

### Monthly:

- Check all at-grade plumbing systems.
- Check all at-grade drainage systems.
- Test basement flood control and sump systems.
- Replace any leaking fittings or drains immediately, even if small.
- Does the irrigation system spray water against the foundation wall?
- Are roof drain outlets clear of debris?
- Are any water elements at-risk for vandalism?
- Do downspouts direct water away from the foundation?
- Investigate the source of any standing water.

### Below Grade Envelope Requirements

Remember, below-grade building elements are a significant part of the building envelope. Basement walls and floors play crucial roles in protecting the building from water intrusion, and can provide important warnings of water problems above.

Also check for signs of effervescence, a condition where moisture boils up through the surface of the concrete, evidenced by flaking of mortar or concrete. A landscape irrigation line leak may first manifest as mold on the basement walls.

### Quarterly:

- Check basement floor drains and drainage system.
- Check all basement walls for signs of water staining or damage. If found, track the source and repair immediately.

### Rapid Response to Water Damage Events

Even the most carefully operated commercial building will likely experience a water damage event sometime in its lifetime. Building staff should have a well-practiced emergency response plan. Like childhood school fire drills, everyone hopes never to need to use these plans. However, they can help ensure a more rapid recovery from a major roof leak, flooded basement, or soaked office carpets. Often the speed of response to a water damage event is the most vital key to getting back to normal day-to-day operations quickly.

A water emergency response plan includes:

- Quick shut down of water supply lines.
- Safe shut down of electric and gas supply lines, as appropriate.
- Easy access to appropriate tools.
- Emergency telephone numbers for fire, police and emergency personnel, water extraction companies and HVAC and plumbing specialists.



### Institute for Business & Home Safety

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[DisasterSafety.org](http://DisasterSafety.org)

# Water Damage Prevention for Commercial Buildings

## The Building Envelope



All buildings are different, but each is at risk for water damage. From a minor roof leak to violently destructive hurricanes, any unwanted water intrusion can significantly impact the value of a commercial property. Protecting the roofs, walls, windows and other components of 'the envelope' is essential to reducing the likelihood of water damage. Use the enclosed Operations and Maintenance suggestions and handy checklists to help protect your building envelope against the risk of water damage.

## Age of Building Elements

Ensure that the maintenance program pays special attention to building envelope elements that are near - or beyond - their expected useful life. Conduct a detailed review of your building envelope to estimate when owners will need to update or replace the roof, window sealant joints, flashings, etc. This review will help prioritize capital expenditures over time.

## Listen to Tenants

Occupant complaints are often indicators of impending building envelope problems. Are there reports of mustiness or a moldy smell in an area? The human nose is very sensitive. These complaints are often early warning signs of a problem.

- Consider establishing a Tell Maintenance drop box where occupants can easily report concerns to building management and maintenance.
- Consider conducting an occupant survey to help identify potential water problem sources.

## Roofs

Whether flat or pitched, asphalt or composite, every roof is an at-risk location for unwanted water. Many commercial building roofs are laden with HVAC equipment, vent pipes, skylights and other building system elements, which are all 'holes' in the worst possible place - directly overhead. Many roofs are walked on, have tool boxes and test equipment placed on them, catch leaves and branches behind parapets, have sand and abrasives blown over them constantly, or carry billboards or occupant signage. All of these rooftop elements conspire to make this zone especially vulnerable to water intrusion.

- Check all rooftop penetrations regularly from inside and out.
- Are the seals intact around HVAC systems?
- Are the flashings around skylights, stack vents and other rooftop elements in good condition?

- When inspecting from below, do you see daylight where it shouldn't be?
- Do you see any water stain marks?

## Inspect Flat Roofs Frequently

The roof drainage system on a flat roof is critically important. Inspect all roof drains monthly. Sound excessive? Not if you consider that even one clogged drain can result in thousands of dollars in damage from the next rain storm. And, one wind-blown plastic bag can cause an immediate clog. Be sure the drains are free of rooftop or vegetative debris. This simple check will increase life expectancy of this essential and expensive building element.

## Wall Systems

The exterior walls of a building can be a significant source of unwanted water leakage. It's easy to forget how many openings in commercial building walls are required - from plumbing and irrigation connections, to lighting, HVAC system elements, exhaust vents, air intakes, joints around windows and doors, and fire alarms, to name a few. Then, there are the unplanned holes - the aged brick joints that need re-pointing, sealants that have long ago vanished, damage from acid rain, or settling cracks. All wall penetrations provide access for water, bugs, field mice, birds, or other uninvited "guests." If a building is seriously damaged, specialists may be needed to bring a wall system back up to its expected performance levels. But, regular inspections will help identify potential problems early and help minimize costs for needed repairs.

### Quarterly:

- Check all wall penetrations for proper flashing and sealant integrity.
- Check all major wall joints at windows, doors, electrical and plumbing penetrations.

## Windows

Treat window systems like every other element of the building envelope. Periodic inspection should

be part of your maintenance plan. Do the operable units shut tightly? Are the weather-stripping elements in place? Are the exterior joints and flashing systems in good shape? Are there broken panes of glass that have gone unnoticed but could become a water and safety concern? Are any of the units "fogged" indicating a seal failure?

- Inspect window joints and flashings on the exterior for continuous seal integrity. If the windows are part of a drainable wall system, check to ensure that flashing opening and weep holes are not clogged.
- Inspect windows from the inside for glass and air seal integrity.
- Manually test all locks, cranks, and other mechanical elements.
- Check interior walls around windows for water damage.

## Follow a Regular Inspection Routine

The components of a commercial building envelope are as varied as its occupants and uses. Brick and glass, bitumen and composite panels, marble and stone, all can be used. And, all respond differently to the forces of wind, rain, snow, and ice. Ideally, the envelope ensures that the weather stays on the outside, where it belongs, and that the people and property inside are protected. One of the best ways to minimize a building's risk of water damage is to develop, maintain, and follow a systematic Operations and Maintenance inspection routine that includes all elements of the building envelope.

## At Grade Plumbing, Drains, Irrigation

Where the wall meets the ground is a notoriously high-risk area for damaging water intrusion. Building components such as hose bibs, roof drains and landscape irrigation systems can put a lot of water in the wrong place at the wrong time. Even a small leak can turn into a major headache like a flooded basement or parking garage. Make regular inspections.