

05310 STEEL DECK

SPECIFIER:

CSI MasterFormat 2004 number 05 31 00.

PART 1 GENERAL

1.1 SUMMARY

A. Related Sections:

1. 05120 - Structural Steel.
2. 05210 - Steel Joists.
3. 07503 - Lightweight Insulating Concrete

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. A36 Specification for Carbon Structural Steel.
2. A108 Specification for Steel Bars, Carbon, Cold Finished, Standard Quality.
- A570 Specification for Steel, Sheet and Strip, Carbon, Hot Rolled, Structural Quality.
3. A611 Specification for Steel, Sheet, Carbon, Cold-Rolled, Structural Quality.
4. A653 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
5. A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
6. A924 Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

1.3 SUBMITTALS

- A. Product Data: Include manufacturer's specifications and installation instructions for each type of decking and accessories.
- B. Provide test data for mechanical fasteners used instead of welding for fastening deck to supporting structures.
- C. Shop Drawings: Show layout and types of deck units, anchorage details, and conditions requiring closure strips, supplementary framing, sump pans, cant-strips, cut openings, special jointing, and other accessories.
- D. Submit calculations and connection details, signed and sealed by a Florida registered Professional Engineer, demonstrating compliance with FBC - ASCE 7, for High Velocity Hurricane Zones.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with the following codes and standards:

1. Florida Building Code (FBC).
2. American Iron and Steel Institute (AISI), "Specification for the Design of Cold-Formed Steel Structural Members".
3. American Welding Society (AWS), D1.3 "Structural Welding Code - Sheet Steel".
4. Steel Deck Institute (SDI), "Design Manual for Composite Decks, Form Decks and Roof Decks".

NOTE TO SPECIFIER: Insert required FM wind uplift classification, in the following paragraph B, as determined by FBC ASCE 7.

B. Factory Mutual (FM) Rating: 1-_____.

C. Qualification of Field Welding: Use qualified welding processes and welding operators according to "Welder Qualification" procedures of AWS.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products of one of the following:

1. Marlyn Steel Decks, Tampa, FL.
2. United Steel Deck, Tampa, FL.
3. Vulcraft Sales, Tampa, FL.
4. Wheeling Corrugating, Lenexa, KS.

2.2 MATERIALS

A. Steel for Painted Metal Deck Units: ASTM A611, grade as required to comply with SDI specifications.

B. Steel for Galvanized Metal Deck Units: ASTM A653, grade as required to comply with SDI specifications.

NOTE TO SPECIFIER: Specify minimum gage of deck to comply with FM wind uplift classification.

C. Deck: _____ Ga.

D. Miscellaneous Steel Shapes: ASTM A36.

NOTE TO SPECIFIER: Retain either the following D or E, D and E, or none.

- E. Shear Connectors: Headed stud type, ASTM A108, Grade 1015 or 1020, cold-finished carbon steel, with dimensions complying with AISC specifications.
- F. Shear Connectors: Strap type, ASTM A570, Grade D, hot-rolled carbon steel.
- G. Sheet Metal Accessories: ASTM A653, commercial quality galvanized.

NOTE TO SPECIFIER: Revise below, if heavier galvanizing (G90) is required.

- H. Galvanizing: ASTM A653.
 - 1. Non-exposed surfaces: G60 - 0.6 oz/sf.
 - 2. Surfaces exposed to the exterior: G90 - 0.9 oz/sf.
 - 3. Galvanizing Repair: Where galvanized surfaces are damaged, prepare surfaces and repair according to procedures specified in ASTM A780.
 - 4. Paint: Manufacturer's baked-on, rust-inhibitive paint, for application to metal surfaces that have been chemically cleaned and phosphate chemical treated.
 - 5. Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.
 - 6. Acoustic Sound Barrier Closures: Manufacturer's standard mineral fiber closures.

2.3 FABRICATION

- A. Form deck units in lengths to span 3 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 complying with SDI "Specifications and Commentary for Steel Roof Deck".
- C. Composite Steel Floor Deck:
 - 1. Fabricate deck units with integral embossing or raised pattern to furnish mechanical bond with concrete slabs.
 - 2. Fabricate open-beam deck units with fluted section having interlocking side laps.
- D. Roof Sump Pans:
 - 1. Fabricate from single piece of 0.071" minimum (14 gage) galvanized sheet metal with level bottoms and sloping sides to direct water flow to drain.
 - 2. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3 inches wide.
 - 3. Recess pans not less than 1-1/2" below roof deck surface unless otherwise shown or required by deck configuration.
 - 4. Holes for drains will be cut in the field by others.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install deck units and accessories according to manufacturer's recommendations, shop drawings, and as specified.
- B. 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.
- 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. Do not place deck units on concrete supporting structure until concrete has cured and is dry.
- F. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
- G. Do not use floor deck units for storage or working platforms until permanently secured.
- H. Fastening Deck Units:
 - 1. Fasten roof deck units to steel supporting members by not less than $\frac{1}{2}$ " 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.
 - 2. Comply with AWS requirements and procedures for manual shielded metal arch welding, appearance and quality of welds, and methods used in correcting welding work.
 - a. Use welding washers where recommended by deck manufacturer.
 - 3. Pneumatically driven mechanical fasteners may be used instead of welding. Locate mechanical fasteners and install according to deck manufacturer's instructions.
 - 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.
 - 5. Uplift Loading: Install and anchor roof deck units to resist gross uplift loading of _____ lbs. psf at eave overhang and _____ lbs. psf for other roof areas.
- I. Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or next to the decking, as shown.
- J. Reinforcement at Openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking, and support of other work shown.
- K. Hanger Slots or Clips: Provide UL listed punched hanger slots between cells or flutes of lower elements 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.
- L. Roof Sump Pans: Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12 inches o.c. with at least one weld at each corner.
- M. Shear Connectors: Weld shear connectors to supports through decking units according to manufacturer's instructions. Do not weld shear connectors through 2 layers (lapped ends) of decking units. Weld only on clean, dry deck surfaces.
- N. 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.

NOTE TO SPECIFIER: Delete below if fire-resistance-rated construction is required or flexible closures not allowed.

- O. Provide flexible closure strips instead of metal closures, at Contractor's option, wherever their use will ensure complete closure. Install with adhesive according to manufacturer's instructions.
- P. 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 according to manufacturer's instructions.
 2. Touch-up painted surfaces with same type of shop paint used on adjacent surfaces.
 3. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into adjacent surfaces.

END OF SECTION