
Protection of Standpipes and Sprinkler Piping Against Freezing

The intent of this bulletin is to clarify the design and installation requirements for the protection of standpipes and sprinkler piping against freezing. It is also intended by this bulletin to establish a consistent and uniform enforcement approach to the acceptability of the foregoing installation.

When portions of standpipes and wet sprinkler supply mains are subject to freezing, the pipe shall be protected against freezing by reliable heat-generating systems capable of maintaining a minimum temperature of 4.4^o C (40^o F) (Refer to NFPA 13 or 14). The reliable maintenance at the required temperature level is permitted to be achieved by systems specifically listed for this purpose. The NFPA 13, 2013 Edition "Automatic Sprinkler Systems Handbook" acknowledges that heat-tracing systems may be utilized as such systems.

DESIGN AND INSTALLATION REQUIREMENTS

Electric heat-tracing cable systems are deemed to be acceptable provided the following conditions are met.

1. The entire heat-tracing cable system (all cables certified to CSA Standards C22.2, No. 130.1 or 130.2 and all heat-tracing controls) are designed and sealed by a Mechanical Registered Professional.
2. The heat output capacity shall be based on the ambient air temperature of -13^oC (8^oF) when used on metal pipes protected by a minimum 1" thick fiberglass insulation. Two inch thick insulation is recommended for pipes over 3" in diameter.
3. The manufacturer's installation instructions shall be closely followed and adhered to and posted in the sprinkler valve room.
4. Heating cables shall not be installed until a written release is received from the District Plumbing Inspector indicating that the standpipe and sprinkler pipes are completely installed and have passed all necessary tests.
5. A remote trouble signal indicating any condition described in item (8) below shall be provided on the annunciator of the building fire alarm system. The trouble signal shall be installed in addition to the trouble signals mandated by Article 3.2.4.10. of Division B of the Vancouver Building By-law (VBBL) for an automatic sprinkler system.
6. Where an on-site generator system is used to supply emergency power to a fire pump motor(s), it shall be of sufficient capacity to provide power for all heat-tracing cables installed on the site. The heating circuits shall be connected to an emergency power source with all electrical connections and temperature settings permanently identified using lamicaid-type labels.

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7. Where plastic pipes are used for wet sprinkler systems in conformance with the VBBL and the heat-tracing cable is utilized to provide freeze protection, the installation shall meet the following requirements
 - a) be installed so as to maintain a pipe surface temperature of not less than 4.4⁰C (40⁰F);
 - b) operate at the ambient temperature of not more than 35⁰C (95⁰F); and
 - c) limit temperature at every contact point with the plastic pipe to not more than 60⁰C (140⁰F).
8. All heating circuits shall be thermostatically controlled and continuously monitored (electrically supervised to indicate a trouble signal on the building fire alarm system annunciator) for
 - a) loss of incoming supply voltage;
 - b) loss of control power;
 - c) ground fault;
 - d) continuity; and
 - e) open circuits.

NOTES

1. All control and supervisory devices indicated in the above-noted item (8)(a) to (e) are required to be housed in an approved and suitable enclosure; such control box (controller) provided as part of an electric heat tracing cable system must be approved in accordance with CEC Rule 2-024. (i.e. CSA SPE-1000)
2. Controller provided as part of an electric heat tracing cable system for the above-noted item (8)(a) to (e) which the controller must be installed in accordance with the manufacturer's published installation instructions; and be approved to a specific CSA standard (i.e. C22.2 No. 14 Industrial Control Equipment).
3. An ambient air sensing thermostat protected from direct sunlight and moisture and complete with a lockable enclosure shall be provided as part of an electric heat-tracing cable system (not applicable for self-regulated systems).
4. Electrical supervision of items (8)(c) to (e) above shall include the wiring and other control devices (relays, switches, etc.) that are necessary to fulfill required control functions.
5. Installation of the entire heat-tracing system (heat-tracing cable and associated controls) shall be done only by a Licensed Electrical Contractor with the benefit of an electrical permit.
6. Wiring methods of the power supply circuits to the control box shall comply with relevant provisions of Section 12 of the Canadian Electrical Code, Part I (CEC).
7. Installation of heat tracing cable shall meet the applicable requirements of Section 62 of the CEC, Part I.
8. Acceptance of each installation of the heat-tracing cable system is conditional upon
 - i. receipt of a Schedule C from a Registered Professional responsible for the system design, stating that the system is installed as per original design and that all control functions conform to item (8) of this bulletin; and
 - ii. successful completion of coordinated inspection by the electrical and plumbing inspectors.

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- 9. Ground fault protection of a heat-tracing system installed on standpipe and sprinkler piping must conform to the applicable requirements of this bulletin. It is important to note that each heat-tracing cable installed for the purposes other than described in this bulletin must be supplied from a dedicated branch circuit (i.e. heat-tracing cable for domestic water pipe), the circuit breaker protecting such dedicated heat-tracing branch circuit must be provided with the ground fault protection with a ground fault setting that is sufficient to allow normal operation of the heat-tracing cable in conformance with CEC Rule 62-300(4), notwithstanding Item (5) requirements of this rule. Ground fault protection shall be set at not more than 30 mA and shall comply with manufacturer’s instructions (see Bulletin 2000-044-EL for more clarification).

PERMITS SUBMISSION AND INSPECTION ACTIVITY

- 1. In order to obtain sprinkler and electrical permits for the installation of such systems, the following steps must be taken
 - a) plans designed by a Registered Professional must be submitted for sprinkler plan checking and issuance of a sprinkler permit; and
 - b) application for an electrical permit must be submitted by an electrical contractor. The electrical permit may be issued only upon the issuance of the sprinkler permit.
- 2. All respective work done by the licensed electrical and sprinkler contractors under the scope of their permits is subject to the inspections by the Plumbing Inspection and Electrical Inspection.
- 3. The purpose of the electrical inspection is to inspect that only the cables certified to CSA Standards C22.2, No. 130.1 or No. 130.2 are used; that installation conforms to the CEC requirements and that all controls mandated by item (8) above are installed in the control box and that the intended operation of these controls is certified by the Registered Professional of record for the entire heat-tracing cable system design.
- 4. The purpose of the plumbing inspection is to inspect that all piping subject to freezing is protected by the electric heat-tracing cable systems as per the accepted designed plans.

(Original signed by)

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