

080100 DOORS AND WINDOWS – REPAIR & REPLACEMENT

Cornell's Design and Construction Standards provide mandatory design constraints and acceptable or required products for all construction at Cornell University. These standards are provided to aid the design professional in the development of contract documents and are not intended to be used verbatim as a contract specification nor replace the work and best judgement of the design professional. Any deviation from the Design and Construction standards shall only be permitted with approval of the University Engineer.

PART 1: GENERAL**1.01 RELATED SECTIONS**

- A. Section 080000 – Doors and Windows

1.02 INTENT AND BACKGROUND

- A. The intent of this Section is to clarify Cornell's stewardship goals and mandates related to repair and replacement doors and windows.
- B. Historic landmarks, and/or buildings on the national register, and/or within an historic district, have a defined process and related expectations for door and window repair and/or replacement. Facilities over 50 year old (not always necessary) and deemed by the University as Category 1 for Institutional Value, would typically follow a similar process. (Examples: Willard Straight Hall, and the Johnson Art Museum)
- C. Doors and windows are significant visual character defining elements of every structure. These features are key components in defining architectural style, and their size, shape, placement, construction, and detailing directly reflect the time period within which a building was constructed. The entire character of the building may be impacted by replacing windows and doors with modern material and/or detailing.
- D. This Standard helps frame the discussion on the treatment of existing doors and windows with other interests related to energy conservation, maintenance, ease of use and ability to support current or proposed building needs.
- E. Compared to other wall features, windows require relatively high levels of maintenance and represent a relatively high percentage of preservation/restoration costs of a façade.

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1.03 OBJECTIVES

- A. Ensure that windows and doors are properly evaluated and the direction for repair or replacement of these building components aligns Cornell University's stewardship responsibility.
- B. Outline appropriate approaches to window and door repair and replacement dependent on building asset and other evaluation criteria.
- C. List useful references, resources and standards.

1.04 ROLES AND RESPONSIBILITIES

- A. All changes to the exterior of buildings shall be reviewed by the University Architects Office. (Also applies to key interior public spaces)
- B. Buildings listed as local landmarks or within a local historic district (See Cornell University, Infrastructure Properties and Planning website and "Find Facility Information") need to comply with the Ithaca Landmarks Preservation Commission (ILPC). The project Design Team shall complete an analysis of the existing doors and windows and document the approach for repair or replacement. The University Architect's Office would be responsible to assist with ILPC approval (Certificate of Appropriateness).
- C. Buildings listed on a National Register or within a Nationally Registered Historic District shall have the Design Team fully investigate the condition of the existing doors and windows and document their approach for repair or replacement. In this case, the Letter of Appropriateness would be obtained by the New York State Historic Preservation Office (SHPO). In some instances the building may be listed locally and nationally, and would apply to both agencies for appropriateness. The University Architect's Office would assist with SHPO approval.
- D. Facilities that are 50 or more years of age, and are using State and/or Federal funds for the renovation, need to comply with SHPO and obtain their letter of appropriateness. (Similar to "C")
- E. When the building is not individually listed, within an historic district, or 50 years old with government funded renovations, the University Architects Office may determine that due to the iconic or institutional value of the facility, it will require an internal review of appropriateness with the same rigor employed above. (With key stakeholders and experts)

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PART 2: DOOR & WINDOW REPAIR / REPLACEMENT REQUIREMENTS**2.01 DETERMINING WINDOW & DOOR REPLACEMENT GOALS**

- A. Windows should be considered significant to a building if they are original, reflect the original design intent for the building, reflect the period or regional styles or building practices, reflect changes in the building resulting from major periods or events, or are examples of exceptional craftsmanship or design. (Preservation Brief 9: The Repair of Historic Wood Windows, Technical Preservation Services for Historic Buildings, National Park Service).
- B. Maintenance and repair of windows and doors should be the first consideration. (Identify, Retain, and Preserve) Replacement of weather stripping, repair of glazing, replacement of broken or frayed sash cords and perhaps the installation of interior storms can address many building concerns with openings. If certain windows or doors are damaged beyond repair (Need to document and substantiate), then replacement in kind should be the next level of consideration. If some windows or doors were replaced inappropriately over the years, research and steps should be taken to replicate the original.
- C. Buildings where the openings are in poor repair and the replacement in kind can be documented as a hardship or not practical (Initial capital costs and on-going maintenance costs), it may be possible to consider other materials such as fiberglass, aluminum clad wood windows, and aluminum. However, the replacements shall match the original window in size, shape, materials (where possible and practical), light configuration, and thickness and profile of stiles, rails, and muntins. The ILPC may be more restrictive than SHPO in accepting a case for alternative replacement windows.
- D. Thermal improvements to existing windows, beyond updating weather stripping, could involve the installation of interior storm windows. Many older facilities rely on the operable window as the mechanism to provide code required ventilation air. If this is the case, then the interior storm window would need to allow for this requirement. (Exterior storm windows are not permitted unless they replicate historic storm windows for that particular structure) Replacing glazing on historic buildings with colored or tinted glass, coatings and films shall be avoided. Even some low-e coatings can change the glazing appearance on historic structures.
- E. Removal of window or door openings or the conversion of openings to other functions such as mechanical louvers would be reviewed on a case-by-case basis. This action for an ILPC or SHPO listed facility would require a review hearing (SHPO would be a submission). For other buildings this action would need University Architect Office approval. There are examples on Campus where two

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narrow door leafs have been combined to function as a single leaf to meet current egress code requirements, yet retain the appearance of two single leafs.

- F. Replacement of windows and doors on buildings that are not historic or evaluated as a category 1 or 2 for institutional value, may consider alternative window and door replacement options. This action would still require University Architect Office review and approval. Use of vinyl replacement windows on central campus is not permitted.

2.02 REFERENCE DOCUMENTS AND GUIDELINES

- A. The City of Ithaca Historic District and Landmark Design Guidelines. These guidelines are especially valuable for all historic buildings, but especially those locally designated by the ILPC.
- B. Technical Preservation Services for Historic Buildings, National Park Service. Preservation Brief 9: The Repair of Historic Wooden Windows. Preservation Brief 13: The Repair and Thermal Upgrades of Historic Steel Windows.
- C. The Secretary of the Interior's Standards for Rehabilitation. Building Exterior: Windows; Building Exterior: Entrances and Porches; Building Exterior: Storefronts, and Energy Efficiency section.

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