Preserving Historic Places 2022

Preserving Historic Places, Indiana's Statewide Preservation Conference, offers inspiring lectures, educational sessions, tours, and networking opportunities. Indiana Landmarks, Indiana Division of Historic Preservation and Archaeology, and Indiana University join in sponsoring the annual conference, hosted by South Bend in 2022.

What Works and What Doesn't: Deciding on Replacement Materials in Historic Districts

EDUCATIONAL SESSION 9

Sponsored by Indiana University's Cornelius O'Brien Lecture Series. Free and open to the public.

What Works and What Doesn't:

Deciding on Replacement Materials in Historic Districts

With so many replacement materials on the market and more coming each day, how do historic commissions decide whether a replacement is appropriate and how to choose which one to use? Learn the criteria for making two decisions—is replacement needed and what is the best replacement for this project?

Moderator: *Chad Slider, Assistant Director for Environmental Review, Indiana Division of Historic Preservation and Archaeology*
Speaker: *Sharon Ferraro, Historic Preservation Consultant (Pastmasters)*

IMPORTANT NOTE

- Naming specific products does NOT signify endorsement or approval of that product.
- Nor should the product named be considered “pre-approved” as an alternative material.
- It is the responsibility of the commission to determine the suitability of the proposed product for the specific application.

Fun game! Spot the replacement material!

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.

AUTHENTICITY

"This district isn't special just because it *looks* like it's made of historic stuff. It's special because it's *actually* made of historic stuff. Anybody can make a neighborhood out of Hardie-board houses, but only our forebears can provide us with an *authentic* historic neighborhood. Imitation can be better than nothing, but *real* is still the best. Going to the Italy pavilion at Disney World is nice, but actually visiting Italy is exponentially better. When we allow for authentic details to be replaced, the district's character gets nickeled-and-dimed over time, and we slowly transform our real history into something less authentic and less meaningful."

Boyd Maher NAPC May 2017

WHY REPLACE?

1. Deteriorated? *Condition must be evaluated – repair if possible*
2. Improvement?
   - *Better energy efficiency*
   - *Wind load requirements*
3. Missing or not original? Consider appropriate replacement

DETERIORATED ?

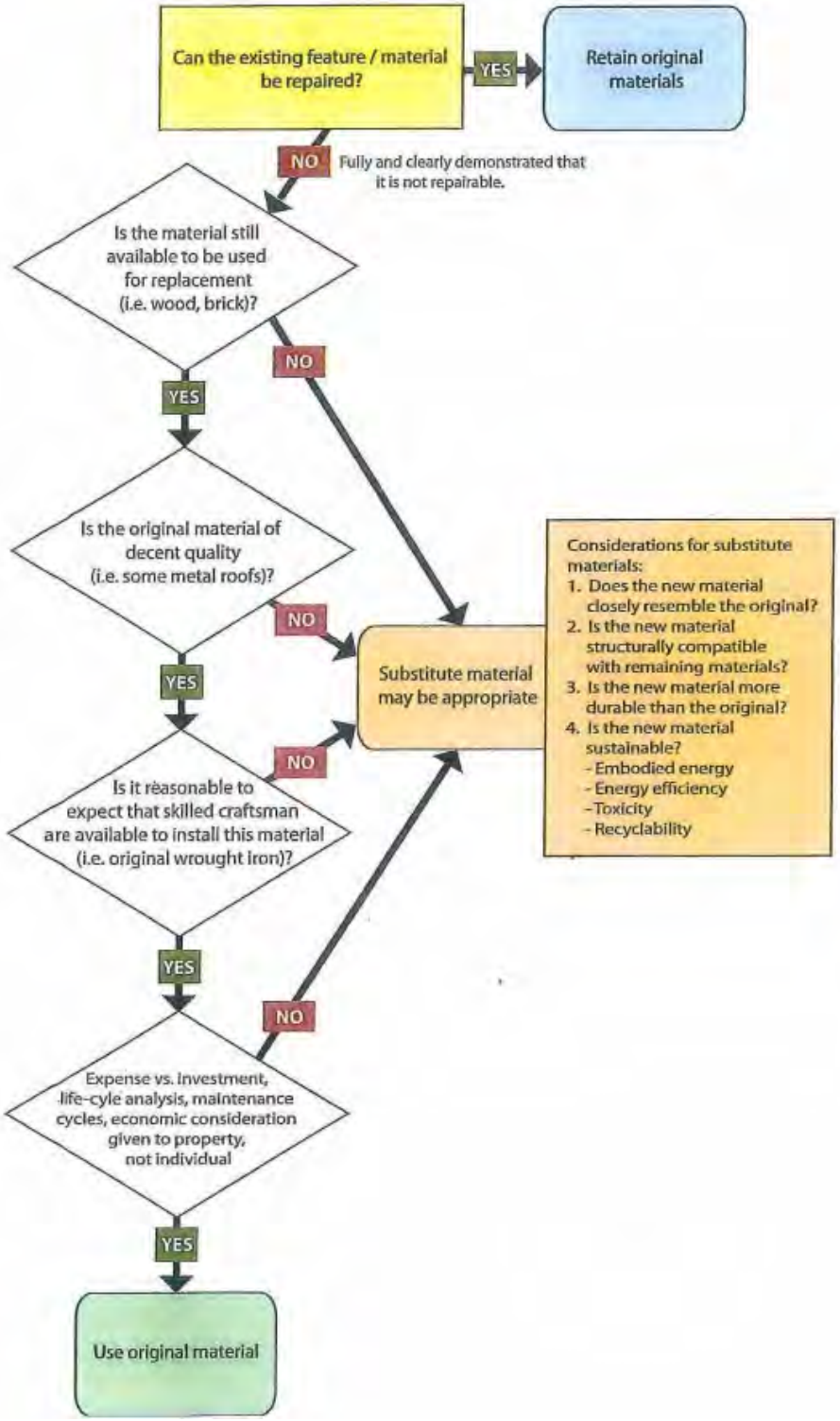
Can the existing feature / material be repaired?

YES

Retain original materials

Secretary of the Interior – Standard #6

6 - Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, **AND, WHERE POSSIBLE, MATERIALS.** Replacement of missing features will be substantiated by documentary and physical evidence.



CRITERIA FOR KEEPING ORIGINAL MATERIAL

Original Material is a PROVEN TECHNOLOGY.

We know it will last a century because it HAS lasted a century

- Is the **original material** still available?
- Is the **original material** of decent or comparable quality?
- Are there **skilled craftspeople** available to install the material?
- **Expense vs investment**: life cycle analysis and economic considerations given to the PROPERTY not the individual

ORIGINAL MATERIAL

Is the original material still available?

Is the original material of decent or comparable quality?

Awesome comparison of an old growth 2x4 vs a new growth 2x4. Notice the old growth has 60 rings and the new growth only has 16. The old wood is more dense, stronger, burns slower and is more insect resistant. The new wood was grown for the sole purpose of being used for timber and the old growth was taken from natural forests which we have very few natural forests left.

USING THE MATERIAL

Are there skilled craftspeople available to install or repair the material?

Can the owner do the work?

Expense vs investment:

Life cycle analysis and economic considerations given to the PROPERTY not the individual owner

PRESERVATION BRIEF #16

Use of Substitute Materials

"… with proper planning, careful specifications and supervision, substitute materials can be used successfully in the process of restoring the visual appearance of historic resources."

Substitute materials have been used for a long time– this is wooden clapboard siding scored to mimic brick. (Southeast corner of Ingleside & West Main – 1118 W. Main - Kalamazoo MI 1885)

When is a replacement material appropriate?

- **Original material is missing altogether.**

Missing rail

- Rebuild new wooden rail at correct height
- Replacement material

Original pressed metal cornice missing.

- Use salvage replica or pressed metal
- Use modern replacement

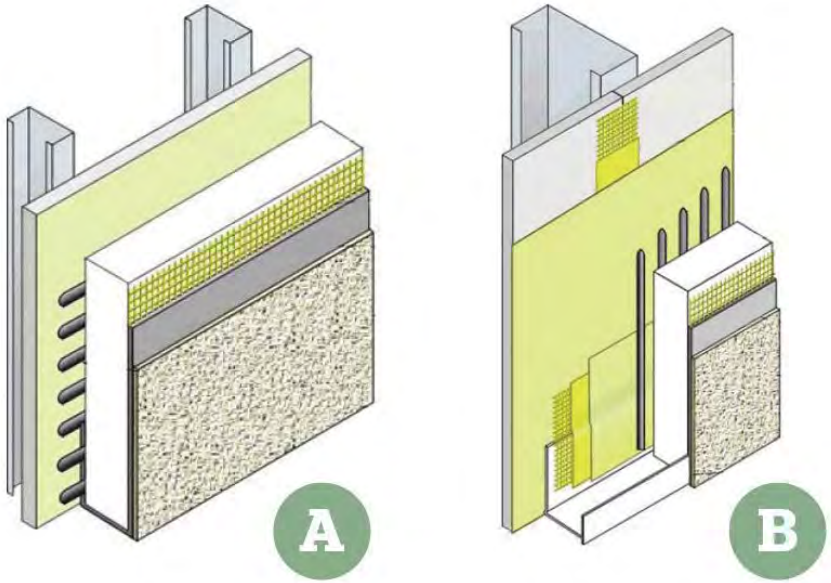
Substitute material may be appropriate

Considerations for substitute materials:

1. Does the new material closely resemble the original?
2. Is the new material structurally compatible with remaining materials?
3. Is the new material more durable than the original?
4. Is the new material sustainable?
   - Embodied energy
   - Energy efficiency
   - Toxicity
   - Recyclability

RESEARCH THE NEW MATERIAL

- Applicant's responsibility to pick a material to use in a replacement
- If an applicant proposes a replacement material – ALWAYS RESEARCH THE PRODUCT.
- MANY PRODUCTS HAVE A MODERATE TO HIGH FAILURE RATE
- Some metal roofing material
- Replacement windows by specific manufacturers
- Be sure you are researching the exact product proposed



Dryvit ^^ flashing
vv failed flashing

SIDING

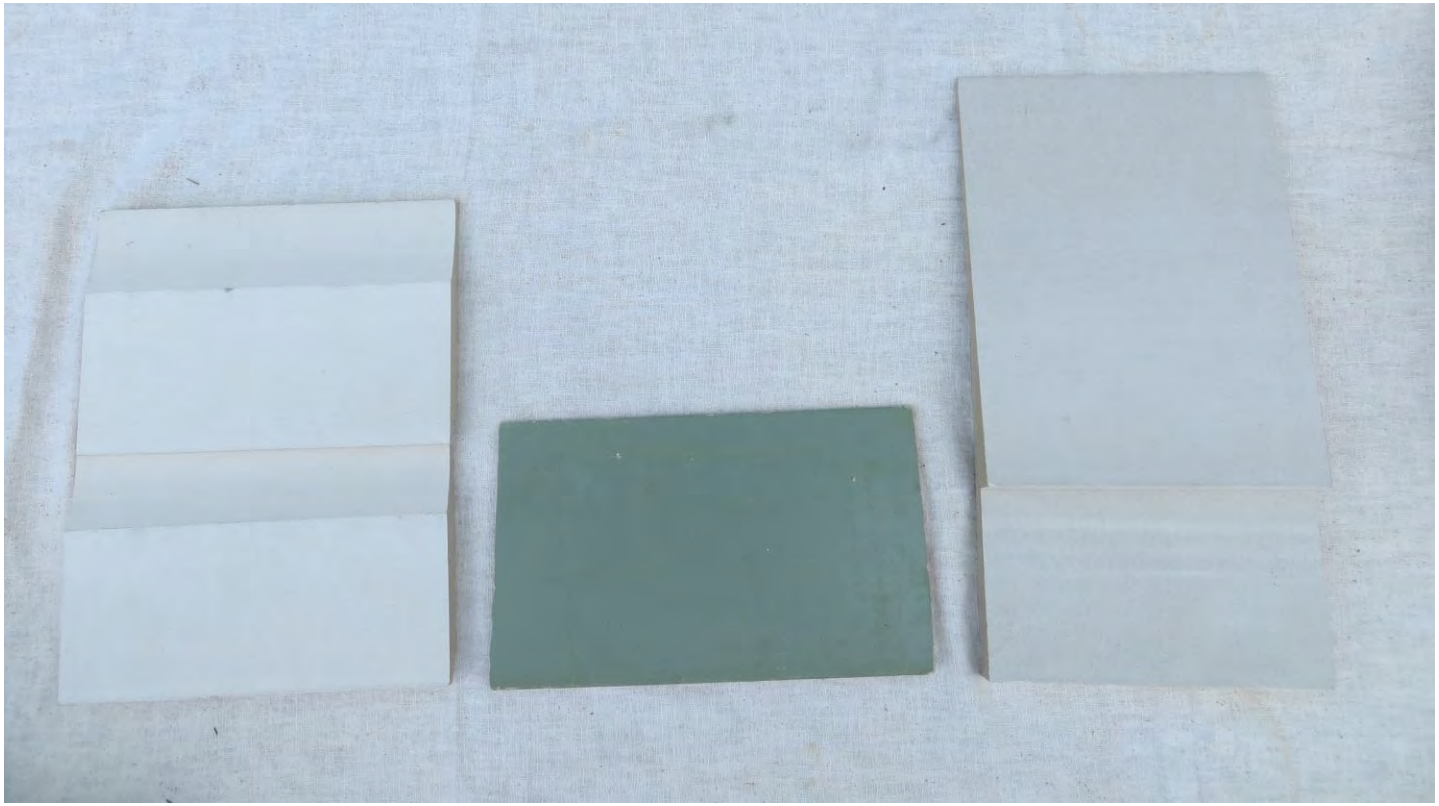
Cementitious Wood

Novelty siding Kalamazoo MI

CONSIDERATIONS cementitious siding

- Smooth or textured
- Trim must be cut with diamond blade saw
- Varied moisture tolerance – SNOW!

Engineered siding

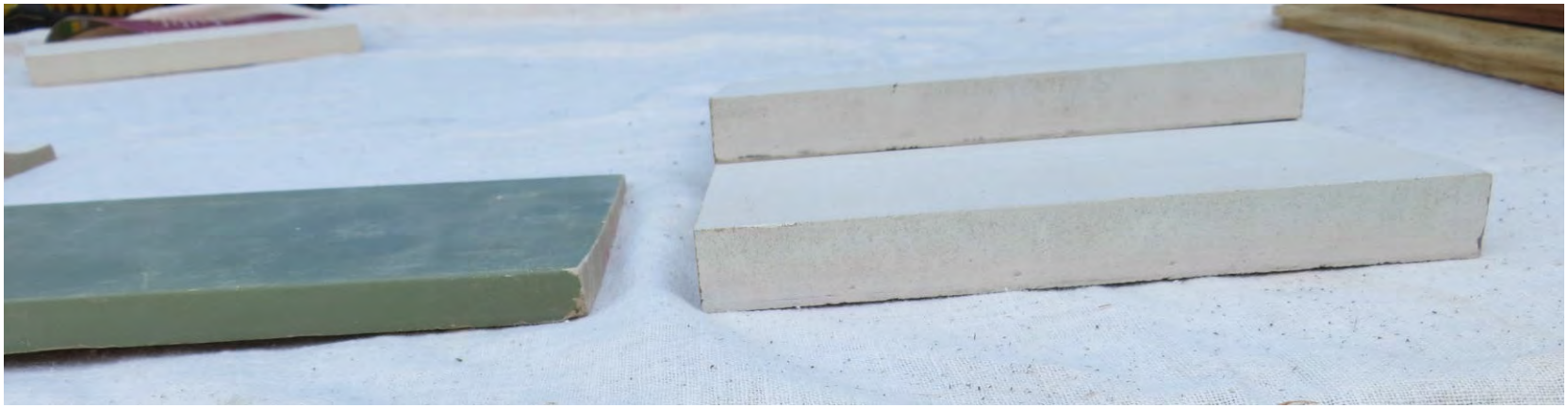


Boral –

Dutch Lap

Different thicknesses of weatherboard

More



BORAL

- CAN BE SHAPED
- FLY ASH AND BINDERS

Material – Siding - vinyl

- Masks deterioration of substrata
- J-channels, shadow lines
- <u>Always</u> has a rounded profile

image courtesy of Mastic by Ply-Gem (mastic.plygem.com)

CASE STUDY – Missing original replacement siding

“Historic” use of alternative materials

Non-contributing building

Material – Trim - Flat Boards
Corner boards, skirt

- Match – thickness and width, sills
- Solid PVC – expensive
- Shiny – not OK for historic homes
- High expansion & contraction – may damage original wood
- Might be good for intricate shapes - bendable with heat.

Material – Trim - Flat Boards
Corner boards, skirt

PVC boards - no structural strength – heavy & solid otherwise – recycled product-water resistant-all surfaces must be coated before installation

Cementitious

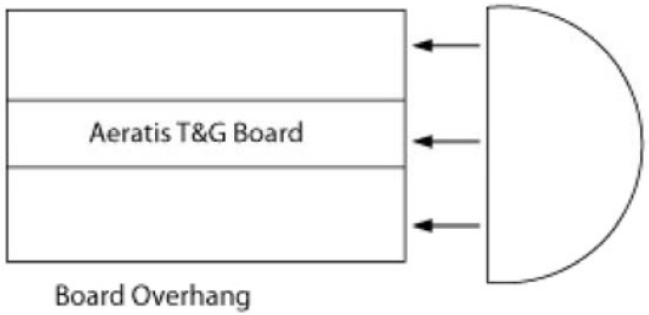
- cannot be routed or shaped – nailed under lap
- Comes as a sheet as well up to 8’, vapor permeable
- Cost – clear un-fingerjointed siding is competitive to Hardie.
- Butt thickness 5/16”

Siding Cost - Cheap to expensive:

- Vinyl/PVC
- Fingerjointed cedar wood siding (backprime)
- Composite
- Cementitious
- Premium clear wood siding
- Cypress

MATERIAL
Deck boards, treads (friction surface)

Half Round Application



PRO:

- Visually compatible (SMOOTH)
- Longevity
- Bonds with paint

CON:

- Ends cannot be shaped to allow a bullnose for drainage. A separate half round or rounded plank must be installed perpendicular to the deck boards

Case Study 2006. Kalamazoo MI

Original porch – porch deck and below – replaced. Columns and fretwork are original

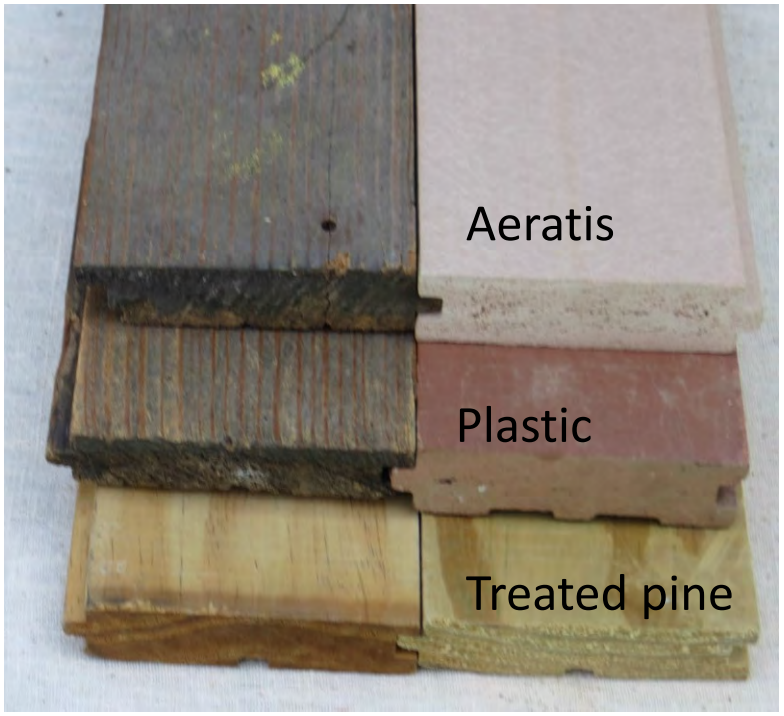
Non-original material removed, stone piers and bolsters from razed house to match foundation

Porch Deck

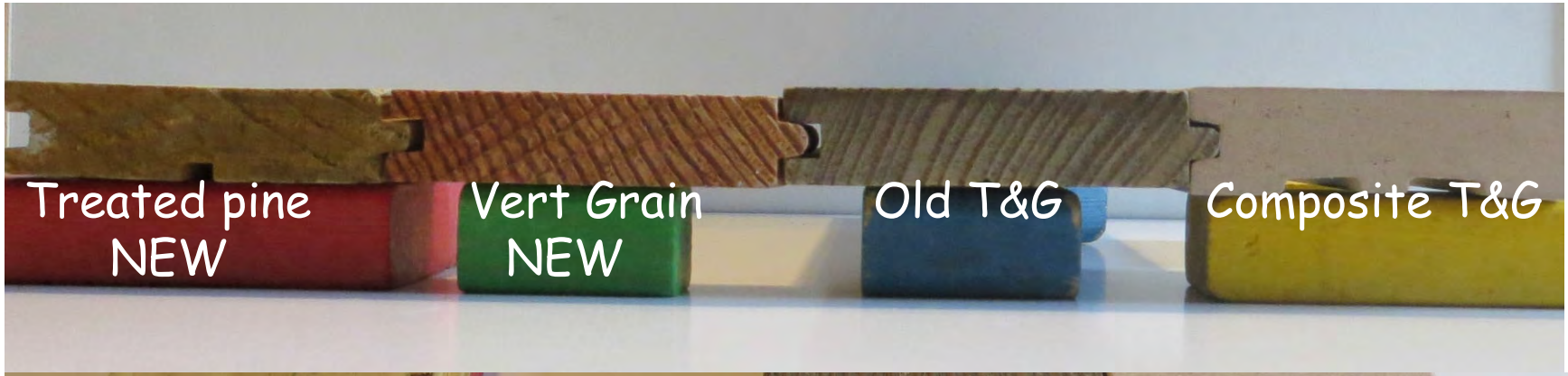
2006 Vertical grain Douglas fir installed on new porch deck

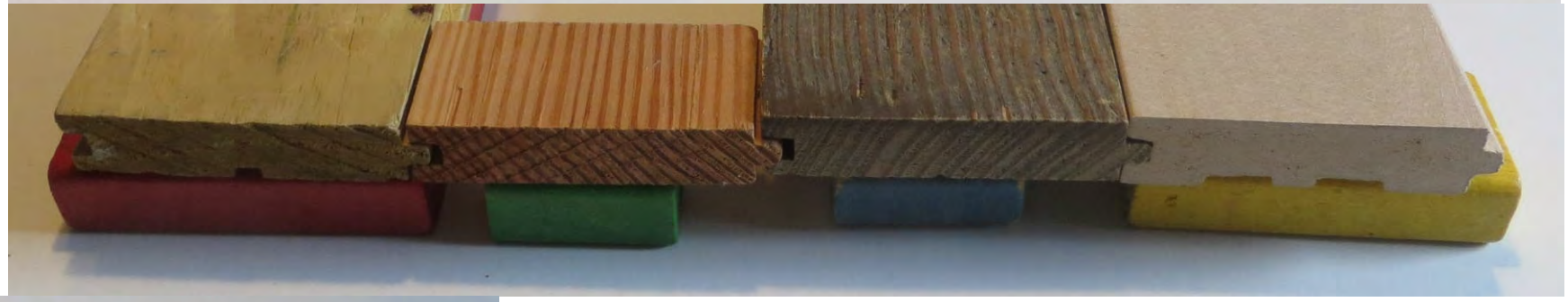
2021 – All leading edges on three sides are rotting

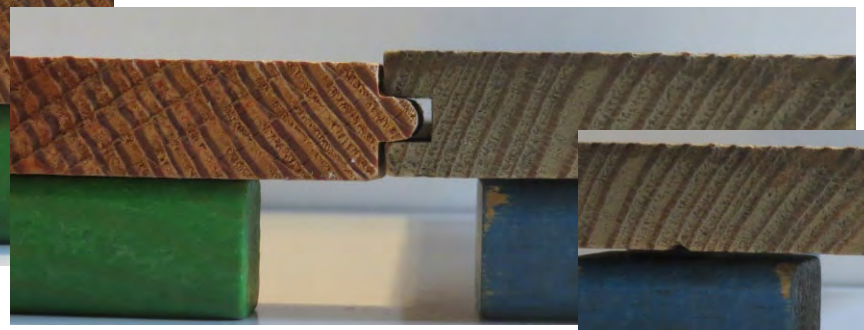
VISUAL QUALITIES - COMPARE



Top: Old T&G – Aeratis
Middle: Old T&G – Plastic T&G
Bottom: Fir – Treated T&G


Treated pine
NEW
Vert Grain
NEW
Old T&G
Composite T&G





Material – Porch posts and rails

Load bearing fiberglass posts and columns
Material: thin glass fibers combined with plastics – rigid load bearing material

Turncraft 8-in Scamozzi Poly/Resin Column Cap

Item #: 410859 | Model #: SC08

Be the first to

$260.11

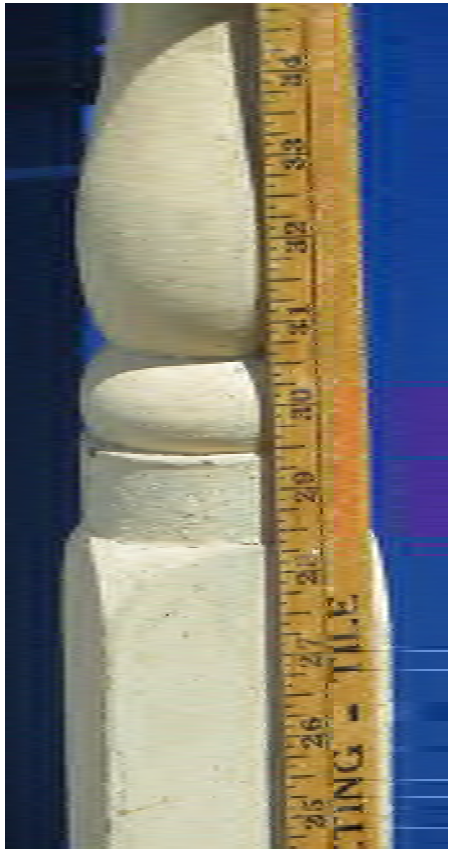
Product shown finished: capital is shipped unfinished and requires painting

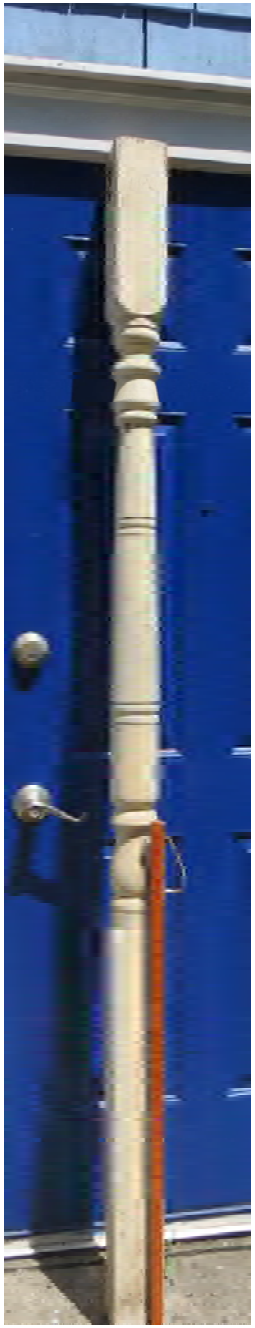
Fypon porch post wraps >>>
Home Depot

Vinyl resin porch columns and capitals

- Scale of “turned” Victorian posts may wrong for historic homes – includes rail height of 36+” CURRENT Building Code)
- Vinyl deteriorates in sunlight (UV) – longevity unknown

Original turned post 27-28” rail





MATERIALS – RESIDENTIAL DOORS

- Fiberglass – can replicate historic doors
- Stainable and paintable. Insulated
- Ca $450 ready to paint + paint & installation – color can be factory applied $1100
- Lifetime workmanship warranty (But what is definition of “lifetime”? Workmanship – not materials?)
- Stable & secure
- Color is thru the entire surface

REPLACEMENT WINDOWS?

- One third of all replacement windows are less than 10 years old.
- Advertisements from replacement companies are recommending owners consider replacement after 5-8 years!

Materials – replacement windows

#1 – WHAT IS CONDITION OF EXISTING WINDOW?

Materials – replacement windows

WOOD

- Match existing profiles and configuration
- May be true divided lites or EXTERIOR applied dimensional muntins AND between bi-glass
- Thermal windows ideally should have a grid between the layers of glass to simulate a true divided lite.

FIBERGLASS

- Can match profiles of traditional wood windows
- Cost 30% more than wood
- Similar to wood in expansion & contraction
- Unknown life expectancy
- Tax credit?? Maybe??

Materials – replacement windows

VINYL

- Less expensive than wood or other materials
- Shorter live expectancy
- Not repairable – re-replacement 60%
- Flexes a lot
- Higher contraction and expansion

VINYL OR METAL CLAD

- Stainable or paintable wood on interior
- When (not if) seal between glass and cladding fails, finger-jointed wood can rot – hidden by the cladding

VINYL WINDOWS

VINYL WINDOWS WITH ALUMINUM SCREENS MOUNTED ON BLIND STOP

WOOD WINDOW WITH ALUMINUM SCREENS MOUNTED ON BLIND STOP

ROOF – diamond pattern

Cement-asbestos roof tiles or metal tiles to asphalt

asphalt

ARTLOK 1906

Cement-asbestos

ROOF – Ornamental metal

WFNORMAN.com

Our original 1908 line of W. F. Norman Victorian Roof Shingles are still available with a variety of hip and ridge finishes. Norman shingles are produced in galvanized steel or solid copper. These two

classic styles A and C are offered, along

HeatherandLittle.com

Sheet Metal Rock Face panel , Approximately 18 x 22, or 38 pcs. per square

Wishbone Style SIZE: 12-1/2 by 17-inches, Covers 1.4 sq ft

Rosary Tile 14-1/2 by 17-inches COVERAGE: 1.4 sq ft

Cobra Sheet Metal Tile Coverage .6 sq. ft. each. Dimensions 8" wide x 11" tall

ROOF – ARTIFICIAL SLATE

Made from:

- Slate & Clay with fiberglass & resins
- Ceramic based
- Recycled rubber and plastic

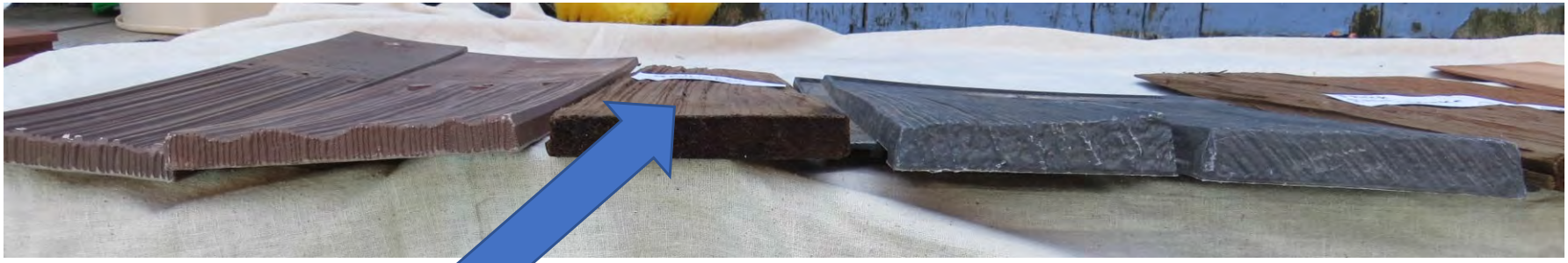
Unknown life expectancy

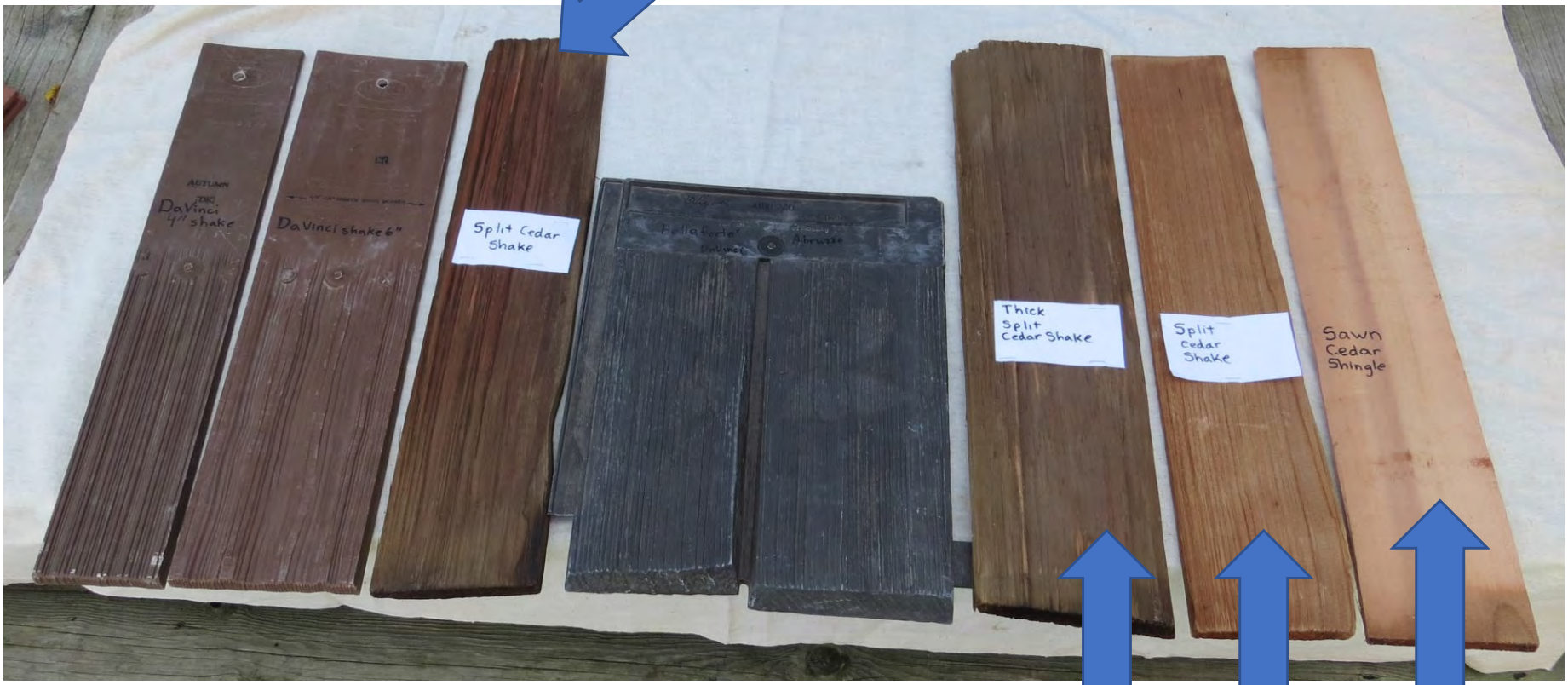
Generally thicker than historic slate

ROOF – Cedar

- Fire Retardance:
  Class A - With specialty underlayments
  ASTM E 108 / UL 790

SHAKES - ROOF





WOOD

Samples on display at FORUM

Cornice & Commercial Ornament

Fypon

LAST

- Is the **original material** still available?
- Is the **original material** of decent or comparable quality?
- Are there **skilled craftspeople** available to install the original material?

ALTERNATIVE MATERIAL NECESSARY

- Will the alternative material create a visual change?

- **Expense vs investment**: life cycle analysis and economic considerations given to the PROPERTY not the individual

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Photo: NPS files.

The Repair of Historic Vinyl Siding

Ernest Lee Olde

- Architectural or Historical Significance
- Physical Evaluation
- Repair Class I: Routine Maintenance
- Repair Class II: Stabilization
- Repair Class III: Replacement and Color Matching
- Summary and References
- Reading List
- Download the PDF

This Brief is based on the issues of significance and repair which are implicit in the standards, but the primary emphasis is on the technical issues of planning for the repair of original vinyl siding including evaluation of the physical condition, techniques of repair, and design considerations when replacement is necessary.

Started development in late 1950s, stable product 1970-80

COMING SOON

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Photo: NPS files.

The Repair of Historic Vinyl Windows

Marvin Andersen

- Architectural or Historical Significance
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This Brief is based on the issues of significance and repair which are implicit in the standards, but the primary emphasis is on the technical issues of planning for the repair of original vinyl windows including evaluation of the physical condition, techniques of repair, and design considerations when replacement is necessary. (No really, fire up your 3d printer!)

1964 – spread in 1970s

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