



MEMORANDUM DATE: October 7, 2020

AGENDA DATE: October 14, 2020

TO: Chair and Members of the Historic Resources Preservation Board

RE: **COA Approval Matrix Amendment**

FROM: Jordan Hodges, Senior Preservation Coordinator
Abraham Fogel, Preservation Planner
Department for Community Sustainability

BACKGROUND:

At the August 12, 2020, Historic Resources Preservation Board (HRPB) meeting, the Board made a motion to place a moratorium on all glass types that are not clear. The Historic Preservation Design Guidelines indicate clear glass is the only appropriate glazing for replacement windows and doors in the historic districts. The Board requested that Staff research Visual Transmittance, an industry standard of how much light is transmitted through glass, to create clear and enforceable regulations for glass coatings and tint. As a result, all administrative and Board cases related to windows and doors (that utilize glass) will require clear glass until the moratorium is lifted.

At the September 9, 2020, Historic Resources Preservation Board (HRPB) meeting, the Board requested that Staff provide additional research that compares the efficiency of clear glass and glass with a Low-E coating. The Board also requested that the standard for visible light transmittance (VLT) be revised to only account for the glazing and not the entire product (frames, grids, sills, etc.) to effectively review glass types.

Energy Efficiency

The construction and maintenance of buildings consumes an enormous amount of natural resources and energy produced in the United States. In an effort to curb the growing energy and material consumption associated with the built environment, architects, engineers, builders and planners, have developed or often rediscovered, “green” building practices which aim to improve energy efficiency. When applying “green” concepts to a building, it’s important to look to the past while considering the future. Historic homes often have advantages in “green” building since they were designed and built when energy and water efficiency were necessities. Historic homes responded to the South Florida climate in ways that were effective and affordable:

- Windows and doors with large overhang eaves and porches which prevent harsh sun and heat gain in the home;
- Covered outdoor spaces which allow for outdoor living;
- Roof venting through attic vents allow heat and moisture to escape once in the home;
- Two or more operable windows in each habitable room allow ample cross ventilation;

- Ceiling fans to encourage air movement;
- Cool flooring like terrazzo or breathable materials like wood to allow air movement;
- Raised foundations which allow air circulation against cooler ground, and raises home above minor flood events;
- Heat producing systems located outside the main living spaces, such as locating a washer and dryer outside or in non-conditioned spaces;
- Smaller building footprints.

Whenever possible, it is the best practice to use the originally designed sustainability features as intended. However, adaptive reuse may prompt modifications to historic structures, so it is important to balance the efficient use of the building with the restoration and historic qualities.

The operational energy and water cost of a structure is the efficiency of the building. This is determined by how much energy or water is required to 'run' the home including the HVAC (heating, ventilation, and air conditioning), appliances, lighting and plumbing. There are several factors that influence the energy efficiency of a structure such as roofing, windows and doors, insulation, construction type, and site features that relate to how a property is oriented and landscaped.

Glazing

Windows and doors are character defining architectural features of historic homes that should be given special consideration for compatibility and continued operational use. Windows and doors should aim to achieve energy efficiency, while being consistent with the structure's historic architectural style. Apart from the window or door product itself, there are many variables that influence its overall energy efficiency. The orientation in relation to the sun, shading due to nearby landscaping or roof overhangs, and use of curtains or blinds all will influence how glazing performs.

Low-E Coatings in Historic Districts

In 2019, the City of Lake Worth Beach published Educational Guidelines through a Florida Department of State, Division of Historical Resources small-matching grant (#19.HSM.300.087). The Educational Guidelines review steps towards energy efficiency, which can be applied to both existing homes and new construction. As indicated on page 11, "Low-E' is a non-reflective, non-tinted window film that greatly reduces heat gain through windows. It's available as a film applied to existing windows or in replacement windows. Tints and mirrored glass are typically not appropriate for historic structures and are not as effective as a 'Low-E' treatment."

The Energy Efficiency Collaborative offers computer simulations that compare the annual energy performance of different window types. These simulations also compare different glass types such as clear, tinted, and Low-E. Factors including home size, window area, home orientation, and shading are accounted for in the simulations. Based on simulations for a typical home in Miami, Florida, there was an increase in performance (lower annual energy costs) for windows that utilize Low-E coatings compared to windows with clear glass.

The following standard for glazing in the historic districts was developed based on research of glass regulations of other historic preservation programs:

“All glazing must be clear, non-reflective and without tint. Low-E (low emissivity) is allowed but the glass must have a minimum 70% visible light transmittance (VLT) measured from the center of glazing. Glass tints or any other glass treatments cannot be combined with the Low-E coating to further diminish the VLT of the glass.”

Visible light transmittance (VLT) refers to the amount of light that passes through a glazing material. A higher (VLT) means there is more light is being transmitted. For impact glass, the VLT typically ranges from 80% for uncoated clear glass to less than 10% for highly reflective coatings on tinted glass. The VLT is determined by the thickness of the frame and sash, coating or tint on the glass, and any grids or muntins as they block some of the light. The VTL representative of the center-of-glazing (COG) region only measures the amount of light that is being transmitted through the glass, not the entire window or door product.

It is Staff’s analysis that a 10% reduction in VLT can be considered within the range of “clear glazing”, which is the standard set by the City’s Historic Preservation Design Guidelines. Major window manufacturers in South Florida offer Low-E coatings that meet the 70% VLT minimum. In Staff’s research, the only exceptions to clear glass in other historic preservation programs are limited to clear Low-E coatings and replicating glass that historically had a color or tint. At the Board’s discretion, tinted-glass may be allowed, which meets the 70% VLT minimum.

Implementation

The Certificate of Appropriateness (COA) Approval Matrix is a document that provides the summary of authority (Staff Approval vs. Board Approval) for actions that impact the exterior appearance of properties located within the historic districts. The VTL standard will be included in the COA Approval Matrix.

Staff has consolidated the COA Approval Matrix to eliminate duplicitous information and ensure consistency with the requirements of the Historic Preservation Design Guidelines.

In addition, Staff will require all window and door replacement Certificate of Appropriateness applications to provide a product quote with the visible light transmittance (VLT) of the glazing clearly indicated.

STAFF RECOMMENDATION:

Staff recommends that the Historic Resources Preservation Board (HRPB) adopt the Amended COA Approval Matrix.

Attachments

- A. Draft COA Approval Matrix