SECTION 05 3123

STEEL ROOF DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS: The General Conditions, any Supplementary General Conditions and Division 1, General Requirements, are hereby made a part of this Section as fully as if repeated herein.

1.2 SECTION INCLUDES

A. Metal Decking for roof construction.

1.3 RELATED WORK

A. Section 05 1200 Structural Steel Framing

B. Section 05 4000 Cold-Formed Metal Framing

1.4 QUALITY ASSURANCE

A. Erector/Installer's Qualifications: Experienced in the installation and/or erection of metal decking and accessories; approved for the installation of the decking by the manufacturer of the decking.

B. Product compatibility: Products indicated as part of a specific assembly shall be certified by each manufacturer to be compatible with the other products proposed for use by the Contractor in that assembly. Specific areas requiring certified compatibility are composite action, and built-up roof assemblies.

C. Wind Uplift: All roof deck shall be designed and anchored to resist a net wind uplift of 38 psf for a 12’-0” x12’-0” area at all exterior building corners, 25 psf for a 12’-0” width around the entire building perimeter, and 15 psf for all other roof areas.

1.5 REFERENCES

A. Steel Deck Institute (SDI):
- "Steel Roof Deck Design Manual." (Deck less than 1-1/2 inch depth.)

B. American Iron and Steel Institute (AISI):
- AISI-02 - "Specifications for Design of Light Gauge Cold-Formed Steel Structural Members."

C. American Welding Society:
- (AWS) D1.3 - "Structural Welding Code-Sheet Steel"

D. ASTM – American Society for Testing & Inspection
- A-653 - “Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron

Alloy-Coated Galvannealed) by the Hot-Dip Process.
- A-780 – “Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings”
- A-924 – “Specification for General Requirements for Sheet Steel, Metallic-Coated by the Hot-Dip Process”

1.6 SUBMITTALS

A. Shop Drawings: Show complete erection layouts, connection details, welds, and anchorages. Indicate framing and support locations, dimensions and marking of decking sections to correspond with installation sequence and procedure; show connections with adjoining construction and materials, types of welds and locations of all holes and/or openings in decking.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel for galvanized metal deck units: ASTM A-653, Structural Quality, Grade 33.

B. Sheet metal accessories: ASTM A-653, commercial quality, galvanized.

C. Galvanizing: ASTM A-924, Designation G90.

D. Galvanizing repair paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with ASTM A-780.

2.2 FABRICATION

A. General: Form deck units in lengths to span three or more supports, with flush, telescoped or nested side laps, unless otherwise indicated.

B. Roof deck units: Provide deck configurations complying with SDI"Basic Design Specifications," of the gauge, depth and width shown.

1. Roof deck shall be 3" x 22 gauge type "N" deck by United Steel Deck or approved equal.

C. Metal cover plates: Fabricate metal cover plates for end-abutting deck units of not less than 18 gauge sheet steel. Form to match contour of deck units and approximately 6" wide.

D. Metal closure strips: Fabricate metal closure strips, for openings between decking and other construction, of not less than 18 gauge sheet steel. Form to provide tight-fitting closures at open ends of flute and sides of decking.

E. Roof sump pans: Fabricate from single piece of 14 gauge galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, unless otherwise shown. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3" wide. Recess pans not less than 1 1/2" below roof deck surface, unless

otherwise shown or required by deck configuration. Holes for drains will be cut in the field.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine the areas and conditions under which metal decking is to be installed and provide written notification of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.2 INSTALLATION

A. General: Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein. 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. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.

B. Fastening deck units:

1. Fasten roof deck units to steel supporting members by not less than 5/8" diameter fusion welds, spaced not more than 8” o.c. for all roof areas, with additional welds as required for diaphragm strength as shown in the contract documents. Comply with AWS requirements and procedures for manual shielded metal arc welding, the appearance and quality of welds, and the methods used in correcting welding work.
2. Lock side laps of adjacent deck units between supports, at intervals not exceeding 24" o.c., with additional screws as required for diaphragm strength as shown in the contract documents.

C. Cutting and fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown on the drawings.

D. Reinforcement at openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown. Reinforce decking around openings less than 72 square inches in size by means of flat galvanized steel sheet placed over opening on top of decking and fusion welded to surface of deck. Provide 14 gauge steel sheet of same quality as deck units at least 12" wider and longer than opening. Space welds at each corner and not more than 12"o.c. along each side. Openings greater than 72 square inches shall be supported by steel angle frames as shown on the structural drawings.

E. Install 6" minimum wide sheet steel cover plates, of same thickness as decking, where deck changes direction. Puddle weld 12" on center maximum.

F. Hanger slots or clips: Provide approved punched hanger slots between flutes of lower element where deck units are to receive hangers for support of ceiling construction, air

ducts, diffusers, or lighting fixtures. Hanger clips designed to clip over male side joints of deck units may be used instead of hanger slots. Locate slots or clips at not more than 24" o.c. in both directions, not over 9" from walls at ends, and not more than 12" from walls at sides, unless otherwise shown. Provide manufacturer's standard hanger attachment devices. Location: at suspended ceilings.

G. Roof sump pans: Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12" o.c. with at least one weld at each corner. Cut opening in roof sump bottom to accommodate drain size indicated.

H. Closure strips: Provide metal closure strips at all open uncovered ends and edges of roof decking, and in the voids between decking and other construction. Weld into position to provide a complete decking installation.

I. Touch-up painting: After decking installation, wire brush, clean and paint scarred areas, welds and rust spots on the top and bottom surfaces of decking units and supporting steel members. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with ASTM A-780. Touch-up painted surfaces with the same type of shop paint used on adjacent surfaces. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into the adjacent surfaces.

3.3 INSPECTION

A. The Owner shall employ an inspection agency approved by the engineer to inspect the field welding of the metal roof decking to the supporting structure. The cost of all the tests and inspections are to be borne by the Owner.

B. See spec section 05 1200 for further requirements.

END OF SECTION