

SECTION 02080

FIRE HYDRANTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Specified
The work specified shall include all labor, material, equipment, tools, services and incidentals necessary to furnish and install hydrants and valve assemblies as shown, specified and required.
- B. Related Work Specified Elsewhere
 - 1. Section 02316 - Select Granular Materials
 - 2. Section 02317 - Rock Excavation
 - 3. Section 02351 - Excavation, Backfill and Trenching
 - 4. Section 03300 - Concrete
 - 5. Section 15051 - Buried Piping Installation
 - 6. Section 15106 - Ductile Iron Pipe, Fittings and Accessories
 - 7. Section 15110 - Valves and Appurtenances
 - 8. Section 15140 - Testing and Disinfection

1.02 QUALITY ASSURANCE

- A. Manufacturer's Qualifications
 - 1. Manufacturer shall have a minimum of 5 years experience producing fire hydrants and shall show evidence of at least 5 installations in satisfactory operation.
- B. Parts Interchangeability
 - 1. Hydrants and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least five years.
 - 2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.
- C. Reference Standards
 - 1. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
 - 2. ASTM A354, Specification for Quenched and Tapered Alloy Steel Bolts, Studs, and Externally Threaded Fasteners
 - 3. AWWA C502, Standard for Dry-Barrel Fire Hydrants
 - 4. NSF/ANSI Standard 61

5. Underwriter's Laboratories (UL)
6. International Organization for Standardization (ISO)
7. Factory Mutual Research Corporation

1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
 1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all fire hydrant materials.
 2. Engineering data including dimensions, materials, size and weight.
- B. Operation and Maintenance Data: Submit complete manuals including:
 1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
- C. Certificates:
 1. Where specified or otherwise required by ENGINEER, submit test certificates.
 2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
 3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this Section, including interior coatings, by an independent, authorized laboratory.
- D. Delivery Tickets:
 1. Furnish delivery tickets indicating the manufacturer, identifying that the fire hydrant was new and from a manufacturer that has been submitted and approved.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the materials. Do not drop or roll materials off trucks. All hydrants and valves shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of hydrants and valves shall be kept free from dirt and foreign matter.

- E. Store all hydrants, valves and appurtenances on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Hydrants shall be unloaded opposite to or as close to the place where they are to be laid as is practical to avoid unnecessary handling.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
 - 1. All products, including interior coatings, shall be suitable for use in a potable water system.
 - 2. Interior coating shall be certified to meet NSF/ANSI Standard 61.
 - 3. All materials shall be suitable for use in potable water systems.
 - 4. All hydrants shall have manufacturer's name cast in raised letters on hydrant body.
 - 5. All bolts required to connect buried valves shall be Type 304 stainless steel or fluorocarbon coated, high strength corrosion resistant low alloy steel.
 - 6. All other bolts, nuts and studs shall, unless otherwise specified, conform to ASTM A307, Grade B; or ASTM A354.
 - 7. Bolts and nuts shall have hexagon heads and nuts.
 - 8. Gasket material and installation shall conform to manufacturer's recommendations.
 - 9. Hydrant shut-off gate valve (auxiliary valve) shall be resilient seat as specified in Section 15110, Valves and Appurtenances.
 - 10. All hydrants, valves, and appurtenances must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.
- B. Hydrants
 - 1. Hydrant shall be cast iron body, break-away type barrel, "O" ring operating stem seal and a 300 psi test pressure with a minimum 150 psi working pressure, in accordance with AWWA Standard C-502, latest revision.
 - 2. All operating parts, including brass valve seat, shall be removable through the barrel without excavation.
 - 3. Hydrant shall be compression type, with valve opening not less than 5-¹/₄ inches, with readily removable brass seats and non-rising stems. Valve shall open against pressure and shall close with pressure. Valve opening limit stops shall be in the shoe of the hydrant.
 - 4. Hydrant shall have two 2-¹/₂-inch hose nozzles and one 4-¹/₂-inch steamer connection with National Standard threads and operating nuts.

5. Hydrants shall be designed to allow 5 feet of cover on the branch and allow 15-inches to 18-inches between the centerline of the lowest nozzle and the surface of the ground.
6. Operating nuts and caps shall be 1-³/₈ inch square and shall turn right (clockwise) to close. Nozzle caps shall be chained to the barrel.
7. Hydrant piping shall be 6-inch restrained ductile iron pipe mechanical joint or anchor pipe unless otherwise specified.
8. Weep holes shall be provided for drainage and remain unplugged. If required by the OWNER, weep holes are to be plugged and the hydrant pumped dry after all flushing, testing, and other filling operations.

C. Acceptable Manufacturers

1. Kennedy - Guardian,
2. Mueller - Centurion,
3. Clow-Medallion,
4. American AVK Model 2780.

2.02 PAINT

- A. All interior wetted surfaces of fire hydrants except finished or bearing surfaces shall be shop painted in accordance with NSF/ANSI Standard 61 specifications for potable water and applied in accordance with the manufacturer's recommendations. Exterior surfaces shall be factory painted with touch-up paint applied in field, as necessary, meeting the following criteria:
1. OSHA safety yellow.
 2. Conforming to Federal lead standards.
 3. Polyurethane modified alkyd.
 4. Solids by weight 67.5%.
 5. Solids by volume 46%.
 6. Paint shall not be supplied in spray-can container.
 7. Manufacturers: Dutch Standard DEF1-Rust Enamel #448, Rust-Oleum #944, Pennsbury Hydrant-Hide #9032, Con-Lux Steel Guard #8504 Caution Yellow and Bruning Silathane #52035 Yellow, or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Install all hydrants and components in accordance with manufacturer's instructions.
2. The hydrant shall be set plumb with the center of the lowest nozzle between 15 inches and 18 inches above the finished grade or as specified by the ENGINEER. The pumper nozzle shall be oriented normal to the near edge of pavement.

3. The auxiliary valve shall be located as close to the main line as possible and at no time shall the center of the hydrant to the center of the auxiliary valve be less than 36 inches. The valve shall not be placed in pavement.
4. No part of the hydrant shall be closer than 2 feet to the face of the curb or 5 feet to the edge of the pavement where no curb exists or as per governing municipalities requirements.
5. All pipe connecting the main to the hydrant stem shall be 6 inch ductile iron pipe, fully restrained by use of anchor pipe or mechanical restraints as specified. Use of tie-rods shall be restricted to restraining existing conditions.
6. A drain pocket of clean No. 1 stone shall be provided as shown on the Drawings.
 - a. The granular material shall be extended above the hydrant drain.
7. Grease all hydrant nozzle threads after installation. The upper stem shall be lubricated with oil or grease. If grease is used, provide alemite fittings. Lubricate areas to be sealed from wet areas with "O" rings. Grease used shall be a food grade compound specially formulated for fire hydrants.
8. Install concrete block during hydrant installation for thrust restraint.

B. Inspection

1. All hydrants and valves will be inspected by the ENGINEER prior to installation. Damaged or defective materials will be rejected whether previously incorporated into the work or not.
2. Prior to the work in this section, the CONTRACTOR shall inspect the installation area to determine if the work of other trades has progressed to the point where the installation may properly commence.
3. The CONTRACTOR shall verify that the installation can proceed in accordance with all pertinent codes and regulations, the original design and the referenced standards.

C. Discrepancies

1. If the above referenced inspection reveals discrepancies, the CONTRACTOR shall notify the ENGINEER immediately.
2. The CONTRACTOR shall not proceed with the installation in areas of discrepancy until said discrepancy is resolved.

3.02 PAINTING

- A. All interior wetted surfaces of fire hydrants except finished or bearing surfaces shall be shop painted in accordance with NSF/ANSI Standard 61 for potable water and applied in accordance with the manufacturers recommendations. Exterior surfaces shall be factory painted yellow and shall be repainted yellow in the field after installation with paint meeting the requirements of this specification.

3.03 TESTING

- A. All parts and components shall be adjusted as required to provide correct operation.
- B. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment required shall be provided by the CONTRACTOR.
- C. CONTRACTOR will replace fire hydrant assemblies, which are leaking or are considered suspect by the ENGINEER.

END OF SECTION