

SECTION 7 – SEPARATION OF WATER MAINS AND SANITARY SEWERS

To prevent the contamination of the public water supplies from nearby sanitary sewers, the following State Water Resources Control Board – Division of Drinking Water (DDW) criteria shall be required.

7-01 BASIC SEPARATION STANDARDS

The “California Waterworks Standards” sets forth the minimum separation requirements for water mains and sewer lines. These Standards, contained in Section 64630, Title 22, California Administrative Code, specify:

- A. Parallel Construction: The horizontal distances between pressure water mains and sewer lines shall be at least 10 feet.
- B. Perpendicular Construction (Crossing): Pressure water mains shall be at least one foot above sanitary sewer lines where these lines must cross.
- C. Separation distances specified in A and B shall be measured from the nearest edges of the facilities (i.e., dimensions are from outside of water main to outside of sewer line or manhole).
- D. Common trench: Water mains and sewer lines must not be installed in the same trench.

The lack of separation between water mains and sanitary sewers results in an increased potential for contamination of the water supply. Therefore, when adequate physical separation cannot be attained, an increase in the factor of safety should be provided by increasing the structural integrity of both the pipe materials and joints required herein.

7-02 EXCEPTIONS TO BASIC SEPARATION STANDARDS

Local conditions, such as available spaces, limited slope, existing structures, etc., may create a situation where there is **no alternative** but to install water mains or sewer lines at a distance less than that required by the Basic Separation Standards. In such cases, Alternative Construction Criteria as specified in Section 7-04 should be followed, subject to the Special Restrictions in Section 7-03.

Water mains and sewers of 24 inch diameter or greater may create special circumstances because of the large volumes of flow. Therefore, installations of water mains and sewer lines 24 inch diameter or larger should be reviewed and approved by the regulatory agency prior to construction.

7-03 SPECIAL RESTRICTIONS

- A. The Basic Separation Standards are available under normal conditions for sewage collection lines and water distribution mains. More stringent requirements may be necessary in conditions such as high groundwater.
- B. Sewer lines shall not be installed within 25 feet horizontally of a low head (5 psi or less pressure) water main.
- C. New water mains and sewers shall be pressure tested where the conduits are located ten feet apart or less.
- D. In the installation of water mains or sewer lines, measures should be taken to prevent or minimize disturbances of the existing line. Disturbances of the supporting base of this line could eventually result in failure of the existing pipeline.
- E. 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 septic sewage that produces corrosive hydrogen sulfide.

Sewer Force Mains

- 1. Sewer force mains shall not be installed within 10 feet (horizontally) of a water main.
- 2. When a sewer force main must cross a water line, the crossing should be as close as possible to the perpendicular. The sewer force main should be at least one foot below the water line.
- 3. 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.
- 4. 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 200 psi or equivalent pressure rating.

7-04 ALTERNATE CONSTRUCTION CRITERIA

The construction criteria for sewer lines or water mains where the Basic Separation Standards cannot be attained are shown in Figures 1 and 2 herein. There are two situations encountered:

Section 7-05 Case 1 – New sewer line – new or existing water main

Section 7-06 Case 2 – New water main – existing sewer line

For Case 1, the Alternative Construction Criteria may apply to the sewer line.

For Case 2, the Alternative Construction Criteria may apply to either or both the water mains and sewer lines.

This construction criterion applies to house laterals that cross **above** a pressure water main but not to house laterals that cross **below** a pressure water main.

7-05 CASE 1: NEW SEWER LINES BEING INSTALLED (Figures 1 and 2)

Zone Special Construction Required for Sewer

- A Sewer lines parallel to water mains shall not be permitted in this zone without approval from the responsible regulatory agency and water supplier.
- B A sewer line placed parallel to a water line shall be constructed of:
1. Extra strength vitrified clay pipe with compression joints.
 2. Class 4000, Type II, asbestos-cement pipe with rubber gasket joints.
 3. Plastic sewer pipe with rubber ring joints (ASTM D3034) or equal.
 4. Cast or ductile iron pipe with compression joints.
 5. Reinforced concrete pressure pipe with compression joints (AWWA C302).
- C A sewer line crossing a water main shall be constructed of:
1. Ductile iron pipe with hot dip bituminous coating and mechanical joints.
 2. A continuous section of Class 305 (DR 14, AWWA C900) plastic pipe or equal, centered over the pipe being crossed.
 3. A continuous section of reinforced concrete pressure pipe (AWWA C302) centered over the pipe being crossed.
 4. Any sewer pipe within a continuous sleeve.
- D A sewer line crossing a water main shall be constructed of:
1. A continuous section of ductile iron pipe with hot dip bituminous coating.
 2. A continuous section of Class 305 (DR 14, AWWA C900) plastic pipe or equal, centered on the pipe being crossed.
 3. A continuous section of reinforced concrete pressure pipe (AWWA C302) centered on the pipe being crossed.
 4. Any sewer pipe within a continuous sleeve.
 5. Any sewer pipe separated by a ten-foot by ten-foot, four-inch-thick reinforced concrete slab.

7-06 CASE 2: NEW WATER MAINS BEING INSTALLED (Figures 1 and 2)

Zone

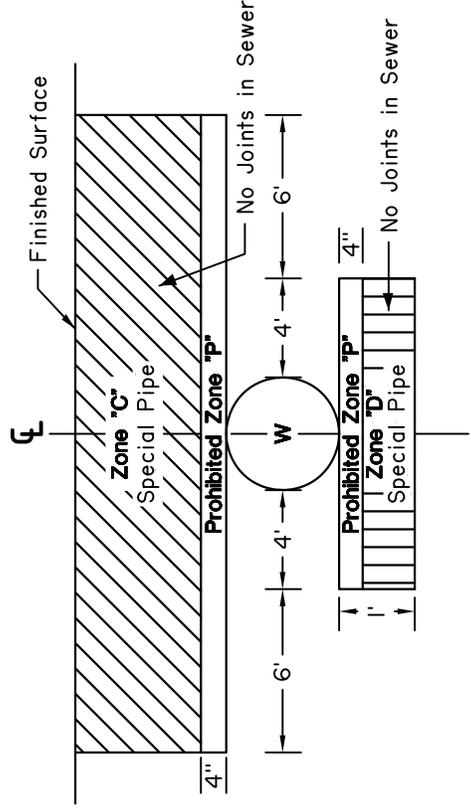
- A No water mains parallel to sewers shall be constructed without approval from the regulatory agency.
- B If the sewer paralleling the water main does not meet the Case 1, Zone B, requirements, the Water main shall be constructed of:
1. Ductile iron pipe with hot dip bituminous coating.
 2. Dipped and wrapped one-fourth-inch-thick welded steel pipe.
 3. Class 200 Type II, asbestos-cement pressure pipe.
 4. Class 305 pressure rated plastic water pipe (DR 14, AWWA C900) or equal.
 5. Reinforced concrete pressure pipe, steel cylinder type (AWWA C300 or C301 or C303).
- C If the sewer crossing the water main does not meet the Case 1, Zone C, requirements, the water main shall have no joints in Zone C and be constructed of:

1. Ductile iron pipe with hot dip bituminous coating.
2. Dipped wrapped one-fourth-inch-thick welded steel pipe.
3. Class 305 pressure rated plastic water pipe (DR 14, AWWA C900) or equal.
4. Reinforced concrete pressure pipe, steel cylinder type (AWWA C300 or C301 or C303).

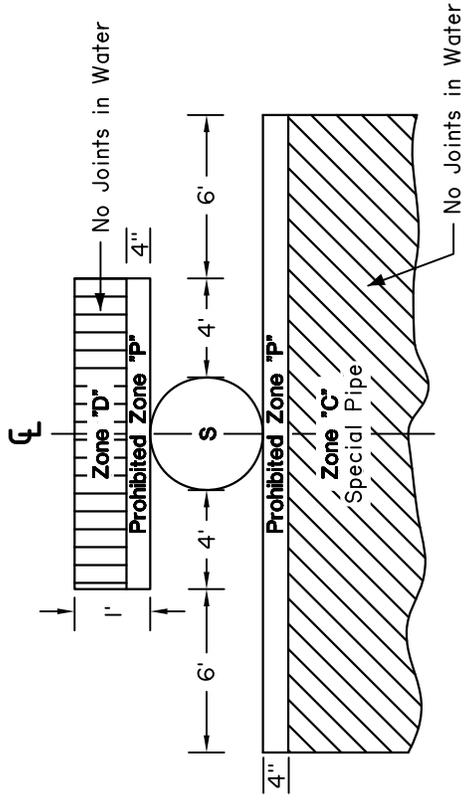
D If the sewer crossing the water main does not meet the requirements for Zone D, Case 1, the water main shall have no joints within four feet from either side of the sewer and shall be constructed of:

1. Ductile iron pipe with hot dip bituminous coating.
2. Dipped and wrapped one-fourth-inch-thick welded steel pipe.
3. Class 305 pressure rated plastic water pipe (DR 14, AWWA C900) or equal.
4. Reinforced concrete pressure pipe, steel cylinder type (AWWA C300 or C301 or C303).

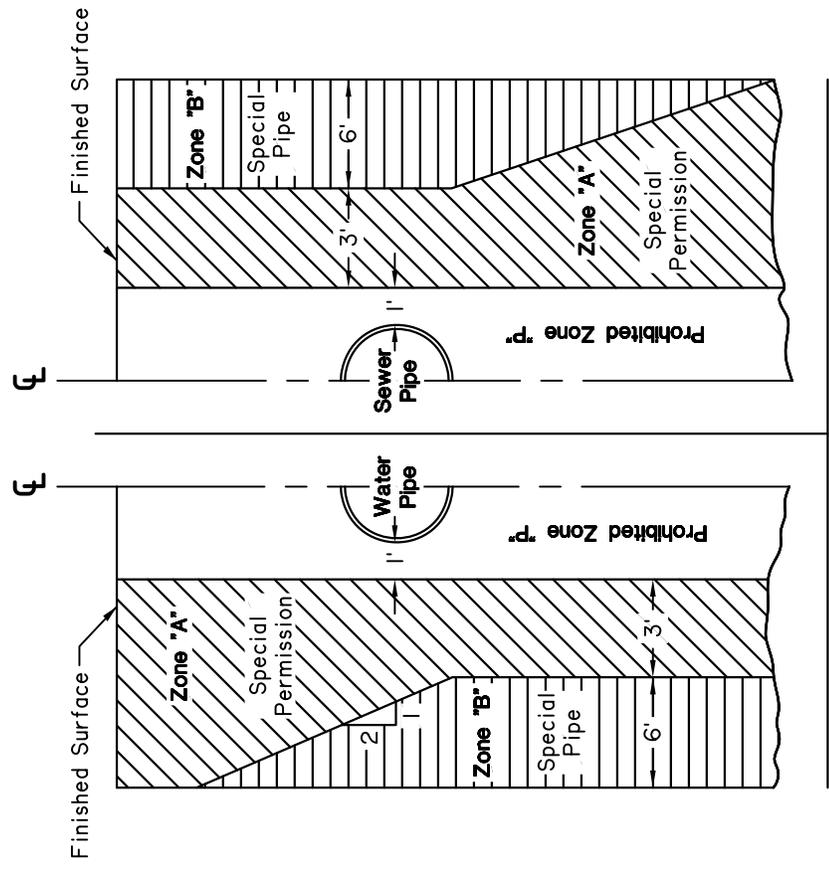
**CASE 1
NEW SEWER LINE**



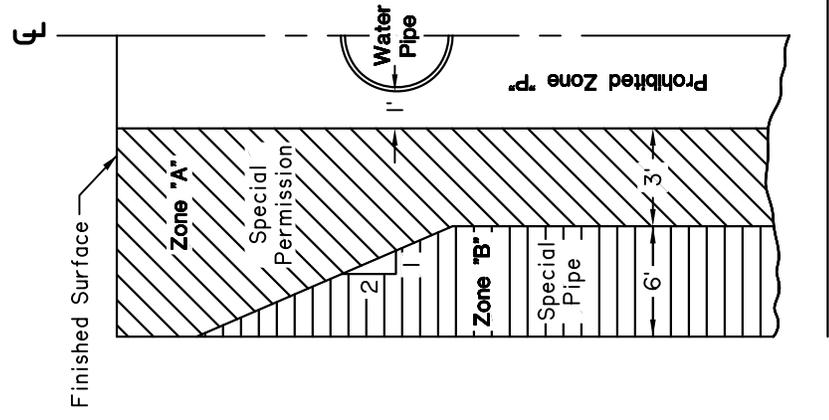
**CASE 2
NEW WATER MAIN**



**CASE 2
NEW WATER MAIN**



**CASE 1
NEW SEWER LINE**



Note:
Zones identical on either side of center lines.
Zone "P" is a prohibited zone, Section 64630 (e) (2)
California Administrative Code, Title 22.

Figure 2 - CROSSINGS

Figure 1 - PARALLEL CONSTRUCTION

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