Institutional Master Plan Notification Form / Project Notification Form

Submitted Pursuant to Article 80 of the Boston Zoning Code

Columbus Avenue Student Housing

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
Northeastern University
360 Huntington Avenue
Boston, MA 02115

and

American Campus Communities
12700 Hill County Blvd, Suite T-200
Austin, TX 78738

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Cube 3 Studio LLC
Elkus Manfredi Architects
Goulston & Storrs
Howard Stein Hudson Associates

January 21, 2016

NORTHEASTERN UNIVERSITY
AMERICAN CAMPUS COMMUNITIES
Epsilon ASSOCIATES INC.

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Table of Contents

Table of Contents

Appendices

List of Figures

List of Tables

Chapter 1.0
Introduction and General Information

1.0 INTRODUCTION AND GENERAL INFORMATION

1.1 Introduction

Northeastern University (the University) and American Campus Communities (ACC) are pleased to submit this Institutional Master Plan Notification Form/Project Notification Form (IMPNF/PNF) to amend the University's existing IMP pursuant to Article 80D of the Boston Zoning Code (Code) and initiate Large Project Review pursuant to Article 80B of the Code in order to enable to development of the Project described herein.

Since the early 1990s, and more intensively over the last decade, the University has developed a national and even global reputation for research and academic rigor. In the fall of 2015 the University had approximately 18,000 full time undergraduates, of whom approximately 3,750 are on co-op and additional students are studying abroad. Graduate student enrollment, including all full- and part-time students in graduate and law programs, at the Boston, Charlotte and Seattle campuses and online, was approximately 12,800 in the 2015-2016 academic year.

In order to attract and retain qualified students, and to address the student housing goals of the City and the 2013 Institutional Master Plan (IMP), the University is aiming to create an appealing atmosphere for on-campus living with innovative, state-of-the-art facilities that encourage personal growth and interaction. This IMPNF/PNF is being filed to initiate approval of an approximately 310,000 square foot (sf) building dedicated mainly to student residential use, as well as commercial space and student amenities and services. The Columbus Avenue Student Housing project (the Project) is located at 10 Burke Street (the Project site) bounded by Burke Street to the east, Columbus Avenue to the north, Coventry Street to the west, and an existing building to the south of the site.

The University intends to ground lease the site to an ACC-related entity that will develop, own and operate a student residence under a dormitory license from the City of Boston. The ground lease will restrict the use of the site to student housing apartments and will give Northeastern University students in their third, fourth, and fifth years of study the first right to lease apartments. The ground lease will require that the Project be operated in accordance with the Northeastern University student code of conduct and housing standards. This partnership between a local university and a national student housing developer represents an opportunity for Boston to attract private capital to fulfill the City's ambitious student housing goals.

American Campus Communities, Inc., is the largest owner, manager and developer of high-quality student housing communities in the United States with more than 150 student housing properties containing approximately 96,300 beds. The company is a fully integrated, self-managed and self-administered equity real estate investment trust (REIT) with expertise in the design, finance, development, construction management and operational

management of student housing properties. Including its owned and third-party managed properties, ACC's total management portfolio consists of almost 200 properties with 125,800 beds in approximately 100 markets nationwide.

1.2 Project Team

Address/Location:	10 Burke Street
Developer:	American Campus Communities, Inc. 12700 Hill County Blvd, Suite T-200Austin, TX 78738 (512) 732-1000 Jason Wills
Architect:	CUBE 3 Studio LLC 360 Merrimack Street, Building 5, Floor 3 Lawrence, MA 01843 (978) 989-9900 Peter W. Bartash Elkus Manfredi Architects 25 Drydock Avenue, Boston, MA 02210 (617) 427-1300 David Manfredi
Legal Counsel:	Goulston & Storrs 400 Atlantic Avenue Boston, MA 02110 Matthew Kiefer Doug Husid
Permitting Consultants:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Peggy Briggs Talya Moked
Transportation and Parking Consultant	Howard Stein-Hudson Associates, Inc 11 Beacon Street, Suite 1010 Boston, MA 02108 (617) 482-7080 Guy Busa Joe SanClemente

1.3 Northeastern University Mission and Objectives

Founded in 1898, Northeastern University is a private urban research university located on both sides of Huntington Avenue on the edges of the Fenway, South End, Mission Hill and Roxbury neighborhoods of Boston.

The University's mission is to educate students for a life of fulfillment and accomplishment, and to create and translate knowledge to meet global and societal needs. Grounded in its signature cooperative education program, Northeastern today provides unprecedented experiential learning opportunities around the world. The University's rapidly growing research enterprise is strategically aligned with three national and global imperatives: health, security, and sustainability.

The University offers students opportunities for professional work, research, service, and global learning in the United States and 90 other countries. Northeastern offers a comprehensive range of undergraduate and graduate programs leading to degrees through the doctorate in nine schools and colleges. It is the purpose of the IMP to provide an organizational framework for creating a physical plan and infrastructure in Boston that strengthen and celebrate the University's mission.

Northeastern University's vision is to be the global leader in the development of living learning environments that translates all learning into purposeful action. The Department of Residential Life strives to create a safe and inclusive residential environment which develops and supports opportunities for intellectual and social development and prepares students to become purposeful contributors to our global society.

The proposed Project has great importance to the development of the University's campus. By creating additional on-campus living solutions for students, the University would be accomplishing its goals by fostering living learning environments and social development via student interaction.

1.4 History of IMP Process to Date/Status of IMP Projects

The 2013 IMP was submitted to the BRA on June 14, 2013, and was approved by the BRA Board on November 14, 2013. A revised version of the IMP was submitted on November 20, 2013, and became effective December 20, 2013. Northeastern's specific objectives, as reflected in its Revised 2013 Institutional Master Plan (IMP) include:

- Development of superior academic facilities to serve the University's increasingly sophisticated teaching environment;
- Development of superior research facilities to support the University's growing research programs, including those in the fields of health, security and sustainability;

- Continued expansion and enhancement of the University's student residential facilities, to help attract and retain qualified students; and

- Consolidation of administrative and other non-academic uses, so as to maximize the availability of space and resources in the central campus area to better serve the University's academic priorities.

The term of the IMP is ten years, and included eleven new projects, with specific project sites to be refined and finalized during the term of the IMP. The IMP seeks to accommodate over 2,000,000 gsf of academic and student life facility growth, including athletic facilities and additional housing, on the existing Northeast campus. To satisfy this scale of needed facilities, while remaining within the confines of the existing campus, the IMP proposed to increase the built density through the re-purposing of under-utilized areas such as parking lots, and replacing low-rise, aging buildings, with taller, more economically and environmentally efficient construction.

The University focused initially on completing a proposed Interdisciplinary Science and Engineering Complex (ISEC) as well as completing the 720-bed East Village, formerly named GrandMarc, residence hall before commencing additional projects. The ISEC is currently under construction, and construction of the East Village residence hall was completed in November 2014 and occupied by students starting in January 2015. Aside from the ISEC, the East Village residence hall, and the Burke Street Housing Project being proposed in this IMPNF, the additional proposed IMP projects are described below. While the exact timing and sequence of the remaining IMP projects are not known, each project is considered as a potential stand-alone development governed by the master planning principles of addressing the campus edges and the relationship to its neighbors; providing campus and community open space improvements; improving connections through the campus including across the MBTA rail corridor; and reinforcing existing campus academic precincts while still promoting mixed-use development.

- North Lot (North Campus): The University proposes to use the North Lot to construct a new 150,000 to 250,000 gsf academic/multi-use facility that could include classrooms/ lecture halls, offices, laboratories, cultural space, meeting rooms and some parking.

- Matthews Arena Addition (East Campus): The Matthews Arena addition is proposed to add 110,000 to 120,000 gsf to the Arena for athletic, event, and student life use.

- Ryder Lot Development (West Campus): A new addition to the existing Ryder Hall on the Ryder Lot is proposed for academic and residential use.

- Burstein Rubenstein Redevelopment (West Campus): The replacement housing project for Burstein and Rubenstein proposes to add 200-250 additional beds, as well as up to 25,000 gsf of academic, cultural or commercial use.

- Cargill Hall (West Campus): The concept for the Cargill Hall site is to construct new 140,000 to 150,000 gsf academic facilities in two 6-8 story buildings.

- Cabot Hall Redevelopment (Core Campus): The IMP proposes 400,000 to 500,000 gsf of new mixed-use academic, research, classroom, cultural, and commercial space at this site.

- Forsyth Hall Redevelopment (Core Campus): The proposed program replaces the existing facility with 140,000 to 150,000 gsf of academic space.

- Science Quad Redevelopment (East Campus): The IMP proposes 60,000 to 120,000 incremental gsf of academic space facilities suitable for contemporary research activities to relieve the pressures of retrofitting new labs in older facilities.

- Gainsborough Garage Redevelopment (East Campus): The IMP program for the Gainsborough Garage Redevelopment includes 200,000 to 240,000 gsf of athletics, recreation, student life activities, meetings, venues and social space in a six to nine story building. This includes structured parking to replace existing parking spaces in the garage.

The 2013 IMP described the Project at the Burke Street/Columbus Avenue site as a mixed-use office and residential building of approximately 175,000 to 200,000 gsf. The building was proposed to accommodate 350 to 600 beds in ten stories. The Project, described further in Chapter 2, has been updated and revised to include a building with a height of approximately 230 feet and approximately 310,000 gsf, and will accommodate approximately 800 beds.

1.5 Existing Campus Description

1.5.1 Northeastern Campus

Northeastern's campus is adjacent to the Fenway, Mission Hill, South End and Lower Roxbury neighborhoods of Boston and has a variety of residential, commercial and institutional neighbors. The University and surrounding neighborhoods are connected through the activities of many students and faculty of Northeastern, who are involved in a multitude of programs and activities that engage community organizations and neighborhood residents. Within these diverse neighborhoods are wide arrays of land uses, including institutional, high-and-medium-density residential, commercial and recreational uses.

Northeastern resides in Boston and is subject to the City's and region's plans and policies. Among the City's various planning initiatives that impact the University's planning framework are: the Urban Ring project, the Roxbury Master Plan, the Melnea Cass Boulevard redevelopment project, the New England Conservatory and Wentworth Institute of Technology IMP's, and the ongoing Northeastern IMP Task Force planning process.

These above planning efforts highlight and promote the need for transit-oriented development at transit nodes. University students and faculty rely heavily on public transportation, and thus any development will continue to focus on the benefits of public transportation to serve the future needs of the University. For example, the International Village development (Parcel 18 West), constructed by the University in 2009, is a high-density mixed-use student residence development adjacent to the Ruggles MBTA Station. The 720-bed East Village residence hall, on a portion of the former YMCA site, also meets many of these transit-oriented goals. The University continues to work with the MBTA to advance its proposed mass transit platform upgrade at Ruggles Station. The proposed Project is also well served by public transportation and is an ideal location for transit-oriented student housing. There is an MBTA 43 bus at the corner of the site on Burke and Tremont Streets, which connects to Ruggles Station, providing access to the Orange Line and several Commuter Rail lines. Alternatively, the Ruggles Station is less than a quarter-mile walk from the site.

1.5.2 Northeastern Owned and Leased Properties

The 2013 IMP presented an updated inventory of existing University properties and facilities located on its Main Boston campus. An updated inventory, included as Appendix A, includes location (address), age, year acquired by the University, gross square footage, number of floors, type of construction, and existing uses.

The University owns or leases approximately 96 buildings within the City of Boston totaling approximately 7.78 million square feet. The land area associated with Northeastern buildings is approximately 67 acres in the City of Boston.

Figure 1-1 presents a map of Northeastern's existing facilities on the Boston campus.

1.5.3 Master Leased Property Program

The following properties described in Table 1-1, in which the University is leasing at least one unit, are included in the Master Lease Property Program (MLPP). (Please note that addresses and numbers of beds are subject to change during the fall of each year).

Columbus Avenue Student Housing Boston, Massachusetts

NORTHEASTERN UNIVERSITY

Figure 1-1

Northeastern University Boston Campus Existing Facilities

Table 1-1 Northeastern University's Master Leased Property Program, 2015

Building	LP Beds	LP Units
331 Huntington Ave	27	15
335 Huntington Ave	24	14
LP-109 St. Stephen St	23	12
LP-115 St. Stephen St	65	32
LP-132 Hemenway St	15	5
LP-136 Hemenway St	10	5
LP-165 Hemenway St	20	9
LP-171 Hemenway St	21	9
LP-204 Hemenway St	45	16
LP-309 Huntington Ave	7	2
LP-311 Huntington Ave	23	10
LP-313 Huntington Ave	17	8
LP-315 Huntington Ave	29	10
LP-84 The Fenway	15	5
LP-97 St. Stephen St	54	19
LP-NU at Douglass Park	198	54
TOTAL	**593**	**225**

1.6 Community/Public Benefits

Following extensive consultation with the BRA-appointed Northeastern IMP Task Force, the broader community, elected officials, and the BRA, Northeastern committed to the following public benefits in association with the Northeastern 2013 IMP. These specific commitments are over and above the diverse array of more than 240 community-focused programs and services that the University developed over the years in response to community need and intends to continue to support.

The overall guidelines that Northeastern relied on to develop the package of community benefits included the following:

- The benefit serves the mutual interests of the community and University and can be recognized to be of benefit in the local community and beyond;
- The benefit leads to sustainable partnerships in the community designed to promote the development of thriving communities along Northeastern's institutional borders, especially in Roxbury;
- The benefit builds on existing programmatic strengths and core competencies of the university, or builds upon other strengths that can be leveraged or harnessed;
- The benefit strives for innovative ways to optimize resources that build a strong community and a strong university; and

- The benefit helps develop a robust community engagement or service strategy that is supported by the University's student and academic interests.

The following specific community benefits, committed to in the IMP Cooperation Agreement that was executed in January 2014, are in process and an update of current status is included.

1.6.1 Northeastern/Neighborhood Partnership for Academic Success

These benefits extend to Boston Public School ("BPS") students applying from homes in the zip codes contiguous to the Northeastern campus (02115, 02118, 02119, 02120, 02130 and 02215).

- Northeastern now offers an additional 30 full-tuition, need-based scholarships to BPS graduates, 20 in the specified zip codes and 10 citywide, in addition to continuation of 120 current full-tuition scholarships currently offered in Boston. Of the 120 existing scholarships, a minimum of 10 will be targeted to the specific zip codes.

- Working with BPS guidance counselors and other administrators, Northeastern hosts semiannual College Readiness events on campus for BPS students and their families from the four neighborhoods, to provide critical information needed to prepare and apply for college and for financial aid.

- BPS graduates from these neighborhoods applying to Foundation Year receive priority in the admission process.

- As of spring 2015, BPS graduates not admitted directly to the undergraduate program or to Foundation Year can arrange with an admissions counselor for a transfer contract, guaranteeing transfer admission provided the student successfully hits a determined set of academic benchmarks at any accredited institution.

- Northeastern negotiated transfer articulation agreements with Roxbury Community College and Bunker Hill Community College to provide another route for BPS graduates from these neighborhoods to enter Northeastern.

- Northeastern provides financial aid covering 100% of demonstrated need for all enrolling BPS students from these neighborhoods.

Highlights of results to date on Partnership for Academic Success:

- The Northeastern departments of Admissions and City and Community Affairs have held 4 College Readiness events over the past 2 years reaching 239 BPS students.
- 21 students from the specified zip codes were enrolled in the 2015-2016 school year Foundation Year cohort. This represents a 31% increase in enrollment of students from the zip codes over the previous year.
- 47 students from Foundation Year Cohorts 1-6 (2010-2015) have transferred to Northeastern's undergraduate residential colleges. 12 students have graduated; 35 are enrolled and pursuing their degrees.
- Developed and awarded 10 new full-tuition, room& board scholarships to BPS Valedictorians and enrolled 6 Valedictorians from BPS High Schools
- Increased yield by 135% for Boston Public Students from 2014 to 2015
- Implemented an on campus support program including mentoring and advising for all newly enrolling Boston Scholars in the Office of Scholarship and Opportunity Programs
- Northeastern finalized and implemented Articulation & Guaranteed Admissions programs for Boston students with Roxbury Community College and Bunker Hill Community College, applicable both to the full- time Undergraduate Residential Day School and the College of Professional Studies.

1.6.2 Northeastern IMP Advisory Council

Northeastern established an IMP Advisory Council to maintain regular and continuous dialogue and transparency with neighbors, address issues of concern as and when they arise, and explore new possibilities for community-university engagement. The IMP Advisory Council has met six times as of December 2015.

1.6.3 Northeastern Neighborhood Center

Northeastern created a neighborhood center, Northeastern Crossing, which serves as both a focal point for community engagement programs and services and a portal for community enquiries into university procurement, employment, admissions, and financial aid. Northeastern Crossing opened in September 2015 with a staff of three, including the Director of Partnership Programs.

1.6.4 On-Campus Business Siting

Northeastern will identify appropriate community-based businesses for on campus opportunities, with the goal of integrating them into new or existing university buildings as well as designating them as preferred vendors in the university purchasing system.

In April 2015, Northeastern ran a Capacity Building program for sixteen SL/W/MBEs. Ten of the businesses were awarded contracts with Northeastern within six months of the training. No local businesses yet identified for location on campus.

1.6.5 Housing Impact Study

Northeastern will fund an update of the Housing Impact Study at or around the five-year term of the Northeastern IMP in order to examine any changes in the impacts of Northeastern students in rental housing stock, particularly in light of the anticipated opening of 1,000 new dormitory beds during the next five years.

1.6.6 Carter Playground

Northeastern committed to rebuilding and maintaining Carter Playground, enhanced by the long-term inclusion of the University's Camden parking lot, into an expanded park. The city will continue to regulate permitting and scheduling of the facilities.

Public meetings on Carter Playground renovation have been held and Boston Parks Department is reviewing the 100% deign documents. Construction start is targeted for mid-2016.

1.6.7 Jobs and Procurement

- Northeastern committed to increasing business with SLBEs to 20% of its discretionary spending and W/MBEs to 12% of discretionary spending within ten years.
- Northeastern will committed 30% of hard construction costs for the Interdisciplinary Science and Engineering Complex to MBEs and 10% to WBEs.
- For non-design project spending on ISEC, Northeastern committed to the goal of hiring 51% Boston residents, not less than 35% minorities and 10% women, and further to establish a planning and oversight committee, including residents and elected officials, to help meet those goals.
- Northeastern will direct 30% of major design/ construction spending in the Northeastern IMP to MBEs and 10% to WBEs.
- Northeastern will direct 10% of non-Northeastern IMP design/ construction spending at Northeastern to W/MBEs within three years.

- Northeastern will pursue the goal of increasing Northeastern employees in the contiguous zip codes by 3-5% within three years.

- Northeastern will encourage Northeastern vendors to hire an additional 100 employees from the contiguous zip codes within three years.

- Northeastern will provide 10 employment training and education programs to community members per year.

- Northeastern will provide 10-15 three-month internship opportunities to community members per year.

- Northeastern will continue to hold job and vendor fairs, including events targeted specifically to SLBEs and W/MBEs.

- Northeastern will contribute $2.5 million to establish an entrepreneurship fund to build local business capacity, with the guidance of a suitable financial institution such as Next Street Financial.

Highlights of Results to date on Jobs and Procurement initiatives:

- Northeastern spent $42.6M with Small Local, Women Owned and Minority Owned Business Enterprises (SL/W/MBEs) in fiscal year 2015 (July 1, 2014 – June 30, 2015).

- Additionally, Northeastern has awarded close to $36 million in contracts with W/MBEs as part of the ISEC project. Sixteen MBEs have been awarded contracts with a total value over $9M and twenty one contracts have been awarded to WBEs for a total value close to $27M as part of the ISEC project.

- In fiscal year 2015, Northeastern nearly doubled the percentage spent with W/MBEs from 8% of spending in FY14 to 15.73% in FY15. The university has exceeded its commitment of achieving 12% spending with W/MBEs within 3 years.

- In fall 2015, Northeastern employs 483 residents from the zip codes contiguous to campus, an increase of 95 employees over last year.

- As a result of connections made at the 3rd annual Northeastern Community Vendor Job Fair, 87 individuals were hired for a new job.

- The concept of a Small Business Loan Fund has progressed and, with assistance from Next Street, Northeastern expect to finalize terms and close on the fund in the first quarter of 2016. As an anchor institution with a $2.5M commitment to guarantee the Fund's loans, Northeastern anticipates that loan products will be offered that are not otherwise available to Boston's local small business community to support capacity building for business improvements.

1.6.8 MBTA track crossing

Adjunct to the first IMP project on Columbus Avenue, Northeastern will create a landscaped crossing of the public transit rail line to better knit the Roxbury and Fenway communities and enhance access for persons with disabilities.

Northeastern continues to work with the MBTA and Amtrak for the approvals necessary to create a new track crossing.

1.6.9 Affordable Housing

In addition, Northeastern will work with partners to identify, advance, and support affordable housing projects in the surrounding neighborhoods that can take advantage of Northeastern's housing linkage obligations.

No projects have been brought forth so far.

Chapter 2.0
Project Description

2.0 PROJECT DESCRIPTION

2.1 Program Need

One of the main objectives of the 2013 Institutional Master Plan was to continue the enhancement of the University's student residential facilities, with a goal of creating 1,000 new beds. This goal aligns with the request of members of the neighborhoods surrounding the University to increase on-campus housing and with the City's goal of increasing student housing beds across the City. The IMP had considered several potential sites for residential use throughout the campus, including the Project site.

Northeastern has an undergraduate population of approximately 18,000 full time undergraduate students, of whom approximately 3,750 are on co-op. As of fall 2015, Northeastern housed 8,707 undergraduates and 101 graduate or law students in campus-controlled housing, of which approximately 553 were part of the Master-Leased Property Program. Another 2,876 undergraduates and 5,636 full time graduate or law students reported residency outside the city of Boston. The number of undergraduates choosing to reside outside of Boston each year has ranged between 2,200 and 2,900 for the past decade. In addition, 1,798 undergraduates and 311 graduates were living abroad or elsewhere in the United States. In fall 2015, Northeastern had 9,161 student beds available, including 593 which were part of the Master Leased Property Program.

The proposed Project, by creating approximately 800 new beds, will allow the University to achieve 80 percent of the housing goals of the 2013 IMP within the first five years. The Project will provide current and prospective students with on-campus housing options that would not otherwise be available. This residential building will create additional housing options for students to remain on-campus in apartment-style housing which is most appealing to students.

2.2 Project Site

The Project site is an approximately 23,424 sf site located on the southeastern edge of the Northeastern University campus (see Figure 2-1). The site, which currently contains a surface parking lot, is bounded by Burke Street to the east, Columbus Avenue to the north, Coventry Street to the west, and an existing building to the south of the site. The site is an ideal location for pedestrian and transit-oriented student housing. Students can easily walk to the main Boston campus buildings and the Ruggles Station is less than a quarter-mile walk from the site. Alternatively, there is an MBTA 43 bus at the corner of the site on Burke and Tremont Streets, which connects to Ruggles Station, providing access to the Orange Line and several Commuter Rail lines.

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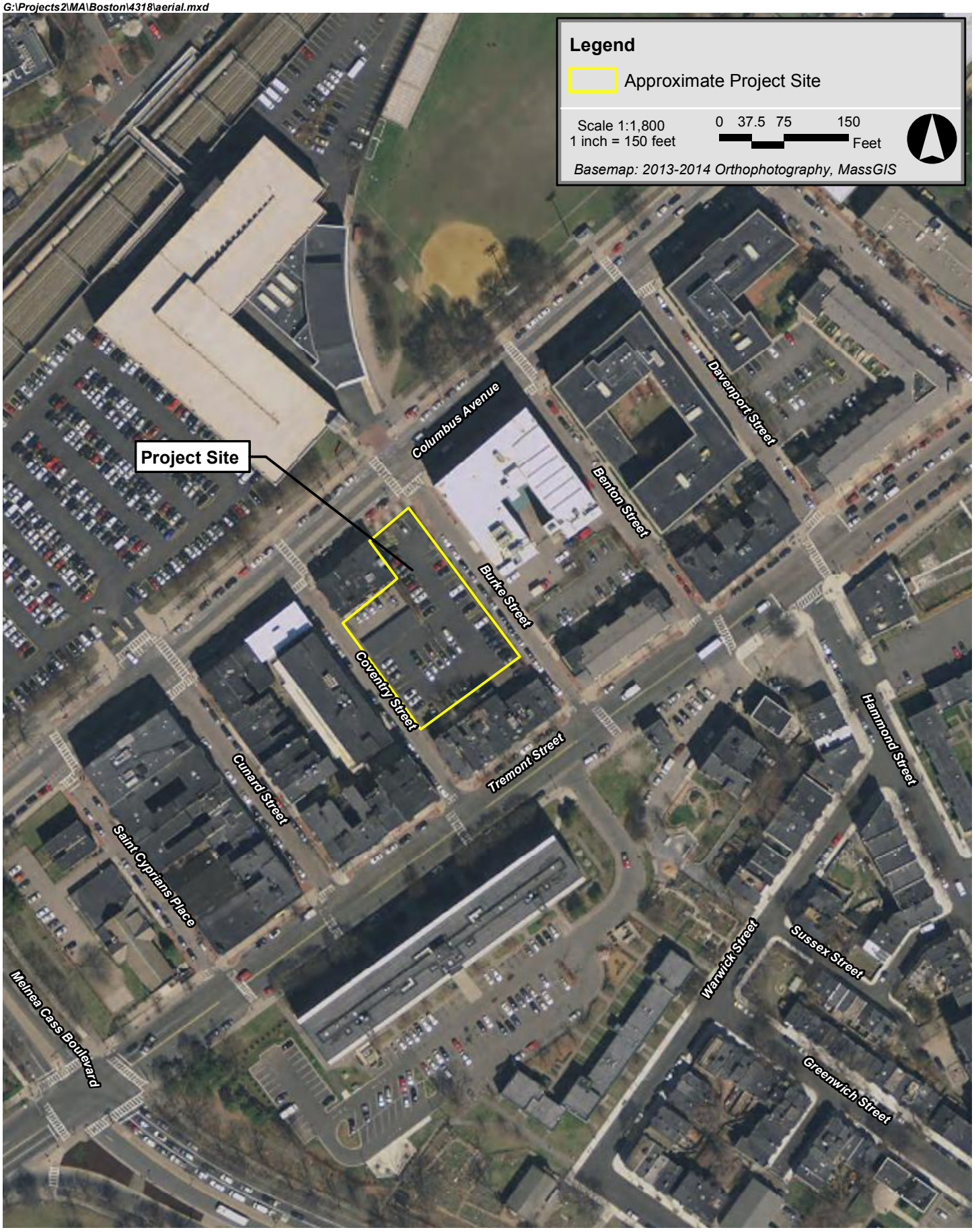


Columbus Avenue Student Housing Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 2-1
Aerial Site Locus

2.3 Proposed IMPNF Project

The 2016 Northeastern University IMPNF Project is a new approximately 230-foot tall, approximately 310,000 sf building for student residential use that will include ground floor commercial use as well as student amenities and services. The proposed structure will have approximately 207 apartment units (approximately 800 beds), consisting of two-bedroom apartments with both shared and private accommodations, as well as four-bedroom apartments with private accommodations. This Project creates the opportunity for Northeastern to achieve 80 percent of its IMP goal of creating 1,000 new residential beds and 130% of the goal for the first five years of the IMP. Figures 2-2 through 2-5 present a site plan, elevation, and perspectives of the Project.

The Project will host a spectrum of student amenities, including a social lounge, recreation and gaming area, fitness center, Academic Success Center, and laundry room. Additionally, there will be on-site paraprofessional staff and resident assistants available. To contribute to the surrounding neighborhood, the building will include commercial space on the ground floor. These active ground floors uses will animate the street and present the internal life of the campus to the public realm.

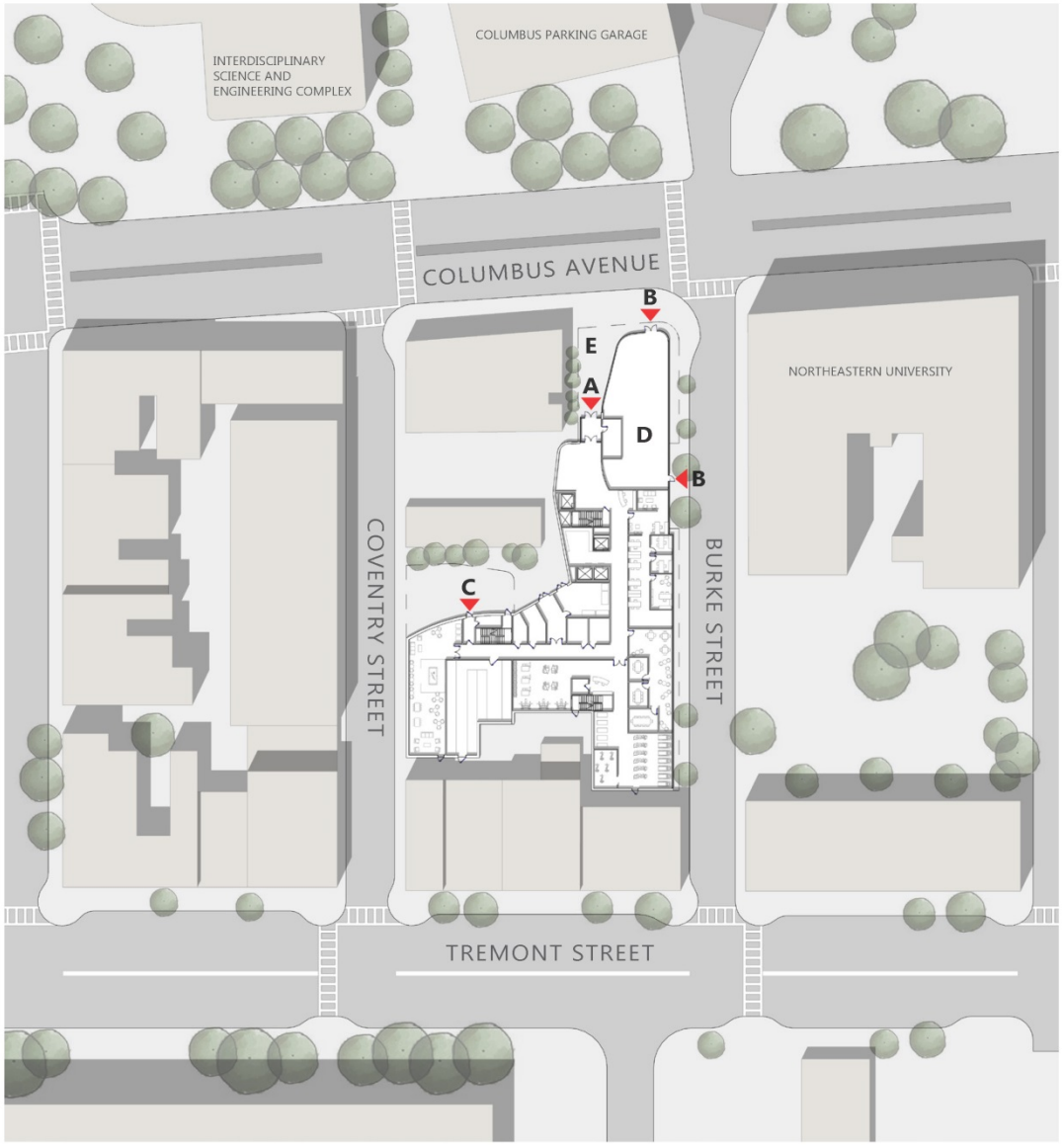
The proposed Project will continue the ongoing transformation and revitalization of Columbus Avenue on the South Campus that began during the 2000 IMP. This Project will contribute to the pattern of residential infill that Northeastern has undertaken in recent years, anchored by International Village at the end of Columbus Avenue. The Project will contribute to the growing identity of Columbus Avenue by integrating public and University spaces that accommodate local needs and activities.

2.3.1 Schedule

It is anticipated that construction will begin in the last quarter of 2016 and will last approximately 30 months.

2.4 Relationship with ACC

The University intends to ground lease the site to an ACC-related entity that will develop, own and operate a student residence under a dormitory license from the City of Boston. The ground lease will restrict the use of the site to student housing apartments and will give Northeastern University students in their third, fourth, and fifth years of study the first right to lease apartments. The ground lease will require that the Project be operated in accordance with the Northeastern University student code of conduct and housing standards. This partnership between a local university and a national student housing developer represents an opportunity for Boston to attract private capital to fulfill the City's ambitious student housing goals.



Columbus Avenue Student Housing Boston, Massachusetts

CUBE3 studio architecture interiors planning

ELKUS | MANFREDI ARCHITECTS

Figure 2-2

Proposed Site Plan

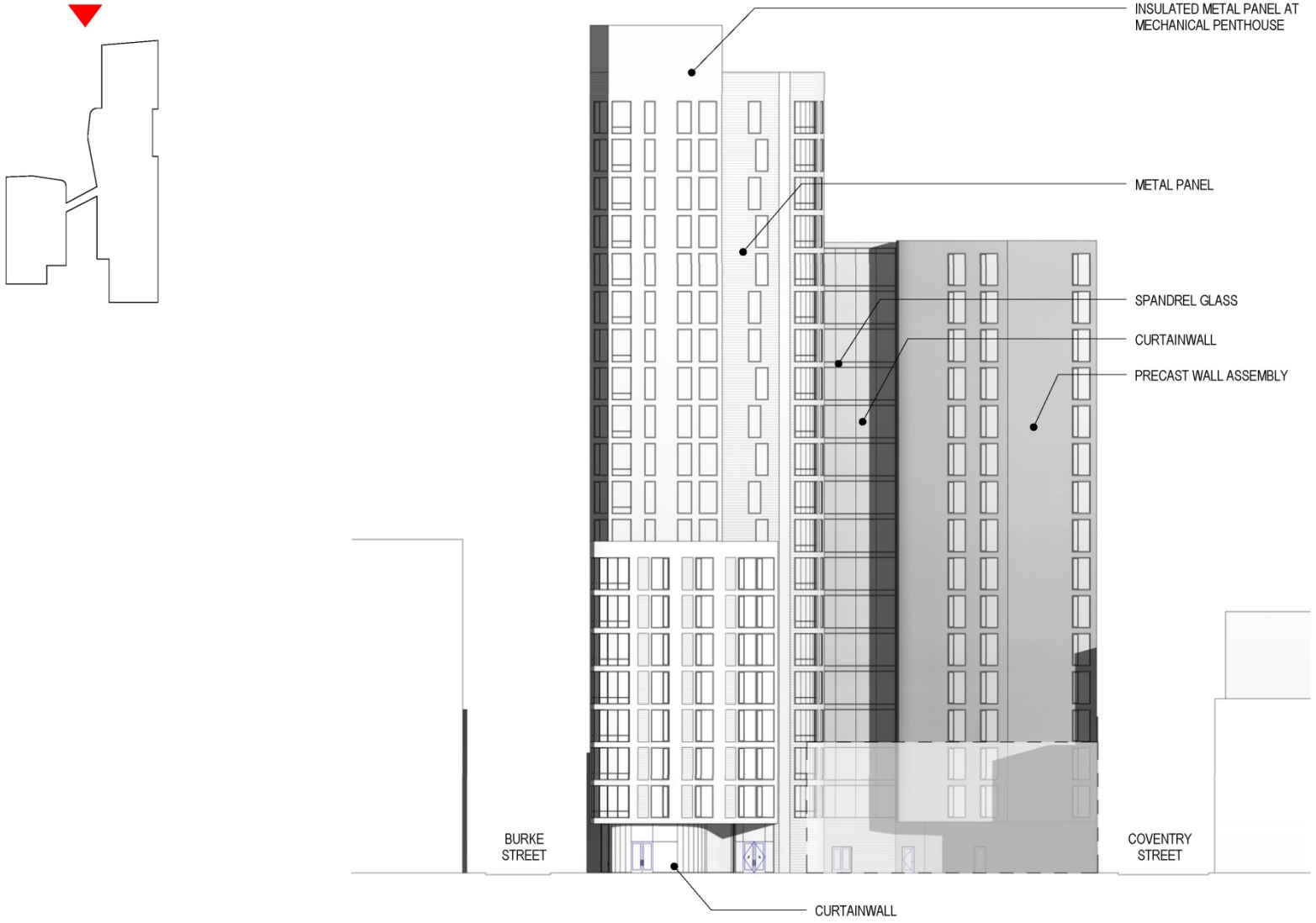


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Figure 2-3

Elevation

Columbus Avenue Student Housing Boston, Massachusetts

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Figure 2-4

Perspective from Columbus Avenue

Columbus Avenue Student Housing Boston, Massachusetts

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Figure 2-5

Perspective from Tremont Street Looking East

2.5 Zoning

As described in the IMP, the Project site is located within: (i) the Greater Roxbury Economic Development Area (EDA) of the Roxbury Neighborhood District governed by Article 50 of the Zoning Code; (ii) the Restricted Parking Overlay District, governed by Section 3-1A(c) of the Zoning Code; and (iii) the [Northeastern] Institutional Master Plan Area. A small portion of the Project site is also located within the Boulevard Planning District of the Roxbury Neighborhood District.

Section 7.3.11 of the IMP described the Burke Street/Columbus Avenue (South Campus) site as including Mixed Use/Office and Residential (350 to 600 beds) with a proposed building height of ten stories, approximately 175,000 to 200,000 sf of gross floor area (GFA) and an estimated floor area ratio (FAR) of 8.0 to 9.0.

As described in Section 1.4, the Project has been updated and revised from that described in the IMP. The Project will now include a new building with a height of approximately 230 feet and approximately 310,000 sf of GFA, resulting in a FAR of approximately 13.3. The Project's uses are anticipated to include approximately 207 apartment uses (approximately 800 beds), consisting of two-bedroom apartments with both shared and private accommodations, as well as four-bedroom apartments with private accommodations. The Proponent anticipates the Project will also include on-site paraprofessional staff and resident assistants. The Project will include accessory uses such as student amenities, including a social lounge, recreation and gaming area, fitness center, Academic Success Center, laundry room and other accessory uses such as loading and trash and recycling facilities. The Project is anticipated to include approximately 3,000 sf of GFA of ground floor commercial space. The Project will not include on-site parking.

The apartments are expected to be restricted to student housing uses through the ground lease of the Project site from the University to an ACC-related entity. As such, the dwelling uses in the Project are classified as a Dormitory, as defined in Section 2A of the Zoning Code and are, therefore, exempt from the provisions of the Mayor's Order Relative to Inclusionary Development dated December 9, 2015.

As further described in the IMP, provided that "future IMP projects receive Certifications of Consistency with the IMP and a Certification[s] of Compliance under Large or Small Project Review, as may be necessary, these projects will be 'deemed to be in compliance with the use, dimensional, parking and loading requirements of the underlying zoning (including special purpose overlay districts established pursuant to Section 3-1A), notwithstanding any provision of the underlying zoning to the contrary, and without the requirement of further Zoning Relief.'" Therefore, upon approval of the amendment to the IMP, the Proponent will confirm the Project's zoning compliance through obtaining a Certification of Consistency with the IMP pursuant to Section 80D-10 of the Zoning Code and a

Certification of Compliance under Large Project review pursuant to Section 80B-6 of the Zoning Code. Project signage is expected to be approved either through the IMP process, or through the BRA's comprehensive sign design process.

2.6 Anticipated Permits and Approvals

In addition to requiring an IMP amendment, followed by a Certification of Consistency and Certification of Compliance, as described above, Table 2-1 presents a preliminary list of federal, state and local permits and approvals that may be required for the Project, based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 2-1 Anticipated Permits and Approvals

Agency Name	Permit/Approval
Federal	
Federal Aviation Administration	Determination of No Hazard to Air Navigation
State	
Department of Environmental Protection	Sewer Connection Permit or Self-Certification (as required); Fossil Fuel Utilization Permit (as required); Notice of Construction
Local	
Boston Redevelopment Authority	Article 80D IMP Amendment; Article 80B Large Project Review; Cooperation Agreement; Boston Residents Construction Employment Plan
Boston Zoning Commission	Approval of IMP Amendment Map Amendment (if required)
Boston Civic Design Commission	Design Review
Boston Water and Sewer Commission	Site Plan Review; Water and Sewer Connection Permits; Cross Connection Backflow Prevention Approval (as required); Temporary Construction Dewatering Permit (as required)
Public Improvement Commission	Specific Repair Plan (as required); Permit/Agreement for Temporary Earth Retention Systems, Tie-Back Systems and Temporary Support of Subsurface Construction (as required); Permit for sign, awning, hood, canopy or marquee (as required)
Boston Transportation Department	Construction Management Plan; Transportation Access Plan Agreement
Boston Public Works Department	Curb Cut Permit(s); Street Opening Permit (as required); Street/Sidewalk Occupancy Permit (as required)
Public Safety Commission Committee on Licenses	Flammable Storage License (as required)
Boston Licensing Board	Dormitory License
Boston Inspectional Services Department	Demolition Permits; Building Permits; Certificate of Occupancy
Boston Fire Department	Permit for fuel storage (as required)

2.7 Legal Information

2.7.1 Legal Judgments Adverse to the Proposed Project

The Proponent is not aware of any legal judgments in effect or legal actions pending with respect to the Project.

2.7.2 History of Tax Arrears on Property

The Proponent does not have a history of tax arrears on property it owns in the City of Boston.

2.7.3 Evidence of Site Control/Nature of Public Easements

The Proponent owns the property pursuant to deeds recorded in Suffolk County Registry of Deeds in Book 19922, Page 8; Book 25067, Page 321; Book 30484, Page 101 and Book 55535, Page 84. A portion of the property is subject to certain party wall rights, although the building has been demolished.

Chapter 3.0
Assessment of Development Review Components

3.0 ASSESSMENT OF DEVELOPMENT REVIEW COMPONENTS

3.1 Transportation

3.1.1 Introduction

This section summarizes the existing transportation conditions in the Project area and discusses site access, preliminary Project trip generation estimates, preliminary transportation impacts, and transportation demand management.

The Proponent expects that a comprehensive analysis of the transportation aspects of the Project, including pedestrian, bicycle, transit, automobile traffic, parking, and loading activity will be prepared and presented in the DPIR to be submitted to the Boston Redevelopment Authority. The DPIR study will be developed in cooperation with the Boston Transportation Department (BTD), BRA, and the community.

3.1.2 Project Description

The Project site is located at Northeastern University's Burke Street lot and has frontage on Columbus Avenue, Burke Street, and Coventry Street (see Site Plan Figure 3-1). The Project will replace the existing surface parking lot with a new student residence facility for use by Northeastern that would provide approximately 207 residential units with 800 beds and approximately 3,000 sf of ground floor commercial space.

The proposed building will eliminate approximately 58 existing surface parking spaces. Given that the proposed building will be student residences, and the proximity to the Northeastern campus and a wide variety of public transit services, no parking will be provided with the Project. Vehicles that currently park in the existing lot would, in the future, park in the Columbus Garage or in one of several other University owned parking facilities, which have adequate available supply to accommodate this demand.

No increases in student enrollment are anticipated with the addition of this Project. With the proposed development of this Project, the proportion of students living in on-campus housing will increase and trips to and from the campus will decrease.

3.1.3 Site Access

The site is conveniently located within Northeastern's south campus and within walking distance of a variety of transportation alternatives, including public transportation, Hubway shared bicycles, and Zipcar and Enterprise shared vehicles.

The new building's entrances to the residential lobby and retail use will be on Columbus Avenue. The Project will also provide pedestrian and streetscape improvements, where necessary, along Columbus Avenue, Burke Street, and Coventry Street adjacent to the site.

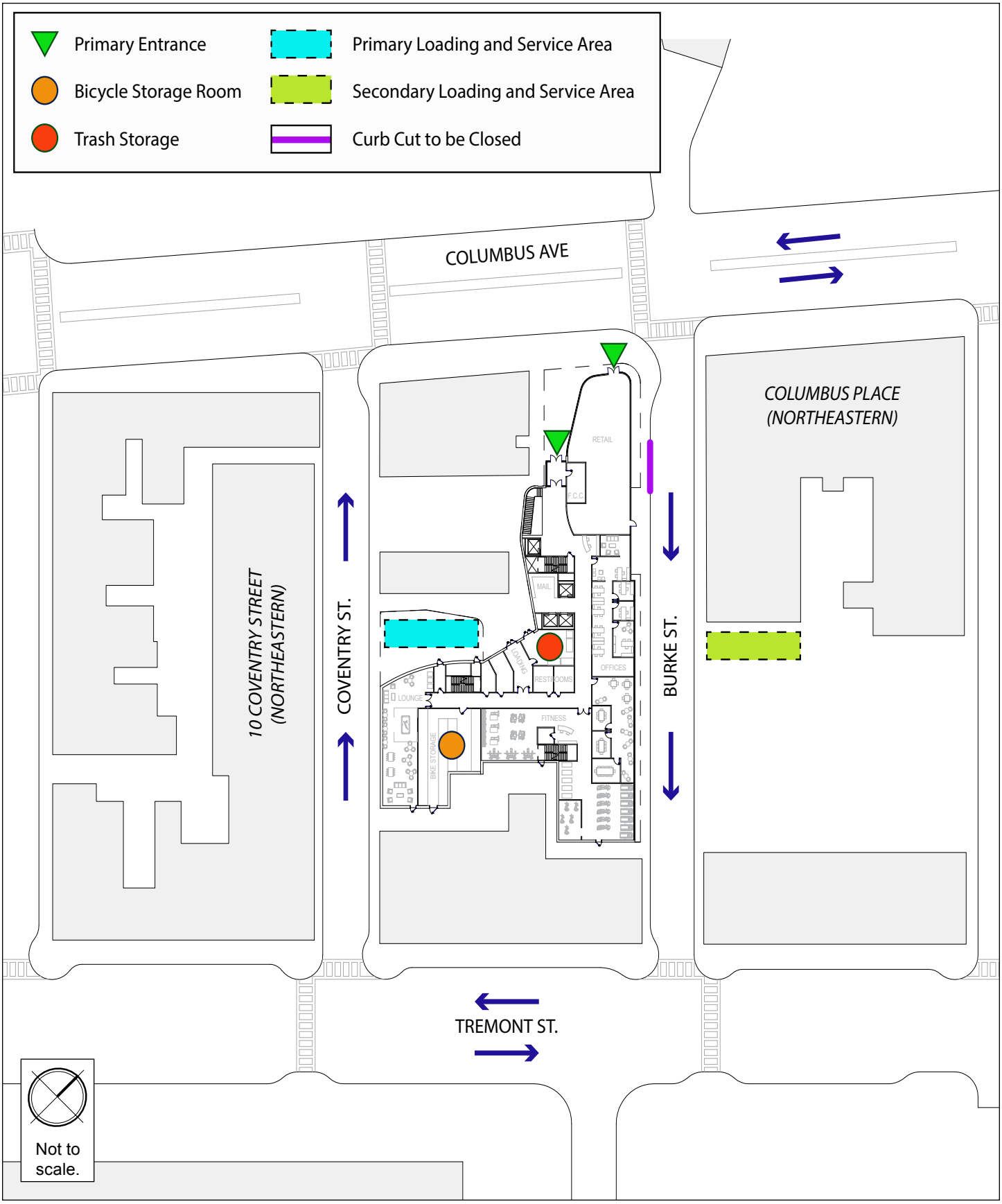

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Figure 3-1
Site Plan

Loading and service activities will occur either on-site in a dedicated area off of Coventry Street or within the adjacent Columbus Place loading area off of Burke Street. The existing curb cut on Burke Street would be closed.

The Project proposes to provide a bicycle storage room as well as outdoor bicycle racks for visitors and guests.

3.1.4 Public Transportation

Northeastern has excellent transit access and is conveniently located adjacent to 15 MBTA bus routes, three MASCO shuttle bus routes, MBTA Green Line Heath/Lechmere E Branch on Huntington Avenue to the north, the Orange Line and commuter rail service at Ruggles Station to the northwest of the site and Orange Line service at Massachusetts Avenue Station to the northeast. Ruggles is a major transportation center housing rapid transit, bus and commuter rail service. Public transportation is also an important mode of access for students and visitors and provides important connections to the surrounding commercial and cultural attractions, particularly for students living on the campus. The public transportation system serving the area around Northeastern University is shown in Figure 3-2 and described below.

MBTA Orange Line

The MBTA's Orange Line subway provides service from Forest Hills Station in Jamaica Plain, Boston through downtown Boston to Oak Grove Station in Malden, Massachusetts. The Orange Line provides inbound and outbound service approximately every six minutes Monday through Friday and every nine to 13 minutes on Saturday and Sunday. Within the campus there are two stations used by the Northeastern community: Ruggles Station, in the south campus at the corner of Ruggles and Tremont Streets and Massachusetts Avenue Station east of the campus on Massachusetts Avenue between Columbus Avenue and St. Botolph Street; both are within walking distance to the Project site. A secondary egress from Massachusetts Avenue station is provided on the Camden footbridge that is convenient for those coming to the campus, but riders cannot enter the station from this location.

MBTA Green Line

The MBTA Green Line E Branch provides trolley service between Heath and Lechmere stations. The E Branch operates on six-minute headways during the weekday morning and afternoon peak periods and on seven to nine minute headways during off-peak periods. Weekend service runs approximately every nine to 12 minutes. The Northeastern and Symphony Stations are located, along Huntington Avenue, less than one-third of a mile from the Project site.

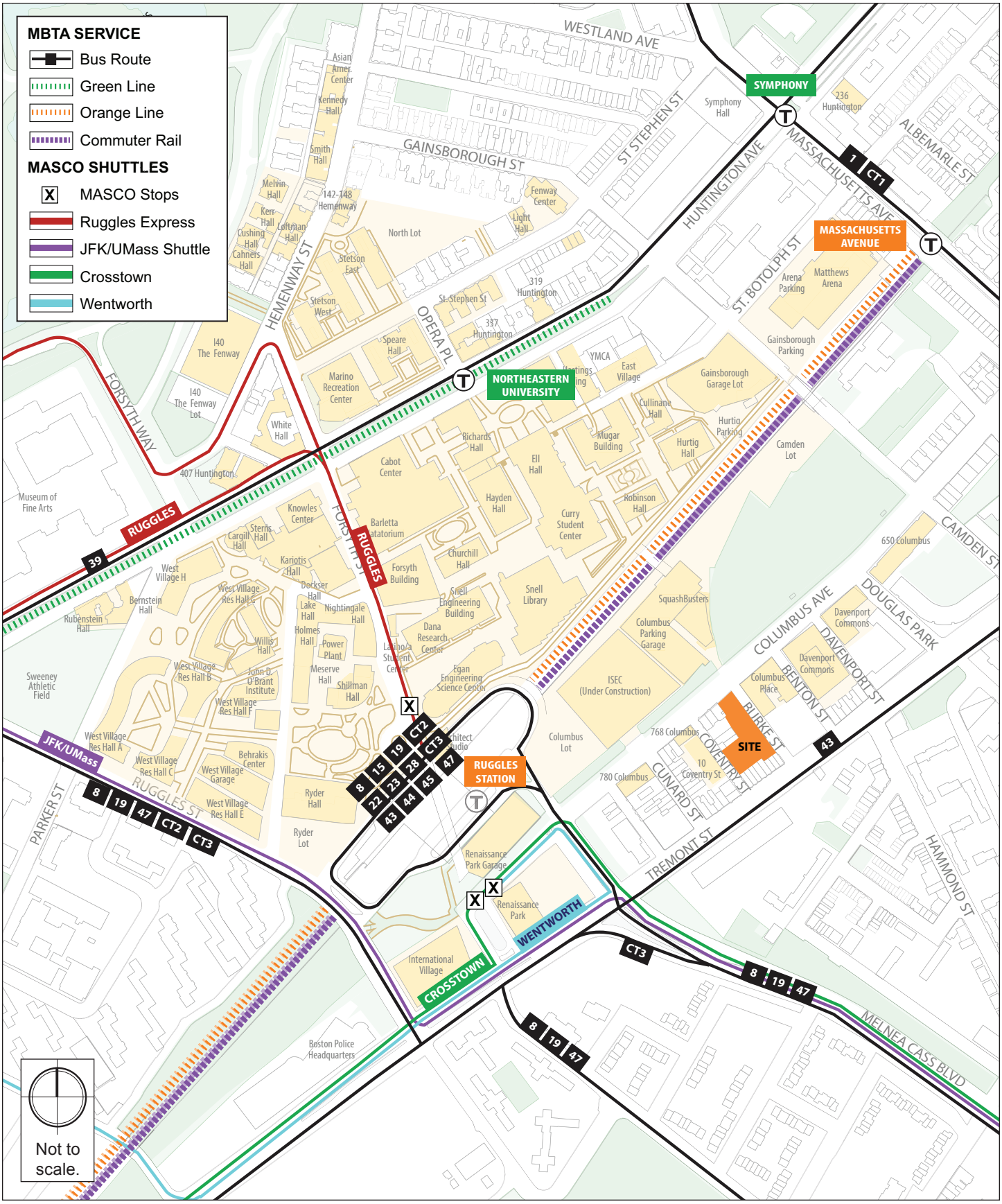

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Figure 3-2
Public Transportation

MBTA Bus Service

The Northeastern Campus is located within convenient walking distance to 15 MBTA bus routes:

- #1 Harvard Holyoke Gate to Dudley Station via Massachusetts Avenue
- #8 Harbor Point/UMASS Kenmore Sta. via B.U. Medical Center & Dudley Station
- #15 Kane Sq. or Fields Corner Sta. Ruggles Sta. via Uphams Corner
- #19 Fields Corner Sta. Kenmore or Ruggles Sta. via Grove Hall & Dudley Station
- #22 Ashmont Sta. Ruggles Sta. via Talbot Ave. & Jackson Sq.
- #23 Ashmont Sta. Ruggles Sta. via Washington St.
- #28 Mattapan Sta. Ruggles Sta. via Dudley Station.
- #39 Forest Hills Sta. Back Bay Sta. via Huntington Ave.
- #43 Ruggles Sta. Park & Tremont Streets via Tremont St.
- #44 Jackson Sq. Sta. Ruggles Sta. via Seaver St. & Humboldt Ave.
- #45 Franklin Park Zoo Ruggles Sta. via Blue Hills Ave.
- #47 Central Sq. Cambridge Broadway Sta. via B.U. Medical Center, Dudley Station. & Longwood Medical Area
- CT1 Central Square, Cambridge Boston University Medical Center/Boston Medical Center via MIT
- CT2 Sullivan Sta. Ruggles Sta. via Kendall/MIT
- CT3 Beth Israel Deaconess Medical Center Andrew Sta. via B.U. Medical Center

The primary MBTA bus route serving the Northeastern campus is the #39 Bus, which provides service between Forest Hills Station and Back Bay Station via Huntington Avenue. The buses operate on six- to 10-minute headways during the weekday morning and afternoon peak periods.

The Project site is located less than a quarter-mile from Ruggles Station, where passengers can access 12 MBTA bus routes, three MASCO shuttle bus routes, Orange Line rapid transit, and the commuter rail. The project site is also located adjacent to the MBTA #43 bus on Tremont Street that provides connection between Ruggles Station and Park Street Station.

MASCO Shuttle Buses

Medical Academic and Scientific Community Organization, Inc. (MASCO) is a non-profit organization dedicated to enhancing Boston's Longwood Medical and Academic area (LMA) with nearly 12,500 riders each day over ten different routes by using a fleet of 37 vehicles. MASCO, along with Paul Revere transportation, help transport people to and around the LMA area via shuttle services from public transit stops and off-site parking facilities. MASCO operates four shuttles that stop at, or near, Ruggles Station, including the Ruggles Express, JKF/UMass, Mission Hill, and Crosstown Shuttles. MASCO shuttle services are available to members of the University who also have an affiliation with MASCO institutions.

MBTA Commuter Rail

Three MBTA commuter rail lines run through Ruggles Station: the Providence/Stoughton line, the Franklin line, and the Needham line. These trains provide access from Boston to the southern and southwestern regions of Massachusetts and Rhode Island.

The Needham Line has twelve inbound trains and twelve outbound trains that stop at Ruggles Station. Inbound trains run between 6:41 a.m. and 10:39 p.m. Outbound trains run between 12:09 p.m. to 10:39 p.m. Peak hour headways are approximately 30 minutes.

The Franklin Line has seven inbound trains and twelve outbound trains that stop at Ruggles Station. Inbound trains run between 7:00 AM and 12:57 p.m. approximately every 16 to 54 minutes during the peak periods. Outbound trains run between 12:53 p.m. to 11:58 p.m. approximately every 25 to 30 minutes during the peak periods.

The Providence/Stoughton Line has ten inbound trains and 25 outbound trains that stop at Ruggles Station. Inbound trains run between 6:11 a.m. and 2:42 p.m. approximately every 20 to 40 minutes during the peak periods. Outbound trains run between 6:28 a.m. to 12:07 a.m. approximately every 8 to 27 minutes during the peak periods and less frequently during the morning hours.

During some train services, passengers riding the MBTA commuter train on Track 2 have to get off at Back Bay Station and use the Orange Line to access Ruggles Station. For this reason, the Ruggles Station Platform Project will construct a new 800-foot long platform on Track 2, which will allow passengers to access Ruggles Station without having to bypass it.

3.1.5 Parking

Northeastern University currently owns and operates four parking garages and 13 surface parking lots on campus. The combined capacity is currently 3,230 spaces and will be 3,347 upon the restoration of the remainder of Columbus lot following the completion of the Interdisciplinary Science and Engineering Complex (ISEC) that is currently under

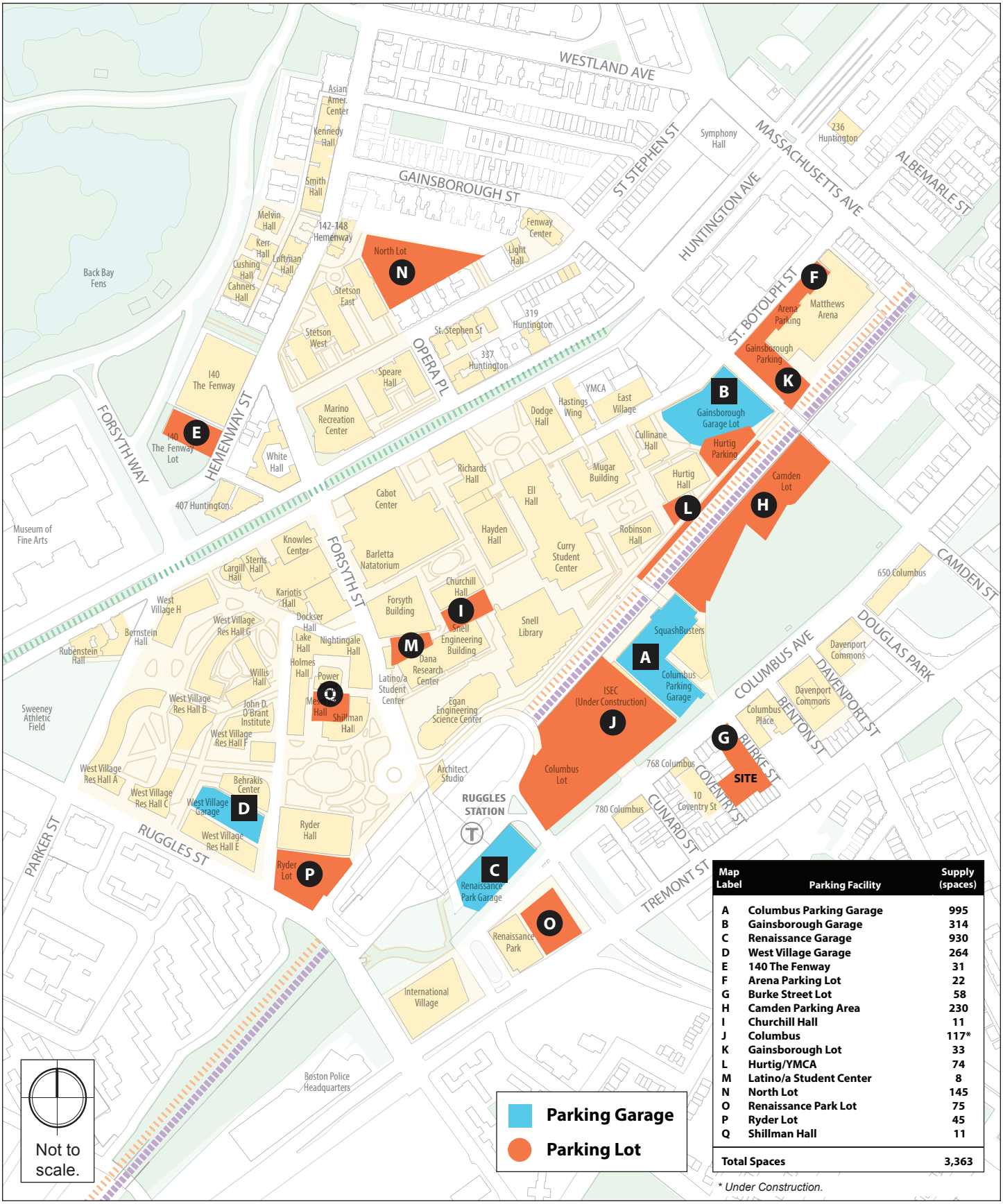
construction. Parking is available for a combination of faculty, staff, students, visitors, and the general public. Northeastern's parking supply is summarized in Table 3-1 and illustrated in Figure 3-3.

Table 3-1 Northeastern University Campus Parking Supply

Map Label	Parking Facility	User	Supply (spaces) *
Garages			
A	Columbus Garage[1]	Faculty/Staff decal, Student decal	995
B	Gainsborough Garage[2]	General Public, Faculty/Staff decal, Event, Snow Emergency	309
C	Renaissance Garage[3]	General Public, Faculty/Staff decal, Overnight Student decal, Snow Emergency	930
D	West Village Garage[4]	Faculty/Staff, Day/Evening Student, Admissions	264
	Subtotal Garages		2,498
Lots			
E	140 The Fenway	Faculty/Staff decal	36
F	Arena Parking Lot	Faculty/Staff decal	46
G	Burke Street Lot (Project Site)	Faculty/Staff decal	58
H	Camden Parking Lot[5]	Faculty/Staff decal, Student Decal	205
I	Churchill Lot	Restricted	11
J	Columbus Lot[6]	Faculty/Staff decal, Student Decal	117
K	Gainsborough Lot	General Public, Event	33
L	Hurtig/YMCA[7]	Faculty/Staff decal, Restricted	72
M	Latino/a Student Center	Restricted	8
N	North Lot[8]	Faculty/Staff decal, Student decal	145
O	Renaissance Park Lot[9]	Monthly Card Holders	75
P	Ryder Lot[10]	Faculty/Staff decal, Vendor decals	36
Q	Shillman Hall	Restricted	7
	Subtotal Lots		849
	Total		**3,347**

1 24 hours 7 days a week. Faculty/Staff/Student with Overnight Parking decals only allowed 2:00 a.m. – 5:30 a.m. Monday – Sunday.
2 24 hours, 7 days a week for hourly rate. Faculty/staff permits allowed between 4:00 a.m. – 1:00 a.m. Parking available during snow emergencies.
3 24 hours, 7 days a week for hourly rate. Closed to NU day permits holders from 5:00 a.m. – 5:00 p.m. Monday – Friday. Weekend rate from 6:00 p.m. Friday until 12:00 a.m.-Monday. Accommodates parking for Children's Hospital (500 permits), Beth Israel (117 permits), and NU Vans and handicapped parking/special decal (65 nested spaces).
4 5:30 a.m. – 11 p.m., Monday – Friday and 8:00 a.m. – 5 p.m. on some Saturdays. No overnight parking.
5 5:30 a.m. – 11:00 p.m. Monday – Sunday. This lot is estimated to close in March 2016
6. Currently under construction. 117 parking spaces may be restored following completion of the ISEC.
7 48 spaces dedicated to YMCA during the day with remaining 26 spaces available to YMCA after 5:00 p.m. No overnight parking.
8 5:30 a.m. – 2:00 a.m. Monday – Sunday and with Overnight Parking Decal 2:00 a.m. – 5:30 a.m. Monday – Sunday.

9 Lot is used exclusively by Beth Israel monthly card holders (about 75 permits).
10 5:30 a.m. – 11:00 p.m. Monday – Sunday.



Map Label	Parking Facility	Supply (spaces)
A	Columbus Parking Garage	995
B	Gainsborough Garage	314
C	Renaissance Garage	930
D	West Village Garage	264
E	140 The Fenway	31
F	Arena Parking Lot	22
G	Burke Street Lot	58
H	Camden Parking Area	230
I	Churchill Hall	11
J	Columbus	117*
K	Gainsborough Lot	33
L	Hurtig/YMCA	74
M	Latino/a Student Center	8
N	North Lot	145
O	Renaissance Park Lot	75
P	Ryder Lot	45
Q	Shillman Hall	11
	Total Spaces	**3,363**

** Under Construction.*

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Figure 3-3
Northeastern Parking Supply

The Project site sits on the Burke Street Lot that currently has a total of 58 surface parking spaces that are designated for use by faculty, staff, and public safety. The Project will result in the elimination of the existing parking at the Burke Street Lot and no new parking will be provided. Staff, faculty, and visitors that currently park at the Burke street lot will, in the future, park either at Columbus Garage or at one of several other lots and garages on the campus.

Unrestricted on-street parking is provided along the west sides of Burke Street and Coventry Street. Within the vicinity of the Project site, on-street parking is provided along both sides of Columbus Avenue and Tremont Street and is a mix of South End and Roxbury permit parking.

3.*1.6 Existing Traffic Conditions*

Vehicle, pedestrian, and bicycle turning movement counts were collected at the following intersections adjacent to the Project site during the weekday morning (7:00 a.m. – 9:00 a.m.), midday (11:00 a.m. – 1:00 p.m.), and evening (4:00 p.m. – 6:00 p.m.) peak periods on Tuesday, December 8, 2015, when classes were in session at Northeastern University:

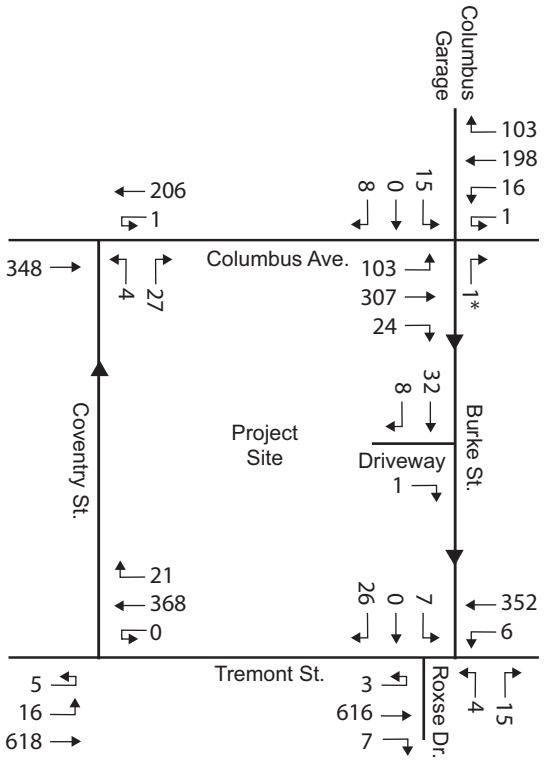
- Columbus Avenue/Burke Street/Columbus Garage;
- Columbus Avenue/Coventry Street;
- Tremont Street/Burke Street/Roxse Drive; and
- Tremont/Coventry Street.

Based on these counts, the weekday peak hours were identified as 7:45-8:45 a.m., 11:15 a.m. – 12:15 p.m., and 4:30-5:30 p.m. Figure 3-4 shows the resulting peak-hour vehicle turning movement volumes.

The DPIR will include an intersection operations analysis at the above study area locations during the weekday morning and evening commuter peak periods.

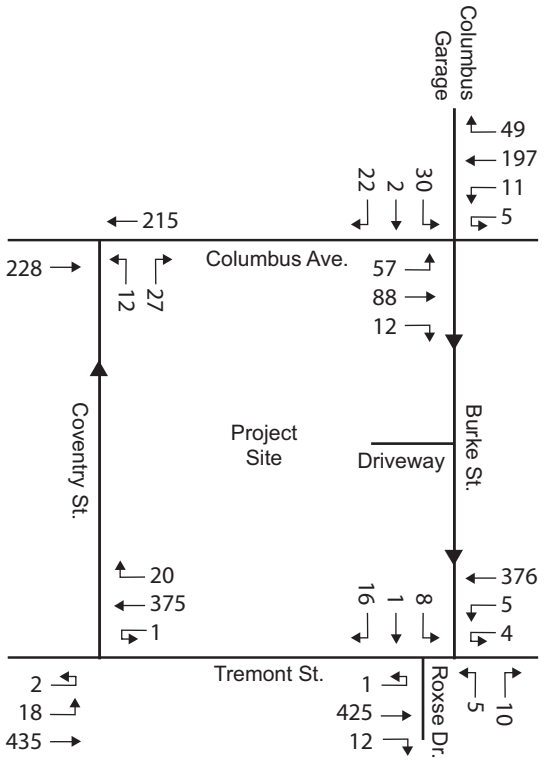
3.1.7 Existing Pedestrian Conditions

The Project site is located within Northeastern's South Campus and is within close walking distance to public transit. Crosswalks are positioned across Columbus Avenue at Burke Street and Coventry Street providing a pedestrian connection between the site and the remainder of the campus. These crosswalks are well utilized throughout the day. Figure 3-5 summarizes the morning, midday, and evening peak hour pedestrian volumes.

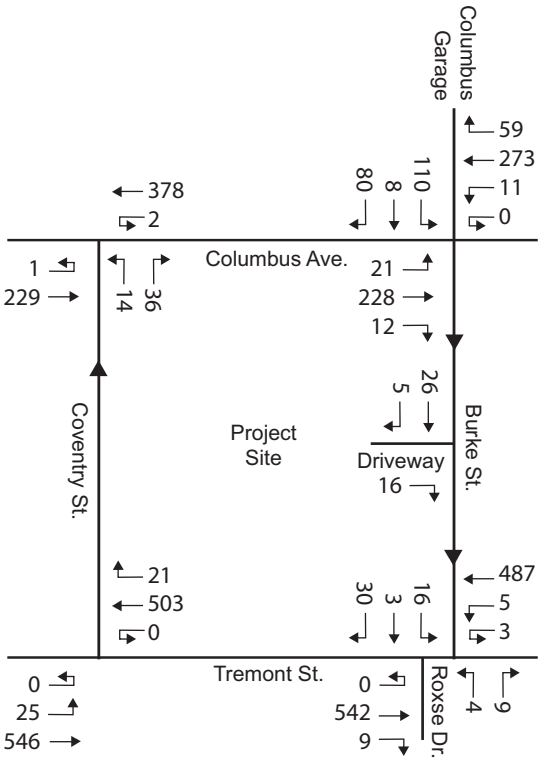


a.m. Peak Hour,
(7:45-8:45 a.m.)

** Prohibited Movement.*



Midday Peak Hour,
(11:15 a.m.-12:15 p.m.)



p.m. Peak Hour,
(4:30-5:30 p.m.)

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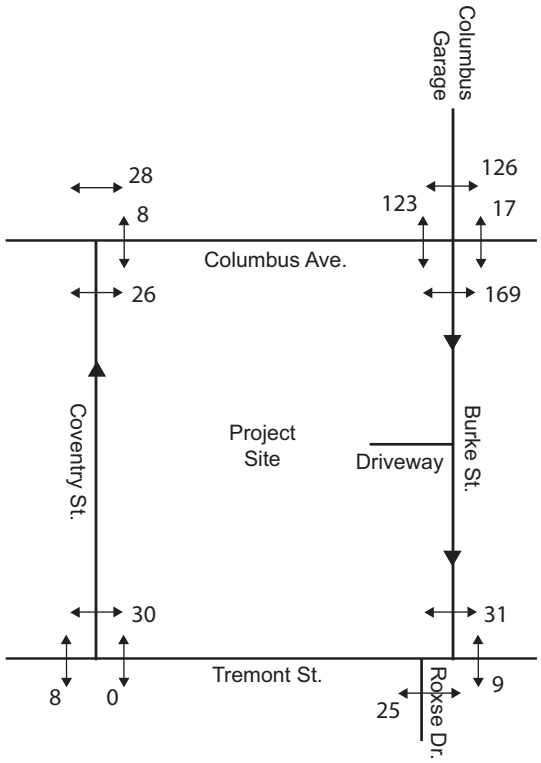
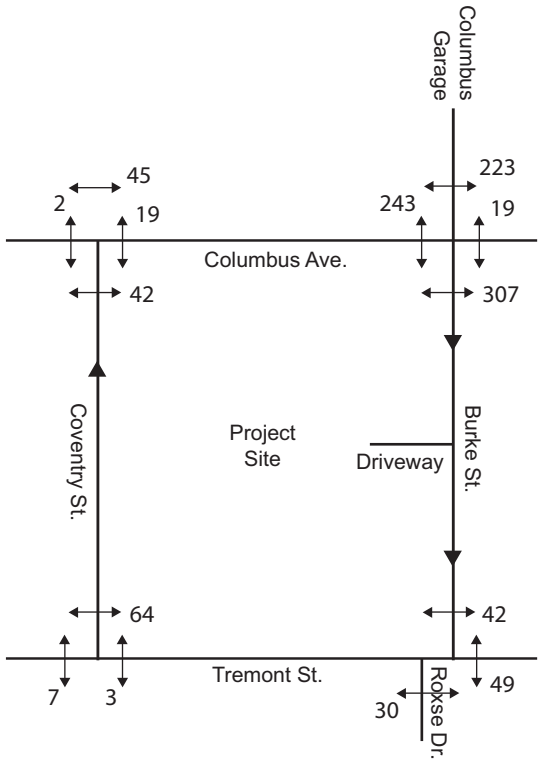
Figure 3-4

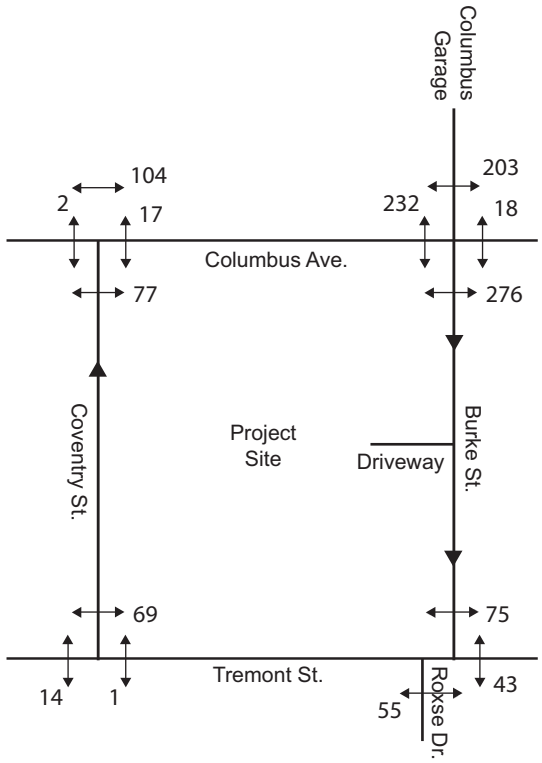
Existing Conditions (2015) Traffic Volumes



a.m. Peak Hour,
(7:45-8:45 a.m.)



Midday Peak Hour,
(11:15 a.m.-12:15 p.m.)



p.m. Peak Hour,
(4:30-5:30 p.m.)

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Figure 3-5

Existing Conditions (2015) Pedestrian Volumes

During field observations, Howard Stein Hudson (HSH) noted numerous pedestrians crossing through the Burke Street Lot. It was also noted that sidewalks along Burke Street and Coventry Street are in poor condition. The Project will improve sidewalk conditions along these roadways adjacent to the site, where necessary. The ISEC Project, which is currently under construction, will also improve sidewalk and bicycle conditions along the north side of Columbus Avenue.

3.1.8 Existing Bicycle Conditions

In recent years, bicycle use has increased dramatically on the Northeastern University Campus and throughout the City of Boston. According to Northeastern's 2012 Massachusetts Department of Environmental Protection (DEP) Rideshare Survey, approximately 9 percent of all students, staff, and employees commute by bicycle on a typical day. Given Northeastern's urban location and compact campus, most students living off-campus tend to reside within walking distance to the campus or have relatively easy access via transit and bicycle. Bicycle mode share for students living off-campus is typically higher than those living on-campus, as on-campus students are within easy walking distance to various academic buildings, residence halls, dining facilities, and other amenities on campus. Cyclists also use the campus and the surrounding roadways to access the Southwest Corridor bicycle trail connecting to Back Bay and Downtown Boston; the Fenway Bicycle Path that runs along the Emerald Necklace; and the South Bay Harbor Trail via Melnea Cass Boulevard. Existing bicycle volumes adjacent to the Project site are illustrated in Figure 3-6.

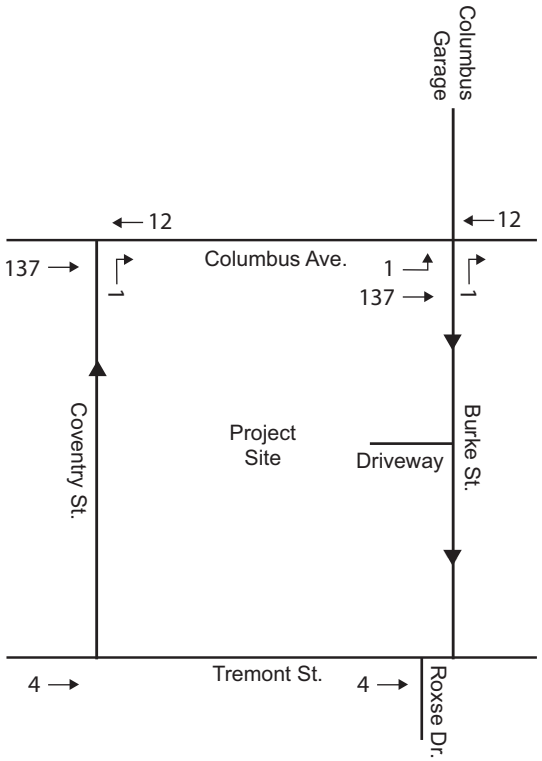
Bicycle Routes

In the immediate vicinity of the campus, the City has recently added bicycle lanes along portions of Columbus Avenue, Massachusetts Avenue, and Forsyth Street and "share the road" symbols along Huntington Avenue, Ruggles Street, and Museum Road. The City has also recently added bicycle boxes at the intersection of Huntington Avenue and Forsyth Street.

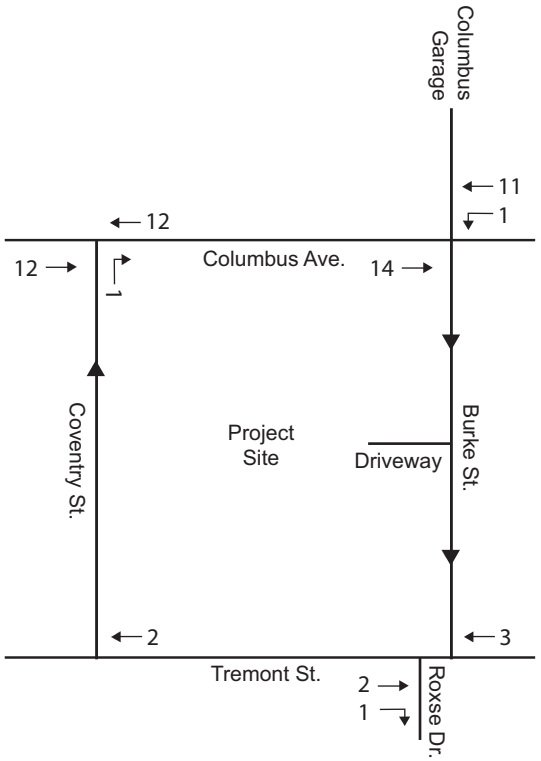
Figure 3-7 shows major bicycle routes to and through the campus and potential future connections from the City of Boston's 2013 *Interactive Bicycle Network Map.*

Bicycle Storage and Demand

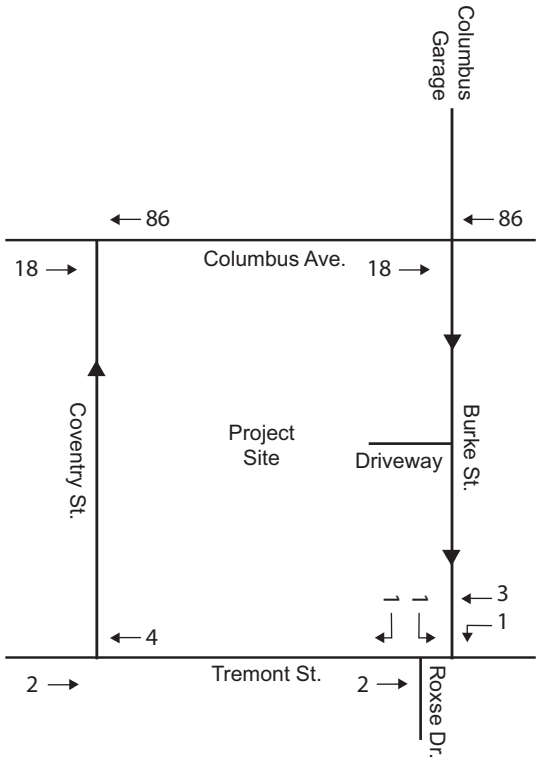
Figure 3-8 shows bicycle racks on campus and locations where bikes are parked without formal bike racks. Approximately one-half of the bicycle racks are covered. The designated bicycle parking is well used during peak periods; bicycles were also observed chained to poles, etc. in the most heavily used areas.



a.m. Peak Hour,
(7:45-8:45 a.m.)



Midday Peak Hour,
(11:15 a.m.-12:15 p.m.)



p.m. Peak Hour,
(4:30-5:30 p.m.)

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Figure 3-6

Existing Conditions (2015) Bicycle Volumes

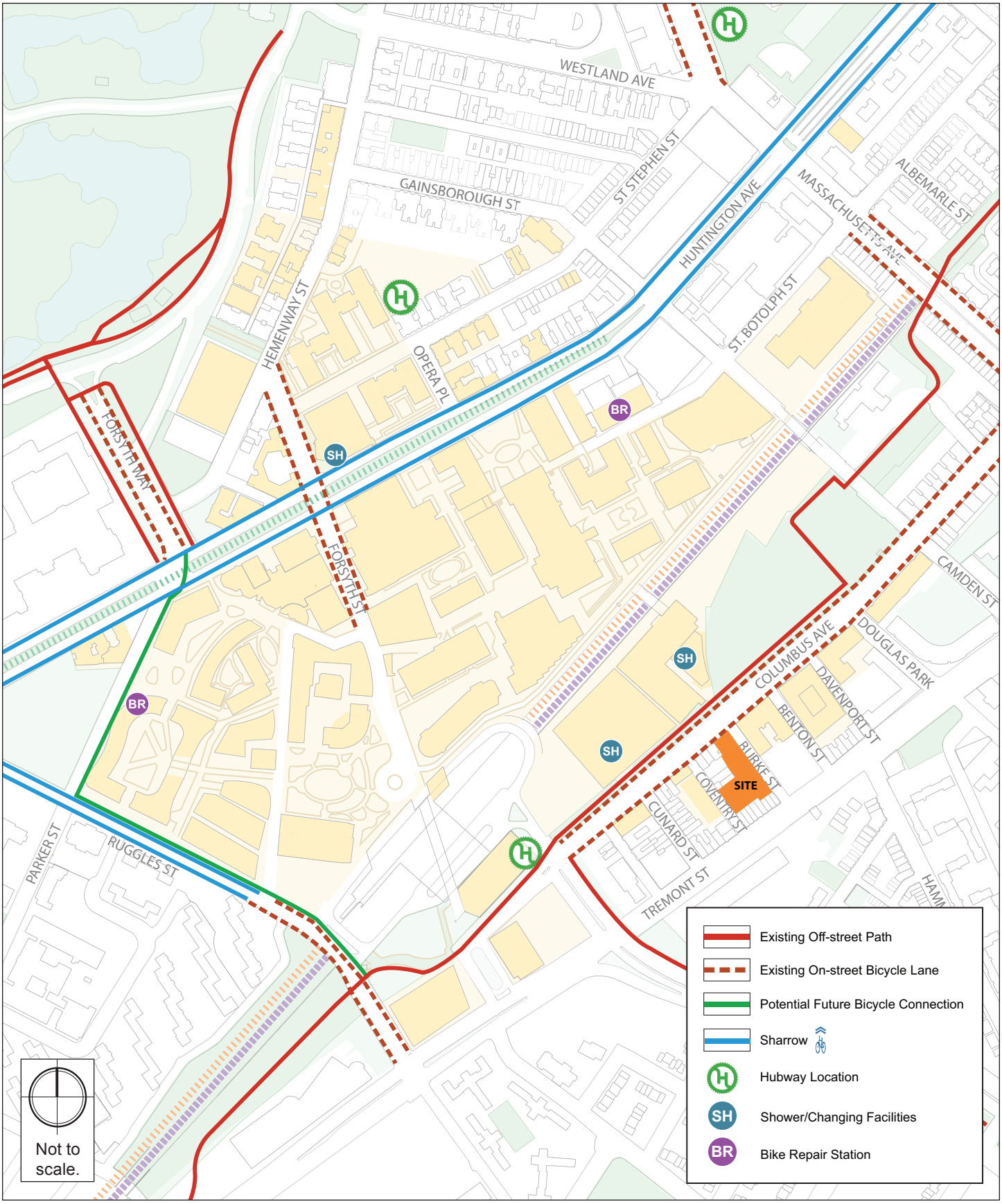

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Figure 3-7
Existing Bicycle Facilities

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Figure 3-8
Existing Bicycle Storage

Northeastern is continually evaluating on-campus bicycle usage and storage and actively adds bicycle racks and/or relocates existing racks to meet changing demand patterns as bicycle use continues to evolve. The University has significantly increased on-campus bicycle storage from only 141 bicycles at eight locations in 2000 to approximately 870 bicycles at nearly 40 locations throughout the campus today. Upon completion, the ISEC, which is currently under construction, will add storage for an additional 165 bicycles, including a dedicated bicycle room and shower facilities, exterior racks, and a bicycle cage within the Columbus Garage. These new bicycle accommodations will bring the campus wide total up to 945 bicycles.

Hubway Bicycle Sharing Program

In 2011, the University partnered with the City of Boston on the New Balance Hubway Bikeshare program. Hubway is a bicycle sharing system providing more than 1,300 bikes at 140 locations throughout Boston, Brookline, Cambridge, and Somerville. As shown in Figure 3-7 and summarized in Table 3-2, Hubway currently has three locations with a combined total of 47 bicycles within about one-third of a mile of the Project site.

Table 3-2 Hubway Bike Share Locations

Location	*Number of Bicycles*
Northeastern University/North Parking Lot[1]	15
Ruggles Station/Columbus Avenue	14
Massachusetts Avenue (Christian Science Plaza)	18
Total	*47*

1. Hubway bike station at North Lot is sponsored by Northeastern University.
Source: www.thehubway.com, accessed December 2015.

3.*1.9 Car Sharing*

Increasingly popular car-sharing services provide easy access to vehicular transportation for urban residents who do not own cars (see Table 3-3 and Figure 3-9). The local car sharing providers, Zipcar and Enterprise, offer short-term rental service for members. Vehicles are rented on an hourly and per-mile basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

Enterprise is currently the provider of shared cars on Campus and has 10 on-demand vehicles in four different locations. Enterprise allows students ages 18 years or older with a valid .edu email address to participate. Zipcar has one location adjacent to the campus with 8 vehicles at 76 Gainsborough Street.

Table 3-3 Car Sharing Locations

Location	*Number of Vehicles*
Zipcar	
76 Gainsborough Street	8
Enterprise	
North Lot (97 St. Stephen Street)	2
Columbus Garage (795 Columbus Avenue)	4
Ryder Lot (66 Leon Street)	2
Matthew's Arena (262 St. Botolph Street)	2

Source: zipcar.com and hertz.com, accessed December 2015.

3.*1.10 Trip Generation*

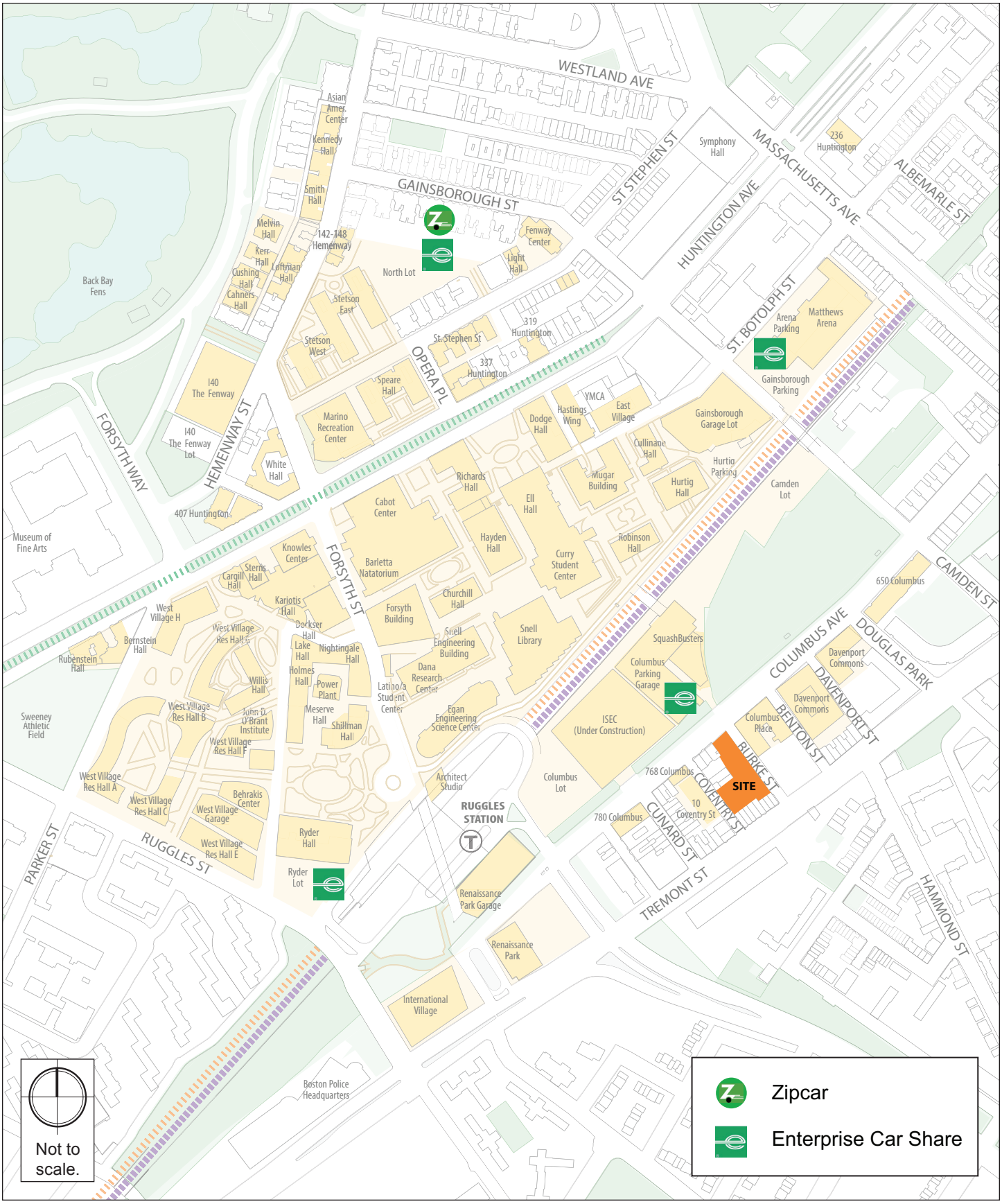
The following sections detail for trip generation for the proposed 207 residential units with 800 beds and approximately3,000 sf of ground floor retail space.

Residential Trip Generation

Northeastern's student enrollment is not anticipated to increase. Therefore, with the development of the proposed Project future external commuter trips to and from campus will be reduced while resident internal pedestrian trips will increase.

Typically, trip generation estimates for a Project are derived from Institute of Transportation Engineers' (ITE) Trip Generation (9th edition, 2012) fitted curve equations and average trip rates for comparable land use codes. However, Trip Generation does not provide comparable data for estimating person trips generated by a university residential building. Consistent with industry practice, the number of trips was based on based on survey data collected by Howard Stein Hudson at Suffolk University's Nathan R. Miller Residence Hall (345 beds) located at 10 Somerset Street in downtown Boston on Tuesday, March 7, 2006 and keycard access data and sign-in data from the University's West Village A North residence hall (412 beds) on Sunday, September 26, 2010 through Saturday October 2, 2010. These residential buildings have no associated parking on-site, similar to that of the proposed Project.

Based on the survey data, each bed is estimated to generate 6.32 daily person trips (3.16 person trips entering and 3.16 person trips exiting). The total peak-hour trip generation per bed is estimated to be 0.31 person trips per bed in the a.m. peak hour, 0.50 person trips per bed during the mid-day peak hour, and 0.54 person trips in the p.m. peak. The data show that the fewest trips are generated during the a.m. peak hour, more during the mid-day peak hour, and the most during the p.m. peak hour.



Columbus Avenue Student Housing Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-9
Car Sharing Locations

As with trip generation rates, no standard mode share rates could be applied to the student residents. As part of the Suffolk University survey at the Nathan R. Miller Residence Hall, all vehicular pick-up/drop-off and loading/service activity were observed in detail for use in estimating daily and peak-hour walk/bike/transit and vehicle mode shares. Based on these observations, 98% of daily trips are walk trips, transit trips, or bicycle trips. The remaining 2 percent of daily trips are made by vehicle.

The resulting trip generation for the 800 new beds is summarized in Table 3-4.

Table 3-4 Residence Hall Trip Generation

Period	Direction	Vehicle Trips	Walk/Bike/Transit Trips[1]
Daily	In	42	2,471
	Out	42	2,471
	Total	84	4,942
a.m. Peak Hour	In	2	57
	Out	8	174
	Total	10	231
midday Peak Hour	In	2	201
	Out	2	190
	Total	4	391
p.m. Peak Hour	In	2	218
	Out	2	205
	Total	4	423

Trip generation based on 800 beds.
1. Non-auto trips are predominantly internal campus trips.

Retail Trip Generation

The trip generation for the approximately 3,000 sf ground-floor retail space was estimated using data contained in the ITE's *Trip Generation* (9th edition, 2012) using Land Use Code (LUC) 820 Shopping Center. The resulting vehicle trips were then converted into person trips based on national average vehicle occupancy rates. Using BTD's mode split data for Area 4 (West Core) and vehicle occupancy rates, the person trips were then reallocated into walk/bike, transit, and vehicle trips. The resulting trip generation for the retail use is summarized in Table 3-5.

Table 3-5 Ground-floor Retail Trip Generation

Period	Direction	Walk/Bike Trips	Transit Trips	Vehicle Trips
Daily	In	48	14	14
	Out	48	14	14
	Total	96	28	28
a.m. Peak Hour	In	1	1	1
	Out	1	0	1
	Total	2	1	2
p.m. Peak Hour	In	4	1	1
	Out	4	1	1
	Total	8	2	2

Trip generation based on 3,000 sf.
Mode share based on BTD Area 4 data: 16% transit, 55% walk/bike, 29% auto.

Combined Project Vehicle Trip Generation

Table 3-6 summarizes the Project vehicle trip generation for the residential and retail use combined.

Table 3-6 Project Vehicle Trip Generation

Period	Direction	Residential Trips (800 beds)	Retail Trips (3,000 sf)	Total
Daily	In	42	14	56
	Out	42	14	56
	Total	84	28	112
a.m. Peak Hour	In	2	1	3
	Out	8	1	9
	Total	10	2	12
p.m. Peak Hour	In	2	1	3
	Out	2	1	3
	Total	4	2	6

As shown in Table 3-6, the Project will only generate 112 vehicle trips (56 in and 56 out) on a daily basis with just 12 vehicle trips (3 in and 9 out) during the weekday morning peak hour and only 6 vehicle trips (3 in and 3 out) during the afternoon peak hour. This increase corresponds to just one new vehicle trip every 5 to 10 minutes, which will have an imperceptible impact on the adjacent roadway network.

Traffic Shifts due to Parking Consolidation

As part of the Project, 58 surface parking spaces at the Burke Street lot will be eliminated. Those that currently park at the Burke Street lot will in the future park at the nearby Columbus Garage or one of Northeastern's several other parking facilities. The vehicle trips associated with the existing lot will be redistributed on the roadway network as part of the Build Conditions analysis for the DPIR; however, the relocated trips are expected to have a negligible effect on area traffic operations.

3.1.11 Loading and Building Servicing

As the Project site is occupied by a parking lot, there is no loading or service activity on the site today. During field observations, the study team observed that commercial vehicles servicing Columbus Place often park on the sidewalk along the eastern side of Burke Street.

The Project includes an at grade loading and service area off of Coventry Street. Loading will also occur within the existing Columbus Place surface parking lot, located across the street from the Project site on Burke Street.

The types of services expected at the Project include package delivery, building servicing, trash removal, food deliveries, and deliveries to the ground floor retail space. Deliveries are typically made by passenger vehicles, vans, pick-up trucks, and small box trucks. The loading area will be designed to accommodate a vehicle as large as SU-36 (approximately 36 feet in length).

To evaluate loading and service activity for a residence hall use, the study team used existing loading survey data from similar-type residential facilities at Suffolk University (Nathan R. Miller Residence Hall) and Northeastern University (Stetson Hall). These facilities have on-site dining and are expected to provide a conservative estimate of loading and service activity for the Project. Using a proportional estimate based on number of beds, the Project is expected to generate approximately 8 to 10 deliveries spread out over a typical weekday. Assuming deliveries generally occur between 7:00 a.m. and 3:00 p.m., about 1 delivery per hour can be expected at the Project.

3.1.12 Student Move-in Move out

Since 2000, the University has prepared Move-In/Move-Out Plans each academic year for the Boston Transportation Department (BTD). The Move-Out Plan is usually a less formalized document since that process is more gradual, taking place over a longer time-frame.

The elements of the Move-In plan include:

- Attending community meetings to create support for the move-in plan.

- Notifying neighbors about the move-in process and arranging parking for neighbors in the Camden Lot and Gainsborough garages for the weekend.
- Avoiding moving students into the Fenway area on September 1st due to expected congestion.
- Working with the neighborhoods on August 31 and September 1.
- Assisting coordination of trash removal and police presence.
- Reaching out to neighboring businesses and institutions (i.e., the Symphony, Wentworth) in early May and early June to notify them of the University's move in plans.
- Coordinating with the Mayors' Office and various city agencies with regard to move-in schedule, plan and coordination.
- Spreading move-in over five days to ease congestion and improve service.
- Easing the move-in process for parents and students by providing moving support (professional movers and moving carts) at targeted locations and increasing campus volunteers.
- Expanding curb-side check-in at White Hall, Willis Hall, and West Village H.
- Confirming parking plans with the City and nearby neighborhoods to assist with smooth curbside check-ins.

Northeastern also monitors major events and construction activities in the area that might impact moving procedures.

The Project, when completed, will become an addition to the current Move-In Plan. Move-In activities associated with the Project are expected to have only a small impact on area roadways, as it will account for less than 10 percent of the total number of students housed by Northeastern. The specifics of this addition will be included in future Move-In Plans. It is likely plans will include an adjacent Northeastern parking lot for staging and a large Northeastern lot for parental parking. There should be little neighborhood impact in the adjacent neighborhoods.

3.1.13 Transportation Demand Management

The University has made a strong commitment and continues to make improvements to transportation demand management (TDM) initiatives to help reduce single-occupant auto commuting to and from its campus and to promote non-auto alternatives. Notably, since the 2000 IMP, drive alone commuter trips to/from the campus have declined substantially –

from 27% to only 11% for students and from 49% to only 28% for employees. In 2012, Northeastern received the Massachusetts Excellence in Commuter Options (ECO) Pinnacle Award for the on-going efforts in incorporating sustainable transportation on Campus.

Northeastern University provides a number of transportation demand management (TDM) programs to reduce single-occupant automobile use and parking by students, faculty and staff, and to help improve the environment of the campus, as described below:

- On-Site sale of MBTA passes – The University currently provides MBTA pass sales on-campus through the Husky Card office. In addition, MBTA maps and schedules are posted at a number of different locations around campus.

- MBTA Semester Pass Program – The University participates in the MBTA's Semester Pass Program. This program allows students to receive a discount on transit passes for the semester when purchased in advance.

- Providing Pre-tax purchase of MBTA passes for employees – The University allows MBTA passes to be purchased by employees by means of a pre-tax payroll deduction for up to $125 per month. This effectively reduces the employee cost of purchasing passes.

- Negotiation with Bus Providers – The University is actively involved with the MBTA, BTD and the BRA, as well as adjacent institutions of higher learning and other government agencies to enhance access, as well as the aesthetics of the public transit facilities located adjacent to campus.

- Ruggles Station. – Northeastern University continues to negotiate with the MBTA to improve the Ruggles Station on the Orange Line. This negotiation seeks opportunities for partnership between the University and the MBTA to enhance the overall commuting experience at the station.

- Posting of Bus Schedules – Information on the MBTA including maps, fares, schedules, updates and recommended routes to campus are available at various websites and information centers on campus.

- Bicycling Incentives – Northeastern supports bicycling to campus with sponsorship of the Hubway bike sharing system, discussed elsewhere in this document. NUPD's new voluntary bicycle registration program is available to any faculty, staff, or student. NUPD records the information and provides a sticker. Two bicycle repair stations have been installed on campus for use by the entire Northeastern community. The NU bookstore offers an automatic 20% discount on the U-type locks that it sells, and NU secured a 15% discount on bike safety and security gear at a nearby bicycle shop. Bicycle racks are available throughout campus, and

secure bicycle storage space is provided on the ground level of the Renaissance Park Garage. Showers and lockers for cyclists are available at two athletic centers on the campus.

- Off-Campus Student Services Office – The University operates a Commuter Referral Office providing commuting students with information on commuting (bus and train schedules and carpooling information).

- Limited Overnight Parking for Campus Residents – The University's parking policies permit overnight parking for students only under limited conditions relating to cooperative work assignments, medical reasons, family obligations, and other exceptional circumstances. By far, the most common reason for providing overnight parking to students is cooperative education work assignments. Students with a cooperative education job located beyond reasonable MBTA service are permitted to park on campus on a semester basis.

- Sponsorship of the Fenway Alliance – Northeastern University has been instrumental in supporting the Fenway Alliance as a consortium for planning in the area. The Alliance serves as a forum for the institutions centered in the Fenway Cultural District to coordinate on transportation and parking issues in addition to other concerns of a district-wide nature.

- Roxbury to Fenway Bicycle Connector – Over a period of years, Northeastern has worked to promote the proposed bicycle and pedestrian connection between the Back Bay Fens and the Southwest Corridor Park. The University continues to work collaboratively with the Boston Transportation Department as they seek to design and construct the Roxbury to Fenway Bicycle Connector as part of the Boston Green Links Initiative.

- Ride-matching Program – Northeastern participates in the MassRides program. Faculty, staff and students who are interested in carpooling or vanpooling are matched through a Northeastern University website to MassRides. Posters and literature promoting MassRides have been distributed campus-wide. The Office of Environmental Health and Safety maintains information and links to MassRides on their website. Information is also available at the Off Campus Student Services office located at the Curry Student Center and the Human Resources Management Office at 250 Columbus Place.

- Guaranteed Ride Home – Northeastern continues to promote the Guaranteed Ride Home program offered through MassRides.

- Preferential Parking for Carpools and Vanpools – Up to four preferred parking spaces have been provided in the Gainsborough Garage first floor for faculty and staff with daytime decals who travel with at least three total occupants.

- Carpooling Incentives – The University provides other periodic incentives to encourage carpooling by students, faculty and staff.

- Car Sharing – As noted elsewhere, Northeastern has two car sharing services available on or near the Boston Campus – 48 assigned ZipCar spaces and 7 Hertz On Demand spaces. Several University departments have Zipcar accounts.

- Electric Vehicles and Charging – The University has acquired several small electric vehicles for use on campus by facilities personnel. As part of the ISEC project, the University will be installing electric vehicle charging stations within the first floor of the Columbus Garage.

- Walking. Northeastern provides many facilities that encourage people to walk before, during and after work hours, including restaurants and other dining facilities, recreation centers, banking services, counseling services, a notary public, a library and the bookstore. Walking Works at Northeastern, a physical activity group, encourages walking, including the "walking and talking" program that connects faculty and staff with University leaders.

TDM program elements specific to the new Project will be developed as part of the DPIR.

3.1.14 Construction Period Impacts

Most construction activities will be accommodated within current site boundaries. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The Project's contractor will be required to coordinate all construction activities with other on-going construction work to minimize impacts to area roadways.

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

- On-site construction worker parking will be limited, and worker carpooling will be encouraged;

- A subsidy for MBTA passes will be considered for full-time employees;

- A truck routing plan will be developed to minimize impacts on adjacent roadways; and

- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

3.2 Wind

The Project will have a height of approximately 230 feet. The Proponent will conduct a quantitative wind analysis, including a wind tunnel test, as required by the BRA for buildings over 150 feet. Results of the wind analysis will be included in the DPIR.

3.3 Shadow

The Project team will takes steps to ensure that taller buildings proposed minimize new shading on open spaces, sitting areas or pathways throughout the campus. Any new shadows are expected to be confined to properties already owned by the University. The Proponent will conduct a shadow study for the Project and report the results in the DPIR.

3.4 Daylight

The purpose of a daylight analysis is to estimate the extent to which a proposed project affects the amount of daylight reaching public streets in the immediate vicinity of a project site. The daylight obstruction related to the Project is anticipated to be similar to daylight obstruction on streets in the surrounding area. The extent of daylight obstruction resulting from the Project and measures to mitigate adverse impacts will be studied in the DPIR.

3.5 Solar Glare

The Project will be designed so as not to present an adverse safety impact on Project area traffic as a result of reflected solar glare. Although the façade materials of the Project have not been finalized, facades are not anticipated to be reflective glass and will incorporate low E high performance glass.

3.6 Air Quality

Potential long-term air quality impacts will be limited to emissions from Project-related mechanical equipment and pollutant emissions from vehicular traffic generated by the development of the Project. If changes in traffic operations are significant, the potential air quality impacts will be modeled for both existing and future conditions in the DPIR to demonstrate conformance with the National Ambient Air Quality Standards.

Construction period air quality impacts and mitigation are discussed below in Section 3.12.1.

3.7 Noise

During operations, the Project's mechanical equipment is not expected to result in a perceptible change in noise levels. These impacts, and the Project's compliance with the City of Boston Noise Ordinance, will be studied in the Draft PIR.

Construction period noise impacts and mitigation are discussed below in Section 3.12.2.

3.8 Stormwater/Water Quality

The Project is expected to produce beneficial changes in the quantity and quality of stormwater runoff from the site. Please see Section 3.18 for additional information.

3.9 Solid and Hazardous Waste

3.9.1 Existing Hazardous Waste Conditions

Characterization of soil and groundwater is planned at the appropriate stage of the design process to further evaluate site environmental conditions and soil management requirements for the building. Management of soil and groundwater will be conducted in accordance with applicable local, state, and federal laws and regulations.

The Project involves the demolition of existing structures. The demolition debris will be removed to a properly licensed solid waste disposal facility. Asbestos-containing materials or other hazardous materials, if present, will be managed in accordance with applicable local, state, and federal laws and regulations.

3.9.2 Operational Solid and Hazardous Wastes

The Project will generate solid waste typical of other residential/mixed-use projects. Solid waste generated by the Project will be approximately 599 tons per year, based on the number of beds proposed and amount of retail space proposed. Other than typical wastes generated by residential use (e.g., paint, detergents, etc.), no hazardous wastes are anticipated to be generated by the Project.

The University endeavors to reduce the level of solid waste generated in construction and daily operations through waste minimization, reuse of materials, and recycling wherever possible. A dedicated recyclables storage and collection program will facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

3.10 Geotechnical and Groundwater Impacts

The geotechnical impacts from the proposed Project will be presented in the DPIR. An analysis of existing subsurface conditions, groundwater levels, potential for ground movement and settlement during excavation and potential impacts on adjacent buildings and utilities for each building will be included. In addition, the DPIR will describe measures to ensure that groundwater levels are maintained during and after construction.

3.11 Flood Zones and Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the site located in the City of Boston - Community Panel Number 25025C0079G indicates the FEMA Flood Zone Designations for the Project site. The map shows that the Project is located outside of the 500-year flood plain.

The Project site is developed and does not contain wetlands.

3.12 Construction Impacts

The proximity of city streets and abutting properties to the site will require careful scheduling of material removal and delivery. Planning with the City and institutional neighbors will be essential to the successful development of the Project.

A Construction Management Plan (CMP) for the Project will be prepared and submitted to the BTD for review and approval prior to issuance of a building permit. The CMP will define truck routes which will help in minimizing the impact of trucks on local streets. A police detail will be provided to maintain access to adjacent properties and to direct pedestrian and vehicle flow, if required.

Construction methodologies that ensure public safety and protect nearby businesses will be employed. Techniques such as barricades, walkways, painted lines, and signage will be used as necessary. Construction management and scheduling—including plans for construction worker commuting and parking, routing plans and scheduling for trucking and deliveries, protection of existing utilities, maintenance of fire access, and control of noise and dust—will minimize impacts on the surrounding environment.

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

3.12.1 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during the early phases of construction and during demolition. Plans for controlling fugitive dust during construction and demolition include mechanical street sweeping, wetting portions of the Site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- Using wetting agents on area of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;

- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

3.12.2 Construction Noise

The Proponent is committed to mitigate noise impacts from the construction of the Project. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

3.12.3 Construction Waste Management

The Proponent will reuse or recycle demolition and construction materials to the greatest extent feasible. Construction procedures will allow for the segregation, reuse, and recycling of materials. Materials that cannot be reused or recycled will be transported in covered trucks by a contract hauler to a licensed facility.

3.13 Rodent Control

A rodent extermination certificate will be filed as applicable with the building permit application to the City. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for the proposed Project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the site. During the construction process, regular service visits will be made.

3.14 Wildlife Habitat

The Project site is within a fully developed urban area and, as such, the Project will not impact wildlife habitats.

3.15 Sustainable Design

Burke Street Student Housing will be designed and built using construction industry best-practices for sustainability described within, and measure by, the LEED for Homes Mid-Rise rating system. An Integrated Project Team and process have been established to leverage all professional expertise and seek every opportunity to employ Green Building Techniques and practices. The Project's Preliminary Rating shows performance well in excess of the target of LEED Gold Certification with several additional credit opportunities in discussion, ensuring no ground is lost toward that goal, and a final performance rating beyond the goal is easily possible. LEED Certification for this project will be pursued.

A LEED checklist is included at the end of this section.

Innovation and Design Process

ID 1.1 Preliminary Rating - (Prerequisite): The Project team gathered on December 10, 2015. Price Sustainability Associates (PSA), a Green Rater, reviewed the Preliminary Rating with the design team and completed the Preliminary Checklist. Gold Certification is the target goal for the Project.

ID 1.2 Energy Expertise for Mid-Rise - (Prerequisite): The Project team has both expertise for Mid-rise systems and experience modeling ASHRAE 90.1 energy simulation for LEED-NC & LEED for Homes Mid-Rise and meets this requirement.

ID 1.6 Trades Training for Mid-Rise – (1 Point): PSA will conduct on-site training for the trades responsible for plumbing, mechanical (HVAC) and insulation to review green building concepts and Project goals, specific strategies related to the respective trades and anticipated outcomes.

ID 2.1 Durability Planning – (Prerequisite): The durability evaluation form has been completed and the durability inspection checklist will be developed as the design advances, meeting all of the LEED requirements.

ID 2.2 Durability Management – (Prerequisite): The builder plans to use the durability inspection checklist throughout construction as both an inspection tool and a project management tool for weekly review, to ensure each measure is completed.

ID 2.3 Third-Party Durability Management Verification – (3 Points): PSA will periodically conduct on-site inspections using the Durability Management Checklist to verify that each are installed.

Location and Linkages (LL)

LL 2 Site Selection – (2 Points): The site does not trigger any of the listed environmental sensitivity criteria.

LL 3.2 Preferred Locations: Infill – (2 Points): 75% or more of the perimeter borders previously developed land.

LL 4 Existing Infrastructure – (1 Point): The lot is within a half mile of existing water and sewer service lines.

LL 5.1-5.3 Community Resources/Public Transit – (3 Points): The site has outstanding transit options, maximizing credit in this category.

LL 6 Access to Open Space – (1 Point): The site will meet the criteria of being proximate to space greater than three quarters of an acre within a quarter mile.

Sustainable Sites (SS)

SS 1.1 Erosion Controls during Construction – (Prerequisite): The Project team will develop and implement an erosion control plan prior to the start of construction, which will meet each of the required LEED provisions (a-e).

SS 1.2 Minimize Disturbed Area of Site for Mid-Rise – (1 Point): Project density is 355 units per acre, exceeding the 40 units per acre threshold.

SS 2.1 No Invasive Plants – (Prerequisite): No invasive species are to be included in the landscape plan.

SS 2.2 Basic Landscape Design – (1 Point): Any installed turf will be drought tolerant, will not be used in densely shaded areas, and will not be placed in areas with greater than 25% slope. Mulch or soils amendments will be used as appropriate and compacted soil will be tilled to ay least six inches.

SS 2.4 Drought Tolerant Plants – (1 Point): The landscape architect will select drought tolerant plants (90% or more) for the landscaping plan. Lists of plants and the quantities of each plant will be included.

SS 3.2 Reduce Local Heat Island Effects – (1 Point): The roof will be installed with a high-albedo material on 75% or more of the roof area.

SS 4.3 Stormwater Quality Control for Mid-Rise – (2 Points): The Project will use a stormwater management plan designed in accordance with state and local standards.

SS 5 Nontoxic Pest Control – (2 Points): The construction style of this Project will meet all of the pest-control alternatives for LEED.

SS 6.1-6.3 Compact Development, Very-High Density – (4 Points): Project density is 355 units per acre, meeting the Very-High Density threshold.

SS 7.1 Public Transit Mid-Rise – (2 Points): The number of transit rides available within a half mile of the Project is in excess of 60.

SS 7.2 Bicycle Storage for Mid-Rise – (1 Points): 200 covered storage spaces for bicycles will be provided, exceeding the LEED requirement.

Water Efficiency (WE)

WE 3.1 and 3.2 Indoor Water Use- (5 Points): The Project will specify shower heads with 1.75 or less gallons per minute (gpm), lavatory faucets will use 0.50 or less gpm and the toilets selected will be less than 1.3 gallons per flush.

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

Energy and Atmosphere (EA)

EA 1.1 Minimum Energy Performance for Mid-Rise – (Prerequisite): The Project will exceed the 20% minimum reduction in energy use according to the ASHRAE 90.1 Simulation: Appendix G, well in excess of the LEED minimum threshold.

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

EA 1.3 Optimize Energy Performance for Mid-Rise – (10 Points): The Project intends to reach at least a 23% better than the reference in the ASHRAE with EPA simulation modeling.

EA 7.2 Pipe Insulation – (1 Point): All domestic hot water piping shall have R4 pipe insulation installed.

EA 11.1 Refrigerant Charge Test – (Prerequisite): All refrigerant lines for air conditioning will be charge tested per manufacturer's standards.

EA 11.2 Appropriate HVAC Refrigerants – (1 Point): R410A refrigerant will be used on space cooling systems.

Materials and Resources (MR)

MR 1.1 Framing Order Waste Factor – (Prerequisite): A calculation of the wood necessary to frame the building and orders of the amount of wood purchased will be made. The order shall not exceed this calculation by more than 10%.

MR 1.5 Off-Site Fabrication – (4 Points): Panelized construction will be used in this Project.

MR 2.1 FSC Certified Tropical Woods – (Prerequisite): Suppliers will be notified of preference for FSC products and a request for the country of manufacture for each wood product. Any tropical woods used will be FSC Certified.

MR 2.2 Environmentally Preferable Products – (minimum 3 Points): The Project will select environmentally preferable products in accordance with the EPP table to earn a minimum of 3 points.

MR 3.1 Construction Waste Management Planning – (Prerequisite): The Project will investigate any recycling opportunities in the area and document the waste diverted from the landfill.

MR 3.2 Construction Waste Reduction – (1 Point): The Project will limit the total amount of waste that will go to the landfill by targeting a 50% reduction.

Indoor Environmental Quality (EQ)

EQ 2.1 Basic Combustion Venting Measures – (Prerequisite): These requirements are included in the design and are requirements for basic code compliance in Boston. There will be no fireplaces in any of the units.

EQ 4.1 Basic Outdoor Air Ventilation – (Prerequisite): Continuous ventilation will be provided to each unit to meet the ASHRAE 62.2 – 2007 ventilation requirement.

EQ 5.1 Basic Local Exhaust – (Prerequisite): Bath fans and kitchen area exhaust fans will be ASHRAE 62.2 – 2007 compliant. All of the LEED and ENERGY STAR criteria will be met.

EQ 6.1 Room by Room Load Calculations – (Prerequisite): Room by room load calculations will be provided by the HVAC engineer or responsible party stating the calculations were performed according to the ACCA Manual J and D.

EQ 7.2 Air Filtering – (Prerequisite): MERV 8 filters will be installed on ducted distribution systems.

EQ 8.1 Indoor Contaminant Control During Construction – (1 Point): All ductwork will be sealed throughout construction so that debris doesn't contaminate the distribution systems.

EQ 8.2 Indoor Contaminant Controls for Mid-Rise – (2 Points): The Project will install a central entryway system and in-unit shoe removal and storage near entryways.

EQ 8.3 Preoccupancy Flush – (1 Point): The building will be flushed of airborne contaminants per LEED guidance prior to building turnover.

EQ 10.1 No HVAC in Garage – (Prerequisite): There will be no garage in this Project.

EQ 11 Environmental Tobacco Smoke Control – (1 Point): Restrictions on public smoking will be implemented to reduce smoke exposure and transfer.

EQ 12.1 Compartmentalization of Units – (Prerequisite): A thorough air-sealing protocol will be implemented to ensure leakage below 0.30 CFM50 per sf of enclosure.

Awareness and Education (AE)

AE 1.1 Education of the Homeowner – (Prerequisite): An electronic Home Owner's Manual will be created and provided to all occupants. A one hour walk through will be conducted with the occupants in group trainings.

AE 1.3 Public Awareness – (1 Point): The developer will create a website about the Project, highlighting the benefits of LEED Homes. The developer will work with regional publications on a newspaper article about this Project. The contractor's Project sign will include LEED for Homes signage at the exterior of the building site.

AE 2 Education of the Building Manager – (1 Point): An operations and training manual will be created and provided to the building manager and a one-hour walk-through will be conducted with the building manager.

3.16 Urban Design

The proposed Project will continue the ongoing transformation and revitalization of Columbus Avenue that began during the 2000 IMP. The on-site amenity spaces for use by the residents are located at the ground floor, providing street level activity. To continue the transformation of Columbus Avenue, an approximately 3,000 sf commercial space will be located on the ground floor adjacent to Columbus Avenue. This neighborhood amenity, along with the placement of the primary resident entry along Columbus Avenue will provide activity that will contribute to the revitalization of Columbus Avenue.

LEED for Homes Mid-rise Simplified Project Checklist

for Homes

Builder Name:	***Northeastern University***
Project Team Leader (if different):	***Peter W Bartash, CUBE3***
Home Address (Street/City/State):	***761 Columbus Ave., Boston, MA***

Project Description:

Building type: ***Mid-rise multi-family*** # of stories: ***20***

# of units: ***207*** Avg. Home Size Adjustment: ***-10***

Adjusted Certification Thresholds

Certified: ***35.0*** Gold: ***65.0***

Silver: ***50.0*** Platinum: ***80.0***

Project Point Total

Prelim: ***61.5 + 21.5 maybe pts*** Final: ***17***

Certification Level

Prelim: ***Silver*** Final: ***Not Certified***

Final Credit Category Total Points

ID: 0 ***SS: 4*** ***EA: 10*** ***EQ: 0***

LL: 0 ***WE: 0*** ***MR: 3*** ***AE: 0***

Minimum Point Thresholds Not Met for Final Rating

date last updated :

last updated by :

					Max Pts	Project Points Preliminary			Final
Innovation and Design Process (ID)			(No Minimum Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Integrated Project Planning		1.1	Preliminary Rating		Prereq	*Y*			*Y*
		1.2	Energy Expertise for MID-RISE		Prereq	*Y*			*Y*
		1.3	Professional Credentialed with Respect to LEED for Homes		1	*0*	*0*	*N*	*0*
		1.4	Design Charrette		1	*1*	*0*		*0*
		1.5	Building Orientation for Solar Design		1	*0*	*0*	*N*	*0*
		1.6	Trades Training for MID-RISE		1	*0*	*1*		*0*
2. Durability Management Process		2.1	Durability Planning		Prereq	*Y*			*Y*
		2.2	Durability Management		Prereq	*Y*			*Y*
		2.3	Third-Party Durability Management Verification		3	*3*	*0*		*0*
3.Innovative or Regional Design	✎	3.1	Innovation #1 _____		1	*0*	*0.5*		*0*
	✎	3.2	Innovation #2 _____		1	*0*	*0.5*		*0*
	✎	3.3	Innovation #3 _____		1	*0*	*0*	*N*	*0*
	✎	3.4	Innovation #4		1	*0*	*0*	*N*	*0*
				Sub-Total for ID Category:	***11***	*4*	*2*		*0*
Location and Linkages (LL)			(No Minimum Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND		1	LEED for Neighborhood Development	**LL2-6**	10	*0*	*0*	*N*	*0*
2. Site Selection	✎	2	Site Selection		2	*2*	*0*		*0*
3. Preferred Locations		3.1	Edge Development		1	*0*	*0*	*N*	*0*
		3.2	Infill	**LL 3.1**	2	*2*	*0*		*0*
		3.3	Brownfield Redevelopment for MID-RISE		1	*0*	*0*	*N*	*0*
4. Infrastructure		4	Existing Infrastructure		1	*1*	*0*		*0*
5. Community Resources/ Transit		5.1	Basic Community Resources for MID-RISE		1	*0*	*0*	*N*	*0*
		5.2	Extensive Community Resources for MID-RISE	**LL 5.1, 5.3**	2	*0*	*0*	*N*	*0*
		5.3	Outstanding Community Resources for MID-RISE	**LL 5.1, 5.2**	3	*3*	*0*		*0*
6. Access to Open Space		6	Access to Open Space		1	*1*	*0*		*0*
				Sub-Total for LL Category:	***10***	*9*	*0*		*0*
Sustainable Sites (SS)			(Minimum of 5 SS Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship		1.1	Erosion Controls During Construction		Prerequisite	*Y*			*Y*
		1.2	Minimize Disturbed Area of Site for MID-RISE		1	*1*	*0*		*0*
2. Landscaping	✎	2.1	No Invasive Plants		Prerequisite	*Y*			*Y*
	✎	2.2	Basic Landscape Design	**SS 2.5**	1	*1*	*0*		*0*
	✎	2.3	Limit Conventional Turf for MID-RISE	**SS 2.5**	2	*0*	*1*		*0*
	✎	2.4	Drought Tolerant Plants for MID-RISE	**SS 2.5**	1	*0*	*1*		*0*
	✎	2.5	Reduce Overall Irrigation Demand by at Least 20% for MID-RISE		3	*0*	*0*	*N*	*0*
3. Local Heat Island Effects	✎	3.1	Reduce Site Heat Island Effects for MID-RISE		1	*0*	*1*		*0*
	✎	3.2	Reduce Roof Heat Island Effects for MID-RISE		1	*1*	*0*		*0*
4. Surface Water Management	✎	4.1	Permeable Lot for MID-RISE		2	*0*	*2*		*0*
		4.2	Permanent Erosion Controls		1	*0*	*0*	*N*	*0*
	✎	4.3	Stormwater Quality Control for MID-RISE		2	*2*	*0*		*0*
5. Nontoxic Pest Control		5	Pest Control Alternatives		2	*2*	*0*		*0*
6. Compact Development		6.1	Moderate Density for MID-RISE		2	*0*	*0*	*N*	*0*
		6.2	High Density for MID-RISE	**SS 6.1, 6.3**	3	*0*	*0*	*N*	*0*
		6.3	Very High Density for MID-RISE	**SS 6.1, 6.2**	4	*4*	*0*		*4*
7. Alternative Transportation		7.1	Public Transit for MID-RISE		2	*2*	*0*		*0*
		7.2	Bicycle Storage for MID-RISE		1	*1*	*0*		*0*
		7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE		1	*1*	*0*		*0*
				Sub-Total for SS Category:	***22***	*15*	*5*		*4*

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

					Max Pts	Project Points Preliminary			Final
Water Efficiency (WE)			(Minimum of 3 WE Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse	✎	1	Water Reuse for MID-RISE		5	*0*	*0*	*N*	***0***
2. Irrigation System	✎	2.1	High Efficiency Irrigation System for MID-RISE	**WE 2.2**	2	*0*	*0*	*N*	***0***
	✎	2.2	Reduce Overall Irrigation Demand by at Least 45% for MID-RISE		2	*0*	*0*	*N*	***0***
3. Indoor Water Use		3.1	High-Efficiency Fixtures and Fittings		3	*2*	*0*		***0***
		3.2	Very High Efficiency Fixtures and Fittings		6	*2*	*0*		***0***
		3.3	Water Efficient Appliances for MID-RISE		2	*1*	*0*		***0***
			Sub-Total for WE Category:		***15***	*5*	*0*		***0***
Energy and Atmosphere (EA)			(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance		1.1	Minimum Energy Performance for MID-RISE		Prereq	*Y*			***Y***
		1.2	Testing and Verification for MID-RISE		Prereq	*Y*			***Y***
		1.3	Optimize Energy Performance for MID-RISE		34	*10*	*0*		***10***
7. Water Heating	✎	7.1	Efficient Hot Water Distribution		2	*0*	*0*	*N*	***0***
		7.2	Pipe Insulation		1	*1*	*0*		***0***
11. Residential Refrigerant Management		11.1	Refrigerant Charge Test		Prereq	*Y*			***Y***
		11.2	Appropriate HVAC Refrigerants		1	*1*	*0*		***0***
			Sub-Total for EA Category:		***38***	*12*	*0*		***10***
Materials and Resources (MR)			(Minimum of 2 MR Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing		1.1	Framing Order Waste Factor Limit		Prereq	*Y*			***Y***
		1.2	Detailed Framing Documents	**MR 1.5**	1	*0*	*0*		***0***
		1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	*0*	*0*		***0***
		1.4	Framing Efficiencies	**MR 1.5**	3	*0*	*0*		***0***
		1.5	Off-site Fabrication		4	*0*	*0*	*N*	***0***
2. Environmentally Preferable Products	✎	2.1	FSC Certified Tropical Wood		Prereq	*Y*			***Y***
	✎	2.2	Environmentally Preferable Products		8	*2.5*	*4.5*		***0***
3. Waste Management		3.1	Construction Waste Management Planning		Prereq	*Y*			***Y***
		3.2	Construction Waste Reduction		3	*3*	*0*		***3***
			Sub-Total for MR Category:		***16***	*5.5*	*4.5*		***3***
Indoor Environmental Quality (EQ)			(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
2. Combustion Venting		2	Basic Combustion Venting Measures		Prereq	*Y*			***Y***
3. Moisture Control		3	Moisture Load Control		1	*0*	*1*		***0***
4. Outdoor Air Ventilation	✎	4.1	Basic Outdoor Air Ventilation for MID-RISE		Prereq	*Y*			***Y***
		4.2	Enhanced Outdoor Air Ventilation for MID-RISE		2	*2*	*0*		***0***
		4.3	Third-Party Performance Testing for MID-RISE		1	*0*	*1*		***0***
5. Local Exhaust	✎	5.1	Basic Local Exhaust		Prerequisite	*Y*			
		5.2	Enhanced Local Exhaust		1	*1*	*0*		***0***
		5.3	Third-Party Performance Testing		1	*0*	*1*		***0***
6. Distribution of Space Heating and Cooling	✎	6.1	Room-by-Room Load Calculations		Prereq	*Y*			***Y***
		6.2	Return Air Flow / Room by Room Controls		1	*0*	*1*		***0***
		6.3	Third-Party Performance Test / Multiple Zones		2	*0*	*2*		***0***
7. Air Filtering		7.1	Good Filters		Prereq	*Y*			***Y***
		7.2	Better Filters	**EQ 7.3**	1	*0*	*1*		***0***
		7.3	Best Filters		2	*0*	*0*	*N*	***0***
8. Contaminant Control	✎	8.1	Indoor Contaminant Control during Construction		1	*1*	*0*		***0***
		8.2	Indoor Contaminant Control for MID-RISE		2	*0*	*2*		***0***
	✎	8.3	Preoccupancy Flush		1	*1*	*0*		***0***
9. Radon Protection	✎	9.1	Radon-Resistant Construction in High-Risk Areas		Prereq	*N/A*			***N/A***
	✎	9.2	Radon-Resistant Construction in Moderate-Risk Areas		1	*0*	*0*	*N*	***0***
10. Garage Pollutant Protection		10.1	No HVAC in Garage for MID-RISE		Prereq	*Y*			***Y***
		10.2	Minimize Pollutants from Garage for MID-RISE	**EQ 10.3**	2	*0*	*0*	*N*	***0***
		10.3	Detached Garage or No Garage for MID-RISE		3	*3*	*0*		***0***
11. ETS Control		11	Environnmental Tobacco Smoke Reduction for MID-RISE		1	*1*	*0*		***0***
12. Compartmentalization of Units		12.1	Compartmentalization of Units		Prereq	*Y*			***Y***
		12.2	Enhanced Compartmentalization of Units		1	*0*	*1*		***0***
			Sub-Total for EQ Category:		***21***	*9*	*10*		***0***
Awareness and Education (AE)			(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	✎	1.1	Basic Operations Training		Prereq	*Y*			***Y***
	✎	1.2	Enhanced Training		1	*0*	*0*		***0***
		1.3	Public Awareness		1	*1*	*0*		***0***
2. Education of Building Manager	✎	2	Education of Building Manager		1	*1*	*0*		***0***
			Sub-Total for AE Category:		***3***	*2*	*0*		***0***

The primary design concept blends the goal of increased on-campus student housing with the existing urban fabric. The Project will be eight stories along Columbus Avenue, consistent with the existing buildings along the street. Stepping back towards Tremont Street, the eastern half of the building will be 20 stories, and the western portion will be 16 stories. The taller portion of the building features a slender profile when viewed from both Columbus Avenue and Tremont Street. By concentrating the greatest mass of the design at mid-block, the existing elevation datum along Columbus Avenue is maintained.

3.17 Historic and Archaeological Resources

The proposed new housing will replace the existing surface parking lot on Burke Street. The site is bound by Columbus Avenue, Burke Street, and Coventry Street within the Northeastern University Boston campus. There are no identified historic or archaeological resources on the Project site.

This section identifies the historic resources within the vicinity of the proposed Project site.

3.17.1 Northeastern University Campus

There is one Northeastern University owned property individually listed in the National Register of Historic Places; the Boston Young Men's Christian Association (YMCA) Building located at 312-320 Huntington Avenue. The western wing of the YMCA building, Hastings Hall, is owned by the University. Adjacent to the Project site two University owned properties are located within the Lower Roxbury National Register Historic District; 764-768 and 780 Columbus Avenue.

The Northeastern University Quadrangle within the Northeastern campus is included in the Massachusetts Historical Commission's (MHC) *Inventory of Historic and Archaeological Assets of the Commonwealth*. Located on the south side of Huntington Avenue this area includes seven buildings constructed between 1936 and 1959. The area's buildings represent the original purpose-built campus of Northeastern University.

Two previous historic resources surveys have been completed of the University and its surrounding neighborhoods. A 1984 historic resources survey was completed of the Fenway neighborhood and in 1985 a survey of the Parker Hill/Mission Hill neighborhood was completed by the Boston Landmarks Commission and the Boston Redevelopment Authority. The surveys identified buildings listed individually and districts listed in the State and National Register of Historic Places. The 2005 Northeastern University Preservation Plan included an extensive inventory of the existing historic resources within the vicinity of the Northeastern campus. The survey included all buildings 45 years or older within the campus that had not been previously surveyed. In 2013, an updated survey to this 2005 Preservation Plan was completed and included the survey of an

additional five academic buildings, one recreational building, three residential facilities, and one parking garage. However none of these properties were recommended for listing in the State or National Registers of Historic Places.

3.17.2 Historic Resources in the Vicinity

Several historic resources and historic districts listed in the State and National Registers of Historic Places are located within the vicinity of the Project site, including the Boston YMCA Building, the South End District, the Lower Roxbury Historic District and the Frederick Douglas Square Historic District. State and National Register listed properties and historic districts within a quarter-mile radius of the Project site are listed in Table 3-7 below and their locations are identified in Figure 3-10.

Table 3-7 Historic Resources within the vicinity of the Project

Map No	Name	Address	Designation
A	Boston Young Men's Christian Association Building	312-320 Huntington Avenue	National Register Individual Property
B	New England Conservatory of Music- Jordan Hall	290 Huntington Avenue	National Historic Landmark, National Register Individual Property, Preservation Restriction
C	Peoples Baptist Church	134 Camden Street	State Register, Preservation Restriction
1	South End District	Bound by Southwest Corridor Park, Columbus Ave., East Berkeley St., Harrison Ave., Northampton St.	National Register Historic District
2	South End Landmark District	Bound by Southwest Corridor Park, East Berkeley St. Washington St., Harrison St., Albany St., Camden St.	Local Historic District
3	Frederick Douglas Square Historic District	Hammond St., Windsor St., Warwick St., Tremont St.	National Register Historic District
4	Lower Roxbury Historic District	Tremont St., Melnea Cass Blvd, Columbus Ave., Coventry St., Burke St.	National Register Historic District

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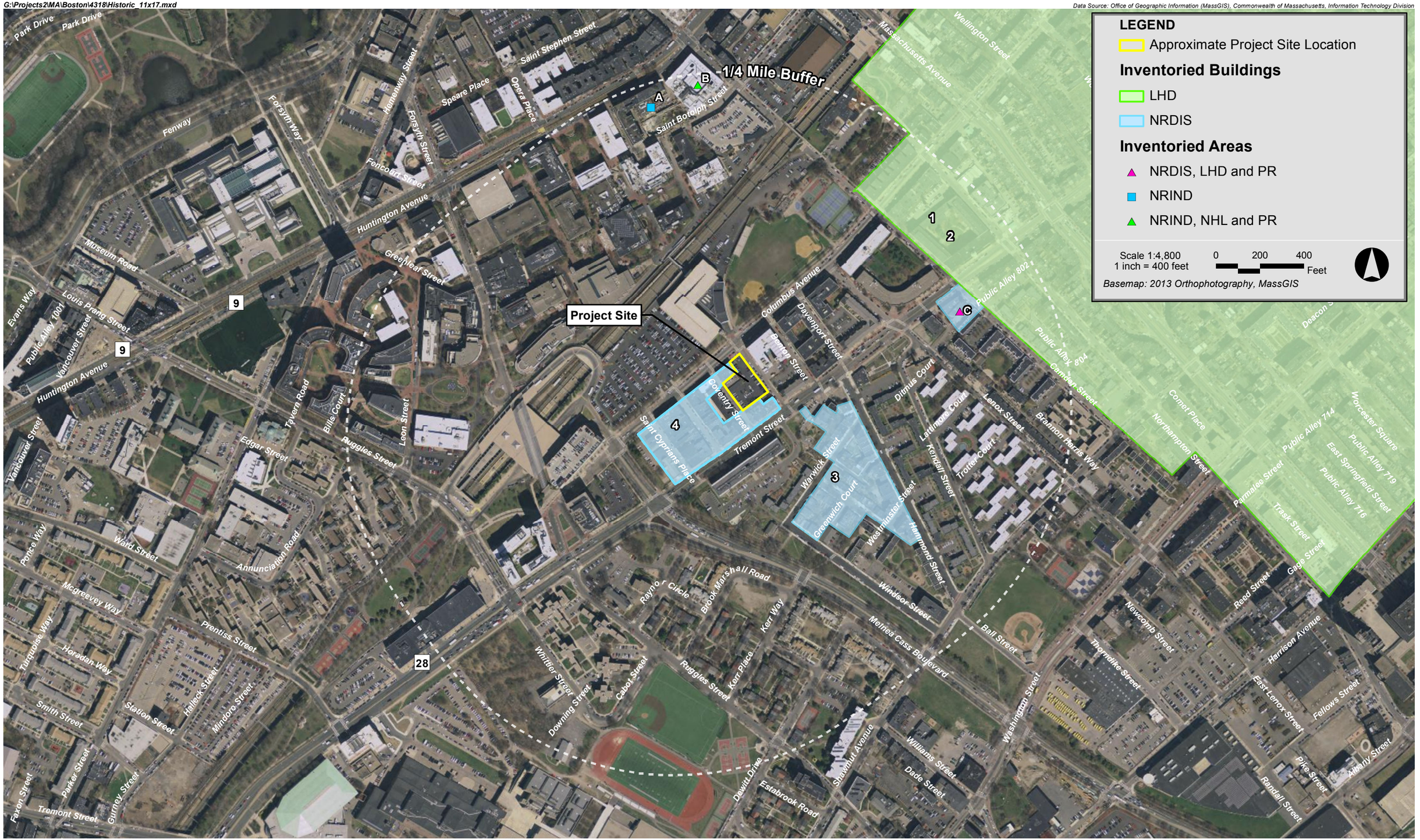
Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



Columbus Avenue Student Housing Boston, Massachusetts

Epsilon Associates Inc.

Figure 3-10

Historic Resources

3.17.3 Archaeological Resources

The Northeastern University campus was developed and largely constructed on filled land created in the late nineteenth century. In addition, because the new construction will occur on land previously disturbed by the construction of the existing surface parking lot, there is little potential for the Project site to yield significant archaeological resources.

3.18 Infrastructure

While not specifically designed at this point, it is anticipated that the various Project infrastructure components will connect to existing City and utility company systems in the adjacent public and private streets. A preliminary evaluation is provided for the following utilities: wastewater, water, stormwater management, natural gas, electricity, and telecommunications.

A forthcoming design process for the Project will include required engineering analyses, and will adhere to applicable protocols and design standards ensuring that the proposed building is properly supported by, and in turn, properly uses the City's infrastructure. Detailed design of the Projects' utility systems will proceed in conjunction with the final design of the building and its interior mechanical systems—and a more detailed description of these activities will be provided as part of the forthcoming development and filing of the DPIR in support of the Project.

The systems discussed below include those owned or managed by the Boston Water and Sewer Commission (BWSC), private utility companies, and on-site infrastructure systems. There will be close coordination among these entities by the Proponent and their development team during future design and construction of the Project.

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

3.18.1 Wastewater Generation

The Project's sewage generation rates were estimated using the Massachusetts Division of Water Pollution Control Sewer System Extension and Connection Permit Program from 310 CMR 15.00 and the proposed building program. 310 CMR 15.00 lists typical sewage generation values for the proposed building use, as shown in Table 3-8. Typical generation values are conservative values for estimating the sewage flows from new construction. 310 CMR 15.00 sewage generation values are used to evaluate new sewage flows or an increase in flows to existing connections. The existing site consists of a parking lot, so there is currently no sewage flows on the site. Table 3-8 describes the increased sewage generation in gallons per day (gpd) due to the Project.

Table 3-8 Estimated Sewage Flows

Building Use	Number	Sewage Generation Rate	Total Flow (gpd)
Dormitory	665 bedrooms	110 gpd/bedroom	73,150
Retail Space	3,000 sf	50 gpd/1,000 sf	150
Total			**73,300**

The total increase in sanitary flow as a result of the Project is estimated to be 73,300 gpd.

3.18.2 Water System

The Project's water demand estimate for domestic services is based on the Project's estimated sewage generation. The increase in average daily water demand associated with the Project is based on the Project's increase in estimated sewage generation. A conservative factor of 1.1 (10%) is applied to the increase in estimated average daily wastewater flows calculated with 310 CMR 15.00 values to account for consumption, system losses and other usages to estimate an average daily water demand. The Project is estimated to increase water demand for the building by 80,630 gpd.

3.18.3 Stormwater Management

The existing site consists of a surface parking lot, and is almost entirely impervious. The Project is expected to produce beneficial changes in the quantity and quality of stormwater runoff from the site. Stormwater management controls will be established in compliance with BWSC standards and the Project will not introduce peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local BWSC stormwater drainage system.

The Project site is not located within the Groundwater Conservation Overlay District (GCOD).

3.18.4 Electrical Service

The site is supplied electricity from Eversource Energy. The Proponent will work with Eversource to confirm adequate system capacity as the design is finalized.

3.18.5 Telecommunications Systems

Telecommunication services for the site are supplied by Verizon. The Proponent will internally work to provide service for the Project and will work with Verizon as needed.

3.18.6 Gas Systems

National Grid has gas services in the vicinity of the Project site. The Proponent will work with National Grid to confirm adequate system capacity as design is finalized.

3.18.7 Utility Protection During Construction

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

The Proponent will continue to work and coordinate with the BWSC and the utility companies to ensure safe and coordinated utility operations in connection with the Project.

Chapter 4.0
Coordination With Other Government Agencies

4.0 COORDINATION WITH OTHER GOVERNMENT AGENCIES

4.1 Architectural Access Board Requirements

The Project will comply with the requirements of the Massachusetts Architectural Access Board and will be designated to comply with the standards of the Americans with Disabilities Act. See Appendix C for the Accessibility Checklist.

4.2 Massachusetts Environmental Policy Act (MEPA)

The Proponent does not expect that the Project will require review by the Massachusetts Environmental Policy Act (MEPA) Office of the Massachusetts Executive Office of Energy and Environmental Affairs. Current plans do not call for the Project to receive any state permits, state funding or involve any state land transfers.

4.3 Massachusetts Historical Commission

The Proponent does not anticipate that the Project will require any state or federal licenses, permits or approvals, and does not anticipate utilizing any state or federal funds. Therefore, review by the Massachusetts Historical Commission (MHC) is not anticipated at this time. In the event that state or federal licenses, permits, approvals or funding is involved, the Proponent will file an MHC Project Notification Form to initiate review of the Project.

4.4 Boston Civic Design Commission

The Project will comply with the provisions of Article 28 of the Boston Zoning Code. This PNF will be submitted to the Boston Civic Design Commission by the BRA as part of the Article 80 process.

4.5 Other Permits and Approval

Section 2.6 contains a list of agencies from which permits and approvals for the proposed Projects will be sought as required.

Appendix A
Facilities Matrix

Northeastern University - Facilities Data Matrix

Issue Date 1/7/2016

Building Name	Code	Official Street Address	Year Built	Year Acquired	Year Major Reno	Below	Above	Penthouse	Gross SF	Owned or Leased	Exterior Construction Type	Footing Type	Primary Building Use	Handicapped Accessible	Broadly Accessible
Academic & Administrative Facilities															
177 Huntington Avenue	177	177 Huntington Avenue	1974	2010	2014	0	9	0	77,312 sf	Leased	Concrete	Unknown	Administrative/Academic	Direct	
236 Huntington Avenue	236	236 Huntington Avenue	Unknown	2012	2012	0	1	0	5,440 sf	Leased	Masonry	Unknown	Administrative	?	
271 Huntington Avenue	271	271 Huntington Avenue	Unknown	2014	2014	0	1	0	24,045 sf	Leased	Concrete/metal panel	Unknown	Academic	Direct	
335A Huntington Avenue (portion of bldg)	335	335A Huntington Avenue	Unknown	2000	2000	1	0	0	4,407 sf	Leased	Masonry	PIF, Caisson or Footing	Student Services	No	
34 Beacon Street	34	34 Beacon Street, Boston, MA	1825	2006	2000	1	5	0	11,056 sf	Owned	Brick	Unknown	Residence & Event Space	?	
Asian American Center	AC	109 Hemenway Street	1898	2005		1	3	0	4,646 sf	Owned	Brick	Unknown	Student Services	Indirect	
O'Bryant Center (part of WVF)	AF	40 Leon Street	2006	NU Built		0	2	0	16,578 sf	Owned	Masonry	PIF, Caisson or Footing	Academic/Administrative	Direct	
Warehouse	AT	76 Atherton Street, Boston, MA	Unknown	Unknown		1	4	0	140,197 sf	Owned	Concrete/Brick	Unknown	Warehouse	?	
Behrakis Health Sciences Center	BK	30 Leon Street	2002	NU Built		1	7	1	124,572 sf	Owned	Glass	PIF, Caisson or Footing	Classroom/Admin.	Direct	
101 Belvidere	BV	101 Belvidere Street	1974	2008	2005	0	4	0	69,911 sf	Leased	Concrete	Unknown	Academic/Administrative	Direct	
Cahners Hall	CA	110 The Fenway	1957	1965		1	2	0	14,912 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Cargill Hall	CG	45 Forsyth Street	1982	NU Built		1	0	0	28,378 sf	Owned	Concrete	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Churchill Hall	CH	380 Huntington Avenue	1959	NU Built		1	4	1	56,277 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Cullinane Hall	CN	288 St Botolph Street	1911	1930	1986	1	2	0	28,043 sf	Owned	Brick	Wood Piles	Administrative	Direct	
Columbus Place	CP	716 Columbus Avenue	1910	1984	1995	1	6	0	124,192 sf	Owned	Concrete/Brick	PIF, Caisson or Footing	Administrative	Direct	
Curry Student Center	CSC	346 Huntington Avenue	1964	NU Built	1994	1	5	0	167,573 sf	Owned	Brick	PIF, Caisson or Footing	Student Services	Direct	
Cushing Hall	CU	102 The Fenway	1910	1966		1	4	0	25,902 sf	Owned	Brick	Wood Piles	Administrative	No	
Dana Research Center	DA	110 Forsyth Street	1966	NU Built		1	5	0	71,374 sf	Owned	Brick	PIF, Caisson or Footing	Research/Classroom	Indirect	
Dodge Hall	DG	324 Huntington Avenue	1952	NU Built	1993	1	4	1	85,826 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Dockser Hall	DK	65 Forsyth Street	1968	NU Built	2008	1	4	0	63,383 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Egan Engineering/Science Research Center	EC	120 Forsyth Street	1996	NU Built		1	3	2	117,710 sf	Owned	Precast masonry panel	PIF, Caisson or Footing	Research	Direct	
Ell Hall	EL	346 Huntington Avenue	1947	NU Built		1	4	1	88,430 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Indirect	
Fenway Center	FC	77 St Stephen Street	1898	2005		1	1	0	18,026 sf	Owned	Brick	Unknown	Student Services	Direct	
Forsyth Building	FR	70 Forsyth Street	1926	1949		1	2	1	87,454 sf	Owned	Concrete	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Hayden Hall	HA	370 Huntington Avenue	1956	NU Built		1	5	0	110,515 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Holmes Hall	HO	39-41 Leon Street	1910	1961		1	5	0	73,758 sf	Owned	Brick	PIF, Caisson or Footing	Administrative	Indirect	
Hurtig Hall	HT	334 Huntington Avenue	1968	NU Built		1	4	1	82,160 sf	Owned	Brick	PIF, Caisson or Footing	Research/Classroom	Direct	
International Village - Office Building	INVO	1155-1175 Tremont Street	2009	NU Built		0	5	0	35,574 sf	Owned	Precast/Metal Panel	Matt Footing	Academic/Administrative	Direct	
Kariotis Hall	KA	55 Forsyth Street	1982	NU Built		1	3	0	14,987 sf	Owned	Brick	PIF, Caisson or Footing	Classroom	Indirect	
Knowles Center	KN	416 Huntington Avenue	1961	NU Built	1990	1	4	1	61,112 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Library	Direct	
Lake Hall	LA	43 Leon Street	1910	1961		1	5	1	54,883 sf	Owned	Brick	PIF, Caisson or Footing	Administrative	Indirect	
Latino/a Student Cultural Center	LT	104 Forsyth Street	1922	1963	1998	1	2	0	3,418 sf	Owned	Concrete	PIF, Caisson or Footing	Student Services	Direct	
Meserve Hall	ME	35-37 Leon Street	1893	1961		1	4	0	33,101 sf	Owned	Brick	PIF, Caisson or Footing	Administrative	Direct	
Mugar Life Sciences Building	MU	330 Huntington Avenue	1941	NU Built		1	4	1	136,321 sf	Owned	Brick	PIF, Caisson or Footing	Research/Classroom	Direct	
Nightingale Hall	NI	105-107 Forsyth Street	1911	1961		1	5	0	65,110 sf	Owned	Brick	PIF, Caisson or Footing	Administrative	Direct	
Power Plant	PP	111 Forsyth Street	1910	1961		0	1	0	6,815 sf	Owned	Brick	PIF, Caisson or Footing	Mechanical Facility	?	
Robinson Hall	RB	336 Huntington Avenue	1965	NU Built		1	4	1	53,286 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Architecture Studios	RG	(Not Assigned)	1985	2000	2000	0	1	0	16,844 sf	Leased	Concrete	PIF, Caisson or Footing	Academic	Direct	
Richards Hall	RI	360 Huntington Avenue	1938	NU Built		1	5	0	113,827 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Indirect	
Renaissance Park	RP	1135 Tremont Street	1994	1997		0	9	1	164,665 sf	Owned	Brick/Precast msnry	PIF, Caisson or Footing	Academic/Administrative	Direct	
Ryder Hall	RY	11 Leon Street	1913	1976	1986	0	4	0	114,329 sf	Owned	Brick	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Shillman Hall	SH	115 Forsyth Street	1995	NU Built		0	4	0	49,304 sf	Owned	Brick	PIF, Caisson or Footing	Classroom	Direct	
Snell Library	SL	376 Huntington Avenue	1988	NU Built		1	4	1	245,993 sf	Owned	Precast masonry	PIF, Caisson or Footing	Library/Classroom	Direct	
Snell Engineering Center	SN	110 Forsyth Street	1984	NU Built		1	4	1	85,980 sf	Owned	Precast masonry	PIF, Caisson or Footing	Classroom/Admin.	Direct	
Stearns Center	ST	420 Huntington Avenue	1976	NU Built		1	5	0	32,515 sf	Owned	Brick	PIF, Caisson or Footing	Administrative	Direct	
140 The Fenway	TF	140 The Fenway	1912,59,69	2010		2	4	0	148,145 sf	Leased	Masonry	Unknown	Research/Academic	Direct	
Tunnels (connecting segments only)	TN	NA	Various	NU Built		1	0	0	7,089 sf	Owned	Concrete	PIF, Caisson or Footing	Circulation	Direct	
Hastings Hall at the YMCA	YMC	320 Huntington Avenue	1913	2012 (leased 2007)		2	6	0	81,833 sf	Owned	Brick	Unknown	Classroom/Residence	Direct	
Broad Street Facility	BM	89 Broad Street, Boston, MA	Unknown	1994	1994	0	2	0	27,620 sf	Leased	Brick		Classroom & Conference		
		Sub-total Academic Facilities			***49 buildings***	***233***			***3,274,829 sf***						
Residence Facilities															
106 St. Stephen Street	106	106 St. Stephen Street	1923	1975 (leased 1966)		1	4	0	17,529 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	No	
110 St. Stephen Street	110	110 St. Stephen Street	1923	1975 (leased 1966)		1	4	0	17,590 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	No	
116 St. Stephen Street	116	116 St. Stephen Street	1923	1975 (leased 1966)		1	4	0	17,567 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	No	
122 St. Stephen Street (Levine Hall)	122	122 St. Stephen Street	1923	1975 (leased 1966)		1	4	0	17,534 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	No	
142 Hemenway Street	142	142 Hemenway Street	1896	1961		1	5	0	10,142 sf	Owned	Brick	Wood Piles	Residence Facility	No	
144 Hemenway Street	144	144 Hemenway Street	1896	1961		1	5	0	8,012 sf	Owned	Brick	Wood Piles	Residence Facility	No	
146 Hemenway Street	146	146 Hemenway Street	1896	1961		1	5	0	8,036 sf	Owned	Brick	Wood Piles	Residence Facility	No	
148 Hemenway Street	148	148 Hemenway Street	1896	1961		1	5	0	8,787 sf	Owned	Brick	Wood Piles	Residence Facility	No	

319 Huntington Ave.	319	319 Huntington Avenue	c 1916	1982		1	5	0	31,320 sf	Owned	Brick	Wood Piles	Residence Facility	No
337 Huntington Ave.	337	337 Huntington Avenue	1923	1982		1	5	0	50,023 sf	Owned	Brick	Wood Piles	Residence Facility	No
407 Huntington Ave.	407	407 Huntington Avenue	1922	1969		1	5	0	29,921 sf	Owned	Brick	Wood Piles	Residence Facility	No
Rubenstein Hall	464	464 Huntington Avenue	1924	1977		1	5	0	29,591 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	No
768 Columbus Avenue	768	768 Columbus Avenue	1914	1999		1	4	0	11,317 sf	Owned	Brick	Unknown	Residence Facility	No
780 Columbus Avenue	780	780 Columbus Avenue	1912	Unknown	2001	1	5	1	40,273 sf	Owned	Brick	Unknown	Residence Facility	Direct
Burstein Hall	BU	454-458-460 Huntington Ave	1927	Unknown	1984	1	4	0	51,715 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	No
10 Coventry Street	CV	10 Coventry Street	2004	2004		2	6	1	69,739 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
Davenport Commons A	DCA	700 Columbus Avenue	2001	2001		0	6	1	122,719 sf	Leased	Brick	PIF, Caisson or Footing	Residence Facility	Direct
Davenport Commons B	DCB	696 Columbus Avenue	2001	2001		0	6	1	76,325 sf	Leased	Brick	PIF, Caisson or Footing	Residence Facility	Direct
East Village	EV	291 St Botolph Street	2014	NU Built		1	17	1	221,754 sf	Leased	Precast/Metal Panel	Unknown	Residence Facility	Direct
International Village - Residence	INV	1155-1175 Tremont Street	2009	NU Built		2	22	2	459,753 sf	Owned	Precast/Metal Panel	Matt Footing	Residence Facility/Academic	Direct
Kennedy Hall	KDY	115-119 Hemenway Street	1911	1979 (leased 1965)		1	5	0	46,925 sf	Owned	Brick	Wood Piles	Residence Facility	Direct
Kerr Hall	KH	96 The Fenway	1913	1973		1	6	0	28,023 sf	Owned	Brick	Wood Piles	Residence Facility	Direct
Loftman Hall (& 153 Hemenway Street)	LF	163, 157, 153 Hemenway Street	1909	1976-78		1	4	0	53,219 sf	Owned	Brick	Wood Piles	Residence Facility	Direct
Light Hall	LH	81-83 St. Stephen Street	1892	1965		1	3	0	15,724 sf	Owned	Brick	Wood Piles	Residence Facility	No
Melvin Hall	MH	90 The Fenway	1913	1965		1	5	0	30,455 sf	Owned	Brick	Wood Piles	Residence Facility	No
Stetson East	SE	11 Speare Place	1967	NU Built		1	4	1	70,450 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
Smith Hall	SM	125,129,131 Hemenway Street	1902	1965	2007	1	3	0	59,225 sf	Owned	Brick	Wood Piles	Residence Facility	Direct
Speare Hall	SP	10 Speare Place	1964	NU Built		1	4	1	98,710 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
Stetson West	SW	10 Forsyth Street	1966	NU Built		1	4	1	120,208 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
White Hall	WH	19-21-23 Forsyth Street	1925	1961		1	5	0	89,378 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
Willis Hall	WI	50 Leon Street	1979	NU Built		1	10	0	114,058 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
West Village A	WVA	500-510 Parker Street	1999	NU Built		1	13	2	225,315 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
West Village B	WVB	460 Parker Street (rear)	2000	NU Built		0	7	0	90,039 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
West Village C	WVC	480 Parker Street (rear)	2000	NU Built		0	7	0	92,569 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
West Village E	WVE	10-20 Leon Street	2002	NU Built		0	8	1	124,176 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility	Direct
West Village F	WVF	40 Leon Street	2006	NU Built		2	7	0	128,460 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility/Academic	Direct
West Village G	WVG	450 Parker Street	2004	NU Built		0	6	0	133,981 sf	Owned	Brick	PIF, Caisson or Footing	Residence Facility/Academic	Direct
West Village H	WVH	440 Huntington Avenue	2004	NU Built		0	16	2	174,307 sf	Owned	Metal Panel/Glass	PIF, Caisson or Footing	Residence Facility/Academic	Direct
	Sub-total Residence Facilities				***38 buildings***	***292***			***2,994,871 sf***					

Athletic & Recreation Facilities														
Cabot Center (& Barletta Natatorium)	CB	400 Huntington Avenue	1954	NU Built		1	2	0	252,295 sf	Owned	Brick	PIF, Caisson or Footing	Athletic Facility	Direct
Henderson Boathouse	HBH	1345 Soldiers Field Road, Brighton	1989	NU Built		0	2	0	17,710 sf	Owned	Wood	PIF, Caisson or Footing	Athletic Facility	?
Matthews Arena	MA	238-262 St. Botolph Street	1906	1980		1	2	0	156,860 sf	Owned	Concrete/Brick	Wood Piles	Athletic Facility	Direct
Marino Recreation Center	MC	359-369 Huntington Avenue	1996	NU Built		0	3	0	82,763 sf	Owned	Masonry/Glass	PIF, Caisson or Footing	Athletic Facility	Direct
Badger & Rosen Squashbusters Center	SB	795A Columbus Avenue	2003	NU Built		0	4	0	38,498 sf	Owned	Metal Panel/Glass	PIF, Caisson or Footing	Athletic Facility	Direct
	Sub-total Athletic/Recreation Facilities				***5 buildings***	***15***			***548,126 sf***					
	Sub-total Academic, Residential & Athletic/Recreation Facil				***92 buildings***	***540***			***6,817,827 sf***					
Parking Structures														
Columbus Parking Garage	CPG	795 Columbus Avenue	1986	NU Built		0	7	0	327,931 sf	Owned	Precast masonry	PIF, Caisson or Footing	Parking Facility	Direct
Gainsborough Garage	GG	10 Gainsborough Street	1918	2000		1	3	0	198,897 sf	Owned	Cast concrete	PIF, Caisson or Footing	Parking Facility	Direct
Renaissance Park Garage	RPG	835 Columbus Avenue	2000	NU Built		0	10	0	337,574 sf	Owned	Precast masonry	PIF, Caisson or Footing	Parking Facility	Direct
West Village Garage	WPG	10-20 Leon Street	2002	NU Built		1	2	0	102,743 sf	Owned	Cast concrete	PIF, Caisson or Footing	Parking Facility	Direct
	Sub-total Parking Facilities				***4 buildings***	***24***			***967,145 sf***					
	Total All Boston Campus Facilities				***96 buildings***	***564***			***7,784,972 sf***	***57.58 acres***				

Surface Parking Lots		***Acres***
Arena Parking Area		0.83 acres
Camden Parking Area		1.56 acres
Columbus Parking Area	Acreage calculations for	3.82 acres
Columbus Place Parking Area	parking areas are approximate.	0.50 acres
Hurtig Parking Area		0.39 acres
North Parking Area		1.95 acres
Ryder Parking Area		0.40 acres
		9.46 acres

Property Without Buildings or Parking Lots	***Land size***
78 The Fenway (property at or about)	0.11 acres
790 Columbus (property at or about)	0.06 acres
	0.17 acres

Boston Campus Acreage	***67.21 acres***
Boathouse Property	***0.30 acres***
Total All Boston Campus Acreage	***67.51 acres***

Appendix B
Climate Change Preparedness Checklist

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	**Columbus Avenue Student Housing**
Project Address Primary:	**10 Burke Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	

A.2 - Team Description

Owner / Developer:	**American Campus Communities/ Northeastern University**
Architect:	**Cube 3 Studio LLC**
Engineer (building systems):	**Cosentini**
Sustainability / LEED:	**Price Sustainability Associates**
Permitting:	**Epsilon Associates**
Construction Management:	**John Moriarty & Associates**
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:	Residential
List the First Floor Uses:	*Commercial, residential lobby, fitness and recreation space*

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

☐ Wood Frame	☐ Masonry	☑ Steel Frame	☑ Concrete

Describe the building?

Site Area:	*23,424 SF*	Building Area:	*310,000 SF*
Building Height:	*230 Ft.*	Number of Stories:	*20Flrs.*
First Floor Elevation (reference Boston City Base):	*Elev.*	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 / No*	Certified:	*Yes / No*

A.6 - Building Energy- TBD

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

Electric:	*TBD (kW)*	Heating:	*TBD (MMBtu/hr)*
What is the planned building Energy Use Intensity:	*TBD (kWh/SF)*	Cooling:	*TBD (Tons/hr)*

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

Electric:	*TBD (kW)*	Heating:	*TBD (MMBtu/hr)*
		Cooling:	*TBD (Tons/hr)*

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

Electrical Generation:	*TBD (kW)*		Fuel Source:	*Diesel*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*1 (Units)*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

Select most appropriate:	☐ 10 Years	☑ 25 Years	☐ 50 Years	☐ 75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

8/91 Deg.	Based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

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

95 Deg.	*5 Days*	*6 Events / yr.*

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

30-90 Days	*0.2 Events / yr.*

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

45 Inches / yr.	*4 Inches*	*0.5 Events / yr.*

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

130 Peak Wind	*10 Hours*	*0.25 Events / yr.*

B.2 - Mitigation Strategies

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

Building energy use below code:	*25% Target*
How is performance determined:	Energy model

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

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

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

Roof:	*R = 25*	Walls / Curtain Wall Assembly:	*R = 13BATTS + R8 continuous insulation*
Foundation:	*R = 15*	Basement / Slab:	*R =10*
Windows:	*R = / U =0.4*	Doors:	*R = / U =0.7*

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

	☐ On-site clean energy / CHP system(s)	☐ Building-wide power dimming	☐ Thermal energy storage systems	☐ Ground source heat pump
	☐ On-site Solar PV	☐ On-site Solar Thermal	☐ Wind power	☑ None
Describe any added measures:	Common area lighting will be dimmed when unoccupied			

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

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

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

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

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

Select all appropriate:	☐ Solar oriented – longer south walls	☐ Prevailing winds oriented	☐ External shading devices	☐ Tuned glazing,
	☐ Building cool zones	☑ Operable windows	☐ Natural ventilation	☐ Building shading
	☐ Potable water for drinking / food preparation	☐ Potable water for sinks / sanitary systems	☐ Waste water storage capacity	☑ High Performance Building Envelop
Describe any added measures:				

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

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

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

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

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

	No

Describe site conditions?

Site Elevation – Low/High Points:	*18.0/18.5 Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*2,400 Ft.*

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

Coastal Zone:	*No*	Velocity Zone:	*No*
Flood Zone:	*No*	Area Prone to Flooding:	*No*

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

2013 FEMA Prelim. FIRMs:	*No*	Future floodplain delineation updates:	*No*

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

	2,300 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	*3 Ft.*	Frequency of storms:	*0.25 per year*

C.3 - Building Flood Proofing

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

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

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

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

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

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

☐ Systems located above 1st Floor.	☑ Water tight utility conduits	☐ Waste water back flow prevention	☐ Storm water back flow prevention

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

Yes / No

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

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

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

Yes / No

If Yes, describe:

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

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

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

C.4 - Building Resilience and Adaptability

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

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

Select appropriate:	*Yes / No*	☐ Hardened / Resilient Ground Floor Construction	☐ Temporary shutters and or barricades	☐ Resilient site design, materials and construction

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

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

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

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

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

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

Appendix C
Accessibility 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/

Project Information

Project Name:	**Columbus Avenue Student Housing**
Project Address Primary:	**10 Burke Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	

Team Description

Owner / Developer:	**American Campus Communities/ Northeastern University**
Architect:	**Cube 3 Studio LLC**
Engineer (building systems):	**Cosentini**
Sustainability / LEED:	**Price Sustainability Associates**
Permitting:	**Epsilon Associates**
Construction Management:	**John Moriarty & Associates**

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?

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

What is the Construction Type – select most appropriate type?

	Wood Frame	Masonry	Steel Frame TBD	Concrete TBD

Describe the building?

Site Area:	*23,424 SF*	Building Area:	*310,000 SF*
Building Height:	*230 Ft.*	Number of Stories:	*20 Flrs.*
First Floor Elevation:	*18.50 Elev.*	Are there below grade spaces:	*TBD*

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 on the southern edge of the Northeastern University campus at the intersection of several Boston neighborhoods. The surrounding area, including the Fenway neighborhood, contains many educational, retail, cultural, and hospital facilities. The South Bay Harbor Trail begins at the nearby Ruggles station, running through several neighborhoods to connect to the Boston Harborwalk on Fort Point Channel.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter	The Project site is less than half a mile from both the Ruggles and Massachusetts Avenue MBTA Orange Line stations, which provides access to the Commuter Rail and numerous bus lines. The Ruggles Station can also be accessed via the 43

rail, subway, bus, etc.	Bus, which has a stop adjacent to the site on the corner of Tremont and Burke Streets.
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Hospitals: Boston Medical Center, Boston Children's Hospital, Brigham and Women's Hospital, and Beth Israel Deaconess Medical Center Higher Education: Northeastern University, Boston University School of Medicine, Wentworth Institute of Technology, School of the Museum of Fine Arts, Massachusetts College of Art and Design, Simmons College, Massachusetts College of Pharmacy and Health Science, Harvard Medical School, Roxbury Community College, and New England Conservatory K-12 Schools – Madison Park High School, John D. O'Bryant School of Mathematics and Science, Timilty Middle School, The Hurley K-8 School, and New England Conservatory Preparatory School Cultural Institutions – Boston Museum of Fine Arts, Isabella Stewart Gardner Museum, New England Conservatory, and Symphony Hall Public and Disabled Housing Developments – Camden (136 Lenox Street, Boston, MA 02118) is State-funded Family development. Whittier Street (1158 Tremont Street, Roxbury, MA 02119) and Alice Taylor (260 Ruggles Street, Roxbury, MA 02120) are Federally-funded Family developments. Washington Manor (1701 Washington Street, Roxbury, MA 02118) is a Federally-funded Elderly/Disabled development.
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.	The proposed Project is located south of Northeastern University's new Interdisciplinary Science and Engineering Complex building. Other adjacent facilities include Squashbusters, the Northeastern University Alumni Center, and the Coventry Street Apartments.

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	Yes – any existing sidewalk and pedestrian ramps affected by new constructed will be replaced.

If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	Sidewalks along Columbus Avenue are constructed out of concrete and in good condition. Sidewalks along Burke Street and Coventry Street are constructed of segments of masonry and asphalt and show signs of aging.
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.	Sidewalks and ramps providing access to the new building will be new.
Is the development site within a historic district? If yes, please identify.	The development site is adjacent to the Lower Roxbury Historic District, but not within the district itself.

Surrounding Site Conditions – Proposed

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

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	There are no plans to make modifications to the Columbus Avenue sidewalks to the north of the site.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Columbus Avenue is a Neighborhood Connector Burke Street and Coventry Street are local streets that connect Columbus Avenue and Tremont Street (also a Neighborhood Connector) but do not cleanly fall into the Complete Street Guideline classification system.
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	While the project design is not advanced enough to provide specific features, the approximate Columbus Avenue sidewalk width will be 20’ and the approximate Burke Street and Coventry Street sidewalks will be 8’ and 6’, respectively.
List the proposed materials for each Zone. Will the proposed materials be on private property or	Proposed materials will be determined as the design advances.

will the proposed materials be on the City of Boston pedestrian right-of-way?	
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	No
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	No

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?	There will be no parking spaces provided on site.
What is the total number of accessible spaces provided at the development site?	None
Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	No
Where is accessible visitor parking	N/A

located?	
Has a drop-off area been identified? If yes, will it be accessible?	No
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	N/A

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	See site diagram
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	All entryways and thresholds are accessible – flush or within acceptable level change restrictions (1/2" or less).
Are the accessible entrance and the standard entrance integrated?	Yes
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	TBD
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	No signage package has yet been developed.

Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that

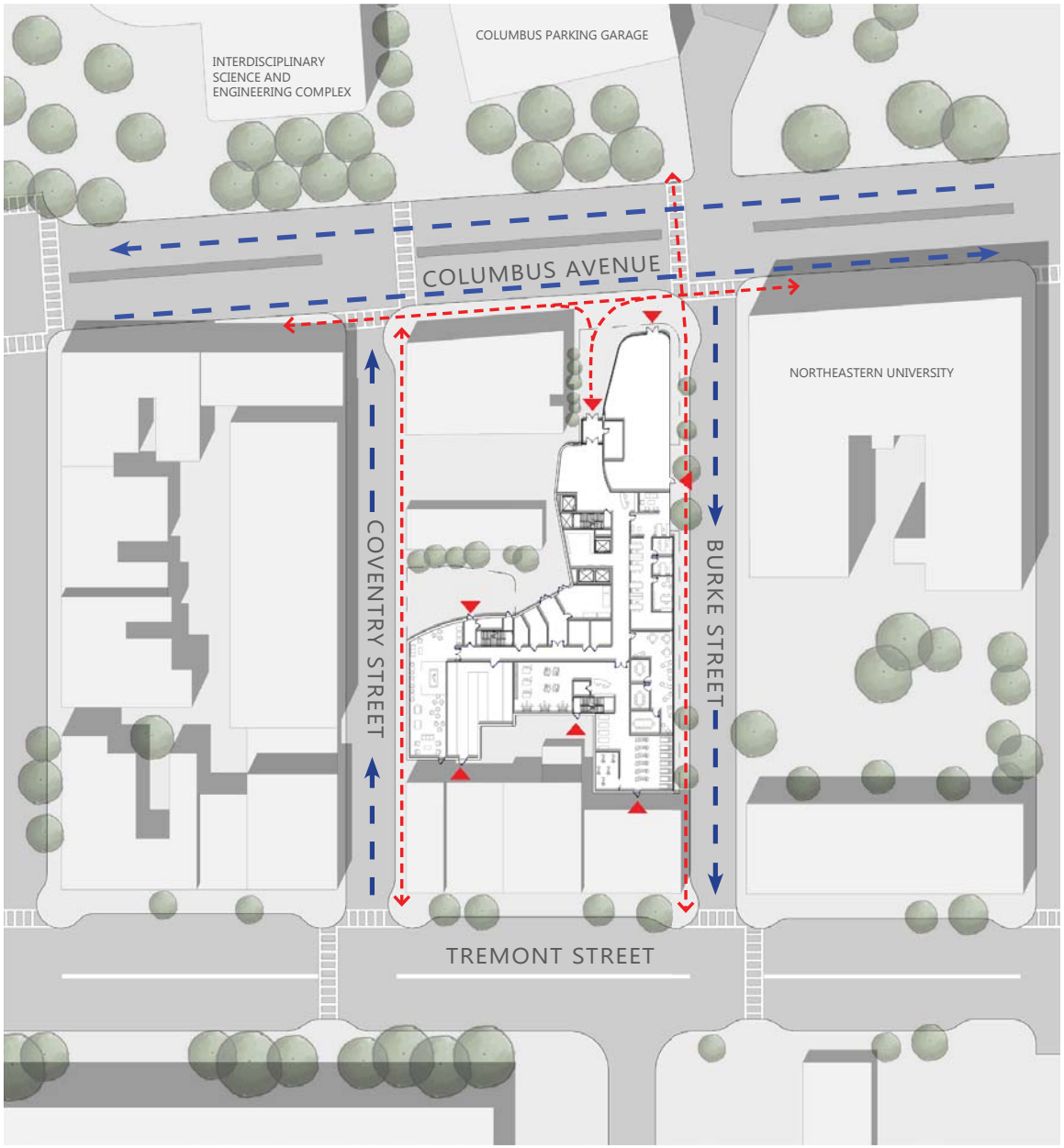
are proposed for the development site that remove barriers to housing choice.

What is the total number of proposed units for the development?	207 Units
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	All units are market rate student housing rental apartments.
How many accessible units are being proposed?	15
Please provide plan and diagram of the accessible units.	See attached diagram.
How many accessible units will also be affordable? If none, please describe reason.	None
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.	No
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	The proposed plan has not been presented yet.
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	N/A

Thank you for completing the Accessibility Checklist!

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

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



LEGEND

- Accessible Building Entrance / Exit
- Pedestrian Circulation
- Vehicular Circulation

SITE PLAN - ACCESSIBILITY