REHABILITATING HISTORIC WINDOWS

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AGENDA

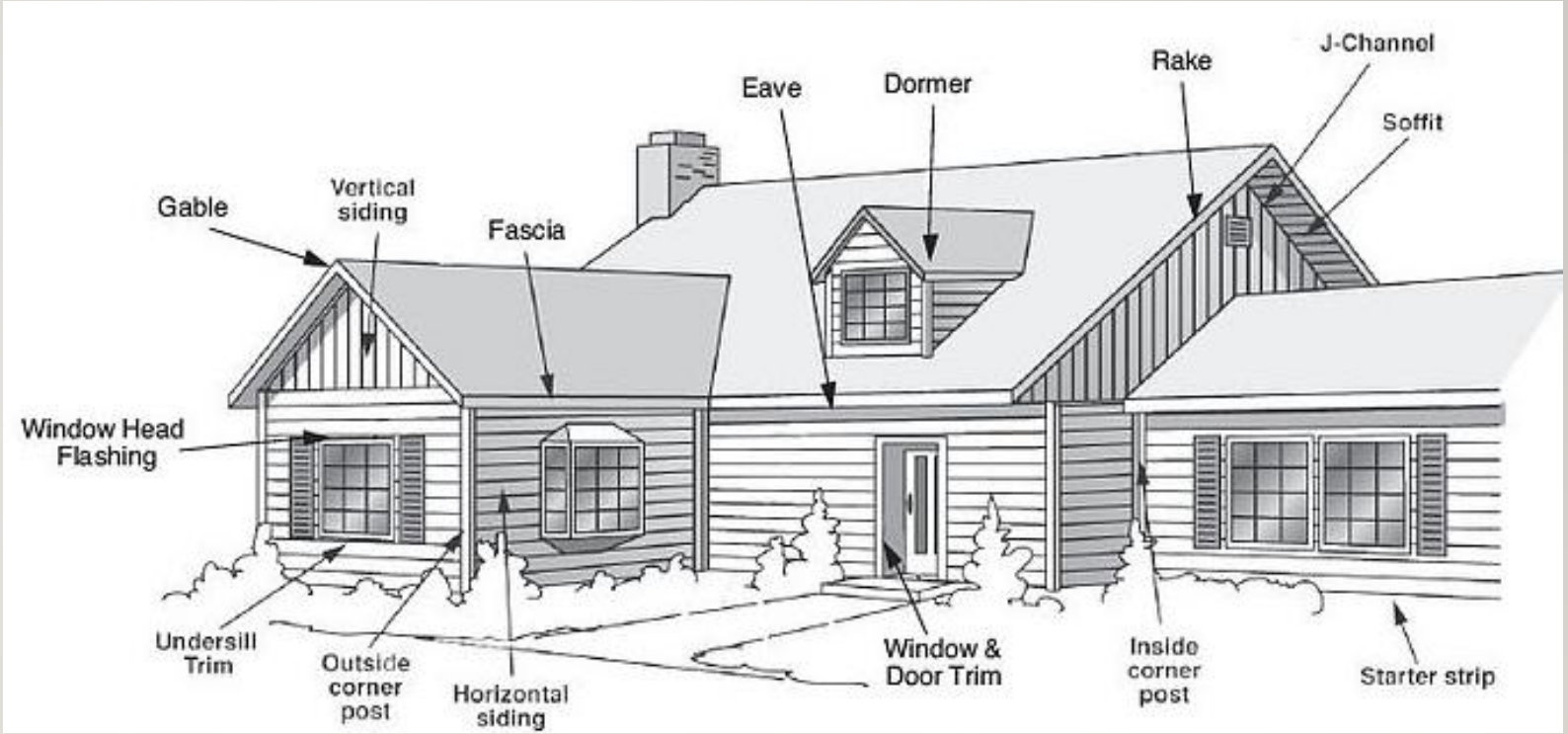
I. Look at why windows are worth saving
II. Delve deeper into the energy savings narrative
III. Watch video from Brent Hull
IV. Look at window parts, common problems and repair solutions
V. Finlay Carriage House workshop
VI. Condition assessment of the Adele's window
VII. Old House video
VIII. Final thoughts
IX. Questions & Answers

WE CAN'T BUILD OUR WAY OUT OF THE GLOBAL-WARMING CRISIS. WE HAVE TO CONSERVE OUR WAY OUT. . . . WE HAVE TO MAKE BETTER, WISER USE OF WHAT WE HAVE ALREADY BUILT.

RICHARD MOE, NTHP

Historic wood windows are valuable character-defining features of a building, worth retaining for architectural and environmental reasons.

Building reuse is a climate mitigation measure.



WINDOWS ARE IMPORTANT

Reflect original design intent

Use quality materials

Show exceptional craftsmanship

WHY PRESERVE OLD WINDOWS?

Old windows fit the house, aesthetically and literally. Replacement windows have a rigid structure and are inserted in the existing window openings. Old houses often shift over time. Gaps in the opening may result in draftier conditions than with the originals.

The craftsmanship was better. The true mortise-and-tenon construction of antique windows is strong, and joints can be repaired. Old windows were built to last, to be repaired as needed, and to remain in use for as long as the house stand.

WHY RESTORE OLD WINDOWS?

Good materials have value. Original wood windows were made of old-growth timber, denser and more weather-resistant than today's tree-farmed softwoods. Delicate muntin profiles are in fact possible only because of the wood density. The wood required no cladding for weather resistance.

Antique glass lends character. Bubbles and distortion are a record of changing technology. The variation of color and texture make the lights (panes) come alive when viewed from the street; the view through them is part of the old-house ambiance.

WHY REHAB OLD WINDOWS?

A warranty should run more than 20 years. Chances are the old windows have done their job for 60 or more years already. It makes more sense to invest in a proven performer than to sink money into new windows that may have a warranty of eight to 20 years.

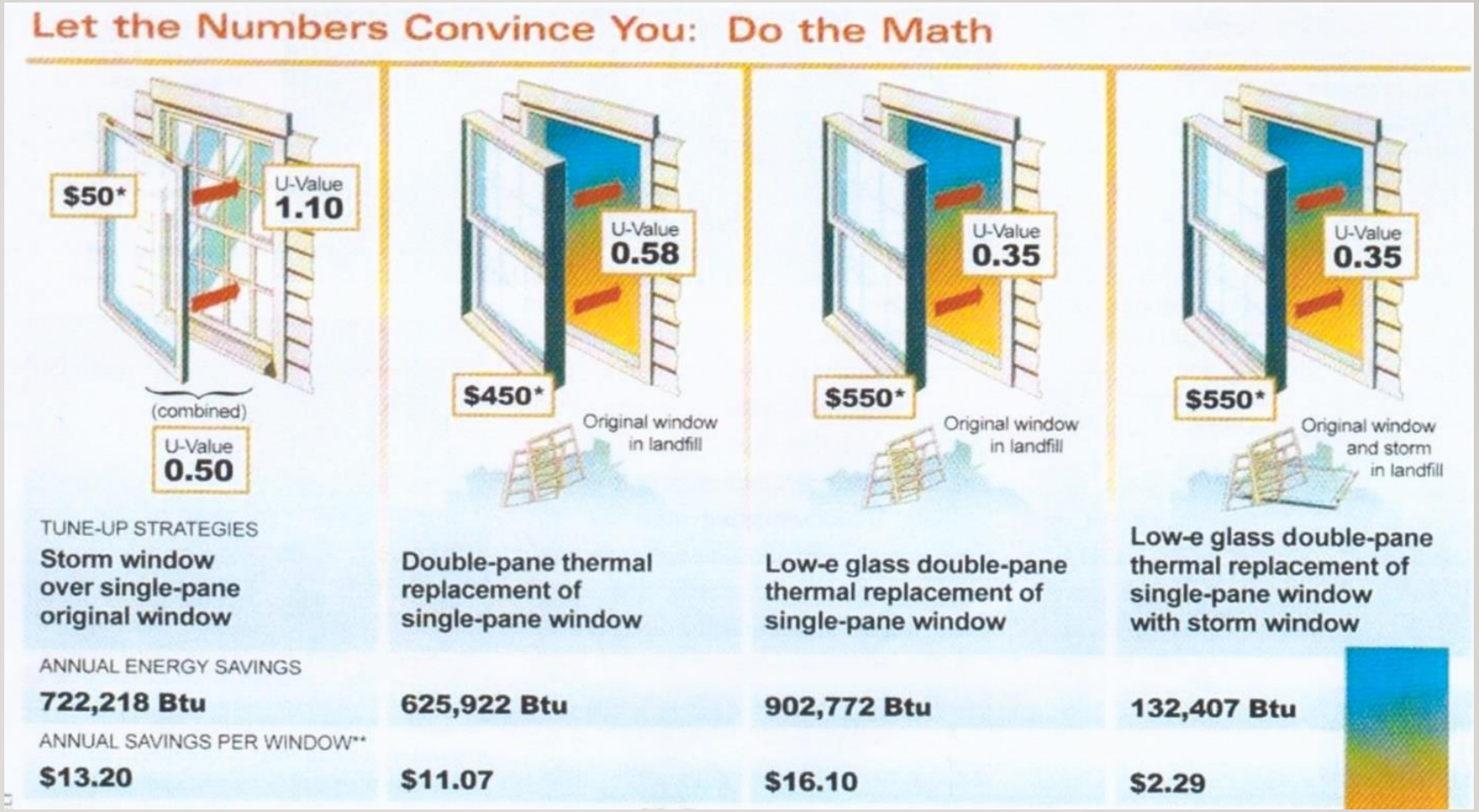
The greenest building is one that is already built. Replacement windows are sold with promises of saving energy. But when evaluated from the perspective of the entire production, shipping, installation, removal, and disposal process, replacing windows consumes much more energy. An older building has a great deal of embodied energy.

ENERGY SAVINGS UNPACKED

The Window Preservation Alliance - windowpreservationalliance.org - states that a 30 to 40% savings on heating costs is possible with old windows, and the benefit is immediate. According to the Field Study of Energy Impacts of Window Rehab Choices the estimated first-year energy savings, comparing a restored wood window with a good storm window to a replacement window, came to $0.60.

The decision to renovate or replace a window should not be based solely on energy considerations.

If total energy expenditure to manufacture replacement windows is considered, the period to break even (on fuel savings over replacement cost) stretches to 40 years or more. And most new windows will not even last that long.



Windows were, and always have been, to provide light and fresh air.

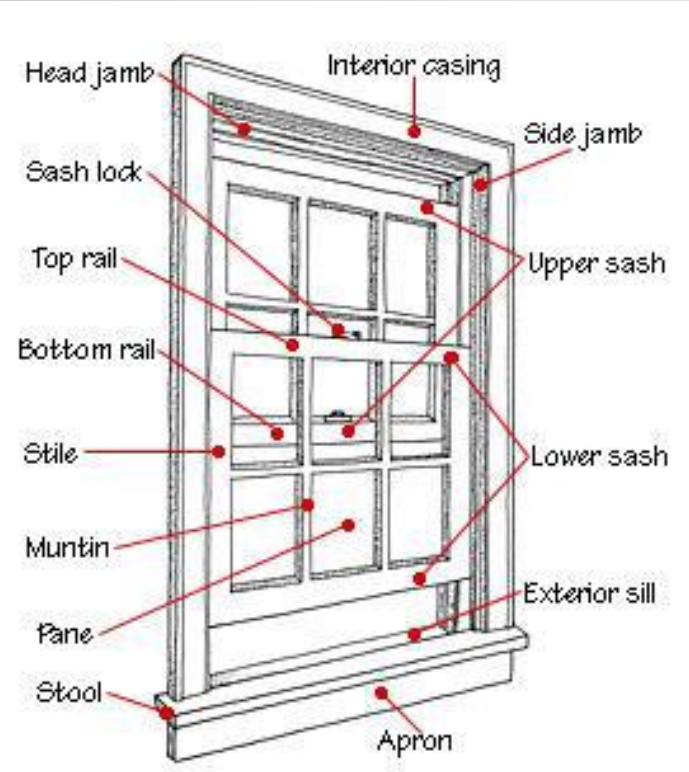
The primary energy issue with windows is excessive air infiltration, not thermal capability.

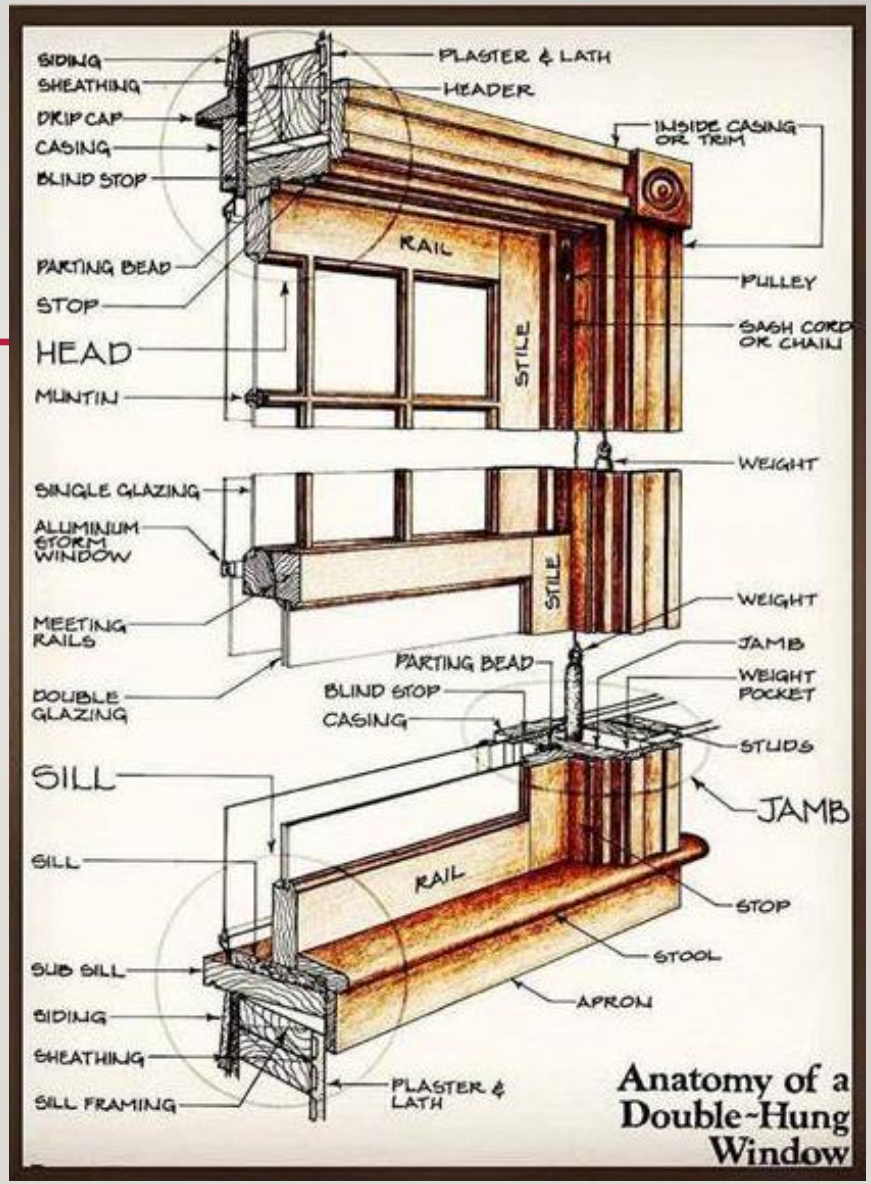
$40 of weather stripping, a well caulked exterior and a good storm window will make a historic window meet or exceed the current International Code for Building Conservation and Energy Efficiency for air infiltration.

New insulated glass (IG) replacement window versus a restored, weatherized historic window with a storm, what window does the infrared show has better thermal performance?

5 Reasons to Keep Your Historic Wood Windows:
https://www.youtube.com/watch?v=J6mAmIrN5qY

NOMENCLATURE OF A SASH WINDOW





WOOD WINDOWS COMMON PROBLEM AREAS

Wood rot from moisture intrusion and condensation

Inoperable – can not open; ropes/weights broken

Warping and cracking

Broken glass

Drafty or leaky windows

HISTORIC WOODEN WINDOW SOLUTIONS

"Deteriorated historic features shall be repaired rather than replaced."

REPAIR – RESTORATION

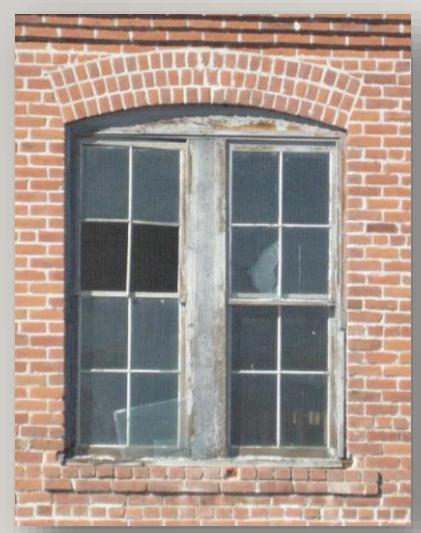
SASH REPLACEMENT

FULL REPLACEMENT

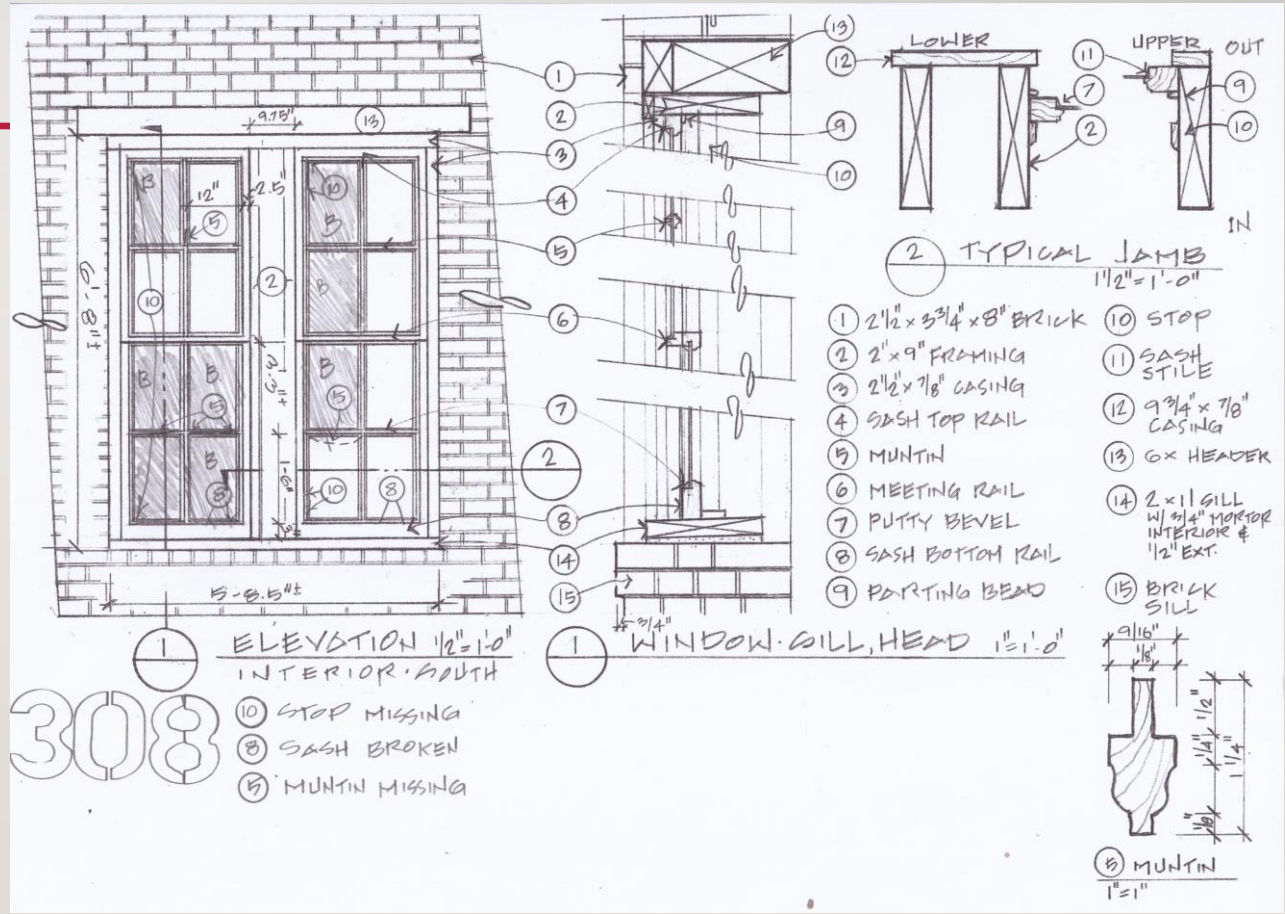
STORM WINDOW

WOOD TO WOOD REPLICATION

WINDOW CONDITION ASSESSMENT



Looks at deterioration of fabric and structural integrity; sum total of all parts informs treatment recommendations



WINDOW REPAIR COMPONENTS

Four Primary Components to Window Repair:

- **Wooden Sash**
- **Glass**
- **Glazing Putty**
- **Paint**

FINLAY CARRIAGE HOUSE WINDOW REPAIR WORKSHOP

ADELE'S WINDOW ASSESSMENT

All Widow Components were Salvaged

- Window frame
- Sashes
- Sash Weights
- Sills
- Trim

General Assessment:

- Relatively good condition
- Sashes move freely
- No visible rot/deterioration
- Broken window panes
- Heavy paint buildup

THE WINDOW FRAME IS IN EXCELLENT SHAPE

Paint is cracked, but the wood is sound.
Just needs a good clean-up.

EXTERIOR TRIM NEEDS ATTENTION, BUT IS SALVAGEABLE

PARTING BEAD AND STOPS NEED REPLACEMENT

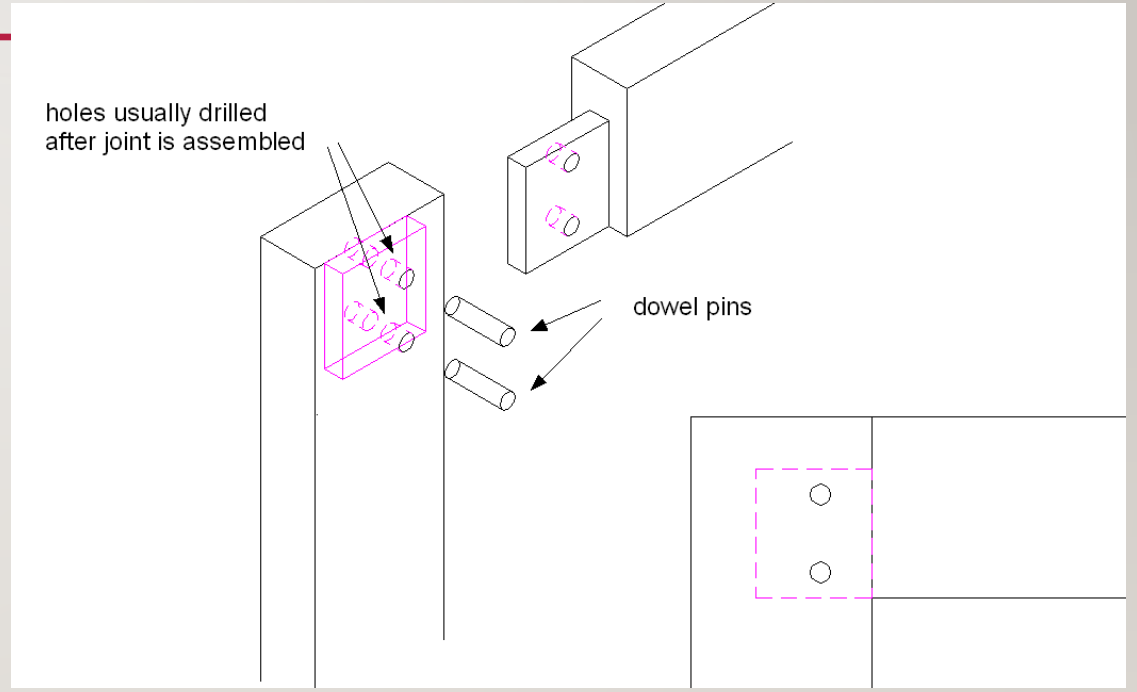
OVERALL, THE ADELE'S WINDOW COULD BE RESTORED

Window Restoration from Start to Finish | This Old House:
https://www.youtube.com/watch?v=RvFxphIMY7k

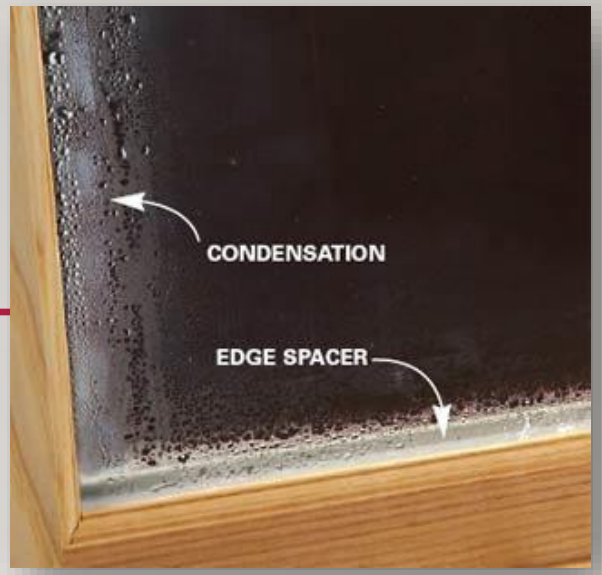
WHEN AN ORIGINAL WINDOW CANNOT BE REPAIRED

Most original wood windows extant today can be repaired and weatherized cost effectively.

- **When no window exists.**
- **When the evidence shows that all 4 tenons are rotted.**
- **When a replacement window fails.**



BENEFITS OF RETAINING, RATHER THAN REPLACING



Historic windows have been easily repaired for over 100 years. Replacement windows generally cannot be repaired

More and more studies are showing that most replacement windows are failing and having to be replaced again in 15 to 20 years – - shorter lifetime then asphalt roof shingles!

Insulated glass seal failures create condensation and premature wood deterioration.

FINAL THOUGHTS

Since 90% plus of all historic windows can be repaired cost effectively, replacement should be the very last resort and based on an assessment the reveals that windows cannot be repaired.

Cost effective and safe lead paint removal is a hallmark of the window preservation industry.

Virtually no glazing putty exceeds the maximum allowed EPA standards for asbestos.

If you need to replace, find the highest quality window replacement company possible, i.e. Wooden Windows in Oakland

Recommended Treatment - Replace in-kind an entire window that is too deteriorated to repair using the same sash and pane configuration and other design details. If using the same kind of material is not technically or economically feasible when replacing windows deteriorated beyond repair, then a compatible substitute material may be considered.

GREAT RESOURCES

National Park Service: Wooden Window Repair Methods

https://www.youtube.com/watch?v=XVoc9HnHtCA

Historic Window Restoration - Mozer Works, Inc.

https://www.youtube.com/watch?v=Hh0EyvonADk

QUESTIONS & ANSWERS