SECTION 33 05 13 - MANHOLES AND STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Monolithic concrete manholes with transition to lid frame, covers, anchorage, and accessories.

B. Modular precast concrete manhole sections with tongue-and-groove joints covers, anchorage, and accessories.

C. Monolithic FRP manholes with transition to lid frame, covers, anchorage, and accessories.

D. Masonry manhole sections with masonry transition to lid frame, covers, anchorage, and accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 04 05 11 - Mortar and Masonry Grout.

1.03 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; 2011.

B. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.

C. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.

D. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale); 2013.

E. ASTM C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections; 2015a.

F. ASTM C478M - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections (Metric); 2015a.

G. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals; 2008 (Reapproved 2013).

H. ASTM C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (Metric); 2008b (Reapproved 2013).

I. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells; 2012.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manhole covers, component construction, features, configuration, and dimensions.

C. Shop Drawings: Indicate manhole locations, elevations, piping sizes and elevations of penetrations.

D. Manufacturer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C478 (ASTM C478M), with resilient connectors complying with ASTM C923 (ASTM C923M).

B. Manhole Sections: ASTM D3753, glass-fiber reinforced polyester with integral steps.

C. Concrete: As specified in Section 03 30 00.

D. Clay Brick Units: ASTM C62, Grade SW solid units; nominal modular size of 2-1/4 x 3-5/8 x 7-5/8 in.

E. Mortar and Grout: As specified in Section 04 05 11, Type S.

F. Reinforcement: Formed steel wire, galvanized finish, wire diameter as indicated on drawings.

G. Concrete Reinforcement: As specified in Section 03 30 00.

H. Admixtures, General: Chemical type conforming to ASTM C494/C494M (wet mix only).

I. Air-Entraining Admixture: Conforming to ASTM C260/C260M (wet mix only).

2.02 COMPONENTS

A. Lid and Frame: ASTM A48, Class 30 Cast iron construction, machined flat bearing surface, removable lid, closed lid design; lid molded with identifying name. Manufactured by Capital Foundry of Virginia.

B. Manhole Steps: Formed galvanized steel rungs; 3/4 inch diameter. Formed integral with manhole sections.

2.03 CONFIGURATION

A. Shaft Construction: Concentric with eccentric cone top section; lipped male/female dry joints; sleeved to receive pipe sections.

B. Shape: Cylindrical.

C. Clear Inside Dimensions: As indicated.

D. Design Depth: As indicated.

E. Clear Lid Opening: As indicated.

F. Pipe Entry: Provide openings as indicated.

G. Steps: As indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify that built-in items are in proper location, and ready for roughing into Work.

C. Verify excavation for manholes is correct.

3.02 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 MANHOLES

A. Place concrete base pad, trowel top surface level.

B. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.

C. Form and place manhole cylinder plumb and level, to correct dimensions and elevations. As work progresses, build in fabricated metal items.

D. Cut and fit for pipe.

E. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.

F. Coordinate with other sections of work to provide correct size, shape, and location.

3.04 MASONRY WORK

A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

B. Lay masonry units in running bond. Course one unit and one mortar joint to equal 8 inches.

C. Form flush mortar joints.

D. Lay masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

E. Install joint reinforcement 16 inches on center.

F. Place joint reinforcement in first and second horizontal joints above base pad and below lid frame opening.

3.05 SCHEDULES

A. Storm Sewer Manholes: Precast concrete sections, galvanized steel steps, 60 inch inside dimension, to depth indicated, with bolted lid.

B. Electric Service Manholes: Prefabricated FRP sections, integral molded steps, 60 inch inside dimension, to depth indicated.

END OF SECTION