

BOSTON COLLEGE

FIELD HOUSE

PROJECT NOTIFICATION FORM



SUBMITTED TO

Boston Redevelopment Authority d/b/a
Boston Planning & Development Agency
1 City Hall Square
Boston, Massachusetts

SUBMITTED BY

Boston College
140 Commonwealth Avenue
Chestnut Hill, Massachusetts

NOVEMBER 2016

Boston College Field House

Brighton, Massachusetts

SUBMITTED TO **Boston Planning & Development Agency**

One City Hall Square
Boston, MA 02201

PROPONENT **Trustees of Boston College**

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Table of Contents

Chapter 1: Project Description

1.1 Proposed Project Purpose and Need.....	1-1
1.2 Institutional Master Plan Overview	1-2
1.2.1 Status of the 10-Year Plan Projects	1-3
1.2.2 Consistency with the IMP	1-4
1.3 Existing Site Conditions	1-4
1.3.1 Site Context.....	1-4
1.3.2 Existing On-Site Uses.....	1-5
1.4 Project Description	1-5
1.4.1 Proposed Development Program.....	1-5
1.4.2 Building Design.....	1-6
1.4.3 Site Improvements	1-6
1.4.4 Vehicular Access and Parking	1-8
1.4.5 Sustainable Development Approach.....	1-8
1.4.6 Project Schedule.....	1-8
1.5 Project Benefits	1-8
1.6 Community Outreach.....	1-11

Chapter 2: Regulatory Context and General Information

2.1 Regulatory Context.....	2-1
2.1.1 Conformance with Zoning.....	2-1
2.1.2 Article 80 – Development Review and Approval	2-2
2.1.3 Article 37 – Green Buildings	2-3
2.1.4 Massachusetts Environmental Policy Act	2-3
2.1.5 Massachusetts Historical Commission.....	2-3
2.2 Anticipated Permits and Approvals	2-3
2.2.1 Agency Outreach and Coordination.....	2-4
2.3 Project Team	2-5

Chapter 3: Sustainability/Green Building and Climate Change Resiliency

3.1 Key Findings and Benefits.....	3-1
3.2 Regulatory Context.....	3-2
3.2.1 Massachusetts Stretch Energy Code	3-2
3.2.2 Article 37 – Green Buildings	3-2
3.3 Sustainability at Boston College.....	3-3
3.3.1 IMP Sustainability Goals	3-3
3.3.2 Current Campus-wide Sustainable Development Initiatives	3-3
3.4 Proposed Project Compliance with Article 37	3-5
3.4.1 Preliminary Green Building Evaluation – LEEDv3 (2009)	3-5
3.4.2 Preliminary Green Building Evaluation – LEEDv4	3-14
3.4.3 Boston Green Building Credits	3-17
3.5 Proposed Project Greenhouse Gas Emissions Reductions Strategies.....	3-18
3.5.1 Preliminary Building Energy Model	3-18
3.5.2 Clean and Renewable Energy Analysis	3-20
3.5.3 Energy Efficiency Assistance	3-20
3.6 Proposed Project Climate Change Preparedness and Resiliency.....	3-21
3.6.1 Sea Level Rise/Flooding.....	3-21
3.6.2 Extreme Weather Conditions	3-21
3.6.3 Potential Resiliency Measures.....	3-21

Chapter 4: Transportation

4.1 Key Findings and Benefits.....	4-1
4.2 Existing Transportation Conditions.....	4-1
4.2.1 Existing Site Access	4-2
4.2.2 Existing Parking and Traffic Generation	4-2
4.2.3 Existing Public Transit.....	4-2
4.2.4 Existing Boston College Shuttle Bus Service	4-3
4.2.5 Existing Pedestrian Circulation	4-4
4.2.6 Existing Bicycle Facilities.....	4-4
4.2.7 Existing Loading and Service.....	4-4
4.2.8 Existing Transportation Demand Management.....	4-4
4.3 Future Transportation Conditions	4-5
4.3.1 Project Traffic Generation.....	4-5
4.3.2 Proposed Vehicle Access and Parking.....	4-6
4.3.3 Proposed Pedestrian Circulation Improvements.....	4-6

4.3.4 Proposed Bicycle Accommodations4-7
4.3.5 Proposed Loading and Service4-7
4.3.6 Transportation Demand Management.....4-7

Chapter 5: Project Certification

APPENDIX

A: BPDA Checklists

List of Tables

Table	Description	Page
Table 1-1	Proposed Development Program	1-6
Table 2-1	Anticipated Project Permits and Approvals	2-4
Table 3-1	Summary of Key Energy Model Assumptions.....	3-19
Table 3-2	Project Stationary Source CO ₂ Emissions.....	3-19

List of Figures

***Note: All supporting graphics are provided at the end of each chapter.**

Figure No.	Description
1.1	Site Location Map
1.2	Project Context
1.3	Existing Site Conditions Plan
1.4	Site Photographs of Existing Conditions
1.5	Boston College Ten-Year Plan Institutional Projects, as approved in the 2009 IMP
1.6	Proposed Site Plan
1.7	Massing Model
1.8a	Overall First Floor Plan & Partial Second Floor Plan
1.8b	Roof Plan
1.9	Building Section
1.10a-c	Perspectives
3.1	Preliminary LEEDv3 (2009) Scorecard
3.2	Preiliminary LEEDv4 Scorecard

4.1	Existing Site Access and Circulation
4.2	Public Transportation
4.3	Boston College Shuttle Bus Service
4.4	Primary Pedestrian Circulation Routes Chestnut Hill Campus
A.1	Accessibility Diagram

1

Project Description

The Proponent, Trustees of Boston College (“Boston College” or the “University”) is submitting this Project Notification Form (PNF) 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 Field House to be built next to the parking garage on Shea Field within Boston College’s Lower Campus in the Brighton neighborhood of Boston (the “Proposed Project”). Refer to Figure 1.1 for the site location.

Separately, an Institutional Master Plan Notification Form (IMP/NF) for Amendment is being submitted by the Proponent to update the current 10-year Boston College Institutional Master Plan (the “IMP”) to add the Field House as a Proposed Institutional Project and to outline modification to the IMP needed to accommodate the Field House. The Proposed Project is consistent with the institution’s goals and objectives of its original 10-year IMP approved by the Boston Redevelopment Authority (“BRA”) on June 10, 2009 and renewed in 2013 for a four-year period until June 10, 2017, in accordance with section 80D-8(1) of the Code. In May 2016, the University submitted an IMP/NF for Amendment and Renewal for the Recreation Center, which further renewed the IMP until June 2021.

1.1 Proposed Project Purpose and 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, a new recreation center, and athletics fields and facilities.

Boston College is proposing to construct an indoor playing space, or Field House, for student athletes with a new weight room and accessory/support space. The Proposed Project will fulfill a critical need to accommodate indoor playing space for football, other varsity sports, club and intramural sports, and recreational activities.

Lack of a Field House negatively affects Boston College athletes more than peer institutions in the Atlantic Coast Conference (ACC) due to the University’s Northeast location with a greater number of inclement weather days. At times, especially towards the end of the season, the football team travels to Gillette Stadium in Foxboro, MA (approximately 45 minutes away) to practice indoors. The Field House will also allow the football team to practice in loud, simulated game environment without affecting classes and the surrounding neighborhood. It will also be used by other varsity sports, club and intramural sports, and for recreational activities.

The existing 5,124-square foot weight room located in the Yawkey Athletics Center (attached to Alumni Stadium) used by the football program is undersized in comparison to most peer institutions, which have a minimum of 10,000 square feet. Furthermore, the existing weight room has proven problematic due to the vibration and noise from weights dropping, which disturbs the meeting spaces and offices also within the facility. The new weight room will be in close proximity to conditioning drills and exercises conducted within the Field House or on the outdoor fields.

1.2 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 in support of its mission for the future of Boston College. As part of this process, the University also conducted a design charrette to solicit input and feedback from the community. This document calls for Boston College to become a leader in liberal arts education, in student formation, in selected natural sciences, in Catholic intellectual life, and resolving urgent societal problems.

Upon the completion of the plan, Boston College developed a long-range campus master plan with 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 learning environment and the life of the University.
2. **Develop Mixed Campus Uses**—That Boston College's campuses host 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 reflect the distinctive character of the Middle Campus with its combination of Gothic architecture, and linked quadrangles and walkways.
4. **Provide Appropriate Campus Density**—That campus development emulate 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.

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

1.2.1 Status of the 10-Year Plan Projects

The 10-Year Plan called for the creation of 21st-century classrooms and laboratories, replacement of a 55-year-old student center and a 44-year-old recreational complex, the addition of much-needed playing fields and athletics facilities and bringing approximately 1,200 undergraduate students living off-campus into University housing. 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. Development 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 a University Conference Center and the McMullen Museum of Art, completed in January of 2016.
4. Construction of Thomas More Apartments at 2150 Commonwealth Avenue consisting of 490 student beds and the University Health Center, completed in August 2016.
5. Development of Reservoir Apartments (formerly known as 2000 Commonwealth Avenue) consisting of 540-bed student residence hall, completed in August 2016.
6. Construction of the athletics fields on the Brighton Campus consisting of a baseball field with 1,000 seats, softball field with 300 seats, recreational field, and support building, to be completed in March 2018.
7. Construction of a new approximately 240,000-gross square foot recreation center to replace the existing Flynn Recreation Complex built in 1972, to be completed in spring of 2019.

Newton

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

1.2.2 Consistency with the IMP

While a new Proposed Institutional Project, the Proposed Project is not a significant change to the IMP because it proposes to retain practice fields on portion of Shea Field and still allows for future construction of student housing. As stated in the IMP, the University plans for 550 beds of apartment-style housing on Shea Field. However, this housing would need to be reconfigured into two buildings, compared to the three buildings presented in the conceptual layout for the IMP. Therefore, an IMPNF for Amendment is being submitted by the Proponent to update the current 10-year IMP, to add the Proposed Project, and modify it with the new future student housing layout, as well as elimination of the 350-space addition to the Beacon Street Parking Garage.

The Shea Field location is the best site for the Field House because of its proximity to Alumni Stadium and the Yawkey Athletics Center. Although siting the Field House in this location will eliminate the previously planned expansion of the Beacon Street Parking Garage, the University continues to address future parking needs through a recent property acquisition at 300 Hammond Pond Parkway, 1.2 miles from the Chestnut Hill Campus, providing parking for approximately 350 vehicles with the potential for more.

As discussed in Section 2.1.2 of Chapter 2, *Regulatory Context and General Information*, changes to the IMP will be addressed as part of the IMPNF for Amendment to be submitted simultaneously with this PNF.

1.3 Existing Site Conditions

1.3.1 Site Context

Figure 1.2 shows the location of the Proposed Project within the context of the Lower Campus, which sits south of Commonwealth Avenue (the "Project Site"). The Project Site is located at the intersection of Beacon Street and Chestnut Hill Driveway—a Massachusetts Department of Conservation and Recreation (DCR) roadway.

Figure 1.3 shows the existing site conditions and adjacent uses, and Figure 1.4 presents photographs of the Project Site as it exists today. To the west of the Project Site sits the Beacon Street Parking Garage and Alumni Stadium. An internal access road abuts the Project Site to the north. Pine Tree Preserve, a wooded area owned by the Commonwealth of Massachusetts, is located on the other side of the access road. Chestnut Hill Driveway and the Chestnut Hill Reservoir are located to the east, and Beacon Street abuts the Project Site to the south. A residential area of Newton is located on the south side of Beacon Street across from the Project Site.

1.3.2 Existing On-Site Uses

The 8.1-acre (352,674 square feet) Project Site is currently used for varsity baseball and softball, football practice, club and intramural sports, and recreational activities. The Project Site currently consists of:

- › A grass baseball field with a clay infield and associated dugouts and stands;
- › A grass softball field with a clay infield and associated dugouts;
- › A grass practice football field; and
- › A crushed stone material storage area.

All three fields are drained with 4-inch perforated PVC pipes, which flow to the drainage main at the southern extent of the Project Site. Two easements for the Massachusetts Water Resource Authority (MWRA) run through the Project Site (Figure 1.3). This area also includes the Cochituate Aqueduct Linear District (BOS.LY, NWT.AS / #64500254 TRA)—a historic resource listed in the National and State Registers of Historic Places. Also inventoried/listed as a historic resource is the Sudbury Aqueduct Linear District (BOS.SK, NWT.AQ/ NR #89002293), which extends under Beacon Street at the south end of the campus. A portion of the aqueduct pipe runs through the southwest corner of the Project Site (Figure 1.3).

During six to seven annual Boston College home football games and commencement at Alumni Stadium, the Project Site can accommodate parking for up to 300 vehicles.

1.4 Project Description

As shown in Figure 1.5, outdoor practice facilities/fields were shown as part of the 10-Year Plan. As shown in Figure 1.6, the Proposed Project will provide indoor playing space for the student athletes at Boston College similar to peer schools.

1.4.1 Proposed Development Program

The approximately 115,700-gross square foot Field House will house athletic functions as well as the support spaces that are necessary to support the indoor practice function for the football program, other varsity sports, club and intramural sports, and recreational activities. Table 1-1 below presents the proposed development program for the Proposed Project.

Table 1-1 Proposed Development Program

Use	Size (Square Feet)
Synthetic Turf Field Surface	86,700
Weight Room ¹	11,625
Lobby/Lounge	2,220
Building Circulation/Envelope	2,120
Total Building Area, per zoning	102,665 GFA²
Mechanical/Storage	13,035
Overall Total	115,700 GSF³

1 Includes restrooms, athletic support areas, and offices.

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

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

The Field House will house a synthetic turf surface large enough to support a full-size football field with a 20-foot run-off space on all sides. Additionally, the Field House will include a new approximately 11,000-square foot weight room, which will replace the existing undersized 5,100-square foot weight room in the Yawkey Athletics Center allowing the football program to have a dedicated space similar to facilities at peer schools. Other spaces include various athletic support uses, such as strength and conditioning coaches' offices, a first aid room, a hydration space, restrooms and a large storage room. A lobby that can serve as a Hall of Fame recognizing past sports successes will be located at the main entrance of the Field House. The existing baseball and softball fields will be relocated as part of the Brighton Fields project recently approved by the BRA Board, d/b/a Boston Planning & Development Agency ("BPDA") Board.

1.4.2 Building Design

Figure 1.7 presents building massing diagrams, and floor plans are shown in Figures 1.8a and 1.8b. Figure 1.9 shows the building section. The exterior design is under review, but will aim to fit in with the surrounding context of Alumni Stadium and the Yawkey Athletics Center with the use of brick, stone, and precast concrete. The exterior design may incorporate a combination of punched windows and curtainwall. The main Field House mass proposes a curved metal roof form approximately 75 feet above grade at its highest point. The weight room component will have a flat roof with a total height of approximately 25 feet. Refer to Figures 1.10a through 1.10c for preliminary perspectives from various viewpoints.

1.4.3 Site Improvements

Landscape Improvements

The proposed landscaping and site improvements are presented in Figure 1.6. The Proposed Project has a number of associated landscape improvements on each side of the proposed structure. The north side of the building facing the campus is

proposed to be the primary entry with a generous 20-foot wide walkway and a paved terrace with a seating area just outside the front doors. The proposed walkway will be framed by hedges, perennial, and annual plantings, and a row of deciduous trees. Access to the storage area under the adjacent parking garage ramp is maintained through several openings in the hedge. The remaining area to the north is a large open lawn with a linear stormwater garden and a paved area to accommodate occasional vehicular access, as well as provide access to the underground pipe that lies within the MWRA easement. Columnar trees will be planted in front of the building framing the central sliding doors to the Field House.

The outdoor practice field and plantings to the east will be visible from the weight room interior. A paved walkway along the eastern edge of the building will provide access for maintenance and emergency response. On the southern edge of the Project Site along Beacon Street, new trees will be planted to match the existing plantings. To the west, a paved concrete access way will be provided between the Field House and Beacon Street Parking Garage to accommodate building users and small service/maintenance vehicles.

Field House Stormwater Runoff Storage Tanks

As part of the Project, Boston College is proposing to store up to 2.8 million gallons of stormwater in underground concrete storage tanks beneath a portion of the Field House. During normal storm events the tanks will capture of runoff from the Project Site. During significant storm events, particularly when a ¼-inch of rain falls in less than 30 minutes, pipes will direct stormwater that currently ponds at the surface at Alumni Stadium and the Beacon Street Parking Garage to the new underground tanks. The tanks are designed to handle flooding from a 25-Year storm event.

The underground storage tank system provides the following benefits to the University and surrounding community:

- › Protects both personal and campus property from excessive surface flooding in some locations.
- › Protects stormwater from surface contamination by liquids and particles, such as oils, greases, mulch, trash, and fecal matter.
- › Reduces peak flow from the campus by allowing stormwater to be held back and released into the system slower than the existing surface flooding condition. Due to a high ground water elevation the system is unable to infiltrate the stored runoff into the groundwater table.
- › Lowers the head pressure from the campus by approximately four (4) feet by moving the surface flooding to underground tanks reducing pressure on the overall Boston Water and Sewer Commission (BWSC) system, which may help alleviate downstream flooding.

1.4.4 Vehicular Access and Parking

The Proposed Project will continue to allow for limited vehicle access through the service gate off Chestnut Hill Driveway, as shown on Figure 1.6. 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 service/maintenance vehicles via two paved access ways onto the Project Site. One access way will be to the northwest of the proposed building and the other to the northeast (Figure 1.6). Building service and loading will take place at the entry level on the north side of the Proposed Project.

No on-site vehicle parking will be provided. ADA-accessible parking spaces for the Proposed Project will be provided adjacent to the Project Site on ground level of the existing Beacon Street Garage (Figure 1.6). Visitors to the Proposed Project will continue to park within the existing Beacon Street Parking Garage. Parking for six to seven annual home football games and Commencement at Alumni Stadium will be maintained on the reconfigured outdoor practice field proposed east of the Field House.

1.4.5 Sustainable Development Approach

Boston College is committed to developing projects that are sustainably designed and energy efficient with interior environments that are healthy for residents, employees, and visitors. The University uses the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) rating system as a tool to ensure sustainable projects. Consistent with the IMP, the Proposed Project will incorporate sustainable design and construction principles and practices that align with a LEED Silver certified project under the LEED for New Construction v2009 rating system. In accordance with Article 37 of the Code relative to the City's Green Building policies and procedures, Chapter 3, *Sustainability/Green Building and Climate Change Resiliency* of this PNF also demonstrates the Proposed Project is "certifiable" under the new LEEDv4 rating system (required for projects submitted for Article 80 Large Project Review on or after November 1, 2016).

1.4.6 Project Schedule

Construction of the Proposed Project is anticipated to commence in May 2017 and be completed in July 2018.

1.5 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 are summarized below.

Institutional Planning

- › 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.
- › Provides an appropriately designed facility that fulfills a need for indoor athletics space on campus that is similar to peer schools.
- › Locates the Field House adjacent to other major athletics facilities on campus and provides connections back to these facilities.
- › Provides for additional space for practice and conditioning sessions for the football program, other varsity sports, club and intramural sports, and recreational activities.
- › Reduces wear and tear/maintenance (i.e., re-sodding) of Shea Field.
- › Locates athletics uses in close proximity to the existing varsity team locker rooms, training and weight rooms, and coaches offices.

Urban Design/Public Realm

- › Preserves the architectural vernacular by providing an exterior materials palette in keeping with Lower Campus.
- › Improves aesthetics of Shea Field as the location of the new Field House will partially block the view of the Beacon Street Parking Garage.
- › Enhances pedestrian circulation along the northern edge of the Project Site.
- › Provides views and visual links to Chestnut Hill Reservoir; large overhead doors within the Field House will create new vantage points to the Reservoir and Pine Tree Preserve.
- › Enhances the Project's western edge adjacent to the existing parking garage by concealing the pedestrian ramp. New landscaping at the Field House entrance approach will enhance this edge as well.
- › Enhances the Beacon Street southern edge by replacing the existing trees with new trees as well as providing a new sidewalk in keeping with current campus-wide design standards.

Transportation

- › Results in no net new vehicle trips to Lower Campus since building users are the same as the existing fields and surrounding athletics facilities, including Alumni Stadium and the Yawkey Athletics Center, and are already travelling to and from the vicinity of the Project Site.
- › Strengthens and improves the internal pedestrian connections, circulation, and experiences, as well as those along the public ways of Chestnut Hill Driveway and Beacon Street.
- › Includes bicycle accommodations in accordance with the *City of Boston Bicycle Parking Guidelines*.
- › Utilizes an existing service driveway and gate access of Chestnut Hill Driveway for limited vehicle access (i.e., emergency and maintenance).

- › 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.

The stormwater management system will meet these standards except for the following:

- Due to a high groundwater table and MWRA waterline easements at the Project Site, the Proposed Project will seek to reduce the required distance between the bottom of the infiltration system and the high groundwater table from two feet to one foot.
- › 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.
- › Captures up to 2.8 million-gallon of stormwater in concrete storage tanks under a portion of the Field House to address campus- and area-wide flooding. Pipes will direct stormwater during significant storm events, which currently floods the surface of Alumni Stadium and Beacon Street Parking Garage, to the underground tanks. These tanks are designed to handle flooding from up to a 25-year storm event.
- › Reduces noise and light impacts associated with outdoor practices and recreational activities on the community, and increases hours for usage without disturbing the neighborhood and classes.
- › Shields building mechanical equipment and service/loading activities so that increased noise levels to nearby sensitive receptor locations are expected to be negligible.
- › Replaces existing play field lights with new fixtures that reduce light spill off-site.
- › Results in negligible localized air quality impacts, including no significant production of CO, associated with vehicle traffic to/from the Project Site as no net new vehicle trips are expected to be generated as a direct result of the Proposed Project.
- › Creates an energy-efficient and environmentally-friendly building designed to target LEEDv3 (2009) Silver certification and the Article 37 requirement of certifiable under LEEDv4.
- › 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 14.7 percent, which equates to

approximately 12.7 percent reduction in stationary source GHG emissions compared to the Base Case.

- › Considers potential impacts associated with predicted increased frequency and intensity of precipitation events by raising the grade at the first floor level.

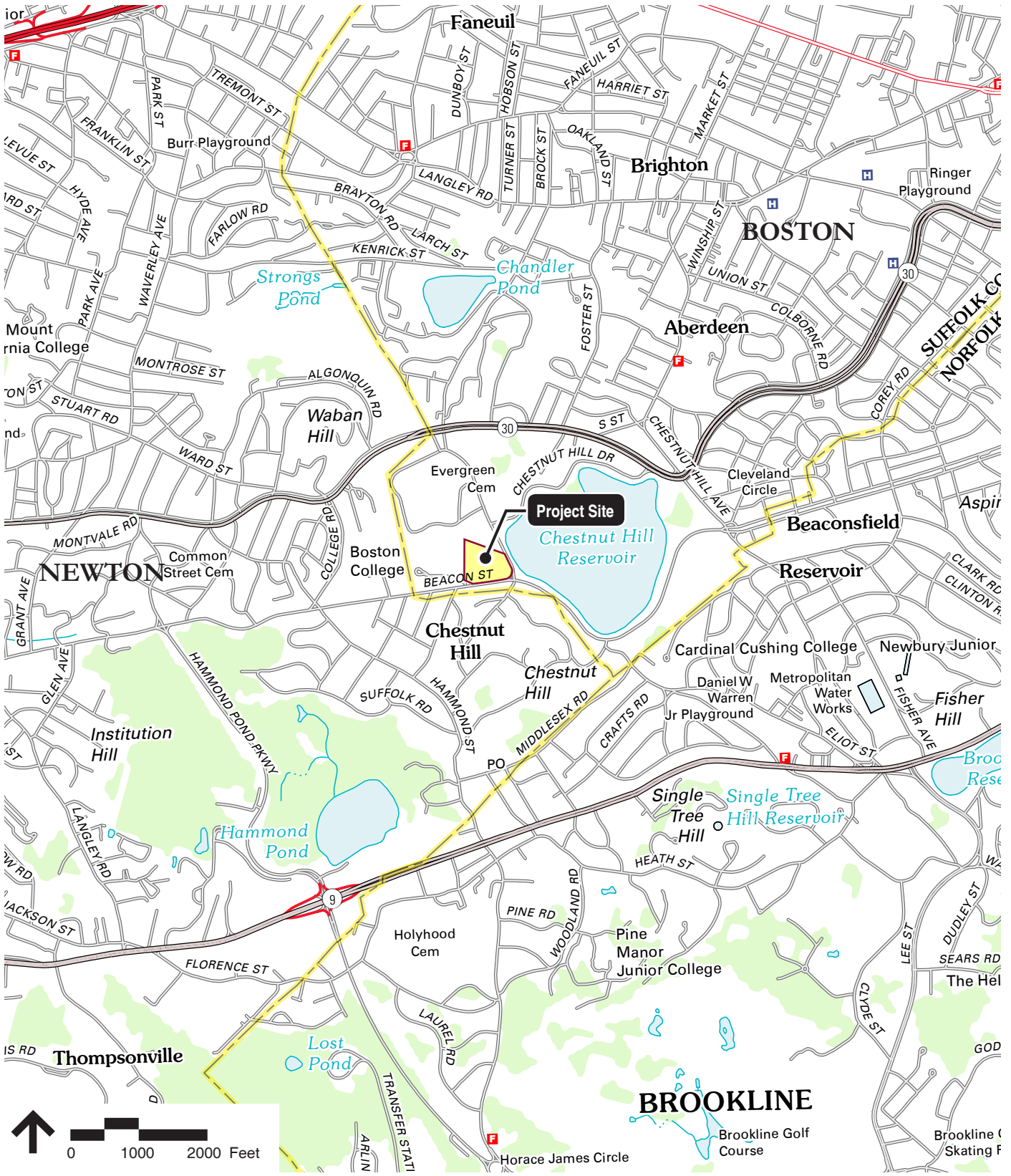
Community & Economic Benefits

- › Provides for additional space for practice and conditioning sessions for summer programs and camps.
- › Generates a Development Impact Project (DIP)/Linkage payment to the City of Boston Neighborhood Housing and Job Trusts estimated at \$1,028,000.
- › Provides approximately 208 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 14-month 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 economic impact of \$1.3 billion annually.¹

1.6 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 October 25, 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 Field House. Additional Task Force meetings will be scheduled during the Article 80 public review process.

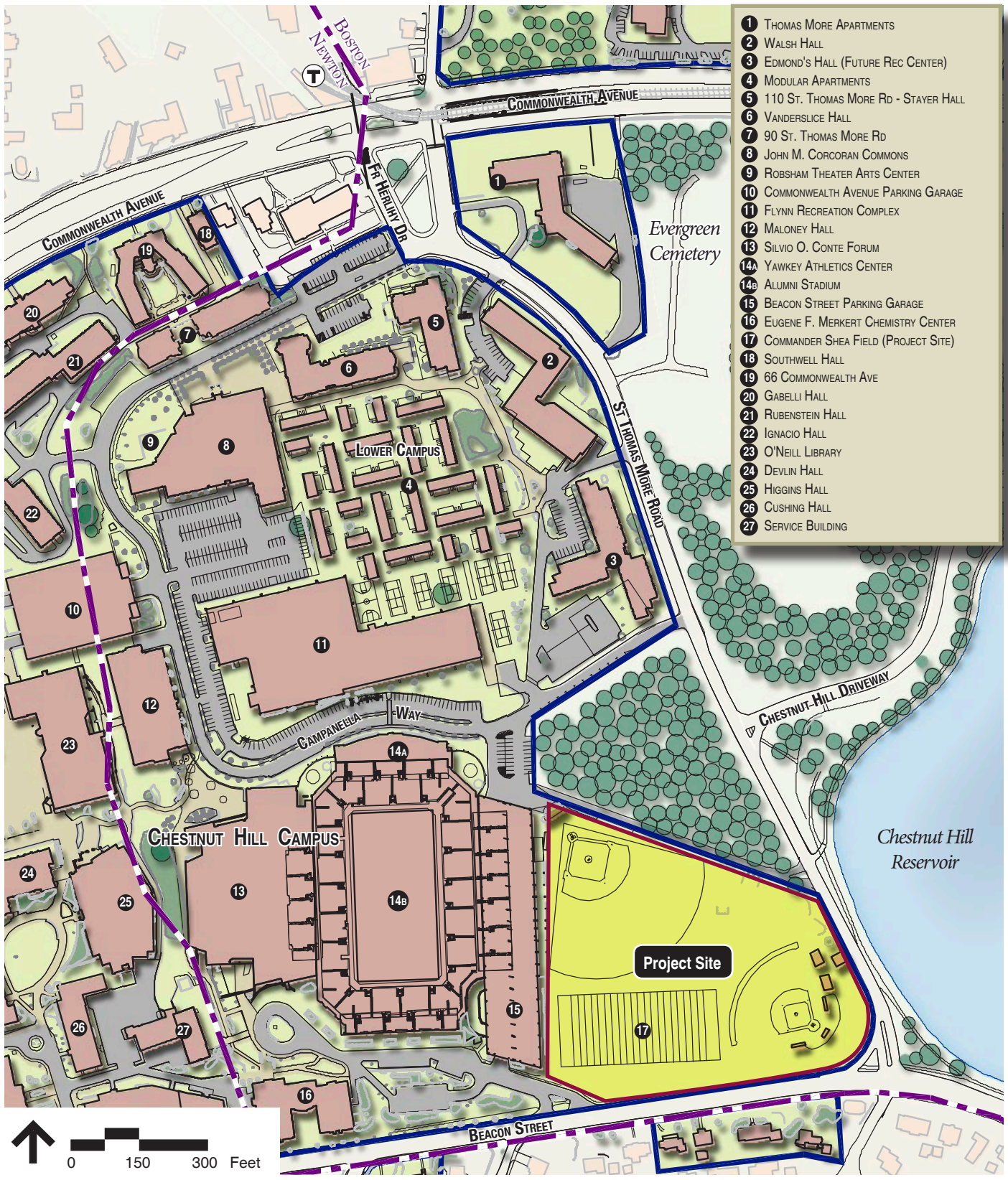
¹ According to the 2009 IMP.



Source: MassGIS 2014 USGS Newton Quad

Figure 1.1
Site Location Map

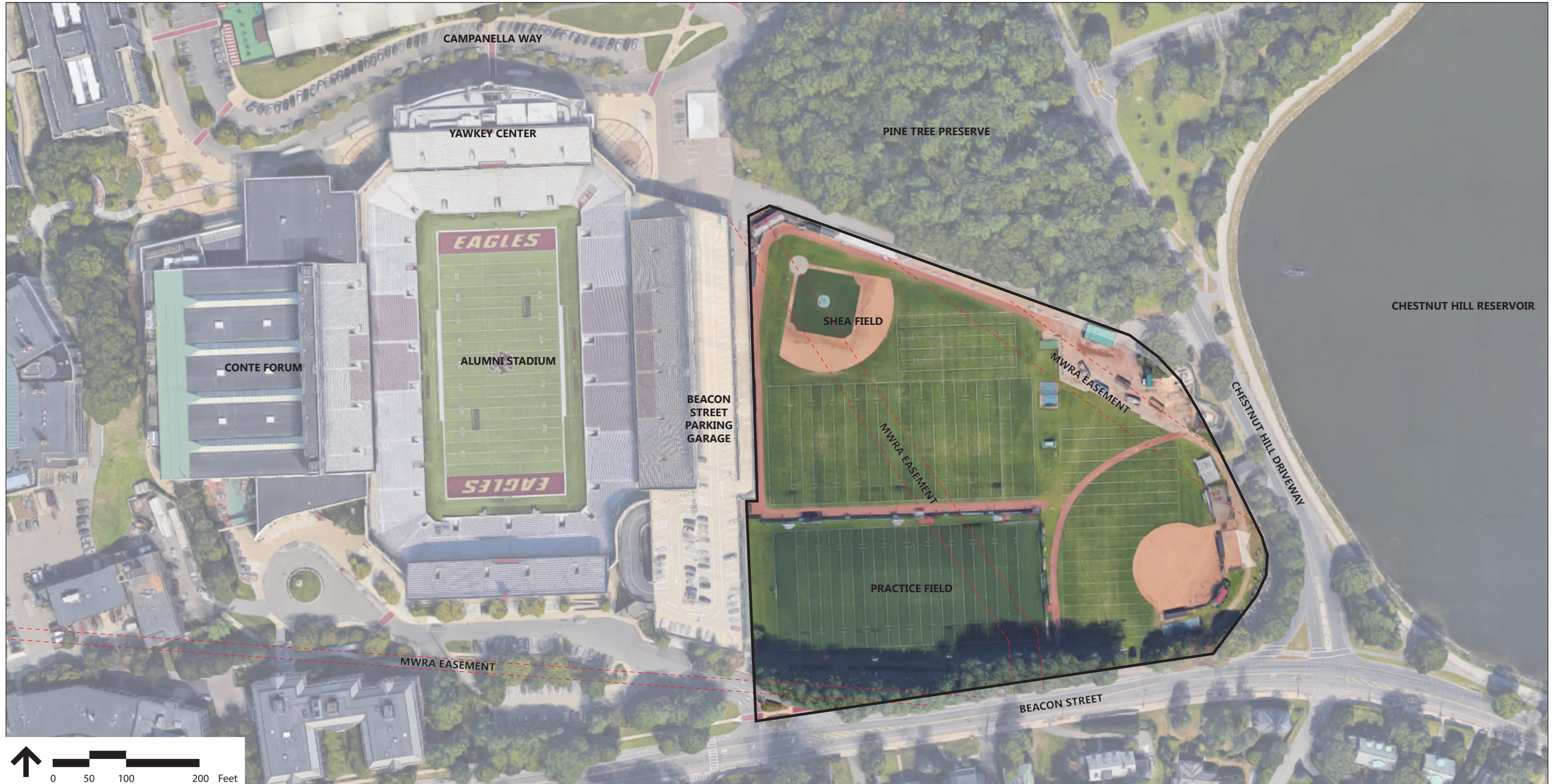
**Boston College Field House
Brighton, Massachusetts**



--- Municipal Boundary
 --- Campus Boundary

Figure 1.2
 Project Context

**Boston College Field House
 Brighton, Massachusetts**



- Property Site Boundary
- - - Easements

Figure 1.3
Existing Site Conditions Plan

**Boston College Field House
Brighton, Massachusetts**



View of Beacon Street Parking Garage, Practice Field and Shea Field, east elevation from Pine Tree Preserve, facing SW



View of Beacon Street Garage and Shea Field, east elevation from Pine Tree Preserve, facing W



View of Beacon Street Parking Garage, Practice Field and Shea Field, east elevation from Beacon Street, facing NW



View of Shea Field and Practice Field from Beacon Street Parking Garage, facing NE



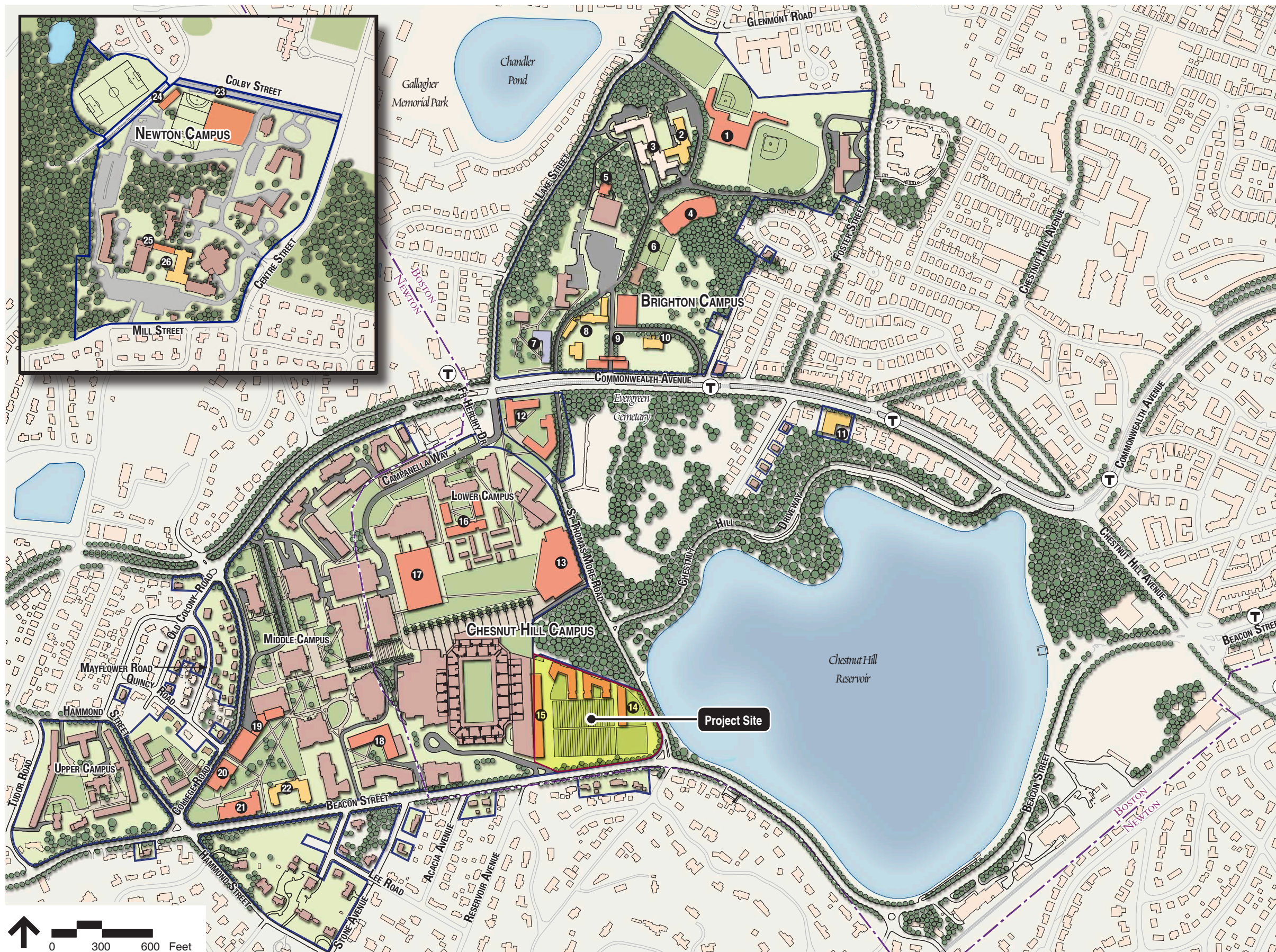
View of Shea Field and Pine Tree Preserve from Practice Field, facing N



View of Practice Field and Beacon Street from Shea Field, facing S

Figure 1.4
Site Photographs of Existing Conditions

**Boston College Field House
Brighton, Massachusetts**



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, as approved in 2009 IMP

**Boston College Field House
Brighton, Massachusetts**



Figure 1.6
Proposed Site Plan

**Boston College Field House
Brighton, Massachusetts**

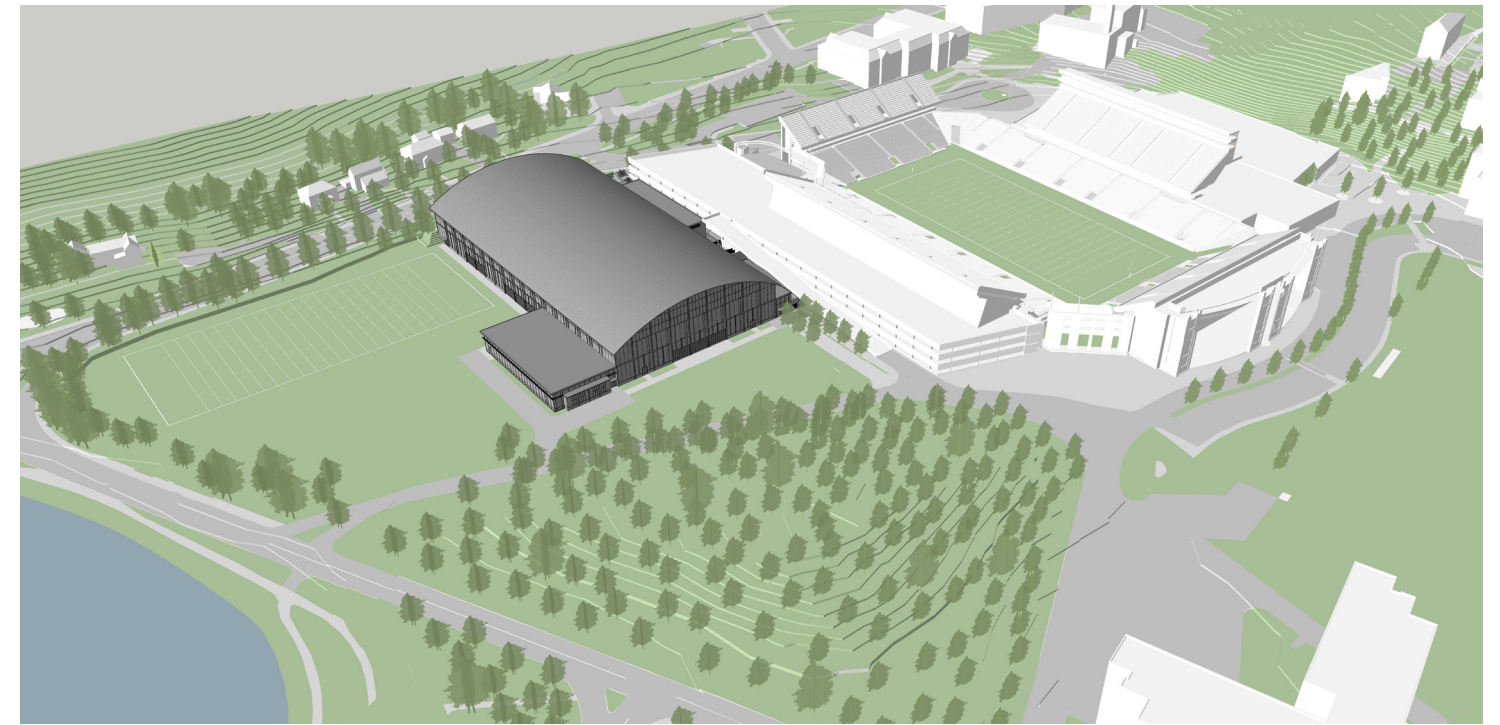


Figure 1.7
Massing Model

**Boston College Field House
Brighton, Massachusetts**

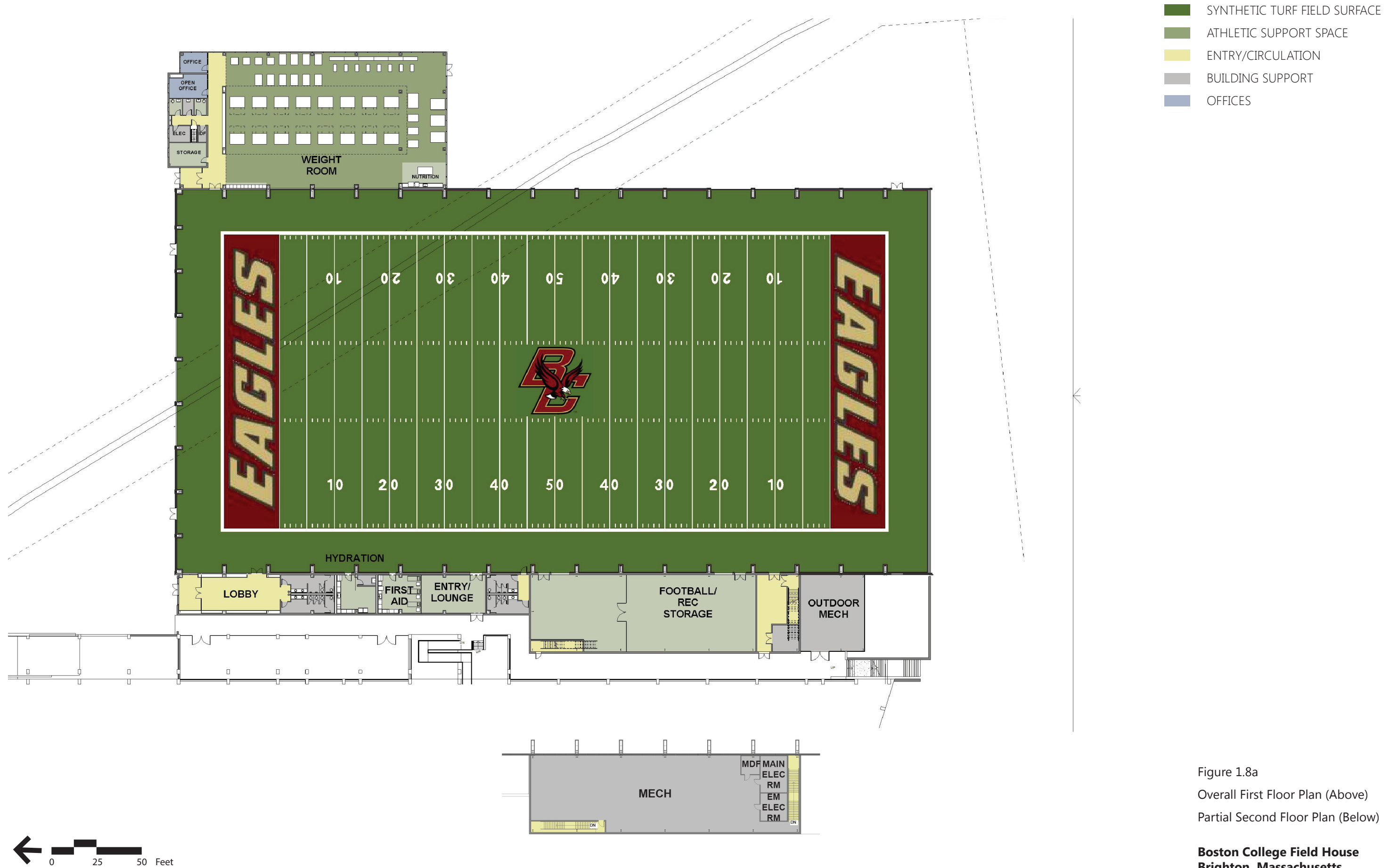
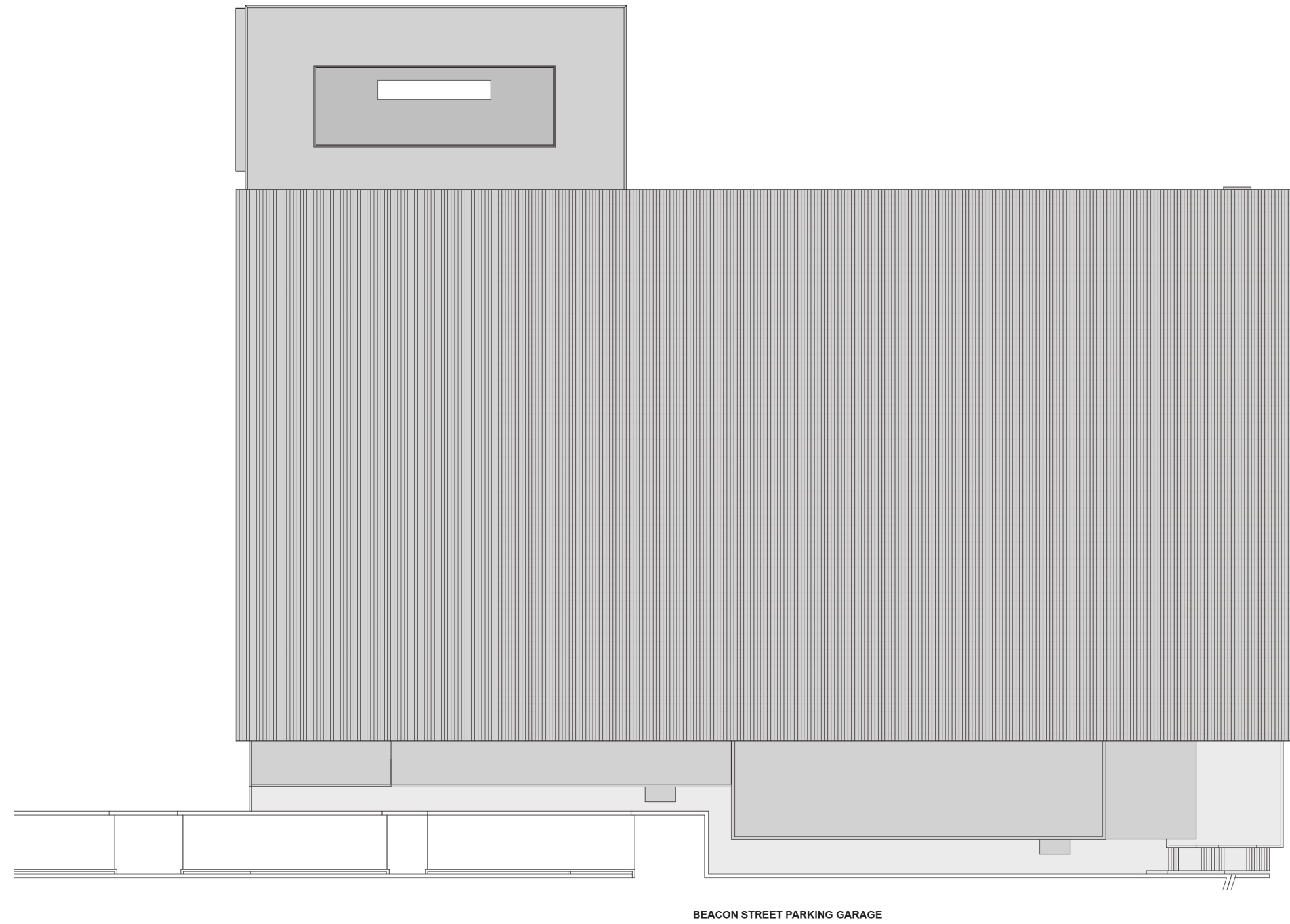


Figure 1.8a
Overall First Floor Plan (Above)
Partial Second Floor Plan (Below)

Boston College Field House
Brighton, Massachusetts



BEACON STREET PARKING GARAGE



Figure 1.8b
Roof Plan

**Boston College Field House
Brighton, Massachusetts**

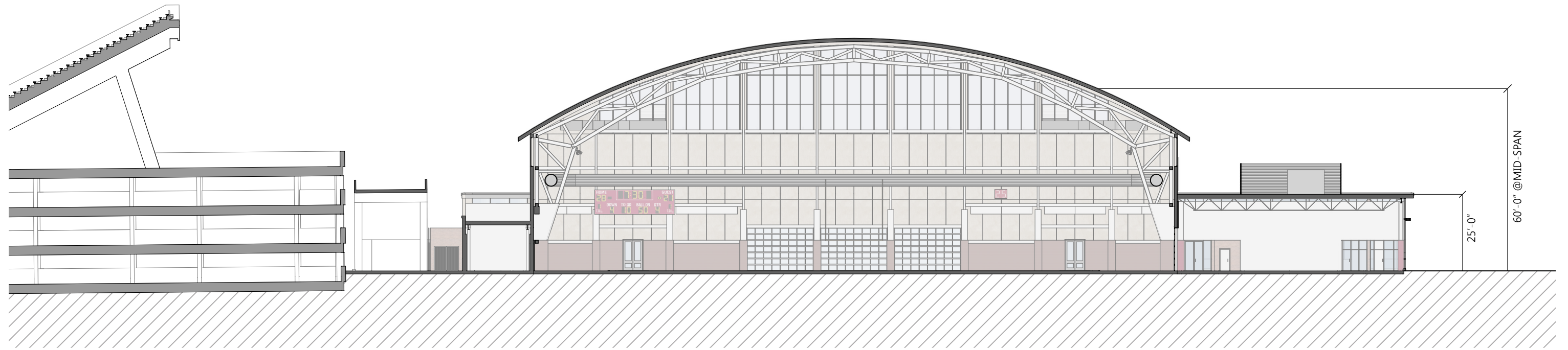


Figure 1.9
Building Section

**Boston College Field House
Brighton, Massachusetts**

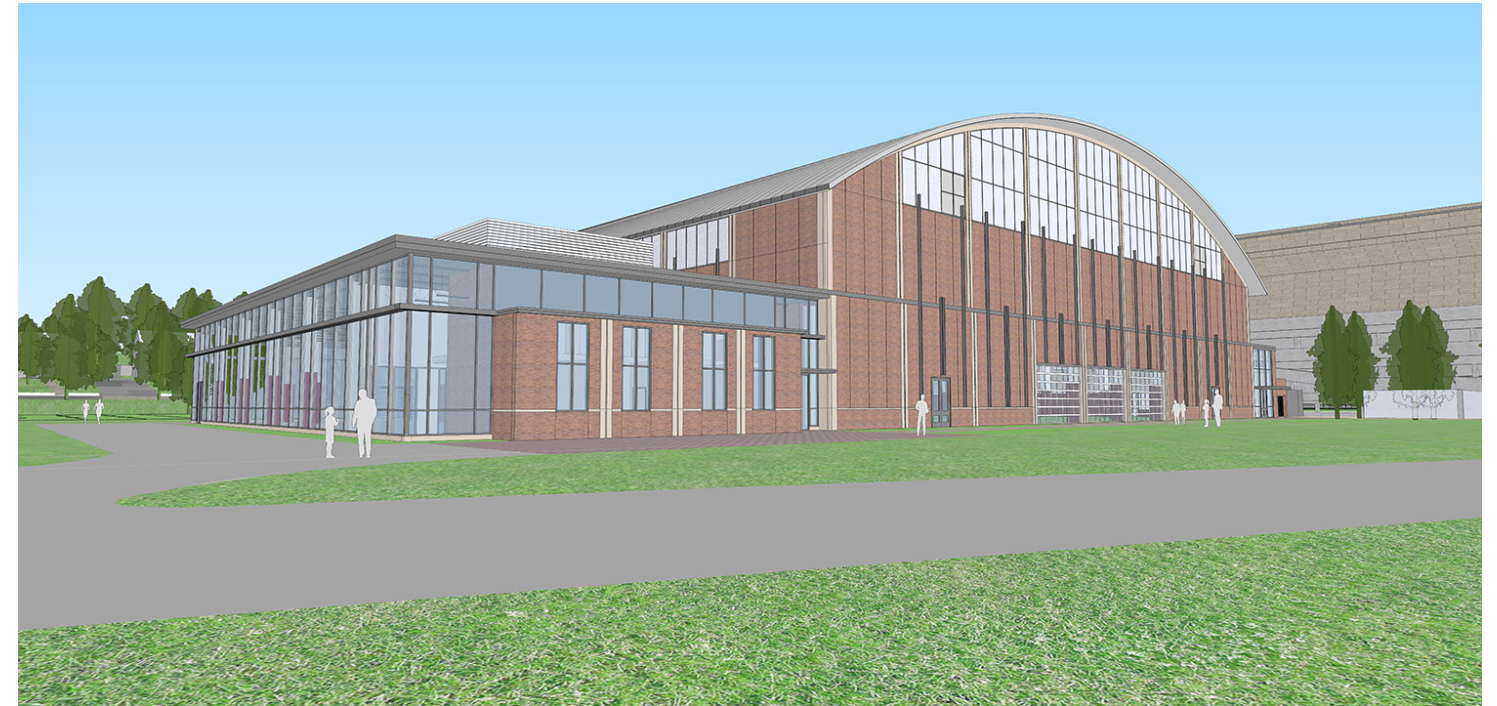


Figure 1.10a
Aerial Perspective

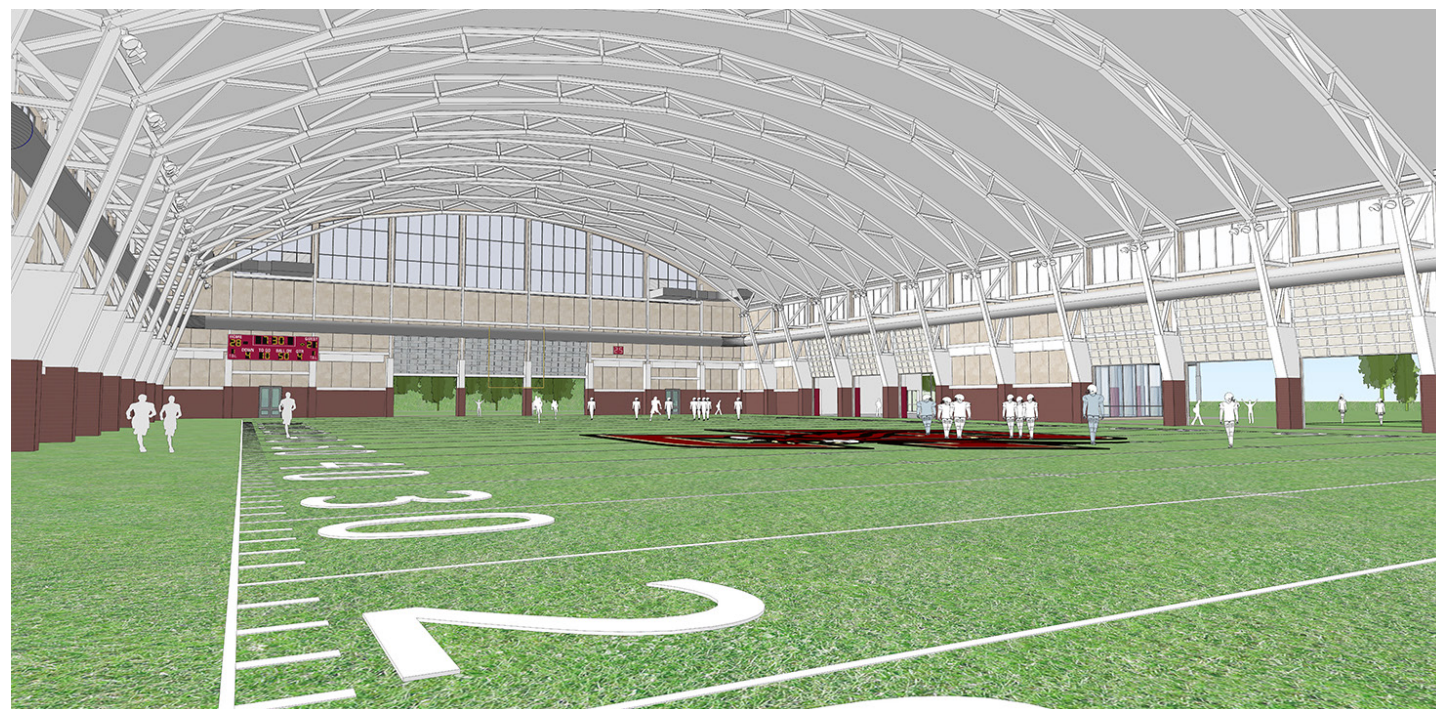
**Boston College Field House
Brighton, Massachusetts**



Looking Northwest from Practice Field



Looking Southwest from Pine Tree Preserve



Looking Northeast from inside Field House

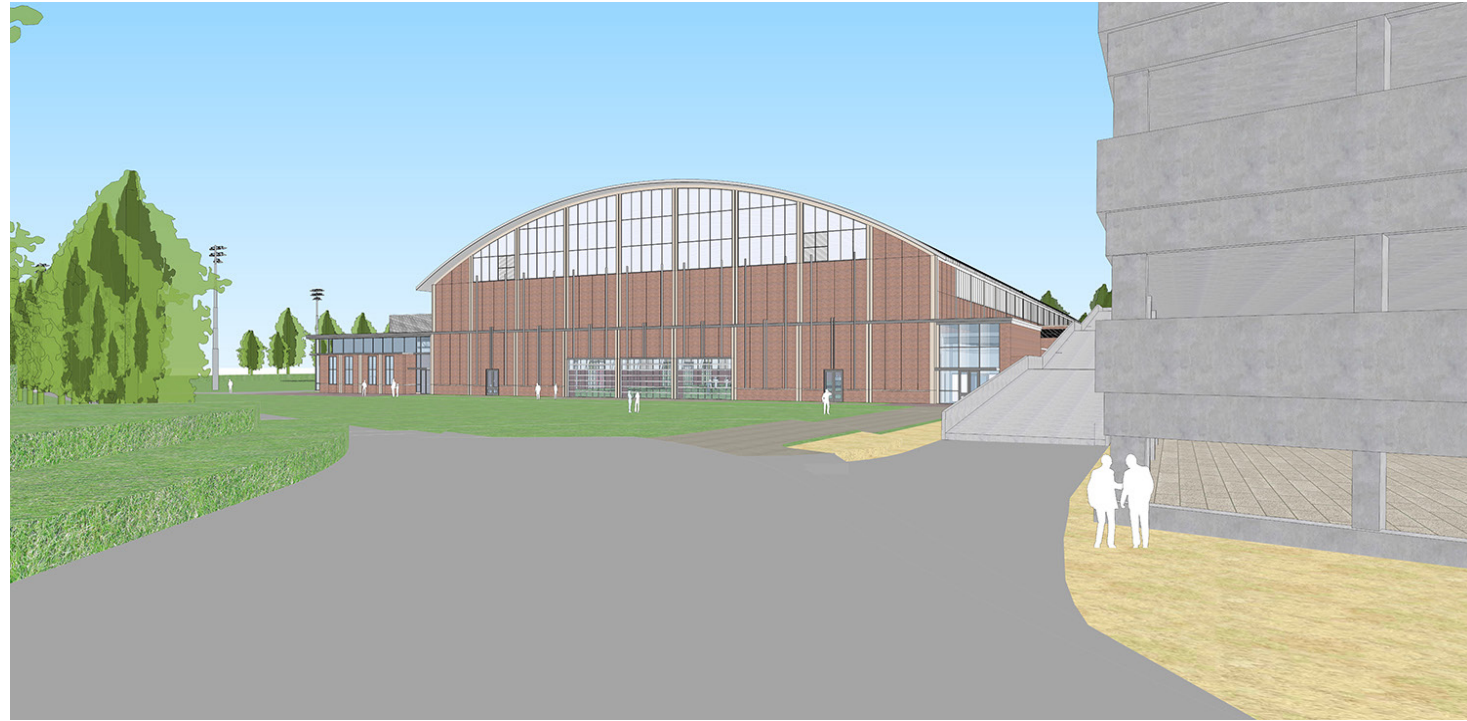


Looking Southeast from inside Field House



Figure 1.10b
Perspectives

**Boston College Field House
Brighton, Massachusetts**



Looking Southeast from Campanella Way



Looking West from Chestnut Hill Driveway



Looking Northwest from Practice Field



Looking North from Beacon Street



Figure 1.10c
Perspectives

**Boston College Field House
Brighton, Massachusetts**

2

Regulatory Context and General Information

The following chapter summarizes the local planning and regulatory controls, anticipated permits and approvals applicable to the Proposed Project. It also describes agency meetings held to date and planned, as well as presents the project team.

2.1 Regulatory Context

This section describes how the Proposed Project is consistent with the City of Boston zoning requirements and ordinances as well as any state review requirements, as applicable.

2.1.1 Conformance with Zoning

The Proposed Project falls within the Allston-Brighton Neighborhood District zoning (Map No. 7A-7D) governed by Article 51 of the Code and Boston College IMP subdistrict (Subdistrict Type Institutional). Boston College intends to construct the Proposed Project as an IMP Proposed Project following amendment of the IMP and issuance of Certificate of Consistency (pursuant to Section 80D-10 of the Zoning Code) and Compliance (pursuant to Section 80B-6 of the Zoning Code). Therefore, the Proposed Project will be deemed to comply with the underlying zoning as provided in Section 80D-11 of the Code.

Uses and Size

The Field House will serve many athletics uses for football, other varsity sports, club and intramural sports, and recreational activities. While the Proposed Project does not preclude construction of 550 student beds on Shea Field, the housing would be reconfigured from three to two buildings, as described in further detail in the IMPNF for Amendment being submitted simultaneously with this PNF (discussed further under Section 2.1.2 below). Also described in the IMPNF for Amendment is the elimination of the previously proposed 350-space parking addition to the Beacon Street Parking Garage.

The Proposed Project is approximately 102,665 gross floor area and the Project Site is approximately 357,216 square feet resulting in a Floor Area Ratio, or FAR, of 0.29.

The Proposed Project will provide the following setbacks:

- › Southern Setback: 48.4 feet
- › Eastern Setback: 284.6 feet
- › Northern Setback: 82.5 feet

- › Western Setback: >500 feet

Height

Under the Massachusetts State Building Code, building height is calculated as the measurement from average grade plane to the average of the highest roof surface. Sloped roofs are measured to the mid-point of the roof per the building code height definition. Based on this definition, the building height will be 60 feet high and, therefore, is not considered a high-rise structure.

2.1.2 Article 80 – Development Review and Approval

Project Notification Form

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

This PNF aims to meet requirements of the City of Boston Article 80B, Large Project Review by presenting details about the Proposed Project and providing a detailed project description and supporting plans, including preliminary information on sustainability and resiliency, in accordance with Boston Zoning Code Article, 37 Green Buildings, (Article 37), and the Climate Change Preparedness and Resiliency Policy (Resiliency Policy), respectively. Upon review of public and agency comments on this PNF as well as any further responses to comments made by the Proponent, the BPDA will issue a Scoping Determination, which will outline the additional information required as part of the Draft Project Impact Report (DPIR) filing.

Institutional Master Plan Amendment

The Field House is a new institutional project and was not included in the original 10-year IMP approved in 2009 and last renewed in May 2016. While the Field House does not preclude planned construction of student housing (550 beds) on the Project Site, as previously contemplated by the approved IMP, the housing would be reconfigured from three to two buildings. And, the Proposed Institutional Projects would be modified to no longer include the 350-space parking addition to the Beacon Street Parking Garage. The University recently acquired property at 300 Hammond Pond Parkway, 1.2 miles from the Chestnut Hill Campus, with parking for approximately 350 vehicles, which will help address future parking needs. These changes are addressed more fully as part of a filing separate from this document—the IMPNF for Amendment—being submitted simultaneously with this PNF. The IMPNF for Amendment is seeking an amendment to the Boston College IMP to incorporate the Field House, and to amend the Shea Field housing and eliminate the addition to the Beacon Street Parking Garage.

Development Impact Project

The Proposed Project is a Development Impact Project (DIP) within the meaning of Section 80B-7 (Development Impact Project Exactions). Based on a preliminary estimate, approximately \$1,028,000 million will be provided to the City as a result of the Proposed Project.

2.1.3 Article 37 – Green Buildings

The Proposed 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”). With the LEED version 4, or v4, rating system effective as of October 31, 2016, the BPDA requires initial Article 80 Large Project Review submissions on or after November 1st to demonstrate LEED certifiable using LEEDv4. As demonstrated in Section 3.4.2 of Chapter 3, *Sustainability/Green Building and Climate Change Resiliency* of this PNF, the Proposed Project is anticipated to achieve LEED Certified level meeting the requirements of Article 37.

2.1.4 Massachusetts Environmental Policy Act

The Proposed Project requires an 8(m) Permit from the MWRA, as well as approvals related to temporary construction activities, including a Temporary Construction Site Dewatering Permit from MWRA and Construction and Access Permit from DCR. However, the Proposed Project does not require review under the Massachusetts Environmental Policy Act (MEPA) because it does not meet or exceed any of the MEPA Review Thresholds, per 301 CMR 11.03.

2.1.5 Massachusetts Historical Commission

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

2.2 Anticipated Permits and Approvals

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

Table 2-1 Anticipated Project Permits and Approvals

Agency/Department	Permit/Approval/Action
Federal	
U.S. Environmental Protection Agency	NPDES Construction Stormwater General Permit
Commonwealth of Massachusetts	
Massachusetts Department of Conservation and Recreation	Construction and Access Permit
Massachusetts Water Resources Authority	8(m) Permit MWRA Temporary Construction Site Dewatering Permit
Massachusetts Historical Commission	Determination of No Adverse Effect (if required)
Massachusetts Department of Environmental Protection, Division of Air Quality Control	Construction Notice
City of Boston	
Boston Planning and Development Agency	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 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

2.2.1 Agency Outreach and Coordination

The Proponent has begun outreach and coordination efforts with departments and agencies at the City of Boston, Commonwealth of Massachusetts Department of Conservation and Recreation (DCR) and the MWRA. Several meetings were held in August and September of 2016 with the MWRA to introduce the Proposed Project and discuss design and construction issues related to two existing MWRA easements on the Project Site. The Proponent anticipates meeting with DCR to brief the Commissioner and staff in advance of applying for a Construction Access Permit for the Proposed Project.

On September 14, 2016, the Proponent met with staff from Boston's Inspectional Services Department and Fire Department to review and discuss potential building

code and fire access issues. The University met with BPDA staff on October 28, 2016 to review the Proposed Project, as well as discuss the Article 80 process and amendment of the IMP.

2.3 Project Team

<p>Proponent</p> <p>Trustees of Boston College 140 Commonwealth Avenue Chestnut Hill, MA 02467 617-552-4787 Contact: Thomas J. Keady, Jr., Vice President for Governmental and Community Affairs</p>	<p>Legal Counsel</p> <p>Boston College Office of General Counsel 140 Commonwealth Avenue Chestnut Hill, MA 02467 617-552-2855 Contact: Joseph M. Herlihy, General Counsel</p>
<p>Architect</p> <p>ARC/Architectural Resources Cambridge 501 Boylston Street, Suite 4101 Boston, MA 02116 617-547-2200 Contact: Philip L. Laird, AIA, LEED AP BD+C, President Stephen Dadagian, AIA LEED AP, Senior Associate Leslie DelleFave, AIA, LEED AP, Associate Architect</p>	<p>Transportation, Permitting, Historic Advisor</p> <p>VHB 99 High Street, 10th Floor Boston, MA 02210 617-728-7777 Contact: David Black, Traffic Engineer Lauren DeVoe, AICP, LEED AP BD+C, Senior Environmental Planner Nicole Benjamin-Ma, Preservation Planner</p>
<p>Civil Engineering</p> <p>Waterfield Design Group, Inc. 50 Cross Street Winchester, MA 01890 781-756-0001 Contact: Craig Miller, PE, Principal and Owner Jacob Murray, PE LEED AP, Senior Civil Engineer</p>	<p>Landscape Architect</p> <p>Stephen Stimson Associates 288 Norfolk Street Cambridge, MA 02139 617-876-8960 Contact: Stephen Stimson, FASLA, Principal and Owner Glen Valentine, Principal</p>
<p>Geotechnical and Environmental Consultant</p> <p>McPhail Associates, LLC 2269 Massachusetts Avenue Cambridge, MA 02140 617-868-1420 Contact: Chris Erickson, PE</p>	<p>MEP</p> <p>Bard, Rao + Athanas Consulting Engineers, LLC 10 Guest Street Boston, MA 02135 617-254-0016 Contact: Patrick Duffy, PE, LEED AP, Associate Principal</p>

3

Sustainability/Green Building and Climate Change Resiliency

This section provides an overview of the sustainable design elements proposed as part of preliminary design of the Proposed Project. Boston College is committed to developing projects that are sustainably designed and energy efficient with interior environments that are healthy for residents, employees, and visitors. The University uses the LEED rating system as a tool to ensure sustainable projects. Consistent with the IMP, the Proposed Project will incorporate sustainable design and construction principles and practices that align with a LEED Silver certified project under the LEED for New Construction 2009, or version 3, rating system. In accordance with Article 37 of the Code relative to the City's Green Building policies and procedures, Section 3.4.2 of this chapter demonstrates the Proposed Project is "certifiable" under the new LEEDv4 rating system (required for projects submitted for Article 80 Large Project Review on or after November 1, 2016).

3.1 Key Findings and Benefits

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

- › Utilizes land efficiently through redevelopment of a previously developed site in close proximity to other athletics facilities and other complementary uses on the Lower Campus.
- › Targets a LEEDv2009 Silver level, as demonstrated by the draft LEEDv2009 scorecard (Figure 3.1).
- › Complies with Article 37 (Green Buildings) of the Code by demonstrating the project design would achieve a LEEDv4 Certified level, as demonstrated by the draft LEEDv4 scorecard (Figure 3.2).
- › Based on a preliminary building energy model, the estimated energy use savings of approximately 14.7 percent demonstrates that it is feasible for the Proposed 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 Proposed Project would result in a GHG emissions reduction of 12.7 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 Proposed Project were considered during early stages of design.

3.2 Regulatory Context

3.2.1 Massachusetts Stretch Energy Code

As part of the Green Communities Act of 2008, Massachusetts developed the optional Stretch Energy Code that gives municipalities the option to enact a more strenuous energy performance code for buildings than the conventional state building code. The Stretch Energy Code increases the energy efficiency code requirements for new construction (both residential and commercial) and for major residential renovations or additions in municipalities that adopt it.

On July 1, 2014, the IECC2009 and ASHRAE 90.1-2007 ceased to be a code option for non-Stretch Energy Code communities, and the IECC2012 and ASHRAE standard 90.1-2010 became the new/updated state-wide Base Energy Code. More recently, as of July 1, 2016, the Stretch Energy Code requirements have been revised to be more stringent to better align with the Base Energy Code. It is assumed that the City of Boston will adopt the updated Stretch Energy Code.

3.2.2 Article 37 – Green Buildings

The Proposed 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 Proposed 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”). With the LEED version 4, or v4, rating system effective as of October 31, 2016, the BPDA requires initial Article 80 Large Project Review submissions on or after November 1st to demonstrate LEED certifiable using LEEDv4.

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

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.

3.3 Sustainability at Boston College

3.3.1 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 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 (GHG) emissions, and to develop a plan 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

3.3.2 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 using the LEEDv2009 rating system in place at the time of the IMP.

Transportation

The University continues its campus-wide Transportation Demand Management program, which is detailed in Chapter 4, *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 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 to 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 311 tons of waste in the Fiscal Year 2016.

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 athletics 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.

3.4 Proposed Project Compliance with Article 37

Boston College is committed to developing projects that are sustainably designed and energy efficient with interior environments that are healthy for the residents, employees, and visitors. Consistent with the approved IMP and its Sustainability Policy, the University intends to target a LEED-NCv3 (2009) Silver level certification as well as demonstrate a certifiable equivalency with LEED-NC version 4 for the Proposed Project. The Proponent and project design team have conducted early evaluations of sustainable design and energy conservation measures, including on-site clean/renewable energy strategies.

The design team for the Proposed Project includes several LEED Accredited Professionals (AP BD+C), including all members of the architecture team (refer to Section 2.3 of Chapter 2, *Regulatory Context and General Information*), the sustainability consultant, Chris Schaffner, PE, LEED Fellow, WELL AP, Founder and President of The Green Engineer, Inc. Sustainable Design Consulting; and the permitting consultant, Lauren DeVoe, LEED BD+C, Senior Environmental Planner/Project Manager with VHB.

The Proponent intends to go for certification under LEEDv3 (2009), which represents the rating system the Proposed Project was registered under prior to the October 31st deadline.

3.4.1 Preliminary Green Building Evaluation – LEEDv3 (2009)

There are seven categories in the LEED certification guidelines: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation in Design Process and the additional Regional Priority Credits. The Proposed Project is targeting several credits that span the seven

categories for a minimum of 50 points to achieve a LEED-NC v2009 Silver level, as demonstrated by the preliminary checklist provided in Figure 3.1. There are many additional credits, listed in italics below, which are still under consideration as to whether or not the Proposed Project shall attempt them; it may be determined that some of the credits under consideration may not be attainable.

The following is a detailed credit-by-credit analysis of the project team's approach for achieving a LEED-NC v2009 Silver certified building:

Sustainable Sites (SS)

The Project Site is located in Brighton, an urban neighborhood of Boston, MA, on the parcel that currently holds Shea Field on Boston College's Chestnut Hill Campus. Locally, the Proposed Project has ample access to public transportation including the MBTA Green Line, via the 'Boston College' (B branch) station; additional shuttles are provided by Boston College to serve local neighborhoods. The Proposed Project shall incorporate low-impact site features that will properly capture and infiltrate stormwater to improve groundwater levels. Alternative transportation strategies shall be employed to reduce pollution impacts from automobile use.

The Proposed Project earns points for Site Selection, Development Density, Minimizing Parking Capacity, as well as Heat Island Effect. The Proposed Project strongly supports public transportation and no new parking is going to be constructed. The project team will focus on including high SRI values for both roof areas and site hardscape.

SSp1 - Construction Activity Pollution Prevention

The Construction Manager shall submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing conditions and the construction of the new building specific to the Proposed Project. The ESC Plan shall conform to the erosion and sedimentation requirements of the 2012 EPA Construction General Permit in order to comply with this LEED prerequisite.

SSc1 - Site Selection

The Project Site is located on a previously developed/graded site on Boston College's Chestnut Hill campus, situated along Beacon Street as well as Chestnut Hill Drive.

SSc2 - Development Density and Community Connectivity

The Project Site is located on a dense suburban college campus, with a surrounding community that includes many local amenities within a ½-mile walking distance.

SSc4.1 - Alternative Transportation, Public Transportation Access

There is direct access within a ½-mile walking distance to the MBTA Green Line light rail via the "Boston College" station (B branch). Additionally, Boston College provides campus shuttle services to local neighborhoods and shopping areas.

SSc4.2 - Alternative Transportation, Bicycle Storage and Changing Rooms

The Proponent and the design team are exploring options to include both interior

and exterior bike racks on-site; shower facilities are within 200 yards off-site, located in Alumni Stadium.

SSc4.4 - Alternative Transportation Parking Capacity

The Proposed Project does not include any new parking on-site, nor anywhere on campus as users are expected to walk or bike to the Project Site. Existing parking at the adjacent Beacon Street Parking Garage will be made available to visitors, including ADA-compliant spaces.

SSc5.2 - Site Development, Maximize Open Space

The Proposed Project will provide sufficient vegetated open space to meet the minimum requirements of this credit, both to the east and north of the proposed building.

SSc6.1 - Stormwater Design, Quantity Control

The City of Boston has requirements for collection and recharge of stormwater. Stormwater collection systems shall be designed to help mitigate runoff from the Project Site and recharge a portion within groundwater recharge wells on-site. The Proposed Project will reduce the total stormwater runoff for a one- and two-year storm design.

SSc6.2 - Stormwater Design, Quality Control

The installation of a groundwater recharge system for stormwater will reduce the suspended solids and phosphorus content of the site stormwater recharge on-site. Plans for additional measures on-site will increase the total runoff treated and suspended solids removed.

SSc7.1 - Heat Island Effect, Non-Roof

All new hardscape materials, aside from the parking area asphalt, have been designed to meet the minimum required SRI (29) for at least 50% of the total hardscape on-site; calculations will be required to ensure compliance with the 50% threshold has been met near the end of design.

SSc7.2 - Heat Island Effect, Roof

The project team shall specify high albedo surface materials with a minimum SRI value of 78 for a minimum of 75% of the Proposed Project's total roof area, excluding area covered by rooftop mechanical systems.

Water Efficiency (WE)

The Proposed Project shall specify low-flow and high-efficiency plumbing fixtures to reduce the amount of potable water used throughout the building. The exterior vegetation will be comprised of regionally appropriate and drought-tolerant indigenous plants. There shall be a high efficiency irrigation system installed on-site.

WEp1 - Water Use Reduction, 20% Reduction and WEc3 - Water Use Reduction

Through the specification of low-flow and high-efficiency plumbing fixtures, the Proposed Project shall implement water use reduction strategies that use, at a minimum, 20% less potable water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture

performance requirements. The Proposed Project shall target an overall potable water use savings of 30% from the calculated baseline use. A higher goal of 35% will be considered depending on the final fixture selection for Water Use Reduction by the project team.

WEc1 - Water Efficient Landscaping

The exterior vegetation shall incorporate native and adaptive plant materials and the design of the irrigation system shall target a 50% reduction in potable water use when compared to a mid-summer baseline.

Energy and Atmosphere (EA)

The building systems shall be designed to optimize energy performance and reduce energy consumption through the use of high-efficiency building systems. The team will engage a building commissioning agent to ensure the proper installation and operation of systems. No chlorofluorocarbon (CFC)-based refrigerants will be used in order to avoid ozone depletion in the atmosphere. The team has also explored the feasibility of on-site renewable technologies.

The building design will include high-performance strategies for the building envelope, lighting, equipment, and low-flow plumbing fixtures to reduce Domestic Hot Water demand. The HVAC design includes:

- › High-performing condensing boilers;
- › Energy recovery dedicated outdoor air units providing heating and ventilation within the building;
- › Radiant heating located around the perimeter of the building;
- › Mixed-mode ventilation strategy to control heat gain within the building; and
- › An ERV and VRF system provided in the weight room component and ancillary spaces.

Large garage-style doors have been incorporated on the eastern side of the building not only for access to the outdoor playing field, but to provide for natural ventilation. Translucent glazing at the top of the Field House and the mostly glass envelope of the weight room will allow for natural light reducing the need for lighting. Attention will be paid to the interior lighting control systems in all back-of-house, common areas, as well as the Field House and weight room to further reduce energy usage for lighting.

Based on current design, preliminary energy model results indicate the Proposed Project is performing 14.7% better than the baseline (ASHRAE 90.1-2013), which equates to approximately 28% energy cost savings, or nine (9) points under LEEDv2009.

The Proponent shall engage a Commissioning Agent during the design phase to review the proposed design and ultimately confirm the building systems are installed and function as intended and desired.

EAp1 - Fundamental Commissioning of the Building Energy Systems

A Commissioning Agent (CxA) shall be engaged by the Proponent for purposes of providing basic commissioning services for the building energy-related systems including HVAC & R, lighting, and domestic hot water systems. The CxA shall verify the building systems are installed, calibrated, and perform to the Proponent's project requirements and the project team's basis of design.

EAp2 - Minimum Energy Performance and EAc1 - Optimize Energy Performance

The building's energy performance shall meet the minimum requirements of EAp2. For EAc1 the design, at minimum, is expected to show an 18% energy cost savings when compared to a baseline building based on ASHRAE Standard 90.1-2007 Appendix G methodology. This requirement will be met by selecting efficient mechanical equipment. Additionally, an improved building envelope design and efficient lighting will be required to achieve this minimum. The team shall develop a whole building energy model to demonstrate the expected performance rating of the designed building systems. The project team is currently demonstrating a higher efficiency for the Proposed Project of at least a 28% improvement in energy cost savings, based on initial design intent, through the preliminary energy model.

EAp3 - Fundamental Refrigerant Management

The specifications for refrigerants used in the building HVAC & R systems shall NOT permit the use of CFC based refrigerants. The proposed design of the HVAC systems will achieve the prerequisite.

EAc2 - On-site Renewable Energy

The design team has evaluated the feasibility of incorporating renewable energy systems on-site and determined that the rooftop is not suitable for installation of solar photovoltaic (PV) arrays due to its curved shape and light structure, as well as its orientation on the Project Site.

EAc3 - Enhanced Commissioning

The team shall engage a third party Commissioning Agent (CxA) during the Design Development phase. The CxA's role shall include, at minimum, a review of the Proponent's project requirements, creating, distributing and implementing a commissioning plan, and performing a design review of project documents. The team is considering the Enhanced scope of work for the CxA at this time.

EAc4 - Enhanced Refrigerant Management

The design team is investigating options to provide refrigerant-containing systems that qualify under the requirements of this credit to not exceed an average refrigerant atmospheric impact of 100. Calculations are necessary once design develops to determine the resulting impact of the selected systems.

EAc5 - Measurement and Verification

The Proponent shall establish an ENERGY STAR Portfolio Manager account to enable the USGBC to review whole building energy and water use for five years after occupancy. The project team is exploring further development of a full Measurement & Verification plan and implementation.

EAc6 - Green Power

The team is exploring the feasibility of purchasing 'green power' for a 2-year renewable energy contract to provide a minimum of 35% of the building's electricity from renewable sources.

Materials and Resources (MR)

A demolition and construction waste management plan will be implemented during construction of the Proposed Project to divert at least 75 percent of waste material from landfills. Building materials will be selected that contain recycled and regional content to reduce use of virgin materials and energy use associated with transportation while supporting local economies. Building-occupant waste recycling will be encouraged through the use of a building recycling program and space.

MRp1 - Storage and Collection of Recyclables

Storage of collected recyclables shall be accommodated within the project design. Occupants shall have a dedicated area to bring their recyclables for storage and collection. Recyclables shall be collected by a contracted waste management company on a regular basis.

MRc2.1 and 2.2 - Construction Waste Management

The specification shall require that prior to the start of construction the Construction Management team shall prepare and submit a Construction Waste Management plan which shall be implemented on-site. The Construction Manager shall endeavor to divert as much construction waste from area landfills as possible with a goal to achieve a minimum 75% diversion rate.

MRc4.1 - Recycled Content 10% (post-consumer & ½ pre-consumer)

The Proposed Project specifications shall require certain materials to include pre- and/or post-consumer recycled content. During construction, materials and products submittals shall include documentation of the percentage of pre- and post-consumer recycled content. The Construction Manager shall track the recycled content with a goal to achieve 10% recycled-content materials based on overall project materials costs.

MRc4.2 - Recycled Content 20% (post-consumer & ½ pre-consumer)

The Construction Manager shall track the recycled content for building materials targeting 20% recycled-content materials based on overall project materials costs.

MRc5.1 - Regional Materials, 10% Extracted, Processed and Manufactured Regionally

The project design specifications shall indicate materials to be extracted, harvested, recovered and manufactured within a 500 mile radius of the Project Site. The project design includes a goal for 10% of the materials and products installed to be regional materials. The Construction Manager shall track the submitted and installed materials and products with a goal to achieve the 10% threshold based on overall project materials costs.

MRc5.2 - Recycled Content 20% Extracted, Processed and Manufactured Regionally
The Construction Manager shall track the regional materials for building materials targeting 20% regional materials based on overall project materials costs.

MRc7 - Certified Wood

The project team is exploring the cost and availability of Forest Stewardship Council (FSC)-certified wood. The Construction Manager shall track all installed wood materials, including invoicing documentation for all FSC-certified products installed on the Proposed Project.

Indoor Environmental Quality (IEQ)

The comfort and well-being of the building occupants will be paramount in regard to air quality, access to daylight and outside views. An Indoor Air Quality (IAQ) Management Plan will be implemented during construction to enhance the well-being of construction workers and to promote a better indoor environment for building occupants. Low-emitting materials, finishes, adhesives and sealants will be employed throughout the building to reduce the quantity of indoor air contaminants and promote the comfort and well-being of installers and building occupants.

IEQp1 - Minimum IAQ Performance

The building mechanical systems shall be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2007 sections 4 through 7 and/or applicable building codes. Any naturally ventilated spaces shall comply with the applicable portions of ASHRAE 62.1 as well.

IEQp2 - Environmental Tobacco Smoke (ETS) Control

The building shall be non-smoking. Additionally, smoking shall be prohibited within 25 feet of all building openings and air intakes.

IEQc1 - Outdoor Air Delivery Monitoring

As a part of the demand controlled ventilation design, the Proposed Project will include the installation of CO₂ sensors within the breathing zone of all densely-occupied spaces and OA flow monitoring stations at all mechanical outdoor air intakes.

IEQc3.1 - Construction IAQ Management Plan, During Construction

The specifications shall require the Construction Manager to develop an IAQ Management Plan for the construction and pre-occupancy phases of the Proposed Project to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied Buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).

IEQc3.2 - Construction IAQ Management Plan, Before Occupancy

The project team is exploring options to comply with the flush-out or IAQ Testing requirements within this credit for the Proposed Project.

IEQc4.1 - Low-Emitting Materials, Adhesives & Sealants

Design specifications shall include requirements for adhesives and sealants to meet

low-VOC criteria for adhesives and sealants. The Construction Manager will be required to track all products used to ensure compliance.

IEQc4.2 - Low-Emitting Materials, Paints and Coatings

Design specifications shall include requirements for paints and coatings to meet low-VOC criteria for paints and coatings. The Construction Manager will be required to track all products used to ensure compliance.

IEQc4.3 - Low-Emitting Materials, Flooring Systems

Design specifications shall include requirements for hard surface flooring materials to be Floor Score-certified and carpet systems that comply with the Carpet and Rug Institute's Green Label program. The Construction Manager will be required to track all products used to ensure compliance.

IEQc4.4 - Low Emitting Materials, Composite Wood and Agrifiber Products

Design specifications shall require composite wood and agrifiber products that contain no added urea-formaldehyde. The Construction Manager shall use only compliant composite wood materials.

IEQc5 - Indoor Chemical and Pollutant Source Control

The project team shall design to minimize and control the entry of pollutants into the building and to contain chemical use areas. The project team shall install entryway systems at all primary entrances to the building, covering a minimum of 10 feet in the direction of travel. The team shall provide deck-to-deck partitions, self-closing door hardware, and negative pressurization within all chemical use areas in the Proposed Project. The team shall specify a minimum MERV rating of 13 for all supply air intakes.

IEQc6.1 - Controllability of Systems, Lighting

The project team shall design to provide lighting controls to occupants within all multi-occupant common spaces, as well as provide individual lighting controls to a minimum of 90% of occupants within individually occupied spaces.

IEQc6.2 - Controllability of Systems, Thermal Comfort

The project team shall design to provide thermal controls to occupants within all multi-occupant common spaces, as well as provide individual controls to comfortably surpass the minimum of 50% of occupants with control access. Thermostats will be positioned to provide access for occupants to control the thermal comfort of these regularly occupied spaces.

IEQc8.1: Daylight and Views, Daylight Access for 75% of spaces

It is the intent of the design to provide ample clerestory, translucent glazing within the Field House as well as full curtainwall glazing in the weight room, maximizing the availability of daylight within these spaces. Compliance with this credit will be dependent on the final calculations based on the final floor plan layouts and envelope design.

IEQc8.2: Daylight and Views, Views for 90% of the spaces

It is the intent of the design to provide ample glazing along the perimeter allowing

for views for at least 90% of the regularly occupied spaces within the Proposed Project.

Innovation & Design Processes (ID)

The team has currently identified three possible ID credits listed below, (limited to 5 ID credits total):

Low Mercury Lighting

The Proposed Project shall design the lighting to significantly reduce the use of mercury-containing lamps, and implement purchasing preference to low-mercury containing fluorescent lamps, when applicable.

Green Housekeeping/Operations

The Proponent shall consider options to implement a policy requiring that cleaning staff use green cleaning products and equipment in the common areas and provide a package for occupants explaining the 'green living' components of the Proposed Project.

Integrated Pest Management Plan

The Proponent shall explore implementation of an Integrated Pest Management Program on campus, that includes measures for investigation, evaluation, and low-risk, alternative methods for pest management, before moving to consider higher risk methods and ensuring notification of all building occupants prior to utilizing the high-risk methods of pest control.

Building as an Educational Tool

The Proposed Project shall explore implementation of two public outreach programs to inform the public about the sustainable design features incorporated into the Proposed Project.

Exemplary Performance: SSc6 - Stormwater Management

The Proposed Project shall provide the measures indicated under base credits SSc6.1 and SSc6.2, with the intent to provide substantial improvements from the base credit requirements. Calculations will be needed to determine compliance, but the design team is pursuing the improvements to qualify for Exemplary Performance for these credits.

IDc2 - LEED Accredited Professional (required ID credit for LEED certification)

A LEED AP shall provide administrative services to oversee the LEED credit documentation process.

Regional Priority Credits (RPC)

Regional Priority Credits (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs an additional credit is automatically awarded to the project. Applicable RPCs based on the Project Site location include: SSc3, SSc6.1, SSc7.1, SSc7.2, EAc2 (1%) and MRc1.1 (75%). The Proposed Project currently holds two RPC as "Yes" for SSc6.1-Stormwater Quantity Control and SSc7.2-Heat

Island Effect, Roof. One additional RPC is possible at the current stage of the design: SSC7.1-Heat Island Effect, Non-Roof.

3.4.2 Preliminary Green Building Evaluation – LEEDv4

With the LEEDv4 rating system effective as of October 31, 2016, the BPDA requires initial Article 80 Large Project Review submissions on or after November 1st to demonstrate LEEDv4 certifiable. The Proposed Project is implementing several strategies that enable it to meet the requirements of LEED-NCv4 Certified level, in accordance with Article 37. While the Proponent does not intend to pursue formal LEEDv4 certification with the USGBC/GBCI, they do intend to go for certification under LEEDv3 (2009), which represents the rating system the Proposed Project was registered under prior to the October 31st deadline. A draft LEED-NC v4 checklist is provided in Figure 3.2 demonstrating LEED v4 certifiable.

Under the new LEED v4 Rating System, each of the seven credit categories have been updated to include more stringent requirements than the previous version, resulting in a significant point total reduction for projects designed to achieve LEEDv3 (2009) Silver level. Per the current design, the Proposed Project is demonstrating compliance with a LEEDv4 Certified level by targeting 44 credit points.

The following sections describe the project design approach to achieve each of the seven credit categories for a LEED-NC v4 certifiable project.

Integrative Process (IP)

The project team meets regularly to ensure the team members from the various disciplines involved are all known to each other and collectively communicating. Sustainable design focused workshops were held early on to assist the team in establishing shared sustainable design and energy efficiency goals for the Proposed Project.

Location and Transportation (LT)

The Project Site is located in Boston, MA on Boston College's Chestnut Hill Campus. Locally, the Proposed Project has access to the MBTA Green Line, via the 'Boston College' (B branch) station within ½-mile walking distance of the Project Site. No new parking is being provided on-site or at the campus level to accommodate the Proposed Project.

The Proposed Project connects via sidewalks and paved pathways to the rest of the Chestnut Hill Campus, ensuring pedestrian and cyclist safety, as well as providing shower and changing facilities within walking distance of the Project Site. Exterior short and long-term bicycle storage is planned. The immediate neighborhood provides a variety of services with pedestrian and cyclist access.

The Proposed Project earns points for Sensitive Land Protection, Access to Diverse Uses, Minimizing Parking Capacity, the provision of Bicycle Facilities, and Access to Quality Transit.

Sustainable Sites (SS)

The Project Site is a previously developed parcel within a suburban college campus. The Proposed Project shall incorporate low-impact site features that will properly capture and infiltrate rainwater to improve groundwater levels.

A site rainwater management plan will be developed to address the rate, runoff and quality of the site rainwater. The Proposed Project is planning to significantly reduce the rainwater runoff by directing it into a below grade re-charge/collection tank. Additionally, the rainwater will be absorbed through surface on-grade landscaping.

The roof and hardscape materials will include light-colored surfaces to reduce the overall heat island effect impact on the Project Site.

The Proposed Project earns points for Site Assessment, Rainwater Management, and attention to reducing the site's Heat Island Effect.

Water Efficiency (WE)

The Proposed Project will reduce potable water use for both sewage conveyance and irrigation needs. Both whole-building and end-use water metering will be installed on the Proposed Project. Additionally, the project team will specify low flow/high efficiency plumbing fixtures, including water closets, urinals, and lavatory faucets to reduce potable water use for indoor fixtures.

The site landscape design will use a mixture of turf and drought tolerant trees, shrubs, and groundcover that grow well in the local environment. The planned irrigation system will be designed to use at least 50% less potable water when compared to a mid-summer baseline.

Energy & Atmosphere (EA)

As detailed previously, the building design will include high-performance strategies for the building envelope, lighting, equipment, and low-flow plumbing fixtures to reduce Domestic Hot Water demand. Mixed-mode ventilation is planned for the Field House, utilizing access doors to the outdoor playing field for supplemental ventilation. Attention to ensuring daylighting availability within both the Field House and weight room will result in a reduction of required lighting power density for most activities within the building.

Based on current design, preliminary energy model results indicate the Proposed Project is performing 14.7% better than the baseline (ASHRAE 90.1-2013), which equates to approximately 16-18% energy cost savings, or seven (7) points under LEEDv4.

The Proponent shall engage a Commissioning Agent during the design phase to review the proposed design and ultimately confirm the building systems are installed and function as intended and desired.

Only refrigerants with low global warming and ozone depleting potential will be specified for use in building systems equipment.

Materials and Resources (MR)

A Building Life-Cycle Assessment and analysis will be performed on the construction materials of the building, specifically the structure and envelope assembly, which will be utilized to make material selection decisions to improve the durability of the Proposed Project and reduce its life cycle impact on the waste stream and environment.

The Proposed Project will specify materials and products that are environmentally responsible and transparent regarding the harvest and extraction of raw materials, ingredient reporting, and the manufacture processes. The design team will endeavor to specify materials and products with environmental and health product declarations to help support a reduced impact of the development on the environment.

Waste management will be addressed both during construction and post occupancy. The CM will provide a construction waste management plan to divert a minimum 75% of the construction and demolition debris comprised of at least five different waste streams.

Post Occupancy, collected recyclables will be accommodated within a dedicated area of the Proposed Project. The campus facilities department will collect the recyclables on a regular basis.

The Proposed Project achieves points in Building Life-Cycle Impact Reduction, Building Product Disclosure & Optimization (through the use of EPDs) and will achieve at least one (1) point for Construction Waste Management during the Construction phase of the Proposed Project.

Indoor Environmental Quality (IEQ)

The Proposed Project will have a healthy interior environment generated through the use of low VOC-containing interior construction and finish materials and maintained through an efficient ventilation system in compliance with ASHRAE 62.1-2010. In compliance with local regulations and campus policy, each building will be non-smoking and no smoking will be allowed within 25 feet of the building.

Additionally, during construction the Construction Manager will develop and implement a compliant Indoor Air Quality Management Plan for the construction phase of the Project.

The building envelope design includes areas of clear vision glazing and openings to the exterior for quality views in various directions for occupants of all regularly

occupied spaces. In addition, clerestory glazing provides ample access to daylight within the main practice facility and ancillary spaces of the Proposed Project.

The Proposed Project earns points for ensuring the installation of Low Emitting Materials, implementation of a Construction IAQ Management Plan during construction, occupant controllability of the interior lighting, and will achieve one (1) point for the Quality of Views provided to occupants.

Innovation in Design (ID)

The Proposed Project will explore innovative approaches to design and building maintenance including considering an Integrated Pest Management policy, and Green Housekeeping.

The Proposed Project intends to achieve all six (6) of the available Innovation in Design credits with a combination of Exemplary Performance, Innovative strategies, and pursuit of LEED Pilot Credits or approaches from other Rating Systems.

Regional Priority Credits (RPC)

Applicable Regional priority credits for the Project Site include:

- › LT Access to Quality Transit (1-point threshold)
- › MR Building Life-Cycle Impact Reduction (2-point threshold)
- › SS Rainwater Management (2-point threshold)
- › EA Optimize Energy Performance (8-point threshold)

3.4.3 Boston Green Building Credits

The Boston Green Building Credits were established in Appendix A to Article 37 as Boston-specific credits that can contribute a point towards a project's LEED certifiable point total. One point may be awarded for each of the following four categories: Modern Grid; Historic Preservation; Groundwater Recharge; and Modern Mobility.

Modern Grid

The team is currently investigating the overall impact level of a Combined Heat and Power system for use within the Proposed Project. It is unlikely that it is feasible for the system to be sized appropriately to serve more than 10% of the buildings energy use.

Historic Preservation

The Proposed Project is not eligible for this credit since it is a new construction project.

Groundwater Recharge

The team will explore whether or not the Proposed Project can provide 50% greater recharge than required under Article 32-6.

Modern Mobility

The team will explore Transportation Demand Management (TDM) options available and appropriate for the Proposed Project.

3.5 Proposed Project 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 Proposed Project through early building energy modeling based on current 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.

3.5.1 Preliminary Building Energy Model

The proposed energy conservation approach is described more fully under 'Energy and Atmosphere (EA)' in Section 3.4.1. Energy savings and associated GHG emissions reductions were calculated by comparing the proposed design to a "Base Case" that reflects minimum compliance with ASHRAE 90.1-2013. Specific improvements may be subject to design modification, as needed, to achieve the GHG emissions reduction based on the final building program and design.

Table 3-1 provides a summary of the proposed improvements assumed for the Proposed Project. Key energy-saving features include low-power lighting design, exhaust air energy recovery, and high-efficiency condensing boilers.

Table 3-1 Summary of Key Energy Model Assumptions

Key Assumptions	Design Case
Building Envelope (Construction Assemblies)	
Walls	U-0.064
Roof	U-0.048
Fenestration and Shading	
Fenestration Area	28%
Vertical Glazing	Storefront/ Clerestory: U-0.45 Punched: U-0.35 (assembly values)
HVAC (Air-side)	
HVAC System	VAV with reheat and energy recovery
Fan System Operation	Fans run according to building occupancy schedule and are only cycled on to meet load during unoccupied times.
Primary Cooling Source	Direct expansion
Primary Heating Source	Gas-fired condensing boilers
Lighting	
Interior Lighting	0.80 W/sf lighting power density

The total estimated annual electricity and natural gas consumption as well as the associated GHG emissions are presented in Table 3-2. The Base Case CO₂ emissions are estimated to be 656 tons per year. With the currently proposed building design and system improvements, the estimate energy use reduction is 14.7 percent, which equates to approximately 12.7 percent reduction in stationary source CO₂ emissions as compared to the Base Case.

Table 3-2 Project Stationary Source CO₂ Emissions

	Energy Consumption			CO₂ Emissions		
	Electricity (kWh/yr)	Natural Gas (MBtu/yr)	Total (MBtu/yr)	Electricity (tons/ yr)¹	Natural Gas (tons/ yr)	Total (tons/ yr)
Base Case	656,941	5,653	7,887	238	331	569
Design Case	632,645	4,570	6,721	230	267	497
End-Use Savings	24,296	1,083	1,166	8	64	72
Percent Savings			14.7%			12.7%

Note: The Design Case is based on typical improvements used by the MEP and the requirements of ASHRAE 90.1-2013.

¹ tons/yr = short tons per year

3.5.2 Clean and Renewable Energy Analysis

The University along with its project design team has conducted a preliminary evaluation of the potential for clean and/or renewable energy strategies for the Proposed Project.

The early evaluation of rooftop solar and cogeneration have been determined these strategies infeasible for the Proposed Project for the following reasons:

- › The Field House rooftop is not suitable for solar photovoltaics (PV) installation due to its curved shape and light structure, as well as its orientation on the Project Site.
- › The roof of the weight room and other support spaces are lower in height and, therefore, shaded by the taller Field House structure to the south where an early cost-benefit analysis shows a simple payback greater than 15 years. The University has identified better, more effective opportunities to invest in energy conservation measures, such as efficient lighting.
- › The low cooling load associated with the Field House use in this climate does not provide enough waste heat to make cogeneration financially feasible.

3.5.3 Energy Efficiency Assistance

Boston College currently has a Memorandum of Understanding with Eversource that stipulates that the University will invest over \$1 million in demand-side management type projects each year. In return, the utility provides enhanced rebates for energy savings. Boston College is on track to save over 13 million kWh at the end of 2016 marking the end of a 6-year of the MOU. The University will be signing a new MOU for another three years bringing the total investment to \$9 million and savings of over 18 million kWh for nine years. Similarly, with National Grid, the University currently participates in demand-side management projects where over 24,370 MMBTU has been saved over the past five years. By working closely with both the electric and natural gas utilities in both new construction and retrofit projects, Boston College strives to maximize utility incentives and energy efficiency.

The above-mentioned programs are anticipated to be extended to the Proposed Project. In addition, the project design team has conducted early outreach to Eversource regarding potential utility incentives for the Proposed Project. These incentives will likely come from the prescriptive program, with the potential for additional custom incentives pending future design decisions. The University and project design team will continue to work with utilities throughout the design process for the Proposed 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:

- › Condensing boilers
- › High-efficiency lighting (interior and exterior)

- › Lighting controls
- › Heat recovery

3.6 Proposed Project 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 BPDA 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 planning and design. The BPDA Climate Change Preparedness and Resiliency Checklist has been completed and is provided in Appendix A.

3.6.1 Sea Level Rise/Flooding

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

3.6.2 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.

3.6.3 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 A. The following summarizes the potential site- and building-related resiliency measures to be considered:

- › Low-carbon building design achieved through high-efficiency design and equipment.
- › 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 through site design by using 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.
- › Elevating the finished floor elevation above surrounding grades to protect against any potential localized flooding in the vicinity of the proposed building.



LEED for New Construction and Major Renovations v2009

Project Scorecard

Boston College Field House

November 4th, 2016

Phase	Yes	?	No	LEED Goal: Silver Certified	Points
Sustainable Sites					
	18	2	6		26
C	Y			Prereq 1	Construction Activity Pollution Prevention Required
D	1			Credit 1	Site Selection 1
D	5			Credit 2	Development Density & Community Connectivity 5
D	1		1	Credit 3	Brownfield Redevelopment 1
D	6			Credit 4.1	Alternative Transportation, Public Transportation Access 6
D		1		Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms 1
D			3	Credit 4.3	Alternative Transportation, Low-Emitting & Fuel-Efficient Vehicles 3
D	2			Credit 4.4	Alternative Transportation, Parking Capacity 2
C			1	Credit 5.1	Site Development, Protect or Restore Habitat 1
D	1			Credit 5.2	Site Development, Maximize Open Space 1
D	1			Credit 6.1	Stormwater Design, Quantity Control 1
D	1			Credit 6.2	Stormwater Design, Quality Control 1
C		1		Credit 7.1	Heat Island Effect, Non-Roof 1
D	1			Credit 7.2	Heat Island Effect, Roof 1
D			1	Credit 8	Light Pollution Reduction 1
4 1 5 Water Efficiency 10					
D	Y			Prereq 1	Water Use Reduction, 20% Reduction Required
D	2		2	Credit 1	Water Efficient Landscaping 4
D			2	Credit 2	Innovative Wastewater Technologies 2
D	2	1	1	Credit 3	Water Use Reduction 2 to 4
10 11 14 Energy & Atmosphere 35					
C	Y			Prereq 1	Fundamental Commissioning of the Building Energy Systems Required
D	Y			Prereq 2	Minimum Energy Performance Required
D	Y			Prereq 3	Fundamental Refrigerant Management Required
D	9	2	8	Credit 1	Optimize Energy Performance 1 to 19
D		1	6	Credit 2	On-Site Renewable Energy 1 to 7
C		2		Credit 3	Enhanced Commissioning 2
D	2			Credit 4	Enhanced Refrigerant Management 2
C	1	2		Credit 5	Measurement & Verification 3
C		2		Credit 6	Green Power 2
2 0 6 Materials & Resources 8					
D	Y			Prereq 1	Storage & Collection of Recyclables Required
C			3	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors, and Roof 1 to 3
C			1	Credit 1.2	Building Reuse - Maintain 50% of Interior Non-Structural Elements 1
C	1			Credit 2.1	Construction Waste Management, Divert 50% from Disposal 1
C	1			Credit 2.2	Construction Waste Management, Divert 75% from Disposal 1
C			1	Credit 3.1	Materials Reuse, 5% 1
C			1	Credit 3.2	Materials Reuse, 10% 1

Phase	Yes	?	No	Materials & Resources, continued	Points
Materials & Resources, continued					
	2	3	1		6
C	1			Credit 4.1	Recycled Content, 10% (post-consumer + 1/2 pre-consumer) 1
C		1		Credit 4.2	Recycled Content, 20% (post-consumer + 1/2 pre-consumer) 1
C	1			Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally 1
C		1		Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally 1
C			1	Credit 6	Rapidly Renewable Materials 1
C		1		Credit 7	Certified Wood 1
9 3 3 Indoor Environmental Quality 15					
D	Y			Prereq 1	Minimum IAQ Performance Required
D	Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control Required
D	1			Credit 1	Outdoor Air Delivery Monitoring 1
D			1	Credit 2	Increased Ventilation 1
C	1			Credit 3.1	Construction IAQ Management Plan, During Construction 1
C		1		Credit 3.2	Construction IAQ Management Plan, Before Occupancy 1
C	1			Credit 4.1	Low-Emitting Materials, Adhesives & Sealants 1
C		1		Credit 4.2	Low-Emitting Materials, Paints & Coatings 1
C	1			Credit 4.3	Low-Emitting Materials, Flooring Systems 1
C	1			Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products 1
D	1			Credit 5	Indoor Chemical & Pollutant Source Control 1
D	1			Credit 6.1	Controllability of Systems, Lighting 1
D	1			Credit 6.2	Controllability of Systems, Thermal Comfort 1
D			1	Credit 7.1	Thermal Comfort, Design 1
D			1	Credit 7.2	Thermal Comfort, Verification 1
D		1		Credit 8.1	Daylight & Views, Daylight 75% of Spaces 1
D	1			Credit 8.2	Daylight & Views, Views for 90% of Spaces 1
4 2 0 Innovation & Design Process 6					
D	1			Credit 1.1	Innovation in Design: Low Mercury Lighting 1
D	1			Credit 1.2	Innovation in Design: Green Housekeeping Policy 1
D	1			Credit 1.3	Innovation in Design: Integrated Pest Management 1
D	1			Credit 1.4	Innovation in Design: Building as an Educational Tool 1
C	1			Credit 1.5	Innovation in Design: Exemplary Performance: SSC6s 1
D	1			Credit 2	LEED® Accredited Professional 1
2 1 1 Regional Priority Credits 4					
SSc3, SSc6.1, SSc7.1, SSc7.2, EAc2 (1%), MRC1.1 (75%)					
1				Credit 1.1	Regional Priority Credit: SSC6.1 1
1				Credit 1.2	Regional Priority Credit: SSC7.2 1
	1			Credit 1.3	Regional Priority Credit: SSC7.1 1
		1		Credit 1.4	Regional Priority Credit: SSC3, EAc2, MRC1.1 1
51 23 36 Project Totals (Certification Estimates) 110					
Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80+					

Source: TGE

Figure 3.1
Preliminary LEEDv3 (2009) Scorecard

**Boston College Field House
Brighton, Massachusetts**



LEED v4 for BD+C: New Construction and Major Renovation
Project Scorecard

Boston College Field House
November 4th, 2016

Y	?	N			
1			Credit	Integrative Process	1
8	3	5	Location and Transportation		16
		X	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
		2	Credit	High Priority Site	2
2	3		Credit	Surrounding Density and Diverse Uses	5
3	2		Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
		1	Credit	Green Vehicles	1
5	4	1	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
		1	Credit	Open Space	1
2	1		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1
5	1	5	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1		1	Credit	Outdoor Water Use Reduction	2
3	1	2	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1
7	13	13	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
	5	1	Credit	Enhanced Commissioning	6
7	1	10	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	3		Credit	Renewable Energy Production	3
	1		Credit	Enhanced Refrigerant Management	1
	2		Credit	Green Power and Carbon Offsets	2
5	5	3	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
3		2	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	2		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit	Construction and Demolition Waste Management	2
5	7	4	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
	1	1	Credit	Enhanced Indoor Air Quality Strategies	2
	2	1	Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	1	1	Credit	Indoor Air Quality Assessment	2
	1		Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
	2	1	Credit	Daylight	3
1			Credit	Quality Views	1
	1		Credit	Acoustic Performance	1
6	0	0	Innovation		6
5			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1
2	2	0	Regional Priority		4
1			Credit	Regional Priority: Access to Quality Transit (1pt threshold)	1
1			Credit	Regional Priority: Building Life-Cycle Impact Reduction (2pt threshold)	1
	1		Credit	Regional Priority: Optimize Energy (8 pt threshold)	1
	1		Credit	Regional Priority: Protect or Restore Habitat (2pt threshold)	1
44	35	31	TOTALS		Possible Points: 110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110					

Source: TGE

Figure 3.2
Preliminary LEEDv4 Scorecard

Boston College Field House
Brighton, Massachusetts

4

Transportation

This section reviews the existing transportation conditions at and around the Project Site, and presents a discussion of potential transportation-related impacts of the Project. The analysis considers all modes of transportation service and operations, including:

- › Vehicular Traffic;
- › Parking;
- › Transit;
- › Bicycle Facilities;
- › Pedestrian Access and Circulation;
- › Loading and Servicing; and
- › Transportation Demand Management.

4.1 Key Findings and Benefits

The key findings related to transportation include:

- › Results in no net new vehicle trips to Lower Campus since users of the Proposed Project are the same users of the existing fields and surrounding athletics facilities, including Alumni Stadium and the Yawkey Athletics Center, and are already travelling to and from the vicinity of the Project Site.
- › Strengthens and improves the internal pedestrian connections, circulation, and experiences, as well as those along the public ways of Chestnut Hill Driveway and Beacon Street.
- › Includes bicycle accommodations in accordance with the *City of Boston Bicycle Parking Guidelines*.
- › Utilizes an existing service driveway and gate access of Chestnut Hill Driveway for limited vehicle access (i.e., emergency and maintenance).
- › Benefits from the diverse range of Transportation Demand Management initiatives aimed at reducing single occupancy vehicle trips to the Chestnut Hill Campus.

4.2 Existing Transportation Conditions

This section describes existing conditions relative to the Project Site.

4.2.1 Existing Site Access

The Project Site (Shea Field) abuts the east side of the Beacon Street Garage with Beacon Street to the south, Chestnut Hill Driveway to the east, and an internal campus roadway to the north. The 8.1-acre Project Site is currently used for varsity sports, specifically baseball, softball, and football practice, as well as club and intramural sports and recreational activities. Vehicle access to the fields is currently provided along the internal access road through a maintenance service gate located off Chestnut Hill Driveway. The existing vehicular access and circulation is shown in Figure 4.1.

4.2.2 Existing Parking and Traffic Generation

Overall, trips to the Project Site are associated substantially with its current use as athletics facilities/fields. As a limited number of students have access to permits to park on-campus, activity associated with student on-campus recreational facilities is predominantly pedestrian rather than vehicular.

Visitors and coaches currently park at the existing Beacon Street Parking Garage adjacent to the Project Site (Figure 1.3).

4.2.3 Existing Public Transit

The Boston College Campus is well served by MBTA transit and bus services. As shown in Figure 4.2, 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 Saturdays and 7-minute to 10-minute headways on Sundays. Service from the Boston College stop is provided between 5:01 a.m. and 12:10 a.m. during 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 Saturdays and 10-minute headways on Sundays. 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 Saturdays and 10-minute headways on Sundays. 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 terminated the program on 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.

4.2.4 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 4.3, 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 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 Thursdays and Fridays, and 5 trips per day between 11:00 a.m. and 5:00 p.m. on Saturdays and Sundays.

4.2.5 Existing Pedestrian Circulation

The Project Site is primarily open lawn sports fields where sidewalks exist beyond a fence along the adjacent roadways east and south of the Project Site (Figure 1.3). Along Beacon Street to the south of the Project Site there is an existing approximately 6-foot-wide asphalt sidewalk. Along Chestnut Hill Driveway on the east side of the Project Site there is a concrete sidewalk also approximately six feet wide. On the north side of the Project Site there is a fence with a 16-foot-wide asphalt service drive on the opposite side of the fence. There is currently no pedestrian connection from the north side of the Project Site to Beacon Street. The existing pedestrian access and circulation is shown in Figure 4.1.

4.2.6 Existing Bicycle Facilities

The Project Site currently has no bicycle storage; however, Boston College has numerous safe, clean, and strategically located bicycle racks throughout its campuses. 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 currently available in the Flynn Recreation Complex (to be replaced by the Recreation Center in 2019) for members and in Maloney Hall for those without membership. The Recreation Center will provide both outdoor bike parking and indoor bike storage for members. 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. Additionally, 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.

4.2.7 Existing Loading and Service

There are currently no dedicated loading or service facilities on the Project Site, other than an occasional maintenance/trash pick-up.

4.2.8 Existing Transportation Demand Management

Boston College actively supports efforts to reduce automobile use by faculty, staff, students and visitors traveling to the campus. 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).
- › **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.

4.3 Future Transportation Conditions

As shown, in Figure 1.6, one of the outdoor practice fields will be replaced with the Field House to provide indoor playing space for the student athletes at Boston College similar to their peer schools. The Proposed Project will be a significant addition of space for the football program and other varsity sports, as well as campus recreational programs. A full description of the Proposed Project within the context of the IMP is presented in Chapter 1, *Project Description*.

4.3.1 Project Traffic Generation

The Field House is not expected to generate new trips to the Lower Campus as the users of the Proposed Project are primarily the same users who traveled to the Project Site previously, with the exception of those traveling to view, officiate, or play baseball or softball games. In the future, baseball and softball users will travel to new baseball and softball fields being constructed on the Brighton Campus. The Brighton Fields project is expected to be completed in March of 2018. The majority of trips associated with the existing fields are predominantly shared trips with other Lower

Campus land uses. Therefore, the majority of users are arriving from or departing to other destinations within the campus, and are not single destination trips with off-campus origins or destinations (with the exception of coaching staff, also already travelling to the campus, and occasional visitors). Furthermore, as a limited number of students have access to permits to park on campus, activity associated with the Field House and other surrounding student on-campus recreational facilities is predominantly pedestrian rather than vehicular.

4.3.2 Proposed Vehicle Access and Parking

The Proposed Project will continue to allow for limited vehicle access through the service gate off of Chestnut Hill Driveway, as shown on Figure 1.6. 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 service/maintenance vehicles via two paved access ways onto the Project Site. One access way will be to the northwest of the proposed building and the other to the northeast (Figure 1.6). Building service and loading will take place at the entry level on the north side of the Proposed Project. Additionally, a new 6-foot-wide concrete access way along the western edge of the Project Site will provide for maintenance vehicle access.

No on-site vehicle parking will be provided. ADA-accessible parking spaces for the Proposed Project will be provided adjacent to the Project Site in ground level of the existing Beacon Street Garage (Figure 1.6). Visitors to the Proposed Project will continue to park within the existing Beacon Street Parking Garage.

Game Day Parking

Currently, the Project Site is not typically used for parking except during six to seven annual home football games and Commencement at Alumni Stadium. The fields can accommodate parking for up to 300 vehicles during these events. This concept will be maintained on the reconfigured outdoor practice field proposed east of the Field House.

4.3.3 Proposed Pedestrian Circulation Improvements

The Proposed Project has been designed to include various points for pedestrian access. The main entrance to the Field House is provided in the northwest corner of the building accessed by a 20-foot-wide paved walkway with landscaping on either side (Figure 1.6). The weight room entrance is provided in the northeast corner of the building accessed by a 6-foot-wide paved walkway that runs along the northern face connecting to the main entryway. Additionally, a 10-foot-wide paved walkway will be provided along the western edge between the Field House and Beacon Street Parking Garage to accommodate building users. A 6-foot-wide paved pathway providing access for maintenance and emergency response will wrap around the southern and eastern edges of the Field House. This pathway will also be accessible by pedestrians.

A secured connection from the Field House to Alumni Stadium, as shown on Figure 1.6, is proposed for building users at the bottom level of the Beacon Street Parking Garage, which is approximately three (3) feet below the Field House finish floor level. A new exterior stair with accessible ramp will be constructed in the areaway between the garage and the Field House.

Portions of the existing Beacon Street public sidewalk will be replaced with a more generous concrete sidewalk (to increase to 10 feet along the Field House from the existing 6-foot-wide existing sidewalk). All other existing sidewalks around the Project Site will be left as is.

4.3.4 Proposed Bicycle Accommodations

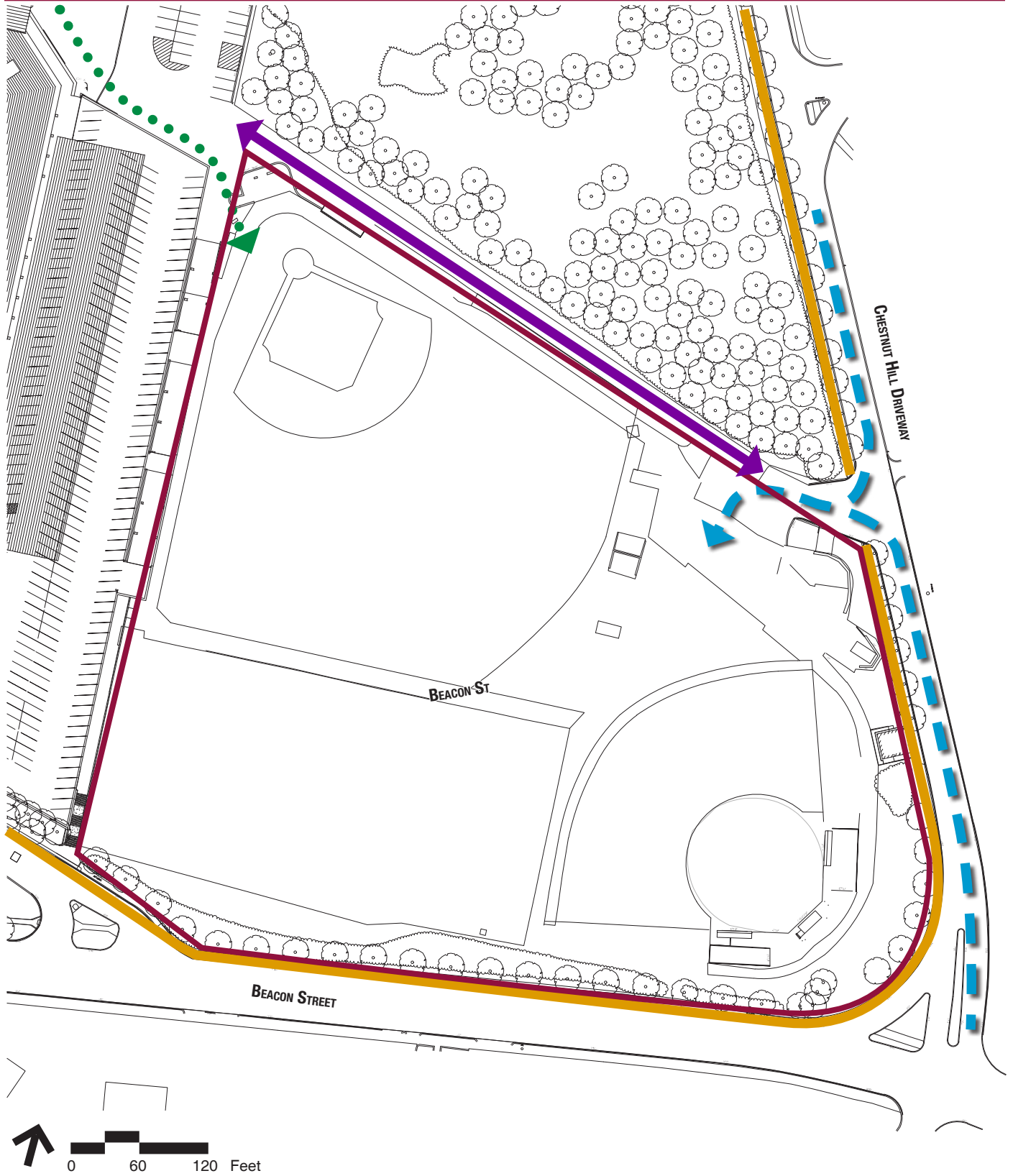
In accordance with the *City of Boston Bicycle Parking Guidelines*, the Proposed Project will provide outdoor bicycle parking spaces onsite and some secured/covered bicycle parking within the building. Shower/changing facilities will be provided in the existing nearby locker rooms in the Yawkey Athletics Center (for the football program) and Conte Forum (for other varsity sports). And, in the future, locker rooms with showers will be provided in the nearby Recreation Center.

4.3.5 Proposed Loading and Service

As previously noted, the existing site is accessed by vehicles through a maintenance service gate located in the northeast corner of the site along the internal access road. The proposed site will continue to allow for vehicle access through the service gate. There will also be two paved access ways to the north of the site for fire trucks and service vehicles. One access way will be to the northwest of the proposed building and the other to the northeast. Service to the building will also be available through the areaway between the Field House and existing parking garage. This areaway will be accessed through a new gate at the north of the Project Site, adjacent to the Field House main entrance, and the existing access point from Beacon Street.

4.3.6 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 Proposed Project will benefit from the diverse range of TDM initiatives, as described in detail in Section 4.2.8.



Source: MBTA


-  Project Boundary
-  Maintenance Vehicle Access
-  Vehicle Access
-  On-Campus Pedestrian Access
-  Public Sidewalks

Figure 4.1
Existing Site Access and Circulation

**Boston College Field House
Brighton, Massachusetts**

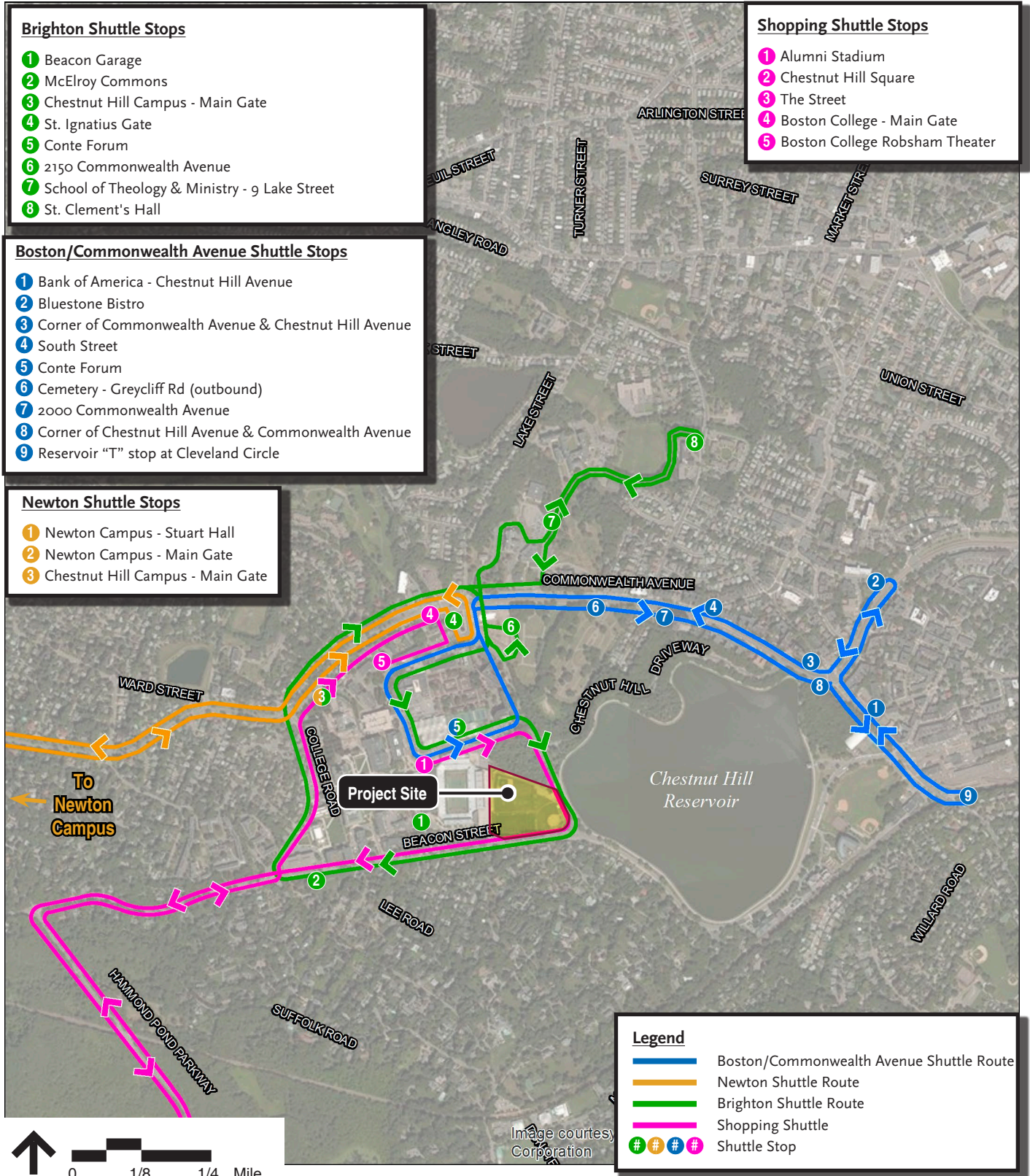


Source: MBTA

- Green Line
- Bus Route

Figure 4.2
Public Transportation

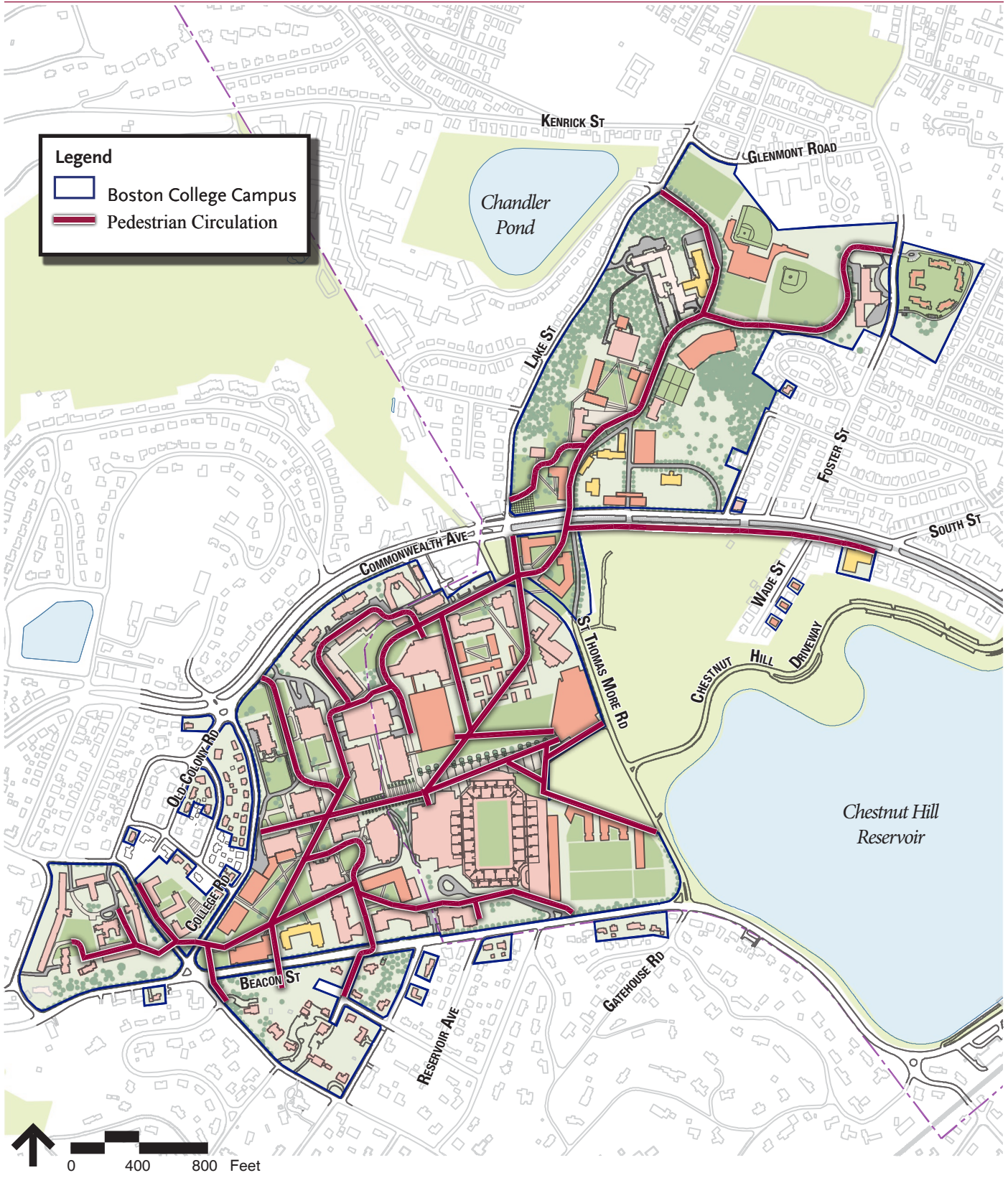
**Boston College Field House
Brighton, Massachusetts**



Source: Boston College Institutional Master Plan, 2009

Figure 4.3
Boston College Shuttle Bus Service

**Boston College Field House
Brighton, Massachusetts**



Source: Boston College Institutional Master Plan, 2009

Figure 4.4

Primary Pedestrian Circulation Routes
Chestnut Hill Campus

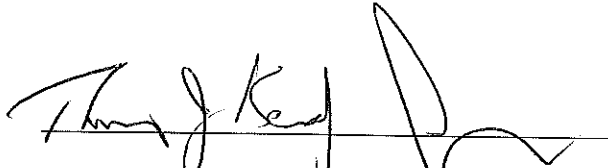
**Boston College Field House
Brighton, Massachusetts**

5

Project Certification

This PNF has been submitted to the Boston Redevelopment Authority, d/b/a Boston Planning & Development Agency, as required by Article 80B of the Zoning Code, on the 17th of November, 2016.

Proponent
Trustees of Boston College



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

Preparer
Vanasse Hangen Brustlin, Inc.



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

APPENDIX A: BPDA Checklists

Accessibility Checklist

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

Article 80 | ACCESSIBILTY CHECKLIST

Project Information

Project Name:	Boston College Field House
Project Address Primary:	Beacon Street and Chestnut Hill Driveway
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 keadyth@bc.edu (617) 552-4787

Owner / Developer:	Boston College
Architect:	ARC/Architectural Resources Cambridge
Engineer (building systems):	Waterfield Design Group (site/civil) BR+A (building systems)
Sustainability / LEED:	The Green Engineer
Permitting:	VHB, Inc.
Construction Management:	

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 +	Institutional	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
Synthetic Turf Field, Weight Room, Offices, Athletics support, Storage			

First Floor Uses (List)

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	Concrete
------------	---------	--------------------	-----------------

Describe the building?

Site Area:

357,216 SF

Building Footprint Area:

109,952 SF

Building Gross Square Footage:

115,700 GSF

Building Height:

60 Ft.

Number of Stories:

2 Flrs.

First Floor Elevation (reference Boston City Base):

139.0 Ft.

Are there below grade spaces/levels, if yes how many:

NO

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 located at 2601 and 2609 Beacon Street in Boston at the intersection of Beacon Street and Chestnut Hill Driveway. The Project Site is abutted by Alumni Stadium and the Beacon Street Parking Garage to the west, an internal access road and hill owned by the Commonwealth of Massachusetts to the north, Chestnut Hill Driveway, and the Chestnut Hill Reservoir up a four-foot hill to the east, and Beacon Street and residential houses located in the City of Newton up a hill to the south.

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 termination point 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 Site 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 Proposed 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 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?

There are sidewalks along Beacon Street and St. Thomas More Road. There is also a pedestrian ramp at the west side of the parking garage which abuts the proposed site.

If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.

Along St. Thomas More Road, the asphalt sidewalk and pedestrian ramp are in moderate condition. Along Beacon Street, the asphalt sidewalk and ramp are in moderate condition. The pedestrian ramp at the parking garage is 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, the sidewalk along Beacon Street will be re-built. The sidewalk along St. Thomas More Road will remain as is. The pedestrian ramp at the parking garage will remain as is.

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 that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking

Article 80 | ACCESSIBILTY CHECKLIST

side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortable pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org

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

Yes
Parkway
<p>Frontage (public sidewalk along Beacon Street) = ranges from 10' to 6' (to match existing 6-ft sidewalk) from west to east Greenscape/Furnishing Zone (along Beacon Street frontage) = ranges from 50' to 16' (from west to east) Pedestrian Zone (Field House paved entryway) = 20' Greenscape/Furnishing Zone (Field House entryway) = 15' Pedestrian Zone (paved walkway connecting Field House entryway and weight room entrance) = 6' Pedestrian Zone (paved walkway along western edge of Field House) = 10' Pedestrian Zone (paved maintenance/emergency access way along the southern and eastern edges of Field House; can be used by pedestrians) = 6'</p>
<p>Frontage (public sidewalk along Beacon Street) = concrete on City of Boston public right-of-way. Greenscape/ Furnishing Zone (along Beacon Street frontage) = lawn with street trees; falls within property line/private property. Pedestrian Zone (Field House paved entryway) = concrete pavers; falls within property line/private property. Greenscape/Furnishing Zone (Field House entryway) = landscaping with grass, shrubs, and trees; falls within property line/private property. Pedestrian Zone (paved walkway connecting Field House entryway and weight room entrance) = concrete; falls within property line/private property. Pedestrian Zone (paved walkway along western edge of Field House) = concrete; falls within property line/private property. Pedestrian Zone (paved maintenance/emergency access way along the southern and eastern edges of Field House; can be used by pedestrians) = concrete; falls within property line/private property.</p>
No

Article 80 | ACCESSIBILITY CHECKLIST

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?

No
Not Applicable (NA)

Proposed Accessible Parking:

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

What is the total number of parking spaces provided at the development site parking lot or garage?

What is the total number of accessible spaces provided at the development site?

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?

Where is accessible visitor parking located?

Has a drop-off area been identified? **If yes,** will it be accessible?

Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry

No parking is proposed on-site.
ADA-accessible parking spaces for the Proposed Project will be provided adjacent to the Project Site in ground level of the existing parking garage. The location is noted on the proposed site plan (PNF Figure 1.6).
NA
NA
NA
NA

Article 80 | ACCESSIBILITY CHECKLIST

locations. Please include route distances.

--

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.

Refer to the proposed site plan shown in PNF Figure 1.6.
--

Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.

Field House Entry – Flush Weight Room Entry – Flush Overhead Doors – Flush South Egress – Flush West Athlete Entry – Stairs and Ramp South Weight Room Egress – Flush
--

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 Proposed Site Plan.
--

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 Proposed Project.
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How many units are for sale; how many are for rent? What is the

NA

Article 80 | ACCESSIBILTY CHECKLIST

market value vs. affordable breakdown?

How many accessible units are being proposed?

Please provide plan and diagram of the accessible units.

How many accessible units will also be affordable? If none, please describe reason.

Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility 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?

NA	
NA	
NA	
NA	
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 | Mayors Commission for Persons with Disabilities



CHESTNUT HILL RESERVOIR

- TERRACE / LANDINGS
<2% SLOPE
- WALKWAYS
< 5% SLOPE
- PEDESTRIAN / VEHICULAR
2-3% SLOPE. 2% MAX CROSS SLOPE
- STAIRS

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment (www.climatechoices.org/ne/)
2. USGCRP 2009 (<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/>)
3. Army Corps of Engineers guidance on sea level rise (<http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf>)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (<http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf>)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr*, Kara S. Doran and Peter A. Howd, 2012 ([http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf](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)

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 Field House
Project Address Primary:	Beacon Street and Chestnut Hill Driveway
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 keadyth@bc.edu (617) 552-4787

A.2 - Team Description

Owner / Developer:	Boston College
Architect:	ARC/Architectural Resources Cambridge
Engineer (building systems):	Waterfield Design Group, Inc. (site/civil) BR+A (building systems)
Sustainability / LEED:	The Green Engineer
Permitting:	VHB, Inc.
Construction Management:	
Climate Change Expert:	

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:	Indoor practice facility for the Football program and recreational sports, strength and weight training for the Football program
List the First Floor Uses:	Synthetic Turf Field, Weight Room, Offices, Athletics support, Storage

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

Wood Frame	Masonry	Steel Frame	Concrete
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Describe the building?

Site Area:	357,216 SF	Building Footprint Area:	109,952 SF
Building Height:	60 Ft.	Building Gross Square Footage:	115,700 GSF
First Floor Elevation (reference Boston City Base):	139.0 feet	Number of Stories:	2 Flrs.
		Are there below grade spaces/levels, if yes how many:	NO

A.5 - Green Building

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

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

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

Registered:	Yes	Certified:	Yes
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A.6 - Building Energy

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

Electric:	632,645 kWh	Heating:	632,645 kWh
What is the planned building Energy Use Intensity:	632,645 kWh	Cooling:	Tons

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

Electric:	10 kW—lighting only via battery)	Heating:	0 MMBtu/hr
		Cooling:	0 Tons/hr

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

Electrical Generation:	(kW)	Fuel Source:	Oil
System Type and Number of Units:	Combustion Engine	Gas Turbine	Combine Heat and Power <i>(Units)</i>

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
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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
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What time span of future Climate Conditions was considered?

Select most appropriate:	10 Years	25 Years	50 Years	75 Years
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Analysis Conditions - What range of temperatures will be used for project planning – Low/High?

91°DB (high) / 0°F (Low)

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

88°DB/74WB°	14.6 Days	5 Events / yr.
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What Drought characteristics will be used for project planning – Duration and Frequency?

<i>Days</i>	<i>Events / yr.</i>
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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?

+42 Inches.	1 Inch	10 Events / yr.
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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?

105 MPH Peak Wind	TBD - Hours	TBD - Events / yr.
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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:	14.7%
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How is performance determined:	EQUEST model of design in comparison to ASHRAE 90.1-2013
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What specific measures will the project employ to reduce building energy consumption?

Select all appropriate:	High performance building envelop	High performance lighting & controls	Building day lighting	EnergyStar equip. / appliances
	High performance HVAC equipment	Energy recovery ventilation	No active cooling	No active heating

Describe any added measures:	None at this time.
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What are the insulation (R) values for building envelop elements?

Roof:	R = 30	Walls / Curtain Wall Assembly:	R = 11.4
Foundation:	R = 7.5	Basement / Slab:	R = 10
Windows:	R = 3.45 / U = 0.29	Doors:	R = 3.45 / U = 0.29

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

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

High Efficiency Lighting Controls and Building Wide Energy Metering (Note: All energy reduction measures are in a study phase.)
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Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:

Connected to local distributed electrical	Building will be Smart Grid ready	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready
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Will the building remain operable without utility power for an extended period?

No*	If yes, for how long:	<i>Days</i>
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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	External shading devices	Tuned glazing,
Building cool zones	Operable windows	Natural ventilation	Building shading
Potable water for drinking / food preparation	Potable water for sinks / sanitary systems	Waste water storage capacity	High Performance Building Envelop

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:

High reflective paving materials	Shade trees & shrubs	High reflective roof materials	Vegetated roofs
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Describe other strategies:

None at this time.

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

Select all appropriate:

On-site retention systems & ponds	Infiltration galleries & areas	vegetated water capture systems	Vegetated roofs
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Describe other strategies:

None at this time.

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

Select all appropriate:

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

None at this time.

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

Describe site conditions?

Site Elevation – Low/High Points:

Building Proximity to Water:

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

Coastal Zone:

Velocity Zone:

Flood Zone:

Area Prone to Flooding:

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:

Future floodplain delineation updates:

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

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:

Frequency of storms:

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:

First Floor Elevation:

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

If Yes, to what elevation

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 st 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.)
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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
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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
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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