

304 BUTTERFLY VALVE MANHOLES

304.01 DESCRIPTION

[Refer to DC WASA Section 2607]

Work consists of excavation, backfill and compaction beyond trench excavation limits, disposal of excess material, furnishing and placing butterfly valve manholes complete with concrete base, frames and covers at locations indicated in the contract documents and/or as directed. Butterfly valve manholes shall be built over butterfly valves 12-inches through 36-inches diameter.

Related Work specified elsewhere may include but is not limited to:

[305](#): Pipe Water Main – Ductile Iron.

[306](#): Gate/Butterfly Valves.

Reference Codes and Specifications:

- (1) AASHTO M105: “Standard Specification for Gray Iron Castings”.
- (2) ASTM A74: “Standard Specification for Cast-Iron Soil Pipe and Fittings”.
- (3) AASHTO M31: “Standard Specification Deformed and Plain Billet-Steel Bars for Concrete Reinforcement”.
- (4) AASHTO M91: “Standard Specification for Sewer and Manhole Brick (made from Clay or Shale)”.
- (5) ASTM D2146: “Standard Specification for Polypropylene Plastic Molding and Extrusion Material”.
- (6) AASHTO M199: “Standard Specification for Precast Reinforced Concrete Manhole Sections”.

304.02 SUBMITTALS

Shop drawings per [105.02](#) shall be submitted for cast- iron frames and covers.

304.03 MATERIALS

Reinforcing Steel, Grade 60 – [812.02](#)

Cast-in-Place PCC – [817, Class B](#)

Manhole Brick – [806.01\(A\)](#)

Manhole Steps – [822.07](#)

Manhole Frames and Covers – [815.04](#)

Cast-Iron Sump – Cast-iron soil pipe shall be per ASTM A 74, Service classification

Mortar – [806.05\(B\) \(5\)](#)

304.04 CONSTRUCTION REQUIREMENTS

Manholes shall be constructed over butterfly valves up to 36-inches diameter as shown in the Contract Documents. Excavation and backfill shall be per applicable subsections of [207](#).

Manholes shall be constructed of brickwork on a reinforced concrete base, with manhole frames and covers set to approved grade as detailed in the contract documents. Manhole brickwork shall be plumb, true to line, with level and accurately spaced courses, with each course breaking joint with the course below. Joints shall not be less than 3/8 inch nor more than 1/2 inch with a minimum of one header course to every six (6) stretcher courses. Each brick shall be placed with a full joint in a full bed of mortar, shoved up against adjacent brick so that the mortar rises between and completely fills the vertical joint. Exterior surfaces of manholes shall be completely coated with a 1/2 inch mortar parging and made watertight. Manhole steps shall be placed with step legs embedded 7-3/8 inches into the brickwork. Brick masonry walls shall be nine (9) inches thick; thickness shall be increased to 13 inches when the manhole depth exceeds 15 feet.

Brick masonry shall not be placed when the ambient air temperature is below 40 deg. F or when it appears probable that temperatures below 40 deg. F will be encountered before mortar can set, unless adequate approved means are provided for protecting the work from freezing. Work shall be protected by heating and maintaining the temperature of the masonry materials at not less than 40 deg. F and maintaining the air temperature above 40 deg. F on both sides of the masonry for not less than 72 hours. Work with, or on, frozen material is prohibited.

During hot weather, masonry shall be protected from direct rays of the sun. All finished work shall be covered and kept damp for a period of seven (7) days after placement.

Mortar shall be freshly mixed for prompt use; no mortar shall be used after setting or beyond one hour after the addition of water. Re-tempered mortar and freeze-preventive chemical additives are prohibited. The mixing machine, batch size, and mixing time shall be approved by the Chief Engineer. When hand mixing is used, mixing shall be accomplished in a clean, leak-proof, non-porous mortar box constructed for the purpose. Manhole steps shall be aligned on sidewall opposite valve operator.

The bottom flange of the manhole frame shall have two (2) 3/4-inch diameter holes drilled or cast therein, 180 degrees opposed. With frame in proper position at required grade, corresponding holes shall be drilled, a minimum of two (2) inches deep, into the brick masonry upon which the frame sits. Steel dowels shall be inserted through and into these holes to prevent lateral movement of frame and cover during backfill operations. Dowels shall be No. 5 rebars, three (3) inches minimum length, or approved equivalent.

304.05 MEASURE AND PAYMENT

The unit of measure will be each.

Payment for Butterfly Valve Manhole will be made at the Contract unit price per each, which payment will include excavation and backfill beyond trench excavation pay limits, concrete base, riser sections, castings and all labor, materials, tools, equipment and incidentals needed to complete work specified.