SECTION 33 12 16
WATER VALVES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Gate, butterfly, plug, check, pressure reducing, pressure relief, control valves and their installation.

B. Related work includes but is not limited to,

1. Excavation, Section 31 23 16.
2. Trench backfill, Section 33 05 20 .

1.2 REFERENCES

A. AWWA C111: American National Standard for Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.

B. AWWA C504: AWWA Standard for Rubber-Seated Butterfly Valves.

C. AWWA C508: AWWA Standard for Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS.

D. AWWA C509: AWWA Standard for Resilient-Seated Gate Valves for Water and Sewerage Systems.

E. AWWA C550: AWWA Standard for Protective Interior Coatings for Valves and Hydrants.

F. AWWA C600: AWWA Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

1.3 SUBMITTALS

A. Provide technical information as required for evaluating the quality of the valve. As a minimum include dimensions, weights, materials lists and operation charts.

PART 2 PRODUCTS

2.1 VALVES -GENERAL

A. Underground:

1. Less than 3 inches: Screwed ends.
2. 3 inches and larger: Flanged or mechanical joint ends as specified. Non-rising stem. Two inches square operating nut. Low alloy steel bolts, AWWA C111.

B. Submerged or Above Sewage or Water:

1. Valve body bolts per manufacturer's recommendations.
2. For joining valve to piping system use stainless steel nuts and bolts, Section 05 05 23.

C. Below an Operating Deck: Provide shaft extension from the valve to deck level.

D. Above Ground: Non-rising stems equipped with a hand wheel.

E. Manually Operated Valves Over 6 feet Above Operating Level: Provide chain operated handles.

F. Clearance: Install so that handles clear all obstruction when moved from open to closed.

G. Rated Working Pressure: 150 psi unless indicated.
H. Coating: Interior, AWWA C550. Exterior per manufacturer's recommendation.

2.2 **GATE VALVES**

A. Material: Cast iron body, bronze mounted. Furnish valves 3 inches through 48 inches that conform to the requirements of AWWA C509, non-rising stem design with "O" ring seals.
B. Operating Direction: Open counterclockwise.
C. Buried Valves: Flanged, mechanical joint, or as indicated.

2.3 **BUTTERFLY VALVES**

A. Material: Cast iron body, bronze mounted. Furnish valves 3 inches through 48 inches that conform to the requirements of AWWA C504.
B. Body Type: Short body or long body at CONTRACTOR's option or short body valves only where the disc will not interfere with adjacent fittings.
C. Wafer Valves: Subject to approval.

2.4 **ECCENTRIC PLUG VALVES**

A. Material: Cast iron body, bronze mounted, non-lubricated, eccentric, quarter-turn type with resilient face plugs, ductile iron discs with upper and lower shafts integral.
B. Markings: Indicate open and close position.
C. Port Areas: At least 82 percent of full pipe area.
D. Resilient Seat Seals: Buna N, field replaceable.

2.5 **CHECK VALVES**

A. Material: AWWA C508.
B. Valves 2-1/2 inches in Size and Smaller: 200 psi working pressure Y-pattern, bronze, regrinding, swing check valve with screwed ends.
C. Valves 3 inches in Size and Larger: Iron body, bronze mounted, flanged end, swing valves with stainless steel hinge pins.
D. Outside Weight and Lever: Required.

2.6 **PRESSURE REDUCING VALVES -SERVICE LINE**

A. Operation: Capable of reducing a varying higher upstream pressure to an adjustable constant lower downstream pressure.
B. Spring and nylon reinforced diaphragm type construction.
C. Equip with Y-strainer upstream of valve.

2.7 **PRESSURE REDUCING VALVES -MAIN LINE**

A. Operation: Capable of maintaining an adjustable constant downstream pressure regardless of upstream pressure.
B. Type: Hydraulically operated using a direct-acting, spring-loaded, normally open, pilot valve controlled diaphragm.
C. Provide a single removable seat and a resilient disc. No "O" ring type discs permitted.

No external packing glands permitted. No pistons operating the main valve or pilot controls permitted.

D. Equip with Y-strainers on the pilot controls, variable closing and opening speed controls and a valve position indicator.
E. Rating: 250 psi working pressure with flanged connections.
F. Include an upstream and downstream pressure gage capable of accurately measuring system pressures.

2.8 **PRESSURE RELIEF VALVES**

A. Operation: Maintain a constant upstream pressure by passing or relieving excess pressure.
B. Closed Valves: Drip-tight.
C. Type: Hydraulically operated, pilot control using a diaphragm with a single removable seat and resilient disc.
D. Pilot Controls: Direct acting, adjustable between 20 and 200 psi, spring-loaded diaphragm valve.
E. Rating: 250 psi working pressure with flanged connections.

2.9 **CONTROL VALVE**

A. Types: Diaphragm actuated, single seated, composition disc, hydraulically operated globe valve.
B. Pilot Controls: Externally mounted, four-way, solenoid pilot valve with self cleaning strainers and diaphragm type check valves.
C. Equip with a limit switch for pump control.
D. Equip with a built-in lift check valve to prevent flow reversal.
E. Rating: 250 psi working pressure with flanged connections.
F. Solenoids and the Limit Switch: Supplied with operating voltage as indicated.

PART 3 EXECUTION

3.1 **INSTALLATION**

A. Flush all lines before valve installation.
B. In ductile iron water mains install valves, AWWA C600.
C. Install butterfly valve shafts vertical in Vault boxes and horizontal otherwise.

END OF SECTION