

## **SECTION 053100 - STEEL DECKING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Composite floor deck.
- B. Related Requirements:
  - 1. Section 033000 "Cast-in-Place Concrete" for normal-weight structural concrete fill over steel deck.
  - 2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.
  - 3. Section 055000 "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.
  - 4. Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings:
  - 1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Product Certificates: For each type of steel deck.

- C. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
  - 1. Power-actuated mechanical fasteners.
- D. Evaluation Reports: For steel deck, from ICC-ES.

## **1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. 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."

### **2.2 COMPOSITE FLOOR DECK**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. ASC Profiles, Inc.
  - 2. Canam Steel Corporation; Canam Group, Inc.
  - 3. Cordeck.
  - 4. DACS, Inc.
  - 5. Epic Metals Corporation.
  - 6. Marlyn Steel Decks, Inc.
  - 7. New Millennium Building Systems, LLC.
  - 8. Nucor Corp.
  - 9. Roof Deck, Inc.

- B. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
1. Galvanized-Steel Sheet, where underside of deck will not be exposed to view: ASTM A 653/A 653M, Structural Steel (SS), Grade 50, G60 zinc coating.
  2. Galvanized and Shop-Primed Steel Sheet, where underside of deck will be exposed to view: ASTM A 653/A 653M, Structural Steel (SS), Grade 50, G60 zinc coating; with unpainted top surface and cleaned and pretreated bottom surface primed with manufacturer's standard baked-on, rust-inhibitive primer.
  3. Profile Depth: 1-1/2 inches.
  4. Design Uncoated-Steel Thickness: 0.0358 inch.
  5. Span Condition: As indicated Triple span or more where possible.

### 2.3 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.
- G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
- H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.
- I. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- J. Galvanizing Repair Paint: ASTM A 780/A 780M or SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight.

- K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION, GENERAL**

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

### **3.3 FLOOR-DECK INSTALLATION**

- A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: 5/8 inch, nominal.
  2. Weld Spacing at support plates & angles and non-composite beams: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart, unless noted otherwise.
  3. Weld Spacing at composite beams: Space and locate welds as indicated.
  4. Weld Washers: Install weld washers at each weld location.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:
1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws, where underside of deck will not be exposed to view.
  2. Fasten with a minimum of 1-1/2-inch- long welds, where underside of deck will be exposed to view.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
1. End Joints: Lapped.
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.
- E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.
- F. Install piercing hanger tabs where required at 14 inches apart in both directions, within 9 inches of walls at ends, and not more than 12 inches from walls at sides unless otherwise indicated.

### **3.4 FIELD QUALITY CONTROL**

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

### **3.5 PROTECTION**

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.

- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
  - 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
  - 2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099123 "Interior Painting."
  
- C. Repair Painting: Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099123 "Interior Painting."

**END OF SECTION 053100**