SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Examine the various SECTIONS of the SPECIFICATIONS and be thoroughly familiar with all provisions regarding painting and finishing work included therein.
B. Apply specified finish coats of paint to all preprimed surfaces and complete finishing system to unprimed items.
C. Paint all process, mechanical, structural, architectural and electrical work exposed to view including equipment, piping, electric panels, electrical conduit, electrical boxes, stanchions, supports and all other items unless specified in the respective SECTIONS to be prefinished.
D. Paint all existing items as noted in this Specification and as indicated on the Drawings.
E. Apply paint on finish surfaces only to the extent specified herein and indicated on the Drawings.
F. Pipe, pump and valve identification markers.
G. Secondary Containment Coatings.
H. Motors, which are pre-finished, shall receive one top coat to provide a color matching the system color indicated in the pipe identification schedule.

1.2 RELATED SECTIONS

A. Section 01340 - Submittals
B. Section 03300 - Cast-in-Place Concrete
C. Section 04200 - Unit Masonry
D. Section 05500 - Metal Fabrications
E. Section 06100 - Rough Carpentry
F. Section 07900 - Joint Sealers
G. Section 08110 - Steel Doors and Frames
H. Section 09905 - Surface Preparation and Shop Coats
I. Division 10 - Specialties
J. Division 11 - Equipment
K. Division 13 - Special Construction
L. Division 15 - Mechanical
M. Division 16 - Electrical

1.3 PREFINISHED ITEMS NOT REQUIRING PAINT OR FINISH

A. Items and equipment which have received the manufacturer's standard primer and finish coats in the factory, except as noted for color and for touch-up painting.

B. Copper, bronze, brass, chromium plate, nickel, stainless steel, aluminum or monel metals (unless otherwise noted).
C. Decorative CMU.
D. Concrete slabs and foot traffic surfaces except skid resistant floor coatings.

1.4 REFERENCES

A. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.
B. ASTM D 2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
C. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
D. Federal Test Method No. 141 - Method 6141, Stain Removal.
E. ANSI A13.1 - Scheme for the Identification of Piping Systems.
F. SSPC - Steel Structures Painting Council.
G. SSPC-PA1, “Standard for Shop, Field, and Maintenance Painting”.
H. SSPC-PA2, “Measurement of Dry Paint Thickness with Magnetic Gauges”.
I. SSPC-SP1, “Solvent Cleaning”.
J. SSPC-SP2, “Hand Tool Cleaning”.
K. SSPC-SP3, “Power Tool Cleaning”.
L. SSPC-SP6, “Commercial Blast Cleaning”.
M. SSPC-SP10, “Near-White Blast Cleaning”.
N. SSPC-PA Guide 3, Standard “A Guide to Safety in Paint Application”, latest revision.
O. OSHA 29 CFR 1926.62 The Interim Final Rule for Lead Exposure in Construction, May 4, 1993.
P. SSPC - Guide 61 (COH) Guide for Containing Debris Generated during Paint Removal Operations.
Q. SSPC - Guide 71 (DIS) Guide for Disposal of Lead-Contaminated Surface Preparation Debris.
R. SSPC Publication 91-18 Industrial Lead Paint Removal Handbook.
S. USEPA 40 CFR Part 261 Identification and Listing of Hazardous Waste.
T. USEPA 40 CFR Part 262 Standards Applicable to Generators of Hazardous Waste.
U. USEPA 40 CFR Part 263 Standards Applicable to Transporters of Hazardous Waste.
V. USEPA 40 CFR Part 268 Land Disposal Restrictions.
W. USDOT 49 CFR Parts 173, 178 and 179.
X. VOC Standards - All coatings shall be in accordance with all applicable State of Maine and Federal VOC Standards.
    1. OSHA 29 CFR 1925.55 Gases, Vapors, Fumes, Dusts and Mists.
    2. 38 MRSA: Section 584A; Air Protection and Improvement Law.

1.5 SUBMITTALS

A. Submit product data under provisions of Section 01340.

B. Submit a minimum of three (3) color charts for color selection by Engineer.
C. Submit schedule with list of items to be coated, type and manufacturer of shop coating and type of field coating, including primers, details on surface preparation methods, application procedures and dry mil thickness.
D. Color scheme shall be in accordance with schedules provided by the Engineer, and all tinting and matching shall be to the satisfaction of the Engineer.
E. Submit coating manufacturer's certification that proposed field coatings are compatible with shop coatings.
F. Submit coating manufacturer's certification that the proposed coatings meet all state and federal VOC regulations.

1.6 QUALITY ASSURANCE

A. All materials used on work shall be exactly as specified in brand and quality. No claim by the Contractor as to unsuitability or unavailability of any material specified, or his unwillingness to use same, or his inability to produce first class work with same, will be entertained unless such claims are made in writing and submitted to the Engineer at least seven (7) days prior to the date established for receipt of General Bids.
B. Before purchasing materials for the work, the Contractor shall submit to the Engineer a list of the products he proposes to use, and the list shall be reviewed by the Engineer and no exceptions taken and reviewed by him before commitment for materials is made.
C. Materials selected for coating systems for each type of surface shall be the products of a single manufacturer.
D. Include on label of all containers:
    1. Manufacturer's name
    2. Type of paint
    3. Manufacturer's stock number
    4. Color
    5. Instructions for reducing, where applicable
    6. Label analysis
    7. Shelf life dates
E. Field Quality Control:
    1. Contractor shall request review by the Engineer, of first finished room, space or item of each color, texture and method of applications, prior to proceeding with additional painting..
    2. Use first acceptable room, space or item as the project standard for each color scheme.
    3. For spray application, when applicable, paint a surface not smaller than 100 square feet as the project standard.
    4. Repainting of materials failing to meet the requirements of the Specifications or Drawings, shall be performed by the Contractor, at no additional cost to the Owner.

5. The number of coats and total mil thickness specified in the paint schedule are minimums. If the specified minimum film thickness is not achieved, additional coats shall be applied to achieve the total film thickness specified.

F. Paints submitted shall meet all Federal and State regulations pertaining to Volatile Organic Compounds (VOC) compliance.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver coating materials in sealed containers with labels legible and intact.
B. Store only acceptable project materials on the project site.
C. All painting materials shall be stored and mixed in a single location coordinated with the Engineer. The Contractor shall not use any plumbing fixture or pipe for mixing or for disposal of any refuse. The Contractor shall carry all necessary water to the mixing room, and shall dispose of all waste outside of the building in a suitable receptacle.
D. Restrict storage location to paint materials and related equipment and supplies.
E. Keep storage location neat and clean.
F. Remove all soiled and used rags, waste and trash from the storage location and building at the end of each work day.
G. Repair all damage to the storage location, caused by painting materials and equipment at no additional cost to the Owner.
H. Comply with all applicable health and fire codes and regulations including safety precautions recommended by the manufacturer. Storage space shall be provided with a suitable fire extinguisher fully charged at all times.
I. Heat shall be provided in the storage area if paints are to be stored during winter months. The temperature shall be maintained above 40 degrees F at all times.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems shall be applied.
B. Do not apply coatings in areas where dust is being generated.
C. Do not apply coatings when the air or material surface temperature is below 50 degrees Fahrenheit and unless the temperature is at least 5 degrees Fahrenheit above the dew point.
D. Do not apply exterior coatings in frosty, damp or rainy weather or while surfaces are exposed to hot sunlight.

1.9 EXTRA MATERIALS

A. For all materials with a shelf life of greater than 12 months, provide one gallon of each type and each color of touch-up paint shall be provided to the Owner by the Contractor in unopened containers.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (PAINT)

A. Sherwin Williams
B. Tnemec Company, Inc.
C. ICI (Glidden/Devoe)

2.2 MATERIALS

Refer to the paint schedule for specific products and application.

2.3 COMPONENTS

A. All finish coats shall be compatible with shop prime coats.
B. Turpentine shall be pure spirits of turpentine.
C. Shellac shall be four pounds and shall meet the U.S. Government specifications as issued by the Bureau of Commerce.
D. When interior or exterior wood and metal are primed in the mill or shop as part of painting contract, use the materials specified in every case for such surfaces and use in accordance with manufacturer's directions for first or priming coat.

2.4 MIXING AND TINTING

A. Deliver paints and enamels ready-mixed to project site.
B. Accomplish job mixing and job tinting only when required and no exceptions taken by the Engineer.
C. Mix only in mixing pails placed in suitably sized nonferrous or oxide resistant metal pans.
D. Use only tinting colors recommended by the manufacturer for the specific type of finish.
E. Fungicidal agents, when applicable, shall be incorporated into the paints and stains by the manufacturer.
F. Mix and prepare paints in strict accordance with Manufacturers recommendations.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition through preparatory work as included in Part 3.2, Surface Preparation.
B. Immediately notify the Engineer in writing when a surface to be finished cannot be put into an acceptable condition.
C. Do not proceed with surface preparation or coating application until conditions are suitable.

D. The Contractor shall be responsible for and shall rectify, at no additional cost to the Owner any unsatisfactory finish resulting from the application of coatings on surfaces not in acceptable condition.

3.2 SURFACE PREPARATION

A. Wood and Plywood to be Painted or Finished Natural -
   1. Clean soiled surfaces.
   2. Except when rough surface is specified, sand to smooth and even surface, then dust off.
   3. Apply shellac to all knots, pitch and resinous sapwood after washing with mineral spirits and, before priming coat is applied.
   4. Fill nail holes, cracks, open joints and other defects with paste wood filler before priming coat surface and color to match finish color. When wood filler is applied on open grain wood, allow the grain to secure a smooth, clean surface. Tint filler to match finished wood.

B. Concrete and Masonry:
   1. Clean all dust, dirt, oil and efflorescence from surfaces.
   2. Fill cracks and irregularities with Portland cement grout to provide uniform surface texture.
   3. Etch dense and smooth concrete, or concrete that has had a hardener applied, with a five percent solution (by weight) of muriatic acid.
   4. Fill concrete masonry unit surfaces with block filler in sufficient thickness to produce a final result which shall fill all voids and pin holes.
   5. Allow surfaces to thoroughly dry prior to application of first coat.

C. Ferrous Metal Surfaces (Items not shop primed)
   1. All submerged ferrous metals shall be sandblast cleaned in accordance to SSPC-SP10 immediately prior to priming.
   2. All other ferrous metals shall be sandblast cleaned in accordance to SSPC-SP6 immediately prior to priming.
   3. Remove dirt, oil and grease by washing surfaces with mineral spirits.
   4. Surfaces shall be dry and free of dust, oil, grease and other foreign material before priming.
   5. Feather edges of sound existing paint by grinding, if necessary.
   6. Clean and touch up weathered, worn or damaged shop coats of paint with the specified primer.
   7. Restore shop coats of paint with identical materials if removed for welding and fabrication.

D. Galvanized Metal:
   1. Thoroughly clean surface with mineral spirits to remove oily residue.
   2. Dry with clean cloth.
   3. Treat surface with copper sulphate or with a compound made for this purpose (Lithoform, Solfo Metallic Coating, etc.) in accordance with the manufacturer's directions, before applying the primer.

E. Previously Coated Surfaces (including existing items and new items that are shop primed)
   1. The areas of the coated surface that are blistered, eroded, brittle or otherwise failed shall be completely removed before beginning the specified surface preparation.
   2. The areas where the existing coating is intact shall be sanded to dull the finish.
   3. Before applying the new coating over an existing coating, a test section must be done to ensure compatibility of the new and old coatings.
   4. All other existing coatings shall be prepared as recommended by the manufacturer and as specified in this section.
   5. Ferrous metals arriving at the job site with shop primers other than the polyamide epoxy or rust inhibitive primers specified shall be provided with an intermediate coat as necessary for compatibility with specified topcoats.
   6. Special attention shall be paid to the potential for epoxy shop and intermediate coats to chalk upon exposure to sunlight. The Contractor shall follow the manufacturer's required surface protection/covering and surface preparation recommendations before any intermediate or top coats can be applied over chalked surface. Epoxy primers and intermediate coats shall be top coated no later than 45 days after the application of the epoxy coating. If topcoats are to be applied later than 45 days, the following surface preparation shall be provided:
      a. The existing finish shall be etched by sanding with 80 grit paper or cloth.
      b. Surfaces shall be pressure washed with 3000 to 5000 pounds of pressure.
      c. The Engineer, at his discretion, can require the Contractor to conduct adhesion tests of the topcoats.

3.3 APPLICATION

A. Workmanship:
   1. Employ skilled workmen to insure workmanship of the highest quality.
   2. Materials shall be applied only by craftsmen experienced in the use of the specific products involved.

B. General Requirements:
   1. Apply all coatings under adequate illumination.
   2. Perform no work in the rain, dew, or fog, when the temperature is below 50 degrees Fahrenheit and at least 5 degrees Fahrenheit above the dew point, or before the other coats have thoroughly dried.
   3. Do not apply coatings until the material surfaces are thoroughly dry.
   4. Apply paints and varnishes with suitable brushes, rollers or spraying equipment.
      a. The rate of application shall not exceed that as recommended by the paint manufacturer for the surface involved.
      b. Keep brushes, rollers and spraying equipment clean, dry and free from contaminates and suitable for the finish required.

c. Apply stain by brush. Cover surfaces with a uniform coat and wipe off if required.
d. Make each coat a different tint from that of the preceding coat, with final coat tinted to the exact shade selected by the Engineer. Lightly sand surfaces between each coat of gloss and semi-gloss finishes, and wipe clean.

5. Comply with the recommendation of the product manufacturer for drying time between succeeding coats. Contractor shall follow the manufacturer's specific curing requirements for rust inhibitive primer shop coats prior to allowing topcoating.
6. Sand and dust between each coat to remove defects visible from a distance of five feet.
7. Finish coats shall be smooth, free of brush marks, streaks, laps or pile up of paints and skipped or missed areas.
8. Inspection:
   a. Do not apply additional coats until the completed coat has been inspected by the Engineer.
   b. Only inspected and reviewed coats will be considered in determining the number of coats applied.
9. Leave all parts of moldings and ornaments clean and true to details with no undue amount of paint in corners and depressions.
10. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.
11. Apply primer on all work before glazing.
12. Refinish entire wall where portion of finish has been damaged or is not acceptable.
13. Apply one coat of metal primer, of the types specified hereunder, and one coat of flat black metal enamel, to the surfaces of all ductwork behind grilles, for a distance of 18 inches.
14. Runs on face are not permitted.
16. Adjust natural finishes as necessary to obtain identical appearance on veneers and solid stock.

3.4 PROTECTION

A. Furnish and lay drop cloths in all rooms and areas where painting and finishing is being done to adequately protect flooring and other work from damage during the prosecution of the painting work.
B. Remove all canopies of lighting fixtures, all electric switch plates, and similar equipment, set them carefully away, and cover adequately, protect the fixtures, etc.; replace the canopies, plate, etc. in as good condition as when found.

3.5 CLEANING

A. At the completion of the work of this Section, remove all paint spots and oil or grease stains, caused by this work from floors, walls, fixtures, hardware and equipment, leaving their finishes in a satisfactory condition. Remove all materials

and debris and leave the site of the work in a clean condition so far as this work is concerned.

3.6 FINAL INSPECTION

A. Protect all painted and finished surfaces against damage until the date of final acceptance of the work. The Engineer will conduct a final inspection of all painters' work. As part of the final inspection the Contractor shall demonstrate compliance with the specified film thickness with appropriate paint gauges. The Contractor shall be required to repaint, refinish, or retouch any areas found which do not comply with the requirements of this Section.

3.7 PAINT SCHEDULE

A. Definitions
   1. Submerged surfaces are defined as:
      a. Those surfaces which are below the maximum water surface level as indicated on the drawings, and/or extend 3-feet above the maximum water surface for uncovered tanks.
      b. All surfaces contained within covered tanks.
      c. The full height of all partially submerged items such as sluice, slide and weir gates, piping, etc.
      d. All surfaces contained within underground vaults, structures and manholes such as valve pits, dry wells, etc.
   2. Enclosed surfaces shall be those non-submerged surfaces enclosed and/or protected within a building in such a manner that it can not be exposed to UV light or weather conditions.
   3. Weather exposed surfaces shall be all other conditions including buried items which do not fall into the definition of submerged or enclosed surfaces as noted above.

B. General: Existing Facility
   1. Paint and finish all new piping, equipment and other items installed, modified or relocated in the existing facility.
   2. Correct and refinish all interior and exterior surfaces in the existing facility affected by the new work. Materials and their application shall be as required to most closely match the existing finishes and as specified in this Section.
   3. Refinish additional existing items on the existing facility as noted on the Drawings and in this Specification.
   4. Finish all new items and components installed or constructed in the existing facilities.

C. Schedule

The product model and coatings system numbers listed below are based on products provided by the Sherwin William's Company and The Tnemec Company, Inc. and are listed to establish the standard of quality. Equivalent products from Devoe Coatings Inc. or Glidden will be accepted provided they meet or exceed the performance of the listed products.

SURFACE/ITEM	SURFACE PREPARATION	PRIMER	INTERMEDIATE	FINISH
MASONRY & CONCRETE				
Masonry Surfaces	Clean & Dry	Tnemec Series 54-580 **OR** SW Heavy Duty Block Filler	Tnemec Series 28/29 Tufcryl 2.0 - 3.0 mils **OR** SW DTM Acrylic Coatings 3.0 - 4.0 mils	Tnemec Series 28/29 Tufcryl 2.0 - 3.0 mils **OR** SW DTM Acrylic Coatings 3.0 - 4.0 mils
CONCRETE AND MASONRY				
All Other Concrete Surfaces	Brush-off Blast to achieve uniform anchor profile	Tnemec Series 28/29 2.0 mils **OR** SW PRO-MAR 200 Latex Wall Primer 2 mil	N/A **OR** SW DTM Acrylic Coating 2.0 mil	Tnemec Series 28/29 2.0 mils **OR** SW DTM Acrylic Coating 2.0 mil
METALS				
Submerged Ferrous Metals (see note 3)	SSPC-SP10 Near White Metal Blast Cleaning	Tnemec Series 161 Tneme-Fascure at 3.0 - 5.0 mils **OR** SW High Solids Catalyzed Epoxy at 6.0 mils	Tnemec Series 161 Tneme-Fascure 4.0 - 6.0 mils **OR** SW High Solids catalyzed Epoxy at 6.0 mils	Tnemec Series 161Tneme-Fascure at 4.0 - 6.0 mils **OR** SW High Solids catalyzed Epoxy at 6.0 mils
Submerged Ferrous Metals, Piping and Equipment Specified to be Shop Primed in Their Respective Sections (see note 3)	SHOP	SHOP PRIME	Tnemec Series 161 Tneme-Fascure at 3.0 - 5.0 mils **OR** SW Macropoxy HS 3.0-6.0 mils	Tnemec Series 161 Tneme-Fascure at 3.0 - 5.0 mils **OR** SW Macropoxy HS 3.0-6.0 mils
Weather Exposed Ferrous Metals, Piping and Equipment Specified to be Shop Primed in Their Respective Sections	SHOP	SHOP PRIME	Tnemec Series 27 FC Typoxy at 3.0 - 5.0 mils **OR** SW Macropoxy 3.0-6.0 mils	Tnemec Series 161 Tneme-Fascure at 3.0 - 5.0 mils **OR** SW - Corothane II Polyurethane 3.0 mil

SURFACE/ITEM	SURFACE PREPARATION	PRIMER	INTERMEDIATE	FINISH
Enclosed Ferrous Metals, Piping and Equipment Specified to be Shop Primed in Their Respective Sections	SHOP	SHOP PRIME	Tnemec Series 27 FC Typoxy at 3.0 - 5.0 mils **OR** SW Macropoxy HS 3.0 - 6.0 mils	Tnemec Series 161 Tneme-Fascure at 3.0 - 5.0 mils **OR** SW Macropoxy HS 3.0 - 6.0 mils
Other Enclosed Ferrous Metals in Areas to Receive Epoxy Finish (Does not include new piping and equipment.)	SSPC-SP6	Tnemec Series 37H-78 Gray Chemprime at 2.5-3.0 mils (Observe Minimum topcoat times) **OR** SW Recoatable Epoxy Primer 3.0 - 5.0 mils	Tnemec Series 27 FC Typoxy at 3.0-5.0 mils **OR** SW Macropoxy HS 3.0 - 6.0 mils	Tnemec Series 161 Tneme-Fascure at 3.0-5.0 mils **OR** SW Macropoxy HS 3.0 - 6.0 mils
Galvanized steel exposed to view.	SSPC-SP1 Solvent Cleaning Followed by SSPC-SP7	Tnemec Series 37H-78 2.5 0 3.0 mils **OR** SW Recoatable Epoxy Primer 3.0 - 5.0 mils	Top coats as noted herein	Top coats as noted herein
Ferrous Metals, Non-Ferrous Metals and Galvanized Steel in Contact with or Embedded in Concrete and Masonry	SSPC-SP1 Solvent Cleaning Followed by SSPC-SP7	Tnemec Series 27 FC Typoxy at 3.0-5.0 mils **OR** SW Recoatable Epoxy Primer at 5.0-7.0 mils	Top coats as noted herein for the surfaces exposed to view	Top Coats as noted herein for the surfaces exposed to view
Exhaust Piping and Hot Ferrous Metals	SSPC-SP10 Near White Metal Blast Cleaning	Tnemec Series 90-96 Tneme-Zinc Inorganic at 2.5 mils **OR** SW N.A.	Tnemec Series 39-1261 High Temperature Aluminum at 1.0 mil **OR** SW Silver-Brite Hi-Heat at 1.0 mil	Tnemec Series 39-1261 High Temperature Aluminum at 1.0 mil **OR** SW Silver-Brite Hi-Heat at 1.0 mil
All other Weather Exposed and Enclosed Ferrous Metals Including Metal Doors, Pressed Steel Frames, Steel Lintels and Bollards	SSPC-SP6	Tnemec Series 37H-78 Gray Chemprime at 2.0-3.0 mils (Observe Minimum topcoat times) **OR** SW Recoatable Epoxy Primer at 4.0-6.0 mils	Tnemec Series 73 Endura-Shield at 2.0-3.0 mils **OR** SW Corothane II Acrylic Urethane at 3.0-5.0 mils	Tnemec Series 73 Endura-Shield at 2.0-3.0 mils **OR** SW Corothane II Acrylic Urethane at 3.0-5.0 mils
Exposed electrical conduit, conduit fittings and outlet boxes mounted on painted or finished surfaces or exposed in painted rooms			Same color and finish as background surface and/or equipment	Same color and finish as background surface and/or equipment

SURFACE/ITEM	SURFACE PREPARATION	PRIMER	INTERMEDIATE	FINISH
PIPING (other than ferrous metal)				
Insulated Pipe to be Color Coded	Clean & Dry	Tnemec Series 51-792 PVA Sealer 1.0 to 1.5 **OR** SW Pro-Mar 200 at 2.0-3.0 mils	Tnemec Series 28/29 at 2.0-3.0 mils **OR** SW Pro-Mar 200 at 3.0-4.0 mils	Tnemec Series 28/29 at 2.0-3.0 mils **OR** SW Pro-Mar 200 at 3.0-4.0 mils
PVC Color Coded Pipe	Clean & Dry - Scuffed Up with Medium Grit Sandpaper	Tnemec Series 161 Tneme-Fascure at 3.0-5.0 mils **OR** SW Sher-Tile at 5.0 - 7.0 mils	N/A	Tnemec Series 161 Tneme-Fascure at 3.0-5.0 mils **OR** SW Sher-Tile at 5.0-7.0 mils
Secondary Containment Coatings for Walls, Floors and Pump Pads				
Chemical Containment and Incidental Splash & Spill Areas	Brush-off Blast to Achieve 2 Mil Anchor Profile	Tnemec Series 120-5002 Beige Vinester at 12.0 to 16.0 mils **OR** SW Corobond 100 Primer 10 to 12 mils	Tnemec Series 120-5003 Vinester Filler & Surfacer Applied as needed to Fill Bug Holes and Voids on Concrete **OR** SW Kem Cati-Coat filler 10.0 to 30.0 mils	Tnemec Series 120-5001 Gray Vinester at 12.0 to 16.0 mils **OR** SW Corobond EN 7000 11.0 to 14.0 mils

NOTES:

1. Surface preparation shall be as specified within this section and as noted in the table above.
2. All dry film thickness indicated are the minimum required.
3. All epoxy coatings subjected to UV Exposure shall receive an additional Polyurethane top coat with a minimum dry film thickness of 3 mils. No epoxy coating shall be left exposed to UV light. This shall include all equipment drives, motors, gear reducers, etc.
4. All ferrous metals, piping and equipment delivered to the site with shop primers other than the specified primer shall receive an intermediate coat as necessary for compatibility with the indicated top coats.
5. All ferrous, nonferrous and galvanized metals in contact with concrete or masonry shall receive a POLYAMIDE epoxy primer with a minimum dry film thickness of 4 mils applied to the contact area.
6. Galvanized surfaces shall be treated as required by manufacturer to be compatible with the primer and top coats specified.
7. If the polyurethane top coats are <u>not</u> compatible with the manufacturer's alkyd primer apply a polyamide epoxy as the intermediate coat.
8. The hollow metal doors and frames shall receive the primer indicated above, applied over the manufacturer's shop coatings.
9. Painting of the piping system shall include all ferrous valves, levers, valve handles, fittings, stands, supports, hangers, pumps and appurtenances.
10. Paint motors for color coordination.
11. Epoxy primers and intermediate coats that have been in place for more than 45 days shall be prepared as indicated under the "Surface Preparation" Section of this Specification.
12. Verify the products provided are compatible with the existing coatings in the existing facility.

3.8 PIPING, EQUIPMENT AND VALVE IDENTIFICATION SCHEDULE

A. All pipes, whether concealed or exposed to view shall be painted as specified in the pipe identification schedule. For insulated pipes, only the insulation shall be painted.

B. Markers shall be corrosion resistant laminated plastic bound to the pipes with nylon fasteners. Pipes with diameters less than 1-1/4 inch shall have marker hung from pipe with nylon fasteners.

C. Lettering size shall be in accordance with the following:

SIZE OF LEGEND LETTERS

Outside Diameter of Pipe or Covering	Minimum Length of Marker	Size of Letters
In	In	In
Up to 1-1/4	8	1/2
1-1/2 to 2	8	3/4
2-1/2 to 6	12	1-1/4
8 to 10	24	2-1/2
over 10	32	3-1/2

D. Adjacent to each marker there shall be an arrow indicating flow direction.

E. Marker location shall be in accordance with the American National Standard Institute Scheme for Identification of Piping Systems (ANSI A13.1). Markers shall be placed adjacent to all valves and/or flanges; adjacent to all changes in direction on all pipe branches; and where all pipes pass through walls or floors on each side of wall/floor. On straight runs of piping, markers shall be placed at no less than 10 foot intervals. Where pipes are located above or below the normal line of vision, the lettering shall be placed below or above (as appropriate) the horizontal centerline of the pipe.

F. All valves, all pumps and other equipment shall be assigned an identification number and shall be marked with the identification number with 3 inch diameter tags.
   1. The tags shall be rugged plastic with metal eyelets.
   2. The tags shall be tied with nylon fasteners.

G. Valve status indicator alignment arrows shall be provided on the indicator and scale sides of all interior handwheel, chain and lever operated valves. Arrow heads shall appear aligned when the valve is in the full-open position. Arrow heads shall be painted on with stencils, of a color contrasting with the color of the valve. Arrow heads shall be minimum of 3/4" in smallest dimension. Valve position indicators shall be aligned to be visible from normal working levels.

H. Manufacturer - To establish a standard of quality, design and function, MARKERS, BANDS and TAGS have been based on Seton Name Plate Corporation, New Haven, Connecticut or an equal.

PIPE IDENTIFICATION SCHEDULE

SYSTEM NAME	DRAWING SYMBOL	PIPE COLOR(2) DESIGNATIONS	MARKINGS	PIPE11 MARKERS(1)
Plant Water	PW	Jade	Plant Water	GW
Hypochlorite Solution	HYP	Safety Yellow	Sodium Hypochlorite	YB
Sodium Bisulfite	SB	Dark Red	Sodium Bisulfite	YB
Cold Potable Water	CW	Lt. Blues	Cold Potable Water	GW
Fire Protection	F	Safety Red	Fire Protection	RW
Heating Water Supply	HWS	Safety Blue	Heating Water Supply	YB
Heating Water Return	HWR	Safety Blue	Heating Water Return	YB
Hot Potable Water	HW	Lt. Blue	Hot Potable Water	YB
Natural Gas	NG	Safety Orange	Natural Gas	YB

(1) YB = Yellow Background with Black Letters
GW = Green Background with White Letters
RW = Red Background with White Letters
BW = Blue Background with White Letters

(2) Stainless steel piping shall not be color coded, but shall receive the markings indicated.

I. Pipe supports consisting of pipe rings, clamps, clevises, U bolts, pipe rollers, saddles, etc. shall be painted with the same color as that of the pipe.

J. Wall supported pipe hangers consisting of brackets, standoffs, etc. shall be painted with the same color as that of the wall.

K. Ceiling/roof supported pipe hangers consisting of thread rods, beam clamps etc. shall be painted with the same color as that of the ceiling.

L. Floor supported pipes consisting of stanchions shall be painted with same color as that of the pipe.

END OF SECTION