Section 09902

PAINTING AND PROTECTIVE COATING

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the furnishing and application, as specified herein, of paint and protective coatings to all new surfaces, except steel water storage tanks, unless specifically excluded by notes shown on the Plans. Refer to Section 09905 – "Repainting and Repair of Existing Water Facilities" for paint and protective coatings of existing surfaces.

B. The Contractor shall furnish all labor, material and equipment of any kind required to perform surface preparation and 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 Engineer 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 Engineer.

C. Perform surface preparation, application and inspection of paint and protective coatings to all surfaces noted in “Attachment A”, and the Painting Schedules in the Plans and in other instructions.

D. Paint all new construction and any existing facilities as shown in the Plans or as designated by the Project Manager. Do not paint surfaces of stainless steel, aluminum, bronze, copper, nickel, Monel, rubber, plastic, chromium, or lead.

1.02 MEASUREMENT AND PAYMENT

No separate payment for Work performed under this Section. Include payment for this work in the lump sum base bid.

1.03 REFERENCES

A. 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.

B. ASTM D4442: Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood- Based Materials

C. ASTM D4444: Standard Test Method for Laboratory Standardization and Calibration of Hand-Held Moisture Meters

D. ASTM D4285: Standard Test Method for Indicating Oil or Water in Compressed Air

E. ASTM D4940: Standard Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blasting Abrasives

F. NFPA Bulletin No. 101

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

H. OSHA 29 CFR 1910.144: Safety Color Code for Marking Physical Hazards

I. SSPC AB 1: Mineral and Slag Abrasives

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

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

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

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

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

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

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

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

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

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

X. 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.

1.04 SUBMITTALS

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

A. 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.

B. 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.

C. 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.

D. For all sealers and protective coatings, furnish Engineer with Manufacturer's technical data sheets and application procedures.

E. Submit certification of Coating Manufacturer that primer, pigments, sealants, and coatings incorporated into work contain no lead.

F. 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.

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

H. 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.

I. 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.

J. Submit results of all soil and paint samples.

1.05 RELATED REQUIREMENTS

A. Section 01330 – "Submittal Procedures"

B. Section 09905 – "Repainting and Repair of Existing Water Facilities"

1.06 QUALITY ASSURANCE

Manufacturer:

A. All paints, sealers, and coatings to be manufactured by those firms listed in "ATTACHMENT B." Products of equal quality by other manufacturers will be considered, subject to review of written submittal to the Engineer 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. Nonvolatile 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 allowed by ”ATTACHMENT A” and “ATTACHMENT B,” all coatings should be 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, the printed instructions of the Coating Manufacturer, and these Specification Sections. The Project Manager 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. Painting and Cleaning

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

2. Contractor is responsible for providing the Owner with a 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.

I. 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 Engineer, who shall require or conduct additional tests or inspections as may be deemed necessary to obtain the level of performance required by this specification.

J. 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, Engineer, and Owner. The pre-painting conference will not be scheduled until all applicable coating submittals have been returned to the Contractor with no objections noted.

K. 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 Owner

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 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 Contractor in accordance with applicable regulations.

1.09 PROJECT SITE CONDITIONS

A. Surfaces receiving paint include:

1. Equipment, machinery, piping, conduit, and metal surfaces

2. Interior surfaces, as noted in room finish schedule

3. Concrete surfaces, including concrete blocks (when noted on Plans)

4. Threads on galvanized pipe and conduit

5. All cabinet and woodwork

6. Interior concrete surfaces of lift station wet wells

B. Do not paint surfaces of stainless steel, aluminum, bronze, copper, and lead.

C. Galvanized Steel Surfaces:

D. Paint only when required by Special Provisions to this Section or where included on finish schedule or shown elsewhere on Plans.

E. Existing Utilities, Structures and Properties:

F. It shall be the responsibility of the Contractor to locate and avoid damage to any and all existing water, gas, sewer, electric telephone, and other utilities, structures, or appurtenances. The Contractor shall repair or pay for all damages caused by his operations or his personnel to existing utilities, structures, appurtenances, or properties, either below ground or above ground and shall settle in full all damage suites which may arise as a result of his operations.

1.10 – 1.12 (NOT USED)

1.13 WARRANTY

All Painting and protective coatings shall have a one-year warranty unless otherwise stipulated by the Plans and/or Contract Documents.

PART 2 PRODUCTS

2.01 MANUFACTURER(S)

A. See “ATTACHMENT A” and “ATTACHMENT B” for manufacturers, types, surfaces by exposure to be painted, the paint system to use and minimum dry mil thickness.

B. Products of a manufacturer other than those named may be accepted if proof is submitted, prepared by an independent testing laboratory that the products, item by item, are the same generic type and equal to those specified in composition, durability, utility, coverage, and appearance for the intended use.

2.02 MATERIALS AND/OR EQUIPMENT

A. “ATTACHMENT A" and "ATTACHMENT B” in this Section include 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 Tables.

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. Painting and Color Coding:

1. Use colors and signs to identify all piping that are exposed to view in buildings or tunnels, above suspended ceilings, or exposed above grade, and all outdoor piping.

2. Identify each pipe by a color complying with the schedule of colors identified in Paragraphs 2.01.E and 2.01.F and by applied markers.

3. Coat pipes in the number of coats and type of material specified. Base coats for pipeline painting may be the same neutral color. Make each succeeding base coat a slightly different color. For the final coat, comply with the pipe identifying color schedule specified below.

E. Colors:

Colors are 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.

F. Safety Color Codes:

Follow OSHA 29 CFR 1910.144 for "Safety Color Codes for Marking Physical Hazards." The following general requirements are set forth as a guide.

1. Red:

Fire protection equipment, danger signs, and fire exit signs. Portable containers of flammable material to be red with yellow band or name of contents stenciled in yellow.

2. Orange:

Moving or rotating parts of equipment protected by guards, including shafts and couplings, pulleys, and sprockets. (Do not paint wearing surfaces.)

3. Yellow:

Caution signs and all physical hazards, including outside levers and weights on check valves, lower pulley blocks and hooks, sprockets and chains on valve operators, inside of openings adjacent to step or ladders, platforms provided for vertical ladders at transition levels, exposed unguarded edges of pits, platforms and walls subject to being struck, and any piping or equipment extending into normal operating areas.

4. Green:

To designate "Safety" and location of first aid equipment such as gas masks, first aid kits, and safety deluge showers.

5. Black and White:

To indicate areas that must remain clear, such as areas around first aid, fire fighting, and other emergency equipment.

G. Water Plant Piping Codes:

Color codes used in painting water plant piping to conform to TCEQ 30 TAC 290.38-47.

H. Pipe Identification Markers:

1. Identify all pipes with applied signs or markers at 15-foot centers, at both sides of penetrated walls or floors, adjacent to valves, at connected equipment, at branch fittings, and in congested pipe layouts.

a. Apply markers consisting of signs with legends as follows:

Outside Diameter of Pipe or Covering (Inches)	Length of Color Field (Inches)	Size of Letters (Inches)
3/4 to 1-1/4	8	1/2
1-1/2 to 2-3/8	8	3/4
2-1/2 to 5-7/8	12	1-1/4
6 to 7-7/8	12	1-1/4
8 to 10	24	2-1/2
Over 10	32	3-1/2

b. As pipe markers use semi-rigid outdoor grade acrylic plastic, Seton Name Plate Corp. "SetMark," or equal. Use Type SNA for outside diameters 3/4 through 5-7/8 inches and Type STR for 6-inch outside diameter or larger. For pipes or pipe covering less than 3/4-inch in diameter, use applied marker or brass identification tags 1-1/2-inches square with depressed letters 1/4-inch high, black-filled. Apply tightly to pipeline with metal or plastic straps.

I. 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 Engineer 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 / MANUFACTURER(S) (NOT USED)

3.02 PREPARATION

A. All surface preparation for shop and field application shall be in accordance with "ATTACHMENT A" and this Section. Substrate surface profile on all metal surfaces shall be as recommended by the Coating Manufacturer for the product used to insure maximum integrity of the applied system, and is to be determined by replica tape test. Examining substrate materials for moisture content, high alkali, smoothness, foreign materials, and dirt. Fill cracks between floors, walls, ceiling, and other structures except when sealant is called for by specifications herein or in other Sections.

B. All equipment and structures adjacent to or in the vicinity of the surface preparation and coating work area, i.e., motors, pumps, bearings, electrical enclosures, etc., shall be protected from damage by abrasive dust, overspray, etc. Any equipment damage by negligence of protection shall be repaired or replaced to the satisfaction of the Owner at the Contractor's expense.

C. All work areas and areas adjacent to work areas where abrasive blasting is conducted, e.g., walls, ceilings, floors, basins, etc., shall be thoroughly cleaned of all blast debris, dust, and foreign material to the satisfaction of the Engineer at the completion of the work. The Contractor shall divert storm water from the surface preparation area from entering the drainage system of the vault by pumping directly to the point of disposal.

D. Verify site conditions

E. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product Manufacturer.

F. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

G. Test shop applied primer for compatibility with subsequent cover materials.

H. Measure moisture content of surfaces using an electronic moisture meter per requirements of ASTM D4442 and ASTM D4444. Do not apply finishes unless moisture content of surfaces is below the following maximums or per Manufacturer's recommendations:

1. Plaster and Gypsum Wallboard: 12 percent.

2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

3. Interior Wood: 15 percent, measured in accordance with ASTM D4442 and ASTM D4444.

4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442 and ASTM D4444.

5. Starting work constitutes acceptance (on the Contractor's part) of conditions and substrates and full responsibilities for the quality and suitable for the finished work.

I. Concrete Surfaces:

1. Prior to painting, surfaces (including masonry and block) to be free of all laitance matter, burrs, and fins, using one or more of the following methods as per SSPC SP 13.

a. Dry abrasive blasting is acceptable when particle size is suitable to achieve the desired surface profile. Equivalent surface profile of 40-60-grit sandpaper is acceptable provided minimal substrate damage and machinery or other equipment in the vicinity of work is adequately protected.

b. 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.

c. Remove oil, grease and other deleterious contaminants with detergent, steam cleaning or other suitable means and thoroughly rinse with fresh water.

d. Burrs, fins and other deleterious irregularities not removed by initial surface preparation shall be stoned or ground smooth.

e. Wash concrete surfaces with 10 percent solution of muriatic acid, then wash clean and free of scale, mortar, dust, moisture, and other foreign matter.

f. Concrete surface shall be allowed to cure 28 days and shall be clean and dry

g. Remove debris by vacuuming

2. Curing compounds, if used, must be compatible with the coating specified. The Contractor shall provide documentation of compatibility from the Coating Manufacturer and/or removal procedures with test criteria to ensure cleanliness requirements. If curing compound is used, it must be removed prior to coating.

J. Metal Surfaces:

1. Clean metal surfaces by abrasive blasting in shop as required by "ATTACHMENT A" and leave clean, dry, and ready to receive prime coat. Provide moisture separators to effectively remove all oil and free moisture from air supply. Cleanliness of air shall be tested by impinging an abrasive-free air stream onto a white cloth for 1 minute. If oil or moisture is detected, the source of air shall be shut down and corrected.

2. All dust and abrasives shall be removed from surfaces by brushing or blowing with clean, dry air. All abrasive grit shall be removed from around and between joints of connecting members.

3. Removal of oil and grease:

Oil and grease shall be removed prior to blasting by solvent cleaning or steam cleaning in accordance with SSPC SP 1. Solvents are to be NSF/ANSI 61 approved for contact with potable water. Cleaned surfaces shall be tested with black light to verify oil and grease removal. After cleaning, the surfaces shall be kept free of all oil, grease, dirt and other contaminants.

4. Perform field abrasive blasting only when repainting existing metal surface or if required to correct unsatisfactorily cleaned and shop-primed metal and when approved by the Project Manager.

5. Provide moisture separators to effectively remove all oil and free moisture from air supply. Remove all dust and grit from surfaces by brushing or blowing with clean, dry air, and remove all grit around and between joints of connecting members. Air quality shall be checked each day in accordance with ASTM D4285.

6. Brushing, Scraping, Grinding, and Chipping:

In field work, if abrasive blasting is not possible, scrapers, wire brushes, and other suitable grinding or chipping tools may be used (in accordance with SSPC SP 2 or SSPC SP 3) for removal of existing paint coatings prior to repainting, or for cleaning, before applying second coats.

7. Subsequent to achieving the specified surface preparation and prior to coating application interior, wetted surfaces must be confirmed free from surface contaminants, visible and non-visible, to a level of less than 7 $\mu g/cm^2$ as sodium chloride. Surfaces will be tested by the Owner's laboratory for evidence of surface contaminants including soluble iron and salts such as chlorides. A minimum of one test for every 1,000 square feet of area will be performed. Contractor is to insure work area is dust free at the time of the test and that the surfaces to be tested are clean.

8. Galvanized surfaces to be re-galvanized shall be stripped cleaned by pickling in an acid base prior to regalvanizing. Contractor is responsible for straightening and realigning fabricated structures after regalvanizing.

9. Surface to be coated on same day as cleaned and before rust bloom occurs. 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 expense toOwner.

10. All surfaces shall be at least 5°F or higher above the dew point and remain this way when blasting, priming, or coating.

11. No paint shall be applied when it is expected that the surface temperature will drop below the Manufacturer's recommendation within 4 hours after the application of the paint.

12. Dew or moisture condensation should be anticipated, and if such condition are prevalent, painting shall be delayed until it is certain that the surface is dry; further, the days painting shall be completed well in advance of the probable time of day when moisture condensation will occur, in order to permit the film the required drying time prior to the formation of moisture.

K. Drywall

Spackle all scratches, nail holes, dents, and other abrasions. When dry, sand surfaces smooth and vacuum clean. Spot prime defects after repairs.

L. Wood Surfaces

1. Interior Wood Items Scheduled to Receive Paint Finish:

Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Filler nail holes and cracks after primer has dried; sand between coats.

2. Exterior Wood Scheduled to Receive Paint Finish:

   Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

M. General

1. Degree of Cleanliness and Surface Profile:

   a. All surfaces that are abrasive blasted shall be completed 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.

2. 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 Owner, will 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 Part 3.09 of this Section.

3. 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 expense to the Owner

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

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.

5. The application of each coating shall be within the limits of applicable ambient temperature, surface temperature, relative humidity and other conditions required to achieve proper adhesion and cure in accordance with the Manufacturer's published or written certified instructions.

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 those 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 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.

10. Minimum Application Temperature for Latex Paints: 45ºF for interiors; 50ºF for exterior; unless required otherwise by Manufacturer's instructions.

11. Minimum Application Temperature for Varnish Finishes: 65ºF for interior or exterior, unless required otherwise by Manufacturer's instructions.

12. Provide lighting level of 80-ft candles measured mid-height at substrate surface, unless required/recommended otherwise by Manufacturer's instructions.

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 / Drying Time:

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.

G. Brush Application

1. Brushes:

Use first-quality hog hair or suitable synthetic bristle brushes. Use of horsehair 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. Apply free of brush and roller marks, bubbles, runs, sags, holidays, and other irregularities. Exercise particular care in painting around bolt heads and nuts and in comers and other restricted spaces. The completed product shall be uniform in color, texture, and sheen. Apply with straight cut-in lines free of smears, splatters, runs over adjoining colors and material.

H. Conventional Spray Application:

1. 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.

2. Paint application procedures to conform to the standards of craftsmanship discussed in the SSPC's Painting Manual, Volume 1, Good Painting Practice. 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.

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

4. 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.

5. 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.

6. 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.

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

I. Airless Spray Application:

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

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

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

4. 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.

5. Follow guidelines described in Part 3.03.H of this Section for proper application methods, standards, drying times, reapplication, and checks for correct spreading rates and coatings.

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 onPlans.

3. Phenolic core lamb's 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. Metal Surfaces:

1. Shop prime metal surfaces, if required, prior to delivery to jobsite

2. After delivery and prior to installation, keep all coated metal surfaces clean and free from corrosion. Clean and touch up or repaint damaged areas with additional primer.

3. After erection or installation of metal work, clean and touch up all rust spots, all places where primer has been rubbed or scraped off, and all bolts and nuts. After previously applied paint has hardened, and when surfaces to receive succeeding coats of paint have been cleaned and dried, apply finish paint in accordance with Tables 2 and 3. Coating systems on surfaces in submerged service shall be allowed to cure prior to service for a period of time designated by the Coating Manufacturer.

4. Factory-Finished Equipment:

   After installation of factory-finished machinery and electrical equipment, check base coats carefully and touch up all damaged surface areas. Do not paint nameplates, serial number bases, chrome, or bronze trim. Clean off any excess paint that impairs convenient removal of covers on gauges, instrumentation, or other equipment fitted with doors or covers. For pumps to be installed into wet well, touch-up shall be done before pump column and bowl is installed into wet well.

5. Factory-Primed Equipment:

Delay final field coating to Manufacturer's primed equipment until equipment has been installed and is in proper working order in accordance with the applicable Item.

6. As a general rule, erection, assembly and testing shall be complete before coating application begins. Surfaces which may become inaccessible after erection or assembly shall be primed and finished prior to erection or assembly.

L. Provide necessary equipment to minimize the amount of dust, paint, abrasives, and other matter from settling on or damaging adjoining property. If excessive dust, paint, or abrasives are found which are affecting adjoining property and/or structures, as determined by the Project Manager, the Contractor shall be required to utilize shrouds, drop tubes, or other means to confine a minimum of 95 percent of the abrasive, paint, and other material to the associated work area.

M. To facilitate adequate observation of all surfaces, provide scaffolding/rigging and adequate illumination required to perform dry film thickness readings and holiday test inspections as required by these specifications and the referenced standards. Provide personnel to move the scaffolding, lighting, or rigging at the instructions of the Engineer.

N. Provide proper safety equipment to the Engineer for observation.

O. 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.

P. 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:

a. All phases of the work are subject to inspection by the Engineer to assure proper performance and compliance with the specifications. The Engineer 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 Engineer or Project Manager.

b. The Contractor shall have on the project site the following testing equipment. Equipment shall be in calibration and proper working order. Equipment shall be used in accordance with the Manufacturers' instructions or as directed by the Engineer.

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

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

(3) One "wet sponge," low-voltage, DC type holiday detector, such as the Tinker-Rasor Electrical holiday detector

(4) Sling Psychrometer:

3. 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.

4. 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.

5. Replica tape & Micrometer:

Tesex X-Course Replica Tape shall be employed to determine the surface profile of blasted surfaces. Surface profile shall be 2.0 – 3.0 mils.

6. Tests to be performed and approved by the Engineer before equipment is put into operation.

7. All work shall be warranted for a period of one year from date of acceptance of the project. The Owner will notify the Contractor at least 30 days prior to the anniversary sate 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 theOwner. 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.

3.04 – 3.06 (NOT USED)

3.07 CLEANING

A. All cloths and waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day. Upon completion of the work, all staging, scaffolding, and containers shall be removed from the site and /or destroyed in an approved and legal manner. Paint spots, oil, or stains upon adjacent surfaces and floors shall be completely removed, and the entire job left clean and acceptable to the Engineer.

3.08 DEMONSTRATION/TESTING AND INSPECTION

A. Quality control procedures and practices shall 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 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 $\leq$ 10 mils.

b. Surfactant to be used as electrolyte for DFT $\geq$ 10 mils.

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

D. 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.

F. After final coat is applied, check with dry film thickness gauge. Where there are extensive areas or spots with coating thinner than specified, apply additional coats as necessary to provide required dry film thickness and consistent even color.

3.09 PROTECTION

A. Protection of Adjacent Property

1. Prior to the cleaning and coating of an exterior surface, the Contractor shall present a written plan to the Owner 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 Owner, 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 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 Plant Equipment

The Contractor shall protect all plant equipment from damage that may result from his activities. The Contractor shall submit a protection plan to the Engineer for review prior to starting work. The protection plan is subject to approval by 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 (NOT USED)

END OF SECTION

ATTACHMENT A
SYSTEM SCHEDULE

			Attachment B - Material Reference				
Type of Surface	**Exposure**	**Cleaning**	**Primer**	**1st Coat**	**2nd Coat**	**3rd Coat**	**Minimum Total Mil Thickness**
Clay or Brick Masonry	Exterior[1]	Manufacturer's Specification	--	1	--	--	N/A
Concrete Block Buildings	Exterior	Manufacturer's Specification	--	2	4	4	3.0 (Finish Coat)
Concrete Block Walls	Interior[2]	Paragraph 3.02 I	--	3	4	4	3.0 (Finish Coat)
Concrete Walls and Ceilings	Interior	Paragraph 3.02 I	--	3	4	4	3.0 (Finish Coat)
Drywall	Interior	Paragraph 3.02 K	--	19	20	20	4.8
Wood	Interior and Exterior	Manufacturer's Specification	10	11	11	--	4.5
Exposed End of Cut of Reinforcing Bars	Exterior	SSPC SP 7/NACE No. 4	--	12	--	--	8.0
Metal Doors, Frames and Windows	Interior and Exterior	SSPC SP 7/NACE No. 4 1.0 Mils Surface Profile	18	9	9	--	4.0
Structural and Miscellaneous Steel, Control Panels	Exterior	SSPC SP 10/NACE No. 2 1.0-2.0 Mils Surface Profile	18	17	9	--	7.0
Structural and Miscellaneous Steel, Control Panels	Interior	SSPC SP 6/NACE No. 3 1.0-2.0 Mils Surface Profile	18	17	--	--	5.5
Ferrous Piping and Valves	Interior[2] Exterior[1]	SSPC SP 10/NACE No. 2 SSPC SP 6/NACE No. 3 1.0-2.0 Mils Surface Profile	6 6	17 18	-- 9	-- --	4.5 6.0

ATTACHMENT A - (Cont'd)

			Attachment B - Material Reference				Minimum
Type of Surface	**Exposure**	**Cleaning**	**Primer**	**1st Coat**	**2nd Coat**	**3rd Coat**	**Total Mil Thickness**
Ferrous Valves and Bolting On Cast Iron Pipe & Buried Steel Piping	Buried	--		14	14		32.0
Factory Finished Machinery, Electrical, and Motors [3]	Interior and Exterior	Hand Clean	5[4]	8[5]	8[5]	--	4.5
Galvanized Steel	Interior	Solvent Cleaning	15	17	--	--	2.9
Galvanized Steel and Galvanized Pipe Conduit Threads	Exterior	Solvent Cleaning	15	18	9	--	4.4
Wastewater Treatment Plant Equipment, Piping	Submerged[6]	SSPC SP 10/NACE No. 2	6	13	13	--	22.0
Potable Water Treatment Plant Equipment, Piping [7]	Submerged	SSPC SP 10/NACE No. 2 1.0-2.0 Mils Surface Profile	7	12	--	--	8.0
Wastewater Wet-Well [8]	Interior Surfaces	Paragraph 3.02 A.	6	13	13	--	22.0

[1] Concrete surface or piping above ground exposed to weathering.
[2] Concrete surface or piping above ground sheltered from weathering.
[3] Use coating system per equipment item when specified.
[4] Optional: Use Manufacturer's standard primer if compatible with specified finish coats.
[5] Optional: Use Manufacturer's standard finish coat.
[6] Piping that is submerged in a fluid.
[7] Coatings used must be in the latest publication of National Sanitation Foundation (NSF) NSF/ANSI 61.
[8] Unless otherwise noted on the Plans.

Note: NACE - Reference to National Association of Corrosion Engineers.

ATTACHMENT B
PAINT, SEALER, AND COATING SCHEDULE

Symbol	Min. Dry Mils Per Coat [1]	Service	Generic Type	Brand and Manufacturer
1.	NA	Primary Sealer	Chemical Penetrant	Aqua-Gard - CreteGard Corp. Loxon 40% Silane Water Repellant – SW Alkali Resistant Primer 4-603 PPG
2.	NA	Weather-proof Primary Sealer	Acrylic Emulsion	16-90 Block Filler - Ameron Carboline Sanitile 120 - Carboline AC 210 Acrylic Primer - Induron Interlac 895 - International Seal Grip Primer 17-21 - PPG Loxon Ext. Masonry Acrylic Primer A24W300 - SW
3.	NA	Primary Sealer	Vinyl-Acrylic Emulsion With Epoxy Esters	16-90 Block Filler - Ameron Carboline Sanitile100 Block Filler - Carboline AC 220 Acrylic Block Filler - Induron Interlac 895-International Heavy Duty Block Filler 16-90 - PPG Heavy Duty Block Filler B42W46 - SW
4.	1.5	Finish	Acrylic Emulsion	Amercoat 220 - Ameron Carboline 3359 - Carboline Aquanaut II - Induron Intercryl 530- International Pitt-Tech Plus Acrylic 90 Line – PPG DTM Acrylic Coating B66-100 Series - SW
5.	1.5	Metal Primer	Alkyd	Amercoat 5105-Ameron Carboline Carbocoat 115 - Carboline P-30 Universal Primer - Induron Interlac 260 - International Metal Primer 6-208/212 - PPG Kem Kremik Universal Primer B50HZ1 - SW
6.	4.0-8.0	Metal Primer or Concrete Surfaces	Polyamid Cured Epoxy Resin	Amerco 385P - Ameron Carboline Carboguard 61- Carboline PE-70 Epoxy - Induron Interseal 670HS- International Amerlock 2/400 - PPG Dura-Plate 235 - SW
7. [2 & 3]	2.0-4.0	Metal Primer	Polyamide-Cured Epoxy Resin	Amerlock 2 - Ameron Carboline Carboguard 891HS - Carboline PE-70 Epoxy - Induron Interseal 670 HS - International Amerlock 2/400 NSF/61 - PPG Epoxide HS B62W940 - SW

ATTACHMENT B - (Cont'd)

Symbol	Min. Dry Mils Per Coat (1)	Service	Generic Type	Brand and Manufacturer
8.	1.5	Finish Coats	Alkyd, Straight Long-oil	Amercoat 5450 Alkyd Gloss - Ameron Carboline Carbocoat 45 - Carboline Armorlux 2500 - Induron Interlac 665- International Industrial Enamel 6-282 series - PPG Industrial enamel HS B542-400 Series - SW
9.	2.0-5.0	Finish Coat	Aliphatic Urethane	Amerco 450H - Ameron Carboline 134 HS - Carboline Indurethane 6600 Plus - Induron Interthane 990 HS- International Pitthane Ultra 95-812 series - PPG Acrolon Ultra B65-820 Series - SW
10.	1.5	Wood	Alkyd Primer	Amercoat 5450 - Ameron Carboline Sanitile 120 - Carboline AC 301 Exterior Wood Primer - Induron Interlac 260 - International Speed-Hide Ext Alkyd 6-809 series - PPG Industrial Enamel HS - SW
11.	1.5	Finish	Alkyd, Straight Long-oil	Amercoat 5450 - Ameron Carboline Carbocoat 45 - Carboline Armorlux 2500 - Induron Interlac 665 - International Amercoat 5450 Alkyd Gloss - PPG Indusrial Enamel HS - SW
12. (2 & 3)	4.0-12.0	Submerged Steel, Iron, or Concrete Surface	Polyamide-Cured Epoxy Resin	Amerlock 2 - Ameron Carboline Carboguard 891HS - Carboline PE-70 Epoxy - Induron Interseal 670HS - International Amercoat 240 Amine Cure - PPG Macropoxy 646 PW - SW
13.	16	Submerged Steel, Iron or Concrete Surface	Coal-tar Epoxy Two Component	Amercoat 78 HB - Ameron Carboline Bitumastic 300M - Carboline Ruff Stuff 2100 Coal Tar Epoxy - Induron Interzone 954 - International Amercoat 78HB Coat Tar Epoxy - PPG Targuard - SW
14.	16	Buried Steel Or Iron	Tar-base Pitch	Amerlastic 280 - Ameron Carboline Bitumastic 300M - Carboline Ruff Stuff 2100 - Induron Interzone 954 - International Amercoat 78HB Coat Tar Epoxy - PPG

ATTACHMENT B - (Cont'd)

Symbol	Min. Dry Mils Per Coat [1]	Service	Generic Type	Brand and Manufacturer
15.	0.4	Galvanized Metal Primer	Vinyl Wash Primer	Galvaprep - Ameron Carboline Galoseal WB - Carboline Vinyl Wash Primer – Induron Galvaprep 5 - International Galvaprep 5 – PPG DTM Wash Primer - SW
16.	2.0-5.0	Steel Above Ground and Above Waterline	High Ratio Silicate Inorganic Zinc	Dimetcote 9 Series - Ameron Carbo Zinc 11 – Carboline Indurazinc MC67 – Induron Interzinc 22 - International Amercoat D-9 Inorganic Zinc - PPG Zinc Clad II - SW
17.	4.0-8.0	Steel Interior	Polyamide Cured Epoxy Resin	Amercoat 385 Epoxy - Ameron Carboline Carboguard 61 - Carboline Induraguard Epoxy - Induron Interseal 670 HS - International Pitt-Guard All Weather DTR 97-946 - PPG Macropoxy 646 PW - SW
18.	4.0-8.0	Intermediate Finish	Epoxy Primer	Amercoat 385 - Ameron Carboline Carboguard 61 - Carboline Induraguard Epoxy - Induron Interseal 670 HS – International Amercoat 385 - PPG Macropoxy 646 PW - SW
19.	0.8	Drywall	Vinyl Polymer	Devoe Vinyl Polymer --50801
20.	2.0	Drywall	Alkyd	21xx Velour Alkyd Flat Interior

[1] Or Manufacturer's standard, whichever is greater. Do not exceed Manufacturer's maximum standard, if applicable.
[2] For potable water use.
[3] As recommended

END OF SECTION