

SECTION 05312

COMPOSITE STEEL DECK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Composite steel deck.
- B. Closures and fillers.
- C. Fastening of deck.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.
- B. Section 05120 - Structural Steel.

1.3 REFERENCES

- A. ASTM A 611 - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Structural Quality.
- B. ASTM A 653/A 653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- C. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- D. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society.
- E. Fire Resistance Directory; Underwriters Laboratories Inc. (UL).
- F. SDI 29 - Steel Deck Institute Design Manual for Composite Decks, Form Decks, Roof Decks, and Cellular Metal Floor Deck with Electrical Distribution; Steel Deck Institute, Inc. (SDI).
- G. SDI DDM02 - Diaphragm Design Manual; Steel Deck Institute, Inc. (SDI).

- H. Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute (AISI).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data:
 - 1. Submit for each type of decking specified, including dimensions of individual components, profiles, and finishes.
 - 2. Mechanical fasteners: Test reports from a qualified independent testing agency evidencing compliance with requirements based on comprehensive testing.
- C. Shop Drawings: Show location of deck units, anchorage details, and other information required for a thorough review.
- D. Product Certificates: Signed by the manufacturer of the steel deck, certifying the supplied products comply with specified requirements.
- E. Welder Certificates.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Member of the Steel Deck Institute.
- B. Codes and Standards: Comply with applicable provisions of the following specifications:
 - 1. American Iron and Steel Institute (AISI).
 - 2. American Welding Society (ANSI/AWS D1.3 Structural Welding Code/Sheet Steel).
 - 3. Steel Deck Institute (SDI).
- C. Each welder shall have satisfactorily passed A.W.S. Qualification tests for welding processes involved, and if applicable, shall have undergone recertification.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage and handling.

- B. If ground storage is needed, store deck bundles off the ground, with one end elevated to provide drainage. Protect bundles against condensation with a ventilated waterproof covering. Stack bundles so there is no danger of tipping, sliding, rolling, shifting or material damage. Check bundles periodically for tightness, and retighten as necessary so wind cannot loosen sheets.
- C. Place deck bundles on the building frame near a main supporting beam at a column or wall. Do not place bundles on unbolted frames or on unattached or unbridged joists. Ensure that the structural frame is properly braced to receive the bundles.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Provide products fabricated by United Steel Deck, Inc.; 14 Harmich Rd. South Plainfield, NJ 07080. Telephone: 908-277-1617 or 800-631-1215; Fax: 908-277-1619.

2.2 MATERIALS

- A. Sheet Steel for Galvanized Deck and Accessories: ASTM A 653/A 653M Structural Quality, minimum yield strength of 33 ksi (230 MPa). Galvanizing: ASTM A 924 with a minimum coating class of G30 as defined in ASTM A 653/A 653M.
- B. Sheet Steel for Deck and Accessories: ASTM A 611 with a minimum yield strength of 33 ksi (230 MPa).
- C. Deck Type and Thickness: As shown on the drawings.
- D. Deck shall be _____ with a minimum metal thickness of _____.
- E. Select deck to provide the load capacities shown on the drawings and as determined using the Steel Deck Institute construction loading criteria.
- F. The deck type provided shall be capable of supporting the superimposed live loads indicated on the drawings.
- G. Whenever possible, deck shall be multi-span and shall not require shoring during the concrete placement procedure.

- H. Where fire resistance rated assemblies are required, provide UL-listed units. Identify steel deck bundles with labels bearing the UL mark.
 - 1. UL Design Number: _____.
 - 2. UL Design Number: As indicated on the drawings.

2.3 ACCESSORIES

- A. Pour stops, column closures, end closures, cover plates, and girder fillers shall be the type required by the Steel Deck Institute.
- B. Mechanical fasteners or welds are acceptable for accessory attachments.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine support framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work of this section.

3.2 PREPARATION

- A. Place deck in accordance with approved placement plans.
- B. Do not place deck panels on concrete support structure until concrete has cured and is dry.
- C. Locate deck bundles to prevent overloading of support members.

3.3 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to Steel Deck Institute specifications and recommendations, and in accordance with placement plans and requirements of this section.
- B. Install temporary shoring, if required, before placing deck panels.
- C. Place deck panels on structural supports and adjust to final position with ends aligned. Attach firmly to the

supports immediately after placement in order to form a safe working platform.

- D. Cut and neatly fit deck units and accessories around openings and other work projecting through or adjacent to the decking.
- E. Do not cut unscheduled openings through the deck without the approval of the Architect; reinforce openings as directed.

3.4 INSTALLATION, FLOOR DECK

- A. Anchor floor deck units to steel supporting members by arc spot puddle welds of the following diameter and spacing or fillet welds of equal strength:
 - 1. Weld diameter: Minimum visible 5/8 inch (15 mm).
 - 2. Weld spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches (300 mm) apart but not more than 18 inches (460 mm).
 - 3. Mechanical fasteners, either powder actuated or pneumatically driven, or screws may be used in lieu of welding to fasten deck to supporting framing, provided they have been specifically approved.
 - 4. Fasten side laps and perimeter edges of units between supports at intervals not exceeding 36 inches (1 m) on center, using one of the following methods:
 - a. #10 self drilling screws;
 - b. Crimp or button punch
 - c. Arc puddle welds 5/8 inch (15 mm) minimum visible diameter, or 1 inch (25 mm) long fillet welds.
- B. End Bearing:
 - 1. Install deck ends over supports with a minimum end bearing of 1.5 inches (40 mm).
- C. Pour Stops and Girder Fillers: Fasten pour stops and girder fillers to supporting structure according to the manufacturer's recommendations.
- D. Floor Deck Closures: Fasten column closures, cell closures, and Z closures to deck to provide tight fitting closures at open ends of ribs and sides of decking. Fasten cell closures at changes of direction of floor deck units unless otherwise directed.

3.5 REPAIRS

- A. Before concrete placement:
 - 1. Inspect the deck for tears, dents, or other damage that may prevent the deck from acting as a tight and substantial form or that would impair structural capability.
 - 2. Repair tears, dents, or other damage.
 - 3. Obtain the approval of the Architect.
- B. Determine the need for temporary shoring of deck before concrete placement.

END OF SECTION