PLANNING DIVISION STAFF REPORT

September 18, 2019

PREPARED FOR THE LANDMARKS ORDINANCE REVIEW COMMITTEE

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Prepared By:	Heather Bailey, Preservation Planner, Planning Division
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Background

At the August 29, 2019, LORC meeting, the committee asked staff to prepare materials for the committee to discuss maintenance and repair of historic windows, including the issue of lead paint. Staff has gathered research and provided the most pertinent items for the meeting packet (and also listed in Legistar for this topic). However, there is a wealth of additional research available and staff would like to summarize those items by topic.

Historic Character

The National Park Service (NPS) has numerous educational resources online. Their Preservation Tech Notes series has 50 articles on a variety of topics, and 22 of those are about windows. The number of articles is in part due to the varied nature of windows, but also due to the importance of windows as a character-defining feature on a building. In their Preservation Brief series, Brief 9: The Repair of Historic Wooden Windows opens with the following statement:

> "The windows on many historic buildings are an important aspect of the architectural character of those buildings. Their design, craftsmanship, or other qualities may make them worthy of preservation. This is self-evident for ornamental windows, but it can be equally true for warehouses or factories where the windows may be the most dominant visual element of an otherwise plain building."

Staff will prepare a visual presentation to show the impact of changing the character of windows on historic properties for the September 18 meeting.

Lead Paint

Lead paint is a serious health hazard, particularly for children. Real Estate disclosures require sellers to advise there is the likelihood of there being lead paint for buildings constructed prior to 1978. The Wisconsin Historical Society likewise says that people should assume that all historic buildings have lead paint (see Historic Buildings and Lead Paint).

The HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in House, published in 2012 provides somewhat contradictory guidance. In their chapter on abatement, they advise that removing lead paint is the most invasive technique, would produce excessive dust, and leave behind lead on surfaces. However, their chapter on historic preservation advises to remove lead paint, particularly for windows as a character-defining feature and to follow lead-safe procedures.

Staff reached out to John Hausbeck from Public Health Madison & Dane County, who repeated the HUD assertion that even though paint is removed, there would be lead left behind in the wood. Staff reached out to the US Forest Service's Wood Products Laboratory as the idea that lead would penetrate wood was new to both Madison preservation staff and the staff at the Wisconsin Historical Society. Staff spoke with Stan Lebow who cited their research that lead is not a metal that readily soaks into wood and due to the viscous nature of paint, lead would not readily transfer to the wood (the paint adheres, but it doesn't soak through the wood). His findings were that lead penetrated 1-2mm into the wood, and that this was removed by the sanding required to prep the wood for new paint. Some of this research is demonstrated in a study their research on Remilling of

Salvaged Wood Siding Coated with Lead-based Paint, which found lead penetration of the wood averaged 1.6mm and planing of the boards resulted in negligible lead levels afterwards.

Both HUD and the EPA (see Steps to Lead Safe Renovation, Repair and Painting) provide details on lead safe procedures for removing lead paint and clean up afterwards. This would be required for both removing the materials covered in lead paint or removing the paint itself. Those procedures specifically address how to contain and clean lead-containing dust during and after a project.

Energy Efficiency & Sustainability

A number of entities have completed research to investigate the claims of window manufacturers that old windows are not energy efficient. Preservation Pennsylvania prepared a study called Considering the Repair, Retrofit and Replacement of Historic Windows where they investigate both the claims for needing to replace historic windows and the process for maintaining them. They summarize the push to replace over repairing like so: "Unfortunately, many people base their decision to replace windows on incomplete or inaccurate information provided by individuals or companies that profit from selling new windows. Significant investment is made in marketing replacement windows, and convincing homeowners that they need them." When the Wisconsin Historical Society is reviewing a proposal to replace rather than repair historic windows for a preservation tax credit project, they require an evaluation by a contractor who is not employed by a window sales company in order to get an accurate assessment.

There are some preservation commissions that require an energy audit as a way of refuting the claim that only replacement windows could make a building energy efficient. The NPS discusses energy efficiency in Preservation Brief 3: Improving Energy Efficiency in Historic Buildings. Their findings are that the majority of heat loss is through the roof, walls, and ceiling. The historic preservation program in Ann Arbor, MI, produced their recommendations for Energy Conservation in Historic Buildings, and they also advocate for repairing original windows rather than replacing in the name of energy conservation.

Typically windows account for 10% of the heat loss of a building. The majority of that heat loss is air infiltration at the perimeter of the window, which can largely be resolved by weather stripping and caulking. In most windows (historic or new thermal pane), the heat transfer via the pane of glass accounts for 10-20% of the heat loss. So replacing a single pane window for a new double pane window in the name of energy efficiency is both not addressing the primary source of heat loss for either a window or a building, for a costly product. Adding a storm as a thermal pane or introducing interior cellular shades will address heat transfer through glass at a fraction of the cost.

The National Trust for Historic Preservation's Preservation Green Lab conducted an in-depth analysis of a variety of retrofitting options and compared those to replacement (see Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement). Their findings were that almost every retrofit option (weather stripping, interior or exterior storm windows, and cellular shades) had a drastically better return on investment.

Finally, maintaining historic windows is a sustainability issue. Replacement windows are generally not repairable and must be replaced whereas old-growth wood windows can be maintained nearly indefinitely. When the NPS released Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings in 2012, they included a section on windows. The emphasis is on maintenance and repair, but it does address replacement as these are rehabilitation standards. Likewise, the Wisconsin Historical Society makes the case for historic windows being sustainable and energy efficient in Advantages of Maintaining Your Historic Windows.