SECTION 02554
FIRE HYDRANTS

1.0 GENERAL

A. Description

Fire hydrant installation shall include, but not necessarily be limited to furnishing and installing fire hydrants or relocating fire hydrants in accordance with the Contract Documents.

B. Related Work Included Elsewhere

1. Trench Excavation, Backfill, and Compaction: Section 02250
2. Water Main Installation and Chlorination: Section 02551
3. Water Valves and Appurtenances: Section 02552
4. Cast-In-Place Concrete: Section 03300
5. Unit Masonry: Section 04200

C. Quality Assurance

The Commission will inspect all materials before, during and after installation to ensure compliance with the Contract Documents.

2.0 MATERIALS

A. General

Materials shall be furnished in accordance with the Contract Documents.

B. Materials Furnished by the Commission

The Commission will not furnish any materials for fire hydrant installation or relocation.

C. Contractor's Options

None.

D. Detailed Material Requirements

1. Washed gravel for hydrant foundation shall meet the gradation requirements of ASHTO M43, Size Number 57.
2. Fire hydrant leads shall be 6-inch diameter ductile iron pipe and shall be the length as shown on the drawings. Fire Hydrant leads shall not exceed 25 feet in length. All joints shall be restrained.
3. Fire Hydrants

a. Hydrant valve opening shall be at least 5-1/4 inch diameter net. Inlet connection shall be 6-inch mechanical joint.

b. Hose connections shall consist of two 2-1/2 inch diameter hose connections and one 4-1/2 inch diameter steamer or pumper connection. Hose and pumper nozzle threads shall conform to ANSI Specifications B26 for “National (American) Standard Fire-Hose Coupling Screw Thread.”

c. Operating nut shall be 5-sided, 1-1/2 inches from point to flat, and shall turn left (counterclockwise) to open.

d. Hydrant design shall be such that when the barrel is broken, it may be replaced without excavating or breaking adjacent pavement; and such that the entire barrel, including all working parts along with the main and drain valve seats, may be removed for inspection or repair without excavating or disturbing the ground.

e. The groundline lugs and valve rod shall be frangible so that in the event of accident, damage or breaking of the hydrant above or near the grade level, the main valve will remain closed and reasonably tight against leakage. Breakaway lugs are required, breakaway bolts will not be accepted.

f. The main valve seal shall be compression type sealing against a bronze seat and the valve shall open against pressure. The main valve shall be removed by use of a short-stemmed wrench.

g. Minimum bury depth shall be three and a half (3 ½) feet measured from the top of the connecting pipe to the ground level at the hydrant.

h. Bonnet shall have cast on the top an arrow and the word "open" indicating the direction for opening.

i. Fire hydrants shall meet the requirements of the “AWWA” Standard for fire hydrants for ordinary water works service C502. All lug bolts shall conform to ASTM A307, Grade B.

j. Interior of shoe shall be epoxy coated.

k. Fire hydrant shall be factory painted yellow by the manufacturer.

E. Material Storage Note: Materials shall be stored in order to insure the preservation of their quantity, quality and fitness for Work. The Contractor shall place materials on wooden platforms, or other hard, clean surfaces, not on the ground, and the materials shall be placed under cover when directed by the Owner. Stored materials shall be located in order to facilitate prompt inspection by the Owner. Lawns, grass plots, or other private or public property shall not be used for storage purposes without written permission of the owner or lessee. Unless directed or noted otherwise in the Contract documents, there will be no payment for stored materials.

3.0 EXECUTION

A. General

1. Excavation, foundation preparation, backfill, and compaction shall be as specified in Section 02250.

2. Construction methods shall be in accordance with Section 02551.

3. All fire hydrants that are set in the ground but are not yet operational shall have an “OUT OF SERVICE” disc placed on the 4-1/2” discharge outlet by the Contractor.

B. Fire Hydrant Installation

1. Fire hydrants shall be installed and all joints shall be restrained in accordance with the Standard Details, at the locations shown, and to elevations directed by the Commission. Hydrants shall be set within an aggregate drainage well extending the full width of the trench, from the center of the hydrant to a length equal to the width in a direction towards the main line, and from the bottom of the trench to a point 6-inches above the drip opening.

2. Hydrant leads shall be laid level on a firm foundation to ensure that the hydrant is set plumb. Backfill around the hydrant shall be compacted so as to obtain a density of at least 92% of maximum when measured in accordance with AASHTO T180, Method D.

3. Where hydrants are to be relocated, the Contractor shall ascertain whether or not the hydrant valve has been restrained before removing the hydrant to be relocated.

4. Where the existing lead is to be abandoned the lead shall be capped and blocked at the main by removing the hydrant valve and installing the cap or plug. All caps and plugs shall be buttressed and strapped to the main or restrained in accordance with Commission Standards.

5. Main port of fire hydrant shall be directed towards the curb or roadway.

6. There shall be no obstruction within a three foot radius of the hydrant.

C. Field Test

1. Fire hydrants installed at the same time as a new water main shall be tested after installation by the Contractor, along with the water main, in accordance with Section 02551.

2. Fire hydrants installed on an existing water main will be visually inspected for leakage by the Commission at the existing water main line pressure before the excavation is backfilled. The hydrant, valve, and connecting pipe shall be leak-free under line pressure.

4.0 METHOD OF MEASUREMENT

A. Measurement for fire hydrant installations or relocations will be made of the number of hydrants satisfactorily installed or relocated as shown on the Plans or directed by the Commission.

B. Measurement for fire hydrant lead pipe shall be made in accordance with Section 02251 Water Main Installation and Chlorination.

5.0 BASIS OF PAYMENT

A. General

1. Payment will be made at the unit price bid. The price bid shall include furnishing all labor, tools, equipment, and materials necessary to satisfactorily complete the work as shown as specified in strict accordance with the Contract Documents.

2. The price(s) bid for furnishing and installing or relocating fire hydrants shall include the following:

   a. Trench excavation, backfill, compaction, and incidental items as specified in Section 02250.

   b. Furnishing and installing aggregate fill and bedding, tie rods, retainer glands, and concrete thrust blocking as shown on the Standard Details or elsewhere in the Contract Documents.

3. Payment will be made for contingent items when approved by the Commission.

B. Fire Hydrants

1. New

   Payment for furnishing and installing fire hydrants complete and in place will be made per hydrant for the total number placed. The price bid shall include all traffic control, fittings, roadway boxes, jointing and restraining materials, buttresses, strapping, cradling, testing of the installation, removal and disposal of pavement, removal and disposal of sidewalk, removal and disposal of paved ditches, removal and disposal of curb and gutter, providing an approved spoil site, and disposing of all spoil or excess materials; backfilling, suitable bedding and backfill materials, all environmental and erosion or sediment control work including off-site requirements at spoil storage or borrow sites; restoration of all disturbed areas, milling, paving, pavement materials, removing existing buttresses when necessary, connecting to existing pipelines, tees, all hydrant and/or valve extensions (if required), furnishing and placing washed gravel under and around the hydrant; bracing, testing and painting of the complete installation; and all incidental items to complete the hydrant installation.

2. Relocations

   Payment for removing and reinstalling fire hydrants complete and in place will be made per hydrant for the total number placed. The price bid shall include all traffic control, investigation of the existing restraint system, capping and plugging if the existing lead line (if required), retapping the existing water main (if required), fittings, roadway boxes, jointing and restraining materials, buttresses, strapping, cradling, testing of the installation, removal and disposal of pavement, removal and disposal of sidewalk, removal and disposal of paved ditches, removal and disposal of curb and gutter, providing an approved spoil site, and disposing of all spoil or excess materials; backfilling, suitable bedding and backfill materials, all environmental and erosion or sediment control work including off-site requirements at spoil storage or borrow sites; restoration of all disturbed areas, milling, paving, pavement materials, removing existing buttresses when necessary, connecting to existing pipelines, tees, all hydrant and/or valve extensions (if required), furnishing and placing washed gravel under and around

the hydrant; bracing, testing and painting of the complete installation; and all incidental items to complete the hydrant installation

C. Fire Hydrant Lead Pipes

Payment for furnishing and installing fire hydrant lead pipe shall be made in accordance with Section 02251 Water Main Installation and chlorination.

****END OF SECTION 02554****