

Commercial Roof Building Envelope Inspection Checklist

1.0 Maintenance Objective & Frequency

The objective of this procedure is to perform a systematic visual and tactile inspection of the commercial roof building envelope to identify potential leaks, structural weaknesses, membrane degradation, and sealant failures before they lead to costly water damage or energy loss. This PM is critical for extending roof lifespan and maintaining warranty compliance.

Frequency: Semi-Annual (Spring and Fall) and within 24 hours after any significant weather event (e.g., hail, windstorm, heavy rain).

2.0 Lockout/Tagout (LOTO) & Safety

- Fall Protection: Full body harness with double lanyard, certified anchor point, and self-retracting lifeline (SRL) for any roof work above 3 meters.
- Electrical Isolation: Identify and avoid all overhead power lines. Maintain minimum 3-meter clearance. If accessing rooftop HVAC units, lockout/tagout electrical disconnect per site LOTO procedure.
- Access Control: Secure all roof hatches and ladder access points. Use warning signs and barricades at ground level to prevent unauthorized entry.
- PPE: Hard hat, safety glasses with side shields, high-visibility vest, slip-resistant boots, and cut-resistant gloves. Bring a personal flotation device if working near skylights or fragile surfaces.
- Weather Check: Do not perform inspection during rain, high winds (above 40 km/h), lightning, or icy conditions.

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
- Infrared thermal imaging camera (optional but recommended for detecting thermal anomalies)
- Flashlight (high-lumen, rechargeable)
- Measuring tape (25 ft / 7.5 m minimum)
- Small pry bar or flathead screwdriver for probing sealants and flashings
- Utility knife with fresh blade for cutting test samples (if authorized)
- Caulking gun and compatible sealant (e.g., polyurethane or silicone) for minor repairs
- Wire brush and solvent (e.g., mineral spirits) for cleaning sealant joints
- Inspection checklist clipboard or tablet with ServiceGrid app
- Safety harness, lanyard, SRL, and anchor strap
- Warning signs and barricade tape

4.0 Step-by-Step Maintenance Procedure

1. Conduct a pre-inspection safety briefing with the team. Review the roof layout, identify all anchor points, and confirm communication protocols (hand signals or two-way radios).
2. Perform a perimeter walk-around at ground level. Inspect the exterior walls, soffits, fascia, and downspouts for signs of water staining, efflorescence, or vegetation growth. Document any anomalies with photos.
3. Access the roof using approved ladder or hatch. Ensure three points of contact at all times. Once on the roof, attach fall protection to a certified anchor point before moving away from the access point.
4. Inspect the roof membrane surface for blisters, punctures, tears, wrinkles, or areas of ponding water. Measure ponding depth with a tape measure; any water remaining 48 hours after rain is a defect. Probe suspicious areas with a small pry bar to check for delamination.
5. Examine all flashings (base, counter, edge, and penetration flashings). Check for loose, cracked, or missing sealant. Use the moisture meter on the substrate adjacent to flashings to detect hidden moisture intrusion. Record readings above 20% as critical.
6. Inspect all roof penetrations: vents, pipes, HVAC curbs, skylights, and conduits. Verify that metal counter flashings are properly secured and caulked. Check for rust or corrosion on metal components. Use the wire brush to clean any corroded areas and apply a rust-inhibitive primer if needed.
7. Evaluate the condition of the roof drains, scuppers, and gutters. Remove any debris (leaves, gravel, bird nests) by hand or with a small trowel. Ensure drain strainers are in place and not damaged. Pour a bucket of water into each drain to confirm free flow; note any backups.
8. Inspect the roof edge metal (gravel stop, drip edge) for secure fastening. Check for loose screws or nails. Torque any loose fasteners to manufacturer specification (typically 8-10 Nm for self-tapping screws). Replace any missing fasteners with compatible stainless steel screws.
9. Use the infrared camera to scan the roof surface for thermal anomalies that may indicate wet insulation or air leaks. Compare with baseline images from previous inspections. Flag any areas with a temperature differential greater than 2°C for further investigation.
10. Inspect all rooftop equipment (HVAC units, exhaust fans, skylights) for proper sealing at the base. Check gaskets and weatherstripping for compression set or cracking. Apply a bead of compatible sealant to any gaps larger than 3 mm.
11. Document all findings in ServiceGrid using the inspection checklist template. Include photos, moisture readings, and thermal images. Tag any critical defects (active leaks, structural damage) as high priority and initiate a work order for immediate repair.
12. Perform minor repairs on-site if safe and authorized: re-caulk small gaps, replace missing fasteners, clear debris from drains. For major defects (membrane tears, structural damage), install temporary patches (e.g., peel-and-stick membrane) and schedule a follow-up repair within 48 hours.

5.0 Verification & Return to Service

1. After completing the inspection and any minor repairs, perform a final walk of the entire roof perimeter and all penetrations to verify that no tools, debris, or loose materials remain on the roof surface.
2. If any sealant or patching was applied, allow adequate cure time per manufacturer instructions (typically 24 hours for polyurethane) before exposing to water. Note cure time in the work order.
3. Conduct a water test on any repaired areas using a hose with a spray nozzle at low pressure (30-40 psi). Spray the repaired joint for 2 minutes while a second inspector observes the interior ceiling for leaks. Document results.
4. Remove all warning signs and barricades. Secure the roof hatch or ladder access. Ensure all fall protection equipment is properly stored and inspected for damage.

5. Complete the ServiceGrid work order by attaching the inspection report, photos, and moisture readings. Set the next scheduled inspection date (6 months from current date) and assign to the appropriate maintenance team.
6. Sign off on the PM work order in ServiceGrid, confirming that the building envelope is in acceptable condition or that critical defects have been flagged for immediate repair.

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.