

## APPROVED MATERIALS

June 23, 2009

Approved materials are revised and updated on a regular basis. It shall be the applicants or contractors responsibility to ensure they are using the current list of approved materials. The applicant or contractor is encouraged to contact the Public Works Department and verify the current list of approved materials prior to ordering or installing items from the list.

Equipment	Description	Manufacturer	Comments
Air/Vacuum Valve Enclosure	20" Dia. One Piece Polyethylene Enclosure for 1" and 2" Combination Air Release and Vacuum Valves	Armorcast P6002002-SND	
Air/Vacuum Valve Suction Screen	For use on 1" and 2" Air/Vacuum Installations. FIP Nylon Nut Style with 20 mesh Stainless Steel Screen	Northtown Hytech 962-1002 (1") 962-2002 (2")	
Anode, Zinc	Pre-packaged Zinc Soil Anode for Protection of Copper Tubing.	Christy's GA-S-5 (5 lb.) GA-S-15 (15 lb.) GA-S-30A (30 lb.)	
Angle Meter Stop 3/4"x1"	Compression type fitting for inlet and meter coupling nut for outlet	James Jones EJ-4201 Ford KV 43-342W NL	
Angle Meter Stop 1"x1"	Compression type fitting for inlet and meter coupling nut for outlet	James Jones EJ-4201 Ford KV 43-444W NL	
Angle Meter Stop 2"x2"	Compression type fitting for inlet and flange outlet	James Jones EJ-4205 Ford KV 43-777W NL	
Backflow Preventer	Reduced Pressure Principal Type Assemblies as Approved by the County of Ventura	As Shown on the County of Ventura's List of Approved Backflow Prevention Assemblies	
Clamp, Repair	Stainless Steel Full Circle	Ford Romac	
Coating, Mastic	Cold Applied Coal Tar Heavy Duty Protective Waterproofing for exposed buried rebar and concrete	Carboline Bitumastic 50	
Corporation Stop, For 1" Service Lines	Bronze with M.I.P. thread inlet and pack joint connection for outlet	James Jones EJ-3403 Ford F-1100 NL	

Corporation Stop, 1" Brass Plug	For Plugging Corporation Stops When a Service is to be Abandoned		
Coupling, C900 PVC Deflection	4" through 12" Solid PVC for obtaining deflection only. Provides 5 Degree Maximum Deflection	Certainfeed Vinyl Iron HD	
Coupling, C900 PVC Repair	4" Through 12" Solid PVC for Repair of C900 PVC Pipe	Certainfeed Vinyl Iron HD	
Coupling, Flanged Coupling Adaptor	Used for connecting flange fitting with plain end PVC	Romac FCA 501 Smith Blair 900 Series	
Coupling, Insulating	Used to isolate one pipe from the other by use of an insulating boot	Romac IC 501 Smith Blair 900 Series	
Coupling, Transition	Used to transition from one pipe type to a different pipe type	Romac 501 Smith Blair 461 Ford FC2W Series	
Customer Hand Valve, 1"x3/4"	Bronze F.I.P. x Meter Coupling	James Jones E1908S Ford B13-332 w/HB34S NL	For 1"x3/4" Meters
Customer Hand Valve, 1"x1"	Bronze F.I.P. x Meter Coupling with handle	James Jones E1908S Ford B13-444 w/ HB34S NL	For 1" Meters
Customer Hand Valve, 1-1/2"x1-1/2"	Bronze F.I.P. x Meter Flange with handle	James Jones EJ-1913W Ford BF13-666 w/ HB67S NL	For 1-1/2" Meters
Customer Hand Valve, 2"x2"	Bronze F.I.P. x Meter Flange with handle	James Jones EJ-1913W Ford BF13-777 w/ HB67S NL	For 2" Meters
Fire Hydrant	6" Standard Wet Barrel Bronze	AVK 2442 6"x4"x2-1/2" AVK 2452 6"x4"x(2)2-1/2"	
Fire Hydrant Bury	6" Ductile Iron	Clow 6" MJ Wet Barrel Hydrant Bury Sigma/Nappco	
Fire Hydrant Break-Off Check Valve	Break-Off Check Valve for Fire Hydrants in Un- Protected Areas or Near Over-Head Electrical Lines.	Long Beach Iron LB400	
Fire Hydrant Spool, Cast Iron, Flanged			
Fire Service Fitting	Customer Manifold for Splitting Fire and Domestic Service	Mars Company, Residential Fire Service Fitting 070905WH	To be used on the customer side of 3/4" and 1" fire rated meters.
Fitting, Ductile Iron	For water lines 4" and larger. Manufactured per Section 3.04		
Grease	For Bolt Corrosion Protection on Buried Bolts.	No-Ox-ID	
Hose Bib			

Lubricant, Pipe Gasket	Rubber Gasket Pipe Lubricant for use on PVC or DIP Joints.	Christy Pro-Lube	
Meter 5/8"x3/4"	Used for Domestic Water Services.	Badger Meter, Inc. RDLP-T-5/8x3/4 (Low Profile) RD-T-5/8x3/4	
Meter 3/4" Fire Rated	Used for Residential Dual Domestic and Fire Services.	Performance Water Meters PMF-03 Hersey QOHA101	
Meter 1"	Used for Domestic Water Services.	Badger Meter, Inc. RD-T-1	
Meter 1" Fire Rated	Used for Residential Dual Domestic and Fire Services.	Performance Water Meters PMF-07 Hersey QOKA101	
Meter 1-1/2"	Used for Domestic Water Services.	Badger Meter, Inc. RD-T-1 1/2	
Meter 1-1/2"	Used for Irrigation Water Services.	Hersey Meters MVR 100	
Meter 1" Fire Rated	Used for Domestic Water Services.	Performance Water Meters PMF-09	
Meter 2"	Used for Occasional Domestic Water Services.	Badger Meter, Inc. RD-T-2	
Meter, Water 2" Compound	Used for Typical Domestic Water Services.	Badger Meter, Inc. RCS-T-2	
Meter 2"	Used for Irrigation Water Services.	Badger Meter, Inc. RTS-T-2 Hersey Meters MVR 160	
Meter 3" Compound	Used for Domestic Water Services.	Badger Meter, Inc. RCS-T-3	
Meter, Water 3"	Used for Irrigation Water Services.	Badger Meter, Inc. RTS-T-3	
Meter 4" Compound	Used for Domestic Water Services.	Badger Meter, Inc. RCS-T-4	
Meter 4"	Used for Irrigation Water Services.	Badger Meter, Inc. RTS-T-4	
Meter 6" Compound	Used for Domestic Water Services.	Badger Meter, Inc. RCS-T-6	
Meter Box, For 5/8"x3/4" Meters	12"x20"x12" Polymer meter box with cover and read lid.	Armorcast A6000485 with A6000484DQ Cover A6000484TDQ Traffic Cover and A6000487 Read Lid A6000487T Traffic Read Lid	Use this box for 2" Blow-Off Installations.
Meter Box, For 1" Meters and 3/4" Fire Rated Meters	13"x24"x12" Polymer meter box with cover and read lid.	Armorcast A6001946PCX12 with A6001866DQ Cover and A6000487 Read Lid A6000487T Traffic Read Lid	

Meter Box,	17"x30"x12" Polymer	Armorcast A6001640PCX12	Use this box for 6"
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For 1-1/2" and 2" Meters and 1" Fire Rated Meters	meter box with cover and read lid.	with A6001643D Cover A6001947TDZ Traffic Cover and A6000482 Read Lid A6000482T Traffic Read Lid	Blow-Off Installations.
Meter Vault, For 3" and 4" Meters	48"x96" Meter vault with hinged lids for access and a hinged lid for meter reading.	Armorcast A6001449AX48MT with a 7"x14" Hinged Lid over the Meter	
Paint, Fire Hydrants	For fire hydrants and guard posts.	Rustoleum "Sunburst Yellow" Number 7747	
Pipe, Ductile Iron	For waterlines 4" and larger. Manufactured per Section 3.03	American Pipe Griffin Pacific States U.S. Pipe	
Pipe, PVC C900	For water lines 4" and larger. Manufactured per Section 3.03	Certainteed Johns-Manville	
Service Saddle, For AC Pipe	Bronze with double straps	James Jones J-979 Ford 202B	
Service Saddle, For PVC Pipe	O.D. controlled bronze with wide strap	James Jones J-964 Ford S90	
Tapping Sleeve For AC and PVC Pipe	Stainless Steel Tapping Sleeve with stainless steel bolts and nuts	Ford "Fast" Series Romac "SST" Series	
Valve, 1" Combination Air Release and Vacuum	Single Body Style Combination Air Release and Vacuum Valve	APCO 143C Crispin UL10 ARI D-040	
Valve, 2" Combination Air Release and Vacuum	Single Body Style Combination Air Release and Vacuum Valve	APCO 145C Crispin UL20 ARI D-040	
Valve, Ball – 2"x2"	For use on Air/Vac Assemblies	James Jones EJ-1900 Ford B11-777 NL	
Valve, Ball w/ Locking Tabs	2" Bronze Compression x Compression with Locking Tabs and Brass Handle.	James Jones EJ-1949SGW Ford B44-777-QW NL	
Valve, Butterfly	For use on mainlines 14" and larger	Pratt Groundhog M&H 4500	
Valve, Gate, Resilient Wedge	For use on mainlines 2" through 12"	AVK Series 25 Clow 2640 AFC Series 25	
Valve, Stack Cover	Valve Box Cap – Long Body for Traffic Marked Water	Alhambra A-29608 South Bay Foundary B52	
Valve, Stem Extension with Rock Shield	Round or square 1-1/2" Dia. Stainless Steel Rod.	Pipeline Products SX-908	

# Memorandum

Date: April 14, 2003

To: Regional and District Engineers

From: David P. Spath, Ph.D., Chief (*Original signed by Dave*)  
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Subject: **GUIDANCE MEMO NO. 2003-02: GUIDANCE CRITERIA FOR THE SEPARATION OF WATER MAINS AND NON-POTABLE PIPELINES**

The purpose of this memo is to update guidance dated April 5, 1983 for consistency with proposed 2003 regulations. Should there be any modification to the proposed Water Works Standards that may impact the content of this guidance, the guidance will be amended accordingly.

## **GUIDANCE: CRITERIA FOR THE SEPARATION OF WATER MAINS AND NON-POTABLE PIPELINES**

### **BACKGROUND**

When buried water mains are in close proximity to non-potable pipelines, the water mains are vulnerable to contamination that can pose a risk of waterborne disease outbreaks. For example, sewers (sanitary sewer mains and sewage force mains) frequently leak and saturate the surrounding soil with sewage due to structural failure, improperly constructed joints, and/or subsidence or upheaval of the soil encasing the sewer. If a nearby water main is depressurized and no pressure or negative pressure occurs, that situation is a public health hazard that is compounded if an existing sewer is broken during the installation or repair of the water main. Further, failure of a water main in close proximity to other pipelines may disturb their bedding and cause them to fail. In the event of an earthquake or other disaster, simultaneous failure of all pipelines could occur.

The most effective protection against this type of drinking water contamination is adequate construction and separation of non-potable pipelines and water mains. The Waterworks Standards (Title 22, Chapter 16, Section 64572) provide separation criteria for new construction. However, when these criteria cannot be met, the risk of contamination can be reduced by increasing the structural integrity of pipe materials and joints, and ensuring minimum separation requirements are met. Therefore, the following guidance details construction criteria for the installation of water mains and non-potable pipelines to minimize the risk of contamination of drinking water.



## DEFINITIONS

- **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.
- **CONTINUOUS SLEEVE** - A protective tube of high-density-polyethylene (HDPE) pipe with heat fusion joints or other non-potable metallic casing without joints into which a pipe is inserted.
- **DISINFECTED TERTIARY RECYCLED WATER** - Wastewater that has been filtered and subsequently disinfected in accordance with Section 60301.230, Chapter 3 (Water Recycling Criteria), Title 22, California Code of Regulations.
- **HOUSE LATERAL** - A sewer line connecting the building drain and the sanitary sewer main serving the street.
- **SUPPLY LINE** - Pipelines conveying raw water to be treated for drinking purposes in accordance with Section 64572 ©, proposed Water Works Standards.
- **WATER MAIN** - Means any pipeline, except for user service lines, within the distribution system in accordance with Section 64551.70, proposed Water Works Standards.
- **RATED WORKING WATER PRESSURE** - A pipe classification system based on internal working pressure of the fluid in the pipe, type of pipe material, and the thickness of the pipe wall.
- **SANITARY SEWER MAIN** - A gravity sewer conveying untreated municipal wastewater.
- **SEWAGE FORCE MAIN** - A pressurized sewer conveying untreated municipal wastewater.

## APPLICABILITY

Note that the construction criteria presented in this document apply to house laterals that cross above a water main, but not to those house laterals that cross below a water main.

Water mains or non-potable pipelines that are 24-inches in diameter or larger may pose a higher degree of public health concern because of the large volumes of flow involved. Therefore, installation of water mains or non-potable pipelines 24-inches in diameter or larger should be reviewed and approved in writing by the Department on a case-by-case basis prior to construction.

In no case, should water mains and non-potable pipelines conveying sewage or other liquids be installed in the same trench.

## REGULATORY REQUIREMENTS

Any new development project in which all the underground facilities are being constructed for the first time must comply with the following regulatory requirements:

### ***Existing requirements:***

#### Section 64630. (Title 22 CA Code of Regulations) Water Main Installation"

(c) Water mains shall be installed at least:

- (1) Ten feet (3 meters) horizontally from and 1 foot (0.3 meters) higher than sanitary sewer mains located parallel to the main.
- (2) One foot (0.3 meters) higher than sanitary sewer mains crossing the main.
- (3) Ten feet (3 meters), and preferably 25 feet (7.5 meters), horizontally from sewage leach fields, cesspools, seepage pits and septic tanks.

(d) Separation distances specified in (c) shall be measured from the nearest outside edges of the facilities.

(e) Where the requirements of (c) and (d) cannot be met due to topography, inadequate right-of-way easements, or conflicts with other provisions of these regulations, lesser separation is permissible if:

- (1) The water main and the sewer are located as far apart as feasible within the conditions listed above.
- (2) The water main and the sewer are not installed within the same trench.
- (3) The water main is appropriately constructed to prevent contamination of the water in the main by sewer leakage.

(f) Water mains shall be disinfected according to AWWA Standard C601-92 before being placed in service.

(g) Installation of water mains near the following sources of potential contamination shall be subject to written approval by the Department on a case-by-case basis:

- (1) Storage ponds or land disposal sites for wastewater or industrial process water containing toxic materials or pathogenic organisms.
- (2) Solid waste disposal sites.
- (3) Facilities such as storage tanks and pipe mains where malfunction of the facility would subject the water in the main to toxic or pathogenic contamination.

**Although the following requirements have not yet been adopted, they should be within the next two years and should be used as guidance for future construction.**

### ***Proposed requirements as of the date of this document:***

#### **Section 64572. Water Main Separation**

(a) New water mains and new supply lines shall be installed at least 10 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:

- (1) Untreated sewage,
- (2) Primary or secondary treated sewage,
- (3) Disinfected secondary-2.2 recycled water (defined in section 60301.220),
- (4) Disinfected secondary-23 recycled water (defined in section 60301.225), and
- (5) Hazardous fluids such as fuels, industrial wastes, and wastewater sludge.

(b) New water mains and new supply lines shall be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:

- (1) Disinfected tertiary recycled water (defined in section 60301.230), and
- (2) Storm drainage.

(c) New supply lines conveying raw water to be treated for drinking purposes shall be installed at least 4 feet horizontally from, and one foot vertically below, any water main.

(d) If crossing a pipeline conveying a fluid listed in subsection (a) or (b), a new water main shall be constructed perpendicular to and at least one foot above that pipeline. No connection joints shall be made in the water main within eight horizontal feet of fluid pipeline.

(e) The vertical separation specified in subsections (a), (b), and (c) is required only when the horizontal distance between a water main and pipeline is eleven feet or less.

(f) New water mains and new supply lines shall not be installed within 100 horizontal feet of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 feet of any cesspool, septic tank, sewage leach field, seepage pit, or groundwater recharge project site.

(g) The minimum separation distances set forth in this section shall be measured from the nearest outside edge of each pipe.

## **ALTERNATIVE CRITERIA FOR CONSTRUCTION**

### **Water Mains, and Sewers and Other Non-potable Fluid-carrying Pipelines**

When new water mains, new sanitary sewer mains, or other non-potable fluid-carrying pipelines are being installed in existing developed areas, local conditions (e.g., available space, limited slope, existing structures) may create a situation in which there is no alternative but to install water mains, sanitary sewer mains, or other non-potable pipelines at a distance less than that required by the regulations [existing Section 64630 (proposed Section 64572)]. In such cases, through permit action, the Department may approve alternative construction criteria. The alternative approach is allowed under the proposed regulation Section 64551(c):

"A water system that proposes to use an alternative to the requirements in this chapter shall demonstrate to the Department how it will institute additional mitigation



measures to ensure that the proposed alternative would not result in an increased risk to public health.”

Appropriate alternative construction criteria for two different cases in which the regulatory criteria for sanitary sewer main and water main separation cannot be met are shown in **Figures 1 and 2**.

- **Case 1** - New sanitary sewer main and a new or existing water main; alternative construction criteria apply to the sanitary sewer main.
- **Case 2** - New water main and an existing sanitary sewer main; alternative construction criteria may apply to either or both the water main and sanitary sewer main.

#### **Case 1: New Sanitary Sewer Main Installation (Figures 1 and 2)**

##### **Zone Special Construction Required for Sanitary Sewer Main**

- A Sanitary sewer mains parallel to water mains shall not be permitted in this zone without prior written approval from the Department and public water system.
- B If the water main paralleling the sanitary sewer main does not meet the Case 2 Zone B requirements, the sanitary sewer main should be constructed of one of the following:
1. High-density-polyethylene (HDPE) pipe with fusion welded joints (per AWWA C906-99);
  2. Extra strength vitrified clay pipe with compression joints;
  3. Class 4000, Type II, asbestos-cement pipe with rubber gasket joints;
  4. PVC sewer pipe with rubber ring joints (per ASTM D3034) or equivalent;
  5. Cast or ductile iron pipe with compression joints; or
  6. Reinforced concrete pressure pipe with compression joints (per AWWA C302-95).
- C If the water main crossing above the sanitary sewer main does not meet the Case 2 Zone C requirements, the sanitary sewer main should have no joints in Zone C and be constructed of one of the following:
1. HDPE pipe with fusion-welded joints (per AWWA C906-99);
  2. Ductile iron pipe with hot dip bituminous coating and mechanical joints (gasketed, bolted joints);

3. A continuous section of Class 200 (DR 14 per AWWA C900-97) PVC pipe or equivalent, centered over the pipe being crossed;
  4. A continuous section of reinforced concrete pressure pipe (per AWWA C302-95) centered over the pipe being crossed; or
  5. Any sanitary sewer main within a continuous sleeve.
- D If the water main crossing below the sanitary sewer main does not meet the requirements for Case 2 Zone D, the sanitary sewer main should have no joints within four feet from either side of the water main and should be constructed of one of the following:
1. A continuous section of ductile iron pipe with hot dip bituminous coating; or
  2. One of the Zone C options 1, 3, 4, or 5 above.

**Case 2: New water mains Installation (Figures 1 and 2)**

**Zone Special Construction Required for Water Main**

- A No water mains parallel to sanitary sewer mains shall be constructed without prior written approval from the Department.
- B If the sanitary sewer main paralleling the water main does not meet the Case 1 Zone B requirements, the water main should be constructed of one of the following:
1. HDPE pipe with fusion welded joints (per AWWA C906-99);
  2. Ductile iron pipe with hot dip bituminous coating;
  3. Dipped and wrapped one-fourth-inch-thick welded steel pipe;
  4. Class 200, Type II, asbestos-cement pressure pipe;
  5. Class 200 pressure rated PVC water pipe (DR 14 per AWWA C900-97) or equivalent; or
  6. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300-97 or C302-99 or C303-95).
- C If the sanitary sewer main crossing above the water main does not meet the Case 1 Zone C requirements, the water main should have no joints in Zone C and be constructed of one of the following:
1. HDPE pipe with fusion-welded joints (per AWWA C906-99);

2. Ductile iron pipe with hot dip bituminous coating;
  3. Dipped and wrapped one-fourth-inch-thick welded steel pipe;
  4. Class 200 pressure rated PVC water pipe (DR 14 per AWWA C900-97); or
  5. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300-97 or C301-99 or C303-95).
- D If the sanitary sewer main crossing below the water main does not meet the requirements for Zone D Case 1, the water main should have no joints within four feet from either side of the sanitary sewer main and should be constructed as for Zone C.

### **Water Mains and Pipelines Conveying Non-potable Fluids**

When the basic separation criteria cannot be met between water mains and pipelines conveying non-potable fluids, the requirements described above for sanitary sewer mains should apply. This includes the requirements for selecting special construction materials and the separation requirements shown in Figures 1 and 2. Note that not all construction materials allowed for sanitary sewer mains will be appropriate for other non-potable fluid lines. For example, certain plastic lines may not be appropriate for the transport of some fuel products. The selection of compatible materials of construction for non-potable fluids is a decision to be made by the project engineer.

### **Water Mains and Sewage Force Mains**

- Sewage force mains shall not be installed within ten feet (horizontally) of a water main.
- When a sewage force main must cross a water main, the crossing should be as close as practical to the perpendicular. The sewage force main should be at least one foot below the water main.
- When a new sewage force main crosses under an existing water main, and a one-foot vertical separation cannot be provided, all portions of the sewage force main within eight feet (horizontally) of the outside walls of the water main should be enclosed in a continuous sleeve. In these cases, a minimum vertical separation distance of 4 inches should be maintained between the outside edge of the bottom of the water main and the top of the continuous sleeve.
- When a new water main crosses over an existing sewage force main, the water main should be constructed of pipe materials with a minimum rated working pressure of 200 psig or the equivalent.

### **Water Mains and Tertiary Treated Recycled Water or New Supply Lines**

The basic separation criteria for water mains and pipelines conveying tertiary treated recycled water or supply lines are a 4-foot horizontal separation where lines are running parallel and a 1-foot vertical separation (water line above recycled or supply line) where the lines cross each other.

When these criteria cannot be met, the Zone A criteria apply where lines are running parallel, and the Zone C and Zone D criteria apply where the lines cross each other as shown on Figures 1 and 2. For these situations, the Zone "P" criteria are in effect and prohibit construction less than 1 foot in parallel installations and less than 4 inches in vertical (crossing) situations.

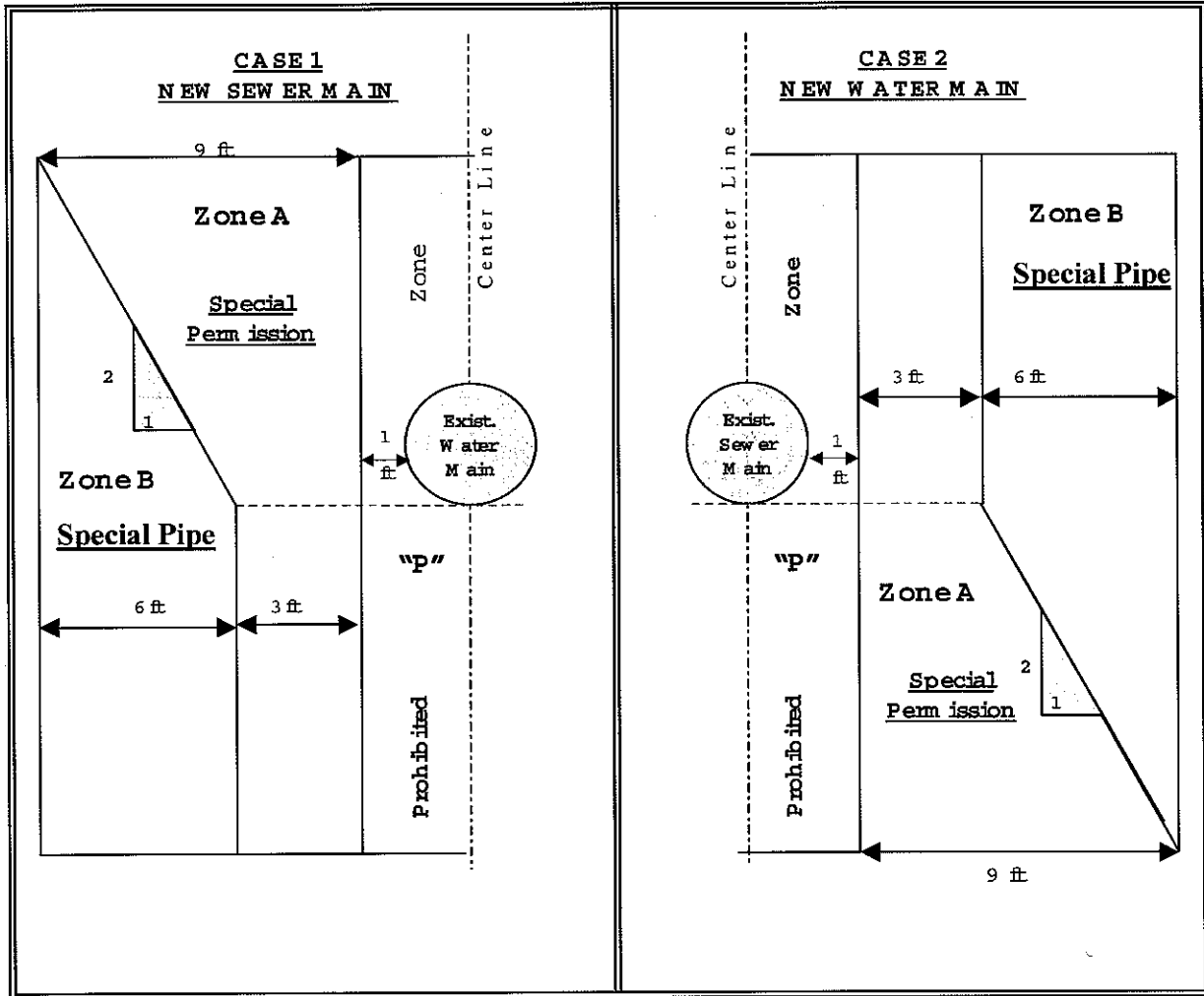
For tertiary treated recycled water and new supply lines, the Zone B criteria (requirements for special pipe) do not apply as the basic separation criteria is a four-foot horizontal separation criteria for parallel lines. The tertiary treated recycled water lines should be constructed in accordance with the color-coding, and labeling requirements per Section 116815, California Health and Safety Code of Regulations.

### **MISCELLANEOUS GUIDANCE**

- More stringent requirements may be necessary if conditions such as high groundwater exist. HDPE or similar pipe may be required to provide flexibility to move without potential joint leaks.
- Sanitary sewer mains should not be installed within 25 feet horizontally of a low head (5 psig or less pressure) water main.
- New water mains and sanitary sewer mains should be pressure tested in accordance with manufacturer's specifications.
- When installing water mains, sewers, or other pipelines, measures should be taken to prevent or minimize disturbances of existing pipelines. Disturbance of the conduit's supporting base could eventually result in pipeline failure.
- Special consideration should 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 producing corrosive hydrogen sulfide.

**NOTE:** Dimensions are from the outside of the water main to the outside of the other pipeline, manhole, or sleeve.

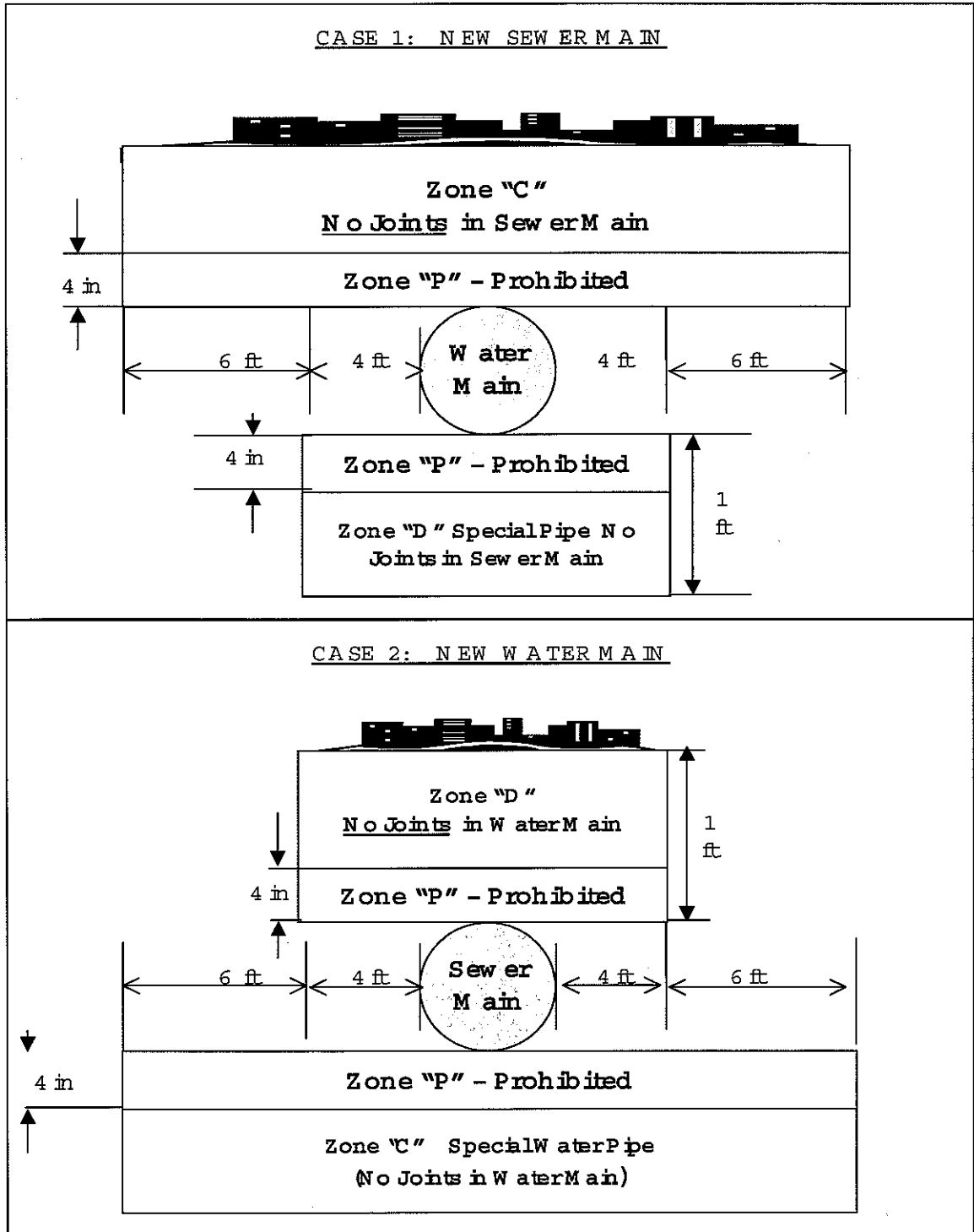
**FIGURE 1 PARALLEL CONSTRUCTION**



Note: Zones identical on either side of center lines

Zones "P" is a prohibited zone, Section 64630 (e) (2) California Administrative Code, Title 22

**FIGURE 2 CROSSINGS**









**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention**

**Article 6. Cross Connection and Backflow Prevention**

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.601. General.**

**Sec. 10-2.601. General.**

Cross connection can be defined as any unprotected connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substances that are not or cannot be approved as safe, wholesome, and potable for human consumption. The term is used in conjunction with backflow prevention. Bypass arrangements, jumper connections, removable sections and other devices through which backflow can occur are considered cross connections. Backflow is the physical process by which contaminants can enter the potable water supply.

No water service connection to any premises shall be installed or maintained by the Water Department unless the water supply is protected as required by said State regulations and the provisions of this section.

The purposes of the provisions in this section are to:

- (a) Protect the public water supply against actual or potential cross connections by isolating within the premises contamination and pollution that may occur because of some undiscovered or unauthorized cross connection on the premises;
- (b) Eliminate known cross connections.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.602. Other applicable codes or standards.**

**Sec. 10-2.602. Other applicable codes or standards.**

(a) All regulations of the Department of Public Health of the State, Title 17 of the California Administrative Code are adopted and made a part of this section by reference or other applicable codes and/or standards.

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(b) Section 12 of the Water Design and Construction Standards shall apply and supplement the information contained herein. That section of the Standards defines various types of backflow prevention as well as presents the list of approved devices.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.603. Cross Connection Control Officer.**

**Sec. 10-2.603. Cross Connection Control Officer.**

The Cross Connection Control Officer for the City is appointed by the Public Works Director and is responsible for overseeing that backflow prevention devices are properly installed, maintained and tested. The area of responsibility for the Cross Connection Control Officer shall be limited to the City's water service area.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.604. Backflow prevention devices.**

**Sec. 10-2.604. Backflow prevention devices.**

(a) Approval and installation. Both the selection and installation of backflow prevention devices required by the provisions of this section shall be approved by the City and shall be installed by and at the expense of the customer.

(b) Testing and maintenance. The devices shall be tested annually by a certified tester with repairs and maintenance as needed. Records of such tests and repairs shall be kept by the customer and made available to the Cross Connection Control Officer. All of the above shall be at the sole cost of the customer.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.605. Requirement to comply.**

**Sec. 10-2.605. Requirement to comply.**

Service of water to any premises may be discontinued by the Water Department if a required backflow preventive device is not installed, inspected, tested, properly operating and

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maintained, or if it is found to have been removed or bypassed, or if unprotected cross connections exist on the premises. In such cases, service shall not be restored until such conditions or defects are corrected to the satisfaction of the Cross Connection Control Officer.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.606. Where devices are required.**

**Sec. 10-2.606. Where devices are required.**

Backflow devices are required at or near the point of service from the public potable water system to any location:

- (a) Having an auxiliary supply, including a groundwater well;
- (b) Where chemicals are manufactured or processed or are used within the premises that could be potentially harmful;
- (c) Where hospitals or doctors' offices, either for humans or animals, with medical and surgical facilities are maintained;
- (d) Where oils and gasses are produced or developed;
- (e) Where there is a mortuary;
- (f) Where there is food processing;
- (g) Where there is a landscape irrigation system;
- (h) Where natural and synthetic rubber, rubber goods and tires are manufactured;
- (i) Where a brewery is operated;
- (j) Where the use within the building might impart an objectionable taste, odor or color;
- (k) Where there is a wastewater treatment facility or pumping station;
- (l) Where there is need for a backflow prevention device for protection of the public potable system.

Backflow prevention devices fall into the following categories: Reduced pressure principle device (RP), double check detector valve, air gap, pressure vacuum breaker, and atmospheric vacuum breaker. The specific device required for a particular location shall be per the Water Design and Construction Standards or as required by the Cross Connection Control

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Officer.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.607. Device requirements.**

**Sec. 10-2.607. Device requirements.**

The following rules are to be used in conjunction with those rules contained in Title 17 of the California Administrative Code and Section 12 of the Water Design and Construction Standards as well as the judgment of the Cross Connection Control Officer. These rules are aimed at protecting the City's water system near the water meter as opposed to internal protection within a building here such internal protection is provided and is approved by the City's Cross Connection Control Officer, protection at the meter may not be required.

(a) Requirement for devices. Any service connection to the public water system from a premises having a potential for harmful or objectionable substances to enter the public water system through backflow cross connections shall be protected.

(b) Auxiliary water supply. Whenever a building or premises has a connection to both the public water system and an auxiliary water supply, the latter shall be protected with either a reduced pressure device or a double check valve depending upon the potential and severity of the cross connection, unless the system was accepted by the City as an additional source of public system water.

(c) Air gaps. Are required at the service connection to any premises on which any material dangerous to health or toxic in nature may be handled under pressure. Also, air gaps shall be used to protect the potable system at wastewater treatment or pumping facilities. The air gap shall be located as close as practicable to the service cock. Other types of devices would only be approved if the air gap is not physically possible.

(d) Reduced pressure principle devices. Are required at industrial and/or commercial facilities using potentially harmful chemicals, hospitals, doctor's offices, irrigation systems (unless protected by air gap or pressure vacuum breaker), fire sprinkler systems using chemical additives, mortuaries, and as required by the Cross Connection Control Officer.

(e) Double check valve assemblies. Are required where products used within the building or premises might impact an objectionable taste, odor or color but would not be hazardous.

(f) Double check detector valves. Are required where there is no other meter

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between the water source and the building such as a fire service line for sprinklered building.

(g) Whenever it is not practical to protect drinking water systems on premises against the entry of water from a source or piping system or equipment that cannot be approved as safe or potable for human use, an entirely separate potable water system shall be installed to supply water at points convenient for consumers.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.608. Fire systems.**

**Sec. 10-2.608. Fire systems.**

Water systems for fighting fire, derived from a supply not approved as safe for potable use shall be kept wholly separate from the potable system. In cases where the domestic water system is used for both drinking and firefighting purposes, approved backflow prevention devices shall be installed to protect the domestic system. Fire protection classes and required devices are as follows:

(a) Classes I and II. Direct connections from the public water mains only; no tanks, reservoirs, or physical connection from other water supplies, no anti-freeze or other additives, no booster pumps creating less than a positive 10 psi suction pressure; all outlets discharging to atmosphere. Generally, Classes I and II do not require backflow prevention devices (i.e., at fire hydrants connected to public main).

(b) Class III. Direct connection from public water system plus either elevated storage tank, fire pumps taking suction from such tanks/reservoirs, or pressure tanks. The water in the storage tanks shall be potable. Generally, Class III requires only double check valves to prevent stagnant waters from backflowing into the potable system.

(c) Classes IV, V and VI. Like Class I and II, but with an auxiliary water supply within one thousand two hundred (1,200') feet of the pumper connection. This class requires a reduced pressure device or double check valve depending upon the quality of the auxiliary water supply. If auxiliary supply is nonpotable source such as contaminated water, industrial water systems or contains chemical additives, an air gap may be required.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.609. Process waters.**

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**Sec. 10-2.609. Process waters.**

Potable water pipelines connected to equipment for industrial processes or operations shall be disconnected therefrom if practicable. Where disconnection is not practicable, a suitable backflow prevention device located beyond the last point from which drinking water may be taken shall be provided on the feed line to process piping or equipment. In the event the particular process liquid is especially corrosive or apt to prevent reliable action of the backflow prevention device, air gap separation shall be provided.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.610. Marking safe and unsafe water lines.**

**Sec. 10-2.610. Marking safe and unsafe water lines.**

Where the premises contain dual or multiple water systems and piping, the exposed portions of pipelines shall be painted, banded, or marked at sufficient intervals to distinguish clearly which water is safe and which is not safe. All outlets from secondary or other potentially contaminated systems shall be posted as being contaminated and unsafe for drinking purposes. All outlets intended for drinking purposes shall be plainly marked to indicate that fact.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.611. Building plumbing.**

**Sec. 10-2.611. Building plumbing.**

All building plumbing and fixtures shall be per the requirements of the Uniform Plumbing Code as amended by the City. The Public Works Department shall have the primary responsibility to prevent water from unapproved sources, or any substance from entering the public water system. The Community Development Department shall also have jurisdiction over the plumbing on the customer's side of the backflow prevention device. The Cross Connection Control Officer shall also have access to the on-site facilities to determine if the potable system is adequately protected.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.612. Premises water supervisor.**

**Sec. 10-2.612. Premises water supervisor.**

Each premises having potential cross connections or requiring backflow prevention and where deemed necessary by the Cross Connection Control Officer shall have a designated person responsible for the installation and maintenance of backflow prevention equipment.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.613. No introduction of chemicals into water supply.**

**Sec. 10-2.613. No introduction of chemicals into water supply.**

No person shall install, maintain, or use any water treatment mechanism, device, or contrivance on any domestic water supply line, or introduce any chemical into any domestic water supply line to or within any consumer premises, in any manner without the prior written approval and authorization of the Health Department and the water purveyor. In the event of any violation of the provisions of this subsection, the water purveyor shall notify the owner, or authorized agent of the owner, of the violating premises of such violation. The water purveyor shall set a reasonable time, not to exceed ten (10) days, for the owner to have the violation removed or corrected. Upon the failure of the owner to have the violation corrected by the end of the specified time interval, the water purveyor, if in his judgment an imminent health hazard exists, may cause the water service to the building or premises to be terminated until the violation is corrected as provided in this subsection.

(Ord. 826-NS, eff. February 24, 1983)

**TITLE 10. UTILITIES / CHAPTER 2. WATER\* / Article 6. Cross Connection and Backflow Prevention / Sec. 10-2.614. Fees.**

**Sec. 10-2.614. Fees.**

Fees for plan checking for backflow devices, for the initial inspection and testing of backflow devices, and for yearly testing (where done by the City) shall be set by Councilmanic Resolution.

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(Ord. 826-NS, eff. February 24, 1983)