SP-231050
(New)

SPECIAL PROVISIONS
FOR
MANHOLE INTERIOR STRUCTURAL EPOXY LINER

Polk County
HDP-1945(411)--71-77

Effective Date
January 22, 2025

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

PART 1 – GENERAL

1.01 Summary.

A. This specification includes all manhole interior structural epoxy liners required for the project.

B. All interior concrete in identified manholes from invert to manhole top shall be lined with structural epoxy liner designed to protect concrete from hydrogen sulfide corrosion, and sealing inflow and infiltration.

1.02 References.

The provisions of the following codes, specifications, and standards, latest editions, shall apply:

- SSPC-SP12/NACE No. 6, Severe Service
- ICRI Guideline No. 310.2
- ASTM D 4414
- NACE SP0188

1.03 Submittals.

Submit Shop Drawings showing the proposed manufacturer and principal parts and materials.

1.04 Measurement and Payment.

A. Measurement: Measurement shall be by square feet of liner installed.

B. Payment: Shall be at the bid unit price per square foot.

PART 2 - PRODUCTS

2.01 Materials.

A. Structural epoxy shall be two component, 100% solids, ultra-high build, fiber reinforced polymer (FRP), epoxy polycyclic polymer.

B. Subject to compliance with the contract documents the following manufacturers are acceptable:
1. Epoxytec LLC (Tnemec), “Epoxytec CPP Sprayliner MH” or “Epoxytec CPP Trowel-Liner”.
2. Or approved equal.

2.02 Construction.

A. Contractor shall perform all lining related work per manufacturer recommendation.

B. May be trowel or spray applied.

C. Primer may be required at the discretion of the Engineer if project conditions and/or substrate preparation do not meet manufacturer recommendations.

2.03 Physical Properties.

A. Shall be self-priming and able to be applied direct-to-concrete.

B. Shall be capable of 3/8 inch sag resistance, overhead or vertical.

C. Liner Thickness: Minimum 125 mils dry film thickness.

D. Lining must be able to bond to saturated-surface-dry (SSD) concrete, with moisture and relative humidity tolerances up to 85% and capable to fully cure underwater.

PART 3 – EXECUTION

3.01 SURFACE PREPARATION.

A. New cast in place concrete shall cure minimum 28 days prior to coating.

B. Concrete surfaces shall be free of curing compounds and form release agents, laitance and foreign particles that may inhibit bonding.

C. Fill and patch voids or defects in concrete per manufacturer recommendations using epoxy-modified mortar.

D. Clean concrete and inspect per SSPC-SP13/NACE No. 6, Severe Service. Surface preparation procedures shall be in accordance with NACE No. 6/SSPC-SP13 and ICRI Guideline No. 310.2.

E. Surface preparation shall expose aggregate and obtain a uniform surface texture resembling the minimum recommended concrete surface ICRI-CSP profile.

F. Surface preparation of the substrate must be achieved immediately prior to lining installation.

G. Re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

3.02 Installation.

A. Structural epoxy lining systems shall be installed when ambient air and surface temperature is above 45°F. The substrate temperature shall be at least 5°F above the dew point. Condition the material between 70°F to 80°F for 24 hours prior to use. Application when temperatures outside of this range will require written instruction from the manufacturer and approval of the Engineer.

B. Application in direct sunlight and/or with rising surface temperatures is not permitted, as this may result in blistering of the materials due to expansion of entrapped air or moisture in the concrete (induced outgassing). In such cases, it will be necessary to postpone the application until later in the day when the temperature of the substrate is falling or take precautionary steps as recommended by the Manufacturer. Concrete surfaces that have been in direct sunlight shall be shaded for at least 24 hours prior to application. Consult the manufacturer for application schedule guidelines specific to temperature conditions and possible primer or sealer application recommendations to reduce outgassing.

3.03 Quality Control.

A. Contractor shall notify Engineer minimum 2 weeks in advance of start of liner related work.

B. Contractor shall conduct quality control tests and submit reports to Engineer for parameters per this specification and any additional tests per manufacturer recommendation.

C. Surface pH Testing: Minimum 9.0 as measured using color indicating pH paper or pH meter.

D. Surface Profile: Inspect and record substrate profile (anchor pattern) at least once every 5 vertical feet or every 100 square feet. If applying structural epoxy direct-to-concrete, surfaces shall be profiled equal to the CSP 4 amplitude as recommended by the coating manufacturer in accordance with ICRI Guideline 310.2 and SSPC-SP13/NACE No. 6.

E. Provide verification of correct mixing of coating materials in accordance with the manufacturer’s instructions.

F. Inspect and record the "pot life" of coating materials is not exceeded during installation.

G. Verify curing of the coating materials in accordance with the manufacturer's instructions.

H. Dry Film Thickness.
1. Wet-film thickness shall be taken every 2 vertical feet or every 25 square feet in accordance with ASTM D 4414 and recorded.
2. The dry-film thickness can be determined using a surface area calculation for material consumption.
3. High-Voltage Holiday (Spark) Testing: Upon full cure, the installed lining system shall be checked by high voltage spark detection in accordance with NACE SP0188 and the manufacturer’s printed application guide to verify a pinhole-free surface.

I. Areas which do not pass testing or meet specifications shall be corrected and retested at no cost to the Contracting Authority.