



WOODSIDE FIRE PROTECTION DISTRICT

Underground Piping Design and Installation Standard

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SCOPE. This guideline provides standard requirements for the design and installation of underground fire piping for automatic fire sprinkler systems and fire hydrant connections. Underground fire piping systems shall be in accordance with NFPA 24 and this Bureau of Fire Prevention and Life Safety Standards and Guidelines Manual. All individuals and companies who intend to engage in the installation or alteration of underground fire piping systems are subject to the requirements of this standard.

RESPONSIBILITY. The underground fire piping system shall be installed by an individual holding a Class A or C-16 State of California Contractor's License. A licensed contractor shall only design systems that the firm has a contract to install.

GENERAL REQUIREMENTS

Pipe & Fitting Protection

Woodside Fire Protection District requires additional pipe protection. All metallic pipes and fittings shall be epoxy coated, polyethylene encased. All bolts, nuts, tie rods, etc. for all portions of the underground mains shall be 316 stainless steel. The transition from underground main to the sprinkler riser shall have a dielectric flange connection. Complete details shall be shown on the plan drawings.

Tracer Wire

Tracer Wire shall be required on all underground fire lines and to be minimum 10 A.W.G.

Cover – Depth

The depth of covering shall be measured from top of pipe to finished grade.

- Under areas of vehicular traffic – 3 feet minimum
- Under landscaping and walkways – 2 ½ feet minimum
- Under railroad tracks – 4 feet minimum (See railroad specs)

Backfill

Backfill materials shall contain no ashes, cinders, debris, organic matter, or other corrosive materials. Rock shall not be placed in trenches.

Valves

Fire Department Valves shall be of an indicating type.

Fire Department Connection (FDC)

1. The FDC shall be located 2–3 feet back from walkways or curbs.
2. The FDC shall be visible from street. It shall have a sign that indicates the address of the building it supports, the type of system (i.e. combination system), and the starting pressure if over 125 psi.
3. FDC's shall be located within 50 feet of a fire hydrant.
4. The centerline of FDC shall be between 36–44 inches from finished grade.
5. The FDC shall remain clear of obstructions and remain accessible.
6. The FDC shall have 1-5" Storz Quick connection and 2 –2 ½" connections minimum based upon design criteria, of vertical or horizontal type (See sample picture)
7. The Storz Quick connection shall be installed downward at a 30-degree angle.

Fire Hydrants

1. Fire hydrants shall be installed with a minimum 6" pipe, supplied by a minimum 8" supply line.
2. All fire hydrants shall be wet barrel type with one 4 ½" connection and two 2 ½" connections.
3. Blue Dots shall be installed off center of drive isle to indicate hydrant location.
4. All private fire hydrants shall be painted red.

TESTING PROCEDURE

1. In accordance with NFPA 24, a 200-psi pressure test is required for a minimum of 2 hours.
2. All thrust blocks and joints to be exposed at time of inspection.
3. Woodside Fire Protection District Inspectors shall witness the flush of underground piping. 6-inch piping shall require a minimum of (3) 2 ½" hoses for the flush. 8-inch piping shall require a minimum of (4) 2 ½" hoses for the flush, flush per NFPA 24.
4. Both a rough and final inspection are required.

PLANS SUBMITTAL

Approved plans required prior to any excavation or installation of appliances or equipment. Working plans shall be drawn to an indicated scale on sheets of uniform size with a reference to grade, buildings structures, point of connection to the sprinklers overhead sprinkler system, point of connection to the City water main, or water tank, and shall include the following items that pertain to the design of the system:

General

1. Name or owner

2. Location, including street address.
3. Point of compass
4. A graphic representation of the scale used on all plans, and details.
5. Name and address of contractor
6. Size and location of water supplies
7. Size and location of riser, DDCV assembly, FDC, PIV,
8. Signage for fire department connection (FDC), post-indicator valve (PIV), backflow preventer device shall have permanent, imbedded signs attached which states address served and shall be secured to valve or connection.

Site Plan

1. Adjoining streets
2. Backflow Prevention shall be installed in accordance with water agency approval detail.
3. Indicate all valve controls, such as street valves, all of which shall require monitoring.
4. The PIV shall be 36 inches in height (set back from curb by 30 inches or protected by concrete post), shall be supervised, and shall not be obstructed or covered by vegetation.
5. Note the location of the FDC, outlets positioned to face the access drive or street. The connection shall be protected by a 30-inch set back from curb or installation of concrete post and shall not be obstructed or covered by vegetation.
6. Trench detail shall include type of fill, depth of cover, tamped in layers under and around the pipe to ensure placement of pipe against settlement or lateral movement and shall contain no ashes, cinders, refuse, organic material, rocks, boulders, or other corrosive material.
7. Indicate pipe size, type, pressure class (Class 200 is required downstream from FDC), include tracer wire, conduit for monitoring applicable valves.
8. Install per NFPA 24, manufacturer specifications, and include those specifications with submittal package. Additionally, include Underwriters Laboratory listing for all appliances for project.
9. Provide method for restraining piping, fittings, tees, bends, caps, bell & spigot by the following:
 - a. Thrust Block. Show supporting calculations, including soil class or calculate to most restrictive soil bearing. Refer to NFPA 24 Chapter 10 or NFPA 13 Chapter 10 for joint restraint criteria.

Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual, for further details and how to apply for a permit.

- ❖ **Note:** Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit. Any modifications/changes to approved plans require a resubmittal/revision. Fees will apply.