



V. GUIDELINES FOR EXISTING STRUCTURES: MATERIALS





A variety of materials including three colors of brick, wood trim and shingles and a slate roof give this residence a depth of texture. Such an eclectic composition would have been popular in the late-nineteenth and early-twentieth centuries.



A. Introduction

As a homeowner, the choices you make regarding materials to use on the exterior of your house directly affect the appearance of the Olde Towne Historic District.

In this chapter you will find helpful information on the maintenance and repair of various materials that were used for houses in Olde Towne. You will also find guidance on replacement or substitute materials that may be approved for use on your house.



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The hand-hewn weatherboards on the first level of this house were an early exterior wall cladding material in Portsmouth. The shingles on the second floor are a later addition.



More narrow clapboards were the fashion for wall cladding in the Victorian era.



Throughout Olde Towne's development, wood was used as the primary material for decorative elements such as the classically inspired details shown here.

B. Wood

The availability and flexibility of wood has made it the most common building material throughout much of America's building history. Because it can be shaped easily by sawing, planing, and carving, wood is used for a broad range of decorative elements, such as cornices, brackets, shutters, posts and columns, railings, and trim on windows and doors. In addition, wood is used in major elements, such as framing, siding, and shingles.

Wood is one of the primary building materials in Olde Towne. The wood frames of many of the houses in the district were originally clad in wood siding, some of which is still evident and much that remains beneath artificial siding. Original windows and doors are also constructed of wood as is the trim that surrounds those elements. Decorative porch, portico and roof trim are also original wood elements.

Maintenance

Wood requires consistent maintenance. The main objective is to keep it free from water damage, rot and wood-boring pests.

- 1** Keep all surfaces primed and painted.
- 2** Use appropriate pest poisons, as necessary, following product instructions carefully.
- 3** Recaulk joints where moisture might penetrate a building.
- 4** Allow pressure-treated wood to season for a year before painting it. Otherwise, the wood-preserving chemicals might interfere with paint adherence.
- 5** Identify sources of moisture problems, and take appropriate measures to fix them.
 - a.** Remove vegetation that grows too closely to wood, and take any other steps necessary to ensure the free circulation of air near wood building elements.
 - b.** Repair leaking roofs, gutters, downspouts, and flashing.
 - c.** Maintain proper drainage around the foundation to prevent standing water.



⊘ Inappropriate Treatments

- 1 Do not use liquid siding. See *Section F: Paint* for more information on this treatment.
- 2 Do not use cement fiberboard to replace original wood siding.
- 3 Do not use synthetic siding, such as vinyl or aluminum, over existing wood siding or as a replacement for removed wooden siding.
- 4 Do not use high-pressure power washing to clean wood siding as the pressure may force moisture behind the siding where it can lead to paint failure and rot.
- 5 Do not caulk under individual siding boards or window sills as this action seals the building too tightly and can lead to moisture problems within the frame walls and paint failure.

✓ Guidelines

- 1 Retain wood as one of the dominant framing, cladding and decorative materials for Olde Towne residences.
- 2 Retain wood features that define the overall character of the building.
- 3 Repair rotted or missing sections rather than replacing the entire element.
 - a. Use new or salvaged wood, epoxy consolidants or fillers to patch, piece or consolidate parts.
 - b. Match existing historic materials and details.
- 4 Replace wood elements only when they are rotted beyond repair.
- 5 Match the original in material and design or use surviving material.
- 6 Base the design of reconstructed wood elements on pictorial or physical evidence from historic sources.



Wood needs consistent maintenance. By keeping siding and trim repaired and painted, you can protect these features from moisture penetration, especially near the foundation.

Preservation Brief #08:
Aluminum and Vinyl Siding on Historic Buildings
www.nps.gov/history/hps/tps/briefs/brief08.htm

Preservation Brief #09:
The Repair of Historic Wooden Windows
www.nps.gov/history/hps/tps/briefs/brief09.htm

Preservation Brief #10:
Exterior Paint Problems on Historic Woodwork
www.nps.gov/history/hps/tps/briefs/brief10.htm



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A regularly sized, rough-faced stone was used for the facade of this duplex. Stone was also used for the window lintels and sills, and the balustrades found on the first and third levels.



C. Masonry

Historic masonry materials include brick, stone, terra cotta, concrete, stucco, tile, and mortar. Brick walls, foundations, and chimneys are character-defining elements of most houses in Olde Towne. There are also examples of stone and stucco residences in the district. Concrete is also found in the district, but its use is usually confined to site elements.

Maintenance

Most masonry problems can be avoided with monitoring and prevention. Disintegrating mortar, cracks in mortar joints, loose bricks, or damaged plaster work may signal the need for masonry repair.

- 1 Prevent water from gathering at the base of a wall by ensuring that the ground slopes away from the wall.
- 2 Repair leaking roofs, gutters, and downspouts and secure loose flashing.
- 3 Ensure that cracks do not indicate structural settling or deterioration. Repair cracks and unsound mortar according to the guidelines later in this section.
- 4 Masonry should only be cleaned when necessary to remove heavy paint buildup, halt deterioration or to remove heavy soiling.
- 5 The best method for cleaning unpainted brick is to use a low-pressure wash of no more than 200 psi, equivalent to the pressure in a garden hose. A mild detergent may be added when necessary.
- 6 Test any detergent or chemical cleaner on a small, inconspicuous part of the building first. Older brick may be too soft to clean and can be damaged by detergents



Brick, often used as an exterior wall material in the district, serves a decorative purpose on this rough-finished stucco facade. Set in a running bond pattern, the sand-colored brick forms quoins at the building corners, accents the second-level windows, and forms a cornice band between the second and third stories.



This house is a particularly fine example of Flemish bond brickwork, a structural bond in which the short and long ends of the brick are alternated, providing strength for the wall.

and by the pressure of the water. This is a mandatory step if you are applying for federal or state rehabilitation tax credits.



7 Use chemical paint and dirt removers formulated for masonry cautiously. Do not clean with chemical methods that damage masonry, and do not leave chemical cleaners on the masonry longer than recommended.

8 Follow any local environmental regulations in regard to chemical cleaning and disposal.

Maintenance Repointing

Old bricks are different from new bricks and the mortar, the material that makes the joints, has to be different as well. Appearance is not the only issue. An improper mortar mix can damage historic brick. Professionals experienced in working with old masonry can guide you in appropriate repointing methods.

9 Remove deteriorated mortar and masonry by hand-raking the joints to avoid damage to the brick or the surrounding area. Roughly one inch of old mortar should be removed to allow for the new mortar.

10 **Appearance:** Duplicate old mortar joints in width and profile (see the *Mortar Joint Profile* illustration on the next page). It is also possible to match the color of the new mortar to that of a clean section of existing mortar.



Low-pressure power-washing can be an environmentally sensitive approach to cleaning historic masonry.

11 **Strength:** Do not repoint with mortar that is stronger than the original mortar and brick. Brick expands and contracts with freezing and heating conditions, and old mortar moves to relieve the stress. If a hard portland cement mortar is used, the mortar will not flex as much, and the brick can crack, break, or spall.

12 **Composition:** Mortar of older brick buildings has a high lime and sand content, usually one part lime to two parts sand. Portland cement may be substituted for a portion of the lime as long as the mortar mix is no more than 20 percent portland cement.

Preservation Brief #01:
Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings

www.nps.gov/history/hps/tps/briefs/brief01.htm

Preservation Brief #02:
Repointing Mortar Joints in Historic Masonry Buildings

www.nps.gov/history/hps/tps/briefs/brief02.htm

Preservation Brief #06:
Dangers of Abrasive Cleaning to Historic Buildings

www.nps.gov/history/hps/tps/briefs/brief06.htm

Preservation Brief #38:
Removing Graffiti from Historic Masonry

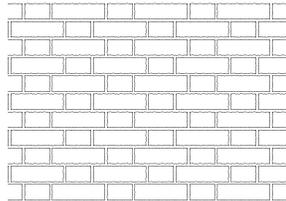
www.nps.gov/history/hps/tps/briefs/brief38.htm

Preservation Brief #39:
Holding the Line: Controlling Unwanted Moisture in Historic Buildings

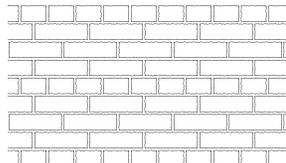
www.nps.gov/history/hps/tps/briefs/brief39.htm



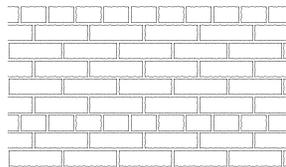
BRICK BOND PATTERNS



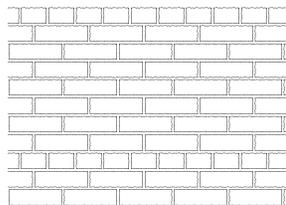
Flemish Bond



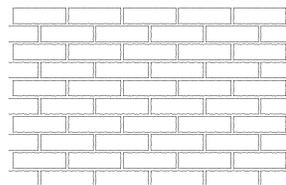
American Bond – 3-course



American Bond – 5-course



American Bond – 7-course



Running Bond

C. Masonry *continued*

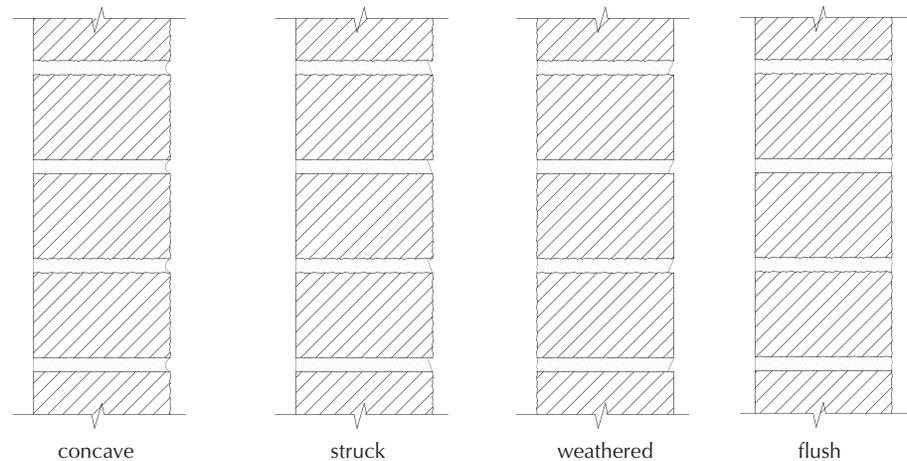
⊘ Inappropriate Treatments

- 1 Do not sandblast masonry, use high-pressure water blasting, or chemically clean with an inappropriate cleanser as these methods can do irreparable damage.
- 2 Do not repoint masonry with a synthetic caulking compound or portland cement as a substitute for mortar.
- 3 Do not use a “scrub” coating, in which a thinned, low-aggregate coat of mortar is brushed over the entire masonry surface and then scrubbed off the bricks after drying, as a substitute for traditional repointing.
- 4 Do not remove mortar with electric saws or hammers that damage the surrounding masonry.
- 5 Do not use waterproof, water-repellent, or non-historic coatings on masonry unless they allow moisture to “breathe” through the masonry. An anti-graffiti coating may be used on masonry areas that have seen repeated vandalism and where improved lighting and other security measures have not been successful.

✓ Guidelines

- 1 Retain masonry features which are important in defining the overall character of the building.
- 2 Leave unpainted masonry unpainted.
- 3 Repair or replace a masonry feature when necessary, using bricks that respect the size, texture, color, and pattern of the historic material, as well as mortar joint size and tooling.
- 4 Repair cracks and unsound mortar with mortar and masonry that matches the historic material.
- 5 Repair by repointing only areas where mortar has deteriorated. Sound mortar should be left intact.

MORTAR JOINT PROFILES



Identify the original profile of mortar joints used on your foundation, chimney, or wall and replicate that profile in any new work.



D. Metal

Olde Towne displays early hand-wrought ironwork as well as the mass-produced metal ornamentation of the late-nineteenth century. Surviving examples in the district include porch, portico, and balcony railings, finials atop the tower portion of Queen Anne residences and fences.

Maintenance

- 1 Use the gentlest means possible when cleaning metals.
- 2 Prepare for repainting by hand-scraping or brushing with natural bristle brushes to remove loose and peeling paint. Removing paint down to the bare metal is not necessary, but removal of all corrosion is essential.
- 3 Clean cast iron and iron alloys (hard metals) with a low-pressure, dry-grit blasting (80-100 pounds per square inch) if gentle means do not remove old paint properly. Protect adjacent wood or masonry surfaces from the grit.

Inappropriate Treatments

- 1 Do not remove the patina of metals, such as bronze or copper, since it provides a protective coating and is a historically significant finish.
- 2 Some metals are incompatible and should not be placed together without a separation material, such as nonporous, neoprene gaskets or butyl rubber caulking.

Guidelines

- 1 Retain architectural metals that provide a distinct quality to the Olde Towne Historic District.
- 2 Repair or replace these metals as necessary, using identical or compatible materials.
- 3 Substitute materials may be considered for reconstructing missing metal elements if it is not technically feasible to replace them with the original material.



This highly decorative ironwork gallery porch is a reminder of Portsmouth's function as a major east coast transportation center, with access to goods from ports near and far.



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The blue house in the middle with its narrow wood clapboard siding is flanked by a white vinyl-sided house to the left and a green asbestos-sided house to the right.

E. Substitute Materials

A building's historic character is a combination of its design, age, setting, and materials. The exterior walls of a building, because they are so visible, play a very important role in defining its historic appearance. Wood clapboards, wood shingles, brick, stone, and stucco are the original exterior wall materials in Olde Towne and are an integral part of its distinctive historic character.

Synthetic materials can never have the same patina, texture, or light-reflective qualities as the original wood siding and, therefore, detract somewhat from the district's historic character.

Substitute siding materials used in the district have changed over time and include asbestos, vinyl, and aluminum. These materials have been used to artificially create the appearance of the original wood siding surfaces or to update the appearance of a particular house.

1. Vinyl and Aluminum Siding

Vinyl and aluminum siding will not be approved for use as a replacement material or over existing wood siding in Olde Towne. When possible, remove existing synthetic siding and restore the original wood siding underneath.

By revealing the original siding you may uncover hidden maintenance issues earlier than they would otherwise be detected.

The following list covers a number of misconceptions associated with vinyl siding:

- a. Often property owners wish to install artificial siding because of the desire to avoid maintenance issues associated with repainting. The vinyl siding industry offers artificial siding as a maintenance-free solution that will solve your exterior building problems for a lifetime.
- b. Vinyl siding is usually guaranteed for 20 years. (Guarantees over 20 years are usually prorated.) Two or three quality paint jobs may cost approximately the same as replacement siding. Good quality latex exterior paint applied according to the manufacturer's instructions may have a warranty of 15 years or more. Properly maintained wood siding has been found to last hundreds of years. Painting of vinyl or aluminum siding can be a challenge as paint may not adhere well to these materials. Painting may also void your warranty.
- c. Vinyl and aluminium siding are not weatherproof. Time and extreme temperatures can take an immense toll on artificial siding. Over time, some artificial siding may dent, warp, cup, become brittle, buckle, break, fade and become dirty due to numerous environmental factors.
- d. Unlike wood, substitute siding materials are difficult to repair to match the existing. Factory colors, styles, and finishes change over time.

Preservation Brief #08:
Aluminum and Vinyl Siding
on Historic Buildings: The
Appropriateness of Substitute
Materials for Resurfacing
Historic Wood Frame
Buildings

www.nps.gov/history/hps/tps/briefs/brief08.htm



2. Cementitious Siding

Cementitious siding will not be approved as a replacement or repair material for wood siding on existing structures. It may be approved for additions to historic structures and its use for that purpose is covered in *Chapter VI: Guidelines for New Construction and Additions*.

3. Composite Trim Materials

Some currently available composite materials are available in custom-formed lengths such as urethane; while others, including cellular PVC, are dimensional mill-ready blanks. Flat board dimensional materials are available in wood-resin composites and cement board but are not able to be worked in the traditional manner of wood.

When wood features are beyond repair, composite or fiberglass replacement porch elements may be approved by the HPC if they replicate the appearance of the original wood elements.

Maintenance

Keep trim painted.

Inappropriate Treatments

- 1 Do not replace historic wooden window, door, or porch trim unless it is deteriorated beyond repair.
- 2 Do not apply new trim over existing trim.
- 3 Do not introduce trim elements that convey a different period of construction.
- 4 Do not use composite materials to patch existing wooden trim.

Guidelines

- 1 Use composite trim only if it replicates the dimension, scale, and overall appearance of the original wood trim.
- 2 Choose materials that may be painted to allow for a later change in the color scheme of the house's exterior.
- 3 Pick colors that are historically appropriate according to *Section F: Paint*.

Composite trim materials may be used when able to replicate the appearance of original wooden elements.



Panning is a term used to describe the wrapping of historic wooden details such as window and porch trim with metal or vinyl material sold as part of a substitute siding installation. Seen here, a wooden pilaster has been wrapped obscuring an element of this building's historic character.



Often, the effects of cleaning or painting vinyl siding can leave the siding with an uneven appearance.





This wooden siding has been sanded to remove all unsound paint and rotted boards have been replaced where necessary. Next step: primer.

F. Paint

A properly painted building accentuates its character-defining details. Painting is one of the least expensive ways to maintain historic fabric and make a building an attractive addition to the historic district.

In some instances buildings may be painted inappropriate colors, or colors are placed on the building incorrectly. Some paint schemes use too many colors, while others paint all building elements the same color – neither one of these is a preferred treatment.

Appropriate Colors

18th- and early-19th-century

- a. Main Structure:** Various shades of white are appropriate body colors. Federal high-style examples might have used a second color to accent trim on the main house. Greek Revival buildings were often painted white, grey, or tan.

Mid-to-late 19th century

- a. Main Structure:** The Queen Anne style favored natural earth tones such as greens, rusts, reds, and browns.
- b. Window Sash:** was often painted a dark color such as deep red, chocolate brown, dark green, olive, dark grey, or black to give it an appearance of receding into the facade.
- c. Shutters:** were painted a dark color, lighter than the sash.
- d. Metal Roofs:** Spanish-brown, dark green, dark grey, and black.



Early 20th century

- a. **Main Structure:** The Colonial Revival dictated softer pastels such as white, light grey, and yellow.
- b. **Window Sash:** White also became a popular sash color.
- c. **Metal Roofs:** Spanish-brown, dark green, dark grey, and black.

 Maintenance

- 1 Keep existing painted materials well painted.
- 2 Clean painted surfaces of accumulated dirt on an annual basis in order to prolong the life of your paint job.
- 3 Follow all local environmental regulations. Refer to *Chapter II: Section F* for information on lead paint hazards.
- 4 Prep, prime, and paint one side of the house before moving on to the next. Otherwise the surface gets dirty between coats, causing possible paint failure.
- 5 Remove loose and peeling paint down to the next sound layer using the gentlest means possible: hand-scraping and hand-sanding are best for wood and masonry. Oil and lead-based paints cure slowly while

latex cures quickly. By removing paint to bare wood, you will have a paint job that will be less apt to fail due to these different rates.

- 6 Performed by a contractor experienced in working on historic buildings, professional chemical removal of paint may be acceptable in certain situations.
- 7 Ensure that all surfaces are free of dirt, grease, and grime before painting. Wash bare wood with tri-sodium phosphate (TSP), then rinse with a hose with no nozzle.
- 8 Repair rot and cracks with wood or epoxy.
- 9 Prime surfaces if bare wood is exposed or if you are changing types of paint. This will allow new paint to adhere properly.
- 10 Use an oil-based alkyd primer applied by brush, not sprayed on.
- 11 Use a high-quality paint and follow the manufacturer's specifications for application.
- 12 Caulk after priming using acrylic/latex caulk with silicone.
- 13 Apply two coats of a high-quality latex paint.



An appropriate paint scheme for a Queen Anne residence may use three complementary paint colors in addition to the roof color.



Preservation Brief #09:
Exterior Paint Problems on
Historic Woodwork
[www.nps.gov/history/hps/
tps/briefs/brief09.htm](http://www.nps.gov/history/hps/tps/briefs/brief09.htm)

Inappropriate Treatments

- 1 Do not paint masonry that is unpainted.
 - 2 Do not completely remove paint to achieve a natural finish.
 - 3 Do not use sandblasting, open flames, or high-pressure water wash to remove paint from masonry, soft metal or wood.
 - 4 Burning old paint off is discouraged as it is a fire hazard and can permanently damage the surface of the wood.
 - 5 Do not apply latex paint directly over oil-based paint as it might not bond properly and can pull off the old oil-based paint. Ensure good adhesion by using an alkyd primer as noted in Maintenance #10 on the preceding page.
- 6 Do not use overly bright and obtrusive colors.
 - 7 Do not use liquid vinyl coatings because:
 - a. **Permeability:** These coatings may not allow historic structures to properly disperse moisture causing an accelerated rate of structural decay hidden by the coating.
 - b. **Diminishment of Details:** The thickness of these coatings may obscure character-defining details of historic woodwork and masonry.
 - c. **Reversibility:** This product has not been shown to be easily removable, therefore, it may cause potential negative impact to the historic fabric of the structure and the district.

Guidelines

- 1 Select a color scheme appropriate to the time period in which your building was constructed and that is generally compatible with adjacent structures.
- 2 Treat similar elements with the same color to achieve a unified rather than overly busy and disjointed appearance.
- 3 Paint unpainted aluminum-frame storm windows and doors to match wood trim.

