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**Building Envelope Specialists**

**Roof Maintenance**

## *Up on the Roof*

### **Up On the Roof - The Importance of Good Maintenance**

By Naji Hassan

Roofs are constantly exposed to all types of environmental stress. The effect of these forces can quickly age it before its time, and minor problems that are caused through negligence, abuse, and lack of maintenance can result in costly repairs.

A planned maintenance program is an essential tool for the property manager of a condominium. When someone arrives to prepare a reserve fund, understanding your roof and its history can help both you and the person preparing the study understand the building and its future needs better.

A historical file must include a detailed description of all roofing components, date of installation, name of roofing contractor, as-built specifications and drawings, all reports by roofing inspectors during the construction, and all maintenance work that has been performed. A record of mechanical equipment and the date of installation and all roofing guarantees from the manufacturer and the roofing contractor should also be included. If this material is not available, a professional may have to be hired to update this data.

#### **Routine Inspections**

Site staff should conduct routine inspections every two months, using a checklist to note any concerns. Such a routine will not only protect the owners' investment but will also help establish a long-term maintenance plan for the building.

Common deficiencies that can be visually detected on a flat roof include ponding, splitting, blistering, ridging, fishmouthing and punctures.

Ponding, the formation of ponds of water on the roof, increases the rate of deterioration substantially. It creates a large reservoir of water that will further damage the interior if a leak occurs and is usually the result of structural settlement and localized roof failure. The practice of installing tapered insulation is widely employed to correct this deficiency, because it is difficult to add new drains to an existing structure.

Splitting is the occurrence of long cracks in the roof membrane. These are usually parallel to felts and insulation joints and may be attributed to physical stress, ponding, freezing and thawing, a cracking of the substrate, or bad workmanship.

Most common in Built-Up-Roofs (BUR) and modified bituminous roof systems, blistering usually occurs between layers of felts or between felts and the substrate. It is raised contained swelling and feels spongy when pressed. The entrapment of air causes movements when temperatures rise and subsequently separates the felts.

Ridging (also referred to as wrinkling and buckling) occurs in bituminous roofing and is normally found above joints of insulation. The ridges are usually long and narrow. This is the result of interior moisture condensing on the underside of the felts.

Ridges and wrinkles on single-ply, loosely laid membrane may be found around drain areas and roof protrusions. This may be due to inadequate attachment of the single-ply membrane and/or using inflexible flashing, which retains a memory of its original shape.

Fishmouthing is the result of the lifting of laps at the edges of bituminous roofs, or unbonded edges in PVC roofing due to inadequate heat welding.

Punctures are found where blisters have broken or as a result of rising nails or screws or other exterior mistreatment.

#### Closer Observation

Check for loose fasteners, which are a common problem in mechanically fastened systems. This could be the result of poor workmanship, deterioration of the roofing components due to saturation or fasteners that are too small.

Flashings and sheet metal have to be checked carefully. Punctures, deterioration, open laps, ridging, and blistering can be found when flashings are inspected. Sheet metal is used to make copings to cover all wall systems. It protects the flexible flashings from wind forces. Any movement of wall systems and settlement may create openings in the sheet metal.

Counter-flashing is metal installed over the flexible flashing at the adjoining walls. This prevents the water from coming in contact with the top edge of flashing. Any punctures or loosening of sheet metal may allow water to penetrate the wall.

Drains must be cleaned regularly and roof safety anchors must be inspected annually by a professional inspector. Engineered drawings should be posted near the roof entrance and a logbook of inspections must be available on site at all times.

Any unscheduled maintenance of major deficiencies should be conducted as soon as possible to avoid interior damage due to water penetration. In such circumstances you will require outside help. Be certain of your professional's technical competence.

Inspections and timely repairs will add years to the life of your roof. A maintenance program will help you allocate the proper capital over an extended period, and budgets for repair and replacement will be readily available when needed.

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