

# **CITY OF SANTA FE**



**PUBLIC UTILITIES DEPARTMENT**

**WATER DIVISION**

**CONSTRUCTION STANDARDS AND  
SPECIFICATIONS**



**City of Santa Fe  
Public Utilities Department  
City of Santa Fe Water Division (COSFWD)  
Construction Standards and Specifications**

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**SECTION A - GENERAL PROVISIONS**

**A.1 Referenced Construction Specifications and Construction Drawings**

The following specifications and drawings shall be included as a part of these specifications by this reference:

1. COSFWD Approved Standard Detail Drawings (These drawings are located at the end of this document.)
2. American Water Works Standard Specifications (AWWA Specifications), latest published revision.
3. New Mexico Standard Specifications for Public Works Construction.
4. New Mexico Department of Transportation Standard Specifications for road and bridge construction (NMDOT Specifications), latest published revision.
5. ASTM Standards
6. The following COSFWD Construction Specifications shall take precedence over referenced specifications in items #1 - #4 above.

**A.2. Developer Construction**

Developer installed public water distribution system improvements shall be done in accordance with the *Agreement to Construct and Dedicate Public Improvements* requirements. The developer and the developer's contractor are responsible for completing work in accordance with these specifications. The developer and the developer's contractor shall be referred to herein as the Contractor for developer installed public water distribution systems. The term Owner as used in this document refers to the Developer.

**A.3 Access to Inspection**

All construction work shall be monitored by COSFWD's Supervising Engineer or designated representative for strict compliance with all applicable specifications, codes and standards. Contractor shall provide access to all water system facilities for inspection purposes and notify COSFWD's Supervising Engineer prior to commencing work. Contractor shall notify COSFWD 24 hours in advance of work to be performed outside normal working hours.

Failure to provide proper access for inspection of work or to notify COSFWD of work to be performed after normal working hours shall result in said work being unacceptable to COSFWD until complete access and



inspection is made. Contractor shall give the supervising engineer a 24 hour advance notice of overtime work scheduled. COSFWD will provide overtime inspection as agreed by the supervising engineer in such instances where the overtime work is required for convenience or necessity of the public. Overtime inspection shall not be done solely for the Contractor's convenience.

Any overtime work shall be inspected by COSFWD on the following regular work day, in cases where COSFWD does not provide overtime inspection.

#### **A.4 Interference with Service and Schedule of Work**

Contractor shall be required to arrange his construction schedule with the intent of maintaining continuous service to COSFWD users to the fullest extent possible from existing facilities. No outage shall exceed 4 hours unless coordinated directly with the COSFWD. Should a conflict between the contract work and service occur, Contractor shall, as directed by the supervising engineer, discontinue the work.

Contractor shall have COSFWD approval for any water shutoff and connections to existing mains prior to the scheduling of any construction. Contractor shall distribute shutoff notices to the general public as necessary. Contractor shall not operate an existing COSFWD valve or fire hydrant unless specifically authorized to do so and such operation shall be under the direction of COSFWD on site personnel.

Contractor may be required to do work outside of normal working hours if COSFWD deems it necessary for the convenience of COSFWD's customers and the general public. When the Contractor is required to shutoff existing waterline to perform any wet connections, Contractor shall, as directed by COSFWD, notify each affected customer **no less than 48 hours** in advance of the anticipated service interruption. COSFWD will provide forms detailing the information to be provided to affected customers. Also, Contractor and COSFWD shall determine when shutoff will be made so that a notice may be placed in the local newspaper by COSFWD. These actions shall be taken to give the water users ample time to arrange for a temporary supply of water.

#### **A.5 Construction Water**

Construction water shall be used in accordance with current City water ordinances. Contractor shall be required to pay for all potable and non-potable water used for construction purposes. If existing water of satisfactory quality for the construction needs can be found from other than the COSFWD source, Contractor may obtain his water from that source.

#### **A.6 Protection of Utilities and Property**

During performance of the work, Contractor shall protect all utilities and property from damage. All utilities shall be spotted prior to any excavation work by Contractor. Contractor shall call New Mexico One Call (811), and request utilities' locations forty-eight (48) hours prior to excavation in accordance with New Mexico One Call operating procedures.

The Contractor shall attempt to locate sewer laterals and other private service lines. Contractor shall contact property owners prior to construction and request location information. Any sewer laterals cut during excavation shall be repaired by Contractor at no additional cost to COSFWD. Payment for repair of sewer service laterals shall be considered paid in the Construction price for water pipe in place.

#### **A.7 Barricades and Signs**

Any signs used by Contractor during performance of work shall conform to the Manual of Uniform Traffic Control Devices.



#### **A.8 Work in Streets Right-of-Way**

All of Contractor's construction work in street rights of way shall be done in strict accordance with the City of Santa Fe Streets' construction specifications, rules, regulations ordinances.

Contractor shall coordinate with the proper public officials and receive approval from said officials prior to any street closing or detouring required due to the work to be performed. Permit costs are considered incidental and included as part of placing of pipe.

#### **A.9 Maintenance of Traffic**

Contractor shall maintain traffic flow(s) and accessibility to private property(s) as close to normal condition as possible. Contractor shall notify residents, city and state officials, as appropriate, of any driveway or road closure.

#### **A.10 Environmental Issues**

The Contractor's obligation to obey any environmental laws or standards is not limited by the following items.

##### *A.10.1 Protection of Vegetation*

Contractor shall protect existing vegetation from removal or damage wherever possible. Contractor shall confine construction work to specified construction limits as shown on the drawings or defined in the specifications. Should Contractor damage or remove any vegetation outside the construction limits, Contractor shall restore the affected area to its original state at no expense to COSFWD or the Owner.

##### *A.10.2 Revegetation of Disturbed Areas*

Within the City of Santa Fe municipal boundary, Contractor shall revegetate as required by City of Santa Fe Ordinances.

##### *A.10.3 Archaeological/Cultural Permits*

Contractor shall not commence excavations within the City of Santa Fe without a permit issued by the City of Santa Fe Planning and Land Use Department.

##### *A.10.4 Slope Protection*

Contractor shall comply with the conditions of the City of Santa Fe's Terrain Management Ordinance, where applicable.

##### *A.10.5 Water Conservation*

Contractor shall use reasonable effort to conserve water during construction. Based on drought or other conditions, COSFWD may require Contractor to use effluent water, collect flushing water for reuse, or other water conservative construction methods.

##### *A.10.6 Separation between Water and Sewer*

Parallel water and sanitary sewer lines must be placed at least ten (10) feet apart horizontally, and the water line must be at a higher elevation than the sewer. If it is impossible to meet these criteria, the water and sewer will be placed in separate trenches at a horizontal separation approved by the COSFWD supervising engineer, and the water line shall be at least two (2) feet above the sewer. When water and sewer lines cross each other, the water line shall be at least two (2) feet above the sewer.



**A.11 Soil Testing**

Testing for soil compaction requirements, proctor analysis, and any other material testing shall be done by a testing lab with all material testing to be certified by a professional engineer registered in the State of New Mexico. Test locations and intervals shall be at the direction of COSFWD and shall be Contractor's responsibility to also comply with all testing necessary for all work done in public right-of-way per the controlling agency's requirements. A copy of all testing shall be mailed from the testing lab directly to COSFWD and the Owner. The cost of material testing shall be incidental to the pipe laying bid items.

**A.12 Work in Railroad Right-of-Way**

Contractor shall not work within railroad right-of-way without a license issued by the railroad owning the right-of-way. All work done by the Contractor shall comply with the requirements of the license.

**A.13 Work in NMDOT Right-of-Way**

All construction work in NMDOT right-of-way shall be done in strict accordance with applicable NMDOT requirements as specified in *Right of Way Manual, Railroad and Utility Unit*. Traffic signs, warnings, and barricades, shall be provided by Contractor and shall conform to NMDOT requirements. Work within NMDOT construction projects shall meet all applicable project specifications and requirements.

**A.14 Restoration of Unpaved Driveways and Streets**

Unsurfaced and gravel surfaced driveways and streets shall be left in the same or better condition as they existed prior to construction. Grading shall be done with the appropriate type of grading equipment. Payment for gravel surface replacement shall be limited to a maximum width of the trench width plus eight feet. Any necessary surface replacement and grading outside of the trench width plus eight feet shall be made by Contractor at no expense to COSFWD or the Owner. Easement areas shall be graded to match existing contours.

**A.15 Certificate of Compliance**

A Certificate of Compliance shall be furnished to COSFWD and the Owner by Contractor for all material that has specification requirements listed in the contract or as directed by the supervising engineer. Certificate of compliance shall be signed and notarized by the material manufacturer stating that the material supplied for Work under the contract meets all required specifications.

**A.16 Safety Standards**

The contractor shall have a documented safety program and shall have a designated safety officer to provide safety surveillance for work performed on the COSFWD water system. The contractor shall ensure that all subcontractors comply with the safety provisions. The contractor's safety program shall include all necessary training, personal protective equipment, and other safety equipment and procedures necessary for all type of work performed on the COSFWD water system.



## SECTION B - INSTALLATION OF WATER MAINS AND SERVICES

### B.1 General

Construction of public water mains for the COSFWD system will be in accordance with the New Mexico Standard Specifications for Public Works Construction published by the New Mexico Chapter of the American Public Works Association except as noted below. The COSFWD specifications take precedence over the APWA specification in the event of any conflict between the two documents. The DEVELOPER is responsible for obtaining a copy of the APWA specifications.

### B.2 APWA Section 701 - Trenching, Excavation and Backfill

Section 701 of the APWA specifications will be used with the following exceptions:

*Section 701.8: REMOVAL OF EXISTING PAVEMENT, SIDEWALK, AND DRIVEWAY:* The CONTRACTOR is responsible for obtaining any required pavement cutting permits. All pavement cuts shall conform to the requirements imposed by the pavement cut permits issued for the job.

*Section 701.11.4: BLASTING:* Replace this sentence: "Blasting shall be under the supervision of a person qualified and experienced in the use and handling of explosives." with: "Prior to any blasting, CONTRACTOR shall submit a Santa Fe County Blasting permit application to COSFWD and shall obtain any applicable Santa Fe County or City permits."

*Section 701.13.3.4:* Delete this section and replace with: "The CONTRACTOR shall utilize acceptable native material in the embedment zone in conformance with these specifications. No additional compensation for importing a different material for the embedment zone will be allowed. The CONTRACTOR shall utilize acceptable native material in the compacted fill above the embedment zone in conformance with these specifications. Additional compensation for importing a different material for the compacted fill above the embedment zone will only be allowed if the native material is Class IV, Class V or rock. Native material excluding rock or shale may be used for the embedment zone; all rocks and shale shall be cleared from the pipe embedment zone."

*Section 701.14.1:* Organic materials such as wood, roots, etc. are also excluded from final backfill.

*Section 701.14.2:* Delete this section and replace with: "Final backfill shall be compacted as shown on the APWA utility trenching details unless otherwise specified in the contract documents or road cut permit. Trenches shall be cut wide enough to allow embedment alongside the flowline for proper installation (fill to the top, tamp to midline, and fill/tamp until fully compacted) as stated in Section 701 of APWA."

*Section 701.15.4:* Add the following to the end of this section: "For each lift of backfill, compaction tests will be taken as directed by COSFWD. At a minimum, tests will be required 300 feet apart along pipe centerline at each 2 foot depth interval. Tests will be staggered horizontally from tests taken at lower lifts. The testing frequency must meet the requirements of the agency responsible for maintaining the road."

*Section 701.17.3:* Add the following to the end of this section: "No additional payment will be made for excavation or blasting beyond the specified limits of the trench configuration."

*Section 701:* Add this section: "Exploratory digging shall only be performed with written authorization from the COSFWD supervising engineer. Exploratory digging shall not be used for any type of work that is ordinarily a part of normal construction (i.e. locating existing utilities in advance of trenching and pipe laying, etc.)."



*Section 701:* Add this section: "The supervising engineer must issue written approval authorizing the use of imported backfill outside the pipe embedment zone prior to use. The contractor shall submit Proctor Test analysis showing import material suitability prior to placement."

**B.3 APWA Section 710 - Boring, Drilling and Jacking**

Section 710 of the APWA specifications will be used with the following exceptions:

*Section 710.3.1:* Delete the last sentence in this section and replace with "The allowable tolerance as to grade and alignment of the installed casing shall not exceed 2 inches per hundred feet of casing length or as approved by COSFWD based on site conditions."

*Section 710.3.2:* Redwood skids are not acceptable. CONTRACTOR shall use prefabricated casing spacers shown on the Approved Materials List and install in accordance with COSFWD Standard Detail Drawings.

*Table 710.4.2:* Replace with the following table:

**CASING SIZE VERSUS CARRIER SIZE**

<b>Carrier Pipe (Nominal Size)</b>	<b>Steel Casing Diameter and Wall Thickness</b>
6"	12" Schedule 30
8"	16" Schedule 30
10"	18" Standard Class
12"	22" Standard Class
14"	26" Schedule 20
16"	28" Schedule 20
20"	30" 0.375" Wall
24"	36" 0.375" Wall
3/4"-2" Cu Tubing	4" Schedule 40 PVC
3/4"-2" Cu Tubing	4" Schedule 40 Steel

**B.4 APWA Section 801 - Installation of Water Transmission, Collector, and Distribution Lines**

Section 801 of the APWA specifications will be used with the following exceptions:

*Section 801.2:* Add the following references: AWWA C905, latest revision.

*Section 801.3.1.2:* Delete this section (U.S. material preference)

*Section 801.3.2.2:* Delete this section and replace with the following: "CONTRACTOR shall install the pipe material shown on the COSFWD construction drawing."

*Section 801.3.2.3:* Delete the following sentence: "All pipe shall be of domestic manufacture and origin."

*Section 801.3.4.8:* CONTRACTOR will use the COSFWD valve card to meet the requirement of this section.

*Section 801.3.7.1:* Delete "National Standard Fire Hose Coupling Screw Threads" (7.5 threads per inch) and replace with "Santa Fe Fire Department Standard Screw Threads (6 threads per inch; National Waterworks Spec 60293) shall be furnished unless COSFWD construction drawings specify National



Standard Fire Hose Coupling Screw Threads." Also, normal bury depth for COSFWD is 4 1/2 to 5 feet unless field conditions require a deeper bury.

*Section 801.3.7.5:* Add this section: "Repaint the fire hydrant bonnet with Wellborn Traffic Yellow, Sherwin Williams Utility Yellow, or COSFWD approved equivalent paint. CONTRACTOR shall apply fire hydrant number decal to match the fire hydrant number assigned on the COSFWD construction drawing using decals provided by COSFWD."

*Section 801.3.8 PRESSURE REDUCING VALVE:* Delete this section. PRV valve requirements will be shown on the COSFWD construction drawing.

*Section 801.3.9 TAPPING SLEEVES:* Tapping sleeves will be as shown in SECTION C, Approved Materials.

*Section 801.4 WATER VALVE DATA CARD:* Delete the water valve data card shown in the APWA specifications and use the water valve data card attached to these specifications.

*Section 801.5 FIRE HYDRANT DATA CARD:* Delete the fire hydrant data card shown in the APWA specifications and use the fire hydrant data card attached to these specifications.

*Section 801.7.1* Add the following to the end of this section: "See the COSFWD Standard Detail Drawings for storm drain and other pipe crossing requirements."

*Section 801.8.1:* The depth of cover over COSFWD pipe shall be 4 feet or as shown on the COSFWD project drawing. Any variation of depth under 4 feet of cover or over 5 feet of cover shall require prior approval by COSFWD.

*Section 801.9.3:* Add the following to the end of this section: "End(s) of the pipe(s) shall be covered at all times except during actual work on the pipe."

*Section 801.9.5:* Add the following to the end of this section: "Changes in horizontal or vertical alignment from the drawings or field staking shall be made only when approved by the COSFWD staff."

*Section 801.9.10:* Add this section: Trace wire shall be installed on all water mains and appurtenances. The wire shall be installed in such a manner as to be able to properly trace all pipelines and services without loss or deterioration of signal or without the transmitted signal migrating off the tracer wire. An insulated 12 gauge copper wire shall be laid along with the pipe in accordance with COSFWD specifications. The color of the wire shall be blue. This continuous conductor wire shall be laid with terminations at terminal boxes, valve boxes, fire hydrants, or meter cans as directed by the COSFWD representative.

Trace wire shall be installed in the same trench and inside bored holes and casing with pipe during pipe installation. It shall be secured to the pipe as required to insure that the wire remains adjacent to the pipe. The trace wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity, and it shall be accessible at all trace wire access points.

Except for approved spliced-in repair or replacement connections, tracer wire shall be continuous and without splices from each trace wire access point.

Trace wire access points shall be accessible at all new water valve boxes, water meter boxes, blowoffs, ARVs, fire hydrants, irrigation turnouts and access manholes. Concentrations of multiple proposed valves near pipe intersections, i.e. tees or crosses, may require more than one access point assembly in each concrete valve box collar. Trace wire access points shall be within public right-of-way or public utility easements.





If the spacing of valves and meters is greater than one-half (1/2) mile, the trace wire shall be looped up in a 2" PVC pipe to be located at a right-of-way fence line or at a cross fence line, as applicable, for protection. A PVC cap shall be placed on the 2" pipe when used, but it shall not be solvent welded onto the pipe.

At the point of connection between ductile iron water mains, with any non-iron water main, the tracer wire shall be properly connected to the iron pipe with a cad weld or approved equivalent. Tracer wire welds shall be completely sealed with the use of an approved mastic type sealer specifically manufactured for underground use. Mastic shall be applied in a thick coat a minimum of one quarter inch (1/4") thick and shall be protected from contamination by the backfill material with the use of a plastic membrane.

Tracer wire shall be laid flat and securely affixed to the pipe at 10 foot intervals. The wire shall be protected from damage during the execution of the works. No breaks or cuts in the tracer wire or tracer wire insulation shall be permitted. At water service saddles, the tracer wire shall not be allowed to be placed between the saddle and the water main.

At all water main end caps, a minimum of 6 feet of tracer wire shall be extended beyond the end of the pipe, coiled and secured to the cap for future connections. The end of the tracer wire shall be spliced to the wire of a six pound zinc anode and is to be buried at the same elevations as the water main.

Connections between the main line tracer wire and branch connection tracer wire shall only be allowed at services, ARVs, blowoffs, irrigation turnouts and laterals.

The branch connection tracer wire shall be a single tracer wire properly spliced to the main line tracer wire. DryConn Direct Bury Lug Aqua water tight connectors, or approved equal, shall be used to provide electrical continuity.

For directional boring installations, two #12 tracer wires, listed above, shall be installed with the pipe and connected to the tracer wire at both ends, or cad welded to the existing iron pipe at both ends.

The tracer wires shall be laid flat and securely affixed to the top and side of the pipeline at five foot (5') intervals to insure its placement during the boring operation.

**Contractor shall perform a continuity test on all trace wire in the presence of the Engineer or the Engineers' representative before paving has commenced. If the trace wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire.**

At all repair locations where there is existing tracer wire, the tracer wire shall be properly reconnected and spliced as outlined above.

*Section 801.10.3:* Replace the first sentence of this section with: "Plastic pressure pipe shall be installed in accordance with applicable sections of AWWA M 23, C900 and C905 and manufacturer's printed recommendations."

*Section 801.12.1:* Replace this section with the following: "The CONTRACTOR shall use mechanical thrust restraint devices at fitting and pipe joints. Concrete thrust blocking shall not be used unless specifically authorized by COSFWD. Dry blocking shall be used only when authorized by Supervising Engineer. Dry blocking is to be used only for tie-in to existing pipe where service restoration time does not allow for the use of poured in place concrete and thrust restraints are not feasible.

Concrete thrust blocking is to be placed in accordance with COSFWD Standard Detail Drawings. The concrete must have a minimum compressive strength of 3,000 psi. ( $f_c = 3,000$  psi.) Compressive cylinder tests of concrete may be requested by the COSFWD representative and are included the bid cost for thrust



blocking. Fittings and bolts are to be covered with plastic prior to placement of concrete. Thrust blocking details for vertical bends will be provided by the COSFWD representative and will be based on site conditions.

Mechanical thrust restraints must be placed in accordance with the manufacturer's recommendations and provide the restrained lengths shown on COSFWD Standard Detail Drawings. Mechanical thrust restraints must be used where restrained pipe is called out on the construction drawings. Full lengths of pipe shall be placed next to the fitting in order to reduce the need for harness restraints, where possible.

*Section 801.17 FLUSHING AND DISINFECTING WATER LINES:* Disinfecting water mains shall be done in strict accordance with AWWA Specifications C651, latest revision, except as herein specified. Flushing shall be done prior to chlorination in such a manner so that the water being flushed travels throughout the main length. If no fire hydrant is installed as part of the main, then the flushing shall be done through adjacent existing fire hydrants or through a tap at no extra pay. The procedure for applying chlorine will be in strict accordance with of AWWA C651, latest revision. A tap shall be made by Contractor at no extra pay for insertion of the chlorine. This tap shall be located where it can be used as a house service in the future if possible and shall be located by the Engineer. Chlorine shall be inserted at a rate not less than 25 mg/l ppm of free chlorine by weight for a period of 24 hours. A different equivalent time/amount ratio may be used at the Engineer's option but for a time less than 24 hours. Payment for disinfection and bacteria testing shall be considered as paid for by the fixed unit price on pipe.

*Section 801.21.1.5:* Add this section: "Receipts or other acceptable documentation showing that all supplier and subcontractor invoices have been paid."

*Section 801.22:* Delete this section (Measurement and Payment provisions as specified in the contract documents shall be used).

**B.5 APWA Section 802 - Installation of Water Service Lines**

Section 802 of the APWA specifications is replaced by this section, COSFWD Standard Detail Drawings, the COSFWD Approved Materials List and the Measurement and Payment provisions of this specification.

*B.5.1 Tapping Table*

The following table shall be used to determine pipe tapping requirements:

<b>TAPPING TABLE</b>			
<b>Main Size &amp; Type</b>	<b>Size of Taps where No Saddle is Required</b>	<b>Size of Taps Requiring Tapping Saddle</b>	<b>Size of Taps Requiring Tapping Sleeve</b>
2" CI	None	3/4"-1 1/2"	2"
4" & Larger CI	3/4" & 1"	1 1/2"-2"	Larger than 2"
4" & Larger AC	None	Up to and Including 2"	Larger than 2"
4" & Larger DI	3/4" & 1"	1 1/2"-2"	Larger than 2"
4" & Larger PVC	None	Up to and Including 2"	Larger than 2"

**All taps shall be done perpendicular (at 90°) in plan view to the main being tapped; the final main shall be a straight shot from the tap.**



## SECTION C - APPROVED MATERIALS LIST

### C.1 General

All materials used in the construction of water lines shall be approved for use in drinking water systems. Materials shall be approved for use in drinking water systems by recognized organizations such as NSF International, American Water Works Association (AWWA), or other organizations or governmental authority.

All underground service line valves and fittings shall conform to the requirements of ANSI/AWWA C800, latest revision. All underground valves and fittings shall be equipped with compression connections. The compression connection shall provide conductance and have a stainless steel or bronze internal split grip ring that grips the service tubing when tightened by the nut on the outlet threads. No clamps with screw type connections are acceptable. All service line valves, fittings, and tubing shall be suitable for use with 150 psig pressure. Soldered joints for buried applications are not allowed.

All materials used in water mains and services shall be rated for a minimum of 150 psi working pressure.

The latest revision of standards shall apply with regard to standards listed in AWWA and American Society of Testing and Materials, (ASTM) Standards as well as any other referenced national or industry standards. The type of pipe, size, joints, gaskets, coating, linings, wall thickness, installation, and testing shall conform to the latest revision of the specifications as set forth below.

### C.2 Ductile Iron Pipe

Domestic-only Ductile Iron Pipe shall be used for all new fire services, fire hydrant legs, services over 2" in size, water mains that are not located in a paved City street with curb and gutter drainage, and water mains that are placed in private property with easements. Ductile iron pipe may also be required in other locations at the discretion of the Public Utilities Director. Pipe shall conform to ANSI/AWWA C150/A21.50, latest revision, and ANSI/AWWA C151/A21.51, latest revision. No imported ductile iron pipe shall be allowed.

Mechanical joints, push-on joints, or flanged joints shall be used as shown on all drawings and/or Standard Details. Joints shall conform to all requirements of ANSI/AWWA C110/A21.10, latest revision, and/or ANSI/AWWA C153/A21.53, latest revision, and or ANSI/AWWA C115/A21.15, latest revision. Rubber gaskets shall be equipped with contact wedges, and shall conform to all requirements of ANSI/AWWA C111/A21.11, latest revision.

Ductile Iron Pipe shall be cement mortar lined in accordance with ANSI/AWWA C104/A21.4, latest revision, and shall be bituminous coated on the outside. Pipe thickness shown in AWWA C151/A21.51-09, latest revision, Table 6, for a rated working pressure, minimum of 150 psi shall be used, unless otherwise noted, or required for flanged pipe.

All ductile iron pipe, fittings, and valves shall be encased with polyethylene wrap as per ANSI/AWWA C105/A21.5, latest revision. Installation and hydrostatic testing of the main shall be in strict accordance with ANSI/AWWA C600, latest revision. Disinfection of the main shall conform to C651, latest revision, requirements.

### C.3 PVC Pipe

PVC shall only be used in a public right-of-way. PVC shall only be used in City streets that have curb and gutter drainage. Any special cases or circumstances will require approval from COSFWD staff. Pipe shall be manufactured and tested in strict accordance with ANSI/AWWA C900, latest revision, for 4-inch through 12-inch pipe or ANSI/AWWA C905, latest revision, for 14-inch through 36-inch pipe.



The thickness class shall be DR-18, unless otherwise noted. Pipe shall have the approval of NSF and shall be imprinted with the seal and approval of NSF. All ductile iron fittings and valves shall be encased with polyethylene wrap as per ANSI/AWWA C105/A21.5, latest revision; installation of PVC pipe requires the use of ductile iron fittings. PVC pipe shall be installed according to all applicable AWWA standards, and in strict accordance with the pipe manufacturer's recommendations. **Fittings shall be used to install PVC pipe; no bending of the pipes to field fit will be allowed.**

**C.4 Iron Fittings**

Ductile or grey iron fittings shall conform to ANSI/AWWA C110/21.10, latest revision, or C153/A21.53, latest revision. Grey iron fittings shall be rated for 250 psi working pressure for sizes up to 3 inch. Ductile iron fittings shall be rated for a 350 psi working pressure in sizes 3-24 inch and ductile iron flanged fittings shall be rated for a 250 psi working pressure in sizes 3-24 inch.

Fittings shall be outside coated with a petroleum asphaltic coating, approximately 1 mil thick. Fittings shall be lined with cement mortar lining in accordance with ANSI/AWWA C 104/A21.4, latest revision. Rubber gaskets shall be in accordance with ANSI/AWWA C 111/A21.11, latest revision.

All iron fittings shall be encased with polyethylene wrap as per ANSI/AWWA C105/A21.5, latest revision. Installation of iron fittings shall be in strict accordance to AWWA/ C 600, latest revision, requirements.

**C.5 Mechanical Joint Retainers**

Mechanical joint retainers shall be one of the following models: **T-bolt fasteners shall protrude a minimum of 3 threads past the nut.**

**Retainer Rings / Bolt-on-Flanges**

Manufacturer	<i>AWWA C900 PVC (4" – 12")</i>	<i>AWWA C905 PVC (14" and Greater)</i>	<i>Ductile Iron Pipe (all sizes)</i>
EBA Iron	2000 PV Megalug	2000 PV	1100 Megalug
Ford Uni-Flange	UFR 1500-E-x-U	UFR 1500-E-C	UFR 1400-D-x-U
Sigma	One-Lok SLCE	One-Lok SLCE	One-Lok SLDE (new pipe) or One-Lok SSLD-X (existing pipe)
Star Pipe Products	PVC Stargrip Series 4000 with Star-Bond	PVC Stargrip Series 4000 with Star-Bond	Stargrip Series 3000 (new pipe) with Star-Bond Stargrip Series 3000S (existing pipe) with Star-Bond
Romac	RomaGrip x" RG-PVC with RomaBond	RomaGrip x" RG-PVC with RomaBond	RomaGrip x" RG with RomaBond



**Joint Harnesses**

Manufacturer	<i>AWWA C900 PVC (4" – 12")</i>	<i>AWWA C905 PVC (14" and Greater)</i>	<i>Ductile Iron Pipe (all sizes)</i>
EBAA Iron	1600	1100 HV	1700
Ford Uni-Flange			UFR 1390-C-x-U or
Sigma	PV-Lok PWP-X	PV-Lok PWP-X	One-Lok SLDEH with corrsafe (new pipe) or One-Lok SSLDH with corrsafe (existing pipe)
Star Pipe Products	Pipe Restrainers Series 1100 with Star-Bond	Pipe Restrainers Series 1100 with Star-Bond	Stargrip Series 3100P (new pipe) with Star-Bond Stargrip Series 3100S (existing pipe) with Star-Bond
Romac	600 Series 611-O.D size with RomaBond	600 Series 611-O.D size with RomaBond	600 Series 611-O.D size with RomaBond

**C.6 Tapping Sleeves**

Tapping sleeves (for taps other than size-on-size) shall have an all stainless steel (SS) body and flange; type 304 stainless steel bolts, hex nuts and plug; gasket suitable for water use; ANSI Class 150 flange. Tapping sleeves that are size-on-size must use an all stainless steel body. Fabricated steel tapping sleeves shall be manufactured by Romac Industries (Model 420 fabricated steel tapping sleeve + all other SS models), JCM (Model 412 fabricated steel tapping sleeve + all other SS models), PowerSeal (Model 3490 MJ stainless steel tapping sleeve with MJ outlet or AS stainless steel tapping sleeve with flange outlet), or approved equal.

**A coupon retainer shall be used on the pilot bit to ensure removal of the coupon from the main. The coupon shall be presented to field inspector(s) upon inspection.**

**C.7 Gate Valves**

Resilient seated gate valves shall be used wherever valves are called for on the drawings, unless otherwise noted. Resilient seated gate valves shall conform to AWWA C-509 or C-515, latest edition, requirements; and shall be for 4" through 12" diameter N.R.S. (Non Rising Stem). A certified drawing shall be supplied by the manufacturer: The Manufacturer shall supply an affidavit of compliance to the above referenced AWWA specification. Records shall be provided showing that tests specified in AWWA C-509 or C-515 have been performed. Bolts and nuts shall conform to appropriate section of AWWA C-509 or C-515, latest edition.

Valve end can be either flanged or mechanical and will be as specified at time of purchase. Valve shall come equipped with O Ring seals. Valves shall open left (counter clockwise) as viewed from the top and valve markings shall be made as outlined in Section 6.1, AWWA C-509, latest edition. Valves shall be furnished with interior coating in accordance with ANSI/AWWA C550. 14" and larger valves shall be of same specification or better and designed for 200 psi working pressure.

Team Industrial InsertValve (Patent No. 6,776,187 or 7,225,827 or equal), 250 psi rated, shall be used for inserting a valve under pressurized tapping conditions for 4" to 12" diameter mains; Team Industrial Insert Valve must only be installed by an approved Team contractor. For larger diameter mains, Hydra-Stop is to be used (model no. IP 250 for 14"-16", Insta-Valve for 20" – 24").



**C.8 Butterfly Valves**

Butterfly valves shall conform to AWWA C 504, latest edition. Valves furnished shall be equipped with a body style as specified on the drawings. Maximum non shock shutoff pressure shall be 250 psi and class 250B as defined in C-504, latest edition. All affidavits of testing shall be furnished. CONTRACTOR shall verify the compatibility of the valve with pipe connecting pieces. Butterfly valves are to be used only in sizes 14” and larger or where specifically called for in the drawings.

Valve body shall be ductile iron. Valve discs shall be of a noncorrosive alloy metal. Valves furnished for buried service shall come equipped with a heavy duty valve operator and equipped with a 3” operating nut. Valves furnished for plant service shall be equipped with a geared actuator assembly with a hand wheel.

**C.9 Valve Boxes**

Valve boxes shall be five and one quarter inch (5-1/4") diameter shafts in 36 to 48 inch extension. Boxes shall have the screw-type length adjustment, such as Castings Inc. series 6860 or Adaptor Inc. Valve Box Adaptor II or approved equal. Lengths that exceed 69 inches shall require use of Castings, Inc. Model CI-550 valve box extension. Valve boxes shall be constructed of cast or ductile iron.

**C.10 Fire Hydrants**

Fire hydrants shall be one of the following models:

Model	Manufacturer	Mfg. Location
Kennedy Guardian	ITT Kennedy Valve	Elmira, New York
Mueller Centurion	Mueller Company	Decatur, Illinois
Waterous Pacer	American Flow Control	South St. Paul, Minnesota
Clow Medallion	Clow Valve Company	Oskaloosa, Iowa

**C.11 Casing Spacers**

Fabricated casing spacers for use on carrier pipe installation through casing conduits shall provide dielectric insulation with polymer runners. Casing spacers with steel bands shall be coated with fusion bonded epoxy or PVC coatings for corrosion protection. Casing spacers shall be one of the following models:

Model	Manufacturer	Mfg. Location
RACI Casing Spacers	Public Works Marketing, Inc.	Plano, TX

**C.12 Casing End Seals**

Casing end seals shall be made of synthetic rubber and be either a pull on style or wrap around style. Stainless steel band clamps with 100% non metallic worm gear shall be furnished for clamping the seal to casing and carrier pipes. A mastic seal strip shall be factory furnished along the edge of the wrap around style seal. Refer to Section E for the list of approved casing end seals.

Model	Manufacturer	Mfg. Location
Model Ac	Advance Products & Systems	Lafayette, Louisiana

**C.13 Copper Service Pipe**

Copper service pipe shall conform to ASTM B 88 and shall be Type K.



**C.14 Water Service Materials**

Water service material manufacturers used in this section are referenced below:

<b>Model</b>	<b>Manufacturer</b>	<b>Mfg. Location</b>
Ford	The Ford Meter Box Co., Inc.	Wabash, Indiana
DFW	DFW Plastics, Inc.	Bedford, Texas
Mueller	Mueller Company	Decatur, Illinois
AY McDonald	AY McDonald Mfg. Co.	Dubuque, Iowa

**PLEASE NOTE: The use of compaction joint fittings in water services is prohibited.**

**C.15 Meter Boxes**

Meter boxes shall be DFW Round Meter Pit Series B with a T-style top (interlocking) and white in color and ribbed as manufactured by DFW Plastics Inc., Mid-States Round Meter Pit, or COSFWD approved equivalent. The diameter and length shall be specified as set forth in the COSFWD Standard Details.

**C.16 Meter Box Lids and Covers**

Meter lids shall be made of polyethylene with the standard size pentagon bolt for the locking lid and shall be furnished with 1 1/2" thick foam along diameter of the box for frost protection. A 2" offset hole for AMI is required for double settings. Meter box covers shall be the following model and manufacturer for each size service as listed:

<b>Meter Size</b>	<b>Cover Manufacturer &amp; Model</b>
3/4" – 1"	Ford Meter Box Co. (FW3 Wabash Double Lid Cover with EXT-2 Extension Ring)
1-1/2" – 2"	Ford Meter Box Co. (MC-36-MB Monitor Cover – includes Inner Frost Lid – not used)
3/4"-1"	AY McDonald Mfg. Company (FRAME ONLY 74M3MWF21 and 74MX2 Extension Ring)
1-1/2"-2"	AY McDonald Mfg. Company (FLANGE) =74MR1010 and (RISER Ring) 74MR1000 (INNERLID) 74 MIL

Meter box lids shall be the following model and manufacturer for each size service as listed:

<b>Meter Size</b>	<b>Lid Manufacturer &amp; Model</b>
3/4" – 1"	AY McDonald Mfg. Company (74MALT115 X800 with Santa Fe marking)
3/4" – 2"	DFW – (DFW12AFD-1WT2 / DFW20AXF-1WA with Santa Fe marking)
3/4" – 2"	DFW – (DFW20AXXF-1WA with Santa Fe marking)
1-1/2" – 2"	AY McDonald Mfg. Company (74 MLT20HH)



**C.17 Meter Yokes**

Yokes shall be constructed of cast iron. The meter yoke bar shall be painted. A 5/8” meter shall use 5/8” x 3/4” yoke; a 3/4” meter shall use 1” yoke, two (2) 1” x 3/4” meter adapters, and one (1) expansion connector; and a 1” meter shall use 1” yoke and one (1) expansion connector. Yokes shall be the model and manufacturer as listed:

<b>Manufacturer</b>	<b>Model for 5/8” x 3/4”</b>	<b>Model for 1”</b>
AY McDonald	14-2	14-4
Ford	Y 502	Y 504
Mueller	H-5020	H-5040

**C.18 Angle Valves**

Angle valves shall be ball type compression connection for CTS tubing x locknut. (Locknut for yoke bar shall be used instead of a meter swivel). **No pack joint fittings will be allowed.** Angle valves shall be the model and manufacturer as listed:

<b>Manufacturer</b>	<b>Ball Style Model for 5/8”</b>	<b>Ball Style Model for 3/4”</b>	<b>Ball Style Model for 1”</b>
AY McDonald	74602BYQ 3/4” x 3/4” x01	74602BYQ 3/4” x 3/4” x02	74602BYQ 3/4” x 3/4” x04
Ford	BA94-232W-Q-NL	BA94-324W-Q-NL	BA94-444W-Q-NL
Mueller	B-24273N	B-24273N	B-24273N

Include the following for residential double meter services:

<b>Manufacturer</b>	<b>5/8” Double Branch Piece</b>
AY McDonald	708UQM 1”x 3/4”x7-1/2” Q CTS x MNPT
Ford	U48-43-Q-NL 1”x7-1/2”x 3/4” MIP
Mueller	H-15363NL 1”x7-1/2”x 3/4”MIP

<b>Manufacturer</b>	<b>5/8” Angle Ball Valve</b>
AY McDonald	74604BY02 3/4” FNPT x 3/4” Ball Valve x 5/8” x 3/4”
Ford	BA91-323W-NL w/ dimensions of 5/8”x 3/4”& 3/4” FIP
Mueller	B-24278NL w/ dimensions of 5/8”x 3/4”x 3/4”FIP

**C.19A Angle Ell**

Angle ells shall be equipped with test valves and shall be compression connection by locknut. **No pack joint fittings will be allowed.** Angle ells shall be the model and manufacturer as listed:

<b>Manufacturer</b>	<b>Model for 5/8” x 3/4”</b>	<b>Model for 3/4”</b>	<b>Model for 1”**</b>
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Mueller	H-14237N		H-14466-AN
AY McDonald	74779YWQ 3/4 x 02	74779YWQ 1 x 02	74779YWQ 1 x 04
Ford	L94-23TD-Q-NL	L94-24TD-Q-NL	L94-44TD-Q-NL

*\*\*See Drawing #02A*

**C.19B Unmeasured Flow Reducer Angle Dual Check (for meters >1”)**

UFR shall be iron yoke star nut by 3/4” Q CTS Compression for use with volumetric (positive displacement) meter.

Manufacturer	Model for 5/8” x 3/4”	Model for 3/4”
AY McDonald	7212-3YQ 331	7212-3YQ 331

**C.20A Expansion Connectors (for meters < 1”)**

Expansion connectors shall be of the three piece design with composition gaskets. Plastic or rubber gaskets will not be accepted. Expansion connectors shall be the model and manufacturer as listed:

Manufacturer	Model for 5/8”	Model for 3/4”	Model for 1”
AY Mc Donald	714-1 EHG	714-2 EHG	714-4 EHG
Ford	EC23NL	EC4NL*	EC-4-GH-122H1-NL
Mueller	H-14234N		H-14234N

*\*\* Two (2) Meter Adapters (Ford A24) also required.*

**C.20B Check Valve on Expansion Connector**

Manufacturer	Model for 5/8”x 5/8” x 3/4”
Ford	EC-23-OR-H2-NL

**C.21 Meter Settings, 1 1/2” & 2”**

Prefabricated meter settings for 1-1/2” & 2” meters shall be equipped with ball-type angle valves on the meter inlet and outlet sides and shall have a 24” rise and shall have FIP inlet and outlets and shall have a MIP by copper tubing compression adapter. Meter setter shall not have a bypass. Risers shall be positioned at least 2” away from the inner wall of the meter pit. Meter setting shall be the model and manufacturer as listed:

Manufacturer	Model for 1 1/2” (Ball Valves)	Model for 2” (Ball Valves)
Ford	VBB76-24-11-66-NL	VBB77-24-11-77-NL
Mueller	B-2422-00-150N	B-2422-00-200N
AY McDonald	720-624WWFF 660	720-724WWFF 770

The adapter shall be the model and manufacturer as listed:



<b>Manufacturer</b>	<b>Model for 1 ½”</b>	<b>Model for 2”</b>
Ford	C84-66-Q-NL	C84-77-Q-NL
Mueller	H-15428-150NL	H-15428-200NL
AY McDonald	74753Q 1 ½”	74753Q 2”

**C.22 Corporation Stops**

Corporation stops must be ball type with CC thread (AWWA tapered thread) inlet and compression connection on outlet (CTS – copper tube size). Iron pipe thread not acceptable. Corporation stops shall be the model and manufacturer as listed:

<b>Manufacturer</b>	<b>Model Number</b>
AY McDonald	74701BQ
Mueller	B-25008N
Ford	FB1000-NL

**C.23 Service Tapping Saddles**

For PVC (C-900) installations: bronze parts are not acceptable. Service tapping saddle shall be stainless steel, double strap with iron body. The iron body shall have either epoxy coating (10-12 mills minimum) or nylon coating (10-12 mills minimum). Acceptable manufacturers are Smith-Blair, Ford Meter Box Company, and Mueller Co.

For DIP/CIP installations: Direct tap with CC threads (AWWA tapered threads) is preferred. Iron pipe thread is not acceptable. Alternate exception is installation of stainless steel full circle tapped clamp with CC threads (AWWA tapered threads). All stainless steel to be: one section, two bolt minimum. Romac and JCM are acceptable manufacturers. When multiple taps are required the following spacing is approved: Minimum 12” horizontal spacing and vertical spacing shall alternate 75° and 85° from vertical.

**C.24 Service Tapped Couplings**

Service tapped couplings shall have AWWA threads and shall be either cast iron, ductile iron or PVC and shall meet all requirements for fittings specified in Section C.

**C.25 Prefabricated Meter Vault**

Prefabricated meter vault shall consist of a vault body with open bottom, a double opening cover with a torsion lift and support mechanism. The vault body shall be manufactured of fiberglass-reinforced plastic. The covers shall be manufactured of polymer concrete. The torsion frame assembly shall be manufactured of hot-dipped galvanized steel. The cover shall be torsion assist polymer concrete consisting of two torsion assisted sides and a stationary center cover. The torsion assisted covers shall have the capability of opening 90 degrees and shall be secured in the closed position with hex-head bolt downs. The stationary center cover shall be secured with stainless steel hex-head bolts. Polymer concrete covers shall be skid resistant with a 0.5 minimum coefficient of friction. Covers shall have lifting slots with stainless steel lifting pins. Vault body and cover assembly shall be designed to withstand 10,400 pound vertical load when installed at grade level. Vaults shall be Torsion Assist models manufactured by Armorcast Products Company, North Hollywood, California:

<b>Dimensions</b>	<b>Model Number</b>
48” x 60”	A6001447MT



48" x 72"	A6001506MT
48" x 96"	A6001449MT

**C.26 Air Release Valves**

Air release valves shall be combination valves capable of releasing large quantities of air during filling of an empty pipe, and breaking vacuum during pipe draining by allowing the re-entry of large quantities of air, and releasing air accumulations under pipe operating pressure. The air release valves shall be Crispin Combination Air Valve (1" valves shall be Model C10, 2" valves shall be Model C20) as manufactured by Multiplex Manufacturing Co., Berwick, Pennsylvania; Val-Matic Valve and Manufacturing Corp. Combination Air Valve (1" valve shall be Model 201C and 2" valve shall be Model 202C); A.R.I Combination Air Valve Model D-040 or approved equal.

**C.27 Utility Marking Posts**

Utility marking post material shall be manufactured of fiberglass. The marking post shall be blue and have white labels on both sides with black lettering stating "CAUTION WATER PIPELINE/BEFORE DIGGING CALL NM ONE CALL 811 FOR LOCATES." Marking posts shall be constructed of resilient materials and shall not deteriorate with exposure to temperature extremes. Marking post colors shall not fade with exposure to sun, water, etc. Marking posts shall be 72" long by 4" wide. Acceptable manufacturers are Carsonite International – Curv-Flex® (Early Branch, South Carolina) or Rhino-FiberCurve™ (Waseca, Minnesota). Utility posts shall be placed every 500 feet along transmission mains, with tracing wire run through each post for testing.

**C.28 Tracing Wire/ Test Connections**

Manufacturer	Model
Copperhead	#12 Copper Clad Steel (CCS) High Strength Soft Drawn 380#
Copperhead	Snake Bite Corrosion Proof Wire Connector
Copperhead	Snake Pit Magnetized Tracer Box

All water mains and other pressure pipelines shall be buried with a continuous electrical tracing wire to enable future location of pipe. The tracing wire shall be an insulated #12 AWG or larger diameter solid conductor. Tracing wires shall be taped to the top of the pipe at 10-foot intervals to prevent dislocation of the wire during backfilling. There shall be a Test Station for every 300 ft. run without a service or a hydrant.

The tracing wire shall be spliced and extended to an above or at grade Test Station near the base of fire hydrants, at valve boxes, and meter cans as directed by COSFWD representatives.

The Test Station shall be a 2-inch monitoring station as manufactured by Handley Industries, Jackson, Michigan. The Test Station shall be furnished complete with a cast iron lid and a magnet for easy location with a line locator. A 12" by 12" by 4" deep concrete pad around the test box shall be provided for security.

**Contractor shall perform a continuity test on all trace wire in the presence of the Engineer or the Engineers' representative. If the trace wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire.**

The tracing wire shall be spliced using a 3-way low voltage tap connector, Dry Conn Direct Bury Lug Aqua #90220 or equivalent. The splice shall be coated for corrosion protection using a general purpose tape sealant similar to Ray-Chem products, 1.5-inch wide, 0.012-inch thick spirally wrapped with 1-inch overlap at connector and wire. The tape sealant shall be covered with a layer of electrical tape as an outer wrap.



*C.28.1 Bonding Wire for Line Tracing*

When the electrical continuity of two lengths of metal pipe is broken by a section of plastic pipe, the metal pipes at either end shall be bonded across the plastic pipe to restore the electrical continuity.

Bonding of the metal pipe shall be by means of cadweld (exothermic) connectors and #4 AWG insulated copper wire. The wire ends and cadwelds shall be capped and sealed to prevent corrosion per Standard Details.

**STANDARD CONSTRUCTION DETAILS  
CITY OF SANTA FE WATER DIVISION**

**DETAIL SHEET INDEX**

<b><i>STANDARD NO.</i></b>	<b><i>TITLE</i></b>
STD-01	General Notes
STD-02	5/8" Single Service
STD-02A	3/4" Single Service
STD-02B	Customer Access Service
STD-03	1" Single Service
STD-04	1-1/2" Single Service
STD-05	2" Single Service
STD-06	5/8" Double Service
STD-07	Fire Hydrant
STD-07B	Fire Hydrant Bollard Detail
STD-08	Valve & Valve Box Installation
STD-09	Valve Stem Extension
STD-10A	Joint Restraint Table
STD-10B	Joint Restraint Detail
STD-10C	Joint Restraint Table - PVC
STD-11	Flush Hydrant
STD-12	Service Location Detail
STD-13	Concrete Thrust Blocking
STD-14A	CMU Vault
STD-14B	CMU Vault
STD-15	Prefabricated Vault
STD-16	Pipe Casing Detail
STD-17	1" and 2" Air-Vacuum Valve
STD-18	3" Domestic Service
STD-19	4" Domestic Service
STD-20	3" and Larger Air-Vacuum Valve Vault
STD-21	Valve Reference Map
STD-22	Pressure Reducing Valve
STD-23	PRV Pressure Gauge Mount Detail
STD-24	Tracing Wire Detail
STD-25	Bonding Jumper Detail
STD-26	2" Blow-Off Valve
STD-27	4-5/8" Meter Services "Y" Branch Connection for Multiple Services



STD-28	2" x 6-5/8" Multi-Service "Y" Branch
STD-29	2" x 4-1" Multi-Service "Y" Branch
STD-30	1" Double Service "Y" Branch Connection for Multiple Services
STD-31	3 - 1" Service, 36" Meter Can
STD-32	Typical Fire Service

# GENERAL NOTES

1. CONTRACTOR SHALL NOTIFY THE CITY OF SANTA FE WATER DIVISION (CoSFWD) FIVE (5) DAYS PRIOR TO COMMENCEMENT OF WORK.
2. CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE CoSFWD CONSTRUCTION STANDARDS AND SPECIFICATIONS.
3. ALL EASEMENTS SHALL BE DEDICATED, CLEARED, GRADED AND STAKED PRIOR TO WATER LINE INSTALLATION.
4. ALL STREETS SHALL BE CUT TO WITHIN  $\pm 6"$  OF FINAL GRADE PRIOR TO WATER LINE INSTALLATION.
5. LOT CORNERS SHALL BE STAKED PRIOR TO SERVICE LINE INSTALLATION. CURB, GUTTER AND DRIVEWAY APRON SHALL BE INSTALLED PRIOR TO SERVICE LINE INSTALLATION UNLESS OTHERWISE APPROVED, IN WRITING, BY CoSFWD.
6. CONTRACTOR (DEVELOPER) SHALL PROVIDE CONSTRUCTION STAKING UTILIZING THE APPROPRIATE RIGHT-OF-WAY MAPS, SIGNED PLATS AND CoSFWD DRAWINGS.
7. MATERIAL SUBMITTALS SHALL BE APPROVED BY CoSFWD PRIOR TO CONSTRUCTION.
8. CONTACT NEW MEXICO ONE CALL AT 811 TWO (2) WORKING DAYS IN ADVANCE OF CONSTRUCTION FOR UTILITY SPOTS.
9. PRESSURE REGULATORS SHALL BE INSTALLED ON ALL SERVICES DOWNSTREAM FROM THE METER.
10. 4 FEET COVER TO TOP OF PIPE SHALL BE MAINTAINED ON ALL WATER MAINS AND SERVICES.
11. CONTRACTOR SHALL SUBMIT AS-BUILT CONSTRUCTION PACKET WITHIN FIVE (5) DAYS OF COMPLETION OF CONSTRUCTION INCLUDING: VALVE TIES, AS-BUILT DRAWINGS (INCLUDING, BUT NOT LIMITED TO: FITTING-TO-FITTING MEASUREMENTS, SERVICE-TO-SERVICE MEASUREMENTS, CENTER OF MAIN TO CENTER OF SERVICE MEASUREMENTS, LENGTH OF MAIN INSTALLED, FITTINGS INSTALLED, ETC.) AND POTABILITY RESULTS.
12. ALL VALVE BOXES SHALL BE BROUGHT UP TO GRADE OF THE FINAL PAVING MATERIAL SO THAT THE CONCRETE IS EXPOSED.
13. FIRE HYDRANTS SHALL BE NUMBERED USING REFLECTIVE NUMERALS. THE REFLECTIVE NUMERALS SHALL BE OBTAINED BY THE CONTRACTOR FOR THE CoSFWD FIELD REPRESENTATIVE AT THE TIME THE NOTICE TO PROCEED (NTP) IS ISSUED. NUMBERS SHALL BE LEGIBLE FROM THE ROAD. PRIOR TO INSTALLING NUMBERS, FIRE HYDRANTS SHALL BE PAINTED.
14. A MECHANICAL RESTRAINT SYSTEM SHALL BE UTILIZED ON FITTINGS AND PIPING FOR THRUST RESTRAINT. CONCRETE THRUST BLOCKING SHALL BE USED ONLY FOR SPECIAL CONDITIONS (E.G. CAPS WHERE MAIN WILL BE EXTENDED IN THE FUTURE) AS SPECIFICALLY APPROVED BY CoSFWD.
15. ANY FIELD CHANGES TO THESE PLANS REQUIRE APPROVAL OF BOTH THE DESIGN ENGINEER AND CoSFWD.
16. WORK ON CoSFWD FACILITIES SHALL NOT BEGIN UNTIL CoSFWD HAS ISSUED A NTP TO THE APPROVED UTILITY CONTRACTOR.
17. ANY AND ALL EASEMENTS FOR CITY-OWNED INFRASTRUCTURE SHALL BE OBTAINED/VERIFIED AND RECORDED BY DEVELOPER BEFORE PROJECT COMMENCEMENT. CONTRACTOR SHALL VERIFY THE EASEMENT IS IN PLACE BEFORE INSTALLING ANY INFRASTRUCTURE.



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

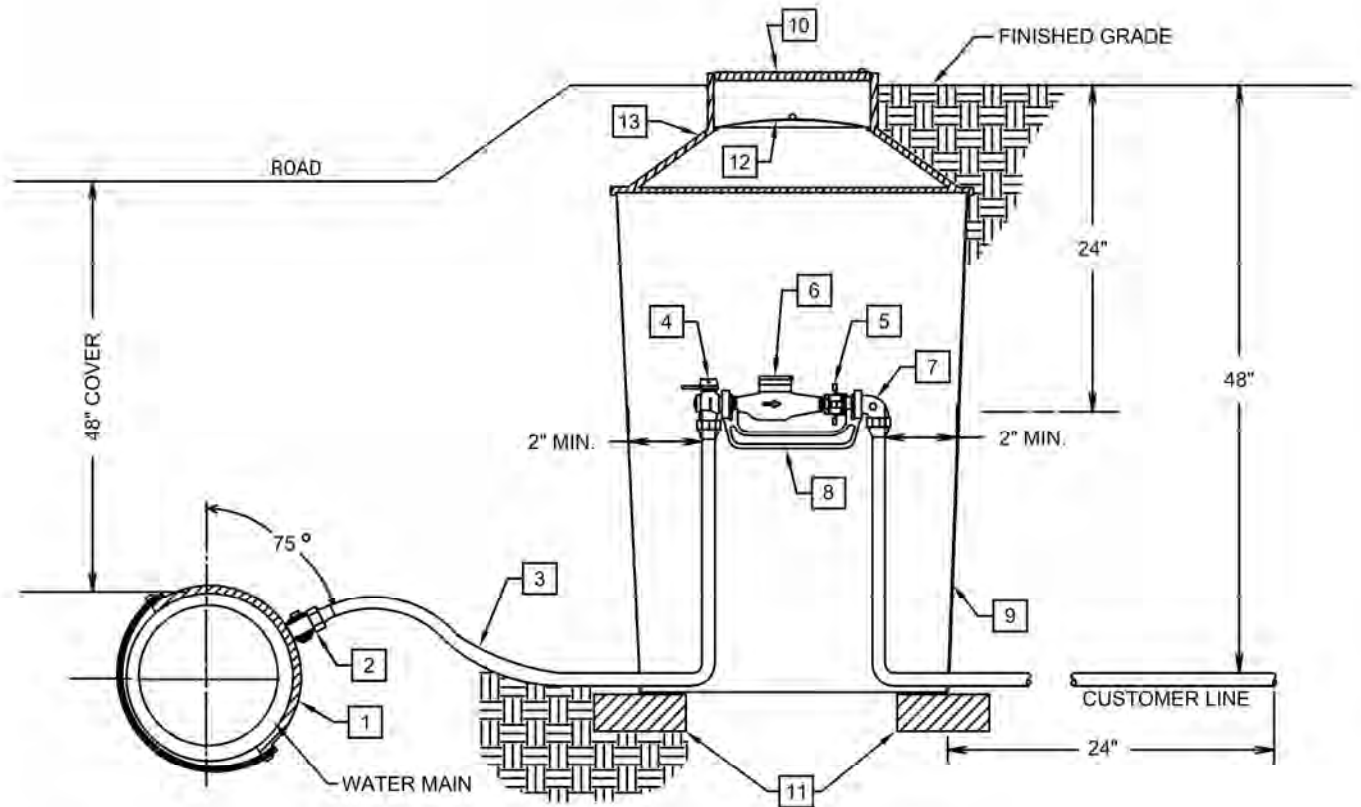
**STANDARD DETAILS**



## **GENERAL NOTES**

DRAWN BY:	DATE: 06/2008
CHECKED:	SCALE:
APPROVED:	

01



NOTE: SEE SERVICE LOCATION DETAIL FOR PLACEMENT DIMENSIONS AND DIRECTIONS.

ITEM

- 1 3/4" SERVICE SADDLE
- 2 3/4" CORPORATION STOP (A.W.W.A. TAPERED THREAD)
- 3 3/4" COPPER TUBING ( TYPE " K " )
- 4 3/4" ANGLE VALVE
- 5 3/4" EXPANSION CONNECTION WITH CHECK VALVE ( 5/8" X 3/4" M.T.R. CONN. TO BE PROVIDED AFTER FINAL INSPECTION BY CONTRACTOR)
- 6 5/8" X 3/4" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- 7 3/4" ANGLE ELL WITH TEST VALVE
- 8 3/4" CAST IRON METER YOKE
- 9 20" DIA. X 36" METER BOX
- 10 POLYMER LID (12-5/16" DIA.)
- 11 BLOCKS - USE AS DIRECTED BY CoSFWD
- 12 1 1/2" BLACK FOAM FROST LID
- 13 DOUBLE LID COVER (20" DIA. X 11-1/2" DIA. INNER OPENING)



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

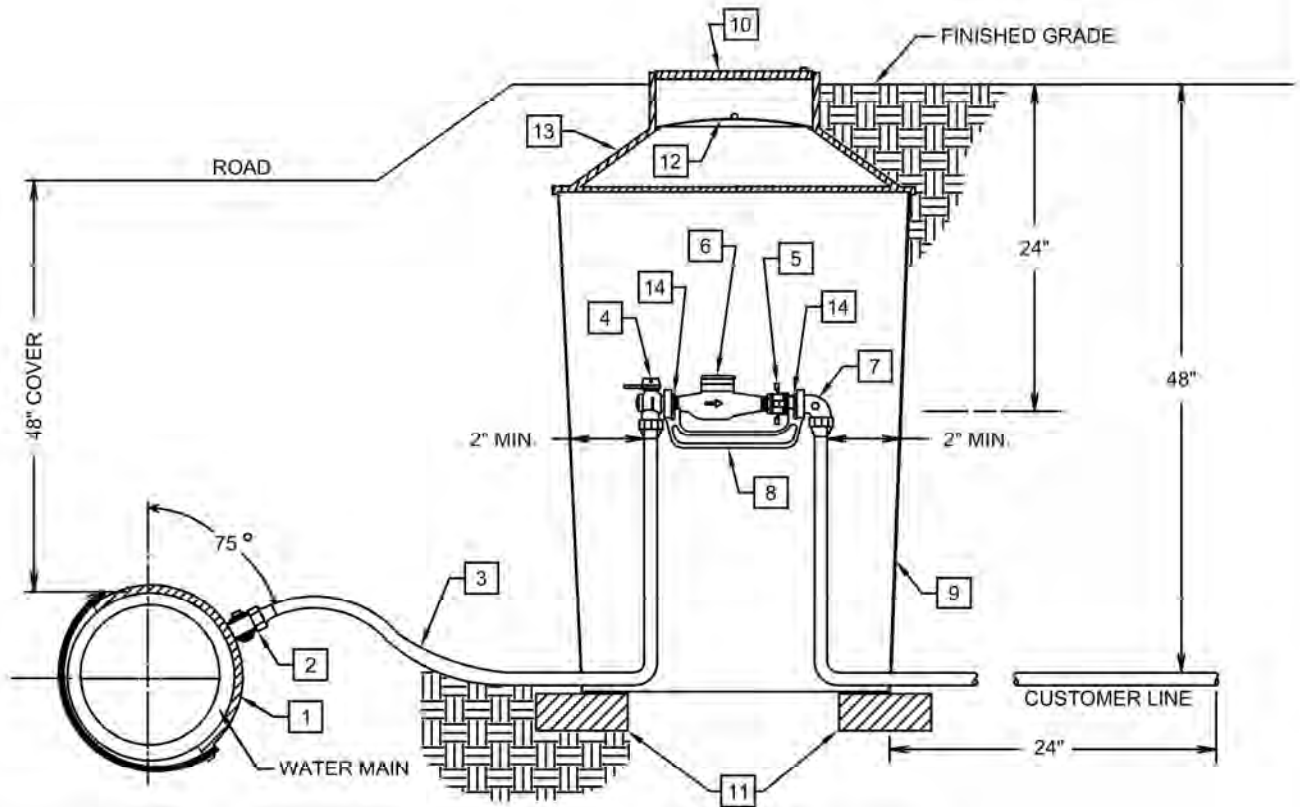
**STANDARD DETAILS**



**5/8" SINGLE SERVICE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**02**



NOTE: SEE SERVICE LOCATION DETAIL FOR PLACEMENT DIMENSIONS AND DIRECTIONS

ITEM

- 1 1" SERVICE SADDLE
- 2 1" CORPORATION STOP (A.W.W.A. TAPERED THREAD )
- 3 1" COPPER TUBING ( TYPE " K " )
- 4 1" ANGLE VALVE
- 5 3/4" EXPANSION CONNECTION WITH CHECK VALVE (TO BE PROVIDED AFTER FINAL INSPECTION BY CONTRACTOR)
- 6 3/4" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- 7 1" ANGLE ELL WITH TEST VALVE
- 8 1" CAST IRON METER YOKE
- 9 24" DIA. X 36" METER BOX
- 10 POLYMER LID (12-5/16" DIA.)
- 11 BLOCKS - USE AS DIRECTED BY CoSFWD.
- 12 1 1/2" BLACK FOAM FROST LID
- 13 DOUBLE LID COVER (20" DIA. X 11-1/2" DIA. INNER OPENING) WITH EXTENSION RING (20" DIA. X 24" DIA.)
- 14 1" X 3/4" METER ADAPTER



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**

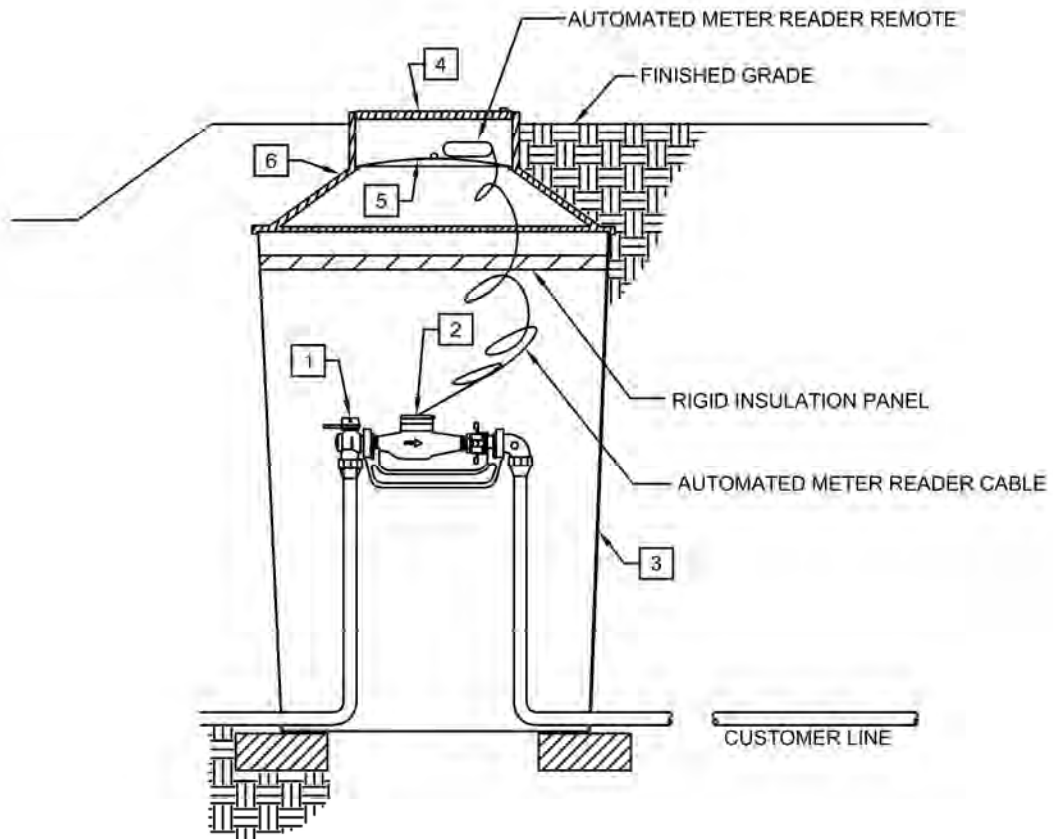


**3/4" SINGLE SERVICE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**02A**





ITEM

- 1 ANGLE VALVE
- 2 SEALED REGISTER WATER METER
- 3 METER BOX
- 4 POLYMER LID
- 5 1 1/2" BLACK FOAM FROST LID
- 6 DOUBLE LID COVER (20" DIA. X 11-1/2" DIA. INNER OPENING)



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

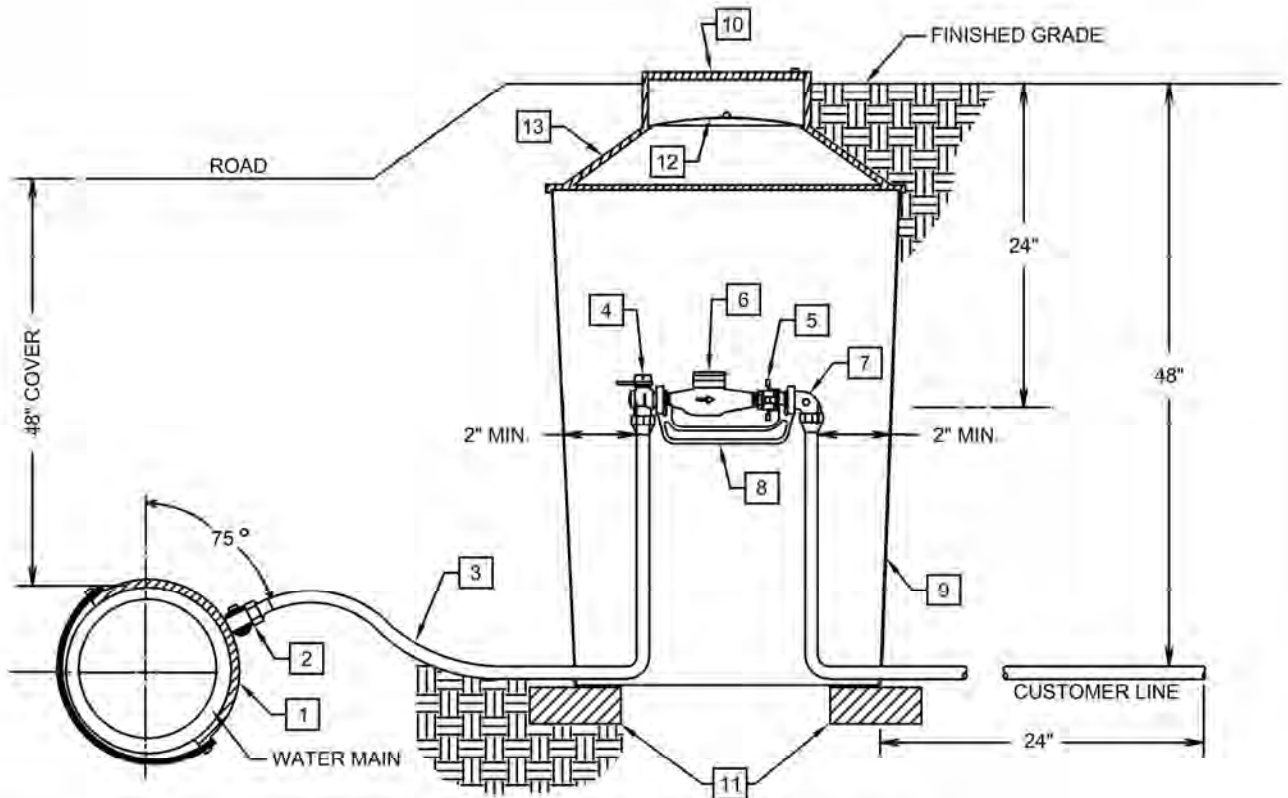
**STANDARD DETAILS**



**CUSTOMER ACCESS  
SERVICE**

DRAWN BY:	DATE: 05/2012
CHECKED:	SCALE: N/A
APPROVED:	

**02B**



NOTE: SEE SERVICE LOCATION DETAIL FOR PLACEMENT DIMENSIONS AND DIRECTIONS.

ITEM

- [ 1 ] 1" SERVICE SADDLE
- [ 2 ] 1" CORPORATION STOP (A.W.W.A. TAPERED THREAD)
- [ 3 ] 1" COPPER TUBING ( TYPE " K " )
- [ 4 ] 1" ANGLE VALVE
- [ 5 ] 1" EXPANSION CONNECTION WITH CHECK VALVE (TO BE PROVIDED AFTER FINAL INSPECTION BY CONTRACTOR).
- [ 6 ] 1" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- [ 7 ] 1" ANGLE ELL WITH TEST VALVE
- [ 8 ] 1" CAST IRON METER YOKE
- [ 9 ] 24" DIA. X 36" METER BOX
- [ 10 ] POLYMER LID (12-5/16" DIA.)
- [ 11 ] BLOCKS - USE AS DIRECTED BY CoSFWD
- [ 12 ] 1 1/2" BLACK FOAM FROST LID
- [ 13 ] DOUBLE LID COVER (20" DIA. X 11-1/2" DIA. INNER OPENING) WITH EXTENSION RING (20" DIA. X 24" DIA.)



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

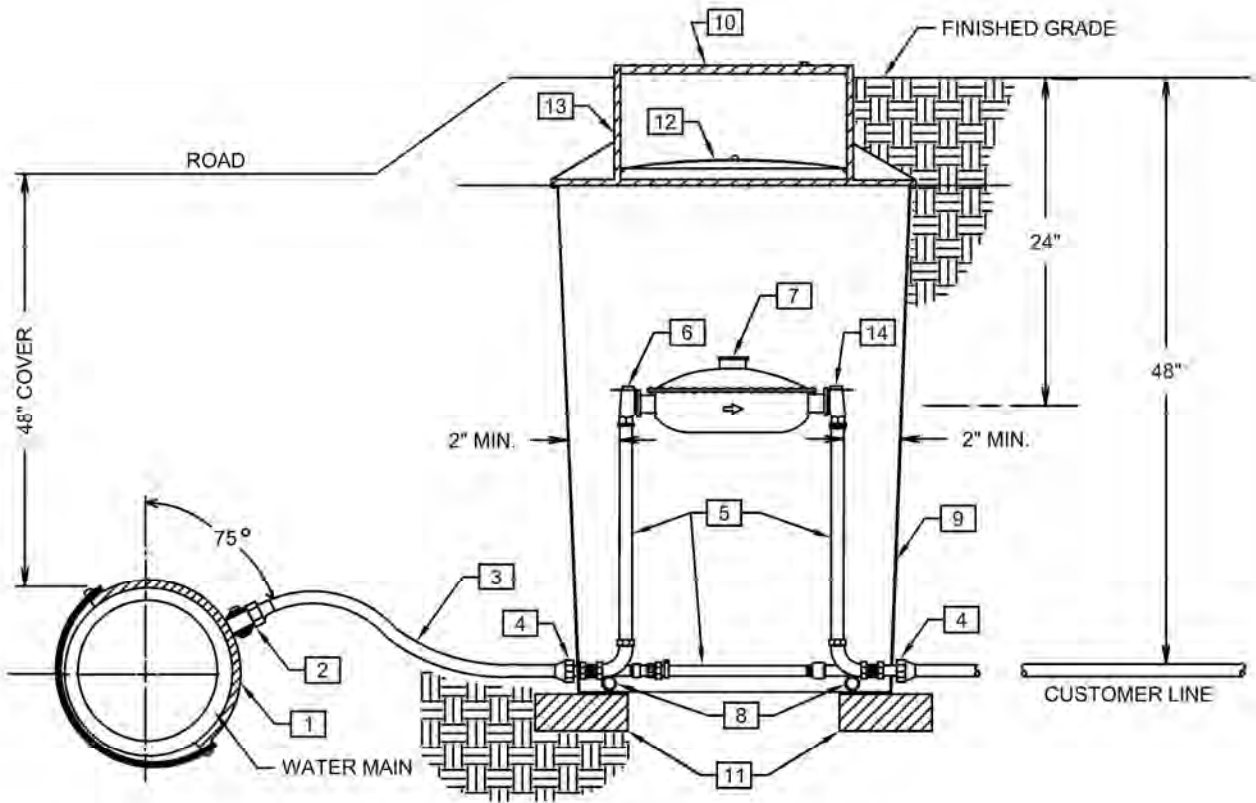
**STANDARD DETAILS**



**1" SINGLE SERVICE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**03**



NOTE: SEE SERVICE LOCATION DETAIL FOR PLACEMENT DIMENSIONS AND DIRECTIONS.

ITEM

- 1 1-1/2" SERVICE SADDLE
- 2 1-1/2" CORPORATION STOP (A.W.W.A. TAPERED THREAD)
- 3 1-1/2" COPPER TUBING ( TYPE " K " )
- 4 1-1/2" ADAPTER COUPLING
- 5 1-1/2" PREFABRICATED METER SETTER (NO BY-PASS)
- 6 1-1/2" BALL ANGLE VALVE
- 7 1-1/2" SEALED REGISTER WATER METER - 13" FLANGE-TO-FLANGE SPACING (METER FURNISHED & INSTALLED BY CoSFWD)
- 8 1" GALVANIZED PIPE 24" LONG
- 9 36" DIA. X 36" METER BOX
- 10 20" DIA. POLYMER LID
- 11 BLOCKS - USE AS DIRECTED BY CoSFWD
- 12 1 1/2" BLACK FOAM FROST LID
- 13 36" DIA. X 20" DIA. MONITOR COVER
- 14 1 1/2" DUAL CHECK VALVE



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

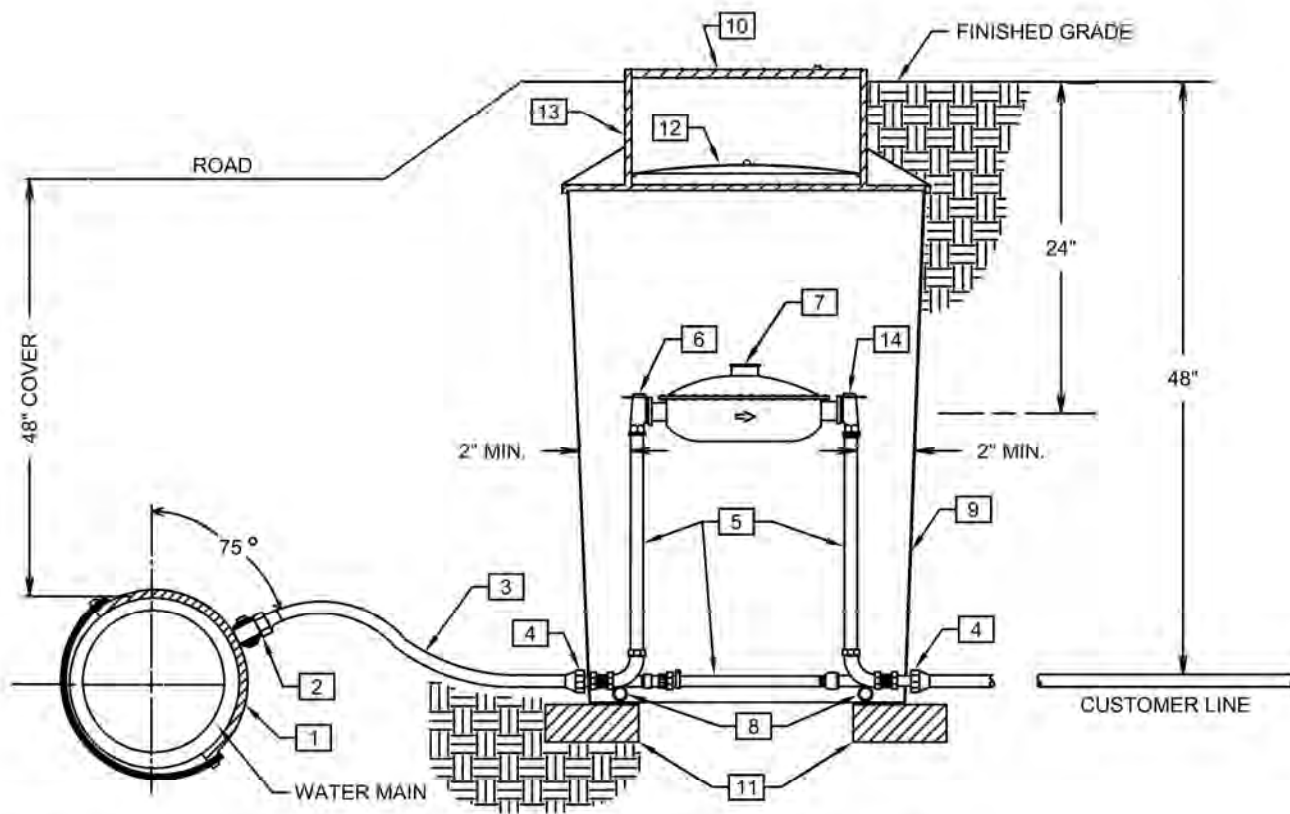
**STANDARD DETAILS**



**1-1/2" SINGLE SERVICE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**04**



NOTE: SEE SERVICE LOCATION DETAIL FOR PLACEMENT DIMENSIONS AND DIRECTIONS.

ITEM

- 1 2" SERVICE SADDLE
- 2 2" CORPORATION STOP (A.W.W.A. TAPERED THREAD )
- 3 2" COPPER TUBING ( TYPE " K " )
- 4 2" ADAPTER COUPLING
- 5 2" PREFABRICATED METER SETTER (NO BY-PASS)
- 6 2" BALL ANGLE VALVE
- 7 2" SEALED REGISTER WATER METER - 17" FLANGE-TO-FLANGE SPACING (METER FURNISHED & INSTALLED BY CoSFWD)
- 8 1" GALVANIZED PIPE 24" LONG
- 9 36" DIA. X 36" METER BOX
- 10 20" DIA. POLYMER LID
- 11 BLOCKS - USE AS DIRECTED BY CoSFWD
- 12 1 1/2" BLACK FOAM FROST LID
- 13 36" DIA. X 20" DIA. MONITOR COVER
- 14 2" DUAL CHECK VALVE



**CITY OF SANTA FE WATER DIVISION**  
**SANTA FE, NEW MEXICO**

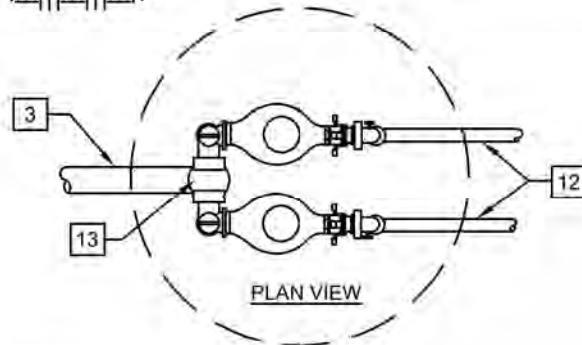
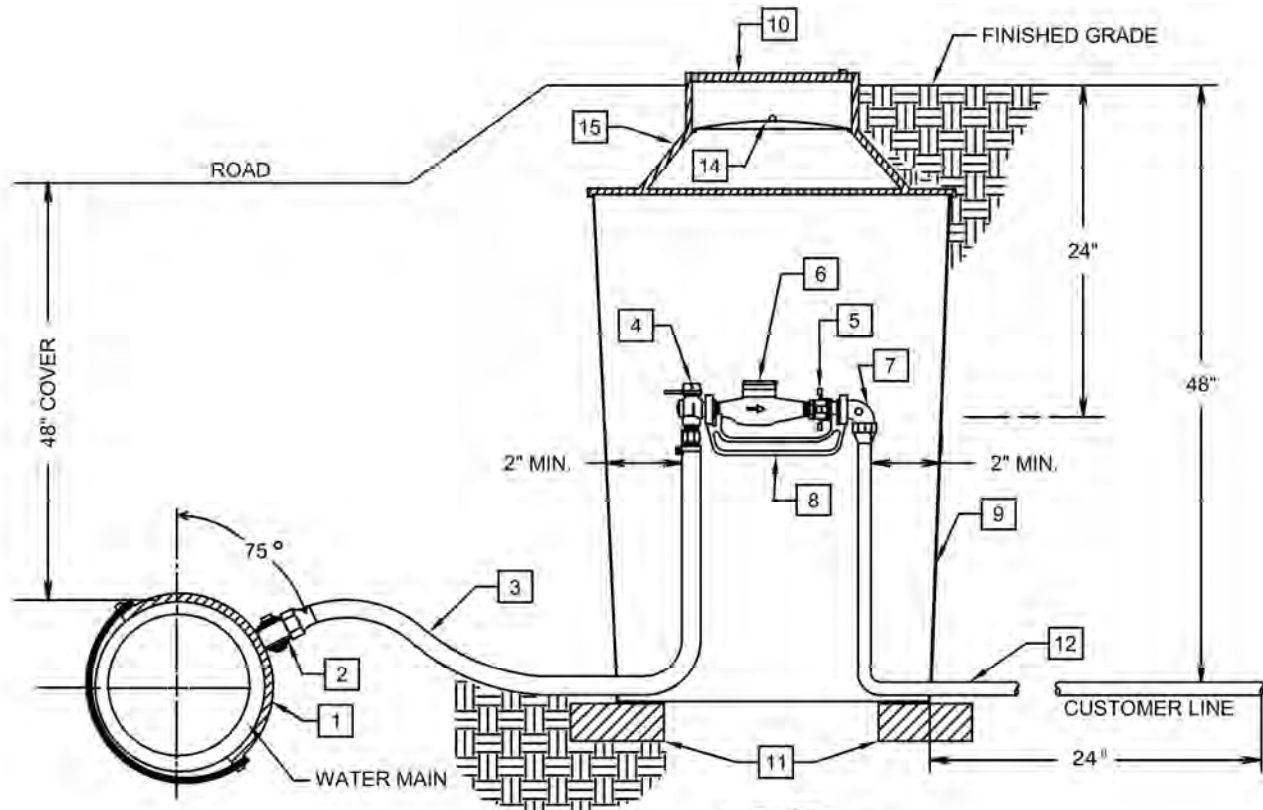
**STANDARD DETAILS**



**2" SINGLE SERVICE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**05**



ITEM

- 1 1" SERVICE SADDLE
- 2 1" CORPORATION STOP (A.W.W.A. TAPERED THREAD )
- 3 1" COPPER TUBING ( TYPE " K " )
- 4 3/4" ANGLE VALVE (2 EA.)
- 5 3/4" EXPANSION WITH CHECK VALVES (TO BE PROVIDED AFTER FINAL INSPECTION BY CONTRACTOR,)
- 6 3/4" X 5/8" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- 7 3/4" ANGLE ELL WITH TEST VALVE (2 EA.)
- 8 3/4" CAST IRON METER YOKE (2 EA.)
- 9 24" DIA. X 36" METER BOX
- 10 POLYMER LID (12-5/16" DIA.)
- 11 BLOCKS - USE AS DIRECTED BY CoSFWD
- 12 3/4" COPPER TUBING ( TYPE " K " )
- 13 BRANCH PIECE
- 14 1 1/2" BLACK FOAM FROST LID
- 15 DOUBLE LID COVER (20" DIA. X 11-1/2" DIA. INNER OPENING) WITH EXTENSION RING (20" DIA. X 24" DIA.)



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SANTA FE, NEW MEXICO**

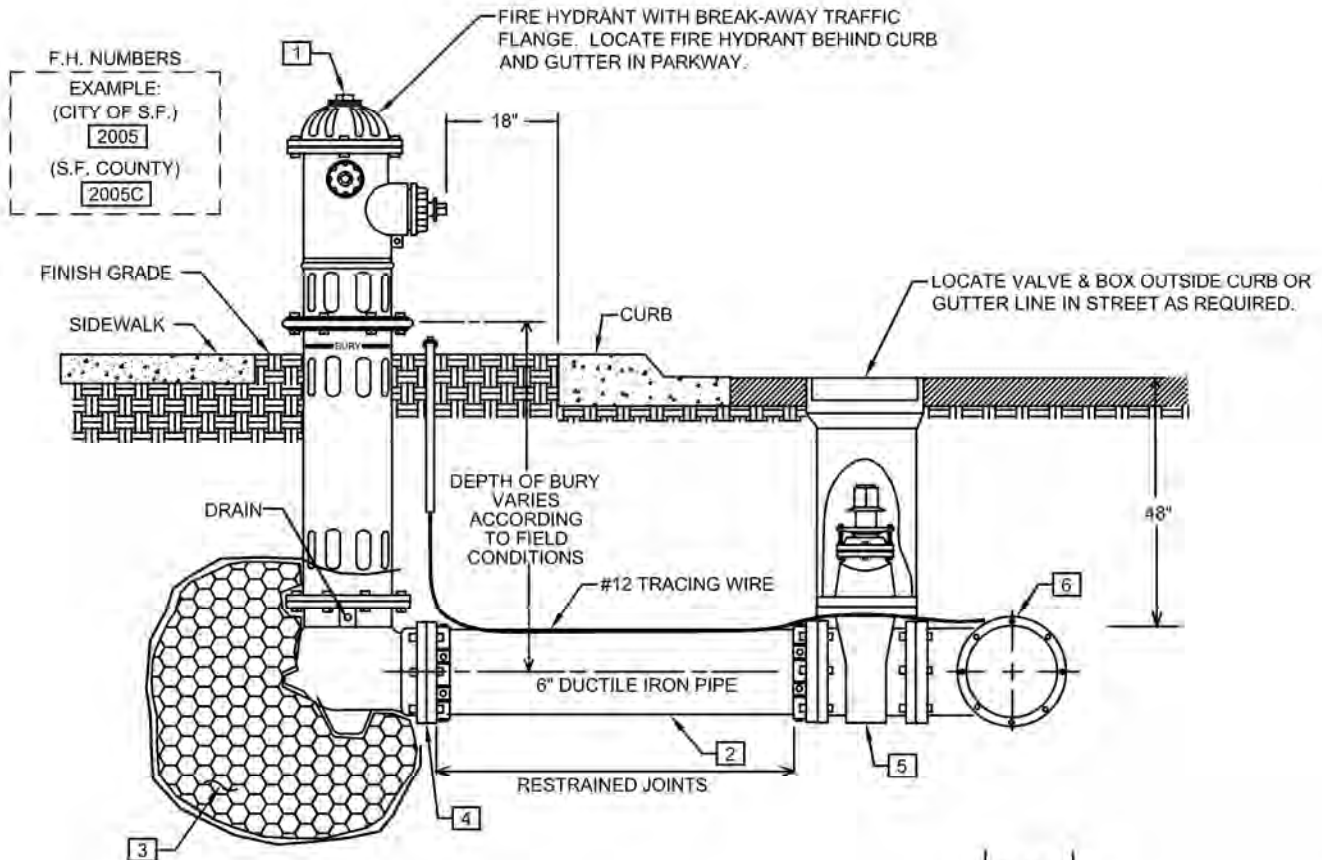
**STANDARD DETAILS**



**5/8" DOUBLE SERVICE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**06**

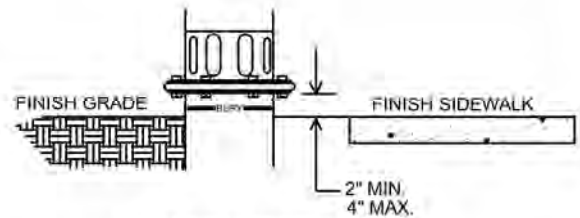


**KEYED NOTES:**

- 1 FIRE HYDRANT
- 2 6" DUCTILE IRON, POLY WRAPPED PIPE
- 3 1/2 CUBIC YARD 3/8" GRAVEL DRAIN W/ 10 MIL. PLASTIC SHEET
- 4 6" MJ RETAINER AND 6" HARNESS (IF REQUIRED)
- 5 6" MJ x FL GATE VALVE & BOX
- 6 TEE: MJ RUN W/ 6" FLANGE OUTLET

**CONSTRUCTION NOTES:**

- A- FIRE HYDRANT SHALL NOT BE INSTALLED NEAR ANY STRUCTURES AND SHALL HAVE A MINIMUM 36" CLEAR SPACE IN ALL DIRECTIONS.
- B- LOCATE HYDRANT 18" BEHIND BACK OF CURB UNLESS OTHERWISE SHOWN ON PLANS OR SPECIFICALLY DIRECTED BY CoSFWD HYDRANT TO BE SET PLUMB AND AT PROPER ELEVATION (ELEVATION PROVIDED BY DEVELOPER) HYDRANTS INSTALLED AS PART OF A NEW DEVELOPMENT/EXTENSION SHALL BE A STANDARD 5' BURY HYDRANT AND SHALL BE SET TO FINISHED GRADE WITHOUT THE USE OF HYDRANT EXTENSIONS (IF AN ADJUSTMENT IS REQUIRED, RE-LAY THE WATER MAIN AND FIRE HYDRANT LEG OR INSTALL RESTRAINED OFFSET AS DIRECTED BY CoSFWD)
- C- WEEP HOLE MUST HAVE 1/4" PLUG REMOVED AND BE FREE DRAINING INTO GRAVEL DRAIN. USE FULLY RESTRAINED JOINTS FROM THE FIRE HYDRANT TO THE FLANGED CONNECTION ON VALVE.
- D- FIRE HYDRANT SHALL BE PAINTED AND REFLECTIVE NUMBERS INSTALLED AFTER INSTALLATION.



**FIRE HYDRANT DETAIL**



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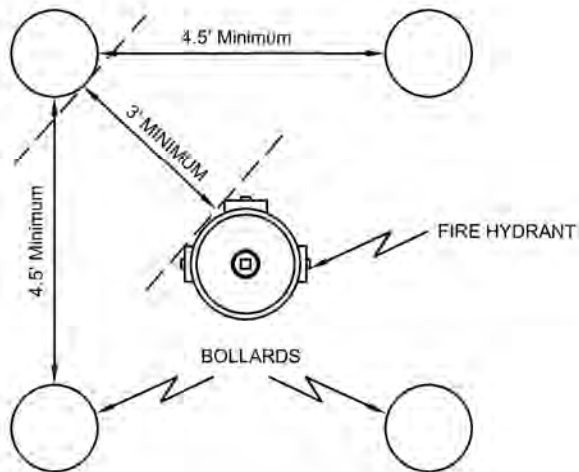
**STANDARD DETAILS**



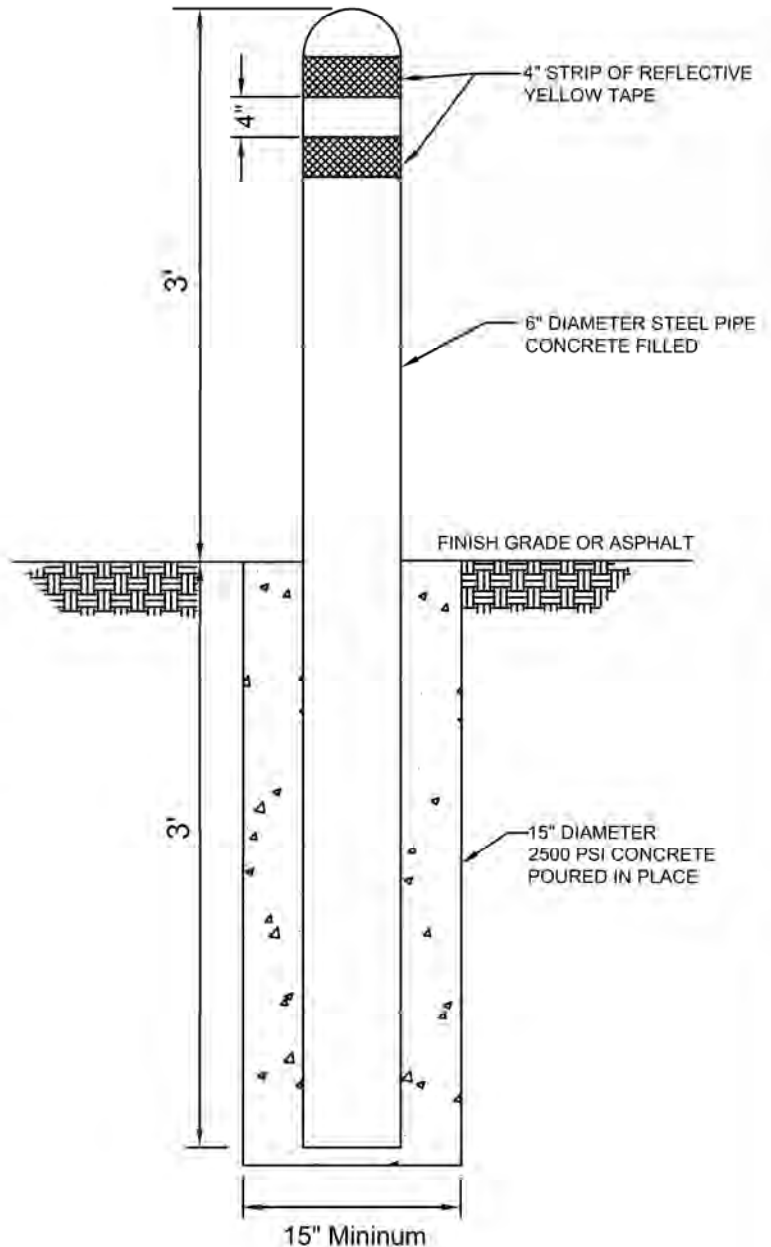
**FIRE HYDRANT**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	

**07**



**BOLLARD PLACEMENT  
PLAN VIEW**



**BOLLARD DETAIL**

**CONSTRUCTION NOTES:**

1. BOLLARDS SHALL BE INSTALLED IF THERE IS NO CURB BETWEEN THE ROAD SURFACE AND THE HYDRANT OR WHENEVER REQUIRED BY CoSFWD. BOLLARDS SHALL NOT BE PLACED IN THE CLEAR ZONE OF THE ROADWAY AS DEFINED IN THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS' (AASHTO) "ROADSIDE DESIGN GUIDE."
2. BOLLARDS SHALL BE LOCATED A MINIMUM OF 3 FEET FROM THE FIRE HYDRANT.
3. BOLLARDS SHALL BE PAINTED WITH WELLBORN TRAFFIC YELLOW, SHERWIN WILLIAMS UTILITY YELLOW, OR CoSFWD APPROVED EQUAL.
4. BOLLARDS SHALL BE FILLED WITH CONCRETE AFTER INSTALLATION. THE TOP OF THE BOLLARD SHALL BE ROUNDED AS SHOWN TO PREVENT WATER ACCUMULATION.
5. BLUE CARSONITE SIGNS DEMARKING VALVE BOX LOCATIONS TO BE PROVIDED BY THE CONTRACTOR.



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**

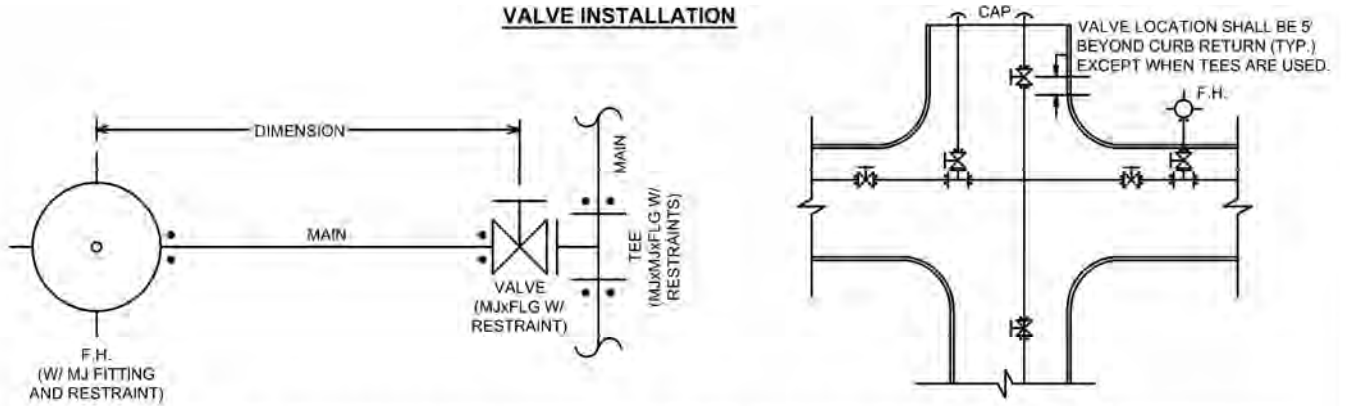


**FIRE HYDRANT  
BOLLARD DETAIL**

DRAWN BY:	DATE: 12/2013
CHECKED:	SCALE:
APPROVED:	

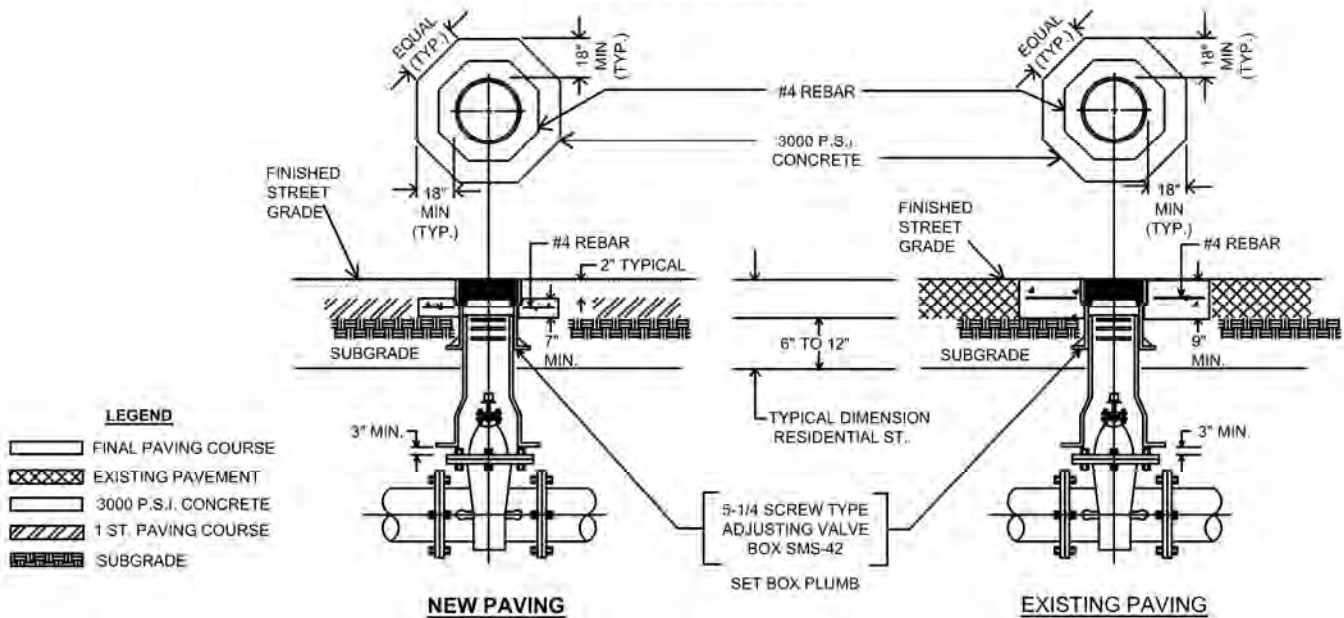
**07A**

## VALVE INSTALLATION



- VALVES**
- 1.) VALVES SHALL BE LOCATED AT ROAD INTERSECTIONS WITH THE INTENT OF ISOLATING THE WATER DISTRIBUTION SYSTEM, AS APPROVED BY CoSFWD.
  - 2.) INLINE VALVES SHALL TYPICALLY BE INSTALLED FIVE (5) FEET BEYOND THE CURB RETURN, AS SHOWN IN THE DETAIL, AND CONSIST OF MECHANICAL JOINT FITTINGS WITH RESTRAINTS EXCEPT WHEN USING TEES, WHICH SHALL HAVE MECHANICAL JOINT x FLANGE FITTING.
  - 3.) VALVES ON FIRE HYDRANT LEGS SHALL HAVE MECHANICAL JOINT x FLANGE FITTINGS AND SHALL CONNECT TO FIRE HYDRANT TEE WITH THE FLANGE FITTING AND THE MECHANICAL JOINT FITTING SHALL HAVE A RESTRAINT, AS SHOWN IN THE DETAIL.
  - 4.) VALVES ON TEES SHALL HAVE VALVES AND TEES WITH MECHANICAL JOINT x FLANGE FITTINGS. THE MECHANICAL JOINT FITTING SHALL HAVE A RESTRAINT, AS SHOWN IN THE DETAIL.

## VALVE BOX INSTALLATION



- NEW PAVING** VALVE BOXES SHALL BE INSTALLED AND RAISED TO GRADE IN THE FOLLOWING MANNER FOR NEW PAVING:
- 1.) VALVE BOX SHALL BE INSTALLED OVER VALVE DURING MAIN INSTALLATION. TOP OF VALVE BOX SHALL BE LEFT BELOW THE TOP OF SUBGRADE UNTIL VALVE IS READY TO BE RAISED TO FINAL GRADE.
  - 2.) WHEN THE VALVE BOX IS READY TO BE RAISED, AN OCTAGON SHAPE SHALL BE CUT-OUT AROUND THE VALVE BOX FROM THE FIRST PAVING LIFT (AS SHOWN IN THE DETAILS); THE VALVE BOX SHALL BE RAISED TO THE FINISHED STREET GRADE; THE SOIL AROUND THE VALVE BOX SHALL BE THOROUGHLY COMPACTED IN ACCORDANCE WITH CITY STANDARDS; THE CONCRETE COLLAR (CONSISTING OF 3,000 PSI CONCRETE AND #4 REBAR) SHALL BE POURED FLUSH WITH THE TOP OF THE FIRST PAVING COURSE (INCLUDING HAND RODDING CONCRETE TO REMOVE VOIDS); AND THE VALVE BOX SHALL BE PROTECTED FROM VEHICULAR TRAFFIC FOR 24 HOURS.

**EXISTING PAVING** INSTALL VALVE BOXES PER "NEW PAVING" (SEE ABOVE) WITH THE CONCRETE COLLAR POURED FLUSH WITH THE FINISHED GRADE OF THE EXISTING PAVING WITH A SMOOTH TROWELED FINISH. NOTE: IF EXCAVATION OVER 42" SQUARE IS REQUIRED TO ADJUST VALVE BOX TO GRADE, "NEW PAVING" CONCRETE COLLAR PROCEDURE SHALL BE FOLLOWED AS WELL AS ANY NECESSARY PAVING SHALL BE COMPLETED.

**UNPAVED AREAS** IN DIRT OR GRAVEL STREETS, TOP OF VALVE BOX AND CONCRETE COLLAR SHALL BE LEFT 6" BELOW THE STREET GRADE. IN OTHER UNPAVED AREAS, VALVE BOX AND CONCRETE COLLAR SHALL BE LEFT 2" ABOVE FINISHED GRADE OR AS DIRECTED BY CoSFWD.

**PROTECTION OF VALVE BOXES** VALVE BOXES SHALL BE PROTECTED FROM DAMAGE, LOSS AND SHALL NOT BE FILLED WITH DIRT AND DEBRIS. VALVES MUST BE ACCESSIBLE DURING CONSTRUCTION WITH MINIMUM EXCAVATION. VALVES IDENTIFIED BY CoSFWD AS KEY SHUT OFF VALVES SHALL REMAIN AT GRADE DURING ALL PHASES OF CONSTRUCTION. BLUE CARSONITE SIGNS DEMARKING VALVE BOX LOCATIONS TO BE PROVIDED BY THE CONTRACTOR.



**CITY OF SANTA FE WATER DIVISION**  
**SANTA FE, NEW MEXICO**

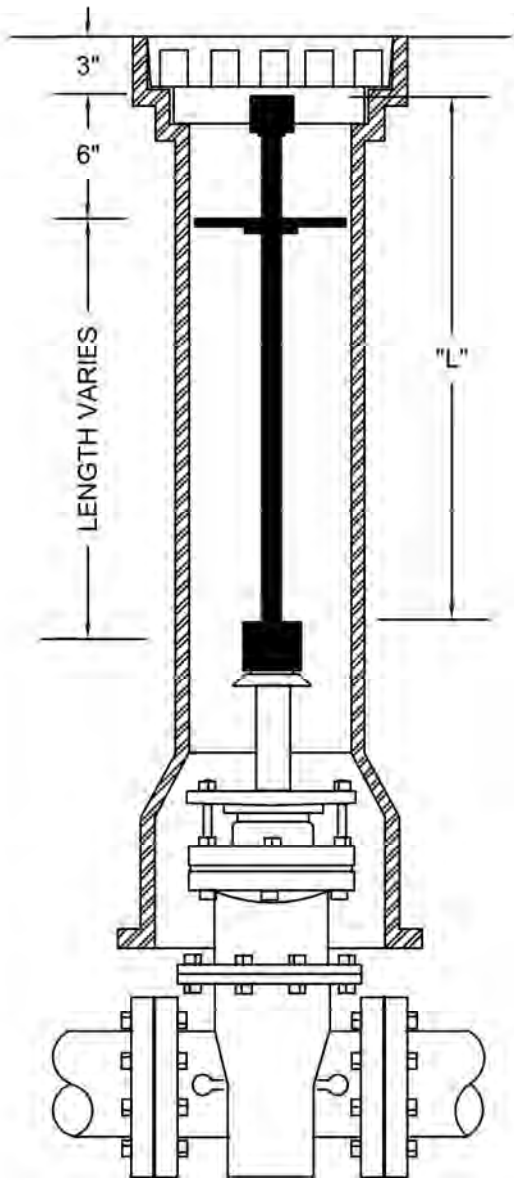
**STANDARD DETAILS**



## VALVE & VALVE BOX INSTALLATION

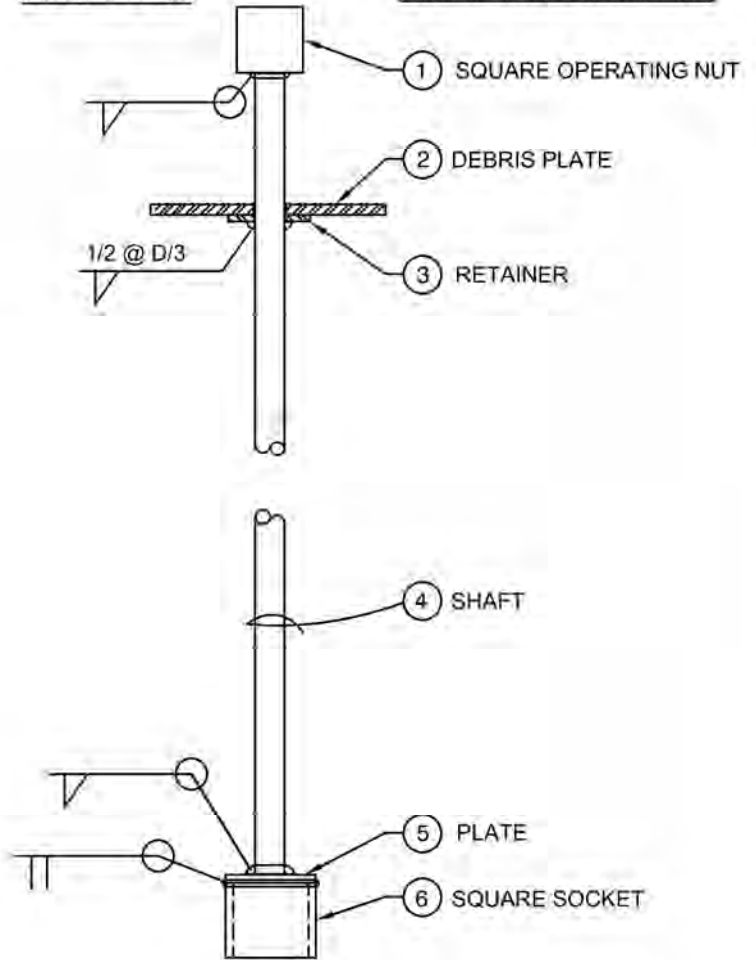
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APPROVED:	





WELD TYPES

EXTENSION STEM ITEMS



EXTENSION STEM ITEM DESCRIPTIONS

- ① 2"x 2"x 2" BAR
- ② 5" DIA. PLATE 3/16" W/1-3/8" DIA. HOLE
- ③ 1-3/8" DIA. HEAVY WASHER
- ④ 1" DIA. SCHEDULE 40 SOLID STEEL PIPE (L < 8')  
1-1/4" DIA. SCHEDULE 40 SOLID STEEL PIPE (L > 8')
- ⑤ 2-1/2"x 2-1/2"x 1/4" PLATE
- ⑥ 2-1/2"x 2-1/2"x 1/4" TUBING

NOTE: ALL STEEL TO BE SAW OR MACHINE CUT.



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**VALVE STEM  
EXTENSION**

DRAWN BY:	DATE: 09/2008
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**09**



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

STANDARD DETAILS



APPROVED:	
CHECKED:	SCALE: N/A
DRAWN BY:	DATE: 09/2008

**10A**

**JOINT RESTRAINT TABLE**

**THRUST RESTRAINT TABLE  
BENDS, TEES, CAPS/VALVES, & REDUCERS**  
(RESTRAINED JOINT LENGTHS IN FEET)

DIAMETER (IN.)	HORIZONTAL BENDS				CAPS / PLUGS / VALVES L <sub>R</sub>	SIZE (IN.) Lg/ Sm/ Run X Br.	TEES				REDUCERS L <sub>R</sub>		
	11-1/4° L <sub>R</sub>	22-1/2° L <sub>R</sub>	45° L <sub>R</sub>	90° L <sub>R</sub>			Run L <sub>R</sub>	Branch L <sub>R</sub>	Run L <sub>R</sub>	Branch L <sub>R</sub>		Run L <sub>R</sub>	Branch L <sub>R</sub>
4	FJO	2	5	12	34	4 X 4	FJO	28	5	8	10	FJO	N/A
6	2	3	7	17	47	6 X 6	FJO	42	5	21	10	FJO	N/A
8	2	4	9	23	62	6 X 4	FJO	26	5	FJO	10	FJO	24
10	3	5	11	27	75	8 X 8	FJO	57	5	36	10	FJO	N/A
12	3	6	13	32	88	8 X 6	FJO	40	5	13	10	FJO	26
						8 X 4	FJO	23	5	FJO	10	FJO	45
						10 X 10	FJO	69	5	48	10	FJO	N/A
						10 X 8	FJO	55	5	29	10	FJO	25
						10 X 6	FJO	39	5	4	10	FJO	46
						10 X 4	FJO	21	5	FJO	10	FJO	61
						12 X 12	FJO	83	5	61	10	FJO	N/A
4	3/2	7/4	14/9	N/A		12 X 10	FJO	68	5	42	10	FJO	43
6	5/3	9/6	20/12	N/A		12 X 8	FJO	54	5	22	10	FJO	47
8	6/4	12/7	26/15	N/A		12 X 6	FJO	37	5	FJO	10	FJO	64
10	7/4	15/9	31/18	N/A		12 X 4	FJO	18	5	FJO	10	FJO	77
12	9/5	18/10	37/21	N/A									

**Table:** This table is based on the EBAA Iron Megalug joint calculations program with the following input criteria: 3.5 ft. depth of bury (conservative); trench type 4; PVC pipe material; GM soil type; 150 psi test pressure; 1.5 safety factor. Specific calculations for restrained lengths are required for conditions not covered by this table.

L<sub>R</sub>: Length of restrained pipe, in feet, for each side of the fitting.

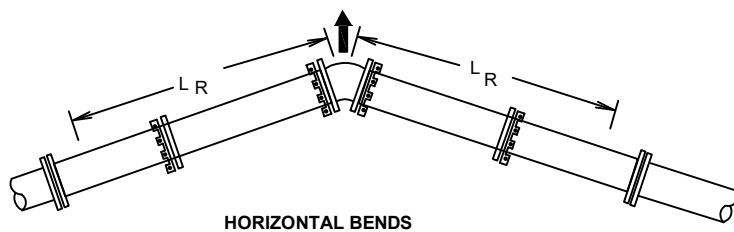
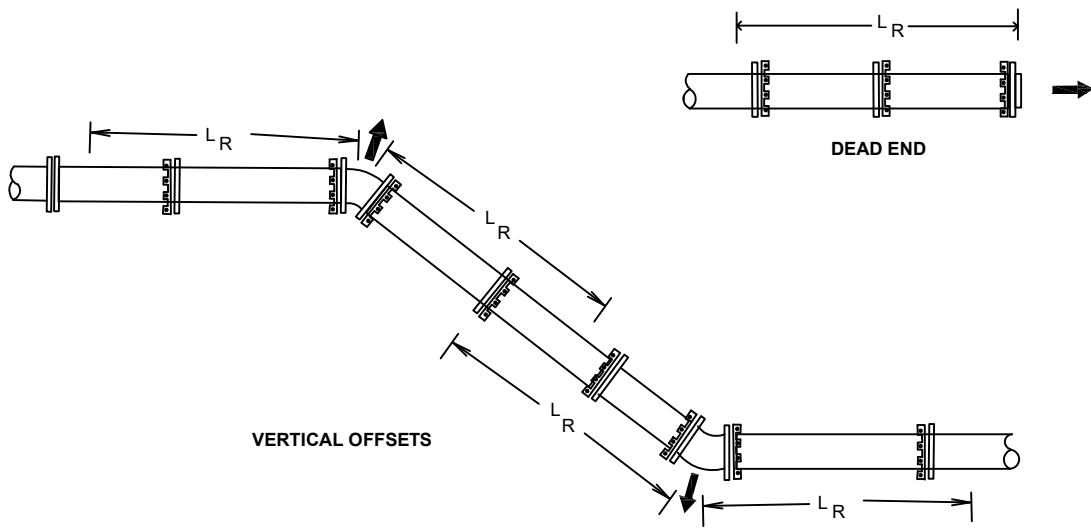
**Minimum Restrained Length:** A minimum restrained length of 5 ft. from the fitting joint is recommended. Vertical offsets shall be completely restrained between the top vertical fitting and the bottom vertical fitting.

FJO: Fitting Joint Only -- This includes at least a 1 ft. length of restrained pipe beyond the fitting joint.




**Vertical Offset:** Use 11-1/2° bends or 22-1/2° bends wherever possible due to the shorter restrained length requirements.

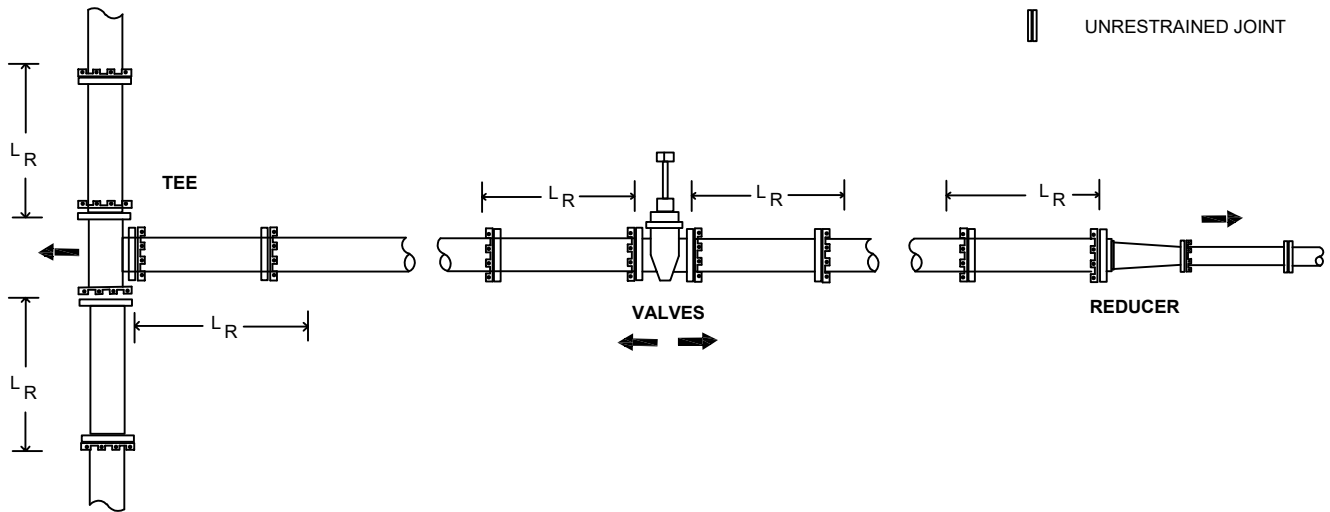
**Caps/Plugs:** Concrete blocking may be required by COSFWD on a case-by-case basis in addition to mechanical restraint.

**Pipe Lengths:** Piping shall be laid out to minimize pipe joints near fittings. Wherever possible, full 20 ft. pipe lengths shall be utilized when connecting to fittings or valves. No pipe bell joints shall be used where fittings are less than 20 ft. apart.



**LEGEND**

-  THRUST DIRECTION
- $L_R$  PIPE LENGTH REQUIRING RESTRAINTS
-  RESTRAINED JOINT
-  UNRESTRAINED JOINT



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**JOINT RESTRAINT DETAIL**

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**10B**



**CITY OF SANTA FE WATER DIVISION**  
**SANTA FE, NEW MEXICO**  
**STANDARD DETAILS**



APPROVED: \_\_\_\_\_  
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 SCALE: N/A  
 DATE: 09/2008  
 DRAWN BY: \_\_\_\_\_

**100**

**JOINT RESTRAINT TABLE**  
**PVC**

**THRUST RESTRAINT TABLE - PVC**  
**BENDS, TEES, CAPS/VALVES, & REDUCERS**  
 (RESTRAINED JOINT LENGTHS IN FEET)

DIAMETER (IN.)	HORIZONTAL BENDS				CAPS / PLUGS / VALVES	SIZE (IN.) Lg/ Sm/ Run X Br.	TEES				REDUCERS		
	11-1/4° Lr	22-1/2° Lr	45° Lr	90° Lr			Run Lr	Branch Lr	Run Lr	Branch Lr			
4	2	3	6	13	34	4 X 4	FJO	29	5	8	10	FJO	N/A
6	2	4	8	18	48	6 X 6	FJO	43	5	22	10	FJO	N/A
8	3	4	10	23	63	6 X 4	FJO	26	5	FJO	10	FJO	25
10	3	6	12	27	75	8 X 8	FJO	57	5	36	10	FJO	N/A
12	4	7	14	32	89	8 X 6	FJO	41	5	13	10	FJO	27
						8 X 4	FJO	24	5	FJO	10	FJO	45
						10 X 10	FJO	70	5	49	10	FJO	N/A
						10 X 8	FJO	56	5	29	10	FJO	26
						10 X 6	FJO	39	5	4	10	FJO	46
						10 X 4	FJO	21	5	FJO	10	FJO	61
4	4 / 2	7 / 3	14 / 6	N/A		12 X 12	FJO	83	5	62	10	FJO	N/A
6	5 / 2	10 / 4	20 / 8	N/A		12 X 10	FJO	69	5	43	10	FJO	26
8	7 / 3	13 / 5	26 / 10	N/A		12 X 8	FJO	55	5	22	10	FJO	47
10	8 / 3	15 / 6	31 / 12	N/A		12 X 6	FJO	37	5	FJO	10	FJO	65
12	9 / 4	18 / 7	37 / 14	N/A		12 X 4	FJO	19	5	FJO	10	FJO	77

**Table:** This table is based on the EBAA Iron Megalug joint calculations program with the following input criteria: 3.5 ft. depth of bury (conservative); trench type 4; PVC material; GM soil type; 150 psi test pressure; 1.5 safety factor. Specific calculations for restrained lengths are required for conditions not covered by this table. Values for verticle bends provided assume 3.5 feet of cover on the low side.

Lr: Length of restrained pipe, in feet, for each side of the fitting.

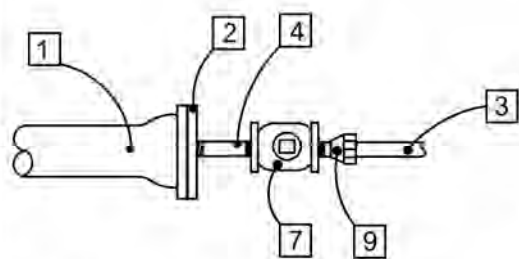
**Minimum Restrained Length:** A minimum restrained length of 5 ft. from the fitting joint is recommended. Vertical offsets shall be completely restrained between the top vertical fitting and the bottom vertical fitting.

FJO: Fitting joint only -- This includes at least a 1 ft. length of restrained pipe beyond the fitting joint.

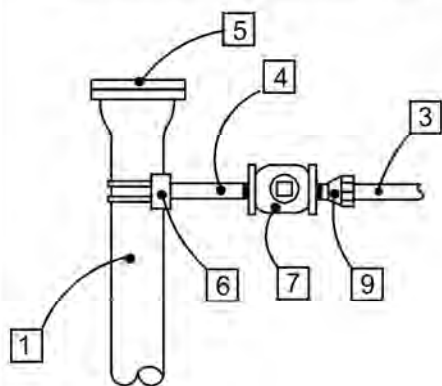
**Vertical Offset:** Use 11-1/2° bends or 22-1/2° bends wherever possible due to the shorter restrained length requirements.

**Caps/Plugs:** Concrete blocking may be required by CoSFWWD on a case-by-case basis in addition to mechanical restraint.

**Pipe Lengths:** Piping shall be laid out to minimize pipe joints near fittings. Wherever possible, full 20 ft. pipe lengths shall be utilized when connecting to fittings or valves. No pipe bell joints shall be used where fittings are less than 20 ft. apart.

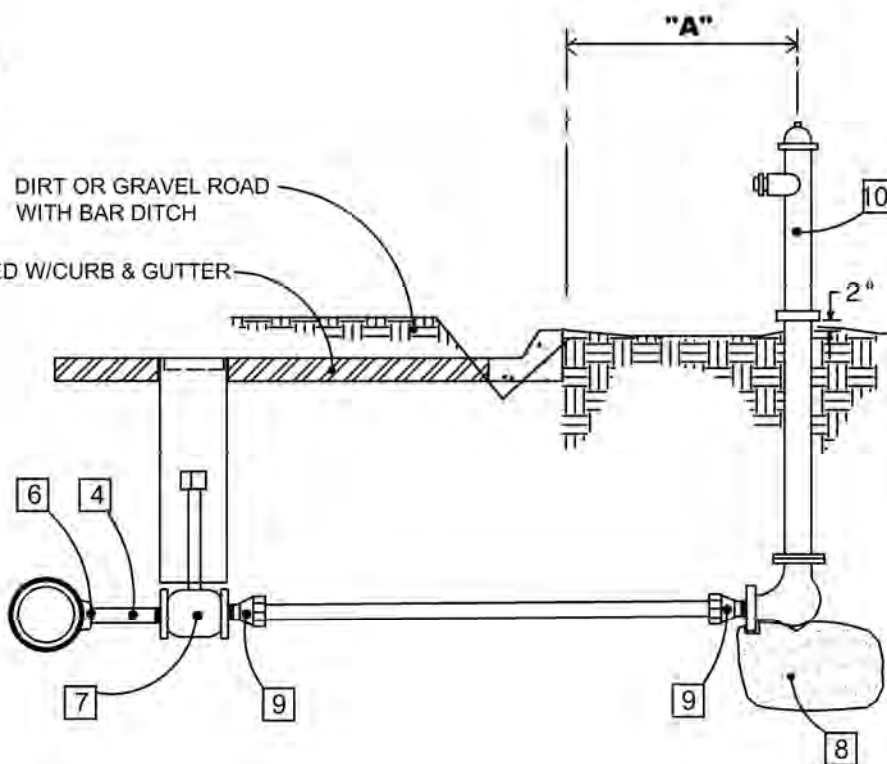


**THREADED CONNECTION AT CAP**



**CONNECTION WITH TAP/SERVICE SADDLE**

DIRT OR GRAVEL ROAD  
WITH BAR DITCH  
PAVED W/CURB & GUTTER



**TYPICAL INSTALLATION**

**CONNECTION AT MAIN**

**KEYED NOTES**

- 1 RESTRAINED DEAD END MAIN
- 2 MJ CAP/PLUG W / 2" TAP
- 3 2" TYPE-K COPPER
- 4 2" BRASS NIPPLE
- 5 MJ CAP/PLUG
- 6 2" SERVICE SADDLE W / IPS THREADS
- 7 2" HEAVY DUTY THREADED GATE VALVE W / BOX
- 8 1/4 YARD OF GRAVEL AT DRAIN
- 9 ADAPTER: 2" COMPRESSION x 2" MIP
- 10 2-1/4" POST TYPE HYDRANT WITH FLANGEABLE CONNECT.

**CONSTRUCTION NOTES**

1. DIMENSION "A" IS TYPICAL 18" BACK OF CURB TO VALVE IN PAVED AREAS AND IS MINIMUM OF 18" BEHIND BAR DITCH IN UNPAVED AREAS BUT CAN BE EXTENDED UP TO 72" TO FIT FIELD CONDITIONS.



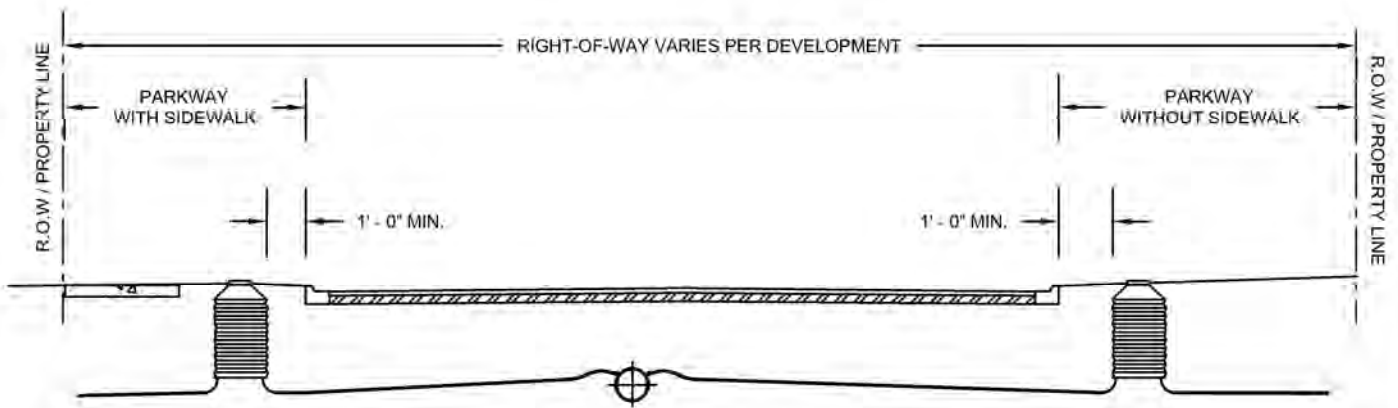
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**FLUSH  
HYDRANT**

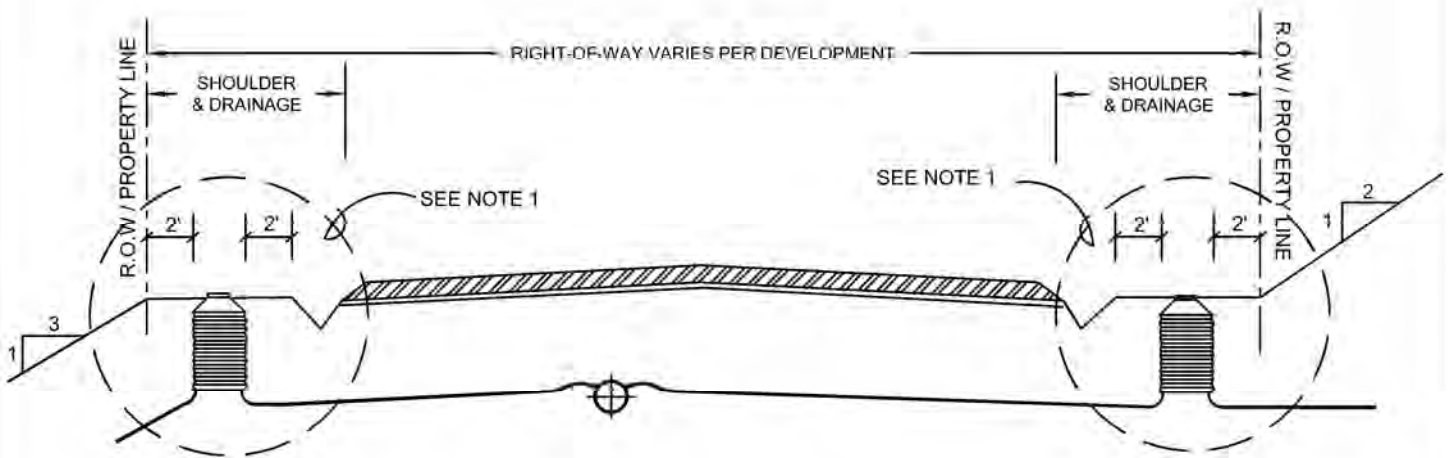
DRAWN BY:	DATE: 09/2008
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APPROVED:	



**CONSTRUCTION NOTES**

1. METER COVER TO BE FLUSH WITH TOP OF CURB.
2. SERVICE INSTALLATION SHALL BE RUN PERPENDICULAR TO WATER MAIN.

**PAVED STREETS WITH CURB**



**CONSTRUCTION NOTES**

1. DO NOT LOCATE METER CANS OR FIRE HYDRANTS IN SLOPES UNLESS APPROVED BY CoSFWD AND BENCHING IS PROVIDED AS SHOWN. A MINIMUM BENCH OF 2' SHALL BE PROVIDED ALL AROUND AS SHOWN.
2. SERVICE INSTALLATION SHALL BE RUN PERPENDICULAR TO WATER MAIN.

**PAVED STREETS WITHOUT CURB**



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**

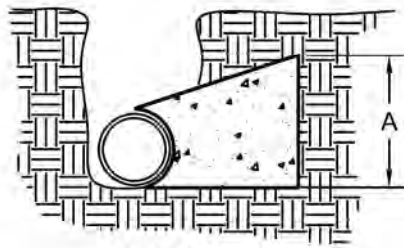
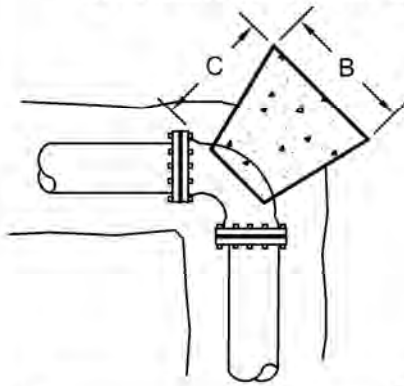


**SERVICE LOCATION  
DETAIL**

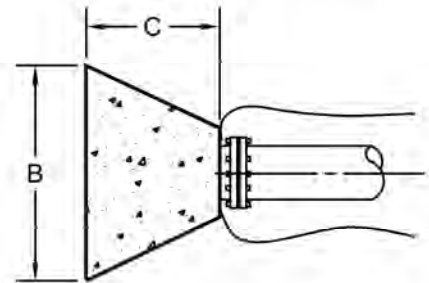
DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	

**12**

**USE MECHANICALLY RESTRAINED FITTINGS & PIPE JOINTS FOR THRUST RESTRAINT UNLESS CONCRETE BLOCKING IS SPECIFICALLY CALLED FOR BY SDCW.**

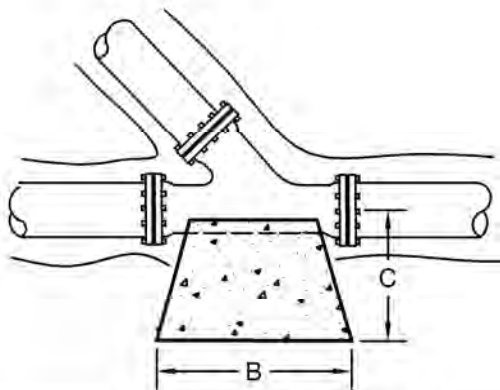


SECTION VIEW

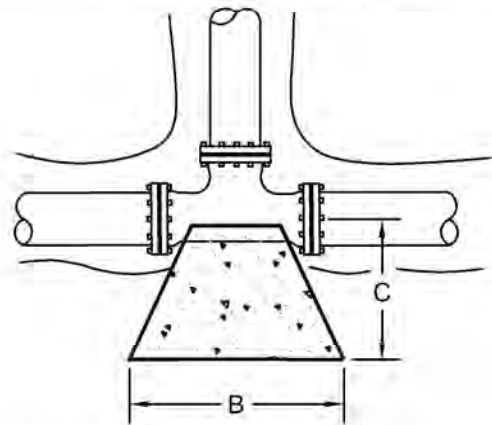


DEAD END ( TYPE "B" )

TYPE "A"



BRANCH WYE ( TYPE "B" )



TEE ( TYPE "B" )

**THRUST BLOCK SIZING TABLE**

PIPE DIAMETER	TYPE "A" BENDS												TYPE "B" FITTINGS		
	11-1/4°			22-1/2°			45°			90°			A	B	C
	A	B	C	A	B	C	A	B	C	A	B	C			
4"	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
6"	12	12	12	12	12	12	12	18	12	18	24	12	12	24	12
8"	12	12	12	12	18	12	18	24	12	24	30	18	18	30	12
10"	12	12	12	12	24	12	20	30	12	24	42	18	24	36	18
12"	12	18	12	18	24	12	24	36	18	32	48	24	24	42	18
14"	12	24	12	18	36	18	30	42	24	36	60	24	30	48	24
16"	18	24	24	24	36	24	30	40	24	42	66	24	36	54	24
18"	18	30	24	24	40	24	36	54	24	48	72	24	42	60	24
20"	20	30	24	30	42	24	42	60	24	54	80	24	42	76	24
24"	24	36	24	36	54	24	48	72	24	66	96	30	54	80	30

1. TABLE BASED ON 200 P.S.I. (130 P.S.I. WORKING PRESSURE) AND 3000 LB/FT<sup>2</sup> ALLOWABLE SOIL BEARING PRESSURE.
2. USE TEE OUTLET DIAMETER TO DETERMINE THRUST BLOCK SIZING. USE BRANCH DIAMETER ON WYE TO DETERMINE THRUST BLOCK SIZING.
3. THE "C" DIMENSION LISTED IS A MINIMUM DIMENSION. CONCRETE BLOCKING MUST BE POURED TO THE UNDISTURBED SOIL OF THE TRENCH WALL.



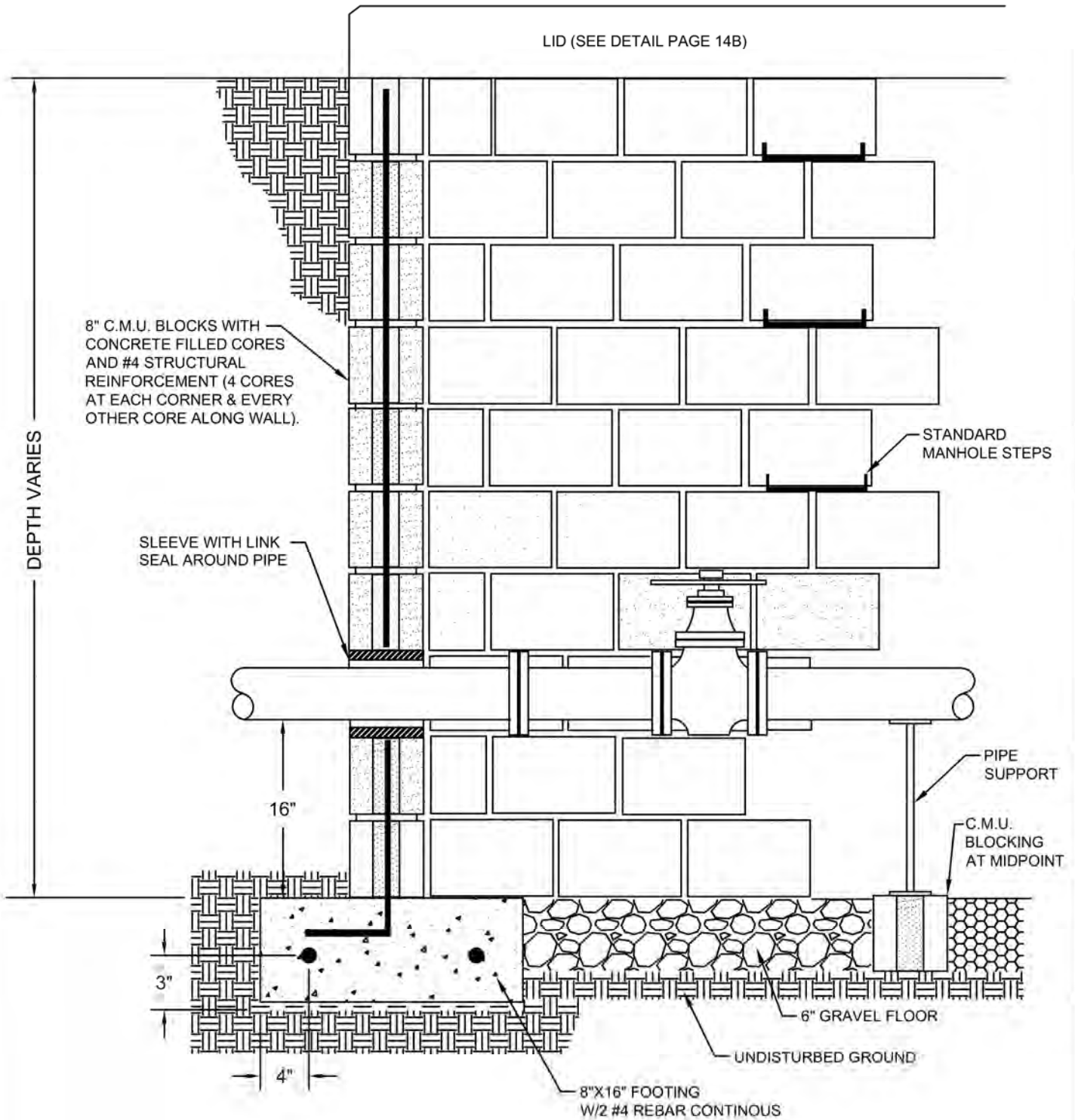
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**CONCRETE  
THRUST BLOCKING**

DRAWN BY:	DATE: 06/2008
CHECKED:	SCALE: N/A
APPROVED:	



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

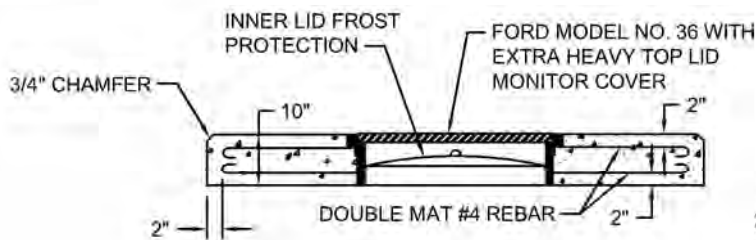
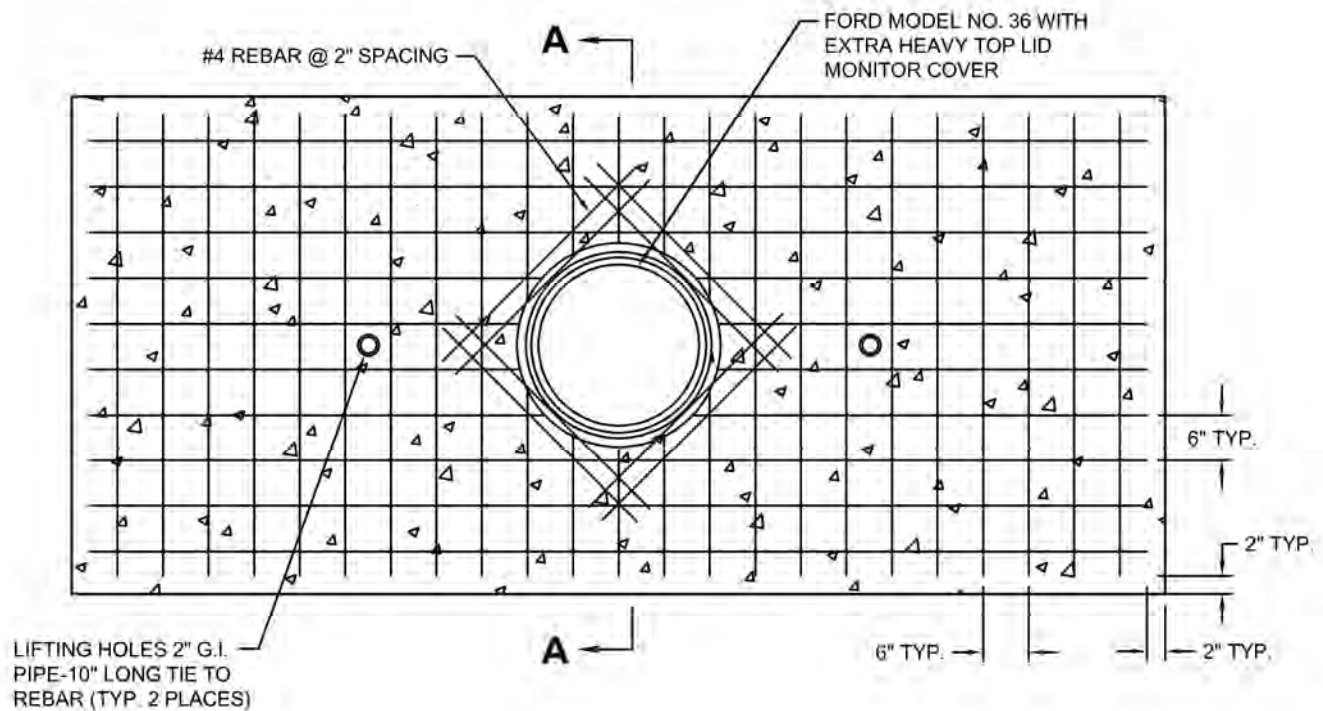
**STANDARD DETAILS**



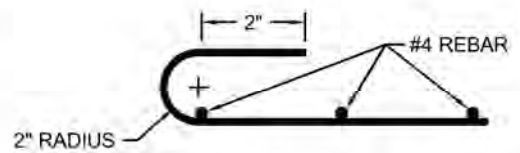
**CMU VAULT**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	

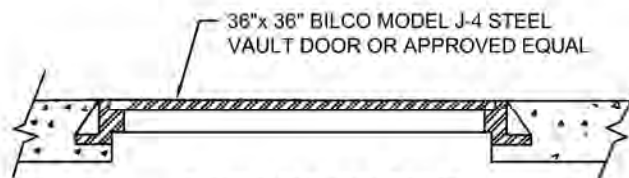




**CROSS SECTION A-A**



**REBAR DETAIL**



**ALTERNATIVE VAULT DOOR**

1. LID TO BE CAST INTO SECTIONS WEIGHING A MAXIMUM OF 4,000 LBS. EACH SECTION TO HAVE TWO (2) LIFTING HOLES.
2. THIS IS A GENERAL DETAIL. EACH PIT WILL HAVE A SPECIFIC DETAIL DRAWING ISSUED FOR CONSTRUCTION.



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

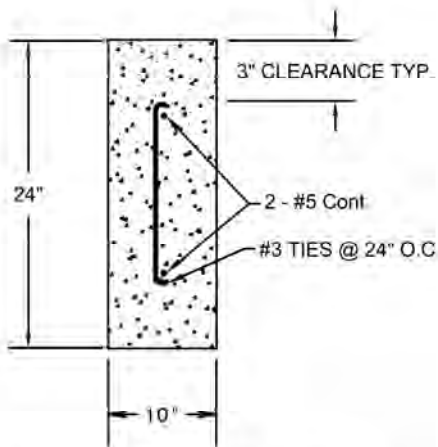
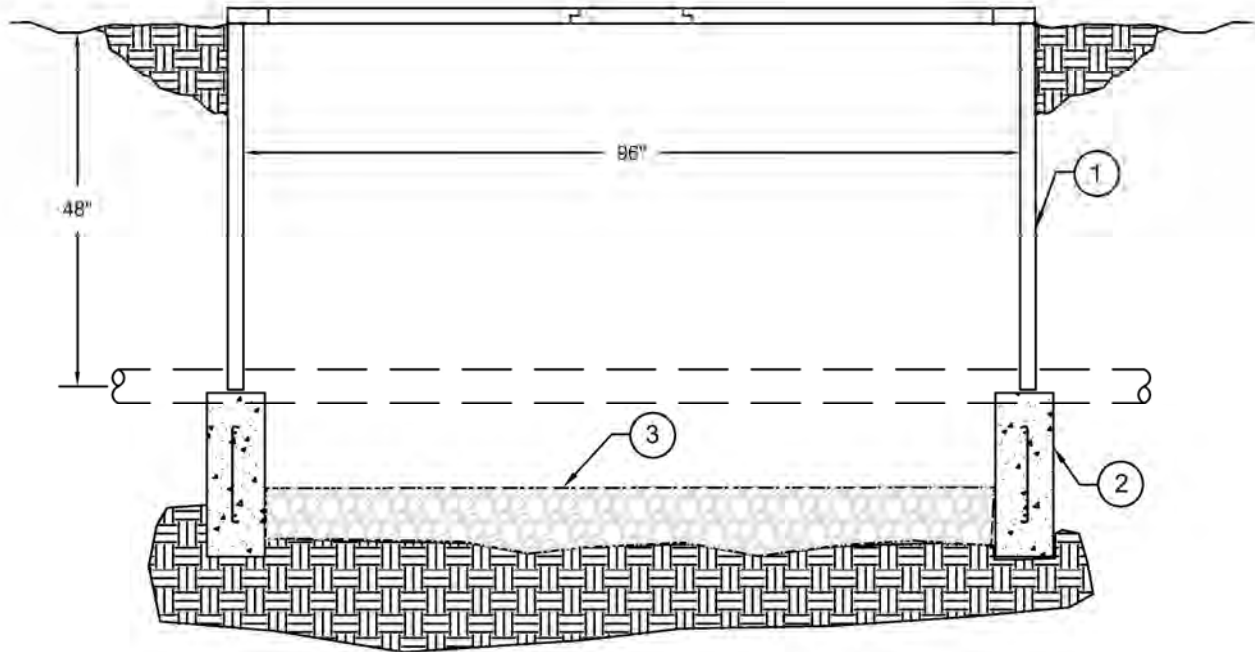
**STANDARD DETAILS**



**CMU VAULT**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	

**14B**



CONCRETE FOOTING DETAIL

- ① Prefabricated Vault 48" x 96" x 48"  
(Per Material Specifications)
- ② Concrete Footing
- ③ Gravel Floor 3/4" Crushed - 6" Thick



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

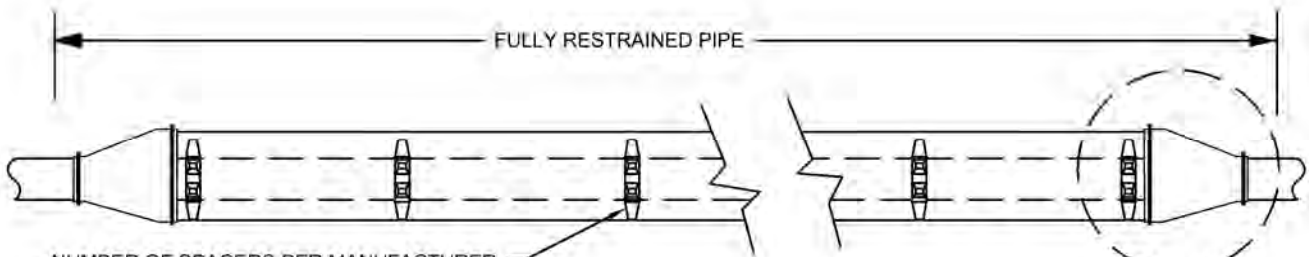
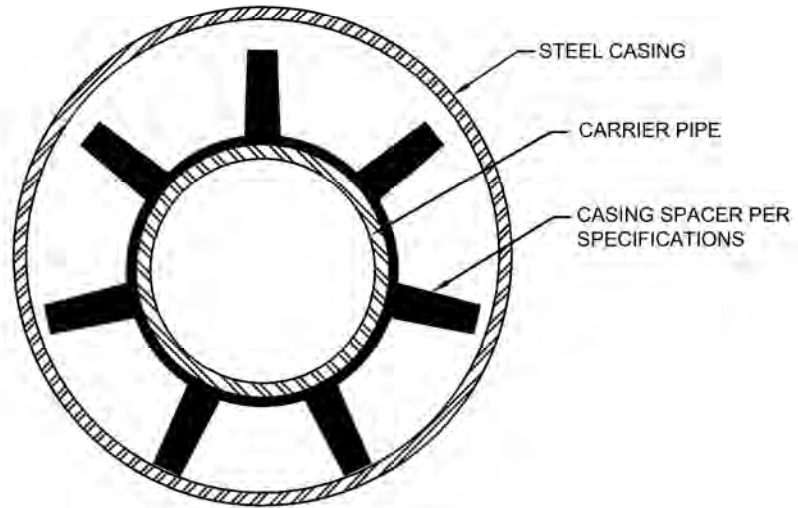
**STANDARD DETAILS**



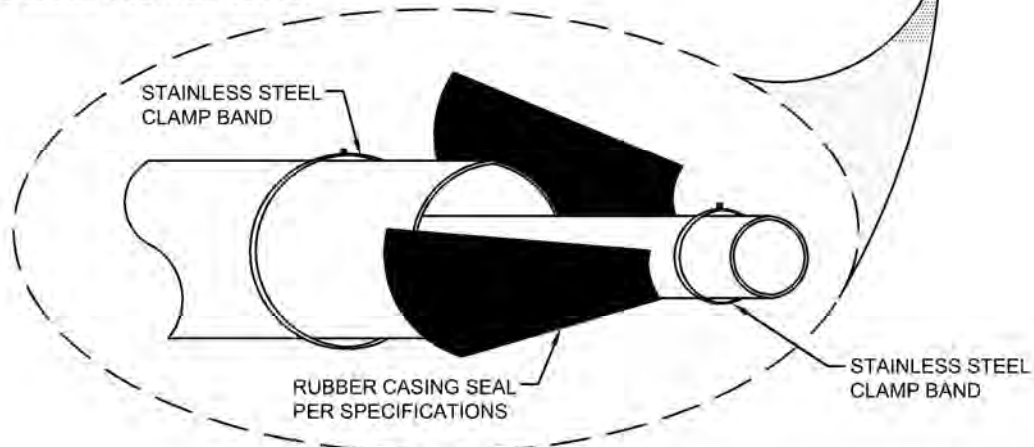
**PREFABRICATED VAULT**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

**15**



NUMBER OF SPACERS PER MANUFACTURER REQUIREMENTS. IN NO CASE LESS THAN THREE SPACERS PER PIPE SEGMENT BETWEEN JOINTS.



CASING SIZE VERSUS CARRIER SIZE

Carrier Pipe (Nominal Size)	Steel Casing Diameter and Wall Thickness
6"	12" Schedule 30
8"	16" Schedule 30
10"	18" Standard Class
12"	22" Standard Class
14"	26" Schedule 20
16"	28" Schedule 20
20"	30" 0.375" Wall
24"	36" 0.375" Wall
3/4"-2" Cu Tubing	4" Schedule 40 PVC
3/4"-2" Cu Tubing	4" Schedule 40 Steel



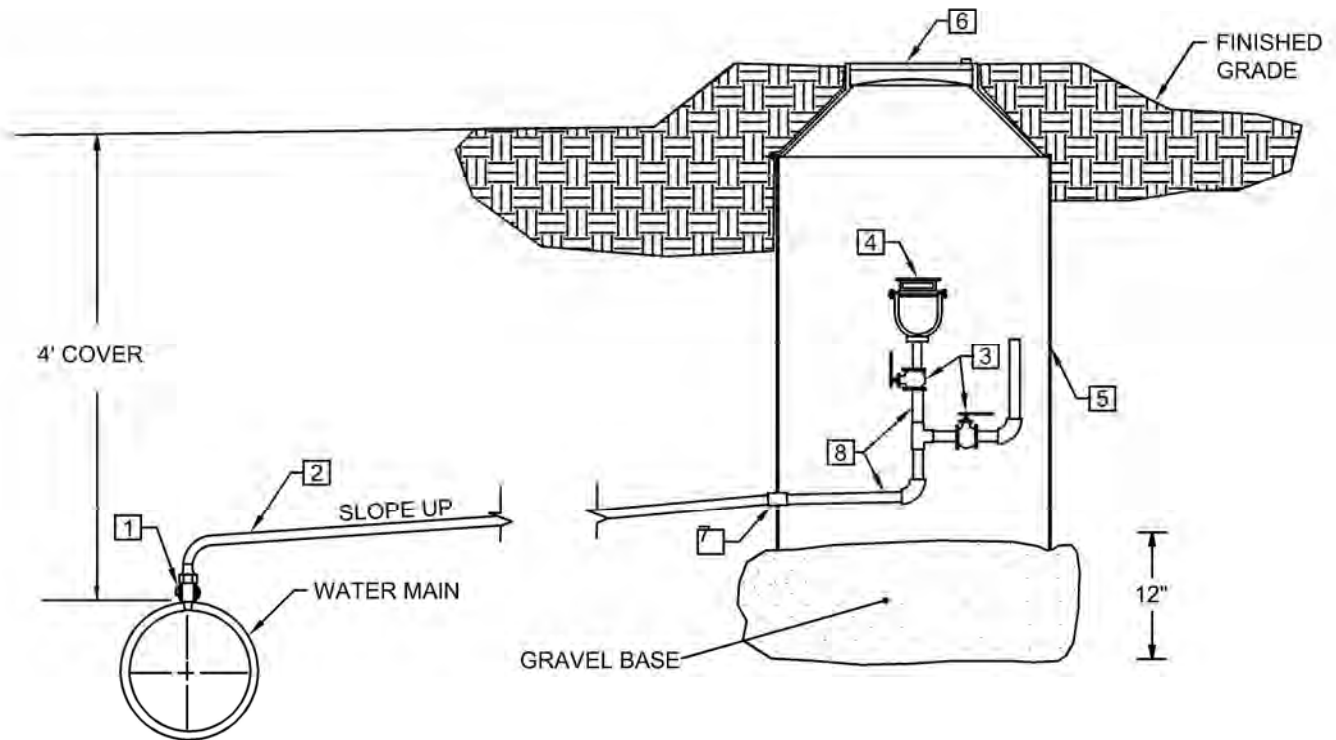
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**PIPE CASING DETAIL**

DRAWN BY: JJA	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	



ITEM	DESCRIPTION
1	1" OR 2" TAPPING SADDLE 1" OR 2" CORPORATION COCK (A.W.W.A. TAPERED THEAD)
2	1" OR 2" TYPE K COPPER
3	1" OR 2" BRASS BALL VALVE
4	1" OR 2" NPT COMBINATION AIR & VACUUM UNIT VALVE & PRESSURE UNIT: CRESPIAN C10 OR C20 WITH PROTECT-TOP
5	36" x 36" -20# POLYETHYLENE METER BOX
6	36" MONITOR RING WITH 20" COVER WITH INNER LID
7	1" OR 2" ADAPTER COUPLING
8	1" OR 2" THREADED BRASS PIPE

LOCATION: WHERE WATER MAIN IS INSTALLED IN ROAD, THE AIR-VACUUM VALVE INSTALLATION SHALL BE LOCATED OUT OF THE PAVEMENT AND OUT OF BAR DITCH, BUT WITHIN RIGHT-OF-WAY OR EASEMENT.



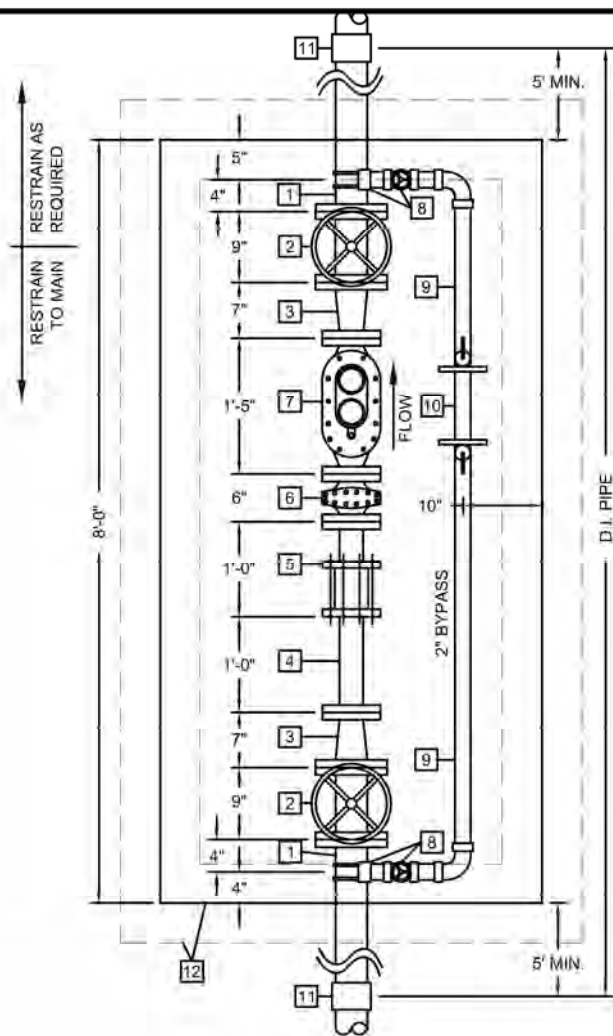
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**

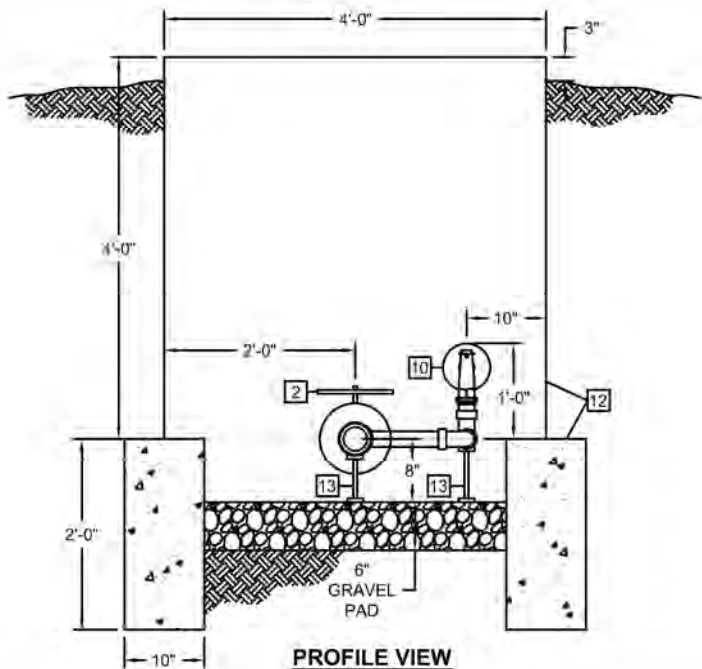


**1" AND 2"  
AIR-VACUUM VALVE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	



**PLAN VIEW**



**PROFILE VIEW**

**ITEM**

- 1 4" FLG x PE CONNECTION PIECE
- 2 4" FLG GATE VALVE W/ HANDWHEEL
- 3 4" x 3" FLG REDUCER
- 4 3" FLG x PE CONNECTION PIECE
- 5 3" FLG COUPLING ADAPTER
- 6 3" FLG METER STRAINER (FURNISHED & INSTALLED BY CoSFWD)
- 7 3" COMPOUND WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- 8 4" x 2" SERVICE SADDLE W/ 2" CORP. STOP STYLE BALL VALVE
- 9 2" TYPE K RIGID COPPER & FITTINGS
- 10 2" PREFABRICATED METER SETTER W/ 2" BALL ANGLE VALVES (PER CoSFWD DETAIL)
- 11 SOLID SLEEVE CONNECTION BETWEEN DUCTILE IRON PIPE AND EXISTING PIPE
- 12 4' x 4' x 8' PREFABRICATED VAULT W/ CONCRETE FOUNDATION (PER CoSFWD DETAIL)
- 13 PIPE SUPPORT

**NOTES**

1. CONTRACTOR SHALL USE 12"Wx12"Lx6"H CONCRETE BLOCK AND PIPE JACK STYLE SUPPORT BOLTED INTO CONCRETE WITH LAG BOLTS. TWO (2) SUPPORTS SHALL BE INSTALLED FOR MAIN LINE AND TWO (2) SUPPORTS SHALL BE INSTALLED FOR BYPASS.
2. CONTRACTOR SHALL LOCATE METER VAULT BEHIND CURB & GUTTER IN AREA THAT IS NOT SUBJECT TO VEHICULAR TRAFFIC.
3. CONTRACTOR SHALL SLOPE GRADE AWAY FROM THE VAULT.
4. CONTRACTOR SHALL INSTALL COMPRESSION FITTINGS FOR 2" BYPASS PIPING.
5. CONTRACTOR SHALL INSTALL FOUR (4) ALLTHREADS AT METER LOCATION TO MAINTAIN METER OPENING AND PIPING ALIGNMENT.



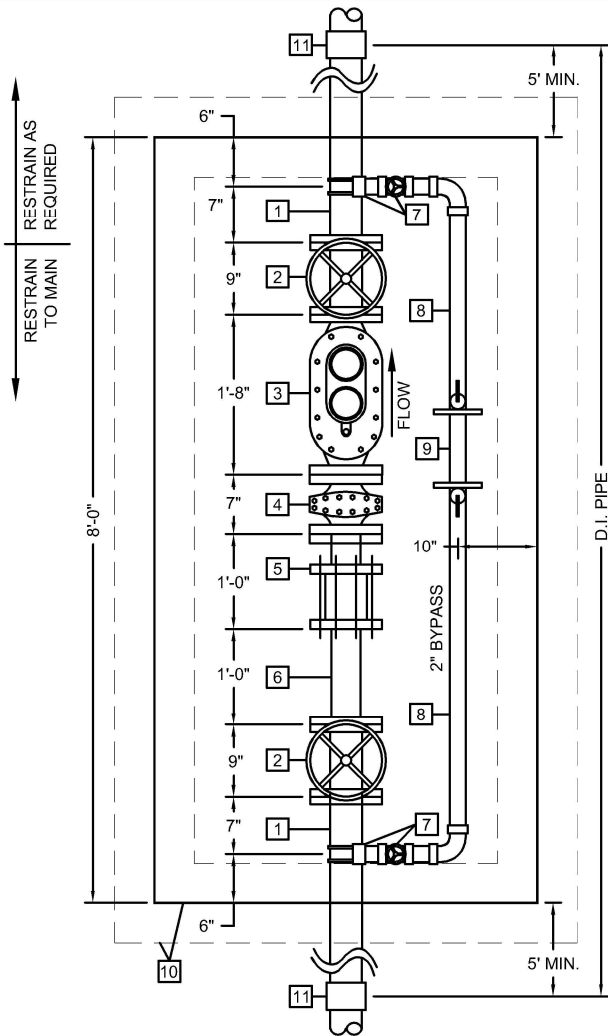
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**

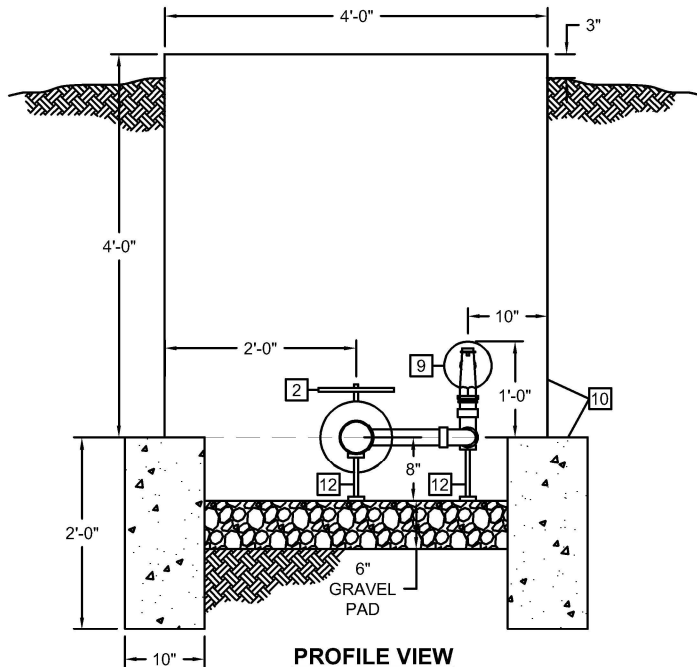


**3" DOMESTIC SERVICE**

DRAWN BY: SAR	DATE: 09/2008
CHECKED:	SCALE: 1" = 2'
APPROVED:	



**PLAN VIEW**



**PROFILE VIEW**

**ITEM**

- 1 4" FLG x PE CONNECTION PIECE
- 2 4" FLG GATE VALVE W/ HANDWHEEL
- 3 4" COMPUND METER (FURNISHED & INSTALLED BY CoSFWD)
- 4 4" FLG METER STRAINER (FURNISHED & INSTALLED BY CoSFWD)
- 5 4" FLG COUPLING ADAPTER
- 6 4" FLG x PE CONNECTION PIECE
- 7 4" x 2" SERVICE SADDLE W/ 2" CORP. STOP TYPE BALL VALVE
- 8 2" TYPE K RIGID COPPER & FITTINGS
- 9 2" PREFABRICATED METER SETTER W/ 2" BALL VALVES (PER CoSFWD DETAIL)
- 10 4' x 8' PREFABRICATED VAULT W/ CONCRETE FOUNDATION (PER CoSFWD DETAIL)
- 11 SOLID SLEEVE CONNECTION BETWEEN DUCTILE IRON PIPE AND EXISTING PIPE.
- 12 PIPE SUPPORT

**NOTES**

1. CONTRACTOR SHALL USE 12"Wx12"Lx6"H CONCRETE BLOCK AND PIPE JACK STYLE SUPPORT BOLTED INTO CONCRETE WITH LAG BOLTS. TWO (2) SUPPORTS SHALL BE INSTALLED FOR MAIN LINE AND TWO (2) SUPPORTS SHALL BE INSTALLED FOR BYPASS.
2. CONTRACTOR SHALL LOCATE METER VAULT BEHIND CURB & GUTTER IN AREA THAT IS NOT SUBJECT TO VEHICULAR TRAFFIC.
3. CONTRACTOR SHALL SLOPE GRADE AWAY FROM THE VAULT.
4. CONTRACTOR SHALL INSTALL COMPRESSION FITTINGS FOR 2" BYPASS PIPING.
5. CONTRACTOR SHALL INSTALL FOUR (4) ALLTHREADS AT METER LOCATION TO MAINTAIN METER OPENING AND PIPING ALIGNMENT.



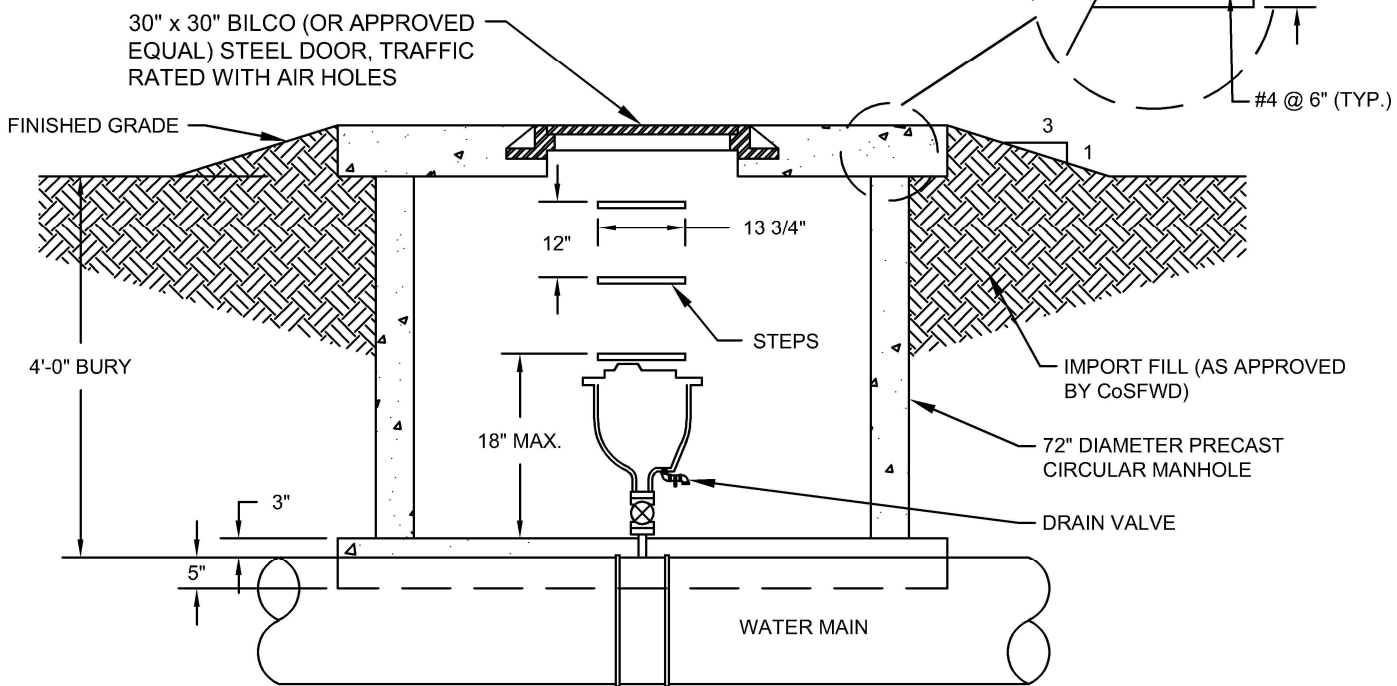
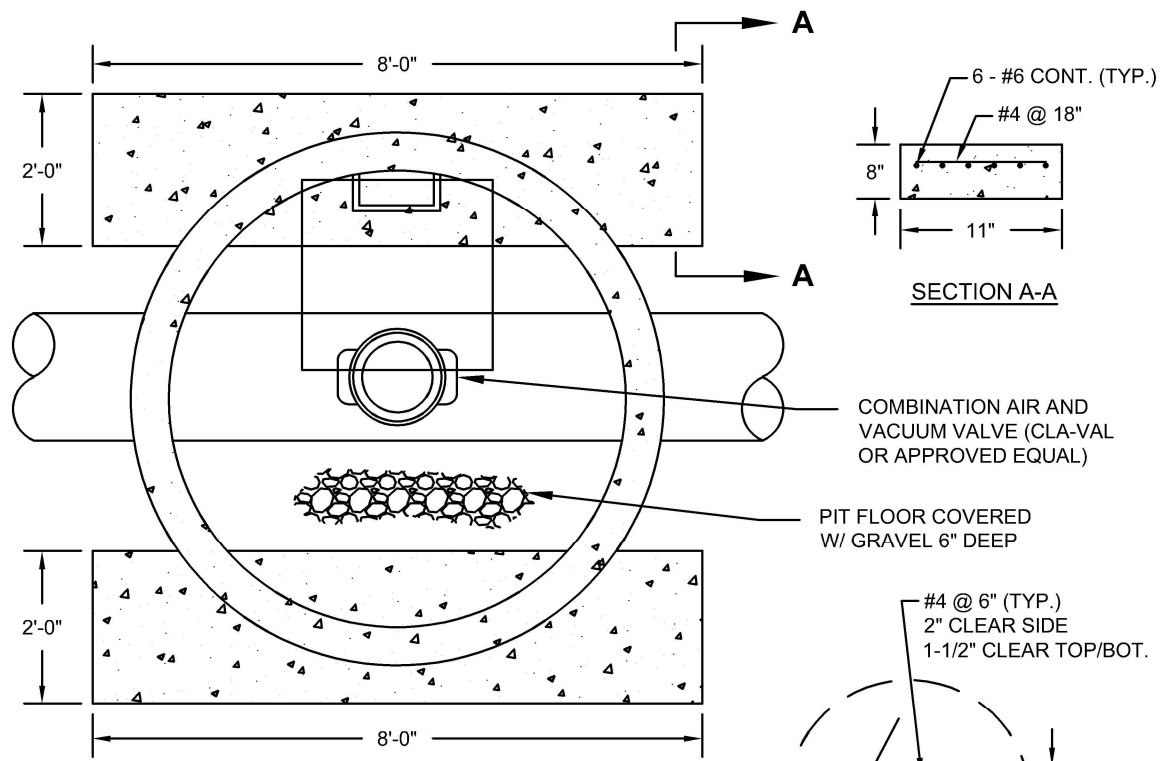
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



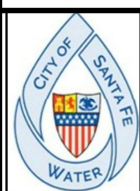
**4" DOMESTIC SERVICE**

DRAWN BY: SAR	DATE: 09/2008
CHECKED:	SCALE: 1" = 2'
APPROVED:	



**NOTE:**

1. 3" (MODEL 363CAV332FT, CL125 FLANGE), 4" (MODEL MTP364/34.116.3, CL250 FLANGE/MODEL MTP364/34.332, CL125 FLANGE) & 6" (MODEL MTP366/34.116.3, CL250 FLANGE/MODEL MTP366/34.332, CL125 FLANGE) AIR & VACUUM VALVES SHALL BE MANUFACTURED BY CLA-VAL (OR APPROVED EQUAL) WITH TRACING WIRE INSTALLED AND TIED TO MAIN.



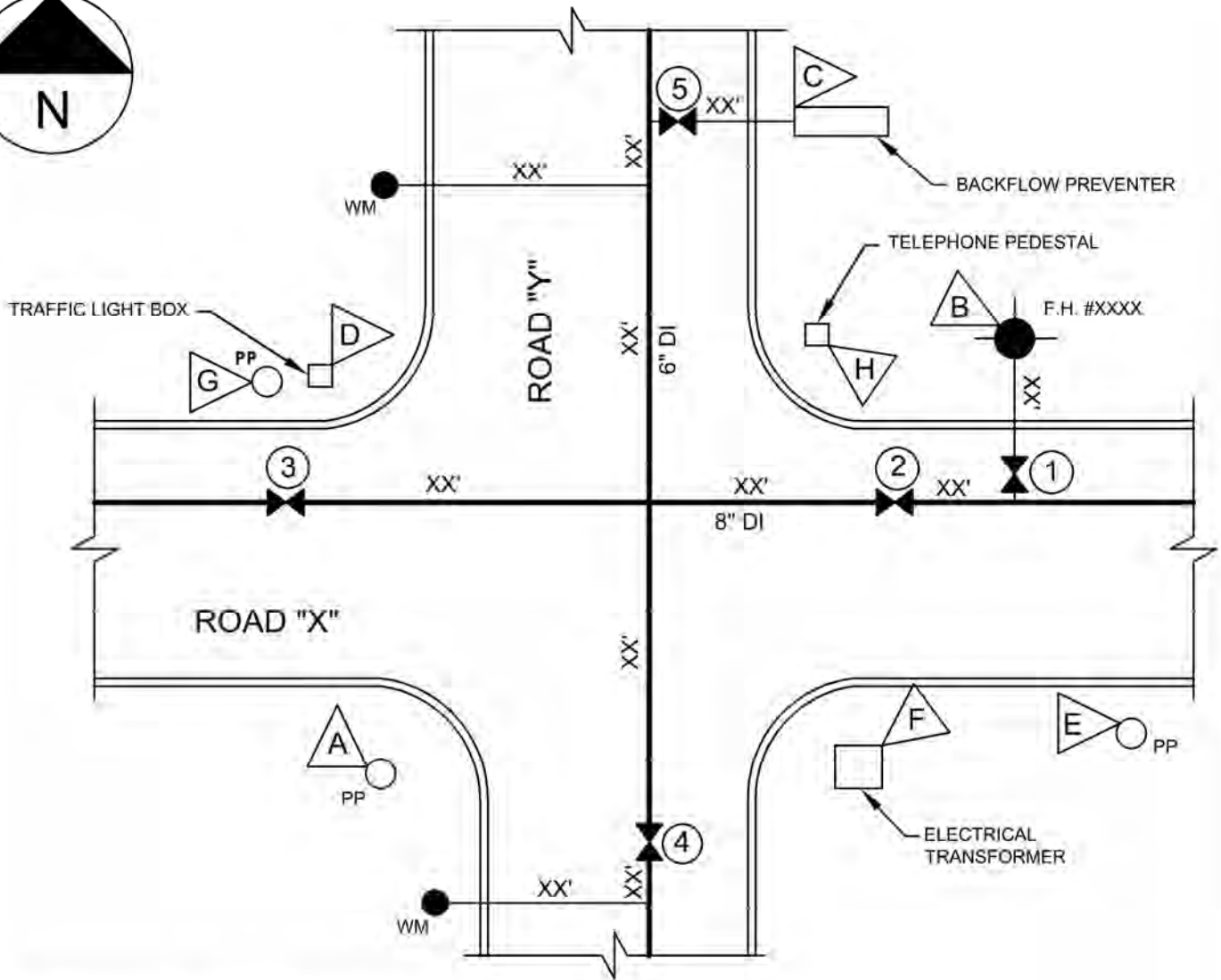
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**3" and Larger Air-Vacuum Valve Vault**

DRAWN BY: BKS	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	



FROM POINT	TO VALVE				
	①	②	③	④	⑤
▲			XX'XX"	XX'XX"	
▲	XX'XX"	XX'XX"			
▲					XX'XX"
▲			XX'XX"		XX'XX"
▲	XX'XX"	XX'XX"		XX'XX"	
▲	XX'XX"	XX'XX"		XX'XX"	
▲			XX'XX"		
▲				XX'XX"	XX'XX"

$\frac{1}{2}$ "  
 $\frac{1}{4}$ "

**VALVE REFERENCING NOTES:**

- (1) ALL VALVES SHALL BE REFERENCED DURING CONSTRUCTION WITH 3 SWING TIES FROM SUITABLE REFERENCED POINTS AND THE TIES RECORDED ON THE CONSTRUCTION DRAWING. VALVE TIES SHALL BE TURNED IN BY CONTRACTOR ON A COPY OF THE ABOVE TEMPLATE.
- (2) ALL REFERENCE POINTS SHALL BE EASILY FIELD IDENTIFIED AND SHALL CONSIST OF: PERMAMENT LAND MARKS (I.E. FIRE HYDRANTS, POWER POLES, ELECTRIC TRANSFORMERS, TELEPHONE PEDESTALS, ETC.) THAT WILL NOT BE RELOCATED OR REMOVED DURING CONSTRUCTION.
- (3) ALL FIRE HYDRANT VALVES SHALL BE REFERENCED WITH A DIMENSION FROM THE CENTER OF THE HYDRANT TO THE VALVE BOX AND SHALL HAVE A MINIMUM OF ONE (1) SWING TIE FROM A SEPARATE REFERENCE POINT.



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

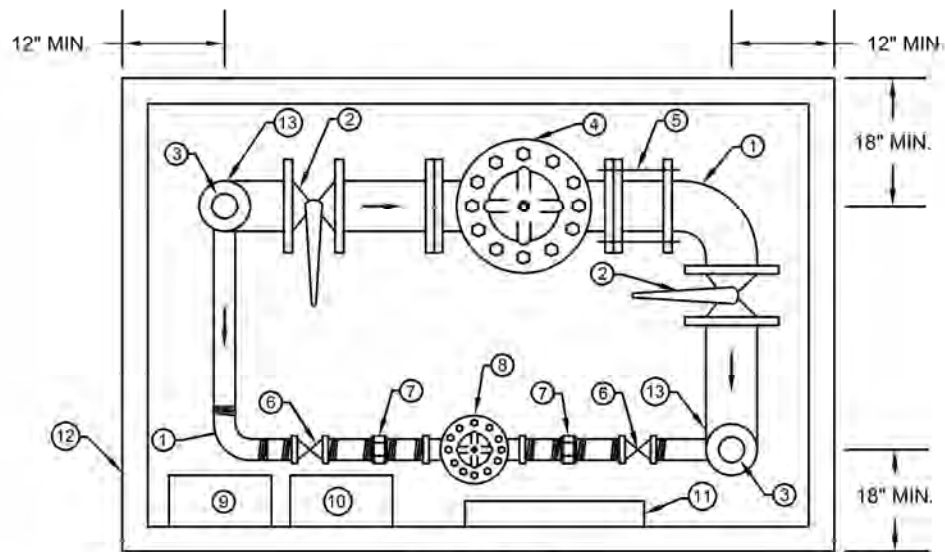
**STANDARD DETAILS**



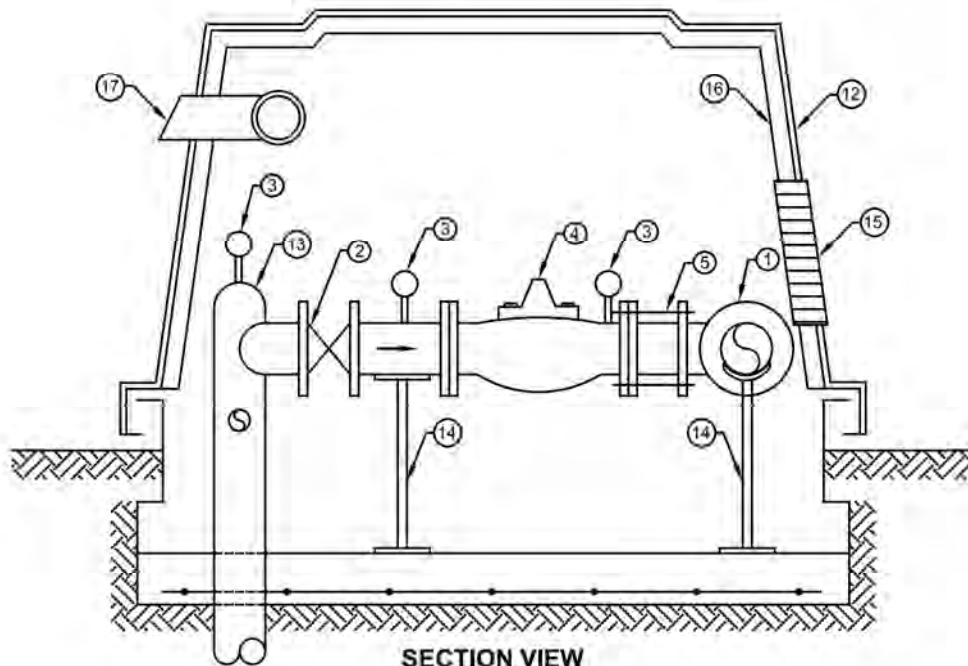
**VALVE REFERENCE MAP**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	





**PLAN VIEW**



**SECTION VIEW**

**EQUIPMENT LIST**

- |  |                                      |
|--|--------------------------------------|
| ① 90° ELBOW  | ⑩ POWER PANEL W/ TWO (2) GFI OUTLETS |
| ② BUTTERFLY VALVE  | ⑪ PRESSURE GAUGE MOUNTING PANEL      |
| ③ PRESSURE GAUGE   | ⑫ PREFABRICATED ENCLOSURE            |
| ④ PRESSURE REDUCING VALVE (SIZED FOR HIGH DEMAND FLOW RATES) | ⑬ WELDED TEE RISER                   |
| ⑤ FLANGE COUPLING ADAPTER                                    | ⑭ PIPE SUPPORT                       |
| ⑥ BALL VALVE   | ⑮ AIR VENT                           |
| ⑦ UNION  | ⑯ FOAM INSULATION                    |
| ⑧ PRESSURE REDUCING VALVE (SIZED FOR LOW DEMAND FLOW RATES)  | ⑰ EXHAUST FAN                        |
| ⑨ HEATER UNIT  | ⑱ CONCRETE SLAB                      |

**NOTES:**

1. PRESSURE GAUGES SHALL BE 4" OIL FILLED GAUGES AND MOUNTED ON PRESSURE GAUGE MOUNTING PANEL (SEE DETAIL).
2. PRESSURE REDUCING VALVES SHALL BE CLA-VAL (MODEL 90-01AB) OR APPROVED EQUAL.
3. PRESSURE REDUCING VALVE VAULTS SHALL BE ABOVE GRADE VAULTS AS MANUFACTURED BY ENGINEER FLUID INC., CANARIS, OR APPROVED EQUAL.
4. SACRIFICIAL ANODE IS REQUIRED FOR CATHODIC PROTECTION ON PREFABRICATED ENCLOSURE BASE.
5. ENCLOSURE SHALL BE PAINTED PER MANUFACTURER RECOMMENDATION WITH COLOR APPROVED BY CoSFWD.
6. CONCRETE SLAB SHALL BE 6-INCHES THICK WITH #5 REBAR AT 12" O.C. FOR REINFORCEMENT.



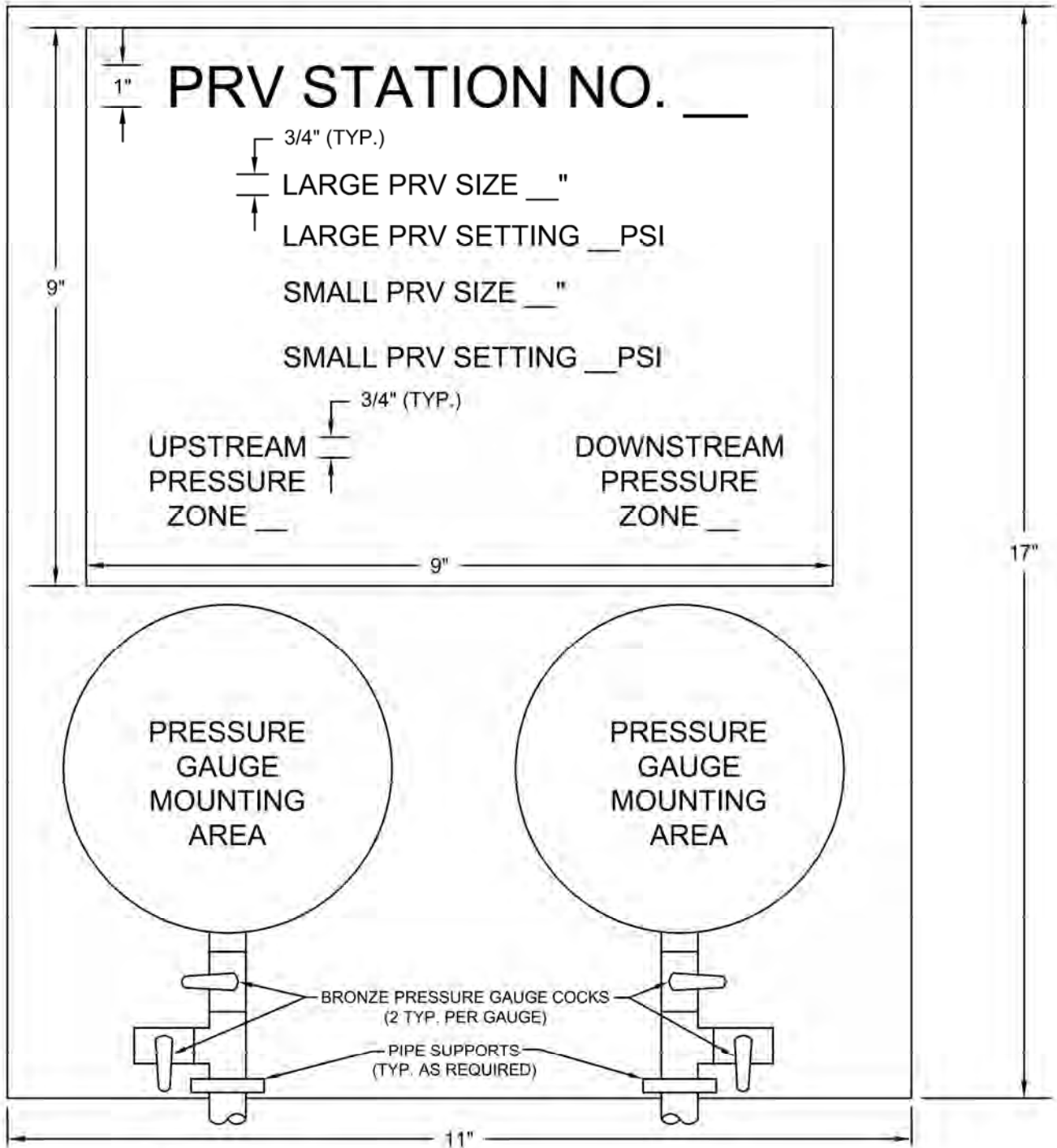
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**PRESSURE REDUCING  
VALVE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	



**NOTES:**

1. PRESSURE GAUGE MOUNTING PLATE SHALL BE CONSTRUCTED OF 3/8" ALUMINUM.
2. MOUNTING PLATE SHALL BE MOUNTED TO WALL USING 13/16" DEPTH x 13/16" WIDE UNISTRUT AND FOUR (4) 3/8" DIA. x 2-1/2" LONG SS LAG BOLTS WITH LAG SHIELD FOR CONCRETE.
3. LABEL PLATE SHALL BE STAINLESS STEEL ACID ETCHED AND COLOR FILLED.



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

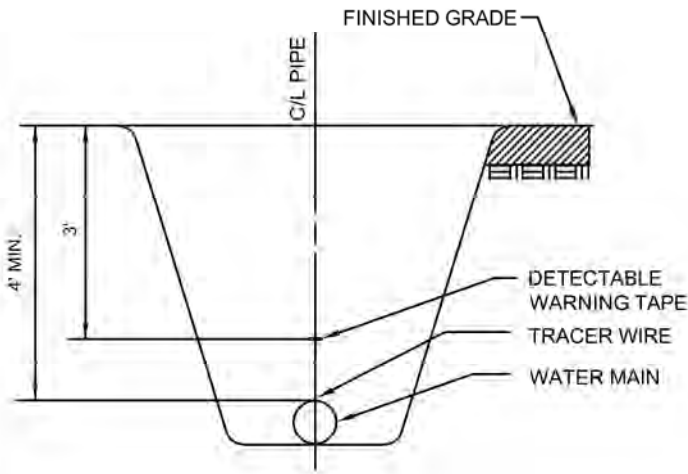
**STANDARD DETAILS**



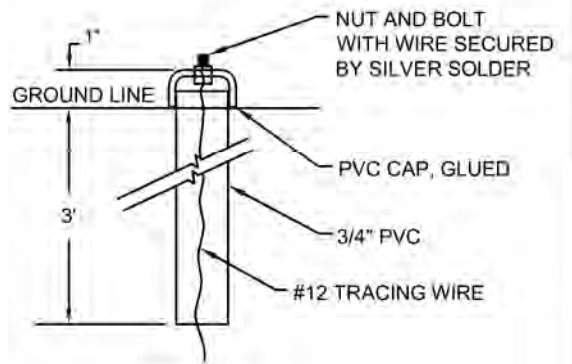
**PRV PRESSURE GAUGE  
MOUNT DETAIL**

DRAWN BY: BKS	DATE: 09/2008
CHECKED:	SCALE: N/A
APPROVED:	

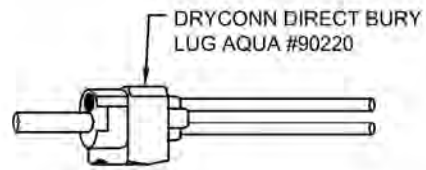
**23**



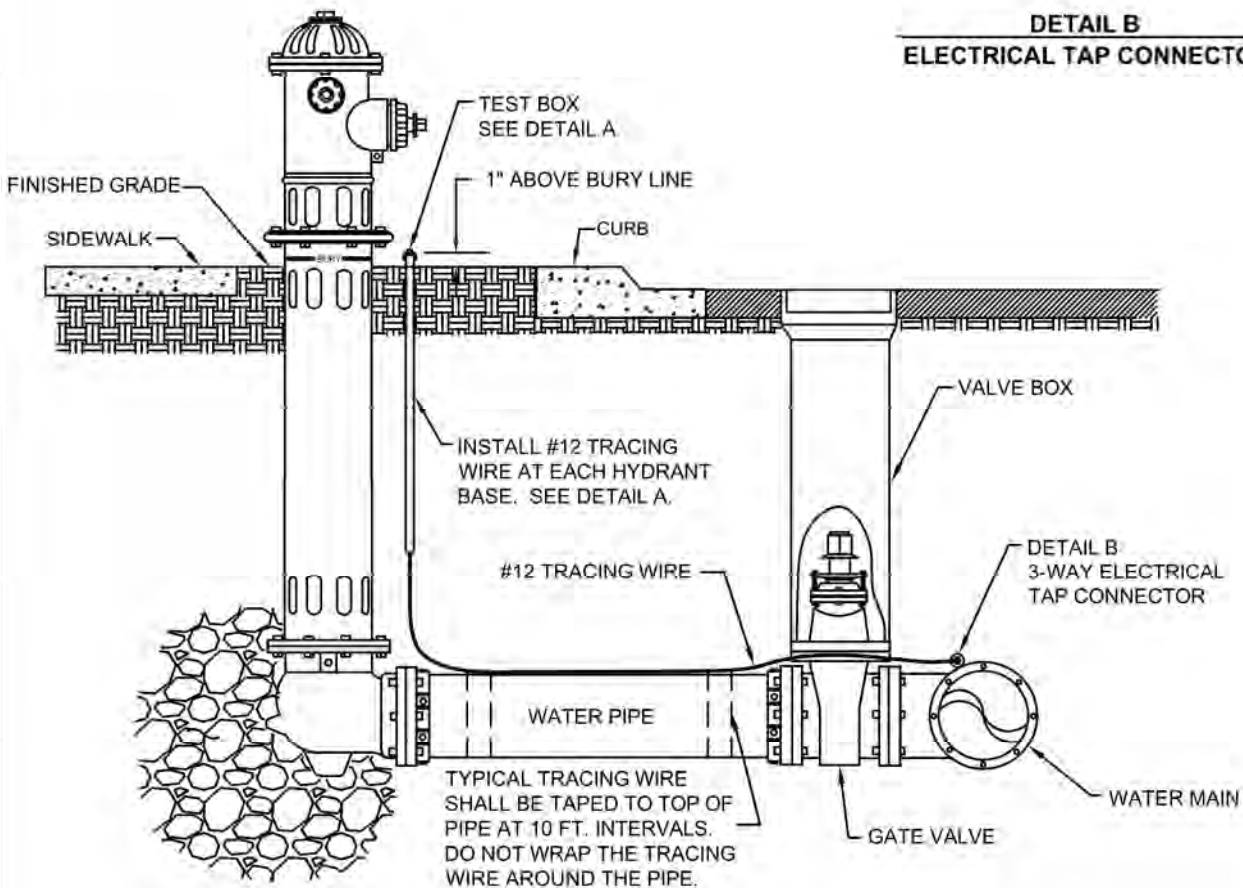
**TRENCH CROSS SECTION**



**DETAIL A  
TEST BOX**



**DETAIL B  
ELECTRICAL TAP CONNECTOR**



TRACING WIRE DESIGN AND DETAILS COURTESY  
OF PEAK POWER ENGINEERING, INC.  
1309 AGUA FRIA, SANTA FE, NM 87501



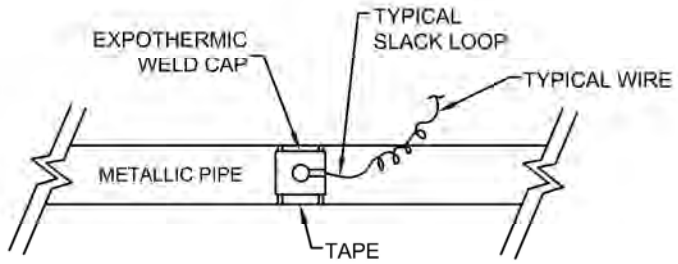
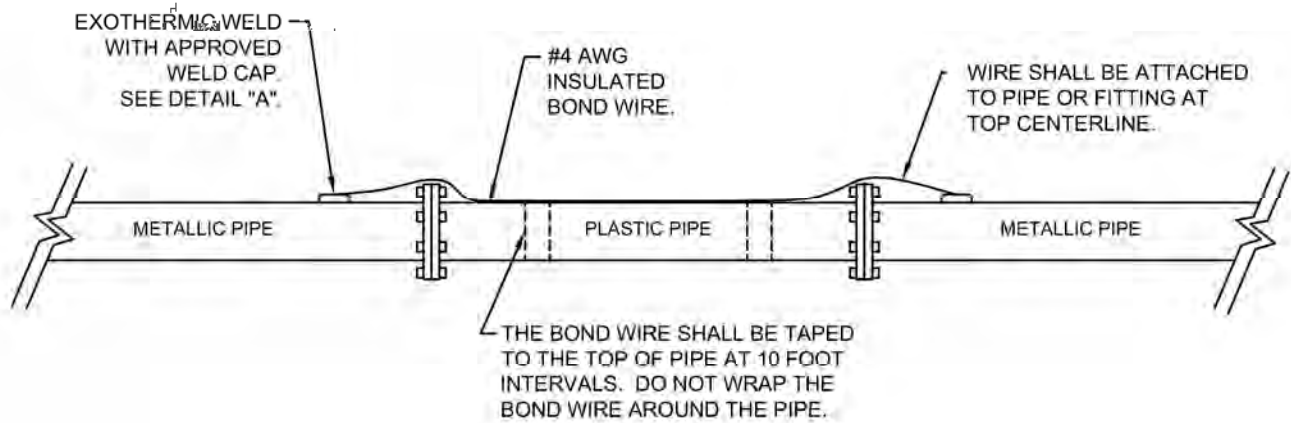
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**TRACING WIRE DETAIL**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	



**DETAIL "A"**

DRAWING COURTESY OF PEAK POWER ENGINEERING, INC.  
1309 AGUA FRIA, SANTA FE, NM 87501



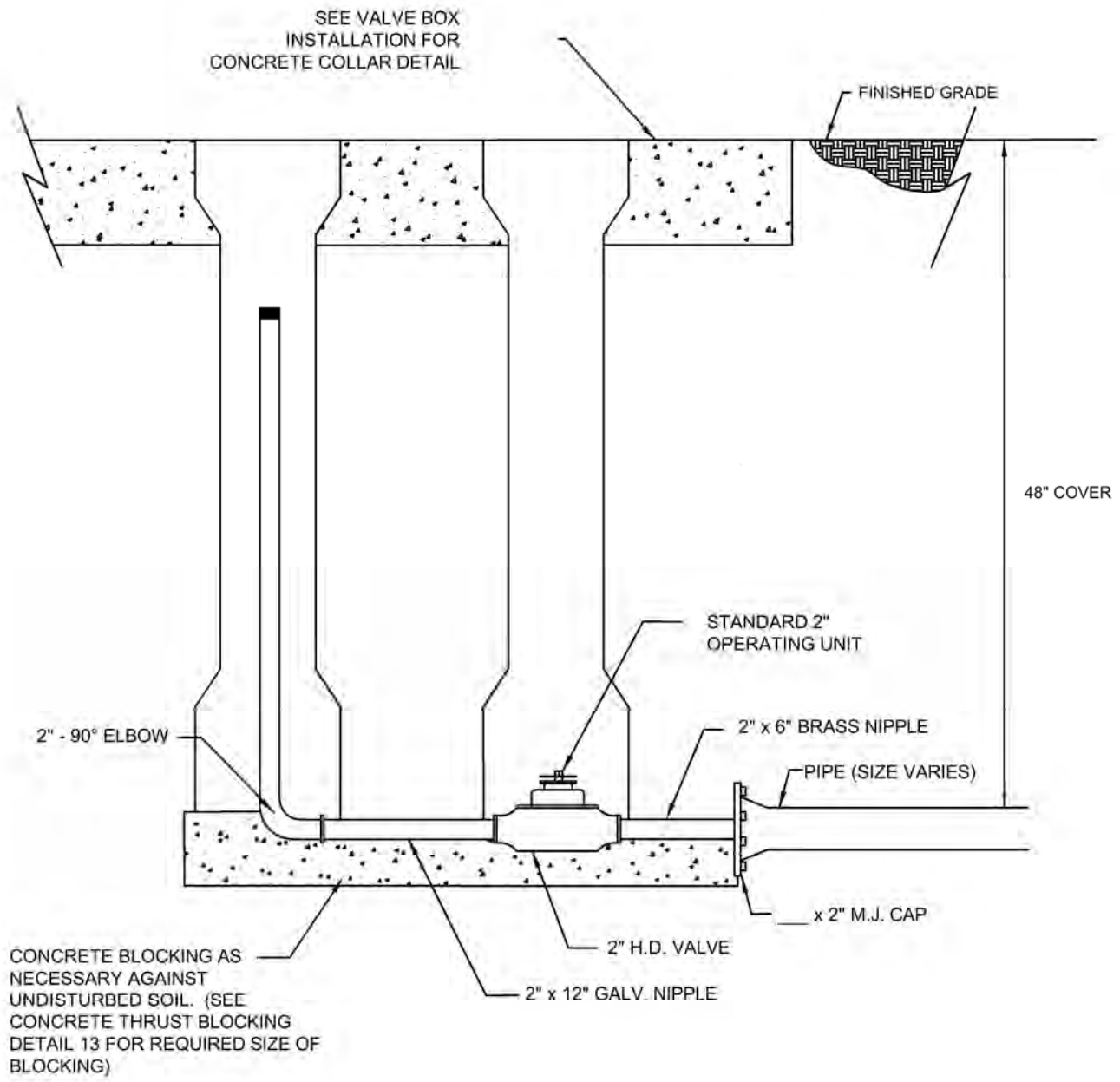
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**



**STANDARD DETAILS**

**BONDING JUMPER DETAIL**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	



NOTES:

1. BLOW-OFF VALVES ARE TO BE USED ONLY WHEN SPECIFIED BY CoSFWD.
2. WRAP END OF PIPE, CAP, AND BLOW-OFF VALVE ASSEMBLY WITH 4 MIL. POLYETHYLENE SHEETING PRIOR TO REPLACEMENT OF CONCRETE BLOCKING.



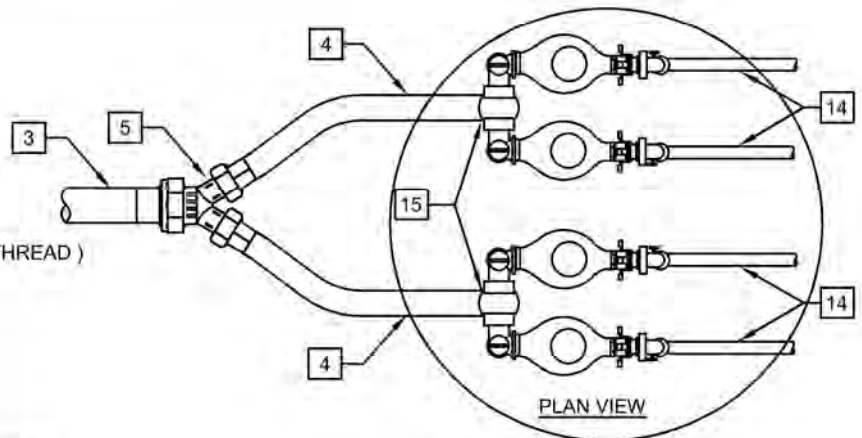
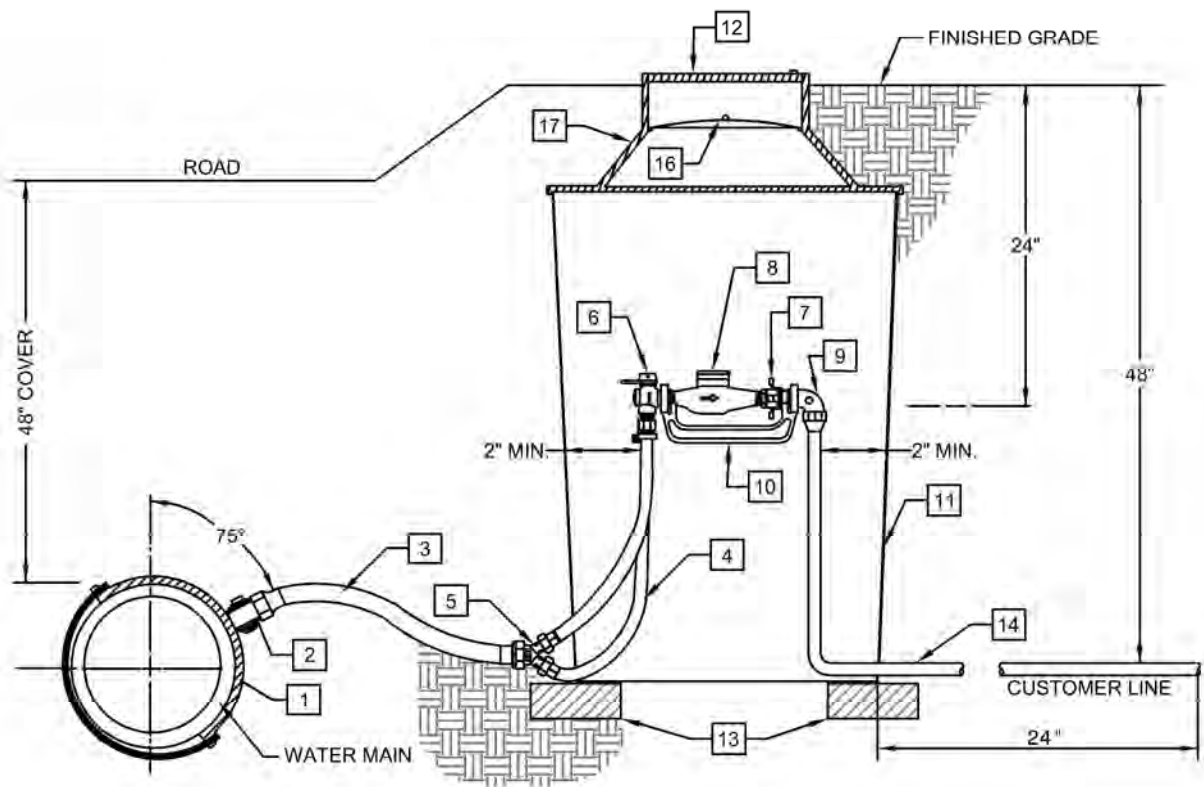
**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**2" BLOW-OFF VALVE**

DRAWN BY:	DATE: 09/2008
CHECKED:	SCALE:
APPROVED:	



ITEM

- [ 1 ] \_\_\_\_\_ x 2" SERVICE SADDLE
- [ 2 ] 2" CORPORATION STOP (A.W.W.A. TAPERED THREAD )
- [ 3 ] 2" COPPER TUBING ( TYPE " K " )
- [ 4 ] 1" COPPER TUBING ( TYPE " K " )
- [ 5 ] MULTI-SERVICE "Y" BRANCH
- [ 6 ] 3/4" ANGLE VALVE
- [ 7 ] 3/4" EXPANSION CONNECTION WITH CHECK VALVE
- [ 8 ] 3/4" x 5/8" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- [ 9 ] 3/4" ANGLE ELL WITH TEST VALVE
- [ 10 ] 3/4" CAST IRON METER YOKE
- [ 11 ] 36" DIA. X 36" METER BOX
- [ 12 ] POLYMER LID (20" DIA.)
- [ 13 ] BLOCKS - USE AS DIRECTED BY CoSFWD
- [ 14 ] 3/4" COPPER TUBING ( TYPE " K " )
- [ 15 ] BRANCH PIECE
- [ 16 ] 1 1/2" BLACK FOAM FROST LID
- [ 17 ] 36" DIA. x 20" DIA MONITOR COVER



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

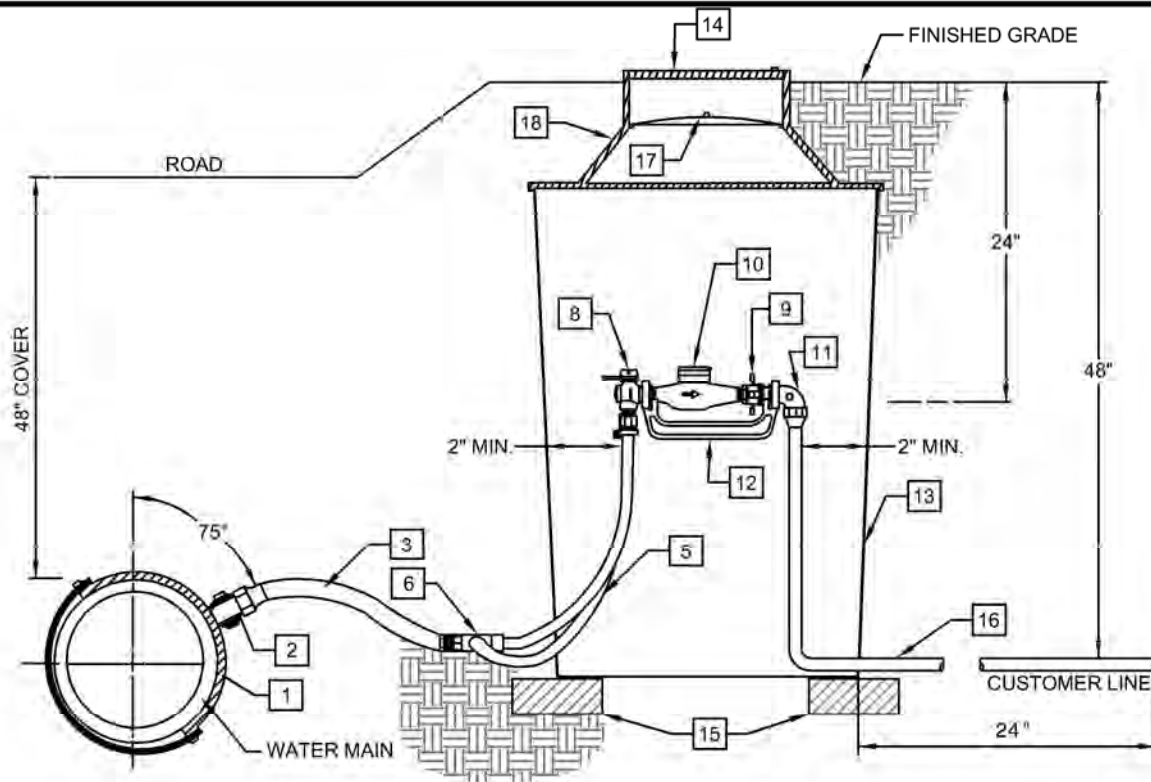
**STANDARD DETAILS**



**4-5/8" METER SERVICES  
"Y" BRANCH CONNECTION  
FOR MULTIPLE SERVICES**

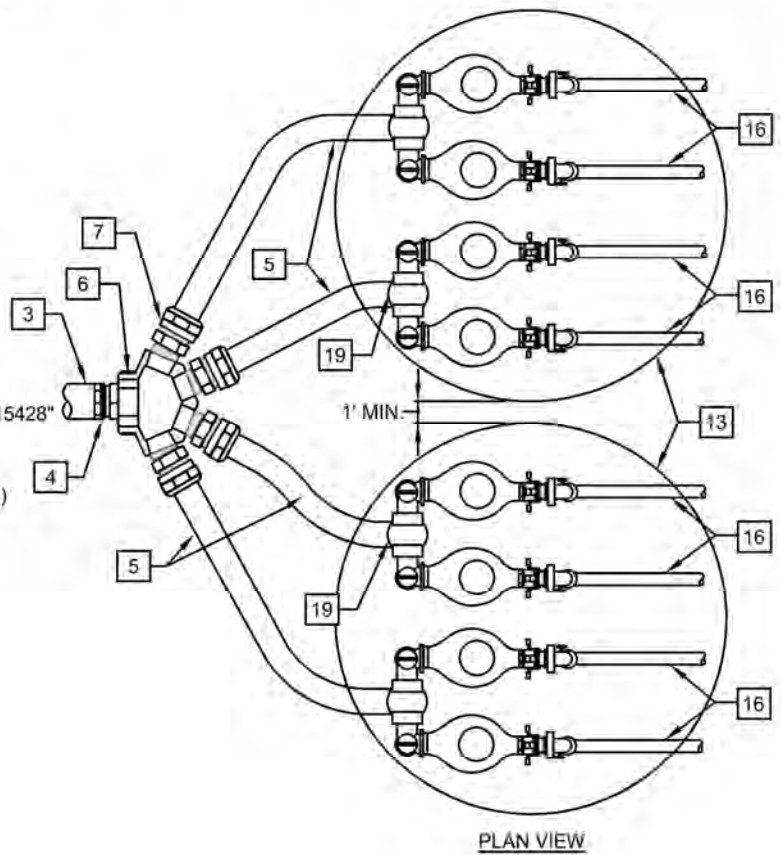
DRAWN BY: DATE: 04/2018  
CHECKED: SCALE: N/A





ITEM

- [ 1 ] \_\_\_\_ x 2" SERVICE SADDLE
- [ 2 ] 2" CORPORATION STOP (A.W.W.A. TAPERED THREAD )
- [ 3 ] 2" COPPER TUBING ( TYPE "K" )
- [ 4 ] 2" MALE IRON BY COMPRESSION FITTING
- [ 5 ] 1" COPPER TUBING ( TYPE "K" )
- [ 6 ] MULTI-SERVICE "Y" BRANCH, MODEL "Y11-474-NL STYLE"
- [ 7 ] 1" MALE IRON PIPE BY COMPRESSION FITTING MODEL "H-15428"
- [ 8 ] 3/4" ANGLE VALVE (2 EA.)
- [ 9 ] 3/4" EXPANSION CONNECTION WITH CHECK VALVES (2 EA.)
- [ 10 ] 3/4" X 5/8" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- [ 11 ] 3/4" ANGLE ELL WITH TEST VALVE (2 EA.)
- [ 12 ] 3/4" CAST IRON METER YOKE (2 EA.)
- [ 13 ] 36" DIA. X 36" METER BOX
- [ 14 ] POLYMER LID (20" DIA.)
- [ 15 ] BLOCKS - USE AS DIRECTED BY CoSFWD
- [ 16 ] 3/4" COPPER TUBING (TYPE "K")
- [ 17 ] 1 1/2" BLACK FOAM FROST LID
- [ 18 ] 36" DIA. x 20" DIA. MONITOR COVER
- [ 19 ] BRANCH PIECE



PLAN VIEW



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

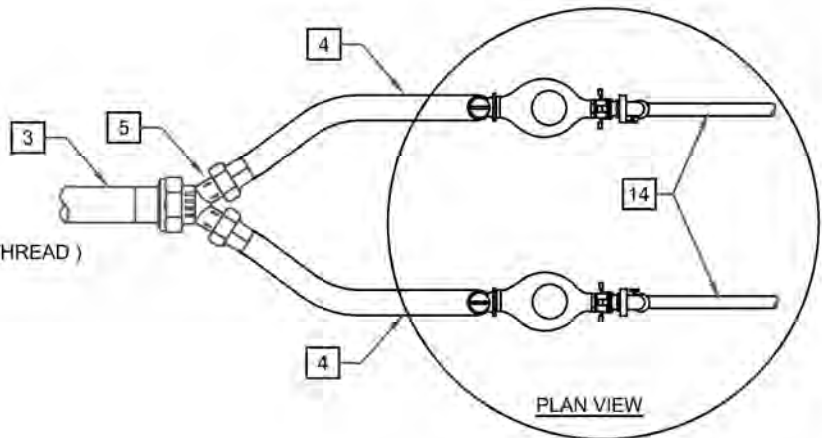
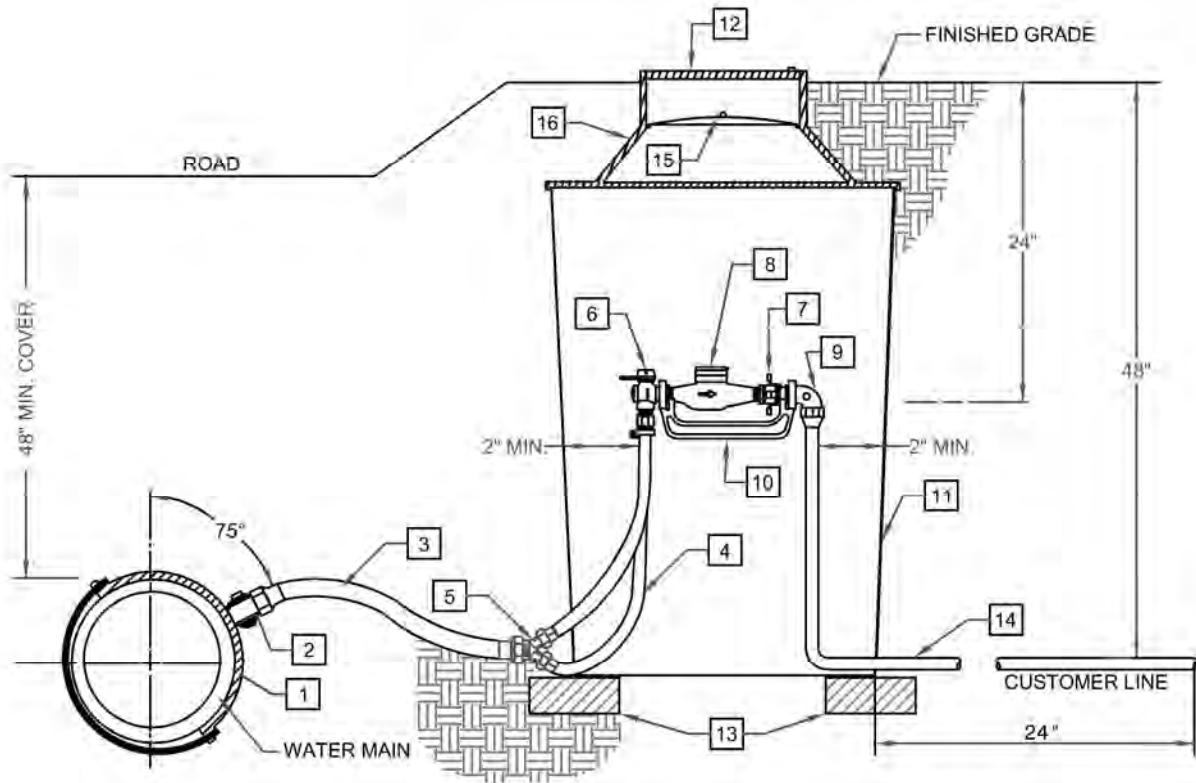
**STANDARD DETAILS**



**2" x 4-1" MULTI-SERVICE  
"Y" BRANCH**

DRAWN BY:	DATE: 04/2018
CHECKED:	SCALE: N/A





ITEM

- [ 1 ] \_\_\_\_\_ x 2" SERVICE SADDLE
- [ 2 ] 2" CORPORATION STOP (A.W.W.A. TAPERED THREAD )
- [ 3 ] 2" COPPER TUBING ( TYPE " K " )
- [ 4 ] 1" COPPER TUBING ( TYPE " K " )
- [ 5 ] MULTI-SERVICE "Y" BRANCH
- [ 6 ] 1" ANGLE VALVE
- [ 7 ] 1" EXPANSION CONNECTION
- [ 8 ] 1" SEALED REGISTER WATER METER (FURNISHED & INSTALLED BY CoSFWD)
- [ 9 ] 1" ANGLE ELL WITH TEST VALVE
- [ 10 ] 1" CAST IRON METER YOKE
- [ 11 ] 36" DIA. X 36" METER BOX
- [ 12 ] POLYMER LID (20" DIA.)
- [ 13 ] BLOCKS - USE AS DIRECTED BY CoSFWD
- [ 14 ] 1" COPPER TUBING ( TYPE " K " )
- [ 15 ] 1 1/2" BLACK FOAM FROST LID
- [ 16 ] 36" DIA. x 20" DIA MONITOR COVER



**CITY OF SANTA FE WATER DIVISION**  
**SANTA FE, NEW MEXICO**

**STANDARD DETAILS**

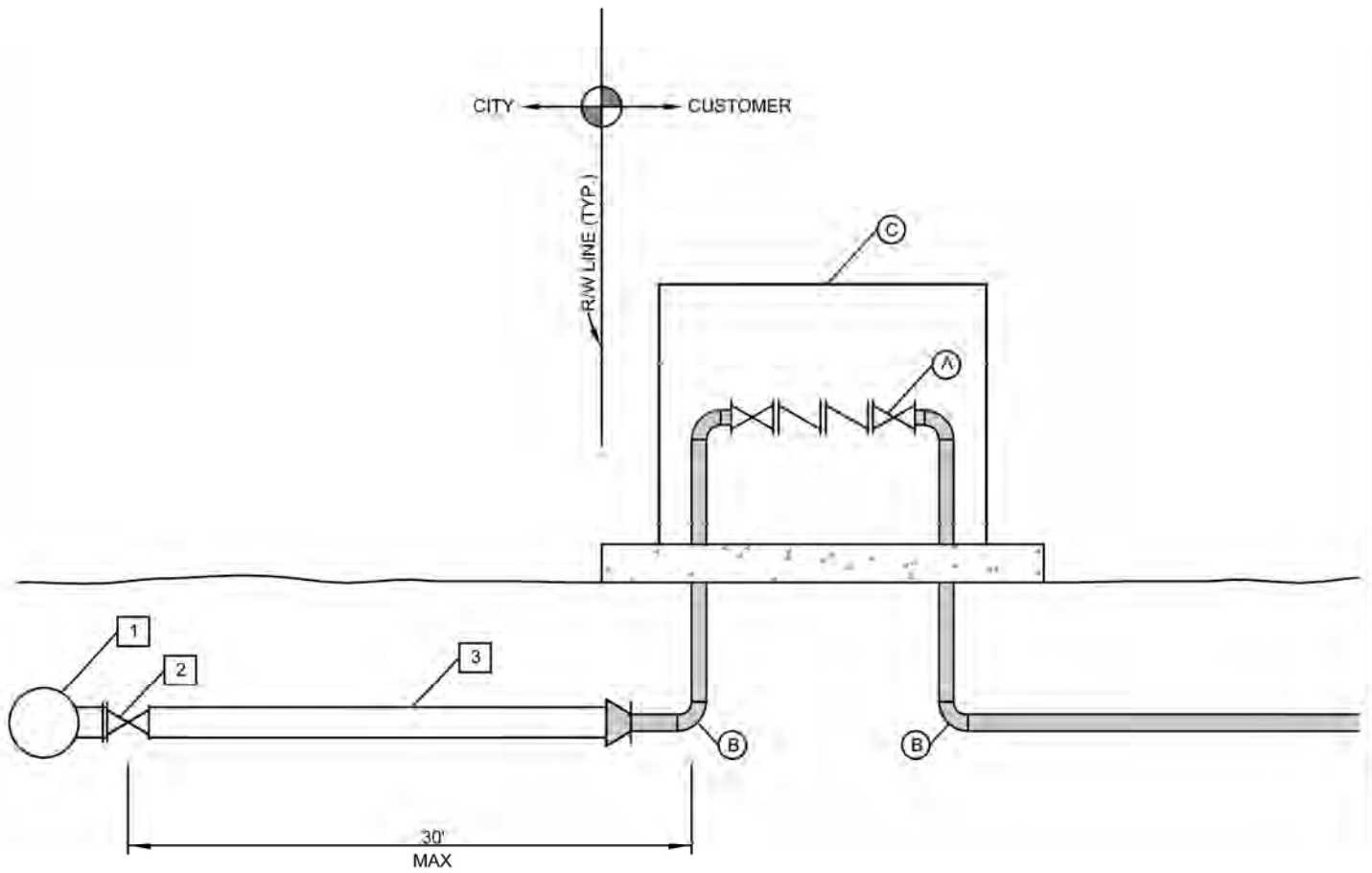


**1" DOUBLE SERVICE**  
**"Y" BRANCH CONNECTION**  
**FOR MULTIPLE SERVICES**

DRAWN BY: DATE: 04/2018  
 CHECKED: SCALE: N/A.

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ITEM

- 1 TEE OR TAPPING SLEEVE WITH FLG. OUTLET (4" MIN.)
- 2 GATE VALVE FLG. x MJ (4" MIN.)
- 3 RESTRAINED DIP-PW (4" MIN.)
- (A) REDUCED PRESSURE ZONE BACKFLOW PREVENTER W/DETECTOR ASSEMBLY
- (B) CUSTOMER PIPING (REDUCER/TAPPED CAP FOR PIPING LESS THAN 4")
- (C) HEATED ENCLOSURE



**CITY OF SANTA FE WATER DIVISION  
SANTA FE, NEW MEXICO**

**STANDARD DETAILS**



**TYPICAL FIRE SERVICE**

DRAWN BY:	DATE: 04/2018
CHECKED:	SCALE: N/A

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