

Aircraft Hangar Door Tracks and Other CID1 Areas



Application Design Note

Aircraft hangar door tracks provide a unique challenge for surface snow melting due to the potential presence of hazardous substances. Aircraft housed in hangars, for maintenance or storage, contain large volumes of flammable fuel and fuel vapor which may leak from the fuel storage tanks. The National Electrical Code (NEC) and Canadian Electrical Code (CEC) require that all wiring in or under the hangar floor must conform to the requirements of Class I, Zone 1 locations or Class I Division 1 (CID1) locations because of the possibility of hazardous material leaking through the hangar floor. The codes further state that all fixed wiring in a hangar not in a hazardous area must be installed in metal raceways or must be armored cable, type MI cable, or aluminum sheathed cable. For hazardous material spill containment, hangar construction may include sumps or pits which are isolated from drain systems to collect the spilled fluid for recovery. These pits or depressions are classified as CID1 areas.

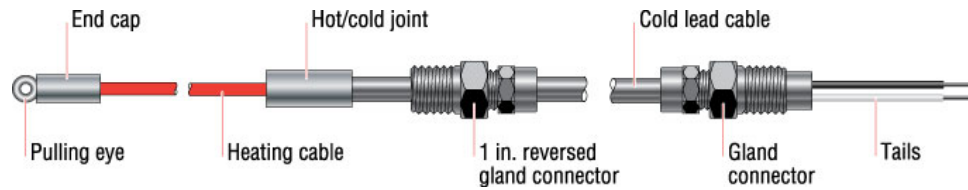
Hangar door construction often includes the use of rail like tracks to enable the large heavy doors to open and close sideways. Maintaining snow and ice free tracks is necessary for hangar door operation throughout the snow season. Due to the restrictions placed on the installation of heating cables, a method of isolating the heating cables from exposure to hazardous materials must be employed.

The best method of isolation is to install nVent RAYCHEM alloy 825 sheathed mineral insulated (MI) heating cables in a liquid filled steel pipe, as defined below.

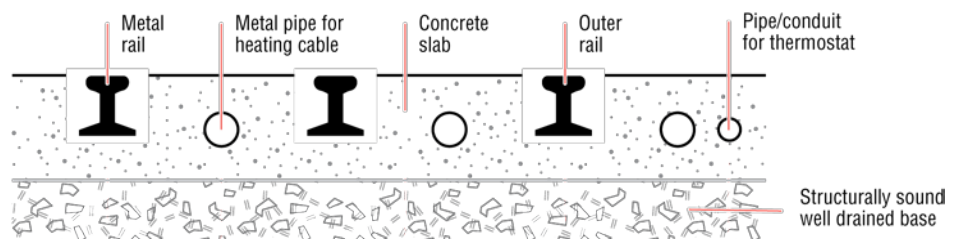
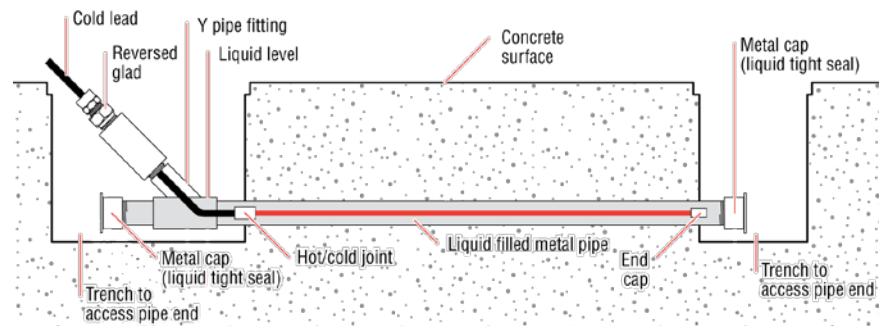
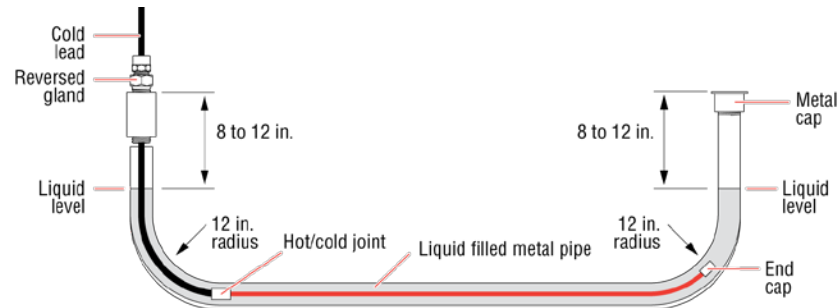
- Install MI heating cable in schedule 80 ASTM A-106 GR B, standard-weight seamless steel pipe. Tapered thread connections are satisfactory, providing the threads are cut true to gauge with a sharp, clean die. The threads should be washed with a good solvent and a pipe thread sealant should be used in assembly.
- Fill completed pipe assembly with glycol/water mixture or approved thermal transfer fluid ensuring heating cable is completely immersed and allowing space for expansion of liquid.
- All junction boxes must be located in accessible areas. Junction boxes must not be located in the heated slab, but must be located above grade level. Covers must be kept on boxes at all times when not working therein. Junction boxes must be rated for the area they are to be used, consult national and local electrical codes for Aircraft Hangar hazardous area classifications.
- The MI heating cable and piping must be designed and installed so as to deliver sufficient heat to offset heat loss in local Winter conditions. Consult nVent MI Surface Snow Melting Design Guide (H57045) for regional guidelines and contact your local representative or Technical Support for assistance.

All MI terminations must be protected from the weather and from physical damage. The gland assembly must be bonded to the system ground. All MI heating cable circuits must be provided with a ground fault equipment protection device with a 30-mA trip level or a trip point 30 mA above the inherent capacitive leakage level for the designed system.

Design Requirements



- Use Design 'D' Alloy 825 sheath cables
- Include: 1" reversed gland, pulling eye and SPLT (special length tolerance)
- Cables should be 6" to 12" shorter than pipe length
- Design cables to 25 to 35 watts/foot and install in liquid filled pipe



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