

## SECTION 05311

### STEEL FORM DECK AND COMPOSITE STEEL FLOOR DECK

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

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

##### 1.02 RELATED SECTIONS

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

##### 1.03 REFERENCES

- A. Steel Deck Institute (SDI) "Design Manual for Composite Decks, Form Decks and Roof Decks, and Cellular Metal Floor Deck with Electrical Distribution".
- B. American Iron and Steel institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members."
- C. AWS D1.1-02: "Structural Welding Code - Steel," American Welding Society.
- D. ASTM A611: Steel, Sheet, Carbon, Cold-Rolled, Structural Quality.
- E. ASTM A5235: General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- F. ASTM A446: Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.

##### 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. Show pour stop layout and types.
- 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 sidelaps.

##### 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 Form Deck: The steel deck units shall be manufactured from steel conforming to AISI A446 A, B, C, D, or E; or equal, having a minimum yield strength of 33 ksi, unless noted otherwise. The unit design stress shall not exceed the yield strength multiplied by 0.60 with a maximum of 36 ksi. The delivered thickness of the uncoated steel shall not be less than 95% of the desired thickness. Finish shall be galvanized, conforming to ASTM A525 G60. Steel form deck shall be manufactured by United Steel Deck, Inc., Vulcraft, Canam, or approved equal.
- B. Composite Steel Form Deck: Composite steel floor deck shall be fabricated from steel conforming to Section 1.2 of the latest edition of the American Iron and Steel Institute, Specification for the Design and Cold-Formed Steel Structural Members. The steel used shall have a minimum yield point of 33 ksi unless otherwise noted. The delivered thickness of the uncoated steel shall not be less than 95% of the design thickness. Deck shall be galvanized conforming to ASTM A525 [G60][G90]. Composite steel floor deck shall be manufactured by United Steel Deck, Inc., Vulcraft, Canam, or approved equal.
- C. Metal Closure Strips: 20 gauge sheet steel; of required profiles and sizes.
- D. Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.
- E. Welding Materials: Applicable AWS D1.1 type required for materials being welded.
- F. Welding washers shall be a minimum thickness of .0568" (16 gauge) and have a nominal 3/8" diameter hole.
- G. Provide sheet metal pour stops at edges and openings in accordance with SDI Pour Stop Selection Table. Provide vertical leg return lip for Type 16 and larger.

## 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 perform. Steel deck and supports shall be clean, dry and free of frost. Use welding washers when welding 22 Ga. steel deck.
- C. Place 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 and shall not be staggered. Minimum end lap shall be 2". Lap all sheets one-half flute at side laps. Deck units with spans greater than five feet shall have a side laps fastened at midspan or 36" intervals, whichever is smaller, unless otherwise indicated.
  - 1. Attach composite steel deck sheets to supporting members with nominal 5/8 inch diameter puddle welds or equivalent at all edge ribs, plus a sufficient number of interior ribs to provide a maximum average spacing of 12 inches, unless otherwise indicated. The maximum spacing between adjacent points of attachment shall not exceed 18 inches.
  - 2. Attach steel form deck to supporting members with nominal 5/8" diameter arc puddle weld with 3/8" diameter plug weld through welding washers. The minimum requirement for fastening deck is as follows unless otherwise indicated.

- a. At end of sheets, weld in the bottom of each side corrugation and at the bottle of the middle corrugation.
  - b. At intermediate supports, weld at the bottom of each side corrugation.
- D. The use of mechanical fasteners to support the deck to its supports instead of welding may be used, provided that equivalence to the welded method can be shown by approved test data, and shall be subject to approval.
- E. Install flexible closure strips with adhesive in accordance with manufacturer's instructions, completely sealing space.
- F. Install pour stops with 1" long fillet welds at 12" on center. Lap pour stops 2" over supporting structural steel or joist.

END OF SECTION

