

## TIME TO WINTERIZE!!!

DECEMBER 2011

**Winter is coming!** Now is the time to make sure that your buildings, heating systems, equipment, and fire protection systems are prepared for the winter weather.

Do you realize that by simple preventative maintenance on the roofs, it is estimated that the NCR Pool could have a savings of \$5 million dollars a year? On one day last year, \$3.5 million in losses due to a roof collapse and subsequent flooding were caused at one location simply because they failed to clean out the storm gutters.



From a Risk Management standpoint, school districts have to be more proactive when it comes to their buildings and property. Winter weather brings its own unique set of concerns and challenges. In addition, care must be taken to protect the health and well-being of both the students and the staff. The best way to

do this is to winterize your locations through inspection, maintenance, and complete repairs where needed.

There are several steps that districts can take to minimize liability exposures associated with winter weather:

- Surveys to the buildings, paying strict attention to the conditions of the roof, tiles, and storm gutters. The largest weather related property & business interruption losses commonly result from roof system failures. High wind conditions can challenge roof designs. Drifting snow on roofs is unpredictable. Excessive rainfall in a short amount of time could overtax roof drainage systems. The best practice to control future losses would be to perform proactive surveys of these systems and performing maintenance and completing repairs where needed.
- Heating systems for the school or campus should be thoroughly examined and cleaned with all controls tested to be sure that they are in good operating order. All emergency generators and other fuel burning equipment, including those needed for burning standby fuels, should be inspected and functionally tested well in advance of the oncoming cold weather. Temporary or portable heating devices should be avoided if at all possible, because of the inherent fire and CO hazards of such equipment. Portable heaters should only be used for emergency heating when primary heating systems fail. If used, these heaters should be located away from combustible materials, provided with adequate ventilation, and monitored on a regular schedule.
- In those buildings protected by wet pipe sprinkler systems heating equipment thermostats should be properly set to maintain temperatures above 40<sup>o</sup> F. Buildings that are unattended should be equipped with protective signaling devices to monitor low building temperature. Dry pipe sprinkler systems and special water spray systems typically have insulated or heated valve houses, which require monitoring throughout the winter. All piping low points on these systems should be identified, drained, and serviced in advance of cold weather.



The recommendations provided in this bulletin should help to reduce your risk and reduce the exposure to a loss.

Our Loss Control experts are ready to help you address winter weather related issues and other Risk Management concerns. For more information about these services, please contact your local **Keenan & Associates** Office.

## WINTERIZATION

### **BEST PRACTICES:**

#### **Winter Preparedness Safety Tips**

Timely preparation, including structural and non-structural mitigation measures to avoid the impacts of severe winter weather, can avert heavy personal, business and government expenditures. Experts agree that the following measures can be effective in dealing with the challenges of severe winter weather:

#### **BEFORE SEVERE WEATHER ARRIVES**

- Store drinking water, first aid kit, canned/no-cook food, non-electric can opener, radio, flashlight and extra batteries where you can get them easily, even in the dark.
- Keep cars and other vehicles fueled and in good repair, with a winter emergency kit in each.
- Get a NOAA Weather Radio to monitor severe weather.
- Know how the public is warned (siren, radio, TV, etc.) and the warning terms for each kind of disaster in your community; e.g.:
  - **"winter weather advisory"** --- Winter weather conditions are expected to cause significant inconveniences and may be hazardous, especially to motorists
  - **"winter storm watch"** --- Be alert, a storm is likely
  - **"winter storm warning"** --- Take action, the storm is in or entering the area
  - **"blizzard warning"** --- Snow and strong winds combined will produce blinding snow, near zero visibility, deep drifts, and life-threatening wind chill--seek refuge immediately!
  - **"frost/freeze warning"** --- Below freezing temperatures are expected and may cause damage to plants, crops, or fruit trees
  - **"flash flood or flood watch"** --- Be alert to signs of flash flooding and be ready to evacuate on a moment's notice
  - **"flash flood warning"** --- A flash flood is imminent--act quickly to save yourself because you may have only seconds
  - **"flood warning"** --- Flooding has been reported or is imminent--take necessary precautions at once

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- Know safe routes from home, work and school to high ground.
- Know how to contact other household members through a common out-of-state contact in the event you and have to evacuate and become separated.
- Know how to turn off gas, electric power and water before evacuating.
- Know ahead of time what you should do to help elderly or disabled friends, neighbors or employees.
- Keep plywood, plastic sheeting, lumber, sandbags and hand tools on hand and accessible.
- Winterize your house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment. Install storm shutters, doors and windows; clear rain gutters; repair roof leaks; and check the structural ability of the roof to sustain unusually heavy weight from the accumulation of snow--or water, if drains on flat roofs do not work.
- If you think you might want to volunteer in case of a disaster, now is the time to let voluntary organizations or the emergency services office know beforehand.

#### **DURING ANY STORM OR EMERGENCY**

- Monitor your NOAA Weather Radio or keep a local radio and/or TV station on for information and emergency instructions.
- Have your emergency survival kit ready to go if told to evacuate.
- If you go outside for any reason, dress for the season and expected conditions: For cold weather, wear several layers of loose-fitting, lightweight, warm clothing rather than one layer of heavy clothing. Outer garments should be tightly woven and water-repellent. Mittens are warmer than gloves. Wear a hat. Cover your mouth with a scarf to protect your lungs from extremely cold air. Wear sturdy, waterproof boots in snow or flooding conditions.
- If advised to evacuate, tell others where you are going, turn off utilities if told to, then leave immediately, following routes designated by local officials.

#### **DURING A FLOOD**

- Avoid areas subject to sudden flooding.
- Do not try to walk across running water more than 6 inches deep; even 6 inches of rapidly running water can sweep you off your feet.

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- Do not drive into flooded areas. If your car stalls, abandon it immediately--if you can--and seek higher ground.

### **DURING A WINTER STORM**

- Conserve fuel, if necessary, by keeping your house cooler than normal. Temporarily shut off heat to less-used rooms.
- If using kerosene heaters, maintain ventilation to avoid build-up of toxic fumes. Keep heaters at least three feet from flammable objects. Refuel kerosene heaters outside.
- Avoid travel if possible. If you must travel, do so during daylight. Don't travel alone. Stay on main roads, and keep others informed of your schedule.

### **IF A BLIZZARD TRAPS YOU IN YOUR CAR**

- Pull off the road, set hazard lights to flashing, and hang a distress flag from the radio aerial or window. Remain in your vehicle; rescuers are most likely to find you there.
- Conserve fuel, but run the engine and heater about ten minutes each hour to keep warm, cracking a downwind window slightly to prevent carbon monoxide poisoning. Exercise to maintain body heat but don't overexert. Huddle with other passengers and use your coat for a blanket.
- In extreme cold use road maps, seat covers, floor mats, newspapers or extra clothing for covering--anything to provide additional insulation and warmth.
- Turn on the inside dome light so rescue teams can see you at night, but be careful not to run the battery down. In remote areas, spread a large cloth over the snow to attract the attention of rescue planes.
- Do not set out on foot unless you see a building close by where you know you can take shelter.
- Once the blizzard is over, you may need to leave the car and proceed on foot. Follow the road if possible. If you need to walk across open country, use distant points as landmarks to help maintain your sense of direction.

### **AFTER THE STORM**

- Report downed power lines and broken gas lines immediately.
- After blizzards, heavy snows or extreme cold, check to see that no physical damage has occurred and that water pipes are functioning. If there are no other problems, wait for streets and roads to be opened before you attempt to drive anywhere.

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- Check on neighbors, especially any who might need help.
- Beware of overexertion and exhaustion. Shoveling snow in extreme cold causes many heart attacks. Set your priorities and pace yourself after any disaster that leaves you with a mess to clean up. The natural tendency is to do too much too soon.

## **RETURNING TO YOUR HOME AFTER A FLOOD**

- Do not turn electricity back on if you smell gas or if the electric system has been flooded.
- Wear sturdy work boots and gloves.
- Do not handle electric equipment in wet areas.
- Use flashlights, not lanterns, candles or matches, to check buildings containing natural gas, propane, or gasoline.
- Follow directions from local officials regarding the safety of drinking water.
- Clean and disinfect everything that was touched by flood waters and throw out any such foodstuffs.
- If you want to help other victims, give cash donations to the appropriate relief agencies to buy what the victims need. Donated goods such as used clothing, unlabeled and unsorted by size are usually more of a logistical problem than a help. If particular items are needed, there will be public announcements and instructions concerning these.
- Don't go to the disaster scene on your own to volunteer. If you are already a volunteer, you will know where you are to report. If additional volunteers are needed for labor-intensive work like sandbagging, public announcements will be made.

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## WINTERIZATION

### **RISK CONTROLS:**

August through September is typically the time to make sure your buildings, your heating plant, your process equipment, and your fire protection systems are prepared for winter. Critical considerations to look at and discuss are:

#### **Pre-Emergency Planning**

- Begin by establishing a task force responsible to the facilities manager (or designee) to conduct a complete cold weather/winterizing survey.
- The survey should include facility buildings (roofs and walls), fire protection equipment, heating equipment (including standby fuels), cooling equipment (including cooling towers and air conditioning equipment), water supplies and piping, security and alarm supervisory systems, communication systems, and access roads on the premise and nearby vicinity.
- The task force should establish a plan of action that prioritizes items identified as deficient in the survey and need repair, Immediate/High/Medium/Low. The list is presented to the facilities manager (or designee) to carry out the plan of action.

#### **Access to Buildings and Critical Equipment**

- It is important to communicate the procedures to be followed during severe weather to key operating and emergency personnel;
- It is especially important for key employees to monitor developing weather conditions; and
- Critical personnel include those who tend the primary utility equipment – boilers, pumps, air compressors, heating equipment, and fire protection and security systems.

#### **School / Campus Roofs**

- The largest weather related property & business interruption losses commonly result from roof system failures. High wind conditions can challenge the best roof designs. Drifting snow on roofs is unpredictable and must be closely monitored. Excessive rainfall in a short time period can overtax roof drainage systems.
- The condition of the roof assembly should be maintained on a year round basis to minimize the possibility of a roof wind loss or water intrusion. Flashing, roof ballast and fastening components and roof-mounted equipment are features that require frequent inspection and maintenance.

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## Heat, Heating Equipment and Low Building Temperature

- Heating systems for the school or campus should be thoroughly examined and cleaned with all controls tested to be sure that they are in good operating order;
- All emergency generators and other fuel burning equipment, including that needed for burning standby fuels, should be inspected and functionally tested well in advance of the oncoming cold weather;
- Temporary or portable heating devices should be avoided if at all possible, because of the inherent hazards of such equipment. However, portable heaters may be needed for emergency heating when primary heating systems fail. If used, these heaters should be located well away from combustible materials, provided with adequate ventilation, and monitored on a regular schedule;
- Evaluate attics, concealed ceiling and wall spaces, penthouses, and other areas with potentially poor air circulation or insulation; and
- Particular attention should be paid to recently completed construction or to buildings under construction, during cold weather experience to search for poorly insulated areas.

## Fire Protection Systems

- In those buildings protected by wet pipe sprinkler systems heating equipment thermostats should be properly set to maintain temperatures above 40<sup>0</sup> F. Buildings that are unattended should be equipped with protective signaling devices to monitor low building temperature. If watchmen or guards are employed, they should be well instructed on the special duties required during severe weather conditions.
- Dry pipe sprinkler systems and special water spray systems typically have insulated or heated valve houses, which require monitoring throughout the winter. All piping low points on these systems should be identified, drained and service in advance of cold weather. Trapped sections of a dry pipe system may be equipped with a moisture accumulation leg, sometimes called a drum drip, which allows draining of any water accumulation while the system remains in service.
- Automatic sprinkler systems with antifreeze loops should be tested for dilution of the antifreeze glycol prior to cold weather. The entire antifreeze solution should be drained, tested for adequate solution strength, filtered, augmented with additional glycol if needed, and replaced in the system. Optimum glycol concentration should be kept at 50/50.

## Implement Pre-Emergency Planning Procedures

- Actual freeze-ups of fire protection piping constitute serious impairments. Emergency measures that were developed during the planning period need to be promptly implemented.
- A fire watch should be initiated and maintained in the building during the impairment. Temporary protection may be possible.
- Hazardous operations should be minimized until protection is restored. No welding or open flame cutting should be permitted in the affected area. When major impairments occur, information should be given to the local fire department so they know what to expect if they are required to respond to an emergency.

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# Before Winter Checklist

School/Site: \_\_\_\_\_

Date: \_\_\_\_\_

Inspector(s): \_\_\_\_\_

This form is a reminder of general areas and items to be inspected. Check each item “acceptable” or “needs attention.” All “needs attention” items should include location, and the date corrected should be noted.

This form should be sent to the district:

- Maintenance Supervisor     
  Superintendent     
  School Safety Coordinator

A copy should be kept by the employee(s) making the inspection.

Area Inspected	Location(s)	Checked by			Status	
		Yes	No	Date	Accept.	Needs Attn.
<b>GENERAL PREPARATION</b>						
Develop Action Plan and train employees.						
Designate “Weather Watcher” to implement plan.						
Outline Emergency Organization responsibilities such as snow removal from roads, sidewalks, doorways and roofs.						
Prepare snow removal equipment.						
Establish heat system priorities.						
Locate ordinary thermometers in hard to heat areas.						
Make provisions to monitor unattended facilities.						
<b>BUILDINGS</b>						
Building shell in good condition.						
Close unnecessary openings.						
Design/protect heating/insulation systems prone to freeze damage to maintain minimum temperature of 40 degrees Fahrenheit (4 degrees Celsius).						
Prepare heating systems to maintain building temps above 40 degrees Fahrenheit (4 degrees Celsius).						
Provide safe, emergency heating equipment in areas prone to freezing: set to be activated automatically or by assigned personnel.						
Identify/prepare concealed spaces, such as crawl space to allow heat passage during cold spell.						
<b>ROOFING</b>						
Inspect roof framework for weaknesses.						
Assess roof’s capacity for snow loading.						
Develop plan for Emergency Organization/others to handle snow and ice loading on roof.						
Remove debris from drains.						

(Continued)

## Before Winter Checklist

Area Inspected	Location(s)	Checked by Personnel			Status (Check one)	
		Yes	No	Date	Accept.	Needs Attn.
<b>EQUIPMENT</b>						
<b>Boilers</b>						
Completely drain idle equipment.						
Flush with proper antifreeze solution.						
Clear lines with compressed air.						
Remove slow points and dead ends where possible.						
Install steam traps on piping/equipment with drain valves.						
Install low-water fuel cutoffs with minimum piping exposed to ambient temperature.						
Consider/install heat tracing lines for piping that carries water to the water glass, low-water fuel cutoff column, and feed water regulator.						
<b>Other Equipment</b>						
Provide adequate heat, locate in heated enclosure, or provide the proper anti-freeze solution for water cooled equipment such as compressors, pumps, etc.						
Apply lubricants suitable for low-temp applications in equipment such as pumps, blowers and compressors.						
Remove water from oil coolers and water jackets and drain condensers of chilling units.						
Provide adequate fuel supplies.						
Check pressure vessel vents, relief valves and safety valves to assure functional moving parts.						
Construct wind breaks to protect open piping/instruments.						
<b>FIRE PROTECTION EQUIPMENT</b>						
Place thermostats inside buildings to monitor temps.						
<b>For dry-pipe sprinkler systems:</b>						
Maintain dry-pipe valve room temp of 40 degrees Fahrenheit (4 degrees Celsius).						
Check piping pitch and all pipe hangers.						
Drain all low points and install more drains, if necessary.						
Drain system thoroughly after annual trip test.						
Insulate enclosure/install heater to maintain temps above 40 degrees Fahrenheit (4 degrees Celsius).						
Take dry air supply for compressor for dry, room-temperature source.						

A COPY OF THIS CHECKLIST SHOULD BE FORWARDED TO THE PRINCIPAL/SITE SUPERVISOR.

\_\_\_\_\_  
Signature of Recipient

\_\_\_\_\_  
Date

# During Cold Weather Checklist

School/Site: \_\_\_\_\_

Date: \_\_\_\_\_

Inspector(s): \_\_\_\_\_

This form is a reminder of general areas and items to be inspected. Check each item “acceptable” or “needs attention.” All “needs attention” items should include location, and the date corrected should be noted once the problem has been corrected.

This form should be sent to the district:

- Maintenance Supervisor     
  Superintendent     
  School Safety Coordinator

A copy should be kept by the employee(s) making the inspection.

Area Inspected	Location(s)	Checked by			Status	
<b>GENERAL PREPARATION</b>		Yes	No	Date	Accept.	Needs Attn.
Weather watcher informs Emergency Organization of impending cold snaps.						
Employee/Security Guard monitors/records temps in hard-to-heat areas, especially during idle periods.						
<b>BUILDINGS</b>						
Provide temporary interior openings to allow heat into concealed spaces during unusual cold spells.						
Check indicator post for tightness and repair leaks.						
Consider non-freezing/multipurpose dry chemical fire extinguishers in areas where freeze-ups are a concern.						
<b>ROOFING</b>						
Activate snow watch/removal crew to monitor snow depths and remove unsafe accumulations from roofs.						
Clear drains of ice and snow. If roof is pitched and without drains, open paths to eaves to ensure drainage and prevent ponding.						
<b>EQUIPMENT</b>						
When freeze is expected, drain water-cooled equipment that is not otherwise protected.						
Frequently drain condensed moisture from compressed air lines.						
Maintain air-drying equipment of air supply system for instrumentation and air-actuated equipment.						
Install safe, continuous flow-through piping where insufficient cover is present for buried piping or where it is otherwise impractical to protect piping.						
Check pressure vessel vents, relief/safety valves to make sure parts are functional and openings are not obstructed.						
Thaw frozen piping and equipment carefully to avoid damage. Do not use open flames to avoid a fire hazard.						

(Continued)

## During Cold Weather Checklist

Area Inspected	Location(s)	Checked by Personnel			Status (Check one)	
<b>IF COMPLETE LOSS OF HEAT OCCURS:</b>		Yes	No	Date	Accept.	Needs Attn.
Drain equipment such as process piping, mill-use lines, heat exchanges, process equipment, compressors, etc.						
Institute emergency procedures for processes that are dependent on steam water supply to avoid solidification or runaway condition.						
<b>FIRE PROTECTION EQUIPMENT</b>						
Routinely check building thermometers to assess interior temperatures.						
Keep fire pump intake screens clear of ice.						
Make sure hydrants, hose houses, pumper connections, indicator posts and other outdoor sprinkler system valves remain visible and accessible (free of ice and snow).						
If heat is lost, check all water-based extinguishers for possible freeze damage.						
If underground mains freeze, thaw them promptly.						
<b>For wet-pipe sprinkler systems:</b>						
Check for broken pipe fittings, cracked piping, and any distorted/leaking sprinklers.						
After unusually cold weather, open inspector's test connection; if there is no flow, water in the piping is probably frozen.						
<b>For dry-pipe sprinkler systems:</b>						
Regularly check air pressure and temps in dry-pipe enclosure.						
Use moisture traps and desiccants in the air supply piping if the system has a history of heavy condensation buildup.						

A COPY OF THIS COMPLETED CHECKLIST SHOULD BE FORWARDED TO THE PRINCIPAL/SITE SUPERVISOR.

\_\_\_\_\_  
Signature of Recipient

\_\_\_\_\_  
Date