

REQUIREMENTS FOR UNDERGROUND FIRE SERVICE LINES

THE INSTALLATION SHALL MEET THE FOLLOWING STANDARDS AND THE CALIFORNIA FIRE CODE.

NFPA 13, *Standard for the Installation of Sprinkler Systems*
NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*
NFPA 24, *Standard for Installation of Private Fire Service Mains*
NFPA 22, *Standard for Water Tanks for Private Fire Protection*
NFPA 25 *Standard for Testing, maintenance, inspection of water based fire protection systems*
Title 19 *California Code of Regulations*

ACCEPTANCE TESTS TO BE WITNESSED BY MERCED COUNTY FIRE

Fire detection and alarm systems, fire-extinguishing systems, fire hydrant systems, fire standpipe systems, fire pump systems, private fire service mains and all other fire protection systems and appurtenances thereto shall be subject to acceptance tests as contained in the installation standards and as approved by the fire code official. The fire code official shall be notified before any required acceptance testing. **(CFC 901.5)**

- **CALL MINIMUM 48 HOURS ADVANCE NOTICE AT 209-385-7347.**
 - **Underground fire service main shall be sized according to hydraulic calculations for the fire sprinkler system, hydrant fire flows and hose allowance as per specified in NFPA 13 & NFPA 24.**
 - **Shall be hydrostatically tested and witnessed by our office as per NFPA 10.10.2.2 for 200 PSI for 2 hours, Obtain NFPA Acceptance form for installation of underground fire service line upon inspection.**
 - **Corrosive chemicals or leak stop additives of any nature shall not be used for testing and stopping leaks (NFPA 16.2.1.9)**
 - **The torqueing of bolted joints shall be checked (NFPA 24:10.7.2)**
 - **All piping shall be flushed and shall not be less than the following flow rate as per NFPA 10.10.2.1.3**
 - **A minimum of flow velocity at least 10 feet per second which is necessary to for cleaning the pipe and for lifting foreign material to an aboveground flushing outlet. It shall be continued for a sufficient time to ensure thorough cleaning. (NFPA 10.10.2.1.3)**
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PIPING DEPTH OF COVER

Underground fire service main required depth of cover, Top of pipe to grade is 1 foot below frost line, 30" min. cover and 36" min. cover under driveways.

Pipe shall be listed for fire protection and AWWA C900 standards as per Table 10.1.1 including Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in.

The depth of cover over water pipes shall be determined by the maximum depth of frost penetration in the locality where the pipe is laid. **(NFPA 10.4.1)**

The top of the pipe shall be buried not less than 1 ft below the frost line for the locality. **(NFPA 10.4.2)**

Pipe shall not be run under buildings. **(NFPA 10.6.1)**

BACKFILLING

The trench shall be backfilled between joints before testing to prevent movement of the pipe. Hydrostatic tests should be made before the joints are covered so that leaks can be readily detected. Thrust blocks should be sufficiently hardened before hydrostatic testing is begun. If the joints are covered with backfill prior to testing, the contractor remains responsible for locating and correcting any leakage in excess of that permitted. **(NFPA 10.10.2.6)**

Where required for safety measures presented by the hazards of open trenches, the pipe and joints shall be permitted to be backfilled, provided the installing contractor takes the responsibility for locating and correcting leakage. *THIS REQUIRES FIRE DEPARTMENT APPROVAL* **(NFPA 10.10.2.7)**

Backfill shall be tamped in layers or puddle under and around pipes to prevent settlement or lateral movement and shall contain no ashes, cinders, refuse, organic matter or corrosive materials. **(NFPA 10.9.1)**

Rocks shall not be placed in trenches. **(NFPA 10.9.2)**

VALVES

All valves controlling connections to water supplies and to supply pipes to sprinklers shall be listed indicating valves. **(NFPA 6.1.1)**

Post indicator valves shall be located not less than 40 feet from the buildings, unless approved by Merced County Fire Department. **(NFPA 6.3.3)**

PIPE RESTRAINTS, THRUST BLOCKING, CORROSION PROTECTION

Any joint restraint for the fire service main shall be installed as per NFPA Section 10.

Fire mains utilizing restrained joint systems shall include one or more Locking mechanical/push joints, setscrew retainer glands, bolted flange joints, heat fused/welded joints, pipe clamps/tie rods or other approved methods or devices. **(NFPA 10.8.3)**

Restraint is required on all tees, plugs, caps, bends, reducers, valves, and hydrant run outs. **(NFPA 10.8.1.1)**

Rods used for restraint shall be sized in accordance to **Table 10.8.3.1.2.2.**

Hydrants shall be set on flat stones or concrete slabs and shall be provided with small stones or the equivalent placed about the drain to ensure drainage. **(NFPA 7.3.1)**

Threaded rod shall not be bent or formed **(NFPA 10.8.3.1.2.4)**

All nuts, bolts, washers, rods and clamps shall be coated with a bituminous or other acceptable corrosion retarding material. **(NFPA 108.3.5)**

Thrust blocks shall be installed as per NFPA 10.8.2, and shall be considered as satisfactory where the soil is suitable for their use. **(NFPA 10.8.2.1)**

Shall be sized in accordance with **NFPA Section A.10.8.2**

FIRE HYDRANT TYPE

Fire Hydrants shall conform to the standards of the American Water Works Association for dry barrel hydrants. As shown in Detail Drawing SU-01 Merced County Public Works improvement standards. They must have at least one 2-1/2" outlet and one 4-1/2" outlet.

Or unless approved by the local water district, for additional information please call our office to verify your requirements including the local water district.

INSTALLATION HEIGHTS

Fire Department Connection not less than 18 inches and not more than 4 foot above grade or access level. **(NFPA 8.17.1.7)**

Post Indicator Valves Top of the post is 32-40 inches above the final grade **(NFPA 8.16.1.3.1)**

Hydrant Center of hose outlet shall be not less than 18 inches or more than 36" above final grade. With a minimum 3 foot clearance around hydrant.

Fire hydrants, PIVs shall be protected against mechanical damage. **(NFPA 8.16.1.3.2) (CFC)**

FDC INFORMATION

The fire department connection shall be on the system side of the water supply check valve. **NFPA 8.16.2.4.1 8.16.2.4.2**
For single systems, the fire department connection shall be installed as follows:

- (1) Wet system—on the system side of system control, check, in addition, alarm valves *(see Figure A.8.15.1.1)*
- (2) Dry system — between the system control valve and the dry pipe valve
- (3) Preaction system — between the preaction valve and the check valve on the system side of the preaction valve
- (4) Deluge system — on the system side of the deluge valve

A listed check valve shall be installed in each fire department connection. **(NFPA 8.16.2.5.1)**

There shall be no shutoff valve in the fire department connection piping. **(NFPA 8.16.2.5.2)**

SIGNAGE

Label all valves, shutoffs, post indicator valve, for fire sprinkler systems **(CFC 912.4)**

Especially underground pit in field, either approved lid or permanent marking.

8.16.2.4.5 Where a fire department connection services only a portion of a building, a sign shall be attached indicating the portions of the building served.

8.16.2.4.7.1 Each fire department connection to sprinkler systems shall be designated by a sign having raised or engraved letters at least 1 in. in height on plate or fitting reading service design — for example, AUTOSPKR., OPEN SPKR., AND STANDPIPE.

8.16.2.4.7.2 A sign shall also indicate the pressure required at the inlets to deliver the greatest system demand.

VALVE SUPERVISION

Provide and verify provisions for valve supervision, backflow prevention devices, post indicator valves, shutoffs as per NFPA 72 and CFC 905.9. Are the conduits in place?

DISCLAIMER

All construction shall be completed in a professional manner and in compliance with all provisions of the current California Building Standards Codes and all referenced documents contained within. The Code Sections cited below are specific to your project and provided to assist you, however, they are not intended to be all-inclusive.