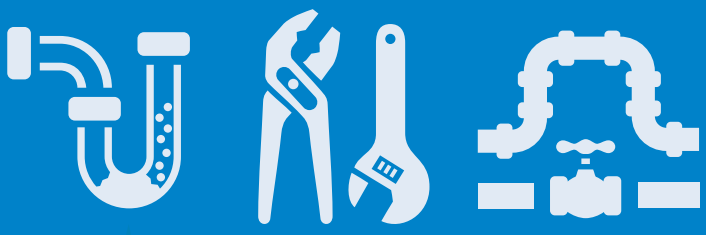
Water Damage

Risk Management Program



Enclosed are key elements to consider when developing a water damage program.

Federated Insurance

Water damage claims are second only to fire losses in frequency and severity. Water issues can stem from various sources, such as rain or weather-related events, underground sources, and even the improper installation of piping during construction projects. Loss of property can be significant if water sources are not controlled and damage is not attended to quickly, as it can quickly spread to other areas.

Most water damage losses occur as a result of faulty workmanship. The improper installation of pipes and connections by various contractors results in large losses when piping systems are charged or pressurized for the first time. It can take weeks or months before some incomplete or improper installations are exposed, as connections may hold for a short period.

Claims get larger after the building is enclosed and interior finishes are being installed, as damage to drywall and finishing trim increases the cost of repairs.

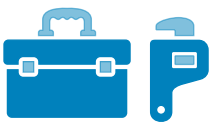
Having water damage protocols in place, along with adequate planning and continuous monitoring of the construction site, can help to mitigate losses. Enclosed are key elements to consider when developing a water damage risk management program. If created and put in place, a water damage risk management program can assist in reducing water damage issues on a construction site. Implementing a program may also assist in saving time and money on all projects.

It's recommended that management of water damage risk play a prominent part in a project's risk management.

Water damage losses can be caused by:

- Site and sub-surface drainage problems;
- Foundation and structural element problems;
- Building envelope deficiencies;
- Unsecured door, window, and roof openings;
- Improper materials;
- Internal plumbing deficiencies (e.g. improper soldering of joints);
- Carelessness (e.g. knocking off sprinkler head, leaving tap open, etc.);
- Improper connections or hook-ups of water using devices or appliances;
- Freezing of exposed pipes; and
- Catastrophic weather events (e.g. hurricane, flooding, etc.) occurring at an inopportune time during the project.

Some of the above issues are the result of poor workmanship, while others result from inexperienced or untrained personnel. Many of these water damage losses may be prevented with proper risk management, which includes a written and enforced water damage risk management program.

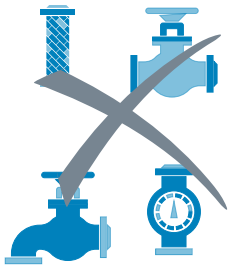


MOST WATER DAMAGE LOSSES OCCUR AS A RESULT OF FAULTY WORKMANSHIP.

A. PROCUREMENT

The first step in developing a water damage risk management program is the procurement of resources and personnel. Here are a few considerations to help guide your business during this process.

1. Allow only quality materials to be used that satisfy project specifications
   - Each part must be clearly labelled with its manufacturer and origin.
   - Retain a record of the manufacturer and supplier of each component part.
   - Although not currently a requirement of the National Building Code approved plumbing materials are preferred (this is mandatory for critical components, such as valves)[1].
   - Systems with a known history of defects or problems should not be used.



SYSTEMS WITH A KNOWN HISTORY OF DEFECTS OR PROBLEMS SHOULD NOT BE USED.

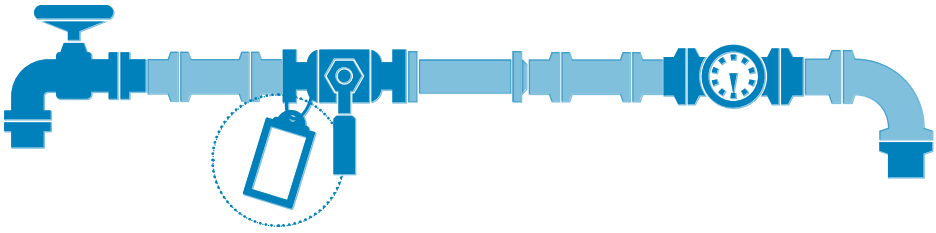
2. Administer standards for the procurement of contractors and suppliers:
   a. Select competent subcontractors based on their experience, reputation, and past performance rather than solely on price:
      - ✓ Only certified (and, where required, licensed) subcontractors should be used.
      - ✓ Whenever possible, the subcontractor should be a member of their applicable professional association.
   b. Subcontractors should commit in writing to:
      - ✓ Verify materials to be used meet or exceed the specifications in the contract.
      - ✓ Strictly comply with design guidelines and follow all manufacturers' installation manuals and specifications.
      - ✓ Provide direct supervision of apprentices and trainees by qualified/certified employees
      - ✓ Never allowing unsupervised work
      - ✓ Train their employees to recognize and report or resolve water issues as they arise, regardless of whose fault they may be.
      - ✓ Mark/initial all joints by the installer to confirm the joint has been fully formed.

[1] **National Building Code of Canada 2015** (NBC). Section 7.1.2.1 Conformance with Regulations or National Plumbing Code

B. **PROCEDURES**

Once you have your equipment and team in place, it's time to establish procedures. You'll need to decide which systems to work on, how inspections will be conducted, and how assessments will run. Here are a few tips that will help you design the right processes.

1. Establish an overall inspection routine, and retain written and photographic documentation of these inspections.
   - Pay particular attention to areas where water can accumulate (like drains, pits, bottom of stairwells and elevator shafts, and under hot water tanks and boilers).
   - Confirm doors and windows are closed tight (and locked, if applicable), especially at the end of each workday.
   - Confirm all openings around floor penetrations (made for conduits, ducts, pipes, cables, wiring, etc.) are completely sealed as soon as practicable.
   - Confirm adequate temperature is maintained in the building to prevent freezing of charged pipes.
2. Water shut-off valves should be tagged/placarded as work progresses (as opposed to at completion of the project).
   - Valve location and function must be noted.
   - Locate water shut-off valves on every floor of multi-storey buildings (although this is not currently a requirement of the National Building Code, it is highly recommended)[2].
3. Consider having crews peer review and certify in writing each other's water system work.
4. Consider a formalized inspection, certification, and sign-off (written documentation of each step) of each water system prior to its commissioning:
   - Always comply with all Code requirements.
   - Visually inspect the integrity of all joints.
   - Confirm there are adequate supports between joints and thrust blocks at all 90 degree turns.
   - As part of the inspection, run hydraulics, hot water system, and sprinkler system various tests to identify and isolate any problems in the water systems.
   - Only authorized fire protection contractors are allowed to place fire protection systems into service. NFPA 13 should be followed.



2. WATER SHUT-OFF VALVES SHOULD BE TAGGED/PLACARDED AS WORK PROGRESS

[2] **National Building Code of Canada 2015 (NBC)**. Section 7.1.2.1 Conformance with Regulations or National Plumbing Code

7. ESTABLISH A PROTOCOL TO INSPECT AND CERTIFY THE ROOF INSTALLATION, DOWNSPOUTS, AND DRAINS.

5. Establish a protocol to supervise, inspect, test, and certify the hook-up installation of water using appliances (e.g. washing machines, dishwashers, etc.) to ensure the connections are sound. It is possible that this installation task will be performed by a subcontractor not affiliated with the mechanical and plumbing trades, using unskilled labour.

6. Implement a procedure to either heat or drain any charged water system that may be subjected to freezing temperatures. If the system is drained, then it should be re-tested and certified before it is charged again.

7. Schedule a maintenance period to inspect and certify the roof installation, downspouts, and drains.

8. Arrange supervision of the installation of exterior wall cladding building envelope materials (e.g. water barriers, windows, doors and external finishings), inspection, and certification.

9. Schedule the delivery of water sensitive materials and installation of interior finishings:
   - After the building envelope (i.e. roofing and wall cladding) has been enclosed and the project made water-tight. If this is not possible, consider providing a dry temporary storage environment (on skids raised off the floor and fully tarped).
   - After the installation and testing of water systems. If elevators (electrical and mechanical components, as well as the cabs) are required to be installed prior to the final testing of the full water system, then establish a plan of protection to minimize damage in case of a water leakage event.

10. Where drywall or plasterboard is to be used for interior walls, leave the bottom 25mm off the floor slab to mitigate water damage. The resulting gap will be covered by the finished flooring system or moulding.

11. Assign a supervisor to oversee and enforce requirements of the water damage risk management program, with the authority to require changes and even stop work. To be effective in this supervisory role, this person should be experienced in the mechanical and plumbing trades with the ability to visually identify faulty materials and workmanship.

12. Hold weekly site meetings to discuss deviations from the water damage risk management program, or any uncovered problems with any water system, and consider implementing the required corrections.

13. Conduct supervisions and inspections as established in the water damage risk management program. Consider obtaining peer review inspection and certification reports.

14. Try and avoid use of temporary water service whenever possible.
    - When required, route temporary water lines in areas where the damage caused by the escape of water is minimized (e.g. if freezing temperatures are not a concern, then route outside of the building, and always route away from susceptible materials such as electrical gear, elevators, finished area, and material storage areas).
    - Temporary water supplies should never be routed through electrical service risers.
    - Temporary water supplies should be turned off when not in use (for instance, during building construction activities)

15. Identify and either mark or protect (with cages) any low-hanging sprinkler heads from accidental contact with any object or personnel.

16. Consider adding these emergency procedures.
    - Turn off power source and shut off any electrical systems in the affected area.
    - Identify the source of water leak.
        - ✓ If source is a pipe, then shut off applicable valve.
        - ✓ If source is a window or door, then close windows and doors.
        - ✓ If source is from above, then cover equipment with tarp or, if possible, move equipment and materials from under leak.
    - Maintain a list of emergency contacts who can provide further instructions.

C. RECORD-KEEPING

Record-keeping is a way to manage and track inventory. It's especially helpful when there are multiple job sites using shared resources. It's also beneficial for keeping records of damages and any testing and certifications that have been completed. In the event of any claims, having documentation of inspections, materials used, installation reports, and more, can be extremely helpful.

1. Document and store all written records, including:
    - Weekly site meeting minutes with identified problems and resolutions
    - Manufacturer and supplier of all component materials used
    - Installation subcontractor name and peer review certification
    - Inspection reports (written and photographic)
    - Testing certification reports and commissioning sign-off
    - Test and certification of installation of water appliances
    - Certification of roof installation
    - Installation reports of exterior wall cladding building envelope materials
    - Incidents of water escape

Proof of insurance of all subcontractors must be diligently filed and neatly maintained so that it is accessible for an audit.

2. All incidents of water escape should be investigated and documented.

D. WATER DETECTION DEVICES

To help prevent water damage and alert workers to any water conditions that do occur, water management and detection devices are recommended. We outline considerations for what these devices should do, where they should be installed, and how often they should be monitored.

1. Install water management devices on incoming risers:
   - The devices should be able to differentiate between normal flow, water flowing when it should not be, excess flow, and water leaking. Each device should:
     - ✓ Shut down the water supply when a small amount of water flow is detected (e.g. a smaller leak) during non-construction idle periods
     - ✓ Shut down the water supply when water flow exceeds a pre-determined parameter (e.g. a massive system fault allowing uncontrolled flow of water)
     - ✓ Monitor "normal" water usage to more accurately adjust the above pre-determined parameter
     - ✓ Provide an audible and visual alarm when detecting an unusual water condition or if the device fails or is not being supplied with power
   - The devices should be monitored (preferably 24/7, but during non-construction idle periods at a minimum), either by on-site security personnel trained in how to discover and respond to an incident or by an off-site ULC-approved monitoring facility (or both).
   - It is acceptable (and preferred) to use the same monitoring facility as is being used to monitor for intrusion and fire.
2. Install water detection devices on the floors situated:
   - Under incoming water risers
   - In electrical equipment rooms
   - Around air conditioning units
   - At the bottom of elevator shafts
   - Under hot water tanks
   - Under heating boilers

If you need further guidance on developing a water damage risk management program, our Risk Services team at Federated Insurance is here to help. We can provide you with recommendations based on jurisdictional regulations, up-to-date legislation, and industry best practices. We'll work directly with you to create a program that fits your unique needs, and provide training to help you make informed decisions to protect your business. Learn more about our Risk Services offerings by visiting our website.

IF YOU NEED FURTHER GUIDANCE ON DEVELOPING A WATER DAMAGE RISK MANAGEMENT PROGRAM, OUR RISK SERVICES TEAM AT FEDERATED INSURANCE IS HERE TO HELP.

RECORD-KEEPING TEMPLATES

Contact Name	Position	Phone Number

LOCATION OF WATER SHUT-OFF VALVES

Type of Valve	Location of Valve	If valve is stored in a secure location, name and contact of keyholder

LOCATION OF POWER SHUT-OFFS

Type of Power Shut-off	Location	If shut-off is in a secure location, name and contact of keyholder