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DIVISION 09 - FINISHES

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STEEL COATINGS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 920 (2005) Standard Specification for Elastomeric Joint Sealants

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC A (2000) Good Painting Practice Steel Structures Painting Manual, Volume 1

SSPC AB 1 (1991; E 2004; E 2007) Mineral and Slag Abrasives

SSPC SP 1 (1982; E 2004) Solvent Cleaning

SSPC SP 10 (2007) Near-White Blast Cleaning

SSPC SP 3 (2004; E 2004) Power Tool Cleaning

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Construction Submittals

Material, Equipment, and Fixture Lists shall be submitted in accordance with paragraph entitled, "General," of this section.

A Safety Plan shall be submitted in accordance with paragraph entitled, "General," of this section.

SD-03 Product Data

Abrasive Blasting Material
Sealant Compound
Inorganic Zinc
Epoxy-Siloxane

SD-04 Samples

Manufacturer's Standard Color Charts shall be submitted in accordance with paragraph entitled, "General," of this section.

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Inspection Forms shall be submitted in accordance with paragraph entitled, "Inspection," of this section.

SD-05 Design Data

Mix Designs shall be submitted in accordance with paragraph entitled, "General," of this section.

Inorganic Zinc
Epoxy-Siloxane

SD-06 Test Reports

Inspection reports shall be submitted for protective coating systems in accordance with paragraph entitled, "Inspection," of this section.

SD-07 Certificates

Certificates shall be submitted for following items showing conformance with the referenced standards contained in this section.

Sealant Compound
Inorganic Zinc Coating
Epoxy-Siloxane Coating

SD-08 Manufacturer's Instructions

Manufacturer's instructions and material safety data sheets (MSDS) shall be submitted for Protective Coatings including details of thinning, mixing, handling, and application.

1.3 DELIVERY, HANDLING, AND STORAGE

Materials shall be delivered in their original, unopened containers bearing the manufacturer's name, shelf-life, product identification, and batch number.

Coatings, thinners, and cleaners shall be stored in tightly closed containers in a covered, well-ventilated area where they will be protected from exposure to extreme cold or heat, sparks, flame, direct sunlight, or rainfall. Manufacturer's instructions for storage limitations shall be followed.

1.4 GENERAL

A Safety Plan shall be submitted for protective coating systems in accordance with OSHA regulations.

Material, Equipment, and Fixture Lists shall be submitted for manufacturer's style or catalog numbers, specification and drawing reference numbers and warranty information for the Protective Coatings Systems fabrication site.

Manufacturer's Standard Color Charts shall be submitted showing manufacturer's standard finish colors.

Mix Designs shall be submitted for each type of protective coating

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including a complete list of ingredients and admixtures. Applicable test report shall verify that the mix has been successfully tested and meets design requirements.

PART 2 PRODUCTS

2.1 ABRASIVE BLASTING MATERIAL

Abrasive blasting materials shall be per SSPC A, Chapter 2.4, and SSPC AB 1.

Abrasive blasting shall be done offsite by Steel Fabricator.

2.2 SEALANT COMPOUND

Sealant shall be a self-curing, single component, polysulfide-rubber type conforming to ASTM C 920. Sealant shall be gray in color and capable of being applied into the joint with a calking gun.

2.3 PROTECTIVE COATINGS

2.3.1 Coating Systems

The following coating system definition is to be specified for use on all surfaces on the interior and exterior of the test cell and its contents, and as directed. The coating system shall be qualified to be used in an AISC Class B slip coefficient application.

COATING SYSTEMS

<u>PRIMER</u> <u>INORGANIC ZINC</u>	<u>TOP COAT</u> <u>EPOXY-SILOXANE</u>	<u>MANUFACTURER</u>
Zinc Clad III HS 100	Polysiloxane XLE-80 (Epoxy Siloxane)	Sherwin Williams

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 General

Faying surfaces that will become inaccessible after installation shall be abrasive blasted and coated with 4 to 6 mils of inorganic zinc only, prior to installation.

Surfaces to be welded shall be left uncoated. Welded areas shall then be masked and touched up.

Prepared surfaces shall be coated within 6 hours after completion of surface preparation and before rusting or recontamination occurs. Surfaces not coated within 6 hours or which show rusting or contamination, regardless of the length of time after preparation, shall be reprepared.

Surface preparation and coating operations shall be sequenced so that freshly applied coatings will not be contaminated by dust or foreign matter.

Surfaces shall be inspected and degreased as required prior to subsequent

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surface preparation and the application of protective coatings. Degreasing shall be by solvent cleaning, detergent washing, or steam cleaning. SSPC SP 1 shall apply for solvent cleaning.

3.1.2 Abrasive Blasting (AB)

Abrasive blasting shall conform to SSPC SP 10 and SSPC A.

Compressed air used for abrasive blasting shall be free of moisture and oil.

A minimum nozzle pressure of 90 pounds per square inch shall be maintained.

Weld slag, weld spatter, and foreign matter shall be removed from surfaces to be coated prior to abrasive blasting using mechanical methods as specified.

Blast cleaning shall achieve a 1.5 to 3.0 mil anchor profile as indicated by a surface profile comparator, replica tape, or similar device.

Rust and corrosion shall be removed from pits and depressions.

Abrasive blast aggregate shall not be reused.

All traces of abrasive residue and dust shall be removed from the surface, leaving it clean and dry.

Blasting aggregates shall be approved materials in accordance with MIL-A-22262 or SSPC AB 1, Type 1 or II, Class A, or steel grit. Only materials approved in the QPL attached to MIL-A-22262 shall be used. The steel grit shall be neutral (6.0 to 8.0 pH), rust and oil free, dry, commercial-grade blasting grit with a hardness of 40 to 50 Rockwell C. The size shall be selected to produce the required anchor profile. Only aggregates that are free of crystalline silica shall be selected for use at NASA.

3.1.3 Mechanical Cleaning (MC)

Where mechanical cleaning is specified and AB is prohibited, needle scalers or abrasive disks or wheels shall be used in accordance with SSPC SP 3, leaving the surface cleanliness equivalent to near-white metal (SSPC SP 10).

3.2 COATING APPLICATION

3.2.1 General Requirements

Manufacturer's instructions for thinning, mixing, handling, and applying products shall be considered a part of this specification. In the event of conflict between the requirements of this specification and the manufacturer's recommendations, this specification shall take precedence.

Compressed air used for spraying coatings shall be free of moisture and oil.

Each coat of material applied shall be free from runs; sags; blisters; bubbles; mud cracking; variations in color, gloss, and texture; holidays (missed areas); excessive film build; foreign contaminants; and dry overspray.

No coating shall be applied when rain is imminent or when the temperature or humidity is outside the limits recommended by the coating manufacturer.

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Surface temperature shall be at least 5 degrees F above the dew point.

Wind speed shall not exceed 15 miles per hour in the immediate coating area when using spray application methods. The relative humidity shall be between 40 and 85 percent when applying solvent based inorganic zinc coatings and top coat.

Coatings shall be thoroughly worked into all joints, crevices, and open spaces. Special attention shall be paid to welds, cutouts, sharp edges, rivets, crevices, and bolts to ensure proper coverage and thickness.

Newly coated surfaces shall be adequately protected from damage.

Coatings shall be applied by airless or conventional spray. Airless spraying shall be used for uniform large surface areas. Conventional spraying shall be used for small areas of intricate configuration and for touchup. During application of inorganic zinc coating, maintain uniform suspension.

Application with brushes shall be permitted for minor touchup of spray applications and stripe coats of inorganic zinc. Top coats may be applied using brush, roller, or spray as applicable.

3.2.2 Mixing and Application Procedures

Material shall be stirred thoroughly using an instrument that will not induce air into coating such as a Jiffy Mixer, manufactured by the Jiffy Mixer Company, Inc., San Francisco, CA, or an approved equal.

Mixed material shall be strained through a 30- to 60-mesh screen.

Continuous slow agitation of the material shall be provided during application of inorganic zinc coating, maintain uniform suspension. Continuous rapid agitation shall be avoided.

Material shall be thinned for viscosity control only. The manufacturer's recommended thinner and amount shall be used.

Material shall be applied in even, parallel passes, overlapping 50 percent. Special attention shall be paid to welds, cutouts, sharp edges, rivets, crevices, and bolts to ensure proper coverage and thickness.

3.2.3 Dry-Film Thickness (DFT)

Coatings shall be applied to the following dry-film thicknesses:

Coating System No. 1:

- a. 4 to 6 mils, inorganic zinc, as specified in Coating Schedule.
- b. Top coat 5 to 7 mils.

3.3 TOUCH-UP

Abrasions that occurred during shipment or erection shall be touched up as follows:

- a. Surface preparation and coating application shall conform to the

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manufacturer's instructions.

- b. Inorganic zinc shall be used for touch-up and repair of inorganic zinc and hot-dip galvanizing.
- c. Top coating shall be used for touch-up and repair of top coat. Reference paragraph 2.3.1, Coating Systems.

3.4 SEALANT COMPOUND APPLICATION

Calking shall be accomplished after application and cure of inorganic zinc coating.

Exterior joints shall be calked, including, but not limited to, the following:

- a. Tops of vertical gussets open to weather.
- b. Open weldments that could trap water.

3.5 INSPECTION

On-site work as described herein shall be inspected for compliance with this specification by a NACE (National Association of Corrosion Engineers) Certified Coating Inspector provided by the Contractor.

For all protective coatings applied off-site locations, the Contractor shall provide full inspection by NACE Certified Coating Inspector. Inspector shall be present at the pre-work conference to address necessary clarification of inspection and specification requirements. Apparent deviation from the specified requirements or any out of tolerance condition shall be immediately reported to the Contracting Officer's Technical Representative (COTR) for determination of corrective action. Submit inspection reports performed by the Coating Inspector.

Inspection Forms shall be submitted at the pre-work conference which shall be used by the Coating Inspector and forwarded to the Contracting Officer's Technical Representative (COTR) prior to delivery of the coated work to the job site.

-- End of Section --