



CITY OF CAMBRIDGE

Community Development Department

To: Planning Board

From: CDD Staff

Date: January 20, 2021

Re: Special Permit PB #370, 51 Vassar Street (parcel address: 71 Vassar Street)

Submission Type: Special Permit Application

Applicant: Massachusetts Institute of Technology

Zoning District(s): Residence C-3B

Proposal Summary: Construction of a new building of 174,000 square feet of mixed institutional and academic uses including a publicly accessible café as well as 36 long-term and 71 short-term bicycle parking spaces.

Special Permits Requested: Project Review Special Permit (Section 19.20) and Special Permit for reduction of required off-street parking (Section 6.35.1). *A summary of the applicable special permit findings is listed on the following page. Applicable sections of the zoning are provided in an appendix.*

Other City Permits Needed: BZA Use Variance for food service (determination to be made by Inspectional Services Dept.)

Planning Board Action: Grant or deny requested special permits.

Memo Contents: Review of area planning and zoning, comments on proposal addressing planning, zoning, and urban design.

Other Staff Reports: Traffic, Parking and Transportation Dept. (TP+T), Department of Public Works (DPW), in separate documents.

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Requested Special Permits	Summarized Findings <i>(detailed zoning text on following pages)</i>
Project Review Special Permit (Section 19.20)	<ul style="list-style-type: none"> • The project will have no substantial adverse impact on city traffic within the study area, upon review of the traffic impact indicators analyzed in the Transportation Impact Study and mitigation efforts proposed. • The project is consistent with the urban design objectives of the City as set forth in Section 19.30.
Special Permit to reduce required parking (Section 6.35.1)	<p>Lesser amount of parking will not cause excessive congestion, endanger public safety, substantially reduce parking availability for other uses or otherwise adversely impact the neighborhood; or will provide positive environmental or other benefits to the users of the lot and the neighborhood, including assisting in provision of affordable housing units.</p>
General Special Permit Criteria (Section 10.43)	<p>Special permits will be normally granted if the zoning requirements are met, unless it is found not to be in the public interest due to one of the criteria enumerated in Section 10.43:</p> <ul style="list-style-type: none"> (a) It appears that requirements of this Ordinance cannot or will not be met, or (b) traffic generated or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character, or (c) the continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or (d) nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City, or (e) for other reasons, the proposed use would impair the integrity of the district or adjoining district, or otherwise derogate from the intent and purpose of this Ordinance, and (f) the new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30.

19.30 Citywide Urban Design Objectives [SUMMARIZED]

Objective	Indicators
New projects should be responsive to the existing or anticipated pattern of development.	<ul style="list-style-type: none"> • Transition to lower-scale neighborhoods • Consistency with established streetscape • Compatibility with adjacent uses • Consideration of nearby historic buildings
Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings.	<ul style="list-style-type: none"> • Inhabited ground floor spaces • Discouraged ground-floor parking • Windows on ground floor • Orienting entries to pedestrian pathways • Safe and convenient bicycle and pedestrian access
The building and site design should mitigate adverse environmental impacts of a development upon its neighbors.	<ul style="list-style-type: none"> • Location/impact of mechanical equipment • Location/impact of loading and trash handling • Stormwater management • Shadow impacts • Retaining walls, if provided • Building scale and wall treatment • Outdoor lighting • Tree protection (requires plan approved by City Arborist)
Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system.	<ul style="list-style-type: none"> • Water-conserving plumbing, stormwater management • Capacity/condition of water and wastewater service • Efficient design (LEED standards)
New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically.	<ul style="list-style-type: none"> • Institutional use focused on existing campuses • Mixed-use development (including retail) encouraged where allowed • Preservation of historic structures and environment • Provision of space for start-up companies, manufacturing activities
Expansion of the inventory of housing in the city is encouraged.	<ul style="list-style-type: none"> • Housing as a component of large, multi-building development • Affordable units exceeding zoning requirements, targeting units for middle-income families
Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city.	<ul style="list-style-type: none"> • Publicly beneficial open space provided in large-parcel commercial development • Enhance/expand existing open space, complement existing pedestrian/bicycle networks • Provide wider range of activities

Area Planning and Zoning

Site Context

The 409,261 square foot site is located in the Area 2/MIT Neighborhood between Main Street and Massachusetts Avenue on the Massachusetts Institute of Technology (MIT) campus. It is bounded by Vassar Street to the south; the MIT Central Utilities Plant (the “MIT CUP”) to the southwest; an active railroad line, a fire lane that is conceived of 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 to the northwest; and the MIT Brain and Cognitive Sciences Building (Building 46) to the east. The Project will be constructed on the former site of MIT Building 44, the Cyclotron Building, and is surrounded by property owned by MIT. In response to a demolition review, the Cambridge Historical Commission (CHC) found that the Cyclotron Building is historically significant, but did not recommend that it be preferably preserved on the condition that the history of the site is appropriately commemorated. The building has been demolished and MIT is working with CHC to ensure that this condition is met.



Image 1: Aerial photograph of the area surrounding 51 Vassar Street dated March 9, 2020.

Site Zoning

The site is located in the Residence C-3B base zoning district and the MIT Institutional Overlay District. The Residence C-3B district allows residential and institutional uses, including schools and hospitals, as-of-right. Most types of commercial land uses, such as offices, laboratories, and retail business, are not allowed in this district. The Residence C-3B development standards promote high-density development, with a maximum height of 120 feet and a maximum FAR of 3.0 for non-residential uses and 4.0 for residential uses. In addition, the open space ratio is only 10% and there is no minimum side yard setback requirement. While the site is located within the MIT Institutional Overlay District, the provisions of Section 4.50 of the Zoning Ordinance do not apply because they are only applicable to Residence A-1, A-2, B, C, and C-1 zoning districts.

Area Planning Studies

The City's Growth Policy, *Toward a Sustainable Future* (completed in 1993 and updated in 2007), articulated some key policies regarding Institutional Land Use. For many decades, the physical expansion of major institutions outside of their core areas has been a significant concern to the City. The Growth Policy recommended containing institutional growth within historic campus boundaries (as established by the Institutional Use Overlay Districts) while permitting these institutions to have enough density in their campuses to limit expansion into other areas, particularly residential neighborhoods and established commercial districts.

The recent *Envision Cambridge* (2019) comprehensive plan establishes city-wide planning goals and recommendations, designating this area as a "Higher Education Institutional Area." In these areas, *Envision Cambridge* reiterates support for growth within existing campus boundaries and adjacent evolving mixed-use areas, permitting reasonable densities for large institutions within their core campuses to avoid expansion into established commercial districts and low-density residential neighborhoods.

Comments on Development Proposal

Zoning Standards

Overall

MIT proposes to construct a new academic building to house the new Schwarzman College of Computing. The building will be approximately 174,000 square feet and will include a mix of office space, research laboratory space, academic space, function/event space, collaboration and meeting space, convening space, and café space. The proposed building will be eight stories tall, with a fully functional basement level. As mentioned earlier, it is located on the MIT campus and is surrounded by MIT buildings.

Uses

Vassar Street has become a hub for new construction on the edge of MIT's campus as the university seeks to grow within the core campus area. While the area once contained more low-scale laboratory and other supporting facilities, it is in the process of being transformed into a more active academic center. The building at 51 Vassar Street will be predominantly used for institutional and academic uses, which are allowed in the Residence C-3 district. However, MIT proposes 3,100 square feet of café use that would be accessible to MIT affiliates as well as to the general public. A determination by the Superintendent of Buildings will be required to determine whether that would be considered an accessory dining option to the otherwise academic use, or a principal use food services establishment, which may require a use variance.

GFA & FAR

The building will be approximately 174,000 square feet. Because it is on a large block of land all owned by MIT, the FAR limitations can be calculated across the entire land ownership. As indicated in the application, the total square footage on the surrounding MIT-owned "block" will be 670,124 square feet and the overall Floor Area Ratio (FAR) will be 1.64, which is significantly lower than the maximum of 3.0.

Since the green roof will not be used by building occupants, it is exempt from the calculation of Gross Floor Area (GFA).

Project plans show an “Accessible Roof” adjacent to the green roof (Figure #1.7j), and the Application is unclear regarding the purpose or dimensions of this space and if it counts towards the building’s GFA. According to Article 2.000 of the Zoning Ordinance, unroofed balconies above the third floor of a building count towards the total GFA. However, according to Section 22.34.1, in the Residence C-3B and certain other zoning districts, patios or decks that are adjacent to a Functional Green Roof Area are exempt from GFA calculations as long as the total space doesn’t exceed 15% of the amount of Functional Green Roof Area on the building and is set back at least 10 feet from all outer roof edges. Based on Figure #1.7j, it appears that the Accessible Roof meets the first of those two criteria, but it is unclear if it meets the second.

Building Height

The proposed building will be 120 feet in height, which is the maximum allowed by zoning for the Residence C-3 district.

Yard Setbacks and Open Space

The setback requirements for this project are unique due to the building’s location on a lot that includes other buildings. In this case, only front and rear yard setbacks would be required since the land owned on either side of the building is part of the same MIT-owned lot. Residence C-3B requires a minimum front yard setback of 10’, which the applicant proposes, and no rear yard setback.

There is no open space requirement for non-residential uses in the base district, though the citywide Building and Site Plan Requirements for new construction of 25,000 square feet or more require a minimum of 15% Green Area or Permeable Open Space, which can be met on lots held within common ownership and which can be modified or waived if the Planning Board finds that the objectives in Section 19.30 are met. The applicant proposes approximately 11,853 square feet of new or improved, publicly-accessible open space along the south and west of the building and along the future Grand Junction Multi-Use Path to the north. The proposed open space includes approximately 2,668 square feet of permeable surfaces (e.g., permeable and/or porous unit pavers, landscaping) at the ground level. The proposal also includes an extensive green roof on the top of the building that measures approximately 15,391 square feet. The existing site mostly consists of impervious surfaces so these interventions will improve upon the site’s current conditions.

Off-Street Parking

The proposal seeks special permit relief for a reduction in required parking per Section 6.35.1. The project would require 98 off-street parking spaces, but the applicant is seeking to waive that requirement and not provide off-street parking on-site. Instead, MIT plans to relocate the existing 22 surface parking spaces currently on-site to an off-site MIT parking facility. For a large institutional use, the parking requirements are normally met within the institution’s pooled parking supply. The request for relief simply means that MIT would not be required to add more parking spaces to their campus parking supply as a result of this project. The Traffic, Parking and Transportation Department (TP&T) supports the reduction in auto parking spaces because MIT can meet the building’s parking demands

using its institutional pool of parking spaces, and the City’s planning generally supports not creating new parking spaces that are not needed. Please see the separate memo from TP&T for additional information and analysis.

Bicycle Parking

The applicant proposes providing 36 long-term bicycle parking spaces and 71 short-term bicycle parking spaces, which meets the minimum numbers required by zoning. However, the bicycle parking plans do not meet the City’s required scale of 1 inch : 10 feet. It’s important to have an appropriately-scaled plan so that staff can evaluate if the physical parking spaces meet City design standards. It’s also possible that the number of required bicycle parking spaces will change based on ISD’s determination regarding the proposed retail café use.

All of the long-term bicycle parking spaces will be located in the basement of the building (see Figure #1.7a). The application mentions that there will be a dedicated entrance to the long-term bicycle parking, but it inconsistently mentions entries along the west, southwest, and east building elevation. Figure #1.14 shows various building entries, but does not identify where the dedicated long-term bicycle parking entrance is located. Short-term bicycle parking will be located to the west of the building, between it and Building 42, and north of the site along the future Grand Junction Multi-Use Path, adjacent to the existing MIT Albany Garage (see Figure #1.11). The placement of the lighting fixtures depicted in Figure #1.11 will need to be coordinated with City staff to ensure that the short-term bicycle parking spaces located near the garage meet the dimensional requirements.

Special Permits

In addition to the reduction in parking, this project requires a Project Review Special Permit as the new construction exceeds 50,000 square feet in GFA, which requires review of the transportation impacts (discussed in the TP&T memo) and urban design characteristics (discussed in the next section of this memo) of the project.

URBAN DESIGN COMMENTS

CDD staff has met several times with the MIT team during the preliminary and schematic design phase last year and appreciates the team’s previous effort and its continued dialogue on design development of the project. The meetings held so far included CHC staff, Urban Design (UD)/Sustainability team, and other City staff including TP+T and DPW. UD staff believes, the proposed MIT SCC is distinctive and elegant in its simplicity of form, utility and building siting. Overall, staff is pleased with the proposed design and outcome of the MIT team’s design process.

Built-form: Massing, Form and Architectural character

The proposed SCC is an eight-story, primarily rectangular glass building, approximately 118’ high. The building spans over the existing railroad and future Grand Junction Multi-Use path to the north; and connects to the neighboring Brain & Cognitive Sciences complex (Building#46) via a 3rd level pedestrian walkway over the loading dock area.

Staff believes the building form and massing are appropriate and contextual. The symmetrical south building façade, formed by the two pavilion spaces and central space, appears as if the entire building is comprised of two glass volumes, each carried by a v-shaped structural frame bracing. The transparent and elegant icy blue grey glass volumes are connected by a central common space maximizing daylight and views for the open stairs, collaboration and convening spaces.

The perimeter floors for levels 3-8 are gracefully supported by the v-shaped structural steel frame bracing encased in greyish silver metal cladding. The design expands the space for the public realm at the building front by eliminating corner columns and providing an uninterrupted flow at the building corners while still expressing a structural purpose. The outcome projects a strong building identity and an iconic image.

Façade Design & Details

The south façade is distinctively different from the east, west and north façade. It is by far, the most intriguing façade. It offers transparency while providing energy performance equivalent to an opaque insulated wall. The prismatic double skin glass façade with air cavity provides an extra insulation and is equipped with an automatic roller blinds for shading purposes. Staff anticipates receiving additional information and details related to the system's performance, configuration, and internal mechanism. One concern for staff is the potential for condensation on the glazing inner layer overtime and for discoloration.

On the north façade, where the Grand Junction rail tracks run directly underneath the building, levels 3-8 are supported by a structural framing of six columns in metal cladding resting on concrete pedestals. Staff appreciates the stylish simplicity of glass and metal details for levels 3-8. However, the façade portion of levels 1-2 below appears plain by comparison. The concrete pedestals for the building columns appear oversized. It is unclear whether the concrete pedestal size was determined by structural load, safety to guard against a derailed train, by architectural design or a combination of these. Staff would like to see further design exploration of this portion of the north façade including if modifying the height, width and length of the concrete pedestals is possible to reduce the visual impact at the pedestrian scale. Staff also expects the MIT team would continue exploring design elements to enliven the visual experience of this side of the building and Grand Junction Multi-Use Path including an opportunity to brighten up the space by some wall transparency, art work, building underside lighting and perhaps a see-through stair sides or underside for visual connection to the outside. Staff also expects the team would provide additional information and coordination related to easements and clearances for the Grand Junction rail and Multi-Use Path.

Building Entrance

The two-story glass lobby wall provides two entrances with vestibules leading directly to the approximately 30' high interior lobby and the common spaces. The active spaces at the ground level include an open communicating stairway, community convening space, and a café. All are oriented toward and visually connected to the street and the campus to the south. The grand space for the entries is centrally located along the building front and is accessible via low steps and sloped stone pavement gently rising from the public sidewalk to the slightly elevated building plinth. Staff believes

the interior spaces including the collaboration spaces are the most exciting interior spaces of the building.

The SCC building glass lobby is approximately aligned with the existing glass atrium of the EG&G Education Center/College of Engineering building complex (building#38) on the south side of Vassar Street. The exterior space along the building front provides an open space amenity to the public realm and is enhanced with high quality hardscape of stone pavement, stone seating bench and stainless-steel handrails and creating a civic minded gesture of relationship to the campus on the south of Vassar Street. Staff anticipates that this grand space would improve the character of Vassar Street and recognizes the strong axial and visual connection between the proposed SCC building two-story lobby and atrium lobby of the existing EG&G building.

Mechanical Equipment & Services- Mechanical penthouse and roof top equipment

The proposed MIT SCC building uses roughly one third of level 8 floor space as a mechanical penthouse serving the building. The mechanical penthouse is fully enclosed and about 16' high. Level 8 also includes an event space, pre-function area and conference rooms. The remainder of the mechanical equipment is on the roof level. The roof level also includes the elevator bulkhead and override space which rises above the roof level. Staff appreciates the inclusion of a green roof and anticipates receiving additional information related to the mechanical penthouse screening material, height of parapet edge and elevator bulkhead.

Open Space and Public Realm

The MIT SCC public realm is composed of roughly 11,850 SF of open space, of which 2,668 SF or roughly 23% is permeable surface. This includes the publicly accessible exterior building space in front of the building which connects to the existing public sidewalk and existing bike path. The building's open space also includes a connection for people walking and bicycling to the future Grand Junction Multi-Use Path and to the at-grade crossing that enables people to access Albany Street. The width of this space needs to be modified so there is a total of 14' clear space.

Staff believes the open space and the 10' set back in front of the SCC building would improve the character of Vassar Street. Also, the building relationship to other MIT buildings is appropriate. For example, the strong visual connection between the building's front entry space and that of the existing EG&G building to the south is positive addition to the public realm. Both are almost on the same visual axis and create a sense of connection to the remainder of the campus to the south.

Right-of-way, Pedestrians and Bicycle Connection, Streetscape and Access to the Grand Junction

For the public right of way/street design in front of the building we expect that the design will be consistent with the Vassar Street corridor and that staff from TP&T, CDD and DPW will work on final design review for any potential changes to Vassar Street during the Project's Building Permit process (including on-street parking spaces, curb regulations, any curb line changes, street trees, and any changes to the existing crosswalk). It is important to ensure that the existing crossing for pedestrians and cyclists is safe, clear, attractive and inviting. The use of street furniture (e.g., pedestrian lighting, signage) and streetscape elements may be used to emphasize safe street crossing.

The multi-use path accessing the Grand Junction at the side of the building is a wonderful opportunity to create attractive and welcoming connections for people walking and cycling. In this area there needs to be a 14-foot wide total clear zone in between vertical elements for the path and buffers. Staff from relevant City departments (CDD, TP&T, and DPW) will look at the final design of the multi-use path as part of the continuing review during the Project's Building Permit process.

Tree Plan

MIT proposes to replant numerous trees along Vassar from Main to Massachusetts Avenue. The proposed tree replanting scheme will enhance the public realm and street space providing shading and increasing the street's tree canopy. Additional opportunities for tree planting are welcome, with the details to be coordinated with City staff for appropriate spacing and buffers, taking into consideration sight lines, tree health, and access for people walking and cycling; the placement and design of these are subject to further detailed design review with City staff.

Sustainability

The proposed project is subject to the Green Building Requirements in Section 22.20 of the Cambridge Zoning Ordinance. According to the Green Building submission, the project is currently designed to achieve a LEED Gold standard under LEED v4 BD+C – New Construction and Major Renovation, with 71 “Yes” credit points, and an additional 12 points designated as “possible.” As required, the submission includes a Net Zero Narrative providing details of design considerations to reduce energy use with regard to building envelope, HVAC systems, hot water systems, and renewable energy.

The project is pursuing LEED's Integrative Design Process credit, which promotes high-performance, cost-effective project outcomes through the early analysis, synergies across disciplines and building systems, assembling and involving the Project Team early in the design and development process, and engaging in design charrettes and trades training sessions. Staff supports this approach to the design and construction of green buildings.

The project is integrating positive features in the proposed mechanical system, including high performance glazing with a double-layer curtain wall on the southeast façade, low window-to-wall ratio at 40%, heat pump chillers utilizing a grid chilled water network for supplemental heating and cooling with no cooling towers, a high efficiency plumbing system to reduce water and energy use, LED lighting, connecting to MIT's central plant infrastructure for chilled water, electricity, and domestic hot water, low flow plumbing fixtures, and an extensive green roof system for 68% of the roof area.

Beyond meeting the minimum Green Building Requirements, this project is expected to reduce energy consumption by 40% and reduce greenhouse gas emissions by 42%. Additional improvements that could be sought as the project is further refined include the following:

- Additional (3) points for Rainwater Management credit in Sustainable Sites category.
- Additional (1) point for Cooling Tower Water Use credit in Water Efficiency category.
- Additional (2) points for Green Power and Carbon Offsets credit in Energy and Atmosphere category.
- Additional points, (1) for Building Life-Cycle Impact Reduction credit and (1) for BPDO-Material Ingredients credit in Materials and Resources category.

- Additional points, (1) for Low-Emitting Materials credit, (1) for Daylight credit, and (1) for Quality Views in Indoor Environmental Quality category.
- Additional point (1) for Rainwater Management in Regional Priority category.

The proposal's Net Zero Narrative also includes a study of the solar energy potential of the site, indicating that the roof will be "solar-ready" and could accommodate a 138 kW photovoltaic panel array. Installation of the array is not currently proposed. .

Staff will continue to work with the Applicant through continuing design review. The project will be reviewed again at the building permit and certificate of occupancy stages to certify that it remains in compliance with the Green Building Requirements.

Continuing Review

CDD staff have met with the project team on multiple occasions to discuss the proposal and provide comments. Staff are appreciative of the MIT project team's efforts to shape this proposal, and look forward to continued collaboration as the project moves forward.

The following is a summary of issues that may be addressed further at the public hearing, or may be incorporated into conditions for continuing design review by staff if the Board decides to grant the special permit:

- Review of "Accessible Roof" adjacent to green roof for conformance with Section 22.34.1 of the Zoning Ordinance.
- Provide a bicycle parking plan at a 1:10 scale.
- Clarify the location of the dedicated entrance to the long-term bicycle parking.
- Review of lighting placement to ensure that the short-term bicycle parking spaces located near the garage meet the dimensional requirements.
- Review of rooftop mechanical equipment heights and the height of screening.
- Review of exterior lighting.
- Review of location, size, species, and planting standards of street trees.
- Review of the connection space between Vassar Street and the Grand Junction
- Review of the Vassar Street public realm frontage