



Travis County ESD No. 12

11200 Gregg Lane
Manor, Texas 78653
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FirePrevention@tcesd12.com



INSTALLATION INFORMATION FOR UNDERGROUND FIRE LINES

- Underground fire line piping shall be installed in accordance with NFPA 24. TCESD No. 12 considers the piping from the point of connection at the municipal water supply to the fire hydrants and to the base of the fire sprinkler riser(s) part of a fire protection system. An underground fire line plan shall be submitted to TCESD No. 12 for review, approval, and inspection.
- A visual inspection of all parts of the installation shall be performed PRIOR to cover. If the piping and joints are covered prior to installation, you will be required to uncover the piping for inspection, regardless of cover.
- A visual inspection will be required before the fire mains are covered to verify location of valves, pipe type, size, wrapped joints and proper installation of restraints.
- All pipe shall be approved for use in fire service systems. Class 150 will be used at a minimum. Galvanized pipe is not approved for underground supply piping.
- All sections of ductile iron pipe or ductile iron fittings shall be encased in 8-mil polyethylene sheeting in accordance with AWWA Standard C105/A21.5-05. Tape used to seal any part of the sheeting shall be listed for underground use.
- 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).
- All exposed flange bolts shall be thoroughly coated with bituminous material after assembly and prior to the installation of any polyethylene sheeting to protect the bolts from corrosion.
- Concrete thrust blocks or other approved retaining methods, shall be installed at all locations where piping changes direction. See thrust block diagrams. All thrust blocks shall be formed and inspected by TCESD No. 12 prior to pouring of concrete and prior to covering.
- Care shall be taken when forming and pouring thrust block fittings to ensure joints are not buried in concrete.

THRUST BLOCKING SCHEDULE

ASSUMPTIONS: LINE PRESSURE - 100 psi, ALLOWABLE BEARING - 4,000 psf, SAFETY FACTOR - 3

PIPE DIAMETER	PIPE AREA Sq. In.	X	11 1/4" BEND			22 1/2" BEND			45° BEND			90° BEND			TEE & PLUG		
			THRUST Lbs.	AREA Sq. Ft.	A	THRUST Lbs.	AREA Sq. Ft.	B	THRUST Lbs.	AREA Sq. Ft.	C	THRUST Lbs.	AREA Sq. Ft.	D	THRUST Lbs.	AREA Sq. Ft.	E
4"-12"	120.8	1.5'	2,367	1.2	1.1'	4,712	2.4	1.5'	9,243	4.6	2.2'	17,078	8.5	2.9'	12,076	6.0	2.5'

PLAN

SECTION

NOTES:

- USE A, B, C, D OR E AS APPROPRIATE. REFER TO SCHEDULE.
- ALL CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED TRENCH WALLS. DISTANCE (X) FROM PIPE FITTING TO TRENCH WALL SHALL BE AS SHOWN IN THE SCHEDULE OR A MIN. OF 12" AT THE THRUST BLOCK.
- VERTICAL DIMENSION OF BEARING AREA AGAINST TRENCH WALL OF THRUST BLOCK SHALL BE EQUAL TO HORIZONTAL DIMENSION OF A, B, C, D, OR E AS APPROPRIATE. REFER TO SCHEDULE AND SECTION DRAWING.
- ALL JOINTS SHALL BE TEMPORARILY JACKED WHEN POURING THRUST BLOCKS. ALL JOINTS OF FITTINGS SHALL BE KEPT FREE OF ANY CONCRETE.
- ALL CONCRETE THRUST BLOCKS SHALL CONSIST OF A MIXTURE OF 1:2:6 OF CEMENT TO WASHED SAND TO GRAVEL AND SHALL BE CURED FOR A MIN. OF 24 HRS.
- CONCRETE THRUST BLOCKS SHALL APPLY TO ALL PIPE FITTINGS.

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.

Scale: NTS

Approved: *[Signature]*

Date: 6/16/2020

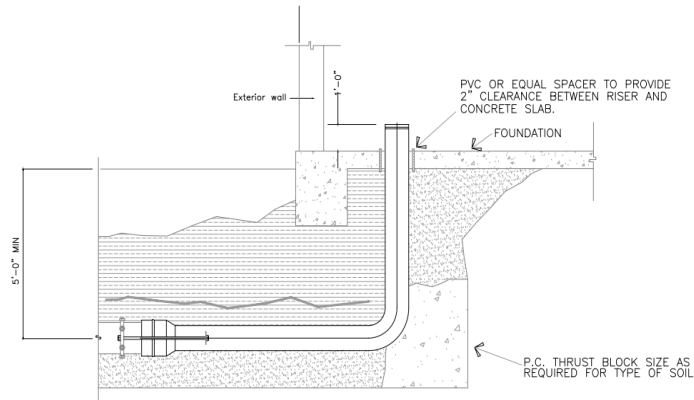
Drawn by: VDI

Detail No. W-11

CITY OF MANOR, TEXAS

THRUST BLOCKING DETAIL

10. Sectional valves shall be provided at appropriate points within piping sections such that the number of fire protection connections between sectional valves does not exceed six.
11. There shall be a minimum of a 2-inch clearance between the fire riser pipe and the concrete slab. The 2-inch space shall be filled with a compressible material that allows movement. A minimum 2-inch clearance shall be provided where the pipe passes through walls.
12. The underground system shall terminate at the riser flange and placed between 12-inches and 18-inches from an exterior wall, at least 12-inches from any other wall, and 6 to 12-inches above the slab.



13. A 200-PSI hydrostatic pressure test shall be performed on all installed piping and appurtenances for a period of two hours. The piping shall be center-loaded during pressure testing with all joints, fittings and appurtenances uncovered. Failure to comply with this section will result in a test failure and the uncovering of the piping for a visual inspection and retesting.
14. An underground supply piping flush shall be conducted by the installing underground contractor and witnessed by TCESD No. 12 prior to connection to the above ground fire sprinkler system. The fire department connection piping shall also be flushed if connected to the fire sprinkler supply piping below grade.
15. The flush of the underground piping shall be performed by the installing underground contractor and witnessed by personnel from TCESD No. 12.
16. Proper methods and equipment must be used to complete the flush of the underground piping. All piping and/or hose must be properly secured or restrained.
17. The flush shall be conducted using a full pipe diameter discharge. If the use of a smaller diameter discharge is to be used, it must be approved by TCESD No. 12 PRIOR to the flush. Approval will not be given on site. The minimum size of a discharge opening for an underground flush shall be no less than a 4-inch diameter hose, pipe, or outlet.
18. All fire hydrants supplied by the main underground water line shall be flushed in accordance with 2013 NFPA 24, Section 10.10.2.1.1.
19. Hydrants shall be flushed through the 4.5" outlet. Any hydrant that has not been flushed and accepted by TCESD No. 12 shall be covered with a black bag until it is deemed to be in service.