



Guidelines for Maintenance, Repair, and Minor Alterations



Guidelines for Maintenance, Repair, and Minor Alterations

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Regular maintenance and repair is essential to extending the life of a building and avoiding costly repairs down the line. This section includes a general overview of best practices and recommendations on how to properly upkeep your historic home, as well as guidance on minor alterations. Many of these treatments and recommendations are adapted from and consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving Your Historic Building* (Weeks and Grimmer, 1996), published by the National Park Service, U.S. Department of the Interior.

This section of the Long Beach Historic District Design Guidelines is part of a larger document created as a planning tool for the City's historic districts. The guidelines are intended to provide recommendations, inspiration, and advice as part of an instructive framework that will help guide sensitive changes to historic properties and encourage rehabilitation. By their nature, design guidelines are flexible. As such, outcomes may depend on the resource, the surrounding district, and the goals of the proposed project.

Any changes to the exterior of the property must be given prior approval by Historic Preservation staff through a Certificate of Appropriateness, and all projects may be subject to other City requirements not listed within these guidelines.

For additional information, please refer to the other chapters of this document:

- Chapter 1: Introduction
- Chapter 2: Guidelines for Maintenance and Repair
- Chapter 3: Design Guidelines by Historic District
- Chapter 4: Architectural Style Guides
- Chapter 5: Additional Resources



Roofs



The roof is a building's first line of defense against the elements, so it is especially important to regularly inspect and maintain the roof. Any necessary repairs should be carried out in a timely manner to prevent further damage. The National Park Service recommends personally inspecting the roof annually, and having a full inspection conducted by a professional every five years or so.

Signs of deterioration to look out for can include:

- Accumulation of debris
- Crooked, sagging, broken, or leaking gutters and down spouts
- Vegetation/biological growth
- Signs of moisture damage, leaks, or standing water
- Cracked, damaged, or deteriorated roof elements, such as roof coverings and flashing
- Loose or damaged decorative elements
- Evidence of insect damage to wooden elements such as rafters and beams, including termite frass, winged insects, and hollow-sounding wood
- Water damage caused by insufficient seals or connections, such as those around skylights

Roof Maintenance and Repair

The following is a list of common types of maintenance and repair. This list is intended as a reference tool. As such, it is not meant to be exhaustive and when in doubt, it is always best to consult a professional.

Problem:

- **Accumulation of debris.**



Excessive debris should not be allowed to accumulate.

- **Crooked, sagging, broken, or leaking gutters and downspouts**



Broken, crooked, or damaged downspouts and gutters will not properly divert water away from a building.

Solution:

Brush debris off and away from roof surfaces with a brush or broom.

Scoop larger debris out from gutters and flush smaller debris through downspouts, scuppers, etc., using a hose.

Prevent excessive plant debris from accumulating by trimming away overhanging branches and vegetation.

Check gutter fasteners and fascia board for failures. Discreet wooden wedges placed behind the gutters can help realign sagging gutters.

Patch any holes or leaks in the gutters, downspouts, etc., using a material such as fiberglass tape or epoxy adhesive. Historic features such as copper downspouts (as opposed to their simple, metal counterparts) should be carefully repaired by an experienced craftsman.

Replace any missing segments of gutter or downspouts in kind; ensure that water is diverted away from the base of the downspout.

Explore alternatives for houses without gutters such as placing flashing or a metal strip above doorways. If applicable to the building or architectural style, identify alternative historic techniques to divert water, such as using chains instead of downspouts.

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Roof Maintenance and Repair, Continued

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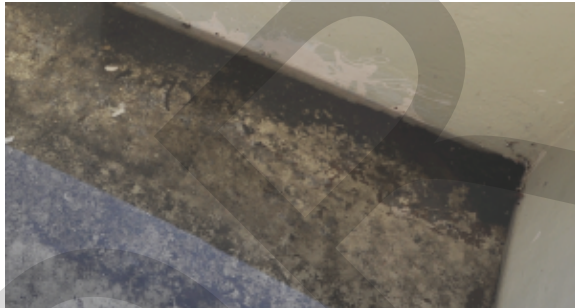
Problem:

- **Vegetation/biological growth.**



Biological growth should be gently removed to prevent further deterioration.

- **Signs of moisture damage, leaks, or standing water.**



Issues such as leaks and standing water, pictured above, should be promptly addressed.

- **Loose or damaged decorative elements.**



Decorative roof elements should be securely fastened to a sound substrate.

Solution:

Scrub away biological growth with clean, low-pressure water and a bristle brush (nylon or natural bristles). Avoid using chemical solutions.

Heavier build up can be gently removed with a plastic putty knife or similar tool.

Trim away overhanging branches and vegetation; exposure to sunlight can help prevent biological growth.

Ensure that water is being properly diverted by gutters, downspouts, scuppers, etc. Check for clogs, leaks, sagging, or misalignment.

Flat roofs that accumulate standing water may require re-banking in order to divert water to scuppers.

Trim away overhanging branches and vegetation, which can accumulate moisture.

Determine if it is the decorative element or the substrate that is causing the feature to be loose. If it is the substrate, determine the cause of any damage and carry out any necessary repairs before re-securing a loose decorative element.

If it is the decorative element, carry out any appropriate repairs to the element itself before re-securing. If the decoration is beyond repair, it should be replaced in kind.

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Roof Maintenance and Repair, Continued

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Problem:

- **Cracked, damaged, or deteriorated roofing elements and flashing**



Carefully repair damaged roofing elements or replace in kind, as the roof may be susceptible to leaks.

- **Evidence of insect damage to wooden elements such as rafters and beams**



Exposed roof elements are susceptible to insects; any signs of insect damage should be promptly addressed.

Solution:

Replace any deteriorated flashing with an appropriate replacement in a timely manner, especially around elements that penetrate the roof such as heating and plumbing vents and chimneys.

Roofing elements, such as shingles or clay tiles, should always be replaced in kind. Avoid replacing more than is necessary. Removal and replacement of sound materials while making repairs is not recommended. Removing and replacing historic materials that could feasibly be repaired is also not recommended.

Temporarily protect exposed sections of roof with pieces of metal flashing. Avoid using asphalt patches, which can make full repairs difficult in the long run.

Trim away overhanging branches and vegetation, which can invite insects.

Hire an exterminator at the earliest signs of insect damage to take care of unwanted pests and prevent serious damage to historic wood elements.

Prepare and carry out a regular treatment plan for continued prevention and protection against insects.

Replace damaged wooden members with hard wood, when possible, which is less susceptible to insects than softer woods.

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Roof Maintenance and Repair, Continued

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Problem:

- **Water damage caused by insufficient seals or connections, such as those around chimneys or skylights**



Carefully monitor connection points for leaks; consider removing non-original features like skylights if the problem persists.

Solution:

Repair and re-seal connection points. Patch damaged elements and install proper flashing to avoid water damage.

Consider removing non-original features like skylights if the problem persists.

Shingled Roofs

Many of the buildings in Long Beach have shingled roofs. While some historic shingles remain, such as wood shake or slate, the majority have been replaced with composite shingles.

- Individual damaged shingles should be replaced with shingles of a similar material, shape, and color to the existing, in order to maintain a uniform appearance.
- If a shingled roof requires wholesale replacement (composite shingle roofs often require full replacement after a period of 10-30 years), the new shingles should be neutral in color and uniform in size. They should be laid in a traditional, alternating pattern and/or in a manner consistent with its architectural style.
- Replacing a historically shingled roof with a completely new roofing material, such as clay tile or metal, is not recommended.

A completely new or incompatible roofing material would drastically change the character of a historic building; therefore, new materials should not be installed without sufficient evidence to suggest they existed historically. Any replacement material should be visually similar to the historic shingles as shingled roofs are typically pitched and highly visible elements of a historic building.

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Shingled Roofs, Continued

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- *It may be acceptable to replace a wood shake or shingle roof with compatible composition shingles.*



Significant and distinctive wood shingle roofs, like this wave-coursed roof with rolled eaves, should be preserved.

Property owners are encouraged to retain their wood shake or wood shingle roofs, but the City is also sympathetic to the potentially cost-prohibitive and lengthy fireproofing and certification process.

In some cases, a highly stylized and distinctive wood roof with features such as wave-coursed shingles and rolled eaves is a significant and character-defining feature of the residence. These rare roofs should remain, and should not be replaced with composition shingles.

Clay Tile Roofs

Some of the most predominant architectural styles in Long Beach feature clay tile roofing material. Clay tile is a distinctive part of these architectural styles, and should be retained.

- *Damaged clay tiles should be replaced in kind.*

Removing clay tiles entirely or replacing them with different roofing material, such as composite shingles, or tiles in a different color or style/pattern is not recommended. This would drastically change the character of a historic building.

- *Special care should be taken when carrying out roof repairs to avoid breaking any of the tiles.*

Roofers should never walk directly on clay tile. Weight should be distributed evenly to prevent breaking or cracking tiles. Because of their interlocking pattern, it may be necessary to carefully remove larger sections of tile to access areas needing repair.



Clay tiles are susceptible to cracking, chipping, and breaking if handled without care.

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Clay Tile Roofs, Continued

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- *Removal of clay tile coping on flat roofs is generally not permitted.*

Clay tile coping should be repaired rather than replaced. If the coping is demonstrably beyond repair, it should be replaced in kind.

If the clay tile coping has been removed and/or replaced with a non-compatible material such as a metal flashing, homeowners are encouraged to restore the clay tile coping. Not only is it a more historically appropriate and attractive finish to the parapet, the coping also provides a measure of protection to the roofline and helps to deflect water away from the building.



Clay tile coping should remain around a parapet (left); it should not be replaced with metal flashing (center) or removed entirely (right).

Flat Roofs

Flat roofs are often surrounded by parapet walls; as such, the surfaces of flat roofs are not visible from the street, making the exact replication of materials less important than maintaining the roof form and preventing leaks.

- *The roof slope on a flat roof should be adequately banked to divert water to scuppers and/or downspouts to deter water buildup on the flat roof.*
- *If areas of the flat roof are pooling water, make sure to remove debris build up around scuppers, down spouts, or drains and build up the roofing material in such a way that water is directed toward drains.*
- *If the roof is leaking, the problem areas should be properly sealed with hot tar and new roofing material. If necessary, replace the entire roof surface.*



Flat roofs are generally surrounded by a parapet wall, and are therefore not visible from the street.

Eaves

Certain types of roofs have eaves. The basic function of an eave is to help deflect water away from the building, but their appearance can vary greatly.

Open eave roofs have exposed roof components such as rafters, brackets, and beams. These components are especially susceptible to damage from the elements and should be maintained and protected by painting or staining regularly.

Boxed eaves are enclosed by soffits, but are also susceptible to damage, especially from moisture due to improper drainage and build-up of debris. Ensure that the building has proper drainage, and carry out any repairs in a timely manner.



Boxed eaves



Open eaves

- *Covering or boxing historically open eaves is not permitted; likewise, opening historically boxed eaves is not permitted.*
- *Roof members such as rafter tails should be repaired as needed, and replaced in kind if damaged beyond repair.*
- *In some cases, it may be appropriate to patch damaged rafter tails with wood epoxy before repainting or staining.*

If the damage is beyond repair, the member should be replaced in kind. It is not appropriate to use automobile "bondo" or other hard fillers with wood.

- *Properly seal joints with an epoxy or wood filler to reduce water infiltration before repainting to avoid future water damage.*
- *Ensure that the roof has proper flashing or install gutters (if historically appropriate) to minimize future water damage to rafter tails and eaves.*



Gutters and Downspouts

- *High style and historic gutters, such as decorative copper gutters and downspouts, should be regularly maintained and repaired as needed.*

In the event that they are damaged beyond repair, these features should be replaced in kind or with a compatible substitute of the same material.

- *If gutters or downspouts need to be added to prevent water damage, it should be done so as unobtrusively as possible.*

Careful attention should be given to selection of the gutters' style and material, so that they are generally compatible with the architectural style of the building.

It is more difficult to blend a gutter system when there is no fascia board. Homes with open eaves should consider a downspout system in areas where water naturally gathers, such as the junction of two gables. Consider limiting the installation of gutters or metal flashing to just those areas that require additional drainage, such as over entryways, or in areas where water damage is especially problematic.

Skylights

Traditionally, skylights were limited to larger, public buildings and grand mansions, and were rarely included in most historic homes. Therefore, they are unlikely to be character-defining features. However, the installation of a sensitively designed, low-profile skylight may be acceptable in order to increase light into the interior of a residence, especially in previously unused spaces, like an attic.

- *The skylight must be positioned in a location that is not visible from the street.*



Skylights can cause extensive water damage if improperly installed and sealed, and are generally not recommended unless necessary to increase living space.

Installing a skylight on an elevation visible from the street is not permitted, as they are rarely compatible with most historic styles and can be quite visually obtrusive. On a gabled roof, a skylight should be installed on a roof plane facing the rear elevation.

A skylight is less likely to be visible from the public right-of-way on a flat roof, but special care should still be taken to ensure a proper seal. Improper installation and sealing of a skylight could result in leaks and unnecessary water damage to the historic residence.

Exterior Cladding



Cladding is the material that covers the outside of the building. In Long Beach, these materials are typically stucco or wood siding. As cladding covers so much of a building, damage to the cladding can significantly alter the appearance of a historic building; therefore, any signs of deterioration should be carefully monitored in a timely manner.



Signs of deterioration to look out for can include:

- Accumulation of dirt and debris
- Cracks
- Bulges
- Evidence of insect damage
- Evidence of moisture damage
- Overgrown vegetation
- Flaking, cracked, peeling, chipping paint



For additional guidance for each cladding type, please refer to the Recommended Treatments by Material section of this chapter, beginning on page 27.

- *Existing cladding should not be entirely covered or replaced as a “quick fix.”*

Covering or replacing the entire exterior cladding is often used as a means to quickly obscure prior cracks, repairs, patches, damage, or deferred maintenance without identifying the underlying cause of deterioration. This can cause more damage to the property in the long run. In some instances, moisture can even get trapped between layers of cladding, causing the building to rot from the inside out.

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Cladding, Continued

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- *Contemporary or non-historic building materials such as vinyl, asbestos and aluminum should not be installed.*

These siding materials are often marketed by vendors as being durable and low-maintenance; however, despite the wide variety of colors, textures and sizes available in these materials, they are visually incompatible with most historic architectural styles. Therefore, installation of these materials in place of historic fabric is not permitted. When properly maintained, historic siding or in-kind replacement of historic siding materials are just as durable and economically sound as any modern alternative. The fact that these historic cladding materials remain on so many old buildings is proof of their potential longevity.

Wood

- *Damage to wood siding can often be isolated and patched, leaving the majority of the wood element (clapboard, shingle, etc.) intact.*
- *If the damaged area is too large to patch, or the wood cladding material is damaged beyond repair, it should be replaced in kind.*

In-kind replacement involves the same materials, shape, profile, etc. as the original. For example, wood clapboards or vertical siding should have the same width and profile; carved shingles such as diamond, fish scale, or arrow shingles should have the same shape as the existing shingles.

- *Replacement of wood siding should be restricted to the areas that need them.*

Removing historic building materials that are in good condition when only a small area requires replacement is not recommended. If the majority of wood siding is damaged beyond repair and wholesale replacement is deemed necessary, the siding should be replaced in kind, salvaging any remaining material in good condition where possible.

- *Covering historic wood siding with an entirely new material, such as stucco or brick, is not permitted.*



This wood siding was inappropriately covered in a layer of stucco.

Where historic wood siding has been covered with an incompatible new material, homeowners are strongly encouraged to remove this material and replace it with historically compatible siding when the existing material has reached the end of its useful life. Although not required, removing non-original and non-compatible siding with a historically compatible material and design is encouraged on historic properties. districts.



Stucco

- *Most contemporary stucco finishes are not compatible with historic architectural styles, and are not recommended.*

Finishes such as the ubiquitous “lace” texture or an extremely smooth surface, free of any tool marks or grit, should be avoided. Where historic stucco has been covered with an incompatible new texture, homeowners are strongly encouraged to remove this stucco and refinish it with a historically compatible texture, rather than repairing or replacing the incompatible texture.



Heavily textured “lace” finish stucco (left) or extremely smooth stucco are equally inappropriate stucco finishes for historic buildings, and should not be applied.

- *Small hairline cracks in stucco are generally not serious, and may be remedied if desired by a coat of new paint.*

More extensive cracks may require patching or sealing to repair; property owners should investigate the source of the cracking, and repair the source as well as the cracks themselves.

- *Patching is always preferable to wholesale replacement.*

When patches are properly carried out, they are easily blended into the existing stucco, especially with a fresh coat of paint. Stucco patches should match the existing stucco in composition and texture. Poorly executed repairs to stucco can significantly affect the exterior appearance and historic character of building; therefore, stucco repair should be conducted by professionals with experience in the various materials and application methods necessary to match the historic finish.

In the event that the majority of stucco is demonstrably damaged beyond repair, it should be replaced in kind with a historically compatible float or dash stucco finish.

- *Caulking compounds or Portland cement are not appropriate for repairing cracks in stucco.*

These materials are not only different in finish and appearance, but they weather differently from stucco, which can cause further damage. There is also a chance these compounds may not adhere properly to the surrounding stucco, and will delaminate or separate from the stucco over time, creating a web-like or scarred surface.

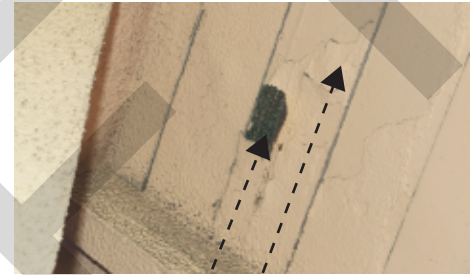
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Stucco, Continued

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- Covering historic stucco with an entirely new material, such as wood siding, tile, metal, or brick, is not permitted.

Likewise, stucco (especially sprayed on stucco) should never be applied to historically wood or masonry surfaces, including exterior siding, wood surrounds, window sills, half-timbering, or other decorative features. Not only would the stucco appearance diminish the integrity of the building's historic character, but the material is not chemically compatible with a wood or masonry substrate and will eventually delaminate and flake from the original surface, making the building look worse over time.

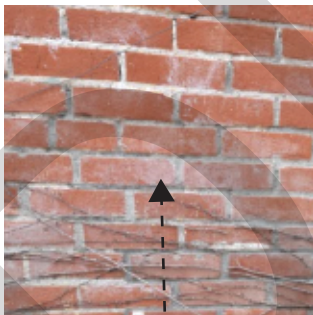


Inappropriate stucco has been sprayed onto these eaves, and has since begun to delaminate and flake away.

Masonry

Special care should be taken when repairing and maintaining masonry cladding, as an improper technique can easily cause inadvertent damage.

- Masonry cladding should only be cleaned when absolutely necessary, and the gentlest methods possible should be used. **Sandblasting or high-pressure washing a masonry building is never permitted.**



Efflorescence



Spalling

Harsh or abrasive methods can erode the protective outer surface of the brick, leaving the interior exposed to the elements and at risk for moisture damage. When fired, bricks develop a hard exterior that seals the porous brick material. Sandblasting and harsh chemicals can remove or weaken that surface, allowing water and salts to penetrate the brick.

Eventually, the bricks will develop a white, powdery surface (called efflorescence), which are salts seeping to the surface of the brick. As the salts expand, they will actually break the bricks from the inside out. This causes "spalling," where the exterior surface of the brick cracks, pops, or breaks off and falls away.

If cleaning is deemed necessary, utilize clean, low-pressure water, gentle phosphate-free detergent, and a bristle brush with natural or nylon bristles.

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Masonry, Continued

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- Over time, mortar will need to be repointed.

The repointing process typically involves carefully removing any damaged or loose mortar to a fixed depth, adding new mortar between masonry units, then smoothing to the desired finish. This process should be carried out by an experienced practitioner using an appropriate mix of mortar. Pure Portland cement and caulking compounds should never be used in place of mortar, except in rare cases when the mortar was historically Portland cement.

The replacement mortar should be carefully mixed, and should match the ratio of sand, lime, and cement found in the historic mortar. Moisture will follow the path of least resistance: mortar that is too soft will quickly erode; mortar that is too hard will divert water through the brick, causing efflorescence and eventually spalling. New mortar should also match the old in color.

The design of the mortar joint finish should also be replicated on historic masonry surfaces when undertaking repairs or replacement. There are a number of different mortar joint finishes, including recessed, raked, flush, or oozing/beaded, each of which create a very different appearance for the masonry wall. Common mortar joints are illustrated below.

Flush Mortar Joints



Flush mortar joints are finished at the same depth as the bricks around them, creating a generally level surface.

Raked Mortar Joints



For a raked finish, the mortar is "raked" out from between the masonry units to a consistent depth.

Oozing/Weeping Mortar Joints



For "oozing" or "weeping" mortar joints, the mortar is allowed to extrude from between the masonry units, creating a more organic appearance.

Recessed Mortar Joints



Recessed mortar joints are smoothed to a rounded, concave finish.

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Masonry, Continued

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- *In the event that a brick needs repaired, patching or consolidating historic fabric is preferable to replacement.*

Masonry can often be carefully patched with certain appropriate compounds. If necessary, it may be acceptable to consolidate historic masonry units on the most visible elevations of the historic building. If masonry units are beyond repair and consolidation is not possible, the units should be replaced in kind.

- *Replacement of masonry cladding should be restricted to the areas that need them; removing historic building materials that are in good condition when only a small area requires replacement is not recommended.*

Masonry can often be carefully patched with certain appropriate compounds. If necessary, it may be acceptable to consolidate historic masonry units on the most visible elevations of the historic building. If masonry units are beyond repair and consolidation is not possible, the units should be replaced in kind.



Paint and Stain

Paint, stain and other coatings are not just an attractive finish on a building. They also provide protection for historic siding and should be regularly maintained.

- *Historical coatings should remain the same.*

Building exteriors and elements that were historically painted should remain painted, and buildings and building elements that were historically stained should remain stained, and so on.

In a similar vein, elements that were not painted or coated historically, such as masonry or stone, should not be painted or coated. Features that were painted or coated historically should not be stripped of their paint or coating.

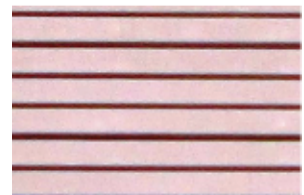
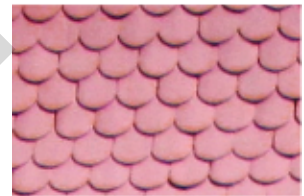
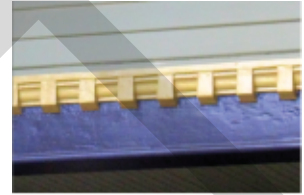
- *Destructive removal methods such as sandblasting, high-pressure washing, and mechanical scraping are not permitted. Paint removal should be achieved using the gentlest methods possible.*

Historic buildings constructed before 1978 may have been coated with lead-based paint originally. Often there may be a concern about the presence of lead in historic coatings; however, such coatings are typically only dangerous if deteriorated to the point where they can be digested or inhaled in large quantities.

There are a number of treatments that can ensure lead-based coatings are safe for homeowners. Wholesale removal of lead-based paint is often not necessary, nor recommended, as it can actually increase the hazard risk. Instead, lead based paints should be encapsulated in properly applied non-lead based paints and not overly scraped or sandblasted to remove prior coats of paint.

The removal of lead-based paints is not a “do-it-yourself” project. The City and other government entities require a licensed professional for projects involving lead abatement and encapsulation.

For more information on proper treatment of lead based paints, refer to the additional resources in Chapter 5.





Paint

- *Buildings, trim, and other architectural features that were historically painted should be repainted as part of regular maintenance.*

How long exterior paint lasts can depend on several factors, including the local climate, sun and water exposure, the condition of the substrate, and the quality of the paint job and materials used. In general, repainting should take place every 5 to 8 years.

- *Indications that the exterior needs repainting include fading, chipping, peeling, or flaking paint.*



"Alligatoring" paint does not necessarily indicate that the surface below is damaged.

Severely flaking, cracked ("alligatoring"), or damaged paint does not necessarily indicate damage to the wood members beneath; however, if damage to the wood is discovered, it should be repaired before repainting to prevent further deterioration. If failing paint is not remedied for a prolonged period of time, it may leave the substrate below exposed and susceptible to damage.

- *Before applying new paint, old or excess paint, debris and other imperfections should always be scraped down to a sound, smooth substrate.*

This does not mean that all the paint needs to be removed down to a bare surface, but the surface to be painted should be smooth and in good condition. In fact, it is preferable not to remove all layers of historic coatings; otherwise, the building could lose its "patina" or historic feeling, and may appear too new. Another factor to consider is the potential loss of historic evidence. Layers of paint could inform future property owners or scholars of what colors were used on the building over time.



Paint is unlikely to adhere to an improperly prepared surface.

- *Stucco siding does not require repainting as often as wood.*

However, paint still provides a measure of protection. Painting can also help conceal patches and repairs. Before repainting, stucco should be cleaned using a low-pressure water wash, and any loose debris or paint should be removed by scraping or scrubbing with a natural or nylon bristled brush.



Paint, Continued

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- *Care should be taken when painting elements like doors, windows, and architectural trim.*

Avoid obscuring historic detailing or inhibiting proper operation (such as painting a window shut) with thick layers of paint.

If windows have been painted shut over time or do not operate smoothly, removing excess paint layers may restore the window to its proper operation. Sticking doors may benefit from the same scraping and repainting process. Excess layers of paint should be carefully removed from more intricate architectural features, such as millwork, before repainting to preserve their detail.

- *Painting architectural features that were not historically painted, such as stained wood, stone, or masonry, is not recommended.*

Paint can be difficult to thoroughly remove after the fact, and its application can drastically change the historic character of a building.

Stain

Some wood elements, especially on Craftsman style homes, are stained rather than painted to highlight the natural wood grain. These stains are typically in a range of brown tones.

- *Staining architectural features that were not historically stained is not recommended.*



Wood stain highlights the natural grain.

Not only would this change the historic character of the building, but stain is unlikely to properly penetrate wood that was previously painted, even if all the paint has been removed. The result will be splotchy and uneven. Wood stain is intended for use on natural wood surfaces only. Similarly, elements that were historically stained should not be painted.

- *Application of solid color stains is not recommended.*

Solid color stains provide an opaque finish that is similar to paint, and do not have the same visual appearance as semi-transparent stains. As such, they are not recommended for use when the natural wood grain and color was historically emphasized.

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Stain, Continued

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- *Wood stain requires regular maintenance, especially in coastal climates, and may require more frequent applications than paint.*

Wood siding should be re-stained about every 5 years or as needed, depending on the product used and the number of coats applied. If the stain is not maintained, it will leave the wood siding susceptible to the elements, leading to warping, cracking, and other damage that could be beyond repair.

There are several types of wood stain available. Semi-transparent penetrating stains are a thin, almost watery product with a small amount of pigment that penetrates the wood and allows its natural grain and texture to show. These types of stains often include water-repellants that provide added protection. As these stains penetrate the wood, they will not flake off or peel like paint does. There are oil-based, acrylic-based and latex-based products available on the market. Oil- and acrylic-based stains generally perform best, as latex does not penetrate the wood.



Without regular applications of wood stain, wood elements like these shingles are susceptible to warping, cracking, moisture, and even insects.

As with painting, wood should be gently scraped and cleaned to remove any loose wood fibers or debris before applying new stain. One coat of semi-transparent penetrating stain can be expected to last 2 to 4 years, while a two-coat application could last as long as 8 years. Subsequent coats over the years may last longer with proper maintenance.

Color

- *Changing the exterior color of a residence is permitted, provided that the color scheme is compatible with the historic style and the surrounding district.*

Generally, lighter neutral colors are the most compatible with historic styles. Please refer to the appropriate section in *Chapter 4: Architectural Style Guides* for additional guidance and ideas for the most compatible color options for your home.

Doors and Windows



Regular inspection and maintenance of openings such as doors and windows is important to ensure proper function. Doors and windows should be inspected from the inside as well as the outside.

Signs of deterioration to look out for can include:



- Accumulation of dirt and debris
- Sagging doors, drag marks on door thresholds
- Sticking or jamming doors or window sashes
- Loose or decaying joints in windows, doors, and frames
- Loose, broken, or rusting hardware
- Broken weights and sash cords on double-hung windows
- Broken, missing, cracked window putty
- Broken, missing, cracked window glazing
- Peeling, chipping paint
- Drafts, gaps, leaks
- Signs of moisture or insect damage

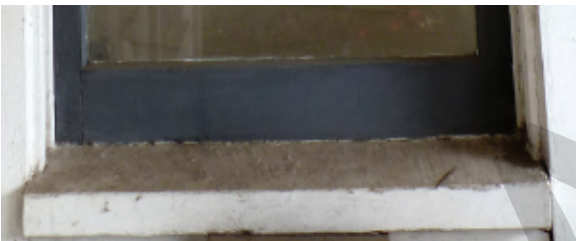


Maintenance and Repair of Doors and Windows

The following is a list of common types of maintenance and repair. This list is intended as a reference tool. As such, it is not meant to be exhaustive and when in doubt, it is always best to consult a professional.

Problem:

- **Accumulation of debris**



Excessive debris should not be allowed to accumulate.

- **Sagging doors, drag marks on door thresholds**



Removing excess paint and lightly sanding may help a door operate more smoothly.

- **Sticking or jamming window sashes**



Coats of paint over time may cause a window to stick.

Solution:

Clear away debris, including vegetation, spider webs, and dirt with a broom or brush.

Trim away overhanging branches and vegetation to prevent accumulation of leaves.

Remove any excess paint.

Tighten door hinge screws (or replace, if necessary).

If the door frame is out of alignment, adjust hinge location for a better fit.

Doors swell with changes in weather and humidity, and may correct itself as the seasons change. If the problem persists, remove the door and lightly sand or plane the area that sticks.

Remove any excess paint.

Lubricate window sash chains, if applicable, with silicone or graphite lubricant.

Beeswax or paraffin may be added to window tracks to help ease movement.

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Maintenance and Repair of Doors and Windows, Continued

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Using wax or wood stain in place of paint on certain areas of a single or double-hung window may help ensure smooth operation.

Note: Historically, double and single hung window sashes were not painted in the section of window where the sash moves. Instead, they were stained or waxed to allow for easy movement. Over time, these sections of the window frame may have been painted, even repeatedly, obstructing the sash from operating properly or sticking. Therefore, excessive layers of paint should be scraped and sanded or removed with gentle chemical strippers to restore the window to proper operation.

Problem:

- **Broken, missing, deteriorated window putty**



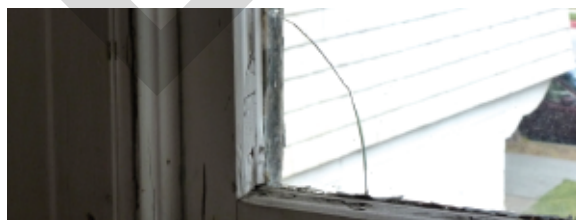
Cracked, damaged putty can leave a window susceptible to damage over time.

Solution:

Carefully remove any broken or deteriorated putty and replace with fresh putty, securing glazing with glazing points.

Missing putty around window glazing allow water to penetrate into the wood mullion and muntins, which can deteriorate the wood joints of the window.

- **Broken, missing, or cracked glass**



Promptly repair broken or cracked glass.

Replace cracked, broken or missing panes of glass in a timely manner to avoid damage to the window or interior. Cracks in glass may be temporarily sealed with glues. Specialty glass like leaded or stained glass should be repaired or replaced in kind by an experienced practitioner.

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Maintenance and Repair of Doors and Windows, Continued

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Problem:

- **Peeling, chipping, missing paint**



Deteriorating paint, while unsightly, is easy to remedy and does not necessarily indicate that a window is beyond repair. Hardware should be removed before repainting.

- **Drafts, gaps, leaks**



Windows that are crooked within their frames will likely need repairs before they are ready for weatherproofing treatments.

- **Signs of moisture or insect damage**



Bottom rails and sills are especially susceptible to moisture damage.

Solution:

Identify and remedy any source of damage before repainting, such as moisture or insects.

Scrape surface to a sound substrate. For wood windows, fill any gaps with a wood sealer if necessary. Carefully repaint.

Be sure to remove hardware during painting. Clean and replace the hardware once the paint has dried.

Ensure that windows are properly aligned, close tightly and have sufficient weather stripping.

If the window is out of plumb (crooked within its frame), a window professional may need to conduct repairs.

Fill any perimeter gaps with an appropriate sealant. For seasonal problems, a temporary and removable seal, like rope caulking, may be an appropriate and cost-effective solution.

Trim away overhanging branches and vegetation, which can invite moisture and insects.

Ensure that water is being properly diverted away from the bottoms of doors and windows. Water is especially prone to gathering on window sills that are not properly angled.

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Maintenance and Repair of Doors and Windows, Continued

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Problem:

- **Signs of moisture or insect damage**



Left unchecked, wood-boring insects can cause irreparable damage to wood elements over time.

Solution:

Hire an exterminator at the earliest signs of insect damage to take care of unwanted pests and prevent serious damage to historic wood elements. Prepare and carry out a regular treatment plan for continued prevention and protection against insects.

Repair moisture and insect damage by scraping out the damaged portions down to a sound, dry surface. Fill these areas with an appropriate wood filler, then paint and finish to seal. If the damage to the wood joints is beyond repair, the window may need to be replaced in kind.

Energy Efficiency

Many property owners consider window replacement as a means of increasing energy efficiency and saving money on energy costs. This is not recommended and may not be permitted.

Several studies have been conducted to compare the results and cost of retrofitting existing windows or wholesale replacement with new, energy-efficient windows. These studies have found that the energy savings of a properly retrofitted historic window are comparable to that of a new window and achieved at a fraction of the cost of replacing all of the windows on a building. Retrofitting measures such as weather stripping, cellular insulating shades, interior window panels, interior shutters, and interior surface films may provide similar results with a much greater return of investment, while better preserving the historic character of your home.

- *The installation of dual glazing in a historic window may be acceptable, but is not always be feasible.*

Dual glazing is a relatively simple project on a fixed or casement window, in which a second pane of glass may be installed on the interior; however, for a single or double hung window, the process is much more complicated. First, the window muntins must be thick enough to accommodate the second pane of glass while maintaining an appropriate profile, which is often not the case. Second, the weight of the added glass may require a re-calibration of any counterweight or sash balance system.

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Energy Efficiency, Continued

CONTINUED FROM PAGE 24

The entire process can be costly and time consuming, and may not be as worthwhile an investment as other retrofitting methods.

- *Because of the complex nature of properly retrofitting historic windows, there are other, simpler methods property owners may want to try before undertaking a large window project.*

These methods include sealing air leaks, increasing insulation, installing interior shutters, and upgrading to more efficient heating or cooling systems. For some architectural styles within certain historic districts, it may be appropriate to install awnings over windows for shade and cooling. Like any new equipment, any of these features should be installed carefully by an experienced technician to avoid damaging or obscuring character-defining features.



Replacing the windows on a historic home (left) can have a drastic impact on its exterior appearance and historic character. Homeowners are encouraged to consider other options that will increase energy efficiency while preserving their home's historic character.

Lighting

Typically, architectural lighting on residences is limited to exterior lights near the front door or in the porch ceiling.

- *If adding a new light fixture to the street-facing elevation is necessary, it should be with a fixture that is compatible with the historic architectural style of your home. Exterior light fixtures should generally be located either near the front door or in a porch ceiling.*
- *External wires or conduit are discouraged, and unnecessary damage to the historic fabric behind the fixture should be avoided.*
- *Where they exist, historic light fixtures should be retained, regularly maintained and repaired.*
- *If a historic light fixture is demonstrably beyond repair, it should be replaced in kind.*

Please refer to the appropriate section in Chapter 4: Architectural Style Guides to select a fixture that is compatible with the style of your historic home.

- *Non-original light fixtures, such as floodlights or motion-sensing lights are visually obtrusive and should not be installed on primary elevations of contributing properties.*

Homeowners are encouraged to install these types of light fixtures in an inconspicuous corner, or along the side or rear elevations instead. If a historic or incompatible light fixture needs to be replaced, many manufacturers create new lighting fixtures that are attractive and compatible with a variety of architectural styles.



Contemporary lighting, such as the flood light pictured on the right, should not be used on the front elevation of a historic home.

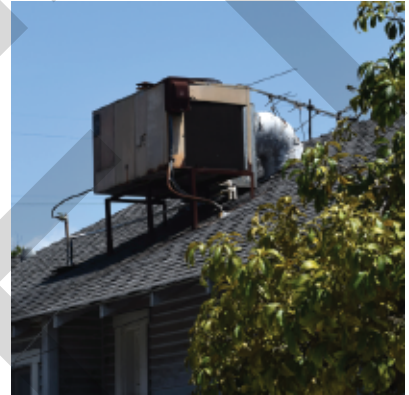


Mechanical Equipment and Utilities

- *Prioritize locating equipment, such as solar panels, satellite dishes, fuse boxes, rain barrels, etc., where it will not be visible from the street.*

Equipment should be carefully installed by an experienced technician to prevent damaging or obscuring character-defining features of the property.

Any small, new mechanical equipment that must be installed on the roof, such as solar panels or satellite dishes, should be installed in an inconspicuous location, preferably on the rear elevation. Equipment should not be visible from the public right-of-way. Larger equipment, such as HVAC condensers, should be installed at ground level rather than on a roof plane. Equipment should be carefully installed by an experienced technician to prevent damaging or obscuring character-defining features of the property.



Large equipment should never be installed on the roof plane, especially in areas visible from the public right-of-way.

Security

- *Adding visually obtrusive security doors or window bars on the primary or side elevations is generally not recommended.*

Homeowners are encouraged to consider more compatible security measures. The installation of security doors, bars, and grilles is one of the most visually obtrusive alterations to a home, and is not recommended.

- *Removal of visually obtrusive features and replacement with a more compatible security solution is recommended.*

Peace of mind can be achieved in ways that will also preserve the historic appearance of your home. Modern, wireless electronic security systems can be installed without obstructing any character-defining features, and are a recommended solution. Property owners may also consider implementing security measures such as interior swing-away bars and interior locks that are not visible from the exterior.

Any exterior elements of a security system should be installed on a rear or secondary elevation, and all components should be carefully installed by an experienced technician to avoid damaging or obscuring historic or character-defining features.



Security

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- *There are a number of manufacturers that create storm or screen doors and windows that can be visually compatible with the style and historic character of your building while providing additional security, ventilation, and light.*

These features typically have wood frames and are similar in color, shape and finish to the historic doors or windows.



These window screens (purple frames) are visually compatible with the historic windows behind them and do not detract from the character of the residence.



Recommended Treatments by Material: Wood

The following is a list of recommended maintenance and treatments. This list is intended as a reference tool. As such, it is not meant to be exhaustive and when in doubt, it is always best to consult a professional.

DO:

Inspect

- Inspect all wood elements, including posts, boards, siding, windows, doors, and trim annually for signs of deterioration. Identify and remedy the sources of any such deterioration in a timely manner to prevent further damage.

Clean

- Gently clean wood elements annually, and before repainting. Use clean, low-pressure water from a garden hose and a natural or nylon bristle brush. If necessary, use a mild non-phosphate detergent.

Paint

- Repaint wood elements when existing paint is showing signs of failure, such as peeling, cracking, blistering, or chipping.
- Identify any potential underlying causes of paint failure and remedy them before repainting.
- Properly prepare the surface for painting. Scrape to a sound substrate, sand, and carefully apply new paint.

DON'T:

- Defer inspections, thereby potentially missing early warning signs of deterioration.

- Delay repair and maintenance needs identified during inspection.

- Use abrasive, high-pressure or harsh chemical cleaning methods.

- Defer regular washing away of dirt, debris, and other accumulations such as spider webs. These can stain the exterior over time, and hide more serious signs of deterioration.

- Never sandblast wood as a means to clean or remove loose paint from wood.

- Delay repainting when paint shows signs of paint failure. This may leave the wood elements exposed to damage without the added protection of paint.

- Paint over damaged paint or wood without identifying and remedying any potential underlying causes.

- Paint over layers of failing paint without properly preparing the surface.

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Recommended Treatments by Material: Wood

CONTINUED FROM PAGE 29

DO:

- Avoid applying excess paint to highly detailed or moving elements, such as millwork, windows and doors, which may obscure the craftsmanship or hinder proper operation.
- Remove excessive paint buildup on moving parts such as double-hung windows or sashes to restore their operation if painted shut.
- Choose an appropriate paint product. For example, a new layer of oil-based paint may not adhere properly to a lower layer of latex paint.
- Choose a color that is consistent with the age and style of the building.
- Apply paint only to areas that were historically painted.

Paint

- Stain unpainted wood regularly to protect the wood from sun and water damage. Regular staining will also help the stain last longer over time.
- Properly prepare the surface for stain by cleaning, brushing away debris, and sanding.
- Choose an appropriate product, opacity, and color. Oil- and acrylic-based stains are recommended.

Stain

Apply stain only to areas that were historically stained, and retain the stained finish.

DON'T:

- Apply thick layers of paint that may cause doors and windows to stick, obscure finer details.
- Use an inappropriate paint product that does not ensure proper adhesion.
- Paint surfaces that were historically unpainted; conversely, don't remove paint from areas that were historically painted.
- Select a paint color or color scheme that is incompatible with the historic style of the building.
- Spray a sanded or textured coating or stucco finish over wood members such as rafter tails, wood window surrounds or wood siding if this technique was not used historically.
- Defer staining of wood elements, which may put wood elements at risk of deterioration.
- Apply stain onto an unprepared surface.
- Stain wood features that were not historically stained, even if paint has been removed. Stain is unlikely to properly penetrate wood that was previously painted, and the result will be patchy and uneven.
- Remove stain from surfaces that were historically stained or paint over natural wood that was historically stained.

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Recommended Treatments by Material: Wood

CONTINUED FROM PAGE 30

DO:

- Keep tree branches and vegetation trimmed away from building exteriors.
- Regularly inspect for signs of wood-boring insect damage.
- Hire an exterminator at the first signs of insect infestation to take care of unwanted pests to prevent serious damage to wood elements.
- Prepare and carry out a regular treatment plan for continued prevention and protection against insects.

DON'T:

- Allow vegetation to grow near or on the building exterior, inviting insects and moisture.
- Defer inspections, potentially missing early warning signs of insects.
- Delay hiring a professional to curb the spread of wood-boring insects and potentially irreparable damage.
- Delay regular extermination treatments to prevent recurrence of insect damage.

Insects



hollow channels



frass

Tell-tale signs of termite infestation include grooves (or "channels") throughout the wood, as well as "frass," or termite droppings. Winged insects may be seen around the home.

Recommended Treatments by Material: Wood

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DO:

- Keep tree branches and vegetation trimmed away from building exteriors.
- Regularly inspect wood siding for signs of moisture damage, including wood rot, standing water, and damp areas.
- Divert lawn sprinklers and water runoff (downspouts and leaders) away from the building's wood siding and foundation. Ensure proper water diversion and carry out any necessary repairs in a timely manner.
- Regularly clean out debris and from gutters and downspouts to prevent blockage and water overflow.
- Repair areas of pooling water to properly slope away from building and prevent future standing water.
- Remove mold or algae growth from the surface by applying a gentle anti-fungal compound to the surface.

DON'T:

- Allow vegetation to grow near or on the building exterior, inviting insects and moisture.
- Defer inspections, potentially missing early warning signs of moisture damage.
- Allow sprinklers or runoff to spray directly onto wood surfaces.
- Delay correcting water diversion elements such as gutters, downspouts, flashing, and window sills.
- Allow water to pool on wood decks or around the foundation and exterior siding.
- Allow mold or algae to remain on the surface for extended periods of time.

Moisture



Algae and mold should be scrubbed away with a soft brush and gentle cleaning solution.



Wood rot, caused by moisture and certain types of fungus, may be damp to the touch and cause the wood to splinter away or break off in "chunks." It is typically easy to penetrate with an implement such as a pencil.



Recommended Treatments by Material: Stucco

The following is a list of recommended maintenance and treatments. This list is intended as a reference tool. As such, it is not meant to be exhaustive and when in doubt, it is always best to consult a professional.

	DO:	DON'T:
Inspect	<ul style="list-style-type: none"> Inspect all stucco annually for signs of deterioration such as cracks, bulges, and loose stucco. Identify and remedy the sources of any such deterioration in a timely manner to prevent further damage. 	<ul style="list-style-type: none"> Defer inspections, thereby potentially missing early warning signs of deterioration. Delay repair and maintenance needs identified during inspection.
Clean	<ul style="list-style-type: none"> Gently clean stucco with low-pressure water from a garden hose, a natural and soft bristle brush, and a mild non-phosphate detergent. 	<ul style="list-style-type: none"> Use abrasive, high-pressure, or harsh chemical cleaning methods or sand-blasting to clean stucco exteriors.
Repair	<ul style="list-style-type: none"> Repair stucco by patching cracks or removing larger areas of damaged material and patching using recognized preservation methods that preserve the majority of the stucco wall intact. Only remove areas of damaged stucco and patch with the same material and application technique and texture as the original surface. Identify and remedy the source of deterioration as needed. Carry out repairs in a timely manner. 	<ul style="list-style-type: none"> Remove excessive amounts of sound building material to repair a damaged area. Defer necessary repairs, which could cause further damage in the long run. Simply repair the damage without identifying and remedying the potential source. Use a stucco that is not visually compatible with the existing material for repairs; repairs should be practically imperceptible to the naked eye, especially with a coat of fresh paint. Cover cracks or damage to stucco by completely covering an entire surface to "camouflage" the damage, especially with a heavy texture that is incompatible with the historic surface.

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Recommended Treatments by Material: Stucco

CONTINUED FROM PAGE 33

DO:

- Replace stucco only when damaged beyond repair or if repair is not feasible.
- Limit replacement to the areas that need them, unless wholesale replacement is demonstrably necessary.
- Replace stucco in kind with new stucco that is compatible in texture and finish.

Replace

DON'T:

- Needlessly remove sound building material.
- Cover damaged wood with stucco. This technique can cause further damage in the future as moisture is trapped between the two surface materials.
- Use a "spray on" technique to apply stucco unless this method was used historically (most historic buildings were hand troweled with a smooth surface).

- Clean and scrape surface to a sound substrate before repainting.
- Choose a color that is consistent with the age and style of the building.

Paint

- Paint onto an unprepared surface.
- Select a paint color or color scheme that is incompatible with the historic style of the building.

- Keep tree branches and vegetation trimmed away from building exteriors.
- Regularly inspect for signs of moisture damage, such as bulging, efflorescence, mold growth, and damp areas.
- Ensure proper water diversion and carry out any necessary repairs in a timely manner.
- Remove mold or algae growth from the surface by applying a gentle anti-fungal compound to the surface.

Moisture

- Allow vegetation to grow near or on the building exterior, inviting moisture.
- Defer inspections, potentially missing early warning signs of moisture damage.
- Delay correcting water diversion such as gutters, downspouts, flashing, and window sills.
- Allow sprinklers or runoff to spray directly onto stucco surfaces.
- Allow mold or algae to remain on the surface for extended periods of time.



Recommended Treatments by Material: Masonry

The following is a list of recommended maintenance and treatments. This list is intended as a reference tool. As such, it is not meant to be exhaustive and when in doubt, it is always best to consult a professional.

DO:

Inspect

- Inspect all masonry annually for signs of deterioration such as cracks, spalling, efflorescence and missing or broken mortar.
- Identify and remedy the sources of any such deterioration in a timely manner to prevent further damage.

Clean

- Gently clean masonry only when necessary to halt deterioration or remove heavy soiling or biological growth.
- Use low-pressure water from a garden hose, a natural or nylon bristle brush, and a mild non-phosphate detergent.

Repair

- Repair masonry units by patching, piecing-in, consolidating, or otherwise reinforcing using recognized preservation methods that preserve the majority of the masonry intact.
- Remove and replace deteriorated mortar and repoint with a mortar that is similar in strength, composition, color, texture, and pointing technique. Match the existing mortar joints and pointing technique.
- Identify and remedy the source of deterioration as needed.
- Carry out repairs in a timely manner.

DON'T:

- Defer inspections, thereby potentially missing early warning signs of deterioration.
- Delay repair and maintenance needs identified during inspection.

- Use abrasive, high-pressure, or harsh chemical cleaning methods.

- Never sandblast. Sandblasting removes the natural protective surface on the brick that is created when fired at high temperatures. Once this surface has been damaged, water can penetrate into the brick, which will cause it to absorb the salts in water and spall in the future.

- Use pure Portland cement as a patching material. Use a mortar that is not similar enough in texture, color, and composition, which could cause damage to the bricks in the long run, including efflorescence and spalling.

- Defer necessary repairs, which could cause further damage in the long run.

- Simply repair the damage without identifying and remedying the potential source.

- Use a pointing technique that is not similar to the existing.

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Recommended Treatments by Material: Masonry

CONTINUED FROM PAGE 35

DO:

- Replace bricks only when damaged beyond repair or if repair is not feasible.
- Limit replacement to the areas that need them.
- Replace masonry units in kind with new units that are compatible in material, size, shape, profile, and color.

Replace

- Repaint masonry only when there is evidence that it was historically painted.
- Use gentlest method possible to remove inappropriate applications of paint; test methods in an inconspicuous area for effectiveness and any damaging side effects. This may include scraping off loose or peeling paint with a stiff natural brush.
- Regularly carry out repairs and maintenance to ensure brick will not be damaged by moisture or water rather than relying on surface coatings.

Paint and Protect

- Keep vegetation trimmed away from building exteriors.
- Divert sprinklers away from masonry and ensure proper water diversion and carry out any necessary repairs in a timely manner.

Moisture

DON'T:

- Remove sound masonry units when replacing damaged elements.
- Replace with a feature of new or different material that is visually incompatible with the original.

- Paint masonry that was not historically painted.
- Use harsh or abrasive methods to remove inappropriate applications of paint, or apply a removal method to a large area without prior testing.
- Apply unnecessary water-repellent or waterproof coatings; these can change the appearance of the masonry and cause more damage than they prevent, such as trapping moisture inside the masonry units.
- Use sandblasting as a means to remove prior surface coatings (see note on sandblasting above).

- Allow vegetation to grow near or on the building exterior, inviting moisture.
- Allow sprinklers and runoff to spray on masonry foundations or walls. (Continued next page.)

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Recommended Treatments by Material: Masonry

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Moisture

DO:

- Regularly clean out debris from gutters and downspouts to prevent blockage and water overflow.
- Remove mold or algae growth from the surface by applying a gentle anti-fungal compound to the surface.

DON'T:

- Delay correcting water diversion such as gutters, downspouts, flashing, and window sills.
- Allow mold or algae to remain on the surface for extended periods of time.

Recommended Treatments by Material: Metal

The following is a list of recommended maintenance and treatments. This list is intended as a reference tool. As such, it is not meant to be exhaustive and when in doubt, it is always best to consult a professional.

Inspect

DO:

- Inspect all metal elements annually for signs of deterioration, including rust, broken or missing pieces, and damage at connection points to the building.
- Identify and remedy the sources of any such deterioration in a timely manner to prevent further damage.

DON'T:

- Defer inspections, thereby potentially missing early warning signs of deterioration.
- Delay repair and maintenance needs identified during inspection.

Clean

- Regularly wash away dirt and other debris with clean, low-pressure water.
- Determine the specific type of metal to identify the most appropriate cleaning process.
- Gently clean metal if needed to remove paint buildup or corrosion. Try hand scraping and wire brushing before trying harsher methods.

- Utilize wet grit blasting techniques. This method can drive water deep into the metal, encouraging rust. (Continued next page.)



Recommended Treatments by Material: Metal

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DO:

- Protect any surrounding material if methods such as grit blasting or chemical compounds are deemed necessary (typically this would only be necessary in cases of extreme paint failure or corrosion).

- Hire a skilled technician when employing harsher, more dangerous methods for safety, efficiency, and to avoid inadvertent damage to the metal and any surrounding elements.

- Repair metal features by patching, piecing-in, consolidating, or otherwise reinforcing using recognized preservation methods.

- Identify and remedy the source of deterioration (often prolonged water exposure or peeling or cracking paint) as needed.

- Carry out repairs in a timely manner.

- Replace metal elements in kind, using the existing historic feature as a model for reproduction or to guide the design of a compatible new feature.

- Gently scrape before repainting.

- Identify any sources of deterioration and remedy before repainting.

- Allow metal to be totally dry before painting.

DON'T:

- Leave surrounding building features unprotected from harsher metal cleaning treatments.

- Defer necessary repairs, which could cause further damage in the long run.

- Simply repair the damage without identifying and remedying the potential source of damage.

- Replace metal elements that can feasibly be repaired.

- Replace metal elements with incompatible (especially non-metal replacement) features.

- Paint on an unprepared or damp metal surface.

- Paint over deterioration in an attempt to fix it, such as corrosion.

- Paint a metal element that was not historically painted (e.g. a decorative copper downspout).

Clean

Repair

Replace

Paint