



WATER DAMAGE CAN BE COSTLY. PLAN AHEAD TO PROTECT YOUR PROPERTIES.

Water intrusion and liquid damage are two of the leading causes of commercial property loss in condominiums, commercial residential properties, hotels, offices and retail establishments.



For a variety of reasons, these occupancies are more prone to water damage events than any other. High rise properties are especially vulnerable to high severity claims.

Invisible damage can have major impacts.

Small water leaks can go undetected for significant periods of time, creating invisible damage. Once released into the building, water can cause major issues, including:

- Physical damage and deterioration to building materials and structural members
- Contents and equipment damage
- Related business impacts, such as financial loss in rents, unforeseen repairs and perhaps even reputational risk

Direct costs: Cleanup; construction and equipment repair; material replacement; mold remediation

Indirect costs: Indoor quality issues; loss of tenants; legal fees; other business interruption impacts

A practical solution.

To help prevent or reduce significant loss due to water intrusion, building owners or managers should:

- Understand their exposures
- Take proactive measures from the get-go to avoid water damage
- Be fully prepared to act in the event of a water intrusion

This calls for a thoughtfully prepared Water Damage Prevention Plan (WDPP) that's routinely updated and exercised.

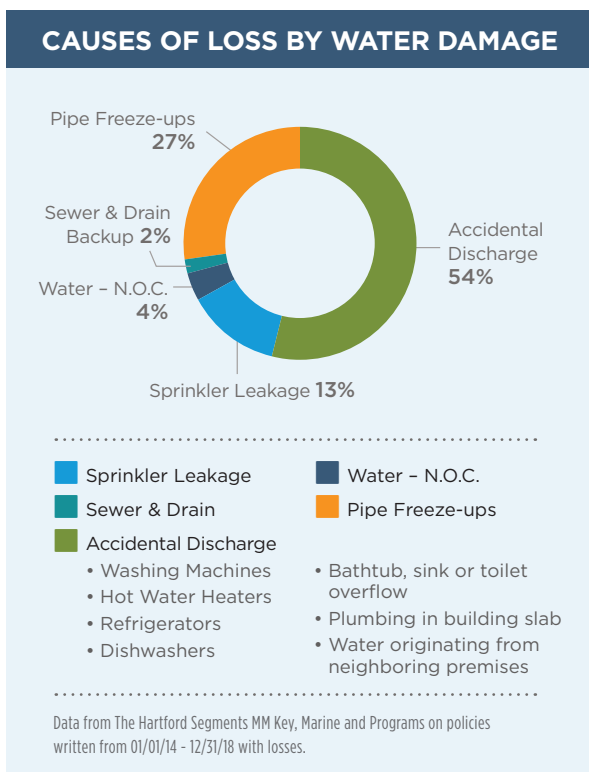
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WATER DAMAGE PREVENTION PLANS SHOULD BE CUSTOMIZED

A WDPP is generally site-specific, based on the size, age, height, location and construction of the building, as well as the uniqueness of the occupancy.

Some occupancies tend to have a higher exposure to water damage than others. For instance, hotels, condominiums and other residential occupancies are exposed to potential water leaks from plumbing related to large numbers of sinks and toilets, laundry facilities, hot water tanks, HVAC equipment and much more.

High rise buildings have the potential for a multi-story water damage loss, whereas older, less cared for buildings can be subject to sudden and unexpected water intrusion due to exposed conditions going unnoticed.



A WATER DAMAGE LITMUS TEST

Developing a sound WDPP requires a good deal of thought, planning and knowledge regarding site-specific water intrusion sources and potential exposures. But the payback can be huge when you consider what’s at stake: loss exposure, disruption to business and all of the potential uninsurable risks.

This document is designed to help guide you in the development of a facilities WDPP. A good starting point:

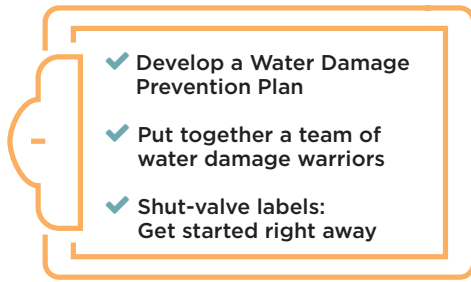
- Recognize where water intrusion vulnerabilities exist
- Determine what’s already in place to help control potential water intrusion events

Let’s do a litmus test based on your answers to the following questions.

1. Has this facility had any water damage events in the past 36 months? Yes No
2. Does the risk management program have a written WDPP? Yes No
3. Are the locations of all liquid/water supply shut-off valves documented and do they identify the areas controlled? Yes No
4. Do designated employees have ‘shut-valve’ knowledge and authority to close valves in the event of an emergency? Yes No
5. Are you aware of any water damage hazards or sources? (Answer after reading this document.) Yes No
6. Does the facility self-inspection routinely check on the condition of potential water intrusion sources? Yes No
7. Does the facility’s staff engage in routine building maintenance and does this include upkeep with water intrusion sources? Yes No
8. Are there any water detection sensors used to monitor water flow/leak detection and are any connected to shut-valve actuation? Yes No
9. Does the risk management program have repair and remediation contractors on retainer, or does it have a list of updated contractor contact numbers for emergency purposes? Yes No

If #1 is yes, or if more than three questions are answered “No,” then consider developing a formal WDPP.

The Hartford Risk Engineering team is always available to help you work through this process.



LET'S GET STARTED

Design a written WDPP with the following priorities:

- Establish your team and provide training
- Enhance site inspection activities to include high-risk areas of potential water intrusion
- Identify prevention and control measures
- Outline pre- and post-event job responsibilities
- Establish post-event restoration and recovery strategies

Tip: A loss resulting in water damage. When a pipe breaks or a valve fails or a piece of equipment malfunctions, resulting in a water damage loss, it's always prudent to save the device for The Hartford Claims Adjuster to examine.

There may be opportunities for claim subrogation. Without it, there's no chance to avoid a paid claim against your policy.

Conduct a vulnerability risk assessment with these facts in mind:

- Water damage can originate from a number of different sources
- Most root causes are preventable and can be managed and addressed with low to no cost strategies
- In many cases, a good preventative maintenance program is all that's needed to avoid many of the accidental discharges mentioned in the table below

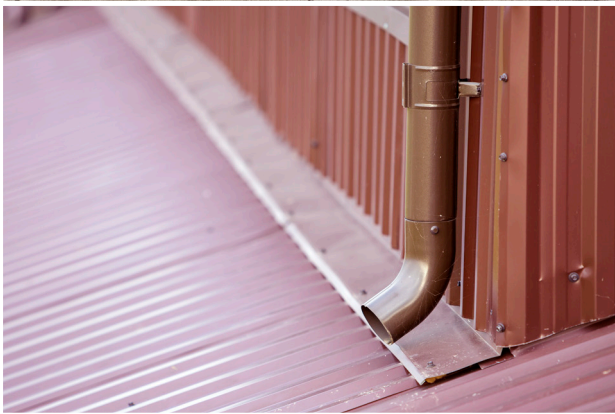
DETERMINING HIGH RISK AREAS OF WATER INTRUSION VULNERABILITY

In general there are three major areas that can be sources of potential water intrusion in every building:

- **The building envelope** (roof, walls and floors)
- **Interior systems**, including piping for domestic water, process liquids and sprinkler protection, as well as building equipment and appliances
- **Exterior exposures**, such as surface water from improper landscaping, gutters and downspouts and weather-related hazards

Although this isn't an all-inclusive list, it's a good starting point to recognize where buildings are vulnerable to water intrusions and makes each building site and operation unique.

SOURCES OF WATER INTRUSION	
Exterior Water Sources	Interior Water Sources
• Roofs, roof drains and drain lines	• Heating and cooling systems, piping and radiators
• Roof eaves and ice dams	• Mechanical systems – water tanks, chillers, air handlers, cooling towers
• Scuppers, gutters and downspouts	• Appliances – washing machines, dishwashers, toilets, sinks, etc.
• Windows, doors and vents	• Wet areas – showers, baths, laundry and wet closets
• Siding and shingles; other openings	• Domestic water lines, systems and drains and drain lines
• Foundations	• Sewage systems, sump pumps
• Bulkheads and below-grade door openings	• Fire sprinkler piping, heads, standpipes and valves rooms
• Landscaping, ground sloping	• Roof drain piping that runs inside a building
• Groundwater	• Unheated attics, basements and crawl spaces
• Irrigation systems	
• Septic systems	



The building envelope: windows, doors, vents, and other entry points.

Watch for points of entry, such as windows, doors, and other openings, that can admit water if not well maintained. Poor flashing or caulking around windows, for instance, can lead to slow leaks and eventually more serious water intrusion.

Tip: Be on the lookout. Carefully look at siding and shingles for damage or potential leaks. Do any appear loose or missing?

Roof deck, roof drains, scuppers, gutters, downspouts and drain lines.

Examine the roof deck. Is it aged (20 years or older) or poorly maintained? Flat roof decks act like large water collectors when improperly designed or maintained. If there's evidence of water ponding, this can lead to long-term roofing problems, including water seepage beneath the roof membrane, resulting in deterioration of the roof substrates and eventual damage to the roof deck itself.

Make sure the roofing equipment is properly secured. This can prevent damage to the roof deck. Two questions:

- Is roofing equipment drained directly into roof drains or downspouts, instead of the roof itself? Make sure roof drains, scuppers, gutters and downspouts are properly secured, well maintained and unclogged. Make sure gutter downspouts actually move water away from the building.
- Do the roof drains enter and pass inside the building? If so, do they pass over critical equipment, electrical rooms or elevator shafts where a pipe break or leakage could result in a major loss?

Tip: Be vigilant in cold weather areas. Poor roof drainage can lead to ice dams or frozen gutters. This can result in ice developing at roof eaves due to poor insulation or ventilation. Once this ice begins to melt, water can enter the building along the roof edge or the exterior walls, and this could be significant if coinciding with heavy rain events.

All of these items should be part of your building maintenance and inspection program, which should be done monthly, in most cases, with a full inspection of the roof cover at least annually by a qualified roofing contractor.

INTERNAL SOURCES OF WATER OR LIQUID

It's important to identify all potential sources of water and other liquids and to know exactly where the zonal, floor and main shutoff valves are located. Creating a valve list or map, conducting regular inspections and exercising these valves will be critical to ensuring that all systems are in proper working order.

Tip: Be proactive: Delays that result from not being able to locate the right shut-off valve during a leak event could result in a major water damage loss. System mapping and trained staff can help to avoid these delays.



Piping systems.

Older piping systems are more commonly prone to failures. These systems require greater maintenance and testing to assure the integrity of the pipe, fittings and equipment. Also, some public and private water supplies contain damaging materials that increase the overall corrosion rate of internal piping systems. Proper water treatment, system maintenance and testing must be practiced in order to ensure system integrity.



Unheated areas can lead to frozen pipes. Heating systems failures, especially in attics, basements and water closets, are the cause of many recent frozen pipe water damage losses. In northern cold weather climates, standard practices ensure that vulnerable areas are properly heated and that low temperature monitoring is provided, but not always. Even in temperate climates, cold snaps can lead to pipe freeze-ups in unheated areas, such as attics, crawl spaces, basements, closets and sprinkler valve rooms, commonly located along outside walls. Make sure there is adequate insulation, and permanent or safe temporary heat supplied in these spaces. When heat isn't possible, these spaces should be electronically monitored to alert facilities personnel when temperatures start to reach dangerously low levels. Alternatively, staff should check these spaces frequently to monitor and avoid long heat outages during severe cold snaps.

Tip: Take extra care in earthquake-prone areas. These can also be subject to a higher potential of leaks and pipe breaks, depending on the quality and vintage of the piping and the adequacy of earthquake sway bracing.

Appliances, laboratories, cooling and heating piping, and radiators.

Due to the sheer number of these systems in residential properties, condominiums, hotels, public buildings and commercial high-rise buildings, they're the most prevalent root causes of water damage losses.

For that reason, it's important for the facilities personnel to monitor the condition of

- Appliances, such as washers
- Heating systems
- Water tanks
- HVAC system and cooling towers
- Water supply connections
- Shutoff valves
- Piping and the flexible connections between the valves and the appliances

Whenever water damage problems result from plumbing issues or where there are signs of deterioration, it's time to update fixtures or piping, including the replacement of PVC nylon braided lines with steel braided lines. This is also a good practice when planned facility updates are being made, rather than waiting until their useful life has been exceeded.

Hot water tanks have been the source of many serious water damage losses. Facility personnel should be aware of the age and condition of these tanks. The normal life expectancy of hot water tanks is generally 10 - 12 years. These tanks can become problematic after the normal life expectancy is up, subject to rusting and catastrophic failure. A potential flooding event can result. Unless the tank supply piping is provided with excess flow monitoring and control, a failure could result in continued water discharge until the condition is discovered.

Hot water tanks should always be routinely inspected and maintained. Replace the tanks even if they show only minor signs of deterioration.

Tip: Seasonality: preventative maintenance is KEY! Accidental discharges from heating systems, HVAC equipment or even smaller appliances often start from slow leaks which grow to sudden and unexpected ruptures. Consider inspecting these items regularly and examine connection points for potential leaks. These units are more exposed to potential losses when they're first turned on for cold seasons or for summer usage, so for HVAC systems, preventative maintenance should take place in the months of March or April; while winter preparedness for heating systems should be done in the months of October or November.



Tip: Install safety pans. Safety pans beneath hot water tanks and HVAC condensers can catch nuisance leaks. Sometimes these pans can be piped to local drainage systems, an added safety measure.



Sewage systems and sump pumps.

Sewage systems can also lead to water intrusion through backup of floor drains and other sewer piping. The cause of these sewer backups can be located long distances away from the building, yet still create a significant loss. Knowing the loss history of your facility and sewer back-up events is helpful in determining preventative measures.

Sump pumps are a critical piece of equipment and they're sometimes all that stands between a safe, dry basement and a flooded one. Often, low-lying facilities or basements with seeping foundation walls will admit nuisance water. The installation of sump pumps can help to discharge this water from the building.

The problem is that sump pumps are often out of sight, and therefore out of mind. Without proper preventative maintenance, these pumps can deteriorate and become inoperative. Sump pumps should be part of the facilities routine inspection, testing and maintenance planning. Monitoring power, high-level water detection and the installation of back-up power sources are all prudent measures for adequate emergency response.

Critical equipment.

Critical equipment has a very high vulnerability to water intrusion. That includes:

- Data or media centers
- Main computer rooms
- Telecommunications
- Hospital diagnostics equipment or bio labs
- High technology manufacturing clean rooms

Even small amounts of water could result in immediate shutdown and significant damage to this equipment, resulting in high operational impact. So it's very

important to be aware whenever domestic water supply or sprinkler protection piping has been installed over this equipment.

Tip: Locate water piping away from equipment.

Other measures include properly shielding equipment, or using water sensors with quick-acting automatic shutoff valves installed to prevent serious water damage from occurring.

Sprinkler systems.

It's well known that fire protection sprinkler systems have greater than a 97% success rate of fire control when they're properly designed and cared for. Most times these systems are monitored for water flow and security tampering to ensure they'll work in the event of a fire. Facilities should also ensure that effective sprinkler system maintenance and alarm contracts are in place as an added measure to prevent non-weather-related water damage losses. If sprinkler systems leak, we generally have the benefit of water flow alarms and instant notification, **IF** the alarms are well maintained.

Tip: Keep a close watch on control valve rooms.

Normally sprinkler control valves or valve rooms are located on exterior walls. In cold weather climates it's important that these rooms are adequately heated and provided with low temperature monitoring. Even in temperate climates, cold snaps can lead to pipe freeze-ups in unheated areas. Be sure to check control valve rooms frequently during these cold snaps. Also, pay special attention to unheated attics, basements and crawl spaces, especially when wet pipe sprinkler protection is provided in these spaces. Ideally these areas are provided with low temperature monitoring.



Facility landscaping and surrounding areas.

Water intrusion can also occur from surface water or other nearby water sources during heavy rain storms. The most vulnerable areas include below-grade door openings, bulkheads, windows, vents, and other building penetrations.

Tip: Don't create water funnels with landscaping.

Close attention should be given to proper landscaping (slope and drainage around the building) so that these site features don't act like a funnel for the water to enter the building. Natural events such as heavy rainfall, windstorm, flooding or hurricane require special considerations.



The Hartford Risk Engineering Organization can be consulted on an as-needed basis to address your site-specific issues or inquiries.

Renovations and new construction.

Renovation projects or new construction involve unique challenges in preventing water damage. Engineering and administrative controls that work well in new construction projects must be modified whenever a building, or a portion of a building, is occupied during construction.

Tip: Add on WDPP to your reno plans. The WDPP for renovation projects and/or buildings that will be occupied during construction should take this under consideration. The Hartford Construction, Inland Marine Team can be consulted to help address these unique exposures.

WATER DAMAGE PREVENTION PLANNING (WDPP)

Water intrusion and liquid damage are among the leading causes of loss across all commercial occupancies, even more so than fire, theft, vandalism, and all other property insurable perils.

Preventing water intrusion and liquid damage - and taking quick and effective action when leaks do occur - can help to drastically reduce the size and number of water damage losses that can occur in your facility. Once a vulnerability risk assessment has been completed, a Water Damage Prevention Plan should be written to identify high-risk areas and guide in mitigating potential water intrusion events.

The plan.

Based on the unique features and operations of the facility, the WDPP should incorporate the following measures, including procedures for both clean water and contaminated water incidents:

- Develop a log to track history of leaks and resulting liquid damage
- Document potential sources of water intrusion and routes of entry
- Create detailed plans or schematics of liquid piping systems, including the location of shutoff valves
- Establish a valve shutoff authority, and review / update when changes in personnel and facility layouts occur
- Conduct annual systems inspections and provide appropriate maintenance annually
- Enhance mitigation efforts by obtaining the necessary supplies (tarps, wet vacs, buckets, etc.) to minimize event damage
- Consider change management, including facilities and operation plans as part of the WDPP
- Conduct a facility vulnerability risk assessment annually
- Identify repair and remediation contractors and where possible, establish pre-event contracts under retainer
- Review, update and exercise the WDPP annually

Tip: Map your piping systems. As mentioned in the list above, a key feature of an effective WDPP is a detailed piping plan or schematic of the facility liquid piping systems and a preplan of actions to be taken in the event of liquid leak. To do this, start by identifying all liquid control valves, including zonal, floor and main shutoffs. Create a master list and make sure the list is made available to all appropriate personnel. Consider color coding and/or labeling the valves, along with direction of flow indicated.

Tip: Clarify your shutoff protocol. Assign responsibilities to staff, including peak and off-peak times, and ensure authority to shut off valves. Training should be provided to assigned staff so that they're aware if and when a valve should be shut. Make instructions clear so that any new team members understand the procedures. Shutting valves for the wrong reason can lead to a disaster if an ensuing fire is in another part of the facility, so this needs to be part of the shut-valve decision process.

Tip: Maintain temperature control. Maintain heat for locations exposed to frigid or freezing temperatures. Even warm climate regions can experience freezing temperatures on occasion.

Tip: Create a check list of key concerns and conduct regular inspections. This should include checking the condition of connections to appliances, the working status of shut off valves, ensuring that heat is working in key exposures areas, such as sprinkler valve rooms.

Cleanup.

Provide training to all WDPP team members on the subject of safe cleanup protocol. Create planned activation and notification procedures, as well as pre-established staging areas, where teams meet to organize and begin liquid damage mitigation activities, including:

- Removal of vulnerable materials
- Removal or protection of stocks and goods
- Removal or protection of critical equipment
- Begin water removal and clean up

Tip: Create a water intrusion response kit.

Include necessary items, such as:

- Flashlights and emergency lanterns
- Plastic buckets and wet/dry vacuums
- Hoses with the required adaptors
- Squeegees
- Pipe wrenches
- Electrical extension cords, ground fault circuit interrupters

Contractual relationships.

Develop contractual relationships with key contractors. These could include specialty contractors for specific types of business equipment, but should always include:

- Water damage remediation contractors
- Heating contractors
- Restoration companies

Having these contractors under retainer is always prudent, and will facilitate access and reasonable pricing in the event of widespread regional storm damages. During such events, contractor pricing will often spike due to supply and demand challenges.

Finally, it's important to keep the WDPP up to date. At a minimum, the plan should be reviewed at least annually to address operational or staff changes, then updated as needed.

Contractual risk transfer.

Transferring risk to another entity is one of the most important and cost-effective means to controlling losses. Where appropriate, transfer the responsibility for risk, contractually, to the responsible parties. This may range from contractors doing minor installation, to major overhauls to your facility. Below are some areas to consider:

- Require Hold Harmless and Indemnity Agreements
- Lease Business Property and Equipment
- Transfer Risk to Third Parties
- Require Waivers of Subrogation
- Require Additional Insured Status
- Always use the services of legal counsel to develop and/or review any contracts that you sign

For additional information please see [The Hartford's Risk Engineering TIPS Paper on Contractual Risk Transfer](#)

ELECTRONIC MONITORING

Consider installing water intrusion detection systems in critical areas, especially if your facility has had a history of water damage events. This technology has come a long way in the last few years and can include any and all of the following features, based on local needs:

- Wireless technology
- Easy, non-intrusive installations
- Detection that's connected to control valves for automated operation (shut in event of emergency)
- Set up to make alerts notifications to smart phones
- Connected to local or remote monitoring services
- Vendors can also provide analytics on water usage

KEY SERVICES

Since 1914, The Hartford's Risk Management team has been committed to helping our business customers improve their operations and reduce their losses.

As your property insurer and partner in risk management, The Hartford can identify concerns you may have overlooked, helping you:

- Consider your operations and any changes you plan to make
- Visualize the types and extent of losses that could occur at your property
- Evaluate controls to prevent or control possible losses
- Choose customized, practical solutions that blend with your operation
- Understand and apply National Fire Protection Association codes and requirements

INDUSTRIES ACROSS THE BOARD LOOK TO OUR EXPERTS

Our Risk Engineering consultants have the technical expertise to control property losses for a variety of industries: metalworkers, technology, pharmaceuticals, mercantile/retailers, plastics, wholesalers, printers and more.

Preventing fire. Preparing for severe weather. The Hartford's main objective in property risk management is to prevent property-related losses, which could include fire, explosion, weather and other events.

Available countrywide. The Hartford has the technical expertise in every geographic region to analyze and help minimize the negative effects of many types of threatening events.

LEARN MORE.

For more information, contact your Risk Engineering consultant from The Hartford today or visit [TheHartford.com/riskengineering](https://www.TheHartford.com/riskengineering)

HELPING CONTROL COSTS AS WELL AS LOSSES

Without proper controls in place to prevent or reduce the effects of a fire, explosion or weather-related property exposure, you may be denied insurance coverage.

Or, you may have to pay higher premiums and agree to higher deductibles. So it makes good business sense to use the risk management services available from The Hartford.

PUT US TO THE TEST FOR TECHNICAL INSIGHTS



Have you hired contractors to test your fire pumps, alarms and sprinklers but find it difficult to understand the test results? The Hartford can help you better understand test reports and determine if repairs are needed. We can even witness the tests as they're conducted, if appropriate.

In addition, The Hartford offers:

- Technical Information Paper Series (TIPS) on a variety of risk engineering topics, accessible on our website (see below)
- Sprinkler plan design/calculation review
- Review and consultation concerning higher hazard operations

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