher leaders on the use of data and their implications for evaluation and assessment.

### Boston Connects

Boston Connects is a unique school-community-university partnership linking fourteen Boston Public Elementary Schools in Cluster 5 and Cluster 2, the YMCA of Greater Boston and Boston College with other community partners to coordinate school and community support programs serving more than 4,500 students and their families. In January, the Lynch School of Education announced a \$9.2 million extension of funding through grants from the New Balance Foundation, Strategic Grants Partners and the Charles Hayden Foundation. The Boston Connects partnership is committed to the principle that academic success in urban schools requires integrated and comprehensive student and family support both to address the non-academic barriers to learning and to promote healthy development. To this end, Boston Connects is working toward building systemic change within these

elementary schools and surrounding neighborhoods by connecting individual students and families with effective in-school student support and well-developed community agency resources. Through Boston Connects, students and their families are able to gain access to better health care and nutritional information programs, educational resources, after-school care and other prevention programs.

### **College Bound**

Established by Boston College in 1987, College Bound is a program for culturally and racially diverse students from the Boston Public Schools that focuses on increasing their access to and retention in four-year institutions of higher education. College Bound is currently affiliated with Brighton High School and the West Roxbury Education Complex. Students from both the Lynch School of Education and the College of Arts and Sciences work with high school youths to refine their academic skills and supplement their high school programs with Saturday enrichment classes both on the BC campus and in their communities. The program also fosters leadership skills and parental engagement, and provides career advisement, college application assistance and financial aid guidance.

### **Options through Education**

The Options Through Education Transitional Summer Program (OTE) is a six-week pre-collegiate enrichment program designed for educationally and financially disadvantaged students who are highly motivated potential achievers. OTE gives these students a leg up on the sometimes daunting transition to college life. It familiarizes participants with Boston College's academic and administrative resources, strengthens their scholastic skills and acquaints them with the campus and surrounding community. The program has been recognized by the Education Testing Service as a national model and boasts a 91 percent retention rate for its students during their collegiate careers and a 94.5 percent graduation rate for its AHANA (African-American, Hispanic, Asian, and Native American) participants during the past four years.

### **YMCA Black Achievers College Fair**

For the past 12 years, Boston College has hosted the YMCA Black Achievers College Fair at the Flynn Recreation Complex. This event introduces 3,000 African-American high school seniors to the educational opportunities at area universities, including Boston College, historically black colleges and universities, and military academies. College admissions representatives, as well as representatives from organizations that assist students with college planning, test preparation and scholarship assistance, are on hand to provide guidance and answer questions.

### **Private Industry Council (PIC) Summer Jobs Program**

This program provides students from 14 Boston Public High Schools with summer employment opportunities at various businesses, colleges and universities and non-profit

agencies in Boston, with a goal of integrating education with future employment objectives. Boston College has participated in the PIC Summer Program since 1985, employing 25 to 30 students in various offices and departments across campus such as Athletics, Governmental and Community Affairs, Human Resources, the Lynch School of Education and the Bookstore. In addition to providing the students with valuable work experience, the program offers MCAS tutorial classes and college admission information.

## Let's Get Ready Program

Starting in fall, 2006, Boston College partnered with the *Let's Get Ready* program to offer SAT and college preparatory services to 45 high school juniors and seniors from Allston-Brighton, to enhance their abilities to successfully apply to college and to increase the number of qualified applicants for the Allston-Brighton Scholarship Program. To date, participants have achieved an average SAT score increase of 140 points, and enrollment has increased to 58 students. Program participants meet two evenings a week at Another Course to College (ACC) in Brighton, where 18 to 20 Boston College students serve as coaches for the writing, verbal and math sections of the SAT. The program's more than 40 hours of free SAT tutoring and 15 hours of preparation for the college search process have made success on the SAT and college admittance attainable goals. This successful Boston College program is viewed as a model for other *Let's Get Ready* sites in Massachusetts.

## MACC – Massachusetts Campus Compact Tutoring Program

The Boston College-Massachusetts Campus Compact Tutoring Program is a group of 75 undergraduate students who volunteer at a Boston public school or the West End House Boys & Girls Club. Tutors assist at the schools at least one day a week and participate in weekly training sessions on the BC campus.

## Read Aloud Program

The Read Aloud Program is a partnership among the faculty and staff of Boston College, the Boston Public Schools and Boston Partners in Education. The program's nearly 70 volunteers are assigned to read to students once a month at three local Brighton elementary schools: the Mary Lyon, the James Garfield and St. Columbkille School. The volunteers read from specially chosen books that are appropriate for the age level, interest and curriculum of the pupils. Volunteers also lead book discussions, question and answer sessions, or general conversations in the classroom.



### Donovan Urban Teaching Scholars Program

The Donovan Urban Teaching Scholars program is an intensive one-year master's degree program in teacher preparation. Each year, the program recruits and supports a diverse cohort of up to 30 graduate students, and provides them with an academically challenging education specifically responsive to the concerns and needs of urban students, families, schools and communities. Both pre-practicum and practicum placements for the Donovan Urban Teaching Scholars occur in the following Boston Public Schools: Jackson Mann, Boston International High School, Mary Lyon, Brighton High School and West Roxbury Education Complex. A number of Donovan alumni are currently teaching in BPS.

### Teachers for a New Era

Boston College's University-wide commitment to teacher education is strengthened by participation in the Carnegie Corporation's Teachers for a New Era (TNE) initiative. As one of 11 TNE institutions preparing, assessing and supporting future teachers, Boston College improves teacher preparation and P-12 pupil learning through continued collaboration among Education and Arts & Sciences faculty and Boston-area school-based professionals. Boston College's extensive liberal arts core curriculum and social justice vision enhance opportunities available to teacher candidates and practicing teachers.

Demonstrating its commitment to the Boston Public Schools, a significant number of Lynch School of Education students are placed in Boston Public Schools for both pre-practicum and practicum placements as reflected in Table 13-2. Based on the quality of this experience and job performance, many graduates are hired by BPS as indicated in Table 13-3.

**Table 13-2 Boston College Lynch School of Education  
Students Placed in Boston Public Schools for Pre-Practicum and Practicum**

Field	Date	Boston Public Schools	Non Boston Public Schools	Total	Percent in Boston Public Schools
Teacher Education	2006-2007	93	210	303	31%
Education Administration	2006-2007	4	5	9	44%
School Counseling	2006-2007	1		1	100%

**Table 13-3 Boston College Boston Public School Hire Report**

Year	BC BPS New Hires	Total BPS New Hires	Percent BC BPS New Hires
2006-2007	58	544	10.7%



### **Center for Catholic Education**

As the top-ranked Catholic school of education, BC's Lynch School has a long tradition of concern for Catholic education at all levels. Uniquely poised to lead the charge of building new models of sustainability for Catholic schools across the country, Boston College's Center for Catholic Education brings under one banner various initiatives related to Catholic education. One such successful local initiative is the St. Columbkille School Partnership described below.

### **St. Columbkille School Partnership**

In 2006, Boston College, the Archdiocese of Boston and St. Columbkille Parish established a ground-breaking partnership to preserve and strengthen Catholic, parish-based education for the children and parents of Allston-Brighton. This unique collaboration, the first between a Catholic university and a parochial school in the United States, draws on the rich resources of the Lynch School of Education, best practices in American elementary education, and the guidance of Catholic educational, social and religious principles. In its first year, the partnership implemented a new early childhood curriculum, offered teacher training and professional development programs (including 100 percent scholarship for teachers or faculty seeking a master's degree from the Lynch School of Education), completed much-needed renovations to the physical plant, and examined both the financial and management structure of the school. In total, Boston College has invested more than \$1 million in St. Columbkille School since 2006.

### **St. Columbkille Summer Camp**

Since 2003, Boston College and St. Columbkille School have joined forces to offer a summer day camp for local children. Open to 120 campers from ages 3 to 14 residing mainly in Allston-Brighton, the camp operates nine one-week sessions on the BC campus. In addition to classroom learning, activities include specialized on-campus informational tours of the BC bookstore, admissions, police department, museum and library, use of computer labs, the pool and other athletic facilities, a karate clinic, events with student athletes, reading enrichment provided by the Storymobile and field trips to area resources such as the science museum, zoo and the aquarium.

### **Urban Catholic Teacher Corps**

The Urban Catholic Teachers Corps (UCTC) is a two-year service program for teachers who wish to gain experience teaching in urban Catholic schools in the Boston area, while living in community with other aspiring teachers. Now in its 10th year, UCTC offers professional experience and spiritual development to young teachers interested in Catholic education, while providing the Archdiocese of Boston with a source of trained educators committed to urban Catholic schools.

## Community Development Assistance

Boston College participates in numerous community development activities and programs designed to strengthen the physical, social and economic conditions of its neighboring communities. The following community development initiatives illustrate the University's commitment to improving the quality of life beyond its campus borders.

### Allston-Brighton/Boston College Community Fund

Created in 1995 by Boston College and Mayor Thomas M. Menino, the mission of the Fund is to provide grant support to Allston-Brighton community groups or non-profit organizations for projects that enhance the community through civic engagement, beautification initiatives, youth enrichment or educational programs. The Fund Committee is composed of community residents, representatives from the City of Boston and Boston College. The Fund awards individual grants of up to \$3,000 (recently increased from \$2,500) in two cycles during the fall and spring of each year and one \$25,000 biennial beautification grant (see Tables 13-4 and 13-5).



**Table 13-4 Spring 2007 Community Fund Awards**

Organization	Grant Amount
Addiction Treatment Center of New England	\$3,000
Boston Connects	\$3,000
Brighton High School	\$3,000
Caritas Good Samaritan Hospice	\$3,000
Children's Organic Garden Science Project with the Conservatory Lab Charter School	\$900
The Fishing Academy, Inc	\$3,000
Holy Resurrection Orthodox Church, Open Door Ministry	\$3,000
Mt. Saint Joseph Academy	\$2,600
St. Columbkille School	\$3,000
The Winship Elementary School Parent Council	<u>\$1,860</u>
<b>TOTAL</b>	<b>\$26,360</b>

Table 13-5 Spring 2007 \$25,000 Biennial Award

Organization	Grant Amount
West End House Boys and Girls Club of Allston-Brighton	\$25,000

This past year the Fund conducted a special grant cycle, awarding a total of \$175,000 in three categories: Civic Engagement, Community Beautification, and Youth Enrichment (see Table 13-6). With the addition of the three special grants, the Fund awarded more than \$225,000 to Allston-Brighton initiatives during the past year and will soon surpass the \$1 million mark in total grants since its inception.

Table 13-6 Special Grant Awards

Organization	Grant Amount
<b>Beautification Project Grant:</b> Allston Village Main Streets, "Allston Village Beautification"	\$50,000
<b>Youth Enrichment Project Grant:</b> YMCA of Greater Boston (Oak Square), "Oak Square Community Teen Center"	\$50,000
<b>Civic Engagement Project Grant:</b> Brighton-Allston 200, Inc. "The Brighton-Allston Bicentennial"	\$75,000
<b>TOTAL</b>	<b>\$175,000</b>

### Boston College Neighborhood Center

The Boston College Neighborhood Center, located on Washington Street in the heart of Brighton Center, is now in its 12th year of linking University resources to services to the Allston-Brighton community. The Center's programs include:

#### Tutoring and Mentoring Programs

Boston College students volunteer to tutor more than 100 local children in a variety of programs and settings: one-on-one at the Neighborhood Center, on the Boston College campus, and in after-school programs. The one-on-one tutoring program matches BC students with Allston-Brighton students ranging from elementary school through high school. BC students participate in after-school tutoring programs at the Jackson Mann School, St. Columbkille School, the Commonwealth Tenants Association After-School Program, and the Read Boston Program, a children's literacy campaign operating at the Hamilton and the Baldwin Elementary Schools. In addition, BC students are mentoring young girls in the third, fourth and fifth grades at the Hamilton, Winship and Garfield Elementary Schools via the BC chapter of the Strong Women, Strong Girls Program. The

program's mission is to empower young girls and build positive self-esteem and skills for life-long success.

### **English as a Second Language (ESL)**

Boston College students volunteer to teach English to local residents at the Neighborhood Center and five other sites in Allston/Brighton: the Allston/Brighton Community Development Corporation, Insight, the Joseph Smith Community Health Center, Covenant House and the Commonwealth Tenants Association. This program has helped hundreds of immigrants to learn English and has helped hundreds more experience the joys of reading.

### **Food for Families**

The Boston College Office of Governmental and Community Affairs, the Alumni Association and the Neighborhood Center collaborate with the Commonwealth Tenants Association and the Boston Food Bank to feed needy families at the housing development. On the second Wednesday of each month, BC student athletes and other volunteers work in conjunction with the Commonwealth Tenants Association to bag and distribute groceries from the Food Bank. Through this effort, 225 bags are distributed to families and the elderly each month.

### **HEAR – Helping Educate for Academic/ Athletic Responsibility**

Boston College student athletes and their coaches visit every Allston-Brighton public and parochial elementary and middle school at least once throughout the year. During their interactions, student athletes speak to the class about the value of academics and the importance of teamwork in everyday life. In addition to visiting schools, the HEAR program also makes regular visits to patients at the Franciscan Children's Hospital and Boston Children's Hospital. The assistant director of the Neighborhood Center works with the schools to match their needs with BC resources and provides youth tickets to BC athletic events.

### **Service Days**

Service Days offer opportunities for students to give back to the surrounding communities of Allston and Brighton by volunteering their time to assist neighborhood organizations with various projects. Teams of students help with park beautification, painting projects at churches, schools and public housing developments, city-wide clean up efforts such as Boston Shines, assisting elderly and disabled neighbors, flower planting, graffiti removal, nursing home visits and youth mentoring. In recent years, service projects were performed at the Oak Square YMCA, Irish Immigration Center, Brighton Main Streets, St. Columbkille School, all three local libraries and at the Commonwealth and Faneuil Gardens Housing Developments.

### Veronica Smith Senior Center

Boston College partners with the Veronica Smith Senior Center to provide health screening for seniors. It also provides programs such as the Men's Club at BC, which features events and lectures, and organizes a dance for the seniors featuring the vocal and musical talent of BC students. A tour of the Boston College campus and lunch are offered to 30 seniors each spring.

## Volunteer Service Programs

Boston College emphasizes volunteerism as a vital part of a student's education and personal formation. The number of student volunteers in the Allston/Brighton community alone is estimated at more than 1,000 per week and their effect is significant. For example, a former executive director at the West End House Boys and Girls Club stated that the community service work the organization received saved the Club between \$100,000 and \$125,000 each year. Three of Boston College's most notable volunteer service programs, PULSE, 4Boston and the Appalachia Volunteers, are mentioned below in addition to a sampling of other programs involving both students and employees.

### PULSE

Boston College's PULSE program is a national model for service learning that integrates academics with a service internship at one of 51 community service placements in the Greater Boston area. The 400 students involved in the program volunteer between eight and twelve hours each week during the academic year at a variety of non-profit organizations. On any given day, PULSE students are coordinating volunteers for Project Bread's Walk for Hunger, serving breakfast to homeless men at the Pine Street Inn, or providing tutoring and mentoring services at three Brighton organizations: Crittendon Hastings House, Commonwealth Tenants Association and the Parent's Center at Saltonstall House.

### 4Boston

Boston College's 4Boston program, comprising more than 300 undergraduate students, is a major volunteer initiative that services 18 community agencies in the City of Boston. Named for the four hours each student provides on a weekly basis, the 10-week program operates during the fall and spring semesters. Each placement is made up of a team of 20 students and over the course of one year alone 4Boston volunteers average more than 80,000 service hours. Placements in Brighton include the Commonwealth Tenants Association After-School Program, the Jackson/Mann Adult Education Program and the Franciscan Children's Hospital Residential Assessment Program.

### Appalachia Volunteers

Since its founding in 1978, the Boston College Appalachia Volunteers program has provided hope and assistance to marginalized and impoverished communities located in the Appalachian region of the United States. Starting with 12 students, the BC program has grown to more than 650 volunteers operating in 36 different locations within Appalachia, making it the largest Spring Break service organization in the United States. In order to gain valuable experience working with different facets of the community, volunteers participate in local service opportunities during the academic year leading up to their Spring Break service trip. This past fall a total of 175 students participated in community service activities at the Oak Square YMCA, the Brighton and Oak Square Libraries, Brighton Main Streets/Boston Shines Clean-Up, the Veronica Smith Senior Center and the Faneuil Gardens Housing complex.

### American Red Cross Club of Boston College

The American Red Cross of Boston College (ARCBC) is a student organization that works in conjunction with the American Red Cross of Massachusetts Bay Chapter. The ARCBC sponsors five blood drives each year, offers CPR and first aid training, assists with food distribution for the needy in Boston, and provides immediate disaster relief to the surrounding community.

### Campus School Volunteers

The Campus School Volunteers of Boston College (CSVBC) are a group of undergraduates established to work with and advocate for the students with complex health needs, many of whom are from the Greater Boston area, who attend BC's Campus School for the multiply disabled. The group was established in 1996, and has become one of the largest student volunteer groups on campus. The Campus School Volunteers work both directly with the students in classroom settings, as well as outside the school organizing fund raisers and promoting awareness.

### Circle K Club of Boston College

Circle K is a service organization dedicated to community and campus involvement in and around the Boston College area. A majority of the service projects are aimed at improving the general well being of the residents of Allston-Brighton. Boston College students participate in activities ranging from a literacy project at the Hamilton and Baldwin Schools, to working in the soup kitchens at Brighton Congregational Church, to initiating a bicycle and helmet safety program at local elementary schools.



### Cleansweep

Now in its 15th year at BC, Cleansweep student, employee and alumni volunteers collect household items, clothing, food and appliances donated by students at the close of each academic year. These items are then distributed for re-use to hundreds of non-profit organizations, community agencies, churches and schools in Boston and other local communities. Not only does this program embody BC's mission of service to others, but it helps the environment by reducing waste and promoting recycling.

### Dance Marathon

Each spring, Boston College students gather to dance the night away and raise funds for Brighton's Franciscan Hospital for Children. Through donations from friends and family along with sponsorships from local businesses, the event raised a record \$165,000 in 2007, and since its establishment in 2003, the Dance Marathon has contributed more than \$350,000 to the hospital.

### Grads Give Back Day

Each year the Law Student and Graduate Student Associations of Boston College plan a day of community service called "Grads Give Back Day." This year, more than 100 graduate students volunteered at placements on campus and throughout Boston. The service opportunities ranged from conducting on-campus food and clothing drives, hosting a social for children attending the Campus School, clean-up of the jogging and pedestrian pathways at the Chestnut Hill Reservoir, visiting residents at the Brighton House Rehabilitation and Nursing Center and assisting with a spring clean-up of the grounds and facilities at the Franklin Park Zoo.

## Cultural Resources

### Boston College's McMullen Museum of Art

Boston College's McMullen Museum of Art serves as a dynamic educational resource for all of New England, as well as the national and the international communities. The Museum displays its notable permanent collection and mounts exhibitions of scholarly importance from all periods and cultures of the history of art. The Museum is free and open to the public. Private group tours are also available by request and the Museum's docents can tailor their presentations to the group's age level and interests. Museum personnel may also be able to provide additional texts or facilitate contact with a BC faculty member with expertise in a specific area of interest.

## Boston College Arts Festival

For the past ten years in April, Boston College has sponsored a celebration of the arts which is free and open to the public. More than 13,000 people attended the 2007 Festival that showcased the artistic achievements in the performing, visual and literary arts of 1,000 Boston College students, faculty and administrators. The festival features instrumental, vocal and dance performances, art exhibitions and demonstrations, film screenings, literary readings, an afternoon of art activities designed for children, and a Mass for the arts.

## Humanities Series

For fifty years, the Humanities Series has enriched the intellectual, cultural and spiritual lives of Boston College students, faculty and staff, as well as the general public, by offering a remarkable range of speakers, artists and performers. Over the years, the University has been host to an amazing range of talent, including twenty-two of the Library of Congress's Poet Laureate Consultants and four Nobel Prize winners in literature, nearly all of whom appeared in free events open to the neighboring community.

## Neighborhood Night at the Theater

In conjunction with the Arts Festival, the Office of Governmental and Community Affairs invites 100 neighborhood residents to attend opening night of the student Spring theatrical production at Robsham Theater. Prior to the production, the University hosts a reception where residents and members of the BC community can converse and enjoy light refreshments.

## Irish Institute at Boston College

Since its founding in 1997, the Irish Institute at Boston College has hosted more than 100 programs and numerous special events open to the public. Working under the auspices of the Center for Irish Programs, the Irish Institute makes use of cross-campus and local resources to facilitate rewarding personal, corporate and professional exchanges with the goal of promoting a lasting peace in Ireland. The Irish Institute often hosts officials and policymakers from Ireland and Northern Ireland and offers professional development programs in areas such as government, business, and education.



### “Pops on the Heights”

For the past 15 years, the Boston Pops Orchestra has performed at Boston College in a scholarship fundraising gala known as “Pops on the Heights.” As part of this event, the University extends an invitation to 100 neighbors to enjoy dinner and the performance. Last year’s event featured renowned conductor John Williams and the event raised a record \$2 million in funds. Since the inception of the program, 522 scholarships have been awarded to needy students.

## Sports and Recreational Programs

### Boston College Athletic Tickets

In conjunction with the Athletic Department, the Office of Governmental and Community Affairs reserves 50 tickets per game for residents of Allston-Brighton to attend on-campus football, basketball and hockey games. Tickets are obtained on a first-come, first-served basis by contacting the Office. Table 13-7 indicates the value of the tickets distributed last year.

**Table 13-7 Sports Tickets Provided to Allston-Brighton Residents**

<u>Sport</u>	<u>Number of tickets per home game</u>	<u>Cost to Boston College per home game</u>
Football	50 tickets at \$37 each for 7 games	\$12,950
Basketball	50 tickets at \$20 each for 14 games	\$14,000
Hockey	50 tickets at \$20 each for 19 games	\$19,000
<b>Annual Total</b>		<b>\$45,950</b>

### Flynn Recreation Complex Summer Program

Boston College opens the Flynn Recreation Complex to 30 residents of Allston -Brighton per day, weekdays during the summer. Residents register with the Office of Governmental and Community Affairs and contact the office to use the swimming pool and fitness equipment in the facility. This extremely popular program runs from early June through late August.

### Mayor’s Cup Hockey Tournament

Each October, Boston College donates ice time to the City of Boston for the Mayor's Cup Hockey Tournament. This tournament provides youngsters of all ages from neighborhoods throughout Boston with the opportunity to compete at the squirt, peewee and bantam hockey levels on the home ice of the 2008 NCAA Men’s Hockey National Champions.

### Allston-Brighton Youth Hockey

Boston College supports the Allston-Brighton Youth Hockey program by donating ice time in Conte Forum on an annual basis.

### Boston College Spring Football Game

Each spring, the University hosts an inter-squad football match at Alumni Stadium that is free and open to the community. In addition to the game, the University hosts a carnival in the Flynn Recreation Complex with games, activities and refreshments for families to enjoy.

### Kid's Karate Exhibition

For the last 16 years, BC has partnered with Kid's Karate, a premier youth karate program, to host an annual exhibition in the Power Gym at Conte Forum. More than 4,800 local children from Boston and Newton have benefited from the program which builds self-esteem, mental and physical confidence, and mutual respect among the children.

### Jimmy Fund Charity Events

Boston College opens the Flynn Recreation Complex to the Hoops for Hope, 3-on-3 basketball tournament, which raises money to support cancer research. Last September, the Jimmy Fund utilized BC athletic and parking facilities to accommodate 400-600 walkers and served as the official start the Jimmy Fund 5-Mile Walk.

### Community Rowing Boathouse

Boston College is participating in the development of the Community Rowing Boathouse now under construction at 100 Nonantum Road in Boston on land leased from the Commonwealth of Massachusetts. As a "Contributing Organization," the University has committed to a substantial payment towards construction costs and annual payments for on-going operating expenses in exchange for the use of boat storage racks in the facility by its crew team.

COOPERATION AGREEMENT  
FOR  
THE BOSTON COLLEGE  
INSTITUTIONAL MASTER PLAN  
AND  
STUDENT RESIDENCE HALL  
AT 2150 COMMONWEALTH AVENUE, BOSTON

This COOPERATION AGREEMENT (this "Agreement") is made as of the 7 day of August, 2014 by and between the **BOSTON REDEVELOPMENT AUTHORITY**, a public body politic and corporate, created pursuant to Chapter 121B of the Massachusetts General Laws, as amended, and acting in its capacity as the Planning Board of the City of Boston pursuant to Chapter 652 of the Acts of 1960, as amended, with offices at One City Hall Plaza, Boston, Massachusetts 02201-1007 (the "Authority"), and **Trustees of BOSTON COLLEGE**, a Massachusetts non-profit private institution of higher education and research, having its usual place of business at 140 Commonwealth Avenue, Chestnut Hill, Massachusetts 02467 ("Boston College"). The Authority and Boston College are sometimes referred to collectively herein as the "Parties", and each as a "Party".

RECITALS

WHEREAS, on December 5, 2007, Boston College filed an Institutional Master Plan Notification Form for a new Institutional Master Plan, for proposed development of its Chestnut Hill and Brighton Campuses;

WHEREAS, the Authority issued a Scoping Determination pursuant to Article 80D-5.3 of the Boston Zoning Code (the "Code") on February 21, 2008 requiring the filing of an Institutional Master Plan;

under the Amended IMP, as the same may be amended. Said 100,000 square foot exclusion shall be used for the first 100,000 square feet of DIP Uses in the IMP Projects.

6. The Amended IMP

As mitigation for the impacts attributable to the IMP Projects (including but not limited to the Residence Hall Project) upon the Allston and Brighton neighborhoods, Boston College shall undertake the civic, charitable, and general contributions and commitments outlined below. With the exception of a CMP, TAPA and BRCEP, as such may be applicable to future IMP Projects, Boston College shall not be required to provide additional mitigation commitment or public benefits in connection with further review of such IMP Projects under Article 80B or 80E of the Code, nor in connection with any renewal or amendment of the IMP meeting the requirements for a waiver of review under Section 80D-5-2(e) of the Code during the Master Plan Term (as defined in subparagraph 1 a. below). On or before July 1, 2015, and for every subsequent year of the Master Plan Term, Boston College will submit to the BRA and the Allston-Brighton Boston College Community Task Force (the "Task Force"), a report describing progress in fulfilling the public benefits commitments made in this Cooperation Agreement and the IMP.

a. Neighborhood Improvement Fund. Boston College shall establish a Neighborhood Improvement Fund (the "Fund") in the amount of \$2,564,000. The goal of the Fund is to finance projects that enhance the public realm and for which public sources of financing may be unavailable or inadequate. Projects may include improvements in public parks and open space, neighborhood beautification, transportation and roadway improvements, public safety projects and public art. Projects should be of broad public benefit to the Allston-Brighton neighborhood. The fund shall be held by Boston College in a separate account. The parties to this Agreement shall make reasonable efforts to identify, review and select projects, in accordance with the procedure outlined below, such that the Fund will be disbursed in



full over the term of the IMP, ending on June 30, 2020 (referred to herein as the "Master Plan Term"). If any of the Fund remains unexpended on June 30, 2020, such amounts shall be used to fund similar public benefit commitments contained in the subsequent or renewed Boston College Institutional Master Plan. Boston College and the Authority shall establish a procedure for the selection of projects that will include (i) consultation with the Task Force and (ii) joint approval by the Authority and Boston College, as follows:

- Neighborhood Improvement Fund projects may be proposed by (i) Allston-Brighton civic organizations, (ii) Boston College, (iii) the City of Boston, (iv) Commonwealth of Massachusetts agencies that maintain public parks, open spaces, roadways or other public facilities in Allston-Brighton, and (v) non-profit institutions that maintain facilities in the Allston and/or Brighton neighborhoods and serve Allston-Brighton residents.
- The Task Force shall review Neighborhood Improvement Fund proposals according to uniform procedures and criteria to be determined in consultation with Boston College and the Authority in Task Force meetings. The Task Force's review shall include presentations by applicants at public meetings of the Task Force. Following such review the task Force will vote to recommend or not recommend proposals to the Authority and Boston College, giving reasons therefor.
- From the recommended proposals, the Authority and Boston College shall select mutually acceptable proposals to be funded; provided, however, in the event of any disagreement with a Task Force recommendation by either Boston College or the Authority, the dissenting party (or parties) shall present

the reasons for their position at a public meeting of the Task Force. No proposed project may be funded unless there is a joint determination by the Authority and Boston College that the project merits funding.

b. **Undergraduate Scholarships.** Boston College agrees to award on an annual basis for the period beginning September 2014 and continuing through the balance of Master Plan Term, fifteen (15) full-tuition scholarships (each such scholarship eligible for renewal for up to four-years of full-time enrollment) to qualified Boston residents (with preference to residents of Allston-Brighton). For sake of clarity, it is noted that the number of recipients of such scholarship may number as many as 60 in an academic year. Recipients must be admitted as full-time undergraduates to the Boston College first-year class through the usual admission process, must have resided in Boston continuously for four years at a minimum prior to matriculation, and must be from families demonstrating a financial need in excess of \$15,000 pursuant to uniform financial-aid criteria (which shall require FAFSA certification) , and must maintain academic good standing for scholarship renewal.

c. **Woods College Scholarships.** Boston College agrees to award on an annual basis for the period beginning September 2014 and continuing through the balance of Master Plan Term up to five (5) scholarships for the Woods College of Advancing Studies to qualified Boston Residents (with preference to residents of Allston-Brighton). Each scholarship shall be in an annual amount equal to tuition charges for six courses (three courses per semester). Awards shall be renewable for up to four consecutive academic years, provided the recipient maintains good academic standing and is enrolled in a degree program. In the event there remain unassigned scholarships in any year after awards are made to degree seeking candidates, Boston College may at its discretion to be exercised on a case by case basis award scholarship to students taking courses outside of a degree program, with preference for Allston-Brighton residents. (To avoid doubt, there may be a maximum of fifteen scholarships outstanding in any

academic year, depending on renewals and possible awards to non-degree seeking students.) Awards shall be made according to uniform procedures, and applicants must have resided in Boston for four consecutive years at a minimum prior to matriculation and be from families demonstrating a financial need pursuant to uniform financial-aid criteria, which includes FAFSA certification. Information concerning application procedures shall be made available at the Woods College offices and the Boston College Neighborhood Center.

d. **Relocated and Expanded Boston College Neighborhood Center.** Boston College has relocated the Boston College Neighborhood Center to 480 Washington Street in Brighton. The new location provides enhanced space for programming and community meetings, handicapped accessibility and parking. Neighborhood Center programming during the Master Plan Term will include work force development and resume workshops, career counseling, and use of social media in job searches, as well as hours for evening classes and tutoring.

e. **Boston College Community Fund.** Boston College will continue its annual contribution of \$75,000 to the BC Community Fund during the Master Plan Term. As in prior years the Fund shall be administered and distributed by an Advisory Committee consisting of ten (10) members, including six (6) members designated by the Mayor's Office of Neighborhood Services, two (2) representatives of the City of Boston designated by the Mayor, and two (2) members designated by Boston College. The Advisory Committee shall establish certain minimum standards which each applicant must meet to be considered for grants, appropriate limits on the amounts that may be disbursed to any one grantee, as well as uniform application procedures, including a standard application form and published application deadlines. All grants shall be made to support organizations, programs, or purposes benefiting the citizens and neighborhoods of the Allston Brighton neighborhood. No portion of the Fund shall be used in any manner for any program or purpose which is (or to support any organization or group whose activities are) in whole or in part (i) adverse to the

interests of Boston College or (ii) contrary to the teachings and beliefs by the Catholic Church or the culture and traditions of Boston College or the Society of Jesus.

f. **Annual Job Fairs and Computer Training.** Boston College will sponsor two annual job fairs during the Master Plan Term to publicize open staff positions at the University. For qualified candidates living in Allston or Brighton, the University will provide annual funding during the Master Plan Term for up to ten (10) candidates to take training workshops or classes in Office Word, Excel, Power Point or Photo Shop to enhance future job prospects. Awards will be made on a rolling basis and application materials will be available at the job fairs.

g. **Construction Employment.** During the Master Plan Term, Boston College will contribute to Building Pathways, a union pre-apprentice training program, offered by the Boston Building Trades Council for various trades including laborers, electricians, carpenters, iron workers, and painters, to assist in employment of Allston-Brighton residents on Boston College construction projects. Boston College will sponsor up to five Allston-Brighton candidates annually and shall make good faith efforts during the Master Plan Term to promote hiring of program graduates by contractors working at the University.

h. **"Walk to Work" Mortgage Assistance Program.** Boston College will assist full-time employees purchasing homes in Allston-Brighton for their primary residence by funding on a grant basis mortgage origination points and other closing costs customarily payable by Buyer up to a maximum payment of \$3,900. The program will provide such funding for up to two qualified employees per year, or a total of 13 employees over the Master Plan Term.

i. **First-Time Homebuyer Assistance Program.** Boston College will provide annually during the Master Plan Term two \$5,000 matching grants toward the purchase of a home in Allston or Brighton by Allston or Brighton residents who have successfully completed a first-time homebuyer education program and have saved at least \$5,000.

towards their home purchase. Boston College will work with the Authority's staff to establish guidelines for the program and selection of recipients. All grant payments will be made at closing directly to fund amounts due from Buyer as shown on a final RESPA settlement statement, and accordingly grants funds will not be available to fund good-faith deposits under an offer to purchase or purchase and sale agreement.

j. St. Columbkille Partnership School. During the Master Plan Term, Boston College will continue to contribute approximately \$400,000 per year to the St. Columbkille Partnership School to help fund academic programs, financial aid, teacher training, curriculum development and facility improvements.

k. Other Continuing Programs. During the Master Plan Term, Boston College shall continue its funding and participation at current levels in the following community programs: partnerships with the Boston Public Schools (subject to continuing grant awards to Boston College), the Mayor's Summer Employment Program in partnership with the Private Industry Council (PIC) Program and the Community Assistance Program.