

Prevention of water damage in historical buildings

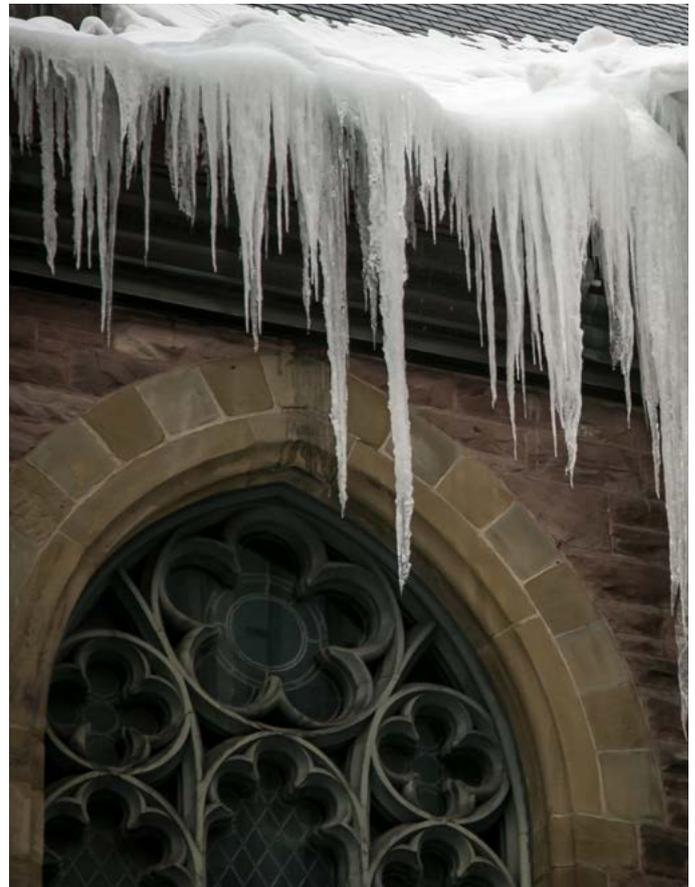
The winter months of 2010 were especially severe in the United Kingdom, above average heavy snowfalls, sustained sub zero temperatures and hard freezes took a huge toll on every aspect of domestic and business life. As the whole country hunkered down to withstand these severe weather conditions, buildings and factories were hit by frost damage, burst pipe, snow collapses and perhaps most damaging of all water ingress. The subsequent losses incurred totalled an all time high, at close to £1 billion, much of this was caused by water damage.

Older buildings of historical value suffered more than most from water damage during these freezing months. Buildings such as castles, stately homes, listed buildings, schools, museums, churches, town halls and council buildings took the full brunt of the storms. This loss prevention bulletin focuses specifically on how you can protect against water ingress for these buildings. Once wet, these buildings are notoriously difficult to restore and recover; the only effective solution is to **prevent** water ingress and damage.

What can you do this winter?

Preventing water ingress into buildings must be preplanned prior to the onset of winter. In all cases, a winter pre-plan should be established well in advance and certainly no later than by October and should consider the following:

- Establish a weather watching and monitoring function for your building. As winter approaches you need to be aware that situations can change very quickly and your ability to react rapidly can be hampered by disturbances in external factors such as public transport and road infrastructure. Put a responsible person in charge to guard against winter.
- Precautionary measures should start with basic visual checking and testing of the physical condition of key building features such as tiles, windows, ledges openings, walls, doors, gutters, downspouts and roof drainage channels. There are specialist companies that can be contracted out to make these checks safely and cost effectively.





- One of the most common causes of water damage is the freezing of pipes causing them to rupture. Ensure all water pipes and tanks in unheated areas are adequately lagged and in severely exposed areas trace heated. If possible systems that are not being used or non essential should be drained down.
- If a severe winter sets in, the heating equipment in your building will likely be tested to the full again. Test the functionality of all heating systems and ensure fuel is plentiful especially in relatively remote areas.
- Be particularly wary of freezing within outdoor piping. Inspect and test heat tracing and confirm that all areas have adequate insulation in place and secured.
- One of the most common causes of water damage is water from sprinkler piping. This can be due to leaks or worse from a rupture through the formation of ice. If your building has sprinkler piping it is imperative that a focused effort be made to winter proof all areas with sprinkler or firewater supply piping. Solutions include extra lagging, antifreeze, trace heating or simply just maintaining room heating. Outdoor piping requires special focus. Your sprinkler contractor can help you pre-plan if given sufficient time to prepare. The final winter proofing solution must not compromise the fire fighting capability of the sprinkler system.
- Be careful not to create conditions to promote the formation of ice dams. This is particularly important in older buildings where the backing up of water from ice damming effect can cause significant water ingress. See QBE Technical Bulletin - Ice Dams. [www.qbeeurope.com/documents/riskmanagement/property/technical-guides/Prevention of Ice Dams.pdf](http://www.qbeeurope.com/documents/riskmanagement/property/technical-guides/Prevention%20of%20Ice%20Dams.pdf)
- On roof areas where snow melt cannot drain off, do not allow snow accumulation to build up. Examples include flat parapet roofs and in valleys of sloped roofs. If the snow melt cannot drain away due to iced blocking up drainage channels, the water will build up and likely drain into the building. Prepare well in advance for snow removal with trained personnel and/or snow blowers.
- Even seemingly innocuous actions can have wide ranging and significant effects during abnormally cold weather. A normally closed door left open can cause pipes to freeze, use of blow torches to thaw frozen pipes have frequently cause buildings to burn down, lack of simple snow removal equipment has caused buildings to collapse. The only effective guard against all the myriad of potential loss scenarios is to be prepared and to be vigilant at all times.

Checklist

Prior to onset of freezing conditions

	GENERAL
	Establish a Weather Watch monitoring function during the winter months and designated a responsible person to do this.
	Ensure severe weather emergency plan is established.
	Ensure needed but likely "hard to get" equipment are planned for during winter months: Snow blowers / removers, Generators, Tarpaulins, Fuel, space heaters, Mops / buckets, Antifreeze, Sandbags, Hot air blowers, labour.
	Evaluate and address possibility of Ice Dams.
	For areas that are vacant or have a history of past freeze or water damage incidents, drain all equipment that carries water or is susceptible to condensation or freezing. Add antifreeze to any systems that cannot be drained.
	For unattended buildings, provide a supervised alarm system to monitor power supply, building temperatures, low-water fuel trips on boilers, water temperatures on exposed water storage tanks and in high value areas water detectors.
	Locate thermometers in hard to heat areas.
	Consider how ice plugged pipes will be thawed (e.g. hot air blowers) – DO NOT use open or naked flames.
	BUILDING
	Conduct visual and basic physical checks to assure building shell is in good physical condition.
	Ensure all building areas are able to reach and maintain at least 4°C temperatures. Though see notes for prevention of ice dams.
	Check all drainage channels (downspouts, hoppers, gutters etc) on roof are clear of debris.
	Ensure the temperature profile of all rooms and attic spaces can be monitored and that heat can be applied safely to these areas if needed. This is particularly important in areas holding water pipes, a freeze condition in these rooms must be prevented.
	EQUIPMENT
	Assure all boilers are safeguarded against freeze – particularly in drain lines, sight glasses and condensate lines. Drain down all idle boilers.
	Locate and ensure operability of the master shut off valve controlling water supplies into the building. If sub divisional valves exist within the building these should be similarly identified.
	Protect all water filled equipment that are prone to wind chill for example all outdoor equipment and also equipment located indoors but behind open louvers.
	For all sprinkler systems specifically engage sprinkler contractors to make winter safe all sprinkler systems. Areas of particular focus are systems protecting outdoor areas or cold areas (attics, lofts etc) , valve chambers and valve rooms, these should be at 4°C or higher.
	The sprinkler contractor should also make winter safe all pump houses, hydrants and suction / gravity tanks.

During freezing conditions

	GENERAL
	Weather watcher should monitor at least daily cold temperatures and forecasts.
	Temperatures should be taken of cold vulnerable areas during the day night and weekends.
	Consider and continually monitor the possibility of the entire building losing heating capabilities.
	BUILDING
	Keep roof drains open and free of ice in a safe manner. Engage specialist companies to perform this if necessary.
	Monitor the amount of snow on the roof and clear it before accumulations reach unsafe levels. Engage specialist companies to perform this if necessary.
	EQUIPMENT
	Check heat-tracing systems to make sure all operate adequately.
	Take special care if naked flame space heating equipment such as gas fires are used.
	Do not use naked flames to thaw ice plugged pipes and equipment.
	For all gravity and suction tanks maintain water temperature above 4°C.
	Check all sprinkler systems incl. wet-pipe and dry-pipe sprinkler systems regularly to make sure they are ice-free.
	Keep all fire protection-related equipment (e.g., hydrants) free of snow and ice for easy access.
	Maintain a temperature above 4°C in rooms with dry-pipe sprinkler system valves and fire pumps.

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