



MAINTENANCE SHORT GUIDE

10.02.2016 - rev 003 - Maint ShoGui 003 ENG



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MAINTENANCE SHORT GUIDE

01

Ease of maintenance is one of the hallmarks of roofing systems. Reference guides now make it even easier for a building owner to institute a semiannual maintenance program to maximize his roofing investment. Flexible membrane roof system, is a broad category comprising thermoset, thermoplastic and modified bitumen materials, typically pre-fabricated in a factory under strict quality controls. They are mostly covered by warranties that always 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 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 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
- surface coatings, if present

► **CAP FLASHING**, which are metal or other rigid covers at membrane terminations, should be inspected for :

- 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
- sealants showing signs of cracking, or weathering or ageing

► **EDGE METAL**, installed at the edge of a roofing system to terminate the roof and provide waterproof flashing, should be checked for :

- loose or missing fasteners
- loose or missing stripped-in flashing
- splits in the stripping at metal flashing joints
- corroded metal

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- ▶ missing or displaced metal sections or joint covers
- ▶ open joints
- ▶ sealants displaying signs of cracking or weathering or ageing

▶ **BASE FLASHING**, which are roof membrane terminations at walls and curbs, should then be looked at and watched 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 ageing
- ▶ base flashing material without signs of deterioration or building movements.

▶ **PENETRETIIONS** are pipes, drains and other items that puncture 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
- ▶ a tight seal 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
- ▶ the membrane contains no worn spots, deteriorated areas, or holes in the membrane;
- ▶ insulation panels are in their original positions
- ▶ there are no changes in insulation or substrate firmness when the roof is walked on
- ▶ adequate drainage is present
- ▶ 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 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

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

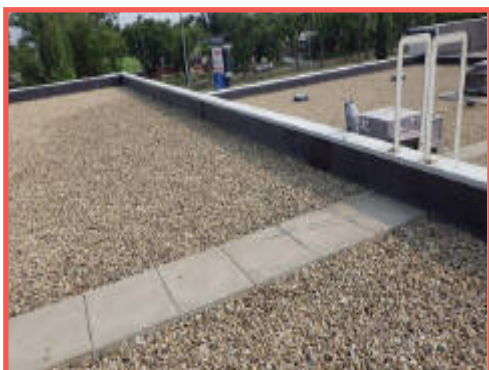
A GALLERY, NON EXHAUSTIVE, OF INSPECTIONS



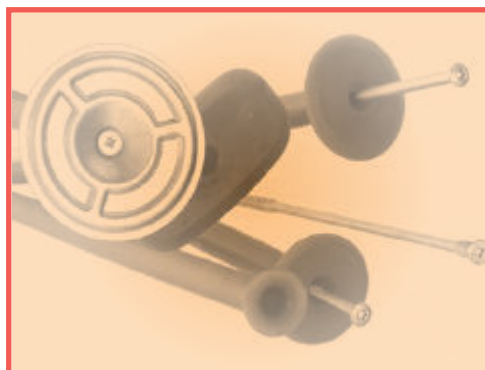
DEBRIS



PENETRATIONS



BALLAST



FASTENERS

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WATER STAIN



SELVEDGE DETACHMENT



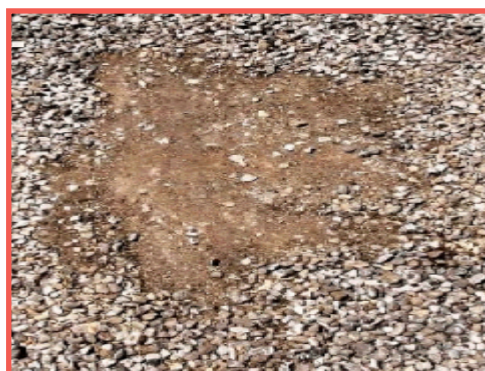
TENSIONING



SURFACE COATING



TRANSIT AREAS



SLATE LOSS

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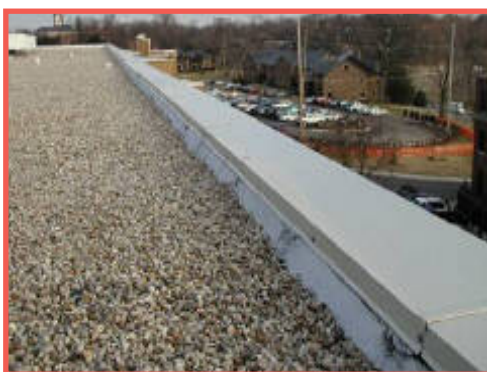
05



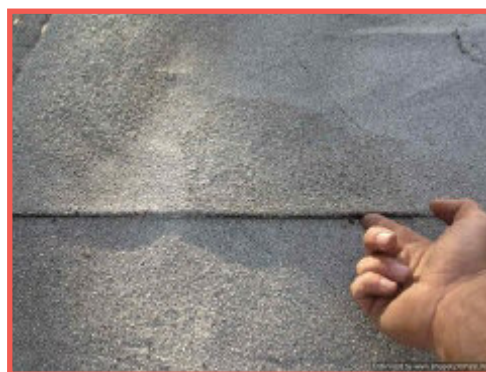
WATER DRAIN OUTLET



EDGE METAL



CAP FLASHING



WELDING CONTROL



STORED MATERIAL



TECHNICAL INSTALLATIONS

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GENERAL MAINTENANCE : building owners should institute a maintenance program to maximise their investment. Membranes are covered by warranties that require periodic maintenance inspections that can be 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



Basic roof inspection procedures : 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 roof inspection should be undertaken by a suitably qualified tradesperson and he should be paid for his services. Maintenance is best carried out bi-annually in spring and autumn

01--ensure safe access can be gained to the roof and that relevant Health and Safety Procedures are followed when accessing and working on the roof. Safety harness attachment points or man safe systems should always be used where provided and necessary

02--the roof should be inspected and surveyed at least yearly and after any severe storms. Record details of access and persons involved

03--record details of any damage that requires attention. Report any signs of damage or degradation to the roofing contractor immediately. They can arrange for the necessary and appropriate remedial work to be carried out as necessary. It will be beneficial if a roof plan is produced and marked with co-ordinates record the results of inspections to avoid any confusion and provide an on-going record of roof performance, which can be compared year on year

04--remove all debris and leaves from rainwater outlets, chutes, gutters etc. All debris must be removed from the roof and not flushed down rainwater pipes. Roofs in the vicinity of tall trees should be inspected more frequently. It is recommend that leafs are removed in spring and autumn to avoid any growth



05--ensure that any protective flashings, edge trims or termination bars are secure and remain securely fixed

06--check all mastic sealant and mortar pointing for signs of degradation, and repair or renew as necessary

07--where promenade tiles or paving slab walkways exist, ensure that they are in good condition and securely fixed

08---ensure that any item of plant/equipment that may have been installed onto the roof is on a suitable support and that any fixings do not penetrate the waterproofing.

09--if membrane repairs are needed, they should be performed by a professional roofing contractor. Not doing so could also void the warranty. Meir Roofing and Insulation Supplies as the manufacturer's agent should be notified promptly about the need for repair(s) and the procedures followed. All procedures should be documented in order to create an informative history of a roof system's performance

10--If you check the condition of your roof twice a year, you should be able to plan in advance for necessary repairs. Early signs of trouble include dark areas on ceilings, peeling paint on the underside of roof overhangs, damp spots alongside fireplaces, and water stains on pipes venting the water heater or furnace

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a neglected roof maintenance can lead to a serious repair or replacement need



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ALLIGATORING

Shrinkage cracking of the bituminous surface of built-up roofing or the exposed surface of smooth-surface roofing, producing a pattern of deep cracks with the scaly look of an alligators hide

ASPHALT

A highly viscous hydrocarbon produced from the residuum left after the distillation of petroleum used as the waterproofing agent of a built-up roof

BALLAST

An anchoring material (such as rounded river rock, gravel, or pre-cast concrete pavers), which is used to resist wind, uplift forces and hold roof membranes in place

BITUMEN

A generic term for either the asphalt or coal tar pitch used in the roofing industry

BLISTER

A spongy, raised portion of roofing membrane, ranging in size from 25mm(1") in diameter and barely detectable to as much as 4.6m² (50ft²) in area and 300 mm(12") high. Blister result from the pressure of trapped air or water vapour

BUILT-UP ROOF

Is a roof consisting of multiple plies of roof felts laminated together with bitumen. Built-up roof material can consist of bitumen-saturated felt, coated felt, polyester felt or other fabrics. A surfacing is generally applied and can be asphalt, aggregate (gravel or slag), emulsion or a granule-surfaced cap sheet

CRICKET

A wood-framed structure that diverts water away from chimneys, walls or other vertical roof projections and penetrations; also called a saddle

DECK

The substrate over supportive framing to which roofing material is applied; also called decking or sheathing

DRIP EDGE

Flashing made of steel or other non-corrosive material that is placed along the eaves and rake edges at a 90° angle to let water runoff drop clear of fascia and into the gutters

EAVE

A roof edge that extends past the exterior wall line

EMULSION

An intimate mixture of bitumen and water, with uniform dispersion of the bitumen globules, achieved through a chemical of clay emulsifying agent

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EPDM

Ethylene Propylene Diene Monomer (or Terpolymer which is simply a product consisting of three distinct monomers). EPDM is classified as a Thermoset material which means it is either fully-cured prior to being installed or that it cures during natural weathering after installation

FASCIA

Vertical roof trim located along the perimeter of a building, usually below the roof level, to cover the rafter tails at the eaves. Also called the boards behind the gutter

FELT

Material of interwoven fibers saturated with asphalt and used as a protective under layer between shingles and decking; also called tarpaper

FISHMOUTH

An opening formed by an edge wrinkle in a felt where it overlaps another felt in a built-up roofing membrane

FLASHING

Metal or other flexible material used to seal the roof and prevent leaks around any projection or intersection, such as pipes, chimneys, dormers, valleys or adjoining walls

FLAT OR SLOW ROOF

A roof with a pitch of less than three feet of rise over a twelve-foot run; this type of roof needs a sealed system installation

FLOOD COAT

The top layer of bitumen in an aggregate-surfaced built-up roofing membrane

GRAVEL

Coarse granular aggregate, having rounded edges, resulting from the natural erosion of rock

HIP

The external angle formed by the intersection of two sloping roof planes; from the ridge to the eaves.

ICE-LEAK BARRIER

A self-adhering and self-healing membrane applied to the roof deck and designed to protect against water infiltration from ice buildup or wind-driven rain

LAMINATED SHINGLES

Strip shingles made with fiberglass mat and asphalt that are laminated, or textured, to create a three-dimensional effect. Also called dimensional or architectural shingles. There are also shingles that are called dimensional though they are made from a single material, not two materials laminated together.

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MEMBRANE

The portion of the roofing system that serves as the waterproofing material. Can be composed of one material or several materials laminated together

MODIFIED BITUMEN

Is a bitumen modified by one or more polymers such as Atactic Polypropylene (APP), styrene butadiene styrene (SBS)

PERMEABILITY

The rate of flow of a liquid or gas through a porous material

PITCH CHANGES

The variation in the degree of roof incline, which is expressed as the ratio of the rise to the span, in feet

PITCH POCKET

A flanged piece of flashing material placed around irregularly shaped roof penetrations and filled with grout and a pourable sealer to seal around the penetration in order to seal it from against moisture entry. Pitch pockets are a good source of leaks and should be avoided if possible

PLUMBING BOOT

A prefabricated covering, usually of flexible material, used to seal around a penetration; also called a pipe boot

PLY

A layer of roofing membrane. A four-ply membrane has at least four plies of felt at any vertical cross section cut through the membrane

PONDING

The accumulation of water at low-lying areas on a roof

PRIMER

A liquid bituminous material applied to a surface to improve adhesion of heavier application of subsequently applied bituminous materials

PROTECTED MEMBRANE

A roof assembly in which the insulation and ballast are placed on top of the membrane component. Commonly referred to as an "inverted roof assembly"

PVC

PVC stands for Polyvinyl Chloride. It is one of the pioneering single-ply roof materials. The first known PVC roofing membrane was produced by a company called Trocal and was installed in Germany in 1966. Within a few short years, Trocal PVC covered millions of square feet all over the world and single-ply roofing was setting the stage for market dominance.

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PVC (follow)

Within a few short years, Trocal PVC covered millions of square feet all over the world and single-ply roofing was setting the stage for market dominance.

RAFTER

The structural member supporting the deck and roof system components, extending from the down slope perimeter to the ridge or hip

RAKE

The inclined edge of a sloped roof over a wall from the eave to the ridge, and usually perpendicular to the eave and ridge

RIDGE

The horizontal external angle formed by the intersection of two sloping roof planes, i.e., where the two sides of a roof meet at the highest point

RIDGE VENT

A type of roof exhaust vent that ventilates the attic along the ridge or hip line where the roof deck has been cut back; works in conjunction with soffit vents under the eaves.

ROOF VENTILATION

A static, wind- or power-operated system for removing hot air and moisture from the air under your roof. Includes ridge vents.

SHED ROOF

A roof containing only one sloping plane; a single-pitch roof, with no hips, ridges, valleys or gables. Also called a half gable. The area at the top is called a clearstory.

SINGLE PLY MEMBRANE

Roofing membranes that field-applied using a pre-manufactured sheet of single layer membrane material (either homogenous or composite) rather than multiple layers

SMOOTH-SURFACE ROOF

A built-up roofing membrane with a coating of hot asphalt, asphalt emulsion or asphalt cutback.

SOFFIT

The finished underside of the eaves, or roof overhang, which can be enclosed or exposed.

SOFFIT VENT

An intake vent in the soffit area of the house that provides attic venting at a lower portion of the roof

SUBSTRATE

The surface upon which the roofing membrane is placed – structural deck or insulation.

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TPO

Thermoplastic Olefin or Polyolefin membranes are single-ply roof membranes constructed from ethylene propylene rubber

VALLEY

The internal angle formed by the intersection of two sloping roof planes running from the eaves to the ridge, allowing water to run off

VAPOUR RETARDER

A material designed to restrict the passage of water vapour through a wall or roof assembly

WATER SHIELD

A watertight barrier used to seal water out at the eaves and rakes, in valleys, and around chimneys and skylights

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