



ORANGE COUNTY FIRE AUTHORITY

NOTES FOR UNDERGROUND PLANS

All of the notes listed below shall be placed, verbatim, on the plan under the heading
"ORANGE COUNTY FIRE AUTHORITY NOTES"

INSPECTION REQUIREMENTS

1. A minimum of three OCFA inspections are required for underground piping serving sprinkler systems and/or private hydrants: 1) Pre-pour inspection; 2) Hydrostatic testing; 3) Flush inspection. Please schedule all inspections at least 48 hours in advance. Inspections canceled after 1 p.m. on the day before the scheduled date are subject to a re-inspection fee. Call OCFA Inspection Scheduling at (714) 573-6150.
2. **Pre-pour inspection:** Thrust block excavation shall be completed, but thrust blocks shall not be poured. All pipe shall be in place and exposed for visual inspection. Pipe shall be laid on a minimum six-inch bed of clean sand. Trenches shall be of a sufficient depth to allow the required cover above pipe. Ferrous pipe and fittings shall be encased in polyethylene tubing (not wrapped) and tightly taped to inhibit water infiltration. Ferrous joints (with the exception of stainless steel 316) shall be coated with asphaltic sealant or other corrosion retarding material. See items 11 – 19, 21 and 22 below for detailed requirements.
3. **Hydro Testing:** Thrust blocks shall be in place. Pipe shall be center-loaded with clean sand to prevent uplift, but all joints shall remain exposed. The system shall be hydrostatically tested at 200 psi (or 50 psi over maximum static pressure, whichever is greater) for a duration of at least two hours prior to the arrival of the OCFA inspector. See item 16 for detailed requirements.
4. **Flush inspection:** All portions of the underground system shall be flushed to remove debris prior to connection to overhead piping. Flow shall be through a minimum of a four-inch hose or pipe, unless otherwise approved by the OCFA inspector prior to scheduling the flush. Hose or pipe shall be restrained to prevent injury and damage. Discharged water shall be collected or diverted in accordance with applicable SWPPP/NPDES provisions. The local public works department, water district, and/or other applicable agency shall be notified of the scheduled flush by the contractor. The OCFA flush and hydro inspections may be scheduled concurrently. See items 11, 18, and 20 – 23 below for detailed requirements.
5. Upon flush inspection or prior to final sprinkler or site inspection, all detector check assemblies, control valves, and fire department connections (FDC) shall be clearly labeled with the address(es) served by the device. Address signs shall be securely attached to the device and be of a durable, fade-resistant material which is visible and legible from the fire lane. FDC and four-inch hydrant outlets shall be unobstructed and oriented toward the fire lane. Valves shall be locked in the open position with breakaway locks. All PIV valves and private hydrants shall be painted OSHA safety red. The closest upstream indicating valve to the riser shall be painted OSHA safety red. Hydrant and FDC caps shall be in place. See items 6 – 9, 18, and 20 – 23 for detailed requirements.

GENERAL REQUIREMENTS

6. Installation, inspection, and testing shall conform to 2010 editions of NFPA 13 and NFPA 24. OCFA jurisdiction begins at the downstream side of the last valve on the detector check assembly. Verify design and installation requirements for the portion of the system preceding this point with the local water district.
7. Vegetation shall be selected and maintained in such a manner as to allow immediate location of, and unobstructed access to; all hydrants, control valves, fire department connections, and other devices or areas used for firefighting purposes.
8. A minimum three-foot clearance shall be provided around all hydrants and post indicating valves. A minimum three-foot clearance shall be provided on at least one side of a detector check assembly to allow proper operation of the device. The front of FDC and the adjacent fire access roadway shall be free of any obstructions.

9. Any future modification to the approved private underground piping system is subject to review, inspection, and approval by the Orange County Fire Authority.
10. Approval of this plan shall not be interpreted as approval of any information or project conditions other than those items and requirements identified in OCFA Guideline B-03, and applicable sections of the 2010 editions of NFPA 13 and NFPA 24. This project may be subject to additional requirements not stated herein upon examination of actual site and project conditions or disclosure of additional information.

PIPE AND TRENCH REQUIREMENTS

11. A 6-inch bed of clean fill sand shall be provided below the pipe and 12-inches above the pipe (total of 18 inches plus outer diameter of the pipe).
12. Pipe shall be buried at least 36" where subject to loading (e.g., driveways, parking lots) and at least 30" elsewhere.
13. All pipe shall be approved for use in fire service systems. Class 150 will be used at a minimum, and class 200 pipe shall be used where the water pressure exceeds 150 psi. The use of galvanized pipe is prohibited when a portion of the system is buried.
14. All ferrous pipe and fittings shall be protected with a loose 8-mil polyethylene tube. Wrapping the pipe in polyethylene sheeting is not acceptable. The ends of the tube and any splices made for tees or other piping components shall be tightly sealed with two-inch tape that is approved for underground use.
15. All bolts used for underground connections, including T bolts, shall be 316 stainless steel. All ferrous fittings (with the exception of 316 stainless steel) shall be cleaned and thoroughly coated with asphalt or other corrosion retarding material after assembly and prior to the installation of polyethylene tube.
16. Thrust blocks, or another approved method of thrust restraint, shall be provided wherever pipe changes direction.
17. A minimum two-inch clearance shall be provided where the pipe passes through slabs or walls. Underground system shall terminate at the riser flange and placed a maximum of 18 inches from an exterior wall and 6 inches above the slab.
18. The FDC shall contain a minimum of two 2 ½" inlets. When the system design demand, including the interior hose stream demand or a standpipe, is a minimum 500 gpm, four 2 ½" inlets shall be provided. FDCs shall be painted OSHA safety red.
19. Pipe running under a building or building foundation shall be stainless steel and shall not contain mechanical joints.

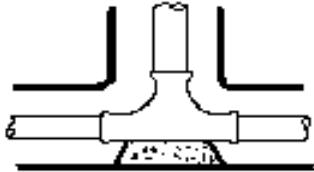
HYDRANT REQUIREMENTS

20. Private fire hydrants shall be listed with a minimum of one 2 ½" and one 4" outlet. The 4" outlet shall face the fire department access road. All outlets shall be provided with National Standard Threads (NST). Private hydrants shall be painted OSHA safety red.
21. Fire hydrant supply piping shall be a minimum of six inches in diameter. The lowest valve operating nut shall be a minimum of eighteen inches above grade and the hydrant flange shall be a minimum of two inches above grade.
22. A keyed gate valve shall be provided for each hydrant in an accessible location. Keyed gate valves shall be located within six to ten feet of the hydrant in an area that is unobstructed and clearly visible. Valves shall not be located in parking stalls.
23. All fire hydrants shall have a "Blue Reflective Pavement Marker" indicating their location per the OCFA standard detailed in Guideline B-09. Private hydrants and markers are to be maintained in good condition by the property owner.

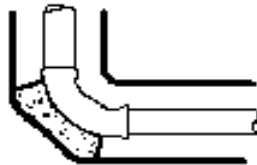
PLACE THE FOLLOWING NOTES, VERBATIM, ON THE PLAN:

**ORANGE COUNTY FIRE AUTHORITY
NOTES FOR THRUST BLOCK RESTRAINTS**

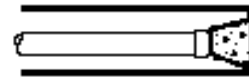
CONDITION I



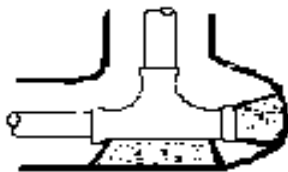
CONDITION II



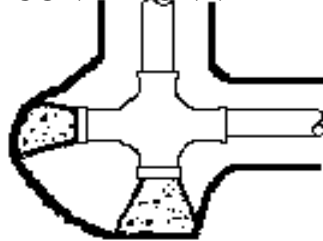
CONDITION III



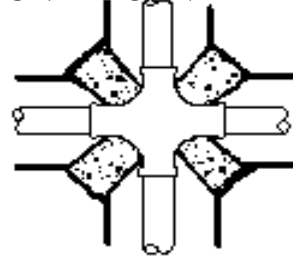
CONDITION IV



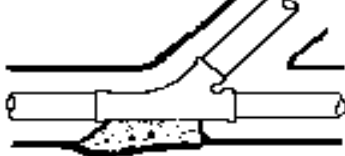
CONDITION V



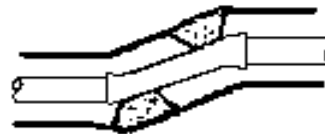
CONDITION VI



CONDITION VII



CONDITION VIII



THRUST BLOCK BEARING AREA IN SQUARE FEET

Pipe Size	CONDITION							
	I	II	III	IV	V	VI	VII	VIII
<6"	2.0	2.9	2.0	2@ 2.0	2@ 2.0	4@ 1.6	2.0	2@ 1.6
6"	4.3	4.0	4.3	2@ 4.3	2@ 4.3	4@ 3.3	4.3	2@ 3.3
8"	7.4	10.6	7.4	2@ 7.4	2@ 7.4	4@ 5.7	7.4	2@ 5.7
10"	12.1	17.1	12.1	2@ 12.1	2@ 12.1	4@ 9.3	12.1	2@ 9.3
12"	17.2	24.1	17.2	2@ 17.2	2@ 17.2	4@ 13.2	17.2	2@ 13.2

NOTES

1. Thrust block areas based on 225 PSI and 2,000 PSF soil pressure with 2 ½ feet of cover minimum.
2. Thrust block bearing faces shall be placed against undisturbed soil, approved compacted backfill, or Class 100-E-100 slurry.
3. Thrust blocks shall be Class 560-C-3250 concrete, unless specified otherwise.
4. To facilitate future removal of thrust blocks and line extension use cardboard separators between blocks, if needed.