**SECTION 33 71 19**

**ELECTRICAL UTILITY MANHOLES**

**PART 1 GENERAL**

1. SECTION INCLUDES
   1. Prefabricated concrete manholes
   2. Manhole accessories
2. REFERENCES
   1. ASTM A48/A48M – Standard Specification for Gray Iron Castings
   2. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Product
   3. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   4. ASTM A659/A659M – Standard Specification for Commercial Steel (CS), Sheet and Strip, Carbon (0.16 Maximum to 0,25 Maximum Percent), Hot-Rolled
3. QUALITY ASSURANCE
   1. Manufacturer: Company specializing in precast concrete structures with three years documented experience.
4. SUBMITTALS
   1. Submit shop drawings and product data under provisions of Sec 01 33 00.
   2. Indicate material specifications, dimensions, capacities, size, and location of openings, reinforcing details, and accessory locations.
   3. Provide product data for manhole accessories.
   4. Submit manufacturer's installation instructions under provisions of Sec 01 33 00.

**PART 2 PRODUCTS**

1. PRECAST CONCRETE MANHOLES
   1. Precast Concrete: Air-entrained, 2000-psi compressive strength at 28 days.
   2. Reinforcing shall be per AASHTO H-20, bridge loading.
2. CAST‑IN‑PLACE MANHOLES
   1. Concrete: 3000-psi compressive strength at 28 days in conformance with requirements of Sec 03 30 00.
   2. Provide reinforcing under the provisions of Sec 03 20 00.
3. MANHOLE ACCESSORIES
   1. Manhole Frames and Covers: ASTM A48/A48M; Class 30B gray cast iron, machine finished with flat bearing surfaces.
   2. Sump Covers: ASTM A48/A48M Class 30B gray cast iron.
   3. Pulling Irons:
      1. 7/8-inch diameter steel bar forming a triangle of 9 inches per side when set.
      2. Galvanize to ASTM A153/A153M for irregular shaped articles.
   4. Cable Rack Inserts: Steel channel insert with minimum load rating of 800 pounds, length to match cable rack channel.
   5. Cable Rack Channel: 4" x 1½" x 3/16" steel channel wall bracket, 48" length, with cable rack arm mounting slots on 8" centers.
   6. Cable Racks: ASTM A659/A659M steel channel, 2 ½" x 14" with high-glazed wet-process porcelain insulators.

**PART 3 EXECUTION**

1. PREPARATION
   1. Excavate, install base material, and compact base material in accordance with manufacturer's instructions under provisions of Sec 31 20 00.
2. INSTALLATION ‑ PRECAST CONCRETE MANHOLES
   1. Install and seal precast sections in accordance with manufacturer's instructions.
   2. Use precast neck and shaft sections to bring manhole entrance to proper elevation.
   3. Install manholes plumb.
   4. Set the top of each manhole to finished elevation or otherwise as indicated on the drawings.
3. INSTALLATION ‑ CAST‑IN‑PLACE CONCRETE MANHOLES
   1. Form cast-in-place manholes, inside and outside surfaces, in accordance with the provisions of Section 03 11 00.
   2. Manhole Shape: As indicated.
   3. Inside Dimensions: As indicated.
   4. Wall Thickness: As indicated.
   5. Form window for duct entry as indicated.
   6. Include 12" drain opening and one-1" ground rod openings in base section.
   7. Cast cable-pulling irons in place opposite each duct entry window as indicated.
   8. Cast inserts for cable racks in place as indicated.
4. INSTALLATION ‑ MANHOLE ACCESSORIES
   1. Install drains in manholes, and connect to 4" pipe terminating in cu yd crushed gravel bed in accordance with provisions of Sec 22 20 00.
   2. Install ground rod with top protruding 4" above manhole floor.
   3. Waterproof exterior surfaces, joints, and interruptions of manholes after concrete has cured 28 days minimum, in accordance with provisions of Section 07 11 13.
   4. Attach cable racks to inserts after manhole installation is complete.

END OF SECTION