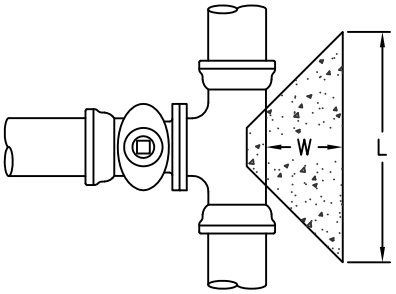
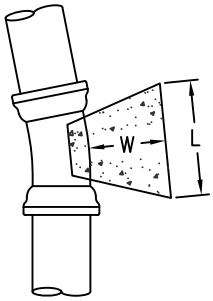
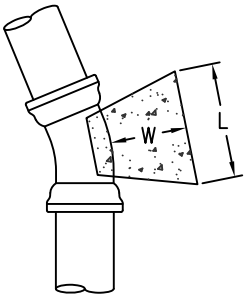
APPENDIX 10L
MISCELLANEOUS WATER DETAILS



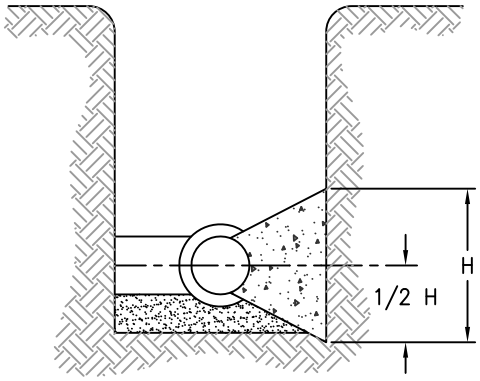
TEE / TAPPING SLEEVE PLAN VIEW



11.25° ELBOW PLAN VIEW

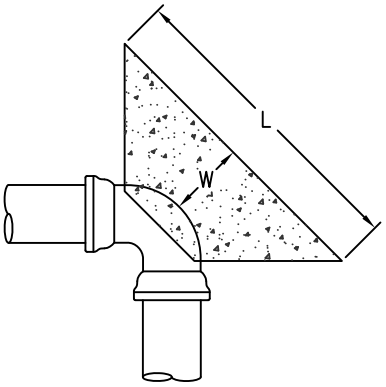


22.5° ELBOW PLAN VIEW



TYPICAL SECTION VIEW

45° ELBOW PLAN VIEW



90° ELBOW PLAN VIEW

THRUST BLOCK DIMENSIONS																
TEE, TAP, OR DEAD END					11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
BRANCH SIZE (INCHES)	L (FEET)	H (FEET)	W MIN. (FEET)	ELBOW SIZE (INCHES)	L (FEET)	H (FEET)	W MIN. (FEET)	L (FEET)	H (FEET)	W MIN. (FEET)	L (FEET)	H (FEET)	W MIN. (FEET)	L (FEET)	H (FEET)	W MIN. (FEET)
4	1.5	1	1	4	1	1	1	1	1	1	1.5	1	1	2	1	1
6	2	2	1	6	1	1	1	1.5	1	1	2	1.5	1	2.5	2	1
8	3	2	1	8	1.5	1	1	1.5	1.5	1	2.5	2	1	4	2	1
10	3.5	2.5	1	10	2	1	1	2	2	1	3	2.5	1	5	2.5	1
12	4.5	3	1	12	2	1.5	1	2.5	2	1	4	2.5	1	6	3	1

THRUST BLOCK DESIGN CRITERIA:

THRUST BLOCK SIZES HAVE BEEN CALCULATED USING THE METHOD AND EQUATIONS PUBLISHED IN *THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE, SIXTH EDITION 2006* BY THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) UTILIZING THE FOLLOWING DESIGN PARAMETERS: DESIGN PRESSURE = 150 PSI (SEE NOTE #4 BELOW), SOIL BEARING CAPACITY = 2,000 PSF (SEE NOTE #4 BELOW), SAFETY FACTOR = 1.5, AND NOMINAL PIPE DIAMETER

THRUST BLOCK NOTES:

1. CONCRETE FOR THRUST BLOCKS SHALL HAVE A MINIMUM 28–DAY COMPRESSIVE STRENGTH OF 3,000 PSI. REFERENCE SECTION 1.1.13 OF THE TRUCKEE MEADOWS WATER AUTHORITY ENGINEERING & CONSTRUCTION STANDARDS FOR ADDITIONAL REQUIREMENTS. BAG CONCRETE MIX IS NOT ACCEPTABLE.
2. ALL FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE WRAP PER AWWA C105. MASTIC (BRUSH–ON) SHALL BE APPLIED TO ALL BOLTS, ETC.
3. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. IN CASES WHERE THIS IS NOT PRACTICAL, BACKFILL AREA BEHIND WHERE THRUST BLOCK WILL BE POURED WITH TYPE 2, CLASS B AGGREGATE BASE (PER SECTION 200.01.03 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION – ORANGE BOOK) COMPACTED TO 95% MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY PROCEDURES SET FORTH IN ASTM D 1557, CUT–BACK COMPACTED AGGREGATE BASE TO EXPOSE A FIRM SURFACE, THEN POUR THRUST BLOCK.
4. FOR SOIL BEARING CAPACITY LESS THAN 2,000 PSF AND/OR DESIGN PRESSURE IN EXCESS OF 150 PSI, INCREASE THRUST BLOCK BEARING AREAS ACCORDINGLY. REVISED THRUST BLOCK SCHEDULE FOR SPECIFIC CONDITIONS SHALL BE SUBMITTED BY THE DESIGN ENGINEER.

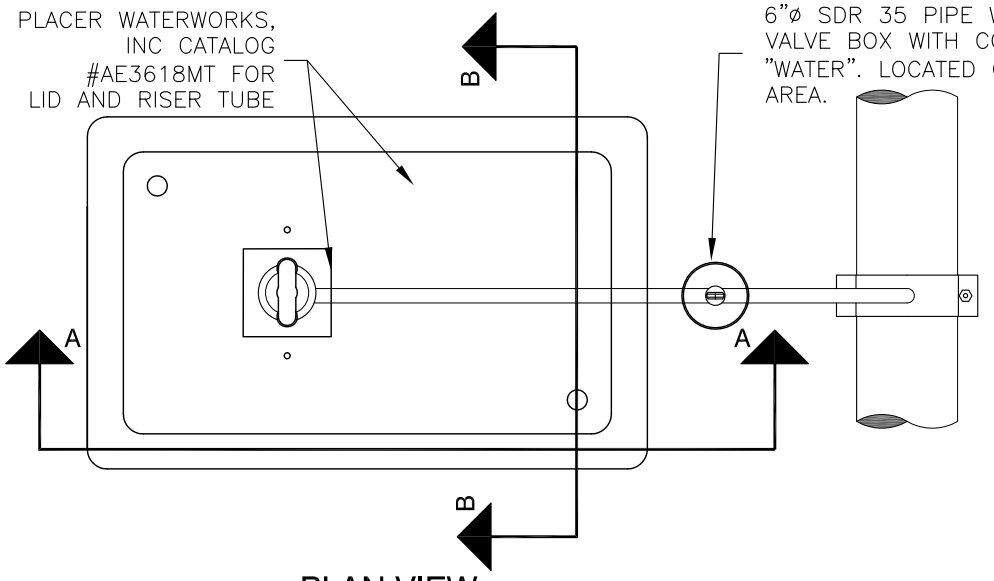
TRUCKEE MEADOWS WATER AUTHORITY

DATE 7/2011

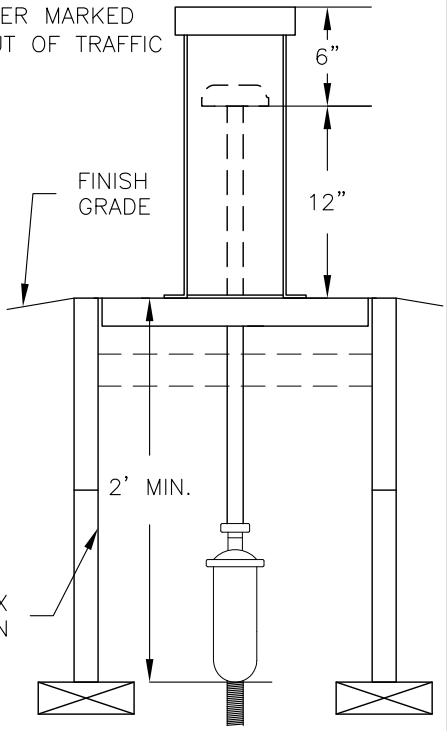
REV

APPENDIX 10L
THRUST BLOCKS
TEES / TAPPING SLEEVES / DEAD ENDS
11.25, 22.5, 45 & 90 DEGREE ELBOWS
4-INCH THROUGH 12-INCH

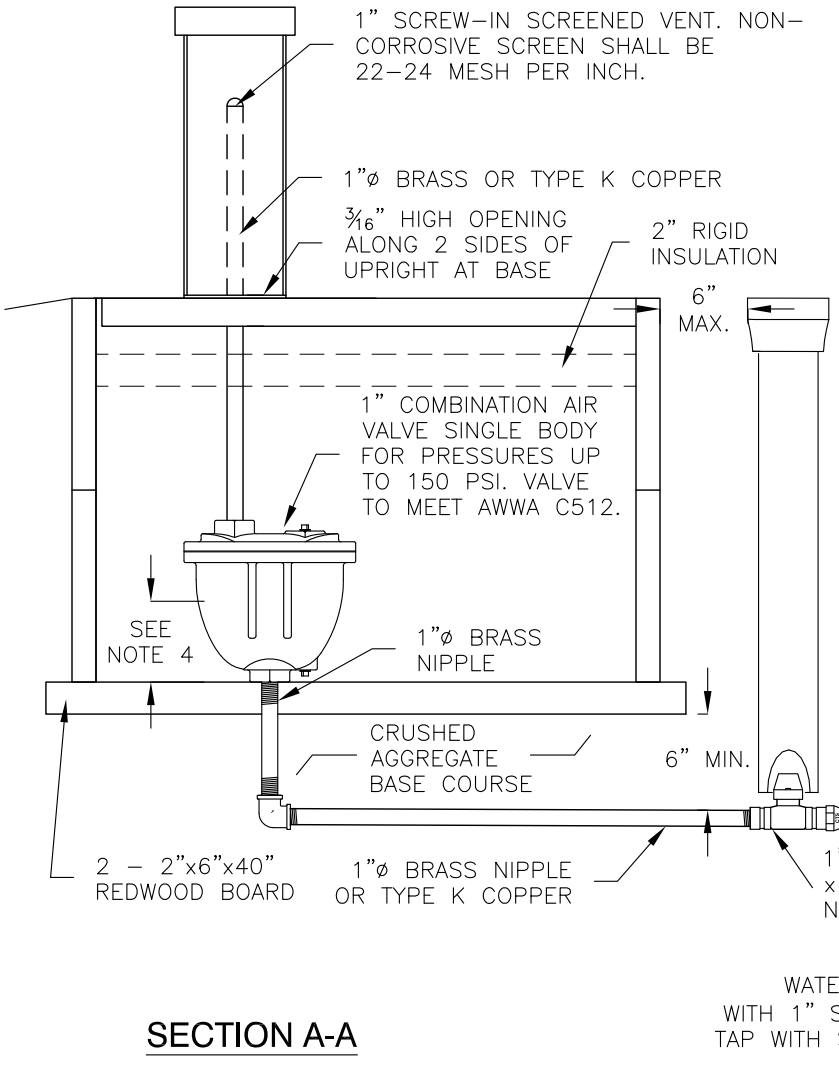
DRAWING NUMBER
10L-2



PLAN VIEW



SECTION B-B

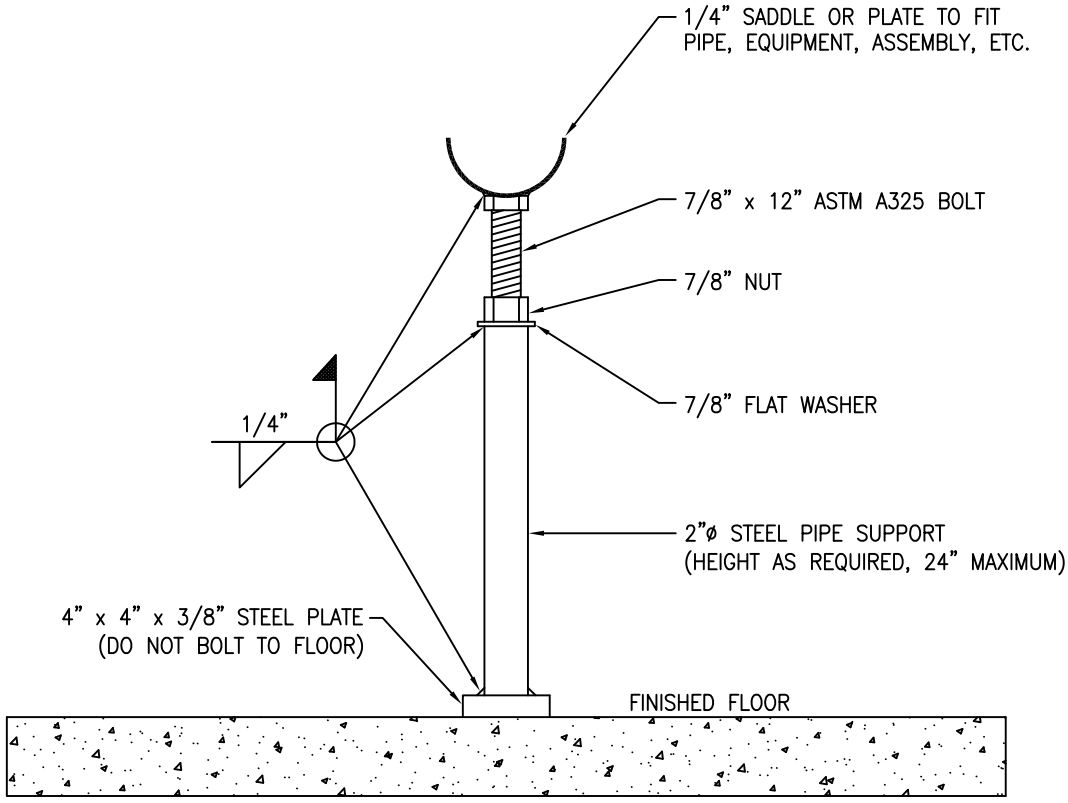


SECTION A-A

NOTES

1. REFER TO APPENDIX 10H FOR SERVICE TAP INSTALLATION.
2. REFER TO 10L-6 FOR TRENCH BEDDING AROUND HDPE PORTION OF THIS DETAIL. BEDDING SAND TO BE USED UNLESS OTHERWISE CALLED FOR.
3. TOP OF ENCLOSURE AND VALVE CAP SHALL BE SET 0.2 FEET ABOVE HIGHEST FINISHED GRADE SURROUNDING ENCLOSURE WITH LANDSCAPE AREAS.
4. PLACE TYPE 2 CLASS B CRUSHED AGGREGATE BASE WITHIN BOX TO EXTEND HALF WAY UP BODY OF THE ARV AND EXTEND UNDER BOX TO A DEPTH OF 6" BELOW THE BRASS NIPPLE/COPPER TUBE. BASE TO EXTEND FROM THE ARV TO THE CURB VALVE AND BEYOND THE EXTENTS OF THE ENCLOSURE FOR 6-INCHES.

TRUCKEE MEADOWS WATER AUTHORITY	DATE 7/2005 REV 9/2016	APPENDIX 10L COMBINATION AIR RELEASE VALVE	DRAWING NUMBER 10L-4

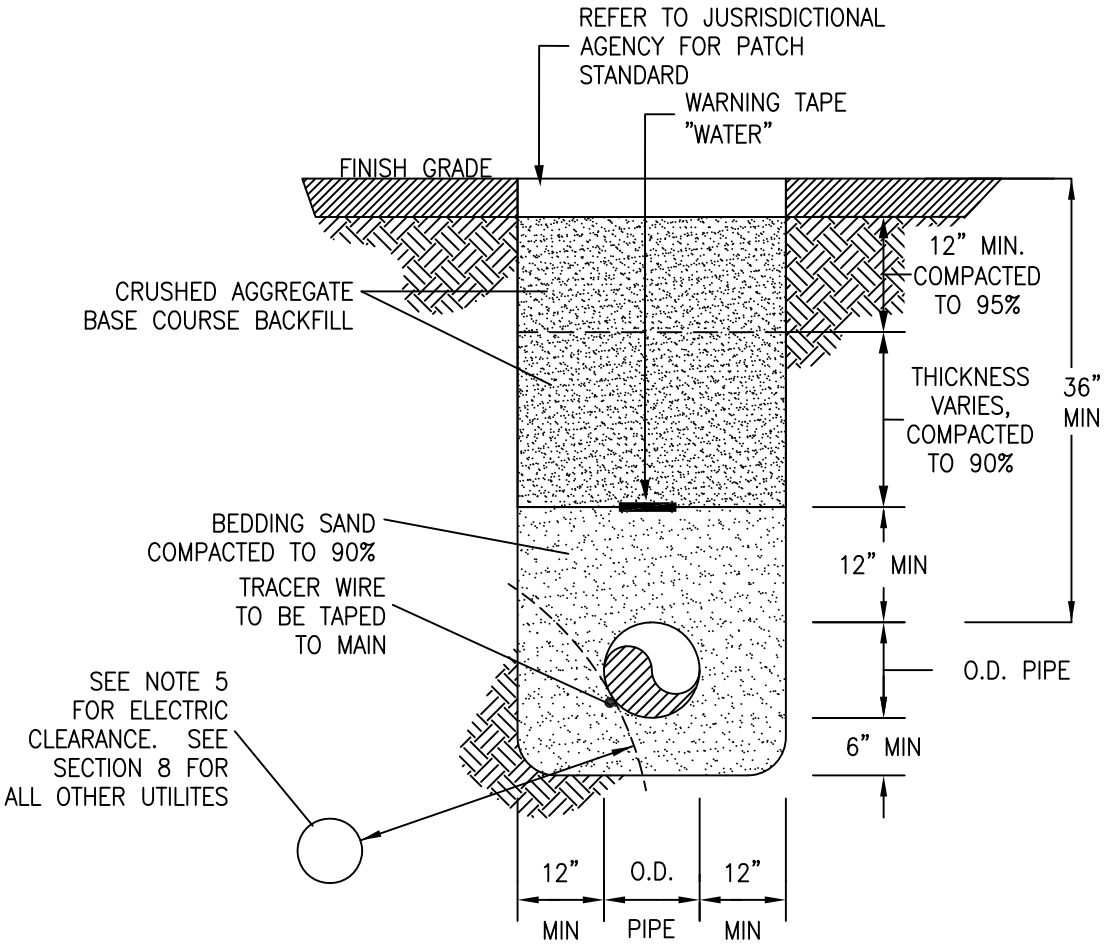


METAL COATING FINISH NOTE:

1. ALL NON-THREADED COMPONENTS, WHICH HAVE NOT BEEN COATED WITH FUSION BONDED EPOXY, SHALL BE COATED USING TWO-COAT SELF-PRIMING EPOXY SYSTEM CARBOLINE 801. AN ACCEPTABLE ALTERNATIVE COATING SYSTEM IS SHERWIN WILLIAMS EPOXY MASTIC B58 SERIES.

2. ALL METAL SURFACES TO BE COATED SHALL RECEIVE SURFACE PREPARATION EQUIVALENT TO POWER TOOL CLEANING (SSPC-SP3) BY POWER WIRE BRUSHING, POWER IMPACT TOOLS, OR POWER SANDERS, OR EQUIVALENT TO BRUSH-OFF BLAST CLEANING (SSPC-SP7) TO REMOVE RUST, MILL SCALE, AND OTHER DETRIMENTAL FOREIGN MATERIALS PRESENT UNTIL AT LEAST TWO-THIRDS OF EACH ELEMENT OF SURFACE AREA IS FREE OF ALL VISIBLE RESIDUE. APPLICATION OF THE EPOXY COATING SYSTEM SHALL FOLLOW IMMEDIATELY AFTER SURFACE PREPARATION. ANY CLEANED AREAS NOT COATED BEFORE CORROSION FORMS SHALL BE RE-CLEANED PRIOR TO THE APPLICATION OF THE EPOXY COATING.

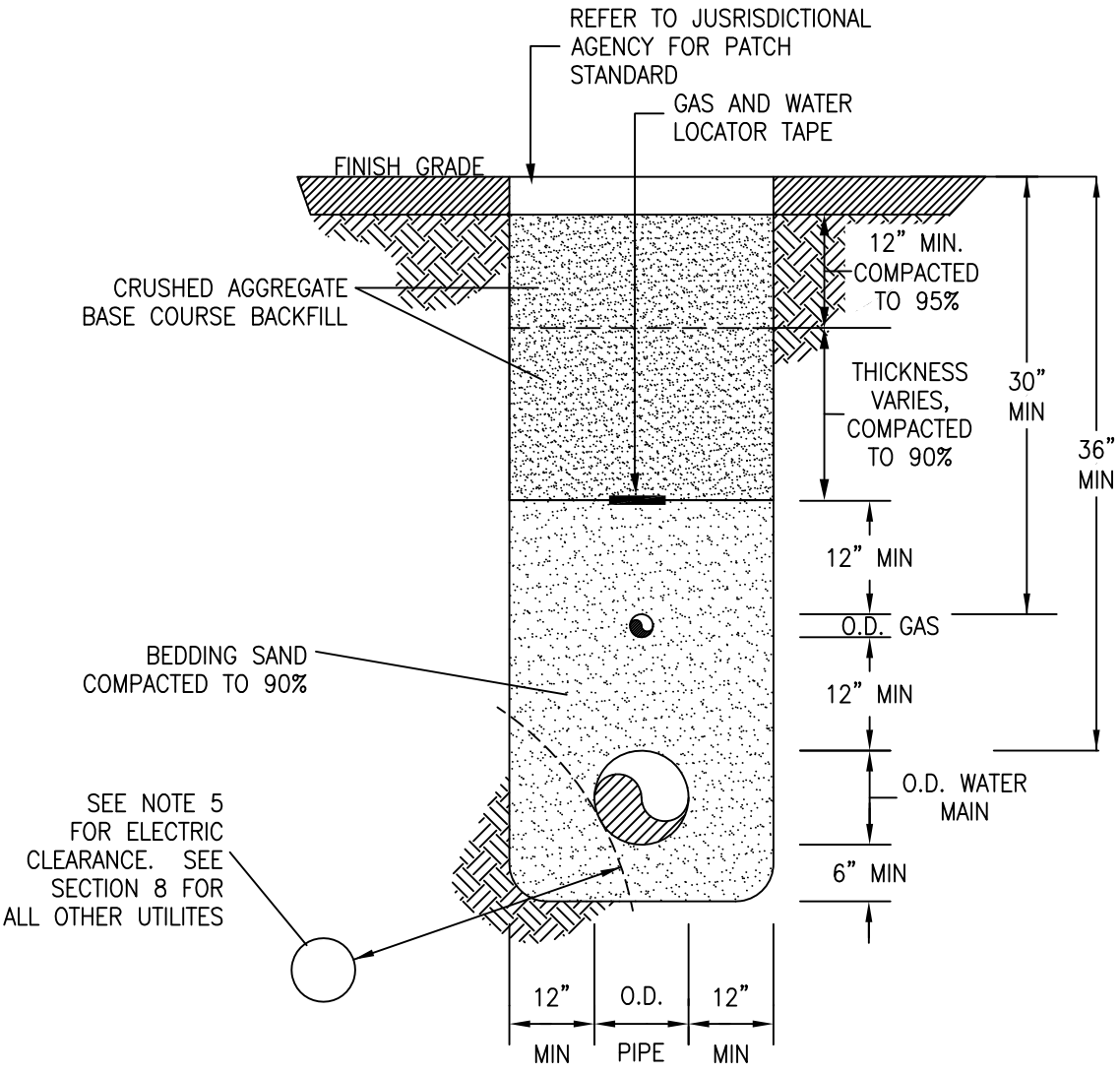
TRUCKEE MEADOWS WATER AUTHORITY	DATE 7/2011 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS ADJUSTABLE PIPE SUPPORT	DRAWING NUMBER 10L-5



NOTES:

1. ALL TRENCHES MUST CONFORM TO APPLICABLE TMWA, CITY, STATE, COUNTY, AND OSHA SPECIFICATIONS AND REQUIREMENTS. IN THE CASE OF CONFLICT, THE MORE RIGID SPECIFICATION OR STANDARD SHALL APPLY.
2. BEDDING SAND SHALL BE COMPACTED TO 90% MAXIMUM DENSITY PER SECTION 5.05.03 AND SHALL BE A MINIMUM OF 12" ABOVE AND 6" BELOW THE MAIN. PER SECTION 5 OF TMWA STANDARDS.
3. CRUSHED AGGREGATE BASE COURSE BACKFILL SHALL BE PLACED IN 12" MAXIMUM LOOSE LIFTS. THE TOP 12" SHALL BE COMPACTED TO 95% MAXIMUM DENSITY. THE AREA ABOVE THE BEDDING SAND & BELOW 12" FROM FINISH GRADE SHALL BE COMPACTED TO 90% MAXIMUM DENSITY. PER SECTION 5 OF TMWA STANDARDS.
4. NON-METALLIC BLUE WARNING TAPE SHALL BE PLACED IN ALL TRENCHES AT LEAST 12" ABOVE THE WATER MAIN.
5. ELECTRIC UTILITIES MUST BE LOCATED BELOW WATER & MAINTAIN 2' MINIMUM RADIAL CLEARANCE FROM TMWA WATER FACILITIES. IF 2' RADIAL CLEARANCE CAN NOT BE MET ELECTRIC CONDUIT MUST BE CONCRETE ENCASED AT LEAST 18" EACH SIDE OF WATER CROSSING. FIBER OPTIC AND/OR COMMUNICATION CONDUITS SHALL NOT BE PLACE IN THE SAME TRENCH AS WATER.
6. ALL CHANGES MUST BE APPROVED BY THE TMWA INSPECTOR AND/OR THE TMWA ENGINEER.
7. SEPARATION FOR PIPES IN A JOINT TRENCH SHALL BE A MINIMUM OF 12".
8. TRACER WIRE SHALL BE #14 COPPER CLAD STAINLESS STEEL CORE WITH 30 MILS BLUE HDPE INSULATION. ALL WIRE SPLICES SHALL BE MADE USING A SPLIT BOLT CONNECTOR WRAPPED WITH AQUASEAL AND ELECTRIC TAPE. THE CONTRACTOR SHALL INSTALL A 3 POUND ANODE AT EVERY TEST STATION. TEST STATIONS SHALL BE LOCATED ALONG THE MAIN NO MORE THAN 500 FEET APART. REFER TO 10L-9.

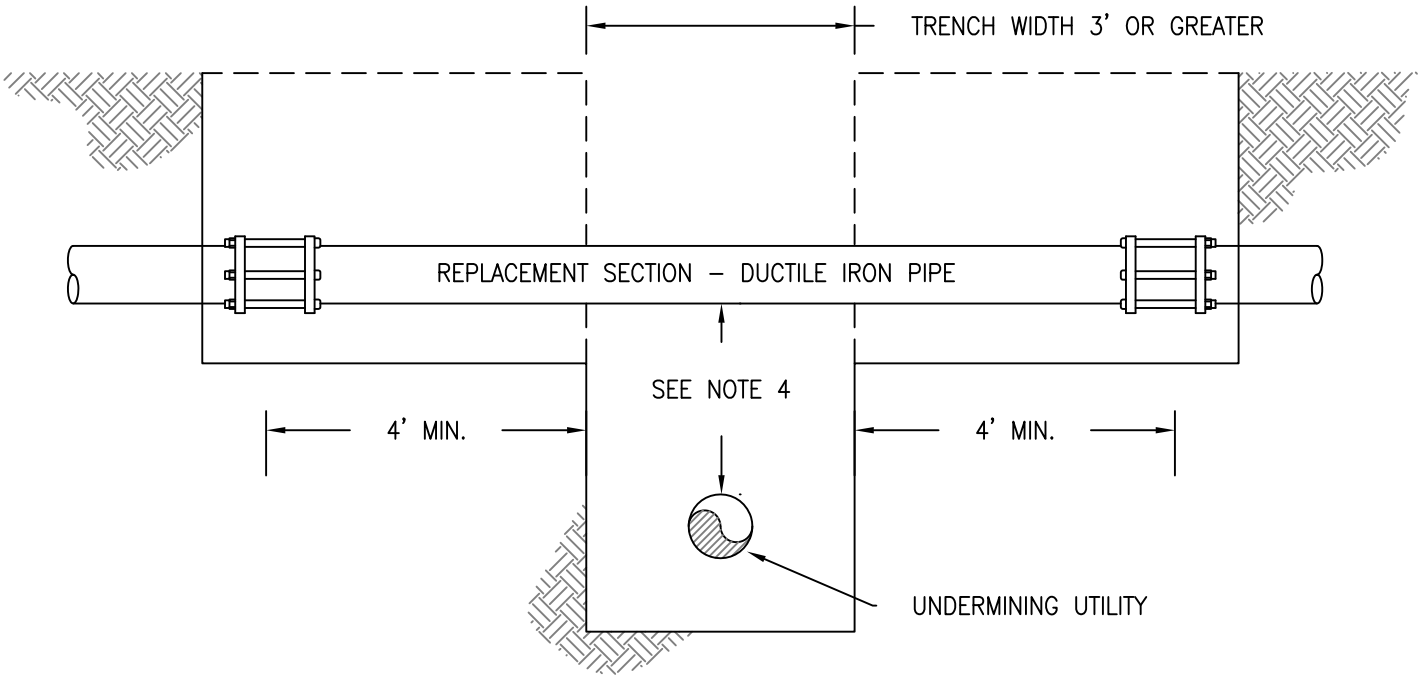
TRUCKEE MEADOWS WATER AUTHORITY	DATE 7/2011 REV 02/2014	APPENDIX 10L MISCELLANEOUS WATER DETAILS TRENCH DETAIL WATER ONLY	DRAWING NUMBER 10L-6



NOTES:

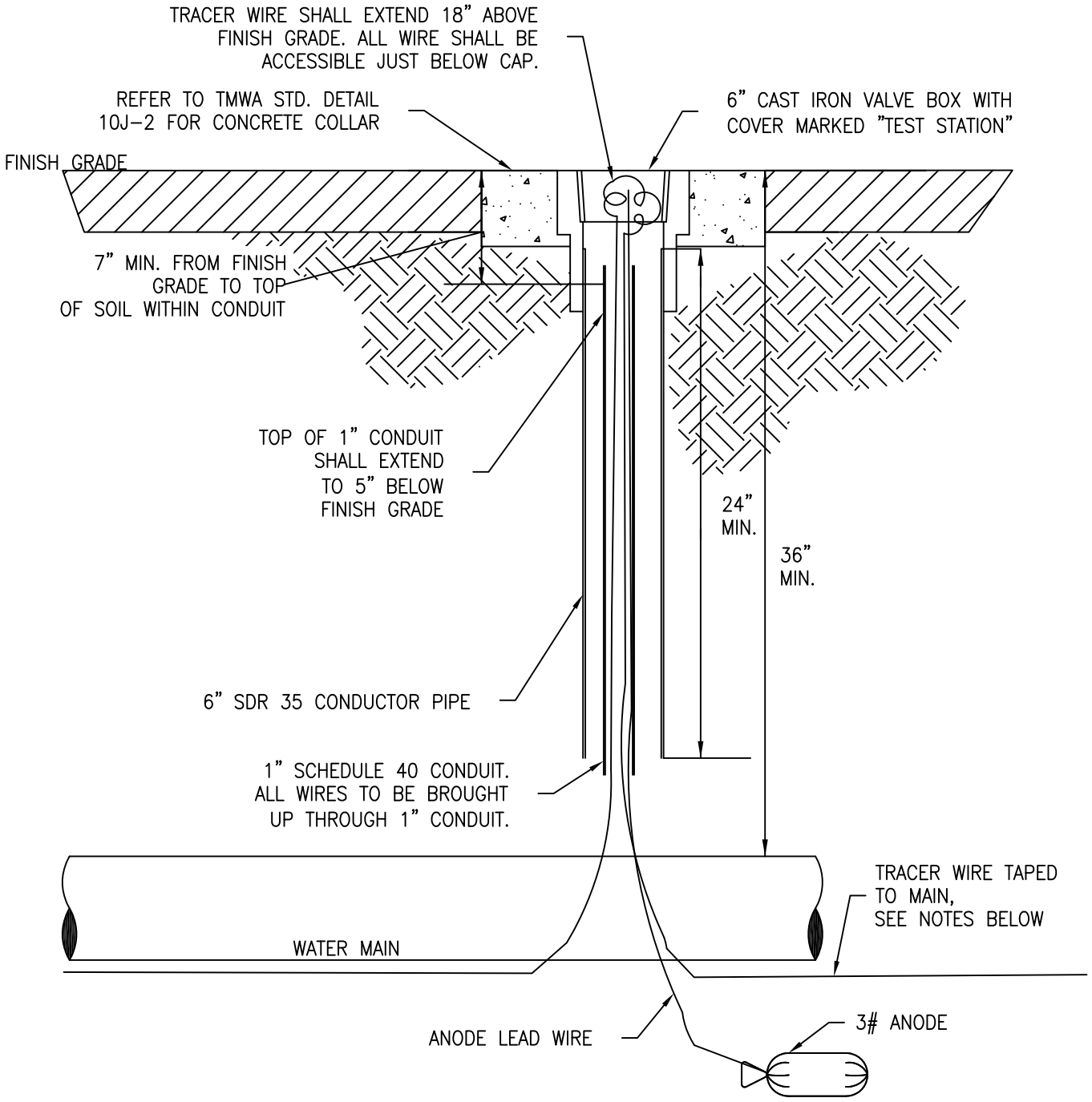
1. ALL TRENCHES MUST CONFORM TO APPLICABLE TMWA, CITY, STATE, COUNTY, AND OSHA SPECIFICATIONS AND REQUIREMENTS. IN THE CASE OF CONFLICT, THE MORE RIGID SPECIFICATION OR STANDARD SHALL APPLY.
2. BEDDING SAND SHALL BE COMPACTED TO 90% MAXIMUM DENSITY PER SECTION 5.05.03 AND SHALL BE A MINIMUM OF 12" ABOVE AND 6" BELOW THE MAIN. PER SECTION 5 OF TMWA STANDARDS.
3. CRUSHED AGGREGATE BASE COURSE BACKFILL SHALL BE PLACED IN 12" MAXIMUM LOOSE LIFTS. THE TOP 12" SHALL BE COMPACTED TO 95% MAXIMUM DENSITY. THE AREA ABOVE THE BEDDING SAND & BELOW 12" FROM FINISH GRADE SHALL BE COMPACTED TO 90% MAXIMUM DENSITY. PER SECTION 5 OF TMWA STANDARDS.
4. METALLIC WATER AND GAS LOCATOR TAPE SHALL BE PLACED IN ALL TRENCHES AT LEAST 12" ABOVE THE GAS.
5. ELECTRIC UTILITIES MUST BE LOCATED BELOW WATER & MAINTAIN 2' MINIMUM RADIAL CLEARANCE FROM TMWA WATER FACILITIES. IF 2' RADIAL CLEARANCE CAN NOT BE MET ELECTRIC CONDUIT MUST BE CONCRETE ENCASED AT LEAST 18" EACH SIDE OF WATER CROSSING. FIBER OPTIC AND/OR COMMUNICATION CONDUITS SHALL NOT BE PLACED IN THE SAME TRENCH AS WATER.
6. ALL CHANGES MUST BE APPROVED BY THE TMWA INSPECTOR AND/OR THE TMWA ENGINEER.
7. SEPARATION FOR PIPES IN A JOINT TRENCH SHALL BE A MINIMUM OF 12".

TRUCKEE MEADOWS WATER AUTHORITY	DATE 7/2011 REV 02/2014	APPENDIX 10L MISCELLANEOUS WATER DETAILS TRENCH DETAIL GAS AND WATER	DRAWING NUMBER 10L-7



1. COUPLINGS SHALL BE ROMAC STYLE 501, FUSION EPOXY COATING, CENTER RING LENGTH MINIMUM 7".
2. BACKFILL AND COMPACTION REQUIREMENTS SHALL COMPLY WITH SECTION 5, TRENCH BEDDING, BACKFILL & EXCAVATION.
3. REPLACEMENT SECTION OF PIPE SHALL BE DUCTILE IRON.
4. REFER TO TMWA CONSTRUCTION AND DESIGN STANDARDS FOR MINIMUM CLEARANCE REQUIREMENTS.

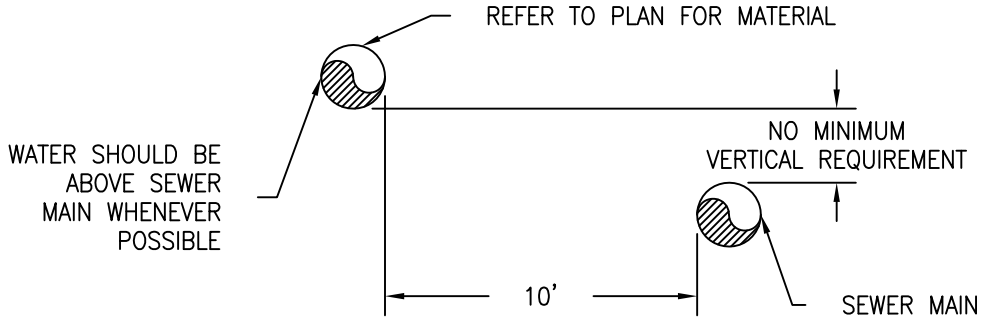
TRUCKEE MEADOWS WATER AUTHORITY	DATE 7/2011 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS CROSSING UNDER EXISTING TRANSITE OR SMALL DIAMETER CAST IRON MAINS	DRAWING NUMBER 10L-8



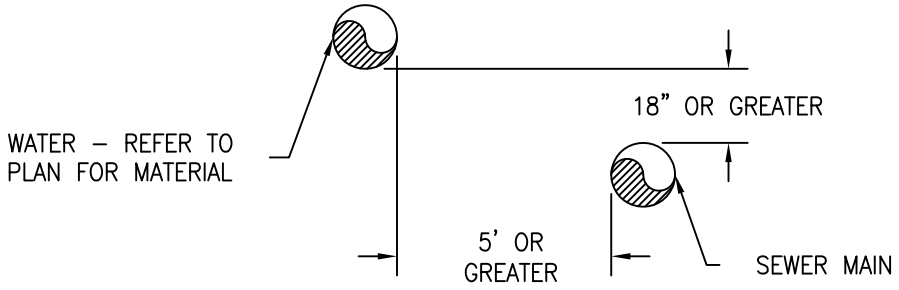
NOTES:

1. TRACER WIRE SHALL BE #14 COPPER CLAD STAINLESS STEEL CORE WITH 30 MILS BLUE HDPE INSULATION.
2. ALL WIRE SPLICES SHALL BE MADE USING A SPLIT BOLT CONNECTOR WRAPPED WITH AQUASEAL AND ELECTRIC TAPE.
3. CONTRACTOR SHALL INSTALL A 3 POUND ANODE AT EVERY TEST STATION.
4. TEST STATIONS SHALL BE LOCATED ALONG THE MAIN NO MORE THAN 500 FEET APART UNLESS OTHERWISE SPECIFIED ON THE PLANS.
5. PRIOR TO ACCEPTANCE OF WATER MAIN, THE CONTRACTOR SHALL PERFORM A CONTINUITY TEST ON THE INSTALLED TRACER WIRE SYSTEM.
6. WHERE DIRECTED, TRACER WIRE SHALL BE PLACED WITH ALL SERVICE LINES AND SHALL BE EXTENDED INTO THE METER BOX. TRACER WIRE SHALL BE ACCESSIBLE FROM METER BOX AND SHALL EXTEND 12 INCHES ABOVE GROUND. CONNECT TO MAIN TRACER WIRE AS SPECIFIED IN NOTE 2.

TRUCKEE MEADOWS WATER AUTHORITY	DATE 02/2014 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS TEST STATION	DRAWING NUMBER 10L-9

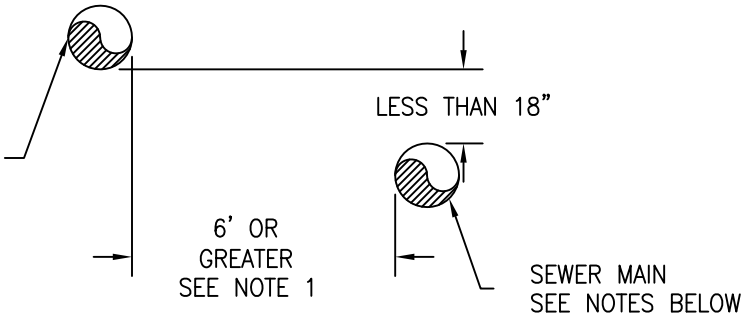


OPTION 1



OPTION 2

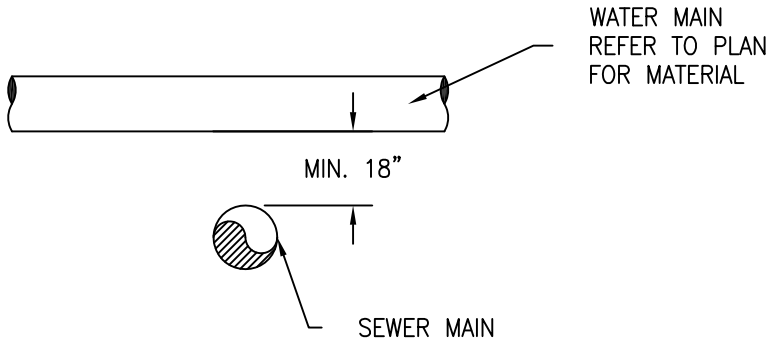
WATER – DUCTILE IRON, WITH POLYETHYLENE WRAP PER AWWA C105, MECHANICALLY RESTRAIN ALL JOINTS. FOR WATER SERVICE LATERALS 2" AND SMALLER USE CTS HDPE TUBING.



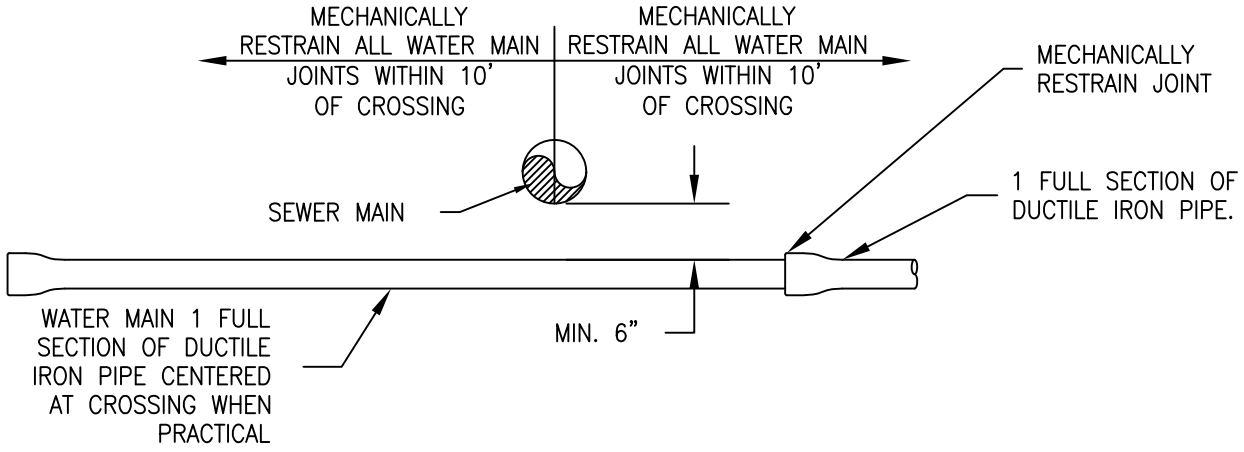
OPTION 3

NOTES:
1. IF SEPARATION IS 10 FEET OR MORE USE OPTION 1.
2. NON–PRESSURIZED SEWER MAINS SHALL BE SDR 35 PVC. IF SEWER MAINS ARE NON SDR 35 PVC, SEWER MAINS SHALL BE ENCASED IN 4" OF EXCAVATABLE SLURRY, USE EXTERNAL JOINT SEALANT OR OTHER MITIGATION TO ENSURE JOINTS ARE WATERTIGHT. WHERE THE SEWER MAINS ARE PRESSURIZED, THE SEWER MAINS SHALL HAVE MECHANICALLY RESTRAINED JOINTS OR SHALL USE WELDED OR FUSED PIPE.
3. FOR STORM SEWER MAINS WITH A DIAMETER OF 24" OR LARGER, THE SEWER MAINS SHALL BE INSTALLED WITH WATER TIGHT JOINTS THAT USE JOINT SEALANTS OR JOINT GASKETS.

TRUCKEE MEADOWS WATER AUTHORITY	DATE 02/2014 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER MAIN OR WATER SERVICE LATERAL PARALLEL TO SEWER MAIN	DRAWING NUMBER 10L-10



OPTION 1



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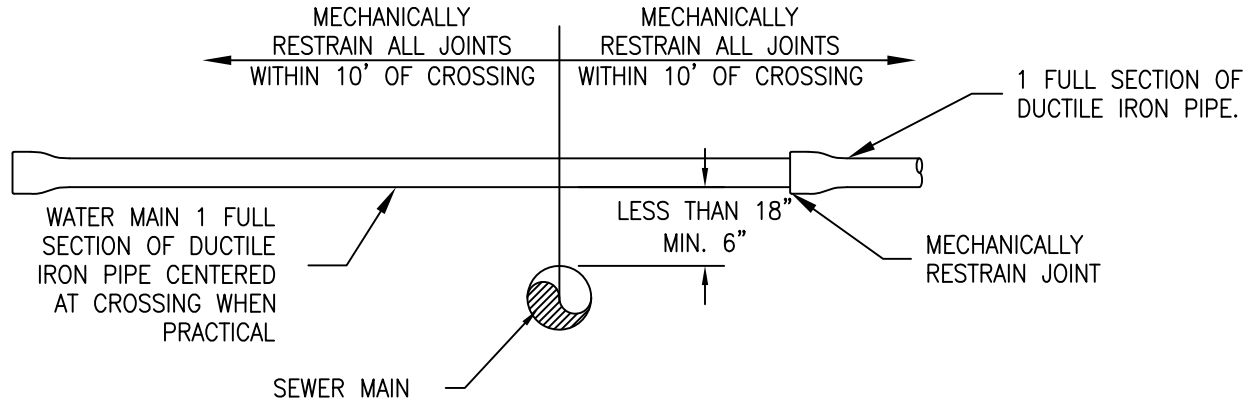


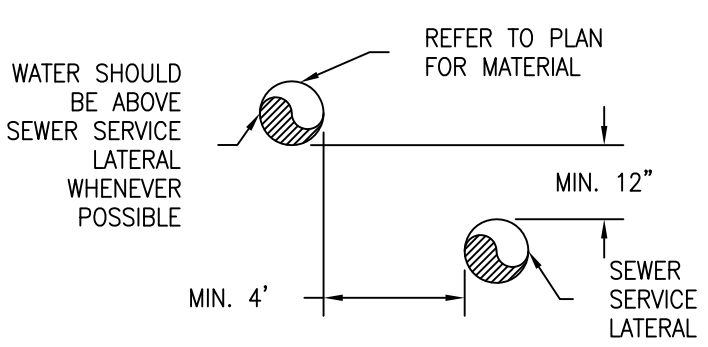
OPTION 2

NOTES:

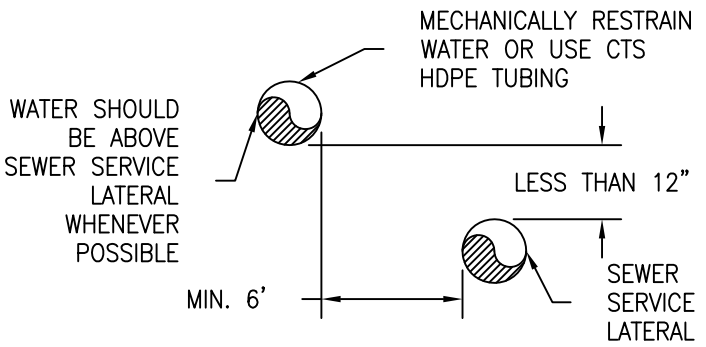
1. OPTION 1 SHOULD BE UTILIZED WHEN POSSIBLE.
2. NON–PRESSURIZED SEWER MAINS SHALL BE SDR 35 PVC. IF SEWER MAINS ARE NON SDR 35 PVC, SEWER MAINS SHALL BE ENCASED IN 4" OF EXCAVATABLE SLURRY, USE EXTERNAL JOINT SEALANT OR OTHER MITIGATION TO ENSURE JOINTS ARE WATERTIGHT. WHERE THE SEWER MAINS ARE PRESSURIZED THE SEWER MAINS SHALL HAVE MECHANICALLY RESTRAINED JOINTS OR SHALL USE WELDED OR FUSED PIPE.
3. ALL MECHANICALLY RESTRAINED WATER PIPES SHALL BE DUCTILE IRON WITH POLYETHYLENE WRAP PER AWWA C105.

TRUCKEE MEADOWS WATER AUTHORITY	DATE 02/2014 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER MAIN CROSSING SEWER MAIN	DRAWING NUMBER 10L-11

WATER MAIN OR WATER SERVICE LATERAL PARALLEL TO SEWER SERVICE LATERAL

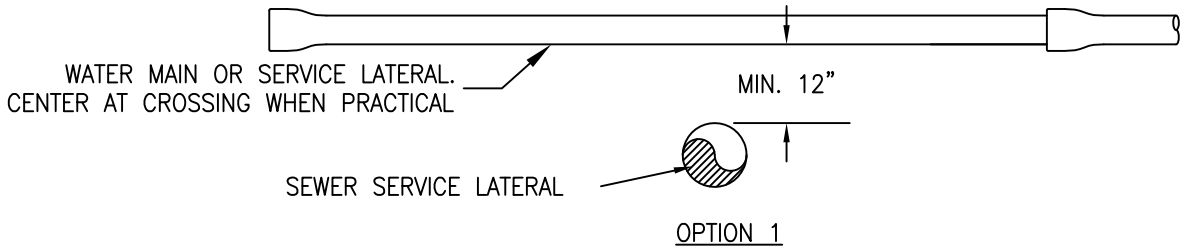


OPTION 1

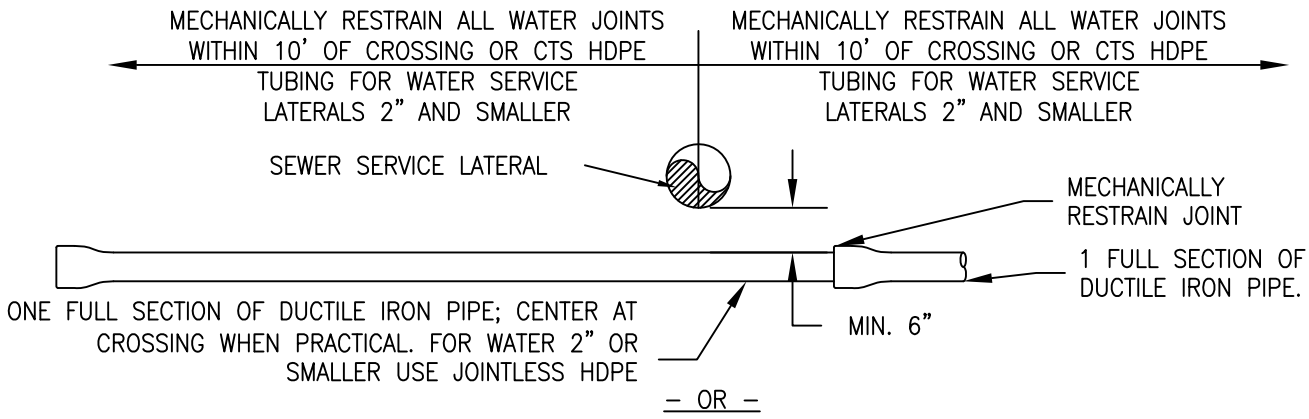


OPTION 2

WATER MAIN OR WATER SERVICE LATERAL CROSSING SEWER SERVICE LATERALS



OPTION 1



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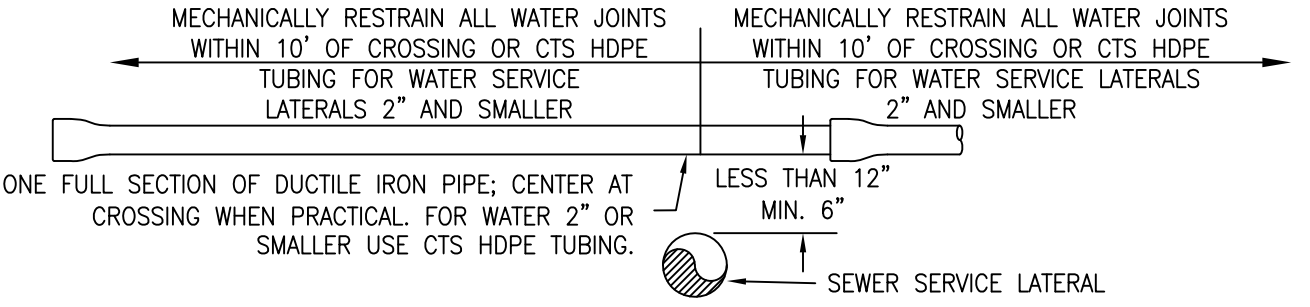
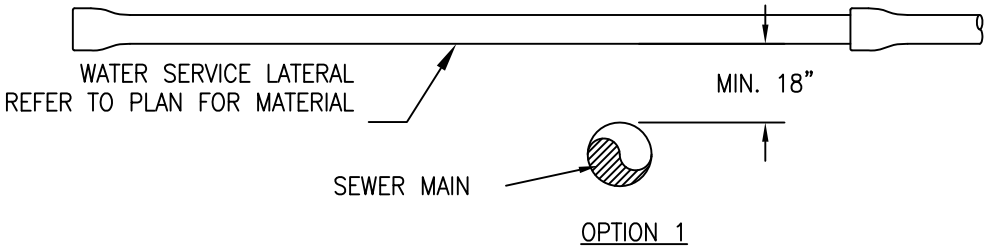


OPTION 2

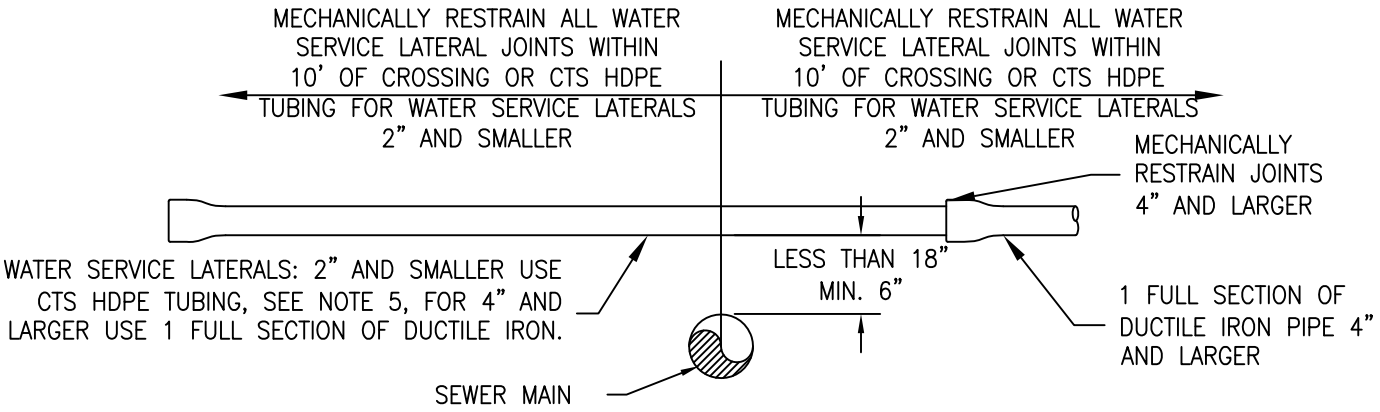
NOTES:

1. OPTION 1 SHOULD BE UTILIZED WHEN POSSIBLE.
2. NON–PRESSURIZED SEWER SERVICE LATERALS SHALL BE SDR 35 PVC. IF SEWER SERVICE LATERALS ARE NON SDR 35 PVC, SEWER SERVICE LATERALS SHALL BE ENCASED IN 4" OF EXCAVATABLE SLURRY, USE EXTERNAL JOINT SEALANT OR OTHER MITIGATION TO ENSURE JOINTS ARE WATERTIGHT. WHERE THE SEWER SERVICE LATERALS ARE PRESSURIZED, THE SEWER SERVICE LATERALS SHALL HAVE MECHANICALLY RESTRAINED JOINTS OR SHALL USE WELDED OR FUSED PIPE.
3. ALL MECHANICALLY RESTRAINED WATER PIPES SHALL BE DUCTILE IRON WITH POLYETHYLENE WRAP PER AWWA C105.
4. FOR WATER SERVICE LATERALS 2" AND SMALLER THERE SHALL BE NO JOINTS OR FITTINGS BETWEEN THE WATER MAIN AND THE WATER METER.

TRUCKEE MEADOWS WATER AUTHORITY	DATE 02/2014 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER MAIN OR WATER SERVICE LATERAL PARALLEL TO OR CROSSING SEWER SERVICE LATERAL	DRAWING NUMBER 10L-12



OPTION 1



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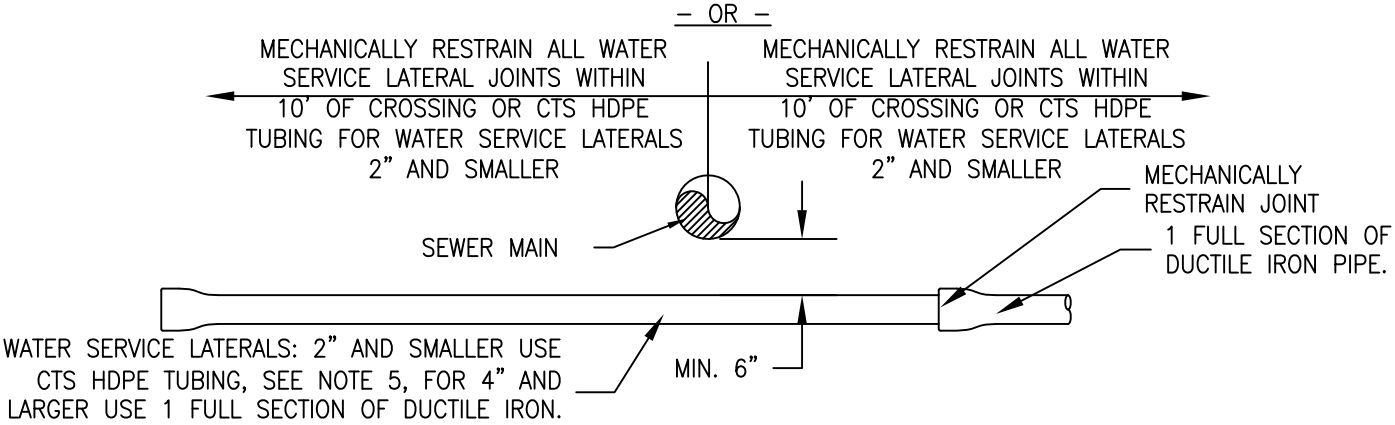

OPTION 2

NOTES:

1. OPTION 1 SHOULD BE UTILIZED WHEN POSSIBLE.
2. NON–PRESSURIZED SEWER MAINS SHALL BE SDR 35 PVC. IF SEWER MAINS ARE NON SDR 35 PVC, SEWER MAINS SHALL BE ENCASED IN 4" OF EXCAVATABLE SLURRY, USE EXTERNAL JOINT SEALANT OR OTHER MITIGATION TO ENSURE JOINTS ARE WATERTIGHT. WHERE THE SEWER MAINS ARE PRESSURIZED, THE SEWER MAINS SHALL HAVE MECHANICALLY RESTRAINED JOINTS OR SHALL USE WELDED OR FUSED PIPE.
3. ALL MECHANICALLY RESTRAINED WATER PIPES SHALL BE DUCTILE IRON WITH POLYETHYLENE WRAP PER AWWA C105.
4. FOR WATER SERIVICE LATERALS 2" AND SMALLER THERE SHALL BE NO JOINTS OR FITTINGS BETWEEN THE WATER MAIN AND THE WATER METER.

TRUCKEE MEADOWS WATER AUTHORITY	DATE 02/2014 REV	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER SERVICE LATERAL CROSSING SEWER MAIN	DRAWING NUMBER 10L-13