

SECTION 02540

CAST-IN-PLACE SANITARY SEWER MANHOLES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Reinforcing steel.
 - 2. Cast-in-place concrete for manhole bases, cutoff walls, manhole and value box collars, and casing supports. Replacement of existing sewer manholes or construction of new manholes over existing sewers will require a cast-in-place base with pre-cast barrel(s) and cone or flat top manhole cover.
 - 3. Concrete finishes.

1.02 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301 Specifications for Structural Concrete for Buildings
 - 2. ACI 305 Hot Weather Concreting
 - 3. ACI 306 Cold Weather Concreting
 - 4. ACI 347 Guide to Formwork for Concrete
- B. American Society for Testing and Materials (ASTM) Standard Test Method:
 - 1. A185 Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement
 - 2. A615 Deformed and Plain Billet Steel Bars for Concrete Reinforcement
 - 3. C150 Portland Cement
 - 4. C260 Air-Entraining Admixtures for Concrete
 - 5. C494 Chemical Admixtures for Concrete
- C. Construction Specifications:
 - 1. CALTRANS, State of California Department of Transportation, Standard Specifications dated July 1992.

1.03 SUBMITTALS

- A. Submit the following to the Engineer for review:
- B. Product Data:
 - 1. Concrete materials certifications.
 - 2. Concrete mix design, including test results.
 - 3. Concrete placement method and sequence.
 - 4. Reinforcing steel shop drawings.
 - 5. Concrete curing method.

1.04 QUALITY ASSURANCE

- A. Standard: CALTRANS.

- B. Concrete Tests: CALTRANS.
- C. Contractor shall be responsible for hiring an independent testing laboratory to collect, cure and test all concrete cylinders. Certified test reports shall be sent directly to Engineer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. General: Provide storage and handling of all materials so that upon delivery they are undeteriorated and ready for use.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. CALTRANS Section 90 and except as modified below:
 - 1. Cement: ASTM C150, Type II, low alkali.
 - 2. Aggregate: 1-inch maximum size.
 - 3. Admixtures:
 - a. Air entraining: ASTM C260.
 - b. Water reducing: ASTM C494 Type A.

2.02 REINFORCEMENT

- A. CALTRANS Section 52 and except as modified below.
 - 1. Reinforcing bars: ASTM A615 Grade 60.
 - 2. Welded wire fabric: ASTM A185; sheets.

2.03 CONCRETE MIX DESIGN

- A. Concrete Class: A

2.04 FORMS

- A. General: Take responsibility for adequacy of forms, bracing and shoring. Satisfy ACI 347. Provide mortar-tight construction.
- B. Tolerances: ACI 301.

2.05 NON-SHRINK GROUT

- A. ASTM C1107, Grade B (construction) with no shrinkage as measured by ASTM C827. Furnish a premixed product, consisting of properly proportioned amounts of non-metallic, dimensionally stable material to which water is added.

2.06 EPOXY BONDING SYSTEM

- A. General: ASTM C881:
 - 1. Provide Type I for bonding hardened concrete to hardened concrete; Type II for bonding freshly mixed concrete to hardened concrete; and Type III as a binder in epoxy mortar or concrete, or for use in bonding skid-resistant materials to hardened concrete.

2. Provide Grade 1 or 2 for horizontal surfaces and Grade 3 for vertical surfaces.
 3. Provide Class A if placement temperature is below 40°F; Class B if placement temperature is between 40 and 60°F; or Class C if placement temperature is above 60°F.
- B. Provide: Sikadur Epoxy adhesives manufactured by the Sika Chemical Corporation; Concrete compounds manufactured by Master Builders, Inc., or equal. These products are represented by W. C. Hodges, Palo Alto, California.
- C. For bonding new to pre-existing concrete, provide Sika Armatec 110, or equal. Specifier knows of no equal.

PART 3 - EXECUTION

3.01 CONSTRUCTION

- A. General: CALTRANS Section 51 except as modified below.
- B. Preliminary Work: Provide a 6-inch crushed rock layer compacted to 93% relative density below base slabs.
- C. Embedded Items: Locate accurately and securely in place prior to concreting.
- D. Concrete Cover to Reinforcement: ACI 301.
- E. Cold Weather: ACI 306 when temperature is below 40°F.
- F. Hot Weather: ACI 305 when temperature is above 75°F.
- G. Exposed Corners: Chamfer 3/4-inch.
- H. Surface Finish: Ordinary Surface Finish or match existing.
- I. Install non-shrink grout and epoxy adhesive to existing concrete manholes or plugging existing pipe in manholes per the written instructions by the manufacturer.

END OF SECTION