

## **05100: STRUCTURAL AND MISCELLANEOUS METAL**

### **GENERAL**

Members intended to be left exposed in completed construction shall be designated as "Architecturally Exposed Structural Steel" (AESS) or "Architecturally Exposed Steel" (AES) shall meet, as a minimum, the special requirements of AISC 2, Section 10. An upgrade to these minimum requirements shall be considered for structural steel based on project conditions.

In addition to AISC 2, Section 10, ornamental metal work shall conform to recommended practices of the National Association of Architectural Metal Manufacturers (NAAMM).

### **QUALITY ASSURANCE**

Shop drawings are required for fabrication of structural steel and custom fabricated assemblies.

Contractor shall be required to verify field conditions and dimensions.

Drawings shall be reviewed for constructibility.

Steel base plates shall be provide for items bearing on concrete. Anchor bolts shall be used for leveling. Space below plates shall be filled solid with appropriate non-shrink grout.

Exposed welds shall be ground smooth.

Templates shall be used for setting anchor bolts.

Contractor shall supervise installation of anchor bolts and related items to assure proper setting in concrete.

Metal exposed to atmosphere, moisture or embedded directly in concrete shall be hot dipped galvanized minimum 4 inches above surface of concrete.

Metal exposed to atmosphere or moisture shall be non-ferrous coated hot-dip galvanized.

Contractor shall be required to submit completed "Procedure Qualification Record" (PQR), "Welding Procedures Specification" (WPS) and Welder Performance Qualification Records for welds on work where life safety is impacted including railings and guardrails. Certified manufacturers test reports are required for all steel brought on site.

Mock-ups: Full-size, partial mock-ups shall be considered for ornamental metal items to verify conformance to design intent, review quality of workmanship, and evaluate applied coatings and colors.

## PROTECTIVE COATINGS

### General:

Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" recommendations for applying and designating finishes.

Shop-primed ornamental metal shall be spray finished in shop to the greatest extent possible

### Products:

Galvanizing-Repair Paint: Minimum 82 percent zinc-dust-content paint for regalvanizing welds in galvanized steel, complying with FS DOD-P-21035a. Where repaired galvanizing is to be left exposed, use repair paint that will closely match appearance of hot-dip galvanizing.

Primer for Galvanized Steel: Inorganic, zinc-rich: "Tneme-Zinc 90-97," Glidden, or equal, 2.0 to 3.5 DFT.

### Finish Coatings:

Select coatings for durability, fade resistance, and abrasion resistance where subjected to student contact. Powder coatings shall be avoided where subjected to wear by student contact.

Field applied coatings shall be VOC compliant and selected for long-term durability, ease of maintenance and repair.

### Galvanizing:

Comply with ASTM A153, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", for galvanizing of iron and steel hardware.

Comply with ASTM A123, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products", for galvanizing of rolled, pressed, and forged-steel shapes, plates, bars, and strips 1/8 inch thick and heavier.

Comply with ASTM A123 for galvanizing of assembled steel products.

Surface Preparation of AESS and Ornamental Metal: Comply with SSPC: The Society for Protective Coatings (SSPC) surface preparation specification No. 6 or No. 10. If steel is to be galvanized, prepare surface to this standard prior to galvanizing.

Galvanized Steel Prior to Priming: SSPC SP No. 1 exercising care not to damage galvanizing.

Zinc coating damaged after fabrication shall be repaired with paint in accordance with ASTM A780, "Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings," American Hot-Dip Galvanizers Association publication, "Recommended Practice for Touch-up of Damaged Galvanized Coatings," and recommendations of repair paint manufacturer.

Zinc-coated surfaces to be painted shall be chemically treated prior to painting in accordance with SSPC standard SP-1, "Solvent Cleaning," exercising care not to damage galvanizing.

## UC BERKELEY DESIGN STANDARDS

After erection, abraded areas of shop primer, field bolts, and welds shall be spot painted and touched-up with same coating used for shop priming.

Clearly indicate whether protective coatings are to be shop and field applied including intermediate and finish coats.

### **ORNAMENTAL METAL WORK**

Walkway canopies, railings, guardrails shall be designed to reflect their exposure to student use with respect to climbing, loading, and similar interface.

Shop drawings are required for fabrication of canopies, railings, guardrails, and similar work.

END OF 05100