

Window Solutions for Historic Rehabilitation Projects

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Class DESCRIPTION

Complexities surround the rehabilitation of an historic building: tax credits, repair vs replace, performance requirements, etc.

Just as these historic buildings played a critical role in the past, windows play a critical role in the rehabilitation for the future.

Examine how Standards and Guidelines from the US Department of Interior are applied to window repair or window replacement.



Learning Objectives

1 Discover

Why fenestration is important and many times challenging during a historic rehabilitation process

2 Identify

Technologies, resources and best practices to assist you throughout a historic rehabilitation project

3 Apply

Concepts of window restoration as defined within US Dept. of Interior Standards and Guidelines to assess existing windows and determine rehabilitation project outcomes.

4 Consider

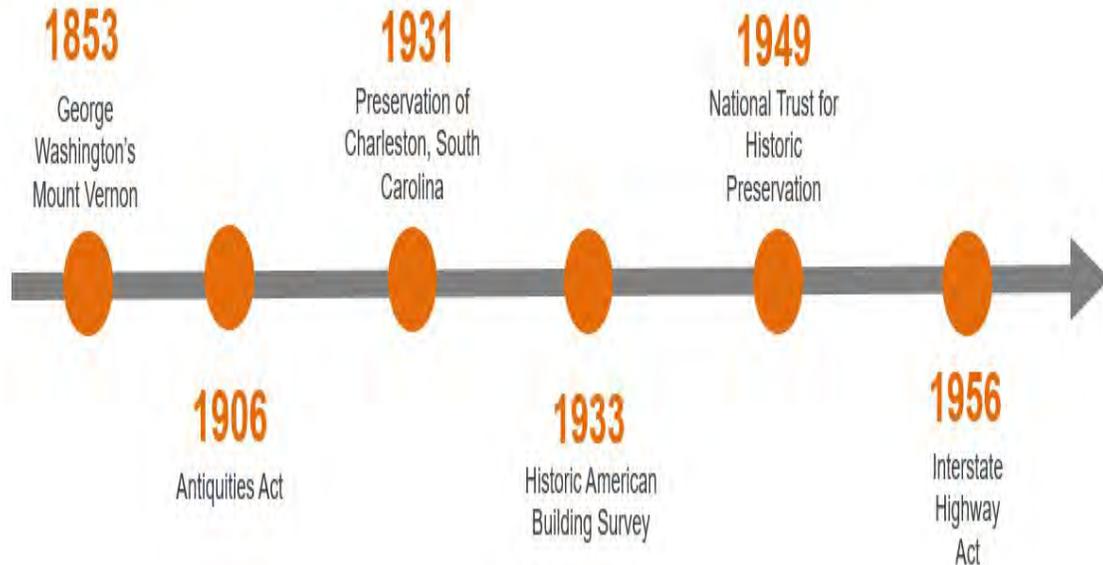
Solutions to restore, repair or replace windows and challenges of each for historic tax credit purposes.



Objective 1

Why Fenestration Is Important

Historic Preservation in the US



- George Washington's Mt. Vernon – Mount Vernon Ladies Association 1853
- Antiquities Act of 1906 – Made the destruction of historically significant sights and antiquities illegal
- Preservation of Charleston, SC 1931 – First locally protected historic district in the United States
- HABS – Historic American Building Survey 1933 – New Deal program to document important American architecture
- National Trust for Historic Preservation – Established in 1949 as a national organization advocating for the preservation of important historical and architectural sites
- Interstate Highway Act of 1956 – led to the destruction countless historic buildings and neighborhoods

Earliest efforts were women's groups formed to save the homes of US presidents

Historic Preservation in the US

Key events with lasting impact

1960's



1963



Demolition of New York City's Pennsylvania Station



1965



New York City Landmarks Law enacted

Enacted in order to protect historic landmarks and neighborhoods from precipitate decisions to destroy or fundamentally alter their character



1966



Historic Preservation Act of 1966 – Established the National Register of Historic Places

- Sets the federal policy for preserving our nation's heritage
- Establishes a federal-state and federal-tribal partnership

Local Preservation

Key dates

What dates or people were instrumental in your city as it relates to historic preservation?

Buildings of Interest

Were any buildings of significance lost in the name of progress that galvanized the preservation movement?





Importance of Windows

Direct quote from the National Park Service:

“As one of the few parts of a building serving as both an interior and exterior feature, windows are nearly always an important part of the historic character of a building. In most buildings, windows also comprise a considerable amount of the historic fabric of the wall plane and thus are deserving of special consideration in a rehabilitation project.”



Historical Significance

- Original
- Reflect original design intent
- Reflect period or regional styles or practices
- Reflect changes related to major periods or events
- Show exceptional craftsmanship

Importance of Preservation

Old buildings for new opportunities





Success of Historic Tax Credit

- Revitalize historic buildings
- Spark economic opportunity in communities
- From the 2020 Annual Report
 - 989 Certifications of Completed Work
 - Over \$6.54 billion in private investment
 - Projects big and small
 - New National Register nominations
 - 39 states have state historic tax credits



Tax Incentives

Federal Tax Incentives are available for buildings and structures:

- National Historic Landmarks
- Listed in the National Register
- Contribute to National Historic Districts
- Select Local Historic Districts

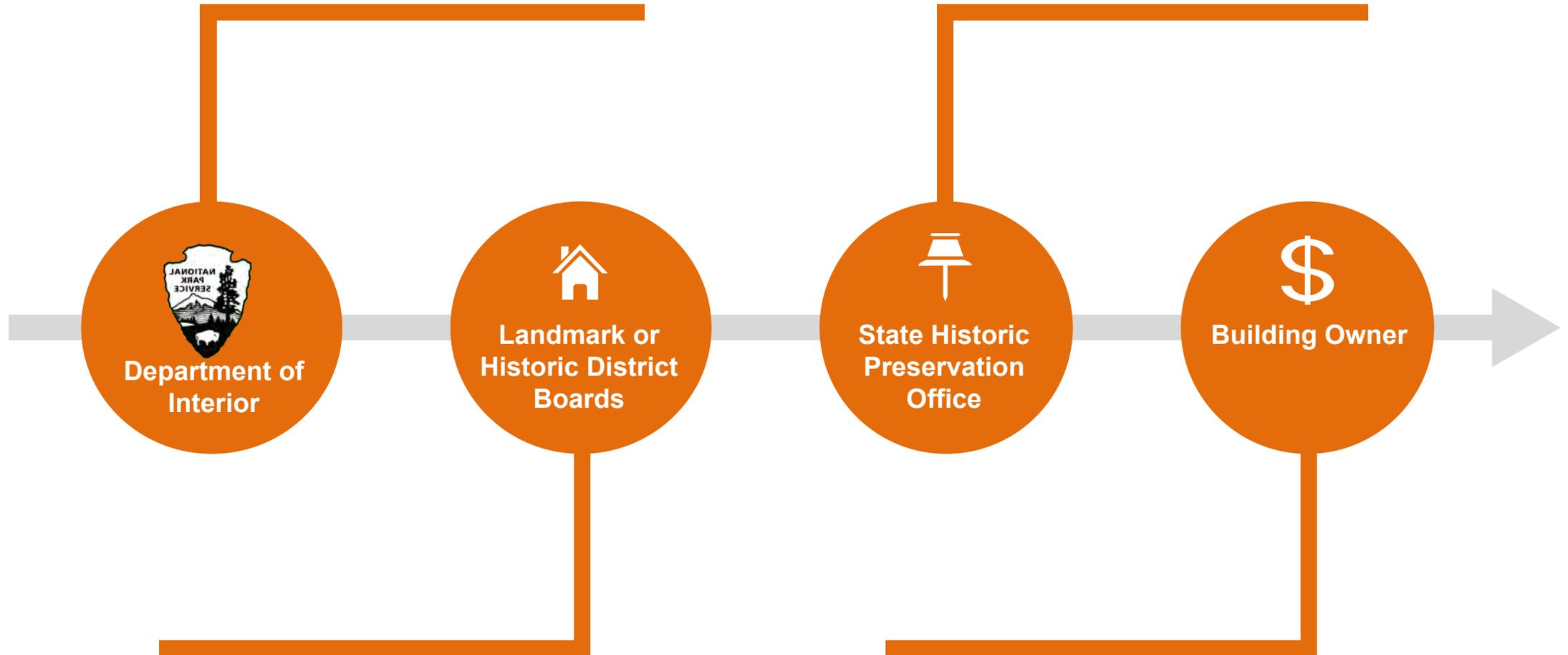


Objective 2

Resources, Technology, and Best Practices

Who is Involved?

Depending on your project, there can be several players involved



Research: Resources

Start with both online and in-person research

State or Local Agencies

Historical societies, museums, preservation commission or consultants

Documents, Surveys, Archives

Historical records, photography in libraries or archives

National Register

Records of Part 1 recommendation or application for designated status

Advocates, Social Media

Preservation enthusiasts, interest group pages and posts



TOWNSHIP 19 NORTH RANGE 22 EAST OF THE 106 MERIDIAN-GRAND AVENUE									
Lot	Area	Acres	Owner	Remarks	Area	Acres	Owner	Remarks	Area
1	0.10	0.10	...	...	...	...	...	...	...
2	0.10	0.10	...	...	...	...	...	...	...
3	0.10	0.10	...	...	...	...	...	...	...
4	0.10	0.10	...	...	...	...	...	...	...
5	0.10	0.10	...	...	...	...	...	...	...
6	0.10	0.10	...	...	...	...	...	...	...
7	0.10	0.10	...	...	...	...	...	...	...
8	0.10	0.10	...	...	...	...	...	...	...
9	0.10	0.10	...	...	...	...	...	...	...
10	0.10	0.10	...	...	...	...	...	...	...
11	0.10	0.10	...	...	...	...	...	...	...
12	0.10	0.10	...	...	...	...	...	...	...
13	0.10	0.10	...	...	...	...	...	...	...
14	0.10	0.10	...	...	...	...	...	...	...
15	0.10	0.10	...	...	...	...	...	...	...
16	0.10	0.10	...	...	...	...	...	...	...
17	0.10	0.10	...	...	...	...	...	...	...
18	0.10	0.10	...	...	...	...	...	...	...
19	0.10	0.10	...	...	...	...	...	...	...
20	0.10	0.10	...	...	...	...	...	...	...
21	0.10	0.10	...	...	...	...	...	...	...
22	0.10	0.10	...	...	...	...	...	...	...
23	0.10	0.10	...	...	...	...	...	...	...
24	0.10	0.10	...	...	...	...	...	...	...
25	0.10	0.10	...	...	...	...	...	...	...
26	0.10	0.10	...	...	...	...	...	...	...
27	0.10	0.10	...	...	...	...	...	...	...
28	0.10	0.10
29	0.10	0.10
30	0.10	0.10
31	0.10	0.10
32	0.10	0.10
33	0.10	0.10
34	0.10	0.10
35	0.10	0.10
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37	0.10	0.10
38	0.10	0.10
39	0.10	0.10
40	0.10	0.10
41	0.10	0.10
42	0.10	0.10
43	0.10	0.10
44	0.10	0.10
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49	0.10	0.10
50	0.10	0.10



Research: Documentation

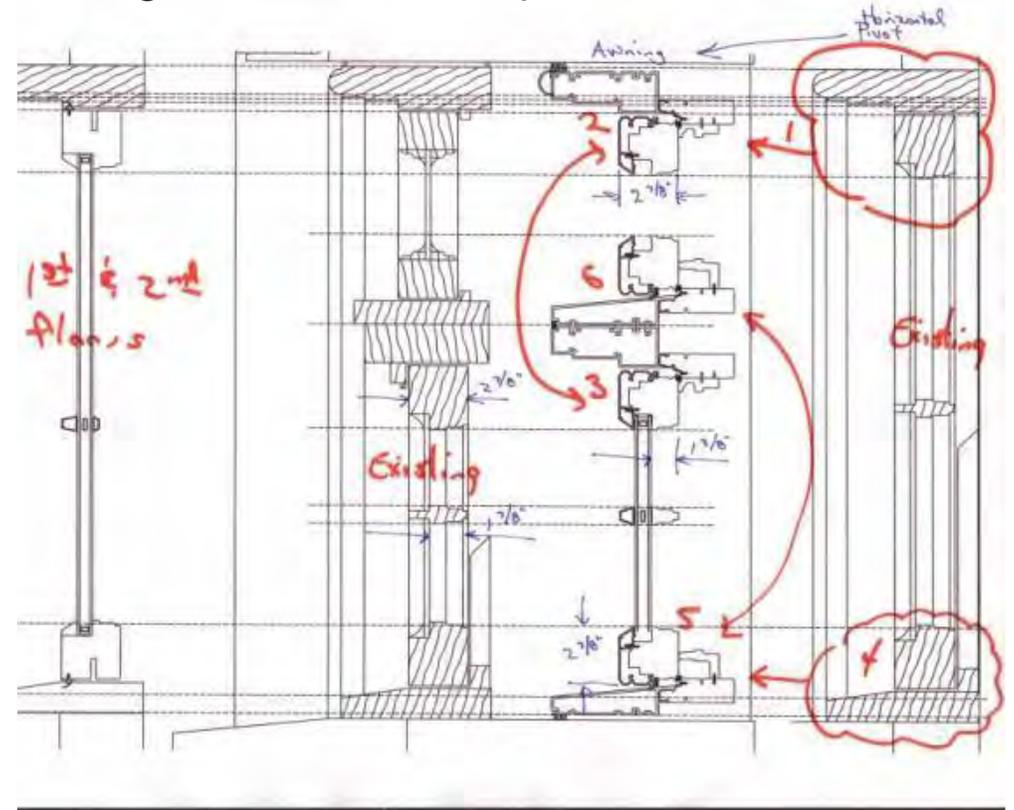
Your two best friends are the camera on your phone and a spreadsheet

Drawings should be at the same scale and large enough to show construction detail.

If you receive tax credit, documentation must be kept for 5 years.

The window's relationship to the existing wall plane must also be provided for both the existing historic windows, when present, and the proposed replacement window.

Existing windows v. Proposed window solutions



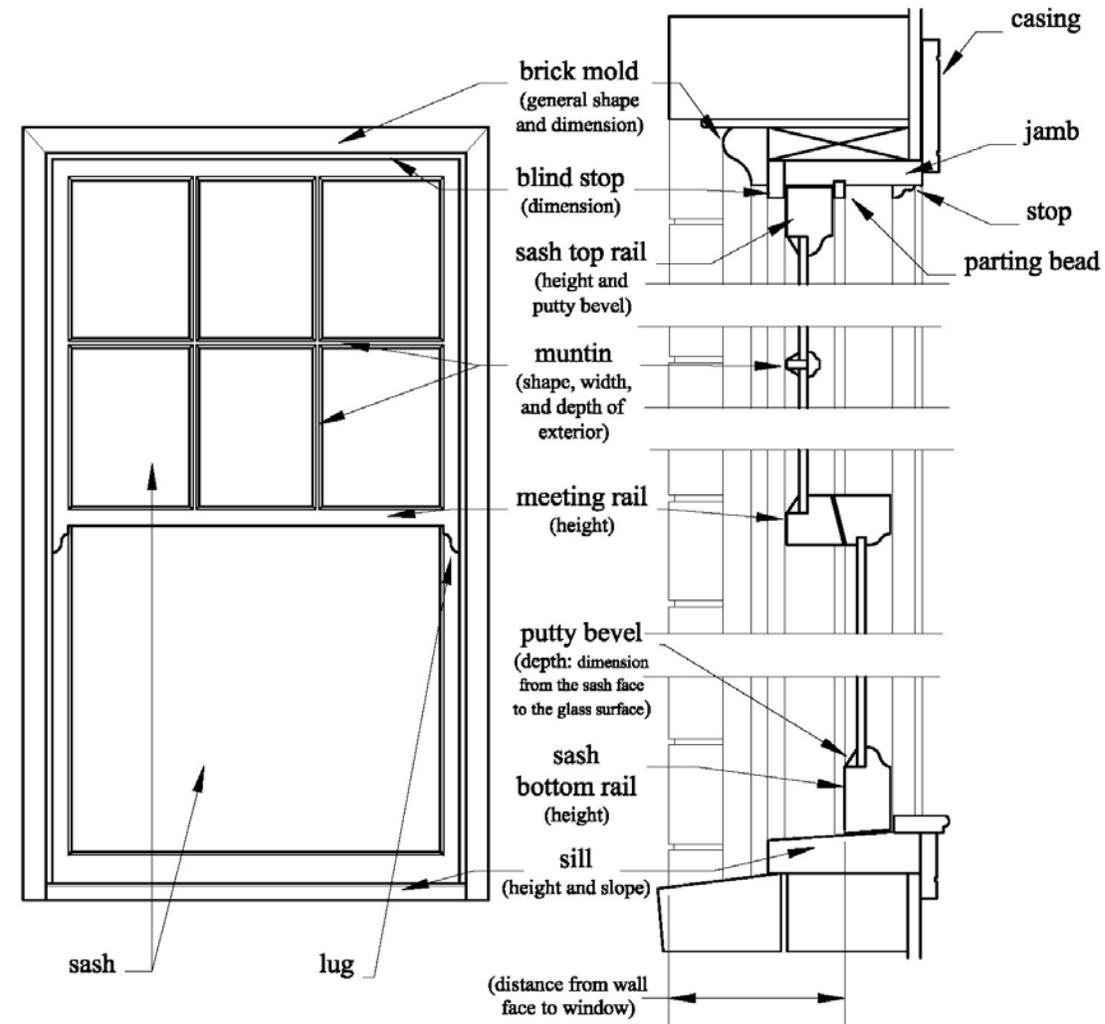
Unit by Unit Assessment

1. Window Location

2. Window/Door Material

3. Physical Condition of Each Unit

- Frame
- Sill
- Paint
- Glazing
- Hardware
- Overall (Good, Fair, Poor)



Unit by Unit Assessment

Your two best friends are the camera on your phone and a spreadsheet

Sum of all parts:

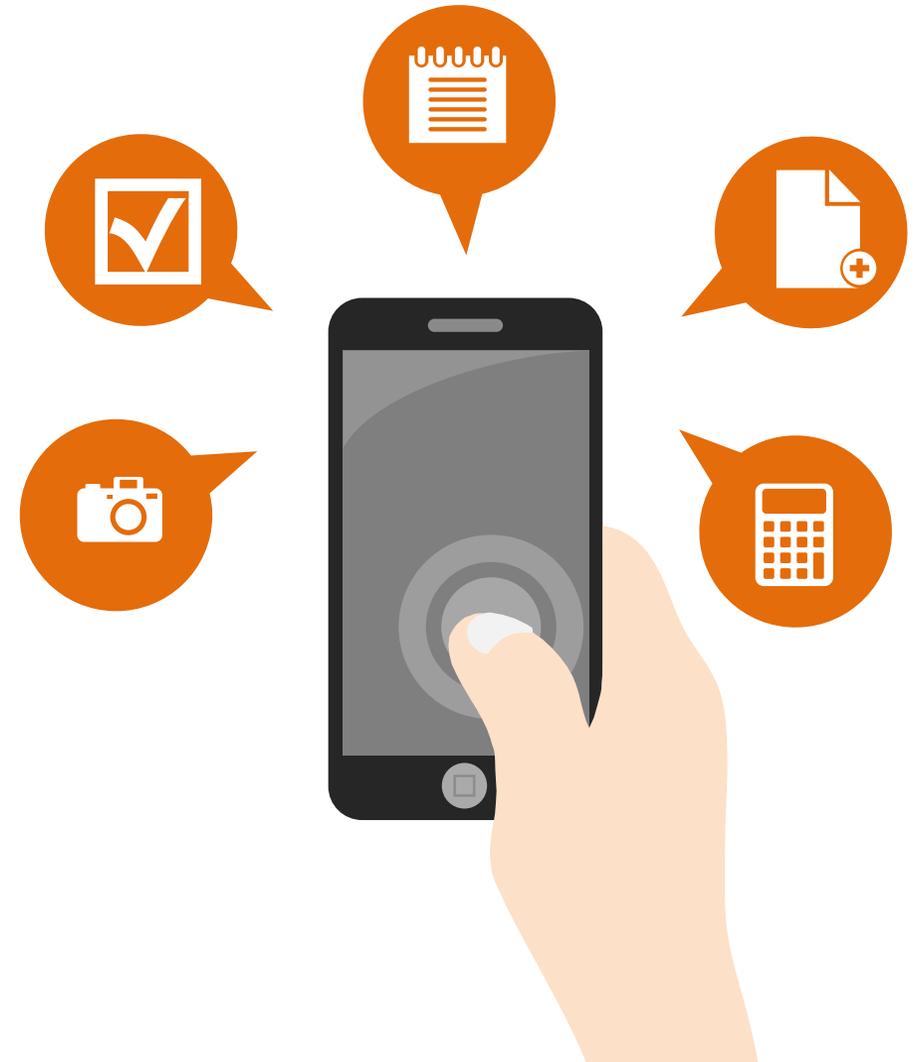
- Mass/proportionality
- Placement in the plane of the opening
detailing shadow lines
- Moisture damage
- Paint and wood condition



Unit by Unit Documentation

Keeping records of key data, observations and conditions are critical for tax credits

- 01** Moisture damage
- 02** Condition of frame, sill, sash and glazing
- 03** Paint and wood condition
- 04** Wood is frequently in sound physical condition beneath unsightly paint.





Objective 3

Standards and Guidelines

Change photo

The Standards: Approaches to Treatment

- 1 Preservation
- 2 Rehabilitation
- 3 Restoration
- 4 Reconstruction

Rehabilitation:
Process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values.



Secretary of the Interior: Standards for Rehabilitation



1. A **property shall be used for its historic purpose** or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The **historic character of a property shall be retained** and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. **Changes that create a false sense of historical development**, such as adding conjectural features or architectural elements from other buildings, **shall not be undertaken**.
4. Most **properties change over time**; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive **features**, finishes, and construction techniques or examples of craftsmanship that characterize a historic property **shall be preserved**.
6. Deteriorated **historic features shall be repaired** rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as **sandblasting**, that cause damage to historic materials **shall not be used**. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant **archaeological resources** affected by a **project shall be protected** and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The **new work shall be differentiated from the old** and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Standards for Rehabilitation

#6

Deteriorated **historic features shall be repaired** rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.



Standards for Rehabilitation #9

New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

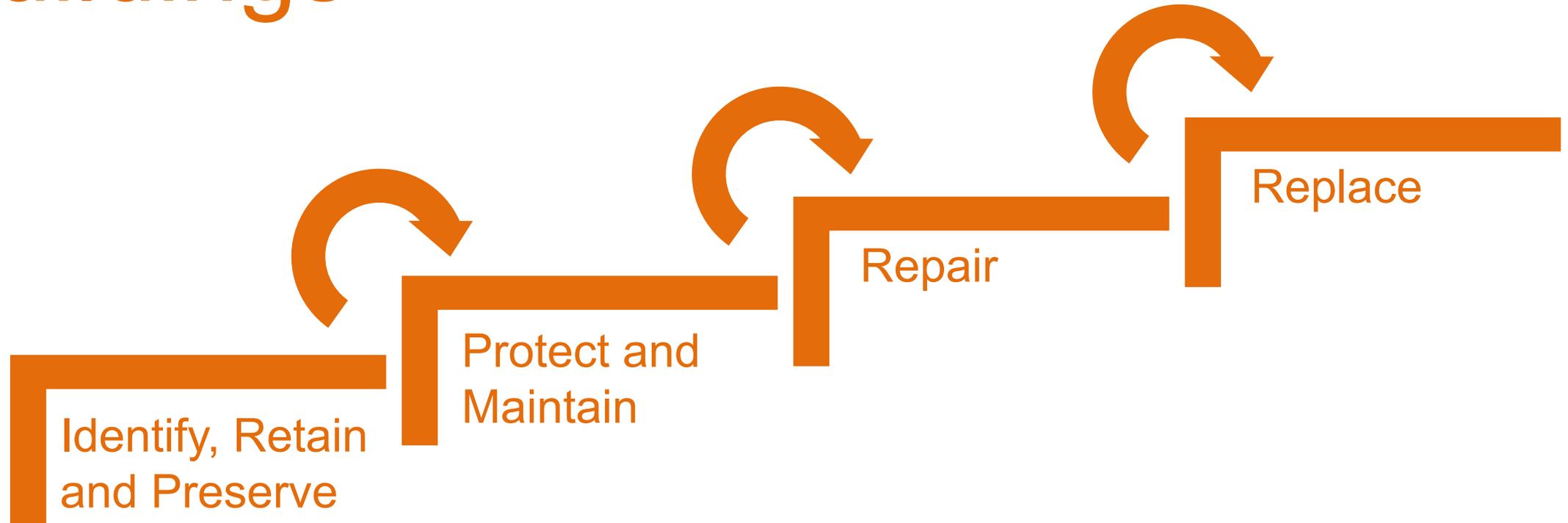


Standards for Rehabilitation #10

New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.



Guidelines for Rehabilitating Historic Buildings





Guidelines: Not Recommended

Historic Fabric

Removing or radically changing windows which are important in defining the historic character of the building so that, as a result, the character is diminished.

Changes

Changing the historic appearance of windows using inappropriate designs, materials, finishes, or colors which noticeably change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame.

Overall Design

Changing the number, location, size or glazing pattern of windows, through cutting new openings, blocking-in windows, and installing replacement sash that do not fit the historic window opening.



Objective 4

**Restore, Repair or
Replace?**

Windows Beyond Repair?

Open Discussion





Planning for Window Treatment

- Principle façade often most significant
- Examine each window individually
- 4 basic window functions
 - Admit light
 - Fresh air and ventilation
 - Visual link to the outside
 - Enhance appearance
- Determine whether components reflect technology of the time or lend to overall design of building



Budgetary Considerations: Energy Efficiency

- Excessive air infiltration occurs due to lack of maintenance
- Evaluate what is more cost effective: restored vs replacement
- Advantages and disadvantages to both restore and replace
- New technologies, materials, resources
- Maintenance considerations



Rehabilitation Plan: Repair Classes I, II and III

Each successive repair class represents an increasing level of difficulty, expense, expertise and time.

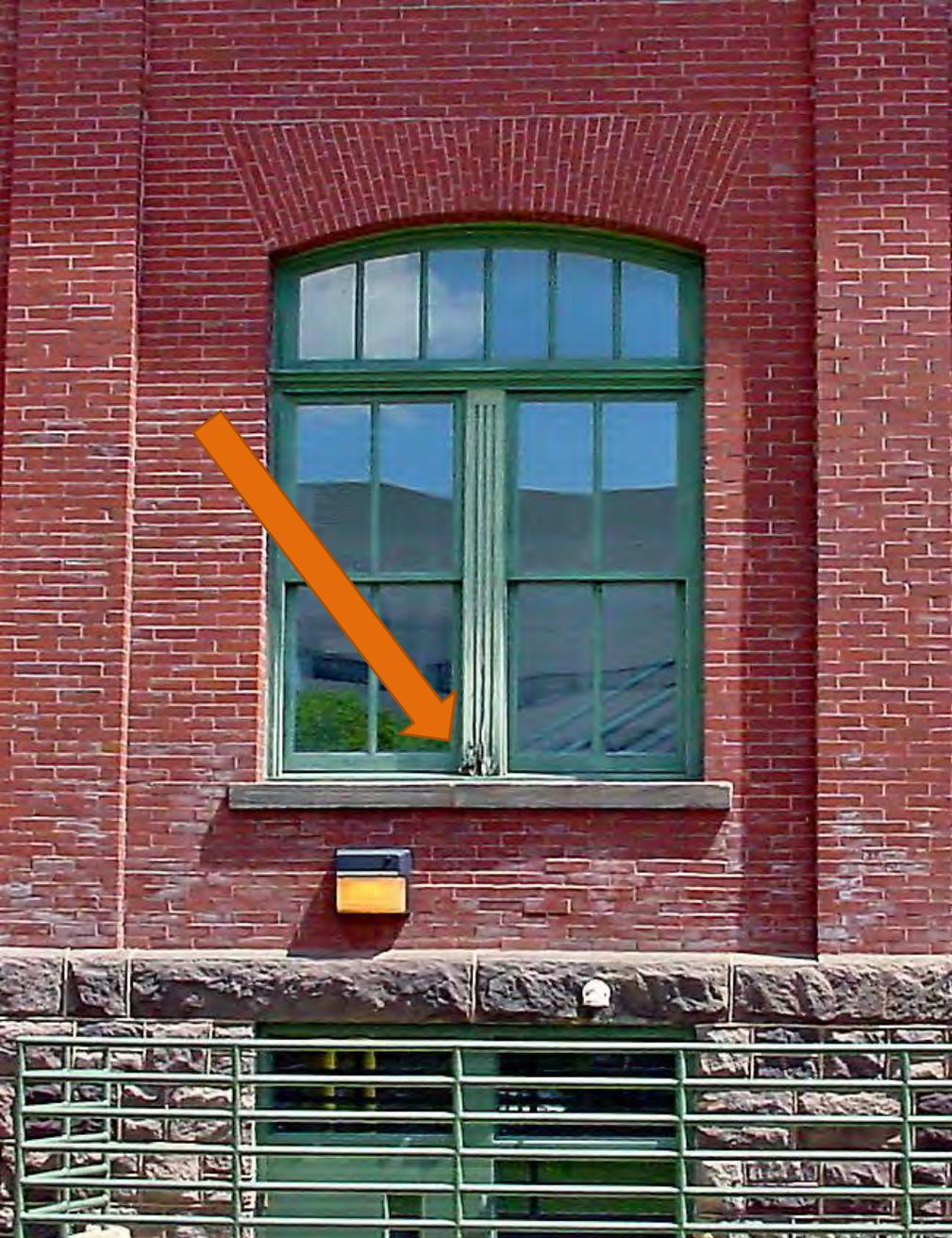
- Repair Class I: Routine maintenance
- Repair Class II: Stabilization
- Repair Class III: Splices and parts replacement

Why Use Professionals?

Exterior casing provided by the GC as a value engineer solution.

The trim was not made to handle exterior conditions.

This image shows the condition 5 years after installation.



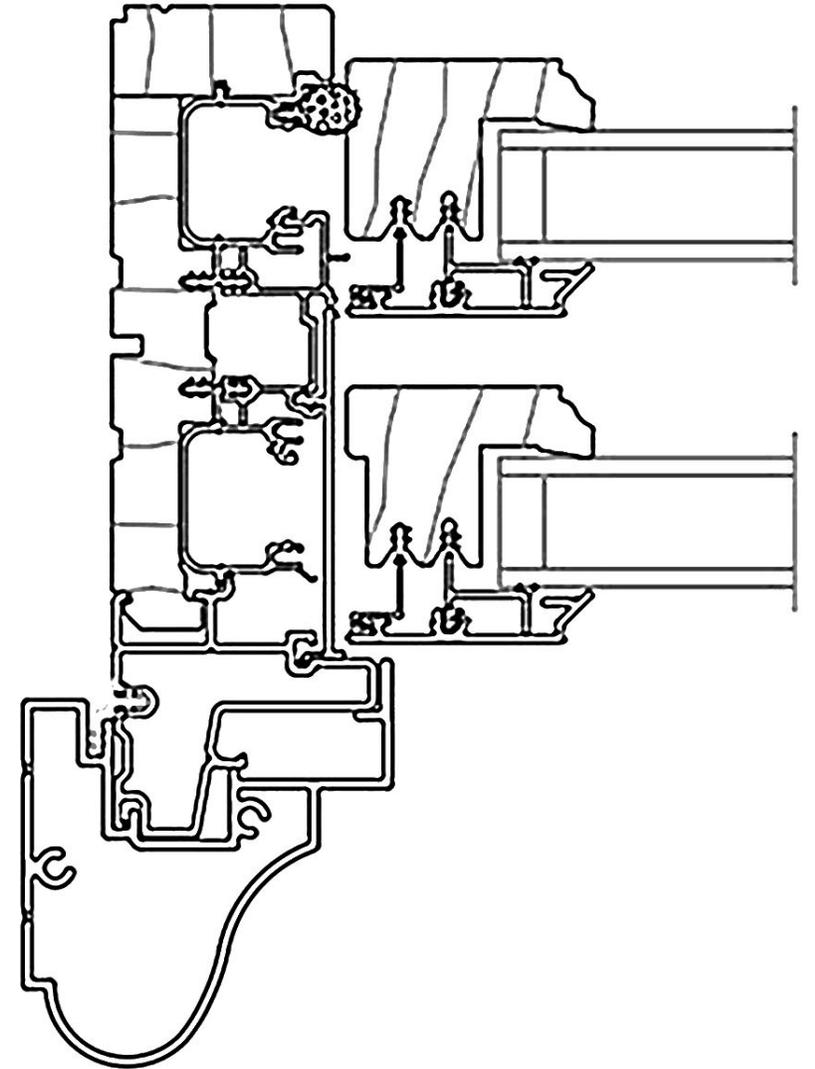
Retention is
Always
Preferrable to
Replacement



Replacement

Begin with a look at the windows which are to be replaced.

- 01** Mass and proportionality
- 02** Mullion / Transom
- 03** Muntin profiles
- 04** Frame and glass
- 05** Associated details, ornamentation





Replacement Challenges

Always review what is the best match:

- Profile replication
- Architectural integrity
- Daylight opening
- Divided lites
- Shadow lines
- Brick mould casing
- Radius replication
- Style and rail replication
- Joinery

Replacement Challenges

Style and rail joinery. Exterior casing profile.



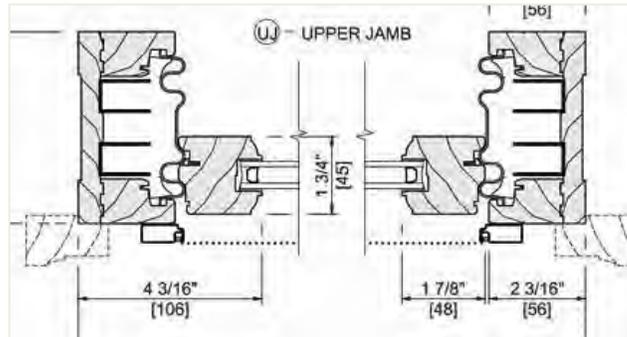
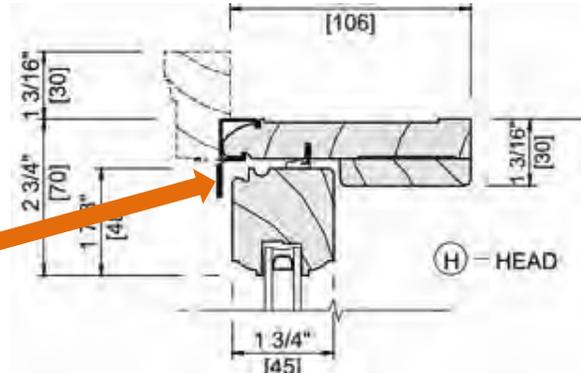
Replacement Solutions

When the window is beyond repair

- 01 Sash replacement
- 02 Storm window treatments
- 03 Full replacement
- 04 Insert replacement
- 05 Exact replication



Importance of Detail



In Conclusion: Replacement Windows

What are our final comments about replace for historic rehabilitation?

- 01 Samples
- 02 Rapid prototypes
- 03 Expertise and experience
- 04 Local architectural reps
- 05 Product and service solutions





Objective 5

Case Studies

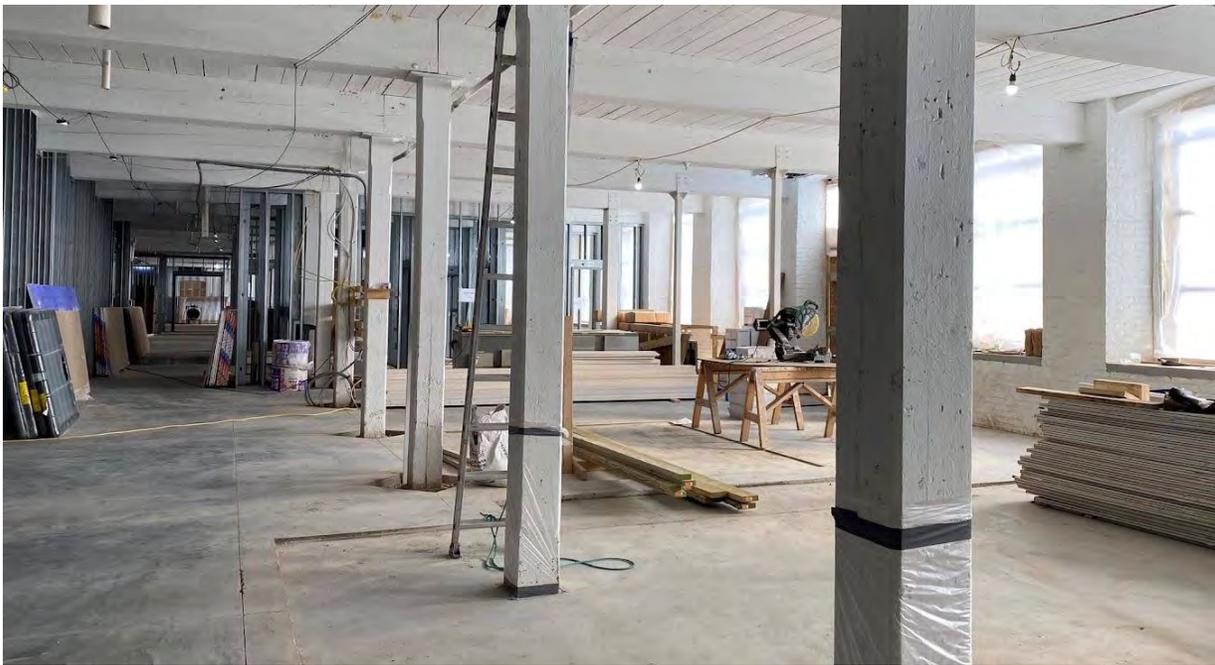


Case Study
Eagle Cotton Mill
Madison, Indiana

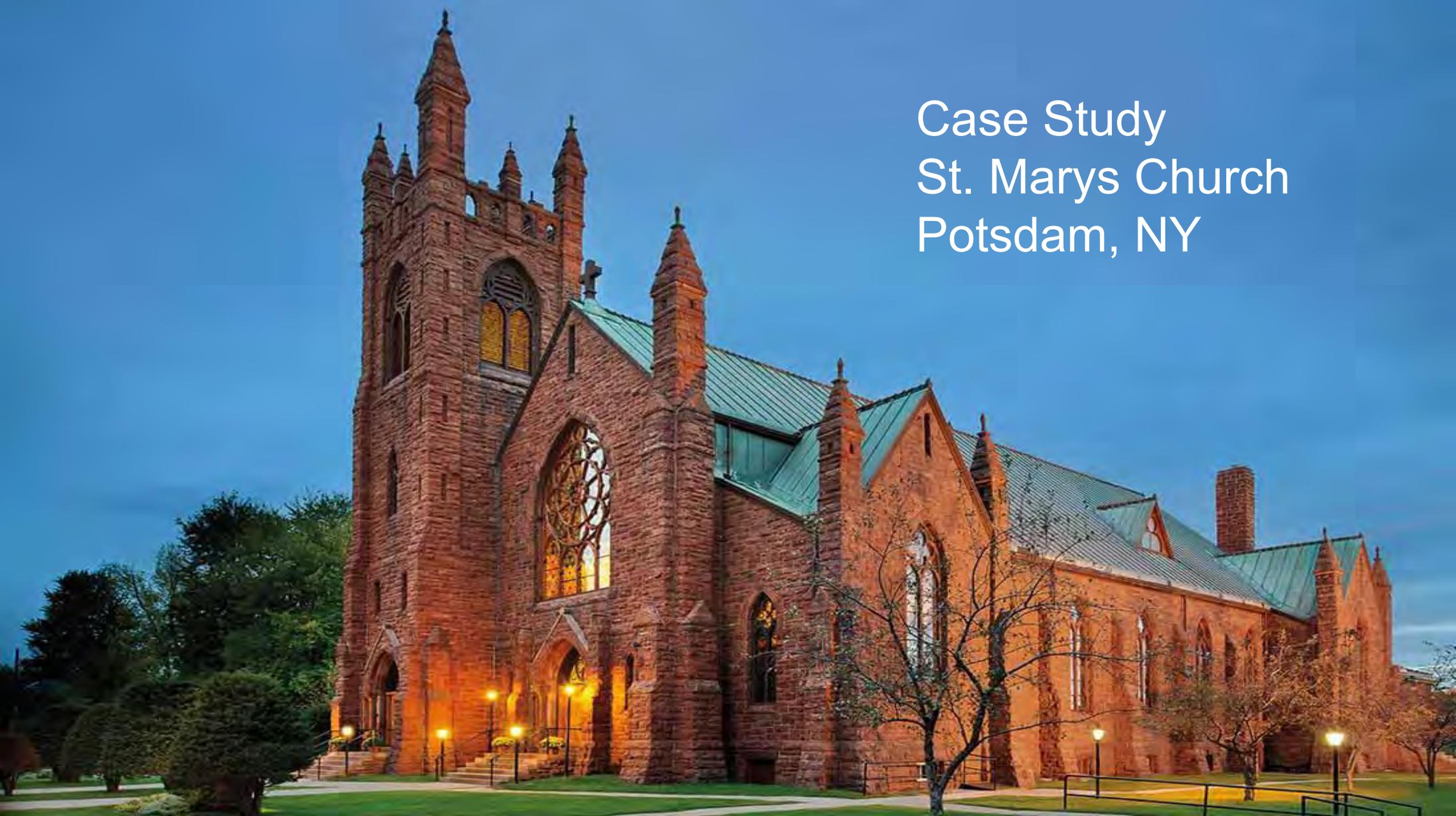
Sash Replacement

- Eagle Cotton mill, Indiana
 - Project Highlights:
 - Sash were missing or damaged
 - Budget and schedule led to insert sash replacement
 - Challenges included large openings, historical accuracy, durability
 - Engineering support teams
-





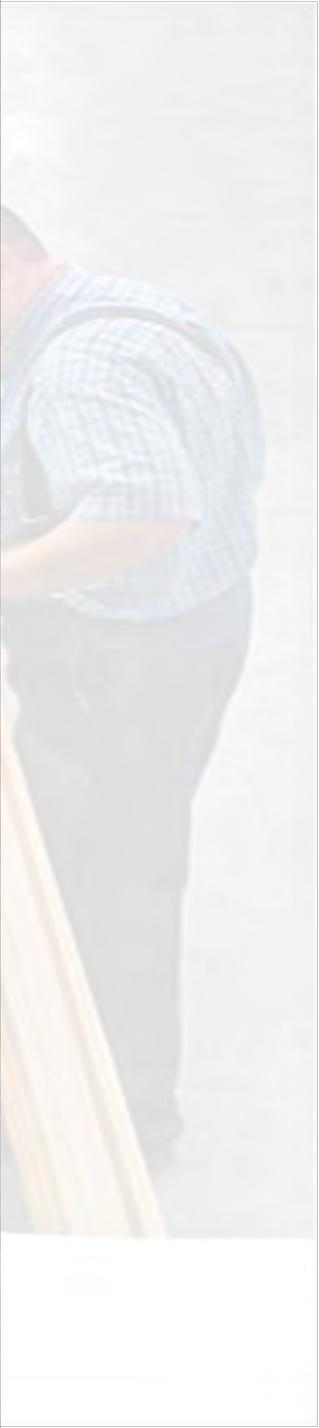
Case Study
St. Marys Church
Potsdam, NY

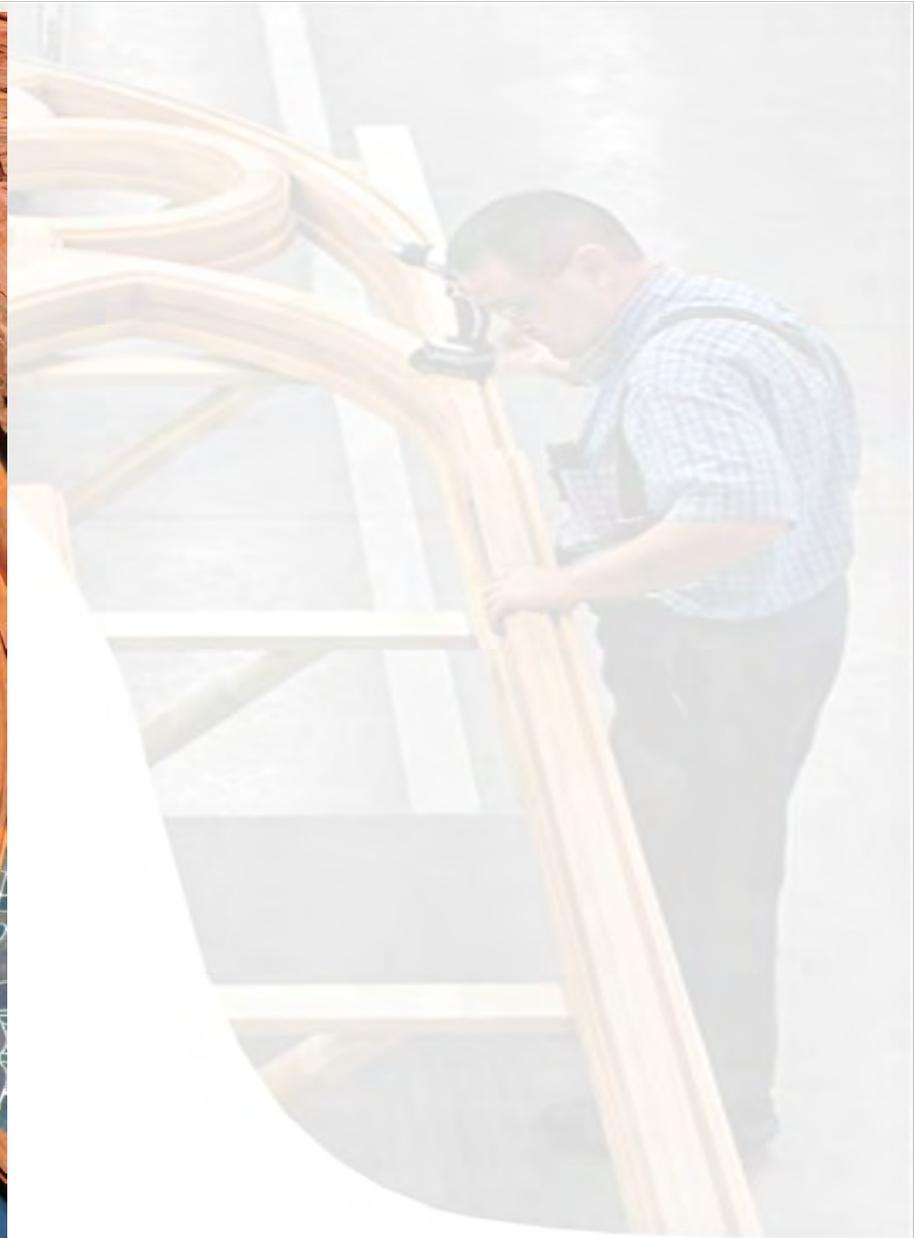
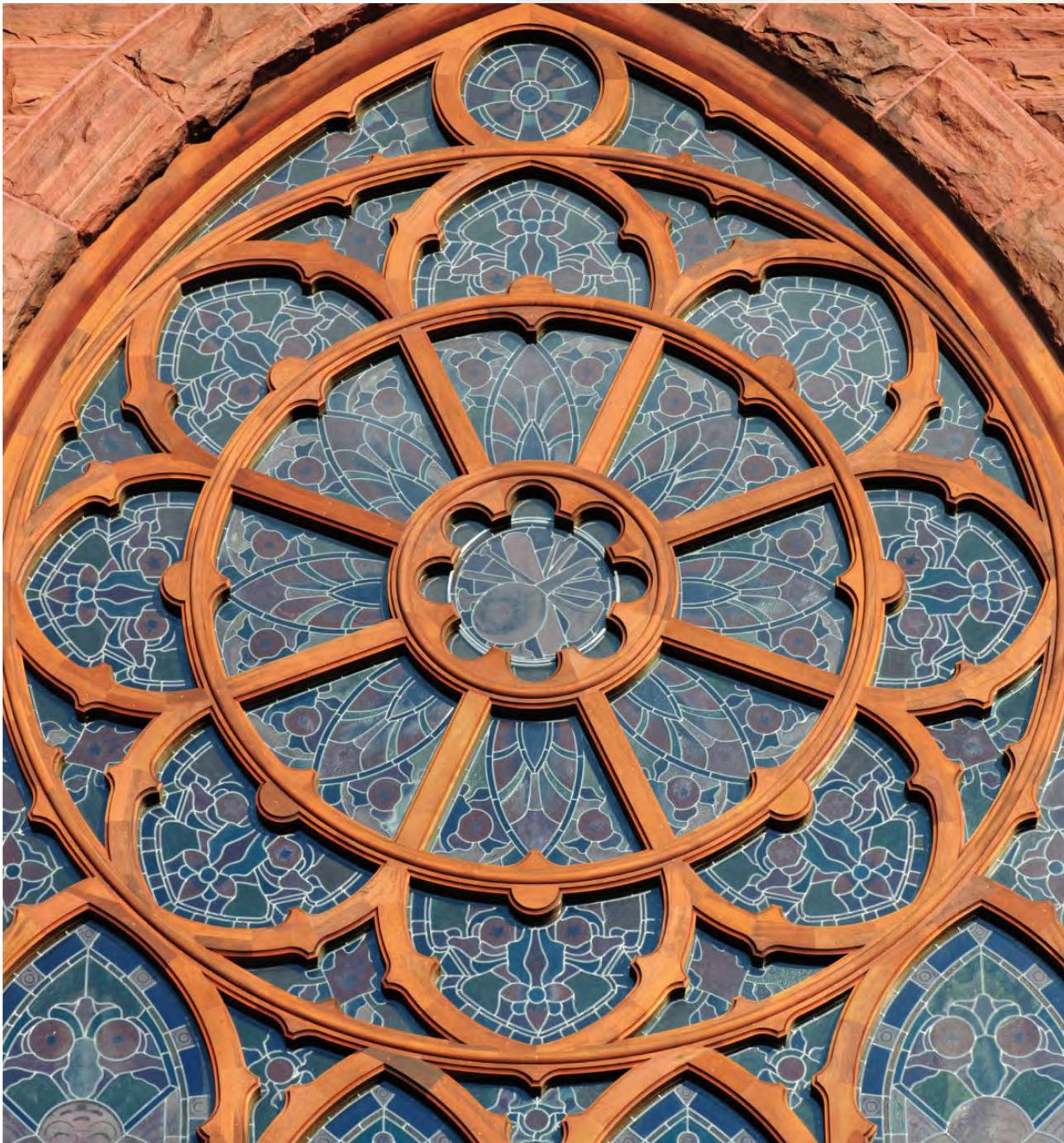


St. Mary's Church | Potsdam, NY
• Jerry MacNeil Architects Ltd.
• 15 Custom Mahogany Gothic Wds

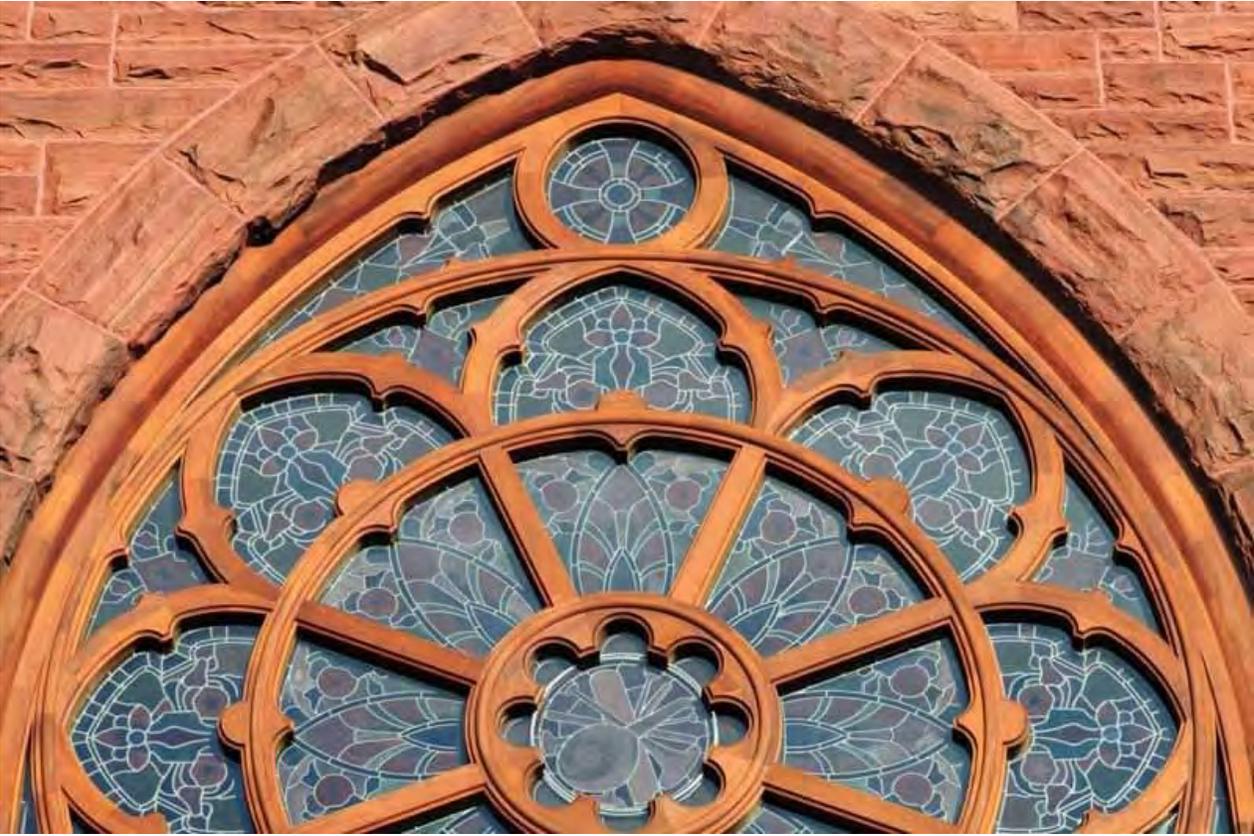
• Digital measurement technologies.
• Designs downloaded directly to Marvin's CNC equipment for a paperless project.

- 3 at 6' x 18'
- 11 at 5' x 16'
- 1 at 14' x 23'
- 14 ft. diameter Rose Wdw.
- Six layers of mahogany.





St. Mary's Church Potsdam, NY
•14 ft. Diameter Rose Window.





REHABILITATION SOLUTIONS IN CONCLUSION

Return to former glory, giving buildings new life while embracing an embodied sense of place.

As historic buildings played a critical role in the past, windows play a critical role in the future.

Requires expertise of a myriad of trades, manufacturers, historic professionals, and architects to succeed.

Discussion

Q&A



Historic WRehab

Thank you!

