

Appendix C

Material Inspection Checklists

Appendix Overview

Regular inspection of your historic building's materials will enable repairs of small problems before they become large. This Appendix contains building material inspection checklists in "flash card" form for quick and easy reference, organized by material type (masonry, stucco, wood, metalwork, windows/doors, and roofing/drainage). Each card tells you what problems to look for, and recommends the appropriate actions to address them.

Use this Appendix If...

- You notice cracking, sagging, or other visible problem with your historic building and need to know what it means and how to fix it.
- You want to catch minor problems with your building's materials through a routine inspection you can perform yourself.
- You are considering buying a historic building and want guidance in spotting major issues (keeping in mind that the checklists are not a sufficient substitute for a full inspection by a qualified professional).

What's Inside...

Exterior Masonry
Stucco
Exterior Wood
Roofing
Windows and Doors
Metalwork

Exterior Masonry

Regular inspection and maintenance of your exterior masonry materials is very important, particularly since most masonry elements are often used as part of the structural system. Visually inspect your property often, and look for potential damage conditions, including the following:

| <i>Structural Problems</i> | |
|--|--|
| <i>What to Look For</i> | <i>Recommended Action</i> |
| <p>Cracks in masonry wall</p> <p>Vertical or diagonal cracks through walls and masonry units</p> <p>Horizontal cracks and hairline cracks in mortar joints</p> | <p>Can indicate differential or uneven foundation settlement or significant structural problems. Consult a professional, particularly if the condition worsens.</p> <p>Vertical or diagonal cracks, or cracks that split individual units, often represent a more significant problem, such as differential settlement.</p> <p>Horizontal cracks or hairline cracks limited to mortar joints or individual units tend to be less severe.</p> <p>Monitor and document the conditions during each inspection to see if they worsen over time; and after repair, to see if they return.</p> <p>Crack monitors or similar tell-tale gauges may also be used to help monitor problem areas.</p> |
| <p>Bowing or bulges in the wall plane; leaning walls</p> | <p>Can indicate differential settlement or significant structural problems. Consult a professional, particularly if the condition worsens.</p> |

| <i>Masonry Units (Brick and Stone)</i> | |
|--|---|
| <i>What to Look For</i> | <i>Recommended Action</i> |
| <p>Cracked units</p> <p>Missing Units</p> <p>Spalling, chipped edges</p> <p>Crumbling and flaking of surfaces</p> <p>Rust stains, cracking and spalling (from embedded metal)</p> <p>Poor previous repairs</p> | <p>Repair masonry units. Consult a professional for specific repairs or recommendations</p> <p>Repairs can include infilling cracks with color-matched mortars or grouts; pinning cracked units back together; patching spalled or missing portions with color-matched patching mortars; resetting loose units with new mortar; and replacing heavily damaged or missing units with new. There may also be associated repairs needed for embedded metals or flashings.</p> <p>When replacing with new, match existing masonry units in type, color, texture, size, shape, bonding pattern and compressive strength.</p> |

Exterior Masonry

Masonry Units (Brick and Stone)

| <i>What to Look For</i> | <i>Recommended Action</i> |
|--|---|
| Cracked units | Repair masonry units. Consult a professional for specific repairs or recommendations |
| Missing Units | <p>Repairs can include infilling cracks with color-matched mortars or grouts; pinning cracked units back together; patching spalled or missing portions with color-matched patching mortars; resetting loose units with new mortar; and replacing heavily damaged or missing units with new. There may also be associated repairs needed for embedded metals or flashings.</p> <p>When replacing with new, match existing masonry units in type, color, texture, size, shape, bonding pattern and compressive strength.</p> <p>If units are no longer manufactured or unavailable, try architectural salvage companies for sources. Also depending on the building, it may be possible to relocate original units from concealed/less visible areas for repairs at visible locations.</p> <p>Do not install modern brick for patching of historic masonry, even if they are “antiqued.” They are typically much harder and do not match the historic masonry.</p> |
| Spalling, chipped edges | |
| Crumbling and flaking of surfaces | |
| Rust stains, cracking and spalling (from embedded metal) | |
| Poor previous repairs | |

Masonry Units (Terra Cotta & Cast Stone)

| <i>What to Look For</i> | <i>Recommended Action</i> |
|--|---|
| Cracked units | Repair masonry units. Consult a professional for specific repairs or recommendations |
| Missing Units | <p>Repairs can include infilling cracks with color-matched mortars or grouts; pinning cracked units back together; patching spalled or missing portions with color-matched patching mortars; resetting loose units with new mortar; and replacing heavily damaged or missing units with new. There may also be associated repairs needed for embedded metals or flashings.</p> <p>When replacing, work with terra cotta or cast stone suppliers to mold existing units, and fabricate new to match.</p> |
| Spalling, chipped edges | |
| Flaking surfaces, loss of glaze | |
| Rust stains, cracking and spalling (from embedded metal) | |
| Hollow, unsound areas | |
| Poor previous repairs | |

Exterior Masonry

| <i>Masonry Units (Adobe)</i> | |
|---|--|
| <i>What to Look For</i> | <i>Recommended Action</i> |
| Cracking in walls | Damage may be caused by ground movement and differential settlement; poor drainage; erosion from water and wind;; roof leaks; poor design or construction techniques; and lack of maintenance. |
| Bulging or sagging | |
| Eroded or pitted surfaces | |
| “Coving” (deep erosion at the base of walls) | A common problem with adobe is also improper repairs using cement and concrete materials, such as cement stuccoes, concrete patches, and concrete wall bases (see “rising damp” below, under moisture problems section). |
| Cracked, delaminated or missing render (stucco) | Diagnosing the deterioration mechanisms and performing the proper repairs to adobe can be complex. It is highly recommended that you consult a professional. |
| Liquefied, non-cohesive units; mud flows | |
| Missing units | |
| Improper repairs | |
| | Typical repairs can include: Patching and replacing adobe brick; patching and replacing mud mortar; patching and replacing surface coatings (renders); removing incompatible materials and poor previous repairs; and associated work. |

Exterior Masonry

Mortar

What to Look For

Weathered, eroded and crumbly mortar
 Cracking in mortar joints
 Missing mortar
 Separation of mortar from masonry units
 Loose or missing masonry units
 Spalled surfaces and chipped edges of masonry units

Recommended Action

Repair and maintain mortar joints through repointing

Identify areas likely to have original or early mortars, in particular in protected/non-weathered locations, and match to that. When properly done, the new mortar should visually match the original in color, texture, joint size, and joint profile (tooling).

Select a new mortar that is compatible with the surrounding masonry, particularly in terms of strength (see sidebar on page 77).

For properties with a higher standard of care or special historic significance, we recommend matching the original mortar mix. This can be determined through laboratory analysis.

Remove old mortar carefully with hand chisels or small pneumatic tools or grinders. Do not over-cut or widen existing joints, or chip masonry units.

Moisture Problems

What to Look For

Leaks/Damp
 Damp/wet conditions; musty smells
 Stains, tide lines
 Spalling, crumbly masonry walls
 Blistering, crumbling and peeling interior finishes
 Salt deposits (efflorescence)
 Mold growth
 Biological growth/vegetation

Recommended Action

Repair masonry units. Consult a professional for specific repairs or recommendations

Repairs can include infilling cracks with color-matched mortars or grouts; pinning cracked units back together; patching spalled or missing portions with color-matched patching mortars; resetting loose units with new mortar; and replacing heavily damaged or missing units with new. There may also be associated repairs needed for embedded metals or flashings.

When replacing, work with terra cotta or cast stone suppliers to mold existing units, and fabricate new to match.

Exterior Masonry

Moisture Problems (cont'd)

What to Look For

Recommended Action

Rising Damp (similar signs as above, but concentrated at base of walls)

Occurs when porous masonry materials draw up moisture from the ground into the walls. The moisture then evaporates, either to the inside or outside surface.

May be exacerbated by improper materials or repairs. Common problem with adobe buildings that have a concrete base installed up against the adobe walls.

Improve site drainage around base of walls by installing French drain or other drainage system improvements.

Improve below-grade waterproofing (dampproofing).

Maintain good ventilation to underfloor areas and crawlspaces.

For mild problems, soft mortars and renders may be used for continual repairs. These are sacrificial treatments, designed to crumble away and be renewed.

For consistent/reoccurring problems, it may be necessary to construct an impermeable barrier at the base of the wall, just above ground level, known as a damp-proof course. This is considered invasive; consult a professional.

Water ponding adjacent to foundation

Verify water existing from downspouts is directed away from the building. Provide splash blocks or extensions at the base of downspouts as needed.

If a continual problem, re-grade area adjacent to foundation to direct surface water away from the building.

Damp walls; moss or algae on masonry surface; vegetation on or close to walls

Vegetation can trap moisture in masonry by blocking sunlight and ventilation.

We recommend removing vegetation from masonry walls, and removing or thinning vegetation close to the building.

Clean moss or algae growth from the wall surface with low pressure water, gentle detergents, and natural bristle brushes.

Inspect irrigation systems, and re-direct sprinkler heads away from wall surfaces.

Exterior Masonry

Surface Conditions

What to Look For

Recommended Action

Surface soiling and staining

Clean masonry surfaces. Products and methods will vary depending on the material and condition; consult a professional. See the masonry and stucco cleaning guide on page 252 for more detailed information.

Efflorescence

Clean efflorescence from wall surface with low pressure water and a soft, natural bristle brush. A gentle detergent may also be added if needed.

Review the area for possible sources of moisture, and correct/repair where possible to keep efflorescence from returning.

Painted masonry, evidenced by peeling, flaking, curling, or blistering

Peeling, flaking, curling, or blistering

Painted surface worn/weathered

Chalky or dull finish

Maintain existing paint coatings through proper surface preparation and repainting.

For properties with a higher standard of care or special historic significance, we recommend matching the original finish. Determine through laboratory analysis if masonry has always been painted. If yes, match original color; if no, remove existing paint coatings.

Avoid applying new paint to masonry that has never been painted.

Masonry sealers

Do not apply water-repellent and waterproof coatings (“sealers”). These coatings prevent moisture from evaporating from the masonry. Some are marketed as vapor permeable, or “breathable”, but may form shiny or dark films on the surface, and will still reduce natural evaporation. Once applied, they are nearly impossible to remove.

Exterior Masonry and Stucco

Masonry & Stucco Cleaning Guide

Cleaning can enhance the character and overall appearance of a building. However, improper cleaning can be very damaging.

- In general, the goal is to remove surface soiling or staining using the gentlest means possible, and without damage to the masonry.
- For best results, perform masonry repairs and repointing work prior to cleaning, to ensure building is water-tight.
- Select the appropriate cleaners for the type of masonry.
- Test cleaning products and methods first, in small inconspicuous areas.
- When using water cleaning, minimize water pressure to prevent surface damage (generally no more than 100 psi).
- When detergents are needed (for removal of stubborn or oily soiling), use a mild non-ionic detergent, such as a hand dishwashing detergent, diluted in water, and scrub with a natural bristle brush.
- Do not use abrasive blasting (sandblasting) or high pressurized water washing that can damage masonry surfaces.
- Do not use metal brushes or grinders that can damage masonry surfaces.
- Do not use harsh chemicals. Chemical cleaners can etch, stain, bleach or erode masonry surfaces.
- Consult a professional with specialized knowledge of historic masonry cleaning when gentler cleaning methods are not successful.

Stucco

Visually inspect your property often, and look for potential damage conditions, including the following:

| <i>Structural Problems</i> | |
|---|---|
| <i>What to Look For</i> | <i>Recommended Action</i> |
| <p>Cracks in stucco wall</p> <p>Wide-width cracks, often through full stucco thickness; may be vertical, diagonal, or horizontal</p> <p>Web-like cracking patterns</p> <p>Hairline-width cracks, often through finish layer only.</p> | <p>Wider width cracks can indicate differential or uneven foundation settlement or structural problems. They may also be indicative of the need for expansion or control joints within the wall surface. Consult a professional, particularly if the condition worsens, or reoccurs after repair.</p> <p>Web-like cracking may be indicative of shrinkage upon curing, and tends to be less severe.</p> <p>Hairline cracks are minor, and can often be bridged with a new coat of elastomeric paint or thin slurry coat of the stucco repair material.</p> <p>Repair of wider cracks will typically include routing out or cutting out the damaged area, and patching with a compatible stucco mix.</p> |
| <p>Bowing or bulges in the wall plane</p> | <p>Bulging areas may be delaminating from the masonry substrate, or, in the case of wood lath, may have areas of detachment (broken plaster keys).</p> <p>Survey by gently tapping with a wooden or acrylic hammer or mallet to identify areas of detachment (will sound hollow).</p> <p>For most properties, detached areas may be cut out, and replaced with matching stucco.</p> <p>For properties with a higher standard of care or special historic significance, we recommend retaining as much original stucco as possible. Bulged areas can be carefully reattached to the wall through other means (adhesive injection, etc.) Consult a professional for recommendations.</p> |
| <p>Spalling and missing stucco</p> | <p>Remove loose material at spalled areas, and patch spalled or missing areas with new stucco to match. Where needed, cut and splice in new wire mesh reinforcement, or replace decayed wood lath.</p> |
| <p>Corroded mesh reinforcement, embedded metal, or accessories (corner beads, weep screeds, tie wires, etc.)</p> | <p>Remove stucco material to sufficient distance in order to replace the corroded mesh, metal or accessories; patch with new stucco to match.</p> |

Stucco

Surface Conditions

What to Look For

Recommended Action

Surface soiling and staining

Clean masonry surfaces. Products and methods will vary depending on the material and condition; consult a professional. See the masonry and stucco cleaning guide on page 252 for more detailed information.

Painted surfaces

Peeling, flaking, curling, or blistering

Painted surface worn/weathered

Maintain existing paint coatings through proper surface preparation and repainting.

For properties with a higher standard of care or special historic significance, we recommend matching the original finish. Determine original paint color through laboratory analysis.

When selecting paint, it is important that the new paint be compatible with earlier coats of paint and the stucco material; otherwise it may peel or trap moisture within the wall. Lime-based paint is preferred, if compatible, as it is more flexible and breathable than typical latex paint. Elastomeric paints also have some flexibility and crack-bridging properties, working well over stucco.

Water-repellent coatings or sealers are not necessary.

Exterior Wood

Visually inspect your property often, and look for potential damage conditions, including the following:

Structural Problems

What to Look For

Recommended Action

Exterior walls not plumb or vertically straight; bulging

Large deflections or sagging, particularly in roof lines

Windows and doors do not fit or operate properly; frames are out-of-square or racked

Siding has wavy surface

These conditions can indicate uneven or differential settlement or structural problems.

They can also be the result of inadequate strength/over-loading, poor design, lack of bracing, later modifications, or material defects.

Consult a professional, particularly if the condition worsens.

Intermediate to advanced wood rot

Losses to the cross section of structural members.

Crushing failure under loading conditions.

Consult a professional, particularly if the condition worsens.

May need to install temporary shoring or other bracing to prevent failure or collapse.

Wood Siding and Decorative Trim

What to Look For

Recommended Action

Loose, cracked, missing, or open joints

Open joints around window and door frames

Open joints between dissimilar materials (ex. wood and metal)

Splits or checking in wood memb

Open joints in and around wood materials leave avenues for water to penetrate, and wood rot to develop.

For localized areas, patch with exterior wood fillers or wood-compatible epoxy putties; and wood splices or dutchmen.

Refasten loose elements together with careful nailing or fastening.

Re-caulk perimeter joints around windows or doors.

Repair or replace deteriorated flashings.

For areas that cannot be repaired, replace in-kind. Match the historic wood in size, profile and visual characteristics. For siding, match the original pattern, exposure and alignment relative to the building.

For replacement wood, select appropriate wood species for use and location. Consider using decay-resistant or treated wood.

When replacing wood with stained or clear finishes, match existing wood species and grain as closely as possible.

Exterior Wood

Moisture Problems

What to Look For

Recommended Action

Leaks/damp

- Damp/wet conditions; musty smells
- Stains, tide lines
- Mold growth
- Biological growth/vegetation

Damage resulting from a failure of other building elements, such as roofing and drainage, plumbing, etc. Typically caused by aging materials, improper repairs, and a lack of maintenance.

Investigate the source of the leak or damage, and correct those conditions during wood repair.

Surface/ground water

- Water ponding adjacent to foundation
- Wood materials on or within 6-inches of the ground
- Wood materials on masonry foundations or piers

Wood materials near the ground are more susceptible to decay from moisture.

Correct construction if possible to provide a buffer between wood materials and the ground, and between wood materials and foundations.

Verify water exiting from downspouts is directed away from the building. Provide splash blocks or extensions at the base of downspouts as needed.

If a continual problem, re-grade area adjacent to foundation to direct surface water away from the building.

Damp walls; moss or algae on masonry surface; vegetation on or close to walls

Vegetation can trap moisture in wood by blocking sunlight and ventilation.

Remove vegetation from wood walls, and remove or thin vegetation close to the building.

Clean moss or algae growth from the wall surface with low pressure water, gentle detergents, and natural bristle brushes.

Inspect irrigation systems, and re-direct sprinkler heads away from wall surfaces.

Exterior Wood

Wood Decay/Rot

What to Look For

- Staining and discoloration
- Surfaces are soft with raised wood grain
- Mold and mildew smells
- Voids along the grain structure
- Wood is soft or “punky”; can be easily probed with metal tools

Recommended Action

- Inspect wood decay-prone areas regularly, such as wood near foundations and base of walls; window sills and lower rails; door thresholds; sill beams and wall plates; cornices and trim; porches; crawlspaces; and interfaces of wood with masonry or other materials.
- Keep wood materials dry; see “Moisture Problems” actions.
- Apply borate-based wood preservatives to protect against decay.
- Apply water repellents with mildewcide additives that will kill active fungi and protect from future growth.
- Maintain protective paint coatings (see “Surface Conditions” actions).

Insect Damage

What to Look For

- Mud tubes on surfaces of wood or masonry
- Entry/exit/flight holes and tunnels
- Frass (loose wood dust byproduct from tunneling)
- Insects or larvae

Recommended Action

- Inspect insect target zones regularly, in particular wood materials on or within 6-inches of the ground; wood materials on masonry foundations; and wood within crawl spaces.
- Engage a pest management company to provide regular inspections and treatment.
- Treat with borate-based wood preservatives to protect against insect attack.
- Correct construction detailing where possible to provide a buffer between wood materials and the ground, and between wood materials and foundations (ex. termite shields).

Exterior Wood

Surface Conditions

What to Look For

Recommended Action

- Painting
 - Peeling, flaking, curling, wrinkling, or blistering
 - Cracking, crazing, or alligatoring
 - Painted surface worn/weathered, with bare wood showing
 - Soiled, chalky, or dull finish

Surface cleaning may be all that is needed, depending on condition. Wash with a mild detergent solution and natural bristle brushes.

Investigate the source of damage, and correct those conditions prior to repainting.

Maintain existing paint coatings through proper surface preparation and repainting. . In general, wood needs repainting every 5 to 8 years.

Prepare surfaces by cleaning, scraping and sanding to remove loose soiling and paint not adhered to the wood. Putty or caulk over countersunk nails, gaps and joints. Spot prime areas of bare wood.

Apply a high quality, exterior grade paint, that is appropriate to the substrate. It is best to use a primer and paint that are compatible and from the same manufacturer. For bare wood, primer and two coats of finish paint are recommended.

For properties with a higher standard of care or special historic significance, we recommend matching the original finish. Determine original paint color through laboratory analysis.

Non-Original Materials

What to Look For

Recommended Action

Original siding has been covered with vinyl, steel, or aluminum siding

Siding installed over original wood siding can trap moisture within the wall system, and conceals any damage or wood rot from view.

Remove non-original siding so that the underlying materials can be inspected and repaired.

Repair work may include restoration of details or trim that were damaged or removed during non-original siding installation.

Do not install incompatible or artificial siding.

Roofing

Visually inspect your property often, and look for potential damage conditions, including the following:

Structural Problems

What to Look For

Recommended Action

Large deflections or sagging in roof lines

These can indicate uneven or differential settlement or significant structural problems. Consult a professional, particularly if the condition worsens.

Terra Cotta & Concrete Tile

Useful service life: 100+ years with proper maintenance and repairs; underlayments however have useful service life of 20+ years.

What to Look For

Recommended Action

Broken or missing tiles
 Tile units delaminating or flaking apart
 Tile particles seen in valleys and gutters
 Soiling; debris; vegetation

Re-attach/ re-secure loose tile.
 Replace missing tile in kind.
 Replace individual broken or deteriorated tile in kind.
 Consider roof replacement when over 20% of units are cracked, missing or delaminated.
 Remove debris regularly; clean tile surfaces as required.
 Trim back overhanging tree limbs.
 Inspect regularly for damage, and repair as needed.

Water leaks
 Dark stains (water stains) and wood rot at underside of roof (visible in attic spaces)
 Mildew on underside; dampness in attic space

May indicate that tile underlayments (waterproofing) is damaged or deteriorated.
 Remove tile from problem area to investigate, and repair as required; reinstall tile.
 For significant damage, re-roofing is recommended. Tile may be salvaged and reinstalled. Replace underlayment, and repair or replace any damaged roof deck or sheathing as required.
 Verify whether attic spaces are sufficiently ventilated.

Roofing

Wood Shakes & Shingles

Useful service life: 50+ years with proper maintenance and repairs

What to Look For

Loose or slipped shingles; missing shingles
Split shingles
Surface erosion/wear; appear thin
Moss or mold on roof surface

Recommended Action

Re-attach/ re-secure loose shingles.
Replace individual damaged or missing shingles in kind.
Consider roof replacement when over 20% of shingles are damaged or missing.
Clean biological growth and treat to inhibit future growth.
Trim back overhanging tree limbs.
Inspect regularly for damage, and repair as needed.

Asphalt & Composition Shingles

Useful service life: 20+ years with proper maintenance and repairs

What to Look For

Loose or slipped shingles; missing shingles
Dents and surface damage (hail damage)
Cracked shingles
Surface erosion/wear; appear thin
Mineral granules seen in valleys and gutters
Moss or mold on roof surface

Recommended Action

Re-attach/ re-secure loose or slipped shingles.
Replace individual damaged or missing shingles in kind.
Consider roof replacement when over 20% of shingles are split, cracked, missing or deteriorated.
During repair or re-roof, inspect roof deck/substrate for damage and repair as required.
Clean biological growth and treat to inhibit future growth.
Trim back overhanging tree limbs.
Inspect regularly for damage, and repair as needed.

Roofing

Membrane Roofs (Flat Roofs)

Useful service life: 20+ years with proper maintenance and repairs

What to Look For

Bubbles, blisters, and wrinkles
 Cracking and separations
 Loose/detached membrane sheets
 Roof feels loose or spongy under foot
 Water ponding on roof
 Mineral granules or gravel worn away; seen at drains and low areas
 Membrane or reflective paint eroded
 Soiling; debris

Recommended Action

Patch localized areas of damage using compatible methods (varies by roof system type)
 Consider roof overlay or roof replacement when over 20% of roof area is deteriorated or roof is beyond useful service life.
 During repair or re-roof, inspect roof deck/substrate for damage and repair as required.
 Remove debris regularly; clean roof surfaces as required.
 Trim back overhanging tree limbs.
 Inspect regularly for damage, and repair as needed.

Metal Roofs

Useful service life: 50+ years with proper maintenance and repairs

What to Look For

Substantial number of rust or corrosion spots
 Previous tar patch repairs
 Punctures or pinholes in the metal
 Broken seams or joints
 Weathered or peeling paint
 For flat metal roofs, bounce under foot; water ponding
 Soiling; debris

Recommended Action

Patch or re-solder localized areas of damage using compatible methods (varies by roof system type)
 Consider roof overlay or roof replacement when over 20% of roof area is deteriorated or roof is beyond useful service life.
 Re-paint tin and terne-coated steel every 5-10 years.
 During repair or re-roof, inspect roof deck/substrate for damage and repair as required.
 Remove debris regularly; clean roof surfaces as required.
 Trim back overhanging tree limbs.
 Inspect regularly for damage, and repair as needed.

Roofing

Chimneys

What to Look For

Recommended Action

Chimney is leaning.

May indicate a structural problem or earthquake damage (if unreinforced or not braced). Consult a professional, particularly if the condition worsens.

Chimney is not properly lined
Flue is blocked, clogged, or heavily soiled

Install a chimney liner if wood-burning fireplaces are used, or if masonry inside of flue is crumbling.

Remove collected ash regularly; ensure smoke damper operates.

Engage chimney sweep to clean flue after periods of heavy use or long periods of inactivity prior to use.

Chimney is not properly capped

Install an appropriate chimney cap for the building style.

Masonry or stucco is cracked or crumbling

See “Exterior Masonry Inspection Checklist” and “Stucco Inspection Checklist”

Mortar joints in chimney are cracked or eroded

See “Exterior Masonry Inspection Checklist”

Flashings

What to Look For

Recommended Action

Loose or missing flashing

Broken welds or seams

Un-caulked openings or gaps

Substantial number of rust or corrosion spots

Previous tar patch repairs

Punctures or pinholes in the metal

Patch or re-solder localized areas of damage using compatible methods (varies by metal type)

Replace flashing where missing or heavily damaged.

Inspect regularly with roof, and repair as needed.

Roofing

Drains, Gutters, & Downspouts

What to Look For

Recommended Action

Clogged with debris

Remove debris and clean/flush for proper drainage. Recommend cleaning 2x/year (spring and fall), or more frequently if needed.

Provide strainers at area drains (flat roofs); mesh screens at gutters.

Trim back overhanging tree limbs.

Inspect regularly with roof, and repair as needed. Also, inspect during heavy rainstorm to identify potential problem areas.

Loose, askew, disconnected, or missing components

Re-solder open joints and broken seams; reconnect sections where loose

Dents or crushed components

Replace damaged or missing components in kind.

Open seams; broken welds

Clean and prepare metal surfaces, and repaint.

Rust or corrosion

Peeling paint; paint loss

Water ponding adjacent to foundation

Verify water exiting downspouts is directed away from building foundation. If necessary, re-grade around foundation for proper drainage.

Provide splash blocks or downspout extensions if needed.

Where no gutters or downspouts exist:

Wood decay/ damage and ponding water at foundation related to surface drainage/ water dripping from roof

Inspect during heavy rainstorm to identify potential problem areas.

Consider installing new gutters and downspouts appropriate for the building style.

Roof Appurtenances

What to Look For

Recommended Action

Broken welds or seams; open joints around penetrations

Patch or re-solder localized areas of damage using compatible methods (varies)

Cracked or deteriorated tar around penetrations

Replace if damage is substantial

Equipment unsupported; improperly supported; damaging to roof

Remove and patch roof if abandoned.

Take corrective action as needed to ensure all equipment is properly supported and attached to structure, without damage to roof. Consult a professional.

Windows & Doors

| <i>Windows & Doors</i> | |
|---|--|
| <i>What to Look For</i> | <i>Recommended Action</i> |
| Wood decay (rot) | Inspect regularly and repair as needed. |
| Insect damage | Repair decayed wood (see “Exterior Wood”) |
| Steel corrosion (rust) | Clean and stabilize rust (see “Metalwork”) |
| Aluminum oxidation (white rust) | Clean surfaces regularly and repaint as needed. Remove any built-up paint that may restrict movement. |
| Glass breakage | Replace window putty as needed. |
| Aged, cracked and missing glazing putty | Replace broken glass in kind. |
| Broken, damaged or missing hardware | Clean and oil hardware as needed. Adjust for proper operation. |
| Racking of frames, difficult to operate, poor fitment | Re-caulk perimeter of openings and install weatherstripping between moving parts to reduce air infiltration. |
| Overpainting of sash and frames, painted shut or difficult to operate | |
| Leaks and air drafts around windows or doors | |

Metalwork

| <i>Metalwork</i> | |
|---|---|
| <i>What to Look For</i> | <i>Recommended Action</i> |
| Loose and peeling paint coatings | Inspect regularly and repair as needed. |
| Reddish surface stains (light rust) | Clean surfaces to remove loose soiling and peeling paint. |
| Metal flaking and pitting (surface depressions) at rust areas (moderate rust) | Remove surface rust with abrasive pads or steel wool. Sand surfaces to smooth out rough areas. |
| Metal breaking apart at rust areas, loss of strength (heavy rust) | Where rust cannot be removed to sound metal, stabilize with a tannic-acid based rust converter. |
| Damage to adjacent masonry from rust expansion (“rust jacking”) | At areas where rust was removed and metal is pitted, fill gaps with a compatible metal putty. |
| Broken or missing fasteners | At heavily rusted, broken or missing components, replace in kind. |
| Dissimilar metals at fasteners or adjacent flashing | Replace heavily rusted fasteners and fasteners of dissimilar metals. |
| | Re-paint with a high quality, exterior grade, zinc-rich primer and paint coating. |