

# Underground Fire Main White Paper

## Colorado Division of Fire Prevention and Control



**Intent of paper** – Throughout the state, the Colorado Fire Suppression System Program has been in effect since January 1, 1991. The Division of Fire Prevention and Control (DFPC) continues to see non-compliance of the rules set forth as they pertain to the underground installation of Private Fire Service Mains serving Sprinkler Systems and Private Fire Hydrants. The current rules for the program (8 CCR 1507-11) were promulgated 11/30/2020. This paper is designed to make clear the permitting, installation, and inspection requirements for private fire mains.

**Private Fire Service Main** - Private fire service main, as used in this standard, is the pipe and its appurtenances on private property:

- Between a source of water and the base of the system riser for water-based fire protection systems
- Between a source of water and the base elbow of private hydrants.
- For the sake of the State's regulations a source of water provided by a local water purveyor (i.e. Water District or Municipal Water System) shall end at the point where that water purveyor is no longer fiscally responsible (without seeking remuneration or reimbursement from the users of the that main, lateral, branch, or service line) for the maintenance and repairs of said water source.

**Permit and Plan Requirements:**

- Fire Suppression Systems (including Private Fire Service Mains) ***shall not*** be installed or modified unless plans have been approved by a State certified Fire Inspector III-Plans Examiner in accordance with 8 CCR 1507-11
- Plans, product data sheets, and hydraulic calculations shall be submitted to an Authority Having Jurisdiction (AHJ) employing a State certified Fire Inspector III-Plans Examiner prior to the installation, fabrication, modification, or alteration of any Fire Suppression System in the State of Colorado.
  - o Exemptions:
    - Hydraulic calculations are not required for small projects unless, in the opinion of the AHJ with a State Certified Fire Inspector III-Plans Examiner, the hydraulic design of the existing system may be affected by the scope of work (consultation with the AHJ should always be conducted).
    - Hydraulic calculations are not required for residential, prescriptive pipe-schedule systems if designed in accordance with adopted standards.
- Plans and hydraulic calculations must bear the signature of a P.E. or NICET level III or above. This signature attests that the plans have been reviewed, and meet they the intent of the standard.
- If the local AHJ employs a State certified Fire Inspector III-Plans Examiner, required documents shall be submitted in accordance with local rules.

- If the local AHJ does NOT employ a State certified Fire Inspector III-Plans Examiner, the required documents shall be submitted to the Division for review and permitting.

### **Contractor requirements:**

- Individuals or companies installing Underground Supply Lines from public water lines to system risers shall be registered as "FIRE SUPPRESSION SYSTEM CONTRACTOR - UNDERGROUND" with the Colorado Division of Fire Prevention & Control.
- Upon initial application or renewal, Fire Suppression System Contractors-Underground will attest that all personnel performing work on fire suppression systems have received training on and retain copies available for use of NFPA 13, NFPA 22, and NFPA 24, as adopted by the Division in 8 CCR 1507-101.
- All Fire Suppression System Contractors-Underground personnel shall at all times have access on the worksite to copies of NFPA 13, NFPA 22, and NFPA 24, as adopted by the Division in 8 CCR 1507-101.
- Upon initial application or renewal, Fire Suppression Contractors-Underground will attest that, until they release responsibility for the underground fire main installation to the owner, they will not allow any fire suppression system to be connected to the underground fire main by any person not registered with the Division as a Fire Suppression System Contractor.
- Suppression Contractors shall ensure that their projects are permitted and inspected by State Certified Fire Inspector III-Plans Examiners (for Plan Reviews) and Fire Inspector IIs (for Inspections) in accordance with 8 CCR 1507-11

### **Inspector Requirements:**

Individuals performing Plan Reviews on Fire Suppression Systems (including underground private fire service mains) must be State certified as Fire-Inspector III - Plans Examiner, in accordance with the provisions of 8 CCR 1507-101 § 4.2.3C.

Individuals performing inspections on Fire Suppression Systems (including underground private fire service mains) must be State certified as Fire Inspector II or higher, in accordance with the provisions of 8 CCR 1507-101 § 4.2.3B.

### **Fire Line Installation and Component Requirements:**

- Underground supply lines installed between the public water main or a private water source and the Fire Suppression System riser shall be installed in accordance with NFPA 24 or NFPA 13, chapter 10, Underground Piping.

### **Testing & Inspections:**

The following shall be field verified by a local State certified Fire Inspector II or a DFPC Fire Inspector for final acceptance:

- Thrust blocks and restraint systems shall be visually inspected for compliance with NFPA 24-10.8
- Pipe depth of cover is not less than 1 ft below the frost line for locality. (NFPA 24-10.4.2)
- After installation: rods, nuts, bolts, washers, clamps, and other restraining devices shall be cleaned and thoroughly coated with a bituminous or other acceptable corrosion-retarding material. Plastic wrap alone is not acceptable in lieu of this requirement. (NFPA 24-10.8.3.5)
- Hydrostatic test conducted at 200 psi or 50 psi in excess of the systems working pressure (whichever is greater) for 2 hours. (NFPA 24-10.10.2.2.1)
- Flushing of underground pipe shall be performed in accordance with NFPA 24-10.10.2.1. (NOTE: Contractor must provide equipment to show adequate flow rate to DFPC inspector)
- Completion and signing of the "Contractors Material and Test Certificate for Underground Piping" by the State registered Underground Contractor (NFPA 24-10.10.1)
- The Fire Inspector may require flushing of the aboveground sprinkler piping if required tests for the underground piping prior to connection to the above ground system cannot be documented.

**\*\*\*PIPING NOT VISUALLY INSPECTED BY A STATE CERTIFIED  
FIRE INSPECTOR II PRIOR TO BEING BURIED WILL BE REQUIRED  
TO BE UNCOVERED\*\*\***