Replacement Storefronts

Learning from Historic Examples

Improving Durability

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Finding Compatability Through History

- Overall composition and its relationship to the building
- Size and weight of framing elements
- Division of glass: transoms, muntins
- Materials



Openings in a wall



Structural frame aligning with wall above





Entire façade as frame











Storefront as independent composition









Cast iron: Structure located by storefront plan but separated from the glazed wall



Cast iron: Frame and supports integrated into the glazed wall





Masonry supports with wood facing







External independent structure





Steel enabled clear spans



Frame disappears Simple steel supports subordinate to glazing















Glass size and framing, muntins and transoms















Transoms



















Light























(Fig. 3) are made in many styles and finishes, to cover every possi-FIL 3. No. 11 TRANSOM BAR (FULL SIZE). ble need of contractor or builder. Copper, brass, bronze, German silver, nickel-plated, oxidized copper, antique brass and gun-metal are the regular finishes.

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SIZES AND FINISHES.

(Figs. 1 and 2) and Transom Bars



ZOURI DRAWN METALS COMPANY

Manufacturers of Zouri Safety Key-set Copper Store Front Construction

GENERAL OFFICES AND FACTORY

CHICAGO HEIGHTS, ILL.

AGENTS IN PROCEEDL CITIES OF THE UNITED STATES AND CANADA.

Product

1920

ZOURS SAFETY KEV-SET and INTERNATIONAL STORE and division hars with will-adjusting setting blocks after features of safety not found in any other less. FRONT CONTINUCTION. Zouri sality key at law

are approved to Ends

writers' Laboratories,

under date of Jale 25 2

Description

Preferential cating on plate glass is inevitable, as it is now in successful operation in every other line of in-sorance. Flat rating is the arch enemy of safety. It encourages the cheapest salistitations that michanical ingenuity can produce. Zouri safety hey-set such, evenier
































Assessing the building and developing a strategy

- Identify the history of changes
- Preserve and repair salvageable historic material
- Understand structural opportunities and limitations
- Accommode current functions







Respect "Period of Significance" Value authentic material







Limitations to restoring design



Damage from changes may limit possibilities



Minimize visual impact of safety and technical limitations

Choose a durable species if using wood

Wood	Decay Resistance	Paint-Holding
		Characteristics
	(1 best; 4 worst)	(1best; 5 worst)
Softwood		
Cypress	2 - 3	1
Douglas-fir	3	2 (4 oil)
Eastern white pine	3 - 4	2
Ponderosa pine	4	2 (3 oil)
Redwood	2 - 3	2
Spruce	4	2 (3 oil)
White fir	4	3
Western hemlock	4	2 (3 oil)
Western red cedar	2	1
Southern yellow pine	4	3 (4 oil)
Hardwood		
Birch	4	4
Black locust	1	
Cherry	3	4
Eastern cottonwood	4	2 (3 oil)
Elm	4	5 (3/ filler)
Gum	4	4
Maple	4	4
Northern red oak	3 - 4	5 (4/filler)
Walnut	2	5 (3/filler
White oak	2	5
Yellow poplar	4	2 (3 oil)





Compensate for a material's weakness



Keep water out





Let water out



Potential problem?





end grain, End Grain, ENDGRAIN











Varnish is a high maintenance finish in all but the most protected areas





Minimum requirements for replacement:

- Visual match
- Compatible physical properties







Successful use of non-traditional and synthetic materials

- Accommodate thermal and moisture related expansion and contraction that is unique to the material.
- Use manufacturer-recommended fasteners and adhesives
- Maintain needed finishes

Building a compatible new feature

• General visual characteristics of traditional material

Reasons to consider a substitute:

- Poor performance of historic material
- Equivalent historic material not available
- Improved durability of alternative
- Cost material, fabrication, installation

Fiber reinforced polymer composites, FRP (cornices, carved elements,)

- May be paintable, UV sensitive without an integral finish
- Custom molds and standard shapes





Glass fiber reinforced concrete, GFRC

(custom fabricated for stone, cast stone or terra cotta elements)





- Lighter weight than stone or terra cotta
- May depend on a surface finish for match

Cellular PVC

(mouldings, trim boards)

- Paintable: no dark colors
- UV resistant
- Density of pine
- Some brands can be milled
- Mouldings available
- Non-orthotropic movement
- Greater thermal movement than wood but less hygroscopic movement







Hi-density Polyurethane Foam (ornament, moldings)

- Paintable, UV sensitive
- Slightly less dense than pine, thus easily damaged by impact
- Closed cell not moisture sensitive
- Sometimes combined with polyethylene surface
- Mostly standard shapes
- Non-orthotropic
- Thermal movement



Wood-based Composites

Hardboard (flat trim boards)

- Resins binders
- Must be painted
- Will expand and swell with moisture
- Non-orthotropic





Fiber Cement

(boards & sheets)

- Prefinished or must be painted
- Flat boards ³/₄" and 1" plus limited molded profiles
- Non-orthotropic,
- Minor moisture-related movement
- Heavy









