



CAMBRIDGE HISTORICAL COMMISSION

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Date: December 30, 2019
To: Members of the Historical Commission
From: Eric Hill, Survey Director
Re: D-1545: MIT Cyclotron- Building 44, 51 Vassar Street (1962)

An application to demolish the building at 51 Vassar Street was submitted on December 10, 2019. The applicant, The Massachusetts Institute of Technology, was notified of an initial determination of significance and a public hearing was scheduled for January 2, 2019.

Site

The MIT Cyclotron is located on the north side of Vassar Street, mid-block between Main Street and Massachusetts Avenue. The Boston & Albany Grand Junction Branch rail line runs along the north side of Building 44. The building is sited on a large institutional lot (52A-31), running along the northern side of Vassar Street to the railroad tracks and includes multiple buildings in a Residential C-3B zoning district and in the MIT Overlay Zoning District.



MIT Cyclotron- Building 44, 51 Vassar Street.

MIT Campus Map, 2019.

Building 44 is surrounded by MIT properties on all sides. To the north, over the railroad tracks is the Albany Street Parking Garage (N4); to the east is the Brain and Cognitive Sciences Complex (Building 46); to the west is the MIT Power Plant (Building 42); and across Vassar Street are the Vassar Street Buildings (36, 34, 38, 39 & 37).



51 Vassar Street, MIT Building 44, facing west on Vassar Street.

CHC staff photo, 12/26/19

Architectural Description

The MIT Cyclotron Building is a Modern laboratory structure which was constructed in 1962. The two-story structure sits atop a concrete foundation and is rectangular in form, with the longest facades fronting Vassar Street and the railroad tracks and has a flat rubber membrane roof. The main façade is organized into ten bays, with the entry door located between the 7th and 8th bays from the left. The front door and side lights are sheltered by a cantilevered metal awning. A loading bay consisting of double doors is located between the 1st and 2nd bays from the left. Exterior walls are a pale-yellow brick in a running bond. The cornice consists of four soldier courses which is more decorative than functional as it is flush with the façade. The fenestration is located within the slightly recessed vertical bays which run the height of the building and slope outward at the cornice.

A metal fire escape is located on the east side elevation. A one-story wing at the west end is topped by a flat roof with pipe railing and mechanical equipment.



51 Vassar Street, MIT Building 44.

CHC staff photo, July 1968.



51 Vassar Street, MIT Building 44.

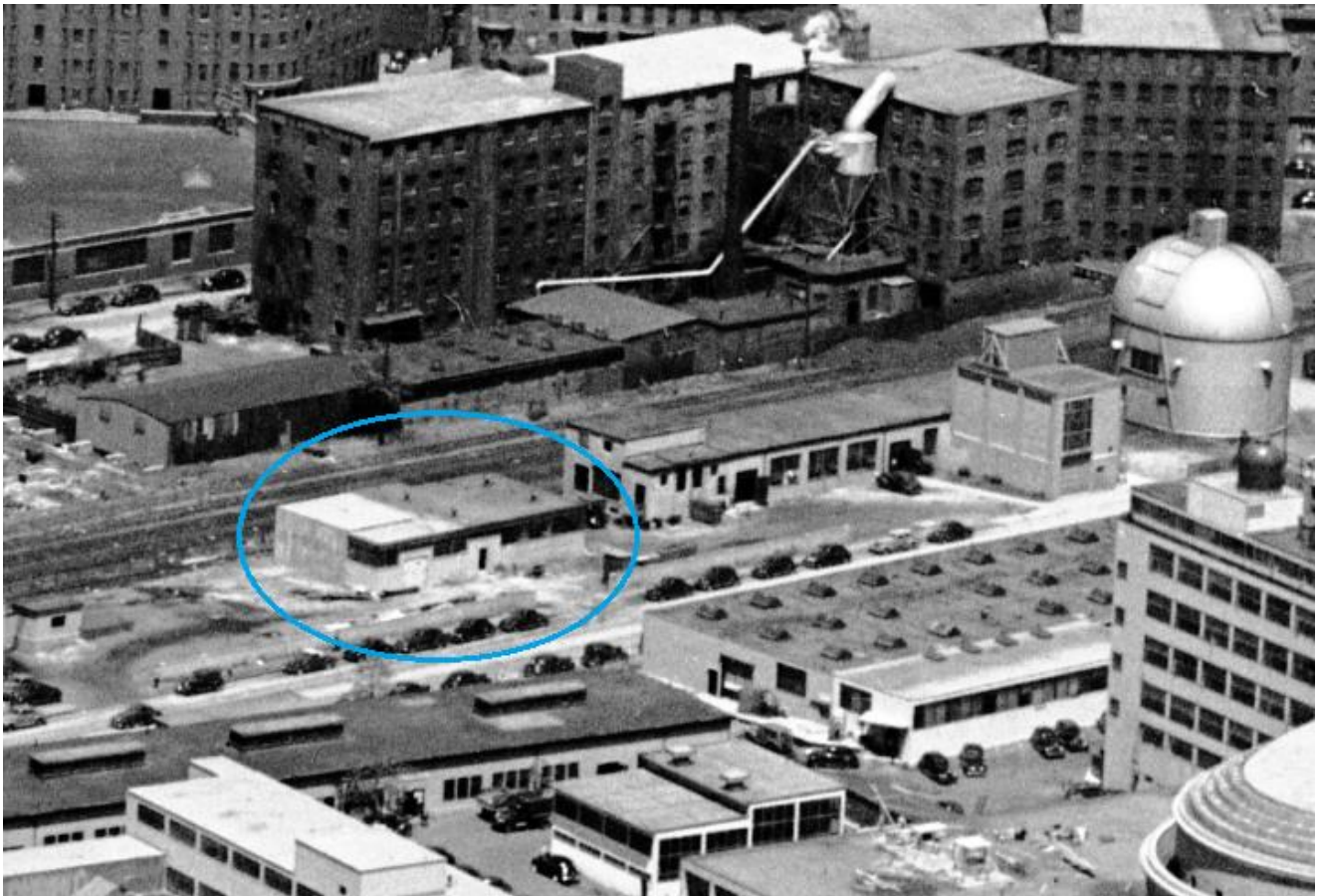
CHC staff photo, 12/26/19



51 Vassar Street, MIT Building 44, rear elevation. CHC staff photo, 12/26/19



51 Vassar Street, MIT Building 44, Vassar Street entrance. CHC staff photo, 12/26/19



Aerial view of MIT, Cyclotron Building 44 circled. CHC Patriquin Collection, taken 1947.

MIT is proposing to replace Building 44 with the new Stephen A. Schwarzman College of Computing Building, designed by Skidmore, Owings & Merrill. According to MIT,

The new building will be an interdisciplinary hub for work in computer science, Artificial Intelligence (AI), data science, and related fields that contribute to the design and use of computing. It will span MIT's five schools with complementary expertise in arts, humanities and social sciences, architecture and urban planning, business management, and data acquisition hardware and physics.

The site was selected for its physical proximity to related departments in buildings 46 and 32 as well as in the Main Group. The development of this site is an opportunity to activate this portion of Vassar Street with welcoming entries to public ground floor program and improved site and landscape conditions.

The building is planned to include approximately 165,000 GSF of office, lab and collaborative study space. Fifty faculty members and their research groups will be housed in the building. The design firm of Skidmore, Owings & Merrill (SOM) was selected by way of a design competition. The project is currently in conceptual design. The target construction start date is Q1 2021 with project completion in Q1 2023. [Applicant submittal]

History

The relocation of MIT from Boston's Back Bay to Cambridge in 1916 profoundly influenced the development of the land along the Charles River. MIT acquired its first Cambridge lands from the city in 1912 and began the design and construction of the school's main buildings. The original campus property encompassed about 46 acres on the east side of Mass. Ave. between the railroad line along Vassar Street and the Charles River. The first Institute buildings completed in 1916 consisted of the Beaux-Arts Main Group, designed by William Welles Bosworth as an interconnected complex of academic buildings sited around the Great Court (now known as Killian Court) facing the river and Boston. Residential and industrial development on the surrounding lots remained slow through the 1920s. By 1924, the Institute had begun to outgrow its original Cambridge campus and started to acquire additional land on the west side of Mass. Ave, later known as West Campus. Over the next 15 years, MIT added academic and dormitory buildings to the original campus and constructed student and athletic facilities on the new property. By 1940, it owned approximately 80 acres along the river with 20 educational buildings and laboratories, student houses, athletic fields, and a sailing pavilion.

The inter-war period at MIT led to the beginnings of a shift from the Classical architecture showcased by William Welles Bosworth and his original plan for the Institute, to early Modernism which flourished in Cambridge thanks to the arrival of the Bauhaus influence at Harvard. Walter Gropius and Marcel Breuer fled Germany and settled in Cambridge, accepting positions at the Graduate School of Design. By the late 1930s, a few early Modern buildings at MIT, all with purely industrial elements, including the original MIT Cyclotron, Building 44 (1938); the Wright Brothers Wind Tunnel, Building 17 (1939); and the Briggs Field House, W23 (1939, razed 2000). The transition to Modernism was slow, as the MIT Sailing Pavilion, Building 51 (1936) and the Rogers Building, Building 7 (1938) and continued the Classical architecture of early MIT buildings.

During World War II, MIT operated in part as a national defense laboratory for research on subjects including radar, aeronautics, and high voltage. Temporary and permanent buildings were constructed within the project area during and immediately after the war. Other research facilities were built within the original campus complex and on vacant lots in the eastern part of the project area, where former industrial buildings had begun to deteriorate.

Institute buildings constructed in the 1940s and 1950s reflect a conscious shift from classicism to modernism. Some of the earliest buildings in Cambridge constructed in the International Style include the Alumni Swimming Pool, Building 57 (1940) and the Radiation Laboratory, Building 24 (1941). After WWII, the Institute expanded on the International Style and hired MIT-trained architects at Anderson, Beckwith & Haible and Gordon Bunshaft of Skidmore, Owings & Merrill to design modern laboratory buildings with glass curtain walls and boxy forms, a gesture to the industrial character surrounding the campus.

By 1960, a new Campus Master Plan was established by the Long-Range Planning Committee, established ground rules for the future development of the MIT campus. A fundraising drive called the Second Century Fund, raised nearly \$100 million in the early 1960s, which provided capital to acquire land, construct new buildings and renovate others, including the Cyclotron building.

The Cyclotron (Building 44) at 51 Vassar Street, was originally constructed in 1938 for research in nuclear physics. Designed by architects McCreery & Theriault, the building and program were to be

under the direction of Professor Robley D. Evans, who had begun studying the biological effects of radiation in the 1920s while a student at the California Institute of Technology and at the University of California, Berkeley. Evans established the new Radioactivity Center on campus where he did pioneer work in nuclear medicine and research into safety standards for radioactive materials specifically for detecting microscopic particles of radium in the human body, an important tool in the early diagnosis of radium poisoning.

President Karl T. Compton provided funds to build a cyclotron and laboratory building to meet Dr. Evans' research needs. Most funding for Building 44 was provided by the John and Mary R. Markle Foundation of New York established in 1927 "to promote the advancement and diffusion of knowledge among people of the United States, and to promote the general good of mankind."

Before the cyclotron was completed in 1939, Dr. Evans and MIT President Karl Compton placed a brass time capsule under one of the 18-ton magnets in the cyclotron. According to a Boston Globe article depicting the laying of the time capsule, it "contains various publications of The Institute and scientific papers dealing with the research carried on with such machines".



Dr. Robley D. Evans (left) and President Karl Compton (right) placing brass time capsule in cyclotron. 1939 photo courtesy of MIT Museum.

A cyclotron is an instrument for accelerating ions to extremely high velocities for use in atomic disintegration experiments. Inside of the cyclotron, a large electro-magnet holds the flying ions in suitable baths to receive the repeated voltage boosts, which speed in a circle, increasing speed at every revolution. The ions then reach the outer rim and are caught in a vacuum tube for use in applied research.



MIT Cyclotron. Undated photos courtesy of Massachusetts Institute of Technology.

Building 44 was also utilized by a parallel program, led by physicist Robert J. Van de Graaff across Vassar Street at the High-Voltage electrostatic generator building (Building 20), a temporary wooden structure erected in 1942 and later razed in 1999 for the Stata Center.

After WWII, interest in atomic energy research boomed and Harvard University built a new cyclotron on Oxford Street in 1946, since demolished (D-877). Researchers gravitated to Harvard's race-track

cyclotron for its larger control room and up-to-date beam focusing equipment. In response, MIT utilized a U.S. Atomic Energy Commission Grant of \$350,000 and \$150,000 from the Second Century Fund to modernize its 1938 cyclotron building.

In 1962, the entire cyclotron building, except for the cyclotron and the one-story concrete vault that housed it, was demolished for a new two-story building. The new two-story building was four times larger than the former 3,000 square foot structure, and it included an enlarged target area for the atom-smashing cyclotron beam, new focusing equipment and modern laboratory space. The new laboratory was designed by the firm of Perry, Shaw, Hepburn & Dean and constructed by Canter Construction Company of Brookline.

Significance and Recommendation

I recommend that the Cyclotron Building at 51 Vassar Street be found significant for its associations with early research in nuclear technology and as the last remaining cyclotron in Cambridge. The Commission should hear testimony from the applicants and public and review the plans for demolition before making a further determination.

cc: Emma Corbalan, Massachusetts Institute of Technology
Ranjit Singanayagam, Inspectional Services, City of Cambridge.

Sources

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