

COATING SPECIFICATION (WATER AND REUSE TREATMENT FACILITIES)

1. SCOPE

- 1.1. This specification defines the methods of surface preparation, coating systems, and methods of application for painting as outlined herein.
- 1.2. The Contractor shall furnish all supervision, labor, tools, materials, equipment, Scaffolding or other structures, and supervision required for the transportation, unloading, storage, and application of the paint and associated products covered by this specification.
- 1.3. The work includes painting and finishing of exterior exposed items above grade surfaces, and all other work obviously required to be painted unless otherwise specified herein or on the drawings. The omission of minor items in the schedule of work shall not relieve the contractor of his obligation to include such items where they come within the general intent of the specification as stated herein.
- 1.4. The following items will not be painted:
 1. Any code requiring labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
 2. Any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts, unless otherwise indicated.
 3. Aluminum handrails, walkways, windows, louvers, and grating unless otherwise specified herein.
 4. Signs and nameplates.
 5. Finish hardware.
 6. Stainless steel angles, tubes, pipe, etc.
 7. Products with polished chrome, aluminum, nickel, or stainless steel finish.
 8. Plastic switch plates and receptacle plates.
 9. Flexible couplings, lubricated bearing surfaces, insulation and metal and plastic pipe interior.
 10. Sprinkler heads.
- 1.5. All work shall be done in strict accordance with this specification, the design drawings and the painting package, including manufacturer's printed instructions.

- 1.6. The Contractor will obtain, at its own expense, all permits, licenses and inspections and shall comply with all laws, codes, ordinances, rules, and regulations promulgated by authorities having jurisdiction, which may bear on the work. This compliance will include Federal Public Law 91-596 more commonly known as the "Occupational Safety and Health Act of 1970."
- 1.7. Wherever the word "Engineer" occurs in this specification, it shall apply to the authorized representative of the City of Pompano Beach. Where the word "Contractor" occurs in this specification, it shall apply to the contractor performing any part of or all of this work.
- 1.8. Surfaces to be painted: (Refer to 17.0 Coating Schedule for description of surfaces to be painted and their specified coating systems and colors).

2. DEFINITIONS

- 2.1. Field Painting is the painting of new or rebuilt items at the job site. Field painting shall be the responsibility of the Contractor.
- 2.2. Shop Painting is the painting of new or rebuilt items in the shop prior to delivery to the jobsite.
- 2.3. Abbreviations The abbreviations and definitions listed below, when used in this specification, shall have the following meanings:
 - 2.3.1. SSPC – Society for Protective Coatings
 - 2.3.2. Exterior – Outside, exposed to weather
 - 2.3.3. Interior Dry – Inside, not subject to immersion service
 - 2.3.4. Interior Wet – Inside, subject to immersion service
 - 2.3.5. ASTM – American Society of Testing Materials
 - 2.3.6. NACE – National Association of Corrosion Engineers
 - 2.3.7. NSF – National Sanitation Foundation (Standard 61)
 - 2.3.8. AWWA – American Water Works Associates (AWWA D102-97)
 - 2.3.9. ICRI – International Concrete Repair Institute
 - 2.3.10. CSP – Concrete Surface Profile (1-9)

3. RESOLUTION OF CONFLICTS

- 3.1. It shall be the responsibility of the Contractor to arrange a meeting prior to the start of painting, or flooring installation between the Contractors, the Paint Manufacturer, whose products are to be used, and the Engineer. All aspects of surface preparation, application and coating systems as covered by this specification will be reviewed at this meeting.
- 3.2. Clarification shall be requested promptly from the Engineer when instructions are

lacking, conflicts occur in the specification, or the procedure seems improper or inappropriate for any reason.

3.3. Copies of all manufacturer's instructions and recommendations shall be furnished to the Engineer by the Painting Contractor.

3.4. It shall be the responsibility of the Coating Manufacturer to have their factory representative meet in person with the Contractor and Engineer a minimum of three times during the job as a consultant on surface preparation, mil thickness of coating and proper application of coating unless meeting is determined to be unnecessary by the Engineer.

4. INSPECTION OF SURFACES

4.1. Before application of the prime coat and each succeeding coat, all surfaces to be coated shall be subject to inspection by the Engineer. Any defects or deficiencies shall be corrected by the Contractor before application of any subsequent coating.

4.2. Samples of surface preparation and of painting systems shall be furnished by the Contractor to be used as a standard throughout the job, unless omitted by the Engineer.

4.3. When any appreciable time has elapsed between coatings, previously coated areas shall be carefully inspected by the Engineer, and where, in his opinion, surfaces are damaged or contaminated, they shall be cleaned and recoated at the Contractor's expense. Recoating times of manufacturer's printed instructions shall be adhered to.

4.4. Coating thickness shall be determined by the use of a properly calibrated "Nordson-

4.5. Mikrotest" "Positest" Coating Thickness Gauge (or equal) for ferrous metal or an OG232 "Tooke" Paint Inspection gauge (or equal) for non-ferrous and cementitious surfaces. Please note that use of the "tooke" gauge is classified as a destructive test.

5. EQUIPMENT

5.1. Effective oil and water separators shall be used in all compressed air lines serving spray painting and sandblasting operations to remove oil or moisture from the air before it is used. Separators shall be placed as far as practical from the compressor.

5.2. All equipment for application of the paint and the completion of the work shall be furnished by the Contractor in first-class condition and shall comply with recommendations of the paint manufacturer.

5.3. Contractor will provide free of charge to the Engineer a "Nordson-Mikrotest" or "Positest" dry film thickness gauge for ferrous metal and an OG232 "Tooke" gauge or equal for non-ferrous and cementitious surface, to be used to inspect coatings by the Engineer and Contractor. The gauges may be used by the Contractor and returned each day to the Engineer. Engineer will return gauges to Contractor at completion of job.

6. MATERIALS

- 6.1. All materials specified herein are manufactured by the TNEMEC Company, Inc., Xypex Chemical Corporation, or Chemprobe Technologies, Inc. These products are specified to establish standards of quality and are approved for use on this project.
- 6.2. Equivalent materials of other manufacturers may be substituted on approval of the Engineer. Requests for substitution shall include Manufacturer's literature for each product giving the name, generic type, descriptive information and evidence of satisfactory past performance and an independent laboratory certification that their product meets the performance criteria of the specified materials.
 - 6.2.1. Abrasion – Fed. Test Method Std. No. 141, Method 6192, CS-17 Wheel, 1,000 grams load
 - 6.2.2. Adhesion – Elcometer Adhesion Tester
 - 6.2.3. Exterior Exposure – Exposed at 45 degrees facing the ocean (South Florida Marine Exposure)
 - 6.2.4. Hardness – ASTM D3363-74
 - 6.2.5. Humidity – ASTM D2247-68
 - 6.2.6. Salt Spray (Fog) – ASTM B117-73
- 6.3. Bidders desiring to use coatings other than those specified shall submit their proposal in writing with the bid opening. Substitutions which decrease the film thickness, the number of coats applied, change the generic type of coating, or fail to meet the performance criteria of the specified materials will not be approved. Prime and finish coats of all surfaces shall be furnished by the same manufacturer.
- 6.4. All coatings to be shop applied must meet the requirements for volatile organic compounds (VOC) of not more than 3.5 lbs./Gallon after thinning.
- 6.5. Colors, where not specified, shall be as selected by the Owner or their Representative.
- 6.6. All coatings in contact with potable water need to be NSF Certified in accordance with ANSI/NSF Standard 61.

7. WORKMANSHIP AND MATERIALS

7.1. Surface Preparation

- 7.1.1. The surface shall be cleaned as specified for the paint system being used. All cleaning shall be as outlined in the Steel Structures Painting Council's Surface Preparation Specification, unless otherwise noted. If surfaces are subject to contamination, other than mill scale or normal atmospheric rusting, the surfaces shall be pressure washed, and acid or caustic pH residues neutralized, in addition to the specified surface preparation.

7.1.1.1. Standards for Surface Preparation

SSPC-SP1 Chemical and/or Solvent Cleaning

Remove all grease, oil, salt, acid, alkali, dirt, dust, wax, fat, foreign matter, and contaminants, etc. by one of the following methods: steam cleaning, alkaline cleaning.

SSPC-SP13 (NACE-6) Surface Preparation of Concrete

Surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems.

7.1.1.2. Visual standards from International Concrete Repair Institute CSP1-9 for degree of roughness and surface profile of concrete.

7.1.2. Oil, grease, soil, dust, etc., deposited on the surface preparation that has been completed shall be removed prior to painting according to SSPC-SP1 Solvent Cleaning.

7.1.3. "Touch-up systems will be same as original specification except that approved manufacturer's organic zinc-rich shall be used in lieu of inorganic zinc where this system was originally used. Also strict adherence to manufacturer's complete touch-up recommendations shall be followed. Any questions relative to compatibility of products shall be brought to the Engineer's attention; otherwise, Contractor assumes full responsibility.

8. PRETREATMENTS

8.1. When specified, the surface shall be pretreated in accordance with the specified pretreatment prior to application of the prime coat of paint.

9. STORAGE

9.1. Materials shall be delivered to the job site in the original packages with seals unbroken and with legible unmutated labels attached. Packages shall not be opened until they are inspected by the Engineer and required for use. All painting materials shall be stored in a clean, dry, well-ventilated place, protected from sparks, flame, and direct rays of the sun or from excessive heat. Paint susceptible to damage from low temperatures shall be kept in a heated storage space when necessary. The Contractor shall be solely responsible for the protection of the materials at the job site. Empty coating cans shall be required to be neatly stacked in an areas designated by the Engineer and removed from the job site on a schedule determined by the Engineer. Engineer may request a notarized statement from contractor detailing all materials used on the project.

10. PREPARATION OF MATERIALS

10.1. Mechanical mixers, capable of thoroughly mixing the pigment and vehicle together,

shall mix the paint prior to use where required by manufacturer's instructions; thorough hand mixing will be allowed for small amounts up to one gallon. Pressure pots shall be equipped with mechanical mixers to keep the pigment in suspension, when required by manufacturer's instructions. Otherwise, intermittent hand mixing shall be done to assure that no separation occurs. All mixing shall be done in accordance with SSPC Vol. 1, Chapter 4, "Practical Aspects, Use and Application of Paints" and/or with manufacturer's recommendations.

10.2. Catalysts or thinners shall be as recommended by the manufacturer and shall be added or discarded strictly in accordance with the manufacturer's instruction.

11. APPLICATION

11.1. Paint shall be applied only on thoroughly dry surfaces and during periods of favorable weather, unless otherwise allowed by the paint manufacturer. Except as provided below, painting shall not be permitted when the atmospheric temperature is below 50° F, or when freshly painted surfaces may be damaged by rain, fog, dust, or condensation, and/or when it can be anticipated that these conditions will prevail during the drying period

11.1.1. No coatings shall be applied unless surface temperature is a minimum of 5° above dew point; temperature must be maintained during curing.

11.1.2. DEW POINT CALCULATION CHART

DEW POINT CALCULATION CHART
Ambient Air Temperature – Fahrenheit

Relative Humidity	20	30	40	50	60	70	80	90	100	110	120
90%	18	28	37	47	57	67	77	87	97	107	117
85%	17	26	36	45	55	65	76	84	95	103	113
80%	16	25	34	44	54	63	73	82	93	102	110
75%	15	24	33	42	52	62	71	80	91	100	108
70%	13	22	31	40	50	60	68	78	88	96	105
65%	12	20	29	38	47	57	66	76	85	93	103
60%	11	19	27	36	45	55	64	73	83	92	101
55%	9	17	25	34	43	53	61	70	80	89	98
50%	6	15	23	31	40	50	59	67	77	86	94
45%	4	13	21	29	37	47	56	64	73	82	91
40%	1	11	18	26	35	43	52	61	69	78	87
35%	-2	8	16	23	31	40	48	57	65	74	83
30%	-6	4	13	20	28	36	44	52	61	69	77

SURFACE TEMPERATURE AT WHICH CONDENSATION OCCURS

Dew Point

Temperature at which moisture will condense on surface. No coatings should be applied

unless surface temperature is a minimum of 5° above this point. Temperature must be maintained during curing.

Example

If air temperature is 70° F and relative humidity is 65%, the dew point is 57° F. No coating should be applied unless surface temperature is 62° F minimum.

- 11.1.3. No coatings shall be applied unless the relative humidity is below 85%.
- 11.1.4. Suitable enclosures to permit painting during inclement weather may be used if provisions are made to control atmospheric conditions artificially inside the enclosure, within limits suitable for painting throughout the painting operations.
- 11.1.5. Field Painting in the immediate vicinity of, or on, energized electrical and rotating equipment, and equipment and/or pipes in service shall not be performed without the approval of the Engineer.
- 11.1.6. Extreme care shall be exercised in the painting of all operable equipment, so that the proper functioning of the equipment will not be affected.
- 11.1.7. The Contractor's scaffolding shall be erected, maintained, and dismantled without damage to structures, machinery, equipment or pipe. Drop cloths shall be used where required to protect buildings and equipment. All surfaces required to be clear for visual observations shall be cleaned immediately after paint application.
- 11.1.8. The prime coat shall be applied immediately following surface preparation and in no case later than the same working day. All paint shall be applied by brushing, paint mitt and roller, conventional spraying, or airless spraying, using equipment approved by the paint manufacturer.
- 11.1.9. Each coat of paint shall be recoated as per manufacturer's instructions. Paint shall be considered recoatable when an additional coat can be applied without any detrimental film irregularities such as lifting or loss of adhesion.
- 11.1.10. Finish colors shall be in accordance with the COLOR SCHEDULE and shall be factory mixed (i.e., there shall be no tinting by the Contractor, unless authorized by the Engineer).
- 11.1.11. All open seams in the roof area of tanks shall be filled after application of the

topcoat with a flexible caulking such as Sika Flex 1A.

11.2. **WORKMANSHIP**

11.2.1. The Contractor must show proof that all employees associated with this project shall have been employed by the Contractor for a period not less than six (6) months.

11.2.2. Painting shall be performed by experienced painters in accordance with the recommendations of the paint manufacturer. All paint shall be uniformly applied without sags, runs, spots, or other blemishes. Work, which shows carelessness, lack of skill, or is defective in the opinion of the Engineer, shall be corrected at the expense of the Contractor.

11.2.3. The Contractor shall provide the names of at least 3 other projects of similar size and scope that they have successfully completed under their current company name.

11.3. **APPLICATION OF PAINT**

11.3.1. BY BRUSH AND/OR ROLLERS

11.3.1.1. Top quality, properly styled brushes and rollers shall be used. Rollers with a baked phenol core shall be utilized.

11.3.1.2. The brushing or rolling shall be done so that a smooth coat as nearly uniform in thickness as possible is obtained. Brush or roller strokes shall be made to smooth the film without leaving deep or detrimental marks.

11.3.1.3. Surfaces not accessible to brushes or rollers may be painted by spray, by dauber or sheepskins, and paint mitt.

11.3.1.4. It may require 2 coats to achieve the specified dry film thickness if application is by brush and roller.

11.3.2. AIR, AIRLESS, OR HOT SPRAY

11.3.2.1. The equipment used shall be suitable for the intended purpose, shall be capable of properly atomizing the paint to be applied and shall be equipped with suitable pressure regulators and gauges.

- 11.3.2.2. Paint shall be applied in a uniform layer, with a 50% overlap pattern. All runs and sags should be brushed out immediately or the paint shall be removed and the surface resprayed.
- 11.3.2.3. High build coatings should be applied by a crosshatch method of spray application to ensure proper film thickness of the coating.
- 11.3.2.4. Areas inaccessible to spray shall be brushed; if also inaccessible to brush, daubs or sheepskins shall be used, as authorized by the manufacturer.
- 11.3.2.5. Special care shall be taken with thinners and paint temperatures so that paint of the correct formula reaches the receiving surface.
- 11.3.2.6. Nozzles, tips, etc., shall be of sizes and designs as recommended by the manufacturer of the paint being sprayed.
- 11.3.2.7. The first coat on concrete surfaces in immersion service should be sprayed and backrolled.

12. PROTECTION AND CLEAN-UP

12.1. It shall be the responsibility of the Contractor to protect at all times, in areas where painting is being done, floors, materials of other crafts, equipment, vehicles, fixtures, and finished surfaces adjacent to paint work. Cover all electric plates, surface hardware, nameplates, gauge glasses, etc., before start of painting work.

12.2. At the option of the Engineer during the course of this project, the Contractor will contain all spent abrasives, old paint chips, paint overspray and debris by means suitable to the Engineer, including but not limited to, full shrouding of the area.

12.3. If shrouding is required, the Contractor must provide a complete design of the intended shroud or cover. Care must be taken not to modify or damage the structure during the use of the shroud. If damage should occur, the Contractor is held responsible for all repairs.

12.4. At completion of the work, remove all paint where spilled, splashed, splattered, sprayed or smeared on all surfaces, including glass, light fixtures, hardware, equipment, painted, and unpainted surfaces.

12.5. After completion of all painting, the Contractor shall remove from job site all painting equipment, surplus materials, and debris resulting from this work.

12.6. The Contractor is responsible for the removal and proper disposal of all hazardous materials from the jobsite in accordance with Local, State, and Federal requirements as outlined by the Environmental Protection Agency.

12.7. A notarized statement shall be presented to the Engineer that all hazardous materials have been disposed of properly including but not limited to: name of disposal

company, disposal site, listing of hazardous materials, weights of all materials, cost per pound and EPA registration number.

13. TOUCH-UP MATERIALS

13.1. The Contractor shall provide at the end of the project at least one (1) gallon of each generic topcoat in each color as specified by the Engineer for future touch-up. Two gallons may be required for (2) component materials.

14. ON-SITE INSPECTION

14.1. During the course of this project the Engineer will reserve the option of incorporating the services of a qualified inspection service. The inspection service will be responsible for assuring the proper execution of this specification by the successful contractor.

15. COATING SYSTEM SCHEDULE

15.1. EXTERIOR OF PRESTRESSED CONCRETE TANKS

Z.1 System No. 156-3 (New Tanks)

Surface Preparation: Surface to be clean and dry.

	DFT-Mils
1st Coat: 156-Color Enviro-Crete	4.0 – 6.0
2nd Coat: 156-Color Enviro-Crete	<u>4.0 – 6.0</u>
	8.0–12.0

Minimum 10.0 Mils

Z.2 System No. 156-4 Existing Tanks (Previously Painted)

Surface Preparation: Remove all dirt, oil, grease, chalk, and loose paint per High Pressure Water Blast (Min 3500 PSI).

	DFT-Mils
1st Coat: 151 Elasto-Grip	1.0 – 2.5
Stripe Coat: Stripe all hairline cracks with a Brushed coat of 156 Enviro-Crete	3.0 – 5.0
Spot Coat: 156 Enviro-Crete	4.0 – 6.0
Topcoat: 156 Enviro-Crete	6.0 – 8.0
(Cracks)	10.0–15.5
(Other)	7.0 –10.5

1st coat is optional and can be eliminated with approval from coatings manufacturer.
Spot coat of Series 156 for areas of bare concrete.

15.2. **CLEAR WATER REPELLENT FOR CONCRETE, MASONRY & BRICK**

BB.1 Silane/Siloxane Sealer (Water Based)

Surface Preparation: Allow new concrete to cure 28 days. Clean surfaces to be sealed by abrasive blasting or waterblasting.

COATING: BRICK, CONCRETE

Chemprobe PRIME A PELL H₂O 125-200 SF/GAL

SPLIT FACED OR POROUS MASONRY

Chemprobe PRIME A PELL H₂O. 65-100 SF/GAL

BB.2 Silane/Siloxane Sealer w/Concrete Stain

Sealer: Chemprobe Prime A Pell H₂O 65-200 SF/Gal

Concrete Stain: Two Coats of Chemprobe 75-200 SF/Gal/Ct Conformal Stain

BB.3 RTV Silicone Rubber Water Repellent And Graffiti Protectorant

1st Coat: 626 Dur A Pell GS 75-300 SF/Gal*

2nd Coat: 626 Dur A Pell GS 75-300 SF/Gal*

*Depends on substrate.

**Use 680 Mark A Way for graffiti removal.

16. GENERAL STATEMENT

16.1. Manufacturer's Technical Data Sheets, Installation Instructions and Label Directions are considered to be part of this specification.

16.2. Systems not applicable to this project should be deleted.

16.3. Consult TNEMEC for additional systems needed to address surfaces not included within these specifications.

16.4. For additional technical support, product availability, and pricing information, please contact:

FLORIDA PROTECTIVE COATINGS CONSULTANTS, INC.
TNEMEC, INC.
250 Waymont Ct. Suite 120
Lake Mary, FL 32746
Telephone: (407) 322-1243
Fax: (407) 322-1245
e-mail: mstensrud@tnemec.com

MICHAEL R. STENSRUD
 GEORGE SMITH
 BILL LANGER
 BLAKE HOLMES

16.5. WARRANTY - If within one year after the date of completion of each facility component, any Work found to be defective, painting CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective work. If painting CONTRACTOR does not promptly comply with terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective work corrected or the rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, will be charge to the painting CONTRACTOR.

17. COATING SCHEDULE

	STRUCTURE	SURFACE	EXPOSURE	COATING SYSTEM	FINISH COLOR
1					
2					
3					
4					
5					

SYSTEMS REFERENCE GUIDE

15.1 EXTERIOR OF PRESTRESSED CONCRETE TANKS

- Z.1 System No. 156-3 (New Tanks)
- Z.2 System No. 156-4 System Existing Tanks (Previously Painted)

15.2 CLEAR WATER REPELLENT FOR CONCRETE, MASONRY, AND BRICK

- BB.1 Silane/Siloxane Sealer (Water Based)
- BB.2 Silane/Siloxane Sealer w/Concrete Stain
- BB.3 RTV Silicone Rubber Water Repellent & Graffiti Protectorant

17. COATING SCHEDULE

	STRUCTURE	SURFACE	EXPOSURE	COATING SYSTEM	FINISH COLOR
1	Tanks	Prestress	Exterior		TBD
2	Trim				