

SECTION 33 39 00

SANITARY AND STORM SEWER MANHOLE STRUCTURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Monolithic, cast in place concrete manhole barrel and either monolithic concrete or masonry transition to lid frame.
- B. Modular precast concrete manhole barrel with tongue-and-groove joints and either precast concrete or masonry transition to lid frame.
- C. Precast polyethylene manhole assemblies.
- D. Preparation and installation of lid frame, covers, anchorage, and accessories.

1.2 RELATED SECTIONS

- A. Section 31 23 33 - Excavation, Backfill, and Compaction for Utilities
- B. Section 33 41 00 - Storm Sewer Systems
- C. Section 33 31 13 - Sanitary Sewer Systems
- D. Section 32 13 13 – Portland Cement Concrete Paving
- E. Local governing authority and code requirements
- F. Construction Drawings

1.3 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition
 - A 48 Gray Iron Castings
 - C 55 Concrete Building Brick
 - C 478 Precast Reinforced Concrete Manhole Sections
 - C 923 Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes
 - D 1248 Polyethylene Plastics Molding and Extrusion Materials
- B. International Masonry Industry All-Weather Council (IMIAC) latest edition Recommended Practices and Guide Specification for Cold Weather Masonry Construction

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1.4 SUBMITTALS

- A. Shop Drawings: Indicate reference to Construction Drawings regarding manhole locations, elevations, piping with sizes, locations, and elevations of structure penetrations.
- B. Product Data: Provide data for manhole covers, manhole steps, component construction, features, configuration, and dimensions.

1.5 PUBLIC WORK

- A. Comply with the City of Centerton, AR, standard water and sewer specifications for public water and sewer lines. If conflict should be found between this section and city standards for public utilities, city standards shall be the priority. It shall be the Contractor's responsibility to obtain city standard water and sewer specifications and comply with the minimum requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Manhole Barrel: Nonreinforced cast-in-place concrete in accordance with Section 03 30 00.
 - 1. Cast-in-place manholes shall be not less than 4'-0" inside diameter and constructed of 3500 psi concrete.
 - 2. Forms shall be made of steel sheets accurately shaped and fabricated of sufficient strength to form dense watertight walls to true dimensions.
 - 3. Concrete shall be deposited in evenly distributed layers of about 18 in., with each layer vibrated to bond to preceding layer.
- B. Manhole Barrel: Reinforced precast concrete in accordance with ASTM C 478 with gaskets in accordance with ASTM C 923.

Construct manholes of precast concrete sections as required by Construction Drawings to size, shape, and depth indicated, but never less than 4'-0" inside diameter.

- C. Manhole Barrel: Precast polyethylene in accordance with ASTM D 1248. Manholes shall be manufactured with factory-molded steps. Nominal cylinder internal diameter shall be 48-in. and shall be designed to accept concrete filled polyethylene manhole lids and standard cast iron frames with lid or grate. Manholes shall have a compressive strength which meets ASTM D 2412 standards. Acceptable Manufacturers: Advanced Drainage Systems (ADS) or approved equal.
- E. Mortar and Grout: Mortar for finishing and sealing shall be Class "C". Honeycombing less than 2-in. deep shall be repaired using Class "D" mortar.

2.2 COMPONENTS

- A. Lid and Frame: Lid and frame shall comply with ASTM A 48, Class 35B heavy duty cast iron construction, machined flat bearing surface, removable lid, closed or open as indicated on Construction Drawings with sealing gasket and manufactured by Neenah Foundry Company or approved equal.
- B. Manhole Steps: Neenah Foundry Company catalog No. R-1982-F for precast manholes or catalog No. R-1980-0 for brick or cast-in-place manholes or approved equal.
- C. Base Pad: Cast-in-place concrete as specified in Section 03 30 00.

2.3 CONFIGURATION

- A. Barrel Construction: Concentric barrel with eccentric cone top section.
- B. Shape: Cylindrical
- C. Clear Inside Dimensions: 48-in. diameter or as indicated on Construction Drawings.
- D. Design Depth: As indicated on Construction Drawings.
- E. Clear Lid Opening: 22-in. diameter minimum
- F. Pipe Entry: Provide openings as indicated on Construction Drawings
- G. Main and Lateral Pipes: Neatly cut off main and lateral pipes flush with inside of manhole or inlet where they enter structure walls. Point up irregularities and rough edges with nonshrinking grout.
- H. Inverts: Shape inverts for smooth flow across structure floor as indicated on Construction Drawings. Use concrete and mortar to obtain proper grade and contour. Finish surface with fine textured wood float.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify items specified by other Sections are properly sized and located.
- B. Verify that items associated with structures are in proper location and ready for connection to other work and/or structure construction.
- C. Verify that the excavation for manholes and other structures are correct.

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3.2 PREPARATION

- A. Coordinate placement pipe connections to structure as indicated on Construction Drawings.

3.3 PLACING PRECAST MANHOLE BARREL SECTIONS

- A. Place slab foundation to proper elevation and location and trowel top surface level for placement of manhole barrel.
- B. Place manhole barrel plumb and level to correct elevations and anchor to base pad.
 - 1. After completion of slab foundation, first joint of manhole barrel shall be lowered into position, grooved end first, and set level and plumb on concrete slab. Align and adjust to proper grade prior to placing and forming invert which shall be poured immediately after setting of first section of manhole barrel.
 - 2. Prior to setting subsequent manhole barrel sections, apply primer to tongue and groove ends and allow to set in accordance with manufacturer's recommendations. Place "Ram-nek", or equivalent joint sealing material on tongue end. Lower next section into position, and remove excess sealing material from interior of structure. Add additional material on exterior of joint, if necessary, for a completely watertight joint.

END OF SECTION