

SECTION 9 PAINTING

- 9.01 Scope: Contractor shall furnish all materials and equipment and perform all labor necessary for painting all surfaces constructed under this Contract, and specified to require painting, gas proofing or coating as indicated on the Drawings, and in accordance with the following Specifications.
- A. Material: Materials for use in this work shall be delivered in unbroken original containers, bearing the manufacturer's name and shall be mixed and applied in conformance with the manufacturer's specifications and directions.
- B. General: Painting shall be done in a first-class, workmanlike manner, and no paint shall be applied upon damp or frosty surfaces or in wet, foggy or freezing weather. All surfaces shall be brushed free of dust, and all foreign matter removed before any paint is applied. All surfaces shall be completely dry before any paint is applied. All iron and steel and other steel work which is shop primed shall have all abrasions in the priming coat cleaned by wire brushing, sandpaper or an approved method to bright metal, so as to remove all scale, ridges, rust or faults in the prime coat. All welding splatter shall be removed and this area reprimed. All voids, open or hollow places shall be repaired with a material suitable to the surface to be repaired. Paint shall be evenly spread and well brushed out, so there shall be no drops, runs or sagging of the coating. Where runs and drops do occur, they shall be removed and the surface recoated to the satisfaction of the Engineer. Sufficient time, as directed by the manufacturer shall be allowed for the paint to dry before the application of succeeding coats. Drop cloths shall be used to protect other surfaces of the structure or equipment in place, and upon completion of work all paint spots shall be removed from surfaces as directed by the Engineer, and any defaced surfaces shall be refinished as directed by the Engineer. Any painting work found to be defective or applied under adverse conditions shall be removed and replaced at the direction of the Engineer.
- 9.02 Testing Equipment Required: Contractor will furnish the Engineer with one DeFesco PosiTector 6000 dry film thickness gauge.
- 9.03 Surfaces Requiring Painting: Surfaces requiring painting shall include all new surfaces specified under this Section of the Specifications and constructed on this project. Exterior building surfaces requiring painting shall include doors, concrete block, wood, miscellaneous iron and steel. Surfaces requiring painting in basins and structures shall consist of equipment, piping and miscellaneous iron and steel.
- 9.04 Preparation of Painting Surfaces: All surfaces to be painted shall be prepared in accordance with the best practices with particular attention to the following:
- A. Non-submerged ferrous metal surfaces of small miscellaneous items such as handrails, metal doors, cast iron piping, pumps and motors, etc. shall be prepared in accordance with *Surface Preparation Specification SSPC-SP2 Hand Tool Cleaning*.

- B. Submerged ferrous metal surfaces shall be prepared in accordance with *Surface Preparation Specification SSPC-SP10 Near-White Metal Blast Cleaning*.
 - C. All concrete or masonry surfaces must be free of dust, oils, curing compounds or any foreign matter that would interfere with the bond of the coating.
- 9.05 Manufacturer: Paint manufacturers specified are Tnemec and Carboline. Contractor shall submit for approval proposed paint manufacturer, coatings and color charts in accordance with the General Requirements section of these Specifications.
- 9.06 Painting Miscellaneous Iron and Steel Work: Miscellaneous iron and steel work and structural steel work before leaving the shop of the fabricator and before being exposed to weather shall be thoroughly cleaned of all foreign matter, loose black scale and rust to a *Surface Preparation Specification SSPC-SP2 Hand Tool Cleaning* or *SSPC-SP3 Power Tool Cleaning* standard and shall receive a pretreatment of one coat of Carboline Rustbond or Tnemec pretreatment if applicable. Allow 24 hours to dry then apply one coat of Tnemec Series 1 or equal at 2.0 to 3.0 mils dry or one coat of Carbocoat 115. Whenever the priming coat has been damaged in transit or during construction or has become deteriorated due to long exposure to the elements, the metal shall be cleaned, touched up, or re-primed to the satisfaction of the Engineer. Valves, gates and appurtenances, if not tar dipped, shall be primed and painted as specified for miscellaneous iron and steel. PLEASE NOTE ANY IMMERSION GRADE STEEL WILL RECEIVE A *SSPC-SP10 NEAR WHITE METAL BLAST* AS ITS SURFACE PREPARATION METHOD.
- 9.07 Painting Galvanized Iron Work:
- A. Interior Painting Galvanized Iron Work: Surface shall be prepared by solvent cleaning the entire substrate to be painted using xylol or xylene. The substrate should be clean, dry and free of all contaminants prior to painting. The first field coat should be painted with Tnemec Series 66, Carboline Galoseal WB or equal, applied at 2.0 to 3.0 mils dry. The second field coat should be painted with Tnemec Series N69, Carboline Carbocoat 45 or equal, applied at 2.0 to 3.0 mils dry.
 - B. Exterior Painting Galvanized Iron Work: Surface shall be prepared by abrading the surface to a *SSPC-SP3 Power Tool Cleaning* standard. The substrate should be clean, dry and free of all contaminants prior to painting. The first field coat should be painted with Tnemec Series 66, Carboline Galoseal WB or equal, applied at 2.0 to 3.0 mils dry. The second field coat shall be painted with Tnemec Series 73/1074, Carboline Carbocoat 45 or equal, applied at 2.0 to 3.0 mils dry.
- 9.08 Painting Cast Iron or Ductile Piping:
- A. Submerged Cast Iron and Ductile Piping: The substrate should be blasted to a *SSPC-SP10 Near White Blast Standard*. The substrate should be clean, dry and free of all contaminants prior to painting. The shop coat or first field coat shall be painted with Tnemec Series N140-1211, Carboline Carboguard 891HS or equal, applied at 3.0 to 4.0 mils dry. The second and third field coat shall be painted with Tnemec Series N69 (non-potable), Carboline Carboguard 890 (non-potable) or equal, applied at 4.0 to 6.0 mils dry. If piping is potable water, apply two coats

of Tnemec Series N140, Carboline Carboguard 891HS or equal, applied at 4.0 to 6.0 mils dry.

- B. Exterior Exposed Cast Iron and Ductile Piping: Surface shall be prepared by applying SSPC-SP6 "Commercial Blast Cleaning." The substrate should be clean, dry and free of all contaminants prior to painting. The shop coat or first field coat shall be painted with Tnemec Series N140-1211, Carboline Bitumastic 300M or equal, applied at 3.0 to 4.0 mils dry. The second field coat shall be painted with Tnemec Series 135 or equal, applied at 3.0 to 4.0 mils dry. The third coat shall be Tnemec Series 73/1074, Carboline Carbothane 133 HB or equal, applied at 2.0 to 3.0 mils dry

9.09 Miscellaneous Painting:

- A. Exterior Woodwork: Exterior woodwork shall receive one priming coat of Tnemec Series 36-603, Carboline Sanitile 120 or equal, applied at 2 to 3 mils dry film thickness. Apply two finish coats of Tnemec Series 28/29, Carboline Carbocoat 45 or equal, applied at 2 to 3 mils dry film thickness. Allow 4 hours drying time at 75°F between coats.
- B. Interior Wood: Interior woodwork shall receive one priming coat of Tnemec Series 10-99W, Carboline Sanitile 120 or equal, applied at 2 to 3 mils dry film thickness. Apply two finish coats of Tnemec Series 1028/1029, Carboline Carbocoat 45, applied at 2 to 3 mils dry film thickness. Allow 4 hours drying time at 75° F between coats.
- C. Exterior Concrete Block:
1. Surface Preparation – The substrate should be clean, dry and free of all contaminants prior to painting.
 2. First Coat – Tnemec Series 660, Sherwin-Williams Loxon Siloxane Water Repellant or equal. 75-90 S.F./gallon. Conformal stain may be added to sealant at Owner's expense.
- D. Interior Concrete Block, Concrete Walls and Concrete Ceilings:
1. Concrete Block: The prime field coat shall be one coat of Tnemec Series 130, Carboline Sanitile 100 or equal, applied at the rate of 75 to 90 square feet per gallon. The second field coat shall be two coats of Tnemec Series N69, Carboline Carboguard 890 or equal, applied at 320 square feet gallon (3 to 4 dry mils per coat).
 2. Concrete Walls and Concrete Ceilings: The prime field coat shall be two coats of Tnemec Series N69, Carboline Carboguard 890 or equal, applied at the rate of 320 square feet per gallon (3 to 4 dry mils per coat).
 3. Existing: Repair/repaint existing interior masonry walls as follows:
 - a. Surface Preparation: Dry or wet abrasive blasting removing any loose coating and etching well adhered previous coats of paint. Feather all edges.

- b. Paint Coat as Follows: Apply 2 coats of Tnemec Series 113, applied at 2.0 to 3.0 mils dry.

9.10 Colors: Where more than one coat of paint is required, paint for each undercoat shall be job tinted off-shade, sufficient to show complete coverage for each coat. The colors of paints for the various parts of the work shall be selected by the Engineer. The lower 4' of walls and partitions shall have dado stripe and color darker than the upper walls and ceilings, unless otherwise specified or directed by the Engineer.

9.11 Piping Color Codes: The Contractor shall paint all exposed metallic pipe lines with the colors specified. Small diameter non-metallic lines should not be painted but should be color-coded with the colors specified using labels according to the "Signs and Labels" section.

<i>Line</i>	<i>Tnemec Color</i>	<i>Tnemec No.</i>	<i>Carboline Color</i>	<i>Carboline No.</i>
Water Lines:	Safety Blue	11SF	Safety Blue	5150
Chemical Lines:	Safety Yellow	02SF	Safety Yellow	6666
Waste Lines:	Weathered Bark	84BR	Walnut Grove	2248
Sewage:	Gray	33GR	Machine Gray	0754
Air Line:	Balsam	91GN	Vernal Green	0388
Gas Line:	Monterrey Tile	28RD	Tile Red	0156

9.12 Signs and Labels: After other painting of pipe work has been completed as provided for herein, the Contractor shall label the pipe work by stenciled legends, all as ordered by the Engineer.

- A. In addition to the color coding of piping, two legends descriptive of the function of the pipe, such as "Sludge" shall be stenciled. One legend shall be stenciled on each side of the pipe on the pipe lines and on the side of the bands away from the valve or fittings. The legend shall be located on the pipe so that it will be in direct line of vision. Legend may be omitted from one side if view is obstructed from that side. Where the flow in a pipe shall be at all times in one direction only, then a flow arrow shall be placed in front of each legend on the pipe. The lettering and arrows shall be cut neatly into stencils, the arrows being the same height as the letters. The size of lettering shall be:

	<i>Outside Diameter of Pipe or Covering</i>	<i>Size of Letters</i>
1.	¾" to 1¼"	½"
2.	1½" to 3"	¾"
3.	3¼" to 4¼"	1"
4.	4½" to 6¾"	1½"
5.	7" to 7¾"	2"
6.	8" to 9¾"	2½"
7.	10" to 11¾"	3"

<i>Outside Diameter of Pipe or Covering</i>	<i>Size of Letters</i>
8. 12" and over	3½"

- B. For pipes smaller than ¾" in outside diameter, use laminated plastic or aluminum tag with the lettering etched or stamped and filled in with black or contrasting enamel.
- C. The legends and flow arrows shall be stenciled with approved black or contrasting stencil paint. The above outline of intent designates the general extent of the identification work and is not exclusive of other similar work such as identification and other equipment as may be directed by the Engineer. Following the completion of the work under this item, the Contractor shall deliver to the Owner two sets of all stencils used.
- D. In addition to the above labeling of pipe work, the Contractor shall paint stencil lengths in the same manner as a pipe of appropriate size on the individual units of equipment such as blowers, pumps, collector drives, compressors, silencers, etc. All push buttons, starters, switches, etc. when remote from the equipment controlled and/or power packs shall have labels of the engraved plastic type fixed to or adjacent to the remote switch, push button, starter, etc.

9.13 Payment: No separate payment will be made for the work of this Section. The cost of the work, and all cost incidentals thereto, shall be included in the price bid for the item to which the work pertains.

