



# United States Department of the Interior

NATIONAL PARK SERVICE  
WASHINGTON, D.C. 20240

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## Memorandum

To: Regional Directors

Attention: MARO-Harrison, WRO-Pepin-Donat, ARO-Hart, SERO-Hartwig,  
RMRO-Cole

From: Associate Director, Cultural Resources

Subject: Evaluating Tinted and Reflective Glazing Proposals for Historic  
Buildings for the Tax Certification Program

In the March, 1984, regional workshop, a presentation and discussion was held on the use of tinted and reflective glazing and films in historic buildings. There was consensus among the regional offices that additional printed guidance on this subject was important to ensure greater consistency servicewide in evaluating these materials. Accordingly, Preservation Assistance Division has prepared the enclosed paper for your use. Based on the March presentation, this guidance expands on the Rehabilitation Guidelines. The paper identifies documentation that will be useful to regional offices and states in assessing the impact of tinted glazing in historic buildings and describes a methodology for evaluating this documentation. Please share this paper with States in your region.

Questions concerning tinted and reflective glazing should be addressed to Preservation Assistance Division, attention Jean Travers or Chuck Fisher. As in the past, I strongly encourage you to be prudent in your review of rehabilitation proposals, continuing to confer with Washington on all projects that could have important policy consequences for the tax certification program.

## TINTED AND REFLECTIVE GLAZING AND FILMS: CONSIDERATIONS IN EVALUATING REHABILITATION PROJECTS

### Introduction

The Secretary of the Interior's "Standards for Rehabilitation" require that where historic windows are individually significant features, or where they contribute to the character of significant facades, their distinguishing visual qualities must not be destroyed, but rather retained and preserved (Standards 2 and 6). Standard 2 further states that the removal or alteration of any historic material (such as glass) should be avoided, when possible. Finally, the rehabilitation guidelines recommend against changing the historic appearance of windows through the use of inappropriate materials, finishes, or colors which radically change the reflectivity and color of the glazing.

Besides preserving the visual qualities significant to a historic building, the Standards emphasize the need to preserve the historic material that comprises the character-defining features. For windows, this would typically include the historic frames, sash, and glazing--collectively such material usually represents 20% to 40% of the exterior surface of a building. Whenever it is not possible to reasonably repair and preserve the historic material, it becomes even more critical to maximize the preservation of a window's visual qualities.

### Historic Glass

Clear glass is most often found in historic sash; therefore, in addition to preserving the historic material, whenever possible, the visual qualities of clear glass--its transparency, reflectiveness, distortion, and texture--should be preserved to the greatest extent possible in the course of rehabilitation. When historic glass is replaced with tinted or reflective glass or when it is covered with a colored film, there are usually noticeable and frequently pronounced changes to the appearance of the window. Taken cumulatively, changes to the visual qualities of windows on primary or highly visible secondary elevations can diminish the historic character of the building and, in consequence, result in rehabilitation work that does not meet the Secretary's "Standards for Rehabilitation."

### Reflective Glass and Reflective Films

The retention of clear glazing, where it existed historically on primary or highly visible secondary elevations, is always recommended by the National Park Service (NPS). Replacing clear glass with reflective glass or reflective films will almost always preclude a project from meeting the Standards because of its radically differing visual qualities and, in typical cases, because of material loss of historic features which results when replacement windows are installed.

### Tinted Glass and Tinted Films

In the past decade, a more problematic area has been the use of tinted glass and films for historic buildings. This is because, while tinted glazing and tinted films are never recommended by the NPS on historic buildings, there may be cases where the visual impact and material loss are not so severe that such a single alteration will preclude certification for Federal tax incentives. It is therefore critical that projects be evaluated individually. Property owners should be cautioned that the use of tinted glazing or tinted films can be, and has been, the sole cause for denial of certification; more commonly, however, the use of tinted glazing and films represents one of several

changes to windows or facades which can lead to denial due to the cumulative effect of other inappropriate alterations.

### Documentation for Evaluating Tinted Glazing and Films

When evaluating projects that propose the use of tinted glass or films, NPS should pay particular attention to the justification provided by the applicant:

1. Has a strong economic argument been made for tinted glazing or films? Has a careful analysis been undertaken? If not and the project is still in the proposed stage, the owner may be willing to revise the plans.
2. Is the applicant claiming the need to install tinted glazing or films in part to justify the replacement of sash that is in repairable condition? Film and tinted glass considerations should be separated from issues relating to replacement of historic sash. Replacement of historic window sash, of itself, is a major preservation concern. Owners should be made aware that in situations where the use of tinted glass will not have a radical visual impact, options often exist to reglaze single-light historic wood sash with tinted insulating glass or to apply tinted films without replacement, i.e., loss of the historic sash.

While the extent of documentation required for evaluation may vary according to the specific project, any work causing the serious loss of historic fabric or affecting the visual qualities of the character-defining features should be carefully evaluated.

In the final analysis, approval or denial of a project using tinted glazing or tinted films will always be a professional judgment on whether or not the rehabilitation is consistent with the historic character of the building, NOT whether the owner has made strong economic arguments for the use of tinted glazing and films.

The extent of documentation needed for NPS evaluation will vary according to the individual projects. The following points are provided to facilitate NPS evaluation:

1. The recommended alternatives for reducing solar gain and glare without having a radical, and potentially, permanent impact on appearance of the historic building include traditional measures such as blinds, awnings, and shades. The application should also clearly show why these alternatives to tinted glazing cannot be employed.
2. Since most owners base tinted glass proposals on economic considerations, the cost analysis undertaken by the owner may be useful as supporting documentation, especially where historic material is being replaced. A thorough analysis should factor-in increased lighting costs, increased heating costs, capitalization costs, and related economic issues, as applicable. If tinted glass or tinted film is light enough not to have a major effect on the visual qualities of historic features, it usually means reductions in solar gain and glare are not appreciable, thus strengthening the case for retention of the historic window glazing and sash.

3. For proposed work, a field mock-up of a tinted glazed sash could be placed next to an existing, thoroughly clean, window. The results of this comparison test can be photographically documented or, ideally, a field inspection made by either State or NPS regional office staff. If no photographs were taken before work was completed, the tinted glazing in one window could be removed and replaced with clear glass of the same thickness as the historic glazing to facilitate the NPS assessment.  
  
--In general, a comparison of an opened window (giving an unglazed appearance) will not serve as an adequate side-by-side comparison with tinted glass units for evaluation purposes since the opened window (a) does not take into account the reflective qualities of the historic clear glass; and (b) usually makes the window opening appear as a darker void.
4. Specifications for the glazing should be provided in the application, i.e., the thickness of the glass; the shading coefficient; the daylight transmittance; and whether both or only one of the glass sheets in an insulating glass unit will be tinted. A determination should also be made whether tinted glass or tinted film is being proposed for a storm unit. Glass samples can be submitted, although are not required documentation.
5. Color photographs (wherever possible) showing before and after work should be examined. Ideally photographs should be taken both in (a) indirect sunlight or shade; and (b) in direct sunlight (if applicable).

## NPS Considerations in Evaluating Tinted Glazing/Tinted film Proposals

Each project must be reviewed based on its own merits; the following points reflect decisionmaking over the past years:

1. The use of tinted glass and tinted films on character-defining or highly visible secondary elevations is discouraged because:

--It usually results in a change in the building's historic character. The Revised Guidelines (1983) to the "Standards for Rehabilitation" recommend against the use of tinted glass on character-defining facades.

--Technology is changing rapidly in the direction of glass which will appear clear, and reduce solar gain.

--An owner's desire to use tinted glass is often based on a perceived need to have a "new" or "rehabbed" look for an older building. It is also frequently used to help justify replacement of historic sash that could otherwise be retained, repaired, and preserved.

--In the majority of cases, light tinted glass will not lead to significant cost savings for the owner, thus weakening the owner's contention that it is essential for energy cost reduction.

2. Dark tinted glass/films and reflective glass/films used on character-defining and other highly visible secondary facades almost always have a dramatic impact, and such work has resulted in the denial of certification, regardless of economic or market conditions.

3. When light tinted glass (or light tinted film) is installed in replacement sash on character-defining facades or on highly visible secondary elevations--where replacement is an appropriate treatment--but the new windows are a poor match for the historic windows, a cumulative impact of material loss and changes to the historic visual qualities occurs, usually leading to denial of certification.

4. Light tinted glass (or lightly tinted films) retrofitted to existing sash or installed in matching replacement sash where replacement of historic sash is an appropriate treatment can, in cases, be acceptable--depending upon the circumstances involved.

5. Use of tinted glazing on non-character-defining elevations that are not visible from the public way are necessarily a lesser concern (see also section on Documentation for Evaluating Tinted Glazing and Films).

6. An onsite inspection is recommended when considering denial of certification exclusively for use of tinted glass or tinted film.

7. When preparing special condition letters that address a variety of issues (cumulative changes--either to the windows alone or to various other components of the project--required to bring a project into conformance with the Standards), it is appropriate to require that clear glass be used on character-defining or highly visible secondary elevations rather than lightly tinted glass in those cases where the owner has not provided sufficient documentation for a professional assessment of its impact. Where it can be established that the tinted film or glass treatment does not meet the Standards, a single condition addressing the glazing issue is justified.

8. When the use of tinted glazing is acceptable, brand name glass, daylight transmittance levels, and shading coefficients should not be specified by the NPS in a conditional letter. Rather, the owner should amend the application and state what specific tinted glass will be used; NPS will then make an evaluation of its appropriateness.

9. Where a building has two architecturally identical elevations (i.e., the same materials, features, and detailing) that are character-defining and viewed together from the public way and only one facade exhibits major heat gain through existing glazing, NPS will consider the use of light tinted glass on both elevations for visual uniformity. This determination will always be made on a case-by-case basis and would never be encouraged as a general approach.

10. It is always important to consider what other changes are being proposed to the windows, including storefront glazing, in the course of rehabilitation. Are the windows being saved or replaced in kind? Are other major changes being proposed, which, in combination with tinted glazing, will create a major visual change involving windows on a character-defining elevation?

Additional Guidance:

-To date, light grey tints seem to have the least visual impact although there have been a few instances where, due to the unique character of a building, a light bronze or a light green tint has not precluded the overall project from certification.

-Interior light levels, curtains, blinds, dropped ceilings and overhead lights may sometimes serve either to increase or to lessen the negative visual impact of tinted glass; however, such factors are difficult to assess and interpret and are usually not decisive in certification evaluations.

-NPS review staff need to be familiar with glazing products specifications. This information will assist reviewers in evaluating proposed projects. Sample glass submitted by an owner, however, is only minimally helpful in making a final evaluation.

Prepared by:  
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