

## 2.09 Underground Pipe Detail Plan and Design Criteria Submittal for Installation of Underground Piping for Fire Sprinkler Service (2025)

**Reference:** 2025 NFPA 13, 2025 NFPA 24, and SFFD Administrative Bulletin 4.23.

**Purpose:** This bulletin describes the information to be provided on plans submitted for a permit to install the underground piping for fire sprinkler service.

**Scale and Documentation:** When permit plans are submitted for underground piping, the plans shall be drawn to an indicated scale (not smaller than 1/8" = 1') with a graphic scale indication. All fonts on all sheets shall be a minimum 1/8" font size. All plans shall be of uniform size (11" x 17" minimum), with a plan of each floor. Plans must be clear with legible text and symbols so they could be electronically scanned. For Electronic Plan Review (EPR) via Bluebeam: The applicant shall follow all DBI specific requirements for EPR submission and shall provide all the required information included in this section in electronic format. The requirements of this bulletin shall apply to both paper plans and EPR submittals.

### I. GENERAL REQUIREMENTS

Sprinkler plans shall provide underground pipe details showing new underground fire service or mains that include all of the following:

1. **Pipe Information.** Underground pipe information shall include size, lengths from the city main to the building and/or the main building riser, location, weight, material (complete description, such as cement lined ductile iron), fitting being used, and point of connection to city main.
2. **City Main Information.** Name of the street the city main is buried under and the size of the city water main.
3. **CPVC Prohibited.** CPVC underground piping is prohibited by SFPUC. Whether combination or dedicated fire underground, it must be braised copper K (up to 2" in diameter) or ductile iron for piping greater than 2" in diameter.
4. **Pressure Fitting (ProPress) Prohibited.** Pressure fittings per 2025 NFPA 13 Section 6.4.7 are prohibited for underground piping by SF Plumbing Code.
5. **Thrust Blocks.** For mechanical joints on underground piping, if the pipe joints are not restraint joints and thrust blocks are required, provide thrust block size/bearing area and details based on what type of soil is present.
6. **Depth.** Depth of cover for the underground pipe and how much the clearance is between top of pipe and concrete sidewalk slab or roadway pavement shall be shown on the plans. The following conditions shall apply:
  - A. **Depth with Frost.** Where frost is a concern, the depth of cover for fire service main pipe be not less than 2 1/2 feet or 1 foot below the frost line for the locality in accordance with NFPA 24 Section 10.4.2.

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- B. **Depth Without Frost.** Where frost is not a factor, the 2 1/2 foot depth of cover is required to protect the pipe from mechanical damage.
- C. **2" and Smaller Fire Service.** The San Francisco Water Department supplies domestic water meters for all fire services of 2 inches and smaller, including combination fire/domestic services. These meters require that the pipe be installed less than the 2 1/2 feet required by NFPA 24. Due to the practical difficulty of compliance with this standard, all 2 inch and smaller fire services, including combination services, shall be allowed to be installed following the criteria listed below which will prevent mechanical damage:
- (1) **12" Depth Minimum.** All installation of piping shall comply with San Francisco Plumbing Code section 609.1 which requires a minimum depth of cover of 12" below finished grade.
  - (2) **4" Concrete.** A minimum 4" of concrete shall cover the area above the pipe. The four inch concrete installation shall extend a minimum of 12" horizontally on both sides of the pipe.
  - (3) **3" of Earth.** A minimum of 3" of earth shall be maintained between the pipe and concrete. Exception: Pipe and joints that have been coated and wrapped do not have to comply with this requirement
7. **Hydrant Installation.** Fire Hydrant installation detail if a new hydrant is being installed, or relocated. The SFPUC Customer Service Bureau, New Installations shall be contacted at (415) 551-2900 prior to any work being performed on the fire hydrant system.

### Note for Underground Installation Permits

1. **Underground Only Permit.** The following conditions shall apply when a fire only permit is submitted for the underground service only (no overhead sprinklers):
  - A. **Supply/Demand Curve.** When obtaining a permit for "Underground Installation Only", provide a graph of Supply/Demand Curve(s) showing available margin(s) for highest demand.
  - B. **Underground Before Overhead Sprinklers.** The underground contractor is permitted to submit the underground only permit before the sprinkler overhead permit. A statement from the underground contractor is required indicating that if the underground pipe size does not meet the overhead sprinkler demand, the underground pipe shall be replaced to meet the overhead sprinkler system demand.
  - C. **Underground After Overhead Sprinklers.** The underground contractor is permitted to submit the underground only permit after the sprinkler overhead permit once the overhead sprinkler permit is issued. In that case, it must include a reference plan from the approved overhead sprinkler permit showing the underground service layout and calculated size.

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2. **Underground and Overhead Sprinklers on One Permit.** The underground could be submitted together with the overhead sprinklers on the same sprinkler permit only if it is submitted by the same contractor.

*Note: Fire Sprinkler Service - Meter & Supply Size Approval Form will be forwarded to the SFPUC upon final approval of plans.*

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