

SECTION 05310 - STEEL DECK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Acoustical roof deck.
- B. Composite floor deck.
- C. Supplementary framing for openings up to and including 18 inches.
- D. Bearing plates and angles.
- E. Acoustical insulation in roof deck flutes.

1.3 RELATED REQUIREMENTS

- A. Section 03200 - Concrete Reinforcement.
- B. Section 03300 - Cast-in-Place Concrete: Concrete topping over metal deck.
- C. Section 05120 - Structural Steel: Support framing for openings larger than 18 inches and shear stud connectors.
- D. Section 05210 - Steel Joists: Support framing for openings larger than 18 inches and shear stud connectors.

1.4 REFERENCE STANDARDS

- A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- B. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- C. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2008.
- D. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 2007.
- E. SDI (DM) - Publication No.31, Design Manual for Composite Decks, Form Decks, Roof Decks; Steel Deck Institute; 2007.
- F. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); The Society for Protective Coatings; 2002 (Ed. 2004).

- G. SSPC-Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II; Society for Protective Coatings; 1997 (Ed. 2004).

1.5 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittals procedures.
- B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, cellular raceways and outlet box locations, pertinent details, and accessories.
- C. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.
- D. Submit manufacturer's installation instructions.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Steel Deck:
 - 1. Nucor-Vulcraft Group: www.vulcraft.com.
 - 2. Wheeling Corrugating Co: www.wheelingcorrugating.com.
 - 3. Substitutions: See Section 01600 - Product Requirements.

2.2 STEEL DECK

- A. 1 1/2" Roof Deck(1.5B): Non-composite type, steel sheet.
 - 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
 - 2. Structural Properties:
 - a. Span Design: Double.
 - 3. Minimum Metal Thickness, Excluding Finish: 20 gage.
 - 4. Nominal Height: 1-1/2 inch.
 - 5. Profile: Fluted; SDI WR; 1.5B.
 - 6. Formed Sheet Width: 36 inch.
 - 7. Side Joints: Lapped, welded.
 - 8. End Joints: Lapped, welded.
 - 9. Fasten deck to steel support members at ends and intermediate supports with 3/4 pattern. Where deck is continuously supported weld 12 inches on center.
 - a. Welding: Use fusion welds, 3/4" dia puddle welds.
 - 10. Provide 1 - # 10 TEK screws minimum per side lap.
- B. Composite Floor Deck(2.0VLI): Fluted steel sheet embossed to interlock with concrete:

1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
2. Structural Properties:
3. Span Design: Double.
4. Minimum Metal Thickness, Excluding Finish: 22 gage.
5. Nominal Height: 2 inches.
6. Profile: Composite Steel Deck;2.0VLI .
7. Formed Sheet Width: 36 inch.
8. Side Joints: Lock seam.
9. End Joints: Lapped, welded.
10. Fasten deck to steel support members at ends and intermediate supports with 36/4 pattern. Where deck is continuously supported weld 12 inches on center.
 - a. Welding: Use fusion welds, 3/4" dia puddle welds.
11. Provide 2 - # 10 TEK screws minimum per side lap.

2.3 ACCESSORY MATERIALS

- A. Bearing Plates and Angles: ASTM A 36/A 36M steel, unfinished.
- B. Welding Materials: AWS D1.1.
- C. Fasteners: Galvanized hardened steel, self tapping.
- D. Weld Washers: Mild steel, uncoated, 3/4 inch outside diameter, 1/8 inch thick.
- E. Shop and Touch-Up Primer: SSPC-Paint 25, zinc oxide, complying with VOC limitations of authorities having jurisdiction.
- F. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
- G. Acoustical Insulation: Glass fiber type, minimum 1.1 lb/cu ft density; profiled to suit deck.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.2 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. At cellular/plated deck level and align deck within 1/8 inch horizontally and vertically. Butt ends, allow for maximum 1/8 inch gap. Install sheet steel covers over gaps wider than 1/8 inch. Tape and seal joints watertight.

- E. Clinch lock seam side laps.
- F. At mechanically fastened male/female side laps fasten at 30 inches on center maximum.
- G. At welded male/female side laps weld at 18 inches on center maximum.
- H. Weld deck in accordance with AWS D1.3.
- I. At deck openings less than 6 inches in size, provide additional sheet of deck lapped 24" each side of hole and a minimum two flutes beyond each side of opening. Attach to base deck with #10 TEK screws at 12" o.c.
- J. At deck openings from 6 inches to 18 inches in size, provide 2 x 2 x 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.
- K. Where deck changes direction, install 8 inch minimum wide by 1/4 inch thick sheet steel cover plates. Fusion weld 12 inches on center maximum.
- L. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.
- M. 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