

How To Implement A Roof Maintenance Program

Ease of maintenance is one of the hallmarks of single-ply roofing systems. And many published reference guides now make it even easier for a building owner to institute a semiannual maintenance program to maximize his roofing investment.

Single-ply, or, as it's more correctly known, flexible membrane roof systems, is a broad category comprising thermoset, thermoplastic and modified bitumen materials, compounded or manufactured in a factory under strict quality controls. They are often covered by membrane warranties that actually call for periodic maintenance inspections and provisions. In fact, warranties can be voided by the lack of regularly scheduled roof inspections and maintenance.

Periodic preventive maintenance can prevent small, easily handled problems from becoming disruptive, big-budget nightmares. Proper repairs to a roof system can prolong the roof's service life and enhance the value of the original investment made in it.

Maintenance issues are attracting more attention these days from the roofing industry as a whole. A number of roofing contractors have set up roof maintenance and/or roof management programs to handle these concerns in an ongoing, professional way, freeing facility managers to concentrate on other areas.

Regardless of who does it, regular inspections of the roof system should be made in both the fall and the spring; special inspections should also be made when extraordinary events occur, such as extreme storms or the installation of new rooftop equipment.

Basic roof inspection procedures

Perhaps surprisingly, the starting point of a roof inspection should actually be the interior of a building. The interior walls and ceilings should be examined for any signs of water staining which would indicate a problem above on the roof.

The roof itself should then be visually inspected. The following key areas should be checked in this order:

- Cap flashings;
- Edge metal;
- Base flashings;
- Penetrations;
- Field of the roof;
- Ballast;
- Roof adhesives; and Surface coatings, if present.

Cap flashings, which are metal or other rigid covers at membrane terminations, should be inspected for:

- loose areas of attachment or loose or missing fasteners;
- loose or displaced sections of metal;
- deformed metal that could collect water and funnel it through an end joint;
- corrosion;
- missing or loose joint covers; and
- sealants showing signs of cracking, weather and/or aging.

Edge metal, installed at the edge of a roofing system to terminate the roof and provide waterproof flashing, should be checked for:

- loose areas of attachment or loose or missing fasteners;
- loose or missing stripped-in flashing;

- splits in the stripping at metal flashing joints;
- corroded metal;
- missing or displaced metal sections or joint covers;
- open joints and sealants displaying signs of cracking or weathering or aging.

Base flashings, which are roof membrane terminations at walls and curbs, should then be looked at. Watch for:

- a secure and sealed top termination;
- continuous adhesion of base flashing to substrate, with no loose membrane or extensive bridging;
- a covered top seal of the membrane base flashing;
- closed seams at the bottom of the base flashing at its attachment to the field membrane;
- sealed seams at vertical laps;
- sealants in good condition, without signs of cracking, weathering or aging; and
- base flashing material without signs of deterioration or building movements.

Penetrations are pipes, drains and other items that are inserted through the roof membrane. They must be flashed properly to assure a watertight roof. An inspector should examine the following:

- the drain clamping ring and drain strainer to ensure proper securement for a watertight seal at the membrane-to-drain interface;
- thorough adhesion of sealant inside pitch pockets and membrane adhesion around the outside of pitch pockets;
- pitch pockets containing adequate fill material to prevent water from collecting;
- pipe boot flanges sealed tightly to the roof membrane; and
- a tight seal and termination around pipe(s) at the top of pipe boots.

In the field of the roof, be sure that:

- No fasteners protrude against the membrane, causing a "tenting" effect; or that there are no visibly loose fastening points;
- the membrane contains no worn spots, deteriorated areas, or holes in the membrane;
- insulation panels are in their original positions; no buckling or warping,
- there are no changes in insulation or substrate firmness when the roof is walked on;
- adequate drainage is present; and
- around rooftop equipment, no areas have been degraded by equipment leaks or spills, or have been punctured by dropped tools or equipment parts from workers maintaining roof-mounted equipment.

In ballasted systems, it is important to note:

The removal of ballast or concrete pavers to inspect the membrane is not part of a routine inspection. Ballast, if present, should be continuously redistributed, although occasional small bare spots, approximately the size of a person's foot, are generally acceptable. Use a push broom as necessary to cover the membrane and prevent uneven loading.

If the roof membrane has a coating on it, it should be examined. Coatings will generally require reapplication(s) during the life of the roof system; frequency depends on many factors, such as the local environment, ponding water, roof slope, and the type and quality of the original coating. Recoating work is typically the responsibility of the building owner and should be performed by a professional roofing contractor. The inspector should also pick up debris like paper, bottles, broken glass, tree limbs and vegetation and dispose of it properly. Likewise, he should also remove obstructions, such as leaves or dirt from roof drains and/or scuppers, ensuring that they flow freely. Clogged drains and/or scuppers can lead to excessive

ponding on the roof, which frequently causes leaks or even roof collapse.

However, caution should be exercised when clearing debris from drains because significant suction can be created by draining water; it can quickly suck tools into a drain.

If traffic patterns are developing across the roof, the owner should consult the membrane manufacturer to determine how to best protect the roof membrane from traffic. A number of different walking pads or systems are available to address this issue.

Roof inspection may uncover the need for repairs in a variety of categories, including spot patches, emergency repairs, general repairs and permanent repairs.

If membrane repairs are needed, they should be performed by a professional roofing contractor specifically authorized by the membrane manufacturer. Not doing so could also void the warranty. And in keeping with typical warranty requirements, the manufacturer of a warranted roof system should be notified promptly about the need for repair(s) and the procedures to be followed. Typically manufacture warranties require written notification to the warranty department within thirty (30) days of discovery of any leak.

All procedures should be documented in order to create an informative history of a roof system's performance.

Resources for repair techniques

SPRI has written a number of helpful reference guides on a wide range of roofing issues. Its updated, comprehensive "Single-Ply Roofing: A Professional's Guide to Specifications" contains an array of informative resource material on a broad range of flexible membrane roofing issues..

SPRI also offers its own "Manual of Roof Inspection, Maintenance and Emergency Repair for Existing Single-Ply Roofing Systems." This 24-page, illustrated guide outlines the causes of roof problems and how to conduct roof inspections. It includes a sample of a detailed form that maintenance departments can use to develop historical records on their own roofing installations. A chapter highlights maintenance steps that owners should perform on a regular basis. The manual also outlines steps for emergency repairs, which should be regarded as temporary until a professional roofing contractor can schedule a visit.

Another useful resource is the ARMA/NRCA/SPRI Repair Manual for Low-Slope Membrane Roof Systems. It contains over 300 pages of text and more than 800 photographs.

When a problem is discovered, it is necessary to remediate its cause, not just provide a "quick fix" short-term solution.

The book is a step-by-step handbook for successful, long-term repair of thermoplastic, thermoset, modified bitumen and built-up roofing systems. While these repair procedures are intended to be completed by professional roofing contractors, the manual provides a guide for the type and scope of work involved. It is contained in a loose-leaf three-ring binder, so that pages can be removed, photocopied and/or brought to the rooftop.

The ARMA/NRCA/SPRI Repair Manual for Low-Slope Membrane Roof Systems and the Manual of Roof Inspection, Maintenance and Emergency Repair for Existing Single-Ply Roofing can be ordered from the NRCA at 800-323-9545.

To electronically access information about flexible membrane systems and resources, people can plug into SPRI's web site. "Networkers" can reach SPRI's home page on the WorldWide Web at: <http://www.spri.org>.

The SPRI web site is also interactive. People can write in questions, which are answered promptly.

With all the helpful reference sources out there, maintenance supervisors can find plenty of useful roofing guides to help maximize system value. There's no excuse to let roofs stay "out of sight, out of mind."

Checklist: Safeguards for top roof maintenance

- Keep roof clean and free of debris.
- Keep drainage systems clear and functional.
- Train maintenance personnel in the do's and don'ts of single plies.
- Restrict roof access to authorized personnel only.
- Limit penetration of the roof system for later equipment installation.

Updated 2006