SECTION 26

PAINTING

26-1 General

26-1.01 Scope

This section describes the requirements for furnishing and applying paint for architectural, structural, mechanical and miscellaneous work.

Paint systems and colors for exterior surfaces of piping, equipment, wood, masonry, and concrete shall be as specified in the Paint-Finish Schedule on the Plans.

26-1.02 Submittals

The Contractor shall submit a materials list naming each product to be used identified by manufacturer and type. Technical data sheets and MSDS sheets shall be submitted indicating the manufacturer's application recommendations and the volatile organic compound (VOC) level (gm/L) for each product submitted. Manufacturer's certifications of compliance shall accompany each product submitted. The Contractor shall submit current charts of the manufacturer's available colors for confirmation by the Engineer forty-five (45) days prior to the commencement of coating and painting.

26-1.03 Painting Location

Surface preparation and painting shall be performed at the project site except mechanical and electrical equipment shall be painted by the equipment manufacturer per their standard specifications unless noted otherwise in these specifications. The Contractor shall provide, at his expense, all shelter, heating, cooling, humidity control, and safety measures necessary to perform the work in accordance with these specifications.

26-1.04 Surfaces Not Requiring Painting

Unless otherwise indicated, painting is not required on surfaces in concealed areas and inaccessible areas such as foundation spaces, pipe spaces, and on buried pipe. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, brass, and similar finished materials will need not require painting under this section except as may be so specified. Portions of metal embedded in concrete, except for aluminum surfaces, need not be painted. Equipment with factory applied baked enamel finishes also need not be painted.

Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts, unless otherwise indicated. Also do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates.

26-2 Materials

26-2.01 General

Paint materials are identified by proprietary name to indicate the type and quality of material desired. Materials of other manufacturers may be substituted subject to written approval of the Engineer.

All materials of a paint system, including primer and finish coats, shall be produced by the same paint manufacturer unless otherwise approved by the Engineer and the affected paint manufacturers. Thinners, cleaners, driers and other additives shall be as recommended by the paint manufacturer of the particular coating selected.

26-2.02 Paint Delivery and Storage

Paint and materials shall be delivered to the project site in unopened containers that plainly show at the time of use the name, color, date of manufacture, and the manufacturer. Paints shall be stored in a suitably protected area that is heated or cooled as required to maintain temperatures at the manufacturer's recommended range.

26-2.03 Colors

Colors shall be selected by the Engineer. If more than one manufacturer's paint is required for shop paint compatibility, colors may need to be custom mixed to match other manufacturer's colors used on the project.

26-2.04 Paint Systems

Surface preparation is specified in the Workmanship portion of this specification.

26-2.04-A System 1

1. Type of coating: Epoxy, Urethane
2. Surface: Exterior, non-submerged, metals and plastic piping.
3. Surface Preparation: Ferrous Metals - SSPC-SP-6; Plastic piping, Galvanized and Nonferrous Metals - SSPC-SP-1.
4. Coatings and Dry Film Thickness (DFT):

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
1	5.0 (Metals) 3.0 (Plastics)	66	480	Higard
1	4.0 (Metals) 3.0 (Plastics)	73	428 HS	1122B

26-2.04-B System 2

1. Type of Coating: Epoxy
2. Surface: Interior non-submerged metals, plastic piping, and Concrete.

3. Surface Preparation: Ferrous Metals - SSPC-SP-6; Plastic Piping, Galvanized and Nonferrous Metals - SSPC-SP-1; Concrete - SSPC-SP-6.
4. Coatings and DFT:

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
2	10 (Metals & Concrete) 6 (Plastics)	66	480	Higard

26-2.04-C System 3

1. Type of Coating: Alkyd Enamel
2. Surface: Exterior of interior non-submerged Metals.
3. Surface Preparation: Ferrous Metals - SSPC-SP-6; Nonferrous Metals SSPC-SP-1
4. Coatings and DFT:

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
1	3.0	37-77	126HS	622HB
2	5.0	2H	222	500HB

26-2.04-D System 4

1. Type of Coating: Alkyd Enamel
2. Surface: Interior or Exterior Wood
3. Surface Preparation: Sanding as required.
4. Coatings and DFT:

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
1	3.5	36-603	172	500HB
2	4.0	2H	222	500HB

26-2.04-E System 5

1. Type of Coating: Epoxy
2. Surface: Gypsum Drywall, Pipe Insulation.
3. Surface Preparation: Clean and Dry.
4. Coatings and DFT:

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
1	1.0	51-792	230	Glamorglaze Wallboard Primer
2	6.0	66	460	200HB

26-2.04-F System 6

1. Type of Coating; Latex Acrylic, Semi-Gloss.
2. Surface: Interior Concrete, Masonry, Wood, Plaster, and Gypsum Wallboard.
3. Surface Preparation: Clean and Dry.
4. Coatings and DFT:

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
2	4.0	7	236	620

26-2.04-G System 7

1. Type of Coating: Silicone Sealer
2. Surface: Exterior Concrete Block.
3. Surface Preparation: Clean and Dry.
4. Coatings and DFT:

Minimum No. of Coats	Total DFT	Tnemec Series	Engard Series	Koppers Series
2	N/A	60	102	Silicone Penetrant

26-2.05 Miscellaneous Painting

Certain other painting systems and specifications, such as Fusion Bonded Epoxy for the Pump Station pump barrels, are described elsewhere in these specifications.

26-3 Workmanship

26-3.01 General

All painting work shall be performed in strict conformance with the paint manufacturer's recommendations and these specifications.

26-3.02 Protection of Materials

Remove, mask, or otherwise protect hardware, lighting fixtures, switch plates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted. Provide drop cloths to prevent paint materials from falling on or marring any adjacent surfaces. Protect working parts of all mechanical and electrical

equipment and from damage during surface preparation and painting process. All openings in motors shall be masked to prevent paint and all other materials from entering the motor windings.

26-3.03 Completeness of Work

Painting of pipes and equipment shall include all items related and attached, including valve handles, bolts, backs of grills, pipe supports, and similar miscellaneous items as required for satisfactory completeness of work.

26-3.04 Metal Surface Preparation

All workmanship for metal surface preparation shall be in strict conformance with the applicable following Steel Structures Painting Council (SSPC) Specifications and additions.

Solvent Cleaning	SP-1
Hand Tool Cleaning	SP-2
Power Tool Cleaning (Wire Brush)	SP-3
White Metal Blast Cleaning	SP-5
Commercial Blast Cleaning	SP-6
Brush-Off Blast Cleaning	SP-7
Pickling	SP-8
Near-White Blast Cleaning	SP-10

Wherever the words "solvent Cleaning", "hand tool cleaning", "wire-brushing", or "blast cleaning", or similar words of equal intent are used in these Specifications or in paint manufacturers' Specifications, they shall be understood to refer to the applicable SSPC Specifications listed above.

Hand tool clean areas that cannot be cleaned by power tool cleaning.

26-3.04-A Preblast Cleaning Requirements

All oil, grease, welding flux, and other surface contaminants shall be removed prior to blast cleaning. Preblast cleaning methods shall be steam, not water or cold water with appropriate detergent additives followed by clean water rinsing.

Small, isolated areas shall be cleaned as above or solvent cleaned with suitable solvents and clean cloths.

All sharp edges shall be rounded or chamfered and all burrs, jagged edges, and surface defects shall be ground smooth.

Welds and adjacent areas shall be prepared such that there is no undercutting to reverse ridges on the weld bead, no weld spatter on or adjacent to the weld or any other areas to be painted, and no sharp peaks or ridges along the weld bead. All embedded pieces of electrode or wire shall be ground flush with the adjacent surface of the weld bead.

26-3.04-B Blast Cleaning Requirements

The type of equipment and speed of travel shall be such that the specified degree of cleanliness is obtained. The type and size of the abrasive shall be selected to produce a surface profile that meets the coating manufacturer's recommendations for the particular primer to be used. Only dry blast cleaning methods will be permitted. The abrasive shall not be reused unless otherwise approved by the Engineer.

Abrasive blast cleaning shall not be performed whenever the relative humidity exceeds 85 percent, nor whenever the surface temperature is within 50°F above the dew point of the ambient air.

The Contractor shall comply with the applicable State and local air pollution control regulations for blast cleaning.

26-3.04-C Post-Blast Cleaning and Other Cleaning Requirements

All surfaces shall be cleaned of all dust and residual particles of the cleaning operations by air blast cleaning or other approved method prior to painting. Enclosed areas and other areas where dust settling is a problem shall be vacuum cleaned and wiped with a tack cloth.

Surfaces shall be painted within 8 hours after the start of the cleaning operation or sooner if required to preclude surface rusting. Surfaces that have started to rust before they are painted shall be reblasted.

26-3.04-D Intercoat Surface Preparation

Previously primed or painted surfaces shall be brushed with a stiff-bristled broom, softly rubbed with hardware cloth or an alternate method approved by the paint manufacturer in order to remove all loose and partially embedded overspray and dust particles. All dust and loosened intercoat contaminants shall be air-blown cleaned or vacuumed to provide a clean, dust-free substrate. Areas where architectural appearance and smooth surfaces are important shall have the previous coat lightly sanded with fine emery cloth prior to top-coating.

26-3.05 Application of Paint

All paints and coating shall be applied in strict accordance with the paint manufacturer's recommendations. The applied coatings shall contain no runs, bridges, shiners, laps, or other imperfections. The coating system shall be free of pinholes and holidays and shall be uniform in texture and color.

26-3.05-A Multiple Component Coatings

Multiple component coatings shall be prepared using all of the contents of the container for each component as packaged by the paint manufacturer. No partial batches will be permitted. Multiple component coatings that have been mixed shall not be used beyond their pot life. The paint applicator should purchase small quantity kits for touch-up painting and other small areas requiring painting. Only the components specified and furnished by the paint manufacturer shall be mixed. No intermixing of additional components for reasons of color or otherwise, even within the same generic type of

coating, will be permitted unless written approval is obtained from the paint manufacturer.

26-3.05-B Damaged Coatings

Damaged coatings, pinholes, and holidays shall have the edges feathered and repaired in accordance with the paint manufacturer's recommendations.

All finish coats, including touch-up and damage repair coats, shall be applied in a manner which will present a uniform texture and color-matched appearance.

26-3.05-C Safety

Painting shall be performed in strict accordance with the safety recommendations of the paint manufacturer and with the recommendations of the National Association of Corrosion Engineers contained in the publication "Manual for Painter Safety". Unsafe conditions shall be cause for rejection of work.

26-3.05-D Cleanup

All cloth and cotton 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 or destroyed in an approved manner. Paint spots, oil, or stains upon adjacent surfaces and floors shall be completely removed, and the entire job left clean and acceptable.

26-3.06 Inspection

The preparation of surfaces and application of coatings and related materials as required to complete the work will be subject to inspection by the Engineer at all times during performance of the work.

The Contractor shall give the Engineer a minimum of 3 days advance notice of the start of any surface preparation work or coating application work. All such work shall be performed only in the presence of the Engineer, unless the Engineer has granted prior approval to perform such work in his absence. Work, which has been performed in the absence of the Engineer without his prior approval, or work, which is not performed in strict compliance with the procedures set forth in these Specifications, will be subject to rejection.

Inspection by the Engineer, or the waiver of inspection of any particular portion of the work, shall not be construed to relieve the Contractor of his responsibility to perform the work in accordance with these Specifications.

26-3.06-A Surface Preparation

The surface preparation will be inspected for compliance with these Specifications. All surfaces shall be subject to inspection prior to the start of the surface preparation.

Blast cleaned surfaces of wrought steel shall be cleaned to the final finish displayed in the Pictorial Surface Preparation Standards for Painting Steel Structures, SSPC-VIS-1-67T. The Contractor and the Engineer shall use the visual standards as a guide in determining the minimum degree of surface preparation required.

Surfaces of casting and of metals other than mild steel shall be cleaned to the degree of contaminant removal specified in the applicable SSPC surface preparation. A rational method for evaluating the degree of cleanliness of the particular surface shall be determined by the Engineer.

The surface profile shall be measured for conformance with a Keane-Tator surface comparitor.

26-3.06-B Film Thickness and Integrity

The Contractor shall conduct film thickness measurements and electrical inspection of the coated surfaces and shall recoat and repair as necessary for compliance with the Specifications. Primer and intermediate coats will be subject to inspection by the Engineer.

After repair and recoated areas have dried sufficiently, final tests will be conducted by the Engineer. Coating thickness specified in mils will be measured with a magnetic type dry-film thickness gauge such as Mikrotest, supplied by Nordsen Pacific, Buena Park, CA. Discontinuities and voids in the coatings (except zinc primer and galvanizing) will be determined with an electrical holiday detector, low voltage wet sponge type such as Model M-1, manufactured by Tinker and Rasor, San Gabriel, CA.

26-3.07 Painting Schedule

The following schedule describes the selection of paint systems to be applied to various portions of the work:

Electric Panels	Factory Finish
Interior Exposed Pipe	System 1
Exterior Metal	System 1
Exterior Roof System	Factory Finish
Concrete Floors	System 2
Interior Conduits	System 3
Exterior Wood	System 4
Interior Ceiling	System 5
Interior Masonry Walls	System 6
Exterior Masonry Walls	System 7

26-4 Measurement and Payment

No measurement and separate payment shall be made for any of the work specified in this section, and all costs in connection therewith shall be included in the contract lump sum price for the Booster Pump Station.