

SECTION 02712 - TROWEL-APPLIED MANHOLE REHABILITATION COATING

City of San Diego, CWP Guidelines

PART 1 GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing a trowel-applied epoxy mortar coating such that rehabilitated manholes become structurally sound and impervious to ground water, soil, and debris, and become resistant to hydrogen sulfide (sulfuric acid) corrosion.
- B. The CONTRACTOR is cautioned that sewage will continue to flow to the manholes and that the WORK must be performed under permit required confined space entry conditions.

1.2 RELATED SECTIONS

- A. The WORK of the following sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

03300 - Cast-In-Place Structural Concrete

1.3 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Section 01300:
 - 1. Coating manufacturer's data sheet for each product used, including statement on suitability of the material for the intended use and compliance with the requirements of this Section.
 - 2. Coating manufacturer's instructions and recommendations on surface preparation, application, and compatibility of prime and finish coats.
 - 3. Material Safety Data Sheet for each product to be used.
 - 4. Certification from the coating manufacturer that the proposed applicator firm is accepted for the given product and site conditions. Coating shall not proceed until the CONSTRUCTION MANAGER has reviewed the certification.

1.4 SERVICES OF MANUFACTURER

- A. The CONTRACTOR shall require the coating manufacturer to furnish a qualified

technical representative who shall:

1. Furnish at least 6 hours of on-site instructions to the applicator's employees on the proper surface preparation, use, mixing, and application of the coating systems.
2. Observe and approve the start of surface preparation, mixing, and application of coating.
3. Be available as necessary to resolve field problems with the coating material or application methods.

PART 2 PRODUCTS

2.1 WALL CLEANING MATERIALS

- A. **Water Abrasive or Wet Abrasive Blast:** Type and size of abrasive shall be selected to produce a surface profile that meets the coating manufacturer's recommendations.
- B. **High Pressure Water:** Water at 3500 psi minimum pressure.
- C. **Cleaners:** Cleaners, if used, shall be per coating manufacturer's recommendations.

2.2 WALL REPAIR MATERIALS

- A. **Hydraulic Plug:** Quick-setting material recommended by the manufacturer for sealing active leaks in manhole structures. Material shall be compatible with coating material.
- B. **Quick-Set Mortar:** Material to repair wide cracks, hole, and disintegrated mortar.

[2.3 BENCH-FORMING AND REPAIR MATERIALS

- A. Concrete shall be lean, Type V, in accordance with Section 03300.]

2.4 RESURFACING MATERIAL

- A. Resurfacing material shall be trowelable portland cement-based fast-setting material as recommended by the manufacturer of the chemical-resistant coating material.

B. Manufacturer, or equal

1. Sauereisen F-120

2.5 COATING MATERIAL

A. Manhole coating material shall be a 3 part, aggregate filled, 100 percent solids epoxy specifically resistant to corrosive attack from sanitary sewage and sewer gases including sulfuric acid.

B. Material shall have the following properties:

<u>Property</u>	<u>Standard</u>	<u>Value</u>
Bond strength to concrete	-	failure within concrete, not at concrete surface
Compressive strength	ASTM C 579	7,300 psi
Density	ASTM C 905	113 lb. per cu. ft.
Flexural strength	ASTM C 580	4,900 psi
Max. service temperature	-	150 deg. F
Modules of elasticity	ASTM C 580	2.75×10^5 psi
Moisture absorption	ASTM C 413	0.03 percent, max.
Tensile strength	ASTM C 307	2,000 psi

C. Thickness of coating shall be 1/8-inch, minimum.

D. Manufacturer, or equal

1. Sauereisen 210

PART 3 EXECUTION

3.1 DIVERSION PUMPING

A. Install and operate sewage diversion pumping equipment to maintain sewage flows without backup, overflow, or spill.

3.2 CLEANING AND SURFACE PREPARATION

A. Remove dirt, grease, and debris from floor and interior walls of manhole using high pressure water and abrasive as necessary to prepare a roughened, bondable

surface as recommended by the coating manufacturer.

3.3 REPAIRS

- A. Active leaks, if present, shall be sealed by application of material recommended by the coating manufacturer.
- B. Repair wide cracks, holes, or disintegrated mortar with quick-set mortar, following the manufacturer's application instructions.
- [C. Repair and reshape manhole inverts and benches according to the requirement of Section 03300. Inverts shall be U-shaped and have a minimum depth of ½ pipe diameter. Benches shall have smooth surfaces without defects that allow debris to accumulate.]

3.4 RESURFACING

- A. Areas to be resurfaced and thickness of material shall be as recommended by the manufacturer to rebuild degraded surfaces and patch voids and irregularities which would adversely affect performance of the coating material. Resurfacing material shall not be thicker than ½-inch.
- B. Mix the material and potable water in strict accordance with the manufacturer's recommendation.
- C. Trowel the material onto the prepared surfaces and spread to the necessary thickness to achieve the desired surface uniformity.

3.5 COATING APPLICATION

- A. Mix components in strict accordance with the manufacturer recommendations.
- B. After plug, mortar, and resurfacing materials have cured according to the respective manufacturer's recommendations, trowel the coating material onto the surfaces of walls, benches, and inverts at minimum thickness of 1/8-inch. The coating shall be holiday free.

3.6 FIELD TESTING

- A. Inspect the coated surfaces for cracks, voids, holes, uncured spots, dry spots, delaminations, and any defect which might affect the coating performance.
- B. Test the entire coated surface for holidays at 100 volts/mil in accordance with ASTM D 4787.
- C. **Repair:** Defects and holidays shall be ground down at least 2 inches in all

directions from the defect and shall be repaired according to the manufacturer's recommendations. All repairs shall be made at no additional cost to the OWNER.

- END OF SECTION -