Section 09905

REPAINTING AND REPAIR OF EXISTING WATER FACILITIES

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the repairs to the protective coatings of existing water plant equipment, impacted during construction activities. For new coatings, refer to Section 09902 – "Painting and Protective Coating."

B. This Section describes the repainting of existing facilities, including the following tasks as applicable to the project (See "ATTACHMENT B" for areas to be repainted and repairs to be made):

1. Remove paint, prepare surface, recoat and disinfect the interior and exterior of a ground storage tank (GST).

2. Remove paint, prepare surface, recoat and disinfect the interior and exterior of a hydropneumatic tank (HPT).

3. For GSTs and HPTs, replace all manway gaskets; sand and paint all bolts and nuts for manways (replace as necessary) and supports

4. Pressure wash all concrete supports for equipment and piping

5. Remove paint, prepare surface and recoat exterior of all aboveground yard piping, including valves, fittings, metal pipe supports and appurtenances

6. For exterior piping: replace missing pipe straps; tighten all bolts that are loose on pipe straps; and repair/replace insulation peeling or damaged on the chemical injection and sample piping near the surface water and ground water line and chemical buildings.

7. Pressure wash and clean exterior of existing buildings, and clean interior walls of existing buildings.

8. Remove paint, prepare surface and recoat doors, metal louvers and windows of buildings.

9. Remove paint, prepare surface, and recoat interior and exterior walls of existing buildings.

10. Remove paint, prepare surface and recoat the exterior of existing pieces of equipment and appurtenances, including all associated piping, valves, and fittings.

11. Site Restoration, including restoring land surface and grass to as good or better

condition than existed prior to Work, clean-up project site and hydro-mulch seed all areas disturbed as a result of construction.

12. Replace all identification markers and signs on equipment and tanks after painting and repairs are completed.

13. Repairs damage to the coatings on a GST caused by construction activities.

14. Identify all known repairs that need to be made at the site.

15. Identify all suspected repairs that need to be made at the site.

C. Do not paint surfaces of stainless steel, aluminum, bronze, copper, PVC and rubber. Paint galvanized steel surfaces only if currently painted. Do not paint electrical junction boxes, electrical conduits, natural gas piping, louvers, bollards, walkway grating, gaskets, and pump concrete pads.

D. Do not paint tank or piping when they are full of water. Contractor is to coordinate with the Operator to drain the tank and piping as empty as applicable.

E. If the Contractor deems lead tests provided by the Owner are insufficient, Contractor shall perform sampling and analysis to confirm there are no detrimental levels of lead within the paint at no additional cost prior to commencing Work. If detrimental levels of lead are detected, the Project Manager is to be notified immediately and the Contractor shall stop Work.

F. The Contractor shall furnish all labor, material and equipment of any kind required to perform surface preparation, paint removal and/or painting on the project as hereinafter set forth. The Contractor shall provide materials and labor to deliver the Work. Painting shall be performed at such times and in such places as the Contractor and Project Manager may agree upon in order that dust-free and neat Work is obtained. All painting shall be done in strict accordance with the recommendations of the manufacturer and shall be performed in a manner satisfactory to the Project Manager.

G. Cleaning, paint removal and surface preparation methods vary for each item and are discussed in Paragraph 3.02.

1.02 MEASUREMENT AND PAYMENT

A. No separate payment for Work performed under this Section. Include cost of same in Contract price bid for Work of which this is a component part.

B. The Owner reserves the right to accept or reject any of the individual base bid items prior to issuing the Notice to Proceed. Rejected base bid items shall not be included in the Scope of Work and the respective line item amount shall be subtracted from the grand total.

C. Contractor shall include the cost of repainting piping associated with each tank within the respective bid item for each tank. Associated piping is considered to be piping attached to the tank, extending from the tank to immediately below ground.

D. If the Contractor deems lead tests provided by the Owner are insufficient, Contractor shall perform sampling and analysis to confirm there are no detrimental levels of lead within the paint at no additional cost prior to commencing Work. If detrimental levels of lead are detected, the Project Manager is to be notified immediately and the Contractor shall stop Work.

1.03 REFERENCES

This specification references the following publications in their current editions. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

A. Any conflicts between specifications related to the Work, coating manufacturer's data and these referenced specifications shall be presented in writing to the Project Manager for resolution prior to beginning Work.

B. ASTM D4940: Standard Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blast Cleaning Abrasives

C. AWWA D102: Coating Steel Water Storage Tanks

D. AWWA C652: Disinfection of Water Storage Facilities

E. NACE SP0178: Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service

F. NSF/ANSI 61: Drinking Water Systems Components – Health Effects

G. SSPC AB 1: Mineral and Slag Abrasives

H. SSPC SP 1: Standards for Surface Preparation Specification No. 1 - Solvent Cleaning

I. SSPC SP 2: Standards for Surface Preparation Specification No. 2 - Hand Tool Cleaning

J. SSPC SP 3: Standards for Surface Preparation Specification No. 3 - Power Tool Cleaning

K. SSPC SP 5/NACE No. 1: Standards for Surface Preparation Specification No. 5 - White Metal Blast Cleaning

L. SSPC SP 6/NACE No. 3: Standards for Surface Preparation Specification No. 6 - Commercial Blast Cleaning

M. SSPC SP 7/NACE No. 4: Standards for Surface Preparation Specification No. 7 - Brush-off Blast Cleaning

N. SSPC SP 10/NACE No. 2: Standards for Surface Preparation Specification No. 10 – Near-White Blast Cleaning

O. SSPC SP 11: Standards for Surface Preparation Specification No. 11 – Power-Tool Cleaning to Bare Metal

P. SSPC SP 13: Standards for Surface Preparation Specification No. 13 - Surface Preparation of Concrete

Q. SSPC Painting Manual: Good Painting Practice - SSPC Painting Manual, Volume 1 and Volume 2

R. SSPC VIS 1: Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

S. SSPC VIS 3: Guide and Reference Photographs for Steel Surfaces Prepared by Power- and Hand-Toll Cleaning

T. TCEQ 30 TAC 290.38-47: Public Drinking Water; Subchapter D: Rules and Regulations for Public Water Systems

U. TCEQ 30 TAC 101.211: General Air Quality Rules; Subchapter F: Emissions Events and Scheduled Maintenance, Startup, and Shutdown Activities; Division 2: Maintenance, Startup, and Shutdown Activities - Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements

V. TCEQ 30 TAC 111.131-139: Control of Air Pollution From Visible Emissions and Particulate Matter - Subchapter A: Visible Emissions and Particulate Matter Division 3: Abrasive Blasting of Water Storage Tanks Performed by Portable Operations

W. In addition to the above references, State, Local and Federal codes which address the handling, storage, application and disposal of abrasives, protective coatings and coating related materials are applicable.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01330 – "Submittal Procedures:"

B. Painting Schedule:

Submit list indicating major items to be painted, surface preparation, paint manufacturer, product designation, dry mil thickness, and details of holiday detection for submerged surfaces. Submit a plan for protecting existing devices and facilities prior to starting Work.

C. Panels:

1. If requested by the Owner, submit panels containing samples of proposed paints and coatings. Include three displays of each kind and color of paint used. Panel to be representative of material to be coated.

2. Mark panels to indicate respective types of surfaces to which several kinds and colors of paint, stain, and coating are applied.

D. Samples:

If requested by the Owner, submit 1/4 pint of each batch number of each kind of paint or stain proposed for use. Do not deliver materials to site until representative samples (if requested) have been approved.

E. For all sealers and protective coatings, furnish Project Manager with manufacturers technical data sheets and application procedures.

F. Submit certification of coating manufacturer that primer, pigments, sealants, and coatings incorporated into Work contain no lead.

G. Submit letter certifying coatings and caulk to be applied to interiors of piping and equipment, included as Work under this Section, are approved by the National Sanitation Foundation (NSF) and are listed in the latest volume of the NSF/ANSI 61.

H. Submit certification from manufacturer or supplier of abrasive blast media that media contain less than 1 percent free silica.

I. Submit evidence of notification of the appropriate office of the Texas Commission on Environmental Quality (TCEQ) prior to abrasive blast cleaning. TCEQ notification to be in accordance with requirements of TCEQ 30 TAC 101.211.

J. Coordinate Scope of Work with Texas Commission on Environmental Quality (TCEQ). Submit a copy of TCEQ Contractor Permit or certificate stating that no TCEQ Permit was required.

1.05 RELATED REQUIREMENTS

A. Section 01110 - "Summary of Work"

B. Section 01330 – “Submittal Procedures”

1.06 QUALITY ASSURANCE

A. Manufacturer:

All paints, sealers, and coatings to be manufactured by those firms listed in Paragraph 3.11 and "ATTACHMENT A." Products of equal quality by other manufacturers will be considered, subject to review of written submittal to the Project Manager within 15 days of Contract award that includes product data and a detailed paint and coating schedule. No request for substitution will be considered which decreases the film

thickness and/or the number of coats to be applied, or which offers a change from the generic type of coating specified. Request for substitution shall contain the following:

1. Full name of each product

2. Descriptive literature

3. Directions for use

4. Generic type

5. Non volatile content by volume

B. Bidders desiring to use paints other than those specified shall submit their proposal based on the specified materials, together with the information noted above, and indicate the sum which will be added to or deducted from the base bid, should the alternate materials be acceptable.

C. Workmanship:

1. Furnish workers who perform quality work and who are experienced and knowledgeable in the surface preparation and application of high-performance industrial coatings. Submit list of five similar projects which have been prepared and coated by the personnel to be employed for this project.

2. Provide manufacturer's written instructions on cleaning and coating prior to any surface preparation or coating.

3. Workmanship shall be of first class quality. Finish painting shall show no drips, runs, sags, holidays, or other defects. The finish coat shall be free from noticeable laps or brush marks.

4. Paint during application shall be continuously stirred and no thinner shall be added after the paint has been mixed. Paint shall be thoroughly worked into all joints, corners, and well brushed out over all surfaces.

5. Should any coat of paint be judged unsatisfactory, the Contractor shall remove the coat(s) as necessary and repaint at no additional cost to the Owner.

6. Paint application procedures shall conform to the standards of craftsmanship discussed in the SSPC Painting Manual.

D. To the maximum extent possible, all coatings should be supplied from one Manufacturer. Unless otherwise specified, coating materials for a specific surface or piece of equipment shall be from a single Manufacturer.

E. All coatings provided for use on this project in the field or from equipment suppliers shall be in compliance with local, state, and federal government laws, regulations and ordinances related to items such as lead, chromate, carcinogens and volatile organic

compounds. All coatings in potable water service to meet NSF/ANSI 61 standards for potable water service, and must be certified by an organization accredited by ANSI.

F. The Contractor shall provide applicable Material Safety Data Sheets (MSDS) for all materials used in accordance with SARA Title III, Employee-Right- To-Know information as required by all Federal and State Statutes.

G. Surface preparation and application standards shall comply with the requirements of the SSPC Painting Manual (including Commentary sections and Appendices), NACE International, AWWA D102, the printed instructions of the coating manufacturer, and these specification sections. The Project Manager and/or Engineer shall be consulted regarding any situations not covered by these reference standards or this Section. Where the foregoing standards, recommendations, and specification sections are conflicting, said conflicts shall be brought to the attention of the Project Manager. Published manufacturer's recommendations shall be adhered to unless changed in writing by the home office of the manufacturer.

H. Application of the coating on the interior of GSTs with the preferred one-step coating method must be accomplished with the proper equipment and personnel well trained and experienced in application of this type of coating. Personnel must be able to show at least three years experience in use of the equipment and application of these types of coatings.

I. Specification Sections describe details of complete coating system application. Contractor is responsible for all details necessary to properly apply a complete coating system.

J. To reduce problems associated with areas that are hard to access during painting, especially in the interior of GSTs and HPTs, Sika Flex flexible sealant is to be applied to all overlaps, gaps between the roof and rafters, roof and joints, between joints and rafters, and any other voids. All voids or gaps shall be completely filled following proper application techniques and drying times. Once completed, the area shall be smoothed out and ready for application of coatings.

K. Painting and Cleaning:

1. Interior field cleaning and painting to be performed in the presence of the Owner's designated representative.

2. Contractor responsible for providing the Project Manager with surface preparation and painting schedule prior to commencing Work. Give a minimum of 72 hour notice before beginning said Work.

3. Surface preparation, paint application, and paint curing procedures to be in accordance with paint manufacturer's written instructions.

L. Quality Control, i.e., all testing and inspection is to be performed by and shall be the responsibility of the Contractor, and shall be in accordance with the procedures stated

and referenced herein. Quality assurance, i.e., confirmation of all tests and inspections, shall be by the Project Manager, who shall require or conduct additional tests or inspections as may be deemed necessary to obtain the level of performance required by this specification.

M. A pre-painting conference shall be held at the job site prior to the start of application of any chemical resistant concrete coatings. The coating manufacturer and coating, applicator shall attend the conference in addition to the Contractor, Project Manager, and Engineer. The pre-painting conference will not be scheduled until all applicable coating submittals have been returned to the Contractor with no objections noted.

N. Correction of Work:

1. Correct the Work for a period of one year if it becomes unserviceable or objectionable in appearance, as a result of being defective or nonconforming.

2. Defects shall include, but not be limited to the following:

a. Discoloring noticeably by yellowing, streaking, blooming, changing color or darkening

b. Mildewing

c. Peeling, cracking, blistering, alligatoring, or releasing from the substrate

d. Chalking

e. Changing sheen

f. Softening or becoming tacky

1.07 SYSTEM DESCRIPTION (NOT USED)

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver to site in original sealed containers with manufacturer's label attached.

B. Materials to be stored on site in location approved by the Project Manager.

C. Materials to be protected from weather, sunlight, and low temperatures.

D. All paints shall be properly prepared by the Manufacturer and delivered to the site for field painting in the original unbroken containers with Manufacturer's label plainly printed thereon. Containers, which are broken, opened, water-marked and/or contain caked, lumpy or otherwise damaged materials are unacceptable and shall immediately be removed from the work site.

E. The Contractor shall exercise every precaution in the storing of paints, solvents, cleaning fluids, rags, and similar materials, as to eliminate the risk of spontaneous combustion or other hazardous conditions. Portable fire extinguishing equipment shall be provided in a convenient location for emergency access. All painting materials stored on the job site shall be stored in a location outside of the Work area. The Contractor shall take all safety precautions in accordance with AWWA D102, NFPA Bulletin No. 101 and all federal, state, and local regulations.

F. Storage areas to be kept clean and free of fire hazard. At the end of each work day, oil rags, waste paper, abrasive blast cleaning material and other fire hazards to be removed and disposed of by the Contractor in accordance with applicable regulations.

1.09 - 1.13 (NOT USED)

PART 2 PRODUCTS

2.01 MANUFACTURER(S)

Acceptable paint manufacturers are listed in “ATTACHMENT A,” Table 2 of this specification. Products of equal quality by other manufacturers will be considered, subject to review of written submittal that includes product data, application and curing recommendations, and painting schedule if submitted for consideration prior to the advertised bid opening date for this project. Coatings for the interior of the tanks must be NSF/ANSI 61approved.

2.02 MATERIALS AND/OR EQUIPMENT

A. Paragraph 3.11 and "ATTACHMENT A" in this Section includes the paint, protective coatings, and sealers for this project. Furnish all such special materials required for the manufacturer's coating systems whether or not included in this section

B. The combination of coating and thinner shall not exceed 3.5 pounds per gallon of volatile organic compound.

C. All primers, protective coatings, sealants, and pigments used for this project shall contain no lead.

D. Color:

Paint coatings shall match existing coating colors. Colors to be approved by the Owner. Contractor shall submit a current chart of the manufacturer’s available colors to the Project Manager and receive approval prior to the start of coating and painting operations. Contractor shall submit a list of items to be painted and color charts for each type of surface.

E. Abrasive Blast Materials

1. Mineral and slag abrasive materials shall conform to the requirements of SSPC AB 1. Abrasives are to be Class A, less than 1% crystalline silica. The

conductivity of the abrasive (indicative of water-soluble contaminants) shall not exceed 500 microsiemen (microhms) when tested in accordance with ASTM D4940. Abrasives for all surfaces will be tested.

2. The Contractor shall provide to the Project Manager qualifications and conformance testing performed and documented in accordance with prior to using the abrasive materials.

3. The abrasive shall also be of a grit size to produce the profile specified by the paint manufacturer for the coating system being applied.

4. Abrasive shall be properly stored and shall be free from contaminants.

5. No abrasives may be recycled for use again on this project because of the possibility of chloride contamination.

6. All abrasives must be delivered to the jobsite in moisture-proof bags or airtight bulk containers. Bags and/or containers shall be clearly labeled with the manufacturer's name and address and the content.

2.03 - 2.04 (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

Some dimensional data may be provided in the Plans or in exhibits attached to Section 01110 - "Summary of Work." The data provided is information of record based on the original design drawings. Information of record is provided for Contractor's use. Said data is not guaranteed and its use in no way relieves the Contractor of any responsibility for losses due to inaccuracies.

3.02 PREPARATION

A. Methods

1. Removal of Oil and Grease:

Remove oil and grease with a solvent approved by coating manufacturer, or by steam combined with detergent (in accordance with SSPC-SP 1). Use of gasoline, kerosene, naphtha, or carbon tetrachloride not permitted.

2. Degree of Cleanliness and Surface Profile:

a. All surfaces shall be abrasive blasted to the degree specified for a given area. The profile thus obtained may be verified with replica tape such as Tes-Tex Coarse or Extra Coarse Press-O-Film Tape.

b. The standard of cleanliness for the surface preparation shall be evaluated with the use of: SSPC VIS 1; Swedish Pictorial Standards; or Visual Standards in SSPC SP 5/NACE No. 1, SSPC SP 6/NACE No. 3, SSPC SP 7/NACE No. 4 and SSPC SP 10/NACE No. 2.

c. All dust and abrasive shall be removed from freshly blasted surfaces by brushing, or blowing with clean dry air, paying special attention to corners and joints of connecting members prior to coating.

3. Abrasive Blast Cleaning:

a. Blasting shall progress in such a manner that the area cleaned shall not exceed the area that can be coated in the same day. Blasting shall not be performed if the surface may become wet before coating commences or when the surfaces are less than 5ºF above the dew point, determined as outlined elsewhere in these Specification Sections.

b. Only where abrasive blast cleaning is not possible, and subject to approval of the Project Manager, power scrapers, wire brushes, or other grinding or chipping tools be permitted.

c. Contractor shall be responsible for taking all necessary precautions to protect adjacent plant facilities and all adjacent properties from abrasive blast debris (abrasive and removed paint), as described in Paragraph 3.09 of this Section.

4. Surfaces which have been cleaned, but which have started to show signs of rust or dirt are to be cleaned again prior to coating at no additional cost.

5. If surfaces to be coated cannot be put in proper condition for coating by customary cleaning and abrasive blasting operations, notify the Project Manager in writing prior to coating application.

6. Metal and Weld Preparation:

a. All surface defects such as welding and torch-cut slag, welding flux, and spatter, etc., shall be removed by the Contractor by grinding.

b. All rough welds shall be dressed as per NACE SP0178 and all sharp edges shall be radiused 1/8th inch minimum.

c. Pits deeper than 1/8th inch shall be filled by welding.

7. Concrete Surfaces

a. Prior to painting, surfaces to be free of all latent matter, burrs, and fins, using one or more of the following methods as per SSPC SP 13.

(1) Remove oil and grease with detergent and thoroughly rinse with fresh water.

(2) Abrasive blasting may be used only if machinery or other equipment in vicinity of Work is adequately protected either by covering adjacent areas or by the use of self recovering blasting equipment. Also, avoid settling of dust or grit on freshly painted surfaces.

(3) Wash concrete surfaces per SSPC SP 13 requirements using mechanical, chemical, or thermal methods.

(4) Concrete surface shall be allowed to cure 28 days and shall be clean and dry.

8. Protection of Surfaces:

a. Cleaning and painting shall be performed in such a manner that detrimental amounts of dust or the contaminants do not fall on wet, newly-coated surfaces.

b. Surfaces not intended to be coated shall be suitably protected from the effects of cleaning and coating operations. Water Plant instruments, gauges, and controls shall also be sufficiently protected from damage. Contractor to submit a plan for protecting devices prior to starting Work. Protection plan is subject to the Project Manager's approval.

c. The surface to be coated shall have the specified surface preparation at the time of application of the coating. If the surface is degraded or contaminated subsequent to surface preparation and prior to coating, the surface shall be restored before coating application as directed by the Project Manager.

d. Valves shall not be painted shut

e. Do not paint over equipment identification plates

B. Preparation of Interior and Exterior Surfaces

1. Surfaces to be Cleaned and Coated:

a. All interior steel and exterior surfaces of GSTs, including, but not limited to access ladders, steel hatches, weirs, all piping and appurtenances, and all threads, bolts, nuts, pins, brackets, seams, corners, etc, but excluding galvanized surfaces, shall be cleaned and coated.

b. All interior and exterior steel surfaces of HPTs, including, but not limited to, access ladders, steel hatches, all associated piping valves and

appurtenances, and all threads, bolts, nuts, pins, brackets, seams, corners, etc., but excluding galvanized surfaces, shall be cleaned and coated.

c. All exterior surfaces of equipment, associated piping, valves, fittings, and accessories, including, but not limited to, all threads, bolts, nuts, pins, brackets, seams, corners, etc., but excluding galvanized surfaces, shall be cleaned and coated.

d. All interior and exterior surfaces of the doors, windows, and louvers on existing buildings, interior and exterior walls of the buildings, excluding galvanized surfaces, shall be cleaned and coated. Do not paint items previously not painted.

e. Exterior surface of all above ground yard piping, including, but not limited to, all associated valves, fittings and appurtenances, and all threads, bolts, nuts, pins, brackets, seams, corners, etc., but excluding galvanized surfaces, shall be cleaned and coated.

2. Cleaning:

a. All interior surfaces of GSTs are to be cleaned and degreased prior to abrasive blasting as per SSPC-SP 1. All interior surfaces of a GST to be abrasive blasted to SSPC SP 10/NACE No. 2 with a 2.0 – 3.0 mil angular profile.

b. All exterior surfaces of GSTs and HPTs, including yard piping, valves, fittings to be abrasive blasted in accordance with SSPC SP 6/NACE No. 3, obtaining a 1.5 – 2.5 mil angular anchor profile.

c. All interior surfaces of HPTs are to be abrasive blasted in accordance with SSPC SP 10/NACE No. 2.

d. All exterior surfaces of GSTs and, HPTs, including yard piping, valves, and fittings to be abrasive blasted in accordance with SSPC SP 6/NACE No. 3, obtaining a 1.5 – 2.5 mil angular anchor profile.

e. All exterior surfaces of equipment including all valves and fittings to be abrasive blasted in accordance with SSPC SP 6/NACE No. 3.

f. All interior and exterior surfaces of doors, louvers, and windows are to be abrasive blasted in accordance with SSPC SP 6/NACE No. 3 obtaining a 1.5 – 2.5 mil angular profile.

g. All exterior surfaces of above ground yard piping, valves, and fittings to be abrasive blasted in accordance with SSPC SP 6/NACE No. 3, obtaining a 1.5 – 2.5 mil angular anchor profile.

h. Standard of cleanliness for the surface preparation shall be evaluated as described in Paragraph 3.02.A.2 and elsewhere in this Section.

i. Remove all dust and abrasive from the freshly blasted surfaces as described elsewhere in this Section.

3. Priming and Spot Priming:

a. Prime and spot prime blast-cleaned surfaces not later than during the same day and before the forming of rust on the surfaces.

b. Primer and spot prime paint to be in accordance with the Paint System Schedule provided elsewhere in this Section.

c. Special attention shall be given to lapped joints, bolt heads and nuts, threads, corners, member intersections, and other deviations from smooth surfaces. These areas shall be primed by brush with 20 percent thinned material, prior to the complete priming.

4. Intermediate Coat:

a. Interior and exterior surfaces shall be given at least one intermediate coat of paint.

b. The thickness and color of the intermediate coat shall be in accordance with the "Paint Material and Manufacturer Schedule" provided elsewhere in this Section.

5. Finish Coat:

Interior and exterior surfaces shall then be given final coat(s) in accordance with the “Paint Material and Manufacturer Schedule” provided elsewhere in this Section.

6. Protection of Existing Equipment:

Contractor is to protect all existing equipment during construction. Any damage to the existing equipment shall be repaired to the original condition at Contractor’s own expense. Contractor to provide protection cover for the control panels and booster pump motors during construction. No foreign material shall be placed on top of the control panels. Do not stand or lay any tools or equipment on the top of control panels. The control panels shall not be used for support of any construction equipment, including, but not limited to, construction ladder.

C. When repairing damage to a GST caused as a result of installation of supports, surface water piping or other construction activities; surface preparation shall be performed in accordance with the following scenarios:

1. When it is determined that the existing interior coating of the GST is an epoxy liner requiring touch-up:

    a. Remove all visible oil, grease, soil, dirt and other soluble contaminants in accordance with SSPC SP 1.

    b. Square off the exposed substrate surface and the adjacent surface of the intact coating system for about 6-12 inches. All interior surfaces to be coated shall be prepared per Near White Blast Cleaned to remove all existing paint, rust, dirt, mill scale and foreign matter by the recommended methods outlined in SSPC SP 10/NACE No. 2.

    c. Adjacent areas extending a minimum of 3” from the edge of the bare steel into the existing coating shall be prepared per SSPC SP 7/NACE No. 4.

    d. For surface conditions "D" and "G" as per SSPC VIS 3, every effort should be made to completely clean pitted surfaces.

2. When the existing interior coating of the GST is an epoxy liner requiring touch-up but abrasive blast cleaning is not feasible and may result in damage to the existing liner:

    a. Remove all visible oil, grease, soil, dirt and other soluble contaminants in accordance with SSPC SP 1.

    b. Square off the exposed substrate surface and the adjacent surface of the intact coating system for about 6-12 inches. All interior surfaces to be coated shall be prepared per SSPC SP 11 utilizing a rotary blasting tool such as the Monti-Bristle Blaster to create an angular profile with a minimum surface profile of 1 mil.

    c. Adjacent areas extending a minimum of 3” from the bare steel to be coated shall be prepared per SSPC SP 2 or SSPC SP 3 to abrade the surface and create sufficient profile for adhesion of the epoxy.

    d. For surface conditions "D" and "G" as per SSPC VIS 3, every effort should be made to completely clean pitted surfaces.

3. When it is determined that the existing interior coating of the GST is a flexible lining system such as a polyurethane or a polyurea requiring touch-up:

    a. Remove all visible oil, grease, soil, dirt and other soluble contaminants in accordance with SSPC SP 1.

    b. Square off the exposed substrate surface and the adjacent surface of the intact coating system for about 6-12 inches. All interior surfaces to be coated shall be prepared per Near White Blast Cleaned to remove all

existing paint, rust, dirt, mill scale and foreign matter by the recommended methods outlined in SSPC SP 10/NACE No. 2.

c. Adjacent areas extending a minimum of 3" from the edge of the bare steel into the existing coating shall be prepared per SSPC SP 7/NACE No. 4. Solvent wipe the adjacent area with MEK immediately prior to application of the Sher-Flex S Repair Material.

d. For surface conditions "D" and "G" as per SSPC VIS 3, every effort should be made to completely clean pitted surfaces.

4. When the existing interior coating of the GST is a flexible lining system such as a polyurethane or a polyurea requiring touch-up but abrasive blast cleaning is not feasible and may result in damage to the existing liner:

a. Remove all visible oil, grease, soil, dirt and other soluble contaminants in accordance with SSPC SP 1.

b. Square off the exposed substrate surface and the adjacent surface of the intact coating system for about 6-12 inches. All interior surfaces to be coated shall be prepared per SSPC SP 11 utilizing a rotary blasting tool such as the Monti-Bristle Blaster to create an angular profile with a minimum surface profile of 1 mil.

c. Adjacent areas extending a minimum of 3" from the bare steel to be coated shall be prepared per SSPC SP 2 or SSPC SP 3 to abrade the surface and create sufficient profile for adhesion of the epoxy.

d. Solvent wipe the adjacent area with MEK immediately prior to application of the Sher-Flex S Repair Material.

3.03 ERECTION/INSTALLATION/APPLICATION AND/OR CONSTRUCTION

A. General:

1. Use one convenient location for storing and mixing of materials, and keep fire extinguisher available in this area as long as location is used for such purpose. Protect floors, and all other areas where Work is done, with suitable drop cloths, and remove oily rags and waste from building and legally dispose of in accordance with state and local regulations at close of each day's Work.

2. Mixing, thinning, and application to be in accordance with manufacturer's printed instructions.

3. On completion of operations, remove all spots, oil, and stain from all surfaces and leave entire project in clean condition as far as this work is concerned. Remove from premises all containers and debris resulting from this Work and legally dispose of in accordance with state and local regulations.

4. Follow Manufacturer's safety precautions.

B. Quality of Paint Applications:

1. All coatings shall be applied in accordance with manufacturer's recommendations and the specifications as outlined herein, using the best state-of-the-art techniques that will result in a finish containing uniformity and integrity, and a finish that is free of runs, sags, curtains, pinholes, orange peel, fish eyes, excessive overspray, or delaminations.

2. Any defects detrimental to the life or appearance of the coating shall be removed and repaired.

C. Thinners and Solvents:

Use only thinners and solvents specified in paint formulas of paint being used and mix in proportions recommended by paint manufacturer.

D. Weather:

1. No coating work to be done under unfavorable weather conditions unless the Work is under cover, well protected, and specific approval from the Project Manager is obtained.

2. No coating or paint to be applied when the surrounding air temperature or the temperature of the surface to be coated is below 50°F or less than 5°F above the dew point.

3. No coatings to be applied to wet or damp surfaces or in rain, snow, fog, or mist.

4. No coatings to be applied when it is expected that the ambient air temperature will fall below 50°F or less than 5°F above the dew point within 6 hours after application of coatings or paints.

5. No coating to be applied when the relative humidity is above 85 percent. Relative humidity and dew point to be measured by use of a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychometric Tables.

6. If the above conditions are prevalent, blasting, coating, or painting operations to be delayed until weather conditions are favorable.

7. If there is not full-time resident inspection on the project, the Contractor shall have wet bulb-dry bulb measuring equipment and steel temperature measuring equipment on the job at all times. Readings shall be recorded at the beginning of each painting session and at no less than 4-hour intervals.

8. Wind velocities during the exterior painting shall be compatible for the quality application of the exterior coatings.

9. No paint shall be applied when it is expected that the surface temperature will drop below the Manufacturer's recommendation within 6 hours after the application of the paint.

E. Coverage:

1. As recommended by paint manufacturer and sufficient to obtain minimum mil thickness specified. Do not exceed maximum thickness specified by manufacturer, if applicable. After final coat is applied, check with non-destructive dry film thickness gauge.

2. The thickness of the primer and intermediate coating is essential to the systems integrity. The addition of mils in a succeeding coat to make up for thin preceding coat(s) will not be allowed except where required to hide the underlying color.

3. Dry mil thickness thicker than the specified allowable will also be considered to be not in compliance with the specifications if it will be detrimental to the appearance, or recoatability of the system, unless required for the uniformity of color.

F. Curing:

1. Each coat of paint shall be allowed to either dry or cure for the amount of time recommended by the coating manufacturer before successive coats of paint are applied.

2. All successive coats of paint shall be applied within the recoat threshold time as recommended by the coating Manufacturer.

3. Any change in this procedure shall be per the coating manufacturer recommendation and with written approval of the Project Manager and/ or Engineer.

G. Ventilation:

Adequate ventilation for proper curing shall be provided. It is essential that the solvent vapors released during and after application of coating be removed from tanks or enclosed places. During coating application in enclosed areas the capacity of ventilating fans shall be at least 300 cfm per gallon of coating applied per hour. Continuous forced ventilation at a rate of at least one complete air change per 4 hours shall be provided for during all phases of paint application and for at least 7 days after coating application is completed. Air shall be exhausted from the lowest portions of the tank with the top openings kept open and clear.

H. Applications:

Surfaces to be painted by brush, roller, or spray.

I. Brush Application:

1. Brushes:

Use first-quality hog hair or suitable synthetic bristle brushes. Use of horse hair bristle brushes not permitted. Keep brushes clean and free from accumulation of dried paint or dirt, and when brushes for oil or varnish base paints are not in use, keep them suspended in raw linseed oil bath. Clean brushes with proper solvent before reuse.

2. Application:

Apply in uniform thickness consistent with specified coverage and with sufficient cross-brushing to ensure filling of surface irregularities. Exercise particular care in painting around bolt heads and nuts and in corners and other restricted spaces.

J. Roller Application

1. Proper length nap rollers shall be used to ensure a smooth application free of runs, sags, roller marks, or air bubbles.

2. Use longer nap for rougher surfaces when specified on the Plans.

3. Phenolic core lambs wool type rollers shall be used when polyurethanes, epoxies, or other types of activated coatings are applied by roller.

4. Standard type rollers shall be used on water based and enamel coatings.

5. Rollers shall be of sufficient quality to leave finished surfaces free of lint, roller nap, runs, sags, and other imperfections.

6. Roller core and fiber to be of a material not subject to degradation by the solvents or coating used.

7. Roller not to exceed 18 inches in length.

K. Spray Application

1. Conventional Spray Application:

a. Air used for conventional spray guns to be clean and dry. Apply with adjustable air gun equipped with suitable water trap to remove moisture from compressed air, and with paint pot having air driven or mechanical agitator.

b. Paint application procedures to conform to the standards of craftsmanship discussed in the SSPC's Painting Manual. These techniques include, but are not limited to, multiple passes of the spray gun with each pass overlapped 50 percent and "Cross Hatching" successive coats of paint.

c. Supply with width of spray adequate to coat the applicable surface with suitable pressure for the particular type of paint being used.

d. Each coat of paint to be allowed to either dry or cure the amount of time recommended by the coating manufacturer before successive coats of paint are applied. All successive coats of paint to be applied within the recoat threshold time as recommended by the coating manufacturer.

e. Make frequent checks to ensure correct spreading rate and coating and apply without sags, runs, or "orange peel" effect. Correct all such imperfections. Take special care to cover edges, corners, and bolt heads, without bridging over of paint film.

f. All equipment to be used by the painting Contractor to be capable of and designed for the purposes for which the equipment is to be used. Safety devices and gauges on the spray equipment to be in proper working order and function equal to new equipment.

g. Contractor responsible for ensuring no overspray from spray application contacts other plant equipment and facilities or adjacent property as described in Paragraph 3.09 of this Section.

2. Airless Spray Application:

a. Equipment used for airless spray shall be designed for and capable of handling the volume and pressures necessary to ensure smooth and proper application.

b. Hoses shall be specifically designed for the viscosity of the material being sprayed and shall be of the nonstatic, self-grounding type.

c. Tips shall be properly sized to ensure complete atomization and the spray pattern shall be continuous and free of all fingering effects.

d. Spraying techniques that result in a uniform wet pattern shall be used and dry spraying should be avoided. Dry spray shall be removed prior to coating being applied.

e. Follow guidelines described in Paragraph 3.03 K.1 of this Section for proper application methods, standards, drying times, reapplication, and checks for correct spreading rates and coatings.

L. Special Requirements

1. Cast iron or ductile iron piping and valves for interior and exterior installation with a factory-applied Bitumastic or asphaltum varnish coating shall be cleaned by abrasive blasting so as to provide a NACE #3 finish on interior exposed installations and a NACE #2 finish on exterior exposed surfaces

2. Inspection:

   All phases of the Work are subject to inspection by the Project Manager to assure proper performance and compliance with the specifications. The Project Manager shall be advised of the proper time to inspect surface preparation, prime coat, and each succeeding coat. The Contractor shall apply additional coats only after the previous coat has been approved by the Project Manager.

3. The Contractor shall provide and have on the project site the following testing equipment. Equipment shall be calibrated and in proper working order. Equipment shall be used in accordance with the Manufacturers' instructions.

   a. One magnetic pull-off type, nondestructive paint film thickness gauge, such as a Mikrotest thickness gauge

   b. One set of certified coating thickness calibration standards produced by the U.S. Department of Commerce

   c. One "wet sponge," low-voltage, DC type holiday detector, such as the Tinker-Rasor Electrical holiday detector

   d. Sling Psychrometer: Relative humidity and dew point reading shall be taken at intervals throughout the day's work. Readings shall be taken at the start of the mornings work, mid day and afternoon. Should environmental conditions change, additional reading shall be taken to assure that coating are being applied under the conditions as outlined by the coatings Manufacturer.

   e. Surface Temperature Thermometer: Surface temperature shall be taken in areas where Work is being performed. Surface temperature shall be that as specified by the coatings Manufacturer.

   f. Replica tape & Micrometer: Tesex X-Coarse Replica Tape shall be employed to determine the surface profile of blasted surfaces. Surface profile shall be 2.0 – 3.0 mils.

4. Tests to be performed and approved by the Project Manager before equipment is put into operation.

5. All Work shall be warranted for a period of one year from date of acceptance of the project. The Project Manager will notify the Contractor at least 30 days prior to the anniversary date and shall establish a date for the inspection. Any

defects in the coating system shall be repaired by the Contractor at no additional cost to the Owner. Should a failure occur to 25 percent of the painted surface, either interior or exterior, the entire surface shall be cleaned and painted in accordance with these specifications.

M. Contractor to ensure that the impressed current cathodic protection system is turned off by operator. Cathodic protection to be turned off for a year after initial application.

3.04 PAINT REPAIRS

For repairs to existing coatings due to construction activities, and per the surface preparation information listed in Paragraph 3.02.C, the following coatings shall be used:

A. For Epoxy Coating Systems

1. Immediately following surface preparation and before rusting occurs, apply one coat of the following to all bare steel surfaces:

   a. Sherwin-Williams - Sher-Plate PW

   b. Tnemec - Series FC22 Epoxoline

   c. Or Approved Equal

2. This coating shall be applied at a dry film thickness of 16.0 to 50.0 mils.

3. If flash rust occurs prior to priming, the areas must be prepared again prior to the application of the above coating. The applicator shall extend the wet edge of the newly applied coating into the existing coating a minimum of 3-inch from the bare steel. The edge of the coating shall be feathered to create a smooth transition into the existing coating.

B. For Flexible Lining Systems

1. Immediately following surface preparation and before rusting occurs, apply one coat of the following to all bare steel surfaces:

   a. Sherwin-Williams - SherFlex S Polyurethane

   b. Or Approved Equal

2. This coating shall be applied at a dry film thickness of 30.0 to 60.0 mils.

If flash rust occurs prior to priming, the areas must be prepared again prior to the application of the above coating. The applicator shall extend the wet edge of the newly applied coating into the

existing coating a minimum of 3-inch from the bare steel. The edge of the coating shall be feathered to create a smooth transition into the existing coating.

3.05 - 3.06 (NOT USED)

3.07 CLEANING

A. Cleanliness

1. Clean up paint spillage, windblown spray, etc. with Ketone solvents.

2. Keep interior of tank and accessories clean and free from foreign matter.

3. Clean up abrasive blast debris daily.

4. Provide proper sanitary waste facilities.

5. Only healthy personnel may enter tank.

6. If necessary, Owner's physician will judge physical fitness of all persons entering tank.

B. Disinfection:

1. Clean, sweep, and wash down walls.

2. Remove foreign matter from tank.

3. Disinfect tanks using Chlorination Method 1 or Method 2 described in AWWA C652. Contractor is to select the method of chlorination to be used. Contractor is to comply with all applicable requirements of AWWA C652 and TCEQ 30 TAC 290.38-47 standards.

4. Fill tank with water, furnished by the Owner

5. Comply with the requirements of AWWA C652, Chlorination Method 1 or Method 2 for the disposal of disinfection water (Paragraphs 4.3.1.5 and 4.3.1.5.1).

6. Coordinate with the owner of the WRF for collection of water sample for bacteriological analysis. The owner, when notified by Contractor, will collect water samples. Three, consecutive, satisfactory water samples required. A satisfactory water sample is a sample analyzed and determined to meet State Department of Health criteria for bacterial analysis.

7. Repeat disinfection and water sampling procedures, if necessary, until three consecutive water samples meet State Department of Health criteria for bacterial analysis.

8. Water samples to meet State Department of Health criteria for bacterial analysis before tank will be accepted.

9. Satisfy EPA and other regulatory agency requirements for disposing of chlorinated water.

10. In addition to tank interior surfaces, tank overflow pipe and/or drain to also be disinfected.

3.08 DEMONSTRATION / TESTING AND INSPECTION

A. Quality control procedures and practices will be utilized to monitor all phases of surface preparation, application, and inspection throughout the project. Each phase of surface preparation and coating application to be inspected and approved in writing by the Owner's certified NACE Inspector.

B. Provide the proper safety equipment and necessary scaffolding or rigging and adequate illumination to perform a thorough inspection.

C. Contractor to furnish the following equipment for use by the Owner's Inspector or Representative.

1. One nondestructive paint film thickness gauge, such as Mikrotest thickness gauge.

2. One set of certified coating thickness calibration standards produced by the U.S. Department of Commerce.

3. One "wet sponge" type holiday detector, such as the Tinker-Rasor Model M1 Electrical holiday detector.

a. Tap water to be used as electrolyte for DFT≤ 10 mils.

b. Surfactant to be used as electrolyte for DFT ≥ 10 mils.

c. Check inside surfaces with "wet-sponge" low voltage detector after paint has cured at least five days.

d. Mark locations where holidays are detected and retest after repair work has been completed.

e. All areas on the interior of the GSTs will be checked, both above and below the water line.

4. Replica tape such as "Testex" tape coarse and extra coarse grades. Also provide a dial-type micrometer.

D. The Owner's Inspector or Representative to witness measurements and may elect, and shall be permitted, to perform additional measurements deemed necessary.

E. Dry film thickness tolerance 0.25 mil; measure each 100-square-foot section plus checks on all structural and miscellaneous interior members. In the interior of tanks, these measurements will be taken both above and below the water line.

F. After the final coat is applied, check with elecometer or Mikotest dry film thickness gauge. In the interior of ground storage and hydropneumatic tanks, all areas will be checked, both above and below the water line. Where there are extensive areas or spots with coatings thinner than specified, apply additional coats as necessary to provide required dry film thickness, and for exterior surfaces, consistent even color.

3.09 PROTECTION

A. Protection of Adjacent Property

1. Prior to the cleaning and coating of the exterior surface, the Contractor shall present a written plan to the Project Manager describing how paint and/or abrasive damage to automobiles and property will be handled, including a process for quick removal of the paint, and who will do the Work. This approval in no way will relieve the Contractor from the responsibility of settling claims for damage, but is intended as an avenue to expedite and minimize said claims.

2. Due to the proximity of the site to residences, emissions from abrasive blasting must be controlled using one of the methods given in TCEQ 30 TAC 111.131-139.

3. Shrouds or other means to be approved by the Project Manager, to be used to protect adjacent property and on site structures from damage associated with paint application.

B. Ground Protection:

1. Protect the ground from contact with cleaning blast debris. No blast debris from exterior cleaning activities shall be allowed to contact the ground at project location. Ground to include complete water plant project site.

2. Material(s) used for ground cover protection to support weight of tank cleaning blast debris, dry and wet, as well as personnel and equipment movement associated with the activities of this project.

3. Prevent storm water, contaminated with blast debris, from leaving area.

4. Contractor responsible for complete clean up of any areas contaminated by tank cleaning blast debris.

C. Protection of Water Plant Equipment

The Contractor shall protect all water plant equipment from damage that may result from his activities. The Contractor shall submit a protection plan to the Project

Manager for review prior to starting Work. The protection plan is subject to approval by the Project Manager and/or the Engineer and must include detailed descriptions of the Contractor's proposed plan for protecting sensitive equipment from abrasive blasting, pressure washing, and dust. Special care shall be given to electrical equipment and chlorination facilities.

3.10 SCHEDULES (REPAINTING OF EXISTING FACILITIES)

"ATTACHMENT A" to this Section defines "System Schedule" (Table 1), and "Material and Manufacturer Schedule" (Table 2).

ATTACHMENT A

PAINTING REQUIREMENTS

Table 1 - System Schedule

		Manufacturer and Material Reference (See Table No. 2)			
Type of Surface	**Type of Exposure**	**Primer**	**1st Coat**	**2nd Coat**	**3rd Coat**
Steel Tank (GSTs)	**On-Step Method** Interior Surface [1,2,3,4,5.6] (partial immersion services)		1A		
			2A		
			3A		
			4A		
			5A		
Steel Tank (GSTs, HPTs, Piping, Fittings and Valves)	Exterior Surface[6,8]	12A	12B	12C	
		13A	13B	13C	
		14A	14B	14C	
		15A	15B	15C	
		16A	16B	16C	
		17A	17B	17C	
		18A	18B	18C	
Steel Tank (GSTs [not using One-Step Method] and HPTs)	Interior Surface [1,2,3,4,5.6] (partial immersion services)	6A	6B	6C	
		7A	7B	7C	
		8A	8B	8C	
		9A	9B	9C	
		10A	10B	10C	
		11A	11B	11C	
Pumps, Water Wells, Auxiliary Engine, Emergency Generator, and all other above ground piping, fittings and valves, if not otherwise specified.	Exterior [6,8]	12A	12B	12C	
		13A	13B	13C	
		14A	14B	14C	
		15A	15B	15C	
		16A	16B	16C	
		17A	17B	17C	
		18A	18B	18C	

		Manufacturer and Material Reference (See Table No. 2)			
Type of Surface	**Type of Exposure**	**Primer**	**1st Coat**	**2nd Coat**	**3rd Coat**
Steel Doors	Interior [6, 8]	12A	12B	12C	
		13A	13B	13C	
		14A	14B	14C	
		15A	15B	15C	
		16A	16B	16C	
		17A	17B	17C	
		18A	18B	18C	
Cinder Block Building	Interior, Exterior [6, 8]	25A	25B	25C	
		26A	26B	26C	
		27A	27B	27C	
		28A	28B	28C	
		29A	29B	29C	
Fuel Tank	Exterior [6, 8]	30A	30B	30C	
		31A	31B	31C	
		32A	32B	32C	
		33A	33B	33C	
		34A	34B	34C	
Concrete Surface (Concrete Pipe Support, GST Concrete Base)	Exterior [6,10]		35B	35C	35D
			36B	36C	36D
			37B	37C	37D
			38B	38C	38D
			39B	39C	39D
			40B	40C	40D
Concrete Surface (Concrete Pipe Support, Booster Pump Concrete Pad)	Interior [6,11]		41B	41C	41D
			42B	42C	42D
			43B	43C	43D
			44B	44C	44D
			45B	45C	45D
			46B	46C	46D
			47B	47C	47D

		Manufacturer and Material Reference (See Table No. 2)			
Type of Surface	**Type of Exposure**	**Primer**	**1st Coat**	**2nd Coat**	**3rd Coat**
Auxiliary Engine Snubbers For surfaces exposed to high temperature	Exterior [2, 4]	20 (Two Coats)			

Notes:

(1) All interior surfaces to be coated including those not in regular contact with water.

(2) Water fill level is prone to fluctuation on a daily and hourly basis.

(3) Water in tank is chlorinated above normal drinking water levels.

(4) Interior surfaces shall include a preliminary coat 4.0 – 6.0 mil thickness for all seams, welds and bolts. The coating shall be same product as coating No 1 (1st coat).

(5) Coatings used must be in the latest publication of NSF/ANSI Standard 61.

(6) No request for substitution will be considered which decreases the film thickness and/or the number of coats to be applied, or which offers a change from the generic type of coating specified. Request for substitution shall contain the followings:

A. Full name of each product
B. Descriptive literature
C. Directions for use
D. Generic Type
E. Non Volatile Content by Volume

(7) The prime layer is only applied to the prepared spot areas.

(8) Exterior surfaces are those surfaces that are exposed to the atmosphere. These surfaces do NOT contact the water inside the tank.

(9) Contractors desiring to use paints other than those specified shall submit proposal based on the specified materials, together with the information noted above, and indicate the sum which will be added to or deducted from the base bid, should the alternate materials be acceptable. In no case will the request be considered unless received, in writing, 15 days following contract award.

(10) Concrete Surface exposed to weathering.

(11) Concrete Surface sheltered from weathering.

3.11 TABLE 2 - MATERIAL AND MANUFACTURER SCHEDULE

Reference No.	Material and Manufacturer	Color	Coat Thickness DFT[2]	Minimum Total System Mil Thickness[4]
1A	Carboline Reactamine 760	Note 1	25.0 - 30.0	25.0 - 30.0
2A	Induron Perma-Clean 100 Ceramic Epoxy	Note 1	25.0 - 30.0	
3A	IP Polibrid 705	Note 1	25.0 - 30.0	
4A	PPG Amerthane 490 NFS	Note 1	25.0 - 30.0	
5A	Sherwin-Williams Sher-Plate PW Epoxy	Note 1	25.0 - 30.0	
6A	Carboline Carboguard 61 series	White	4.0 - 6.0	
6B	Carboline Carboguard 61 series	Beige	4.0 - 6.0	
6C	Carboline Carboguard 61 series	White	4.0 - 6.0	12.0 - 18.0
7A	Induron PE-70 Primer	Tan	3.0 – 5.0	
7B	Induron PE-70 Int./Finish	Gray	4.0 – 6.0	
7C	Induron PE-70 Int./Finish	White	4.0 – 6.0	11.0 – 15.0
8A	IP Devoe BarRust 233H	White	5.0 – 6.0	
8B	IP Devoe BarRust 233H	Beige	5.0 – 6.0	
8C	IP Devoe BarRust 233H	White	5.0 – 6.0	15.0 – 18.0
9A	PPG Amerlock 2 Epoxy (NSF approved)	White	4.0 – 6.0	
9B	PPG Amerlock 2 Epoxy (NSF approved)	Off-White	4.0 –6.0	
9C	PPG Amerlock 2 Epoxy (NSF approved)	White	4.0 – 6.0	12.0 – 18.0
10A	Sherwin-Williams Macropoxy 646 PW	White	3.0 – 6.0	
10B	Sherwin-Williams Macropoxy 646 PW	Blue	4.0 – 6.0	
10C	Sherwin-Williams Macropoxy 646 PW	White	5.0 – 8.0	12.0 – 20.0
11A	Tnemec 20 POTA POX	White	3.0 - 5.0	
11B	Tnemec 20 POTA POX	Beige	4.0 - 5.0	
11C	Tnemec 20 POTA POX	White	4.0 - 5.0	11.0 - 15.0
12A	Carboline Carboguard 60 series	Note 1	4.0 - 6.0	
12B	Carboline Carboguard 60 series	Note 1	4.0 - 6.0	
12C	Carboline Carbothane 134HG	Note 1	4.0 - 6.0	12.0 - 18.0
13A	Induron PE-70 Primer	Note 1	4-6	
13B	Induron Induraguard Epoxy	Note 1	3-6	
13C	Induron Indurethane 6600 Plus	Note 1	2-3	9-15

Reference No.	Material and Manufacturer	Color	Coat Thickness DFT[2]	Minimum Total System Mil Thickness[4]
14A	IP Devoe BarRust 231	Note 1	4-8	
14B	IP Devoe BarRust 231	Note 1	3-6	
14C	IP Devoe DevThane 379	Note 1	2-4	9-18
15A	Pittsburgh Paint Amercoat 385 PA	Note 1	4-8	
15B	Pittsburgh Paint Amercoat 385	Note 1	3-6	
15C	Pittsburgh Paint Amercoat 450 H	Note 1	2-4	9-18
16A	PPG 97-946 Pitt-Guard All Weather Epoxy	Note 1	4-8	
16B	PPG 97-948 Pitt-Guard All Weather Epoxy	Note 1	3-6	
16C	PPG 95-8000 Series Pitthane Ultra	Note 1	2-4	9-18
17A	Sherwin-Williams Recoatable Epoxy Primer	Note 1	4-8	
17B	Sherwin-Williams Macropoxy 646 PW	Note 1	3-6	
17C	Sherwin-Williams Acrolon Ultra Polyurethane	Note 1	2-4	9-18
18A	Tnemec 20-1255	Note 1	4-8	
18B	Tnemec 73 ENDURA – SHIELD	Note 1	3-6	
18C	Tnemec Series 700-Color HydroFlon	Note 1	2-4	9-18
19B	Carboline Carbothane 134HG	Note 1	3-5	
19C	Carboline Carbothane 134HG	Note 1	3-5	6-10
20B	Induron Indurethane 6600 Plus	Note 1	2-3	
20C	Induron Indurethane 6600 Plus	Note 1	2-3	4-6
21B	IP Devoe DevThane 379	Note 1	3-5	
21C	IP Devoe DevThane 379	Note 1	3-5	6-10
22B	PPG Ameron Amercoat 450 H	Note 1	3-5	
22C	PPG Ameron Amercoat 450 H	Note 1	3-5	6-10
23B	PPG Pitthane Ultra Urethana 95-812 Series	Note 1	3-5	
23C	PPG Pitthane Ultra Urethana 95-812 Series	Note 1	3-5	6-10
24B	Sherwin-Williams Acrolon Ultra Polyurethane	Note 1	3-5	
24C	Sherwin-Williams Acrolon Ultra Polyurethane	Note 1	3-5	6-10

Reference No.	Material and Manufacturer	Color	Coat Thickness DFT[2]	Minimum Total System Mil Thickness[4]
25A	Carboline Carbocrylic 3358	Note 1	NA	
25B	Carboline Carbocrylic 3359	Note 1	3-6	
25C	Carboline Carbocrylic 3359	Note 1	3-6	6-12
26A	Induron AC 210 Acrylic Primer	Note 1	NA	
26B	Induron Aquanaut II	Note 1	2-4	
26C	Induron Aquanaut II	Note 1	2-4	4-8
27A	IP Devoe Bloxfil 4000	Note 1	N/A	
27B	IP Devoe DevFlex 4216	Note 1	3-6	6-12
27C	IP Devoe DevFlex 4216	Note 1	3-6	6-12
28A	PPG Ameron 16-90 Block Filler	Note 1	3-6	
28B	PPG Ameron Amercoat 220	Note 1	3-6	
28C	PPG Ameron Amercoat 220	Note 1	3-6	6-12
29A	Sherwin Williams Loxon Ext. Masonry Acrylic Primer A24W300	Note 1	NA	
29B	Sherwin Williams DTM Acrylic Coating B66-100	Note 1	3-6	
29C	Sherwin Williams DTM Acrylic Coating B66-100	Note 1	3-6	6-12
30A	Ameron Amercoat 385 PA	Note 1	Spot Prime	
30B	Ameron Amercoat 385	Note 1	4-10	
30C	Ameron Amercoat 450 H	Note 1	3-5	7-15
31A	Carboline Carboguard 60	Note 1	Spot Prime	
31B	Carboline Carboguard 60	Note 1	4-10	
31C	Carboline Carbothane 134HG	Note 1	3-5	7-15
32A	Induron P-14 Armorguard Primer	Note 1	Spot Prime	
32B	Induron P-14 Armorguard Primer	Note 1	4-6	
32C	Induron Indurethane 6600 Plus	Note 1	2-3	6-9
33A	IP Devoe BarRust 231	Note 1	Spot Prime	
33B	IP Devoe BarRust 231	Note 1	4-10	
33C	IP Devoe BarRust 379	Note 1	3-5	7-15
34A	Sherwin Williams Macropoxy 646 PW	Note 1	Spot Prime	

Reference No.	Material and Manufacturer	Color	Coat Thickness DFT[2]	Minimum Total System Mil Thickness[4]
34B	Sherwin Williams Macropoxy 646 PW	Note 1	4-10	
34C	Sherwin Williams Acrolon Ultra Polyurethane	Note 1	2-4	6-14
35B	Carboline 3352HB	Note 1	NA	3.0
35C	Carboline 3359	Note 1	1.5	
35D	Carboline 3359	Note 1	1.5	
36B	Induron AC 210 Acrylic Primer	Note 1	NA	4-6
36C	Induron Aquanaut II	Note 1	2-3	
36D	Induron Aquanaut II	Note 1	2-3	
37B	IP Devoe Bloxfil 4000	Note 1	NA	3.0
37C	IP Devoe DevFlex 4216	Note 1	1.5	
37D	IP Devoe DevFlex 4216	Note 1	1.5	
38B	PPG Ameron 16-90 Block Filler	Note 1	NA	3.0
38C	PPG Amerco at 220	Note 1	1.5	
38D	PPG Amerco at 220	Note 1	1.5	
39B	PPG Seal Grip Primer 17-21	Note 1	NA	3.0
39C	PPG Pitt-Tech Acrylic 90 Line	Note 1	1.5	
39D	PPG Pitt-Tech Acrylic 90 Line	Note 1	1.5	
40B	Sherwin-Williams Loxon Ext. Masonry Acrylic Primer A24W300	Note 1	NA	3.0
40C	Sherwin-Williams DTM Acrylic Coating B66-100 Series	Note 1	1.5	
40D	Sherwin-Williams DTM Acrylic Coating B66-100 Series	Note 1	1.5	
41B	Carboline Sanitile 100	Note 1	NA	3.0
41C	Carboline Carbocrylic 3359	Note 1	1.5	
41D	Carboline Carbocrylic 3359	Note 1	1.5	
42B	Carboline Flexxide Masonry Block Filler	Note 1	NA	3.0
42C	Carboline Carbocrylic 3359	Note 1	1.5	
42D	Carboline Carbocrylic 3359	Note 1	1.5	
43B	Induron AC220 Acrylic Block Filler	Note 1	NA	4-6

Reference No.	Material and Manufacturer	Color	Coat Thickness DFT[2]	Minimum Total System Mil Thickness[4]
43C	Induron Aquanaut II	Note 1	2-3	
43D	Induron Aquanaut II	Note 1	2-4	
44B	IP Devoe Bloxfil 400	Note 1	NA	
44C	IP Devoe DevFlex 4216	Note 1	1.5	3.0
44D	IP Devoe DevFlex 4216	Note 1	1.5	
45B	PPG Pitt-Glaze WB 16-90 Block Filler	Note 1	NA	
45C	PPG Amercoat 220	Note 1	1.5	3.0
45D	PPG Amercoat 220	Note 1	1.5	
46B	PPG Pitt-Glaze Block Filler 16-90	Note 1	NA	
46C	PPG Pitt-Tech Acrylic 90 Line	Note 1	1.5	3.0
46D	PPG Pitt-Tech Acrylic 90 Line	Note 1	1.5	
47B	Sherwin-Williams Heavy Duty Block Filler B42W46	Note 1	NA	
47C	Sherwin-Williams DTM Acrylic Coating B66-100 Series	Note 1	1.5	3.0
47D	Sherwin-Williams DTM Acrylic Coating B66-100 Series	Note 1	1.5	
48	Prime Coat and Finish Coat (Two Coats) Using Aluminum Silicone Resin: Use an aluminum silicone resin material suitable for a service temperature of up to 1000 degrees F. Coating shall comply with Federal Specification DOD-P-28 or per Manufacturer's Recommendation	Note 1	2.0-4.0	4.0 - 8.0

Notes:

(1) Color to be selected by the Owner.

(2) DFT is Dry Film Thickness.

(3) Maximum Volatile Organic Compound (VOC) allowed in any one coating shall be 3.5 pounds per gallon.

(4) For materials with reference No. 1-11 and reference No. 18-27, the Minimum Total System Mil Thickness is the sum of Primer Coat, 1st coat, and 2nd coat. For materials with reference No. 12-17, the Minimum Total System Mil Thickness is the sum of 1st coat and 2nd coat, not including the spot prime coat. For materials with reference No. 28-41, the Minimum Total System Mil Thickness is the sum of 2nd and 3rd coat, not including the 1st coat.

(5) Or manufacturer's standard, whichever is greater. Do not exceed manufacturer's maximum standard, if applicable.

ATTACHMENT B

[Design Engineer is to complete blanks per site requirements]

AREAS TO BE REPAINTED AND REPAIRS

END OF SECTION