DIVISION 9
FINISHES

2004/05/3

SECTION 09110
NON-LOAD BEARING WALL FRAMING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Non-load-bearing wall framing construction.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 09250 - Gypsum Board.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. ASTM International (ASTM):
      a. A653, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
      b. C645, Specification for Nonstructural Steel Framing Members.
   2. Underwriters Laboratories, Inc. (UL):
      a. Building Materials Directory.
      b. Fire Resistance Directory.
   3. Building code:
      a. International Code Conference (ICC):
         1) International Building Code and associated standards, 2000 Edition, referred to herein as Building Code.

1.3 SUBMITTALS

A. Shop Drawings:
   1. See Section 01340.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
      c. Manufacturer's load tables for style indicated.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Wall and ceiling framing components:
      a. Dale/Incor.
      b. G-P Gypsum Corp.
      c. National Gypsum Co.
      d. U.S. Gypsum Co.
      e. The Steel Network Inc.
      f. Metal-Lite Inc.

B. Submit requests for substitution in accordance with Specification Section 01630.

2.2 MANUFACTURED UNITS

A. Screw-Type Metal Studs:
   1. ASTM C645.
   2. Roll-formed channel tracks and 'C' type studs.
   3. Flanges: Minimum 1-5/8 IN wide.
   4. ASTM A653 Grade A, G60 galvanized.
   5. Size: 6 IN unless otherwise indicated on drawings (gages as indicated in this specification).

B. Wire Ties: 18 GA soft annealed, galvanized.

C. Fasteners for Runners: Power-driven type to withstand minimum 190 LB shear when driven.

D. Metal Furring Channels:
   1. ASTM C645.
   2. Minimum 20 GA steel.
   3. Minimum 7/8 IN deep "hat sections".
   4. ASTM A924, G60 galvanized.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Provide 16 GA studs and as follows unless otherwise noted on drawings:
   1. At jambs of openings, use two 16 GA studs.

C. Provide continuous runner tracks sized to match studs.
   1. Align runners accurately at both floor and top.
   2. Secure runner tracks to structure at maximum 24 IN OC.
   3. Secure at all corners, ends, and door openings.

D. Space studs maximum 16 IN OC, unless otherwise noted.
   1. Provide additional studs at corners, partition intersections, terminations each side of control joints, door and window openings and any other opening in partitions.
   2. Provide continuous stud backing at all gypsum board corners.

E. Use full length studs between runners.

F. Friction fit studs to runners except at partition corners, intersections, behind wall supported casework or equipment and at openings. At those locations, positively attach studs to runners with 3/8 IN self-tapping screws on both flanges of each stud, top and bottom.

G. At all openings provide two full length studs, back to back, at each jamb.
   1. For wall areas above and below openings, cut track to length, split flanges and bend webs at ends.
   2. Overlap and screw attach to jamb studs.
   3. Install cut to length intermediate studs between jamb studs at head and sill sections at same spacing as full length studs.
   4. To provide for control joints at openings, install additional stud, maximum 1/2 IN from jamb studs. Do not fasten extra stud to track or jamb stud.
   5. Securely attach jamb studs to door and window frames.

H. Align stud openings to facilitate running of wires, conduit, and piping.

END OF SECTION

2004/04/30

SECTION 09130
ACOUSTIC SUSPENSION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal and Fiberglass acoustic suspension systems.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. ASTM International (ASTM):
      a. C635, Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
      b. C636, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
   2. Underwriters Laboratories, Inc. (UL):
      a. Building Materials Directory.

1.3 SUBMITTALS

A. Shop Drawings:
   1. See Section 01340.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.

B. Samples:
   1. Samples of each product being used minimum 6 IN long.
   2. Sample of intersecting grid connection system.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Acoustical suspension systems (fiberglass): [Scheduled as FRP].
      a. Crane Kemlite Company, Inc.

B. Submit requests for substitutions in accordance with Specification Section 01630.

2.2 COMPONENTS

A. Hangers:
   1. Galvanized, soft annealed steel wire for general use.
   2. Soft stainless steel wire for use with aluminum systems and in wet areas.

B. Fiberglass Suspension Systems:
   1. Equal to Kemlite Sanigrid with 1/2 IN thick kemply lay-in panels.

2.3 MAINTENANCE MATERIALS

A. Extra Material:
   1. Provide Owner with 8 LF of main runner and 8 LF of cross runner of each different finish and type of grid specified.
   2. Supply minimum 2 OZ of touch-up paint for each color of grid used.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with ASTM C636 and manufacturer's instructions.

B. Provide all hangers and inserts necessary to support acoustical ceilings.
   1. Where placement of ducts or other obstructions limits hanging wires, provide additional supporting members.
   2. Provide supplementary rough suspension system and trapezing where necessary to support acoustical ceilings beneath pipes, ducts, equipment, etc.
   3. Do not suspend any part of rough suspension system or acoustical ceilings from ducts, pipes, conduit, equipment, etc.
   4. Provide structural members sized as required to span ducts, etc.

C. Hang suspension systems from structural supporting and framing members, floor deck, or rough suspension system.
   1. Locate hangers to avoid contact with insulation covering ducts and pipes.
   2. Splay hangers only where obstructions or other conditions preclude plumb, vertical installation.
   3. Offset horizontal forces of splayed hangers by countersplaying, bracing or other approved methods.

D. Space hangers to prevent loads from items in or on ceiling from causing eccentric deflection and rotation of main runners exceeding limits specified in manufacturer's technical data.
   1. Provide additional hangers at each corner of light fixture.
   2. Provide hangers not more than 6 IN from ends of main runners.
   3. Support main runners directly from hangers.
   4. Space main runners to support ceiling units and other work resting in or on ceiling.

E. Install moldings where ceilings meet walls, partitions, other vertical elements, and other types of ceilings.
   1. Support runners and border units on moldings.
   2. Secure moldings to wall construction by fastening through holes drilled in web.
   3. Space holes not more than 3 IN from each end and not more than 16 IN on center.
   4. Draw up fasteners for tight set against vertical surfaces.
   5. Miter cut inside and outside corners.
   6. Level to tolerances in accordance with ASTM A636.
   7. Install moldings with exposed leg supporting bottom flange of exposed runners.
   8. Where ceiling mounted fixtures have integral flange trim, no additional trim is required.

F. Leave suspension system ready to accept installation of acoustic materials.

END OF SECTION

2004/05/19

SECTION 09905
PAINTING AND PROTECTIVE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Painting and protective coatings.
   2. Minimum surface preparation requirements.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 03348 - Concrete Finishing and Repair of Surface Defects.
   4. Section 11005 - Equipment: Basic Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American National Standards Institute (ANSI):
      a. A250.10, Test Procedure and Acceptance Criteria For Prime Painted Steel Surfaces for Steel Doors.
      b. Z535.1, Safety Color Code.
   2. ASTM International (ASTM):
      a. D4258, Practice for Surface Cleaning Concrete for Coating.
      b. D4259, Practice for Abrading Concrete.
      c. D4261, Practice for Surface Cleaning Concrete Unit Masonry for Coating.
      d. D4262, Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
      e. D4263, Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
      f. E84, Test Method for Surface Burning Characteristics of Building Materials.
   3. American Water Works Association (AWWA).
   4. National Bureau of Standards (NBS):
      a. Certified Coating Thickness Calibration Standards.
   5. National Fire Protection Association (NFPA):
      a. 101, Life Safety Code.
   6. National Sanitation Foundation International (NSF):
      a. 61, Drinking Water System Components - Health Effects.
   7. Steel Structures Painting Council (SSPC) Joint Surface Preparation Standard:
      a. PA-2, Measurement of Dry Paint Thickness with Magnetic Gages.
      b. SP-1, Solvent Cleaning.
      c. SP-2, Hand Tool Cleaning.
      d. SP-3, Power Tool Cleaning.
      e. SP-5/NACE No. 1, White Metal Blast Cleaning.
      f. SP-6/NACE No. 3, Commercial Blast Cleaning.
      g. SP-7/NACE No. 4, Brush-off Blast Cleaning.
      h. SP-10/NACE No. 2, Near-White Blast Cleaning.
      i. SP-13/NACE No. 6, Surface Preparation of Concrete.

B. Qualifications:
   1. Coating manufacturer's authorized representative shall provide written statement attesting that Applicator has been instructed on proper preparation, mixing and application procedures for coatings specified.

2. Contractor and applicators shall have minimum of 10 years experience in application of similar products on similar project. Provide references for minimum of three different projects completed in last 5 years with similar scope of work. Include name and address of project, size of project in value (painting) and contact person.

C. Miscellaneous:
1. Furnish paint through one manufacturer unless noted otherwise.

D. Deviation from specified mil thickness or product type is not allowed without written authorization of Engineer.

E. Material may not be thinned unless approved, in writing, by paint manufacturer's authorized representative.

1.3 DEFINITIONS

A. Installer or Applicator: Installer or applicator is the person actually installing or applying the product in the field at the Project site.
1. Installer or applicator are synonymous.

B. Approved Factory Finish: Finish on a product in compliance with the finish specified in the section where the product is specified or in Section 11005.

C. Corrosive Environment: Immersion in, or not more than 6 IN above, or subject to frequent condensation, spillage or splash of a corrosive material such as water, wastewater, or chemical solution; or chronic exposure to corrosive, caustic or acidic agent, chemicals, chemical fumes, chemical mixture, or solutions with pH range of 5 - 9.

D. Highly Corrosive Environment: Immersion in, or not more than 6 IN above, or subject to frequent condensation, spillage or splash of a corrosive material such as water, wastewater, or chemical solution; or chronic exposure to corrosive, caustic or acidic agent, chemicals, chemical fumes, chemical mixture, or solutions with pH range below 5 or above 9.

E. Exposed Exterior Surface: Surface which is exposed to weather but not necessarily exposed to view as well as surface exposed to view. Exterior surfaces are considered corrosive environment.

F. Finished Room or Space: One that has finish called for on Room Finish Schedule or is indicated, on Drawings, to be painted.

G. Paint includes fillers, primers, sealers, emulsions, oils, alkyds, latex, enamels, thinners, stains, epoxies, vinyls, chlorinated rubbers, urethanes, shellacs, varnishes, and any other applied coating specified within this Section.

H. Surface Hidden from View: Surfaces such as those within pipe chases, and between top side of ceilings (including drop-in tile ceilings) and underside of floor or roof structure above.

I. VOC: Volatile Organic Compounds.

1.4 SUBMITTALS

A. Shop Drawings:
1. See Section 01340.
2. Product technical data including:
a. Acknowledgement that products submitted meet requirements of standards referenced.
b. Manufacturer's application instructions.
c. Manufacturer's surface preparation instructions.
d. If products being used are manufactured by Company other than listed in Article 2.2, provide complete individual data sheet comparison of proposed products with specified products including application procedure, coverage rates and verification that product is designed for intended use.
e. Contractor's written plan of action for containing airborne particles created by blasting operation and location of disposal of spent contaminated blasting media.

f. Coating manufacturer's recommendation on abrasive blasting.
g. Manufacturer's recommendation for universal barrier coat.
3. Manufacturer's statement regarding Applicator instruction on product use.
4. Contractor and applicator experience qualifications.
a. No submittal information will be reviewed until Engineer has received and approved Contractor and Applicator qualifications.
5. Certification that coating systems proposed for use have been reviewed and approved by Senior Corrosion Specification Specialist employed by the coating manufacturer.

B. Samples:
1. Manufacturer's full line of colors for Engineer's color selection.
2. After initial color selection by Engineer provide two 3 x 5 IN samples of each color selected.

C. Miscellaneous Submittals:
1. See Section 01340.
2. Approval of application equipment.
3. Applicator's daily record:
a. Submit daily record at end of each week in which painting work is performed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver in original containers, labeled as follows:
1. Name or type number of material.
2. Manufacturer's name and item stock number.
3. Contents, by volume, of major constituents.
4. Warning labels.
5. VOC content.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, only the following manufacturers are acceptable:
1. Tnemec.
2. Ameron Protective Coatings Div.
3. ICI Devoe.
4. Carboline Protective Coatings.
5. Sherwin Williams.
6. Dampney Company, Inc.
7. Sika.

B. Submit requests for substitution in accordance with Specification Section 01640.

2.2 MATERIALS

A. All materials used must contain not more than 2.8 LBS/GAL VOC.

B. For unspecified materials such as thinner, provide manufacturer's recommended products.

C. Paint Systems - General:
1. P=prime coat. F1, F2 . . . Fn = first finish coat, second finish coat . . . . . nth finish coat, color as selected by Engineer.
2. If two finish coats of same material are required, Contractor may, at his option and by written approval from paint manufacturer, apply one coat equal to mil thickness of two coats specified.

D. Products specified are manufactured by Tnemec.

E. Paint Systems (Systems not shown are not used):

1. System #1 - Polyamidoamine Epoxy Primer with Polyamidoamine Epoxy or Aliphatic Acrylic Polyurethane Enamel Finish Coat(s).
   a. Prime coat:
      1) P1=1 coat, 3 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11
   b. Finish coat(s):
      1) Interior:
         a) F1=1coat, 3 mils, Series N69 Epoxoline (Polyamidoamine Epoxy)
         b) F2=1 coat, 3 mils, Series N69 Epoxoline (Polyamidoamine Epoxy)
      2) Exterior:
         a) F1=1 coat, 3 mils, Series N69 Epoxoline (Polyamidoamine Epoxy)
         b) F2=1 coat, 2.5 mils, Series 1074 Endura-Shield (Aliphatic Acrylic Polyurethane Enamel), VOC=1.81

2. System #2 - Polyamidoamine Epoxy Primer with Polyamidoamine Epoxy or Aliphatic Acrylic Polyurethane Enamel Finish Coat(s).
   a. Prime coat:
      1) P1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11
   b. Finish coat(s):
      1) Interior:
         a) F1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11
      2) Exterior:
         a) F1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy)
         b) F2=1 coat, 2.5 mils, Series 1074 Endura-Shield (Aliphatic Acrylic Polyurethane Enamel), VOC=2.45

3. System #3 - Polyamidoamine Epoxy Primer with Polyamidoamine Epoxy or Aliphatic Acrylic Polyurethane Enamel Top Coat(s).
   a. Prime coat:
      1) P1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11
   b. Finish coat(s):
      1) Interior:
         a) F1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy)
      2) Exterior:
         a) F1=1 coat, 2.5 mils, Series 1074 Endura-Shield (Aliphatic Acrylic Polyurethane Enamel), VOC=2.80

4. System #4 - Zinc-rich Urethane Primer with Polyamidoamine Epoxy or Aliphatic Acrylic Polyurethane Enamel Top Coat(s).
   a. Prime coat:
      1) P1=1 coat, 2.5 mils, Series 90-97 Tneme-Zinc (Zinc-Rich Urethane), VOC=2.67
   b. Finish coat(s):
      1) Interior:
         a) F1=1 coat, 3 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11
      2) Exterior:
         a) F1=1 coat, 2.5 mils, Series 1074 Endura-Shield (Aliphatic Acrylic Polyurethane Enamel), VOC=2.45

5. System #5 - Modified Polyamidoamine Epoxy Primer with Polyamidoamine Epoxy or Aliphatic Acrylic Polyurethane Enamel Top Coat(s).
   a. Prime coat:
      1) P1=1 coat, 2.0 mils, Series 135 Chembuild (Modified Polyamidoamine Epoxy), VOC=1.16
   b. Finish coat(s):
      1) Interior:

a) F1=1 coat, 2.5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11

2) Exterior:

a) F1=1 coat, 2.0 mils, Series 1074 Endura-Shield (Aliphatic Acrylic Polyurethane Enamel), VOC=2.45

6. System #6 - Epoxy Primer with Epoxy Top Coat(s), NSF approved.
   a. Prime coat:
      1) P1=1 coat, 80 mils, Sikagard 75 EPOCEM Epoxy/Cement Resurfacing and Pore Filling Mortar
   b. Finish coat(s):
      1) Interior:
         a) F1=1 coat, 5 mils, Sikagard 62 Epoxy Coating.
         b) F2=1 coat, 5 mils, Sikagard 62 Epoxy Coating.
      2) Non-slip finish at floor/containment areas:
         a) F2=1 coat, 5 mils, Sikagard 62 Epoxy Coating with Sikagard 62 Granules.

7. System #7 - Zinc-Rich Urethane Primer with Polyamidoamine Epoxy or Aliphatic Acrylic Polyurethane Enamel Top Coat(s).
   a. Prime coat:
      1) P1=1 coat, 2.5 mils, Series 90-97 Tneme-Zinc (Zinc-Rich Urethane), VOC=2.67
   b. Finish coat(s):
      1) Interior:
         a) F1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11
      2) Exterior:
         a) F1=1 coat, 3.0 mils, Series 1074 Endura-Shield (Aliphatic Acrylic Polyurethane Enamel), VOC=2.45

8. System #8 - Air Dry Silicone Copolymer Primer with Silicone Copolymer Top Coat.
   a. Prime coat:
      1) P1=1 coat, 2.0 mils, Dampney Thurmalox 260C Series (Air Dry Silicone Copolymer), VOC=3.20
   b. Finish coat:
      1) Interior or exterior:
         a) F1=1 coat, 2.0 mils, Dampney Thurmalox 260C Series (Air Dry Silicone Copolymer), VOC=3.20

9. System #9 - NOT USED.

10. System #10 - NOT USED.

11. System #11 - Zinc-Rich Aromatic Urethane Primer.
    a. Prime coat:
       1) P1=1 coat, 3.0 mils, 90-97 Tneme-Zinc (Zinc-Rich Urethane), VOC=2.67

12. System #12 - Acrylic Emulsion Primer and Top Coat.
    a. Prime coat:
       1) P1=1 coat, 2.5 mils, Series 29 Tufcryl (Acrylic Emulsion), VOC=1.53
    b. Finish coat:
       1) Interior:
          a) F1=1 coat, 2.5 mils, Series 29 Tufcryl (Acrylic Emulsion), VOC=1.53

13. System #13 - .Modified-Acrylate Elastomer Primer and Top Coat..
    a. Prime coat:

1) P1=1 coat, 8 mils, Series 156 Enviro-Crete (Modified-Acrylate Elastomer), VOC=1.19

b. Finish coat:

1) Exterior:

a) F1=1 coat, 8 mils, Series 156 Enviro-Crete (Modified-Acrylate Elastomer)

14. System #14 - NOT USED.

15. System #16 - Polyamidoamine Epoxy Prime and Top Coat(s).

a. Prime coat:

1) P1=1 coat, 80 to 110 SF/GAL/coat, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11

b. Finish coat(s):

1) Interior:

a) F1=1 coat, 175-200 SF/GAL/coat, Series N69 Epoxoline (Polyamidoamine Epoxy)

16. System #17 - NOT USED.

17. System #18 - NOT USED.

18. System #19 - Polyamidoamine Epoxy Coating.

a. Prime coat:

1) P1=1 coat, 5 mils, Series N69 Epoxoline (Polyamidoamine Epoxy), VOC=2.11

19. System #20 - NOT USED.

20. System #21 - Modified Polyamidoamine Epoxy.

a. Prime coat:

1) P1=1 coat, 5 mils, 135-1243 Chembuild (Modified Polyamidoamine Epoxy), VOC=1.44

21. System #22 - NOT USED.

22. System #23 – NOT USED.

23. System #24 - NOT USED.

24. System #25 - NOT USED.

25. System #26 – NOT USED.

26. System #27 - NOT USED.

27. System #28 - NOT USED.

28. System #29 - NOT USED.

29. System #30 - NOT USED.

30. System #31 - NOT USED.

31. System #32 - NOT USED.

PART 3 - EXECUTION

3.1 ITEMS TO BE PAINTED

A. Exposed Exterior Surfaces including:
   1. Columns, beams, equipment supports, and pipe supports.
   2. Piping, valves, and fittings except when covered by pipe jacketing and supports.
   3. Exposed ductwork and supports.
   4. Conduit, device boxes, junction boxes and covers, pull boxes and covers and supports when attached to a surface required to be painted or to a prefinished surface.
   5. Miscellaneous ferrous metal surfaces.
   6. Hollow metal doors and frames.
   7. Steel pipe bollards.
   8. Steel lintels and exposed steel components of masonry lintels (plain and/or galvanized).
   9. Structural steel.
   10. Galvanized metal surfaces.
   11. Copper and brass surfaces.
   12. Fue vents and plumbing vents.

B. Interior Finished Areas:
   1. Refer to Room Finish Schedule on Drawings. If schedule requires wall surfaces to be painted in a particular space, the space is considered to be a finished area, therefore, paint all appurtenant surfaces within the space unless specifically noted not to be painted in the Contract Documents. Appurtenant surfaces include:
      a. Columns, pipe supports, and equipment supports, underside of overhead concrete which is exposed, semi-exposed or concealed from view but still exposed to the adjacent atmosphere.
      b. Piping, valves, and fittings except when covered by pipe jacketing and supports.

C. Surfaces in Areas Not Considered Finished:
   1. Paint following surfaces in areas not considered as finished area:
      a. Piping, valves, and fittings, except when covered by pipe jacketing and supports.
      b. Structural steel.
      c. Miscellaneous ferrous metal surfaces.
      d. Steel lintels and exposed steel components of concrete and/or masonry lintels (plain or galvanized).
      e. Hollow metal doors and frames.

D. New Equipment:
   1. Paint new equipment, except:
      a. Where noted in Article 3.2.
      b. Where specified elsewhere in the Contract Documents.

3.2 ITEMS NOT TO BE PAINTED

A. General: Do not paint items listed in Article 3.2 unless specifically noted in the Contract Documents to be painted.

B. Items with Approved Factory Finish.

C. Electrical Equipment:
   1. Do not field paint certain items of electrical equipment as listed in Section 11005 except where painting is specifically stated elsewhere in these Contract Documents, or where the equipment is subject to a corrosive environment. The list of equipment includes specific types of equipment with Approved Factory Finishes.

D. Surfaces Hidden from View except when in a corrosive or highly corrosive area, including:
   1. When not in a corrosive or highly corrosive area:
      a. Conduit.

b. Ducts.
c. Insulation.
d. Galvanized metal surfaces.
e. Note: (Manufacturer's standard coatings, if any, may remain).

E. Other Items:
1. Stainless steel surfaces except:
a. Piping.
b. Banding as required to identify piping.
2. Aluminum surfaces except:
a. Where specifically shown in the Contract Documents.
b. Where in contact with concrete.
c. Where in contact with dissimilar metals.
3. Fiberglass surfaces except:
a. Fiberglass piping.
b. Piping supports.
4. Interior of pipe, ductwork, and conduits.
5. Moving parts of mechanical and electrical units where painting would interfere with the operation of the unit.
6. Code labels and equipment identification and rating plates.
7. Contact surfaces of friction-type connections.

3.3 SCHEDULE OF ITEMS TO BE PAINTED AND PAINTING SYSTEMS

A. Concrete:
1. Interior cast-in-place and interior precast surfaces (other than prefinished panels): SYSTEM #15.
a. Includes equipment bases, pads, pedestals, pilasters, etc.
2. Exterior cast-in-place and exterior precast surfaces: System #13.

B. Structural Steel:
1. System #2, unless noted otherwise.

C. Membrane tank (all surfaces - including but not limited to, walls, bottoms, top edges, sumps); does not include flocculation basin. All concrete surfaces of these elements: System #6 (interior).

D. Ferric Sulfate Bulk Storage Tank Containment - all interior surfaces - including but not limited to, walls, bottoms, top edges, sumps. All concrete surfaces of these elements: System #6 (interior).

E. Pump Equipment Room M102 – concrete floor, walls and concrete equipment pads: System #6 (with non-slip finish on flooring only).

F. Ferric Sulfate Bulk Storage Tank Containment - all interior surfaces - including but not limited to, walls, bottoms, top edges, sumps. All concrete surfaces of these elements: System #6 (interior).

G. Miscellaneous ferrous metals (non-corrosive dry environment): SYSTEM #1.
1. Not for coating structural steel, galvanized steel, steel (hollow metal) doors, and frames, and products with approved factory finishes.

H. Ferrous metals subject to corrosive environment: SYSTEM #2.
1. Includes ferrous metal components of bar screens, grit washers, interior of tanks, wetted parts of digester covers, clarifier mechanisms, sluice gates, slide gates, trickling filter mechanisms, piping, stairs, exterior of tankage, tank or equipment bridges, pumps, and similar items.
2. Does not include items subject to contact with potable water.

I. Ferrous metals subject to highly corrosive environment: SYSTEM #2.
1. Includes ferrous metal components of bar screens, grit washers, interior of tanks, wetted parts of digester covers, clarifier mechanisms, sluice gates, slide gates, trickling filter mechanisms.
2. Does not include items subject to contact with potable water.

J. Galvanized Metals:
   1. Field touch-up where top coat is required: SYSTEM #4.
      a. Prime paint only the damaged area.
   2. Assembled galvanized steel items: SYSTEM #3.
   3. Field touch-up of galvanized surfaces not requiring a finish top coat: SYSTEM #11.
      a. Paint only damaged areas.

K. Steel (hollow metal) doors and frames and window frames primed in the factory: SYSTEM #5.
   1. Shall be in conformance with ANSI A250.10

L. Steel equipment with existing paint coating or factory-applied prime or finish coating not complying with this Specification: SYSTEM #5.
   1. Includes equipment specifically indicated in the Contract Documents to be painted.
   2. Factory-applied coats to remain.

M. Non-ferrous metals (except galvanized): SYSTEM #3.
   1. Includes copper, brass, aluminum and aluminum flashing specifically indicated on the Drawings to be painted.

N. Plastic Surfaces:
   1. PVC, FRP, and HDPE surfaces: SYSTEM #3.
      a. Includes tankage.

O. Electrical Conduit:
   1. Galvanized: SYSTEM #3.
   2. PVC coated. SYSTEM #3.

P. Pipe, Valves, and Fittings:
   1. Pipe bollards: SYSTEM #2.
   2. Steel, cast-iron, and uncoated ductile iron: SYSTEM #1.
   3. Stainless: SYSTEM #1.
   4. Brass and bronze: SYSTEM #3.
   5. PVC, FRP: SYSTEM #3.
   6. Steel aeration piping and blower equipment: SYSTEM #8.

Q. Pipe and duct insulation when mounted on wall to be painted: SYSTEM #12.

R. Aluminum buried in concrete and between dissimilar metals which are not below liquid level: SYSTEM #19.

S. Aluminum colored pipe thread touch-up, and aluminum colored finish where top coat is not required: SYSTEM #21.
   1. Not for coating aluminum material.

T. Steel pipe, ducts, and equipment subject to maximum high temperatures of 400 DegF: SYSTEM #8.

3.4 PREPARATION

A. General:
   1. Prepare surfaces to be painted in accordance with coating manufacturer's instructions and this Section unless noted otherwise in the Specification.
   2. Remove all dust, grease, oil, compounds, dirt and other foreign matter which would prevent bonding of coating to surface.

B. Protection:
   1. Protect surrounding surfaces not to be coated.
   2. Remove and protect hardware, accessories, plates, fixtures, finished work, and similar items; or provide ample in-place protection.

C. Prepare and Paint Before Assembly: Where component is subject to corrosive or highly corrosive environment, prepare and paint, before assembly, all surfaces which may be subject to environment which are inaccessible after assembly.

D. Ferrous Metal:
1. Prepare ductile iron pipe in accordance with pipe manufacturer's recommendations and AWWA.
2. Complete fabrication, welding or burning before beginning surface preparation.
   a. Chip or grind off flux, spatter, slag or other laminations left from welding.
   b. Remove mill scale.
   c. Grind smooth rough welds and other sharp projections.
3. Solvent clean in accordance with SSPC SP-1 all surfaces scheduled to receive additional SSPC surface preparation.
4. Surfaces subject to corrosive or highly corrosive environment and all surfaces subject to immersion service:
   a. Near-white blast clean in accordance with SSPC SP-10/NACE No. 2.
5. All interior and exterior surfaces:
   a. Minimum commercial blast clean in accordance with SSPC SP-6/NACE No. 3.
6. Surfaces subject to high temperatures.
   a. Heat in excess of 600 DegF: SSPC SP-10/NACE No. 2.
   b. Heat in excess of 200 DegF but less than 600 DegF: SSPC SP-6/NACE No. 3.
7. Surfaces of steel joists and steel trusses:
   a. Commercial blast clean the major portion of the truss in accordance with SSPC SP-6/NACE No. 3.
   b. Power tool or hand clean tight connection areas and other difficult to access areas in accordance with SSPC SP-2 or SP-3.
8. Steel surfaces scheduled to receive paint system No. 24:
   a. White metal blast in accordance with SSPC SP-5/NACE No. 1.
9. Restore surface of field welds and adjacent areas to original surface preparation.
10. All surfaces of steel lintels and steel components of concrete lintels used in wall construction shall be completely painted with both prime and finish coats prior to placing in wall.

E. Hollow Metal:
1. Solvent clean in accordance with SSPC SP-1.

F. Galvanized Metal:
1. Solvent clean in accordance with SSPC SP-1 followed by abrasive brush blast in accordance with SSPC SP-7/NACE No. 4 to provide 1 mil profile.

G. Concrete:
1. Cure for minimum of 28 days.
2. Verify that concrete surfaces have been cleaned and that voids have been patched in accordance with Section 03348.
   a. Concrete surfaces shall be cleaned in accordance with ASTM D4258.
3. Mechanically abrade concrete surfaces in accordance ASTM D4259 as recommended by coating manufacturer.
4. Abrasive blast concrete surfaces in accordance with SSPC SP-13/NACE No. 6 to provide profile recommended by coatings manufacturer.
5. Test pH of surface to be painted in accordance with ASTM D4262.
   a. If surface pH is not within coating manufacturer's required acceptable range, use methods acceptable to coating manufacturer as required to bring pH within acceptable range.
   b. Retest pH until acceptable results are obtained.
6. Verify that moisture content of surface to be painted is within coating manufacturer's recommended acceptable limits.
   a. Test moisture content of surface to be coated in accordance with ASTM D4263.

b. After remedial measures have been taken to lower or raise moisture content, retest surface until acceptable results are obtained.

H. Preparation by Abrasive Blasting:
1. All abrasive-blasted ferrous metal surfaces shall be inspected and approved in writing by NACE certified coatings inspector immediately prior to application of paint coatings.
   a. Inspection shall be performed to determine cleanliness and profile depth of blasted surfaces and to certify that surface has been prepared in accordance with these Specifications.
2. Schedule the abrasive blasting operation so blasted surfaces will not be wet after blasting and before painting.
3. Perform additional blasting and cleaning as required to achieve surface preparation required. Prior to painting, reblast surfaces allowed to set overnight and surfaces that show rust bloom.
   a. Surfaces allowed to set overnight or surfaces which show rust bloom prior to painting shall be reinspected and approved by NACE certified coatings inspector prior to paint application.
4. Profile depth of blasted surface: Not less than 1 mil or greater than 2 mils unless required otherwise by coating manufacturer.
5. Provide compressed air for blasting that is free of water and oil. Provide accessible separators and traps.
6. Confine blast abrasives to area being blasted.
   a. Provide shields of polyethylene sheeting or other such barriers to confine blast material.
   b. Plug pipes, holes, or openings before blasting and keep plugged until blast operation is complete and residue is removed.
7. Protect nameplates, valve stems, rotating equipment, motors and other items that may be damaged from blasting.
8. Reblast surfaces not meeting requirements of these Specifications.
9. Abrasive blasting media may be recovered, cleaned and reused providing Contractor submits, for Engineer's review, a comprehensive recovery plan outlining all procedures and equipment proposed in reclamation process.
10. Properly dispose of blasting material contaminated with debris from blasting operation not scheduled to be reused.

I. All Plastic Surfaces and Non-Ferrous Surfaces Except Galvanized Steel:
1. Sand using 80-100 grit sandpaper to scarify surfaces.

3.5 APPLICATION

A. General:
1. Thin, mix and apply coatings by brush, roller, or spray in accordance with manufacturer's installation instructions.
   a. Application equipment must be inspected and approved in writing by coating manufacturer.
2. Temperature and weather conditions:
   a. Do not paint surfaces when surface temperature is below 50 DegF unless product has been formulated specifically for low temperature application or approved in writing by Engineer and paint manufacturer's authorized representative.
   b. Avoid painting surfaces exposed to hot sun.
   c. Do not paint on damp surfaces.
3. Immediately after surface has been inspected, apply structural steel and miscellaneous steel prime coat in the factory.
   a. Finish coats shall be applied in the field.
   b. Prime coat referred to here is prime coat as indicated in this Specification. Structural steel and miscellaneous steel prime coating applied in factory (shop) as part of Fabricator's standard rust inhibiting and protection coating is not acceptable as replacement for specified prime coating.
4. Provide complete coverage to mil thickness specified.

a. Thickness specified is dry mil thickness.
b. All paint systems are "to cover." In situations of discrepancy between manufacturer's square footage coverage rates and mil thickness, mil thickness requirements govern.
c. When color or undercoats show through, apply additional coats until paint film is of uniform finish and color.

5. If so directed by Engineer, do not apply consecutive coats until Engineer has had an opportunity to observe and approve previous coats.
6. Apply materials under adequate illumination.
7. Evenly spread to provide full, smooth coverage.
8. Work each application of material into corners, crevices, joints, and other difficult to work areas.
9. Avoid degradation and contamination of blasted surfaces and avoid intercoat contamination.
   a. Clean contaminated surfaces before applying next coat.
10. Smooth out runs or sags immediately, or remove and recoat entire surface.
11. Allow preceding coats to dry before recoating.
    a. Recoat within time limits specified by coating manufacturer.
    b. If recoat time limits have expired reprepare surface in accordance with coating manufacturer's printed recommendations.
12. Allow coated surfaces to cure prior to allowing traffic or other work to proceed.
13. Coat all aluminum in contact with dissimilar materials.
14. When coating rough surfaces which cannot be backrolled sufficiently, hand brush coating to work into all recesses.
15. Backroll concrete and masonry and gypsum board surfaces with a roller if paint coatings are spray applied.

B. Prime Coat Application:
1. Prime all surfaces indicated to be painted. Apply prime coat in accordance with coating manufacturer's written instructions and as written in this Section.
2. Ensure field-applied coatings are compatible with factory-applied coatings. Ensure new coatings applied over existing coatings are compatible.
   a. Employ services of coating manufacturer's qualified technical representative.
      1) Certify through material data sheets.
      2) Perform test patch.
   b. If field-applied coating is found to be not compatible, require the coating manufacturer's technical representative to recommend, in writing, product to be used as barrier coat, thickness to be applied, surface preparation and method of application.
   c. At Contractor's option, coatings may be removed, surface reprepared, and new coating applied using appropriate paint system listed in paragraph 2.2 E.
      1) All damage to surface as result of coating removal shall be repaired to original condition or better by Contractor at no additional cost to Owner.
3. Prime ferrous metals embedded in concrete unless galvanized.
4. Apply zinc-rich primers while under continuous agitation.
5. Ensure abrasive blasting operation does not result in embedment of abrasive particles in paint film.
6. Brush or spray bolts, welds, edges and difficult access areas with primer prior to primer application over entire surface.
7. Touch up damaged primer coats prior to applying finish coats. Restore primed surface equal to surface before damage.

C. Finish Coat Application:
1. Apply finish coats in accordance with coating manufacturer's written instructions and in accordance with this Section.
2. Touch up damaged finish coats using same application method and same material specified for finish coat. Prepare damaged area in accordance with Article 3.4.

3.6 COLOR CODING

A. Color and band piping in accordance with Article 3.9 of this Section.
   1. Band piping using maximum of three different colors at 20 FT maximum centers.
   2. Place bands:
      a. Along continuous lines.
      b. At changes in direction.
      c. At changes of elevation.
      d. On both sides of an obstruction (e.g., wall, ceiling) that painted item passes through.
   3. Band width for individual colors (pipe diameter measured to outside of insulation, if applicable):
      a. Piping up to 8 IN DIA: 2 IN minimum.
      b. Piping greater than 8 IN up to 24 IN DIA: 4 IN minimum.
      c. Piping greater than 24 IN up to 48 IN DIA: 6 IN minimum.
      d. Piping greater than 48 IN DIA: 8 IN minimum.

3.7 FIELD QUALITY CONTROL

A. Maintain daily record:
   1. Provide the following information for each coat of paint applied:
      a. Date, starting time, end time, and all breaks taken by painters.
      b. Sky condition.
      c. Air temperature.
      d. Relative humidity.
      e. Wind speed and direction.
      f. Moisture content of substrate prior to each coat.
      g. Provisions utilized to maintain work area within manufacturer's recommended application parameters.
      h. Surface temperature of substrate to which paint is being applied.

B. Measure wet coating with wet film thickness gages.

C. Measure coating dry film thickness in accordance with SSPC PA-2 using Mikrotest gage calibrated against National Bureau of Standards "Certified Coating Thickness Calibration Standards."
   1. Engineer may measure coating thickness at any time during project to assure conformance with Specifications.

D. Measure surface temperature of items to be painted with surface temperature gage specifically designed for such.

E. Measure substrate humidity with humidity gage specifically designed for such.

F. Provide wet paint signs.

3.8 CLEANING

A. Clean paint spattered surfaces. Use care not to damage finished surfaces.

B. Upon completion of painting, replace hardware, accessories, plates, fixtures, and similar items.

C. Remove surplus materials, scaffolding, and debris. Leave areas broom clean.

3.9 SCHEDULE

A. Piping and Pipe Banding Color Schedule (Colors based on Tnemec):
   1. Water Treatment Plant Piping Color Schedule:
      a. Owner will select all colors during shop drawing approval.
   2. OWNER will verify color and banding selections for piping during shop drawing process. The anticipated color and banding schedule is as listed below.

a. OWNERs selection of color and banding scheme during shop drawing may result in more piping having requirements for banding than listed below. CONTRACTOR shall provide color selections and banding selected by OWNER during shop drawing process at no additional cost.

DESIGNATION	SERVICE	PIPE COLOR	BANDING COLOR
A	Compressed Air	Light Green	
BP	Backpulse	Green	
BWR	Backwash Recycle	Tan	
CCW	Cleaning Chemical Waste	Light Brown	
CIP	Clean In Place		
CAS	Citric Acid Solution		
CLS	Chlorine Solution	Yellow	Red
D	Drain	Grey	
FES	Ferric Sulfate Solution		
FW	Feed Water		
FN	Finished Water	Light Blue	
NG	Natural Gas		
NPW	Nonpotable Water	Tan	Black
O	Overflow Line		
PA	Process Air		
PER	Permeate		
PW	Potable Water	Light Blue	
RW	Raw Water	Tan	
SAM	Sample	Green	
SMD	Sample Drain	Light Brown	
SVW	Service Water	Light Blue	
SBS	Sodium Bisulfite Solution		
SHS	Sodium Hydroxide Solution	White	Red
VT & CHV	Vent	Light Grey	

END OF SECTION

SECTION 09986

FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

PART 1 - GENERAL

1.1 SCOPE:

A. Refer to Room Finish Schedule for indication of room where FRP are to be installed.
   1. Schedule also indicates which surfaces are to be FRP panels.

1.2 QUALITY ASSURANCE

A. ASTM Standards:
   1. ASTM-E84.
   2. ASTM-D570.

1.3 SUBMITTALS

A. Product data:
   1. Fire test information.

B. Samples:
   1. Material samples of full range of standard and custom range of for selection of colors.
   2. After color selection furnish two 12 IN square samples of each selected color.

C. Contract closeout information:
   1. Maintenance data.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Schedule delivery of anchorage components as required for installation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Acceptable manufacturers:
   1. Materials listed:
      a. Base:
         1) Kemlite.
      b. Optional:
         1) Glassteel.
         2) Nudo Panels.
         3) Fiber-lite.
         4) Sequintia.
         5) Citadel.
         6) Marlite.
   2. Other manufacturers desiring approval comply with Document 00440

2.2 WALL PANELS

A. Class A Fiberglass Reinforced Plastic (FRP) Wall Panels:
   1. Panel thickness:
      a. 0.09 IN.
   2. Barcol hardness not greater than 40.
   3. Interior Finish rating: Class A (I) when tested in accord with ASTM-E84:
      a. Flame spread: Less than 25.

b. Smoke developed: Less than 450.

4. Water absorption no greater than 0.08 percent at 24 hours at 77 degF in accord with ASTM-D570.
5. Identify boards by manufacturer's standard marking on reverse side of panel.
6. Finish: Pebble grain.
7. Color: As selected from manufacturer's standard range.
8. Base Product: Kemply with Fire-X Glasboard by Kemlite.

B. Moldings:
1. Manufacturer's standard extruded vinyl trim.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify suitability of substrate to accept installation.

B. Correct unsatisfactory conditions.

C. Start of installation indicates acceptance of responsibility for performance.

3.2 INSTALLATION - WALL PANELS

A. Install in accordance with manufacturer's recommendations and approved shop drawings.

B. Install moldings to panels prior to erection.
1. Apply moldings to all panel edges.
2. Apply silicone sealant to manufacturer's recommendations.

C. Apply adhesive full coverage at all support elements.
1. Brace installation until adhesive completely cured.
2. Fasten with nylon drive rivets at manufacturers recommended spacing.

3.3 CLEANING

A. Remove excessive sealant and adhesive with cleaner recommended by panel manufacturer.

B. Clean entire surface prior to closeout.

END OF SECTION