

SECTION 053000 - METAL DECKING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Section includes metal decking as indicated on Drawings, specified herein, and needed for a complete and proper installation.

1.2 RELATED SECTIONS

- A. Section 013330 - Structural Submittals.
- B. Section 014525 - Structural Testing/Inspection Agency Services.
- C. Section 051000 - Structural Steel.
- D. Section 052000 - Steel Joists and Joist Girders.

1.3 REFERENCES

- A. AISI - Specifications for the Design of Cold-Formed Steel Structural Members.
- B. AWS D1.1 - Structural Welding Code.
- C. AWS A5.5 - Specifications For Low Alloy Steel Covered Arc-Welding.
- D. SDI - Basic Design Specifications.
- E. SDI - Steel Roof Deck Design Manual.
- F. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
- G. AWS D1.3 – Specification for Welding Sheet Steel in Structures.

1.4 SUBMITTALS

- A. Notify the Design Professional prior to detailing shop drawings.
- B. Submit detailed shop drawings showing layout and types of deck panels, weld sizes, weld patterns and conditions requiring closure panels, finishes, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories. Include calculations and required information if not completely covered by load tables and products data.
- C. Submit mill certification that the steel supplied meets the required specifications.

- D. Submit written welding procedures.
- E. Submit manufacturer's specifications, section properties, load tables, diaphragm shear tables, noise reduction coefficients (if applicable) and installation instructions for each type of decking and accessories. Include manufacturer's certifications to show compliance with supplementary framing, sump pans, cant strips, curb openings, special jointing and other accessories.

1.5 QUALITY ASSURANCE

- A. Structural Testing/Inspection Agency shall perform the following quality related items:
 - 1. Verify placement of deck for alignment and proper lap.
 - 2. Verify welds for size and pattern.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect steel deck from corrosion, deformation and other damage during delivery, storage and handling. Store materials off ground to permit easy access for inspection and identification. Store steel members and packaged items in a manner that provides protection against contact with deleterious materials. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide metal deck sheets of three spans minimum wherever possible.
- B. AISI Specifications Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- C. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 DECK ATTACHMENT

- A. Use E-60 series electrodes conforming to AWS A5.5.
- B. Provide weld washers for material thinner than 22 gauge.

2.3 ROOF DECK

- A. Metal roof deck formed from steel sheets shall conform to ASTM A653 structural quality (SQ). Provide roof deck types, minimum grades and gauges as indicated on Drawings.

- B. Before forming, the steel sheets shall receive a hot-dip protective coating of zinc conforming to ASTM A924 with the following minimum coating class, as defined in ASTM A653:

- | | | |
|----|------------------------|-----|
| 1. | Aggressive Environment | G90 |
| 2. | All other locations | G60 |

Provide accessories, clips, and other items as required.

- C. Roof deck that will be painted in the field (coordinate with Design Professional), shall comply with these additional requirements:

1. Before fabrication of the panel, all surfaces of the galvanized sheet steel shall be processed through a continuous coil coating line, designed to degrease and clean the metal, followed by a chemical conversion coating to etch the surface for proper bond characteristics. The roof deck shall then be coated with a 0.2 mil epoxy primer, oven baked and recoated with a 0.5 mil polyester primer and rebaked. This coil coated prime finish shall be applied to both sides of the material.
2. For deck within aggressive environments, after fabrication or assembly of the panel, the exposed surface and the inside periphery of the perforations shall receive the factory applied epoxy primer. The primer shall be oven cured to enhance adhesion and durability characteristics.
3. Compatibility of all field applied finish paint with the factory applied primer shall be the responsibility of the painting contractor.

- D. Provide roof deck units with flush, nested 2-inch end laps and nested side laps, unless otherwise indicated or specified. Provide deck configurations complying with SDI "Basic Design Specifications".

2.4 ROOF SUMP PANS

- A. When required by Design Professional fabricate from single piece of 14-gauge galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, unless otherwise shown. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3 inches wide. Recess pans not less than 1-1/2 inches below roof deck surface, unless otherwise shown or required by deck configuration. Holes for drains will be cut in the field.

2.5 CANT STRIPS

- A. When required by Design Professional fabricate cant strips of 20 gauge sheet steel. Bend to form a 45-degree cant not less than 5 inches wide with top and bottom flanges not less than 2 inches wide, unless otherwise shown.

2.6 GALVANIZING REPAIR PAINT

- A. ASTM A780 – SSPC Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight.

2.7 REPAIR PAINT

- A. Manufacturer's standard rust-inhibitive primer of same color as primer. Coordinate with Architect.

PART 3 - EXECUTION

3.1 GENERAL

- A. Load conditions shall be in accordance with Steel Deck Institute sequential loading formulas.
- B. Installer must examine the areas and conditions under which metal decking is to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- C. Locate deck bundles to prevent overloading of supporting members.

3.2 PLACEMENT

- A. Place steel deck units on supporting steel framework and adjust to final position before permanently fastening. Install deck units and accessories in accordance with manufacturer's recommendations and the Drawings, and as specified herein.

3.3 CUTTING

- A. Cut holes in deck indicated by the Drawings. Other holes required shall be supplied by those requiring them. Obtain written authorization for additional holes and cutting not indicated on erection drawings.

3.4 WELDING

- A. Perform welding in accordance with AWS Structural Welding Code.
- B. Provide weld washers for deck thinner than 22 gauge.

3.5 CONCENTRATED LOADS

- A. Do not hang concentrated loads exceeding 50 pounds from the deck. Only one such load is allowed per span of the deck. Must be spaced minimum 4'-0" from next concentrated load.

3.6 DECK SUPPORTS

- A. Fasten deck to steel framework at ends and at each intermediate support by welding according to manufacturer's specifications unless indicated otherwise on structural drawings or otherwise specified herein. Do not weld deck in place until all bolted and

welded connections for the structural frame are complete. A minimum of one floor over the area to be decked is to be bolted and welded prior to welding deck in place.

3.7 ROOF DECK

- A. Place roof deck in straight alignment. Lap ends of sheets two inches.
- B. Attach side laps of roof deck with as shown on the Drawings. Fasteners for side laps and overlying roofing material in dovetail deck shall be concealed within the depth of the dovetail shaped ribs. Within aggressive environments, fasteners shall be stainless steel.
- C. Fasten roof deck in place as shown on the Drawings.

3.8 REPAIR

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780 and manufacturer's written instructions. Puddle welds to be painted only if deck is exposed in final condition.
- B. Repair Painting:
 - 1. Wire brush and clean rust spots, welds, and abraded areas on surface of prime-painted deck immediately after installation and apply repair paint. Coordinate with manufacturer's specifications.
 - 2. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner shall engage a qualified testing agency to perform tests and inspections.
- B. Field welds will be subject to inspection.
- C. Prepare test and inspection reports.

END OF SECTION 053000