

SECTION 05310

STEEL ROOF DECK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish labor, materials and equipment necessary for the fabrication and installation of steel roof deck and accessories.

1.02 RELATED SECTIONS

- A. Section 05120: Structural Steel.
- B. Section 05210: Steel Joists.
- C. Section 05500: Metal Fabrications.

1.03 REFERENCES

- A. Steel Deck Institute (SDI) "Design Manual for Composite Decks, Form Decks and Roof Decks".
- B. American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members," latest edition.
- C. AWS D1.1-02: "Structural Welding Code - Steel," American Welding Society.

1.04 SUBMITTALS

- A. Submittals shall be in accordance with Section 01300.
- B. Submit Shop Drawings showing layout of deck panels, deck profile dimensions, anchorage to supports, projections, openings and reinforcement, finishes, end details, and accessories. Submit catalog showing deck properties and load tables. Show manufacturer's deck designation on Shop Drawings.
- C. Submit verification that deck design and manufacture is in compliance with the Steel Deck Institute Specifications.
- D. Submit manufacturer's data for mechanical fasteners to be used for anchorage of deck to supports and at sidelap connections.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's requirements. Steel deck shall be stored off the ground with one end elevated to provide drainage and shall be protected from the elements with a waterproof covering, ventilated to avoid condensation.

PART 2 PRODUCTS

2.01 MATERIALS AND COMPONENTS

- A. Steel Roof Deck: Roof deck units shall be fabricated from steel conforming to AISI Section 1.2. The delivered thickness of the uncoated steel shall not be less than 95% of the design thickness. Steel roof

deck shall be manufactured from steel conforming to ASTM Designation A611, Grades C, D or E or A446, Grades A, B, C, D, E or F, or equal, having a minimum yield strength of 33,000 pounds per square inch, unless noted otherwise. The maximum working stress shall not exceed 20,000 pounds per square inch. The unit design stress shall in no case exceed the minimum yield strength of the steel divided by 1.65 for specific design uniform loads. The unit design stress shall be increased 33-1/3% for temporary concentrated loads provided the deck thus required is no less than that required for the specific design uniform loads.

1. Finish: Prime-painted coating.

B. Acoustical Deck: Acoustical roof deck shall be fabricated from steel conforming to AISI Section 1.2. The steel used shall have a minimum yield point of 33 ksi. The delivered thickness of the uncoated steel shall not be less than 95% of the design thickness. Acoustical deck shall be manufactured from steel conforming to ASTM Designation A611, Grades C, D or E or A446, Grades A, B, C, D, E or F, or equal, having a minimum yield strength of 33,000 pounds per square inch, unless noted otherwise. The maximum working stress shall not exceed 20,000 pounds per square inch. The unit design stress shall in no case exceed the minimum yield strength of the steel divided by 1.65 for specific design uniform loads. The unit design stress shall be increased 33-1/3% for temporary concentrated loads provided the deck thus required is no less than that required for the specific design uniform loads.

1. Finish: Prime painted coating.

2. Provide perforations on vertical webs of open flute roof deck units.

3. Provide perforated bottom plate with long-span deck units.

4. Acoustical Filler Strips: Fibrous glass type; minimum 1.X. lb.cu. ft. density; profiled to suit.

5. Provide a NRC rating of .90.

C. Fabricate roof sump pan of 14 gauge sheet steel, flat bottom, sloped sides, recessed 1-1/2 inches (38 mm) below roof deck surface, bearing flange 3 inches (75 mm) wide, watertight.

D. Metal Closure Strips: 20 gauge sheet steel; of required profiles and size.

E. Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.

F. Galvanized Metal Spot Primer: Wilbur & Williams "Zinc Shield," Devco "Zinc Prime 100," Tnemec "Tneme-Zinc," or approved equal, meeting Military Specifications MIL-P-21035.

G. Spot Primer (Painted Decks): Tnemec "Series 37 Chem Prime," Wilbur & Williams "Prime Line," or approved equal, universal phenol-alkyd primer.

H. Ridge and Valley Plates: Fabricate ridge and valley plates of sheet steel of the same quality, finish and gauge as the deck units; each leg not less than 2-1/4" wide, bent to provide tight-fitting closure with deck units. Provide plates in 10' lengths where possible.

I. Welding Materials: Applicable AWS D1.1 type required for materials being welded.

PART 3 EXECUTION

3.01 INSTALLATION

A. Erect steel decking as recommended by the SDI and in accordance with approved Shop Drawings. Properly align and level on structural supports. Deck shall span over at least three supports.

B. Welding shall be done in strict accordance with the AWS D1.1 requirements by a welder licensed for the welds they will be performing. Steel deck and supports shall be clean, dry and free of frost.

C. Place roof deck with edges up and flutes at right angles to supports bearing onto the support a minimum of 1-1/2". End laps shall always occur over supports. Minimum end lap shall be 2". Lap all sheets

one-half flute at side laps. Unless indicated otherwise, attach sheets to supporting members with nominal 1/2 inch diameter puddle welds or equivalent at all side laps, plus a sufficient number of interior ribs to limit the spacing between adjacent points of attachment to 18 inches maximum. For spans greater than 5 feet, the side laps shall be fastened together at a maximum spacing of three feet, unless indicated otherwise. Fillet welds when used, shall be at least one inch long. Weld metal shall penetrate all layers of deck material at end laps and side joints, and shall have good fusion to the supporting members. The use of fastening methods other than welds, such as self-drilling fasteners, may be used provided that equivalence to the welded method can be shown by approved test data and shall be subject to approval.

- D. Unless otherwise detailed, install minimum 6 inch wide cover plates where deck changes direction. Weld in place at maximum 12 inches o.c.
- E. Immediately after installation, touch-up welds, burned areas and damaged spots with specified prime paint.
- F. Install sheet steel closures and angle flashings to close openings between deck and walls, columns, and openings.
- G. Position roof sump pans with flange bearing on top surface of deck. Weld at each deck flute.

END OF SECTION

