



# Maintenance Recommendations for Historic Building Owners

City of Lockport, Department of Planning

## *Lockport History*

The City of Lockport is a heritage destination with local, state and national importance. Lockport was planned and named in 1837 by Commissioners of the Illinois and Michigan Canal. The City was to serve as headquarters because of its central location along the planned Canal. The I & M Canal officially opened in 1848 creating the final passageway for the interior route between the Atlantic Ocean, the Great Lakes and the Gulf of Mexico. This link secured Chicago's position as the shipping capital of the United States.

The City of Lockport was founded in 1836 and incorporated in 1853, with an established residential and commercial building stock composed of handsome brick and Joliet limestone buildings. Lockport also boasted a burgeoning commercial strip, known as State Street. Although the East side of State Street was flattened by the Lockport fire of 1895 between 9<sup>th</sup> and 10 Street, the commercial district was quickly rebuilt.



Figure 1: State Street in Lockport, 1909

Tourists today are attracted to Lockport to view the I & M Canal, the Gaylord Building, Will County Historical Society, and the Chicago Sanitary and Shipping Canal, which was completed in 1900. It is important for heritage tourism in Lockport to represent a continuity between the Canals, residential and commercial buildings in the City. Therefore this brochure has been created to provide recommendations to historic property owners on how to keep their building, and therein, Lockport functional and beautiful.

## *Window Maintenance*

Whenever possible, the retention of historic windows in a building should be the top priority of a historic property owner. The windows of the building are a crucial component of the overall design scheme, where in older buildings they may represent as much as 20 to 30% of the building fabric. In addition to the window openings providing a rhythm to the exterior, windows can also be ornamental on the interior in the way they filter and disperse light. Historic windows do not necessarily need to be original to the building but a 50-year rule-of-thumb is recommended, when viewed from this length of time windows can be reflective of technologies utilized during the course of the building history.



Figure 2

Historic wood windows are especially important to retain and maintain because the quality of material and construction cannot be duplicated today. Historic wood windows are most often composed of dense, old growth wood, which is unavailable today because of old-growth forest depletion. Old-growth wood has a tighter grain than young wood, which means that it will last longer and weather better, in fact, if properly maintained, wood windows can last an additional 100 years. Technologies employed in historic wood window construction consisted of individual glass panes in the framework and a rope and pulley system to operate. As all of the window components exist or operate individually, when one part of the window is damaged that particular piece need only be replaced. However with modern windows, complete window replacement is necessary if one component becomes damaged.

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The first step in maintaining historic windows is to create a record of their condition. By undertaking a survey, not only will you become familiar with the historic resource that you have; you will be able to track changes in their condition and recognize trends in deterioration. Trend identification may point to underlying issues that need mitigation. To begin the survey, you will want to examine each window from the exterior, looking for cracked panes or missing weather stripping. Once completed, continue to the interior where you can raise and lower the windows to examine the mechanical system and take a closer look at wood deterioration. The property owner can conduct a simple survey; however, it is also possible to hire a historic window consultant or architect to do the assessment.

Once the survey is complete, the property owner will be able to address common repair issues, such as sticking windows and broken latches or panes, which are all easily repaired. By regularly addressing these common issues, the lifetime of the historic window will be extended. One of the more common maintenance issues for historic windows occurs as a result of water infiltration. This water damage will lead to deterioration of the wood on the sill or around the panes. Deterioration can be stabilized using epoxies available at home improvement stores, while more extreme cases may require wood splicing. A good hands-on manual for window maintenance issues was created by the National Park Service, entitled *Preservation Brief #9: The Repair of Historic Wood Windows*, and is available online at <http://www.cr.nps.gov/hps/tps/briefs/presbhom.htm>.



Figure 3

If maintenance on historic windows has been continually deferred, window retention is no longer an option, it is recommended that you seek out the help of a historic window specialist. You can find a list of such service providers by contacting Landmarks Illinois. When faced with the decision to replace, replace only those windows that cannot be salvaged and replace in-kind. Particular attention should go towards matching the shape and muntins of the new window with that which is being re-placed. Whenever possible, replace wood windows with modern wood windows. Often the historic window frame will be retained even when replacing because of their integration into the structural system. Removing the wood frame will most likely result in damage to the exterior and interior finishes.

One of the most common reasons for the replacement of historic windows is because of the perpetuated myth, by vinyl window distributors, that historic windows are not energy efficient. However, studies have shown that the most common method of air infiltration (almost 85%) is from around the glass, rather than through, which is an effect of poorly maintained windows. The energy efficiency of a historic building can be greatly improved through surveying your windows for deficiencies in the caulking around the frame, cracked glazing putty, a loose-fitting window sash, cracked panes, or lack of weather-stripping. Some recommended treatment methods include the installation of vinyl jamb liners, a new latch at the connection between the upper and lower sash, and in some cases, it may be beneficial to paint the upper in place.

The remaining 15% of energy loss is through the glass itself. Although window salespeople want you to believe these savings can only be accomplished through insulated or multi-pane glass, there are other options. Storm windows are highly effective, and when combined with weather-stripping, can equal the energy savings of replacement windows at half the cost.

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When installing storm windows, it is important to match the frame color with that of the existing windows, the sash size, the window shape, and should include only a half screen so as to not obscure more of the historic window behind. An additional benefit to storm windows rather than multi-pane glass is an aesthetic problem, inevitably the area between the layered panes will be subject to moisture penetration and fogging will occur. The replacement of single-glazed panes in historic windows with multi-panes may lead to minimal energy savings, but it would take more than 50 years to benefit from the cost of the replacement.



Figure 4

A final point in window maintenance is that it is important to refrain from the use of vinyl windows if replacement is required as such an unabashedly modern material distracts from the historic fabric of the building. In addition, vinyl windows are very flexible so they expand and contract in extreme weather at approximately twice the expansion rate of wood and seven times that of glass. This will lead to a possible separation between the frame and the glass causing air infiltration. The technology employed by vinyl windows has been around approximately 20 years, while wood windows, when properly maintained, have been proven to last well over 100 years; making the investment in your wood windows not only a safe but also an energy efficient decision.

## Mortar Repair

Mortar has always been a primarily functional building material; however, when looking at a building that has been patched with an inappropriate mortar color; it becomes obvious that mortar also possesses aesthetic qualities. When your building must be repointed either in part or completely because of cracks in the mortar joints or masonry, or because of loose stone or brick, it is important to start with a mortar analysis. Mortar restoration companies can, from a sample of your mortar, conduct lab tests from which they will be able to advise as to the historic mortar mix used on the building, the sand color, and grain size needed to match appearance. Although mortar analysis is very important to create continuity; it is also to create continuity, it is also important to study the joints for decorative finishes.

There are two points in the repointing process when a contractor's ineptitude could do more damage to the building than the deteriorated joints would do if left alone: when the mortar is being removed and when the mortar mix is being determined. When removing the deteriorated mortar joints it should be done with great care so not to damage the surrounding masonry units. To prevent injury to the building, it is recommended that workers use hand chisels and mash hammers (as seen to the right). Also, the horizontal mortar joints could be cut down the center using a diamond blade grinder and then a hand chisel. In all cases, power grinders should not be used. Although a power grinder is the quickest way to remove mortar joints, and therefore usually less expensive, the grinder can take on a life of its own in the hands of an inexperienced or inattentive operator and can cut directly into the brick or stone.

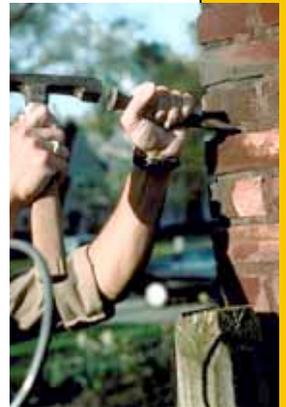


Figure 5

Even the diamond blade grinder should not be used in the vertical mortar joints as the joint is small this is most often where damage occurs. Once the masonry unity has been damaged, it becomes sponge-like and will deteriorate quickly, in addition to being unattractive.

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Mortar joints should be removed to approximately 2 to 2 ½ times the width of the mortar joint. This depth will allow the mortar to obtain a strong bond with the existing mortar and the masonry unit. The existing mortar joints should be gently cleaned of dirt and should remain wet while the new mortar is being set.

The second issue that may arise when repointing relates to the proper mortar mix. Historic mortar could derive from a variety of ingredient proportions with the most common mix consisting of one part slaked lime (lime is mixed with water to create a putty) and three parts local sand. Portland Cement became available in the United States in 1872, but was used only as a minor additive in order to speed the curing process at the turn of the century. By 1930, Portland Cement became a major ingredient in modern mortar resulting in a faster curing mortar that was also much harder than historic mortar.

Figure 6: Repointing Technique

The purpose of mortar in a building is to bind masonry units; to allow movement when weather causes the materials to expand and contract; to cushion the masonry as settlement occurs; and to act as a conduit for water to exit the wall. If the modern mortar used in repointing is stronger than the masonry units, the masonry becomes the more permeable component responsible for sustaining all the movement and water passage which leads to spalling, cracking or deterioration of the brick or stone rather than the sacrificial mortar. This is another reason for the mortar analysis, to determine the proper amount of Portland Cement in the mortar mix or if it is present at all.

Clearly, one of the hardest parts of repointing a building is selecting the contractor. It is recommended to first talk with other historic building owners about their experiences with contractors. After receiving recommendations, you would want to meet with the contractor and ask them for examples of other buildings they have repointed. Once the contractor has been selected, ask them to do a sample repointing on your building. Be sure to pick a discreet location on your property and have the contractor send an average worker to come and remove mortar and repoint in an approximate 3-foot by 3 foot area. Landmarks Illinois maintains a list of recommended masonry restoration workers if you need a starting point. Another resource would be the U.S. Heritage Group who may be able to provide a list of contractors who have participated in their masonry workshops.

Repointing can be an expensive undertaking and often times building owners must start with smaller areas that need immediate work as opposed to confronting the entire building on one job. If this is the chosen route, it is recommended that if possible to repoint an entire wall or feature, (such as a bay, at one time. By exhibiting due diligence the first time around, you can avoid later masonry repair work. A good repointing job will usually last at least 30 years but may last as long as 50 to 100 years.

## Masonry Cleaning

Just as important to your building's health as proper repointing is masonry cleaning. It is important to start by using the gentlest means possible, which begins with a low-pressure spray (100 psi or below) before building to a medium spray (maximum 300 to 400 psi) when necessary. If these methods are ineffective, it is recommended to use a water spray with a mild soap.



Figure 7: Sandblasted Brick

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Even cleaning with water can prove harmful to a building if the masonry joints are in disrepair and allow water infiltration. If water gets behind the exterior wall it can cause supporting members to rust or create water damage on interior finishes. The more abrasive the cleaning method selected, the more potential damage to the building fabric. Damages could include pockmarks left by sand blasting, efflorescence forming on masonry units, or discoloration and spalling from chemical treatments. For more information on cleaning methods, and their respective dangers, please review the National Park Service's *Preservation Brief #1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings*.

## Awnings and Canopies

Awnings have long been credited by commercial buildings for their functionality as advertising space and by shoppers for their shade and rain protection, but they have recently become overlooked for the great energy efficiencies they provide to both commercial and residential building. Awnings are highly effective for cooling an interior by preventing direct sun from shining through windows and creating heat build-up. From an aesthetic point of view, awnings can also highlight architectural elements, window regularity, and building symmetry, as long as they are carefully fastened to the building to mitigate damage.

In the northern United States, awnings are most often retractable to prevent damage from occurring by snow build-up and ice during the winter months. When using awnings, they are typically restricted to the south, east and west elevations because this is where the sun will shine directly into the building.

Awnings come in a variety of shapes, including shed, dome, concave, convex, bullnose, and the more modern marquee. When selecting a shape it is important to choose the one that mimics the shape of the opening. Since retractable awnings can only be in the shed shape, this is the most popular shape for commercial buildings.

In commercial buildings it is recommended that awnings do not cover more than 1/3 of a window's surface area so that merchandise is easily visible to pedestrians. However, on residential buildings, this rule does not apply as homes tend to not only value their privacy but because the awning becomes more of a design element to the home.



Figure 9

It is very important on both building types that the awning is designed to fit the opening it shades. If awnings are drawn over multiple windows or bays, the building's proportions and some architectural elements are lost.

With almost all architecture built prior to World War I, and even most architecture after, a soft flexible canvas awning with a valance is the most appropriate material selection. Most buildings from this time are in a romantic style and are complemented by the movement of the fabric. With commercial buildings, the valance can also serve as a



Figure 8: Otis Awning Fabrics Brochure, 1920s

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Figure 10

convenient place to advertise a store name or address as it remains visible even when the awning is retracted.

Color usage on awnings should complement the building to which the awning is attached. In the case of commercial buildings, since most are brick or stone, the awnings tend to be in earth tones or more natural, subtle colors. In residences, the same rule-of-thumb applies that subtly is the best policy. However because houses are often wood, awnings have a wider color palette, including most earth and natural tones, as well as primary and secondary colors.

Buildings constructed during the second half of the 19<sup>th</sup> century up until the turn of the century were focused on verticality, therefore, awnings are appropriate over windows on upper floors. However, buildings constructed after the turn of the century returned to a more classical, horizontal focus, so awnings would typically be recommended for only the first floor and would be flat, projecting canopies of metal and glass. Housing after World War I, also became more modern with styles emerging such as the Art Moderne that focused on horizontality. On such residences, awnings would typically be a metal, often aluminum, shed shape over windows with metal canopies over the entrance.

Most fabric awnings today have a live expectancy of four to seven years yet metal awnings or canopies will last longer if properly maintained. Although energy efficiency is a benefit for awning usage on any building type, as residences also have blinds or shades that could be used as a substitute, energy savings are usually only recognized with commercial usage.

## *Historic Doors and Storefronts*

Historic doors, like windows, should be retained on buildings whenever possible because of the craftsmanship and character they contain. As the front door of a home forms the first impression for a visitor, they were often highly ornate with multi-pane inserts and often decorative glass.

Historic storefronts are just as important to retain for the reasons listed above, but in addition, they can become a marker of technology and marketing techniques of the time. As technology increased, plate glass windows become larger and storefronts more open. In the mid-twentieth century, store designers use the entranceway and display windows to lure pedestrians from the sidewalk into the store. In some high-style examples, the display cases may be undulating to promote movement or the front wall may disappear completely, thus separating the potential customer from the store by glass alone. The retention of these historic storefronts, or mid-century modernizations that are historic in and of themselves, should be retained and utilized by the current tenant.



Figure 11

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## Reference:

### *Lockport History*

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### *Masonry Cleaning*

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<http://www.cr.nps.gov/hps/tps/briefs/brief1/htm> Accessed February 26, 2007.

### *Awnings and Canopies*

*Main Street Guidelines: Awnings and Canopies on Main Street.*

"Preservation Brief 11: Rehabilitation Historic Storefronts." Washington, D.C.: U.S. Department of the Interior, National Park Service Preservation Assistance Division. <http://www.cr.nps.gov/hps/tps/briefs/brief11/htm> Accessed February 26, 2007.

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## Figure Identification:

Figure 1: State Street in Lockport, IL, 1909. Courtesy of Lamb, John. Images of America, Lockport Illinois: The Old Canal Town. Charleston: Arcadia Publishing, 1999.

Figure 2: Historic Window at Urbana, IL Cattle Bank. Courtesy of Courtney Gray.

Figure 3: State Street in Lockport, IL, 2007. Courtesy of Courtney Gray.

Figure 4: Vinyl Replacement Windows in Morris, IL, 2007. Courtesy of Courtney Gray.

Figure 5: Mortar Removal with Chisel. Courtesy of Preservation Briefs 2: Repointing Mortar Joints in Historic Masonry Buildings.

Figure 6: Proper Repointing. Courtesy of Preservation Briefs 2: Repointing Mortar Joints in Historic Masonry Buildings.

Figure 7: Sandblasted Brick. Courtesy of Preservation Brief 1: Assessing Cleaning and Water-Repellant Treatments for Historic Masonry Buildings.

Figure 8: Otis Awning Fabrics Brochure, 1920s. Courtesy of Preservation Briefs 44: The Use of Awnings on Historic Buildings Repair, Replacement & New Design.

Figure 9: Awnings on Private Residence. Courtesy of Preservation Briefs 44: The Use of Awnings on Historic Buildings Repair, Replacement & New Design.

Figure 10: State Street in Lockport, IL, 2007. Courtesy of Courtney Gray.

Figure 11: Historic Main Street. Courtesy of Preservation Brief 11: Rehabilitation Historic Storefronts.

## Resources:

Illinois Historic Preservation Agency  
Preservation Services  
#1 Old State Capitol Plaza  
Springfield, IL 62701  
(217) 782-4826  
<http://www.illinoishistory.gov/ps/index.htm>

Landmarks Illinois  
53 W. Jackson Boulevard  
Suite 1315  
Chicago, IL 60604  
(312) 922-1742  
<http://www.landmarks.org/>

Preservation Briefs, National Park Service (available online)  
(866) 512-1800  
<http://www.cr.nps.gov/hps/TPS/briefs/presbhom.htm>