

# **WATER AGENCIES' STANDARDS**

## **Design Guidelines for Water and Sewer Facilities**

### **SECTION 2.4 SEWER FACILITY GUIDELINES**

#### **2.4.1 PURPOSE**

- A. This section is a guideline to be used in the design of proposed sewer systems. The Engineer of Work shall be responsible to ensure that improvement plans are processed in accordance with Section 2.2 and designed in accordance with Sections 6.1 through 6.4 and accepted standards of good engineering practice.
- B. Developer facilities will be designed by the Engineer of Work, constructed by the developer's contractor and transferred to the AGENCY upon satisfactory completion and acceptance in accordance with the AGENCY's Rules and Regulations.

#### **2.4.2 STANDARD TERMS AND DEFINITIONS**

Wherever technical terms or pronouns occur in these guidelines or in related documents, the intent and meaning shall be interpreted as described in Standard Terms and Definitions.

The following terms and definitions as found in this section shall have the following meaning:

DHS: The State of California, Health and Welfare Agency, Department of Health Services (DHS). DHS set requirements for minimum horizontal and vertical separation between potable water, recycled water and/or sewer lines. Also refer to WAS Standard Drawing WI-01 through WI-03.

#### **2.4.3 GENERAL**

It is the responsibility of the user of these documents to make reference to and/or utilize industry standards not otherwise directly referenced within this document. The Engineer of Work may not deviate from the criteria presented in this section without prior written approval of the Agency's Engineer.

#### **2.4.4 PIPE SIZE AND MATERIAL**

- A. The minimum size and type of material for sewer pipelines shall be in accordance with Section 6.1. Residential, commercial or industrial lateral service sizes shall be as shown on the improvement plans. The AGENCY will not accept sewer lines that are constructed in a common trench with another utility.
- B. Approved materials and manufacturers for service materials and connections are listed in WAS Approved Materials List.

#### **2.4.5 FLOW DESIGN CRITERIA**

- A. Residential, commercial, and industrial design flows shall be based on flow and peaking factors listed in Section 4.2.

- B. The maximum depth of flow in relation to the diameter of pipe is listed in Section 4.2.
- C. For minimum and maximum slope criteria for sewer pipelines, see Section 4.2.
- D. For minimum and maximum velocity criteria for gravity sewer pipelines, see Section 4.2.

#### **2.4.6 DEPTH OF COVER**

Depth of cover for sewer pipelines shall be in accordance with Section 6.1.

#### **2.4.7 STANDARD LOCATION AND ALIGNMENT**

For standard location and alignment of gravity sewer pipelines, see Section 6.1. For sewer lines allowed within an easement, refer to Section 1.5 for easement widths and locations.

#### **2.4.8 SEPARATION CRITERIA FOR WATER, SEWER AND RECYCLED WATER**

##### **A. Horizontal Separation:**

The State of California, Health and Welfare Agency, Department of Health Services (DOHS) regulations require a minimum horizontal separation between water and recycled water or sewer lines as shown on WAS Standard Drawing WI-01 and WI-03. There are special construction methods and/or variations that may be used when these separations cannot be achieved. The Engineer shall approve separations that do not meet the DOHS regulations.

##### **B. Vertical Separation:**

1. Water, sewer, and recycled water lines are typically located vertically from the street surface down in order of decreasing quality. Water shall be the shallowest and sewer lines shall be the deepest. WAS Standard Drawing WI-02 and WI-03 showing the clearance requirements for perpendicular construction of water, sewer, and recycled water pipelines.
2. Continuous steel casing of either a water line or a sewer line will also be allowed in accordance with WAS Standard Drawing WI-03.

#### **2.4.9 STATIONING PROCEDURE**

Stationing for sewer lines shall be as listed in Section 1.1.

#### **2.4.10 NOTES**

The Water Agencies' Notes for development improvement plans are listed in Appendix 2.2.B.

#### **2.4.11 MANHOLES**

Manhole type, size, spacing, access, lining and manhole appurtenances shall be in accordance with Section 6.2.

#### **2.4.12 FORCE MAIN DESIGN CRITERIA**

- A. For sewer lift station force main design criteria refer to Section 6.4.
- B. For minimum and maximum velocity criteria for sewer lift station force mains refer to Section 4.2.

#### **2.4.13 SEWER LATERALS**

Sewer laterals shall be in accordance with Section 6.3.

#### **2.4.14 SEWAGE LIFT STATIONS**

- A. The AGENCIES have established standard design guidelines for interim sewage lift stations. Interim sewage lift stations will serve a development until a master planned sewer lift station or facility is constructed and operational. The interim sewage lift station design criteria are listed in Section 10.1. The Engineer of Work shall follow the criteria to meet the needs of an individual development and the developer shall be responsible to pay all costs for design, construction, and eventual demolition of the interim lift station.
- B. Design criteria for permanent master planned lift stations are also listed in Section 10.1. The AGENCY will reserve the right to have a developer's engineer design and contractor construct a lift station and reimburse them for the costs or provide the design and construction services independent of the developer.
- C. In some cases it may be necessary for a developer to design, construct, and dedicate to the AGENCY a permanent sewer lift station that is not a master planned facility. The design criteria for permanent sewer lift station shall govern for these unplanned facilities.

#### **2.4.15 REFERENCE**

- A. Should the reader have any suggestions or questions concerning the material in this section, contact one of the member agencies listed.
- B. The publications listed below form a part of this section to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said publications unless otherwise called for. The following list of publications, as directly referenced within the body of this document, has been provided for the users convenience. It is the responsibility of the user of these documents to make reference to and/or utilize industry standards not otherwise directly referenced within this document.

1. Water Agencies Standards (WAS):

a. Design Guidelines:

- 1. Section 1.1, Drafting Guidelines
- 2. Section 1.5, Easements and Encroachments
- 3. Section 2.2, Development Plan and Permit Processing Procedures
- 4. Section 4.2, Sewer Planning
- 5. Section 6.1, Gravity Sewer Pipeline Design
- 6. Section 6.2, Sewer Manholes and Cleanouts
- 7. Section 6.3, Sewer Laterals<sup>3</sup>
- 8. Section 6.4, Pressure Systems (Force Main)

9. Section 10.1, Sewer Lift Station Design
  - b. Standard Drawings:
    1. WI-01 through WI-03
  - c. Approved Materials List for Sewer Facilities

END OF SECTION