SECTION 05300
STEEL DECK

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS:

A. Requirements for the General Conditions, DIVISION I, are hereby made a part of this Section to the same extent as if repeated herein.

B. The Fabricator/Erector shall coordinate this work with that of other trades affecting, or affected by the work included under this Section and shall cooperate with such trades, and the General Contractor to assure the steady and timely progress of the work.

C. The Fabricator/Erector agrees to accept the results of tests secured from a qualified testing laboratory engaged by the Owner.

D. When referred to, Standard Specifications of Technical Societies, manufacturers' associations, and federal agencies shall be the latest edition and include all amendments current as of the date of issue of these Specifications.

1.2 SCOPE OF WORK:

A. The work under this Section includes the furnishing of all labor, materials, tools, equipment and services required for the complete installation of all metal deck indicated on the Drawings or specified herein. Shop Drawings, fabrications, transportation and erection are here included. The work also includes provision of reinforcing at unframed roof openings, specifically reinforcing roof drain openings, flashing, cell closures, closure plates, pour stops, sheet metal work required to contain concrete, and sump pans at roof drains over all areas shown on the Drawings.

B. Related Work Specified Elsewhere: The following items of work are not included in this Section and are specified elsewhere:

1. SECTION 03300 - CAST-IN-PLACE CONCRETE
2. SECTION 05120 - STRUCTURAL STEEL
3. Supports and hangers for Electrical, Mechanical, and/or Plumbing work (except as shown on the Structural Drawings or noted herein) specified

under the respective Sections.

1.3 ABBREVIATIONS AND STANDARDS:

A. Abbreviations:

AISC: American Institute of Steel Construction, Inc.
AISI: American Iron and Steel Institute
ANSI: American National Standards Institute
ASCE: American Society of Civil Engineers
ASTM: American Society of Testing Materials
AWS: American Welding Society
SDI: Steel Deck Institute
UL: Underwriters Laboratories, Inc.

B. National Standards referenced herein are included to establish recognized quality only. Equivalent quality and testing standards will be acceptable subject to their timely submission, review and acceptance by the Engineer.

C. Standards: The Fabricator/Erector shall have in is possession and shall keep available in his field office the following Standards and Recommended Practices (latest editions and/or edition indicated below) to which reference may be made herein and to which he shall conform, except where otherwise required by this Specification.

1. International Building Code, 2003
2. American Society of Civil Engineers
   a. ASCE 7-98: American Society of Civil Engineers: Minimum Design Loads for Buildings and Other Structures, 1998.
3. American Welding Society
   a. AWS D1.3: Structural Welding Code – Sheet Steel
4. Steel Deck Institute
   a. SDI No. 28: Design Manual For Composite Decks, Roof Decks, and Form Deck.

1.4 DEFINITIONS:

A. Testing Agency: The Testing Agency will be selected by the General Contractor and paid for by the Owner. He will be responsible for the Owner's field inspection throughout the erection process and in that capacity will visually inspect the work, review the Fabricator/Erector's field test reports and perform such additional tests as deemed necessary to ensure conformance with the intent of the Contract Drawings and Specifications.

1.5 SUBMITTALS

A. Refer to DIVISION 1 for submittal provisions and procedures.

B. Certificate of Compliance: Submit to the Engineer each of the following:

1. Certification of Welders: Certified copies of the welder's certificates of qualification.
2. Physical Tests: Certified copies of report(s) of physical tests of an independent Testing Agency indicating ultimate and service load values for the deck being supplied.
3. Manufacturer's Tests: Certified copies of reports of manufacturer's tests made from heats at the mill for all metal deck supplied under this Section.
4. Manufacturer's literature indicating recommended installation instructions, section properties, load tables, etc.

C. Shop Drawings:

1. Shop Drawings shall show type of deck, gage of steel, locations, necessary fabrication to fit deck into job, closures, pour stops, sump pans, curb details, method of field connection to supporting structure including size, spacing, and pattern of welding, and method of fitting deck with other parts of construction.
2. The Fabricator/Erector shall verify the consistency of field dimensions with those dimensions given on the Architect's Drawings, and obtain by measurements at the site all necessary dimensions and levels.
3. Prior to submission of the Shop Drawings to the Engineer, they shall be prechecked by the Fabricator/Erector for conformity of detail with the Contract Documents and as coordinated with other work under his charge. The signature of a representative of the Fabricator/Erector indicating that the Drawings have been prechecked will be required. The Fabricator/Erector shall be wholly responsible for the conformity of dimensions and details of the Shop Drawings with the Contract Documents. Shop Drawings shall indicate where shoring of metal decking is required. The maximum allowable deflection under wet concrete is 3/8 inch.
4. Shop Drawings (four sets) shall be submitted in the form of black line prints for use by the Engineer

as work sheets for review of the Drawings.

5. After receipt of the Shop Drawings by the Engineer, they will be reviewed and necessary corrections will be marked on three copies, which will be returned. Corrections shall then be made on the Drawing(s), which shall be resubmitted. This procedure will continue until the Drawings are released for construction. The Fabricator/Erector shall then deliver to the Engineer the quantity and type of prints specified in DIVISION 1 for his record and the use of his personnel.
6. At least one copy of each released Shop Drawing shall be kept available in the Fabricator/Erector's field office and Drawings not bearing evidence of release for construction by the Engineer shall not be kept on the job.

1.6 GUARANTEE/WARRANTY:

A. Attention is directed to DIVISION 1 regarding Guarantees and Warranties under this Section.

B. Manufacturers shall provide their standard guarantees for work under this Section; however, such guarantees shall be in addition to and not in lieu of all other liabilities, which the manufacturer and/or Fabricator/Erector may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Deck shall be formed of steel conforming to ASTM A446, Grade A (minimum yield strength 33,000 psi) with a zinc coating conforming to ASTM A525, coating class G90 or as indicated on the Drawings, 18-gage minimum or as indicated on the Drawings.

1. Metal floor deck shall be one of the following products or approved equivalent:
   a. Vulcraft: 2" VLI
   b. United Steel Deck, Inc.: 2" Lok-Floor
2. Metal roof deck shall be one of the following products or approved equivalent:
   a. Vulcraft: 3" Type N or 1½" Type B
   b. United Steel Deck, Inc.: 3" Type NS or 1½" Type B

B. Accessories: Closures, hanger tabs for suspended

acoustical ceilings, and other accessories shall be provided as necessary for complete installation. Hanger tabs shall each support 100 pounds minimum load and provide for fastening of hanger wire for suspended ceiling. Tabs shall be a maximum of 1'-0" on center in each direction.

C. Cell closure flexible strips and fillers shall be of material in compliance with applicable Building Code governing class of construction. Sump pans and frames for drains blocking infills at curb of mechanical units.

D. Provide metal closure strips at edges of all slabs and openings that will serve as pour stops for concrete. Closures shall be of same quality as metal deck unless otherwise indicated as "plate" and be sufficient to span or cantilever from steel beams (16-gage minimum).

PART 3 - EXECUTION

3.1 INSPECTION:

A. Examine all work prepared by others to receive work of this Section and report any defects affecting installation to the Fabricator/Erector for correction. Commencement of work will be construed as complete acceptance of preparatory work by others.

3.2 FABRICATION:

A. Fabricate deck units in accordance with the AISI "Specifications for the Design of Cold Formed Steel Structural Members" and approved Shop Drawings. Locate openings for penetrations where indicated and provide supports framing and edge reinforcement for all openings.

B. Floor Deck: Form units in lengths to span three or more support spacings with flush ends and interlocking side laps. All decking shall be detailed and fabricated to be unshored during concrete placement unless otherwise noted on the Contract Drawings. Depth, rib spacing, and gage as specified or shown on the Contract Drawings.

C. Roof Deck: Form units in lengths to span three or more supports spacings with flush ends and nested side laps. Depth, rib spacing, and gage as specified or called out on the Contract Drawings.

D. Closures: Form to provide tight fit at open ends of

cells or flutes and at sides of deck.

3.3 PRODUCT DELIVERY, STORAGE AND, HANDLING:

A. Steel deck delivery should be scheduled to arrive at the job site as required for erection.

B. Storage: Store off the ground with one end elevated to provide for drainage. Protect against condensation with a ventilated waterproof covering.

C. Care should be taken not to bend or mar decking.

3.4 INSTALLATION:

A. Install in accordance with manufacturer's recommendations, except as modified or extended herein. Welding shall be in accordance with AWS D1.3.

B. Placing Deck Units: Place deck units on supporting steel framework and adjust to final position with ends bearing minimum 2-1/2 inches on supporting members.

1. Place deck units end to end before they are permanently fastened.
2. Align cells over entire length of run.
3. Do not stretch or compress side lap interlocks.
4. Place units flat and square, and secure to adjacent framing without warp or deflection.
5. Units less than full width used to complete deck coverage shall not be less than 6 inches wide.
6. Where possible, steel deck shall span three or more supports.

C. Fastening Deck Units

1. Secure units to supporting members with 3/4-inch minimum diameter fusion welds. Maximum spacing 12" on center at each beam or girder support except as otherwise noted on the Contract Drawings.
2. Tack weld end closures at 4'-0" on center maximum.
3. Tack weld side closures at 3'-0" on center maximum.
4. Side Laps:
   a. Composite Deck: Button punch side laps between adjacent decks at intervals not to exceed 2'-0".
   b. Non-composite Deck: Fasten side laps between adjacent deck units with #12 TEK Screws at 6″ on center maximum such that tight fit is created between the two units.
5. All welding shall be done by competent experienced

welding personnel.

D. Cut and fit deck units around projection through roof. Make cuts neat, square, and trim. Grind smooth all rough edges.

3.5 PROTECTION:

A. Do not use deck for storage or working platforms until permanently secured in position.

B. Assure that construction loads do not exceed carrying capacity.

C. During erection, distribute all construction live loads by appropriate means to prevent damage to the previously installed components.

3.6 CLEANING AND TOUCH-UP:

A. Remove oil, grease, dirt, or debris from deck and leave work ready for further construction.

B. Wirebrush clean all welds and scars and touch-up with zinc-rich paint.

END OF SECTION