



THE CITY OF DAYTONA BEACH
OFFICE OF THE PURCHASING AGENT

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ADDENDUM NO. 4

DATE: **OCTOBER 2, 2018**
PROJECT: **RFP 0118-2600**
2018 CURED IN PLACE PIPE (CIPP) REHABILITATION SERVICES
TERM CONTRACT

OPENING DATE: **October 9, 2018**

This addendum is hereby incorporated into the Bid/Proposal documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents. Additions are indicated by underlining, deletions are indicated by ~~strikethrough~~.

1. Answer to Bidder's question:
Question 1: Please release specs related to manhole lining scope of work.
Answer 1: Specifications for the Agru Sure Grip 2mm liner, titled, "Specification for Agru Sure-Grip HDPE Concrete Protective Liner" and for Raven liner or acceptable equal, titled, "Section 09900" are ATTACHED.
2. All other terms and conditions remain the same.

The Proposer shall acknowledge receipt of this addendum in the transmittal letter covering their Proposal.

The City of Daytona Beach

Joanne Flick, CPPO, CPPB
Purchasing Agent

Remember to register with the City of Daytona Beach at
www.vendorregistry.com to be notified of future bid opportunities with
the City.

As of 9-30-18 we have discontinued use of the previous Vendor Notification
system.



SPECIFICATION FOR AGRU SURE-GRIP® HDPE CONCRETE PROTECTIVE LINER

PART 1- GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required to supply High Density Polyethylene "HDPE" concrete protective liner sections required for the lift station/wet wells, receiving manholes, drop manholes, and manholes as required or as shown on the plans.
- B. Agru Sure Grip HDPE concrete protective liner (CPL) shall be designed and installed to protect concrete surfaces from corrosion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Liner shall be AGRU Sure Grip® HDPE (high-density polyethylene) with a thickness of 2mm. All Sure Grip HDPE liner sheets shall be extruded with a large number of anchoring studs, a minimum of 39 per SF (420/m²), manufactured during the extrusion process in one piece with the sheet so there is no welding and no mechanical finishing work to attach the studs to the sheet. The liner shall have a pull out of 112.5 lbs./anchoring stud. Minimum distance between studs shall be no less than 2.1275". Stud height shall be no less than 13mm or 9/16"
- B. Horizontal Seams. Flat liner sheet, non-anchored, used for overlapping joints, shall have a minimum thickness of 3mm and a minimum width of 2". All joint protection shall be sealed by means of thermal welding performed by certified welders. Joints with gaps less than 3/8" may be welded without the use of cap strips. Optional Turn-Backs may be used to seal joint sections in lieu of cap strips when applicable I.E. shallow manholes with Flat tops will utilize this method when depths less than 3' of head room from bottom of top slab to invert.



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2.01 MATERIALS con't.

- C. When an interface is required to attach the HDPE liner to non-HDPE material use the polyester backed HDPE sheet to provide a positive seal and transition between dissimilar materials. Use a construction grade adhesive sealant or SS clamp to attach the collar to the non-HDPE product.
- D. The lining shall have good impact resistance, shall be flexible, and shall have an elongation sufficient to bridge up to a 1/4" settling crack, without damage to the lining. The liner shall be able to bridge any expansion cracks that may occur.
- E. The lining shall be repairable at any time during the life of the structure.
- F. An AGRU certified fabricator supplies precut liner sections to fit the precast or cast in place forms. The precast supplier or contractor installs the fitted liner on the formwork and places the concrete evenly against the liner as the forms are filled. The interior surfaces to be protected shall include the precast walls, precast top slabs, and pipe entries.
- G. All pipe penetrations must be water-tight. Electrical conduits and drain pipes can be pre-welded to the liner and utilize cast in solvent weld connections or grouted in and sealed by the field welder. Gravity pipes 4", 6" & 8" to utilize flexible water-tight flexible connections that meet ASTM C-923. Compression type boots may be installed in a cast in wall sleeve welded to the liner and or cast in boot connectors will be placed using a split mandrel and will be grouted flush with inside wall. For gravity pipe's 10" and larger the method of sealing the hole opening around the pipe will vary, as required by the resilient connector installation guidelines. An HDPE pipe seal will be placed over the grouted pipe and welded to the liner. **OPTIONAL LINK SEAL CONNECTIONS:** Openings to be provided as per manufactures request. Pipe to extend past inside wall and to be collared with HDPE Doughnut seal welded to wall liner.
- H. Wall mounted pipe support brackets require stainless steel anchor bolts. Apply Sika Flex 1-A Polyurethane Sealant or equal around anchor bolt where it penetrates through the liner then install a neoprene washer before placing SS washer or bracket flange then tighten securely.



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- J. Aluminum Hatches cast in lined wet well structures must have an aluminum or HDPE skirt. Aluminum skirts require a 2” return at bottom of skirt. Liner is to be cut to fit snugly against the aluminum skirt and sealed to the return flange with butyl sealant prior to casting. HDPE Skirts are welded to the liner before casting. Vent sleeves are welded to liner and actual vent piping can be pre-welded at engineers’ option when PVC vents are allowed.

PART 2.02 PHYSICAL PROPERTIES

- A. The AGRU Sure Grip® CPL systems and welding rod shall be manufactured from the same resins and meet the following properties:

<u>Property</u>	<u>Testing Method</u>	<u>Unit</u>	<u>HDPE</u>
Density	ASTM D792-86.	g/cm ³	0.945
MFI (Melt Flow Index)	ASTM D1238-88	g/10min	(190/5)
Heat Reversion (Dimensional Stability)	ASTM D1638-83	%	<2
Yield Stress	ASTM D638-89	PSI	≥2,320
Elongation of Yield	ASTM D638-89	%	≥12
Elongation at break	ASTM D638-89	%	≥200
<u>Property</u>	<u>Testing Method</u>	<u>Unit</u>	<u>HDPE</u>
Fire Classification	UL-94		V2
Maximum Working Temperature		C°	60
		F°	140



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- B. Upon request, the manufacturer shall provide written certification that the liner used meets or exceeds the requirement of this specification.

PART 3 WELDING

- A. All welding shall be performed in accordance with the published directives and procedures of the manufacturer and by welders certified by the manufacturer. Lined structures must be completely sealed, leak free and clean before field welding occurs and all well points systems turned off. Completion of welding will provide a one piece monolithic concrete protective liner system that will provide excellent resistance to hydrogen sulfide attack and will not pull off the wall in the event that infiltration occurs. If Hydrostatic or Vacuum Testing is required this procedure must be done before any field welding takes place.

The following welding techniques are acceptable:

1. Extrusion Welding: Used to seal all seams inside structure, attaching wall sleeves and is the primary welding method.
 2. Butt Welding: Used to fuse flat sheets together.
 3. Hot Air Welding: For use in tight areas and around small pipes and fittings
- B. All welding must be performed by Agru Certified Welders. Completed welds will be visually checked and Spark Tested by welding crew.

Latest Revision 2012

Agru Specification "Sure Grip" HDPE Concrete Protective Liner



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SECTION 09900

PROTECTIVE COATINGS

PART 1 - GENERAL

1.1 Summary

- A.** This Section includes coating of exterior and interior surfaces throughout the Project and which are listed in PART 2 with systems specified in PART 2.

- B.** Coating systems include surface preparation, prime coat (first coat), finish coats (second and third coats), inspection, cleaning, and touch-up of surfaces and equipment. Shop preparation, prime coat, and finish coats to be shop-applied, may be specified elsewhere or referenced to this Section so that a complete system is specified and coordinated.
 - 1.** Where surface preparation and first (prime) coat are specified in other Sections to be shop-applied, such as for structural steel, or equipment, only the touch-up and finish coats are a part of field painting. Surface preparation is the required degree of preparation prior to application of first (prime) coat regardless if done in shop or field.
 - 2.** If materials are provided without shop primer then surface preparation, first, second, and third coats are a part of field painting.
 - 3.** Concealed surfaces are generally not required to have finish-coats unless otherwise specified, but prime coat should be applied and touched up prior to concealment.
 - 4.** Where Equipment and Materials are provided with shop-applied finished coating system, only touch-up is a part of field painting.
 - 5.** Refer to applicable Sections to determine whether surface preparation and first coat, or complete coating system, is to be shop-applied.

C. Related Work Specified Elsewhere

1. **Shop Painting and Coatings:** All applicable Divisions.
2. **Factory Prefinished Items:** All applicable Divisions.

D. Colors

1. Color of finish coatings shall match accepted color Samples.
2. When second and finish coats of a system are of same type, tint or use an alternate color on second coat to enable visual coverage inspection of the third coat. When first and second coats only are specified and are of same or different types, tint or use an alternate color on first coat to enable visual coverage inspection of the second coat.
3. Contract Price shall include the following approximate number of finish coat colors to form a basis for bidding:
 - a. **Epoxy:** Eight colors, with 50% deep tone colors.
 - b. **Ceramic:** Two colors, with 50% deep tone colors.

1.2 Quality Assurance

A. Reference Standards and Specifications

1. American National Standards Institute (ANSI)

ANSI A 13.1 - Scheme for the Identification of Piping Systems.

ANSI Z 53.1 - Safety Color Code for Marking Physical Hazards.

2. American Society for Testing and Materials (ASTM)

ASTM D4258 - Surface Cleaning Concrete for Coating.

ASTM D4261 - Surface Cleaning Concrete Unit Masonry for Coating.

3. Society for Protective Coatings (SSPC) Surface Preparation Specifications

SP1 - Solvent Cleaning: Removes oil, grease, soil, drawing and cutting compounds, and other soluble contaminants.

SP2 - Hand Tool Cleaning: Remove loose material. Not intended to remove adherent mill scale, rust, and paint.

SP3 - Power Tool Cleaning: Removes loose material. Not intended to remove all scale or rust.

SP5 - White Metal Blast Cleaning: Removes all scale, rust, foreign matter. Leaves surface gray-white uniform metallic color.

SP6 - Commercial Blast Cleaning: Two-thirds of each square inch free of all visible residues; remainder only light discoloration.

SP10 - Near-White Metal Blast Cleaning.

SP11 - Power Tool Cleaning to Bare Metal.

4. American Waterworks Association (AWWA)

Standard for Painting and Repainting Steel Tanks, Stand-Pipes, Reservoirs, and Elevated Tanks for Water Storage, D-102.

5. American Concrete Institute (ACI)

ACI 515.1R Guide to the Use of Waterproofing, Damp-proofing, Protective and Decorative Barrier Systems for Concrete

B. Include on label of container:

1. Manufacturer's name, product name, and number.
2. Type of paint and generic name.
3. Color name and number.

4. Storage and temperature limits.
5. Mixing and application instructions, including requirements for precautions which must be taken.
6. Drying, recoat, or curing time.

C. Prepainting Conference

1. Before Project field painting starts, representatives for the Owner, Contractor, coating applicator, and coating manufacturer's technical representative shall meet with Engineer.
2. Agenda for the meeting will include details of surface preparations and coating systems to ensure understanding and agreement by all parties for compliance.

D. Warranty

1. The coating manufacturers and applicators shall warrant their products and applications respectively against defects for a period of five (5) years under normal use. The warranty shall be in printed form.

E. In the event a problem occurs with coating system, surface preparation, or application, coating applicator and coating manufacturer's technical representative shall promptly investigate the problem and submit results to Engineer.

F. Stated VOC shall be unthinned maximum VOC certified by manufacturer.

G. A coating report shall be completed daily by Contractor at each phase of the coating system starting with surface preparation. These shall be submitted on the form attached at the end of this Section.

1.3 Submittals

- A.** Submit as specified in Section 1330.
- B.** Includes, but not limited to, the following:

- 1.** Schedule of products and paint systems to be used. Schedule shall include the following information:
 - a.** Surfaces for system to be applied.
 - b.** Surface preparation method and degree of cleanliness.
 - c.** Product manufacturer, name, and number.
 - d.** Method of application.
 - e.** Dry-film mil thickness per coat of coating to be applied.
- 2.** Color charts for selection and acceptance.
- 3.** Technical and material safety data sheets.
- 4.** Certification by coating manufacturer(s) that all coatings are suitable for service intended as stated on each coating system sheet. If manufacturer has an equivalent product as that specified, but it is not suitable for the intended purpose, he shall submit the recommended product for approval at no increase in cost, and state reasons for substitution.
- 5.** Contractor shall certify in writing to the Engineer that applicators have previously applied all the systems in this Specification and have the ability and equipment to prepare the surfaces and apply the coatings correctly.

1.4 Delivery, Storage, and Handling

A. Delivery of Materials

- 1.** Deliver in original unbroken sealed containers with labels and information legible and intact. Containers shall also have correct labels with required information.
- 2.** Allow sufficient time for testing if required.
- 3.** Open and mix on the premises and in the presence of the Engineer. Any rejected material shall be at once removed from the premises. Colors shall be as selected by Engineer.

B. Storage of Materials

- 1.** Store only acceptable materials on Project site in enclosed structures to protect them from weather and excessive heat and cold. Store in accordance with County and State Safety Codes.
- 2.** Provide separate area and suitable containers for storage of coatings and related coating equipment.
- 3.** Dispose of used or leftover containers, thinners, rags, brushes, and rollers in accordance with applicable regulations.

1.5 Regulatory Requirements

- A.** In addition to requirements specified elsewhere for environmental protection, provide coating materials that conform to the restrictions of the local and regional jurisdiction. Notify Engineer of any coating specified herein that fails to conform to the requirements for the location of the project or location of application.
- B. Lead Content:** Use only coatings that are totally lead free except for zinc-rich primers which shall not have a lead content over 0.06% by weight of nonvolatile content.
- C. Chromate Content:** Do not use coatings containing zinc-chromate or strontium chromate.
- D. Asbestos Content:** Materials shall not contain asbestos.
- E. Mercury Content:** Materials shall not contain mercury or mercury compounds.

1.6 Project Conditions

- A.** This Project is in a location in which drifting coatings, if spray-applied, could contaminate adjacent surfaces or vehicles nearby. All containment precautions and application methods shall be taken into consideration and implemented to prevent the above from occurring.

1.7 Inspection Service

- A.** Owner will engage in the services of an independent NACE certified coating inspection service, Level III certification.
- B.** Inspection service will provide full-time inspection of all field surface preparation and coating applications to ensure full compliance with the requirements of this Specification. The presence of the inspection service shall not relieve Contractor for compliance with Specifications or authorized changes.
- C.** Inspection service will document all work, including nonconformance, using forms acceptable to Owner and Engineer. All documentation and reports will be prepared and signed by the Inspection service representative, and submitted to Engineer on a daily basis. At the completion of all coating applications, Inspection service representative will also submit a conformance report certifying that all Work relative to coatings complies with the Specifications or authorized change.
- D.** Inspection service will be responsible for field verification and recommendations of the following field coating operations:
 - 1.** Surface preparation methods, equipment.
 - 2.** Substrate conditions, moisture content of concrete, substrate profiles, and surface temperatures.
 - 3.** Temperature, humidity, and wind conditions at times of coating applications.
 - 4.** Specified or approved coating verification.
 - 5.** Application equipment.
 - 6.** Coating wet and dry film thickness.
 - 7.** Proper coating curing.
 - 8.** Coating system failure, causes, and remedy.

- E. Inspection service representative will discuss with Engineer, Owner, and Contractor all recommended Specification deviations, changes in products, or application methods.

PART 2 - MATERIALS

2.1 Acceptable Manufacturers

- A. Acceptable manufacturers are as follows:

1. Sauereisen
2. Carboline
3. Raven Lining Systems
4. Ameron Protective Coatings Systems Group, Ameron Corp.
5. Devoe Coating Company, Division of ICI.
6. Futura Coatings, Inc.
7. The Glidden Company.
8. International Protective Coatings.
9. Keeler & Long, Inc.
10. Kop-Coat, Inc., Division of Carboline.
11. Pittsburgh Paints, PPG Industries Inc.
12. Santile, Division of Carboline Company, Inc.
13. Tnemec Company, Inc.
14. Polyken

2.2 General

- A. Materials furnished for each coating system must be compatible to the substrate.

- B.** When unprimed surfaces are to be coated, entire coating system shall be by the same coating manufacturer to assure compatibility of coatings.
- C.** When shop-painted surfaces are to be coated, ascertain whether finish materials will be compatible with shop coating. Inform Engineer/ Architect of any unsuitable substrate or coating conditions.
- D.** Coating system shall be as specified below or to the manufacturer's standard, whichever is more stringent.

2.3 Areas of Application

- A.** Submerged Concrete Surfaces, exposed to H₂S vapor:
 - 1.** Surface Preparation and coating system: In accordance with manufacturer's recommendations.
 - 2.** Applied to all concrete surfaces including floors, walls, baffles and ceilings.
 - 3.** Product and Manufacturer:
 - a.** Sauereisen 210
 - b.** Raven 405
 - c.** Plasite 5371
 - d.** Or approved equal.
- B.** Ferrous Metals including all Structural Steel, Miscellaneous Ferrous Metals, and all Ferrous Piping; Interior Non-submerged:
 - 1.** Surface Preparation: SSPC-SP6 Commercial Blast Cleaning as specified in Paragraph 3.1.
 - 2.** Interior non-submerged applies to areas that are housed within a building and/or within a non-process, enclosed structure.
 - 3.** Product and Manufacturer: Provide one of the following:
 - a.** Tnemec:
 - 1)** Shop Primer: 66 H.B. Epoxoline – two coats, 2-3 dry mils per coat
 - 2)** Field Primer or Filed Touchup: 66 H.B. Epoxoline – one coat, 2-3 dry mils per coat.
 - 3)** Finish: 69 H.B. Epoxoline II – tow coats, 4-5 dry mils per coat.
 - b.** Or approved equal

- C. Ferrous Metals, Including all Ferrous Piping; Exterior Non-submerged:**
- 1.** Surface Preparation: SSPC-SP6 Commercial Blast Cleaning as specified in Paragraph 3.1.
 - 2.** Exterior non-submerged applies to areas that are not housed within a building or structure, and that are not located within process and / or water carrying structures or tanks.
 - 3.** Product and Manufacturer: Provided one of the following:
 - a.** Tnemec:
 - 1)** Primer: 66 H.B. Epoxoline – tow coats, 2-3 dry mils per coat.
 - 2)** Intermediate: 69 H.B. Epoxoline II – one coat, 4-5 dry mils.
 - 3)** Finish: 75 Endura-Shield – tow coats, 1.5-2 dry mils per coat
 - b.** Or approved equal.
- D. Galvanized Metal and Non-Ferrous Metal; Interior Non-Submerged:**
- 1.** Surface Preparation: SSPC-SP1 Solvent Cleaning, as specified in Paragraph 3.1.
 - 2.** Interior non-submerged applies to areas that are housed within a building and/or within a non-process, enclosed structure.
 - 3.** Product and Manufacturer: Provide one of the following:
 - a.** Tnemec:
 - 1)** Primer: 66 H.B. Epoxoline – one coat, 3-4 dry mils
 - 2)** Finish: 69 H.B. Epoxoline II – one coat, 4-5 dry mils.
 - b.** Or approved equal.
- E. All Aluminum in Contact with Dissimilar Materials:**
- 1.** Surface Preparation: Remove all foreign matter.
 - 2.** Product and Manufacturer: Provide one of the following:
 - a.** Tnemec:
 - 1)** 66 H.B. Epoxoline – two coats, 2.0 – 3.0 dry mils per coat
 - b.** Or approved equal.
- F. PVC Piping, CPVC Piping, Fiberglass, Fiberglass Insulation Covering; Exterior:**
- 1.** Surface Preparation: Sand as specified by the coating manufacturer.

2. Exterior applies to areas that are not housed within a building and/or within an enclosed structure.
 3. Product and Manufacturer: provide one of the following
 - a. Tnemec:
 - 1) Primer/Intermediate: 66 H.B. Epoxoline – one coat each, 2.0 – 3.0
 - 2) Finish: 75 Endura-Shield – one coat, 3.0 dry mils
 - b. Or approved equal.
- G.** PVC Piping, CPVC Piping, Fiberglass, Fiberglass Insulation Covering; Interior Non-Submerged:
1. Surface Preparation: Sand as specified by the coating manufacturer.
 2. Product and Manufacturer: Provide one of the following:
 - a. Tnemec:
 - 1) Primer/Intermediate/Finish: 66 H.B. Epoxoline – one coat each, 2.0 – 3.0 dry mils per coat.
 - b. Or approved equal.
- H.** Steel and Galvanized Steel Pipe; Buried Exterior:
1. Surface Preparation: SSPC-SP10, Near-White Blast, as specified in Paragraph 3.1.
 2. Product and Manufacturer: Provide one of the following:
 - a. Tnemec:
 - 1) Primer: 66-1211 Epoxoline – two coats, 3-4 dry mils per coat.
 - 2) Field Primer or Field Touchup: Surface preparation as specified.
 - 3) Finish: 46-413 Tneme-Tar – two coats, 10.0 dry mils per coat.
 - b. Or approved equal.
- I.** Submerged or Intermittently Submerged Ferrous Metals; Interior and Exterior:
1. Definition: Submerged shall apply to all metals below the maximum water surface elevation in open top structure unless otherwise noted or otherwise shown; and to all metals within liquid or residual solids carrying structures that are covered, including all metals on the underside of the covers unless otherwise noted or otherwise shown; and to all metals within an enclosed process structure. This shall apply to all metals whether intermittently or

continuously submerged.

- 2.** Surface Preparation: SSPC-SP 10 Near-White Blast Cleaning as specified in Paragraph 3.1.
 - a.** Tnemec:
 - 1)** Primer: 69-1211 Epoxoline II – tow coats, 3-4 dry mils per coat.
 - 2)** Intermediate: 69 H.B. Epoxoline II – tow coats, 5 dry mils per coat.
 - 3)** Finish: 69 H.B. Epoxoline II – two coats, 5 dry mils per coat.
 - b.** Or approved equal.

J. Special Requirements for Aluminum:

- 1.** Aluminum surfaces bearing in or embedded in concrete and fayin surfaces of bolted aluminum joints ,except anchor bolts, shall be given two coats of 66 H.B. Epoxoline Primer, or approved equal. The primer shall be allowed to dry between coats and before concrete is poured against it.
- 2.** Where aluminum metals are placed in contact with or fastened to ferrous or stainless steel metals, the contact surfaces of each shall receive the protective coating specified for that metal and a gasket shall be placed between the two contact surfaces. The gasket material shall be non-conductive commercial grade neoprene, 60 durometer, 0.03-inch in thickness unless otherwise specified. Bolts shall be isolated using one piece non-conductive sleeves and washers as manufactured by PSI Products, Inc., Burbank, California: Parker Seal Col, Culvert City, California, or approved equal.

K. Galvanizing: All galvanizing, where called for in the Contract Documents, shall be hot-dip process conforming to ASTM A-123:

- 1.** Surface Preparation: All surfaces to be clean and free of contaminants prior to application of the coating system.
- 2.** Prime Coat: Series 104 H.S. Epoxy; one coat 4-5 mils DFT.
- 3.** Finish Coat: Series 104 H.S. Epoxy; one coat 4-54 mils DFT.

L. Concrete Semi-Gloss Latex:

- 1.** Surface Preparation: All surfaces to be clean and free of contaminants prior to application of the coating system.

2. Prime Coat: Series 7 Tneme-Cryl; one coat 2-3 mils DFT.
3. Finish Coat: Series 7 Tneme-Cryl; one coat 2-3 mils DFT.

M. Ductile and Cast Iron (Exterior Exposure):

1. Surface Preparation: Solvent scrub with stiff bristle brush followed by brush-off abrasive blast cleaning to a minimum surfaces profile depth of 1.5 mils.
2. Prime Coat: Series 69-1255 (beige) H.B. Epoxoline II: one coat 3-5 mils DFT.
3. Finish Coat: Series 73 Endura-Shield; one coat 3-4 mils DFT.

N. Ductile and Cast Iron (Interior Exposure):

1. Surface Preparation: Clean, dry, and free of contaminants
2. Prime Coat: Series 135 Chembuild; one coat 4-6 mils DFT.
3. Finish Coat: Series 69 H.B. Epoxoline II; one coat 4-6 mils DFT.

O. Ductile and Cast Iron (Buried):

1. Surface Preparation: Solvent scrub with stiff bristle brush followed by brush-off abrasive blast cleaning to a minimum surface profile depth of 1.5 mils.
2. Prime Coat: Series 69-1255 (beige) H.B. Epoxoline II; one coat 3-5 mils DFT.
3. Finish Coat: Series 69 H.B. Epoxoline II; one coat 4-6 mils DFT.

P. Ductile and Cast Iron (Immersion):

1. Surface Preparation: Solvent scrub with stiff bristle brush followed by brush-off abrasive blast cleaning to a minimum surface profile depth of 1.5 mils.
2. Prime Coat: Series 66 H.B. Epoxoline; one coat 4-6 mils DFT.
3. Finish Coat: Series 69 H.B./ Epoxoline II; one coat 4-6 mils thick.

Q. Stainless Steel Duct (Buried):

1. Surface Preparation: SSPC-SP6 Commercial Blast Cleaning or manufacturer's recommendations, whichever is more stringent.
2. Prime Coat: Polyken 1019 or 1027, or approved equal.
3. Finish Coat: Polyken 905 tape, or approved equal.

2.4 Surfaces Not to be Coated

- A. Do not field paint any of the following items unless specifically noted otherwise.
1. Factory finished equipment, except for touch-up.
 2. Metal surfaces of aluminum, stainless steel, copper, bronze and similar finished materials.
 3. Equipment nameplates, valve stems, moving shafts and linkages.

2.5 Color Coding of Piping

- A. **Color Coding of Piping:** Exterior and interior by color coding entire pipe.

1. General

- a. Coat piping with solid colors as specified below for entire length of pipe in exposed finished and unfinished areas. Exclude areas in pipe chases and furred areas.
- b. Coat all other piping in colors matching adjacent surfaces. If adjacent area is unfinished, paint in color determined by Engineer/Architect.
- c. Identify piping with letters, arrows and bands as specified below. Apply after completion of finish coating.

2. Color Scheme

Description	Pipe and Band Color	Letter and Arrow Color
Potable Water (hot or cold)	Light blue	Black
Nonpotable or Raw Water	Light blue with red bands	Black
Seal Water	Dark blue with red bands	White
Low Pressure (Air) Aeration supply	Light green	Black
Sewage	Light gray	Black
Sludge	Light brown	White
Scum	Dark brown	White
Drain	Dark gray	White
Sample	Light gray with green bands	Black
Sprinkler Piping	Red	White

In addition, special painting of the following items will be required.

Item	Color
Valve handwheels and levers	Red

Number at least 2 inches high shall be painted on or adjacent to all accessible valves, pumps, flowmeters, and other items of equipment which are identified on the drawings or in the specifications by number.

3. Location of Letters, Arrows and Bands

- a. Place letters, arrows and bands on piping near connections to equipment, adjacent to valves or fittings, on both sides of walls penetrated, and at intervals not to exceed 25 feet.
- b. Place arrows adjacent to or below letters depending upon visibility. Place arrows in direction of flow. For dual-flow piping, indicate both directions.

- c. Locate letters to be visible from normal line of vision above floor level. Letter locations subject to approval of Engineer/Architect.
- d. Band to be full circumference of pipe.

4. Letter, Arrow and Band Size

- a. Block-style letters, all capitals, conforming to ANSI A13.1 and as follows:

Outside Diameter of Letters Pipe or Covering	Size of Letters and Arrows	Width of Banding
Less than 3/4"	Approved metal tag or band	6"
3/4" to 1-1/4"	1/2"	8"
1-1/2" to 2"	3/4"	8"
2-1/2" to 6"	1-1/4"	12"
8" to 10"	2-1/2"	24"
Over 10"	3-1/2"	32"

- 5. Vent lines, electrical conduit and related electrical accessories shall be painted to match adjacent wall surfaces as directed by ceiling space shall be painted same as surfaces adjacent to the wall surfaces.

PART 3 - EXECUTION

3.1 Surface Preparation

- A. Prepare surfaces for each coating system conforming to SSPC or ASTM surface preparation specifications listed.
 - 1. If grease or oils are present, SSPC-SP1 must precede any other method specified.
 - 2. Remove surface irregularities such as weld spatter, burrs, or sharp edges prior to specified surface preparation.
 - 3. Undertake specified surface preparation in accordance with the coating manufacturer's recommendations.

- B.** Depth of profile will be as specified or as recommended by the manufacturer for each system, but in no instance shall it exceed one-third of the total dry film thickness of complete system.
- C.** Prepare only those areas which will receive the first coat of the system on the same day.
 - 1.** On steel substrates, apply coating before rust bloom forms.
- D.** Concrete surfaces shall be adequately cured in accordance with SECTION 3300 and a minimum of 28 days old prior to coating application.
- E.** Abrasives for blasting shall be free of oil, washed and dry, unused silica sand, coal, copper or nickel slag that have sharp and hard cutting surfaces. Abrasives approved by Powertech Laboratories are strongly recommended.
- F.** Sharp projections and weld splatter shall be ground smooth. All areas ground smooth shall be reblasted prior to the coating application.
- G.** Sharp edges shall be ground round and smooth to radius = 1/8 prior to the coating applications for structural steel in Highly Corrosive Areas and for Immersion Services.
- H.** After abrasive blasting, steel surfaces must be completely dust free (cleaned by vacuum and/or blown off with oil/water-free compressed air), oil and grease free, and have a chloride concentration of less than 3 µg/cm².
- I.** Unless otherwise specified, the steel profile must be 1.5 - 2.5 mils in depth and jagged as opposed to a peen pattern.
- J.** All welds shall be stripe coated by brush with the primer, prior to the application of the full primer coat. Note that inorganic zinc coatings shall not be applied by brush except to very small areas. Stripe coating shall be by spray.
- K.** Unless approved by the Paint Manufacturer to the contrary, the blast surface shall be primed prior to the development of rust bloom or other contaminants and not later than 8 hours after surface preparation.

- L. Oxidation of the steel due to deleterious conditions may necessitate reblasting or sweepblasting the surface to restore the specified cleanliness standard.

3.2 Application

- A. Apply coatings in accordance with coating manufacturer's recommendations.
- B. All work shall be undertaken by skilled applicators who are qualified to perform the required work and have a minimum of 5 years experience in similar applications. The work shall be done in a manner comparable to the best standards of practice found in that trade. All materials shall be evenly applied so as to be free from sags, runs, crawls, wrinkles, holidays, or any other defects. All coats shall be of the minimum of brush marks. When finished and dried, brush strokes shall appear in one direction only, and there shall be no curved brush marks showing. All coats shall be thoroughly dry before the succeeding coat is applied. All coats that are intended to hide shall be given another coat if the coating does not properly hide the undercoat.
- C. Use properly designed brushes, rollers, and spray equipment for all applications.
- D. Spraying shall be done in the cross lap method of spraying, streaking first in one direction and shortly later spraying across this section at right angles to the first set of passes.
- E. On unprimed surfaces apply first coat of the system the same day as surface preparation.
- F. Dry film thickness of each system shall meet the minimum specified. Maximum dry film thickness shall not exceed the minimum more than 20% or coating manufacturer's requirements if less. Where a dry film thickness range is specified, the range shall not be less than or exceeded.
- G. Shop and field painting shall remain 3 inches away from unprepared surface of any substrate such as areas to be welded or bolted.

H. Environmental Conditions:

1. Do not apply coatings when inclement weather or freezing temperature may occur within coating curing time requirements. Atmospheric temperature must be maintained between 60°F and 85°F for at least 48 hours prior to and during application, unless otherwise approved by coating manufacturer.
2. Wind velocities for exterior applications shall be at a minimum to prevent overspray or fallout and not greater than coating manufacturer's limits.
3. Relative humidity must be less than 85% and the temperature of the surface to be painted must be at least 5°F above the dew point.
4. Provide adequate ventilation in all areas of application to ensure that at no time does the content of air exceed the Threshold Limit Value given on the manufacturer's Material Safety Data Sheets for the specific coatings being applied.

I. Recoat Time: In the event a coating, such as an epoxy, has exceeded its recoat time limit, prepare the applied coating in accordance with manufacturer's recommendations.

J. Protection

1. Cover or otherwise protect surfaces not to be painted. Remove protective materials when appropriate.
2. Provide signs to indicate fresh paint areas.
3. Provide daily cleanup of both storage and working areas and removal of all paint refuse, trash, rags, and thinners. Dispose of leftover containers, thinners, rags, brushes, and rollers which cannot be reused in accordance with applicable regulations.
4. Do not remove or paint over Equipment data plates or code stamps on piping.

5. Mask, remove, or otherwise protect finish hardware, machined surfaces, grilles, lighting fixtures, and prefinished units as necessary.
6. Provide cover to prevent paints from entering orifices in electrical or mechanical equipment.

3.3 Inspection

- A. Contractor shall provide and use a wet film gauges to check each application approximately every 15 minutes in order to immediately correct film thickness under or over that specified.
- B. Contractor shall provide and use a dry film gauge to check each coat mm (mil) thickness when dry, and the total system mm (mil) thickness when completed.
- C. Use holiday or pinhole detector on systems over metal substrates to detect and correct voids when indicated on system sheet.
- D. Furnish a sling psychrometer and perform periodic checks on both relative humidity and temperature limits.
- E. Check temperature of the substrate at regular intervals to be certain surface is 5°F or more above the dew point.

3.4 Cleaning and Repairs

- A. Remove spilled, dripped, or splattered paint from surfaces.
- B. Touch up and restore damaged finishes to original condition. This includes surface preparation and application of coatings specified.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 **Measurement:** No measurement will be made for this item, Protective Coatings.
- 4.2 **Payment:** Payment will be made at the contract lump sum price bid and shall be considered full payment for providing labor and materials to perform this work.

COATING REPORT

Contract Name: _____ Contract No.: _____
Coating Contractor: _____ Foreman: _____
Unit or Surface Identification: _____
Unit or Surface Location: Exterior: _____, Interior: _____

Surface Preparation:

Date _____; Air Temp _____°F; Relative Humidity _____%
Method of Surface Preparation: _____
Profile achieved _____ mils (if applicable).

Touch-Up:

Date _____; Time _____; Air Temp _____°F; Surface Temp _____°F
Relative Humidity _____%; Dew Point _____°F
Coating Used _____; Dry Film Obtained _____ mils.

First Coat:

Date _____; Time _____; Air Temp _____°F; Surface Temp _____°F
Relative Humidity _____%; Dew Point _____°F
Coating Used _____; Dry Time Before Recoat _____ hrs.
Dry Film Obtained _____ mils.

Second Coat:

Date _____; Time _____; Air Temp _____°F; Surface Temp _____°F
Relative Humidity _____%; Dew Point _____°F
Coating Used _____; Dry Time Before Recoat _____ hrs.
Dry Film Obtained _____ mils.

Third Coat:

Date _____; Time _____; Air Temp _____°F; Surface Temp _____°F
Relative Humidity _____%; Dew Point _____°F
Coating Used _____; Dry Film Obtained _____ mils.

****END OF SECTION 9900****

QUALITY. VALUE. ECONOMIC GROWTH.

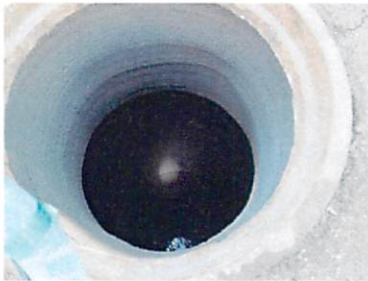
WWW.MIAMIDADE.GOV/WATER



Product Specifications

Miami-Dade Water & Sewer Department
 Address: 3071 SW 38th Ave, Miami, FL 33146
 Phone: (305) 665-7477

Standard Manhole Coating



Minimum Standards

- ASTM G210
- ASTM D4227
- MDWASD Specifications: Sections 02536
- Modified Epoxy Coating

Other Requirements

- NACE Certified Technician Available
- Manufacturer's Certified Applicator
- Underlayment shall be compatible with coating (manufacture's complete system)
- No Calcium Aluminates allowed
- Coating required on manholes within 300 feet of wet well
- Coating required on manholes with force main discharge

Applications

- Sewer Manholes

PRE-APPROVED MANUFACTURER

- 1) Epoxytec
- 2) Polymorphic Polymers Corp
- 3) BASF
- 4) PermaForm
- 5) SpayRoq
- 6) Quadex
- 7) Mainstay
- 8) GML Coating System
- 9) Raven Lining System

Issue Date:

9/9/2016

Revised Date:

9/9/2016

APPROVED PRODUCTS / MODELS

COATING MANUFACTURER	COATING SYSTEM	SUBMITTED
Epoxytec	Uroflex, with CPP, Ceramico or Tnemic 218	<input type="checkbox"/>
Polymorphic Polymers Corp	PPC Coating System WW-200-1a/Damp Concrete	<input type="checkbox"/>
BASF	Sewer Guard HBS 100 Epoxy Liner by BASF with SP15 Spray Mortar	<input type="checkbox"/>
PermaForm	Permaform MS-10,000 Fortified with ConShield or Cor-Guard Epoxy	<input type="checkbox"/>
SprayRoq	SprayRoq, Spray Wall and SprayShield GT Coating	<input type="checkbox"/>
Quadex	Geokrete Gepolymer with ConSeal ConBlock	<input type="checkbox"/>
Mainstay	Mainstay DS-5 High Build Epoxy with Mainstay ML-72 Restoration Mortar	<input type="checkbox"/>
GML Coating System	Green Monster Epoxy with GML-30 and GML-60 Epoxy Cement	<input type="checkbox"/>
Raven Lining System	Raven 405 Epoxy with Raven 755 Epoxy	<input type="checkbox"/>

CHEMICAL SEAL FOR ACTIVE LEAKS:

Drill through Manhole and seal outside void

Avanti	<input type="checkbox"/>
Deneef	<input type="checkbox"/>
Quadex Quad-plug	<input type="checkbox"/>

Sleeves

1 of 2

COMMENTS: _____

Approved by: David Vazquez, PE
Title: Specifications Manager