ARTICLE 19: PROJECT REVIEW SPECIAL PERMIT

MIT Stephen A. Schwarzman College of Computing

Cambridge, Massachusetts

DECEMBER, 2020

SUBMITTED TO

Cambridge Community
Development Department
344 Broadway
Cambridge, MA 02139

SUBMITTED BY

Massachusetts Institute of Technology
77 Massachusetts Avenue, NW 23-100
Cambridge, MA 02139

PRODUCED BY

vhb

IN ASSOCIATION WITH

Skidmore, Owings & Merrill LLP
REED Hilderbrand Landscape Architects
Nitsch Engineering, Inc.
ARUP

December 8, 2020

Ref: 14926.00

Cambridge Planning Board
Community Development Department
Attn: Swaathi Joseph
City Hall Annex
344 Broadway
Cambridge, MA 02139

Re: MIT Stephen A. Schwarzman College of Computing Special Permit

Dear Chairman Preston Connolly and Members of the Board,

On behalf of the Massachusetts Institute of Technology (MIT, or the "Applicant"), VHB is pleased to submit this Project Review Special Permit Application, pursuant to Article 19.20 of the Cambridge Zoning Ordinance. The Applicant proposes to construct a new academic building (the "Project"), named Stephen A. Schwarzman College of Computing ("SCC" or the "College"), at 51 Vassar Street, between Main Street and Massachusetts Avenue on MIT's campus (the "Project Site").

The Project will be constructed on the former site of MIT Building 44. The Project Site is bounded by Vassar Street to the south; the MIT Central Utilities Plans (the "MIT CUP") and an existing pedestrian path that connects MIT's Main Campus south of Vassar Street to Albany Street to the southwest; an active railroad lines, a fire lane which is conceived as a future second railway transit line, and the MIT Albany Street Garage to the west; the right of way for the future Grand Junction Multi-Use Path, which when completed will connect the Boston University Bridge to Somerville, to the northwest; and the MIT Brain and Cognitive Sciences Building (Building 46) to the east.

The construction of the SCC is a critical part of MIT's commitment to create a hub for the campus through its programmatic connections across industries and academic disciplines, and will strengthen computing studies and research across the Institute's many areas of engineering, science, data science and computing science. This new eight-story building will offer a mix of institutional/academic uses, totaling approximately 174,000 gross floor area (GFA). Active programs and teaching spaces, including but not limited to the lobby, convening space, lecture hall, and meeting rooms, and a publicly accessible cafe are located on Levels 1 and 2, the research programs are located from Levels 3-7, and the function/event space is located on Level 8. The basement will contain shell space for future classroom or office program. The College will also be connected to Building 46 via Level 4. There will be no off-street parking provided on-site.

Engineers | Scientists | Planners | Designers

99 High Street
10th Floor
Boston, Massachusetts 02110
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Key benefits of the Project include:

- Urban Design: The Project proposes architecture that is responsive to the surrounding context, while creating a signature building that contributes to the City's progressive architecture;
- Public Realm/Streetscape: The Project will continue the transformation of Vassar Street from a wide, vehicular- and industrial-focused street into a pedestrian- and bicycle-friendly institutional artery;
- Connectivity: The Project will improve pedestrian access from MIT's main campus, south of Vassar Street, the Project Site, the future Grand Junction Multi-Use Path, and Albany Street through the creation of an enhanced pedestrian path to the west of the Project;
- Open Space: The Project will provide approximately 11,853 SF of improved, publicly accessible open space to the south and west of the building, and along the future Grand Junction Multi-Use Path;
- Historic/Cultural Considerations: The Applicant will explore the potential to install a publicly accessible interpretive exhibit in a designated location adjacent the building's ground floor lobby to honor the significance of the site's original Cyclotron and scientific research uses.
- Sustainability/Resiliency: The Project has incorporated high performance building measures into the design that will result in approximately 60 percent reduction in energy cost. Other sustainability features include the installation of extensive green roof system and planting of new street trees to reduce urban heat island effects. The Project will pursue LEED v4 New Construction, targeting Gold level certification.

We have reviewed the Project described in this application with City staff (CDD, DPW, CWD, and TP&T) and believe that all comments and questions have been addressed at this time. We look forward to meeting with the Board and sincerely thank you for your time and consideration of this Project.

Kyle Greaves

Kyle Greaves, AICP
Project Manager/ Senior Environmental Planner
kgreaves@vhb.com

MIT Stephen A. Schwarzman College of Computing (Volume I)

Cambridge, Massachusetts

SUBMITTED TO **Cambridge Community Development Department**
City Hall Annex
344 Broadway
Cambridge, MA

PROPONENT **Massachusetts Institute of Technology**
77 Massachusetts Avenue NW 23-100
Cambridge MA, 02139

PREPARED BY **VHB**
99 High Street, 10th Floor
Boston, MA 02110

In association with:
Skidmore, Owings & Merrill LLP
REED Hilderbrand Landscape Architects
Nitsch Engineering, Inc.
ARUP

December 8, 2020

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DRAFT

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

SPECIAL PERMIT APPLICATION • COVER SHEET

In accordance with the requirements of the City of Cambridge Zoning Ordinance, the undersigned hereby petitions the Planning Board for one or more Special Permits for the premises indicated below.

Location of Premises: 51 Vassar Street

Zoning District: C3-B

Applicant Name: Massachusetts Institute of Technology - Travis Wanat

Applicant Address: 77 Massachusetts Ave., NW23-1 00, Cambridge MA 02139

Contact Information: 617-258-7687 twanat@mit.edu

Telephone # Email Address Fax #

List all requested special permit(s) (with reference to zoning section numbers) below. *Note that the Applicant is responsible for seeking all necessary special permits for the project. A special permit cannot be granted if it is not specifically requested in the Application.*

Article 19, Section 19.20 Project Review Special Permit
Article 6, Section 6.35.1 Reduction of Required Parking

List all submitted materials (include document titles and volume numbers where applicable) below.

See list of submitted materials in the Special Permit Application Form Supplemental Documentation attached.

Signature of Applicant: 12/1/20

For the Planning Board, this application has been received by the Community Development Department (CDD) on the date specified below:

Date Signature of CDD Staff

DRAFT

DIMENSIONAL FORM

Project Address: 51 Vassar Street **Application Date:** 12/8/20

	Existing	Allowed or Required (max/min)	Proposed	Permitted
Lot Area (sq ft)	409,261		409,261	
Lot Width (ft)				
Total Gross Floor Area (sq ft)			174,000	
Residential Base	N/A	N/A	N/A	
Non-Residential Base	496,124	N/A	670,124	
Inclusionary Housing Bonus	N/A	N/A	N/A	
Total Floor Area Ratio	1.21	3.0	1.64	
Residential Base	N/A	N/A	N/A	
Non-Residential Base				
Inclusionary Housing Bonus	N/A	N/A	N/A	
Total Dwelling Units	N/A	N/A	N/A	
Base Units				
Inclusionary Bonus Units				
Base Lot Area / Unit (sq ft)				
Total Lot Area / Unit (sq ft)				
Building Height(s) (ft)		120	120	
Front Yard Setback (ft)		10	10	
Side Yard Setback (East) (ft)	Multiple Building	N/A*	0*	
Side Yard Setback (West) (ft)	Multiple Building	27'-6"***	27'-6"***	
Rear Yard Setback (ft)	Multiple Building	27'-4"***	27'-4"***	
Open Space (% of Lot Area)	N/A	N/A**	N/A**	
Private Open Space	N/A	N/A	11,853 SF (Project Site)	
Permeable Open Space	N/A	N/A	2,668 SF (Project Site)	
Other Open Space (Specify)	N/A	N/A	N/A	
Off-Street Parking Spaces	22	105****	0*****	
Long-Term Bicycle Parking	0	36	36	
Short-Term Bicycle Parking	0	71	71	
Loading Bays	0	2	2	

Use space below and/or attached pages for additional notes:

*Per Cambridge Zoning Section 5.13

**Per Cambridge Zoning Sections 5.22.1 and 5.22.2, open space requirements apply to residential projects only

***West: 120 + 45 = 165 / 6 = 27.5'; North: 120 + 44 = 164 / 6 = 27.33'

****Per Cambridge Zoning Section 6.2.2.1. Spaces will be assigned to campus inventory

*****Per Cambridge Zoning Section 6.35.1 Reduction of Required Parking

FEE SCHEDULE

Project Address: 51 Vassar Street **Application Date:** 12/8/2020

The Applicant must provide the full fee (by check or money order) with the Special Permit Application. Depending on the nature of the proposed project and the types of Special Permit being sought, the required fee is the larger of the following amounts:

- If the proposed project includes the creation of new or substantially rehabilitated floor area, or a change of use subject to Section 19.20, the fee is ten cents ($0.10) per square foot of total proposed Gross Floor Area.
- If a Flood Plain Special Permit is being sought as part of the Application, the fee is one thousand dollars ($1,000.00), unless the amount determined above is greater.
- In any case, the minimum fee is one hundred fifty dollars ($150.00).

Fee Calculation

New or Substantially Rehabilitated Gross Floor Area (SF): 174,000	× $0.10 =	17,400
Flood Plain Special Permit	Enter $1,000.00 if applicable:	
Other Special Permit	Enter $150.00 if no other fee is applicable:	
TOTAL SPECIAL PERMIT FEE	**Enter Larger of the Above Amounts:**	17,400

OWNERSHIP CERTIFICATE

Project Address: 51 Vassar Street **Application Date:**

This form is to be completed by the property owner, signed, and submitted with the Special Permit Application:

I hereby authorize the following Applicant: Travis Wanat

at the following address:

to apply for a special permit for: Massachusetts Institute of Technology

on premises located at: 51 Vassar Street

for which the record title stands in the name of: Massachusetts Institute of Technology

whose address is: 77 Massachusetts Ave., NW23-1 00, Cambridge MA 02139

by a deed duly recorded in the:

Registry of Deeds of County: Middlesex Book: 3678 Page: 190

OR Registry District of the Land Court, Certificate No.: Book: 10280 Page: 398

Book: 10719 Page: 278

NA

Signature of Land Owner (If authorized Trustee, Officer or Agent, so identify)

To be completed by Notary Public:

Commonwealth of Massachusetts, County of Middlesex

The above named Richard L Austin Jr. personally appeared before me,

on the month, day and year Dec. 3, 2020 and made oath that the above statement is true.

Notary: D. Kelley Brown

My Commission expires: Dec. 16, 2022

Special Permit Application Form Supplemental Documentation

The following section provides supplemental information to support the Special Permit Application Form for the Massachusetts Institute of Technology (MIT, or the "Applicant") Stephen A. Schwarzman College of Computing (the "SCC" or the "College") on the MIT campus in Cambridge MA (the "Project"). It provides a list of requested special permits for the Project, a list of submitted materials for the application, and describes coordination of proposed plans with city departments. Certification of Receipt of Plans forms will be signed by each department after receipt of the Special Permit Application.

List of Requested Special Permits

- Section 6.35.1 – Reduction of Required Parking
- Section 19.20 - Project Review Special Permit

List of Submitted Materials

- Application Form
- Dimensional Form
- Owner Certificate
- Fee Schedule
- Project Narrative
- Urban Design Narrative
- Noise Mitigation Narrative
- Sustainable Design/LEED Narrative
- Sewer Service Infrastructure Narrative
- Water Service Infrastructure Narrative

- Tree Study
- Access and Circulation Study
- Site Plans
- Elevations
- Sections
- Perspective Renderings
- Floor Plans

Coordination with City Departments

The Applicant has met on several occasions with various Community Development Department (CDD) staff regarding the overall Project, including public realm improvements, urban design approach, sustainability approach and the community outreach program as well as the Special Permit Project Review application and process. An initial design review session has also taken place with CDD to evaluate proposed building massing and initial building design. The Applicant has also met with Cambridge Historical Commission (CHC) staff prior to the demolition of Building 44 on Vassar Street, to make way for the Project. After a public hearing held on January 2, 2020, the Commission determined that while Building 44 is significant (based largely on the scientific activities that have taken place there), it is not preferably preserved. A general construction permit was subsequently filed with Inspectional Services Department on May 15, 2020 for the utility enabling, demolition and site preparation work scope.

The Applicant along with its site civil engineering team attended meetings with the Cambridge Department of Public Works (DPW) and Cambridge Water Department (CWD) to discuss the infrastructure anticipated to serve the Project, as well as stormwater measures pursuing on-site. Additionally, the Applicant and project landscape architect met with DPW to discuss proposed streetscape and landscape improvements.

The Applicant along with its transportation planners attended a meeting with the Department of Transportation, Parking, and Traffic (TP&T) to confirm the scope of the Circulation and Access Study, and, more specifically, bike parking, and building service and loading design. TP&T determined that a full Transportation Impact Study (TIS) is not required for the Project. A copy of the Circulation and Access Study is provided in Appendix C.

The Applicant retained a landscaping consultant, in association with an arborist, to prepare a tree study and mitigation plans consistent with the requirements of the Cambridge Tree Protection Ordinance (Section 8.66 Cambridge Zoning Ordinance). The Applicant submitted the tree study to DPW and the City Arborist on July 1, 2020. The Tree Study is provided in Appendix A.

In conformance with Section 22.23 of Article 22, the Applicant developed and submitted a detailed Green Building Report to CDD on September 18, 2020. The City has determined that the Green Building Report provided by the Applicant is complete and demonstrates compliance with the Green Building Requirements of Section 22.24 at the special permit stage of review. Please refer to Appendix B for the Green Building Report, and a copy of the certification letter issued on October 15, 2020.

1

Project Description

This is an application for the Project Review Special Permit, pursuant to Article 19.20 of the Cambridge Zoning Ordinance, for the Massachusetts Institute of Technology (MIT) Stephen A. Schwarzman College of Computing ("SCC" or the "College") on the MIT campus in Cambridge MA (the "Project"). The new academic building is a critical part of the Institute's commitment to create a new MIT college that aims to be a hub for the campus through its programmatic connections across industries and academic disciplines, and will strengthen computing studies and research across MIT's many areas of engineering, science, data science and computing science. The Project is located at 51 Vassar Street, the site of Building 44, between Main Street and Massachusetts Avenue on MIT's campus (the "Project Site"). Refer to Figure 1.1 for a Project Site context plan, Figure 1.2a for campus context plan and Figure 1.2b for a MIT parcel/lot plan.

The new academic building includes construction of a mix of institutional/academic uses that will support SCC's program requirements, including office space, research laboratory space, academic space, function/event space, collaboration and meeting space, convening space, and café space totaling approximately 174,000 gross floor area (GFA). There will be no off-street parking provided on-site.

The scale of the Project (greater than 50,000 SF of GFA) requires a Project Review Special Permit (Section 19.20 of the Cambridge Zoning Code (the Zoning Code)). As an institutional university project that relocates less than 250 parking spaces (22 existing spaces total) and does not create more than 150 new parking spaces, the Project does not have a traffic impact that would require a traffic study as described in Section 19.21.1. As demonstrated herein, the Project as submitted conforms to the Citywide Urban Design Objectives of Article 19.30, the Sustainable Design and Development requirements of Article 22.20, and satisfies all other requirements necessary for the issuance of the requested Project Review Special Permit.

This chapter provides an overview of the Project and creation of the College, describes the existing Project Site conditions and the proposed Project and public realm improvements, summarizes the Project's public benefits, and provides a summary of regulatory context applicable to the Project.

1.1 Project Overview

The new proposed building for SCC will sit in a centralized location that promises to unite the many MIT departments, centers, and labs that integrate computing into their work. The proposed building will serve as an interdisciplinary hub for research and innovation in computer science, artificial intelligence (AI), data science, and related fields that deal with computing advances, including how new computing methods can both address and pose societal challenges. The goals of the College include:

- Connect advances in computer science and machine learning with advances in MIT's other academic disciplines;
- Create 50 new faculty positions within the college and jointly with existing academic departments;
- Give MIT's five schools a shared structure for collaborative education, research, and innovation in computing and artificial intelligence;
- Educate all students to responsibly use and develop computing technologies to address pressing societal and global resource challenges; and
- Focus on public policy and ethical considerations relevant to computing, when applied to human-machine interfaces, autonomous operations, and data analytics.

1.2 Existing Site Conditions and Site Context

1.2.1 Existing Conditions

The Project Site is bounded by Vassar Street to the south, which over recent years has been transformed from a wide, vehicular- and industrial-focused street into a pedestrian- and bicycle-friendly institutional artery that links the two sides of MIT's campus. To the southwest, the Project Site is bounded by the MIT Central Utilities Plant (the "MIT CUP"), and an existing multi-modal path that connects MIT's Main Campus south of Vassar Street to Albany Street. To the west, the Project Site is bounded by active railroad lines, a fire lane which is conceived as a future second railway transit line, and the MIT Albany Street Garage. The right of way for the future Grand Junction Multi-Use Path is also located northwest of the Project parallel the railroad tracks, which when completed will connect the Boston University Bridge to Somerville. To the east, the Project Site is bounded by the MIT Brain and Cognitive Sciences Building (Building 46).

The Project will be constructed on the former site of MIT Building 44, which consisted of approximately 14,708 Gross Floor Area (GFA) of institutional and academic uses. Building 44 has been demolished to enable the Project Site for the proposed new building. Refer to Figure 1.3a for a figure depicting existing conditions, Figure 1.3b for an existing conditions survey plan. Refer to Figures 1.4a-c for figures depicting existing images of the Project Site.

1.2.2 Site Context

The Project is located at a critical juncture of MIT's campus, and will serve as physical hub that connects MIT's main campus to the south of Vassar Street to the existing technology, engineering and science uses of the north campus. As depicted on Figures 1.4a-c, the Project Site was selected for its physical proximity to related departments, and it will stand in close proximity to a cluster of computing- and AI-focused departments, centers, and labs located directly across the street and running up to the intersection of Vassar and Main Streets. To the east of the Project Site is Building 46, the Brain and Cognitive Sciences Building, which will have a physical connection to the Project. The Kendall Square MBTA station is located approximately 0.4 mile east, or an approximately eight-minute walk from the Project Site.

1.3 Proposed Project Description

The Project proposes the construction of one new building including approximately 174,000 GFA of institutional and academic uses distributed over eight (8) above-grade floors and one (1) basement level. Figure 1.5 presents a site boundary plan, and Figure 1.6 presents the proposed site plan for the Project.

Table 1-1 below presents the proposed development program.

Table 1-1 Proposed Development Program Summary

Use/Element	Approx. Dimensions[1]
Institutional/Academic Uses[2]	170,900
Café	3,100
Total GFA	**174,000**

1) All areas are provided as gross floor area (GFA) as defined in Article 2 of the Cambridge Zoning Ordinance, which excludes accessory and support spaces, such as mechanical space, off-street loading and bicycle parking.
2) Includes "damp-capable" laboratory uses, classrooms, tutoring and study rooms, meeting rooms, and office/administrative uses.

The new mixed-use building includes construction of institutional and academic uses that will support SCC program requirements, including office space, research laboratory space, academic space, function/event space, collaboration and meeting space, convening space, and accessory café space.

Figures 1.7a-j present the floor plans for the Project. Active programs and teaching spaces, including but not limited to the lobby, convening space, lecture hall, and meeting rooms, and a publicly accessible cafe are located on Levels 1 and 2, the research programs are located from Levels 3-7, and the function/event space is located on Level 8. The basement will contain shell space for future classroom or office program. The Project proposes a physical connection on Levels 3 and 4 to Building 46 to the east.

1.3.1 Proposed Building Design

The massing concept for the SCC building is comprised of two research pavilions, elevated above two levels of active, public, accessible uses. The shingled glass facade on the south elevation breaks at the center of the building, providing views into a central zone of open stairs and collaboration and convening spaces referred to as the "Collaboration Cascade", which connect the research wing pavilions. The Collaboration Cascade begins at the transparent, active street level, and continues up through the building to the signature function/event space in the rooftop pavilion. On Levels 3-8, the building bridges over the railroad tracks north of the Project Site to create larger floorplates with appropriate floor to floor heights that accommodate the proposed institutional and research uses, and to enable future flexibility and adaptability. The Project also proposes an outdoor terrace on Level 8 which will be open to building occupants/users.

Refer to Figures 1.8a-e for building sections, Figure 1.9a-d for building elevations, and Figures 1.10a-h for renderings and perspective views of the Project.

1.3.2 Project Schedule and Phasing

Throughout the coming months, the Applicant expects to work diligently with the community and with the City to complete the Article 19 Project Review Special Permit process.

The Applicant commenced demolition, site enabling and utility work in Q3 of 2020. The total construction timeframe for the Project is expected to take approximately two years.

1.3.3 Site Planning and Landscaping

Establishing a connection between the Project Site, the future Grand Junction Multi-Use Path, the Vassar Street corridor, the Brain & Cognitive Sciences building, and the main MIT campus south of Vassar Street is central to the development of the site planning concept. The proposed site, landscape, and streetscape elements aim to prioritize the pedestrian experience, and are designed to foster public engagement and activation along Vassar Street. Vassar Street used to be a back door to MIT's main campus, but is becoming an important pedestrian corridor that links the two sides of the MIT's campus together. Pedestrian realm and streetscape improvements associated with the Project will establish a clear hierarchy for pedestrian, bicycle, and vehicular travel, provide opportunities for new landscaped open space, and strengthen physical and academic connections to the various academic buildings and colleges on the Main Campus north and south of Vassar Street, which are critical to the interdisciplinary mission of the College.

The exterior spaces will support pedestrian social exchange and collaboration in publicly accessible spaces that maximize pedestrian comfort and safety. The design establishes a visually porous and universally accessible connection between the public realm and the primary entry points to the building's activated publicly accessible spaces.

The following sections summarizes the proposed site circulation, building access, and public realm/streetscape improvements. Refer to Figure 1.11 for a landscape plan, Figures 1.12a-b

for detail plans, Figure 1.13 for a site circulation plan, and Figure 1.14 for a building access plan.

1.3.3.1 Site Circulation

The site plan has focused on creating the primary pedestrian areas to the west and south of the building, which accommodate circulation, gathering, and short-term bicycle parking in support of the Project and the larger MIT campus network. The Project proposes enhancements to the existing multi-modal path and existing multi-modal crossing along the building's west façade that is currently located between the Project and the MIT CUP, and extends across Vassar Street. The Project will improve the existing 9-foot-wide multi-modal path with new unit pavers, shade trees, new lighting and wayfinding, and installation of safety measures over the existing railroad tracks. As well, site design will provide adjacent bike racks, trash receptacles and benches. The enhanced multi-modal path will serve as a critical connection between MIT's main campus, south of Vassar Street, the Project Site, the future Grand Junction Multi-Use Path, and Albany Street. The Proponent is committed to working with the City of Cambridge to ensure that the Project and its associated improvements enhance, and do not interfere, with the planned construction of the future Grand Junction Multi-Use Path to the north of the Project.

Additional short-term bicycle parking in support of the Project is proposed to the north along the future Grand Junction Multi-Use Path, adjacent the existing MIT Albany Garage. The area immediately north of the building (south of the railroad tracks) will continue to be maintained clear as a fire lane.

1.3.3.2 Building Access

Primary building access will be from two entry points along the Vassar street frontage. Broad, sloped walkways (less than five percent grade) are proposed to facilitate direct, universal access, and are designed to align with the anticipated significant flow of pedestrian traffic coming from the east and west along the Vassar Street sidewalk. The sloped walkways are tied together with a monolithic stair, which provide a visual connection into the Collaboration Cascade and the stairs that connect the internal active use and convening spaces.

Along the building's east façade, a dedicated entrance will provide access to long-term bicycle parking.

1.3.3.3 Public Realm/Streetscape Improvements

The proposed streetscape treatments along Vassar Street are designed to help establish the Project's identity, and to support the active uses fronting on Vassar Street. The proposed streetscape along Vassar Street would be approximately 24 feet wide with a 11-foot furnishing zone, an approximately eight-foot walkway zone, and an approximately five-foot cycle track. To achieve these widths, the Applicant proposes the removal of five on-street City metered parking spaces to allow the extension of the curb line by approximately six feet. The elimination of these spaces will also accommodate a proposed rideshare drop-of/pickup area.

The public realm will tie directly to the Project's universally accessible entry sequence, gathering spaces, and bicycle parking. Publicly accessible open space activates areas to the south and west of the building, and along the future Grand Junction Multi-Use Path.

The Project will also contribute to MIT's Vassar street tree replacement project, which was previously reviewed and approved by the City. Approximately nine (9) street trees within the Vassar street tree replacement project scope, along with three (3) additional new street trees fall within the limit of work for the Project, and will be replaced once Project construction is complete. The street trees along Vassar Street and in front of the Project Site have been dead or dying for some time. Installing new street trees in front of the Project Site as well as in front of adjacent Building 42 (immediately to the west) will create a more pedestrian friendly streetscape condition, and will foster a robust tree canopy that will help reduce the urban heat island effect. Refer also to Appendix A for a copy of the Tree Study, which depicts existing and proposed trees on the Project Site.

1.4 Project Benefits

Urban Design/Public Realm

- Propose architecture that is responsive to the surrounding context, while creating a signature building that contributes to the City's progressive architecture;
- Continue the transformation of Vassar Street from a wide, vehicular- and industrial-focused street into a pedestrian- and bicycle-friendly institutional artery;
- Provide approximately 11,853 SF of improved, publicly accessible open space to the south and west of the building, and along the future Grand Junction Multi-Use Path;
- Extend the curb line by approximately six (6) feet to accommodate an expansion of the furnishing zone;
- Create a new accessible short-term rideshare drop-of /pickup area adjacent the curb cut for the loading and service area;
- Explore opportunities to integrate into the design elements that honor the history and the heritage of the Cyclotron and the previous uses of the Project Site, as well as MIT's history of innovation.

Transportation/Access & Circulation

- Provide no new on-site parking in support of the Project;
- Relocate the existing 22 surface parking spaces currently on-site to an off-site MIT parking facility;
- Request a Special permit to eliminate required 98 off-street parking spaces (Section 6.35.1 of the Zoning Code)
- Improve pedestrian access from MIT's main campus, south of Vassar Street, the Project Site, the future Grand Junction Multi-Use Path, and Albany Street through the creation of an enhanced multi-modal path to the west of the Project;

- Encourage non-automobile transportation with good access to public transportation of the Kendall/MIT Redline station and multiple bus stops;
- Provide bicycle parking that meets the City's and Leadership in Energy and Environmental Design (LEED) requirements (117 bicycle parking spaces on-site: 71 long-term; and a minimum of 36 short-term spaces); and
- Continue implementing a program of Transportation Demand Management (TDM) measures to reduce automobile trips generated by the Project.

Environment/Sustainability

- Target LEED Gold certification through the US Green Building Council/Green Building Certification (the "USGBC/GBCI") using the New Construction and Major Renovation (LEED-NC) rating system. The Project is currently showing achievement of 71 points, which far exceeds the minimum 60 points required for Gold certification.
- Incorporate high performance building design measures that target a 60 percent reduction in energy cost compared to the baseline specified in LEED v4;
- Incorporate an extensive green roof system that represents approximately 68 percent of the Project's roof area;
- The proposed building and Project Site have been designed to be resilient to 2070 flood impacts as defined by both the MIT and the City of Cambridge Vulnerability Assessments;
- Reduce the urban heat island effect through the planting of new street trees in front of the Project Site as well as in front of adjacent Building 42; and
- Limit new shadows on public ways and public open space.

1.5 Zoning Compliance

1.5.1 General Applicable Criteria for Approval of a Special Permit (Section 10.43)

As discussed in further detail in Chapter 3*, Special Permit Criteria*, of this application, the Project satisfies the generally applicable criteria for the approval of a Special Permit.

1.5.2 Required Findings for a Project Review Special Permit (Article 19.000; Section 19.20)

1.5.2.1 Section 19.25.1: Traffic Impact Findings

As discussed in further detail in Appendix C, *Circulation and Access* of this application, the Project will have no substantial adverse impact on city traffic within the study area as analyzed in the Transportation Access and Circulation Study.

1.5.2.2 Section 19.25.2: Urban Design Findings

As discussed in further detail in Chapter 2, *Urban Design* of this application, the Project will be consistent with the urban design objectives of the City set forth in Section 19.30.

1.5.3 Required Findings for a Special Permit to Reduce Required Parking (Article 6.000; Section 6.35.1)

As discussed in Section 2.3 of The Circulation and Access Study located in Appendix C, the Project will be consistent with the review criteria for a project seeking a reduction or elimination in required off-street parking.

1.5.4 Incentive Zoning

The City of Cambridge's Incentive Zoning, pursuant to Section 11.202 of the Zoning Ordinance, requires developments of more than 30,000 square feet GFA to provide a housing contribution to mitigate the impact of the development on the need for affordable housing in the city. This requirement is applicable to the Project. As such, the Proponent will work with the City to determine the appropriate fee payment as outlined in the ordinance.

1.6 Agency and Community Outreach

The Applicant values their relationships within the Cambridge community and with the City. Prior to filing this application, the Applicant has participated in period of technical and design reviews with the City. Between July and October 2020 regular agency coordination meetings were held and included discussions with the Cambridge Community Development Department (CDD), the Cambridge Water Department (CWD), the Cambridge Public Works Department (DPW), and the Cambridge Traffic and Parking Department (TP&T), area groups, neighbors and abutters. One early engagement community meeting was held in October 7, 2020.

Table 1-2 highlights Project-related agency and community outreach activities completed by the Applicant since July 2020, when the Project was first introduced to the City.

Table 1-2 Agency and Community Outreach Meetings

Date	Meeting
July 8, 2020	Introductory Meeting with City Depts. (CDD, TP&T, DPW)
July 22, 2020	Meeting with CDD (Zoning Focus)
July 30, 2020	Meeting with DPW
August 6, 2020	Meeting with TP&T
August 12, 2020	Meeting with CDD (Urban Design Focus)
September 10, 2020	Meeting with CDD (Sustainability Focus)
October 7, 2020	Early Engagement Community Meeting

Discussions with the City Departments have covered a diverse range of topics including urban design and public realm, zoning, circulation and access, infrastructure and utilities, and

sustainability. The Project team welcomes the input of the City and its neighbors and will continue to meet with the community and others as the Project moves through the Article 19 review process and construction.

Early Engagement Community Meeting

The Applicant recorded comments raised by community members at the virtual early engagement community meeting held on October 7, 2020. Refer to Appendix D for a summary of the comments and responses from the virtual early engagement community meeting.

2

Urban Design

The following section demonstrates that the Project conforms with Article 19.30: Citywide Urban Design Objectives.

2.1 Citywide Urban Design Objectives

The design of the SCC building, or the Project, aims to activate Vassar Street, strengthen and improve pedestrian networks, maintain the street wall, and establish a signature presence for the Project. From an analysis of the urban context of Vassar Street, to the specific proportions of a single glass module, the following strategies have been developed, with holistic considerations of the Project's façade design through different scales of presence.

- Creating Public Realm: As depicted on Figures 2.1a-c, Vassar Street is at the intersection of two different urban grains, one driven by the MIT's main campus, and the other from the City of Cambridge context. This intersection results in a short, syncopated rhythm of façade and pockets of spaces along Vassar Street. The Project improves the street wall condition by maintaining the front yard setback, aligned to neighboring Building 46.
- Activating Vassar Street: The Project opens up the entire ground floor elevation to the street, activating Vassar Street frontage by its publicly accessible programs, activities, and transparency, which spills out to the site and landscape design along Vassar. Additionally, site improvements at the western edge of the Project Site will strengthen and enhance the existing multi-modal path and existing pedestrian crossing along.
- Prismatic Façade Transparency: The Project's exterior material assembly is a dynamic counterpoint to its surrounding context of building facades – most having far greater opacity in their use of brick, concrete, and stone. Instead, the College is an expression of prismatic glass and signifies a new transparency and engagement with the Vassar Street corridor. As depicted in Figure 1.15 of Chapter 1, *Project Description, t*he Project's defining element is an innovative "double-skin" southern façade which balances high transparency with energy efficiency in its closed-cavity composition of glass panels. The materiality of glass is further animated by the "shingled" assembly of the panels and the visual effect of overlapping layers. Glass continues across all elevations of the Project and unifies the building mass as a whole. The side and rear facades employ similarly-proportioned panels of co-planar, insulated glazing. However, the building's actual transparency is modulated at these elevations by a subtle but strategic use of spandrel glass, which results in an energy-efficient 43 percent window-wall ratio.

2.1.1 19:31: Responsive to Existing or Anticipated Development

New projects should be responsive to the existing or anticipated pattern of development. Indicators include:

(1) Heights and setbacks provide suitable transition to abutting or nearby residential zoning districts that are generally developed to low scale residential uses.

The Project is located on the north side of Vassar Street, between Main Street and Massachusetts Avenue in Cambridge, Massachusetts. The Project includes construction of institutional and academic uses that will support the College program requirements, including office space, research laboratory space, academic space, function/event space, collaboration and meeting space, convening space, and café space totaling approximately 174,000 GFA distributed over eight (8) above-grade floors and one (1) basement level.

Active, and publicly accessible programs, including but not limited to the lobby, café, convening space and meeting rooms are located on Levels 1 and 2, the research programs are located from Levels 3-7, and the function/event space is located on Level 8. The basement will contain shell space for future classroom or office program. The Project proposes a physical connection on Levels 3 and 4 to Building 46 to the east.

The Project's building massing and site development are compatible and of similar scale to the adjacent buildings. Refer to figure 2.1g for a study image.

(2) New buildings are designed and oriented on the lot so as to be consistent with the established streetscape on those streets on which the project lot abuts. Streetscape is meant to refer to the pattern of building setbacks and heights in relationship to public streets.

The existing buildings along Vassar Street are varied in style and expression, from the expressive forms of the Stata Center, the rotated gridded frontages of Buildings 36 and 39, the industrial characteristics of the MIT CUP, to the monolithic stone façade of Building 46. Along the south side of Vassar, the existing buildings relate inward towards the main academic core of campus, leaving Vassar Street feeling more like an edge than a central campus artery. Activating and shifting the character of Vassar Street is therefore an important design goal for the SCC.

The proposed streetscape along Vassar Street would be approximately 24 feet wide with a 11-foot furnishing zone, an approximately eight (8)-foot walkway zone, and an approximately five (5)- foot cycle track. To achieve these widths, the Applicant proposes the potential removal of five (5) on-street City metered parking spaces to allow the extension of the curb line by approximately six (6) feet. The elimination of these spaces will also accommodate a proposed rideshare drop-of /pickup area adjacent the curb cut for the loading and service area.

(3) In mixed-use projects, uses are to be located carefully to respect the context, e.g. retail should front onto a street, new housing should relate to any adjacent existing residential use, etc.

The Project consists of institutional and academic uses that will support the College program requirements, including office space, research laboratory space, academic space,

function/event space, collaboration and meeting space, convening space, and accessory café space. As described in Chapter 1, *Project Description*, the Project proposes a publicly accessible small café that will front Vassar Street on Level 1.

(4) Where relevant, historical context are respected, e.g. special consideration should be given to buildings on the site or neighboring buildings that are preferably preserved.

The Project Site is outside of the nearest Conservation & Historic Districts located approximately 1.0 mile to the northwest and southwest. Select National Register sites are located on adjacent blocks.

On December 20, 2019, the Applicant filed an application with the Cambridge Historical Commission in anticipation of the desire to demolish Building 44 on Vassar Street, to make way for the Project. After a public hearing held on January 2, 2020, the Commission determined that while Building 44 is significant (based largely on the scientific activities that have taken place there), it is not preferably preserved. A general construction permit was subsequently filed with Inspectional Services Department on May 15, 2020 for the utility enabling and site preparation work scope.

MIT's history of innovation is a valued aspect of its culture, which is preserved in collections and displays throughout its publicly-accessible facilities. The Applicant is continuing to identify stakeholders and available resources to honor the significance of the site's original Cyclotron and scientific research uses. The Applicant will explore the potential to install a publicly-accessible interpretive exhibit in a designated location adjacent the building's ground floor lobby.

2.1.2 19:32: Pedestrian and Bicycle-Friendly/Relationship to Surroundings

Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings. Indicators include:

(1) Ground floors, particularly where they face public streets, public parks, and publicly accessible pathways, consist of spaces that are actively inhabited by people, such as retail stores, consumer service businesses and restaurants where they are allowed, or general office, educational or residential uses and building lobbies. Windows and doors that normally serve such inhabited spaces are encouraged to be a prominent aspect of the relevant building facades. Where a mix of activities are accommodated in a building, the more active uses are encouraged facing public streets, parks and pathways.

In commercial districts, such active space consists of retail and consumer service stores and building lobbies that are oriented toward the street and encourage pedestrian activity on the sidewalk. However, in all cases such ground floor spaces should be occupied by uses (a) permitted in the zoning district within which the building is located, (b) consistent with the general character of the environment within which the structure is located, and (c) compatible with the principal use for which the building is designed.

The building has intentionally located the accessible active uses on Levels 1 and 2 of the Project, fronting Vassar Street. At the ground level the public realm will tie directly to the Project's universally accessible entry sequence, gathering spaces, and bicycle parking.

Publicly accessible open space activates areas to the south and west of the building, and along the future Grand Junction Multi-Use Path to the north of the Project.

In addition to the above programmatic assignments, the Project's exterior transparency and structural lightness at grade also promote a lively pedestrian streetscape. As opposed to the weighty base conditions of neighboring buildings, the entrance to the Project is characterized by expansive glazing and a cantilevered massing supported by two, wide "V" braces. This structural scheme eliminates the imposition of columns at the building's front corners, while the heroic scale of the braces visibly celebrates the building's advanced engineering.

(2) Covered parking on the lower floors of a building and on-grade open parking, particularly where located in front of a building, is discouraged where a building faces a public street or public park, and publicly accessible pathways.

There will be no off-street parking provided for the Project.

(3) Ground floors should be generally 25-50% transparent. The greatest amounts of glass would be expected for retail uses with lesser amounts for office, institutional or residential use.

The shingled, closed-cavity glass facade provides views into a central zone of open stairs and collaboration and convening spaces, referred to as the "Collaboration Cascade", which connect the research wing pavilions. The Collaboration Cascade begins at the transparent, active street level, and public programs on Level 1 and 2, and continues up through the research floors on Level 3-7 to the signature function/event space in the rooftop pavilion on Level 8.

(4) Entries to buildings are located so as to ensure safe pedestrian movement across streets, encourage walking as a preferred mode of travel within the city and to encourage the use of public transit for employment and other trips. Relating building entries as directly as possible to crosswalks and to pathways that lead to bus stops and transit stations is encouraged; siting buildings on a lot and developing site plans that reinforce expected multi-modal pathways over the lot and through the district is also encouraged.

Primary building access will be from two entry points along the Vassar street frontage. Broad, sloped walkways (less than five percent grade) are proposed to facilitate direct, universal access, and are designed to align with the anticipated significant flow of pedestrian traffic coming from the east and west along the Vassar Street sidewalk.

The walkways run parallel to the building's structural "V" braces (Figure 1.10f) with the intent to integrate the path of entry with their monumental presence. Together, the braces support the upper, projecting floors of the east and west research pavilions and frame a long canopy along Vassar Street offering shelter from the elements to building entrants.

The underlying steel structure of the braces (similar to ground floor columns) will receive a metal cladding to provide precise and refined edge profiles. The boxed-frames are rotated about their central axis and thereby recall the prismatic qualities of the façade panels above. The metal brace enclosures terminate squarely with the building's stone entry plinth as a direct and elegant intersection of the two materials. The design team is continuing to refine

the details of these assemblies, in addition to provisions for cane detection by the visually-impaired.

The Project proposes enhancements to the existing multi-modal path and existing pedestrian crossing along the building's west façade that is currently located between the Project and the MIT CUP, and extends across Vassar Street. The Project will improve the existing 9-foot-wide multi-modal path with new unit pavers, shade trees, new lighting and wayfinding, and installation of safety measures over the existing railroad tracks. As well, site design will provide adjacent bike racks, trash receptacles and benches.

(5) Pedestrians and bicyclists are able to access the site safely and conveniently; bicyclists should have, secure storage facilities conveniently located on-site and out of the weather. If bicycle parking is provided in a garage, special attention must be paid to providing safe access to the facilities from the outside.

The Project's short-term bicycle parking is proposed to the west of the Project between Building 42, and to the north along the future Grand Junction Multi-Use Path, adjacent the existing MIT Albany Garage. Along the building's west façade, a dedicated entrance will provide access to long-term bicycle parking

(6) Alternate means of serving this policy objective 19.32 through special building design, siting, or site design can be anticipated where the building form or use is distinctive such as freestanding parking structures, large institutional buildings such as churches and auditoriums, freestanding service buildings, power plants, athletic facilities, manufacturing plants, etc.

The Project's proposed height and setbacks are consistent with the established streetscape and pattern of development in the surrounding campus context.

2.1.3 19:33: Environmental Impacts and Mitigation

The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include:

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

(a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.

The majority of mechanical equipment will be placed in the 8th floor mechanical penthouse to prevent and minimize both visual and audible impact by the units. Any mechanical equipment installed on the roof above the penthouse will be carefully designed to minimize

noise and visual impacts through use of screening and/or setback. Refer to Section 2.1.4 for a preliminary noise mitigation narrative.

(b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building areas, particularly with regard to residential neighborhoods and views and vistas.

A mechanical penthouse will house the majority of the mechanical equipment that forms massing symmetry for the building. The mechanical penthouse enclosure is designed as a continuation of the north and east façade modules with anodized aluminum panels. The design of the mechanical penthouse is thoroughly integrated in the overall building narratives.

(c) Placement of mechanical equipment at locations on the site other than on the rooftop (such as in the basement), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives.

The mechanical penthouse will be set back 20′ away from south façade looking over Vassar street. The equipment that are installed on the roof above the penthouse will be located at minimum 10′ away from the building perimeter for maintenance access. While the Project does have a basement, it will contain shell space for future classroom or office program.

(d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are carefully designed as features of the building, thus creating interest on the skyline.

The majority of mechanical equipment will be placed in the 8th floor mechanical penthouse to prevent and minimize both visual and audible impact by the units. The Project will likely include two exhaust stacks, one for the generator and one for lab exhaust, that will extend above the mechanical penthouse. Any mechanical equipment and or stacks installed on the roof above the penthouse will be carefully designed to minimize impacts on views through screening and/or setback, and will include appropriate acoustical silencers as necessary.

(e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

Any vertical elements that extend above the penthouse will be carefully designed to minimize impacts on views, and will not be visible from any residential neighborhood.

(2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

Trash and recycling compactors will sit within the loading dock that is located on the east side of the Project adjacent to Building 46. Generally, loading activities will occur interior to the loading dock, with trash and recycling pickups occurring weekly, or as needed. The

loading area which includes the trash and compactor storage will be screened from the street.

(3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

The loading area will include an architectural screening element so that interior loading operations, including trash and compactor storage, will be screened from the street. Additionally, the loading dock has been sited to minimize the visual and operational impact on neighboring buildings, which are all controlled by MIT.

(4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

The Project Site will be designed to meet the provisions of MassDEP's Stormwater Management Policy for a redevelopment project and standard engineering practices in the State of Massachusetts. Stormwater management strategies for the Project building and proposed site improvements will provide mitigation of stormwater runoff as required by the City of Cambridge standards (25-2 rate deduction and 65 percent phosphorous removal).

Proposed stormwater management measures will include the use of Cambridge-approved Best Management Practices (BMP's), underground detention/infiltration systems, deep sump catch basins, and green roofs that will help to control peak rates of runoff and quality of runoff. The current Project design incorporates an extensive green roof system that represents approximately 68 percent (15,391 SF), of the roof area. Also, where possible, site stormwater will be directed into landscaping or porous surfaces to promote increased infiltration. Groundwater is estimated to be around Elevation 12 Cambridge City Base (CBC), as such the bottom of the Project's infiltration systems will be located at Elevation 14 CBC.

During construction, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the Project Site per the requirements of the United States Environmental Protection Agency ("US EPA") National Pollutant Discharge Elimination System (NPDES), Construction General Permit (CGP).

(5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

The existing site is largely constructed of impervious surfaces including an existing building and surface parking. The current Project design proposes approximately 11,853 SF of new, improved, publicly accessible open space along the south and west locations of the building, and along the future Grand Junction Multi-Use Path. The Proposed open space will include approximately 2,668 SF of permeable surfaces that will include the strategic use of permeable and or porous unit pavers, and landscaping to reduce impervious area. The current Project design also incorporates an extensive green roof system that represents approximately 68 percent (15,391 SF), of the roof area. The green roof will not be occupiable.

(6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of

adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.60 of this Zoning Ordinance.

Refer to Figures 2.2a-c or studies depicting net new shadow cast by the Project. The building which rises only eight stories above grade will have limited net new shadow impact on the public realm along Vassar Street. The majority of net new shadows cast by the Project will be cast to the west, north and east onto existing MIT buildings.

(7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

No retaining walls are required on the Project Site. A minimum building finish floor elevation was established based upon MIT and City flood modeling[1] of the 2070 100-year design storm. A freeboard height of one foot was added to the anticipated flood elevation to establish the minimum finish floor elevation of 22.7 CBC. Access to the two primary entries along the building's south façade is accommodated via two sloped accessible walkways (less than five percent slope) which bring the pedestrians up approximately fifteen inches from the existing grade along the property line / back of sidewalk. In addition to the sloped walkways, pedestrian access is also accommodated via a monolithic staircase with three risers.

(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

The Project Site is located within the MIT campus and the block is bordered by Industry Zoning Districts & and Special Zoning Districts to the north. The closest residential buildings are in Newtowne Court, over 600 feet away.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

Outdoor building and landscape lighting will provide sufficient light levels for safety and an active public realm, but respect the dark-sky requirements of LEED & the City of Cambridge Outdoor Lighting Ordinance.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

The Applicant retained a landscaping consultant, in association with an arborist, to conduct a tree study and mitigation plans for the Project. The Applicant submitted a report on this study to DPW and the City Arborist on July 1, 2020. A copy of the Tree Protection Plan is provided in Appendix A.

The tree study has identified that there are five "significant" trees within the meaning of Section 8.66.030 of the Cambridge Municipal Code (the "Tree Ordinance") on the existing Project Site that will have to be removed to allow construction of the Project. The five trees were removed October 26, 2020. The Project proposes five (5) new trees along the existing

[1] The projected storm events and the projected flood elevations are consistent between the MIT flood model and the City's flood model.

multi-modal path and existing pedestrian crossing along the building's west façade that is currently located between the Project and the MIT CUP. As part of MIT's separate project to upgrade and expand MIT's CUP, MIT will be planting seven (7) new trees along the existing multi-modal path along the west façade of the MIT CUP, creating a continuous corridor of trees along the pathway that connects Vassar Street to Albany Street.

The Project will also contribute to MIT's Vassar street tree replacement project. As described in the Tree Study Memorandum in Appendix A, the nearly 50-tree replacement planned for Vassar Street between Main Street and Massachusetts Avenue are public street trees, but they are part of a long-term obligation of MIT to maintain the Vassar Street improvements made more than 15 years ago as a part of the MIT-City Vassar Street Memorandum of Understanding. The 2020 tree replacement project will work around the area of the new Schwarzman College of Computing, planting 36 trees the fall of 2020 fall, with the balance to be planted in 2023 with the SCC project. Approximately nine (9) street trees within the Vassar street tree replacement project scope, along with three (3) additional new street trees fall within the limit of work for the Project, and will be replaced once Project construction is complete.

2.1.4 Noise Mitigation Narrative

The Project is expected to comply with the City of Cambridge Noise Ordinance and Massachusetts Department of Environmental Protection's (MassDEP's) Noise Regulations . The site layout and building design, as it relates to the service/loading area and management of deliveries and location of building mechanical equipment at the Project Site have been considered. The determination of specific generator parameters, such as the sizes and locations will be made during the design development process.

Building Mechanical Equipment

Since the Project is in the early stages of the design process, the full extent and specific details of the building mechanical equipment are unknown at this time. Based on preliminary design plans, it is anticipated that the majority of mechanical equipment will be placed in the 8th floor mechanical penthouse to prevent and minimize both visual and audible impact by the units. The Project will likely include two exhaust stacks, one for the generator and one for lab exhaust, that will extend above the mechanical penthouse. The emergency generators and other regulated equipment will be tested during daytime hours. All mechanical equipment within the penthouse and or stacks installed on the roof above the penthouse will include appropriate acoustical silencers as necessary to comply with the City's Noise Control Ordinance (Chapter 8.16).

The Project will also be required to adhere to MassDEP's regulations that require such equipment to be certified and registered. As part of the air permitting process, the Project will be required to meet additional noise requirements described in MassDEP regulations under the Codes of Massachusetts Regulations (310 CMR 7.00). When the details of the emergency generator are developed, the Applicant will submit the appropriate permit application to MassDEP, which would include noise mitigation measures, such as acoustic enclosures and exhaust silencers that are necessary to meet MassDEP's noise criteria.

Building Service and Loading

Loading and trash removal will be conducted in the loading dock located on the south side of the building. Generally, loading activities will occur interior to the loading dock, with deliveries occurring between the hours of 9:00 AM and 9:00 PM in accordance with the Cambridge Noise Ordinance. When the trucks are idle, they will be required to shut off their engines for loading and unloading. The Project does not propose residential uses, and it is not anticipated that the Project will have any noise impact on the nearest residential building, which is over 600 feet away in Newtowne Court.

2.1.5 19.34: Adequate City Infrastructure Services

Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system. Indicators include:

(1) The building and site design are designed to make use of water-conserving plumbing and minimize the amount of stormwater run-off through the use of best management practices for stormwater management.

Overall water demand for the Project will be reduced through the use of appropriate low-flow and low-consumption plumbing fixtures, which will be installed in the Project to achieve an anticipated reduction in water usage of 30 percent from the baseline as specified in the LEED v4 Reference Guide and will be Water Sense labelled. The landscape design will demonstrate at least a 50 percent reduction in potable water demand for outdoor water use through specification of native, tolerant plant species with low water demand, and, if required, installation of efficient irrigation systems.

The Project Site will be designed to meet the provisions of MassDEP's Stormwater Management Policy for a redevelopment project and standard engineering practices in the State of Massachusetts. Stormwater management strategies for the Project building and proposed site improvements will provide mitigation of stormwater runoff as required by the City of Cambridge standards (25-2 rate deduction and 65 percent phosphorous removal).

Proposed stormwater management measures will include the use of Cambridge-approved Best Management Practices (BMP's), underground detention/infiltration systems, deep sump catch basins, and green roofs that will help to control peak rates of runoff and quality of runoff. The current Project design incorporates an extensive green roof system that represents approximately 68 percent, (15,391 SF) of the roof area. Also, where possible, site stormwater will be directed into landscaping or porous surfaces to promote increased infiltration.

(2) The capacity and condition of drinking water and wastewater infrastructure systems are shown to be adequate, or the steps necessary to bring them up to an acceptable level are identified.

Based on conversation with MIT and the Cambridge Water Department (CWD), there are currently no water capacity issues anticipated in the vicinity of the Project Site. Hydrant flow tests will be performed to determine the capacity of the water main in Vassar Street. Should it be determined that there is inadequate pressure and volume available a booster pump will

be provided as part of the Project to handle the deficiency. It is not anticipated that any improvements to the City owned infrastructure will be required for this Project.

The Applicant will work with CWD on the development of the project design and submit plans for formal approval prior to the issuance of the Building Permit for the Project.

(3) Buildings are designed to use natural resources and energy resources efficiently in construction, maintenance, and long-term operation of the building, including supporting mechanical systems that reduce the need for mechanical equipment generally and its location on the roof of a building specifically. The buildings are sited on the lot to allow construction on adjacent lots to do the same. Compliance with Leadership in Energy and Environmental Design (LEED) certification standards and other evolving environmental efficiency standards is encouraged.

The Project will incorporate high performance building design measures that will greatly contribute to energy and water conservation efforts. The Project is pursuing LEED v4 for New Construction and Major Renovation (LEED-NC), Gold level. Refer to Appendix B for more details about the Project's compliance with Article 22 and Green Building narrative.

2.1.6 19.35: Reinforce and Enhance Urban and Historical Context

New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically. Indictors include:

(1) New educational institutional construction that is focused within the existing campuses.

The Project is located on MIT's campus, and on parcels owned by MIT.

(2) Where institutional construction occurs in commercial areas, retail, consumer service enterprises, and other uses that are accessible to the general public are provided at the ground (or lower) floors of buildings. Where such uses are not suitable for programmatic reasons, institutional uses that encourage active pedestrian traffic to and from the site.

The building has intentionally located the publicly accessible cafe on Level 1 of the Project, fronting Vassar Street. At the ground level the public realm will tie directly to the Project's universally accessible entry sequence, gathering spaces, and bicycle parking. Publicly accessible open space activates areas to the south and west of the building, and along the future Grand Junction Multi-Use Path.

(3) In large, multiple-building non-institutional developments, a mix of uses, including publicly accessible retail activity, is provided where such uses are permitted and where the mix of uses extends the period of time the area remains active throughout the day.

The Project is a single building that proposes institutional and academic uses that will support the College program requirements, including office space, research laboratory space, academic space, function/event space, collaboration and meeting space, convening space, and café space.

(4) Historic structures and environments are preserved.

The Project Site is outside of the nearest Conservation & Historic Districts located approximately 1.0 mile to the northwest and southwest. Select National Register sites are located on adjacent blocks.

On December 20, 2019, the Applicant filed an application with the Cambridge Historical Commission in anticipation of the desire to demolish Building 44 on Vassar Street, to make way for the Project. After a public hearing held on January 2, 2020, the Commission determined that while Building 44 is significant (based largely on the scientific activities that have taken place there), it is not preferably preserved. A general construction permit was subsequently filed with Inspectional Services Department on May 15, 2020 for the utility enabling and site preparation work scope.

As noted previously, the Applicant is continuing to identify stakeholders and available resources to honor the significance of the original site's Cyclotron and scientific research uses. The Applicant will explore the potential to install a publicly-accessible interpretive exhibit in a designated location adjacent the building's ground floor lobby.

(5) Preservation or provision of facilities for start-up companies and appropriately scaled manufacturing activities that provide a wide diversity of employment paths for Cambridge residents as a component of the development; however, activities heavily dependent on trucking for supply and distribution are not encouraged.

The Project proposes institutional and academic uses that will support the College program requirements.

2.1.7 19.37: Enhance and Expand Open Space/Public Realm

Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city. Indicators include:

› *(1) On large-parcel commercial developments, publicly beneficial open space is provided.*

The current Project design proposes approximately 11,853 SF of new, improved, publicly accessible open to the south and west of the building, and along the future Grand Junction Multi-Use Path. The Proposed open space will include approximately 2,668 SF of permeable surfaces that will include the strategic use of permeable and or porous unit pavers, and landscaping to reduce impervious area. The current Project design also incorporates an extensive green roof system that represents approximately 68 percent, (15,391 SF) of the roof area.

The Project proposes approximately 7,409 SF of additional improvements within the public ROW along Vassar Street, which include a 11-foot furnishing zone, an approximately eight (8)-foot walkway zone, and an approximately six and a half (6.5) foot cycle track. To achieve these widths, the Applicant proposes the removal of five (5) on-street City metered parking spaces to allow the extension of the curb line by approximately six (6) feet. The potential elimination of these spaces would accommodate a proposed rideshare drop-of /pickup area adjacent the curb cut for the loading and service area.

(2) Open space facilities are designed to enhance or expand existing facilities or to expand networks of pedestrian and bicycle movement within the vicinity of the development.

Pedestrian realm and streetscape improvements associated with the Project will establish a clear hierarchy for pedestrian, bicycle, and vehicular travel, provide opportunities for new landscaped open space, and strengthen physical and academic connections to the various academic buildings and colleges on the Main Campus South of Vassar Street, which are critical to the interdisciplinary mission of the College

As described in Section 1.3 of Chapter 1, *Project Description*, the Project proposes enhancements to the existing multi-modal path and existing pedestrian crossing along the building's west façade that is currently located between the Project and the MIT CUP, and extends across Vassar Street.

(3) A wider range of open space activities than presently found in the abutting area is provided.

The Project will foster new life and activity on the Project Site by inviting students, faculty and the public to engage with the building's publicly accessible programs, including but not limited to the lobby, café, convening space and meeting rooms located on Levels 1 and 2. The active street front and the Collaboration Cascade will provide a window from the street into the active, transparent uses that begin at the street level, and continue up through building to the signature function/event space in the rooftop pavilion. Publicly accessible open space along the south and west of the building, and along the future Grand Junction Multi-Use Path will be landscaped and programmed to invite the public to engage with the space, and provide a welcoming entry to the building.

3

Criteria for Issuance of Special Permits

The following section demonstrates how the Project conforms with Section 10.43: Criteria for Issuance of Special Permits.

3.1 Demonstration of Conformance with Section 10.43

3.1.1 Compliance with Requirements of Ordinance

As demonstrated by the Table 1 Dimensional Form and the list of requested Special Permits presented in the *Special Permit Application Form Supplemental Documentation* section of the application, the Project will meet all applicable requirements of this Ordinance.

3.1.2 Project-Related Traffic and Access

The Project is not anticipated to generate traffic or patterns of access or egress that would cause congestion, hazard, or substantial change in established neighborhood character.

The Project does not propose any on-site parking in support of the Project. Building occupants who drive and park on-campus, will be able to do so in an existing MIT parking facility. No additional parking spaces will be added to the MIT parking supply, the expectation is for the net new occupants who drive and park on-campus to use MIT's existing vehicle parking supply. As part of this application, the Applicant requests a special permit to eliminate required off-street parking consistent with Section 6.35.1 of the Zoning Code. Refer to Appendix C, Section 2.3 for additional details on the parking analysis.

Vehicular loading and service will be provided through an existing curb cut off Vassar Street along the eastern edge of the building abutting Building 46. The curb cut will be less than 30 feet, and therefore will not require a special permit.[1] All service and loading will happen interior to the loading dock, which will include an architectural screen. The Project proposes a rideshare drop-of /pickup area adjacent the curb cut for the loading and service area along Vassar Street. Refer to Appendix C for more information.

As described in Section 1.3 of Chapter 1, *Project Description*, the Project proposes enhancements to the existing multi-modal path and existing multi-modal crossing along the

[1] Section 6.9.2 of the Zoning Code

building's west façade that provides an important connection between the Project Site, the future Grand Junction Multi-Use Path, the Vassar Street corridor and the main MIT campus south of Vassar Street. The Project will also enhance the public realm with a widened furnishing zone, a generous sidewalk, and a new cycle track. Figure 1.10 of Chapter 1, *Project Description*, demonstrates such improvements to enhance the Project Site's public realm. The Project proposes new accessible entrances designed to align with the anticipated significant flow of pedestrian traffic coming from the east and west along the Vassar Street sidewalk.

3.1.3 Impact to Adjacent Uses

The Project is located on the MIT campus, and is surrounded by MIT buildings. As described in Section 1.2 of Chapter 1, *Project Description*, the Project Site was selected for its physical proximity to related departments, such as the Stata Center, home to the MIT Computer Science and Artificial Intelligence Laboratory, the MIT Institute for Data, Systems, and Society, and the Department of Electrical Engineering and Computer Science.

The Project will not adversely affect the continued operation of adjacent uses. In fact, it is expected to enhance the development of adjacent uses, as permitted in the Zoning Ordinance. The active ground floor uses will bring more life and activity to Vassar Street, which is becoming an important pedestrian corridor that links the two sides of the MIT's campus together. The addition of trees, green space and seating to the west and south of the building provides relief on a formerly industrial streetscape that had limited green space.

The Proponent is committed to working with the City of Cambridge to ensure that the Project, and associated improvements enhance, and do not interfere with the planned construction of the future Grand Junction Multi-Use Path to the north of the Project.

3.1.4 Health, Safety, and/or Welfare of Occupants and Public

The Project will be designed with a strong focus on health, safety, and the wellness of occupants and the public. The Project is targeting LEED Gold certification through USGBC/GBCI using the New Construction and Major Renovation (LEED-NC) rating system. The Project is currently showing achievement of 71 points, which far exceeds the minimum 60 points required for Gold certification. The design will incorporate sustainability measures, including but not limited to indoor air quality, environmentally preferable building materials, and energy-efficient systems, and will be in conformance with the current state building code, including the Stretch Energy Code. Additionally, the Project will be operated in compliance with all health and safety regulations of the City of Cambridge.

The Project also proposes substantial improvements to the public realm and site circulation, which include improving the existing 9-foot-wide multi-modal path with new unit pavers, shade trees, new lighting and wayfinding, and installation of safety measures over the existing railroad tracks. As well, site design will provide adjacent bike racks, trash receptacles and benches.

3.1.5 Project-Related Impacts to the District or Adjoining Districts

As detailed in Section 3.1.3, the Project is located on the MIT Campus, and is surrounded by existing MIT buildings. As described in Section 1.2 of Chapter 1, *Project Description*, the Project Site was selected for its physical proximity to related departments, and no impacts are anticipated to any buildings within the district, or adjoining districts.

3.1.6 Consistency with Urban Design Objectives

As proposed, the Project's design is consistent with the Urban Design Objectives as discussed in Chapter 2, *Urban Design*.

4

Sustainable Design and Development

In compliance with Sections 22.20 through 22.25 of Article 22, Sustainable Design and Development, of the Zoning Ordinance, the Project has developed a holistic and robust sustainability approach that will result in a high performance, low-carbon, healthy building that is resilient to future changes in climate. The following chapter summarizes the Project's sustainable design measures to meet Leadership in Energy and Environmental Design (LEED) for New Construction version 4 (v4) - Gold certification, as well as proposed strategies for future transition to net zero greenhouse gas (GHG) emissions. The detailed Green Building and Net Zero Narratives are provided in Appendix B.

4.1 Summary of Green Building Narrative

In conformance with Section 22.23 of Article 22, the Applicant developed a detailed Green Building Report, outlining the Project's approach, credit-by-credit basis, to seek Gold certification, using LEED for New Construction v4 rating system. The City has determined that the Green Building Report provided by the Applicant is complete and demonstrates compliance with the Green Building Requirements of Section 22.24 at the special permit stage of review. Please refer to Appendix B for a copy of the certification letter issued on 10/15/2020.

Based on the Project's most current conceptual design, the Project is tracking 71 points, which exceeds the minimum requirement of 60 points for Gold level. There are also 12 additional "maybe" points currently under investigation. Table 4.1 summarizes the Project's LEEDv4 NC-Gold certification pathway.

Table 4-1 LEED Points Planned for v4 Gold Certification Pathway

Category	Points Planned (YES)	Maybe Points
IP: Integrative Process	1	-
LT: Location and Transportation	13	-
SS: Sustainable Sites	3	3
WE: Water Efficiency	5	1
EA: Energy and Atmosphere	25	2
MR: Materials and Resources	7	2
EQ: Indoor Environmental Quality	10	3
ID: Innovation in Design	6	-

Category	Points Planned (YES)	Maybe Points
RP: Regional Priority	1	1
TOTAL	**71**	**12**

4.1.1 Summary of LEED Credit Narrative

The LEEDv4-NC rating system is being used to evaluate and track sustainable design features of the Project. Key findings of the Project's green building approach, as further detailed in Appendix B include:

- The Applicant and the project team have implemented an Integrated Design Process holding a series of eight (8) sustainability focused workshops to date to collectively define project goals, refine and review the analysis to support the sustainability and resilience goals and priorities to support a healthy, low carbon building design. Initial energy, GHG emissions and water reduction goals were established and parametric analysis served to inform the building envelope design.
- The Project will encourage non-automobile transportation with good access to public transportation of the Kendall/MIT Redline station and multiple bus stops. The Project Site is a walker's paradise with a walk score of 92 and a biker's paradise with a bike score of 99. 71 short-term and a minimum of 36 covered long-term bicycle parking spaces will be provided for building occupants.
- Preliminary energy modeling shows the proposed design achieves a 53.7 percent reduction in energy cost compared to a LEED baseline which results in 18 of 18 optimize energy performance points.
- The Applicant will pursue all six (6) points under LEED for Enhanced Commissioning meaning a building systems and equipment as well as building envelope (BECx) will be commissioned. Monitoring-based commissioning services (MBCx) will also be engaged, KGS Clockworks, to provide ongoing commissioning and fault detection during operation to ensure the building is operating as designed and in an energy-efficient manner.
- The Project will conduct a Life Cycle Assessment (LCA) to assess scope three (3) embodied carbon emissions and is targeting a five (5) percent reduction in embodied carbon from a comparable baseline. Structure and enclosure materials will provide Environmental Product Declarations (EPDs) to support the LCA.
- Materials will exceed minimum LEED requirements for material transparency (Option 1) by specifying materials that not only have Health Product Declarations (HPDs) or equivalent chemical inventory declarations but will specify ILFI Red List Free interior finish materials for materials where multiple products are available and without cost premiums. This aligns with Option 2 Material Ingredient Optimization which requires the Project specify at least ten (10) Red List-free materials.
- The Project will provide good indoor air quality through several strategies focused on source control, filtration, construction practices and verification and achievement of LEED EQ credits for Enhanced Indoor Air Quality Strategies (EQc1), Low-emitting materials (EQc2), Construction Indoor Air Quality Management (EQc3) and Indoor Air quality Assessment (EQc4).

- The Project is pursuing LEED Pilot credit Comprehensive Composting to further reduce waste generation by collecting organic waste in addition to recyclables.
- The Project Site and proposed building have been designed to be resilient to 2070 flood impacts as defined by the MIT Flood Model and the City of Cambridge Flood Model.[1] The Project Site is currently not defined in a FEMA flood hazard zone. The 2070 100-year storm (24-hour design rain) event has been used as the basis for determining ground floor elevation. This is assumed to be 8.5 inches of rainfall in 24 hours. The Project design flood elevation inclusive of one foot of freeboard is therefore +21.34 CBC and the current design ground floor elevation is +22.27 CBC.
  - All critical equipment, as defined by the Applicant, has been located on the Penthouse and roof of the building.

For credit by credit details, refer to the Green Building Narrative in Appendix B.

4.2 Summary of Net Zero Narrative

In 2016, MIT advanced its climate change mitigation efforts by joining local partners, Boston Medical Center and Post Office Square Redevelopment Corporation, in a 25-year power purchase agreement (PPA). The PPA enabled the construction of a roughly 650-acre, 60-megawatt solar farm – a largest aggregate renewable-energy purchase by an alliance of organizations in the U.S. at the time. The impact of this initial PPA on MIT's carbon footprint is equivalent to more than half (17 percent) of the "32-percent emissions reduction by 2030 from a 2014 baseline" commitment in MIT's 2015 Climate Action Plan. As of 2019, net emissions are 18 percent below the 2014 baseline. Furthermore, the current upgrade and expansion of MIT's CUP, it will further reduce the emissions associated with campus utilities. As such, the Project, at initial opening, will benefit from this significant investment in the MIT CUP and GHG emissions reduction.

Table 4.2 summarizes the technical framework by which the Project can be transitioned to net zero greenhouse gas emissions in the future, including the future condition and process of transitioning from the proposed design to the future condition.

Table 4-2 Net Zero Emissions Transition

Campus Utilities Carbon Emissions		FY19	40MW[2] Anticipated	Percentage Reduction
Campus CHW[1]	lbs CO_2e/MMBtu	80.05	66.29	17%
Campus Steam	lbs CO_2e/MMBtu	150.59	144.35	4%
Campus Electricity	lbs CO_2e/kWh	0.639	0.57	11%

1 CHW – Chilled Water System
2 MW - Megawatt

For more details, refer to the Net Zero Narrative in Appendix B. In this document, the Applicant provides the projected energy use and GHG emissions of the Project, measures to improve energy performance and promote renewable energy, incentive programs that are

[1] The projected storm events and the projected flood elevations are consistent between the MIT flood model and the City's flood model.

being used to reduce energy demand, and pathways to transition the building to net zero emissions in the future.

4.3 Preliminary Energy Model Inputs

The Project will be highly energy efficient as compared to the Massachusetts Stretch Energy Code, 780 CMR Chapter 13 amended February 7, 2020. Preliminary energy modeling shows the proposed design achieves a 40-percent reduction in energy and a 42-percent reduction in operational GHG emissions. The preliminary energy model also demonstrated an Energy Use Intensity (kBtu/SF/year) of 36 in the proposed design as compared to a baseline of 60. This far exceeds the minimum Stretch Energy Code requirement for a 10-percent reduction in energy.

The proposed building envelope design exceeds the prescriptive performance of a code compliant baseline. The largest contributors are a window to wall ratio of 40 percent and high-performance glazing including a double skin south-east façade with low-U-values in excess of code minimums.

The proposed design utilizes energy efficient building systems including use of heat pump chillers at the building utilizing the campus chilled water as a heat sink/source to provide supplemental heating or cooling to the building, a dedicated outdoor air system (DOAS) air handling unit with V8 dynamic filters and energy recovery at 80 percent efficiency. Fan coil units with high efficiency motors are provided throughout occupied spaces, with demand control ventilation and LED lighting.

For more details on the Project's anticipated energy loads and GHG emissions, refer to Section 4 of the Net Zero Narrative in Appendix B.

5

Infrastructure

This section represents a cumulative discussion of the existing infrastructure systems and infrastructure needs for the which is being submitted for Article 19 Special Permit Project Review under.

The following utilities have been evaluated: sanitary sewer; water; stormwater management; natural gas; electricity; and telecommunications. Figure 5.1 shows the existing utilities that are available to the Project. Figure 5.2 show the schematic design for the proposed infrastructure systems and connections for the Project.

The Project will connect to existing City and utility company systems in the adjacent public right of way. Based on initial investigations and consultations with the appropriate agencies, all existing infrastructure systems are adequately sized to accept the incremental increase in demand associated with the redevelopment and operation of the Project. As design progresses, all required engineering analyses will be conducted where the final design will adhere to all applicable protocols and design standards ensuring that the proposed development of the building is properly supported by and properly utilizes City infrastructure. Detailed design of the Project's utility systems will proceed in conjunction with the design of the building and interior mechanical systems.

The systems discussed herein include those owned or managed by the DPW, CWD, MIT private utility companies and on-site infrastructure systems.

5.1 Sewer and Water Infrastructure

The capacity and condition of domestic water and sanitary sewer infrastructure systems are shown to be adequate.

5.1.1 Proposed Sanitary Sewer Generation and Connections

As depicted on Figure 5.2, sanitary sewer service will be provided by an 8-inch connection to the 10-inch dedicated municipal system in Vassar Street. Based on discussions with the DPW, the capacity and condition of the sewer and water mains in Vassar Street are known to be adequate and in good condition. It is not anticipated that upgrades to the existing municipal infrastructure will be required. The location of the proposed sewer connection to the municipal systems will continue to be discussed and reviewed with the DPW as the Project moves further into design.

The Project's wastewater generation rate was estimated using design sewage flow rates obtained from 310 CMR 15.000, The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-Site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage. Table 5-1 below displays existing and proposed sanitary flows.

Table 5-1 Estimated Wastewater Generation

Program Type	Quantity	Generation Rate	Total (GPD)
Existing Flow			
Building 44			
Office	16,119 GSF	75 GPD/1,000 SF	1,208
		Total Existing	**1,208**
Proposed Flow			
Building 45			
Office	174,000 GFA	75 GPD/1,000 SF	13,050
		Total Proposed	**13,050**
		NET NEW	**11,842**

GPD – Gallons Per Day

5.1.2 Domestic Water and Fire Protection

As depicted on Figure 5.2, domestic water for the Project will be provided by a single connection to the municipal water system in Vassar Street. Water flows for the Project have been estimated to be 14,355 Gallons Per Day (GPD) using a conservative increase of 10 percent of the wastewater generation. Fire water service for the proposed building will be provided by redundant 6-inch connections, one internal connection to the 10-inch MIT fire protection infrastructure and a second connection to the 12-inch municipal water system in Vassar Street. Domestic water service for the proposed building will be provided by a 4-inch connection to the 12-inch municipal water system in Vassar Street.

Overall water demand for the Project will be reduced through the use of appropriate low-flow and low-consumption plumbing fixtures, which will be installed in the Project to achieve an anticipated reduction in water usage of 30 percent from the baseline as specified in the LEED v4 Reference Guide and will be Water Sense labeled. The landscape design will demonstrate at least a 50 percent reduction in potable water demand for outdoor water use through specification of native, tolerant plant species with low-water demand and efficient irrigation systems (if required).

Based on conversation with the CWD, there are currently no water capacity issues in the vicinity of the Project Site. Hydrant flow tests will be performed to determine the capacity of the water main in Vassar Street. Should it be determined that there is inadequate pressure and volume available, a booster pump will be provided as part of the Project to handle the deficiency. It is not anticipated that any improvements to the City owned infrastructure will be required for this Project.

The Applicant will work with CWD on the development of the Project design and submit plans for formal approval prior to the issuance of the Building Permit for the Project.

5.2 Stormwater Management

The Project Site will be designed to meet the provisions of MassDEP's Stormwater Management Policy for a redevelopment project and standard engineering practices in the State of Massachusetts. Stormwater management strategies for the Project building and proposed site improvements will provide mitigation of stormwater runoff as required by the City of Cambridge standards (25-2 rate reduction and 65 percent phosphorous removal). Across the Project Site there will be an estimated reduction of impervious area by 40 percent. Existing stormwater enters directly into the City system unmitigated during all storm events.

Proposed stormwater management measures will include the use of Cambridge-approved BMP's, including underground detention/infiltration systems, deep sump catch basins, and green roofs that will help to control peak rates of runoff and quality of runoff. The current Project design incorporates an extensive green roof system that represents approximately 68 percent (15,391 SF), of the roof area. Also, where possible, site stormwater will be directed into landscaping or porous surfaces to promote increased infiltration. Groundwater is believed to be around elevation 12 CBC, as a result the bottom of the infiltration systems will be located at elevation 14 CBC.

Storm sewer flows (roof drain connections and site drainage) from the Project Site will be connected to the municipal storm system located in Vassar Street. Storm sewer flows for the Project will meet or reduce the existing flows from the Project Site. Based on discussions with the DPW, the capacity and condition of the storm sewer main in Vassar Street is known to be adequate and in good condition, therefore it is not anticipated that upgrades to the existing municipal infrastructure will be required. The location of the proposed storm drain service connection to the municipal systems will continue to be discussed and reviewed with the DPW as the Project moves further into design.

5.3 Other Utilities

There is an electric duct bank that passes through the Project Site through the Utility Corridor from west to east side of the existing building, which provided electric service to the existing building. Additionally, there is a gas main in Vassar Street available for connection; however, there are no current plans to connect.

5.3.1 Private Utility Services

There is a MIT-owned Medium Temperature Hot Water feed-and-return in the utility corridor that currently runs parallel with the electric duct bank that runs from the west side of the Project Site, to the southeastern corner and out towards Vassar Street. There is also an MIT-owned telecommunication duct bank that services the existing building from south face of Vassar Street and continues on out of the north face of the building towards the railroad tracks.