

SECTION 33 12 19
WATER UTILITY DISTRIBUTION FIRE HYDRANTS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Water Works Association (AWWA):
 - a. C502, Dry-Barrel Fire Hydrants.
 - b. C503, Wet Barrel Fire Hydrants.
 - c. C600, Installation of Ductile-Iron Mains and Their Appurtenances.
2. ASTM International (ASTM): C94, Standard Specification for Ready-Mixed Concrete.
3. FM Global Approved.
4. NSF International (NSF):
 - a. NSF/ANSI 61, Drinking Water System Components - Health Effects.
 - b. NSF/ANSI 372, Drinking Water System Components - Lead Content.
5. UL: 246, Standard for Hydrants for Fire-Protection Service.

1.02 SUBMITTALS

A. Action Submittals: Catalog cuts of system components.

1. Include calculations for thrust blocks for high-pressure installations (if required).

B. Informational Submittal:

1. Certificate of Compliance: Upon completion of the system installation, verify all fire department hose connections, and check all fire safety devices to ensure their readiness for emergency connection and operation.

PART 2 PRODUCTS

2.01 GENERAL

A. Physical Characteristics: None.

B. Functional Characteristics: Use or reuse of components and materials without a traceable certification is prohibited.

C. Performance Characteristics:

1. Components and Materials in Contact with Water for Human Consumption: Comply with the requirements of the Safe Drinking Water Act and other applicable federal, state, and local requirements. Provide certification by manufacturer or an accredited certification organization recognized by the Authority Having Jurisdiction that components and materials comply with the maximum lead content standard in accordance with NSF/ANSI 61 and NSF/ANSI 372.

2.02 LOW PRESSURE HYDRANTS

A. Hydrant:

1. Physical Characteristics:
 - a. Break flange type.
 - b. Nominal 5-1/4-inch main valve opening with 6-inch bottom connections.
 - c. Two 2-1/2-inch hose nozzles.
 - d. One 4-1/2-inch pumper nozzle.
 - e. Purple aboveground line.
 - f. Main Valve:
 - 1) Depth of Bury: 3-1/2 feet.
 - 2) Equip with O-ring seals.
 - 3) Valve opens on counterclockwise rotation.
2. Functional Characteristics: Conform to AWWA C502.
3. Performance Characteristics:
 - a. Operating Nuts: 1-1/2-inch National Standard pentagon nut.
4. Mechanical joint inlet connection.

2.03 OR EQUALHIGH PRESSURE HYDRANTS

A. Hydrant:

1. Physical Characteristics:
 - a. Break flange type.
 - b. Nominal 5-1/4-inch main valve opening with 6-inch bottom connections.
 - c. Two 2-1/2-inch hose nozzles.
 - d. One 4-1/2-inch pumper nozzle.
 - e. Purple aboveground line
 - f. Main Valve:
 - 1) Depth of bury 3-1/2 feet.
 - 2) Equip with O-ring seals.
 - 3) Valve opens on counterclockwise rotation.
2. Functional Characteristics: Conform to AWWA C502, except working pressure of 250 psi.

3. Performance Characteristics:
 - a. Operating Nut: 1-1/2-inch National Standard pentagon nut.
 - b. Mechanical joint inlet connection.

2.04 PRECAST CONCRETE PIER BLOCK

- A. Physical Characteristics: Nominal dimensions of 8-inch thickness by 16-inch square base.
- B. Functional Characteristics: Compressive Strength: 3,000 psi at 28 days.
- C. Performance Characteristics: None.

2.05 GRAVEL FOR DRAINAGE

- A. Physical Characteristics: Washed 3/4-inch crushed rock or graded river gravel.
- B. Functional Characteristics: Material free of organic matter, sand, loam, clay, and other small particles that will restrict water flow through gravel.
- C. Performance Characteristics: None.

2.06 FOUNDATION STABILIZATION MATERIAL

- A. Physical Characteristics: Maximum 3-inch hard rock free from excessive clay material, but enough fines to bind larger fragments.
- B. Functional Characteristics: Furnish when existing trench material or imported pipe base material will not support soft or flooded spots in excavated trench.
- C. Performance Characteristics: None.

2.07 CONCRETE FOR THRUST BLOCKING

- A. Physical Characteristics:
 1. Aggregate Size: 1-1/2 inches.
 2. Slump: 2 inches to 4 inches.
- B. Functional Characteristics: Ready-mix meeting ASTM C94, Alternative 2.
- C. Performance Characteristics: Compressive Strength: 2,500 psi at 28 days.

2.08 THRUST TIES

- A. Physical Characteristics: 3/4-inch-diameter steel rods.
- B. Functional Characteristics: None.
- C. Performance Characteristics: None.

PART 3 EXECUTION

3.01 GENERAL

- A. Install hydrants in accordance with Section 3.7 and Section 3.8 of AWWA C600, unless specified otherwise.

3.02 EXCAVATION

- A. Excavate to subgrade. Fill over excavated areas with foundation stabilization material. Tamp to provide firm foundation.

3.03 BASE BLOCK

- A. Place on firm, level subgrade to ensure uniform support.

3.04 INSTALLATION OF HYDRANTS

- A. Locate hydrants to provide accessibility and to minimize potential damage from vehicles.
 - 1. Relocate improperly set hydrants.
 - 2. Hydrant Located behind Curbs: Set barrel so pumper nozzle or hose nozzle caps are a minimum of 18 inches from gutter face of curb.
 - 3. Hydrant Located in Space between Curb and Sidewalk: Not less than 8 inches, clear from sidewalks.
 - 4. Hydrant Located between Sidewalk and Property Line: Minimum clearance 8 inches from sidewalk.
 - 5. Set hydrants so safety flange is a minimum of 2 inches above finished ground or sidewalk level.
- B. Place hydrant on base block carefully to prevent the base block from breaking.
- C. Joints shall conform to Section 3.4 of AWWA C600 when cast or ductile iron pipe is used.
- D. Maintain hydrant in a plumb position during subsequent Work.

3.05 GRAVEL FOR DRAINAGE

- A. Place gravel around base block and hydrant bottom in accordance with Section 3.7 of AWWA C600.

3.06 CONCRETE THRUST BLOCKING

- A. Place blocking after hydrant is set in final position and join to pipe.
- B. Concrete thrust block shall have a minimum of 4 square feet of bearing area against undisturbed earth for a standard pressure installation.
 - 1. Calculate required bearing area for high pressure installation.

3.07 THRUST TIES

- A. Install thrust ties in lieu of concrete thrust blocking when ground surface behind hydrant is less than 2 feet above top of hydrant base.
 - 1. Install two tie rods between main valve and hydrant, water main tee and main valve.

END OF SECTION

