SECTION 09 97 13

STEEL COATINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: This Section includes surface preparation and application of coating systems.
   1. Furnish all materials and equipment necessary to remove surface contaminants, corrosion, and existing coatings; prepare the surface; and apply coating system.
   2. Install stepped mock-ups of all surface preperations and coating application
   3. Abate hazardous materials in the coating system
   4. Exterior
      a. Install necessary protection
      b. Chemically strip existing coating and abate hazardous materials
      c. Abrasive blast steel in accordance with SSPC SP10
      d. Apply new coating system to all existing steel elements
   5. Interior
      a. Install necessary protection.
      b. Temporarily remove radiators.
      c. Chemically strip existing coating and abate hazardous materials
      d. Prepare surface in accordance with SSPC SP11
      e. Apply new coating system to all existing steel elements
      f. Reistall radiators.
   6. Interior Overcoating
      a. Install necessary protection
      b. Prepare surface in accordance with SSPC SP3
      c. Apply new coating system to all existing steel elements
   7. Exterior Overcoating if corrugated anels at first floor
      a. Install necessary protection
      b. Prepare surface in accordance with SSPC SP3
      c. Apply new coating system to all existing steel elements

B. Contractor shall conform to all federal, state, local, and OSHA requirements for for abatement methods and procedures. It is the responsibility of the Contractor to test the existing coating to determine the toxic metal content, and based on those results, design and implement the appropriate plans for containment, environmental protection, waste disposal, and worker safety.

C. Related Sections:
   1. Section 07 92 00 - Joint Sealants.

1.2 REFERENCES

A. Reference Standards: Latest edition as of Specification date.
   1. ASTM International
      a. ASTM D16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products
      b. ASTM D523 - Standard Test Method for Specular Gloss
      c. ASTM D610 - Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces

d. ASTM D714 - Standard Test Method for Evaluating Degree of Blistering of Paints
e. ASTM D1212 - Standard Test Methods for Measurement of Wet Film Thickness of Organic Coatings
f. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
g. ASTM D3359 - Test Method for Measuring Adhesion by Tape Test
h. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
i. ASTM D4285 - Standard Test Method for Indicating Oil or Water in Compressed Air
j. ASTM D4417 - Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
k. ASTM D5162 - Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates

2. Code of Federal Regulations:
   a. 40 CFR 59, Subpart D (EPA Method 24), Volatile Organic Compounds (VOC) content limitations
   b. 29 CFR 1910.1000-1500, Subpart Z, “Toxic and Hazardous Substances”
   c. 29 CFR 1910.134, toxic exposure limits
3. Federal Standard 313, “Material Safety Data Sheets - Preparation and Submission”
4. International Standards Organization (ISO)
   a. ISO 8502-3 - Preparation of steel substrates before application of paints and related products -- Tests for the assessment of surface cleanliness -- Part 3: Assessment of dust on steel surfaces prepared for painting (pressure sensitive tape method)
5. The Society for Protective Coatings (SSPC)
   a. SSPC-AB 1 - Mineral and Slag Abrasives
   b. SSPC-PA 1 - Shop, Field, and Maintenance Painting of Steel
   c. SSPC-PA 2 - Measurement of Dry Coating Thickness with Magnetic Gages
   d. SSPC-SP 1 - Solvent Cleaning
   e. SSPC-SP 2 - Hand Tool Cleaning
   f. SSPC-SP 3 - Power Tool Cleaning
   g. SSPC-SP 10/NACE No. 2 - Near-White Blast Cleaning
   h. SSPC-SP 11 - Power Tool Cleaning to Bare Metal
   i. SSPC-Vis 1 - Standard Pictorial Surface Preparation Standards for Painting Steel Surfaces
   j. SSPC-Vis 3 - Guide and Reference Photographs for Steel Surfaces Prepared by Hand and Power Tool Cleaning
   k. SSPC-C3 - Supervisor/Competent Person Training for De-leading Industrial Structures
   l. SSPC-QP-1 - Field Applications of Coatings Complex Structures
   m. SSPC-QP-2 - Industrial Hazardous Paint Removal
   n. SSPC-Guide 6 - Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations.
   o. SSPC Painting Manual, Volume 2, 2008 Edition.

1.3 DEFINITIONS

A. ASTM D16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products

1.4 SUBMITTALS

A. Submittals required by this section shall be submitted within 14 calendar days after Letter of Award.

B. Maintain copy of list where work is being performed.

C. Schedule indicating significant dates such as delivery, removal, completion of shop work, finish completion, etc.

D. Coating Manufacturer
   1. Approved list of application equipment to be used on this project.
   2. Manufacturer's inspection plan, including the number and frequency of site visits by Manufacturer's Technical Representative.
   3. Manufacturer's maximum permissible surface chloride, sulfate, and nitrate (CSN) concentrations on substrate prior to coating.
   4. Manufacturer's qualifications where substitutions are proposed.
   5. Manufacturer's Technical Representative qualifications.
   6. Written approval of contractor by the manufacturer of the specified coatings.
   7. Samples for review of coating color and texture.
   8. Provide a letter certifying products that comply with the VOC content requirements when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   9. Decoding information so field personnel can verify shelf lives and other coded information.
   10. Damaged coating repair procedure for approval. Repair procedure shall comply with the most stringent requirements of SSPC-PA 1 and the manufacturer's written recommendations. Repairs to the coating system must result in an acceptable, uniform gloss and color on visible surfaces.
   11. Pinhole repair procedure for approval. Repair procedure shall comply with the most stringent requirements of SSPC-PA 1 and the manufacturer's written recommendations. Repairs to the coating system must result in an acceptable, uniform gloss and color on visible surfaces.
   12. Manufacturer's maintenance recommendations.

E. Contractor
   1. For information purposes only, list of 5 projects similar to Work specified in this Section, completed in the past five years for review by the Owner. Similar projects are considered as those projects that have comparable scale, coating systems, substrates, and substrate conditions, and are located in comparable environmental conditions as defined by SSPC Environmental Zones Definitions. The information provided should demonstrate experience with previously coated and partially corroded structural steel projects in comparable exterior environments where new coating systems were applied that included a zinc-rich primer. For each project reference submitted, include project description, contact with address and telephone number, surface area coated, description of coating system used, the substrate, the substrate condition, and the environmental conditions.
   2. Documentation that contractor has previously applied the specified manufacturer's coating system or similar systems in production quantities similar to this Project. Include list of such projects with description, surface area coated, coating system description, and contact with address and telephone number.
   3. Contractor qualifications.
   4. Supervisor qualifications.
   5. Painter qualifications.
   6. Quality Control Representative's qualifications.
   7. Samples for Verification:
      a. Sample of surface profile on a new 1/4 by 6 by 12 inch ASTM A36 steel plate with a uniform profile as required by the specification as determined by ASTM D4417 Method C replica tape.

8. Samples of Coating
   a. Submit 6 samples on rigid backing, 12 inches square.
      1) Provide additional 6 samples on rigid backing, 12 inches square for each batch of each coating typeStep coats on Samples to show each coat required for system.
      2) Label each coat of each Sample.
      3) Label each Sample for location and application area.
   b. Provide minimum 1 quart of each coating from each batch on the project.
9. Safety Plan: Submit a written plan of action that covers operational requirements for safe application of coatings, means of protection of surrounding areas from overspray, rebound, etc., handling, storage, and disposal of hazardous and toxic materials. Include provisions not to perform welding and painting operations simultaneously within the contained area, and to provide adequate ventilation. Plan requirements will comply with applicable government regulations and most stringent requirements of the following:
   a. Manufacturer's Safety Data Sheets
   b. Toxic material exposure limits, per 29 CFR 1910.1000 and 29 CFR 1910.134
10. Protection Plan: Submit to Owner a plan of action for environmental monitoring, testing, collection, and disposal of hazardous containing materials.
   a. Protect the property of the Owner.
   b. Coating applied to surfaces not scheduled for coating shall be completely removed and surfaces returned to original condition to the Owner's satisfaction.
11. Access Plan: Submit drawings and narrative describing the temporary working platforms, scaffolding, etc. to be used for the Work. Include signed and sealed calculations prepared by a licensed Engineer.
12. Containment Plan: Submit drawings and narrative describing the temporary enclosure of working platforms during the work.
   a. Containment system shall allow for the collection and disposal of dust and debris during abrasive blasting and other paint removal and surface preparation work.
13. Inspection Plan: Submit to Owner an inspection plan including a sample of a daily Quality Control log. Plan shall include list of testing and inspection equipment to be used, and shall indicate the number and frequency of site visits by manufacturer's technical representative. It shall also include but not be limited to:
   a. Pre-surface preparation for obvious defects and contamination to be removed in accordance with the specified preparation.
   b. Measurement of ambient conditions of temperature, humidity, and dew points.
   c. Evaluation of surface preparation, application, and compressor (if used) equipment to verify cleanliness and avoid contamination.
   d. Evaluation of surface preparation and profile for conformance with standards.
   e. Observation of coating mixing and application for conformance to manufacturer's instructions and mock-up(s).
   f. Determination of dry film thickness of each coat applied for conformance to manufacturer's instructions and mock-up(s).
   g. Monitor cleanliness and time between coats. Each coat shall be inspected for cleanliness before application of subsequent coats.
14. Certifications
   a. Provide a letter certifying paints and coatings are free of or do not exceed specified limits of asbestos, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, or compounds thereof.
   b. Provide a letter certifying that abrasive blast media comply with SSPC AB 1.
15. Obtain from the coating manufacturer a letter of intent to warranty coating before start of work.
16. All warranties agreed upon by the coating manufacturers, applicator, and Owner.

1.5 QUALITY ASSURANCE

A. Owner and Architect/Engineer will periodically observe progress, evaluate quality, and perform tests of the coating.

B. General
   1. Review specifications for requirements affecting Work of this trade. Conflict between these specifications and coating manufacturer's requirements or specifications, or other pertinent specifications, shall be immediately brought to the attention of the Owner in writing. The more stringent requirement shall govern the work unless approved by the Owner.
   2. Do not apply coatings from different manufacturers to the same component unless otherwise specified. Provide materials that are not available from the manufacturers from sources recommended and approved in writing by the manufacturers.
   3. Work in-place shall be subject to inspection testing. Work found to be unacceptable shall be replaced with new, acceptable work, at no cost to the Owner.
   4. Only prepare enough surface area that can meet the surface preparation requirements and be coated in the same day.
   5. Provide lighting of at least 25 foot candles on the surface to be coated.
   6. The Contractor is completely responsible for quality control regardless of whether or not an independent inspector is present.

C. Manufacturer's Quality Assurance
   1. Qualified manufacturer: A company specializing in the manufacture of high performance coatings with a minimum of 10 years of experience.
   2. Manufacturer's Technical Representative shall perform site visits throughout the project including:
      a. During the mock-up to establish the standard quality to be used on the project.
      b. Monthly, or more frequently, to review work progress.
      c. Monthly inspections for conformance with requirements shall include:
         1) Observing coating surface preparation.
         2) Measuring or observing measurement of surface profile.
         3) Observing coating application coating application.
         4) Measuring or observing measurement of wet film thickness.
         5) Measuring or observing measurement of dry film thickness of cured coating.
         6) Measuring or observing measurement of adhesion of cured coating.
      d. As necessary to advise the Contractor of procedures and precautions for use of the materials.
      e. At completion of work, Manufacturer's Technical Representative shall perform a final inspection of completed work and issue warranty.
   3. Manufacturer's Technical Representative shall provide a written report for each site visit within one week of the date of the visit summarizing observations and documenting if surface preparation and coating application is in accordance with the specifications and manufacturer's recommendations.
   4. If necessary, Contractor shall compensate the Coating Manufacturer for required site inspections by the Manufacturer's Technical Representative.

D. Contractor
   1. Contractor is required to submit documentation validating compliance with qualification requirements in the sub-paragraphs. Failure of the Contractor to meet the required qualifications may cause the bid to be rejected

2. Contractor shall have current SSPC QP-1 (Field Application to Complex Industrial and Marine Structures) certification.
3. Contractor shall have current SSPC-QP-2 (Field Removal of Hazardous Coatings) certification
4. Contractor Supervisor shall be on site during all paint removal activities.
5. Contractor shall assure the presence of a qualified Manufacturer's Technical Representative from coating manufacturer.
6. Contractor shall have experience with similar projects for the successful field application of coating to structural steel.
7. Contractor shall be approved in writing for application of the coating system by coating manufacturer.

E. Contractor Supervisor
1. A minimum of 10 years of experience in the preparation and coating of structural steel.
2. A minimum of 3 years of experience in supervising this type of Work. Apprentices shall be under direct supervision of an experienced supervisor.
3.

F. Contractor Quality Control Representative
1. Contractor shall have a dedicated Quality Control Representative on site during all stages of work, including the mock-up.
2. A minimum of 10 years of experience in the quality control of preparation and coating of structural steel.
3. Shall be NACE Level 3 Certified.
4. The Coating Inspector shall have the necessary inspection equipment on site and in proper working order.
5. The Coating Inspector shall be on-site during the mock-ups, at the beginning of surface preparation, and until completion of the coating work.
6. If shift work is used, Quality Control Representative shall have overlapping shifts to exchange information.
7. Quality Control Representative shall document the progress, general quality of work, and any non-compliant work with digital photographs and daily logs.
8. Quality Control Representative shall submit daily inspection report, and report any type of deficiency to the Owner and Contractor simultaneously on a daily basis.
9. Quality Control Representative shall approve each element at each hold point.
10. Quality Control Representative shall have personnel with the necessary education, training, physical capabilities, technical knowledge and experience for their assigned functions.

G. Painter Qualifications
1. A minimum of 5 years of experience in the preparation and coating of structural steel.

H. Contractor's Quality Control Representative
1. Do not perform surface preparation or apply coatings if Contractor Quality Control Representative is not present.
2. Do not apply any coatings when measurements, observations, readings, etc. are not in conformance with manufacturer's written instructions.
3. The Contractor's Quality Control Representative shall, at a minimum, have the following inspection equipment on site and in good working order:
   a. Electronic dry film thickness gage capable of measuring thickness in accordance with SSPC PA-2
   b. Replica tape in a range for the required blast profile and spring micrometer

c. Tooke gage
d. SSPC-Vis1
e. SSPC-Vis3
f. Surface CSN Test Kits in ample supply to measure surface chloride, sulfat, and nitrate concentrations in the prescribed frequency
g. Surface temperature thermometers
h. Air temperature, relative humidity, and dew point meter(s)
i. Nordson Wet film coating thickness gages
j. Pressure sensitive tape for testing in accordance with ISO 8502-3
k. Low voltage holiday detector
l. Camera
m. Blotter paper

4. Contractor's Quality Control Representative shall prepare and submit daily inspection reports which includes day, time, and location of all quality control tests specified:
   a. Location on structure (use nomenclature and component numbering scheme as indicated on the Drawings).
   b. Description of work performed
   c. Personnel name
   d. Project number
   e. Paint removal method and times of paint removal
   f. Coatings used
   g. Batch numbers of coatings
   h. Batch number of thinners
   i. Hold point inspections completed
   j. Inspection equipment calibrated
   k. Non-conformance and corrective actions
5. Measure and record on daily inspection reports:
   a. Daily storage temperature range for coating materials and verify conformance with specification and manufacturer's requirements.
   b. Pre-surface preparation for obvious defects and contamination to be removed in accordance with the specified preparation.
   c. Profile
      1) The blast profile shall be measured using replica tape and measured with a spring micrometer, ASTM D4417 Method C.
         a) Measure profile of the existing structural steel after abrasive blasting.
         b) When the steel is pitted, measure profile on ASTM A36 steel coupons 1/4 by 6 by 6 inch (minimum size) temporarily fixed to the structural steel to be abrasive blasted. Blast the coupon concurrently with the pitted structural steel. The profile on the coupons shall meet the requirement for new steel.
      2) Frequency of measuring profile is as follows:
         a) Every new batch or mix of abrasive.
         b) At least once at the beginning of each shift by each blaster
         c) As required by the Architect/Engineer .
         d) Measure the depth of pits caused by corrosion of substrate using a calibrated pit gage or micrometer.
   d. Test each new batch of abrasive for chloride content using Chloride Ion Test Kit for Abrasive in accordance with the test kit manufacturer's directions.
   e. Evaluate compliance of surface preparation to:
      1) SSPC-SP1. Examine 100 percent of applicable surfaces for compliance with SSPC-SP1.

2) SSPC-SP 2 using SSPC-Vis-3. Examine 100 percent of applicable surfaces for compliance with SSPC-SP2.
3) SSPC-SP 3 using SSPC-Vis-3. Examine 100 percent of applicable surfaces for compliance with SSPC-SP3.
4) SSPC-SP10 using SSPC-Vis-1. Examine 100 percent of applicable surfaces for compliance with SSPC-SP10.
5) SSPC-SP11 using SSPC-Vis-3. Examine 100 percent of applicable surfaces for compliance with SSPC-SP11

f. Test surfaces prepared for painting for cleanliness per ISO 8502-3 immediately prior to coating application. Dust quantity rating shall be 1 or better. Use Scotch Transparent 3/4-inch Tape Cat. 600 for performance of the ISO 8502-3 test. Apply pressure to the tape in accordance with ISO 8502-3 Paragraph 6.2 a). Frequency of testing shall be as follows:
   1) Perform surface cleanliness tests (ISO 8502-3) on each of the first three 100 square foot areas that have been prepared, blown-down, vacuumed, etc. Tests shall be performed in at least triplicate on representations of the surface as a whole, including pitted areas. For instance, on stairs perform test on each of the following surfaces: tread, riser, or sidewall (stringer). For structural steel, test on each of the following surfaces: top of beam, bottom of the beam, top of the bottom flange, and web of the beam, or underside of top flange
   2) Perform surface cleanliness tests (ISO 8502-3) on each of the subsequent 200 square foot areas that have been prepared, blown-down, vacuumed, etc.
   3) When any 1 cleanliness test is not in compliance with the requirements of the specification, it shall be cause for temporary noncompliance of that area. Re-clean the surfaces of the entire noncompliant test area and areas that have yet to be tested; however, the measurement frequency begins anew at Step 1 followed by Steps 2 and 3 with the corrected non-compliant area forward.
   4) Do not always test the same representation; make assurances that random representations are tested through the course of the work.
   5) The testing sequence described above will be started new each day with Step 1.
g. Measure surface chloride, sulfate, and nitrate (CSN) concentrations with the Surface CSN Test Kit. Using the kit, the CSN measurements are made on the same extract taken at each test location.
   1) Surface CSN tests shall be performed on pitted areas, as well as adjacent to weld areas, when present. Otherwise, test locations shall be selected that are representative of the surface as a whole.
   2) Measure surface CSN measurements using Surface CSN Test Kit daily. If thresholds of contaiminents are greater than maximum permissible amount, remove containiments and retest.
h. Measure surface temperature using a surface thermometer prior to the application of any coating and at least once every 2 hours during coating application. No coating shall be conducted if temperature is outside the range provided in the manufacturer's written instructions.
i. Air temperature, relative humidity, and dew point recorded before application of any coating and at least once every 2 hours during coating application. If readings are not in conformance to manufacturer's written instruction, no coating shall be conducted.
j. Test compressed air to ensure no moisture or water contamination is present in accordance with ASTM D4285. Use a clean white piece of blotter paper will be held approximately 18 inches from the air supply downstream of the moisture and oil separators. The air is permitted to blow on the blotter paper for 3 minutes and is then inspected for signs of detrimental amounts of moisture or oil contamination. If there is

no discoloration, the air is acceptable. If moisture or oil is visible, the air shall not be used. Check air at least once every four hours.

k. Observation of coating mixing and application for conformance to manufacturer's instructions and mock-up(s).
l. Measure temperature of coating components and mixed material.
m. Record coating batch numbers from the mixed components, the amount and type of thinner used, and the date applied
n. Verify that coatings have been applied within the manufacturer's specified pot life, and minimum and maximum recoat times.
o. Observe induction times where applicable.
p. Verify that the coating has been applied as a continuous, uniform film, of specified thickness and is free of holidays, thin spots, and at their full thickness. Verify that applied coatings are without cloudiness, spotting, laps, streaks, brush marks, runs, sags, ropiness, or other surface imperfections.
q. Coating Wet Film Thickness
    1) Painter shall confirm wet film thickness of intermediate and finish coats taken randomly using a notched gauge at least once every 10 linear feet in accordance with ASTM D1212.
r. Coating Dry Film Thickness
    1) Measure dry film thickness of each coating application of the coating system with magnetic gages in accordance with SSPC PA-2 Restriction Level 2
s. Conduct pinhole and holiday detection tests after final cure of the finish coating in accordance with ASTM D5162. Use low voltage wet sponge detector. Do not use wetting agent; only use clean, potable water.

6. Schedule hold points between all major operations for inspection. Document the following in daily inspection reports:
    a. Pre-paint removal inspection
    b. Paint removal inspection
    c. Primer coat inspection
    d. Intermediate coat inspection
    e. Finish coat inspection
    f. Corrective action
    g. Use same model pull-off tester (ASTM D4541 Type 2) for comparison of adhesion data throughout entire project unless directed otherwise by the Owner.

I. Coordinate with Architect/Engineer for inspection and preparation of punch lists for each area of work, prior to beginning removal of containment system and access platform.

J. The Owner, Architect/Engineer , and/or the Quality Control Representative will measure coating adhesion as deemed necessary throughout the project. Use same model pull-off tester (ASTM D4541 Type 2) for comparison of adhesion data throughout entire project unless directed otherwise by the Owner or Architect/Engineer .

K. At the request of the Owner, weekly progress meetings will be conducted on site. Attendance shall include the Contractor's Project Manager, Supervisor and Quality Control Representative.

1.6 MOCK-UP

A. Prior to the start of full-scale surface preparation and coating work, the Contractor shall prepare mock-ups as indicated below.
    1. Exterior surfaces

2. Interior surfaces

B. Size and location of each of the mock-ups shall be confirmed with the Architect/Engineer prior to implementation.

C. Conduct CSN measurements on surface prior to and after surface preparation.

D. Conduct quality control testing on prepared surface prior to and after Salt Removal Procedure including CSN measurements.

E. Perform specified coating application such that a portion of each coating layer is exposed to view. Each coating layer shall have a distinguishably different color.

F. Additional mock-ups shall be made until acceptable results are achieved. Adjustments to application of products shall be made in accordance with limits defined in manufacturer's recommendations upon approval of the Owner.

G. Mock-ups will cure 7 days prior to testing and evaluation by Architect/Engineer .
1. Provide access for Architect/Engineer to perform field adhesion testing of coatings on infield sample prior to proceeding with overall work. Adhesion tests will be performed in accordance with ASTM D3359 and ASTM D4541. Results of both tests will be evaluated by the Architect/Engineer , and the test judged to be the most suitable by the Architect/Engineer will be used as the standard for the project.
2. Coating manufacturer shall review surface preparation and coating mock-ups on site during installation.
3. Coating manufacturer shall perform or observe adhesion tests of the mockups in accordance with ASTM D3359 and ASTM D4541.

H. Coordinate the mock-up schedule with the Architect/Engineer . Mock-ups shall not be conducted until containment is in place and all environmental and operational controls are fully functional. However, the mock-ups(s) shall be approved by Owner before commencement of the overall preparation and coating work. Sample shall be protected and retained during the Work to serve as a standard for full-scale work. Upon completion of Work, the sample may be incorporated into the full-scale work.

I. Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Owner specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver materials to job site in original, new, and unopened packages and containers bearing the manufacturer's name and label and batch numbers.

B. Acceptance at Site: Damaged or deteriorated materials shall be clearly identified and not used on this Project. Promptly remove rejected and non-complying materials from the premises.

C. Storage and Protection: Store materials in tightly closed containers in well ventilated areas with ambient temperatures continuously maintained at not more than 90 degrees Fahrenheit, unless required otherwise by manufacturer's instructions. Storage area shall be protected from exposure to direct sunlight, heat, sparks, flames, and weather.
1. Maintain containers in clean condition, free of foreign materials and residue.
2. Store containers so manufacturer's labels are clearly displayed.

3. Remove rags and waste from storage areas daily.
4. Only use materials within their shelf life.

D. Waste Management and Disposal: Comply with applicable safety codes and regulations that govern the work, including Occupational Safety and Health Administration (OSHA), Owner OSHL (Occupational Safety and Health Law) and Environmental Protection Agency (EPA) regulations covering waste and wastewater disposal and VOC content.

1.8 PROJECT CONDITIONS

A. The contractor shall inform his employees, subcontractors and all other persons engaged in the project that paints containing potentially hazardous constituents are present in the existing coatings at the job site.

B. Equipment, material, and appliances required for completion of Work, shall be so located and operated as to provide for maximum efficiency, public safety, persons employed at the site, and to prevent damage to new and existing construction, in accordance with the Contractor's safety plan, OSHA, and applicable safety codes and regulations.

C. Confine operations at Project site to areas permitted by laws, permits, contract, the Owner, and Contractor's safety plan.

D. Assume full responsibility for protection and safekeeping of products stored on premises, and for their proper use.

E. Provide Owner, Architect/Engineer , and Coating Inspector with access to the Work.

F. Where conditions are uncovered that is not anticipated by the specifications, notify Owner in writing immediately, before repairs are initiated.

G. No coating shall be applied if temperature is outside the range provided in the manufacturer's written instructions.

H. Do not apply coatings in rain, fog, or mist; when relative humidity exceeds 85 percent; or to damp or wet surfaces. Allowable minimum relative humidity shall be as determined by the manufacturer.

1.9 SEQUENCING AND SCHEDULING

A. Schedule application of coatings so that Work performed by other trades or on surfaces adjacent to area of Work of this Section is complete. Assure that this Work does not affect the performance or final appearance of Work in this Section.

B. Schedule steel preparation and painting so that dust and other contaminants from the preparation process will not fall onto uncured, newly painted surfaces.

C. Protect adjacent building elements not to be coated.

D. Prepare surfaces and abate hazardous materials.
1. Conduct necessary quality control tests and inspections.
2. Document preparation of surface in daily inspection log.

E. Apply coating and fill material as required.

1. Conduct necessary quality control tests and inspections.
2. Document coating application in daily inspection log.

F. Remove protection

1.10 WARRANTY

A. General
   1. The warranty shall be signed by the manufacturer, applicator, and contractor as applicable.
   2. Coating failures shall be repaired/corrected within the warranty period at no cost to the Owner.

B. Contractor Warranty:
   1. For a period of five years after Substantial Completion date, the applicator and contractor shall warrant, with no dollar limit, that they will repair or replace coating that does not comply with requirements; that fails in adhesion, cohesion, or general durability; that cracks, checks, fades, or chalks; where visible rust occurs.
   2. New coating shall closely match color of existing coating. Extend new coating to reveals, surface edges, or other natural termination points to minimize differences in appearance between new and existing coating.
   3. Warranty includes:
      a. Adhesive or cohesive failure of existing coating that remains in place at transitions.
      b. Surface preparation Work.
      c. Coating application Work
      d. Providing access to warranty Work.

C. Coating Manufacturer Warranty
   1. Coating Systems with Fluoropolymer Finish
      a. For a period of 5 years, the Manufacturer shall warrant the coating:
         1) Will not check, crack, blister, peel, delaminate, excessively chalk, allow exterior water to penetrate the coating, or fail in general durability.
            a) Evaluate chalking in accordance with ASTM D4214. Chalking less than a rating of No. 8 shall be considered a defect and must be repaired.
            b) Blisters will be evaluated using ASTM D714. Blisters less than a rating of No. 10 shall be considered a defect and must be repaired.
         2) Will not allow the substrate to corrode in excess of Rust Grade 6 (Greater than 0.3 percent and up to 1.0 percent) of the surface area being coated as measured in accordance with ASTM D610.
         3) Will not change color more than 5 ΔE CIE units as determined in accordance with ASTM D 2244 by comparing the affected exposed coating cleaned with water and a soft cloth with unexposed Original Project Color Standards maintained by the manufacturer and the Owner. Average of 5 readings per 100 square feet.
         4) Will not exhibit loss of gloss in excess of 20 units as measured by a gloss meter in accordance with ASTM D523 with 60 degree geometry.
            a) Average of 5 readings per 100 square feet.
         5) Warranty dollar amount shall be limited to the value of the coating system materials at time of the award of claim.
      b. For a period of 15 years, the manufacturer shall warrant that the coating:
         1) Will not check, crack, blister, peel, delaminate, excessively chalk, allow exterior water to penetrate the coating, or fail in general durability.

a) Evaluate chalking in accordance with ASTM D4214. Chalking less than a rating of No. 7 shall be considered a defect and must be repaired.
b) Blisters will be evaluated using ASTM D714. Blisters less than a rating of No. 10 shall be considered a defect and must be repaired.

2) Will not allow the substrate to corrode in excess of Rust Grade 4 (Greater than 3.0 percent and up to 10.0 percent) of the surface area being coated as measured in accordance with ASTM D 610.
3) Will not change color more than 12 ΔE CIE units as determined in accordance with ASTM D 2244 by comparing the affected exposed coating cleaned with water and a soft cloth with unexposed Original Project Color Standards maintained by the manufacturer and the Owner. Average of 5 readings per 100 square feet.
4) Will not exhibit loss of gloss in excess of 24 units as measured by a gloss meter in accordance with ASTM D523 with 60 degree geometry. Average of 5 readings per 100 square feet.
5) Warranty dollar amount shall be limited to the value of the coating system materials at time of the award of claim.

PART 2 PRODUCTS

2.1 STEEL COATINGS, GENERAL

A. Material Compatibility
   1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. Provide products of same manufacturer for each coat in coating system unless otherwise specified.

B. Colors
   1. Finish Coats
      a. Color as selected by Owner
   2. Primer, Stripe, Filler, and Intermediate Coats
      a. Use contrasting colors as recommended by the coating manufacturer and approved by the Owner for each of the following: primer, stripe, filler, intermediate, and finish coats.

C. Gloss
   1. As selected by the Owner.

2.2 MATERIALS AND TOOLS FOR SURFACE PREPARATION

A. Surface CSN Test Kit:
   1. Chlor*Test “CSN” (Chloride/Sulfate/Nitrate Ion Tests for Surfaces), manufactured by Chlor*Rid International, Inc. PO Box 908, Chandler Arizona (800)422-3217 www.chlor-rid.com, or approved equal.

B. Chloride Ion Test Kit for Abrasive
   1. Chlor*Test A, manufactured by Chlor*Rid International, Inc. PO Box 908, Chandler Arizona (800)422-3217 www.chlor-rid.com, or approved equal.

C. Acid-Based Surface Chloride Removal Product (Salt Remover):

1. Chlor*Rid, manufactured by Chlor*Rid International, Inc. PO Box 908, Chandler Arizona (800) 422-3217 www.chlor-rid.com, or approved equal.

D. Abrasive Material
   1. Abrasives used for blast cleaning shall meet the requirements of SSPC AB1 and shall be clean, oil-free, dry mineral sand, mineral grit, or manufactured grit and shall have a size and gradation that the abrasive will produce a uniform profile within the specified range as required for the selected coating system. Abrasive shall be free from contaminants such as excessive fine particles, paint, oils, moisture, chlorides, and heavy metals, or toxic material prohibited by OSHA or federal, Owner, or local regulations.
      a. Abrasives resulting in an unacceptable degree of embedment will be rejected.
      b. Abrasive shall have a chloride content no greater than 7 ppm when tested with the Chloride Ion Test Kit for Abrasive.

E. Cleaner/Degreaser
   1. Cleaner/Degreaser recommended by the coating manufacturer
   2. Purple Power Industrial Strength Cleaner/Degreaser, Model 4320P, manufacturered by Aiken Chemical Company, Greenville, SC 29616, http://www.clean-rite.com, (800) 828-1860 or approved equal
   3. Extra Muscle Prepaint Cleaner, manufactured by Great lakes Laboratories, 27537 Schoolcraft Road, Livonia MI 48150, (800) 888-1105, http://greatlakeslaboratories.com

2.3 BASIS OF DESIGN: COATINGS

A. Manufacturers:
   1. Tnemec Company, Inc., 6800 Corporate Drive, Kansas City, Missouri 64120, (800) 863-6321, www.tnemec.com (Tnemec)

B. Coatings for Exposed Exterior Surfaces
   1. Tnemec
      a. Surface Preperation: SSPC SP10 Near-White Blast Cleaning
      b. Surface Profile: 1.5 to 2.0 mils
      c. Primer: Series 90-97 Tneme-Zinc, 2.5 to 3.5 mils DFT
      d. Filler: Series 215 Surfacing Epoxy for filling and patching up to 0.5 inches maximum thickness.
      e. Stripe Coat: Series N69 Hi-Build Epoxoline II
      f. Intermediate Coat: Series 73 Endurashield, 2.0 to 3.0 mils DFT
      g. Finish Coat: Fluoronar Series 1072, 2.0 to 3.0 mils DFT

C. Coatings for Exposed Interior Surfaces Prepared to Bare Steel
   1. Tnemec
      a. Surface Preperation: SSPC SP11 Power Tool Cleaning to White Metal
      b. Primer: Series N69 Hi-Build Epoxoline II, 3.0 to 5.0 mils DFT
      c. Filler: Series 215 Surfacing Epoxy for filling and patching up to 0.5 inches maximum thickness.
      d. Stripe Coat: Series N69 Hi-Build Epoxoline II, 2.0 to 3.0 mils DFT
      e. Intermediate Coat: Series 1026 Enduratone, 2.0 to 3.0 mils DFT
      f. Finish Coat: Series 1026 Enduratone, 2.0 to 3.0 mils DFT

D. Coatings for Exposed Interior Surfaces Prepared for previously coated
   1. Tnemec

a. Surface Preperation: SSPC SP3 Power Tool Cleaning
b. Primer: Series 1026 Enduratone, 2.0 to 3.0 mils DFT
c. Finish Coat: Series 1026 Enduratone, 2.0 to 3.0 mils DFT

E. Coatings for Corrogated Metal Panels
1. At areas of corrosion
a. Tnemec
1) Surface Preperation: SSPC SP11 Power Tool Cleaning to White Metal
2) Primer: Series N69 Hi-Build Epoxoline II, 3.0 to 5.0 mils DFT
3) Filler: Series 215 Surfacing Epoxy for filling and patching up to 0.5 inches maximum thickness.
4) Stripe Coat: Series N69 Hi-Build Epoxoline II, 2.0 to 3.0 mils DFT
5) Intermediate Coat: Series 1026 Enduratone, 2.0 to 3.0 mils DFT
6) Finish Coat: Series 1026 Enduratone, 2.0 to 3.0 mils DFT
2. At areas for intact coatig
a. Tnemec
1) Surface Preperation: SSPC SP3 Power Tool Cleaning
2) Primer: Series N69 Hi-Build Epoxoline II, 3.0 to 5.0 mils DFT
3) Finish Coat: Series 1026 Enduratone, 2.0 to 3.0 mils DFT

2.4 SUBSTITUTIONS

A. Coatings
1. "As Equal" proprietary coatings systems may be submitted to Owner for consideration and must include the following documentation:
a. Manufacturer's certification that coating is of the same generic type as the specified system.
b. Performance of formulation showing that it meets or exceeds the performance of the specified coating system and is suitable for the anticipated service conditions.
c. Field test and service data for similar service conditions.
d. Meet or exceed most stringent performance and test data of listed products. Submissions must show side-by-side comparison of data.

B. Surface CSN Test Kit
1. "As Equal" proprietary surface CSN test kits may be submitted to Owner for consideration and must include the following documentation:
a. Approved equal shall demonstrate a chloride retrieval efficiency of at least as 70 percent, as tested by an independent laboratory retained by and paid for by the manufacturer.

C. Acid-Based Surface Chloride Removal Product (Salt Remover):
1. "As Equal" proprietary surface chloride removal product may be submitted to Owner for consideration and must include the following documentation:
a. Comparative tests data, substantiated case histories including any failures, and coating manufacturer's approval for compatibility with specific substitute product.
2. Substitute surface chloride removal product must be approved in writing by the coating manufacturer.

PART 3 EXECUTION

3.1 OVERALL SEQUENCE OF WORK

A. Perform mock-ups
   1. Exterior
   2. Interior to bare metal
   3. Interior overcoating

B. Prepare surfaces
   1. Conduct quality control tests and inspections
   2. Document preparation of surface in daily inspection log.

C. Apply coating materials as required.
   1. Conduct necessary quality control tests and inspections.
   2. Document coating application in daily inspection log.

D. Perfom adhesion testing of overcoating

3.2 EXAMINATION

A. Examine substrates and conditions with Architect/Engineer and Quality Control Representative for compliance with requirements and conditions affecting performance of work.
   1. Atmospheric Conditions: Follow manufacturer's directions for allowable atmospheric conditions. Do not apply coatings if the following variables are outside of the manufacturer's parameters.
      a. Measure dew point with a psychrometer or other suitable instrument prior to application. Do not apply coatings if dew point is outside specification requirements.
      b. Perform surface temperature readings on substrate to receive coating prior to application. Do not apply if surface temperature of steel is outside specification requirements.
      c. Measure ambient air temperature and relative humidity in area of work prior to coating application. Do not apply if ambient air temperature and relative humidity is outside manufacturer's parameters.
   2. Verify compatibility with and suitability of substrates, including compatibility with and durability of existing finishes or primers.
   3. Do not proceed with work prior to written approval ofmockups.
   4. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   5. Coating application indicates acceptance of surfaces and conditions by the contractor.

3.3 PREPARATION – GENERAL

A. Protection
   1. Protect existing construction and work in place from damage resulting from operations related to the Work including removal, reinstallation, and the storage, preparation, handling, and application of coating materials.
      a. Protect the surfaces of components that are not to be prepared and painted.
      b. Protect the surfaces of components that are not to be abrasive blasted. Use suitable rigid materials adequate to tightly cover surfaces and resist the effects of abrasive blasting without damage.

c. In areas where coating systems are to be applied, protect surrounding construction, including existing paving and sidewalks, from drippage or other effects of coatings.

2. Exercise caution in performing Work so as not to damage other building and site elements. Protect the building and site elements from damage.
3. Materials damaged by coating process shall be repaired to the satisfaction of the Owner without additional cost to the Owner.
4. Protection materials shall be carefully and thoroughly removed upon completion of Work.
5. Protect workers, pedestrians, animals, plants, vehicles, other property, etc.
   a. Work required in this Section includes the use of chemicals that can harm workers, pedestrians and other persons, animals, plants, and damage vehicles, other property, street furniture, and other persons and objects that are vulnerable to damage by coating operations.
6. Damage to adjacent property, buildings, vehicles, site features, etc., caused by coating operations shall result in no additional cost to the Owner.

B. Remove items already in place that are not to be coated or interfere with access to surfaces that require coating. Items may include mechanical piping, electrical conduit, and/or light fixtures. If removal is impractical or impossible because of size, weight, or function of the item, provide surface applied protection before proceeding with surface preparation and coating.
   1. Coordinate system shutdown for disconnection/removal with Owner.
   2. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved for removal and reinstallation of items.

C. All surface preparation and coating application shall be within a containment system that will contain all water, abrasive, paint, dust and debris resulting from surface preparation procedures.

D. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and coatings.

E. Conduct quality control testing prior to, during, and after surface preparation and coating application.
   1. SSPC-Vis-1 shall be used as a guide to judge surfaces prepared by abrasive blasting.
   2. SSPC-Vis-3 shall be used as a guide to judge surfaces prepared by hand tool, power tool, commercial grade power tool and power tool to bare metal.
   3. Clean using methods recommended in writing by coating manufacturer.

F. Chloride content on the surface shall be equal to or less than the manufacturer's maximum permissible chloride level.
   1. Use Surface CSN Test Kit in accordance with the manufacturer's directions to determine chloride, sulfate, and nitrate concentration on prepared surfaces.
   2. Notify the Owner of any surfaces where the Surface CSN Test Kit cannot be properly and adequately applied. The Architect/Engineer will provide an alternate procedure with an appropriate factor (multiplier) to be used for the different test method(s).

G. Salt Removal Procedure: After surface preparation, if chloride, sulfate, or nitrate (CSN) contamination is greater than Manufacturer's Maximum Permissible Surface Concentration, pressure wash surface at 3,000 to 5,000 psi with Salt Remover solution in accordance with the Salt Remover manufacturer's directions. Repeat as necessary to achieve recommended chloride, sulfate, or nitrate levels. Do not use water sources with unacceptable chloride content that increase surface chloride contamination. Rinse treated surfaces by pressure washing surface at 3,000 to 5,000 psi with clean potable water. Upon completion of pressure washing, allow surfaces to

completely dry, including crevices (Force any residual moisture from crevices and blow-dry using clean, dry, oil free, 100 psi compressed air), and re-prepare surfaces as required.

3.4 SURFACE PREPARATION – EXTERIOR EXPOSED STEEL SURFACES – ABRASIVE BLASTING

A. Prepare the exterior exposed steel.

B. Prepare surfaces in accordance with SSPC SP1 and remove salts:
   1. Remove all visible oil, grease, drawing and cutting compounds, wax, fatty acids, dirt, dust, loose particles, soil, salts, animal wastes, bolt lubricant, dyes, and other contaminants from surfaces in accordance with SSPC SP1 using a alkaline cleaner/degreaser approved by the coating manufacturer and designed to remove dirts, oils, and greases.
      a. Apply cleaner/degreaser solution to surfaces and allow to dwell as recommended by the manufacturer.
         1) Mist surfaces with water as necessary to maintain cleaner/degreaser solution in a wet condition during the dwell period.
         2) Vigorously scrub areas with stubborn deposits of contaminants with the cleaner/degreaser as recommended by the coating manufacturer.

C. Visually inspect surfaces, including welds, for fins, slivers, burrs, roughness, sharp edges, corners, or protrusions and where present eliminate by grinding smooth with a suitable power tool. Additionally, where present, remove all weld spatter and flux.
   1. Where edges or corners are sharp (i.e. edges with an acute corner that is able, or appears to be able, to cut human flesh)., "break" (flatten) sharp edges and corners in a single pass, by passing a grinder or other suitable device along the corner.

D. Before continuing with surface preparation, allow surfaces to completely dry, including crevices. Whether or not, crevices, joints, and connections appear dry, force any residual moisture from these areas and blow-dry using clean, dry, oil free, 100 psi compressed air.

E. Prepare surfaces in accordance with SSPC SP10:
   1. Remove existing coatings by preparing the surface, including welds, in accordance with SSPC SP10. Thoroughly clean any pitted areas; maintain blast angle at 90 degrees to the surface for maximum cleaning efficiency.
      a. Determine CSN concentration on prepared surfaces in accordance with the Quality Assurance Section. If CSN contamination is greater than the manufacturer's maximum permissible surface CSN concentration, remove CSN salts according to the Salt Removal Procedure.
         1) Upon completion of salt removal procedures (if any), re-prepare surfaces to SSPC SP10. However, before proceeding with SSPC SP10 surface preparation, allow surfaces to completely dry, including crevices. Whether or not, crevices, joints, and connections appear dry, force any residual moisture from these areas and blow-dry using clean, dry, oil free, 100 psi compressed air.
   2. Remove all abrasive, dust, paint residue, and other debris from steel surfaces with commercial grade vacuum cleaner with a brush-type cleaning tool. Surfaces shall be compliant with ISO 8502-3 Level 1 or better.
   3. Apply the first coat of the coating system after the Quality Control examination and before oxidation of the surface occur. Re-prepare non-compliant surfaces. Only prepare enough surface area that can meet the surface preparation requirements and be coated in the same 8 - 10 hour work shift.

3.5 SURFACE PREPARATION – INTERIOR

A. Prepare the surfaces of the coated aluminum skylight system in accordance with SSPC SP1 and remove salts:
   1. Remove all visible oil, grease, drawing and cutting compounds, wax, fatty acids, dirt, dust, loose particles, soil, salts, animal wastes, bolt lubricants, dyes, and other contaminants from surfaces in accordance with SSPC SP1 using an alkaline cleaner/degreaser approved by the coating manufacturer and designed to remove dirts, oils, and greases.
      a. Apply cleaner/degreaser solution to surfaces and allow to dwell as recommended by the manufacturer.
         1) Mist surfaces with water as needed to maintain cleaner/degreaser in a wet condition during the dwell period.
         2) Vigorously scrub areas with stubborn deposits of contaminants with the cleaner/degreaser as recommended by the coating manufacturer.

B. Remove existing coatings using chemical stripper.

C. Prepare surface in accordance with SSPC SP11 Power Tool Cleaning to White Metal

D. Remove all abrasive, dust, paint residue, and other debris from steel surfaces with commercial grade vacuum cleaner with a brush-type cleaning tool. Where the vacuum cleaner cannot reach, use compressed air to blow-down surfaces and remove abrasive, dust, paint residue, and other loose contaminants. Use an extension on the compressed air nozzle if necessary to reach all areas.

E. Before proceeding with coating application, allow surfaces to completely dry, including crevices. Whether or not, crevices, joints, and connections appear dry, blow-dry with clean, dry, oil free, 100 psi compressed air.

F. Apply first coat of the coating system to clean, dry surfaces after the Quality Control Representative's and/or Coating Inspector's examination. Re-prepare non-compliant surfaces. Only prepare enough surface area that can meet the surface preparation requirements and be coated in the same 8 - 10 hour work shift.

3.6 SURFACE PREPARATION – TIGHTLY ADHERED PAINT INTERIOR

A. Prepare surfaces in accordance with SSPC SP1:
   1. Remove all visible oil, grease, drawing and cutting compounds, wax, fatty acids, dirt, dust, loose particles, soil, salts, animal wastes, bolt lubricants, dyes, and other contaminants from surfaces in accordance with SSPC SP1 using a alkaline cleaner/degreaser approved by the coating manufacturer and designed to remove dirts, oils, and greases.
      a. Apply cleaner/degreaser solution to surfaces and allow to dwell as recommended by the manufacturer.
         1) Mist surfaces with water as needed to maintain cleaner/degreaser in a wet condition during the dwell period.
         2) Vigorously scrub areas with stubborn deposits of contaminants with the cleaner/degreaser as recommended by the coating manufacturer.

B. Prepare surfaces in accordance with SSPC SP3 using Power Tools.
   1. Operate the power tool in a manner that prevents damage to the surface and the formation of burrs, sharp ridges, and sharp cuts. Avoid excessive pressure, dwell times, and burnishing of the surface.

C. Remove all abrasive, dust, paint residue, and other debris from steel surfaces with commercial grade vacuum cleaner with a brush-type cleaning tool. Where the vacuum cleaner cannot reach, use compressed air to blow-down surfaces and remove abrasive, dust, paint residue, and other loose contaminants. Use an extension on the compressed air nozzle if necessary to reach all areas. Surfaces shall be compliant with ISO 8502-3 Level 1 or better.

D. Apply the first coat of the coating system after the Quality Control examination. Re-prepare non-compliant surfaces. Only prepare enough surface area that can meet the surface preparation requirements and be coated in the same 8 - 10 hour work shift.

3.7 COATING APPLICATION

A. General
1. Remove fixed items such as lights, conduit, piping, etc. to prepare and coat underlying surfaces. Move movable equipment and coat surfaces behind movable equipment with the required coating system.
2. Apply coatings according to manufacturer's written instructions.
3. Apply coatings in the specified sequence for the coating system selected.
4. Apply coatings by spray except where limited by access, required otherwise by the coating manufacturer, or for stripe coating
5. Follow manufacturer's written instructions for recoat times for all coatings and fillers.
6. Finish coats shall be free of holidays, thin spots, and be applied at their full thickness
   a. If undercoats or other conditions are visible through final coat, apply additional touch-ups until cured film has a uniform coating finish, color, and appearance.
   b. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.
7. Coating defects and other occasional nonconforming conditions, and shall be repaired in accordance with the manufacturer's written directions. The Owner shall have final authority concerning the coating's uniformity and acceptable appearance.
8. Damaged coatings and destructive test sites shall be repaired in accordance with the approved Damaged Coating Repair Procedure.
9. Protect public and private property, pedestrian, vehicular, or other traffic and similar surrounding areas and property, upon, beneath, or adjacent to the structure from coating spatter, spillage, overspray, wind-blown coating, or similar releases of coating.
10. All coating application shall be within an enclosure/containment that will contain all coating material.

B. Zinc-rich primer
1. Apply zinc-rich primer by spray in a mist coat/wet coat fashion. Agitate to maintain zinc suspension throughout application.
2. Repair of isolated small areas (less than 1 square foot) may be performed by brush and roller. Zinc-rich coatings must be agitated at all times to keep zinc pigment suspended.
3. Apply the zinc-rich primer only to properly prepared bare metal surfaces unless otherwise specified by the coating manufacturer. Do not overlap zinc-rich primer onto peripheral coated surfaces unless otherwise specified by the coating manufacturer.

C. Pitted Steel
1. The dry film thickness will vary based on the pitted surface of the steel. To achieve the minimum thickness specified, more paint than specified will be required in pitted surfaces.

D. Filler
   1. Apply fill material to pits deeper than 1/8 inch to a level to match adjacent primed steel surface. Proportion and mix fill material in accordance with manufacturer's written instructions.
   2. Completely seal gaps with filler in accordance with the manufacturer's directions such as at joints of faying surfaces, and crevices between bolts, rivets, washers, nuts and threads of bolted repaired vertical members. Proportion and mix filler in accordance with manufacturer's written instructions. Apply filler to properly primed surfaces. Finish surface of filler to smooth appearance.

E. Apply stripe coats by brush as directed by the manufacturer at welds, seams, bolted connections, bolts, bolt-holes, edges, and corners with the required stripe coat prior to the application of the subsequent coat.

3.8 FIELD QUALITY CONTROL

A. Allow Owner and Architect/Engineer access, as needed, to observe progress and quality of portion of completed Work.

B. Owner reserves the right to invoke the following procedure at any time and as often as the Owner deems necessary during the period when coatings are being applied:
   1. Owner will engage services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
   2. Testing agency will perform tests for compliance with specified requirements.
   3. Owner may direct that coating application stop if test results show that materials being used do not comply with specified requirements. Recoat and tint rejected work at no additional cost to the Owner. If new coating application is incompatible with rejected coated surfaces, preparation procedures specified in this Section will be performed again at no additional cost to the Owner.

C. Coating Materials
   1. Permit Owner and Architect/Engineer to collect samples of coating materials, if determined to be necessary by the Owner. These samples may be laboratory tested to insure that the products used in the coating process are the same as the approved materials.
   2. Provide Owner and Architect/Engineer with access to mixed solutions of the coating products at the Site when so requested by the Owner.
   3. Failure to maintain approved chemicals, products, concentrations, etc., shall be reason for the immediate termination of the Contract Agreement.

D. Coating Process
   1. Permit Owner and Architect/Engineer to conduct tests on coated surfaces if deemed necessary by Owner. Tests will be performed to determine if coatings are being applied according to manufacturer's instructions and approved field samples.
   2. Recoat rejected area without additional cost to Owner if Owner determines that coated surfaces are noncompliant to manufacturer's instructions and approved field samples.
   3. Recoat affected area without additional cost to Owner if Owner determines that the work has not been satisfactorily implemented.

3.9 CLEANING

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. Immediately clean up spatter, spillage, and misplaced paint to restore affected area to its original condition. Do not scratch, damage, or deface adjacent finished surfaces.

C. At completion of Work, promptly remove from Project site materials, supplies, equipment, debris, and rubbish from Work performed under this Section. Leave area of work in a clean condition acceptable to Owner.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

E. Clean equipment according to manufacturer's instructions at the end of a painting application shift.

F. Thoroughly clean spray-gun components with a compatible solvent. Clean fluid feed lines and gun-tips.

G. Cleaned spray equipment shall show no oil or water when tested against a clean surface.

3.10 PROTECTION

A. Protect Work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by the Owner, and leave the site in an undamaged condition.

END OF SECTION