

SECTION 05310 STEEL DECKING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this section.

1.02 DESCRIPTION

A. SCOPE OF WORK

1. This section includes fabrication, delivery, unload and store in locations directed and erect all roof deck units as shown on drawings and specified.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification section.
- B. Product data including manufacturer's specifications and installation instructions for each type of decking and accessories.
- C. Shop drawings showing layout and type of deck units, anchorage details, and conditions requiring closure strips, supplementary framing, sump pans, cant strips, cut openings, special jointing, and other accessories.
- D. Submitted shop drawings must be checked and signed by the General Contractor.
- E. Welder certificate: See Section 05120 for certification submittal requirement.

1.04 QUALITY ASSURANCE

- A. Codes and standards: Comply with provisions of 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 Qualifications" procedures of AWS. Welded decking in place is subject to inspection and testing.
- C. FM listing: Provide steel 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.
- D. See Structural Steel 05120, 3.02 for testing requirements.

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Roof deck to be 1-1/2 inch deep, 22 gauge, wide rib (Type B) with galvanized finish. Minimum properties are as follows. Computation of properties shall reflect the "Effective Compress Flange Width" concept.

22 Gauge

$$I = 0.169 \text{ in.}^{(4)}$$

$$S_p = 0.189 \text{ in.}^{(3)}$$

$$S_n = 0.192 \text{ in.}^{(3)}$$

Maximum live load deflection = $l/240$ of span.

Maximum working stress = 20 ksi

- B. Floor deck to be 9/16 inches deep, 26 gauge, galvanized permanent composite form deck. Minimum properties are as follows:

26 Gauge

$$I = 0.015 \text{ in.}^{(4)}$$

$$S = 0.043 \text{ in.}^{(3)}$$

2.02 MANUFACTURERS

- A. Available manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to the following:

1. Marlyn Steel Products, Inc.
2. H. H. Robertson Company
3. Vulcraft Div., Nucor Corporation

2.03 MATERIALS

- A. Steel for galvanized metal deck units: A653 SQ Grade 33 with coating

designation G60.

- B. Miscellaneous steel shapes: ASTM A 36.
- C. Sheet metal accessories: ASTM A 924-94, galvanized.
- D. Galvanizing: ASTM A 653-940 G60.
- E. Galvanizing repair: Where galvanized surfaces are damaged, prepare surfaces and repair in accordance with procedures specified in ASTM A 780.
- F. Flexible closure strips: Manufacturer's standard mineral fiber closures.

2.04 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. Roof deck units: Provide deck configurations that comply with SDI "Specification and Commentary for Steel Roof Deck".
- C. Roof sump pans: Fabricate from single piece of 0.071 inch min. (14 gauge) galvanized sheet steel with level bottoms and sloping sides to direct water flow to draining. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3 inches wide. Recess pans not less than 1-1/2 inches below roof deck surfaces unless otherwise shown or required by deck configuration. Holes for drains will be cut in the field by others.

PART 3 EXECUTION

3.01 GENERAL

- A. Delivery and storage: Deliver deck to job site in bundles and store off ground with one end elevated for water drainage. Cover with waterproof covering, ventilated to avoid condensation.

3.02 INSTALLATION

- A. General: Install deck units and accessories in accordance with manufacturer's recommendations, shop drawings, and as specified herein.
- B. Place deck units on supporting steel framework and adjust to final position with end accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.
- C. Align deck units for entire length of run of cells and with close alignment between cells at ends of abutting units.

- D. Place deck units flat and square, secured to adjacent framing without warp or deflection.
- E. Suspended ceiling, light fixtures, ductwork, piling or other utilities shall not be suspended from decking.
- F. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
- G. Fasten roof deck to supporting steel by welding. See drawings for weld pattern.
- H. Comply with AWS requirements and procedures for manual shielded metal arc weld, appearance and quality of welds, and methods used in correcting welded work. Minimum puddle welded size = 5/8 inch diameter.
- I. Use care in selecting electrodes and amperage to provide positive weld and to prevent blow-out holes.
- J. Use welding washers for all decking 24 gage or thinner.
- K. Mechanically fasten side laps of adjacent deck units between supports with No. 10 self-tapping machine screws.
- L. Uplift loading: Install and anchor roof deck units to resist gross uplift loading. See plan for uplift loading requirements.
- M. Cutting and fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.
- N. Reinforcement at openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking, and support of other work shown.
- O. Roof sump pans: Place over openings provided in roof decking and weld to top decking surface. Space weld not more than 12 inches o.c. with at least one weld at each corner. Detail on architectural drawings.
- P. 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.
- Q. 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.
- R. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions.

END OF SECTION 05310