SECTION 1430

FIRE HYDRANTS

1430.0100 GENERAL

1430.0101 Description of Work. The work under this Section shall consist of furnishing all labor, materials, and equipment required for the installation of fire hydrants, all in accordance with the details shown on the plans and the requirements of these specifications (see TW Standard Detail 500).

1430.0103 Submittals. In order to be accepted for incorporation into the work, the manufacturer's make and model of fire hydrant shall appear on the Approved Materials List (Appendix A).

1430.0104 Delivery, Storage, and Handling. Fire hydrants shall be delivered to the site, stored, and handled in accordance with the manufacturer's instructions.

1430.0200 PRODUCTS

1430.0201 Materials.

(A) Standards. Fire hydrants and the materials used in their manufacture shall comply with the Approved Materials List in Appendix A.

(B) Working Pressure. Fire hydrants shall be designed for a working pressure of 150 pounds per square inch.

(C) Component Parts. Unless otherwise noted, component parts for dry-barrel fire hydrants shall be in accordance with AWWA C502. All components of dry-barrel fire hydrants shall be tested and certified by an approved testing laboratory located in the United States. All component parts shall be readily available.

The fire hydrant's body between the elbow and the top cap shall be fabricated in two parts connected by a swivel flange or breakable flange that permits positioning of the nozzles in any desired direction.

The fire hydrant shall be installed such that when the fire hydrant barrel is broken through any cause—including vehicular damage—it can be replaced without disturbing or replacing the portion of the hydrant below the ground line. Provision shall be made in the manufacture of the stem to allow the stem to be disconnected from the parts above the break point. If breakable or sleeve-type couplings are used, they shall have sufficient torsional strength such that failure of the stem shall occur at a point other than the coupling. The coupling shall be manufactured such that no parts shall be dislodged and fall into the barrel of the fire hydrant, and that the break shall not occur through the pins or bolts holding the coupling to the stem. All parts shall be removable from ground level without excavation of the fire hydrant.

The fire hydrant shutoff shall be of the compression type that provides for closure of the main valve with water pressure. The valve action shall provide positive shutoff at minimum closing torque. Wedge action closing gates and scissor-type main valves shall not be permitted.

The inlet connection shall be a mechanically restrained joint unless otherwise specified. The main valve opening shall be a minimum of 5-1/4 inches.

The fire hydrant shall be designed with O-ring seals to protect the operating stem and threads from water. The seals shall be of the double O-ring type. The O-rings shall move against a bronze, stainless steel, or other non-corrodible metal surface. O-rings shall comply with ASTM D2000.

Upper stem thread lubrication shall be accomplished with either oil or grease. When oil is used, it shall be in conjunction with a functional oil reservoir and oil filler port. The lubricant shall be suitable for a temperature range of -40 degrees F to +150 degrees F. Field lubrication shall be accomplished without disassembly of the unit.

Fire hydrants shall be provided with two 2-1/2-inch hose nozzles and one 4-1/2-inch pumper nozzle. Hose and pumper nozzle threads shall be in conformance with NFPA 194 for National (American) Standard Fire Hose Coupling Screw Threads.

Operating and nozzle cap nuts shall be tapered pentagon nuts not less than 1 inch high. The nut shall measure 1-1/2 inches from point to flat at its base and 1-7/16 inches at the top. Gaskets shall be installed on all nozzle caps. Gaskets shall be in long-life, black rubber in accordance with ASTM D2000. Unless specified on the plans or special specifications, nozzle cap chains shall not be installed. When specified, nozzle cap chains shall comply with the requirements of AWWA C502.

Fire hydrants shall open to the left (counter clockwise). The word “OPEN” and a directional arrow shall be cast in the top of the fire hydrant.

Fire hydrants shall be manufactured with 2 drainholes and provided with an automatic and positively operating, non-corrodible drain. The drain valve shall open as the main valve is closed and vice-versa. The port and seat of the drain valve shall be bronze.

Fire hydrants shall be designed to accept 6-, 12-, or 18-inch extensions.

The shoe or base of the fire hydrant shall connect to a pipe of 6-inch nominal inside diameter unless otherwise noted on the plans. Use of 8 inch base connection hydrant is intended to maximize available flow to the hydrant while minimizing main velocities. Use and application of the 8 inch base hydrant will be determined by Tucson Water New Development and shall be installed per approved plan. The internal surface of the shoe shall be coated with a 2-part thermosetting epoxy protective coating no less than 4 millimeters thick.

After shop priming, the outside of the fire hydrant above finished ground shall be thoroughly cleaned and then shop painted with one coat of primer. The exterior of the fire hydrant above finished ground shall receive one finish coat of aluminum/silver industrial enamel matching the existing Agency hydrant color.

Fire hydrants shall be manufactured with a main valve seat ring of bronze threaded into a bronze drain ring. A 360-degree drain channel shall have a minimum of 2 drain outlets.

1430.0300 EXECUTION

1430.0301 General. Fire hydrants shall be installed as indicated on the plans or as specified in the special specifications. Any changes to the fire hydrant location will require a plan revision approved by Tucson Water.

1430.0302 Installation.

(A) General. Fire hydrants shall be installed in accordance with TW Standard Detail 500.

(B) Workmanship. All the Contractor's or subcontractor's personnel shall be skilled and knowledgeable regarding installation procedures for the fire hydrant and appurtenances being installed.

(C) Supplemental Details. The minimum distance from the centerline of the lowest nozzle and finished grade shall be in accordance with TW Standard Detail 500.

After installation, the Contractor shall paint the hydrant with one coat of aluminum/silver industrial enamel matching the existing hydrant color.

(D) Thrust Restraint. Thrust restraint will be in accordance with Section 1406 and must be pre-approved by Tucson Water.

Concrete thrust blocking, if required, shall be similar to the thrust blocking required for 6-inch, 90-degree bends called for in TW Standard Detail 610, page 2 of 4. Concrete thrust blocking shall only be used for extending existing pipe—which is not mechanically restrained—between the shoe and the main tee. The minimum soil bearing area shall be 7.5 square feet. The Contractor shall ensure that the weep hole in the shoe of the fire hydrant is not obstructed by the concrete thrust blocking. Any concrete thrust blocking shall be placed after the fire hydrant is set in place and connected to the main line.

(E) Fire Hydrant Locks. All fire hydrant locks will be installed by Tucson Water New Development.