

SECTION 02570 - MANHOLES AND CATCHBASINS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specifications, apply to this section.

1.02 DESCRIPTION OF WORK:

- A. Provide manholes as shown on the drawings. This section includes:

- Precast Manholes
- Masonry Inverts
- Frames and Grates

- B. Earthwork: Section 02200

- C. Sewers and Drains: Section 02550

- D. Pump Station: Section 02700

1.03 QUALITY ASSURANCE:

- A. General: Provide complete manhole catchbasin and pump station structures capable of supporting AASHTO H2O loading.

- B. Precast Components: ASTM C478

1.04 SUBMITTALS:

- A. Shop Drawings: Submit for precast components. Show components to be used, elevations of top, base and pipe inverts, location of pipe penetrations, steps, etc.

- B. Product Data: Manufacturers' product data and installation instructions for frames, grates, precast items, manhole sleeves, and joint sealants for precast sections.

- C. Test results are to be submitted.

PART 2 - PRODUCTS

2.01 MANHOLES:

- A. Base Sections: Precast monolithic construction to a joint 16" minimum above crown of highest incoming pipe, with steps.
- B. Barrel Sections: Precast with steps.
- C. Top Sections: Precast eccentric four-foot-high cone with steps. Use two-foot-high cone or flat cover only if shown on drawings.
- D. Steps: Aluminum alloy 6061-T6 or polypropylene reinforced with steel rod. Meet OSHA requirements, minimum width 15". Cast aluminum to be cast into concrete with bituminous paint.
- E. Pipe to Manhole Connections: For pipe sizes 6" or larger, use flexible manhole sleeves equal to CP series manufactured by Interpace Corp., sized to fit diameter and type of pipe without use of gaskets.
- F. Joints Between Precast Sections: Watertight, shiplap type, seal with two rings of 1" diameter butyl rubber sealant.
- G. Dampproofing: Bituminous coating on exterior of precast sections and parged brick.

2.02 CATCHBASINS:

- A. Base Sections: Precast concrete.
- B. Barrel Sections: Precast concrete with cast-in holes for pipe penetrations where pipes are larger than flexible sleeves.
- C. Top Sections: Precast concrete flat cover with eccentric hole for frame and grate.
- D. Joints Between Precast Sections:
 - 1. Between Sections: 4" shiplap with two strips of 1" diameter butyl rubber sealant.
 - 2. Pipe to Catchbasin Connections:

Pipe Sizes 6" or Larger: Flexible manhole sleeves equivalent to CP series manufactured by Interpace Corp. sized to fit diameter and type of pipe without using gaskets.

Pipe sizes larger than manufactured flexible sleeves mortar.

2.03 MASONRY MATERIALS:

- A. Sewer Brick: ASTM C32, Grade SS, hard brick.

B. Mortar: Type M, ASTM C270. Use Type II Portland cement, Type S lime.

2.04 FRAMES AND COVERS:

A. General:

1. Coatings for all Frames, Grates, and Covers: Two coats coal tar pitch varnish applied after sandblasting to provide a smooth, tough, non-brittle, non-scaling finish. Repair damage to coatings to the satisfaction of the Engineer.
2. Cast Iron: ASTM A48 Class 30.

B. Manhole Frames and Covers:

1. General: Minimum 21" dia. opening, minimum weight 350 pounds, labeled with "SEWER" in 3" high raised letters on cover.
2. Standard Frames and Covers: Etheridge M248S, LC258-2 frame and L25C5 cover by E.L. Lebaron Foundry, Model R1760 frame and Type C cover with self-sealing application by Neenah Foundry, or equivalent. 24" dia. cover with "SEWER" on cover.
3. Waterproof Locking Frames and Covers: LTW268 LTW268 frame and cover by E.L. Lebaron Foundry, Model R1755-F frame and Type C cover by Neenah Foundry or equal.

C. Frames and Grates:

1. Catchbasins: Equivalent to Etheridge Foundry No. SA 248 M or SA 246 M where cover requirements dictate use of a shorter frame.

2.05 MISCELLANEOUS:

A. Dampproofing: Provide bituminous coating equal to Dehydrate No. 4 Dampproof by W.R. Grace or Bitumastic Super Service Black by Koppers Co. for field application.

PART 3 - EXECUTION

3.01 INSTALLATION OF MANHOLES AND CATCHBASINS:

A. Placement: Place bases on compacted bedding material so structure is plumb and pipe inverts are at proper elevations. Place barrel and top sections in the appropriate height combinations. Plug all lifting holes inside and out with non-shrink mortar.

- B. Joints: Follow manufacturer's instructions for sealing joints between precast sections. Point joints with non-shrinking mortar.
- C. Frames and Covers: Set to final grade as shown on the drawings or set flush with pavement grade in paved areas or 24" above finish grade in unpaved areas. Provide adequate temporary covers to prevent accidental entry until final placement of frame and grate is made.
- D. Inverts: Construct smooth channels using sewer brick with semi-circular bottoms that match inside surface of pipes to be connected. Where changes in direction of flow are made, fit pipes flush to inside surfaces of manholes and form channel with as large a radius as possible.

Slope bench 1/8 inch per foot from channel up to manhole wall.

- E. Dampproofing: Repair damage to dampproofing and apply dampproofing to masonry as shown on drawings.

3.02 MANHOLE TESTING:

- A. General: Use either exfiltration test for all manholes. Perform tests before constructing invert.

No allowance will be made for absorption during the 8-hour test period. No allowance will be made for leakage at test plug.

- B. Retest unacceptable manholes following repairs until acceptable leakage rate is attained.

- C. Instant Exfiltration Test:

1. Prior to backfilling excavation, plug pipes into and out of manholes and liftholes and fill with water.
2. Inspect manhole surface, pipe joints, and lift holes. If there are no visible leaks, manholes may be considered watertight.

- D. 8-Hour Exfiltration Test:

1. Plug pipes into and out of manhole and secure plugs.
2. Lower groundwater table (GWT) to below manhole. Maintain GWT at this level throughout test. Provide means of determining GWT level at any time throughout test.
3. Fill manhole with water to top of cone.
4. Allow a period of time for absorption (determined by Contractor).
5. Refill to top of cone.

6. Determine volume of leakage in an 8-hour minimum test period and calculate rate.
7. Acceptable Leakage Rate: Not more than 1 gallon per vertical foot per 24 hours.

3.03 REPAIRS:

- A. Determine causes of all leaks and repair them. Perform earthwork required if manhole has been backfilled.
- B. Perform repairs using methods and material approved by the Designer. Remove and replace or reconstruct manhole if necessary. Remove and replace defective sections if required by Designer.

* END OF SECTION 02570 *