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PROTECT YOUR PROPERTY FROM FREEZE DAMAGE

Inspection of Property

Fall is the time to perform pre-winter maintenance at each building. A good winterizing program prepares properties for both expected and unexpected cold weather hazards, and begins with a thorough inspection of all property. This program should include servicing of furnaces and boilers by a qualified inspector to guarantee adequate heat sources for the winter. All piping should be identified and treated, as necessary. Pipes in concealed spaces or in areas with limited heat service, especially those pipes which are located outdoors above ground (common in warm climate regions), warrant special attention. Windows, doors, and ventilation openings should also be examined for gaps or cracks where cold air may enter. Minor gaps can be eliminated by caulking; however, major gaps may require replacement.

Insulation and Inspection of Piping

Pipes identified as being potentially subject to freezing should be properly insulated. Heat tape or heat cables can be used, but caution should be exercised. The U.S. Consumer Product Safety Commission states that "heat tapes or cables contribute to 3,300 residential fires each year," and advises that heat tapes and cables be inspected yearly for cracks or damage to the plastic coverings, bare wires or char marks. If damage is found, the tapes or cables should be replaced.

Incorrect application of heat tape also poses a fire hazard. Use only one layer of heat tape. This will sufficiently protect pipes from freezing without presenting a risk of fire.

Many people also use heat tape in gutters, downspouts, and drains to prevent water from freezing in these areas and from backing up under roof materials, causing extensive roof damage and water leaks. However, it is important that the heat tape used is approved by a recognized testing lab for this type of application and that it be installed in accordance with manufacturer's recommendations. Misuse of heat tape in these cases creates an electrical hazard and a possible fire ignition source.

As winter arrives, a designated person should routinely inspect the property in order to limit damage if a water pipe has frozen. Mission churches, parish halls, schools, and other occupancies that are used on a limited basis should also be checked. These buildings can sustain extensive water damage before the problem is discovered. During holidays and weekends, when buildings are unoccupied (such as schools) or have minimum staff on hand, substantial losses can be incurred before it can be determined that a water pipe has frozen and burst. During periods of extreme cold, inspections performed every three or four hours would not be excessive.

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Maintaining Adequate Heat Supply

All properties should be adequately heated during winter months to prevent pipes from freezing. If a building is unoccupied, a designated person should either maintain an adequate building temperature or turn off the water and drain the pipes. These steps are frequently neglected, even though either action will prevent damage to internal piping.

Temporary heating devices may be used to heat property areas which are vulnerable to the cold. However, care should be taken in the use of these devices. Precautions include:

1. Provide ample distance between heating devices and flammable or combustible materials.

2. Promptly and effectively service heating devices, as well as chimneys and flues, when needed.

3. Store fuel properly and use correct filling/firing procedures.

4. Provide alert and frequent supervision in areas where heating devices are used.

Freeze damage can be controlled and prevented by designing a maintenance and inspection program to winterize all properties.

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PREVENT FROZEN SPRINKLER SYSTEMS

Frigid temperatures can lead to severe freeze damage. To mitigate this risk, a qualified individual should be designated and trained to inspect and maintain the property's sprinkler system. Regular testing of the system is essential to ensure proper functionality. Backup personnel should be trained to support the primary inspector in case of absence or emergency. While smaller properties may opt to hire a professional sprinkler contractor for inspections, it is still important for one or two on-site individuals to be trained in visually checking the system for breaks, leaks, or other potential hazards on a routine basis.

When water freezes, it expands, often causing pipes or fittings to crack. If a fire protection system freezes, bursts, or fails to operate, the consequences can be devastating. To prevent such incidents, consult your fire protection company or service provider. They are best equipped to offer expert guidance and recommend effective solutions for keeping your fire sprinkler system fully operational during the winter months.

Below are some key winter weather tips to help ensure your fire protection system remains functional and dependable year-round.

- **Snow Removal:** Promptly and completely remove snow that prevents access to control valves, hydrants, or service roads; blocked access might discourage regular maintenance or inspections of the sprinkler system.
- **System Maintenance:** Have a professional inspect your sprinkler system(s) before winter to increase durability and dependability.
- **Insulate**: Insulate all exposed pipes, including those in attics, crawl spaces, and exterior walls. Use insulation with the right thermal resistance for your area.
- **Close All Openings:** Ensure that doors, windows, skylights, ventilators, and other openings are weather-tight to prevent the entry of cold air.
- **Add Antifreeze**: Add antifreeze to the sprinkler system to reduce the chance of freezing or broken pipes. A professional can test the water during an annual inspection to ensure the correct concentration.
- **Use Heat Tracing Tape**: Apply electrical heating elements along the pipes to maintain a constant temperature. Make sure the heat tracing is listed to meet fire safety standards.

- **Keep the Thermostat Up**: Set the thermostat to at least 55 degrees Fahrenheit to allow warm air to reach the pipes. Check sprinklers around unit heaters or other heat-producing devices for the correct temperature rating.
- **Use a Heated Valve Room**: If you have a dry pipe sprinkler system in your building or in parts of your building, you will need a heated valve room to prevent water from freezing behind the valve.
- **Maintenance**: Inspect sprinkler systems frequently for technical malfunctions that may cause or aggravate freeze damage. Corrosion, clogged lines, mechanical damage, and tampered valves are a few disorders that could significantly reduce the performance of the system and make it more vulnerable to freezing damage.

Regular maintenance of sprinkler systems is one of the most effective methods for preventing freeze damage. A large freeze loss processed by Catholic Mutual involved over $250,000 in damages at a school. During the Christmas break, a portion of the dry sprinkler system malfunctioned and filled with water. After the system froze and broke, water ran for approximately twenty hours before it was discovered. Proper maintenance of the sprinkler system, frequent inspections of the vacant school during cold weather, and a higher building temperature could have prevented or lessened the extent of damage.

If your sprinkler system becomes frozen:

1. Notify the Fire Department responsible for protecting your property.
2. Notify the sprinkler company.
3. Do not attempt to thaw out the piping using a torch or open flame device.
4. Determine the specific causes of the freezing (i.e., inadequate heat, insulation, or mechanical failure). Take corrective action to prevent another occurrence.
5. If the system has been damaged, repairs should be made, and the system returned to full operation before the building is reoccupied.

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Water and Temperature Sensors

Have you ever experienced the nightmare of water damage from frozen pipes, a sewer backup, or a suddenly flooded basement? If so, you know how expensive, time-consuming, and draining it is to repair your property and protect it from further damage. Often times, leaks are slow and subtle, causing devastating damage before you even realize they are there. Other times, they can be an instant event which can happen when buildings are vacant and there's a sudden cold snap that cause your pipes to burst. It is important to know there are sensors on the market today which can assist you in detecting water leaks and drops in temperatures. These detectors can help you locate an unexpected water source quickly before major damage occurs.

A **water and temperature sensor** is an electronic and/or battery device that is designed to detect the presence of water and temperature change which provides an alert to reduce the risk of water leakage and potential damage. There are many designs, but common ones include, a small cable or device that lies flat on a floor and relies on the electrical conductivity of water to decrease the resistance across two contacts. The device will alert via an audible alarm, or by Wi-Fi or Bluetooth signals to a smart phone. These are useful in a normally occupied area near any infrastructure that has the potential to leak water from sources such as HVAC, water pipes, drain pipes, boilers, sump pumps, floor drains or water heaters.

Things to Consider Before Purchase:

Identify Sites - Best locations to consider for placement of sensors:

- Where are the likely sources of water intrusion in your facility?
    - sump pumps – boilers - floor drains – restrooms - lower level windows
- Where are the likely sources of water failure in your facility?
    - water heaters - toilets/sinks – boilers - pipes
- Where have you had problems in the past?
    - review your incidence or claims history, if any
- Are there high dollar areas you want protected?
    - gym floors – organs – boilers - electrical systems
- What areas are vulnerable to freezing temperatures?
    - doors – windows - exhaust vents - duct work - chimneys/flues

Installation – Does it require professional installation or can it be done in house?

- Determine your technical abilities
    - Are you skilled/qualified to set up these systems to your phone(s) and email account(s) to ensure proper functionality?

- Equipment
    - Hubs – Determine how many hubs will be needed if this system is purchased. A Hub is a device that connects to your router so you can have wireless connection to the sensors. Based on the system you do purchase, where should they be strategically located for the best connectivity? With a very large church or school, it may require multiple zones, which means multiple hubs, which is an additional expense.

    - Sensors – These are the devices you place at your potential water source to alert you to the presence of water or change in temperature. Determine how many sensors will be needed by identifying your potential loss locations. This will assist you in determining which system to consider.

- Application
    - Are you skilled/qualified to set up these systems to your phone(s) and email account(s) to ensure proper functionality?

    - Cellular service for some of these systems may be required. Keep in mind, there is likely a monthly fee for such use.

Installation Issues – Security

- Passwords
    - On some devices, it will be necessary to have an email and password in order to receive alerts.

- Operating systems
    - It is important to know whether your computer, tablet or smartphone operating system is compatible with your desired water sensing device.

- Wi-Fi passwords
    - These will need to be protected. It is important to know the Wi-Fi network passwords for your building in order to connect your water sensing devices.

- App Store
    - Some devices may require a smart phone or tablet app to be downloaded in order to monitor each sensor and to receive alerts. Directions from the manufacturer will be included on how to download the proper app and how to setup your water sensing system.

<u>Service Issues</u> – Strength and service offered in your area

- Wi-Fi service
    - Basements and geographic location, etc. If you are in an area where you consistently have Wi-Fi interruption, you may have to consider a sensor system centered on cellular service.

- Cellular service
    - This may require a monthly fee to utilize.

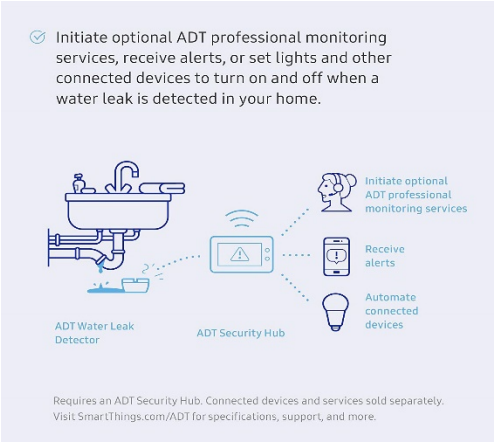
There are several water sensor systems currently on the market. Catholic Mutual does not endorse any one of these products; however, we do recommend consideration be given to installing water/temperature sensor systems to reduce the risk of water damage at your facility. It is also worth noting that you should research whether or not any of these devices will allow you to install more than one contact number and email address to allow multiple notifications in the event your primary contact is unreachable during an event.

<u>Sample Products</u>:

Honeywell Lyric Wi-Fi Water Leak and Freeze Detector

This water sensor is easy to set up and, unlike some of the other sensors out there, it does not require a hub to work. If you're at your facility when the Lyric detects water, you'll hear an audible alarm that will immediately alert you of the leak. If you are away from the facility, the Lyric connects directly to your Wi-Fi network and has an easy-to-use app that sends alerts directly to your smartphone if it detects water. In addition, it provides temperature and humidity readings. This will allow you to monitor your building's normal conditions – something that will help you monitor warning signs early on if something is not right. The Lyric smart water sensor runs on AAA batteries.

Samsung SmartThings ADT Water Leak Detector



The Samsung SmartThings Water Leak Detector follows this pattern with a straightforward, easy-to-use app that alerts you if water is detected or if the humidity or temperature falls outside your preset levels, allowing you to personalize the alerts.

The SmartThings ADT Water Leak Detector is a Wi-Fi-connected, multi-function sensor that detects major problems such as water leaks, humidity and freezing or high temperatures. It can be connected to other ADT devices if you choose the service. The Samsung SmartThings Water Leak detector works well beneath toilets, under sinks, near the water heater or other appliances such as boilers. It runs on AAA batteries with a three-year battery life and a one-year warranty.

This system requires a hub that covers the size of a large home. As such, you cannot just put other SmartThings hub in an outbuilding or area and connect them together. There are other possible solutions to this detailed in the following link:

http://thingsthataresmart.wiki/index.php?title=How_to_Automate_an_Outbuilding

This will include the installation of repeaters that will connect other buildings or locations to the main Hub.

LeakSmart Sensor

Though a little pricier than some of the other sensors mentioned, the LeakSmart sensor has the potential to save a significant amount of money because it not only detects leaks, it connects to your water main and shuts off all water automatically within five seconds of detecting a leak to prevent the damage from occurring using the LeakSmart Valve.

One leaky toilet, washing machine or water heater can cause thousands of dollars' worth of damage if the leak isn't detected soon enough. You can integrate the LeakSmart Sensor with other smart platforms. If you use Nest smart products, the LeakSmart has some special additional features. It easily integrates with other smart platforms and provides special protection when paired with Nest. The LeakSmart Sensor also monitors temperature, so you will be alerted to any elevated hot or cold drafts that might signal other issues.

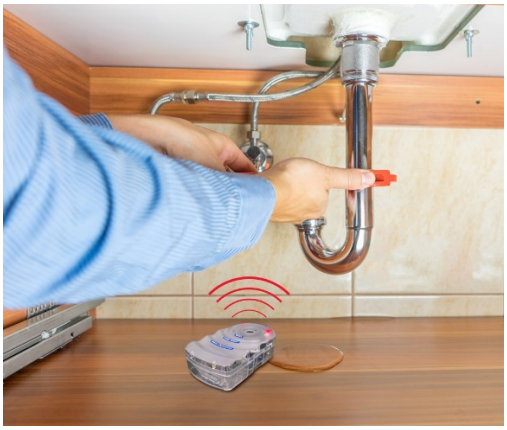
Note: This sensor will likely require the expertise of a professional technician due to its connection with your water main.

D-Link DCH-S16 Wi-Fi Water Sensor

The D-Link DCH-S16 Water Sensor has a unique cable sensor. The detachable cable (3.5-foot non-sensing and 1.65-foot sensor cable) includes leads embedded in it, so you can run it along the edge of basement or bathroom floors. If water comes in contact with one of the leads, it will set off an alarm, allowing you to monitor a larger area and receive notice more quickly if any water is seeping in or leaking out.

The base unit plugs directly into the wall, no batteries are required, and the built-in alarm has 70 decibels of sound power and a red blinking LED light, so you may act immediately if needed. You can also connect the device to your phone using the Mydlink mobile app and Wi-Fi to receive notifications if leaks are detected. If you have other Mydlink smart products, you can use the app to allow interaction between the water sensors and your other products for a synergistic effect in your building. You will need to consider if this system is an option for you in the event your electrical power is interrupted and you do not have a back-up generator.

Zircon 68882 Leak Alert



This sensor offers a unique option of an audible alarm. During storms, there may be no electricity and therefore, no Wi-Fi alerts. It creates a super-loud, battery-powered 105-decibel alarm and flashing SOS alert even if the power goes out, taking your Wi-Fi with it – no smart hub or wiring is required.

The super-loud alarm makes it more likely that a passerby will hear it even if the leak happens when no one is around. And of course, if the Wi-Fi is on, the Zircon Leak Alert sends e-mail alerts that you can check from anywhere. Combine multiple sensors in your facility and name each of them during set up, so that your e-mail alert can immediately let you know which sensor was triggered.

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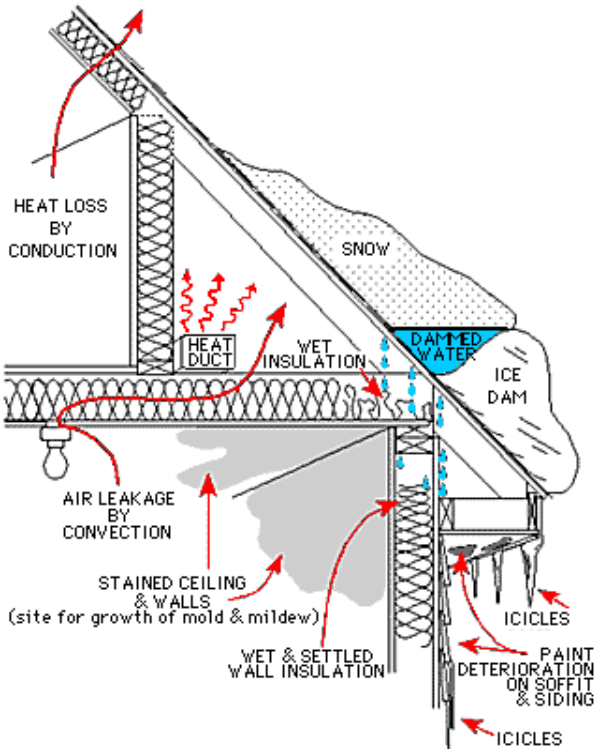
Ice Dams

What is an ice dam?

An ice dam is a ridge of ice that forms at the edge of a roof and prevents melting snow (water) from draining off the roof. The water that backs up behind the dam can leak into a building and cause damage to walls, ceilings, insulation, and other areas. The diagram below shows a cross section of a building with an ice dam.



What causes ice dams?

There is a complex interaction among the amount of heat loss from a building, snow cover, and outside temperature that leads to ice dam formation.

The snow on a roof surface that is above 32°F will melt. As water flows down the roof, it reaches the portion of the roof that is below 32°F and freezes creating an ice dam.

The dam grows as it is fed by the melting snow above it, but it will limit itself to the portions of the roof that are on average below 32°F. The water above backs up behind the ice dam and remains a liquid. This water finds cracks and openings in the exterior roof covering and flows into the attic space. From the attic, it could flow into exterior walls or through the ceiling insulation and stain the ceiling finish.

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Dealing with ice dams

Immediate action:

- The Parish should hire a professional, licensed and insured contractor to remove the snow from the roof. This eliminates one of the ingredients necessary for the formation of an ice dam. It is not recommended that your employees or volunteers be utilized for this task.

Long-term action:

- Increase the ceiling/roof insulation to cut down on heat loss by conduction. A professional insulation contractor should be hired by the Parish to perform this work.
- The contractor should also ensure that the ceiling is air tight so no warm air can flow from the building into the attic space (if present).

Both of these actions will increase the snow load that your roof has to carry because it will no longer melt. Can your roof carry the additional load? If it is built to current codes, there should not be a structural problem.

Natural roof ventilation can help maintain uniform roof temperatures, but if the long-term actions described here are done effectively, then only small amounts of roof ventilation are needed to maintain uniform roof surface temperatures. If heat transfer has been reduced substantially, then snow will build up on the roof and cover natural roof ventilation systems, reducing attic ventilation rates. Natural attic ventilation systems are needed to dry the attic space and remove heat buildup during the summer.