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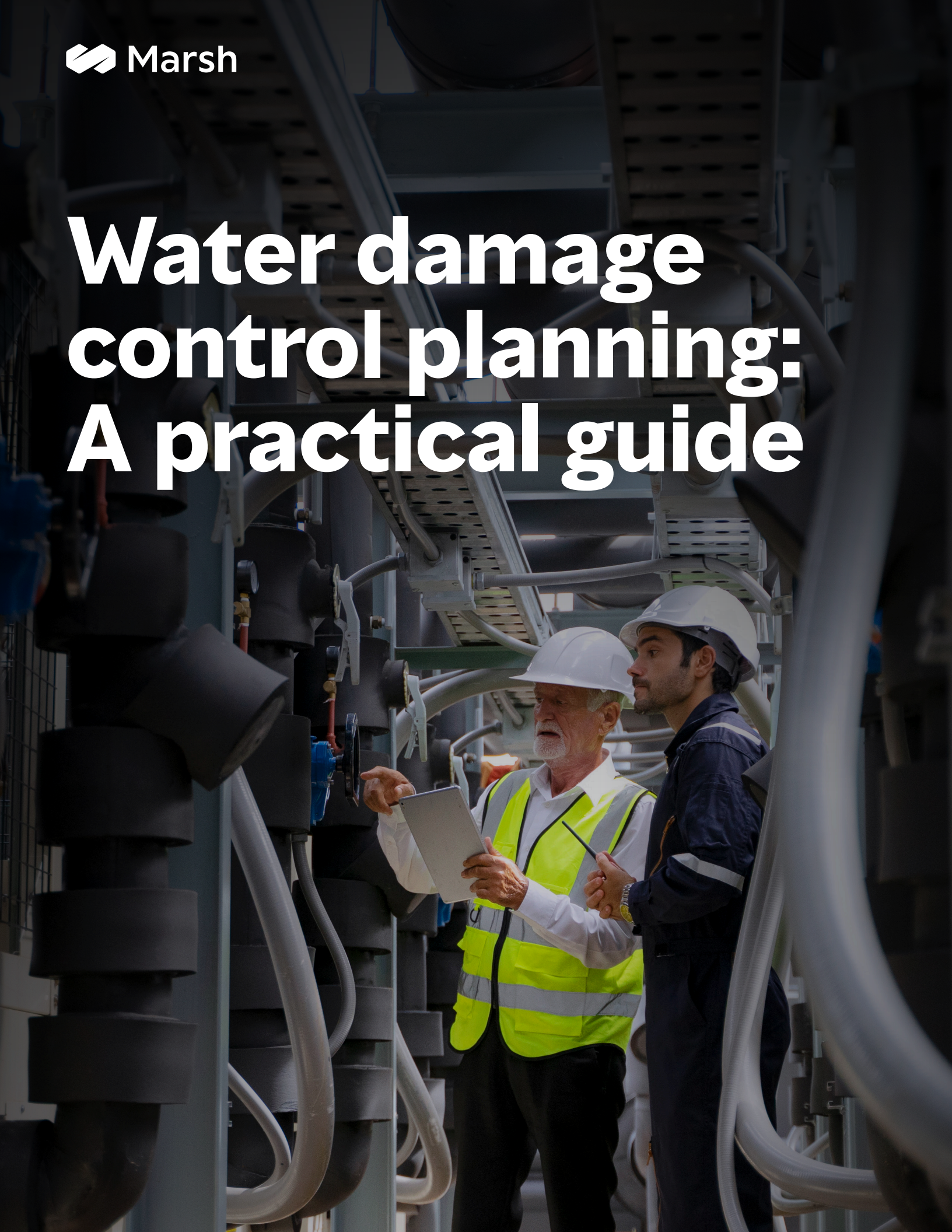
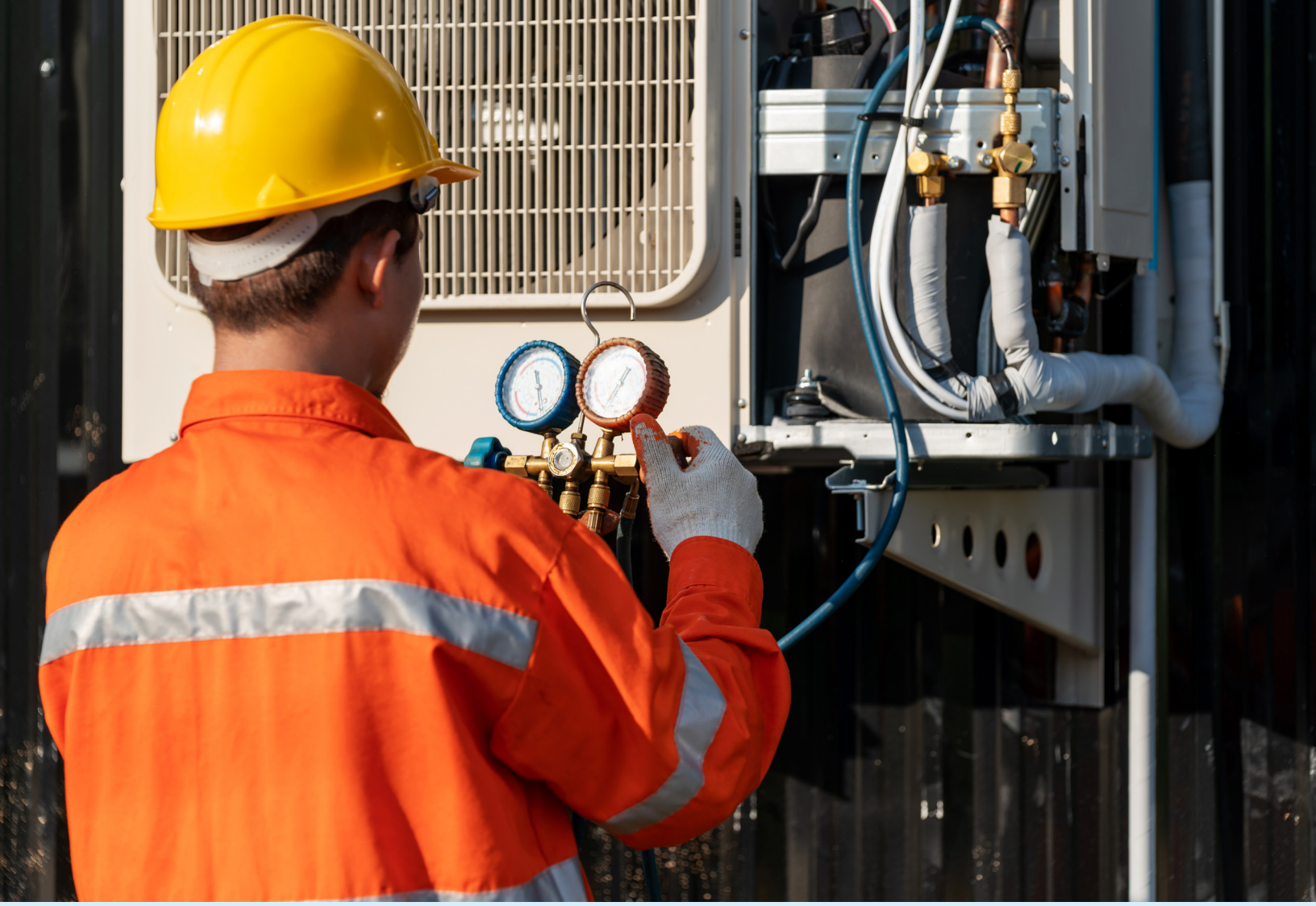
Water damage control planning: A practical guide



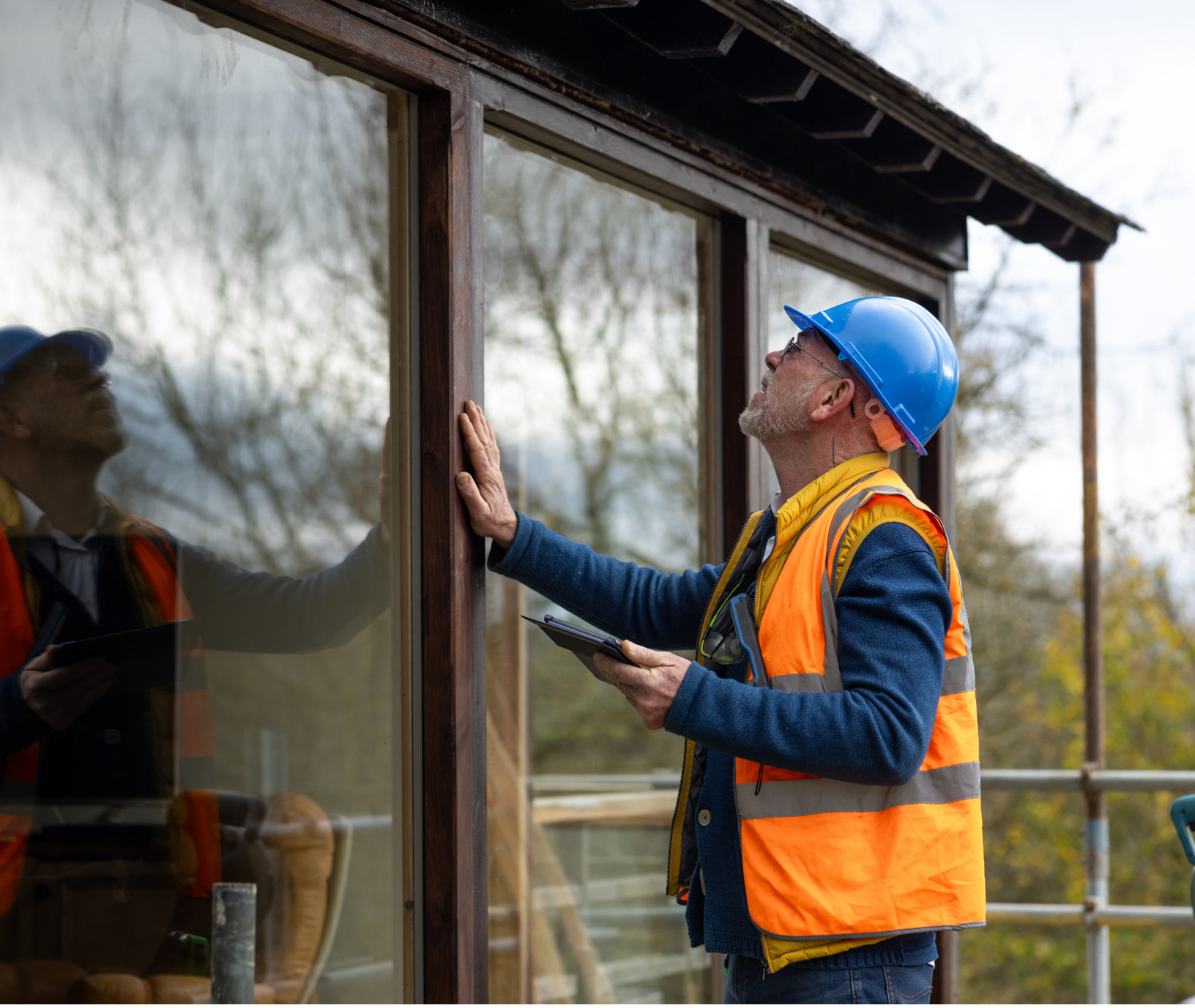


From burst pipes to ever-increasing heavy rain and flood events, water damage to a building can result in costly cleanup, repairs, and business interruptions. As these incidents become more frequent, the total cost of water damage claims to property owners is increasing. Proper identification of building systems, testing and maintenance routines, and pre-planning are essential to mitigate the effects of water damage.

The following guidance and checklists can help commercial and residential property managers develop risk management programs and emergency response plans to better protect their buildings, prepare all relevant personnel, and respond swiftly in the event of water damage.

This guide primarily focuses on practical maintenance, inspection, and planning steps across four broad areas:

- **Building envelope**
- **Plumbing and HVAC**
- **Landscape and site issues**
- **Emergency preparedness**



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Building envelope

The components of a building envelope are varied and respond differently to forces of wind, rain, snow, and ice. To minimize a building's risk of water damage, it's important to develop, maintain, and follow a systematic maintenance inspection routine that accounts for the envelope's main elements.

At-grade: Areas at ground level, where the building meets the ground surface. Water issues here often involve surface water, drainage, and landscaping.

Below-grade: Areas below ground level, such as basements and underground parking. Water intrusion here can cause flooding, mold, and structural damage.

Consider the following actions monthly to mitigate risks to the building envelope.

- Check all at-grade plumbing and drainage systems.
- Test basement flood control, sump systems, drains, and drainage systems.
- Check all basement walls for signs of water staining or damage. If found, track the source and repair immediately.
- Replace any leaking fittings or drains immediately, even if the leak is small.
- Check that irrigation system spray patterns direct water away from foundation walls.
- Check that downspouts direct water away from the foundation.

Roofs

Roofs are high-risk areas for water intrusion. Commercial roofs often have HVAC equipment, vents, skylights, and signage, with openings that can leak. They are frequently walked on, cluttered with tools, and exposed to leaves, debris, and wind-blown trash. Even a single clogged drain or blocked vent can cause costly water damage during storms.

To mitigate these issues, consider the following actions regularly.

- Ensure seals are intact around HVAC systems.
- Inspect rooftop penetrations, from inside and out, and clear roof drains of clogs, debris, and vegetation.
- Check that all HVAC condensation collection pans, drains, and pumps are operating effectively.
- Inspect the condition of flashings around skylights, stack vents, and other rooftop elements.
- Look for signs of water stain marks, including long-term ponding.
- Check the condition of exterior roofing elements, including membrane, gravel, and shingles.
- Make sure vegetative growth is absent.

Wall systems

Commercial walls have many openings — from plumbing, HVAC, and vents to windows, doors, fire alarms, and more. Unplanned holes from aging brick joints, missing sealants, acid rain damage, or settling cracks can also occur.

To mitigate these issues, consider the following actions regularly.

- Consider site conditions for foundations and include drainage or sump pumps where appropriate.
- Inspect wall penetrations, joints, flashings, and weep holes for proper sealing and clarity.
- Check interior and exterior window seals, glass, and interior walls for water damage.
- Manually test locks, cranks, and mechanical components.
- Listen to tenant feedback and consider occupant surveys for help identifying early warning signs.

2 Landscape and site issues

Landscape

Landscaping and outdoor elements are in a constant state of growth, and weather unpredictability can quickly damage water management systems. Effective grounds maintenance requires monitoring the entire building and grounds as a single, unified water management system, designed to direct all water away from the building as quickly as possible.

To mitigate these issues, consider the following actions regularly.

- Pay attention to how buildings settle, as foundation problems may indicate chronic soil and landscape issues.
- Watch for recurring runoff, which can alter grading and cause drainage problems.
- Identify site vulnerabilities and develop emergency and long-term water management plans.
- When planning new construction, consider foundation height, parking, and landscaping impacts on water flow.

Parking lots

Parking lots generate large runoff volumes, which can be blocked by leaves, debris, ice, or windblown trash like plastic bags. Regularly monitoring and clearing drains is essential to prevent damage.

To mitigate these issues, consider the following actions regularly.

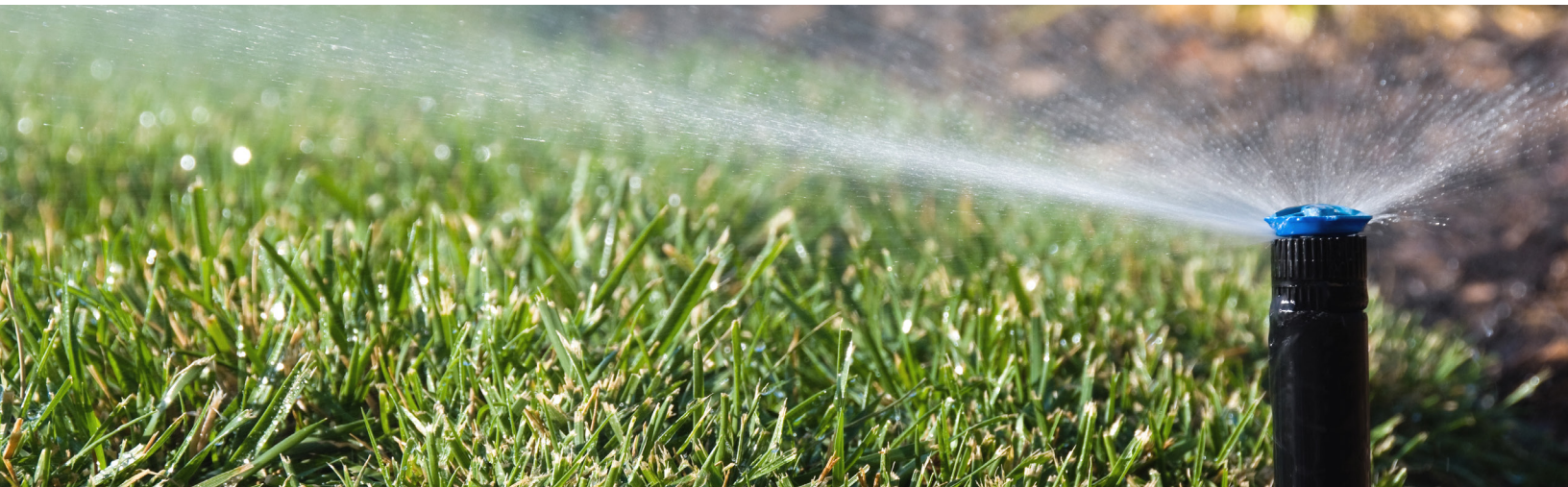
- Routinely inspect all drains that handle parking lot runoff.
- Keep an eye out for standing water.
- Watch for indications of damaged or broken curbs that are part of the water control system.
- After storms, inspect the parking lot for signs of drain blockage.
- Check that snow removal crews do not obstruct storm drains with piles of parking lot snow.
- Avoid plowing snow up against or close to foundation walls.

Irrigation systems

Sprinkler heads are vulnerable to damage from mowers and landscape crews. Heavy equipment can break underground supply lines, often unseen. Similarly, most irrigation systems operate at night, making leaks hard to detect and trace during the day.

To mitigate these issues, consider the following actions regularly.

- Maintain an up-to-date irrigation system map and routinely inspect for damage.
- Regularly turn on the system during daylight hours for routine inspection.
- Adjust the watering schedule to respond to weather conditions or seasonal patterns.



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Plumbing and HVAC systems

Proper operation and maintenance of plumbing and HVAC systems is essential to reducing the risk of water damage. In larger buildings, the systems are often interconnected and move large amounts of water throughout the building. Regular inspection of all key components can help avoid costly water damage.

Plumbing systems

According to the Institute for Business & Home Safety (IBHS), plumbing supply system failures are the leading source of residential water losses. Furthermore, frozen pipe-related failures resulted in losses that were roughly twice as severe.

To mitigate these issues, consider the following actions regularly.

- Check key connections, especially at water main supply lines, key circulating pumps, rooftop water elements, janitors' closets, and areas such as sprinkler systems.
- Repair even the smallest leak immediately and replace leaking fittings or drains promptly.
- Check all water supply pipes, primary system joints, public bathrooms, washing machines, kitchen supply lines, and drain systems.
- Consider the use of metal, braided supply lines as opposed to rubber.
- Check rooftop plumbing lines.
- Test basement flood control and sump systems monthly.
- Check floor drains in kitchens, laundry rooms, and bathrooms.

Additional considerations include:

- Confirm isolation valves are clearly labelled, and superintendents know their locations.
- Test these valves annually to ensure they are operating and are not seized in the open position.
- Monitor water bills for signs of excessive usage.
- Pay attention to pipes that "bang" when faucets are turned off.
- Stay alert to rust stains inside the building.
- Be aware of any signs of moisture in the walls or floor systems.
- During cold weather, remove garden hoses from the exterior hose bibs, drain the water line, and install a frost-free sillcock.
- Use reinforced steel braided water supply lines on washing machines.
- Inspect and test fire protection systems, including automatic sprinkler systems, to ensure their reliability and effectiveness.

HVAC systems

Regular maintenance of rooftop cooling systems is essential, including monthly inspections of water distribution, drainage, and key components like pumps and fans. Annual checks of air coils, and cleaning of condensate drains and outdoor units, help support optimal operation, while maintaining a detailed inspection schedule and replacement plan for critical HVAC parts is also recommended.

To mitigate these issues, consider the following actions regularly.

- Inspect air filters monthly; clean and dry reusable filters before reinstalling.
- Check condensate drains and pans monthly during cooling season; flush and clean if contaminated.
- Ensure rooftop drains are clear and do not drain directly onto the roof or over the building side.
- Inspect air coils annually; clean dust and debris carefully to protect fins.
- Keep outdoor condensing units free of debris.
- Maintain debris-free, filtered fresh air supply ducts; address rust or moisture signs promptly.

Water heaters

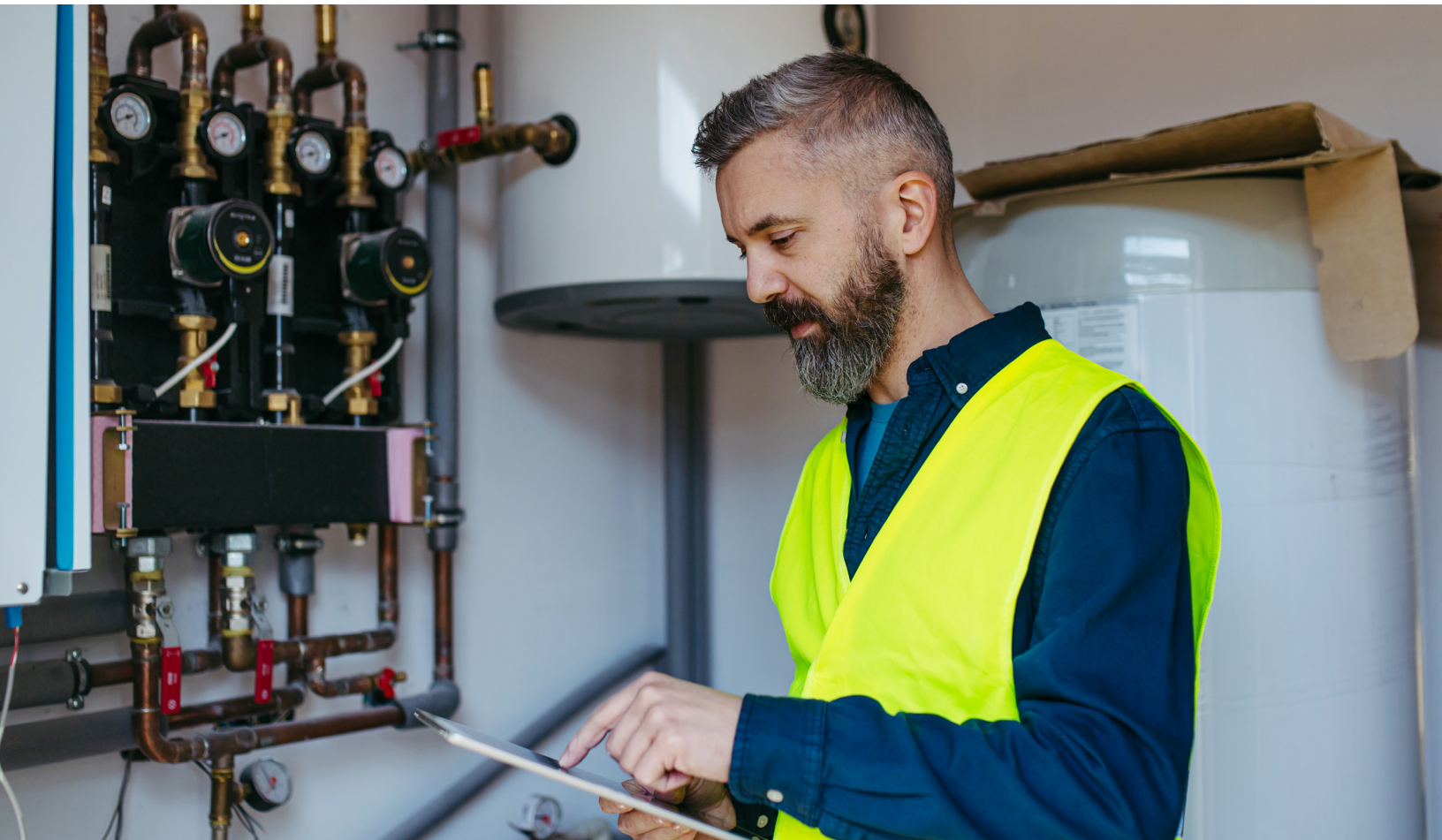
A large number of water heater claims are due to a tank rupture or leakage. The rate of failure dramatically increases for water heaters between 5 and 12 years old. Some statistics indicate that nearly three-quarters of water heaters have failed by age 12.

To mitigate these issues, consider the following actions regularly.

- Have a professional inspect and replace the anode rod annually after the warranty expires to prevent tank corrosion.
- Flush the water heater every six months to remove sediment, especially in hard water areas.
- Annually check the shut-off valve and piping for leaks, rust, or loose joints.
- Operate valves regularly; replace any that don't open or close properly.

Water detection technology

Consider installing water detection technology that includes strategically located water sensors and remote monitoring so that water leak events are detected promptly, ultimately reducing the time required to shut off the valve. In some cases, the technology may even automatically shut off the water valves if a leak is detected.



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Emergency preparedness

Effective emergency preparedness for water-related incidents is crucial to minimizing damage and ensuring a swift response.

Water leak pre-planning

A formal water damage emergency response plan should be developed by professionals knowledgeable of the specific building's systems that are at risk of leaking.

To mitigate water leak issues, consider the following actions:

- Create a contact list of authorized personnel to shut off water supplies.
- Clearly label all water shutoff valves for quick access during leaks.
- Maintain a central map of valves with response instructions.
- Exercise all shutoff valves annually to ensure functionality.
- Keep a spill response cart with a diagram, absorbents, tools, and supplies in a central location.
- Conduct regular water leak drills to train staff on response procedures.

Flood emergency response plan

If the facility is prone to flooding, a basic flood emergency response plan should be established.

To ensure the plan will be effective, consider the following actions:

- Establish a reliable flood warning system, including weather monitoring.
- Assign a person responsible for initiating response actions.
- Define responsibilities, including drainage checks, sandbag deployment, and cleanup.
- Implement procedures for safely shutting down electrical equipment.
- Outline actions to minimize damage using available resources.
- Develop a robust recovery and cleanup plan.

To learn more about how we can help with your water damage control planning and recovery, please reach out to your Marsh contact.

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