SECTION 33 12 00

VALVES, HYDRANTS, AND BLOW OFFS

PART 1 - GENERAL

1.01 This section covers valves, hydrants and blow offs for water lines specified under Section 33 11 00, Water Lines.

1.02 Valve, hydrants and blow offs shall be installed in accordance with the specifications of the local review authority. Standard specifications of the local review authority supersede these specifications on areas of conflict.

PART 2 - PRODUCTS

2.01 RESILIENT SEATED GATE VALVES

A. Gate valves on water lines 2 inches to 60” shall be 250 psi rated, ductile iron, resilient seated, manufactured to meet or exceed the requirements of AWWA C509 or ANSI C515 of latest revision and in accordance with the following specifications and shall be manufactured by according to the Metro Water Services approved materials list.

B. Valves shall have an unobstructed waterway no less than the full nominal diameter of the valve.

C. The valves shall be non-rising stem with the stem made of a low zinc alloy. Two stem seals of the O-ring type shall be provided to prevent leakage around the stem. The seals must be capable of replacement under pressure with the valve fully open.

D. The stem nut, also made of bronze, may be independent of the gate or cast integrally with the gate. If the stem nut is cast integrally, the threads shall be straight and true with the axis of the stem to avoid binding during the opening or closing cycle.

E. The sealing mechanism shall consist of a cast iron gate having a vulcanized synthetic rubber coating with a resilient seat bonded or mechanically attached to the gate or valve body, in accordance with ASTM D429. The resilient sealing mechanism shall provide zero leakage at 250-psi working pressure when installed with the line flow in either direction.

F. The valve body, bonnet cover shall be cast iron, ASTM A126, Class B or ductile iron per ASTM M536.

G. Buried valves shall have integrally cast restrained mechanical joint ends in accordance with AWWA C111 and 2-inch square wrench nut operators. The manufacturer shall supply mechanical joint accessories. Exposed valves in structures shall have flanged ends and removable hand-wheel operators. The direction of opening for either type of valve shall be clockwise as viewed from the top.

H. All ferrous surfaces of the valve body, both inside and out, including bolt holes, shall be protected by a fusion-bonded epoxy coating in accordance with AWWA C550.

I. Markings shall be cast on the bonnet or body of each valve to identify the size, working water pressure, year of manufacture and manufacturer of the valve.

2.02 VALVE BOXES

A. All valves not inside structures shall be provided with cast iron valve box frame and covers over pre-cast concrete valve boxes, unless noted otherwise on the drawings. Valve boxes shall be pre-cast concrete sections with footing blocks as specified by the water utility department. Valve box covers shall be marked “Water” unless noted otherwise. Valve box assembly shall meet H20 loading conditions.

2.03 FIRE HYDRANTS

A. Fire hydrants shall be iron bodied fully bronze mounted hydrants to equal or exceed AWWA Specification C-502, latest revision. Hydrants shall be suitable for 250 psi working pressure and shall be subjected to a test pressure of 500 psi. All fire hydrants shall be according to the Utility District’s approved materials list.

B. Inlet connection shall be a 6” restrained mechanical joint. Main hydrant valve shall be compression type, opening against the pressure and closing with the pressure, with a 5-1/4” valve opening.

B. All hydrants shall be equipped with two 2-1/2” hose nozzles, one 5-1/4” pumper nozzle, breakable safety flange and safety stem coupling. Bronze nozzles shall be securely locked to prevent them from Blowing off. Hose threads shall be National Standard. Nozzle caps shall be equipped with non-kink chains.

C. Hydrants shall be the dry barrel type with an oil reservoir and provision for automatic lubrication of stem threads and bearing surfaces each time the hydrant is operated. Double O-ring seals shall be provided to keep water out of the hydrant top. Direction of opening shall be left (counterclockwise) and so marked on the bonnet in cast letters and arrow.

D. Hydrants shall be provided with automatic multiport drain ports arranged to momentarily flush under pressure each time hydrant is operated. A positive stop shall be provided on the operating stem to prevent over travel when operating valve.

F. Fire hydrants shall be supplied with a bituminous coating for buried portion of hydrant and a brilliant red enamel finish for above ground portions of the hydrant. The contractor shall paint the hydrant after installation and flow testing to match Utility District’s standard fire hydrant color policy.

PART 3 - EXECUTION

3.01 VALVE BOXES

A. Install each valve box on a firm base at the proper elevation only after the satisfactory completion of all pressure and leak testing. The valve box shall be installed so as not to transmit any shock or stress to the valve. Carefully backfill and tamp around the valve box so that it remains centered and plumb over the wrench nut of the valve.

B. In its final position the top of the valve box cover shall be exactly flush with any paved surface and not more than 2 inches above any ground surface.

C. Unless otherwise shown or noted, pour a 2-foot square or 2-foot diameter by 6-inch-thick concrete pad around the top of all valve boxes.

3.02 LOCATIONS OF VALVES

A. Valves in water mains shall be located as shown in the drawings or as directed by the A/E.

END OF SECTION