



SECTION 09 90 00 – PAINTING AND COATING

PART 1 – GENERAL

1.01 SCOPE

- A. This specification defines the methods of surface preparation, coating systems, and methods of application for painting as outlined herein.
- B. 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.
- C. The work includes painting and finishing of interior and exterior exposed items above and below grade surfaces, such as structural steel, miscellaneous metals, walls, pipe, handrails, posts, fittings, valves, pumps, tanks, equipment, 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 with the general intent of the specification as stated herein.
- D. 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. Flexible couplings, lubricated bearing surfaces, insulation, and metal and plastic pipe interior.
 - 9. Public utility pipelines for water, sewer, and storm drainage.
 - 10. Concrete for storm walls.



11. Sprinkler heads.

- E. All work shall be done in strict accordance with this specification, the design drawings, and the painting package, including manufacturer's printed instructions.
- F. 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."
- G. Wherever the word "Engineer" occurs in this specification, it shall apply to the authorized representative of Mead & Hunt. Where the word "Contractor" occurs in this specification, it shall apply to the Contractor performing any part of or all of this work.
- H. Surfaces to be painted: (Refer to 17.0 Coating Schedule for description of surfaces to be painted and their specified coating systems and colors).

1.02 SUBMITTALS

- A. Submit the following in accordance with the requirements specified in Section 01 33 00, "Submittal Procedures."
- B. Submit color cards for all coatings proposed for use, together with complete descriptive specifications and the completed Coating Schedule, to Field Inspector for review and color selection. Requests for review submitted directly to Field Inspector by coating suppliers will not be considered.
- C. For proposed products in contact with raw or treated water, Contractor shall submit certifications that the proposed systems are in compliance with ANSI/NSF 61.
- D. Contractor shall submit a Coating Schedule for each separately identified surface in the Coating Schedule that will be used on the contract, using a Coating Schedule similar to that shown at the end of this specification. Each field coating system shall be acceptable to the coating material manufacturer. Each Coating Schedule shall include application temperature requirements, including recoat window requirements for the ambient conditions at the site, including elevated temperatures up to 130° F. Temperature requirements shall be specified by the coating manufacturer.

1.03 DEFINITIONS

- A. Field Painting is the painting of new or rebuilt items at the job site. Field painting shall be the responsibility of the Contractor.
- B. Shop Painting is the painting of new or rebuilt items in the shop prior to delivery



to the jobsite.

1.04 ABBREVIATIONS

- A. The abbreviations and definitions listed below, when used in this specification, shall have the following meanings:
1. SSPC – Society for Protective Coatings
 2. DFT – Dry Film Thickness
 3. Exterior – Outside, exposed to weather
 4. Interior Dry – Inside, not subject to immersion service
 5. Interior Wet – Inside, subject to immersion service
 6. ASTM – American Society of Testing Materials
 7. NACE – National Association of Corrosion Engineers
 8. NSF – National Sanitation Foundation
 9. AWWA – American Water Works Associates

1.05 RESOLUTION OF CONFLICTS

- A. 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.
- B. 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.
- C. Copies of all manufacturer's instructions and recommendations shall be furnished to the Engineer by the Painting Contractor.
- D. 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 (3) 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.

1.06 INSPECTION OF SURFACES

- A. 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.

- B. 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.
- C. 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.
- D. Coating thickness shall be determined by the use of a properly calibrated "Nordson-Mikrotest" or "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 the use of the "Tooke" gauge is classified as a destructive test.

1.07 EQUIPMENT

- A. 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.
- B. 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 the recommendations of the paint manufacturer.
- C. 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.

PART 2 – MATERIALS

- A. 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.
- B. 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. Unless otherwise stated, the latest revision of identified specifications shall be used.

1. Abrasion – Fed. Test Method Std. No. 141, Method 6192, CS-17 Wheel, 1,000 grams load
 2. Adhesion – Elcometer Adhesion Tester
 3. Exterior Exposure – Exposed at 45 degrees facing the ocean (South Florida Marine Exposure)
 4. Hardness – ASTM D3363
 5. Humidity – ASTM D2247
 6. Salt Spray (Fog) – ASTM B117
- C. Bidders desiring to use coatings other than those specified shall submit their proposal in writing to the Engineer at least ten (10) days prior to 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.
- D. 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.
- E. Colors, where not specified, shall be as selected by the Owner or their Representative.
- F. All coatings in contact with potable water need to be NSF Certified in accordance with ANSI/NSF Standard 61.

2.02 WORKMANSHIP AND MATERIALS

- A. Surface Preparation
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.
- B. Standards for Surface Preparation



1. SSPC-SP1 Chemical and/or Solvent Cleaning
 - a. 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, or volatile solvent cleaning.
2. SSPC-SP2 Hand Tool Cleaning
 - a. Removal of loose rust, loose mill scale, and loose paint to a clean sound substrate by hand chipping, scraping, sanding, and wire brushing.
3. SSPC-SP3 Power Tool Cleaning
 - a. Removal of loose rust, loose mill scale, and loose paint to a clean, sound substrate by power tool chipping, descaling, sanding, wire brushing, and grinding.
4. SSPC-SP4 Flame Cleaning
 - a. Dehydrating and removal of rust, loose mill scale, and some light mill scale by use of flame, followed by wire brushing.
5. SSPC-SP5 (NACE-1) White Metal Blast Cleaning
 - a. Complete removal of all mill scale, rust, rust scale, previous coating, etc., leaving the surface a uniform gray-white color.
6. SSPC-SP6 (NACE-3) Commercial Grade Blast Cleaning
 - a. Complete removal of all dirt, rust scale, mill scale, foreign matter, and previous coatings, etc., leaving only shadows and/or streaks caused by rust stain and mill scale oxides. At least sixty-six percent (66%) of each square inch of surface area is to be free of all visible residues, except slight discoloration.
7. SSPC-SP7 (NACE-4) Brush-Off Blast Cleaning
 - a. Removal of rust scale, loose mill scale, loose rust, and loose coatings, leaving tightly bonded mill scale, rust and previous coatings. On concrete surfaces, brush-off blast cleaning shall remove all laitance, form oils, and solid contaminants. Blasting should be performed sufficiently close to the surface so as to open up surface voids, bug holes, air pockets, and other subsurface



irregularities, but so as not to expose underlying aggregate.

8. SSPC-SP8 Pickling

- a. Complete removal of rust and mill scale by acid pickling, duplex pickling, or electrolytic pickling (may reduce the resistance of the surface to corrosion, if not to be primed immediately).

9. SSPC-SP10 (NACE-2) Near-White Blast Cleaning

- a. Removal of all rust scale, mill scale, previous coating, etc., leaving only light stains from rust, mill scale, and small specks of previous coating. At least ninety-five percent (95%) of each square inch of surface area is to be free of all visible residues, and the remainder shall be limited to slight discoloration.

10. SSPC-SP11-87 Power Tool Cleaning to Bare Metal

- a. Complete removal of rust, rust scale, mill scale, foreign matter, and previous coatings, etc., to a standard as specified on a Commercial Grade Blast Cleaning (SSPC-SP6, NACE-3) by means of power tools that will provide the proper degree of cleaning and surface profile.

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

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

C. Visual standards

- 1. SSPC-VIS-1 (Swedish SIS OS 5900), "Pictorial Surface Preparation Standards for Painting Steel Surfaces," and the National Association of Corrosion Engineers, "Blasting Cleaning Visual Standards" TM-01-70 and TM-01-75 shall be considered as standards for proper surface preparation.
- 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.
- 3. Weld flux, weld spatter, and excessive rust scale shall be removed by Power Tool Cleaning as per SSPC-SP11-87T.



4. All weld seams, sharp protrusions, and edges shall be ground smooth prior to surface preparation or application of any coatings.
5. All areas requiring field welding shall be masked off prior to shop coating, unless waived by the Engineer.
6. All areas that require field touch-up after erection, such as welds, burnbacks, and mechanically damaged areas, shall be cleaned by a thorough Power Tool as specified in SSPC-SP11-87T.
7. Touch-up systems will be same as original specification except that an 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 the compatibility of products shall be brought to the Engineer's attention; otherwise, Contractor assumes full responsibility.

2.03 PRE-TREATMENTS

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

2.04 STORAGE

- A. 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 they have stored at the job site. Empty coating cans shall be required to be neatly stacked in an area 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.

2.05 PREPARATION OF MATERIALS

- A. 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.

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

2.06 APPLICATION

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

2.07 DEW POINT CALCULATION CHART

- A. Ambient Air Temperature – Fahrenheit

	1. 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	29	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



B. Dew Point

1. Temperature at which moisture will condense on surface. No coatings should be applied unless surface temperature is a minimum of 5°F above this point. Temperature must be maintained during curing.

C. Example

1. 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.

D. No coatings shall be applied unless the relative humidity is below eighty-five percent (85%).

E. 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.

F. 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.

G. Extreme care shall be exercised in the painting of all operable equipment, such as valves, electric motors, etc., so that the proper functioning of the equipment will not be affected.

H. 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.

I. Painting shall not be performed on insulated pipe within three (3) feet of insulation operations or on insulation where covering and surface coat have not had time to set and dry. Painting shall not be performed on uninsulated pipe within one (1) foot of any type of connection until the connection has been made, except as directed by the Engineer.

J. 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.

K. 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.

L. Surfaces that will be inaccessible after assembly shall receive either the full



specified paint system or three shop coats of the specified primer before assembly.

- M. 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).
- N. All edges and weld seams in immersion service shall receive a “stripe coat” (applied by brush) of the first coat prior to application of the full first coat.
- O. 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.

2.08 WORKMANSHIP

- A. 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.
- B. 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.
- C. The Contractor shall provide the names of at least six (6) other projects of similar size and scope that they have successfully completed under their current company name.

C. Application of Paint

1. BY BRUSH AND/OR ROLLERS

- a. Top-quality, properly styled brushes and rollers shall be used. Rollers with a baked phenohl core shall be utilized.
- b. 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.
- c. Surfaces not accessible to brushes or rollers may be painted by spray, by dauber or sheepskins, and paint mitt.
- d. It may require two (2) coats to achieve the specified dry film thickness if application is by brush and roller.

D. Air, Airless, Or Hot Spray



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

2.09 PROTECTION AND CLEAN-UP

- A. 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 the start of painting work.
- B. 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.
- C. 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.
- D. 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.
- E. After completion of all painting, the Contractor shall remove from the job site all painting equipment, surplus materials, and debris resulting from this work.



- F. 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.
- G. 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.

2.10 TOUCH-UP MATERIALS

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

2.11 ON-SITE INSPECTION

- A. 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.

2.12 COATING SYSTEM SCHEDULE

- A. STEEL – STRUCTURAL, TANKS, PIPES, AND EQUIPMENT

1. EXTERIOR EXPOSURE (NON-IMMERSION)

A.1 System No. 73-1 Epoxy/High Build Urethane

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

	<u>DFT-Mils</u>
<u>1st Coat:</u> 66-1255 Epoxoline Primer	3.0 – 4.0
<u>2nd Coat:</u> 66-Color Hi-Build Epoxoline	2.0 – 3.0
<u>3rd Coat:</u> 73-Endura-Shield	<u>2.0 – 3.0</u>
	7.0 -10.0

Minimum 8.0 Mils

NOTE: This system is highly resistant to abrasion, wet conditions, corrosive fumes, and chemical contact. Provides 2-3 times the color and gloss retention of conventional paints. Second coat to be same color or close to finish color. Specify Series 1074 Endura-Shield for a gloss finish. Specify Series 161 in lieu of the 66 for faster recoats or lower temperature curing.



A.2 System No. 73-2 High Build Urethane For Marginally Cleaned Surfaces or Topcoating Existing Systems.

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning or SSPC-SP3 Power Tool Cleaning Feather all edges.

	<u>DFT-Mils</u>
<u>Shop Coat:</u> Manufacturer Standard Primer (or existing coating)	1.5 – 2.0
<u>Tie Coat:</u> 135 Chembuild	3.0 – 5.0
<u>Topcoat:</u> 73-Color Endura-Shield	<u>2.0 – 3.0</u> 6.5-10.0
	Minimum 7.5 Mils

NOTE: This system can be used over factory finish paint or over non-sandblasted steel and offer the high performance of a urethane coating. Specify Series 1074 Endura-Shield for gloss finish. A test patch is always recommended to insure proper application.

A.3 System 90-97 Zinc/Epoxy/Urethane

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

	<u>DFT-Mils</u>
<u>Primer:</u> 90-97 Tneme-Zinc	2.5 – 3.5
<u>2nd Coat:</u> 66-Color Hi-Build Epoxoline	2.0 – 3.0
<u>3rd Coat:</u> 73 Endura-Shield III	<u>2.0 – 3.0</u> 6.5 – 9.5
	Minimum 8.0 Mils

NOTE: This system offers the added corrosion protection of a zinc rich primer. Series 90-97 Tneme-Zinc is an organic zinc-rich primer that can be used for field touch up of a zinc primer or for touch up of galvanized surfaces that are damaged. You can substitute Series 91-H₂O Hydrozinc for the 90-97. You can substitute Series 1074 for the Series 73 if a gloss finish is desired.

**B. INTERIOR EXPOSURE (NON-IMMERSION)****B.1 System No. 66-2 Polyamide Epoxy**

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

	<u>DFT-Mils</u>
<u>1st Coat:</u> 66-Color Hi-Build Epoxoline	3.0 – 5.0
<u>2nd Coat:</u> 66-Color Hi-Build Epoxoline	<u>4.0 – 6.0</u>
	7.0 – 11.0
	Minimum 9.0 Mils

NOTE: This system will provide chemical and corrosion resistance against abrasion, moisture, corrosion fumes, chemical contact, and immersion in non-potable water. Primer coat must be touched-up before 2nd coat is applied. Substitute Series 161 for low temperature cure or quick recoats.

C. IMMERSION**C.1 System No. N69-2 High Solids High Build Epoxy (Non-Potable Water)**

Surface Preparation: SSPC-SP10 Near White Blast Cleaning

	<u>DFT-Mils</u>
<u>Stripe Coat:</u> N69-Color Hi-Build Epoxoline II	3.0 – 5.0
by brush and roller to all weld	
Seams and plate edges	
<u>1st Coat:</u> N69-Color Hi-Build Epoxoline II	5.0 – 7.0
<u>2nd Coat:</u> N69-Color Hi-Build Epoxoline II	<u>5.0 – 7.0</u>
	10.0-14.0
	(Excluding stripe coat)
	Minimum 12.0 Mils

NOTE: This system provides maximum protection in immersion service. Scarify the surface before topcoating if the Series N69 has been exterior-exposed for 60 days or longer. If primer coat is damaged, it must be touched-up before 2nd coat is applied.

**C.2 System No. 66-2 High Build Epoxy (Non-Potable Water)****Surface Preparation:** SSPC-SP10 Near White Blast Cleaning

	<u>DFT-Mils</u>
<u>Stripe Coat:</u> 66-Color to all weld seams and plate edges	2.0 – 4.0
<u>1st Coat:</u> 66-Color Hi-Build Epoxoline	3.0 – 5.0
<u>2nd Coat:</u> 66-Color Hi-Build Epoxoline	3.0 – 5.0
<u>3rd Coat:</u> 66-Color Hi-Build Epoxoline	<u>3.0 – 5.0</u> 9.0 – 15.0 (Excluding stripe coat) Minimum 11.0 Mils

NOTE: This system will provide chemical and corrosion resistance for protection against abrasion, moisture, corrosive fumes, chemical contact, and immersion. Primer coat must be touched-up before 2nd coat is applied. Scarify the surface before top coating if the Series 66 has been exterior-exposed for 60 days or longer. Substitute Series 161 for low temperature cure or quick recoats.

C.3 System No. 46-30 Coal Tar-Epoxy (Non-Potable Water)**Surface Preparation:** SSPC-SP10 Near White Blast Cleaning*

	<u>DFT-Mils</u>
<u>One Coat:</u> 46H-413 Hi-Build Thene-Tar	16.0 – 20.0

NOTE: May be applied in a two-coat application. Review critical recoat time if utilized.

*SSPC-SP6 Commercial Blast Cleaning may be used for non-immersion service.

D. MILL COATED STEEL PIPE – EXTERIOR/INTERIOR EXPOSURE
(NON-IMMERSION)

D.1 System No. 66-3 Epoxy-Polyamide

Surface Preparation: Surface shall be clean and dry. Scarify by Brush Blasting if surface is hard and glossy.

	<u>DFT-Mils</u>
<u>1st Coat:</u> 66-Color Hi-Build Epoxoline	3.0 – 4.0



<u>2nd Coat:</u>	66-Color Hi-Build Epoxoline	4.0 – 6.0
<u>*3rd Coat:</u>	73 Endura-Shield	(2.0 – 3.0)
		(9.0 – 13.0)
	Minimums	11.0 Mils for 3 coats
		9.0 Mils for 2 coats

*Optional topcoat for exterior exposure

NOTE: This system can be applied directly to mill coated steel pipe without sandblasting for use in non-immersion. There may be some bleed through with the 1st coat. Do not apply over glossy varnish type mill coatings without thorough scarification.

E. GALVANIZED STEEL – PIPE AND MISCELLANEOUS FABRICATIONS – EXTERIOR (NON-IMMERSION)

E.1 **System No. 73-2 Epoxy/High Build Urethane**

Surface Preparation: SSPC-SP1 Solvent Cleaning and Scarify by Brush Off Blasting, Hand Sanding, or Chemical Treatment

		<u>DFT-Mils</u>
<u>1st Coat:</u>	66-Color Hi-Build Epoxoline	2.0 – 4.0
<u>2nd Coat:</u>	73-Color Endura-Shield	<u>2.0 – 4.0</u>
		4.0 – 8.0
	Minimum	5.0 Mils

NOTE: Series 66 has excellent adhesion to galvanized steel. This system is highly resistant to abrasion, wet conditions, corrosive fumes, and chemical contact. Provides 2-3 times the color and gloss retention of conventional paints. First coat to be same color as or close to the finish color. Specify Series 1074 Endura-Shield for gloss finish.

	4.0 – 8.0
Minimum	5.0 Mils

F. CONCRETE – EXTERIOR ABOVE GRADE

F.1 **System No. 180-1 High Build Acrylic Emulsion – Smooth**

Surface Preparation: Surface shall be clean and dry.

		<u>DFT-Mils</u>
<u>1st Coat:</u>	180-Color W.B. Tneme-Crete	4.0 – 6.0*
<u>2nd Coat:</u>	180-Color W.B. Tneme-Crete	<u>4.0 – 6.0*</u>
		8.0 – 12.0 Mils



Minimum 10.0 Mils

*This coating should be spray applied to achieve the recommended DFT. Application by roller would possibly require additional coats to achieve the recommended DFT for the system.

NOTE: Series 180 is a high-build decorative acrylic coating in a smooth finish. Substitute Series 181 if a sand texture finish is desired.

F.2 System No. 6-1 Acrylic Emulsion

Surface Preparation: Surface must be clean and dry.

	<u>DFT-Mils</u>
<u>1st Coat:</u> 6-Color Tneme-Cryl	2.0 – 3.0
<u>2nd Coat:</u> 6-Color Tneme-Cryl	<u>2.0 – 3.0</u>
	4.0 – 6.0
Minimum	5.0 Mils

NOTE: If semi-gloss finish is desired, use Series 29 Tuf-Cryl as the 2nd coat @ 1.5 – 2.0 mils DFT.

F.3 System No. 100 Concrete Stain

Surface Preparation: The surface must be clean, dry, sound, and free of cracks, and paint.

	<u>SF/Gal/Ct</u>
<u>Sealer:</u> Chemprobe Prime A Pell H ₂ O	65-200
<u>Concrete Stain:</u> Two coats of Chemprobe	75-200

Conformal Stain

G. EXTERIOR – BELOW GRADE

G.1 System No. 46-61 Coal Tar Pitch Solution

Surface Preparation: Surface must be clean and dry. Allow new concrete to cure at least 28 days.

	<u>DFT-Mils</u>
<u>1st Coat:</u> 46-465 H.B. Tnemecol	8.0 –12.0
<u>2nd Coat:</u> 46-465 H.B. Tnemecol	<u>8.0 –12.0</u>



16.0 - 24.0

Minimum 16.0 Mils

G.2 System No. 46-31 Coal Tar Epoxy

Surface Preparation: Surface shall be clean and dry. Allow New concrete to cure at least 28 days.

DFT-Mils

One Coat: 46H-413 Hi-Build Tneme-Tar 14.0-20.0

H. IMMERSION –NON-POTABLE WATER

H.1 System No. 66-4 Epoxy-Polyamide (Non-Potable Water)

Surface Preparation: Allow concrete to cure for 28 days. Abrasive blast clean per SSPC-SP13.

DFT-Mils

1st Coat: 66-Color Hi-Build Epoxoline 4.0 – 6.0

2nd Coat: 66-Color Hi-Build Epoxoline 4.0 – 6.0

8.0 –12.0

Minimum 10.0 Mils

NOTE: Surface irregularities and bug holes should be filled to a smooth uniform appearance as required with TNEMEC Series 63-1500 Filler & Surfacer. First coat should be spray-applied and backrolled.

H.2 System No. 104-5 High Solids Epoxy (Non-Potable Water)

Surface Preparation: Allow concrete to cure for 28 days. Abrasive blast clean per SSPC-SP13.

DFT-Mils

1st Coat: 104-1255 H.S. Epoxy Primer 6.0 – 10.0

2nd Coat: 104-Color H.S. Epoxy 6.0 – 10.0

12.0 - 20.0

Minimum 14.0 Mils

NOTE: Surface irregularities and bug holes should be filled to a smooth uniform appearance as required with TNEMEC Series 63-1500 Filler & Surfacer. First coat should be spray-applied and backrolled.



H.3 **System No. 46-31 Coal Tar-Epoxy (Non-Potable Water)**

Surface Preparation: Allow concrete to cure for 28 days. Abrasive blast clean per SSPC-SP13.

DFT-Mils

One Coat: 46H-413 Hi-Build Tneme-Tar 14.0 – 20.0

NOTE: May be applied in a two-coat application. Review critical recoat time if utilized. Surface irregularities and bug holes should be filled to a smooth uniform appearance as required with TNEMEC Series 63-1500 Filler & Surfacers.

I. FERROUS METAL SURFACES

I.1 **System No. 120-2 Vinyl Ester (Steel)**

Surface Preparation: SSPC-SP5 White Metal Blast Cleaning (3.0 Mil Profile)

DFT-Mils

1st Coat: 120-5002 Vinester Primer 12.0 – 18.0

2nd Coat: 120-5001 Vinester Topcoat 12.0 – 18.0

24.0 – 36.0

Minimum 30.0 Mils

NOTE: Application of a stripe coat to all weld seams and plate edges is recommended.

J. CLEAR WATER REPELLENT FOR CONCRETE, MASONRY & BRICK

J.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

J.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

K. MANHOLES, WET WELLS & LIFT STATIONS

K.1 System No. 120-1 Vinyl Ester

Surface Preparation: Abrasive blast clean to remove all laitance, fines, and contamination.

	<u>DFT-Mils</u>
<u>1st Coat:</u> 120-5002 Vinester Primer	6.0 – 10.0*
<u>2nd Coat:</u> 120-5003 Vinester F&S	As required**
<u>3rd Coat:</u> 120-5002 Vinester Primer	12.0 – 18.0
<u>4th Coat:</u> 120-5001 Vinester Topcoat	<u>12.0 – 18.0</u>
	30.0 – 46.0
	Minimum 36.0 Mils +

*First coat to be applied by roller application or spray applied followed by backrolling.

**All surface voids, cracks, pinholes, and other defects must be filled flush with the adjacent surfaces by putty knife, trowel, float, squeegee, or other suitable method.

K.2 System No. 100-1 Crystalline Waterproofing

Surface Preparation: Surface to be clean and roughened by Brush Blasting, Acid Etching, or High Pressure Water Blasting (3500 PSI) with turbo tips.

1st Coat: XYPEX Concentrate @ (1.5#/SY) – 1/16"±

2nd Coat: XYPEX Modified @ (1.5#/SY) – 1/16"±

NOTE: This system can be applied to concrete that is still wet or hasn't developed final cure. It can be used where wet surface conditions exist or where there is the potential for water intrusion due to hydrostatic pressure.



COATING SCHEDULE

SUBSTRATE	SUBSTRATE & SERVICE	SURFACE PREPARATION	COAT [SERIES # (DFT-MILS)]			
			1 st CT	2 nd CT	3 rd CT	4 th CT
Concrete Masonry Units (Masonry)	System J1					
Steel Handrailing	System A1					

END OF SECTION