

SECTION 16140

CONCRETE HANDHOLES AND PULL BOXES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Section includes requirements for handholes and pull boxes. Handholes and pull boxes are both referred to in this Section as handholes.

1.02 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. M199 Specification for Precast Reinforced Concrete Manhole Sections
- B. California State Department of Transportation (Caltrans) Standard Plans:
 - 1. ES-8 Pull Box Details
- C. California Public Utilities Commission (CPUC) General Orders (G.O.):
 - 1. G.O. No. 128. Rules for Construction of Underground Electric Supply and Communication Systems
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 70 National Electrical Code (NEC)

1.03 SUBMITTALS

- A. Refer to Section 16000, Basic Electrical Requirements, for additional submittals and submittal requirements.
- B. Submit manufacturer's product data for supports, covers, grounding, pullboxes and handholes, joint sealing compound, and other materials. Include concrete mix design.
- C. Submit shop drawings for fabrication and installation of concrete structures.
- D. Submit precast manufacturer's Certification of Compliance.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with NEC and PUC GO No. 128

PART 2 – PRODUCTS

2.01 PRECAST CONCRETE HANDHOLES

- A. Unless otherwise indicated, precast concrete handholes shall conform to Caltrans Standard Plan ES-8, No. 3-1/2T, No. 5T, and No. 6T, for H-20 loading, and AASHTO M199.
- B. Pullbox No. 3-1/2T shall be "Christy" B1017 or Engineer approved equal, with minimum inside dimensions of 10-5/8 inch wide x 17-1/4 inch long x 24 inches deep. Pullbox shall be provided with bolt down checkered steel lid identified as "ELECTRICAL" or "COMMUNICATIONS", as required.
- C. Pullbox No. 5T shall be "Christy" B1324 or Engineer approved equal, with minimum inside dimensions of 13-1/4 inch wide x 24 inch long x 24 inches deep. Pullbox shall be provided with bolt down checkered steel lid identified as "ELECTRICAL" or "COMMUNICATIONS", as required.
- D. Pullbox No. 6T shall be "Christy" B1730 or Engineer approved equal, with minimum inside dimensions of 17 inch wide x 30 inch long x 24 inches deep. Pullbox shall be provided with bolt down checkered steel lid identified as "ELECTRICAL" or "COMMUNICATIONS", as required.
- E. Where indicated on the Plans provide pullbox "Christy" B2436 or Engineer approved equal, with minimum inside dimensions of 24 inch wide x 36 inch long x 24 inches deep. Pullbox shall be provided with two (2) piece bolt down checkered steel lids, with one of the leads identified as "ELECTRICAL" or "COMMUNICATIONS", as required.
- F. Where indicated on the Plans provide pullbox "Christy" B3048 or Engineer approved equal, with minimum inside dimensions of 30-1/4 inch wide x 48-1/4 inch long x 24 inches deep. Pullbox shall be provided with three (3) piece bolt down checkered steel lids, with center lid identified as "ELECTRICAL" or "COMMUNICATIONS", as required.

PART 3 – EXECUTION

3.01 CONCRETE HANDHOLES

- A. Install handholes flush with concrete platform surface, or flush with sidewalks, curbs, paved areas and other concrete surfaces. Install top of handholes 2 inches above grade in landscaped areas. Seal unused openings with mortar.
- B. Install no more than equivalent of three 90 degree bends between pull points.
- C. Plug all ends of unused ducts and conduits in handholes. Use plugs manufactured for the purpose.

3.02 HANDHOLE INSTALLATION

- A. Excavation and backfill shall be in accordance with Section 02300, Earthwork.

- B. Install handhole structures in accordance with the requirements established for precast concrete drainage structures as specified under Section 02630, Storm Drainage System.
- C. Set precast handholes on well-compacted soil with minimum of six inches of crushed stone base. Where duct lines enter handholes, sections of duct may be cast in concrete or may enter through square or rectangular opening of suitable dimensions.
- D. Review location of handholes and obtain the Engineer's acceptance before installation of handhole is started.
- E. Unless otherwise indicated, install ground rod at each pullbox. Provide grounding braid and grounding accessories for grounding the pullbox cover(s) to the ground rod.

3.03 FIELD QUALITY CONTROL

- A. Notify the Engineer for inspection and obtain Engineer's acceptance of handholes and pull boxes prior to installation of cable and equipment. Make corrections required.

END OF SECTION