PART 1 GENERAL

1.01 SECTION INCLUDES
A. Roof deck.
B. Composite floor deck.
C. Supplementary framing for openings up to and including 18 inches.
D. Bearing plates and angles.
E. Stud shear connectors.

1.02 RELATED REQUIREMENTS
A. Section 03.20.00 - Concrete Reinforcing.
B. Section 03.30.00 - Cast-in-Place Concrete: Concrete topping over metal deck.
C. Section 04.20.00 - Unit Masonry: Placement of anchors for bearing plates embedded in unit masonry assemblies.
D. Section 05.12.00 - Structural Steel Framing: Support framing for openings larger than 18 inches and shear stud connectors.
E. Section 05.12.00 - Structural Steel Framing: Placement of embedded steel anchors for bearing plates in cast-in-place concrete.
F. Section 05.21.00 - Steel Joist Framing: Support framing for openings larger than 18 inches and shear stud connectors.
G. Section 05.21.00 - Steel Joist Framing: Placement of embedded steel anchors for bearing plates and joist seats in cast-in-place concrete.
H. Section 05.50.00 - Metal Fabrications: Steel angle concrete stops at deck edges.
I. Section 07.81.00 - Applied Fireproofing: Spray applied fireproofing.

1.03 REFERENCE STANDARDS
D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
F. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2011 w/Errata.
L. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; Society for Protective Coatings; 1999 (Ed. 2004).

1.04 SUBMITTALS
A. See Section 01.30.00 - Administrative Requirements, for submittals procedures.
B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.
C. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.
D. Certificates: Certify that products furnished meet or exceed specified requirements.
E. Submit manufacturer's installation instructions.
F. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
G. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE
A. Design deck layout, spans, fastening, and joints under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Tennessee.
B. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172).
C. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Cut plastic wrap to encourage ventilation.
B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS

2.01 STEEL DECK
A. All Deck Types: Select and design metal deck in accordance with SDI Design Manual.
   1. Calculate to structural working stress design and structural properties specified.
B. Roof Deck: Non-composite type, fluted steel sheet:
   2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
   3. Minimum Base Metal Thickness: 20 gage, 0.0359 inch.
   5. Profile: Fluted; SDI Type 'B'.
   6. Formed Sheet Width: 24 inch.
   7. Side Joints: Lapped, welded.

C.  Composite Floor Deck: Fluted steel sheet embossed to interlock with concrete:
2.  Primer:  Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
4.  Minimum Base Metal Thickness:  20 gage, 0.0359 inch.
5.  Nominal Height:  2 inches.
6.  Formed Sheet Width:  24 inch.
7.  Side Joints:  Lapped, welded.

2.02 ACCESSORY MATERIALS

A.  Bearing Plates and Angles:  ASTM A36/A36M steel, unfinished.
B.  Stud Shear Connectors: Made from ASTM A108 Grade 1015 bars.
C.  Welding Materials:  AWS D1.1/D1.1M.
D.  Fasteners:  Galvanized hardened steel, self tapping.
E.  Powder Actuated Mechanical Fasteners: Steel; with knurled shank and forged ballistic point.  Comply with applicable requirements of ICC-ES AC70.
1.  Design Requirements:  Provide number and type of fasteners that comply with the applicable requirements of SDI design method for roof deck and floor deck applications and ICC-ES AC43.
   a.  Hardness:  Rockwell C 54.5, minimum.
   b.  Tensile Strength:  285 kips per square inch, minimum.
   c.  Shear Strength:  175 kips per square inch, minimum.
   d.  Washers:
      1)  Steel Bar Joist Framing Applications:  0.472 inch diameter, minimum.
      2)  Exposed Roof Deck Applications:  0.591 inch diameter, minimum.
   e.  Corrosion Resistance:
      1)  Steel Bar Joist Framing Applications:  ASTM B 633, SC1, Type III zinc electroplate.
      2)  Exposed Roof Deck Applications:  Provide manufacturer's standard stainless steel sealing caps with bonded neoprene washer over each fastener.
F.  Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.
1.  Design Requirements for Sidelap Connections:  Provide number and type of fasteners that comply with the applicable requirements of SDI design method for roof deck and floor deck applications and ICC-ES AC43.
2.  Fasteners for Steel Roof Decks Protected with Waterproofing Membrane:  ASTM B 633, SC1, Type III zinc electroplate.
G.  Weld Washers:  Mild steel, uncoated, 3/4 inch outside diameter, 1/8 inch thick.
H.  Shop and Touch-Up Primer:  SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
I.  Touch-Up Primer for Galvanized Surfaces:  SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
J.  Flute Closures:  Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.

2.03 FABRICATED DECK ACCESSORIES

A.  Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gage, 0.0299 inch thick sheet steel; of profile and size as indicated; finished same as deck.
B. Roof Sump Pans: Formed sheet steel, 14 gage, 0.0747 inch minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, sealed watertight.

C. Floor Drain Pans: Formed sheet steel, 14 gage, 0.0747 inch minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches below floor deck surface, bearing flange 3 inches wide, sealed watertight.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.

B. On concrete and masonry surfaces provide minimum 4 inch bearing.

C. On steel supports provide minimum 1-1/2 inch bearing.

D. Fasten deck to steel support members at ends and intermediate supports at 12 inches on center maximum, parallel with the deck flute and at each transverse flute using methods specified.
   1. Welding: Use fusion welds through weld washers.
   2. Place and secure special deep fluted sections for integral concrete bridging.

E. At mechanically fastened male/female side laps fasten at 24 inches on center maximum.

F. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.

G. At welded male/female side laps weld at 18 inches on center maximum.

H. Weld deck in accordance with AWS D1.3/D1.3M.

I. At deck openings from 6 inches to 18 inches in size, provide 2 by 2 by 1/4 inch steel angle reinforcement. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and fusion weld to deck at each flute.

J. Where deck (other than cellular deck electrical raceway) changes direction, install 6 inch minimum wide sheet steel cover plates, of same thickness as deck. Fusion weld 12 inches on center maximum.

K. At floor edges, install concrete stops upturned to top surface of slab, to contain wet concrete. Provide stops of sufficient strength to remain stationary without distortion.

L. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.

M. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.

N. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.

O. Position floor drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.

P. Weld stud shear connectors through steel deck to structural members below.

Q. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

END OF SECTION