



Sanitary Sewer Infrastructure Severe Wastewater Elastomeric Polyurethane Lining System Lift Stations, Wet Wells & Manholes

1.00 GENERAL

1.01 Scope

- A. This specification covers the work necessary to furnish and install the POLY-COTE 115 100% solids polyurethane rehabilitation and lining system for severe wastewater treatment applications complete, as shown on the drawings and as specified herein. Work includes, but is not limited to, the following.
 - 1. Stopping Leaks by repair and sealing of the concrete to include removal of unsound and un-bonded materials, structural grouting, chemical grouting, patching compounds, resurfacing compounds, and plugging compounds.
 - 2. Surface preparation, and installation of the Poly-Cote 115 Lining System, to include protection of surfaces not to be treated, touch-up, clean-up, and appurtenant work all in accordance with the requirements of the Contract Documents and this Specification.
 - 3. Surface preparation and protective coating of miscellaneous exposed structural and mechanical metals at the interior of the concrete tank.

1.02 Related Work Specified in Other Sections

- A. Section 03300: Cast-in-Place Concrete
- B. Section 03251: Expansion and Construction Joints
- C. Section 07194: Under Slab Vapor Barrier
- D. Section 07200: Exterior Below Grade Waterproofing
- E. Section 07900: Joint Sealants
- F. Section 09900: Painting

1.03 Referenced Specifications Codes and Standards

- A. Without limiting the generality of other requirements of these specifications, all work hereunder shall conform to the applicable requirements of the referenced portions of the following documents, to the extent that the requirements therein are not in conflict with the provisions of this Section. All references and standards listed shall be the latest revisions. Joint and individual documents are referenced.
 - 1. SSPC – The Society for Protective Coatings
800 Trumbull Drive
Pittsburgh, PA 15205



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(412) 281-2331

2. NACE – National Association of Corrosion Engineers
P.O. Box 218340
Houston, TX 77218-8340
(281) 492-0535
 - a. SSPC-SP 13/NACE No. 6 Surface Preparation of Concrete
 - b. SSPC-TU 2/NACE 6G197 Design, Installation, and Maintenance of Coating Systems for Concrete Used in Secondary Containment
 - c. SSPC-SP 5/NACE No. 1, White Metal Blast Cleaning
 - d. SSPC-SP10/NACE No. 2, Near White Metal Blast Cleaning
 - e. SSPC-SP 6/NACE No. 3, Commercial Blast Cleaning
 - f. NACE SP0178 “Surface Finishes Practices for Tanks and Vessels to be Lined for Immersion Service
 - g. NACE RP0892 “Linings over Concrete for Immersion Service”
 - h. NACE RP0188 “Discontinuity Holiday Testing of Protective Coatings”
 - i. NACE RP 6F-164 “Curing of Interior Tank Linings”
 - j. NACE RP 6F-166 “Recommended Practice for Inspection of Linings on Steel and Concrete”
 - k. SSPC SP-CAB 1,2,3; Surface Preparation of Concrete by Abrasive Blasting
3. ICRI – International Concrete Repair Institute
1323 Shepard Dr., Suite D
Sterling, VA 20164-4428
(703) 450-0116
 - a. Technical Guideline No.03372, “Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays”
 - b. Technical Guideline No. 03731, “Guide for Selecting Application Methods for the Repair of Concrete Surfaces”
 - c. Technical Guideline No. 03741/SSPC-TR 5/NACE Pub 02203, “Design, Installation, and Maintenance of Protective Polymer Flooring Systems for Concrete”
4. ASTM – American Society for Testing and Materials
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
(610) 832-9585
 - a. ASTM F1869 “Standard Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride”
 - b. ASTM E-337: Test Method for Measuring Humidity with a Psychrometer
 - c. ASTM D 4258 “Practice for Surface Cleaning Concrete for



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- d. Coating”
ASTM D 4261 “Practice for Surface Cleaning Unit Masonry for Coating”
 - e. ASTM D 4262 “Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces”
 - f. ASTM D 4414 “Standard Practice for Measurement of Wet Film Thickness by Notch Gages”
 - g. ASTM Committee D01.23: Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an Ultrasonic Gauge
 - h. ASTM D 4541 “Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers”
 - i. ASTM D 4787 “Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates”
 - j. ASTM D 5162 “Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates”
 - k. ASTM D4263- Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
 - l. ASTM F2170- Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using Insitu Probes
5. ACI – American Concrete Institute
Box 19150, Redford Station
Detroit, Michigan 48219
(248) 848-3700
- a. ACI 344R-T “Design and Construction of Circular Pre-stressed Concrete Structures with Circumferential Tendons”
 - b. ACI 344R-W “Design and Construction of Circular Wire and Strand Wrapped Pre-stressed Concrete Structures”
 - c. ACI 350R-01 Requirements for Environmental Engineering Concrete Structures
 - d. ACI 350.1 “Testing of Reinforced Concrete Structures for Water Tightness”
 - e. ACI 350.2 “Concrete Structures for Containment of Hazardous Material”
 - f. ACI 503 “Use of Epoxy Compounds with Concrete”
 - g. ACI 504 “Guide to Sealing Joints in Concrete Structures”

1.04 Submittals

- A. Submit product data for each component specified including data substantiating that the proposed materials comply with specified requirements and recommendations by the manufacturer covering all materials.
- B. Samples of the cured system as described in Part 3.03.D to include the following



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1. Finish texture as determined by the owner or owners' authorized representative.
2. Stepped samples showing stages of multi-layer applications.

1.05 Quality Assurance/Quality Control

- A. Single Source Responsibility: Provide primers and undercoat materials produced by the same manufacturer, or recommended by manufacturer, for each type of Special Coating / Lining specified to ensure compatibility, and proper chemical and mechanical bond.
- B. Installer Qualifications: Engage only factory trained, certified applicator that has successfully completed applications using specified materials on projects of similar size and scope. Provide references with name, address, and telephone number.
 1. Contractor shall have completed a certification program in the use of heated plural component equipment and the specified polyurethane material. Provide written certification from the material manufacturer that the contractor is an approved contractor of the system specified.
 2. Provide written proof of inclusion, in good standing, in manufacturers Certified Applicator Program.
 3. All of the contractor's jobsite personnel must be trained in the hazards associated with confined space entry. All personnel entering a confine space shall be certified for confined space entry.
- C. Equipment Requirements:
 1. Correct material processing equipment is critical in achieving correct mix for the plural component system specified.
 2. Equipment must be heated plural component unit capable of consistently producing 4000 psi, at 80°F to 160°F.
 3. Acceptable pumps and spray gun: Graco Plural Component Unit such as XP70 or XP50. Equivalent application equipment may be substituted and must be approved in writing by Sherwin-Williams Technical Service Group
- D. Quality Control Requirements:
 1. It is the responsibility of the Contractor to provide adequate and inclusive Quality Control (QC) Measures to ensure all surface preparation, repairs and lining installation is completed properly and to recognized industry expectations.



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2. The contractor shall have a detailed QC plan and designated and trained QC staff holding a minimum NACE CIP or SSPC-PCI Level 1 Certificate in good standing.
 3. The contractor shall have the proper and calibrated equipment to perform all the necessary QC monitoring and validation testing.
 4. The Contractor shall keep daily QC logs and produce QC reports as per the requirements of the project contract documents. The contractor will submit QC documentation fully to Sherwin-Williams for completion and verification of the warranty process.
 5. The minimum QC requirements shall include Environmental Monitoring, pH documentation, Surface preparation validation as per the specified standards, verification of soundness of all concrete and steel repairs, Wet Film Thickness and Dry Film Thickness measuring as per SSPC-PA2 (Steel) & SSPC-PA9 (Concrete), High Voltage Holiday Testing as per the standard referenced in this specification.
- E. Substitutions:
1. Manufacturers seeking approval of products other than the specified system must supply cured samples, full product information, project histories and references, technical data with specifications, MSDS, and certifications regarding conformity of performance properties from an independent testing laboratory. The product being submitted for approval must meet all requirements of the performance properties specified within this specification. Compliance with the above quality assurances must be provided in written form at least fourteen (14) days before bids are received. Omission or non-conformance of any item will result in rejection of the request.
- F. Pre-Installation Conference
1. The contractor, the installation sub-contractor, and the concrete tank lining system manufacturer's representative shall meet on site with the owner's representative. Particular emphasis shall be placed on these specifications, safety, weather conditions, surface preparation, material application, and inspection.
 2. The contractor shall submit to the owner's representative any revisions or changes agreed upon, reasons thereof, and parties agreeing or disagreeing with them.
- E. Substrate Conditions: Do not proceed with work until substrate preparation and tolerances have been approved by the owner's representative, concrete tank lining system manufacturer's representative, the approved installation sub-contractor, and the contractor.

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1.06 Delivery, Storage, and Handling

- A. Deliver products to the job site in manufacturer's original, unopened containers bearing manufacturer's name and label and the following information
 - 1. Product name
 - 2. Product description (generic product classification)
 - 3. Manufacturer's lot number
 - 4. Color

- B. Store materials in sealed original manufacturer's containers. Store materials in a protected area out of direct sunlight. Keep containers clean and undamaged. Adhere to manufacturer's published storage temperature and shelf life recommendations. Protect all materials from freezing.

2.00 PRODUCTS

2.01 Acceptable Manufacturers and Materials

- A. The Sanitary Sewer Infrastructure Lining or Rehabilitation System as manufactured by Sherwin-Williams will consist of, one or more systems for Stopping Leaks, Structural Lining, Epoxy Primer and High Strength, Flexible Corrosion Protection Lining where specified. All products are specified as the minimum standard of quality, and are manufactured or distributed by The Sherwin-Williams Company, Cleveland, Ohio (800-331-7979). Additional products may consist of one or more systems for infiltration leak stoppage and concrete repair.
 - 1. **Stopping Leaks** - Infiltration leakage of all concrete and brick structures shall be stopped by trenchless technology method of chemical grouting with polyurethane grouts. Products shall be manufactured by Avanti Grouts and shall be classified as "Hydrophobic Foam", "Hydrophilic Gel" or "Hydrophilic Foam" grouting compounds or a combination of the listed materials and methods or as recommended by the manufacturer.
 - a. Hydrophobic Polyurethane Grouts are hydrophobic polyurethanes that when mixed and makes contact with the water, is designed to fill large voids in rock fissures, gravel layers, and cracks in concrete structures and for the cut-off of gushing water.
Product – Avanti Grouts AV-280 Hydrofoam with AV-281 Hydrocel

 - b. Hydrophilic Polyurethane Gels are hydrophilic polyurethanes designed to react with water and form a water impermeable gel mass. When they come into contact with water, the grout begins to foam and gel, and depending on the temperature and amount of water present, quickly cure to a flexible, impermeable foam or gel mass unaffected by mildly corrosive environments.



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Product – Avanti Grouts AV350

- c. Hydrophilic Polyurethane Foams are designed to form a flexible gaskets or plug in joints and cracks in concrete. When it comes into contact with water, the grout expands quickly and cures to tough. Flexible, adhesive, closed-cell, foam that is essentially unaffected by mildly corrosive environments.

Product – Avanti Grouts AV-202 Multi-Grout

- d. Hydrophobic Polyurethane Grouts that are designed to form flexible gasket or plugs in very tight joints and hairline cracks. When they come into contact with water the grout expands and depending on temperature and the amount of accelerator used quickly cures to a tough, flexible closed cell polyurethane foam that is essentially unaffected by corrosive environments.

Product – Avanti Grouts AV-248 Flexseal LV with AV-249 Catalyst LV

- 2. **Resurfacing Materials** – Designated structures shall receive an application of resurfacing compounds/repair mortar. The resurfacing compounds/repair mortars are classified as Hydraulic Cements, Microsilica Repair Mortars or Calcium Aluminate Repair Mortars. Microsilica Repair Mortars shall be designated for areas of Mild H₂S content or areas to be top coated with a corrosion resistant coating or lining as shown on the drawings. Calcium Aluminate Repair Mortars shall be designated for areas of moderate H₂S content or areas to be top coated with corrosion resistant coating or lining as shown on the drawings. Thickness shall be sufficient to replace lost cross section and fill voids

- a. Hydraulic Cements shall be cement based, quick setting, hydraulic cement compound which instantly stops weeping water through concrete or masonry walls and floors. They will become harder and more resistant when subjected to constant water pressure. *(Used primarily for filling large voids and stopping minor weeping water leaks)*

A.W. Cook Cement, CEMTEC Hydraulic Cement

Compressive Strength ASTM C-109	5,500 psi
Tensile Strength ASTM C-496	650 psi
Bond Strength ASTM C-882 (Modified)	880 psi
Setting Times (Gilmore) "Hot Mix"	65 seconds

- b. Rapid Cure Vertical Grade repair mortars shall be a one part, polymer modified, fast setting, silica fume, fiber reinforced mortar designed for vertical and overhead repairs from ¼" to 2" in one lift. The product may be applied by hand trowel or sprayed with a low-pressure pump. *(Used to hand place large voids, bench repair, or hand troweled structural wall linings)*

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A.W. Cook Cement, CEMTEC Silatec Rapid Cure Vertical Grade
Physical Properties (28 day cure)

Compressive Strength ASTM C-109	6,800 psi
Flexural Strength ASTM C-293	990 psi
Bond Strength ASTM C-882 (Modified)	1,600 psi
Shrinkage ASTM C-596	0.07%
Abrasion Resistance – ¼” APCI	1
Setting Times @ 77°F	
Initial Set – 35 min	
Final Set – 50 min	

- c. Microsilica repair mortars shall be a blend of Portland cement, graded silica sand, fibers and silica fume. The mortar may be hand troweled or spray applied, usually from ½” to 1” in depth. Uses include repairing concrete walls, ceilings, lining brick or concrete manholes and lift stations, etc. Microsilica repair mortar provides an extremely dense matrix and will accept coatings at earlier ages than typical Portland cement repair products. *(Used primarily for structural wall linings)*

A.W. Cook Cement, CEMTEC Silatec MSM
Physical Properties (28 days cure)

Compressive Strength ASTM C-109	10,400 psi
Flexural Strength ASTM C-293	1,695 psi
Shrinkage ASTM C-596	0.00%
Freeze/Thaw ASTM C-666 100 cycles	No Effect
Bond Strength ASTM C-882 (Modified)	1,695 psi
Modulus of Elasticity ASTM C-469	4,533,333 psi
Tensile Strength ASTM C-496	750 psi

- d. Calcium Aluminate repair mortars shall be a blend of quartz silica, fibers and calcium aluminate cement. They can be hand troweled or spray applied, usually from ½” to 1” in depth. Uses include repairing concrete wall and ceilings, lining brick or concrete manholes, lift stations, etc. They can be especially useful when coatings are required at early stages of cure. *(Consult with coating manufacturer for specific times) (Used primarily for structural wall linings)*

A.W. Cook Cement, CEMTEC Silatec CAM
Physical Performance (28 day cure)

Compressive Strength ASTM C-109	12,800 psi
Flexural Strength ASTM C-293	1,360 psi
Shrinkage ASTM C-596	0.03%
Tensile Strength ASTM C-496	650 psi
Freeze/Thaw, 300 cycles ASTM C-666	No Effect
Bond Strength ASTM C-882 (Modified)	1,765 psi



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- 3. Severe Wastewater Lining System: All interior concrete surfaces shall receive application of Sherwin-Williams' Poly-Cote 115 polyurethane lining system.

2.02 Performance Criteria

- B. The severe wastewater infrastructure lining system shall be resistant to the chemical concentrations, temperatures, and duration of exposure, as submitted by the owner or authorized owners' representative.
- C. The concrete tank lining system shall be resistant to cracking from concrete shrinkage and atmospheric thermal movement at construction joints and contraction joints up to 1/8" at temperatures down to -15° F.
- D. Physical Properties

Poly-Cote 115

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>RESULTS</u>
Adhesion	ASTM D4541 Concrete failure Steel	350psi >1,500 psi
Tensile Elongation	ASTM D-638	40%
Tensile Strength	ASTM D-638	2500 psi
Shore D Hardness	ASTM D-2240	65
Flash Point		> 200 F
Solids by Volume		100%
Water Vapor Permeance	ASTM E-96	0.09 inch-pounds @53 mils
Abrasion Resistance	ASTM D-4060, CS-17	<100 mg.loss
Impact	ASTM G-14	>75 in-lbs
Mandrel Bend	ASTM D-522 3" Mandrel	No Cracking or Delamination
Water Absorption	ASTM D570	<2%
Dielectric Strength	ASTM D149	>250V/Mil
Cure to Severe Sewer Service		12 hours @ 77F



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3.00 EXECUTION

3.01 Surface Preparation

A. Concrete

1. The NACE/SSPC Joint Surface Preparation Standards for concrete surface preparation are incorporated in and made part of this specification. All references to SSPC-SP-13/NACE No. 6 designate the definitions and other requirements in these documents. The International Concrete Repair Institute (ICRI) Technical Guideline No. 310.2R, Guide to Surface Preparation of Concrete to Receive Sealers, Coatings and Polymer Overlays shall be used to visually evaluate the concrete surface profile. Refer to Sherwin-Williams Guideline Instructions for Surface Preparation of Concrete.
2. Inspect concrete surface for soundness, flatness, levelness and overall condition. Report any discrepancies to the owner's representative.
3. *Decontamination of the concrete surface* requires the removal of oils, grease, wax, fatty acids and other contaminants, and may be accomplished by the use of detergent scrubbing with a Sherwin-Williams cleaner and degreaser, low pressure water cleaning (less than 5,000 psi), steam cleaning, or chemical cleaning. Rinse thoroughly to achieve a final surface pH > 10.0. Refer to ASTM D4262. The success of these decontamination methods is dependent upon the depth of penetration of the contaminant. In areas where the contaminants cannot be removed, the contaminated concrete must be removed and replaced.
4. Create a minimum surface profile for the system specified in accordance with the methods described in ICRI No. 310.2R to achieve a minimum profile of CSP-3 to CSP-5 for the installation of primers and linings and CSP minimum of CSP 5 for the application of repair mortars.
5. Test surface for pH levels using an electronic pH meter, pH pencils or another method that records pH values in small increments to ensure the actual pH value is known. Gradient testing may be required. The pH of the Concrete shall be > 10 prior to the application of mortar repairs or linings.
6. Following surface preparation, concrete surfaces shall be tested for moisture vapor emissions. First test for moisture vapor transmission using ASTM 4263-(2018) Plastic Sheet Method. If moisture is present after ASTM D4263 the value of the moisture vapor transmission must be verified in accordance with ASTM F1869, Standard Method for Measuring Moisture Vapor Emission Rate of Concrete Sub-floor Using Anhydrous Calcium Chloride Moisture Emissions Test. Moisture Vapor Transmission



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levels shall be no greater than 3lbs/1000 sq ft/24 hrs. Test relative Humidity of the concrete as per ASTM F2170- Using Insitu Probes. The Relative Humidity shall be < 75% prior to proceeding with linings or coatings. Report results to owner's representative and Sherwin-Williams' Industrial & Marine Representative.

7. Stop concrete leaks and infiltration at cracks and joints by use of hydraulic cement, chemical grout, polyurethane injection and/or epoxy injection.
8. When substantial deterioration of the concrete surface has occurred, fully or partially exposing the large aggregate of the concrete the surface should be prepared and cleaned as per instructions above and fully parge coated with an appropriate mortar repair material. The repair material shall be selected based on the thickness of material required to return the surface to approximate original plane. Deep repairs may require successive lifts of materials capable of filling deep voids. A guide to material application thickness is as follows;
 - Sherwin Williams Dura-Plate 2300 - Feather Edge up to ½" per Lift
 - A.W Cook Cemtec Thin Patch or TPM-TP – Up to ½" per Lift
 - A.W Cook Cemtec MSM (Microsilica Mortar)- ½" to 2" per Lift
 - A.W Cook Rapid Grade Vertical – 1/8" to 2" per Lift
9. Concrete Surface Repair: Bug holes, honeycombs and voids
 - a. Areas less than 1/2" deep shall be repaired with Dura-Plate 2300, Steel-Seam FT910 epoxy patching and surfacing compound, or AW.Cook CemTec Thin Patch series repair mortar.
 - b. Areas that are greater than 1/2" deep shall be repaired with AW.Cook CemTec MSM series repair mortar.
10. Provide a clean, saturated surface dry (SSD) concrete surface with no free standing or moving water, with a minimum surface profile as defined above. All substrates are to be vacuumed, swept and blown down with clean, dry air to remove spent abrasive, dust and other foreign material that might interfere with the adhesion of the primer and lining.
11. It is critical that all mortar splatter, protrusions, ridges, penetrations, or sharp projections in the surface of the concrete be ground smooth or otherwise made smooth in addition to the normal surface preparation outlined above. Repair of surface irregularities including, bugholes, honeycombs, voids, exposed aggregate from chemical or biogenic sulfide attack, spalls, cracks, deteriorated joints, slopes, areas near transition zones, must be completed prior to the placement of the lining



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system. For treatment of cracks and joints refer to the section below entitled Crack Isolation and repair. For treatment of Expansion/Isolation and Active Moving cracks see details below listed as Expansion/Isolation and Active Moving crack. For additional questions, refer to Sherwin Williams "Water & Wastewater Concrete Surface Preparation Guide" or contact your local Sherwin-Williams Industrial & Marine Representative.

12. Crack Isolation and Repair- Prior to application of a flexible coating system or an epoxy lining material, control/contraction joints, construction joints, and cracks should be filled with the appropriate specified cementitious repair mortar. Static surface cracks shall be v-grooved and fully vacuum cleaned prior to repairing with mortar. The entire surface area should then receive the specified lining/coating system complete with surface preparation.
13. Expansion, Isolation and Active/Moving Cracks- When the lining material is a flexible material the Isolation and/or expansion joints or potentially active cracks shall be prepared and primed with the specified system primer. Potentially active cracks shall be v-grooved and vacuum cleaned. After the primer has sufficiently cured the joint shall be filled and struck flush or slightly concave with a polysulfide or polyurethane joint sealant. Once the joint sealant material has sufficiently cured/dried, apply a 4"-6" bond breaker material centering the tape along the joint/crack. The flexible lining material can then be applied in a monolithic manner on all surfaces including coating the bond breaker tape.

B. Iron and steel

1. The NACE / SSPC Joint Surface Preparation Standards for abrasive blasting approved in October 1994 are incorporated in and made a part of this specification. All references to SSPC-SP7 / NACE No. 3 and SSPC-SP10 / NACE No. 2 designate the definitions and other requirements in these documents. SSPC VIS 1-89 Visual Standard for Abrasive Blast Cleaned steel shall be used to visually evaluate the blast cleanliness.
2. Remove all oil and grease from surface by solvent cleaning per SSPC-SP1. Minimum surface preparation is SSPC-SP10 / NACE No. 2, Near White Metal Blast Cleaning. Abrasive blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2-3 mils). Prime any bare steel the same day as it is cleaned and before flash rusting occurs.
3. Inspect the surfaces to be lined. All holes in the steel surfaces or pits greater than 1/8 inch shall be repaired in accordance with the tank owner's repair procedures.
4. Prepare all steel surfaces to NACE SP0178 "Surface Finishes Practices for Tanks and Vessels to be Lined for Immersion Service" standards.



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5. Remove or grind down all sharp burrs, edges, and weld spatter from all steel that is to be coated. Corners and edges shall be chamfered 1/16" at a 45° angle minimum or rounded to a 1/16" radius (1/8" diameter) minimum. The anchor profile shall be restored by abrasive blasting prior to the application of lining materials.
6. All substrates are to be vacuumed, swept and blown down with clean, dry air to remove spent abrasive, dust and other foreign material that might interfere with the adhesion of the primer and lining.
7. The maximum allowable residual salt contamination, as measured with a KTA Scat Kit or equivalent field test method, immediately prior to the application of the first coat is as follows:
 - 5 micrograms per square centimeter (50mg/m²) most commodities up to 120°F
 - 2 micrograms per square centimeter (20mg/m²) most commodities at 120°F and greater
 - 2 micrograms per square centimeter (20mg/m²) for demineralized (deionized, distilled) water
8. If directed by the project specification documents corrosion pits > 1/8" in the blasted steel shall be filled flush with the substrate with Steel-Seam FT910 epoxy patching and surfacing compound putty/patching and surfacing compound.
9. If directed by the project specification documents projections and lap joints on welded plates and on riveted plates to be coated shall be filled with Steel-Seam FT910 epoxy patching and surfacing compound putty/patching and surfacing compound in order to smooth out the surface and provide for a smooth transition of the lining over the substrate.

3.02 Application

- a. Comply with manufacturers written installation procedures and individual product data sheet application bulletins.
- b. Apply materials in accordance with the following material coverage.
- c. It is recommended that all work is performed by a competent fully trained contractor holding SSPC-QP1 – Field Application to Complex Industrial & Marine Structures and/or SSPC-QP8- Installation of Polymer Coatings and Surfacing on Concrete or Other Cementitious Substrates Certifications
- d. Environmental conditions shall be monitored and maintained during the entire surface preparation, application and curing process. All surfaces shall be a minimum of 5°F (2.8°C) above the Dew Point and Improving during all applications.
- e. It is highly recommended that Dehumidification Equipment be used on all



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projects to control the environmental conditions on site. Dehumidification equipment must be appropriately sized to maintain appropriate or ideal conditions in the affected area of the specific project. It is the responsibility of the contractor to ensure effective dehumidification and overall environmental controls.

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<u>Products</u>	<u>Thickness (mils dft)</u>
Repair/Patching and Surfacing Compound Options	
Steel Seam FT910 (Steel)	As needed
DuraPlate 2300 (Concrete)	Up to 1/2"
A.W Cook CemTec Thin Patch Mortar	1/4"-1/2"
A.W Cook CemTec MSM	1/4"-2"
Primer	
Macropoxy 5000 Primer (ALL Concrete)	400-500SFG
Infiltration & Inflow Control	
Stop Leaks with Avanti Polyurethane Injection Grouts	As Needed
Flexible Lining	
Poly-Cote 115	
Corners, Edges & Detailed Areas	30-40 mils
Concrete Lining System:	100 – 125 mils
Miscellaneous Steel	30 – 50 Mils



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3.03 Inspection and Testing

- A. The owner or owner's authorized representative is recommended to retain the services of an independent third party inspection firm to provide NACE or SSPC Level 3 minimum certified inspection during the surface preparation, application and final inspection of the installed system.

- B. If test results indicate noncompliance with the specification, the following corrective action may be required of the contractor
 - 1. Remove non-compliant systems or components.
 - 2. Replace system or components in (1)
 - 3. Assume the testing expenses.

- C. Minimum requirements of the chemical resistant coating/lining system are that it be free of the following
 - 1. Uncured material
 - 2. Inadequate thickness
 - 3. Pinholes
 - 4. Blisters
 - 5. Delamination
 - 6. Foreign matter
 - 7. Unspecified materials

- D. High Voltage Holiday testing as per NACE SP1088 or ASTM D4787 to ensure a Pin-hole free lining.

3.04 Protection

- A. The Severe Wastewater Lining System shall be protected from damage or detrimental elements during cure and until the time of final acceptance.

End of Section 099723