

SECTION - 09960 PAINTS AND COATINGS-WATER/MARINE COMPONENTS

All work and materials shall conform to the Drawings and the provision of MDOT SECTION 506 – PAINTING STRUCTURAL STEEL with the following additions:

Section 506.01 Paint – Add the following:

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Coating systems for steel.

1.02 REFERENCES

- A. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
- B. SSPC-SP 1 - Solvent Cleaning.
- C. SSPC-SP 2 - Hand Tool Cleaning.
- D. SSPC-SP 3 - Power Tool Cleaning.
- E. SSPC-SP 6/NACE 3 - Commercial Blast Cleaning.

1.03 DEFINITIONS

- A. Definitions of Painting Terms: ASTM D 16, unless otherwise specified.
- B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state measured in mils (1/1000 inch).

1.04 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, and application instructions.
- C. Color Samples: Submit manufacturer's color samples showing full range of standard colors.
- D. Manufacturer's Quality Assurance: Submit manufacturer's certification that coatings comply with specified requirements and are suitable for intended application.
- E. Applicator's Quality Assurance: Submit list of a minimum of 5 completed projects of similar size and complexity to this Work. Include for each project:
 - 1. Project name and location.
 - 2. Name of owner.
 - 3. Name of contractor.
 - 4. Name of architect.
 - 5. Name of coating manufacturer.
 - 6. Approximate area of coatings applied.
 - 7. Date of completion.
- F. Warranty: Submit manufacturer's standard warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Specialize in manufacture of coatings with a minimum of 10 years successful experience.
 - 2. Able to demonstrate successful performance on comparable projects.
 - 3. Single Source Responsibility: Coatings and coating application accessories shall be products of a single manufacturer.
- B. Applicator's Qualifications:
 - 1. Experienced in application of specified coatings for a minimum of 5 years on projects of similar size and complexity to this Work.
 - 2. Applicator's Personnel: Employ persons trained for application of specified coatings.
- C. Preapplication Meeting: Convene a preapplication meeting two weeks before start of application of coating systems. Require attendance of parties directly affecting work of this section, including Contractor, Architect, applicator, and manufacturer's representative. Review the following:
 - 1. Environmental requirements.
 - 2. Protection of surfaces not scheduled to be coated.
 - 3. Surface preparation.
 - 4. Application.
 - 5. Repair.
 - 6. Field quality control.
 - 7. Cleaning.
 - 8. Protection of coating systems.
 - 9. One-year inspection.
 - 10. Coordination with other work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
 - 1. Coating or material name.
 - 2. Manufacturer.
 - 3. Color name and number.
 - 4. Batch or lot number.
 - 5. Date of manufacture.
 - 6. Mixing and thinning instructions.
- B. Storage:
 - 1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
 - 2. Keep containers sealed until ready for use.
 - 3. Do not use materials beyond manufacturer's shelf life limits.
- C. Handling:
 - 1. Protect materials during handling and application to prevent damage or contamination.
 - 2. Use only soft straps for lifting and handling.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Weather:
 - 1. Air and Surface Temperatures: Prepare surfaces and apply and cure coatings within air and surface temperature range in accordance with manufacturer's instructions.
 - 2. Surface Temperature: Minimum of 5 degrees F (3 degrees C) above dew point.
 - 3. Relative Humidity: Prepare surfaces and apply and cure coatings within relative humidity range in accordance with manufacturer's instructions.
 - 4. Precipitation: Do not prepare surfaces or apply coatings in rain, snow, fog, or mist.
 - 5. Wind: Do not spray coatings if wind velocity is above manufacturer's limit.
- B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.
- C. Dust and Contaminants:
 - 1. Schedule coating work to avoid excessive dust and airborne contaminants.
 - 2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Tnemec Company Incorporated, 6800 Corporate Drive, Kansas City, Missouri 64120-1372. Toll Free (800) 863-6321. Phone (816) 483-3400. Fax (816) 483-3969. Web Site www.tnemec.com or approved equal.

2.02 TOTALLY SPRAY-APPLIED SHOP COATING SYSTEMS FOR STEEL

- A. Exterior Atmospheric Exposure, Public Contact:
 - 1. System Type: Urethane zinc-rich/urethane.
 - 2. Surface Preparation: SSPC-SP 6/NACE 3.
 - 3. Shop or Field Primer: Series 90-97 Tnemec-Zinc or approved equal. DFT 3.5 to 4.0 mils.
 - 4. Field Finish Coat: Series 1075 Endura-Shield or approved equal. DFT 4.0 to 5.0 mils.
 - 5. Total DFT: 7.5 to 9.0 mils.
 - 6. Finish Color: As selected by Resident from manufacturer's standard colors

2.03 ACCESSORIES

- A. Coating Application Accessories:
 - 1. Accessories required for application of specified coatings in accordance with manufacturer's instructions, including thinners.
 - 2. Products of coating manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions under which coating systems are to be applied. Notify Resident of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

3.02 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

- A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.
- B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.03 SURFACE PREPARATION OF STEEL

- A. Prepare steel surfaces in accordance with manufacturer's instructions.
- B. Fabrication Defects:
 - 1. Correct steel and fabrication defects revealed by surface preparation.
 - 2. Remove weld spatter and slag.
 - 3. Round sharp edges and corners of welds to a smooth contour.
 - 4. Smooth weld undercuts and recesses.
 - 5. Grind down porous welds to pinhole-free metal.
 - 6. Remove weld flux from surface.
- C. Ensure surfaces are dry.
- D. Totally Spray-Applied Shop Coating Systems for Steel: Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 6/NACE 3.
- E. Abrasive Blast-Cleaned Surfaces: Coat abrasive blast-cleaned surfaces with primer before visible rust forms on surface. Do not leave blast-cleaned surfaces uncoated for more than 8 hours.

3.04 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.
- C. Keep containers closed when not in use to avoid contamination.
- D. Do not use mixed coatings beyond pot life limits.
- E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.
- F. Uniformly apply coatings at spreading rate required to achieve specified DFT.
- G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.
- H. Stripe paint with brush critical locations on steel such as welds, corners, and edges using specified primer.
- I. Apply coatings per manufacturer's recommendation at bolt hole locations.

3.05 REPAIR

- A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.
- B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.
- C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.06 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of coating systems.

3.07 CLEANING

- A. Remove temporary coverings and protection of surrounding areas and surfaces.

3.08 PROTECTION OF COATING SYSTEMS

- A. Protect surfaces of coating systems from damage during construction.

3.09 ONE-YEAR INSPECTION

- A. Owner will set date for one-year inspection of coating systems.
- B. Inspection shall be attended by Owner, Contractor, Architect, and manufacturer's representative.
- C. Repair deficiencies in coating systems as determined by Architect in accordance with Manufacturer's instructions.

3.10 SCHEDULES

- A. Surfaces not to be painted under this section:
 - 1. Galvanized steel items.
 - 2. Aluminum items.
 - 3. Stainless steel items.
 - 4. Items with factory applied final finish.
 - 5. Coating for reinforcing steel under Section 503.051 Epoxy Coatings.
 - 6. Metallized surfaces specified under Section 506.02 Metallizing.
 - 7. Coating for steel pipe piles specified under Section 506.03 Fusion-bonded Coatings.
- B. Surfaces to be painted under this section:
 - 1. Ro-Ro Ramp with the exception of above items and items noted on the plans.
 - 2. Pier 2 Berth 2 Passenger Gangways 1 – 3 with the exception of walking surfaces and the metal roofing.
 - 3. Pier 2 Berth 2 Gangway Landing Platform
 - 4. Pier 2 Berth 2 Float Access Ramp with the exception of walking surfaces.

Section 506.02 – Metallizing – Add the following: Dolphin caps, fenders, pier cap, BD1 access ramp and other items as specified on the drawings shall be spray metalized with aluminum or zinc per SSPC Guide No. 23. Minimum coating thickness of 10 mils is required. Contractor shall mask off all areas that will be field welded such as pile, plate or stud locations. Areas of steel encased in concrete within 2” of any concrete edge may be left bare.

All Non Slip steel walking surfaces shall be thermal sprayed with *DURALCAN 90/10* as manufactured by AlcoTec, Traverse City, MI (616-941-4111), or approved equal, to obtain a slip resistant surface. Apply per manufacturer’s recommendations.

Section 506.03 Fusion-bonded Coatings – Add the following: All pile and pile pieces shall be fusion bonded epoxy powder coated, unless otherwise noted in the pile schedules on the individual plan sheets. The coating shall be Scotchkote #206N Fusion Bonded Epoxy Coating as manufactured by 3M Company, Corrosion Protection Department, Austin, TX, or equivalent by Morton International, Woodstock, IL or approved equal.

Scotchkote #206N Fusion Bonded Epoxy Coating application shall conform to 3M, Scotchkote 206N, *Fusion Bonded Epoxy Coating - Application Specification*, which is herein made a part of this specification and the following:

All surfaces shall be thoroughly prepared for coating application in strict accordance with the coating manufacturer’s recommendation. All cleaning and coating work must be performed in a heated building. Preceding grit blasting, steel must be heated to at least 100 degrees F to eliminate possibility of moisture on the surfaces to be cleaned and coated.

All work blasted in one day must be coated on that day.

Piles shall be coated on the outside only. The fusion bonded epoxy coating shall be applied in an environmentally controlled plant that is fully enclosed. The coating system shall be fully automatic with the capabilities of preheating and post baking. The grit blast cleaning machine shall be fully automatic and fully enclosed in an environmentally controlled plant. The finished coating thickness shall be 10 mils nominal as tested in accordance with ASTM-G12.

The cured coating shall be of uniform color, gloss and thickness, and shall be free of blisters, pinholes, fish eyes, sags, runs, and any irregularities.

The Resident shall have access to each part of the process and shall have the right and opportunity to witness any of the quality control tests and/or perform such tests himself on a random sampling basis.

Any damage to the fusion bonded epoxy powder coating system shall be shop of field repaired using a two part thermosetting epoxy liquid coating. The coating shall be Scotchkote #312 Liquid Epoxy Coating as manufactured by 3M Company, Corrosion Protection Department, Austin, TX or approved equal.

Scotchkote #312 Liquid Epoxy Coating applications shall conform to 3M, *Scotchkote #312 Liquid Epoxy Coating, Instruction Sheet*, which is herein made a part of this specification and the following:

The finished coating thickness shall be 10 mils nominal as tested in accordance with ASTM-G12.

Section 506.04 – Repair – Add the following: No welding through coatings shall be performed. The coating within one inch of the weld shall be removed prior to welding and repaired after welding.

Damaged galvanizing and metalizing, including that removed for welding, shall be repaired by stick galvanizing with zinc or aluminum alloy sticks to a minimum thickness of 12 mils per the manufacturer's recommendations. Contractor shall submit repair material and methods for review and approval.

*** END OF SECTION ***