

ITEM W37

HYDRANTS

1.0 DESCRIPTION. The Contractor, under the proposed item(s) for hydrants, shall furnish all the materials for and shall properly set in place, all fire hydrants, gravel drain pits, ductile iron pipe, valves, fittings, Grade Lok hydrant extensions, Megalugs, bolts, and anchors, together with wrenches and keys for the proper completion of the work included under this Contract.

In general, this work includes the connecting up to the water main, installing gravel drain pit, necessary ductile iron pipe, valves, fittings, restraints, and hydrant as herein specified plus concrete anchor thrust restraint as shown on the Drawings or as directed by the Engineer.

It is the intent of this contract that the final installation shall be complete in all respects and the Contractor shall be responsible for minor details and any necessary special construction not specifically included in the Drawings or Specifications.

2.0 MATERIALS. Only materials approved by the Stark County Metropolitan Sewer District may be used for this project.

A. Reference Standards. Latest revisions:

1. ASME B18.2.1.
2. ASTM A307.
3. AWWA C104.
4. AWWA C153.
5. AWWA C502.

B. Shop Drawings.

1. All shop drawings submitted electronically for review and approval shall be returned within two weeks either approved or marked up for further design.
2. After examination of such drawings by the Engineer and the return thereof, the Contractor shall make such correction to the shop drawings as have been indicated and shall furnish the Engineer with electronic corrections.
3. Shop drawings shall be complete in details and indicate all materials as specified herein.
4. Manufacturer's catalog or general web-site information will not be sufficient to fulfill shop-drawing requirements.
5. Prior to or with the delivery of equipment, the manufacturer shall provide two (2) copies of an operation and maintenance manual including storage, installation, start-up, operating and maintenance instructions, and a complete parts list and recommended spare parts list.
6. The O & M manuals shall be in compliance with the General Requirements.

C. Calculations. This section is not applicable.

D. Certifications. This section is not applicable.

3.0 MATERIALS.

A. Hydrant Size and Type.

1. The fire hydrants shall meet the requirements of the AWWA Specifications C502.
2. Fire hydrants shall be Mueller Super Centurion 250 3-Way A-421 or approved equal.
3. Working pressure to be 250 psi.
4. Hydrant nozzles:
 - a. Two (2) 2-1/2" hose nozzles.
 - b. One (1) 4-1/2" steamer nozzle. 4" Mueller quick disconnect, Storz 40STZ fitting shall be provided and installed onto the nozzle.
 - c. Nozzles shall have National Standard Threads.
 - d. Provide cast iron caps secured with suitable non-kinking steel chain.
5. Fire hydrants shall have trench depth of 5'-0".
6. The hydrant shall open by turning counterclockwise (left).
7. The hydrants shall be of the compression type with the main valve opening against the pressure and closing with the pressure.
 - a. Main valve opening shall be 4-1/2" minimum.
8. The upper section of the hydrant, which houses the upper stem threads and bronze operation nut shall be designed so that all threaded and bearing metal surfaces are sealed away from the line pressure when the hydrant is in either the open or closed position.
9. The seal shall be made by use of "O" rings.
 - a. All threaded and bearing parts shall be in a lubricated state at all times.
 - b. The lubricant must be either food-grade grease or oil.
10. All fire hydrants shall be of the traffic model type.
 - a. The design shall be such that the upper- and lower-barrel flanges are an integral cast part of the barrel.
 - b. The upper and lower barrels are to be joined at the ground line by means of a breakable cast iron collar, four-part segmental coupling, or a two-part breakable flange.
11. All working parts, except the valve rod, are to be constructed of bronze.
 - a. The operating stem nut is to be bronze and of one-piece construction.
 - b. The operating stem thread shall be not less than one inch outside diameter.
12. The operation nut is to be sealed with three rubber "O" rings in cover plate and cap.
13. Operating cap nuts are to be National Standard Operating nuts and shall be pentagon in shape, measuring 1-1/4" from point to opposite flat.
14. The hydrant shall be so constructed that all internal parts may be removed from the top of the barrel.

- a. Not more than three (3) parts to be removed for removal of stem and all internal parts from top of standpipe.
15. Hydrants, unless noted otherwise on the plans shall be supplied with two or more drain holes and be so constructed that the drip valve is open when the hydrant valve is closed.
16. Each hydrant shall have the name of the manufacturer and the year when made cast upon it in raised letters, and number signifying the order in point of time in which it was cast.
17. The different parts of all hydrants shall be perfectly interchangeable.
 - a. Each part shall also be interchangeable between other hydrants to be furnished under this contract.

B. Bolts, Studs, and Nuts.

1. Bolts, studs, and nuts shall be stainless steel and shall develop the physical strength requirements of ASTM A307, 60,000 psi tensile strength, and shall have regular heads with dimensions conforming to ASME B18.2.1.

C. Valve.

1. One (1) six-inch diameter MJ gate valve, following Item W27, Valves.

D. Hydrant Connector Pipe.

1. The connector pipe shall be GradeLok by Assured Flow Sales, Inc. or approved equal.
2. The connector pipe shall be compact ductile iron conforming to AWWA C153 and shall be cement lined in accordance with AWWA C104.
3. The connector pipe shall have a working pressure rating of 350 psi.
4. The connector pipe shall have an anchoring feature at both ends so that when used with split glands a restrained joint is provided.
5. The connector pipe shall be of the offset design so that the fire hydrant can be adjusted to ensure placement at the proper grade.
6. The connector pipe shall be installed between the gate valve and the fire hydrant.

E. Additional Items.

1. One (1) adjustable hydrant wrench shall be supplied with each five (5) or less hydrants purchased.
2. Provide one (1) gallon of factory red paint.
3. Provide one (1) gallon of factory reflective white paint.
4. Provide one (1) 10.5 ounce bottle of Mueller, food-grade lubricant.

4.0 EXECUTION. The Contractor shall provide all laborer, materials, equipment, and tools necessary to provide and install the hydrant assemblies as shown on all detailed Drawings and specified as below.

A. Installation.

1. Hydrants shall be installed where shown on the detailed Drawings or as directed by the Engineer.
2. The completed installation shall be completely accessible and shall be such that the possibility of damage from vehicles or injury to pedestrians will be minimized.
3. All hydrants shall be installed plumb.
4. Upon completion, the steamer nozzles shall face the roadway.
5. Each hydrant shall be connected to the main with a 6-inch branch connection controlled by an independent 6-inch gate valve as shown on the Drawings.
6. As herein required and as shown on the plans, a drainage pit, shall be excavated at each hydrant and filled with coarse gravel or crushed stone, mixed with coarse sand, compacted in place under and around the elbow of the hydrant as illustrated on the Drawings.
 - a. No drainage pit shall be connected to any sewer.

B. Cleaning and Painting.

1. The fire hydrant shall be painted with a good rust inhibitor undercoat and the barrel and dome a finish two (2) coats of the factory-painted red (10) with the dome painted reflective white (FP) per Mueller's specifications.
2. The portion of the hydrant above the protection case shall be painted outside with two (2) field coats of approved paint.

5.0 ELECTRICAL. This section is not applicable.

6.0 QUALITY ASSURANCE. The work covered under this section of the Specification is intended to be the work, materials, labor, and equipment required to install the hydrant assemblies as described above. All material used on this project shall be new and unused unless otherwise specified and all workmanship shall be of the best quality. Only qualified and skilled workmen/women shall be employed for all phases of this project. All workmen/women shall be trained in trench safety.

A. Testing.

1. Each hydrant shall be tested at the manufacturer using hydraulic pressure.
2. The criteria for testing the approved hydrants shall conform to the requirements of the Owner with regards to pressures and lengths of tests.
3. Any hydrant found defective shall be rejected.

B. Observation.

1. SCMSD designated representative will visually observe the work performed. The representative will notify the Engineer of any discrepancies with the contract documents in the course of the contractor performing the work. The progress observations by the SCMSD do not waive any rights or remedies, nor divest the Contractor of any responsibility for contract compliance or liability for damage.

C. Warranty.

1. The Contractor shall guarantee all materials and workmanship for a period of one (1) year from the acceptance of the water main after successfully passing all testing requirements above.
2. The Contractor, at their costs, shall be responsible to repair any defects or failures, due to workmanship reported to the Contractor after the testing procedures and/or within the one (1) year warranty period.
3. All repairs shall be made within one (1) week of notification of said defect/failure.

7.0 MEASUREMENT. Measurement of this item of work shall be on the basis of the number of hydrant assemblies installed and accepted in the completed work. Each completed hydrant assembly shall include, but not be limited to, one (1) MJ tee (WM dia. x 6"); six-inch (6") diameter pipe with pipe restraints as specified, one (1) six-inch (6") diameter MJ gate valve and valve box, mechanical joint restraints, bolts, concrete thrust blocks, one (1) Grade Lok hydrant extension, and one (1) hydrant.

8.0 PAYMENT. The unit pricing stipulated for the provision of all labor, equipment, and materials necessary for the Hydrants, as specified above and located on all detail Drawings, shall be unit pricing for each hydrant assembly as follows:

<u>Item</u>	<u>Unit</u>	<u>Description</u>
W37	EA.	[WM dia.]" Hydrant Assembly, Type A
W37	EA.	[WM dia.]" Hydrant Assembly, Type B

END OF SECTION