

## SECTION 05310

### STEEL DECK

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. **Section Includes:** Steel deck units for floor and roof applications.
- B. **Related Sections:**
  - 1. Section 01450 - Testing Laboratory Services.
  - 2. Section 05120 - Structural Steel.

##### 1.2 SUBMITTALS

- A. **Product Data:** Submit manufacturer's specifications and installation instructions for each type of decking and accessories.
- B. **Shop Drawings:** Submit shop drawings showing layout and types of deck units, anchorage details, and conditions requiring closure strips, supplementary framing, cant strips, cut openings, special jointing and other accessories.

##### 1.3 QUALITY ASSURANCE

- A. **Codes and Standards:** Comply with the following codes and standards, except as otherwise indicated:
  - 1. American Iron and Steel Institute (AISI), "Specification for the Design of Cold-Formed Steel Structural Members".
  - 2. American Welding Society (AWS), D1.3 "Structural Welding Code - Sheet Steel".
  - 3. Steel Deck Institute (SDI), "Design Manual for Composite Decks, Form Decks and Roof Decks".
- B. **Qualification of Field Welding:** Use qualified welding processes and welding operators in accordance with "Welder Qualification" procedures of AWS.
- C. **Underwriters' Label:** Provide metal floor deck units listed in Underwriters' Laboratories "Fire Resistance Directory", with each deck unit bearing the UL label and marking for specific system detailed.
- D. **FM Listing:** Provide metal roof deck units that have been evaluated by Factory Mutual System and are listed in "Factory Mutual Approval Guide" for "Class I" fire-rated construction.
- E. **Testing:** Refer to "Section 01450 - Testing Laboratory Services".

##### 1.4 JOB CONDITIONS

- A. **Coordination:** Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading structural members.

- B. **Safety:** Do not use deck for storage or working platforms until units are permanently secured. Do not permit storage and operations on installed deck which could damage or deform the deck units.
- C. **Deck Insulation:** Coordinate and cooperate with roof insulation installer to provide deck satisfactory for application of insulation.
- D. **Ceiling Hangers:** Coordinate and cooperate with ceiling installers for placing hangers.

## **PART 2 - PRODUCTS**

### **2.1 STEEL DECK**

- A. **Description:** Dimensions and properties of steel deck are shown on the Drawings. Deck configuration shall be similar to that indicated. Allowable stress shall equal or exceed that of the deck specified on the Drawings.
- B. **Deck Type:**
  - 1. Deck sizes and types all indicated on the drawings.

### **2.2 MATERIALS**

- A. **Steel for Galvanized Metal Deck Units:** ASTM A 446, Grade as required to comply with SDI Specifications.
- B. **Miscellaneous Steel Shapes:** ASTM A 36.
- C. **Sheet Metal Accessories:** ASTM A 526, commercial quality, galvanized.
- D. **Galvanizing:** ASTM A 525, G60.
- E. **Galvanizing Repair Compound:** High zinc dust content paint for repairing damage and regalvanizing welds, with dry film containing not less than 94% zinc by weight, and complying with ASTM A 780.
- F. **Flexible Closure Strips:** Manufacturer's standard vulcanized, closed-cell, synthetic rubber.

### **2.3 FABRICATION**

- A. **General:** Form deck units in lengths to span three or more supports, with flush, telescoped or nested 2-inch laps at ends and interlocking or nested side laps, of metal thickness, depth, and width as indicated.
- B. **Deck Units:** Provide deck configurations that comply with SDI "Specifications and Commentary for Steel Roof Deck".
- C. **Metal Cover Plates:** Fabricate metal cover plates for end-abutting floor deck units of not less than same thickness as decking. Form to match contour of deck units and approximately 6 inches wide.

- D. Metal Closure Strips:** Fabricate metal closure strips, for cell raceways and openings between decking and other construction, of not less than 0.045-inch min. (18 gage) sheet steel. Form to provide tight-fitting closures at open ends of cells or flutes and sides of decking.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. General:** Install deck units and accessories in accordance with manufacturer's recommendations, shop drawings, and as specified herein.
1. Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.
  2. Align deck units for entire length of run of cells and with close alignment between cells at ends of abutting units.
  3. Place deck units flat and square, secured to adjacent framing without warp or deflection.
  4. Do not place deck units on concrete supporting structure until concrete has cured and is dry.
- B. Floor Deck:**
1. Fasten floor deck units to steel supporting members by nominal 5/8 inch puddle welds or elongated welds of equal strength, spaced not more than 12 inches o.c. with a minimum of two welds per unit at each support. Fasten end closures with tack weld or use self-tapping No. 8 or larger machine screws at 3'-0 o.c.
  2. Fasten roof deck units to steel supporting members by not less than 5/8-inch-diameter puddle welds or elongated welds of equal strength, spaced not more than 12 inches at every support, and at closer spacing where indicated. In addition, secure deck to each supporting member in ribs where side laps occur.
  3. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work. Use welding washers where recommended by deck manufacturer.
  4. Mechanically fasten side laps of adjacent deck units between supports, at intervals not exceeding 36 inches o.c., using self-tapping No. 8 or larger machine screws.
- C. Roof Deck:** For application of roof insulation, deck shall comply with the following:
1. Top flanges without concavity or convexity over 1/16 inch, measured across any 3 adjacent flanges.
  2. Side laps properly nested and mechanically fastened not over 36" o.c. between supports.
  3. Ends of sheets lapped at least 2", located over supports and fastened to supports.
  4. Attachments at each support in every other rib (maximum 12" o.c.).
- D. Uplift Loading:** Install and anchor roof deck units to resist gross uplift loading as specified in "Section 07550".
- E. Cutting and Fitting:** Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking.
- F. Reinforcement at Openings:** Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown.

- G. Hanger Slots or Clips:** Provide UL-approved punched hanger slots between cells or flutes of lower element where floor deck units are to receive hangers for support of ceiling construction, air ducts, diffusers, or lighting fixtures.
1. Hanger clips designed to clip over male side lap joints of floor deck units may be used instead of hanger slots.
  2. Locate slots or clips at not more than 14 inches o.c. in both directions, not over 9 inches from walls at ends, and not more than 12 inches from walls at sides, unless otherwise indicated.
  3. Provide manufacturer's standard hanger attachment devices.
- H. Joint Covers:** Provide metal joint covers at abutting ends and changes in direction of floor deck units.
- I. Closure Strips:** Provide metal closure strips at open uncovered ends and edges of roof decking and in voids between decking and other construction. Weld into position to provide a complete decking installation.
1. Provide flexible closure strips instead of metal closures, at Contractor's option, wherever their use will ensure complete closure. Install with adhesive in accordance with manufacturer's instructions.
  2. Provide a minimum of ¼" edge angle at all floor and roof penetrations.
- J. Touch-Up Painting:** After decking installation, wire brush, clean and paint scarred areas, welds, and rust spots on top and bottom surfaces of decking units and supporting steel members.
1. Touch-up galvanized surfaces with galvanizing repair paint in accordance with ASTM A 780.

### 3.2 QUALITY CONTROL

- A. Owner selected and compensated independent testing laboratory** shall visually inspect all deck attachments to structure and sidelap deck attachment.

END OF SECTION