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ADDENDUM NO. 7

Date: April 1, 2026
Project Name: MAWSS Stickney WTP Solids Upgrades
Owner: Mobile Area Water and Sewer System
Garver Project No. W10-2401551

This addendum shall be a part of the Plans, Contract Documents and Specifications to the same extent as though it were originally included therein, and it shall supersede anything contained in the Plans, Contract Documents, and Specifications with which it might conflict. This addendum, including all attachments, shall become part of the Contract and all provisions of the Contract shall apply thereto, with exception of any items listed under "Other Project Information" at the end of this Addendum No. 7, which are supplements provided for the Contractor's convenience. The time provided for completion of the Contract has not been changed as noted in this addendum. Acknowledgement of receipt of this Addendum must be noted in the appropriate section of the Proposal and included with the Contract Documents.

A. CONTRACT DOCUMENTS

Remove and replace the following items with the revised attached version:

- a. Part 1 – Bidder's Checklist of Required Items.

B. TECHNICAL SPECIFICATIONS

Remove and replace the following specifications with the revised attached versions:

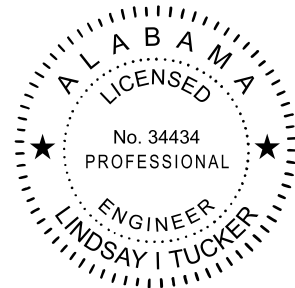
- a. 07 50 00 Roofing, Insulation, and Damp Proofing
- b. 09 96 00 High-Performance Coatings
- c. 09 96 00.1 High Performance Coating Systems Schedule

C. DRAWINGS

- a. No items for Drawings are included in this Addendum.

By: 

Lindsay I. Tucker, P.E.
 Project Manager



Attachments:

- A. Contract Documents
 - 1. Bidder's Checklist of Required Items
- B. Technical Specifications
 - 1. 07 50 00 Roofing, Insulation, and Damp Proofing
 - 2. 09 96 00 High-Performance Coatings
 - 3. 09 96 00.1 High Performance Coating Systems Schedule

END OF ADDENDUM NO. 7

BIDDER’S CHECKLIST OF REQUIRED ITEMS

This Bidder’s Checklist is provided to ensure all required forms are completed and returned as part of the bid submission. All forms must be included as indicated for a bid to be considered a complete, responsive bid. Appropriate signatures and date are required on each document. If an item is missing, the bid may be declared unresponsive and therefore rejected.

Completed

Qualifications Statement	
a. General Information (7 Pages)	<input type="checkbox"/>
b. Schedule A – Current Experience (1 Page)	<input type="checkbox"/>
c. Schedule B – Previous Experience (2 Pages)	<input type="checkbox"/>
d. Schedule C – List of Major Equipment Available (1 Page)	<input type="checkbox"/>
Proposal	
a. Proposal Forms (2 Pages)	<input type="checkbox"/>
b. Acknowledgement of all Addenda (On Page 2 of Proposal)	<input type="checkbox"/>
c. Bid Form (1 Page)	<input type="checkbox"/>
d. SSO and Unpermitted Discharge Prevention Notification (1 Page)	<input type="checkbox"/>
Sucontracting Plan & SDP Policy	
a. Proposed Subcontracting Plan – List of Proposed Subcontractors (2 Pages)	<input type="checkbox"/>
b. SDP Policy Acknowledgement Form (1 Page)	<input type="checkbox"/>
c. Subcontracting Plan/Good Faith Effort Acknowledgement/Affidavit (2 pages)	<input type="checkbox"/>
Bid Bond Form (1 Page) & Associated Documents	<input type="checkbox"/>
*Check when filled out, signed and/or notarized, and included with submission of bid packet.	

SECTION 07 50 00 – ROOFING, INSULATION, DAMP PROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. All materials, labor, insurance, etc., to complete insulation, membrane vapor barrier, cants, damproofing, installation and securing of all flashings, lead flashings, counter flashings, pitch pockets, flashings, and waterproofing of roof penetrations, etc., as required for a complete installation as shown on drawings or called for in the specifications. All work shall be completed in a manner which is acceptable for installing roofing membrane system.

B. Related Sections:

1. 07 21 00 - Building Insulation.
2. 07 92 00 – Joint Sealants.

1.2 SUBMITTALS

A. Subject to the requirements of Section 01 33 00 – Submittal Procedures.

B. Product Data:

1. Metal roof panels, clips, fasteners, coatings (base metal, thickness, finish).
2. Rigid roof insulation (ASTM C1289), facers, thicknesses and LTTR values needed to achieve R-25ci.
3. Underlayment (synthetic, non-bituminous) manufacturer's data and compatibility with metal roof system.
4. Accessories, flashings, closures, sealants.

C. Performance Submittals:

1. Wind-uplift calculations (ASCE 7) and UL/FM test listings demonstrating \geq design pressures.
2. Energy compliance summary indicating insulation R-values and layer configuration per IECC §C402.1.3 / §C402.2.1.

D. Warranty:

1. Manufacturer's standard roof system warranty, minimum 20 years, covering watertightness and panel finish (include chalk/fade limits where applicable).

E. Certificates:

1. Evidence of acceptance of roof applicator by the roofing system Manufacturer.

F. Samples and Manufacturer's Literature:

1. Two 12 in. by 12 in. samples of each sheet component of the roofing and flashing membranes.
2. Latest edition of the roofing system manufacturer's material specifications and installation instructions.
3. Descriptive list of materials proposed for use.

1.3 DESCRIPTION

A. Description of Systems:

1. Roofing shall consist of standing seam metal roof panels on an Ice and Water Sheild and secured to a prepared substrate as shown on drawings.

2. Prepared substrate

1.4 QUALITY ASSURANCE

- A. Quality Assurance:
 - 1. Acceptable Applicator:
 - a. Roofing installer shall be approved by the material manufacturer.
- B. Product Delivery, Storage and Handling:
 - 1. Delivery:
 - a. Material shall be delivered in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
 - 2. Storage:
 - a. Material shall be stored out of direct exposure to the elements. Roll goods shall be stored on end on a clean flat surface. Material shall be protected against moisture.
 - 3. Handling:
 - a. Material shall be handled in such a manner as to preclude damage and contamination with moisture or foreign matter.
- C. Job Conditions:
 - 1. Environmental Requirements:
 - a. Roofing shall NOT be applied during precipitation and shall NOT be started in the event there is a probability of precipitation during application.

1.5 PROTECTION

- A. Protection against staining and mechanical damage shall be provided for adjacent surfaces during application of roofing.

1.6 WARRANTY

- A. Furnish in writing, a fifteen (15) year Siplast Inc. Roof Membrane Guarantee. Guarantee shall be signed and notarized by Siplast Corporate Officer.
- B. Any detail shown on drawings which does NOT conform to watertight installation shall be brought to the attention of the Architect before bidding.
- C. See Section 01 78 36 – Warranties and Bonds for additional requirements.

PART 2 - PRODUCTS

2.1 ROOFING MEMBRANE SYSTEM

- A. Materials:
 - 1. Metal roof panels:
 - a. Material and finish to match existing adjacent structures, see description on design drawings.
 - b. Clips: Manufacturer's standard, floating type to accommodate thermal movement; fabricated from zinc-coated (galvanized) steel, aluminum-zinc alloy-coated steel, or stainless-steel sheet.
 - c. Joint Type: Mechanically seamed, folded as specified in manufacturer's standard.
 - d. Uplift Rating: UL 150.
 - 2. Flashing to consist of:

- a. Glass reinforced aluminum faced asphalt elastomer sheet of 90 pounds/square minimum weight, type Veral.
 - b. Glass reinforced asphalt sheet of 70 pounds/square minimum weight, type Irex.
 - c. Lead flashing where shown.
 3. Asphalt shall be certified for full compliance with the requirements for Type IV asphalt listed in Table I, ASTM D312-71. Each container or bulk shipping ticket shall indicate the equiviscous temperature (EVT), the finished blowing temperature (FBT), and the flash point (F.P.)
 4. Roof Insulation:
 - a. First Layer:
 - 1) 1 1/2 in. + 1 1/2 in. polyisocyanurate board. Roof Insulation – mechanically attached.
 - b. Second Layer:
 - 1) 1/4 in. thick Densdeck Duraguard (thoroughly and completely adhered with hot asphalt).
 - c. Water Trough:
 - 1) 2 in. thick polyisocyanurate board. Insulation (thoroughly and completely adhered). Mechanical fasteners slope to roof drains.
 5. Mechanical Fasteners:
 - a. Fiberglass Glasfast Hexcel Mechanical Fasteners at 18 in. o.c. each way. Securely attached to metal deck.
 6. Joint Tape:
 - a. Densdeck Fiberglass 8 in. wide joint tape.
 7. Moisture/Vapor Vents:
 - a. 0.063 GA spin aluminum moisture relief vents having breathable core tex fabric for one-way venting. Jinco UF-13. Install one per 800 SF.
- B. Inspection:
1. A pre-job conference including the Engineer's Representative, Roofer and Manufacturer's representative shall be conducted prior to the installation of roofing.
 2. Contractor shall verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- C. Preparation:
1. General. All surfaces shall be swept or vacuumed prior to commencement of roofing.
- D. Application:
1. General:
 - a. Application shall be as specified in roofing system manufacturer's instructions.
 - b. Application of roofing shall immediately follow application of insulation (where applicable) as a continuous operation.
 2. Prime metal flanges and concrete and masonry surfaces with a uniform coating of asphalt primer (ASTM D4173).
 3. Flashing shall be accomplished using Irex reinforcing membrane and Veral flashing membrane. The reinforcing sheet shall be lapped a minimum of 3 in. to itself, and shall extend a minimum of 4 in. onto the Paradiene 30 sheet and as shown up the parapet. The flashing sheet shall be lapped a minimum of 3 in. to itself and shall extend a minimum of 6 in. onto the Paradiene 30 sheet and 10 in. up the parapet.
 4. At end of day's work, or when precipitation is imminent, a water cutoff shall be built at all open edges. Cutoffs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of services. Cutoffs shall be completely removed prior to the resumption of roofing.
 5. Finished membrane shall be kept clean of unsightly asphalt residues with lap fully but neatly installed. Where asphalt laps on surface, it shall be sprinkled with granular Paradiene 30 surfacing.
 6. Provide lead Veral flashing at roof drains and vertical and edge of roof termination.

E. Substitute Roof System

1. Approved Manufacturers and Products:
 - a. Johns Manville
Denver, CO
 - 1) Base Ply – DynaPly
 - 2) Finish Ply – DynaKap FR
 - 3) Flashing Sheet – DynaClad
 - 4) Stripping Ply and Flashing Reinforcing Sheet – DynaPly
 - 5) Adhesive – MBR Cold Application Adhesive
 - b. Tamko Roofing Products, Inc.
Joplin, MO
 - 1) Base Ply – Awaplan Versa-Smooth
 - 2) Finish Ply – Awaplan Premium FR
 - 3) Flashing Sheet – Awaplan Heat Welding
 - 4) Stripping Ply and Flashing Reinforcing Sheet – Awaplan Versa-Smooth
 - 5) Adhesive – Tam-Pro CPA Premium SBS Adhesive
 - c. GAF Materials Corp.
Wayne, NJ
 - 1) Base Ply – Ruberoid Mop Smooth
 - 2) Finish Ply – Ruberoid Mop Plus
 - 3) Flashing Sheet – Ruberoid Ultraclad SBS
 - 4) Stripping Ply and Flashing Reinforcing Sheet – Ruberoid Mop Smooth
 - 5) Adhesive – Matrix 101 System Pro SBS Adhesive

F. Roofing Accessories:

1. Roofing Adhesives:
2. Fire Resistant Slipsheet: A coated glass fiber sheet intended for use as a flame barrier over combustible substrates.
 - a. FR10 by Atlas Roofing Corp.: Atlanta, GA
3. Bituminous Cutback Materials:
 - a. Primer:
 - 1) An asphalt, solvent blend as specified in ASTM D41 requirements.
 - 2) Siplast PA-1125 Asphalt Primer by Siplast
Irving, TX.
 - b. Mastics:
 - 1) An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D4586 Type II requirements.
 - 2) Siplast PA-1021 Plastic Cement by Siplast
Irving, TX.
4. Sealant:
 - a. A moisture-curing, non-slump elastomeric sealant designed for roofing application. The sealant shall be approved by the roof membrane Manufacturer for use in conjunction with the roof membrane materials.
 - b. Acceptable types:
 - 1) Siplast PS-304 Elastometric Sealant by Silplast
Irving, TX.
5. Metallic Powder:
 - a. A finely graded metal dust as supplied or approved by the membrane manufacturer, used for covering of bitumen overruns over the foil surfaced membrane.
6. Perlite Cant Strips:
 - a. A cant strip composed of expanded volcanic minerals combined with waterproofing binders.
 - b. The top surface shall be pretreated with an asphalt-based coating.
 - c. The face of the cant shall have a nominal 4 in. dimension.

7. Fasteners:
 - a. Insulation Fasteners and Densdeck Sheathing Panel Fasteners for Wood/Plywood Flashing Surfaces:
 - 1) Insulation fasteners and plates shall be FM Approved, and/or approved by the manufacturer of the primary roofing products. The insulation fasteners shall provide attachment required to meet the specified uplift performance and to restrain the insulation panels against the potential for ridging. The fastening pattern for each insulation panel to be used shall be as recommended by the insulation manufacturer and approved by the manufacturer of the primary roofing products. Acceptable insulation fastener manufacturers for specific deck types are listed below.
 - 2) Metal Decks and Wood/Plywood Flashing Surfaces:
 - a) Insulation mechanical fasteners for metal decks shall be factory coated for corrosion resistance. The fastener shall conform to meet or exceed Factory Mutual Standard 4470 and when subjected to 30 Kesternich cycles shall show less than 15% red rust. Acceptable insulation fastener types for metal decks are listed below.
 - b) A fluorocarbon coated screw type roofing fastener having a minimum 0.220 in. thread diameter. Plates used in conjunction with the fastener shall be a metal type having a minimum 3 in. diameter, as supplied by the fastener manufacturer.
 - i. Parafast Fastener by Siplast
Irving, TX
 - ii. Roofgrip with Buildex Metal Plates by ITW Buildex
Itasca, IL
 - iii. Dekfast #12 with Dekfast Steel Hexagonal Plates by
Construction Fasteners, Inc.
Wyomissing, PA.
 - iv. Standard Roofing Fastener by Olympic Manufacturing Group
Agawam, MA.
 - b. Fire Resistant Slipsheet Fasteners:
 - 1) Slipsheet fasteners shall be approved by the manufacturer of the primary roofing products. Acceptable fasteners for specific substrate types are listed below.
 - 2) Wood/Plywood Flashing Substrates
 - a) A 12 gauge, spiral or annular threaded shank, zinc coated steel roofing fastener having a minimum 1 in. head.
 - i. Square Cap by W. H. Maze Co.
Peru, IL
 - ii. 12 Gauge Simplex Nail by the Simplex Nail and Manufacturing Co, Americus, GA.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Preparation:
 1. General:
 - a. Clean all surfaces, removing all loose aggregate and foreign substances prior to installation of roofing.
 2. Preparation of substrate to Receive Flashing Materials:
 - a. Lay the coated fiberglass slipsheet over the Densdeck surface to receive flashing materials, lapping sides and ends a minimum of 2 in.
- B. Substrate Preparation:
 1. Insulation:

- a. Install insulation panels with end joints offset; edges of the panels shall be in moderate contact without forcing applied as specified in the insulation manufacturer's requirements.
 - b. Stagger joints between layers where insulation is installed in two or more layers. Maintain a maximum panel size of 4 ft by 4 ft for insulation applied in hot asphalt.
 - c. Insulation – double layer:
 - 1) Mechanically attach the bottom layer, using the specified fasteners, at a rate of 1 fastener per 2 ft² of panel area (16 per 4 ft by 8 ft panel). Increase the fastening frequency at the corners/perimeter as specified in the recommendations set forth in solid mopping of hot asphalt; laying each panel directly behind the asphalt applicator. Stagger the panel joints between insulation layers.
- C. Care shall be taken so that insulation does NOT get wet or take on moisture during field storage or application. Keep protected at all times. Check moisture content at time of installation and provide reports to the Architect.
- D. Install first layer of roof insulation on metal deck using Grefco Perma-Fasteners at 18 in. o.c. Joints shall be staggered with joints only occurring on flat hat sections of deck (NOT over flute voids).
- E. Install first layer of roof insulation with joints staggered and mechanically attached to metal deck.
- F. Installation of upper layer of roof insulation shall be coordinated with roofing membrane in order that insulation is protected from elements and remains completely dry.
- G. Any detail shown on drawings which does NOT conform to manufacturer's requirements shall be brought to the attention of the Engineer before bidding.
- H. Field Quality requirements and Inspections:
- 1. Site Condition:
 - a. Leave all areas around job site free of debris, roofing materials, equipment, and related items after completion of job.
 - 2. Notification of Completion:
 - a. Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.
 - 3. Final Inspection:
 - a. Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.
 - 4. Issuance of the Guarantee:
 - a. Complete all post-installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

END OF SECTION

SECTION 09 96 00 – HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. There are several locations of specific painting/marketing requirements on this project, particularly at the aerial decant pipe crossing and bollard at the pipe supports. Refer to Sheet 05-C501 and 05-C102 of the Drawings.
- B. This Section Includes:
 - 1. High-performance coatings and special preparation for surfaces of piping and process equipment, and other surfaces in contact with process water and wastewater.
- C. Related Sections:
 - 1. Section 09 90 00 – Painting and Coating.

1.2 REFERENCES

- A. Federal Specification Unit:
 - 1. FS A-A-3054 – Paint, Heat Resisting (204°C).
 - 2. FS AA-3120A – Paint: For Swimming Pools.
 - 3. FS TT-C-555B – Coating, Textured (for Interior and Exterior Masonry Surfaces).
 - 4. FS TT-P-28H – Paint, Aluminum, Heat Resisting.
- B. Master Painters Institute:
 - 1. MPI – Approved Products List.
 - 2. MPI – Architectural Painting Manual.
- C. SSPC (The Society for Protective Coatings):
 - 1. SSPC – Painting Manual, Volume 2: Systems and Specifications.
 - 2. SSPC-Paint 16 – Coal Tar Epoxy-Polyamide Black (or Dark Red).
 - 3. SSPC-SP 2 – Hand Tool Cleaning.
 - 4. SSPC-SP 3 – Power Tool Cleaning.
 - 5. SSPC-SP 5 – White Metal Blast Cleaning.
 - 6. SSPC-SP 6 – Commercial Blast Cleaning.
 - 7. SSPC-SP 7 – Brush-Off Blast Cleaning.
 - 8. SSPC-SP 10 – Near-White Metal Blast Cleaning.
 - 9. SSPC-SP 11 – Power Tool Cleaning to Bare Metal.
 - 10. SSPC-SP 13 – Concrete Surface Preparation.

1.3 SUBMITTALS

- A. Subject to the requirements of Section 01 33 00 – Submittal Procedures.
- B. Shop Drawings:
 - 1. Schedule of proposed coating materials.
 - 2. Schedule of surfaces to be coated with each coating material.
- C. Product Data:
 - 1. Submit manufacturer information indicating coating materials, performance ratings and description of physical properties of coatings including solids content and ingredient analysis, VOC content, temperature resistance, typical exposures and limitations, and manufacturer's standard color chips.
 - 2. Data Sheets:

- a. For each paint system, furnish a Paint System Data Sheet (PSDS), the Manufacturer's Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system. The PSDS form is appended to the end of this section.
 - b. Submit required information on a system-by-system basis.
 - c. Furnish copies of paint system submittals to the coating applicator.
 - d. Indiscriminate submittal of Manufacturer's literature only is not acceptable.
 - e. Regulatory requirements – Submit data concerning:
 - 1) Volatile organic compound limitations.
 - 2) Coatings containing lead compounds and PCBs.
 - 3) Abrasives and abrasive blast cleaning techniques, and disposal.
 - 4) NSF certification of coatings for use in potable water supply systems.
3. Include MPI – Approved Products Lists with proposed products highlighted.

D. Samples:

- 1. Submit two square drawdowns or brushouts of topcoat finish samples 8 in. by 8 in. in size, illustrating colors for selection. Identify each sample as to finish, formula, color name and number and sheen name and gloss units.

E. Manufacturer's Certificate:

- 1. Certify that products meet or exceed specified requirements.

F. Manufacturer Instructions:

- 1. Submit special procedures, perimeter conditions requiring special attention.
- 2. Include:
 - a. Special requirements for transportation and storage.
 - b. Mixing instructions.
 - c. Shelf life.
 - d. Pot life of material.
 - e. Precautions for applications free of defects.
 - f. Surface preparation.
 - g. Method of application.
 - h. Recommended number of coats.
 - i. Recommended dry film thickness (DFT) of each coat.
 - j. Recommended total dry film thickness (DFT).
 - k. Drying time of each coat, including prime coat.
 - l. Required prime coat.
 - m. Compatible and noncompatible prime coats.
 - n. Recommended thinners, when recommended.
 - o. Limits of ambient conditions during and after application.
 - p. Time allowed between coats (minimum and maximum).
 - q. Required protection from sun, wind, and other conditions.
 - r. Touchup requirements and limitations.
 - s. Minimum adhesion of each system submitted as specified in ASTM D 4541.

G. Qualifications Statements:

- 1. Submit qualifications for manufacturer and applicator.
- 2. Submit manufacturer's approval of applicator.

1.4 CLOSEOUT SUBMITTALS

A. Section 01 77 00 – Closeout Procedures: Requirements for submittals.

B. Operation and Maintenance Data:

- 1. Submit maintenance and cleaning requirements for coatings, repair, and patching techniques.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Section 01 77 00 – Closeout Procedures: Requirements for maintenance materials.
- B. Extra Stock Materials:
 - 1. Furnish 5 gal. of each color of each type of coating specified, for Owner's maintenance use.
 - 2. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.6 QUALITY ASSURANCE

- A. MPI Standards:
 - 1. Comply with indicated MPI standards.
 - 2. Products: Listed in MPI – Approved Products List.
- B. Quality Assurance Submittals:
 - 1. Quality Assurance plan.
 - 2. Qualifications of coating applicator including List of Similar Projects and List of References substantiating experience.
 - 3. Factory Applied Coatings: Manufacturer's certification stating factory applied coating system meets or exceeds requirements specified.
 - 4. If the Manufacturer of finish coating differs from that of shop primer, provide both Manufacturers' written confirmation that materials are compatible.
 - 5. Manufacturer's written instructions and special details for applying each type of paint.
 - 6. Manufacturers' Certification of Proper Installation.
- C. Certifications:
 - 1. All paints and coatings to be used on this project comply with current federal, state, and local VOC regulations.
- D. Compatibility of coatings:
 - 1. Use products by same manufacturer for prime coats, intermediate coats, and finish coats on same surface, unless specified otherwise.
- E. Services of coating manufacturer's representative:
 - 1. Arrange for coating manufacturer's representative to attend preinstallation conferences. Make periodic visits to the project site to provide consultation and inspection services during surface preparation and application of coatings, and to make visits to coating plants to observe and approve surface preparation procedures and coating application of items to be "shop primed and coated".

1.7 QUALIFICATIONS

- A. Manufacturer:
 - 1. Company specializing in manufacturing products specified in this Section with minimum five years' experience.
- B. Applicator Qualifications:
 - 1. Company specializing in performing Work of this Section with minimum five years' experience applying specified type or types of coatings under conditions similar to those of the Work and approved by manufacturer.
 - 2. Provide qualifications of applicator and references listing 5 similar projects completed in the past 2 years.
 - 3. Manufacturer approved applicator when manufacturer has approved applicator program.

4. Approved and licensed by polymorphic polyester resin manufacturer to apply polymorphic polyester resin coating system.
5. Approved and licensed by elastomeric polyurethane (100% solids) manufacturer to apply 100% solids elastomeric polyurethane system.
6. Applicator of offsite application of coal tar epoxy shall have successfully applied coal tar epoxy on similar surfaces in material, size, and complexity as on the Project.

C. Regulatory requirements:

1. Comply with governing agencies regulations by using coatings that do not exceed permissible volatile organic compound limits and do not contain lead:
 - a. Do not use coal tar epoxy in contact with drinking water or exposed to ultraviolet radiation.
 - b. Perform surface preparation and painting as specified in recommendations of:
 - 1) Paint Manufacturer's instructions.
 - 2) SSPC-PA Guide No. 3, Guide to Safety in Paint Applications.
 - 3) Federal, state, and local agencies having jurisdiction.

1.8 MOCKUPS

- A. Unless otherwise specified, before painting work is started, prepare minimum 8 in. by 10 in. samples with type of paint and application specified on similar substrate to which paint is to be applied.
- B. Furnish additional samples as required until colors, finishes, and textures are approved.
- C. Approved samples to be the quality standard for final finishes.
- D. Field samples:
 1. Prepare and coat a minimum 100 ft² area between corners or limits such as control or construction joints of each system.
 2. Approved field sample may be part of Work.
 3. Obtain approval before painting other surfaces.
- E. Section 01 40 00 – Quality Requirements: Requirements for mockup.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver new unopened containers.
- B. Do not deliver materials aged more than 12 months from manufacturing date.
- C. Section 01 60 00 – Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- D. Container Labeling:
 1. Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- E. Inspection:
 1. Accept materials on Site in manufacturer's sealed and labeled containers.
 2. Inspect for damage and to verify acceptability.
- F. Store materials in ventilated area and as specified in manufacturer instructions.

- G. Remove unspecified and unapproved paints from Project site immediately.
- H. Protection:
 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 2. Provide additional protection as specified in manufacturer instructions.
 3. Take precautions to prevent fire and spontaneous combustion.
- I. Shipping:
 1. Where precoated items are to be shipped to the site, protect coating from damage. Batten coated items to prevent abrasion.
 2. Use nonmetallic or padded slings and straps in handling.

1.10 AMBIENT CONDITIONS

- A. Section 01 50 00 – Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.
- B. Minimum Conditions:
 1. Do not install materials when temperature is below 55°F or above 90°F.
- C. Subsequent Conditions:
 1. Maintain above temperature range, 24 hours before, during, and 72 hours after installation of coating.
- D. Provide lighting level of 80 fc, measured mid-height at substrate surface.
- E. Restrict traffic from area where coating is being applied or is curing.

1.11 WARRANTY

- A. Section 01 77 00 – Closeout Procedures: Requirements for warranties.
- B. Furnish Manufacturer's extended guarantee or warranty, with Owner named as beneficiary, in writing, as special guarantee. Special guarantee shall provide for correction, or at the option of the Owner, removal and replacement of work specified in this Specification section found defective during a period of 1 yr. after the date of Substantial Completion.
- C. Contractor and paint Manufacturer shall jointly and severally furnish guarantee.
- D. Include coverage for bond to substrate, and degradation of chemical resistance.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

- A. Coating materials shall be especially adapted for use in water and wastewater treatment plants.
- B. Coating materials used in contact with potable water supply systems shall be certified to NSF 61.

2.2 HIGH-PERFORMANCE COATINGS

- A. Manufacturers:
 1. High Performance Coatings Manufacturers (Choose ONE):

- a. Carboline: Carboline, St. Louis, MO.
 - b. Ceilcote: International Protective Coatings, Berea, OH.
 - c. Dampney: The Dampney Company, Everett, MA.
 - d. Devoe: International Protective Coatings, Louisville, KY.
 - e. Dudick: Dudick, Inc., Streetsboro, OH.
 - f. GET: Global Eco Technologies, Pittsburg, CA.
 - g. Henkel: Henkel North America, Madison Heights MI.
 - h. IET: Integrated Environmental Technologies, Santa Barbara, CA.
 - i. Induron Protective Coatings, Birmingham, AL.
 - j. PPG Amercoat: PPG Protective & Marine Coatings, Brea, CA.
 - k. Raven Lining Systems, Broken Arrow, OK.
 - l. Rustoluem : Rustoleum Corp., Sommerset, NJ.
 - m. Sanchem: Sanchem, Chicago, IL.
 - n. Sauereisen: Sauereisen, Pittsburgh, PA
 - o. Superior: Superior Environmental Products, Inc., Addison, TX.
 - p. S-W: Sherwin-Williams Co., Cleveland, OH.
 - q. Tnemec: Tnemec Co., Kansas City, MO.
 - r. Wasser: Wasser High Tech Coatings, Kent, WA.
 - s. ZRC: ZRC Worldwide Innovative Zinc Technologies, Marshfield, MA.
 - t. Or Approved Equal.
2. Preparation And Pretreatment Materials:
- a. Metal pretreatment (Choose ONE):
 - 1) Henkel: Galvaprep 5.
 - 2) International: AWLGrip Alumiprep 33.
 - 3) Or Approved Equal.
 - b. Surface cleaner and degreaser (Choose ONE):
 - 1) Carboline Surface Cleaner No.3.
 - 2) Devoe: Devprep 88.
 - 3) S-W: Clean and Etch.
 - 4) Or Approved Equal.
3. Coating Materials:
- a. Alkali resistant bitumastic (Choose ONE):
 - 1) Carboline: Bitumastic No. 50
 - 2) Sherwin Williams: Targuard
 - 3) Wasser: MC-Tar
 - 4) Or Approved Equal.
 - b. Wax coating:
 - 1) Sanchem: No-Ox-Id A special.
 - 2) Or Approved Equal.
 - c. High solids epoxy (self-priming) not less than 72% solids by volume (Choose ONE):
 - 1) Carboline: Carboguard 891.
 - 2) Devoe: Bar Rust 233H.
 - 3) Induron: PE-70
 - 4) PPG Amercoat: Amerlock 2.
 - 5) S-W: Macropoxy 646.
 - 6) Tnemec: HS Epoxy Series N140.
 - 7) Or Approved Equal.
 - d. Aliphatic or aliphatic-acrylic polyurethane (Choose ONE):
 - 1) Carboline: Carbothane 134 VOC.
 - 2) Devoe: Devthane 379.
 - 3) PPG Amercoat: Amershield VOC.
 - 4) S-W: High Solids Polyurethane [CA].
 - 5) Tnemec: Endura-Shield II Series 1075 (U).
 - 6) Or Approved Equal.

- e. Epoxy Novolac: Multi-component aggregate-filled epoxy system specifically designed for exposure to municipal wastewater. (Choose ONE):
 - 1) Sauereisen: Sewergard No. 210, 210S, or 210GL
 - 2) Carboline: Plasite 4550 S
 - 3) Devoe: Devmat 100
 - 4) Raven 410
 - 5) Or Approved Equal.
- f. High temperature coating 150 – 350°F (Choose ONE):
 - 1) Carboline: Thermaline 4900.
 - 2) Dampney: Thermalox 245 Silicone – Zinc Dust.
 - 3) PPG Amercoat: Amerlock 2/400 GFK.
 - 4) Or Approved Equal.
- g. High temperature coating 400 to 1,000°F (dry) (Choose ONE):
 - 1) Carboline: Thermaline 4700.
 - 2) Dampney: Thermolox 230C Series Silicone.
 - 3) Devoe: HT-12, High Heat Silicone.
 - 4) Or Approved Equal.
- h. High temperature coating up to 1,400°F:
 - 1) Dampney: Thermalox 240 Silicone Ceramix.
 - 2) Or Approved Equal.
- i. Asphalt varnish: AWWA C 500.
- j. Protective coal tar:
 - 1) Not Acceptable
- k. Coal tar epoxy:
 - 1) Not Acceptable
- l. Coal tar:
 - 1) Where coal tar, coal tar epoxy, or coal tar mastic are specified or indicated on the Drawings, use coal tar epoxy substitute in their place. Coal tar shall not be allowed.
- m. Coal Tar Epoxy Substitute Manufacturer:
 - 1) Tnemec: Series 431
 - 2) Or Approved Equal.
- n. Vinyl ester: Glass mat reinforced, total system 125 mils DFT. (Choose ONE):
 - 1) Carboline: Semstone 870.
 - 2) Ceilcote: 6640 Ceilcrete.
 - 3) Dudick: Protecto-Flex 800.
 - 4) Tnemec: Chembloc Series 239SC.
 - 5) Or Approved Equal.
- o. Elastomeric polyurethane, 100% solids, ASTM D16, Type V, (Urethane P):
 - 1) GET: Endura-Flex EF-1988.
 - 2) Or Approved Equal.
- p. Anti-slip floor coatings:
 - 1) PPG: SFT675
- q. Concrete floor coatings (Choose ONE):
 - 1) Carboline: Semstone 140SL.
 - 2) Devoe: Devran 124.
 - 3) Dudick: Polymer Alloy 1000.
 - 4) Tnemec: Tneme-Glaze Series 282.
 - 5) Or Approved Equal.
- r. Waterborne acrylic emulsion (Choose ONE):
 - 1) S-W: DTM Acrylic B66W1.
 - 2) Tnemec: Tneme-Cryl Series 6.
 - 3) Or Approved Equal.
- s. Galvanizing Zinc Compound:
 - 1) ZRC: Cold Galvanizing Compound.
 - 2) Other Approved Equal.

2.3 COATING SYSTEMS

- A. Coatings:
 - 1. Description:
 - a. Complete multicoat systems formulated and recommended by manufacturer for intended applications and in indicated thicknesses.
 - b. Specified number of coats does not include primer or filler coat.
 - 2. Lead content: None.
 - 3. Chromium Content as Zinc Chromate or Strontium Chromate: None.
 - 4. Maximum VOC Content: As required by applicable regulations.
 - 5. Colors: As selected from manufacturer's standard colors or indicated on Drawings.

- B. System 1 Submerged Metals – Potable Water – High-Solids Epoxy Coating:
 - 1. Description: High-solids, two-component epoxy.
 - 2. Exposure: Moderate.
 - 3. Surface Prep: Abrasive Blast, or Centrifugal Wheel Blast (SP 5)
 - 4. Number of Coats: One.
 - 5. Finish: Low gloss
 - 6. Minimum Solids Content: 78% by volume.
 - 7. Minimum Dry Film Thickness Per Coat: 6 mils.
 - 8. Primer: High Solids Epoxy (Self Priming)

- C. System 2 Submerged Metals – Domestic Sewage – High-Solids Epoxy Coating:
 - 1. Description: High-solids, two-component
 - 2. Exposure: Severe.
 - 3. Surface Prep: Abrasive Blast, or Centrifugal Wheel Blast (SP 5)
 - 4. Number of Coats: Two.
 - 5. Finish: Low gloss
 - 6. Minimum Solids Content: 100% by volume.
 - 7. Minimum Dry Film Thickness Per Coat: 30 mils.
 - 8. Primer: High Solids Epoxy – As recommended by painting system manufacturer.

- D. System 3: Exposed Metal – Highly Corrosive – Epoxy/Polyurethane Coating or Novolac Epoxy:
 - 1. Description: High-solids, two-component epoxy intermediate coat and solvent-based, two-component, pigmented polyurethane top coat.
 - 2. Exposure: Severe.
 - 3. Surface Prep: Abrasive Blast (SP 10)
 - 4. Number of Coats: Two.
 - 5. Finish: Semi-Gloss.
 - 6. Minimum Epoxy Solids Content: 78% by volume.
 - 7. Minimum Polyurethane Solids Content: 69% by volume.
 - 8. Minimum Dry Film Thickness Per Coat: 4 mils.
 - 9. Primer: As recommended by painting system manufacturer.

- E. System 4: Exposed Metal – Mildly Corrosive – Polyurethane Coating:
 - 1. Description: Solvent-based, two-component, pigmented polyurethane.
 - 2. Exposure: Moderate.
 - 3. Surface Prep: Abrasive Blast (SP 10)
 - 4. Number of Coats: One.
 - 5. Finish: Semi-Gloss.
 - 6. Minimum Solids Content: 69% by volume.
 - 7. Minimum Dry Film Thickness Per Coat: 3 mils.
 - 8. Primer: As recommended by painting system manufacturer.

- F. System 5: Buried Metal – General:
 - 1. Standard Conditions

- a. Description:
 - 1) Standard Hot Coal-Tar Enamel, or
 - 2) Coal-Tar Epoxy Substitute, or
 - 3) Tape Coat System.
 - b. Exposure: Moderate.
 - c. Surface Prep: Abrasive Blast (SP 10)
 - d. Number of Coats and Minimum Dry Film Thickness Per Coat:
 - 1) Standard Hot Coal-Tar Enamel: Conform to AWWA C203
 - 2) Coal-Tar Epoxy Substitute: Conform to AWWA C210
 - 3) Tape Coat System: Conform to AWWA C214
 - e. Primer: As recommended by painting system manufacturer.
2. For Acidic Soil, Brackish Water, High Bacteria
- a. Description:
 - 1) Coal-Tar Epoxy Substitute, Double Felt
 - b. Exposure: Moderate.
 - c. Surface Prep: Abrasive Blast (SP 10)
 - d. Number of Coats and Minimum Dry Film Thickness Per Coat:
 - 1) AWWA C203, App. A, Sec. A1.5
 - e. Primer: As recommended by painting system manufacturer.
3. For Highly Abrasive Soil, Brackish Water
- a. Description:
 - 1) Coal-Tar Epoxy Substitute, Fibrous Glass, or
 - 2) Tape Coat System
 - b. Exposure: Moderate.
 - c. Surface Prep: Abrasive Blast (SP 10)
 - d. Number of Coats and Minimum Dry Film Thickness Per Coat:
 - 1) Coal-Tar Epoxy Substitute, Fibrous Glass: AWWA C203, App. A, Sec. A1.5
 - 2) Tape Coat System: AWWA C214 with Double Outer Wrap
 - e. Primer: As recommended by painting system manufacturer.
- G. System 6: Moderate-Heat-Resistant Coating for Ferrous Metal (150° – 400°):
- 1. Description: Solvent-based, pigmented enamel, formulated for service up to 400°F.
 - 2. Exposure: Moderate.
 - 3. Surface Prep: Abrasive Blast (SP 10)
 - 4. Number of Coats: One
 - 5. Minimum Dry Film Thickness Per Coat: 2 mils.
 - 6. Primer: As recommended by painting system manufacturer.
- H. System 7: High-Heat-Resistant Coating for Ferrous Metal (400° – 1,000°):
- 1. Description: Solvent-based, silicone type, aluminum coating, formulated for service up to 1,000°F.
 - 2. Exposure: Severe.
 - 3. Surface Prep: Abrasive Blast (SP 10)
 - 4. Number of Coats: Two.
 - 5. Minimum Solids Content: 46% by volume.
 - 6. Minimum Dry Film Thickness Per Coat: 2 mils.
 - 7. Primer: As recommended by painting system manufacturer.
- I. System 8: High-Heat-Resistant Coating for Ferrous Metal (1000° – 1,400°):
- 1. Description: Silicon ceramic matrix and thermally stable pigments., formulated for service up to 1,400°F.
 - 2. Exposure: Severe.
 - 3. Surface Prep: Abrasive Blast (SP 10)
 - 4. Number of Coats: Two.
 - 5. Minimum Dry Film Thickness Per Coat: 1.5 mils.
 - 6. Primer: As recommended by painting system manufacturer.

- J. System 10: Galvanized Metal Conditioning – Wash Primer:
1. Description: Wash Primer or Coating Manufacturer's Recommendation.
 2. Exposure: Severe.
 3. Surface Prep: Solvent Clean (SP 1), followed by Hand Tool (SP 2), or Power Tool (SP 3)
 4. Number of Coats: One minimum, additional coats as required by exposure.
 5. Minimum Dry Film Thickness Per Coat: 0.4 mils.
- K. System 11: Galvanized Metal Conditioning – Zinc Primer:
1. Description: Organic Zinc Rich or Coating Manufacturer's Recommendation.
 2. Exposure: Severe.
 3. Surface Prep: Solvent Clean (SP 1), followed by Hand Tool (SP 2), Power Tool (SP 3), or Brushoff Blast (SP 7)
 4. Number of Coats: One minimum, additional coats as required by exposure.
 5. Minimum Dry Film Thickness Per Coat: 3 mils.
- L. System 12: Skid-Resistant Walkway Surface Coatings:
1. Description: Aggregated High Solids Epoxy for use on steel, wood, aluminum, brick, block, fiberglass, or concrete.
 2. Exposure: Moderate.
 3. Surface Prep: Brushoff Blast (SP 7) or Plastic Surface Preparation
 4. Number of Coats: One.
 5. Minimum Solids Content: 100% by volume.
 6. Minimum Dry Film Thickness Per Coat: 30 mils.
 7. Primer: High Solids Epoxy – As recommended by painting system manufacturer.
 8. Aggregate Size: GL-400, grit size 20
- M. System 13: Sliding Metal:
1. Description: Wax coating.
 2. Surface Prep: Solvent Clean (SP 1), followed by Hand Tool (SP 2), Power Tool (SP 3), or Brushoff Blast (SP 7)
 3. Number of Coats: One.
 4. Minimum Dry Film Thickness Per Coat: 30 mils.
- N. System 14: Exposed PVC – Epoxy/Polyurethane Coating:
1. Description: High-solids, two-component epoxy primer and solvent-based, two-component, pigmented polyurethane top coat.
 2. Exposure: Severe.
 3. Surface Prep: Brushoff Blast (SP 7) or Plastic Surface Preparation
 4. Number of Coats: Two.
 5. Finish: Semi-Gloss.
 6. Minimum Epoxy Solids Content: 78% by volume.
 7. Minimum Polyurethane Solids Content: 69% by volume.
 8. Minimum Dry Film Thickness Per Coat: 2 mils.
- O. System 15: Aluminum and Dissimilar Metal Insulation:
1. Description: Alkali Resistant Bitumastic or Coal-Tar Epoxy Substitute.
 2. Surface Prep: Solvent Clean (SP 1)
 3. Number of Coats: One.
 4. Minimum Dry Film Thickness Per Coat: 18 mils.
- P. System 16: Existing Concrete/CMU Repair:
1. Description: High-solids, two-component epoxy, with filler.
 2. Exposure: Moderate.
 3. Surface Prep: (SP 13)
 4. Filler: Per Manufacturer's Recommendations, 10 MDFT

5. Primer: High Solids Epoxy – As recommended by painting system manufacturer, 5 MDFT, min.
 6. Number of Coats: One.
 7. Finish: Low gloss
 8. Minimum Solids Content: 78% by volume.
 9. Minimum Dry Film Thickness Per Coat: 6 mils.
- Q. System 17: New Concrete/CMU Exterior-Epoxy/Polyurethane (as required by application schedule):
1. Description: High-solids, two-component epoxy intermediated coat and, Aliphatic Polyurethane, with filler.
 2. Exposure: Moderate.
 3. Surface Prep: (SP 13)
 4. Filler: Per Manufacturer's Recommendations, 10 MDFT
 5. Primer: As recommended by painting system manufacturer.
 6. Number of Coats: One.
 7. Minimum Epoxy Solids Content: 78% by volume.
 8. Minimum Polyurethane Solids Content: 69% by volume.
 9. Minimum Dry Film Thickness Per Coat: 4 mils.
- R. System 18: Concrete/CMU Interior or Immersion Mildly Corrosive – Epoxy/Epoxy (as required by application schedule):
1. Description: High-solids, two-component epoxy intermediated coat and, -solids, two-component epoxy top coat.
 2. Exposure: Moderate.
 3. Surface Prep: (SP 13)
 4. Filler: Per Manufacturer's Recommendations, 10 MDFT
 5. Primer: As recommended by painting system manufacturer.
 6. Number of Coats: Two.
 7. Minimum Epoxy Solids Content: 78% by volume.
 8. Minimum Dry Film Thickness Per Coat: 6 mils.
- S. System 19: Concrete/CMU – Immersion Highly Corrosive – Novolac Epoxy:
1. Description: Epoxy Novolac.
 2. Exposure: Severe.
 3. Surface Prep: (SP 13)
 4. Filler: Per Manufacturer's Recommendations.
 5. Primer: As recommended by painting system manufacturer.
 6. Number of Coats: Two.
 7. Minimum Dry Film Thickness Per Coat: 40 mils minimum or as noted otherwise.
- T. System 20: Epoxy Concrete Floor Coating – Moderate Corrosive Areas:
1. Description: A highly chemical-resistant and solvent-resistant colored novolac glaze.
 2. Exposure: Moderate.
 3. Number of Coats: Two.
 4. Finish: Gloss.
 5. Minimum Solids Content: 100% by volume.
 6. Minimum Dry Film Thickness Per Coat: 6 mils.
 7. Primer: As recommended by painting system manufacturer.
- U. System 21: Epoxy Concrete Floor and Secondary Containment Coating – Highly Corrosive Areas:
1. Description: Epoxy Mortar and Fiberglass intermediate coat with a highly chemical-resistant and solvent-resistant colored novolac glaze top coat.
 2. Exposure: Severe.
 3. Primer: High Solids Epoxy, 6 mils

4. Intermediate Coat: Novolac Epoxy Mortar, 70 mils
 5. Top Coat: Novolac Epoxy, 6 mils
 6. Finish: Gloss.
 7. Minimum Solids Content: 100% by volume.
- V. System 22 Existing Submerged Metals –Domestic Sewage – High-Solids Epoxy Coating:
1. Description: High-solids, two-component
 2. Exposure: Severe.
 3. Surface Prep: Solvent Clean (SP 1), followed by Hand Tool (SP 2).
 4. Number of Coats: Two.
 5. Finish: Low gloss
 6. Minimum Solids Content: 100% by volume.
 7. Minimum Dry Film Thickness Per Coat: 30 mils.
 8. Primer: High Solids Epoxy – As recommended by painting system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 77 00 – Closeout Procedures: Requirements for application examination.
- B. Substrates:
1. Verify that substrate surfaces are ready to receive Work of this Section as indicated by coating manufacturer.
 2. Obtain and follow manufacturer instructions for examination and testing of substrates.
 3. Cementitious Substrates: Do not begin application until substrate has cured minimum 28 days and measured moisture content is not greater than 16%.
- C. Masonry:
1. Verify that masonry joints are struck flush.
- D. Wood:
1. Do not begin application if substrate has moisture content greater than 12%.

3.2 GENERAL PROTECTION

- A. Protect adjacent surfaces from coatings and damage. Repair damage resulting from inadequate or unsuitable protection:
- B. Protect adjacent surfaces not to be coated from spatter and droppings with drop cloths and other coverings:
- C. Mask off surfaces of items not to be coated or remove items from area.
- D. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being coated and in particular, surfaces within storage and preparation area.
- E. Place cotton waste, cloths, and material which may constitute fire hazard in closed metal containers and remove daily from site.
- F. Remove electrical plates, surface hardware, fittings, and fastenings, prior to application of coating operations. Carefully store, clean, and replace on completion of coating in each area. Do not use solvent or degreasers to clean hardware that may remove permanent lacquer finish.

3.3 PREPARATION

- A. Section 01 70 00 – Execution Requirements: Requirements for application preparation.
- B. Clean surfaces of loose foreign matter.
- C. Remove substances that would bleed through finished coatings; if removal is not possible, seal surface with shellac.
- D. Remove finish hardware, fixture covers, and accessories and store.
- E. Prepare surfaces as specified in coating manufacturer's instructions, unless more stringent requirements are specified in this Section.
- F. Protect surfaces listed from abrasive blasting by masking, or other means:
 - 1. Threaded portions of valve and gate stems, grease fittings, and identification plates.
 - 2. Machined surfaces for sliding contact.
 - 3. Surfaces to be assembled against gaskets.
 - 4. Surfaces of shafting on which sprockets are to fit.
 - 5. Surfaces of shafting on which bearings are to fit.
 - 6. Machined surfaces of bronze trim, including those slide gates.
 - 7. Cadmium-plated items, except cadmium-plated, zinc-plated, or sherardized fasteners used in assembly of equipment requiring abrasive blasting.
 - 8. Galvanized items, unless scheduled to be coated.
- G. Protect installed equipment, mechanical drives, and adjacent coated equipment from abrasive blasting to prevent damage caused by entering sand or dust.
- H. Concrete:
 - 1. Allow new concrete to cure for minimum of 28 days before coating.
 - 2. Clean concrete surfaces of dust, mortar, fins, loose concrete particles, form release materials, oil, and grease. Fill voids so that surface is smooth. Etch or brush off-blast clean as specified in SSPC SP-7 to provide surface profile equal to 40-grit – 60-grit sandpaper, or as recommended by coating manufacturer. All concrete surfaces shall be vacuumed clean prior to coating application.
- I. Galvanized Surfaces:
 - 1. Degrease or solvent clean (SSPC SP-1) to remove oily residue.
 - 2. Power tool or hand tool clean or whip abrasive blast.
 - 3. Test surface for contaminants using copper sulfate solution.
 - 4. Apply metal pretreatment within 24 hours before coating galvanized surfaces that cannot be thoroughly abraded physically, such as bolts, nuts, or preformed channels.
- J. Ferrous Metal:
 - 1. Solvent clean.
 - 2. Remove loose rust, loose mill scale, and other foreign substances.
 - 3. Hand Tools: Comply with SSPC-SP 2.
 - 4. Power Tools: Comply with SSPC-SP 3.
 - 5. Blasting: Comply with SSPC-SP 7.
 - 6. Surfaces to Be Finished as Indicated in Coating Schedules
 - a. Remove tight rust to bare metal.
 - b. Hand Tools: Comply with SSPC-SP 2.
 - c. Power Tools: Comply with SSPC-SP 3.
 - d. Blasting: Comply with SSPC-SP 10.
 - e. Protect from corrosion until coated.

- K. Ductile iron pipe and fittings to be lined or coated:
1. Abrasive blast clean as specified in NAPF 500-03.
- L. Sherardized, aluminum, copper, and bronze surfaces:
1. Prepare as specified in coating manufacturer's instructions.
- M. Shop primed metal:
1. Certify that primers applied to metal surfaces in the shop are compatible with coatings to be applied over such primers in the field.
 2. Remove shop primer from metal to be submerged by abrasive blasting as specified in SSPC SP-10, unless greater degree of surface preparation is required by coating manufacturer's representative.
 3. Correct abraded, scratched, or otherwise damaged areas of prime coat by sanding or abrasive blasting to bare metal as specified in SSPC SP-2, SP-3, or SP-6, as directed by the Engineer.
 4. When entire shop priming fails or has weathered excessively (more than 25% of the item), or when recommended by coating manufacturer's representative, abrasive blast shop prime coat to remove entire coat and prepare surface as specified in SSPC SP-10.
 5. When incorrect prime coat is applied, remove incorrect prime coat by abrasive blasting as specified in SSPC SP-10.
 6. When prime coat not authorized by Engineer is applied, remove unauthorized prime coat by abrasive blasting as specified in SSPC SP-10.
 7. Shop applied bituminous paint or asphalt varnish: Abrasive blast clean shop applied bituminous paint or asphalt varnish from surfaces scheduled to receive non-bituminous coatings.
- N. Cadmium-plated, zinc-plated, or sherardized fasteners:
1. Abrasive blast in same manner as unprotected metal when used in assembly of equipment designated for abrasive blasting.
 2. Abrasive blast components to be attached to surfaces which cannot be abrasive blasted before components are attached.
 3. Grind sharp edges to approximately 1/16 in. radius before abrasive blast cleaning.
 4. Remove and grind smooth all excessive weld material and weld spatter before blast cleaning as specified in NACE SP0178.
- O. PVC and FRP Surfaces:
1. Prepare surfaces to be coated by light sanding (de-gloss) and wipe-down with clean cloths, or by solvent cleaning.
- P. Mechanical And Electrical Equipment Preparation:
1. Identify equipment, ducting, piping, and conduit as specified in:
 - a. Section 22 05 53 – Mechanical Identification.
 - b. Section 26 05 53 – Identification for Electrical Systems.
 2. Remove grilles, covers, and access panels for mechanical and electrical system from location and coat separately.
 3. Prepare and finish coat-primed equipment with color selected by the Engineer.
 4. Prepare and prime and coat insulated and bare pipes, conduits, boxes, insulated and bare ducts, hangers, brackets, collars, and supports, except where items are covered with prefinished coating.
 5. Replace identification markings on mechanical or electrical equipment when coated over or spattered.
 6. Prepare and coat interior surfaces of air ducts, convector and baseboard heating cabinets that are visible through grilles and louvers with 1 coat of flat black paint, to limit of sight line.
 7. Prepare and coat dampers exposed immediately behind louvers, grilles, convector, and baseboard cabinets to match face panels.

8. Prepare and coat exposed conduit and electrical equipment occurring in finished areas with color and texture to match adjacent surfaces.
9. Prepare and coat both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.
10. Color code equipment, piping, conduit, and exposed ductwork and apply color banding and identification, such as flow arrows, naming and numbering, as specified in Contract Documents.

3.4 APPLICATION

A. General

1. Apply primer to each surface, unless specifically not required by coating manufacturer.
2. Apply coatings as specified in manufacturer's instructions.
3. Coat metal unless specified otherwise:
4. Aboveground piping to be coated shall be empty of contents during application of coatings.
5. Verify metal surface preparation immediately before applying coating as specified in SSPC SP COM.
6. Allow surfaces to dry, except where coating manufacturer requires surface wetting before coating.
7. Wash coat and prime sherardized, aluminum, copper, and bronze surfaces, or prime with manufacturer's recommended special primer.
8. Prime shop primed metal surfaces. Spot prime exposed metal of shop primed surfaces before applying primer over entire surface.
9. Multiple coats:
10. Apply minimum number of specified coats.
11. Apply additional coats when necessary to achieve specified thicknesses.
12. Apply coats to thicknesses specified, especially at edges and corners.
13. When multiple coats of same material are specified, tint prime coat and intermediate coats with suitable pigment to distinguish each coat.
14. Lightly sand and dust surfaces to receive high gloss finishes, unless instructed otherwise by coating manufacturer.
15. Dust coatings between coats.
16. Coat surfaces without drops, overspray, dry spray, runs, ridges, waves, holidays, laps, or brush marks.
17. Remove spatter and droppings after completion of coating.
18. Apply coating by brush, roller, trowel, or spray, unless method of application is required by coating manufacturer's instructions or these Specifications.
19. Plural component application: Drums shall be premixed each day. All gauges shall be working order prior to the start of application. Ratio checks shall be completed prior to each application. A spray sample shall be sprayed on plastic sheeting to ensure set time is complete prior to each application. Hardness testing shall be performed after each application.
20. Spray application:
 - a. Stripe coat edges, welds, nuts, bolts, difficult to reach areas by brush before beginning spray application, as necessary, to ensure specified coating thickness along edges.
 - b. When using spray application, apply coating to thickness not greater than that recommended in coating manufacturer's instructions for spray application.
 - c. Use airless spray method, unless air spray method is required by coating manufacturer's instruction or these Specifications.
 - d. Conduct spray coating under controlled conditions. Protect adjacent construction and property from coating mist, fumes, or overspray.
21. Drying and recoating:

- a. Provide fans, heating devices, or other means recommended by coating manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats and within curing time following application of last coat.
 - b. For submerged service the Contractor shall provide a letter to the Engineer that the lining system is fully cured and ready to be placed into service.
 - c. Limit drying time to that required by these Specifications or coating manufacturer's instructions.
 - d. Do not allow excessive drying time or exposure which may impair bond between coats.
 - e. Recoat epoxies within time limits recommended by coating manufacturer.
 - f. When time limits are exceeded, abrasive blast clean and de-gloss clean prior to applying another coat.
 - g. When limitation on time between abrasive blasting and coating cannot be met before attachment of components to surfaces which cannot be abrasive blasted, coat components before attachment.
 - h. Ensure primer and intermediate coats of coating are unscarred and completely integral at time of application of each succeeding coat.
 - i. Touch up suction spots between coats and apply additional coats where required to produce finished surface of solid, even color, free of defects.
 - j. Leave no holidays.
 - k. Sand and feather into a smooth transition and recoat and recoat scratched, contaminated, or otherwise damaged coating surfaces so damages are invisible to naked eye.
22. Concrete:
- a. Apply first coat (primer) only when surface temperature of concrete is decreasing in order to eliminate effects of off-gassing on coating.
 - b. Prior to priming, patch with masonry filler to produce smooth surface.
23. Wood:
- a. Prior to priming patch with filler to produce smooth, even surface. Wood Items to Receive Transparent Finish:
 - 1) Remove dust and grit, sealing residue, seal knots, pitch streaks, and sappy sections as indicated by coating manufacturer.
 - 2) Fill nail holes and cracks with matching tinted filler.
- B. ALKALI RESISTANT BITUMASTIC**
- 1. Preparation:
 - a. Prepare surfaces as specified in general preparation requirements.
 - 2. Application:
 - a. Apply as specified in general application requirements.
 - b. Apply at least 2 coats, 8 mils – 14 mils dry film thickness each.
- C. HIGH SOLIDS EPOXY SYSTEM**
- 1. Preparation:
 - a. Prepare surfaces as specified in general preparation requirements.
 - b. Abrasive blast ferrous metal surfaces to be submerged at jobsite as specified in SSPC SP-5 prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces as specified in SSPC SP-10.
 - c. For existing ferrous metal surfaces submerged at jobsite, prepare the surface in accordance with SSPC-SP 1, followed by SSPC-SP 2 to include scuff sanding the existing coated surface prior to overcoating.
 - d. Abrasive blast non-submerged ferrous metal surfaces at jobsite as specified in SSPC SP-10, prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces as specified in SSPC SP 6.
 - e. Abrasive blast clean ductile iron surfaces at jobsite as specified in SSPC SP-7.
 - 2. Application:
 - a. Apply coatings as specified in general application requirements.

- b. Apply minimum 2-coat system with minimum total dry film thickness (DFT) of 12 mils.
- c. Recoat or apply succeeding epoxy coats within time limits recommended by manufacturer. Prepare surfaces for recoating as specified in manufacturer's instructions.
- d. Coat metal to be submerged before installation when necessary, to obtain acceptable finish, and to prevent damage to other surfaces.
- e. Coat entire surface of support brackets, stem guides, pipe clips, fasteners, and other metal devices bolted to concrete.
- f. Coat surface of items to be exposed and adjacent 1 in. to be concealed when embedded in concrete or masonry.

D. HIGH SOLIDS EPOXY AND POLYURETHANE COATING SYSTEM

1. Preparation:
 - a. Prepare surfaces as specified in general preparation requirements.
 - b. Prepare concrete surfaces as specified in general preparation requirements.
 - c. Touch up shop primed steel and miscellaneous iron.
 - d. Abrasive blast ferrous metal surfaces at jobsite prior to coating. Abrasive blast clean rust and discoloration from surfaces.
 - e. Degrease or solvent clean, whip abrasive blast, power tool, or hand tool clean galvanized metal surfaces.
 - f. Lightly sand (de-gloss) fiberglass and poly vinyl chloride (PVC) pipe to be coated and wipe clean with dry cloths, or solvent clean as specified in coating manufacturer's instructions.
 - g. Abrasive blast clean ductile iron surfaces.
2. Application:
 - a. Apply coatings as specified in general application requirements.
 - b. Apply 3 coat system consisting of:
 - 1) Primer: 4 mils – 5 mils dry film thickness high solids epoxy.
 - 2) Intermediate coat: 4 mils – 5 mils dry film thickness high solids epoxy.
 - 3) Topcoat: 2.5 mils – 3.5 mils dry film thickness aliphatic or aliphatic-acrylic polyurethane topcoat.
 - c. Recoat or apply succeeding epoxy coats within 30 days or within time limits recommended by manufacturer, whichever is shorter. Prepare surfaces for recoating as specified in manufacturer's instructions.

E. EPOXY NOVOLAC SYSTEM

1. Preparation:
 - a. Prepare surfaces as specified in general preparation requirements.
 - b. Prepare concrete to obtain clean, open pore with exposed aggregate as specified in manufacturer's instructions.
 - c. Prepare ferrous metal surfaces as specified in SSPC SP-5, with coating manufacturer's recommended anchor pattern.
 - d. Complete application of prime coat within 6 hours of abrasive blast cleaning. When cleaned surfaces rust or discolor, abrasive blast surfaces as specified in SSPC SP-5.
 - e. When handling steel, wear gloves to prevent hand printing.
 - f. Adjust pH of concrete to within 7 pH – 11 pH before applying prime coat.
2. Application:
 - a. Apply coatings as specified in general application requirements and as specified in manufacturer's instructions.
 - b. Continue to monitor dew point. Dew point shall remain 5 degrees above ambient temperature for a minimum of 8 hours after application of coating.

F. CONCRETE FLOOR COATINGS

1. Preparation:

- a. Prepare surfaces as specified in general application requirements and as specified in coating manufacturer's instructions.
- 2. Application:
 - a. Apply primer if required by coating manufacturer.
 - b. Apply 1 or more coats as recommended by coating manufacturer to receive a minimum total dry film thickness of 25 mils, color as selected by Owner.
- 3. Final topcoat shall include nonskid surface, applied as specified in coating manufacturer's instructions.

G. WATERBORNE ACRYLIC EMULSION

- 1. Preparation:
 - a. Remove all oil, grease, dirt, and other foreign material by Solvent Cleaning as specified in SSPC SP-1.
 - b. Lightly sand all surfaces and wipe thoroughly with clean cotton cloths before applying coating.
- 2. Application:
 - a. Apply 2 or more coats to obtain a minimum dry film thickness (DFT) of 5.0 mils.

3.5 FIELD QUALITY CONTROL

- A. Section 01 75 00 – Startup Testing and Training: Requirements for testing, adjusting, and balancing.
- B. Each coat will be inspected. Strip and remove defective coats, prepare surfaces and recoat. When approved, apply next coat.
- C. Control and check dry film thicknesses and integrity of coatings.
- D. Measure dry film thickness with calibrated thickness gauge.
- E. Dry film thicknesses on ferrous-based substrates may be checked with Elcometer Type 1 Magnetic Pull-Off Gage or Positector 6000.
- F. Verify coat integrity with low-voltage sponge or high-voltage spark holiday detector, as specified in SP0188 06. Allow Engineer to use detector for additional checking.
- G. Check wet film thickness before coal tar epoxy coating cures on concrete or nonferrous metal substrates.
- H. Arrange for services of coating manufacturer's field representative to provide periodic field consultation and inspection services to ensure proper surface preparation of facilities and items to be coated, and to ensure proper application and curing:
 - 1. Notify Engineer 24 hours in advance of each visit by coating manufacturer's representative.
 - 2. Provide Engineer with a written report by coating manufacturer's representative within 48 hours following each visit.

3.6 CLEANING

- A. Section 01 77 00 – Closeout Procedures: Requirements for cleaning.
- B. Collect waste material that may constitute fire hazard, place in closed metal containers, and remove daily from Site.
- C. Clean surfaces immediately of overspray, splatter, and excess material.

- D. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.7 PROTECTION

- A. Section 01 77 00 – Closeout Procedures: Requirements for protecting finished Work.
- B. Protect adjacent surfaces and materials not receiving coating from overspray.
- C. Mask when necessary to provide adequate protection and repair damage.

3.8 SCHEDULE OF ITEMS NOT REQUIRING COATING

- A. General: Unless specified otherwise, the items do not require coating:
 - 1. Items that have received final coat at factory and not listed to receive coating in field.
 - 2. Aluminum, brass, bronze, copper, plastic (except PVC pipe), rubber, stainless steel, chrome, Everdur, or lead.
 - 3. Buried or encased piping or conduit.
 - 4. Exterior concrete.
 - 5. Galvanized steel wall framing, galvanized roof decking, galvanized electrical conduits, galvanized pipe trays, galvanized cable trays, and other galvanized items:
 - a. Areas on galvanized items or parts where galvanizing has been damaged during handling or construction shall be repaired:
 - 1) Clean damaged areas by SSPC SP-1, SP-2, SP-3, or SP-7 as required.
 - 2) Apply 2 coats of a Galvanizing Zinc Compound as specified in manufacturer's instructions.
 - 6. Grease fittings.
 - 7. Fiberglass ducting or tanks in concealed locations.
 - 8. Steel to be encased in concrete or masonry.

3.9 SCHEDULE OF SURFACES TO BE COATED

- A. See attached schedule for a list of items to be coated. Schedule may not list all items that require a coating – coat unlisted surfaces with same coating system as similar listed surfaces. Color coat all piping as specified in Section 40 23 39 – Process Piping.

END OF SECTION

SECTION 09 96 00.1 – HIGH PERFORMANCE COATING SYSTEMS SCHEDULE

SURFACES TO BE COATED	COATING SYSTEM	FIELD/FACTORY	NOTES
Ductile Iron Piping including Fittings, Valves, Couplings, Wall Pipes, Sleeves, and related items			
Submerged in Potable or Non-Potable Water	1	Factory Primed/Field Finished	Clarifier South submerged piping
Submerged in Domestic Sewage	2	Factory Primed/Field Finished	
Submerged in Domestic Sewage (Existing)	22	Field Coated	
Exposed – Highly Corrosive	3	Factory Primed/Field Finished	
Exposed – Mildly Corrosive	4	Factory Primed/Field Finished	Interior exposed piping in Sludge Pump Station. Exterior exposed piping at Static Mixer, Splitter Box, Aerial Decant, and Sludge Pump Station.
PVC Piping, PVC surfaces, and FRP without an integral UV resistant gel coating			
Exterior Exposed	14	Factory Primed/Field Finished	
Structural Steel and related metals			
Submerged in Potable or Non-Potable Water	1	Factory Primed/Field Finished	Submerged metals in Clarifier South (other than 316 SST)
Submerged in Domestic Sewage	2	Factory Primed/Field Finished	
Exposed – Highly Corrosive	3	Factory Primed/Field Finished	
Exposed – Mildly Corrosive	4	Factory Primed/Field Finished	
Buried	5	Factory Primed/Field Finished	

SURFACES TO BE COATED	COATING SYSTEM	FIELD/FACILITY	NOTES
Aluminum Surfaces including Grating, Handrails, Checker Plate, Stairs, and related items			
Aluminum grating in contact with dissimilar metals (other than stainless steel), or in contact with masonry, grout, or concrete	11	Factory Primed/Field Finished	Splitter Box, Sludge Pump Station, and Clarifier South
Aluminum checker plate	12	Factory Primed/Field Finished	
Handrail Bases	15	Factory Primed/Field Finished	Splitter Box and Clarifier South
Aluminum in contact with concrete	15	Factory Primed/Field Finished	Splitter Box and Clarifier South
Stair Connections to Concrete	15	Factory Primed/Field Finished	Splitter Box and Clarifier South
Mechanical Equipment			
Slide Gates - Gate Guides	2	Factory Primed/Field Finished	Splitter Box
Slide Gates - Sliding Metal	13	Factory Primed/Field Finished	Splitter Box
Clarifier Mechanisms	Submerged - 1 Exposed - 4	Factory Primed/Field Finished	Clarifier South
Sludge Pumps	Exposed - 4	Factory Primed/Field Finished	Sludge Pump Station
Static Mixer and Flow Meter	Exposed - 4	Factory Primed/Field Finished	Splitter Box (Upstream)
Concrete			
Open Structures holding water in primary treatment, biological treatment, or solids treatment processes - Two (2) feet below the water surface and above including top of walkways	19	Field Coated	Splitter Box and Clarifier South