

**A. BASIC SEPARATION STANDARDS**

The "California Waterworks Standards" set forth the minimum separation requirements for water mains and sanitary sewer and storm drain pipes (from this point on referred to as SS/SD lines). These standards, contained in section 64630, title 22, California Administrative Code, specify:

- 1.) *parallel construction: the horizontal distance between pressure water mains and SS/SD lines shall be at least 10 feet.*
- 2.) *perpendicular construction (crossing): pressure water mains shall be at least one foot above SS/SD lines where these lines must cross.*
- 3.) *separation distances specified in 1 and 2 above, shall be measured from the nearest edges of the facilities.*
- 4.) *common trench: water mains and SS/SD lines must not be installed in the same trench.*

*When the water mains and SS/SD 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 should be provided by increasing the structural integrity of both the pipe materials and joints.*


**B. 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 SS/SD lines at a distance less than that required by the basic separation standards. In such cases, alternative construction criteria as specified in section D should be followed, subject to the special provisions in Section C.*

*Water mains and SS/SD of 24 inch in diameter or greater may create special hazards because of the large volumes of flow, therefore, installation of water mains and SS/SD lines 24 inches in diameter or larger should be reviewed and approved by the California Department of Health Services, Public Water Supply Branch, prior to construction.*

**C. SPECIAL PROVISIONS**

- 1.) *The basic separation standards are applicable under normal conditions for SS/SD collection lines and water distribution mains. More stringent requirements may be necessary if conditions such as high groundwater exist.*
- 2.) *SS/SD lines shall not be installed within 25 feet horizontally of a low head (5 psi or less pressure) water main.*
- 3.) *In the installation of water mains or sanitary sewer and/or storm drain lines, measures should be taken to prevent or minimize disturbances of the existing line. Disturbances of the supporting base of these lines could eventually result in failure of this existing pipeline.*
- 4.) *Special considerations 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.*
- 5.) *Sanitary Sewer and/or Storm Drain Force Mains:*
  - a) *Sanitary sewer and/or storm drain force mains shall not be installed within ten feet (horizontally) of a water main.*
  - b) *When a sanitary sewer and/or storm drain force main must cross a water line, the crossing should be as close as practical to the perpendicular. The sanitary sewer and/or storm drain force main should be at least one foot below the water line.*

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- b) When a sanitary sewer and/or storm drain force main must cross a water line, the crossing should be as close as practical to the perpendicular. The sanitary sewer and/or storm drain force main should be at least one foot below the water line.
- c) When a new sanitary sewer and/or storm drain force main crosses under an existing water main, all portions of the sanitary sewer and/or storm drain force main within ten feet (horizontally) of the water main shall be enclosed in a continuous sleeve.
- d) When a new water main crosses over an existing sanitary sewer and/or storm drain force main, the water main shall be constructed of pipe materials with a minimum rated working pressure of 200 psi or equivalent pressure rating.

**D. ALTERNATIVE CRITERIA FOR CONSTRUCTION**


The construction criteria for sanitary sewer and/or storm drain lines or water mains where the basic separation standards cannot be attained are shown in City of Ripon Standards W-7 and W-7a. There are two situations encountered:

- Case 1 - new sanitary sewer and/or storm drain line being installed with either a new or existing water main. For this case, the alternative construction criteria apply to the sanitary sewer and/or storm drain line.
- Case 2 - new water main being installed with an existing sanitary sewer and/or storm drain line. For this case, the alternative construction criteria may apply to either or both the water main and the existing sanitary sewer and/or storm drain lines.

The construction criteria should apply to the house laterals that cross above a pressure water main, but not to those laterals that cross below a pressure water main.

**CASE 1  
NEW SANITARY SEWER AND/OR STORM DRAIN LINE BEING INSTALLED  
(SEE CITY OF RIPON STANDARD W-7)**

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SANITARY SEWER AND/OR STORM
A	Sanitary sewer and/or storm drain lines parallel to water mains shall not be permitted in this zone without approval from the responsible health agency and water supplier.
B	A sanitary sewer and/or storm drain line placed parallel to a water line shall be constructed of: <ol style="list-style-type: none"> <li>1. Extra strength vitrified clay pipe with compression joints.</li> <li>2. Plastic sewer pipe with rubber ring joints (per ASTM D3034) or equivalent.</li> <li>3. Cast or ductile iron pipe with compression joints.</li> <li>4. Reinforced concrete pressure pipe with compression joints (per AWWA C302-74).</li> </ol>
C	A sanitary sewer and/or storm drain line crossing a water main shall be constructed of: <ol style="list-style-type: none"> <li>1. Ductile iron pipe with hot-dip bituminous coating and mechanical joints.</li> <li>2. A continuous section of Class 200 (DR 14 per AWWA C900) plastic pipe or equivalent, centered on the pipe being crossed.</li> <li>3. A continuous section of reinforced concrete pressure pipe (per AWWA C302-74) centered over the pipe being crossed.</li> <li>4. Any sanitary sewer and/or storm drain pipe within a continuous sleeve.</li> </ol>
D	A sanitary sewer and/or storm drain line crossing a water main shall be constructed of: <ol style="list-style-type: none"> <li>1. A continuous section of ductile iron pipe with hot-dip bituminous coating.</li> <li>2. A continuous section of Class 200 (DR 14 per AWWA C900) plastic pipe or equivalent, centered on the pipe being crossed.</li> <li>3. A continuous section of reinforced concrete pressure pipe (per AWWA C302-774) centered over the pipe being crossed.</li> <li>4. Any sanitary sewer and/or storm drain pipe within a continuous sleeve.</li> <li>5. Any sanitary sewer pipe separated by a 10 foot by 10 foot, 4 inch thick reinforced concrete slab.</li> </ol>


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CASE 2  
NEW WATER MAIN BEING INSTALLED  
(SEE CITY OF RIPON STANDARD W-7a)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER
A	No water mains parallel to sanitary sewer and/or storm drain lines shall be constructed without approval from the health agency.
B	If the sanitary sewer and/or storm drain line 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 bitumuous coating. 2. Class 200 pressure rated plastic water pipe (DR 14 per AWWA C900) or equivalent.
C	If the sanitary sewer and/or storm drain line 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 bitumuous coating. 2. Class 200 pressure rated plastic water pipe (DR 14 per AWWA C900) or equivalent.
D	If the sanitary sewer and/or storm drain line crossing the water main does not meet the Case 1, Zone D requirements, the water main shall have no joints within 4 feet from either side of the sanitary sewer and/or storm drain line, and shall be constructed of: 1. Ductile iron pipe with hot dip bitumuous coating. 2. Class 200 pressure rated plastic water pipe (DR 14 per AWWA C900) or equivalent.

**NOTES AND DEFINITIONS:**

1. Health Agency - The Department of Health Services, Office of Drinking Water. For those water systems supplying fewer than 200 service connections, the local health officer of San Joaquin County shall act for the Department of Health Services.
2. Low Head Water Main - Any water main which has a pressure of 5 psi or less at any time, at any point in the main.
3. Dimensions - All dimensions are from the outside of water main to outside of sanitary sewer and/or storm drain line, or manhole.
4. Compression Joint - a push-on joint that seals by means of the compression of a rubber ring or gasket between the pipe and a bell or coupling.
5. Mechanical Joint - Bolted joints.
6. 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.
7. Fused Joint - The joining of sections of pipe using thermal or chemical bonding process.
8. Sleeve - A protective tube of steel with a wall thickness of not less than one-fourth inch into which a pipe is inserted.
9. Groundwater - Subsurface water found in the saturation zone.
10. House Lateral - A sewer connecting the building drain and the main sewer line.
11. SS/SD - Indicates sanitary sewer (SS) and storm drain (SD).
12. Non-potable water system - Water system to be used for landscape irrigation purposes only.

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