

Frozen Pipes

Understanding the Risk

During severe cold spell water systems, including sprinkler installations, can freeze, expand, burst and when there is a thaw significant water damage can result. If the water leakage is not detected immediately and appropriate action taken, significant damage can be caused

Preparation & Precautions

Prior to the winter period setting in there are numerous precautions that must be considered in order to manage this risk. The following list may not be conclusive and other remedial action may be considered necessary depending on the particular location and exposure:

- Identify equipment that is vulnerable to freezing and implement measures to adequately insulate and/or drain down water systems. If buildings are left unattended during winter months, the entire water system must be drained down.
- The entire pipework installation throughout the building including pipework/tanks located in concealed ceiling spaces must be evaluated in order to determine the level of protection afforded. This needs to be reassessed when building modifications or extensions are undertaken in order to ensure that all water service changes are considered.
- Monitor temperatures in areas which are vulnerable to freezing and have arrangements in place to increase the level of heating within the area if low temperatures are experienced.
- Inspect the fabric of the building to identify unnecessary openings, damaged doors, broken windows and unnecessary vents. These should be sealed where necessary however there may be a requirement to retain some level of ventilation.
- Heating systems are required in order to provide some level of heating and minimise risk of burst pipes. It is important that these systems are maintained at least annually.
- Prolonged low temperatures will eventually lower the temperature within buildings which will also affect water services increasing the risk of freezing. In light of this the building which contains water services must be provided with heating sufficient to maintain a minimum air temperature within every part of the building of at least 10°C.
- Frost stats must be fitted to heating systems in order to ensure that heating levels are maintained at 10°C in all areas including unoccupied buildings.
- Inspect piping in order to determine the level and quality of insulation afforded.
- Insulation material must be maintained in a dry state and this is particularly important regarding external or underground pipework which should be protected with a waterproof cover in order to exclude water and maintain insulation integrity.
- Smaller diameter pipes will require a greater thickness of insulation in view of the heat retention capacity of the smaller volume of water.
- Insulation should be provided around all fittings including bends, valves, tees etc.
- Insulation must be checked on a regular basis in order to check integrity. Birds can pick at and remove insulation exposing piping and other water services to freezing on the external fabric of the building.
- There may be water installations which cannot be drained down i.e. toilet cisterns, toilet pans, low section of water tanks etc. In these cases it may be necessary to add an antifreeze solution to the water. Consult the material data sheet in order to evaluate compatibility in advance of undertaking this.
- The location of drain valves, stop valves etc.



must be known by key personnel in order that the water supplies can be isolated immediately should there be a problem. These valves should be exercised on a regular basis in order to ensure that they remain operational.

- Sprinkler system will require special attention. It is important that alternate wet/dry installations are changed over at the appropriate time. Sprinkler system must be monitored off site at a third party alarm monitoring station in order to ensure an appropriate response by experienced staff should system activate. Sprinkler bells must be kept operational (where provided).

Emergency Response Procedures

If water leakage goes undetected for an extended period of time extensive damage can result. Intervention at an early stage can result in isolation of damaged pipework, tanks, equipment and thereby minimise damage.

An Emergency Response Plan must be developed. The team appointed must be kept informed regarding extreme weather conditions and emergency procedures in order that correct preventative action can be taken. The team must also be aware of procedures to adopt if a heating system fails including emergency contact details for heating system maintenance personnel.

Emergency Response personnel must be aware of the location of drain valves, stop valves etc in order that the water supplies can be isolated immediately should there be a problem. The location of these should be noted within the Site Emergency Response Plan.

During winter months when there is an increased risk of burst pipes it is important that there are regular building and plant inspections undertaken. This is particularly important overnight, at weekends and also over the Christmas holiday period when the building could be unattended for days. During vulnerable periods the buildings must be checked daily.

For further information, please contact your local AIG Commercial Property Engineer.

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