



The Design Guidelines chapters sometimes refer to the use of alternative materials when describing appropriate replacement of historic building features and components such as moldings, windows, siding, and other architectural details. An alternative material, sometimes referred to as a “substitute” or “replacement” material, is one which is different from that used historically. Alternative materials can be appropriate for historic resources in some cases. An alternative replacement material should always convey the visual qualities, character, and durability of an original material.

Four Circumstances That May Warrant the Use of Alternative Materials:

1. Unavailability of historic materials: most common reason and particularly a problem for masonry materials where the color and texture are derived from the material itself
2. Unavailability of skilled craftsmen: particularly true for ornamental work such as carved wood or stone, or cast iron
3. Inherent flaws in original materials: if incompatible materials were used together on a historic structure, or if materials have eroded, a more durable natural material may be appropriate as a substitute
4. Code-required changes: many times building codes require changes to historic buildings for the health and safety of its occupants. In some cases, replacing heavy historic elements with light replicas may be an appropriate solution. However, it is important to keep in mind that this action could affect any local or National Register designation status of the building, as well as resulting in a loss of potential tax credit money

Appropriate Use of Alternative Materials

Alternative materials are sometimes used to replace damaged, deteriorated, or missing features. While it is usually best to use historic materials, in some circumstances it may be appropriate to imitate historic materials with substitute materials. When using substitute materials, it is important to match them as closely as possible to the historic material and to ensure that no damage to the remaining historic fabric will result upon installation.

Approval for Use of Alternative Materials

The use of alternative materials is considered on a case-by-case basis as replacement materials or for use on a new addition or new building in a preservation district. The Architectural Review Committees and Landmarks Commission will consider a variety of factors when determining whether an alternative material is appropriate (as described below). Additionally, the ARCs, Landmarks Commission, and Metro Staff will consider the reasonable availability of the preferred material, the skill required to execute the preferred approach, and the quality, appearance, and character of solutions.

Any COA application that includes the proposed use of a material that is new or has not been reviewed before will be reviewed by the Architectural Review Committee of the appropriate preservation district. While not every new material may be deemed appropriate for the use on historic structures, the Landmarks Commission staff encourages the testing and analysis of new materials, especially as the use of some new materials may provide a greener solution than replacing a material in-kind. Occasionally, staff will test a new material to determine its compatibility with a historic material and its durability. Materials that meet the correct standards will then be shown to the Landmarks Commission and Architectural Review Committees for future reference. Applicants are also welcome to suggest a new material to staff for testing.

After obtaining approval from the Landmarks Commission and Metro Staff for the use of an alternative material, consult a qualified professional and experienced fabricator and contractor. The Landmarks Commission will consider the following factors when determining whether an alternative material is appropriate.

Potential Impact on Historic Significance

Removing an original material diminishes the integrity of a historic property by reducing the percentage of building fabric that remains from the period of historic significance. Retaining the original material is always preferred. If this is not feasible, alternative materials may be considered. When used, an alternative material should convey the character, including detail and finish, of the original to the greatest extent feasible.

Durability

An alternative material should have proven durability in similar applications. While some new materials are very sturdy, others may degrade quickly and can be difficult to repair.

Appearance

An alternative material should have a similar profile, texture, and finish as the original material. Some synthetic siding has an exaggerated, rusticated finish that is an inaccurate representation of original clapboard, and many vinyl products have a sheen that is out of character with that of painted wood and metal.

Location

Up close, it is easier to identify some alternative materials due to differences in texture, finish, and feel. Tapping on a hollow plastic column or fence does not convey the same experience as the original. For this reason, locations that are more remote are better. Similarly, the use of alternative materials is more appropriate on non-primary facades.

Cost

Some alternative materials are promoted because their initial costs appear to be less than repairing or replacing the original. When the other qualities of appearance and durability are proven, then the less expensive option may be appropriate. However, long-term, "life cycle" costs should also be weighed. Sometimes, the up-front saving is deceptive.

Environmental Impacts

The potential environmental impacts of alternative materials should also be considered including impacts associated with manufacture, transport, installation, and ability to recycle.

Interaction with Historic Building Materials

Some alternative materials may interact negatively with historic materials. For example, some metals may corrode and stain original materials and some window and siding materials may expand and contract with temperature changes in ways that degrade historic characteristics of an original material.

FOR MORE INFORMATION

The National Park Service published a Technical Preservation Brief titled "The Use of Substitute Materials on Historic Building Exteriors." Consult this document for more information when considering the use of an alternative material.

<https://www.nps.gov/tps/how-to-preserve/briefs/16-substitute-materials.htm>



Some Alternative Material Examples

With the previous considerations in mind, the following products are examples of those that are often discussed as possible replacements for original materials on historic buildings or those to be used in new construction in preservation districts. The following list does not imply that these materials will be approved by the Architectural Review Committee, Landmarks Commission, or Metro Staff; it is intended to highlight some potential applications and issues related to their use. The qualities of these materials that are described here are not definitive and are provided to alert users to some of the variables that they should evaluate when considering alternative materials.

Fiberglass

Fiberglass is a type of reinforced plastic where the fiber is glass. It appears in a variety of grades, some of which are designed for exposure to exterior elements. It is typically used for reproducing decorative mouldings and architectural details, as well as roofing shingles. In exterior applications, protected areas may extend the durability of the product. As a replacement material, there are sometimes concerns about the "hollow" sound and lightweight feel when it is used in locations where people may frequently come into direct contact, such as on a front porch column.



Fiberglass Shingles

As shingles, fiberglass can appear similar to asphalt shingles, although some versions have a shiny finish that may be out of character in preservation districts. Fiberglass shingles are reported to have good fire protection qualities and be more environmentally friendly, as they use less asphalt. However, they also are reported to be somewhat less durable than asphalt shingles and less suitable for cold climates.

Composite Fiberglass

A variation is composite fiberglass, which combines other materials with fiberglass. In architectural materials, this may include ground stone to simulate genuine stone products. This is reported to be more durable than basic fiberglass. Columns and mouldings are examples of its use. Casts can be ordered to accurately match original, missing details.



Plastic Composite Decking

This is typically made from sawdust and recycled plastics mixed with pigments and preservatives. It is provided in boards that can be installed in a manner similar to wood decking. Finish and appearance have improved in recent years, to more closely resemble wood in scale, character, and finish. It is reported to be durable and require little maintenance.

Glass-Fiber-Reinforced Concrete (GFRP)

This product combines glass fiber with concrete. It is reported to be used for its stronger weight carrying qualities and durability. It may appear as window trim, decorative columns, and mouldings. It can have a stone finish, or be painted.

Vinyl (Polyvinyl Chloride (PVC) Resin

Vinyl is a synthetic man-made plastic that appears as many building products, including siding, windows and doors, fences, and decking. Industry organizations claim that the material is durable and can be recycled, but others have raised concerns about these qualities. Other concerns that are raised relate to the appearance. Some siding, for example, is produced with an exaggerated "wood" grain, or with a shiny finish that is not authentic to most historic applications of genuine wood siding. Some siding also is produced in dimensions that are out of character and lack the precise edge that genuine wood provides. Trim boards may also be out of scale with historic designs.

Synthetic (Cultured) Stone

This product combines concrete with ground stone to simulate genuine solid stone. It is cast as a blend of stone particles and resins, combined with pigments. It appears in a variety of finishes that simulate various stone types, such as granite, limestone, and sandstone. It appears as columns, railings, and architectural details.

Synthetic stone also occurs as a veneer that is intended to simulate genuine stone. Concerns have been raised about the appearance when applied as a wall veneer, because the detailing may not look authentic. More accurate versions have become available, however.

Fiber Cement Siding

This product is a composite of sand, cement, and cellulose fibers. It appears as a siding product, often as a substitute for wood lap siding. It can be cut and installed as individual planks, similar to wood. Fiber cement siding can be painted. It is reported to be very durable and can be obtained in dimensions and finishes that appear similar to genuine wood siding. Other versions, however, may not have appropriate finishes or dimensions for application in preservation districts. Care should be taken in assuring that trim boards and details are similar to genuine wood.

Exterior Insulation and Finish Systems (EFIS)

This product is a synthetic stucco that is a multi-layered composition, with a protective outer layer covering a softer inner core. It is claimed to have good insulation properties. Concerns have been raised about durability, moisture intrusion, mold growth, and infestation by animals. Some improvements of the product have been reported, but concerns remain about its use in preservation districts.

Synthetic Slate Roofing

Synthetic slate shingles are a composition of plastic and rubber. Some include cellulose or mineral dust. They can be shaped to resemble genuine slate. It is reported to be recyclable and to be highly durable. Key considerations in historic contexts are that the finish, profile, dimensions, and details appear similar to those of original slate.

Synthetic Tile Roofing

This composite material appears as a substitute for clay or concrete roof tiles. They are reported to be highly durable. When applied in historic contexts, key considerations are that the color, finish, and profile appear similar to original tiles.



