

WATER AGENCIES' STANDARDS

Design Guidelines for Water and Sewer Facilities

SECTION 5.4 FIRE HYDRANTS AND FIRE SERVICES

5.4.1 PURPOSE

The purpose of this section is to provide an overview and general information regarding the use, sizing, location and design of fire hydrants and fire services.

5.4.2 STANDARD TERMS AND DEFINITIONS

Wherever technical terms 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:

FH: Fire Hydrant Assemblies

FS: Fire Service Assemblies

5.4.3 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.

5.4.4 GUIDELINES

- A. To the extent possible, fire hydrants and fire services shall be laid out in the public right-of-way. Easements may be required in accordance with Section 1.5.
- B. Requirements of need and location of fire hydrants and fire services are established by the Fire Department having jurisdiction in the project area.
- C. Backflow prevention devices are required in accordance with Section 2.2.
- D. Size-on-size wet taps (6-inch to 6-inch, 8-inch to 8-inch, etc.) are not allowed. Size-on-size connections must be made with in-line "Tee" fitting in accordance with WAS Standard Specification 15000 unless otherwise directed by the Agency.
- E. Service taps are not allowed off the fire hydrant or fire service lateral in accordance with Section 5.7.

5.4.5 FIRE HYDRANTS

Fire hydrants shall be installed on potable water mains only. Fire hydrants shall not be installed on recycled water mains. Fire hydrants must conform to AWWA C-503 and to the requirements of the Fire Department having jurisdiction in the project area.

- A. Wet-barrel hydrants shall generally be used for pressures up to two hundred (200) psi. System pressures up to and including one hundred fifty (150) psi require standard wet-barrel hydrants, and pressures up to two hundred (200) psi require high-pressure wet-barrel hydrants in accordance with the WAS Approved Materials List.
- B. The Fire Department having jurisdiction in the area of the proposed fire hydrant shall provide the location(s) of fire hydrant(s) within a development with the specific location in accordance with WAS Standard Drawings WF-01 through WF-05. If there are conflicts with the proposed location or if a different location would be more beneficial then the Engineer of Work shall consult with the Fire Department for approval.
- C. In general, fire hydrants are located at street intersections, but not more than six hundred feet (600') apart in single-family residential areas nor more than three hundred feet (300') apart in multi-family residential, commercial, and industrial areas. Fire hydrants in the middle of blocks are located on lot lines.
- D. Fire hydrants shall be installed in accordance with WAS Standard Specification 15300 and Standard Drawings WF-01 through WF-04 and the following criteria:
- For eight inch (8") or larger diameter dead-end mains, a maximum of two fire connections with either fire hydrants and/or fire services are allowed.
 - For eight inch (8") or larger diameter mains when looped, two or more fire hydrants can be installed.
 - No more than two fire hydrants (fire services), or one fire hydrant and one fire service, are allowed on dead-end mains or to be out of service at any time.
- E. Fire hydrant outlet sizes and configuration shall be as shown on the Approved Plans or as directed by the Fire Department of jurisdiction. Hydrants shall generally have the following number and size of outlets as directed by the fire department of jurisdiction:
1. Residential: One (1) two and one half inch (2½") outlet and one (1) four inch (4") outlet.
 2. Commercial and light industrial: Two (2) two and one half inch (2½") outlets and (1) four inch (4") outlet.
 3. Industrial: One (1) two and one half inch (2½") outlet and two (2) four inch (4") outlets.
- F. Fire hydrants must be installed perpendicular to the water main, and may not be installed in cul-de-sacs unless otherwise approved by the Agency Engineer. The Engineer of Work should check (on a case-by-case basis) if an eight inch (8") diameter fire hydrant lateral is necessary to supply such fire hydrants. Alignment of fire hydrant ports shall be in accordance with WAS Standard Drawing WF-04.
- G. Depending on location, fire hydrant assemblies may require protection posts or concrete retaining walls. When required by the Agency Engineer, or when shown on the Approved Plans, protection posts or retaining walls shall be installed in accordance with WAS Standard Drawings WF-04, WM-03 and WM-04.

- H. Relocation: When a water main is replaced by a parallel main, the fire hydrant is moved three feet (3') in either direction from its original location; when the main is replaced in place, the fire hydrant can be replaced in its original location. Reconnection to existing fire hydrants from new water mains is acceptable provided no horizontal offset of the stub line is required. Age and condition of an existing fire hydrant will also dictate the need for replacement that is established by the Agency Engineer.

5.4.6 FIRE SERVICES

Fire service shall be installed on potable water mains only. Fire services shall not be installed on recycled water mains.

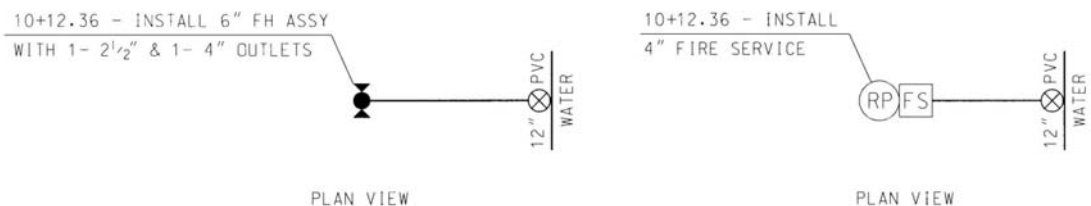
- A. Fire service requirements are determined by the Fire Department having jurisdiction in the area of the proposed fire service. The Fire Department of jurisdiction shall provide the location(s) of fire service(s) within a development with the specific location in accordance with WAS Standard Drawings WF-01 through WF-05. If there are conflicts with the proposed location or if a different location would be more beneficial then the Engineer of Work shall consult with the Fire Department for approval.
- B. Fire service plans must show all existing onsite fire hydrants.
- C. Fire services must be installed perpendicular to the water main and in accordance with WAS Standard Specification 15112 and Standard Drawing WF-05.
- D. Relocation: When a water main is being replaced or relocated, existing, unused fire services to fully developed lots may not be replaced or reconnected. Conversely, existing active fire services to vacant lots may be replaced or reconnected, unless a permitted building plan for the lot shows otherwise.

5.4.7 NOTATIONS ON PLANS

Fire hydrants and fire services shall be shown in the plan view portion of the sheet(s) only and shall include, but not be limited to, the following minimum information:

- A. Standard symbols, stationing and plan callout notes shall be in accordance with Section 1.1.
- B. Fire hydrants and fire services shall be shown with the following information:
- Stationing of the Fire hydrant and/or fire service at the connection to the pipeline.
 - Size of Fire hydrants and/or fire services.
 - Refer to Figure 1 below.

Figure 1
Fire Hydrants and Fire Service Assembly Plan Callouts



5.4.8 MATERIAL SELECTION

Fire hydrants, fire services and appurtenant components to be used with the installation of water systems shall be in accordance with WAS Standard Specification Section 15112 and 15300 and the Approved Materials List.

5.4.9 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 5.7, Water Services and Test Stations
 - b. Standard Specifications:
 1. Section 15000, General Piping System and Appurtenances
 2. Section 15112, Backflow Preventers
 3. Section 15300, Fire Hydrants
 - c. Standard Drawings:
 1. WF-01 through WF-05 for fire hydrants and fire services.
 2. WM-03
 3. WM-04
 - d. Approved Materials List for Water Facilities
 2. American Water Works Association (AWWA):
 - a. AWWA C503, Wet-Barrel Fire Hydrants

END OF SECTION