SECTION 09 96 00
HIGH PERFORMANCE COATINGS

COATING SYSTEMS FOR PRESTRESSED CONCRETE WATER STORAGE TANKS

City of Pompano Beach

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coating systems for water processing facilities.

1.2 RELATED SECTIONS

A. Section 15075 - Mechanical Identification: Identification of mechanical equipment.

B. Section 16075 - Electrical Identification: Identification of electrical equipment.

1.3 REFERENCES

A. ANSI/NSF 61 - Drinking Water System Components - Health Effects.

B. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.

C. AWWA C 652 - Disinfection of Water-Storage Facilities.

D. SSPC-SP 1 - Solvent Cleaning.

E. SSPC-SP 2 - Hand Tool Cleaning.

F. SSPC-SP 3 - Power Tool Cleaning.

G. SSPC-SP13/NACE 6 – Preparation of Concrete

1.4 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).

1.5 SURFACES NOT TO BE COATED

A. The following items shall not be coated unless otherwise noted:

1. Galvanized checkered plate.

2. Stainless Steel.

3. Aluminum vents, fascia, windows, louvers, grating and checkered plate.

4. Air Conditioning unit and disconnect.

5. All lights and fixtures.

6. Plastic switch plates and receptacle plates.

7. Signs, equipment identification, and nameplates.

1.6 SUBMITTAL

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 in the past year. Projects must include painting of Prestressed Concrete Water Storage Tanks. Include for each project:
   1. Project name and location.
   2. Name of owner.
   3. Name of contractor.
   4. Name of engineer.
   5. Name of coating manufacturer.
   6. Approximate area of coatings applied.
   7. Date of completion.

F. Warranty: Submit manufacturer's standard warranty.

1.7 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.
   3. Demonstrate a history of compliance with applicable requirements of Occupational Safety and Health Administration.

4. The Primary Contractor MUST perform all work.

C. Owner's Requirements:
   1. Contractor must coordinate meetings including the owner, coating manufacturer's representative, and the project manager. These meetings will be held before the project, during the surface preparation, during the applications, and upon completion of the project. Contractor MUST give a (5) day minimum notice to all parties before a meeting is required.

   2. Owner will obtain final coating quantities applied to substrates to meet the minimum dry film thickness.

C. Mock-Ups: N/A

D. Preapplication Meeting: Convene a pre-application meeting [2] [_____] weeks before start of application of coating systems. Require attendance of parties directly affecting work of this section, including Contractor, Engineer, 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. Disinfection.
   6. Repair.
   7. Field quality control.
   8. Cleaning.
   9. Protection of coating systems.
   10. One-year inspection.
   11. Coordination with other work.

1.8 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: Protect materials during handling and application to prevent damage or contamination.

1.9 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. .

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

2.1 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.

B. Florida Protective Coatings Consultants, Inc. 250 Waymont Court, Ste.#120 / Lake Mary, FL 32746 PH 407-322-1243
South Florida Representative: Blake Holmes (954)648-2787.

2.2 COATING SYSTEM:

A. Concrete

1. Prestressed Water Storage Tanks

Surface Preparation: Remove all chalk, dirt, dust, mold, mildew, form release oils, and other soluble contaminants by high pressure water blast cleaning (minimum 3500 PSI, 3 to 5 gallons per minute, potable water). A cleaning detergent such as Trisodium Phosphate must be utilized to facilitate cleaning.

Scrape all loose coatings back to sound, tight coatings and feather the edges.

Surface must be clean and dry prior to the application of any coating.

Fill hairline cracks (less than 1/32" wide) by brushing (1) coat of Tnemec Series 156 EnviroCrete.

Spot Prime Coat & Tape: Cracks larger than 1/32" and repaired masonry shall be stripe coated with Series 156 Envirocrete prior to embedding Tnemec Series 152 Tneme-Tape and topcoated with Tnemec Series 156 EnviroCrete.

		DFT-Mils
Prime Coat:	151 – ElastoGrip FC	1.0 – 1.5
Intermediate Coat:	156 - EnviroCrete	4.0 – 6.0
Finish Coat:	156 - EnviroCrete	4.0 – 6.0
		9.0 – 13.0

Product Performance Criteria
QUV Exposure: ASTM D4587

No blistering, cracking, chalking, or delamination of film. No less than 69% gloss retention, no more than 1.1 units gloss loss, and no more than 3.59 DE (FMC-2) color change after 5,000 QUV Exposure.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 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.

3.3 SURFACE PREPARATION OF CONCRETE

A. Interior, Wet Substrate:

1. Prepare concrete surfaces in accordance with manufacturer’s instructions, SSPC-SP 13/NACE 6, and ICRI 03732.
2. Allow concrete to cure for a minimum of 28 days.
3. Test concrete for moisture in accordance with ASTM D 4263 and F 1869.
4. Fill holes, pits, voids, and cracks.
5. Ensure surfaces are clean, dry, and free of oil, grease, chalk, form release agents, and other contaminants.

3.4 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.

3.5 DISINFECTION

A. Disinfection of Water Contact Surfaces and Filling of Water Storage Tanks:
   1. Do not disinfect water contact surfaces or fill water storage tanks until application of coating systems is complete, coatings have fully cured, and field quality control inspection is complete.
   2. Allow number of days in accordance with manufacturer's instructions and as directed by Engineer for full cure of coating systems on water contact surfaces before flushing, disinfecting, or filling with water.
   3. Disinfection: AWWA C 652 or as directed by Engineer.

3.6 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.

3.7 FIELD QUALITY CONTROL

A. Inspector's Services:
   1. Verify coatings and other materials are as specified.
   2. Verify surface preparation and application are as specified.
   3. Verify DFT of each coat and total DFT of each coating system are as specified using wet film and dry film gauges.
   4. Coating Defects: Check coatings for film characteristics or defects that would adversely affect performance or appearance of coating systems.
      a. Check for holidays on interior steel immersion surfaces using holiday detector.
   5. Report:
      a. Submit written reports describing inspections made and actions taken to correct nonconforming work.
      b. Report nonconforming work not corrected.

c. Submit copies of report to Engineer and Contractor.

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

3.8 CLEANING

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

3.9 ONE-YEAR INSPECTION

A. Owner will set date for one-year inspection of coating systems.

B. Inspection shall be attended by Owner, Contractor, Engineer, and manufacturer's representative.

C. Repair deficiencies in coating systems as determined by Engineer in accordance with manufacturer's instructions.