

SECTION 4

Care & Preventative Maintenance

OVERVIEW

Due to its constant exposure to heat, cold, ultraviolet rays, rain, snow, hail, high winds and/or physical damage, a roof can be the one of the most vulnerable component of a building's exterior. Despite exposure to these negative effects, long-term performance can be enhanced, and major roof problems can be mitigated or avoided, through correct design, quality materials, proper installation procedures and workmanship, and a comprehensive roof maintenance program. The cost of a comprehensive maintenance program is minimal compared to the cost of repairing and/or replacing a damaged roofing system.

The roofing system is a critical asset in the overall building envelope, and should be treated as such. Identifying and correcting potential problems early is important to help prevent small problem from becoming bigger issues. It helps to maintain the integrity of the roof, protect the building's contents, and avoid interruption of the building's intended function. A thorough and consistent maintenance schedule can also help extend the life of the roofing system and lower life cycle and replacement costs.

UNDERSTANDING THE IMPORTANCE OF PROPER ROOF MAINTENANCE AND REPAIR

Like all roofing systems, roofs that have been coated require regular maintenance and repair. The Roof Coatings Manufacturers Association (RCMA) recommends that roofs and coatings be inspected twice each year, generally in the spring and fall, and after any major storms or high speed wind events. Additional coating should be applied as necessary to repair damage to the coating or underlying roofing substrate. Additional coating can also be applied where the existing coating has worn away. Refer to the specific sections of this manual for more information on coating and re-coating applications.

The following is a list of general care and maintenance recommendations that will help achieve maximum performance from the roofing system.

- Provide proper drainage to minimize standing water on the roof. Keep the roof surface clean from leaves, pine needles, twigs, paper, accumulated dirt and other debris, which may accumulate and result in clogged drains. Cut back trees or branches growing too close to the roof.
- Ponding water on the surface of the roofing system will increase the probability of moisture entering the structure in the event of a puncture or other mechanical damage to the roofing membrane.
- Check the building exterior for settlement or movement. Cracks in the walls are a warning of possible cracks in the roof substrate and flashing. Ensure that overhangs, cornices, fascia, and edging are in good condition.
- Avoid damaging the roofing system by exposing it to any of the following, which could cause premature degradation of the coating or membrane:
 - Liquids containing petroleum products
 - Solvents
 - Grease used for lubricating rooftop units or from restaurant vents
 - Oils (new or old) used for air conditioning or compressor units
 - Kitchen waste or other animal fats
 - Chemicals
- The use of catch pans (including proper drainage of these pans or other means of protection) may be used to protect the roofing membrane from exposure to grease, chemicals, and other materials that would otherwise be expelled onto the roof surface. Prolonged exposure to these materials can cause swelling and possible degradation of the roofing system if spills are not removed in a timely manner.
- Check for signs of algae, mold, mildew or other plant growth on the roof, particularly in shaded areas that hold water.
- Unprotected areas of the roofing system are more susceptible to damage from heavy foot traffic and additional measures must be taken to avoid damage to the system. See options below and/or contact GAF for recommendations where heavy foot traffic is expected.
- If snow removal is necessary, use plastic shovels and be careful when working around protrusions or other areas where detail work could be damaged. Snow blowers, picks, axes and shovels with sharp edges must not be used on the roof.
- Remove foreign debris, such as glass, bolts, nails, screws, metal shavings, and any other materials that may cause punctures or cuts to the liquid-applied roofing system.
- Limit roof access. Most roof damage is caused by individuals that are not authorized to access the roof, or by individuals that are not aware of the damage that can be caused when proper precautionary procedures are not followed. Roof access should be strictly limited to authorized personnel and outside personnel should be informed as to the precautions necessary when accessing the roof. Make a log of all

visitors and maintenance personnel accessing the roof.

- Make sure that maintenance personnel are warned against dropping tools and equipment on the coated roof surface in order to avoid punctures. When servicing the rooftop HVAC units, antennas, solar panels, satellite dishes, etc., care should be taken when placing tools, metal doors, lids, pans, or sharp objects on the coating system surface. When moving roof-mounted units or equipment over coated roofs, avoid damage by placing smooth plywood over the surface prior to moving any equipment.
- Repair of any damage caused by physical damage to the roofing system is the responsibility of the Building Owner. The Building Owner is also responsible for ensuring that any such damage is properly repaired by either the original contractor of record or another GAF-certified contractor. If timely repairs are not made to rectify physical damage to the roofing system, this can result in the need for major repairs or replacement of the roof or roof coating system at the Building Owner's sole expense.

SEMI-ANNUAL INSPECTIONS

When conducting a semi-annual inspection, the liquid-applied roofing may be slippery when wet. Exercise caution when walking on the liquid-applied roofing during or after a rain shower, or if moisture is present in the form of dew, frost or ice. Pay attention while walking on light-colored surfaces as ice or frost build-up may not be as visible as on a dark surface.

Semi-Annual Inspections...

Consist of a cleaning and visual examination of the roof coating system. The inspection should include the overall coating condition as well as the integrity of flashings, vent pipes and other protrusions, skylights, drains, gutters, parapet walls and caps, adjacent walls, and mechanical equipment. Also check for evidence of any biological growth or other foreign debris.

Preventative Maintenance Program...

Consists of regularly scheduled inspections and subsequent corrective actions, intended to maximize the life expectancy of the roofing system. It is recommended that preventative maintenance semi-annual inspections be scheduled in the spring and fall.

Additional Inspections

In addition to the scheduled semi-annual inspection, additional inspections should be scheduled if the roof is exposed to physical damage or unusual conditions including but not limited to those listed below. Maintenance programs that include semi-annual inspections can usually be arranged through the installing contractor or another GAF-certified contractor. They can also be performed by a registered roof consultant or other qualified personnel who have been properly trained in liquid-applied roofing and safety. These inspections should be attended by the Building Owner and/or in-house maintenance personnel responsible for the roof. Additional roof inspections should be conducted whenever any of the following conditions occur:

1. Exposure of the roof to severe weather, such as strong winds, hail or continuous heavy rainfall.
 - Examine the roof for severely ponded areas, accumulated debris, and any damage to the building components that may allow moisture to infiltrate the roofing membrane. The liquid-applied roofing should also be examined in areas where severe conditions may have caused punctures, tears, abrasions or loose coating.
2. After repair or replacement of rooftop equipment, or at any other time when the roof may be exposed to activities from other trades where damage may occur.
 - Examine the roof for spills, debris, sharp objects, punctures, excessive wear, or other damage caused by heavy traffic or modifications to the roof.

Cleaning Procedures

WARNING: The liquid-applied roofing may be slippery when wet. Exercise caution when walking on the liquid-applied roofing during cleaning.

1. Remove any build-up of rocks, branches, leaves, pine needles and other foreign debris, as well as excessive dirt build-up around drains and other low areas. Use a plastic rake, medium-bristle push brush or other appropriate method for removing this accumulated debris from the roof, using the least amount of pressure possible. Remove any excessive build-up or blockage from drains, gutters and downspouts. Ensure that downspouts on multi-level roofs do not dump directly onto the coated roof surface below. Trim any overhanging trees to prevent excessive leaf and pine needle accumulation, allowing as much sunlight to the roof as possible to help eliminate mildew and algae growth.

2. Liberally apply GAF Cleaning Concentrate, diluted at a ratio of 1 part concentrate to 10 parts water, under low pressure to a given section of the roof at the rate of 0.4 to 0.7 gallons per 100 ft² (1.6 to 2.9 L/m²). Allow the cleaner to sit for a minimum of 15 minutes.
3. Make sure that areas where algae, mold, or mildew growth has occurred are thoroughly saturated. These areas should also receive additional scrubbing with a medium to stiff bristle brush to assure the most complete removal possible.
4. Pressure rinse toward the drains using clean water and a 1,200 to 1,500 psi pressure washer. Use a fan tip on the extension wand, held no closer than 12" (305 mm) from the coated roof surface. Low areas where the dirt has accumulated may require additional agitation using a broom or cleaning pad.

IMPORTANT: Roof wash-off catchment systems should be in place when required. Be sure to follow state and local requirements for roof-wash off catchments during the cleaning process.

INSPECTION CHECKLIST

Pre-Inspection

Prior to the actual roof inspection, a detailed roof plan should be prepared, on which any defects and notes can be recorded.

Prior to going onto the roof itself, inspect the underside of the deck (if accessible), as well as the outside of the building. Note any signs of excessive moisture, staining, or deterioration. These observations can give clues to not only problems with the roof, but also other conditions affecting the performance of the building envelope.

GAF Inspection Checklist

Area of Concern	Treatment	✓
Roof Membrane & Flashings	<ul style="list-style-type: none"> Ensure that the overall liquid-applied roofing is sound and free of mechanical damage, splits, crazing, and cracking. In areas prone to standing water, inspect the coating surface for signs of blisters, delamination, or degradation caused by biological growth. 	
Roof Drains & Scuppers	<ul style="list-style-type: none"> Ensure that roof drains and scuppers are clear and free of all debris to allow for proper drainage. Check drain covers to verify that they are tight and properly fastened. Ensure that the liquid-applied roofing around drains and scuppers is sound and free of blisters, tears, and delaminations. 	
Gutters	<ul style="list-style-type: none"> Ensure that gutters are clean and free of any debris that will inhibit proper drainage. If drains are coated, inspect coating to ensure that it is sound and free of blisters, tears and delaminations. 	
Parapet Walls & Caps	<ul style="list-style-type: none"> Inspect interface between roof deck and parapet walls to ensure that there are no splits or tears, and that the liquid-applied roofing is fully-adhered and sound. Examine parapet walls and caps to ensure that there are no cracks or breaks in the substrate or membrane that will allow moisture to enter beneath the liquid-applied roofing system. 	
Protrusions	<ul style="list-style-type: none"> Inspect the liquid-applied roofing around all protrusions, such as vent pipes, for any signs of splits, tears or delaminations around the base. Ensure that vent pipes have the proper caps installed. Inspect liquid-applied roofing to ensure that it is still self-flashing and secure around the top of all protrusions. 	
Roof Mounted Equipment	<ul style="list-style-type: none"> All rooftop equipment should be inspected to ensure that it is well-secured to the base risers, and that the liquid-applied roofing around the base is sound and free of blisters, tears and delaminations. 	
Skylights	<ul style="list-style-type: none"> Check the reinforcement around all skylights to ensure that it is sound and free of blisters, tears and delaminations. 	
Other Details	<ul style="list-style-type: none"> Check the bricks and mortar on chimneys, as well as caulking or joints in metal flashings such as copings, counter-flashings, rooftop units, curbs, caps, expansion joints, etc. Repair or replace caulking as necessary. 	
Moisture Analysis (optional)	<ul style="list-style-type: none"> If damage has caused concern with moisture penetration into the roof substrate, a non-destructive moisture detection survey can be conducted to provide an accurate analysis. Two common methods are nuclear metering and infrared thermography. A moisture meter probe can also be inserted through the liquid-applied roofing; however, this is a destructive method and will require the damage be repaired. 	
Minor Repairs	<ul style="list-style-type: none"> Areas found to need minor repairs (e.g., small punctures and tears) during the inspection may be repaired with GAF RepairPro Sealant (on non-silicone roofs) or Silicone Mastic (on silicone coated roofs). More extensive repairs may be treated with FlexSeal Sealant with Premium Fabric. Silicone coated roofs, use Silicone Mastic and Premium Fabric. For project specific recommendations, please contact GAF's Design Services. 	

ROOF SPECIFIC LEAK INVESTIGATION

On metal decks, it is important to identify the direction of the deck flutes and deck slope. Moisture may infiltrate through the roofing system, migrate in the lower flutes of the deck, and leak inside the building in low areas.

On concrete decks or on projects where the existing roofing material is left in place, leaks may result from moisture entrapment in the original installation.

On poorly insulated roofing assemblies, leaks may occur as the result of condensation. It is therefore important to determine the leak location and frequency. Sources of air leakage should be sealed if possible.

1. Begin leak investigations by conducting a thorough visual inspection of the general location on the roof where leaks have been detected inside the building.
2. Inspect detail areas such as drains, vents, scuppers, HVAC and other roof-mounted equipment, parapets, ponded water areas, etc. If the roof is dry at the time of investigation, areas where water ponds can be identified by evidence of accumulated residue on roof membrane.
3. Examine lower areas of the roof for moisture beneath the liquid-applied roofing (soft insulation can be detected when walking over the roof).
4. Check areas around mechanical rooftop equipment, drains, skylights, roof hatches, expansion joints, pipes, vents, etc. to identify cuts or punctures in the liquid-applied roofing.
5. Examine the condition of metal flashings (i.e., edging, coping, expansion joint covers, parapet caps, etc.) for cracks and improperly sealed joints.
6. When a visible source of the leak has not been identified, wet the system at the anticipated leak area with water and examine the interior area for leaks.
7. Often, an inspection of the underside of the deck will reveal signs of water leakage and/or air infiltration.

EMERGENCY REPAIRS

GAF must be notified of any leaks within 30 days of discovery of a leak or GAF will have no responsibility for making repairs or replacing that portion of the products that leak as a result of a manufacturing defect. The Building Owner may make temporary repairs to minimize damage to the building or its contents in an emergency. Only qualified workers should perform temporary repairs. These repairs will not result in cancellation of the applicable guarantee or warranty as long as they are reasonable and customary and do not result in permanent damage to the GAF roofing materials. When weather conditions permit, permanent repairs should be completed by an approved GAF contractor at GAF's direction if it is a covered leak or at the building owner's direction for non-covered leaks.

Repairs should not be made with asphalt-based products unless a wet patch type product is needed for emergency purposes. If wet patch products are used they must be completely removed at the time permanent repairs are made.

Temporary Dry Surface Emergency Repairs

- Clean the roof surface around the damaged area using Cleaning Concentrate.
- Rinse the area with clean water and allow it to dry.
- Alternately, if area is small, it may be cleaned by wiping with a rag and approved solvent (Xylene, Mineral Spirit, etc.).
- For roofs with acrylic coating, apply Premium Brush-Grade Acrylic Flashing and embed Premium Fabric as needed to provide additional strength. For roofs with urethane or SEBS coating, apply FlexSeal Flashing and embed Premium Fabric as needed to provide additional strength. Finally, for roofs with silicone coating, apply Silicone Mastic and embed Premium Fabric as needed to provide additional strength. Contact GAF Design Services before any other product is used to confirm its suitability.