



Mitigation

Water Damage Prevention Program

A key component in our Water Damage Prevention Program is Mitigation.

Water and liquid damage can lead to significant financial losses and downtime. Whether managing existing facilities, renovating, or starting new construction, proactive mitigation is essential. This brochure outlines tailored strategies for each scenario to help you reduce losses effectively. Safeguard your assets with our expert solutions and ensure long-term resilience against water and liquid damage.

Existing Facilities

An existing facility should begin by assessing its current water and liquid damage emergency operations plan (EOP). If a hazard vulnerability analysis was completed, this category is typically known as "Internal Flood." These key mitigating steps should be included in the existing plan to prevent water and liquid damage in an existing facility:

Commissioning and Recommissioning

Commissioning and recommissioning plans for new and existing piping networks and the building envelope for construction/renovation projects are important for any facility project, big or small, and are covered in more depth in the new construction and renovation section.

Valve Identification and Charting

It's important to know where mechanical, plumbing, fire protection and other process piping valves are located. Labeling and making charts of these valves will help us prepare for preventive maintenance on each one.

Monitors and Sensors

Installing water flow monitors, leak detectors, humidity sensors and temperature sensors in key areas is important. These devices should be placed where water or other liquids could affect services and operations on the floors below.

Sensors should be placed in electrical switchgear, data and telephone switch rooms, especially below ground level. These sensors help us respond quickly if there is a leak.

Monitoring and detection are even more important for closed buildings during off-business hours.

Wet Work Permits

Wet work permits should be part of the preventive maintenance plan. This program and permit system will help the building owner manage and control repair or modification work by contractors on pipes that carry liquids.

W-Rated Fire-Stopping Products

W-rated firestopping products are approved to hold a 3-foot water column and stop fires. They should be used in floor-ceiling openings to prevent water from leaking down to lower floors through holes for cables, conduits and other pipes.

Critical Equipment Areas

Critical equipment and operation areas in the facility may need special leak detectors installed above the ceiling and, if needed, below a raised floor. These areas might also need specific materials and staff training to protect the equipment if there is a liquid leak. For more details, utilize the [High-Value Equipment Checklist](#).

New Construction

Preventing water or liquid damage starts with the design phase of construction. During this phase, we identify and move or protect liquid-carrying pipes above important areas in the building. We also check the building's enclosure design, such as connections between materials, flashing, waterproofing and drainage systems, to ensure the structure will be watertight. This design process often uses Building Information Modeling (BIM) to create a 3D model of the building, which helps visualize how things will look and work, reduce costly design errors, improve quality control and identify material and installation inconsistencies.

After the design is finished, updating the BIM model with any changes or new submittal drawings from subcontractors is important. For smaller projects that don't use BIM, it's still crucial to coordinate design drawings and changes to avoid potential hazards. No matter the method, any design changes must be communicated to everyone involved in weekly meetings to ensure that water damage prevention plans are unaffected, if affected, plans are updated to address any risk.

Commissioning agencies should be involved in the design phase to identify any issues that could lead to damage. Building owners should hire qualified commissioning agencies to review design documents before construction, inspect installations, and test systems to ensure quality construction and conformance to the design documents. Common commissioning agencies include:

- Building envelope
- Structural steel and concrete
- Fixed fire protection systems
- Special hazard protection systems
- Fireproofing and firestopping systems
- Mechanical systems
- Electrical systems
- Plumbing systems

A system that can detect water flow or leaks, monitor them and automatically send alerts to shut off the water supply can help prevent water damage. Zurich can recommend vendors to help with risk evaluation and servicing.

Water damage during construction is a prevalent and costly problem. However, implementing water flow and leak detection systems can significantly reduce the occurrence of expensive water damage events. These events often lead to delays and additional costs, making the cost-saving benefits of these systems a practical and compelling reason for their adoption.

Water and Liquid Flow/Leak Detection

During new construction, installing systems that can detect water or liquid leaks and notify you is important. These systems can automatically shut off the water if there is unintended water flow or a leak. They include devices that monitor water flow and can detect leaks in pipes, water control equipment and even external water sources like rainstorms. Water flow and leak detection sensors should be used in areas like:

- Penthouse mechanical rooms
- Mechanical rooms above critical operations
- Electrical and data rooms below ground
- Drop ceilings over sensitive equipment
- Closed water loop systems
- Elevator pits and other low points
- Storage areas for expensive materials and equipment
- Buildings with many water sources, like apartment buildings
- Areas protected by temporary weather systems
- Where temporary weather protection systems are used prior to building watertight enclosure

Temperature sensors are also important in areas that might freeze, and humidity sensors are needed in moisture sensitive areas. Zurich's vendors can provide sensors that monitor temperature and humidity and send alerts. Areas to consider for these sensors include:

- Stairwells
- Penthouse mechanical rooms
- Mechanical rooms
- Electrical and telecom rooms
- Areas with sensitive interior finishes or equipment
- Areas with temporary heating

Basement Areas

Basement areas need specific design enhancements. Incoming fire protection lead-in mains, domestic water chilled water and other piping and conduit entering below-grade areas from the street, or a pipe chase should be properly sleeved and sealed. During the design phase, it is important to include emergency back-up power and redundancy in all sump and sewer ejection pump systems.

Contractor Prevention Plan

The general contractor should include water damage prevention, infiltration and mold prevention planning in a project-specific Water Damage Prevention Plan. This plan should cover:

- Defining the team and their responsibilities
- Communication and training
- Identifying risks
- Using Wet Work Permits
- Daily inspections
- Planning for water infiltration and mold prevention
- Scheduling water-related activities
- Checking existing conditions
- Reviews by QA/QC and commissioning agencies
- Planning for severe weather
- Temporary protection
- Storing materials and equipment
- Testing wet systems
- Having water damage spill carts
- Mapping and tagging valve locations
- Monitoring water, humidity and temperature
- Responding to water damage
- Reporting water incidents
- Analyzing the cause of water incidents

To prevent water damage, sensitive building materials and mechanical, plumbing and sprinkler components should be elevated off the ground. Sprinkler systems and other pipes should be on skids or in roller racks.

Contractor Response Plan

A detailed Water Damage Response Plan should be in place to handle water damage quickly. This plan should include contact information, responsibilities and procedures for repair and recovery. The plan should be reviewed regularly and updated as needed.

Valve Tagging and Charting

All mechanical, plumbing, steam and sprinkler system valves should be tagged and charted when temporary or permanent water is activated. Best practices include labeling shutoff valves, posting shutoff directions and creating maps of valve locations. This helps with maintenance and quickly shutting off valves in case of a leak.

Renovation Projects

The water damage prevention practices used in new construction also apply to renovation projects. Renovation projects can be riskier because the existing structure is susceptible to water damage, especially if existing building operations will continue during the renovation. This makes it even more important to incorporate water damage risk mitigation practices including design reviews, consultant inspections/testing, water flow/leak detection systems and Water Damage Prevention and Response Plans.

Recommissioning

Recommissioning is very important during renovation projects to manage changes and reduce the risk of loss. Any piping networks that are part of the renovation should be recommissioned, meaning they should be tested with air and water pressure just like during new construction. It's crucial to take steps to limit damage to other parts of the building if a pipe fails during renovation.

Mitigation Steps

- Complete a Risk Assessment before starting renovation work:
 - Find hazards during construction that could affect existing operations
 - Identify any changes that could impact emergency exits
 - Determine how contractors access and move materials to and from the work area
- Include water infiltration and mold prevention steps in a Water Damage Prevention Plan that covers all the methods and contents mentioned
- Create a Water Damage Response Plan
- Use water and liquid flow/leak detection, monitoring and notification systems
- Increase guard tours in the renovation areas during off-hours. For high-risk projects, budget for security during off-hours and train guards on the Water Damage Prevention and Response Plan before they start
- Use commissioning agencies to review design documents, inspect installations, test systems and recommission
- To limit water damage risks, include a water infiltration and mold prevention plan, Wet Work Permits and daily inspections
- Provide water damage prevention training for contractors and subcontractors specific to the area being renovated

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