



# Fire Sprinkler System Design and Installation Requirements

The Park City Fire Service District (PCFD) and Park City Municipal Corporation (PCMC) have made the following amendments to the State of Utah adopted codes and standards for the design and installation of fire sprinkler systems:

- 1. 2010 edition of NFPA-13, Standard for the Installation of Sprinkler Systems. . . . . Page 2
- 2. 2010 edition of NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height. . . . . Page 3
- 3. 2010 edition of NFPA-13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes. . . . . Page 4
- 4. 2012 edition of the International Building Code. . . . . Page 7
- 5. 2012 edition of the International Fire Code. . . . . Page 10
- 6. International Residential Code - Utah State Amendment-15A-4-206(1). . . . . Page 12
- 7. Fire Sprinkler System Submittals. . . . . Page 13
- 8. Project Completion. . . . . Page 14
- 9. Contact Information. . . . . Page 15

Request For Alternative Method (IFC 104.9) - Use of Anti-Freeze Additives in Fire Sprinkler Systems. . . . . Page 16

**Issue Date:** DRAFT - April 9, 2014  
 Update I - April 15, 2014  
**Update II - August 1, 2014**

S:\Fire Prevention\Fire Prev - Codes and Rules\2014 - PCMC-PCFD - Fire Sprinkler Design and Installation Requirements - Update II-FINAL.wpd

1. **NFPA 13 - 2010 edition is modified as follows:**

---

- 1.1 **Section 8.15.21 - System Subdivision - Floor/Zone Control Valves:** Section 8.15.21, System Subdivision, is deleted and replaced as follows:
  - 1.1.1 **8.15.21 - System Subdivision - Floor/Zone Control Valves:** Individual floor/zone control valves shall be used at the riser at each floor for connections to piping serving floor areas in excess of 5000 ft<sup>2</sup>.
- 1.2 **Section 8.17.1.1 - Local Waterflow Alarms:** Amended as follows by adding the following new subsections after 8.17.1.1:
  - 1.2.1 **8.17.1.1.1 - Single Tenant Occupancies:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of the building, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.
  - 1.2.2 **8.17.1.1.2 - Multi-Tenant Occupancies:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of each tenant space, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.
  - 1.2.3 **8.17.1.1.3 - Exterior Waterflow Alarm:** An approved audible and visual waterflow alarm (horn/strobe) shall be provided on the exterior of the building in an approved location, facing the street front of the building.

2. **NFPA 13R - 2010 edition is modified as follows:**

---

2.1 **Section 6.8 - Valves:** Add a new section 6.8.8 as follows:

2.1.1 **6.8.8 - Floor/Zone Control Valves:** Individual floor/zone control valves shall be used at the riser at each floor for connections to piping serving floor areas in excess of 5000 ft<sup>2</sup>."

2.2 **Section 6.16 - Alarms:** Amended as follows by adding the following new subsections after 6.16.1:

2.2.1 **6.16.1.1 - Local Waterflow Alarms:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of each residential unit / tenant space, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.

2.2.2 **6.16.1.2 - Exterior Waterflow Alarm:** An approved audible and visual waterflow alarm (horn/strobe) shall be provided on the exterior of the building in an approved location, facing the street front of the building.

3. **NFPA 13D - 2010 edition is modified as follows:**

---

- 3.1 **4.1.4 - Antifreeze Systems - Subsection (4):** Amended section 4.1.3 by adding a new subsection (4):
  - 3.1.1 **4.1.3 (4) - Existing Systems:** Existing fire sprinkler systems with an antifreeze solution shall be tested annually using an approved method, before the onset of freezing weather. If any of the samples exhibits a concentration lower than what is necessary to keep the fluid from freezing, the system shall be drained completely and replaced with an acceptable concentration of 38% premixed propylene glycol or 48% premixed glycerin.
- 3.2 **4.2 - Hydrostatic Tests:** Section 4.2.1 is deleted and replaced with the following:
  - 3.2.1 **4.2.1 - PCFD:** Where a fire department pumper connection is not provided, the system shall be hydrostatically tested for leakage at a pressure of not less than 100 p.s.i. or at the normal system operating pressure, whichever is higher.
  - 3.2.2 **4.2.1 - PCMC:** Where a fire department pumper connection is not provided, the system shall be hydrostatically tested for leakage at a pressure of not less than 200 p.s.i. or at the normal system operating pressure, whichever is higher.
- 3.3 **7.5 - Sprinklers:** Amended by adding a new subsection after section 7.5.4:
  - 3.3.1 **7.5.4.1 - Garage Area:** Sprinklers within the garage area shall be of the Quick-Response (QR) Sprinkler type as defined by NFPA-13, section 3.6.4.7.
- 3.4 **7.6 - Alarms:** Amended by adding the following new subsections:
  - 3.4.1 **7.6.1 - Exterior Waterflow Alarm:** An approved audible and visual waterflow alarm (horn/strobe) shall be provided on the exterior of the building in an approved location, facing the street front of the building.
  - 3.4.2 **7.6.2 - Interior Alarm:** An interior fire alarm notification appliances is also required to sound throughout the dwelling. An approved audible sprinkler flow alarm to alert the occupants of the dwelling in a normally occupied location when flow switch is activated must be provided.
  - 3.4.3 **7.6.3 - Monitoring:** Fire sprinkler system with 50 or more fire sprinklers, or is in a subdivision which is isolated from the main or common arterial roads, off-premise monitoring is required to be provided and maintained.

- 3.5 **8.1 - Design Criteria:** Amended by adding a new subsection 8.1.1.1.3:
- 3.5.1 **8.1.1.1.3 - Garage Area:**
- 3.5.1.1 8.1.1.1.3.1 **Residential Area Above Garage:** The system shall be designed in accordance with NFPA 13, for a Light Hazard Occupancy.
- 3.5.1.2 8.1.1.1.3.1 **No Area Above Garage:** Fire sprinkler protection is only required to be provided on the wall that separates the garage area from the main residential area, or provide a listed 20-minute fire-rated door with closer that will close and latch securely.
- 3.6 **8.1.2 - Number of Design Sprinklers:** Amended by adding a new subsection 8.1.2.1:
- 3.6.1 **8.1.2.1 - Garages - Residential Area Above:** The number of design fire sprinklers under flat, smooth, horizontal ceilings shall include all sprinklers within a compartment, up to a maximum of two (2) sprinklers, that require the greatest hydraulic demand.
- 3.7 **8.3.3 - Antifreeze Systems:** Amended as follows:
- 3.7.1 **8.3.3 - Antifreeze Systems:** Pursuant to the recent concerns with the use of anti-freeze additives in fire sprinkler systems, the use of anti-freeze additives in the installation of any fire sprinkler system will no longer be permitted.
- 3.8 **8.3.3 - Antifreeze Systems:** Amended by adding a new subsection 8.3.3.1.2:
- 3.8.1 **8.3.3.1.2 - Alternative Method:** Where no other alternative is available to avoid from running the fire sprinkler piping in an unheated area, the homeowner, architect and general contractor may request to PCFD/PCMC for the use of an antifreeze solution, in a limited application, as an alternative materials and methods in accordance with section 104.9 of the IFC, along with an explanation of why the extreme cold temperatures cannot be avoided within the structure where the fire sprinkler piping will be installed. The homeowner, architect and general contractor must acknowledge in their request that they will accept all responsibility and liability and include a hold harmless clause for PCFD/PCMC for the use of the anti-freeze in the fire sprinkler system.
- 3.9 **8.3.3.2 - Antifreeze Solutions:** Subsection 8.3.3.2.3 is deleted and replaced with the following:
- 3.9.1 **8.3.3.2.3** When an Alternative Method is approved by PCFD/PCMC, the anti-freeze solution installed in new fire sprinkler systems shall not exceed a maximum concentration of 38% premixed propylene glycol or 48% premixed glycerin, and the capacity of the system may not exceed 150 gallons.  
[Utah State Amendment-IFC 903.3.1.1.2/903.3.1.1.3/903.3.1.1.3]

- 3.10 **8.3.3.5:** Amended by adding a new subsection 8.3.3.5.1:
- 3.10.1 **8.3.3.5.1 - Antifreeze Tag and Information:** A tag shall be attached to the riser indicating the date the antifreeze solution was tested. The tag shall also indicate the type and concentration of antifreeze solution by volume with which the system is filled, the name of the contractor that tested the antifreeze solution, the contractor's license number, and a warning to test the concentration of the antifreeze solutions at yearly intervals. [Utah State Amendment - IFC 903.5.1]
- 3.11 **8.4.3 - Minimum Pipe Size:** Amended by adding a new subsection 8.4.11:
- 3.11.1 **8.4.11 - Garage Area:** Minimum pipe size, including that for steel pipe, copper, listed chlorinated polyvinyl chloride (CPVC), and polybutylene (PB) piping, shall be one-inch and installed in accordance with NFPA-13 for a Light Hazard Occupancy.
- 3.12 **8.6 - Location of Sprinklers:** Section 8.6.4 is deleted and replaced with the following:
- 3.12.1 **8.6.4 - General:** Fire sprinklers shall only be installed in garages, attached garages, attached car ports and combustible wood burning fire place flu chases when required as follows:
- 3.12.2 **8.6.4.1 - Garages:** Garages that are located directly beneath any living space within the residential structure shall be provided with fire sprinkler protection throughout the garage area and designed in accordance with NFPA 13, for a Light Hazard Occupancy.
- 3.12.3 **8.6.4.2 - Attached Garages and Car Ports:** Attached garages and/or car ports that are attached directly to the residential structure shall be provided with fire sprinkler protection (dry sidewall fire sprinkler) on the wall that separates the attached garage and/or attached car port from the residential structure, or provide and install a listed 20-minute fire-rated door with closer that will close and latch securely on the garage and/or car port side of the wall that separates attached garages and/or attached car ports from the residential structure.
- 3.12.4 **PCMC - 8.6.4.3 - Combustible Wood Burning Fire Place Flu Chases:** Combustible wood burning fire place flu chases shall be provided with either a dry sidewall fire sprinklers installed in the combustible wood burning fire place flu chase, or fire place flu chase shall be provided with an approved 1-hour rated shaft enclosure.

4. **International Building Code - 2012 edition is modified as follows:**

---

- 4.1 **Section (F)901.8 - Pump and Riser Room Size:** IBC, Section (F)901.8, is deleted and replaced with the following: [Utah State Amendment-15A-3-104(1)]
- 4.1.1 **(F)901.8 Pump and riser room size.** Fire pump and automatic sprinkler system riser rooms shall be designed with adequate space for all installed equipment necessary for the installation and to provide sufficient working space around the stationary equipment. Clearances around equipment shall be in accordance with manufacturer requirements and not less than the following minimum elements:
- 4.1.1.1 **901.8.1.** A minimum clear and unobstructed distance of 12-inches shall be provided from the installed equipment to the elements of permanent construction.
- 4.1.1.2 **901.8.2.** A minimum clear and unobstructed distance of 12-inches shall be provided between all other installed equipment and appliances.
- 4.1.1.3 **901.8.3.** A clear and unobstructed width of 36-inches shall be provided in front of all installed equipment and appliances, to allow for inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly.
- 4.1.1.4 **901.8.4.** Automatic sprinkler system riser rooms shall be provided with a clear and unobstructed passageway to the riser room of not less than 36-inches, and openings into the room shall be clear and unobstructed, with doors swinging in the outward direction from the room and the opening providing a clear width of not less than 34-inches and a clear height of the door opening shall not be less than 80-inches.
- 4.1.1.5 **901.8.5.** Fire pump rooms shall be provided with a clear and unobstructed passageway to the fire pump room of not less than 72-inches, and openings into the room shall be clear, unobstructed and large enough to allow for the removal of the largest piece of equipment, with doors swinging in the outward direction from the room and the opening providing a clear width of not less than 68-inches and a clear height of the door opening shall not be less than 80-inches.

- 4.2 **Section (F)903.2 - Where Required:** IBC, Section (F)903.2, is deleted and replaced with the following:
- 4.2.1 **(F)903.2 Where required.** Approved automatic sprinkler systems in new buildings and structures shall be provided in the location described in this section.
- 4.2.1.1 All new construction having more than 6,000 square feet on any one floor, except R-3 occupancy.
- 4.2.1.2 All new construction having more than two (2) stories, except R-3 occupancy.
- 4.2.1.3 All new construction having three (3) or more dwelling units, including units rented or leased, and including condominiums or other separate ownership.
- 4.2.1.4 All new construction in the Historic Commercial Business zone district, regardless of occupancy.
- 4.2.1.5 All new construction and buildings in the General Commercial zone district where there are side yard setbacks or where one or more side yard setbacks is less than two and one half (2.5) feet per story of height.
- 4.2.1.6 All existing building within the Historic District Commercial Business zone.
- 4.3 **Section 903.3 - Installation Requirements:** - Section 903.3 is modified by adding the following new sections:
- 4.3.1 **Section 903.3.1.1.2 - Fire Sprinkler Floor Control Valves:** Floor control valves shall be provided on each floor for fire sprinkler piping, when the floor area is in excess of 5,000 ft<sup>2</sup>.
- 4.3.2 **Section 903.3.1.2.2 - Fire Sprinkler Floor Control Valves:** Floor control valves shall be provided on each floor for fire sprinkler piping, when the floor area is in excess of 5,000 ft<sup>2</sup>.
- 4.3.3 **Section 903.3.7 - Required Access to Fire Sprinkler Risers Rooms.** In other than one and two family dwellings, direct exterior access shall be provided and readily accessible for emergency access by the fire department to all fire sprinkler riser rooms. An approved access walkway leading from fire apparatus access roads to exterior openings for the fire sprinkler riser room shall be provided. When direct access is not provided to the fire sprinkler riser room, an electrically supervised post indicator valve (PIV) in accordance with section 903.4 of this code is permitted.



- 4.4 **Section 903.4.2 - Alarms:** Section 903.4.2 is modified by deleting this section in its entirety and replacing with the following:
- 4.4.1 **903.4.2 - Alarms.** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in an approved location and shall be connected to each automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system.
  - 4.4.2 **903.4.2.1 - Single Tenant Occupancies:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of the building, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.
  - 4.4.3 **903.4.2.2 - Multi-Tenant Occupancies:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of each tenant space, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.
  - 4.4.4 **903.4.2.3 - Exterior Waterflow Alarm:** An approved audible and visual waterflow alarm (horn/strobe) shall be provided on the exterior of the building in an approved location, facing the street front of the building.
- 4.5 **Section 903.6 - Antifreeze Systems:** A new section 903.6 - Antifreeze Systems is added as follows:
- 4.5.1 **Section 903.6 - Antifreeze Systems:** Where protection of fire sprinkler pipes from freezing is a concern, options other than the use of antifreeze solution must be used. Such options include running the fire sprinkler piping in heated/warm spaces, tenting of the insulation over the fire sprinkler piping, installation of dry-pipe fire sprinkler systems, or pre-action fire sprinkler systems. Pursuant to the recent concerns with the use of anti-freeze additives in fire sprinkler systems, the use of anti-freeze additives in the installation of any fire sprinkler system will no longer be permitted.
  - 4.5.2 **Section 903.6.1 - Antifreeze Systems - Alternative Method:** If approved by PCFD/PCMC, the homeowner, architect and general contractor must demonstrate that no other viable alternative is available. If approved by PCFD/PCMC, the homeowner, architect and general contractor must submit a request to PCFD/PCMC for the use of an antifreeze solution, in a limited application, as an alternative materials and methods in accordance with section 104.9 of the International Fire Code, along with an explanation of why the extreme cold temperatures cannot be avoided within the structure were the fire sprinkler piping will be installed.
  - 4.5.3 **Section 903.6.2 - Antifreeze Systems - Existing Fire Sprinkler Systems:** Effective September 30, 2022, all existing fire sprinkler systems with antifreeze additives must be replaced with either a listed antifreeze solution (not currently available), or existing fire sprinkler system must be converted to a water only, with modifications made to protect the existing fire sprinkler pipes from freezing.

5. **International Fire Code - 2012 edition is modified as follows:**

---

- 5.1 **Section 504: Access to Building Openings and Roofs:** - Section 504 is modified by adding a new section 504.4 Required Access to Fire Sprinkler Riser Rooms.
- 5.1.1 **Section 504.4 Required Access to Fire Sprinkler Risers Rooms.** In other than one and two family dwellings, direct exterior access shall be provided and readily accessible for emergency access by the fire department to all fire sprinkler riser rooms. An approved access walkway leading from fire apparatus access roads to exterior openings for the fire sprinkler riser room shall be provided. When direct access is not provided to the fire sprinkler riser room, an electrically supervised post indicator valve (PIV) in accordance with section 903.4 of this code is permitted.
- 5.2 **Section 903.3: Installation Requirements:** Section 903.3 is modified by adding the following new sections:
- 5.2.1 **Section 903.3.1.1.2 - Fire Sprinkler Floor Control Valves:** Floor control valves shall be provided on each floor for fire sprinkler piping, when the floor area is in excess of 5,000 ft<sup>2</sup>.
- 5.2.2 **Section 903.3.1.2.2 - Fire Sprinkler Floor Control Valves:** Floor control valves shall be provided on each floor for fire sprinkler piping, when the floor area is in excess of 5,000 ft<sup>2</sup>.
- 5.2.3 **Section 903.4.2 - Alarms:** Section 903.4.2 is deleted and replaced with the following:
- 5.2.3.1 **903.4.2 - Alarms.** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in an approved location and shall be connected to each automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system.
- 5.2.3.2 **903.4.2.1 - Single Tenant Occupancies:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of the building, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.
- 5.2.3.3 **903.4.2.2 - Multi-Tenant Occupancies:** An approved audible / visual waterflow alarm (horn / strobe) shall be provided in the interior of each tenant space, in a normally occupied location, to alert the occupants of the fire sprinkler system activation.
- 5.2.3.4 **903.4.2.3 - Exterior Waterflow Alarm:** An approved audible and visual waterflow alarm (horn/strobe) shall be provided on the exterior of the building in an approved location, facing the street front of the building.

- 5.3 **Section 903.8 - Antifreeze Systems:** A new section 903.8 - Antifreeze Systems is added as follows:
- 5.3.1 **Section 903.8 - Antifreeze Systems:** Where protection of fire sprinkler pipes from freezing is a concern, options other than the use of antifreeze solution must be used. Such options include running the fire sprinkler piping in heated/warm spaces, tenting of the insulation over the fire sprinkler piping, installation of dry-pipe fire sprinkler systems, or pre-action fire sprinkler systems. Pursuant to the recent concerns with the use of anti-freeze additives in fire sprinkler systems, the use of anti-freeze additives in the installation of any fire sprinkler system will no longer be permitted.
- 5.3.2 **Section 903.8.1 - Antifreeze Systems - Alternative Method:** If approved by PCFD/PCMC, the homeowner, architect and general contractor must demonstrate that no other viable alternative is available. If approved by PCFD/PCMC, the homeowner, architect and general contractor must submit a request to PCFD/PCMC for the use of an antifreeze solution, in a limited application, as an alternative materials and methods in accordance with section 104.9 of the IFC, along with an explanation of why the extreme cold temperatures cannot be avoided within the structure were the fire sprinkler piping will be installed.
- 5.3.3 **Section 903.8.2 - Antifreeze Systems - Existing Fire Sprinkler Systems:** Effective September 30, 2022, all existing fire sprinkler systems with antifreeze additives must be replaced with either a listed antifreeze solution (not currently available), or existing fire sprinkler system must be converted to a water only, with modifications made to protect the existing fire sprinkler pipes from freezing.

**6. International Residential Code - Utah State Amendment-15A-4-206(1) modified as follows:**

6.1 **PCMC - IRC - Appendix P - 2006 Edition:** The following amendment is adopted as an amendment to the IRC for the Park City Corporation, Appendix P, of the 2006 IRC is adopted.

6.1.1 **AP101 Fire sprinklers.** An approved automatic fire sprinkler system shall be installed in new one- and two-family dwellings and townhouses in accordance with Section 903.3.1 of the International Building Code.

## **7. Fire Sprinkler System Submittals**

---

- 7.1 A complete and accurate submittal must be provided for review. Installation of the fire sprinkler system cannot begin until the installation drawings, hydraulic calculations and equipment data sheets have been reviewed and accepted.
- 7.2 Provide three (3) sets for all fire sprinkler shop drawings to be reviewed.
  - 7.2.1 PCMC / PCFD will retain one (1) set and will return two (2) sets of drawings with any applicable conditions of approval. One (1) set of approved drawings shall be available on-site at all times.
  - 7.2.2 Working drawings must be prepared and submitted in accordance with the applicable standard used for design of the fire sprinkler system:
    - 7.2.2.1 NFPA 13 - Chapter 22 - Plans and Calculations.
    - 7.2.2.2 NFPA 13R - Chapter 8 - Plans and Calculations.
    - 7.2.2.3 NFPA 13D - Chapter 8 - System Design
- 7.3 Provide two (2) sets of hydraulic calculations for each area to be reviewed. Hydraulic calculations must be prepared and submitted in accordance with the applicable standard used for design of the fire sprinkler system:
  - 6.1.2.1 NFPA 13 - Chapter 22 - Plans and Calculations.
  - 6.1.2.2 NFPA 13R - Chapter 8 - Plans and Calculations.
  - 6.1.2.3 NFPA 13D - Chapter 8 - System Design
- 7.4 Provide one (1) copy of each manufacture cut-sheet for all fire sprinkler heads, valves, pipe hangers, etc. and details on the seismic and sway bracing.
- 7.5 Provide one (1) completed Plan Submittal Form. Incomplete forms will not be allowed, and review will be held until form is completed.
- 7.6 Full height cross section of the structure/facility/residence must be provided for each fire sprinkler system.
- 7.7 Underground piping drawing showing location and elevation of static and residual test gauges with relation to the riser reference point and flow hydrant location.
- 7.8 Occupancy of each room/area to be protected.

## 8. Project Completion

---

- 8.1 At the completion of the project, the fire sprinkler contractor must provide and/or verify that the following has been done:
- 8.2 **Hydraulic Design Information Sign:** Provide a Hydraulic Design Information Sign for each Design Area on the riser to indicate the location of the design area, the discharge densities over the design area, the required flow and residual pressure demand at the base of the riser and the hose stream demand included in addition to sprinkler demand. [NFPA 13-24.5]
- 8.3 **Stock of Spare Sprinklers:** Provide a supply of spare fire sprinklers in accordance with the applicable standard:
- 8.3.1 NFPA 13 - Section 6.2.9 - Stock of Spare Sprinklers.
  - 8.3.2 NFPA 13R - Section 11.19 - Sprinklers.
  - 8.3.3 NFPA 13D:
    - 8.3.3.1 PCFD - Not Required.
    - 8.3.3.2 PCMC - Two (2) types of each fire sprinkler installed.
- 8.4 **Electric Bell and Strobe:** Verify that power has been provided to the outside electric bell and strobe and that it is operational.
- 8.5 **Pressure Gauges:** Provide pressure gauges such that a gauge is located above and below the back flow prevention device, to measure the supply and system pressures.
- 8.6 **Address for Structure/Facility/Residence:** Verify that the General Contractor has provided the correct address identification for the structure/facility/residence. **Note:** If the address is not installed, a final inspection will not be conducted, nor the Certificate of Occupancy issued.

## 9. **Contact Information**

---

### 9.1 **PCFD - Park City Fire Service District - Fire Prevention Bureau:**

9.1.1 **Telephone:** (435) 940-2532

9.1.2 **Tele-Fax:** (435) 658-5247

9.1.3 **Mailing Address:** P.O. Box 980010 - Park City, Utah 84098-0010

9.1.4 **Shipping Address:** 736 West Bitner Road - Park City, Utah 84098

### 9.2 **PCMC - Park City Municipal Corporation - Building Department:**

9.2.1 **Telephone:** (435) 615-5100

9.2.2 **Tele-Fax:** (435) 658-8931

9.2.3 **Mailing Address:** P.O. Box 1480 - Park City, Utah 84060-1480

9.2.4 **Shipping Address:** 445 Marsac Avenue - Park City, Utah 84060

## **Request For Alternative Materials and Methods - IFC 104.9 Use of Anti-Freeze Additives in Fire Sprinkler Systems**

---

Pursuant to the recent concerns with the use of antifreeze additives in fire sprinkler systems, the use of anti-freeze additives in the installation of any fire sprinkler systems will be allowed only in a limited application when it can be demonstrated that no other viable alternative is available.

Fire sprinkler systems need to be designed such that all interior piping in the structure is within a heated/non-freezing area so that no antifreeze solution would be needed.

Other alternatives include identifying area where the tenting of the insulation over the fire sprinkler piping installation is viable, or the installation of dry-pipe fire sprinkler systems, or pre-action fire sprinkler system throughout the structure.

When the only alternative for the fire sprinkler system design is to install piping in non-heated/freezing area, the use of an antifreeze solution will be reviewed, provided the owner, architect and general contractor submit a request to PCMC/PCFD for the use of antifreeze solution as an alternative materials and methods in accordance with section 104.9 of the IFC, along with an explanation of why the extreme cold temperatures in this area of the structure cannot be avoided.

The owner, architect and general contractor must accept all responsibility and liability and include a hold harmless clause for PCFD/PCMC for the use of the anti-freeze in the fire sprinkler system.

The use of an anti-freeze additive in the fire sprinkler system must adhere to and meet the following criteria for each project that uses an anti-freeze solution in the installation of a fire sprinkler system:

- A signed statement from the owner, general contractor, and fire sprinkler contractor is required to be submitted to PCMC/PCFD to acknowledging their request and identifying that all parties understand the concerns associated with the use of either propylene glycol or glycerin in the fire sprinkler system installation.
- The use of an antifreeze additive in fire sprinkler system will be allowed in only those areas of the structure that are a concern for freezing conditions. The request that the entire structure be protected with antifreeze solution will not be permitted.
- Architect and general contractor will need to meet with PCMC/PCFD to review the entire structure and identify "warm sections" of the structure where freezing conditions can be avoided, and identify the "cold sections" of the structure where freezing conditions cannot be avoided and the fire sprinkler system will require an anti-freeze solution be added at a maximum pre-mixed concentration of 38% premixed propylene glycol or 48% premixed glycerin, with a separate loop installed for each area that requires anti-freeze.
- The fire sprinkler system shall be designed and engineered by a NICET Level III design professional or licensed design professional.
- Operating pressures within the fire sprinkler system shall not exceed 100 psi. This may require the installation of a pressure reducing valve (PRV) in addition to the culinary pressure reducing valve. The PRV will need to be included in the hydraulic calculations and identified on the drawings.
- The minimum pipe size, including that for steel pipe, copper, listed chlorinated polyvinyl chloride (CPVC), and polybutylene (PB) piping, shall be one-inch and installed in accordance with the applicable NFPA-13, NFPA-13D or NFPA-13R standard.



- A listed expansion chamber shall be provided to compensate for thermal expansion of the antifreeze solution within the fire sprinkler system. The size of the expansion chamber shall include the pre-charge air temperature and pre-charge air pressure. The size of the expansion chamber shall be such that the maximum system pressure does not exceed the rated pressure for any components of the antifreeze system.
- Fire sprinkler contractor to indicate the type of anti-freeze solution to be used, and the concentration/mixture proportions. Antifreeze solution shall not exceed a maximum concentration of 38% premixed propylene glycol or 48% premixed glycerin. [Utah State Amendment-IFC 903.3.1.1.2/903.3.1.1.3/903.3.1.1.3]
- Fire sprinkler contractor to indicate on the fire sprinkler drawings the total amount of anti-freeze to be used in each system. Capacity of the antifreeze solution in the system shall not exceed 150 gallons. [Utah State Amendment-IFC 903.3.1.1.2/903.3.1.1.3/903.3.1.1.3]
- Attached is an example request of alternative materials and methods (IFC 104.9) for the use of an antifreeze additives in fire sprinkler system.



**EXAMPLE - Request For Alternative Materials and Methods - IFC 104.9**  
**Request for the Use of an Anti-Freeze Additives in Fire Sprinkler Systems**

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

**Property Address:** \_\_\_\_\_

**Permit Number (If applicable):** \_\_\_\_\_

**Amount of Antifreeze Additive Requested:** \_\_\_\_\_

Antifreeze solution shall not exceed a maximum concentration of 38% premixed propylene glycol or 48% premixed glycerin.

This request is in response to the TIA published by NFPA and as further adopted by the State of Utah, to permit only maximum of 38% premixed propylene glycol or 48% premixed glycerin in fire sprinkler systems.

The owner, general contractor, and fire sprinkler contractor (all parties) are requesting a variance to this requirement due to extreme cold temperatures in this area, and are fully aware of the concerns with the use of more than 38% premixed propylene glycol or 48% premixed glycerin in fire sprinkler systems.

All parties acknowledge this request and understand the concerns with the use of either propylene glycol or glycerin in residential fire sprinkler systems.

All parties must provide documentation that all parties accept all responsibility and liability and including a hold harmless clause for PCFD/PCMC for the use of the anti-freeze in the fire sprinkler system.

**General Contractor Name:** \_\_\_\_\_

**General Contractor Signature:** \_\_\_\_\_

**Homeowner's Name:** \_\_\_\_\_

**Homeowner's Signature:** \_\_\_\_\_

**Fire Sprinkler Contractor's Name:** \_\_\_\_\_

**Fire Sprinkler Contractor's Signature:** \_\_\_\_\_