STANDARD SPECIFICATION SECTION 09965 THERMALLY SPRAYED METALLIC COATING (FLAME SPRAY)

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, application, and testing of thermally sprayed zinc coating (flame spray) for corrosion control on steel, cast iron, and ductile iron equipment, such as valves, pipe, pipe couplings, fittings, air valve enclosures, pipe supports, and structural steel. Do not apply flame spray coating to aluminum, brass, bronze, copper, plastic, rubber, stainless steel, fusion-bonded epoxy surfaces, or flange insulating sets.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Standard Drawings.
- B. Record Drawings and Submittals: STD SPEC 01300.
- C. Painting and Coating: STD SPEC 09900.

1.03 SUBMITTALS

- A. Submit submittal packages in accordance with Standard Specification Section 01300.
- B. Submit manufacturer's catalog literature and product data sheets, describing the physical and chemical properties of the thermally sprayed coating. Describe surface preparation and application procedures.
- C. Submit coating manufacturer's technical and material safety data sheets for the product to be applied.

PART 2 - MATERIALS

2.01 THERMALLY SPRAYED COATING PROCESS

The thermally sprayed coating shall use a metal process wherein an oxygen-fuel gas flame is utilized as the source of heat for melting the coating material or a thermal arc spray technique in which two wires arc, causing them to atomize or melt. Compressed air or gas may be used for atomizing and propelling the material to the work piece.

2.02 METAL SPRAY WIRE

Wire shall conform to ASTM B 833. Material shall be 99.9% zinc (Grade Z 15005 per ASTM B 833).

2.03 ABRASIVES FOR BLAST CLEANING

Abrasives shall conform to MIL-STD-2138A (SH) and shall be either aluminum oxide grit with 16-30 mesh size or angular chilled iron grit with 25-40 mesh size.

2.04 EQUIPMENT FOR THERMAL SPRAYING

- A. Comply with AWS C2.18, Section 6.
- B. Gases: Comply with AWS C2.18, paragraph 5.7.

PART 3 - EXECUTION

3.01 APPLICATORS

Applicators of thermally sprayed coatings shall have a minimum of 2 years of successful experience in the surface preparation and application technique of wire metal spraying. Experienced applicators shall be R.W. Little Co., San Diego, California; Flame-Spray Inc., San Diego, California; or District approved equal.

3.02 THERMAL SPRAY APPLICATION

Comply with AWS C2.18, Section 8, except as modified herein.

3.03 MASKING

Protect all areas not to be sprayed including fusion-bonded epoxy surfaces and flange insulating sets. Mask any aluminum, brass, bronze, copper, plastic, rubber, or stainless steel surfaces. Masking material shall be resistant to abrasive blast cleaning and thermally sprayed coating.

3.04 SURFACE PREPARATION

Start the metal spray operation within four hours after anchor-tooth surface preparation has been completed and finish within six hours. If the substrate temperature is not greater than 9°F above the dew point, do not conduct metal spraying. No more than four hours shall elapse between the surface preparation and the start of the metal spray process.

3.05 THERMAL SPRAYING OPERATION

- A. Use clean dry air with not less than 60 psi air pressure at the compressor. Do not allow more than 35 feet of 3/8-inch inside diameter hose between the compressor and spray gun.
- B. Apply wire spray coating with a minimum of two passes and at right angles to one another. Total coating thickness of zinc shall be 8 to 10 mils. The rate of gun movement and indexing shall achieve the proper thickness per pass. Apply coating to all ferrous surfaces including those areas made inaccessible by the pipe supports. Provide temporary supports during the coating operation and reinstall the pipe supports.
- C. Any surface which shows visible moisture, rust, scale, or other contamination shall be reblasted before spraying. At least one layer of the coating must be applied within 4 hours

of blasting, and the surface must be completely coated to the specified thickness within 8 hours of blasting.

D. After spraying, the coating shall be uniform and free of lumps; loosely adherent, spattered metal; and uncoated spots.

3.06 TESTING AND REPAIR

- A. Test coating for thickness with a calibrated magnetic thickness gauge. If the coating thickness is less than that specified, repair and retest. Coating shall be free from blisters, chips and cracks.
- B. Blast clean defective sections of all sprayed metal prior to re-spraying, except that where the rejection has been solely due to thin coatings, additional sprayed metal may be added if the surface is completely dry and free of visible contamination.
- C. Repair defective coatings per AWS C2.18, Section 9.

3.07 PAINTING AND COATING

After thermal spray coating, paint above ground surfaces of piping, valves, and enclosures per Standard Specification Section 09900, System No. 20. Color of finish coat shall be OSHA Blue. Paint piping and valves located in vaults per Standard Specification Section 09900, System No. 10. Apply finish coat in field. Do not apply prime coat.

END OF SECTION