

Commercial Building Envelope and Roof Membrane Inspection

1.0 Maintenance Objective & Frequency

The objective of this procedure is to perform a comprehensive visual and tactile inspection of the commercial building envelope and roof membrane system. This PM aims to identify and document any signs of water intrusion, membrane degradation, flashing separation, sealant failure, or structural damage that could compromise the building's weathertight integrity. Early detection of defects prevents costly interior water damage, mold growth, and energy loss.

Frequency: Semi-Annual (Spring and Fall) and within 48 hours following any significant weather event (e.g., hail, windstorm, heavy rain). Additional inspections are recommended after any rooftop work or equipment installation.

2.0 Lockout/Tagout (LOTO) & Safety

- **Fall Protection:** All personnel working at heights (roof access) must wear a full-body harness attached to a certified lifeline or anchor point. Ensure guardrails or safety nets are in place where required.
- **Roof Access:** Secure all roof hatches or ladder access points. Post warning signs at ground level if work is in progress overhead.
- **Electrical Isolation:** Identify and avoid all overhead power lines. Maintain a minimum clearance of 3 metres. If working near rooftop HVAC units, ensure they are locked out and tagged out before opening any electrical panels.
- **Hazardous Materials:** Be aware of potential asbestos-containing materials in older roof systems or sealants. Do not disturb suspect materials; report immediately.
- **PPE:** Mandatory hard hat, safety glasses with side shields, high-visibility vest, steel-toed boots, cut-resistant gloves, and appropriate weather gear. Hearing protection required if near operating rooftop equipment.
- **Weather Conditions:** Do not perform inspections during rain, snow, ice, high winds (exceeding 40 km/h), or lightning storms. Slippery surfaces increase fall risk.

3.0 Required Tools, Parts & Lubricants

- Digital camera or smartphone with high-resolution capability for photo documentation
- Moisture meter (pin-type or non-invasive) for detecting trapped moisture in insulation or substrate
- Infrared thermometer or thermal imaging camera for detecting temperature differentials indicating moisture or insulation voids
- Flashlight (high-lumen, rechargeable)
- Measuring tape (25 ft / 7.5 m minimum)
- Soft-bristle brush or broom for clearing debris from flashings and drains
- Small pry bar or putty knife for gently lifting membrane edges to inspect adhesion
- Inspection mirror (telescoping) for viewing behind flashings and under overhangs
- Marking chalk or non-permanent marker for flagging defects on the membrane
- Clipboard, waterproof paper, and pen, or a ruggedized tablet with ServiceGrid app
- Personal protective equipment as listed in Section 2.0

- First aid kit and emergency communication device (cell phone or two-way radio)

4.0 Step-by-Step Maintenance Procedure

1. Perform a pre-inspection safety briefing with all team members. Review the building roof plan, identify all access points, anchor points, and emergency egress routes. Confirm weather conditions are safe.
2. Don all required PPE. Inspect fall protection equipment for damage or wear before use. Attach harness to certified anchor point before stepping onto the roof surface.
3. Begin the inspection at the perimeter of the roof. Walk the entire parapet wall and edge flashing. Visually inspect for loose, corroded, or missing metal flashings, open seams, and sealant cracks. Use the inspection mirror to view behind counterflashings.
4. Inspect all roof penetrations: vents, pipes, HVAC curbs, skylights, hatches, and conduits. Check for cracked or separated sealant, deteriorated rubber boots, and loose metal collars. Gently lift the edge of the membrane at penetration bases to check for adhesion loss.
5. Systematically walk the entire roof membrane surface in a grid pattern (approximately 3-metre spacing). Look for blisters, wrinkles, punctures, tears, alligatoring, bare spots (on built-up roofs), or exposed aggregate (on modified bitumen). Use the moisture meter to test any suspicious areas showing discoloration or soft spots.
6. Inspect all roof drains, scuppers, and gutters. Remove any debris (leaves, gravel, bird nests) blocking water flow. Check drain strainers for damage. Verify that the membrane is properly adhered around the drain flange and that the clamping ring is tight.
7. Inspect all roof-to-wall intersections, including where the roof meets a higher wall (curb). Check for open laps, fishmouths, or gaps in the membrane flashing. Use the infrared thermometer to check for temperature anomalies that could indicate insulation voids or moisture.
8. Inspect all expansion joints. Verify that the joint cover is securely fastened and that the bellows are not torn or compressed. Check for debris accumulation that could restrict movement.
9. Document all findings with photographs and detailed notes. Use the ServiceGrid mobile app to log each defect with GPS location, photo, and severity rating (Critical, Major, Minor). Flag any immediate safety hazards (e.g., open electrical panels, unstable parapets) and report them immediately.
10. If accessible, inspect the interior of the building below the roof. Look for water stains, mold, peeling paint, or damp insulation on ceilings and walls. Correlate interior findings with exterior roof defects.
11. Inspect all rooftop equipment (HVAC units, exhaust fans) for signs of water entry around their bases. Check that equipment is properly secured and that no sharp edges or debris are damaging the membrane.
12. Upon completion, carefully descend from the roof. Remove all tools and debris. Ensure all roof hatches are securely closed and locked. Complete the inspection report in ServiceGrid, including a summary of findings, recommended repairs, and priority schedule.

5.0 Verification & Return to Service

1. Review the completed inspection report with the facility manager or designated authority. Highlight any critical defects that require immediate repair (e.g., active leaks, exposed insulation, loose flashings).
2. For any temporary repairs made during the inspection (e.g., applying emergency sealant to a small tear), verify that the repair is watertight and will hold until a permanent repair can be scheduled.
3. Ensure all roof drains and scuppers are free-flowing. Pour a bucket of water down each drain to confirm unobstructed drainage.
4. Confirm that all roof hatches are closed and locked, and that no tools or debris remain on the roof.

5. Sign off on the PM work order in ServiceGrid, attaching all inspection photos and notes. Set a follow-up reminder for any deferred repairs and schedule the next semi-annual inspection.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.