SECTION 02732

SANITARY SEWER VALVES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Installation of valves as specified below.

B. Refer to other sections for work related to that specified under this heading.

PART 2 – PRODUCTS

2.1 PLUG VALVES

A. All plug valves shall be eccentric, multi-directional plug valves with 100% full port unless otherwise specified.

B. Valves shall be of the non-lubricated eccentric type with resilient faced plugs and shall be furnished with mechanical joint end connections.

C. Valve bodies shall be of ASTM A126 Class B cast iron. Bodies in 4" and larger valves shall be furnished with a 1/8" welded overlay seat of not less than 90% pure nickel. Seat area shall be raised, with raised surface completely covered with weld to insure that the plug face contacts only nickel. Screwed-in seats shall not be acceptable.

D. Plugs shall be of ASTM A126 Class B cast iron. The plug shall have a cylindrical seating surface eccentrically offset fro the center of the plug shaft. The interference between the plug face and body seat, with the plug in the closed position, shall be externally adjustable in the field with the valve in the line under pressure. Plug shall be resilient faced with neoprene or hycar, suitable for use with sewage.

E. Valves shall have sleeve type metal bearings and shall be of sintered, oil impregnated permanently lubricated Type 316 ASTM A743 Grade CF-8M or AISI Type 317L stainless steel. Non-metallic bearings shall not be acceptable.

F. Valve shaft seals shall be of the multiple V-ring type and shall be externally adjustable and repackable without removing the bonnet or actuator from the valve under pressure. Valves utilizing O-ring seals or non-adjustable packing shall not be acceptable.

G. Valve pressure ratings shall be 175 psi through 12" and 150 psi for 14" through 72". Each valve shall be given a hydrostatic and seat test with test results being certified when required by the specifications.

H. Non-buried manual valves shall have handwheel gear actuators. Buried valves shall be provided with tee wrenches and extension stems. Valves larger than 6" may be equipped with gear actuators, depending on WSD's recommendations. All manual actuators shall be rated for the full pressure rating of the valve. All gearing shall be enclosed in a semi-steel housing and be suitable for running in a lubricant with seals provided on all shafts to prevent entry of dirt and water into the actuator. The actuator shaft and the quadrant shall be supported on permanently lubricated bronze bearings. Actuators shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque and to provide seat adjustment to compensate for change in pressure differential or flow direction change. All exposed nuts, bolts and washers shall be zinc plated.

I. Valves and gear actuators for buried or submerged service shall have seals on all shafts and gaskets on the valve and actuator covers to prevent the entry of water. Actuator mounting brackets for buried or submerged service shall be totally enclosed and shall have gasket seals. All exposed nuts, bolts, springs and washer shall be stainless steel.

J. All valves shall be as manufactured by DeZURIK Model PEF.

2.2 COMBINATION AIR VALVES

A. All force mains shall have combination air valves installed as they are indicated on the plans.

B. The body of the valves shall be conical shaped to maintain maximum air gap with the spring loaded float and seal plug connection combining to ensure no contact between the sewage and the seal.

C. The valve shall have a double float design with the upper float being enclosed in the upper section of the valve and shall be made of polypropylene.

D. The lower float shall be in the main body of the valve and shall be constructed of 316 stainless steel.

E. The body, cover flange, and lower flange shall be constructed of 316 stainless steel and shall have a funnel shaped lower body to automatically drain sewage back into the system.

F. All internal metal parts are to be made from corrosion resistant 316 stainless steel with all operating parts in the upper section to be non-metallic plastic materials.

G. The hinge for operation for the opening and closing of the seal on the orifice shall be made of EPDM rubber.

H. The rolling resilient seal shall provide smooth positive opening, closing and lean free sealing over the fluctuation of the pressure differentials.

I. The working pressure shall be 230 psi and tested to 460 psi.

J. All hardware shall be of stainless steel bolts and nuts, and the entire valve, except to upper outlet, shall be constructed of 316 stainless steel.

K. The connection on all pipelines shall be the following sizing with an isolation valve of the same size:

1. 8-inch and smaller 2-inch threaded

L. Combination air valves shall be model A.R.I. D-025.

M. All valves shall be installed in accordance with manufacturer recommendations and shall have an isolation bronze gate valve connection for control.

2.3 VALVE BOXES AND CLEAN OUT BOXES

A. Valve boxes for sewer valves shall be of the sectional type. The lower section shall be precast and have a minimum dimension of 13.25 by 11 inches and sit atop 4 precast concrete footing blocks. The upper section shall be cast iron frame and cover by John Bouchard & Sons, No. 8006 with the cover marked "Sewer". The boxes shall be set flush with the established ground surface grade.

B. Clean out boxes shall be cast iron with frame and separate cast iron lid. Lid shall be marked SEWER. The lower section of the clean out box shall be precast concrete with a minimum dimension of 13.25 inches by 11 inches. The precast box shall sit on four precast manhole brick and shall be flush with finish ground surface. Casting weight to be minimum of 150 pounds for frame and 45 pounds for cover. Clean out boxes shall be John Bouchard No. 8006 or approved equal. The top of the cleanout cap shall be a minimum of 3 inches from the bottom of the cast iron cover.

2.4 OUTSIDE LEVER AND WEIGHT SWING CHECK VALVE

A. The check valve shall be a flanged, counterweighted, rubber seated swing check valve. The valve shall permit flow in one direction only and shall close tightly without slamming when the discharge pressure exceeds the inlet pressure. The cushioned swing check valve shall be installed with the flow direction either horizontally or vertically up and shall function to prevent reverse flow. The valve shall provide a full equivalent pipe area when open fully.

B. The valve body shall be a one piece cast iron or cast steel casting with integral flanges. The flanges shall be faced and drilled in accordance with ANSI B16.1 Class 125.

C. The hinge shaft shall be located completely above the waterway and shall be constructed of stainless steel with the disc arm and counterweight arm keyed there on. The hinge shaft shall be one piece and shall extend through both sides of the valve body.

D. The body seat shall be bronze or stainless steel, and the disc shall be cast iron conforming to ASTM A126 Class B. The seat ring shall be a resilient field replaceable ring that can be replaced without the use of special tools.

E. A lever and adjustable weight shall be provided to initiate closure.

F. The valve shall be a Golden Anderson Model 250, or APCO Series S-6000.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Valves shall be installed per manufacturer's recommendations.

B. Buried valves shall include mechanical joint ends. All valves for aboveground or vault installation shall include flanged ends.

C. Buried plug valves shall be installed with a 2-inch operating nut accessible from ground level via a cast iron valve box. Flanged plug valves shall be installed with removable, operating lever or handwheel.

D. Valves shall be plumbed for level installation so as not to place end connection in a bind.

E. Valves installed outside paved areas shall include a concrete collar around the valve lid at ground surface.

F. Clean out assemblies shall be installed with a cast iron clean out box over the top of the assembly. Box shall be flush with the finished ground surface. Top of clean out assembly shall be at least 3-inches below the inside surface of the box lid.

G. All check valves shall be mounted in a horizontal position in a valve vault. No check valves shall be installed in the wet well.

H. Combination air valves shall be installed in a 4-foot diameter precast concrete manhole with vented cover. Valves shall be located at high points or as directed by the WSD. Additional force main depth may be required to allow for height of

valve body inside the manhole. Manhole cover shall be flush with existing grade. Valve body shall be adequately supported and braced inside the manhole and not solely dependent upon support by the pipe nipple. All pipe nipples shall be bronze. A cut-off valve with handwheel or lever shall be included to isolate the air valve from the force main. Combination air valves shall be mounted with a double strap, stainless steel tapping saddle manufactured by Ford (FS323 for up to 2-inch tap size) with bronze isolation valve equipped with handwheel. No galvanized piping shall be used.

END OF SECTION 02732 – SANITARY SEWER VALVES