CAMBRIDGE HISTORICAL COMMISSION

831 Massachusetts Avenue, 2nd Fl., Cambridge, Massachusetts 02139
Telephone: 617 349 4683 Fax: 617 349 3116 TTY: 617 349 6112
E-mail: histcomm@cambridgema.gov URL: http://www.cambridgema.gov/Historic

APPLICATION FOR CERTIFICATE

1. **The undersigned hereby applies to the Cambridge Historical Commission for a Certificate of (check one box): (•) Appropriateness, ( ) Nonapplicability, or ( ) Hardship, in accordance with Chapter 40C of the Massachusetts General Laws and/or Chapter 2.78 of the Municipal Code.**

2. **Address of property:** 12 Harvard Yard (Harvard Hall) **, Cambridge, Massachusetts**

3. **Describe the proposed alteration(s), construction or demolition in the space provided below: (An additional page can be attached, if necessary).**

The Faculty of Arts and Sciences is planning an exterior restoration project at Harvard Hall that incudes the following key components:

- Cleaning of all masonry surfaces;
- Limited re-pointing of brick façades;
- Removal of composite mortar repairs to brownstone, and redressing or replacing deteriorated brownstone elements;
- Repairing the cupola's wooden structure and re-cladding the exterior;
- Replacing failing wooden window sashes in kind;
- Improving safety lighting at the entrance stair; and
- Installing modest architectural lighting within the cupola.

I certify that the information contained herein is true and accurate to the best of my knowledge and belief. **The undersigned also attests that he/she has read the statements printed on the reverse.**

Name of Property Owner of Record: President and Fellows of Harvard College, c/o Harvard Planning Office

Mailing Address: 1350 Massachusetts Avenue, Suite 573, Cambridge, MA 02138

Telephone/Fax: (617) 496-1879 **E-mail:** mark_verkennis@harvard.edu

Signature of Property Owner of Record: Mark Verkennis
(Required field; application will not be considered complete without property owner's signature)

Name of proponent, if not record owner:

Mailing Address:

Telephone/Fax: **E-mail:**

(for office use only):

Date Application Received: 11/14/18 **Case Number:** 4020 **Hearing Date:** 12/6/18

Type of Certificate Issued: _____ **Date Issued:** _____

Harvard Hall-Exterior Restoration
12 Harvard Yard
Harvard University

November 2018

Building Overview

Harvard Hall was built between 1764 and 1766 to replace an earlier building (1674-1764) that burned on the site. Its exterior was brick and brownstone (brown Triassic sandstone) following the materials example of Holden Chapel (1742) and the original Faneuil Hall. In 1842 Harvard Hall was altered by the addition of a two-story central pavilion to its south elevation without matching the earlier brick or the stone of its foundation. In 1870, the building's first floor was enlarged with one-story additions that filled in the open corners of what had become a T-shaped building. The architect, Henry Van Brunt was sensitive to the materials of the original with matching brickwork (possibly old bricks) and brownstone trim. Van Brunt introduced three new arched windows in the east façade but did not match the gauged bricks of the original arches on the west elevation. The horizontality of the new 1870 south façade created the need to subdivide its plain expanse and brick pilasters were set between the windows. Brownstone capitals and bases were copied from brownstone precedents on pilasters at the adjacent Holden Chapel. Other brownstone details matched the 1764 brownstone band courses and sills. The wooden cupola with its open belfry basically remains unchanged from its 1767 construction. (see Harvard, An Architectural History by Bainbridge Bunting and Margaret Henderson Floyd for further background on the evolution of Harvard Hall and its neighboring buildings).

Proposed Exterior Scope of Work

The current exterior restoration proposes to repoint limited areas of brick façades; clean, remove composite mortar repairs to brownstone; redress or replace deteriorated brownstone; repair the cupola's wooden structure and re-clad its exterior; replace failing wooden window sashes in kind; improve safety lighting at the entrance stair and re-install modest architectural lighting within the cupola.

The project team has met on site with the CHC Executive Director twice to evaluate the condition of building elements, review proposed treatments and compare sample materials for masonry restoration.

Masonry

a. **Brick -** Retain existing brick facades with minor repairs in areas of fracture (east face of east chimney). Clean all brick with mild detergent (Uline Simple Green) and garden hose rinse. Replacement bricks will match adjacent areas of the same period of construction.

   Brick repointing will be done only where existing mortar is significantly recessed. Pointing mortars have varied over time, and original light buff mortar appears to have been overlaid with a pigmented red mortar. New mortar will be light tan to blend into the overall elevation.

b. **Granite -** The building's water table is gray granite ashlar with a rough, flat finish. It is sound except for scaling near ground level due to wetting and freeze-thaw. Granite cleaning will use Prosoco Enviro-Klean (EK) Restoration Cleaner and rinse with a fan-nozzle power wash at 500-600 psi. Pointing will be light buff to match existing and includes a sloped weathering mortar surface at the 2" shelf created by the step back of brownstone band course above. All existing granite will remain in place. Minor redressed surfaces will be restricted to areas of shallow scaling at ground level.

c. **Brownstone -** Brownstone band courses, individual sills, and carved bracketed cornices in the 1764 and 1842 facades. In the 1870 addition brownstone band courses, continuous sill courses that continued between windows, carved pilaster bases and capitals, and double stair at the south entrance match the

quarried material of the earlier construction periods. The stair construction included the1870 bracketed cornice and painted wood entablature.

Brownstone condition varies with different types and degrees of deterioration. Brownstone failures at Harvard Hall include blistering, delamination, contour scaling, granular disintegration, and spalling. These decay mechanisms frequently combine on individual stones to progressively erode surfaces to a significant depth.

Past failures at spalling flat surfaces of band courses and carved pilaster bases have been repaired with composite mortar. The pigmented mortar repairs were troweled onto spalls without cutting consistent recesses to avoid feathered edges. The mortar repairs to flat areas were not rectilinear, therefore not appearing as 'dutchmen.' Composite mortar replacement of carved profiles was troweled. The repairs are very crude by comparison to the original stone pilaster bases and capitals. The composite mortar has remained relatively sound, but it has faded to a pinker hue and disfigures the building's elevations.

On the uppermost bracketed cornice at the gable peak of the east side, carved cornice profiles are lost to erosion and minor spalls have fallen into pedestrian pathways. Brownstone band courses in the 1870 addition include face-bedded stone that continuously delaminate. Earlier phases of construction consistently quarry-bedded the stone and there is less serious failure in band courses and sills. Quarry-bedded sill courses in the south face of the 1870 addition nevertheless show signs of splitting horizontally with accelerating moisture ingress and freeze/thaw damage.

Proposed Treatment - Cleaning; redressing to a sound substrate where blistering or delamination is superficial; rectilinear (dutchmen) repairs at isolated spalls; full-face three-inch thick dutchmen repairs where band course surface failure is extensive; full depth stone replacement at large face-bedded stones; full replacement of carved pilaster bases, capitals, bracketed cornices at east gable, and deeply delaminating sills. The 1870 addition covered the 1842 granite tower base with brownstone that has failed comprehensively due to water (and salt) associated with the stair treads. These stones will be replaced with new brownstone sized to match each of the originals.

After cleaning, redressing, and installation of replacement stones, all brownstone will be coated with a clear, matte, silane-siloxane water repellent and sealer, Sure Klean SL-100. Brownstone repointing will be with a relatively soft Type-N mortar (1 cement; 3 lime; 9 sand) with careful selection of the aggregate to match tonality and hue of original mortar.

Cupola

a. **Structure** - The cupola is supported through the building on brick structural walls at basement level, steel columns on the first floor, and further masonry at second floor, through the attic, and up to the belfry. The cupola's exterior appearance conceals differences among structural materials. Visually, it consists of three stacked areas. The lowest consists of the octagonal structural brick wall, topped by a tall course of concealed brownstone that serves as the base for eight wood posts. The masonry and lower section of the posts are covered with one-inch thick wood cladding. Above this level is wood-framed open belfry level with arched infill between vertical posts. Uppermost is the metal dome with weathervane. Wood structure within the dome is concealed by a ceiling of painted wood. Connections of the wood columns to the dome structure are not open to view and are not documented in known drawings.

   The cupola leans visibly towards the north due to rot in the posts and sill plates in that portion of the octagonal framing. There is further rot among the primary posts and infill framing. Cladding is badly deteriorated with cracking and open joints between boards. Cladding failures and earlier roof problems have allowed water to penetrate to soak wood framing members and introduce decay.

   Proposed Treatment - Engineers from Simpson, Gumpertz & Heger examined the framing from a hydraulic lift and designed replacement timber details with Bruner/Cott. Consigli construction proposes to detach and lower the dome and belfry levels of the cupola to scaffolding at ground level to facilitate replacement of structural posts in new oak, examine the dome's internal support framing, and replace ruined secondary framing infill between arched openings for an improved detail to protect wood cladding from moisture-related decay. When reassembled, the belfry structure and attached dome will be lifted

back into its original position on the octagonal masonry base. *[Note: The same contractor/architect team detached, lowered, restored, and relocated three sections of belfry and spire on Phillips Academy's Memorial Bell Tower successfully.]*

b. **Cladding** - All wood cladding at the cupola is beyond repair. It will be replaced with painted wood to produce a smooth surface and replicate all original profiles at moldings and trim. The new wall sections will provide a ½" wood batten drainage layer and waterproofing membrane. The interior roof/wood floor of the belfry is covered with a roofing membrane and surrounds a fixed contemporary skylight. The project will reveal the wood floor, inspect the boarding and framing below, make necessary repairs and replace the existing membrane with a new one.

1870 Addition

a. **Wood Cornice and Entablature**- The original wood cornice is of a design that does not replicate the brownstone cornices above. It is composed of moldings, fascia brackets (triglyphs), carved wood brackets, and flat planks onto which these are layered. Together the cornice and entablature support a built-in gutter at the roof and balustrade above. Condition of decorative woodwork is fair to good, but the flat stock that is their base in the entablature has rotted and split with openings too large for repair rather than replacement. Paint analysis to determine colors and their stratigraphy is scheduled for spring, 2019 when scaffolding will be in place. Early black and white photographs suggest that the cornice/woodwork was painted to match brownstone in 1870, then later painted white or cream.

b. **Copper-clad Balustrade** - An 1873 black & white photograph of the addition shows a balustrade that was probably wood. Unlike the cornice and entablature below, it was painted a light color that matched window trim and cupola. The balustrade was replaced with a painted copper version that has lasted well except where its top rail and balusters adjacent to the 1842 frontage was dented by ice fallen from the roof above. The current project proposes to repair/replace the damaged portions of the copper balustrade and install cast snow restraint among the slates in the roof overhead.

Lighting

a. **Iron Lanterns**- Harvard Hall has simple trapezoidal lanterns mounted on corners at pathways and over its main entrances. These lanterns are a standard feature within Harvard Yard and have the right balance between period reference, recessive simplicity, and location for safe illumination. The project will assess whether code-compliant illumination requires re-lamping and whether the south entrance stair requires additional lighting. When the results are known, the project team will submit any change in pathway lighting to the CHC staff for review.

b. **Cupola Belfry** - The cupola's open belfry allows views to the ceiling and the upright posts. These were lit with a floor-mounted up-light in the past, but the extreme difficulty of access to the belfry made maintenance almost impossible. The current proposal is to reinstate the up-lighting with fixtures concealed from view by the belfry balustrade and introduce additional circuitry to maximize the replacement cycle for LED bulbs. The lighting level will be low. The existing belfry ceiling is painted light blue.

Roof and Gutters

a. **Slate roof, Copper Flashings and Gutters**- The main roof of Harvard Hall was covered with new slate in 2000. Lead-coated copper flashings along its edges were not detailed adequately for expansion and contraction. The half-round gutters may or may not have existed in 1767, 1842, or 1870, but the vulnerability of the brownstone below makes dependable gutters, downspouts, and flashings especially necessary. Based on the recent rehabilitation/restoration at neighboring Massachusetts Hall, the project team proposes to replace existing 6" half-round gutters with 8" half-round gutters in zinc-coated copper and replace the failing eave flashings with soldered joint covers to protect against exposed cracks created by metal contraction in cold weather.

Wood Window Sash and Glazing

a. **Existing Wood Windows** - Two original double-hung arched windows and one original Palladian wood window with symmetrical side windows are located centrally in the north elevation. Aluminum interior storm windows are mounted directly on top and bottom sashes. The windows are in fair condition, but condensation collects between the storm and the exterior sash. Repairs will include creating weep holes in new storms, epoxy repairs to wood sash and casing, and replacement of glazing putty.

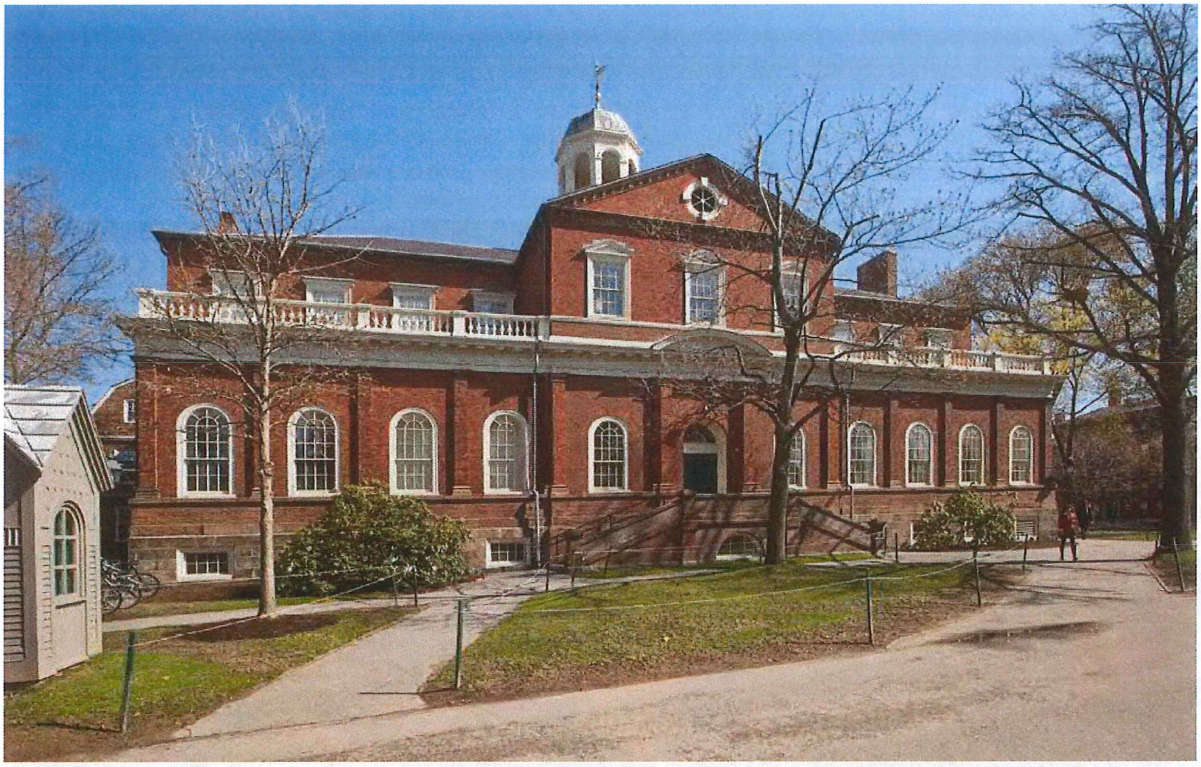
   All other windows were replaced approximately 20 + years ago with operable sash in classrooms and stair landings on floors above basement level. The existing replacement windows have been tested for insulated glazing unit (IGU) seal failure by Simpson Gumpertz & Heger using 'frost' equipment. The tests indicate that the seals have failed or will soon fail under normal exposure; therefore, replacement is timely. The wood sashes with IGUs in individual panes will be replaced from within the building. Extensive repairs to rotted areas in exterior trim and the ends of sills, particularly at the second floor, will be done with wood.

Wood Doors

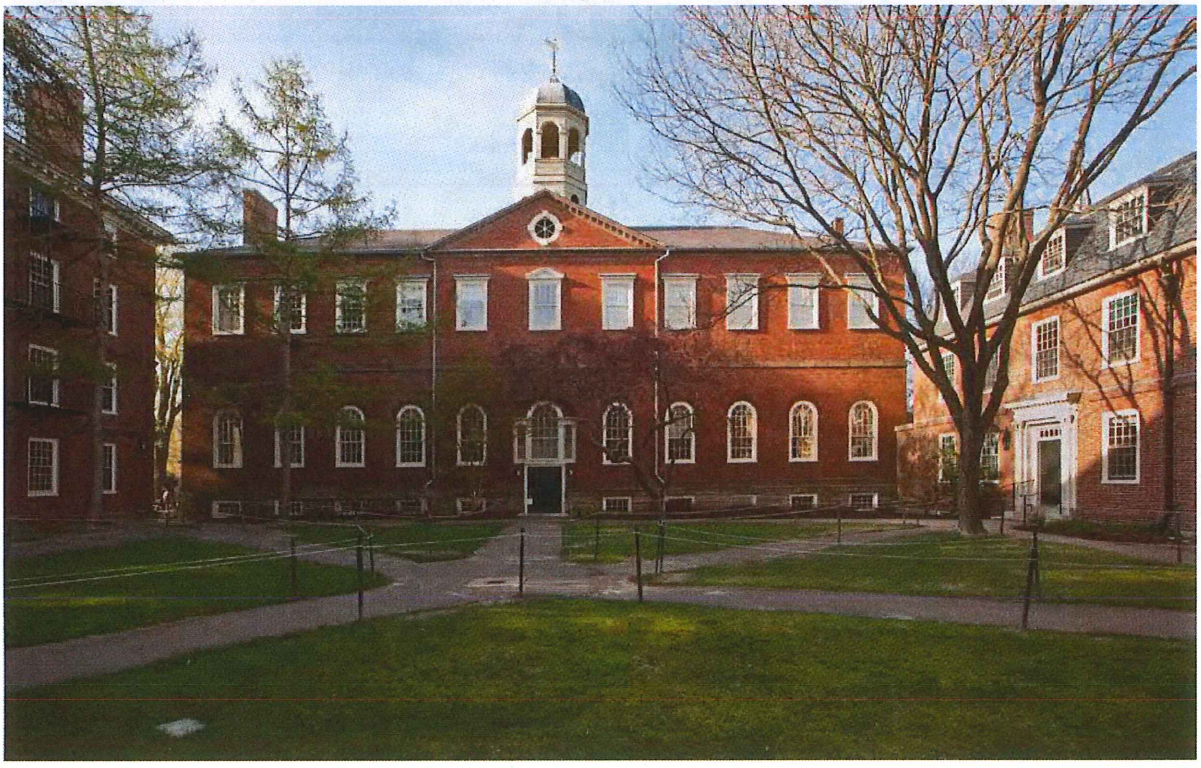
a. **Wood Entrance Doors-** Solid wood panel doors are located at the main entrances, both south and north. The south entrance doors match the panel configuration of the wood doors in the earliest picture of the 1842 addition. Both sets of doors are in fair condition with some cracking at interior panels and joints of the rails and stiles. Wood panels that flank the door at the masonry opening have cracked. In 1937, an opening was cut through granite blocks on the north side of the building for a new four-panel entrance door. The opening was later expanded for wood side-panels on both sides of the door. The south doors were solid two-panel leafs in 1842, changed to glazed two-panel format in a 1920's photo, and are now solid again. The project team recommends replacement of the existing south doors to replicate the wood and glass doors known from the 1920's to aid access into and out of the building's busy main entrance. A two-panel door with glass in the top half is located for basement egress in the east wall. No changes other than minor repairs are proposed for this door or the north entrance.

Project Schedule

Bruner/Cott and the design team have begun Construction Documents and are focused on long-lead specifications for ordering replacement brownstone to allow for a construction start immediately after Harvard Commencement in June 2019.

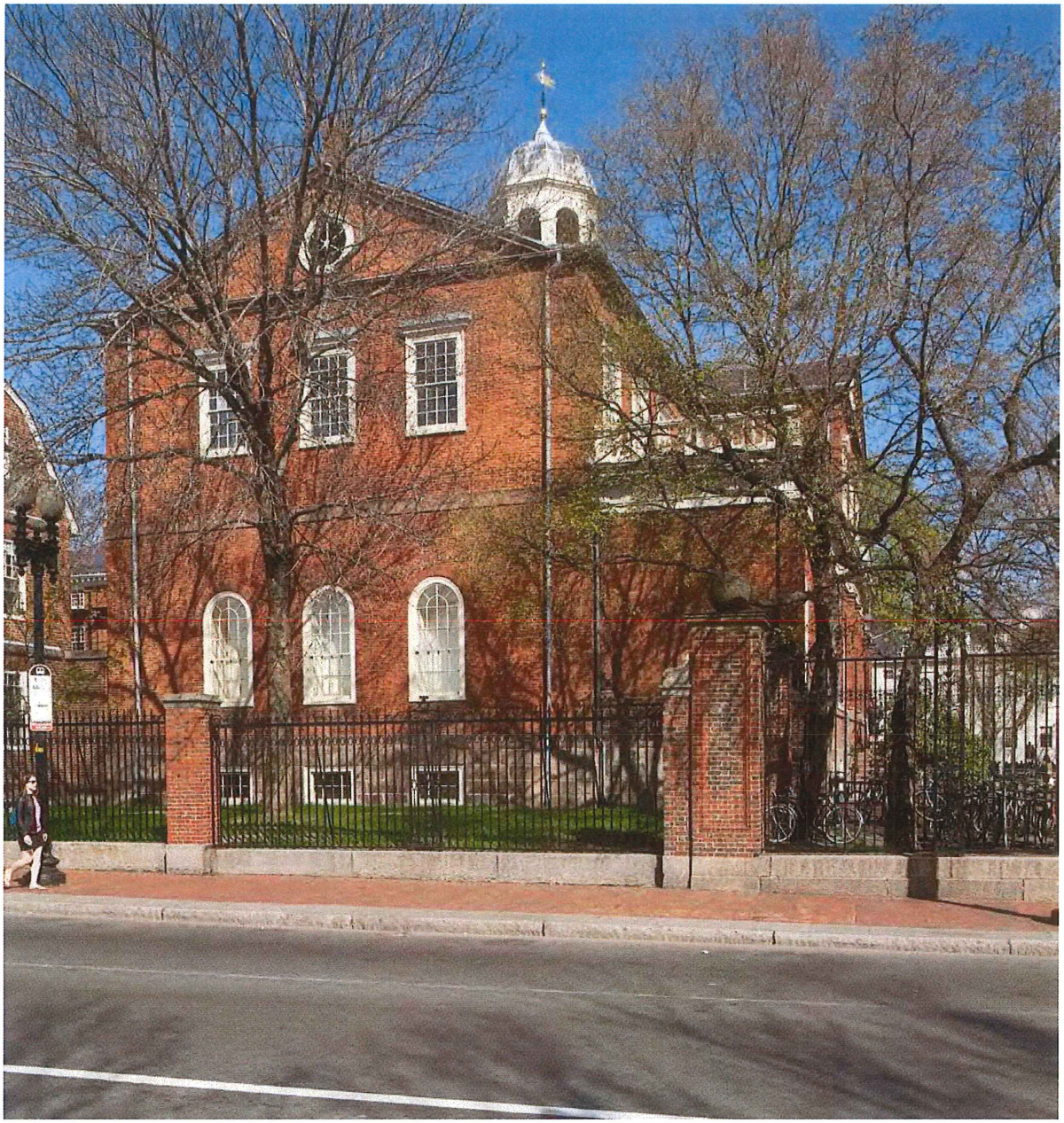


South elevation



North elevation

Southeast elevation



West Elevation