

## **SECTION 05 3000**

### **METAL DECKING**

#### **PART 1. GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections apply to work of this section.

##### **1.2 DESCRIPTION OF WORK**

- A. Extent of metal decking is indicated on drawings, including basic layout and type of deck units required.

##### **1.3 QUALITY ASSURANCE**

- A. Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise indicated or specified:
  - 1. AISI "Specification for the Design of Cold-Formed Steel Structural Members".
  - 2. AWS "Structural Welding Code".
  - 3. ADI "Design Manual for Floor Decks and Roof Decks".
- B. Qualification of Field Welding: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
  - 1. Welded decking in place is subject to inspection and testing. Expense of removing and replacing portions of decking for testing purposes will be borne by Owner if welds are found to be satisfactory. Remove work found to be defective and replace with new acceptable work.
- 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 which have been evaluated by Factory Mutual System and are listed in "Factory Mutual Approved Guide" for "Class I" fire rated construction.

##### **1.4 SUBMITTALS**

- A. Product Data: Submit manufacturer's specifications and installation instructions for each type of decking and accessories. Include manufacturer's certification as may be required to show compliance with these specifications.
- B. Shop Drawings: Submit detailed drawings of one set of reproducibles and two sets of prints showing layout and types of deck panels, anchorage details, and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories.
  - 1. Do not reproduce contract drawings for shop drawings.

- C. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance.

## **PART 2. PRODUCTS**

### **2.1 ROOF DECK**

- A. General: Provide metal roof deck formed from steel sheets having minimum yield strength of **33,000** pounds per square inch. Provide roof deck types and gauges as required by the plans.
- B. Deck finish: Provide roof deck with galvanized finish ASTM A653. Provide accessories, clips, and other items as required.
- C. Deck layout: Provide roof deck units in lengths to span three or more support spacings, with flush, telescoped or nested 2 inch end laps and interlocking side laps, unless otherwise shown or specified. Provide deck configurations complying with SDI "Basic Design Specifications", and as supplied herein.
- D. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
  - 1. Metal Roof Deck Units:
    - (a) Vulcraft/Div. Nucor Corp.
    - (b) Wheeling Corrugating Co. Wolverine Deck Co.
    - (c) ASC Profiles, Inc.
    - (d) Consolidated Systems, Inc.
    - (e) Epic Metals Corp.
    - (f) Mac-Fab Products, Inc.
    - (g) Roll Form Products, Inc.
    - (h) United Steel Deck, Inc.
    - (i) Verco Manufacturing Co.

### **2.2 COMPOSITE DECK**

- A. General: Provide composite deck formed from steel sheets having a minimum yield strength as indicated on the structural documents.
- B. Provide galvanized closures for columns, girders, where panels change direction, and end closures for panels not closed by bent plates or other means.
- C. Provide composite deck units without hanger slots.

- D. Galvanizing: Where required by plans galvanize finished per ASTM A525, with a minimum coating of G60 on both sides. The coating shall conform to Federal Specification QQ-S-775-d, Type I, Class E.
- E. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
  - 1. Composite Metal Floor Deck Units:
    - (a) Vulcraft/Div. Nucor Corp.
    - (b) Wheeling Corrugating Co.
    - (c) Consolidated Systems, Inc.
    - (d) Epic Metals Corp.
    - (e) Mac-Fab Products, Inc.
    - (f) Roll Form Products, Inc.
    - (g) United Steel Deck, Inc.

## 2.3 MATERIALS

- A. Steel for Painted Metal Deck Units: ASTM A 611, Grade C.
- B. Steel for Galvanized Metal Deck Units: ASTM A 446, Grade A.
- C. Miscellaneous Steel Shapes: ASTM A 36.
- D. Shear Connectors: Headed stud type, ASTM A 108, Grade 1015 or 1020, cold finished carbon steel; with dimensions complying with AISC specifications.
- E. Sheet Metal Accessories: ASTM A 526, commercial quality, galvanized.
- F. Galvanizing: ASTM A 525, G60.
- G. Galvanizing Repair Paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with Military Specifications MIL-P-21035 (Ships).
- H. Paint: Manufacturer's baked-on, rust-inhibitive paint, for application to metal surfaces which have been chemically cleaned and phosphate chemical treated.

## 2.4 FABRICATION

- A. General: Form deck units in lengths to span 3 or more supports, with flush, telescoped or nested 2" laps at ends and interlocking or nested side laps, unless otherwise indicated.
- B. Roof Deck Units: Provide deck configurations complying with SDI "Roof Deck Specifications", of metal thickness, depth and width as shown.
- C. Open-Beam Metal Floor Deck Units: Provide fluted sections of metal thickness, depth and width as shown.

- D. Open-Beam Composite Units: Fabricate deck units with integral embossing or raised pattern to furnish mechanical bond with concrete slabs. Fabricate open-beam deck units with fluted section having interlocking side laps; of metal thickness, depth and width as shown.
- E. Metal Closure Strips: Fabricate metal closure strips, for cell raceways and openings between decking and other construction, of not less than 0.045" 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 and final 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. Place deck units in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting units.
  - 3. Deck sheets shall be installed spanning a minimum of four supports (three-span condition).
  - 4. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.
  - 5. Do not place deck units on concrete supporting structure until concrete has cured and is dry.
  - 6. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
  - 7. Do not use floor deck units for storage or working platforms until permanently secured.
- B. Fastening Deck Units:
  - 1. Unless noted otherwise on the structural drawings, fasten floor deck units to steel supporting members by not less than 5/8" diameter fusion welds or elongated welds of equal strength, spaced not more than 12" o.c. with a minimum of 2 welds per unit at each support
  - 2. Unless noted otherwise on the structural drawings, fasten roof deck units to steel supporting members by not less than 5/8" diameter fusion welds or elongated welds of equal strength, spaced not more than 12" o.c. at every support, and at closer spacing where required for lateral force resistance. 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.
  - 4. Use welding washers where recommended by deck manufacturer.

5. Mechanically fasten side laps of adjacent deck units between supports, at intervals not exceeding 24" o.c., using self-tapping No. 10 or larger self drilling tapping screws.
- C. Uplift Loading: Install and anchor roof deck units to resist gross uplift loading as indicated on the Components/Cladding Wind Pressures Table on the structural drawings, or in accordance with the latest edition of ASCE 7.
- D. Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.
- E. Reinforcement at Openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown.
- F. Joint Covers: Provide metal joint covers at abutting ends and changes in direction of floor deck units, except where taped joints are required.
- G. Shear Connectors: Weld shear connectors to supports through decking units in accordance with manufacturers instructions. Do not weld shear connectors through two layers (lapped ends) of decking units. Weld only on clean, dry deck surfaces.
- H. Cant Strips: Weld to top surface of roof decking, and secure to wood nailers with galvanized nails, and to steel framing with welds or galvanized self-tapping screws. Space fasteners or welds at 12" o.c. Lap end joints not less than 3", and secure with galvanized sheet metal screws.
- 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.
- 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 applied in accordance with manufacturer's instructions.

**END OF SECTION**