

CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS/STORM DRAIN LINES

A. PUBLIC HEALTH CONSIDERATIONS

SANITARY SEWERS/STORM DRAIN LINES MAY LEAK AND SATURATE THE SURROUNDING SOIL WITH SEWAGE/UNTREATED WATER. THIS IS CAUSED PRIMARILY BY STRUCTURAL FAILURE OF THE SEWER/STORM LINE, IMPROPERLY CONSTRUCTED JOINTS, AND SUBSIDENCE OR UPHEAVAL OF THE SOIL ENCASING THE CONDUIT. A SERIOUS PUBLIC HEALTH HAZARD EXISTS WHEN THE WATER MAINS ARE DEPRESSURIZED AND NO PRESSURE OR NEGATIVE PRESSURES OCCUR. THE HAZARD IS FURTHER COMPOUNDED WHEN, IN THE COURSE OF INSTALLING OR REPAIRING A WATER MAIN, EXISTING SEWER/EXISTING STORM DRAIN LINES ARE BROKEN. SEWAGE/UNTREATED WATER SPILLS INTO THE EXCAVATION AND, HENCE, ENTERS INTO THE WATER MAIN ITSELF. ADDITIONALLY, IF A WATER MAIN FAILS IN CLOSE PROXIMITY TO A SEWER/STORM DRAIN LINE, THE RESULTANT FAILURE MAY DISTURB THE BEDDING OF THE SEWER/STORM DRAIN LINE AND CAUSE IT TO FAIL. IN THE EVENT OF AN EARTHQUAKE OR MAN-MADE DISASTER, SIMULTANEOUS FAILURE OF BOTH CONDUITS MAY OCCUR.

THE WATER SUPPLIER IS RESPONSIBLE FOR THE QUALITY OF THE WATER DELIVERED TO CONSUMERS AND MUST TAKE ALL PRACTICAL STEPS TO MINIMIZE THE HAZARD OF GROSS CONTAMINATION TO THE PUBLIC WATER SUPPLY. PROTECTION OF THE QUALITY OF THE WATER IN THE PUBLIC WATER SYSTEM IS BEST ACHIEVED BY THE BARRIER PROVIDED BY THE PHYSICAL SEPARATION OF THE WATER MAINS AND SEWER/STORM DRAIN LINES.

THIS DOCUMENT SETS FORTH THE CONSTRUCTION CRITERIA FOR THE INSTALLATION OF WATER MAINS AND SEWER/STORM DRAIN LINES TO PREVENT CONTAMINATION OF THE PUBLIC WATER SUPPLIES FROM NEARBY SANITARY SEWERS/STORM DRAIN LINES.

B. BASIC SEPARATION STANDARDS

THE "CALIFORNIA WATERWORKS STANDARDS" SETS FORTH THE MINIMUM SEPARATION REQUIREMENTS FOR WATER MAINS AND SEWER/STORM DRAIN LINES. THESE STANDARDS, CONTAINED IN SECTION 64572, TITLE 22, DIVISION 4, CHAPTER 16, CALIFORNIA ADMINISTRATIVE CODE, SPECIFY:

1. NEW WATER MAINS AND NEW SUPPLY LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH AS, AND SHALL BE AT LEAST 10 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE (AS MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE), ANY PIPELINE CONVEYING:
 - A) UNTREATED SEWAGE;
 - B) PRIMARY OR SECONDARY TREATED SEWAGE.
2. NEW WATER MAINS AND NEW SUPPLY SHALL BE AT LEAST 4 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE (AS MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE), ANY PIPELINE CONVEYING:
 - A) STORM DRAINAGE.
3. IF CROSSING A PIPELINE CONVEYING A FLUID LISTED IN SUBSECTION (1) OR (2) ABOVE, A NEW WATER MAIN SHALL BE CONSTRUCTED NO LESS THAN 45-DEGREES TO AND AT LEAST ONE FOOT ABOVE THAT PIPELINE. NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN 8 HORIZONTAL FEET OF THE FLUID PIPELINE.
4. THE VERTICAL SEPARATION SPECIFIED IN SUBSECTION (1) OR (2) ABOVE, IS REQUIRED ONLY WHEN THE HORIZONTAL DISTANCE BETWEEN A WATER MAIN AND SEWER/STORM DRAIN LINE IS LESS THAN TEN FEET.

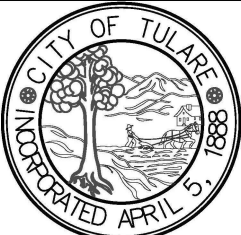
WHEN WATER MAINS AND SANITARY SEWERS/STORM DRAIN LINES ARE NOT ADEQUATELY SEPARATED, THE POTENTIAL FOR CONTAMINATION OF THE WATER SUPPLY INCREASES. THEREFORE, WHEN ADEQUATE PHYSICAL SEPARATION CANNOT BE ATTAINED, AN INCREASE IN THE FACTOR OF SAFETY SHALL BE PROVIDED BY INCREASING THE STRUCTURAL INTEGRITY OF THE PIPE MATERIALS, JOINTS AND BACKFILL MATERIALS, OR ENCASEMENT, AS DIRECTED BY THE CITY ENGINEER.

C. EXCEPTIONS TO BASIC SEPARATION STANDARDS

LOCAL CONDITIONS, SUCH AS AVAILABLE SPACE, LIMITED SLOPE, EXISTING STRUCTURES, ETC., MAY CREATE A SITUATION WHERE THERE IS NO ALTERNATIVE BUT TO INSTALL WATER MAINS OR SEWER/STORM DRAIN LINES AT A DISTANCE LESS THAN THAT REQUIRED BY THE BASIC SEPARATION STANDARDS. IN SUCH CASES, ALTERNATIVE CONSTRUCTION CRITERIA AS SPECIFIED IN SECTION E SHALL BE FOLLOWED, SUBJECT TO THE SPECIAL PROVISIONS IN SECTION D.

D. SPECIAL PROVISIONS

1. THE BASIC SEPARATION STANDARDS ARE APPLICABLE UNDER NORMAL CONDITIONS FOR SEWAGE/STORM DRAIN LINES AND WATER DISTRIBUTION MAINS. MORE STRINGENT REQUIREMENTS MAY BE NECESSARY IF CONDITIONS SUCH AS HIGH GROUNDWATER EXIST.
2. SEWER LINES SHALL NOT BE INSTALLED WITHIN 26 FEET HORIZONTALLY OF A LOW HEAD (5 PSI OR LESS PRESSURE) WATER MAIN.

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D. SPECIAL PROVISIONS CONT.

3. NEW WATER MAINS AND NEW SEWERS SHALL BE PRESSURE TESTED WHERE THE CONDUITS ARE LOCATED 10 FEET APART OR LESS.
4. IN THE INSTALLATION OF WATER MAINS OR SEWER/STORM DRAIN LINES, MEASURES SHOULD BE TAKEN TO PREVENT OR MINIMIZE DISTURBANCES OF EXISTING LINES. DISTURBANCE OF THE SUPPORTING BASE OF SUCH LINES COULD EVENTUALLY RESULT IN THEIR FAILURE.
5. SPECIAL CONSIDERATION SHALL BE GIVEN TO THE SELECTION OF PIPE MATERIALS IF CORROSIVE CONDITIONS ARE LIKELY TO EXIST. THESE CONDITIONS MAY BE DUE TO SOIL TYPE AND/OR THE NATURE OF THE FLUID CONVEYED IN THE CONDUIT, SUCH AS A SEPTIC SEWAGE WHICH PRODUCES CORROSIVE HYDROGEN SULFIDE.
6. SEWER FORCE MAINS
 - a. SEWER FORCE MAINS SHALL NOT BE INSTALLED WITHIN 10 FEET (HORIZONTALLY) OF A WATER MAIN.
 - b. WHEN A SEWER FORCE MAIN MUST CROSS A WATER LINE, THE CROSSING SHOULD BE AS CLOSE AS PRACTICAL TO THE PERPENDICULAR. THE SEWER FORCE MAIN SHOULD BE AT LEAST 12 INCHES BELOW THE WATER LINE.
 - c. WHEN A NEW SEWER FORCE MAIN CROSSES UNDER AN EXISTING WATER MAIN, ALL PORTIONS OF THE SEWER FORCE MAIN WITHIN 10 FEET (HORIZONTALLY) OF THE WATER MAIN SHALL BE ENCLOSED IN A CONTINUOUS SLEEVE.
 - d. WHEN A NEW WATER MAIN CROSSES OVER AN EXISTING SEWER FORCE MAIN, THE WATER MAIN SHALL BE CONSTRUCTED OF PIPE MATERIALS WITH A MINIMUM RATED WORKING PRESSURE OF 235 PSI (DR 18 AWWA C900) OR EQUIVALENT PRESSURE RATING.

E. ALTERNATIVE CRITERIA FOR CONSTRUCTION

THE CONSTRUCTION CRITERIA FOR SEWER LINES, STORM DRAIN LINES, OR WATER MAINS WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN IN FIGURES 1 THROUGH 4. THERE ARE FOUR SITUATIONS ENCOUNTERED:

- CASE 1 - NEW SEWER LINE - EXISTING WATER MAIN.
- CASE 2 - NEW STORM DRAIN LINE - EXISTING WATER MAIN.
- CASE 3 - NEW WATER MAIN - EXISTING SEWER LINE.
- CASE 4 - NEW WATER MAIN - EXISTING STORM DRAIN LINE.

FOR CASE 1, THE ALTERNATE CONSTRUCTION CRITERIA APPLY TO THE SEWER LINE.
 FOR CASE 2, THE ALTERNATE CONSTRUCTION CRITERIA APPLY TO THE STORM DRAIN LINE.
 FOR CASE 3 AND 4, THE ALTERNATE CONSTRUCTION CRITERIA APPLY TO THE WATER MAIN.

IN THE CASE WHERE A NEW SEWER LINE AND A NEW WATER MAIN ARE BEING INSTALLED, THE ALTERNATIVE CONSTRUCTION CRITERIA MAY BE APPLIED TO EITHER THE NEW SEWER LINE (CASE 1) OR THE NEW WATER LINE (CASE 3).

IN THE CASE WHERE A NEW STORM DRAIN LINE AND A NEW WATER MAIN ARE BEING INSTALLED, THE ALTERNATIVE CONSTRUCTION CRITERIA MAY BE APPLIED TO EITHER THE NEW STORM DRAIN LINE (CASE 2) OR THE NEW WATER LINE (CASE 4).

ALONG WITH SEWER MAINS, THE CONSTRUCTION CRITERIA APPLIES TO SEWER LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN AND SEWER LATERALS THAT CROSS WITHIN 12" BELOW A PRESSURE WATER MAIN.

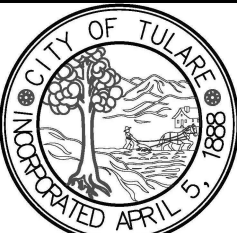
ALONG WITH STORM DRAIN MAINS, THE CONSTRUCTION CRITERIA APPLIES TO STORM DRAIN LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN AND STORM DRAIN LATERALS THAT CROSS WITHIN 12" BELOW A PRESSURE WATER MAIN.

F. CONSIDERATION OF RECYCLED WATER

1. RECYCLED WATER MAINS SHALL BE TREATED AS SEWER MAINS WHEN CONSIDERING THEIR SEPARATION FROM POTABLE WATER.
2. RECYCLED WATER MAINS SHALL BE TREATED AS POTABLE WATER MAINS WHEN CONSIDERING THEIR SEPARATION FROM SEWERS.

G. NOTES AND DEFINITIONS

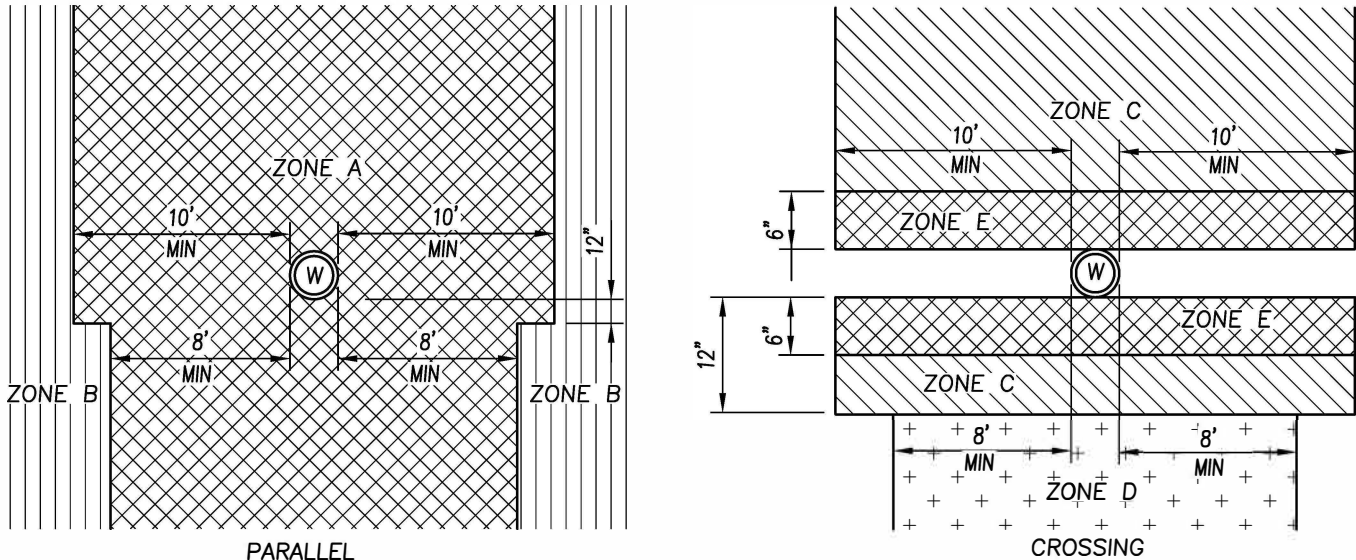
1. SEWER LINE - INCLUDES BOTH SEWER MAINS AND SEWER LATERALS.
2. STORM DRAIN LINE - INCLUDES BOTH STORM DRAIN MAINS AND STORM DRAIN LATERALS.
3. SEWER LATERAL - A SEWER LINE CONNECTING THE BUILDING DRAIN AND THE SANITARY SEWER MAIN LINE IN THE STREET.
4. STORM DRAIN LATERAL - A STORM DRAIN LINE CONNECTING DRAINAGE INLETS OR ADJACENT PROPERTIES TO THE STORM DRAIN MAIN IN THE STREET.
5. LOW HEAD WATER MAIN - ANY WATER MAIN WHICH HAS A PRESSURE OF 5 PSI OR LESS AT ANY TIME AND AT ANY POINT IN THE MAIN.
6. WATER SUPPLIER - ANY PERSON OR ENTITY WHO OWNS OR OPERATES A PUBLIC WATER SYSTEM.

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CASE 1
NEW SEWER MAINS AND LATERALS BEING INSTALLED NEAR AN EXISTING WATER MAIN
 (SEE FIGURE 1 BELOW)

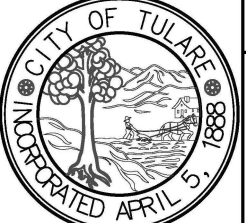
ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER
A	SEWER LINES PARALLEL TO EXISTING WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE CITY ENGINEER. SPECIAL PIPE MATERIAL AND CONSTRUCTION REQUIREMENTS MAY APPLY.
B	A SEWER LINE PLACED <u>PARALLEL</u> TO AN EXISTING WATER MAIN SHALL BE CONSTRUCTED OF: 1. SDR-26 PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT.
C	A SEWER LINE <u>CROSSING</u> OVER OR WITHIN 1 FOOT UNDER AN EXISTING WATER MAIN SHALL BE CONSTRUCTED OF: 1. A MIN. 20 FOOT CONTINUOUS SECTION OF CLASS 305 (GREEN DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT (SEE NOTE 6), CENTERED ON THE EXISTING WATER MAIN BEING CROSSED (SEE SHEET 7 OF 8). FOR SEWER LATERALS, REPLACE THE ENTIRE LATERAL FROM THE SEWER MAIN TO THE RIGHT-OF-WAY WITH CLASS 305 (GREEN DR 14 AWWA C900) PLASTIC PIPE; 2. SDR-26 PLASTIC SEWER PIPE WITHIN A MIN. 20 FOOT PLUS O.D. OF WATER MAIN CONTINUOUS SLEEVE CENTERED ON THE EXISTING WATER MAIN BEING CROSSED (SEE SHEET 7 OF 8). 3. IN LIEU OF OPTION 1. OR 2., UPGRADE WATER MAIN CROSSING UNDER SEWER LINE PER CASE 3 ZONE C (REQUIRES CITY ENGINEER APPROVAL).
D	A SEWER LINE <u>CROSSING</u> UNDER AN EXISTING WATER MAIN SHALL BE CONSTRUCTED OF: 1. CONTINUOUS SECTION OF SDR-26 PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT, WITH A MINIMUM OF 8 FEET SEPARATION FROM OUTSIDE OF PIPE TO NEAREST JOINT.
E	NO SEWER LINES WITHIN THIS ZONE WITHOUT APPROVAL FROM THE CITY ENGINEER

FIGURE 1
NEW SEWER MAINS AND LATERALS BEING INSTALLED NEAR AN EXISTING WATER MAIN



NOTES AND DEFINITIONS

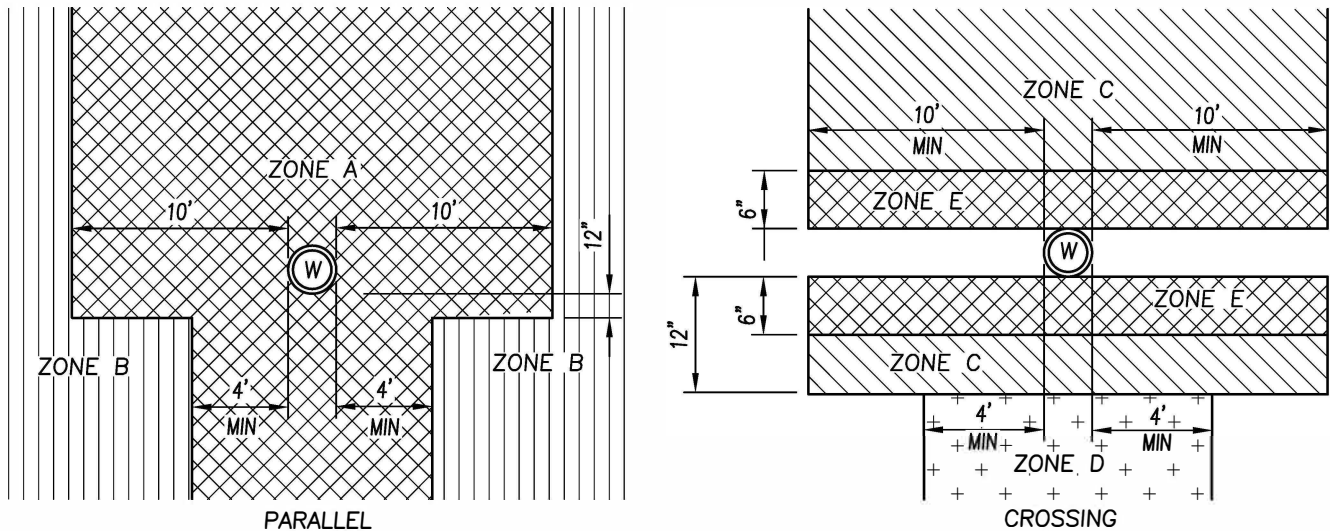
- DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER LINE (ZONE C, MEASURED FROM CENTER OF PIPE TO NEAREST JOINT).
- SEWER LINE - INCLUDES BOTH SEWER MAINS AND SEWER LATERALS.
- SEWER LATERAL - A SEWER LINE CONNECTING THE BUILDING DRAIN AND THE SANITARY SEWER MAIN LINE IN THE STREET.
- RATED WORKING WATER PRESSURE OR PRESSURE CLASS - A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.
- SLEEVE - A PROTECTIVE TUBE OF STEEL WITH A WALL THICKNESS OF NOT LESS THAN 1/4" INTO WHICH A PIPE IS INSERTED. SUPPORT PIPE IN SLEEVE AND PLUG ENDS PER CITY OF TULARE STANDARDS.
- CHANGES IN PIPE MATERIALS WILL ONLY BE ALLOWED FROM MANHOLE TO MANHOLE. PREFABRICATED BELL AND GASKET TYPE ADAPTER (RUBBER COUPLINGS WILL NOT BE ALLOWED) REQUIRE APPROVAL FROM THE CITY ENGINEER. FITTINGS SHALL MATCH FLOW LINES.

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CASE 2
NEW STORM DRAIN LINES BEING INSTALLED NEAR AN EXISTING WATER MAIN
 (SEE FIGURE 2 BELOW)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER
A	STORM DRAIN LINES PARALLEL TO EXISTING WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE CITY ENGINEER. SPECIAL PIPE MATERIAL AND CONSTRUCTION REQUIREMENTS MAY APPLY.
B	A STORM DRAIN LINE PLACED <u>PARALLEL</u> TO AN EXISTING WATER MAIN SHALL BE CONSTRUCTED OF: 1. SDR-26 PLASTIC STORM DRAIN PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT. 2. RUBBER GASKET REINFORCED CONCRETE PIPE.
C	A STORM DRAIN LINE <u>CROSSING</u> OVER OR WITHIN 1 FOOT UNDER AN EXISTING WATER MAIN SHALL BE CONSTRUCTED OF: 1. A MIN. 20 FOOT CONTINUOUS SECTION OF CLASS 305 (GREEN DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT (SEE NOTE 6), CENTERED ON THE EXISTING WATER MAIN BEING CROSSED (SEE SHEET 7 OF 8). 2. SDR-26 PLASTIC PIPE WITHIN A MIN. 20 FOOT PLUS O.D. OF WATER MAIN CONTINUOUS SLEEVE, CENTERED ON THE EXISTING WATER MAIN BEING CROSSED (SEE SHEET 7 OF 8). 3. IN LIEU OF OPTION 1. OR 2., UPGRADE WATER MAIN CROSSING UNDER SEWER LINE PER CASE 3 ZONE C (REQUIRES CITY ENGINEER APPROVAL).
D	A STORM DRAIN LINE <u>CROSSING</u> UNDER AN EXISTING WATER MAIN SHALL BE CONSTRUCTED OF: 1. CONTINUOUS SECTION OF SDR-26 PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR RUBBER GASKET REINFORCED CONCRETE PIPE, WITH A MINIMUM OF 4 SEPARATION CLEAR FROM OUTSIDE OF PIPE TO NEAREST JOINT.
E	NO STORM DRAIN LINES WITHIN THIS ZONE WITHOUT APPROVAL FROM THE ENGINEER

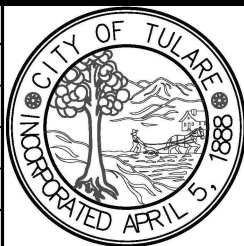
CASE 2
NEW STORM DRAIN LINES BEING INSTALLED NEAR AN EXISTING WATER MAIN



NOTES AND DEFINITIONS

- DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO OUTSIDE OF STORM DRAIN LINE (ZONE C, MEASURED FROM CENTER OF PIPE TO NEAREST JOINT).
- STORM DRAIN LINES - INCLUDES BOTH STORM DRAIN MAINS AND STORM DRAIN LATERALS.
- STORM DRAIN LATERAL - A STORM DRAIN LINE CONNECTING DRAINAGE INLETS OR ADJACENT PROPERTY'S TO THE STORM DRAIN MAIN IN THE STREET.
- RATED WORKING WATER PRESSURE OR PRESSURE CLASS - A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.
- SLEEVE - A PROTECTIVE TUBE OF STEEL WITH A WALL THICKNESS OF NOT LESS THAN 1/4" INTO WHICH A PIPE IS INSERTED. SUPPORT PIPE IN SLEEVE AND PLUG ENDS PER CITY OF TULARE STANDARDS.
- CHANGES IN PIPE MATERIALS WILL ONLY BE ALLOWED FROM MANHOLE TO MANHOLE. PREFABRICATED BELL AND GASKET TYPE ADAPTER (RUBBER COUPLINGS WILL NOT BE ALLOWED) REQUIRE APPROVAL FROM THE CITY ENGINEER. FITTINGS SHALL MATCH FLOW LINES.

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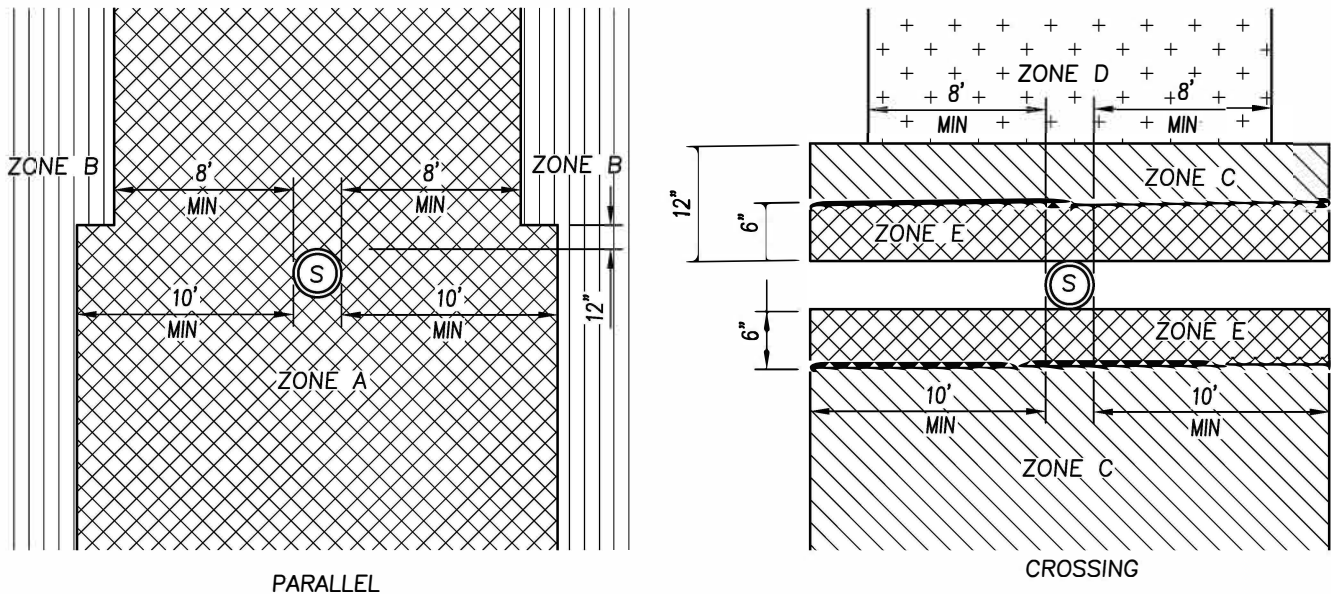


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CASE 3
NEW WATER MAIN BEING INSTALLED NEAR AN EXISTING SEWER LINE
 (SEE FIGURE 3 BELOW)


ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER
A	NO WATER MAINS PARALLEL TO EXISTING SEWER LINES SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE CITY ENGINEER. SPECIAL PIPE MATERIAL AND CONSTRUCTION REQUIREMENTS MAY APPLY.
B	A WATER MAIN PLACED <u>PARALLEL</u> TO EXISTING SEWER LINE SHALL BE CONSTRUCTED OF: 1. CLASS 235 PRESSURE RATED PLASTIC WATER PIPE (DR 18 PER AWWA C900) OR EQUIVALENT.
C	A WATER MAIN <u>CROSSING</u> UNDER OR WITHIN 1 FOOT OVER AN EXISTING SEWER LINE SHALL BE CONSTRUCTED OF: 1. A MIN. 20 FOOT CONTINUOUS SECTION OF CLASS 305 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT, CENTERED ON THE SEWER LINE (SEE SHEET 8 OF 8).
D	A WATER LINE <u>CROSSING</u> OVER AN EXISTING SEWER LINE SHALL BE CONSTRUCTED OF: 1. A CONTINUOUS SECTION OF CLASS 235 PRESSURE RATED PLASTIC WATER PIPE (DR 18 PER AWWA C900) OR EQUIVALENT, WITH A MINIMUM OF 8 FEET SEPARATION FROM OUTSIDE OF PIPE TO NEAREST JOINT.
E	NO WATER MAINS LINES WITHIN THIS ZONE WITHOUT APPROVAL OF THE CITY ENGINEER

FIGURE 3
NEW WATER MAIN BEING INSTALLED NEAR AN EXISTING SEWER LINE



NOTES AND DEFINITIONS

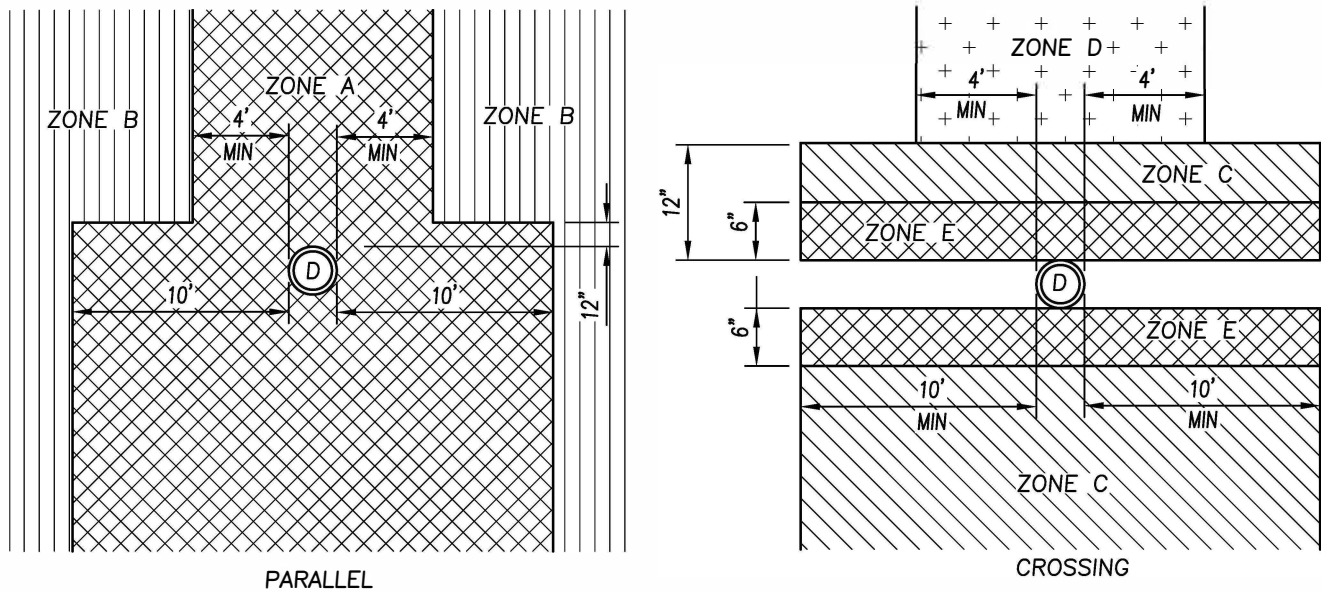
1. DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER LINE (ZONE C, MEASURED FROM CENTER OF PIPE TO NEAREST JOINT).
2. SEWER LINE - INCLUDES BOTH SEWER MAINS AND SEWER LATERALS.
3. SEWER LATERAL - A SEWER LINE CONNECTING THE BUILDING DRAIN AND THE SANITARY SEWER MAIN LINE IN THE STREET.
4. RATED WORKING WATER PRESSURE OR PRESSURE CLASS - A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.

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CASE 4
NEW WATER MAIN BEING INSTALLED NEAR AN EXISTING STORM DRAIN LINE
 (SEE FIGURE 4 BELOW)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER
A	NO WATER MAINS PARALLEL TO EXISTING STORM DRAIN LINES SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE CITY ENGINEER. SPECIAL PIPE MATERIAL AND CONSTRUCTION REQUIREMENTS MAY APPLY
B	A WATER MAIN PLACED <u>PARALLEL</u> TO AN EXISTING STORM DRAIN LINE SHALL BE CONSTRUCTED OF: 1. CLASS 235 PRESSURE RATED PLASTIC WATER PIPE (DR 18 PER AWWA C900) OR EQUIVALENT.
C	A WATER MAIN <u>CROSSING</u> UNDER OR WITHIN 1 FOOT OVER AN EXISTING STORM DRAIN LINE SHALL BE CONSTRUCTED OF: 1. A MIN. 20 FOOT CONTINUOUS SECTION OF CLASS 305 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT, CENTERED ON THE STORM DRAIN LINE (SEE SHEET 8 OF 8).
D	A WATER LINE <u>CROSSING</u> OVER AN EXISTING STORM DRAIN LINE SHALL BE CONSTRUCTED OF: 1. A CONTINUOUS SECTION OF CLASS 235 PRESSURE RATED PLASTIC WATER PIPE (DR 18 PER AWWA C900) OR EQUIVALENT, WITH A MINIMUM OF 4 FEET SEPARATION FROM OUTSIDE OF PIPE TO NEAREST JOINT.
E	NO WATER MAINS WITHIN THIS ZONE WITHOUT APPROVAL OF THE CITY ENGINEER

FIGURE 4
NEW WATER MAIN BEING INSTALLED NEAR AN EXISTING STORM DRAIN LINE

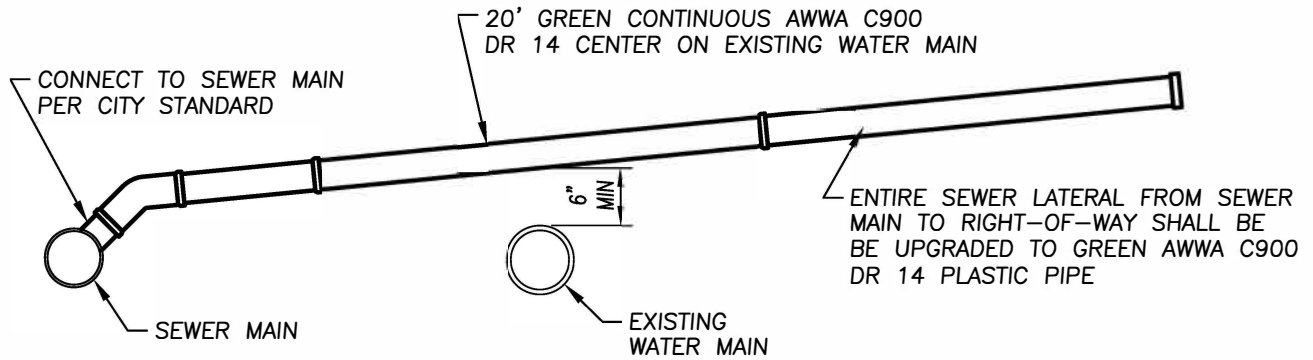


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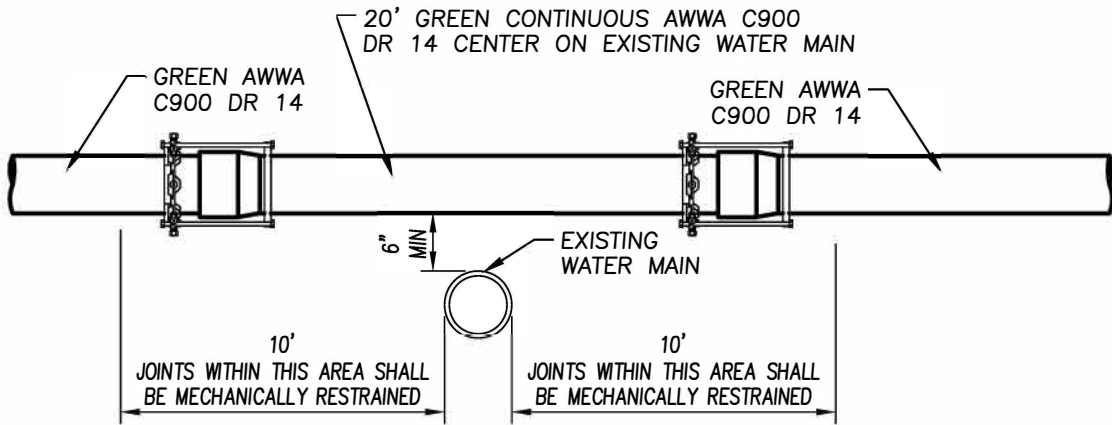
- DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO OUTSIDE OF STORM DRAIN LINE (ZONE C, MEASURED FROM CENTER OF PIPE TO NEAREST JOINT).
- STORM DRAIN LINES – INCLUDES BOTH STORM DRAIN MAINS AND STORM DRAIN LATERALS.
- STORM DRAIN LATERAL – A STORM DRAIN LINE CONNECTING DRAINAGE INLETS OR ADJACENT PROPERTY'S TO THE STORM DRAIN MAIN IN THE STREET.
- RATED WORKING WATER PRESSURE OR PRESSURE CLASS – A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.

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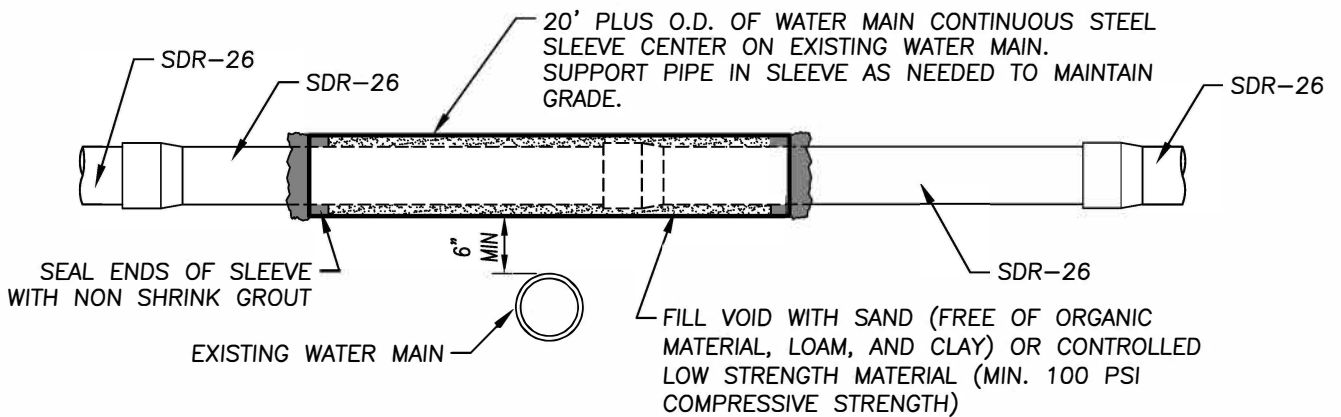
**CASE 1 AND 2, ZONE C
TYPICAL INSTALLATION**
(SEE FIGURES BELOW)



UPGRADE SEWER LATERAL TO AWWA C900 DR 14

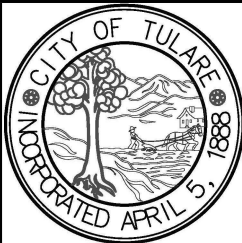


OPTION 1: UPGRADE STORM DRAIN LINE OR SEWER MAIN LINE TO AWWA C900 DR 14



OPTION 2: SLEEVE STORM DRAIN LINE OR SEWER MAIN LINE

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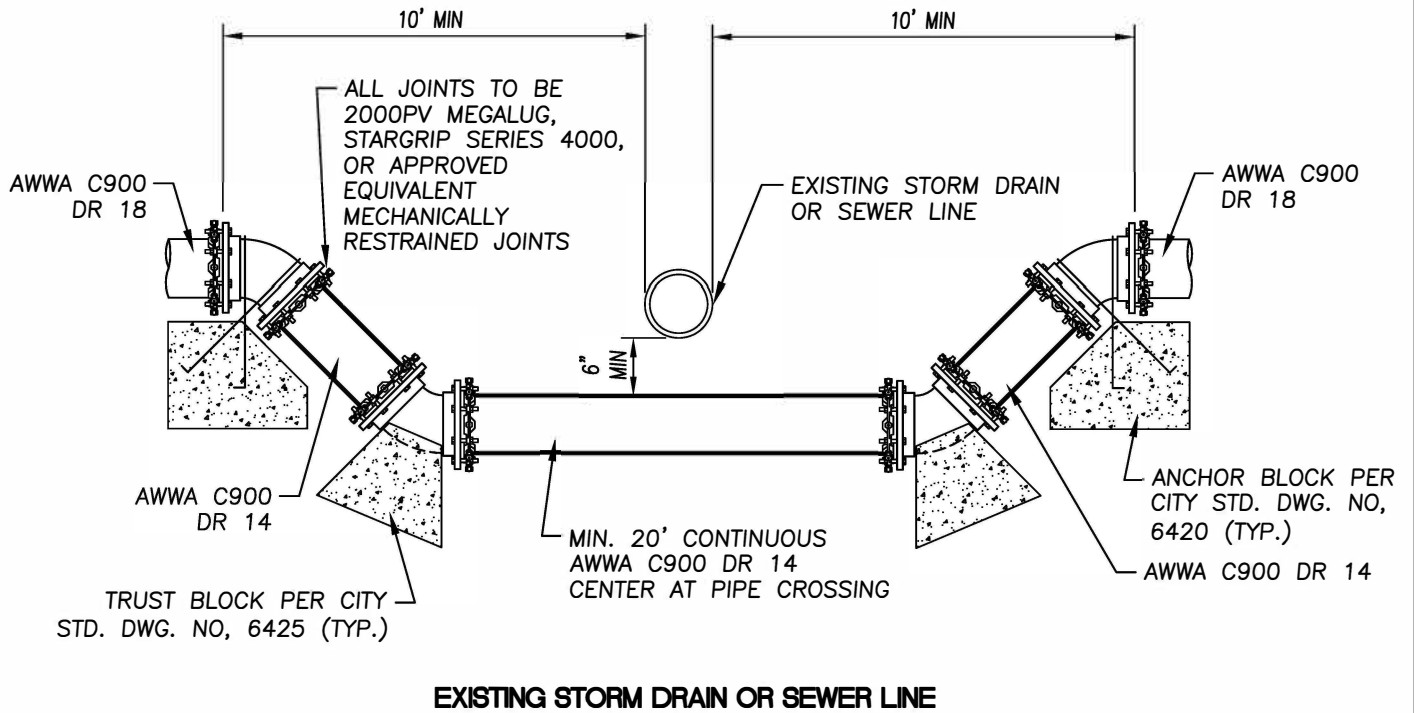
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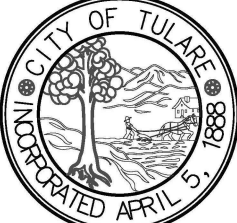
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**CASE 3 AND 4, ZONE C
TYPICAL INSTALLATION**
(SEE FIGURES BELOW)



REVISIONS	DATE		CITY OF TULARE PUBLIC IMPROVEMENT STANDARD	
REVISIONS NO. 1	11-15-21		WATER - SEWER/STORM SEPARATION REQUIREMENTS	
			Approved By: <i>Michael W. Miller</i>	DRAWING NO.:
			Date: 1/21/2021	6110
			City Engineer	8 OF 8