1.1.4 The deck shall not exhibit the sag-bar mark due to sags before being painted.

1.2 Submittals

1.2.1 Conform to requirements of Section 01 33 00 Submittal Procedures.

1.2.2 Product Data: For each type of decking, accessory and miscellaneous component (if used), submit manufacturer's specifications and other data needed to demonstrate compliance with the specified requirements.

1.2.3 Shop Drawings: Submit sheet(s) showing layout and types of deck panels, anchorage details, and conditions requiring closure panels, supplementary framing, ramp plans, cant strips, slip openings, special bearing or other accessories.

1.2.4 Installation Instructions: Submit manufacturer's recommended installation procedures which, when approved by the Engineer, shall become the basis for accepting or rejecting actual installation procedures used on the work.

1.2.5 When the manufacturer or fabricator are used as part of an assembly fabricated on the erection site, Shop Drawings, erection instructions and procedures, sealed evidence of approval by Underwriters Laboratories, Inc. and the local authority having jurisdiction.

1.2.6 Inspection Certificates: Submit certificate of inspection and approval of steel installation acceptance examination as may be necessary in accordance with this and referenced design standards.

1.3 Quality Assurance

1.3.1 Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise shown or specified:

1.3.1.1 AISC "Specification for the Design of Light Gage Cold-Formed Steel Structural Members".

1.3.1.2 AWS "Structural Welding Code-Steel", and "Structural Welding Code-Sheet Steel".

1.3.1.3 SDI "Design Manual for Floor Decks and Roof Decks."

1.3.2 Qualifications of Field Welding: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure". Also follow requirements of the same Section for "Welding" of deck units.

1.3.2.1 Welding operator is subject to examination and testing. Expense of subsequent retesting personnel if welding for testing purposes could be found by Owner's tests not to meet the specified requirements. Welds found to be defective and replace with new acceptable work.

1.3.2.2 FM Listing: Provide steel roof deck units which have a current Standard 4450 or 4550 approval and are listed in "Factory Mutual Approved Guide" for "Class 1" fire rated construction.

1.4 Manufacturer

1.4.1 All roof decking shall be the product of a single manufacturer. All floor decking shall be the product of a single manufacturer.

1.4.2 Manufacturer shall have members of the Steel Deck Institute.

2. Products:

2.1 Steel Deck (steel roofing in composite metal floor decking)

2.1.1 Provide minimum 20 gauge ASE Type "B" deck 42 1/2 in. Lapped as of supporting steel beams and steel joists and load load of 50 per foot of 40" clear span, with deflection limited to 1/240 of the span. See design documents for minimum gauge requirements.

2.1.2 Provide galvanized, zinc-coated hot-dipped prime painted deck. Prepare painting, the galvanized steel shall be chemically cleaned and pre-painted in accordance with previously established manufacturer's recommendations. Prime paint shall be acrylic based, rust inhibitive, recommended for manufacturer for use over galvanized steel, compatible with overlaid SPRAY and finish coats, color: gray.

2.1.2.1 Primer Manufacturer's standard primer, unless noted otherwise.

2.1.2.2 Steel shall conform to ASTM A653, Structural Quality, G-60.

2.2 Floor Deck

2.2.1 Provide minimum 20 gauge NSF type "C" deck (9916 deck). See design documents for additional design requirements.

2.2.2 Steel shall conform to ASTM A653, Structural Quality, G-60. Deck shall have a shop-applied zinc-rich primer of at least 3 mils thickness.

3 Execution

3.1 Inspection

3.1.1 Installer shall examine areas and conditions under which metal decking is to be installed and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 Installation

3.2.1 General: Install deck units over supporting framework in accordance with manufacturer's recommendations, unless modifications are considered necessary by SDI, and final Shop Drawings, and as specified herein.

3.2.1.1 Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before permanently fastened. Do not stretch or excessively side lap deck units.

3.2.1.2 Place deck units flat and secure, secured to adjacent framing without warp or deflection.

3.2.1.3 Provide additional reinforcement and closure pieces at openings as required for strength, continuity of the deck, and support of other work.

3.2.1.4 Cutting and fitting: Cut and neatly fit decks units and accessories around openings and other projections. Repair coating as required to the decking as shown.

3.3 Installing Roof Deck Panels

3.3.1 Position roof deck panels on steel supporting members to an even (possible) width of not less than 3.5" distance. Use welding washers where necessary due to deck manufacturer.

3.3.1.1 At the ridge, eave and other terminal framing, locate edge of panel to occupy full bearing. Frame openings as indicated on Drawings. Structurally reinforce openings as required. Where openings are not indicated on Drawings, but are necessary for the work, provide openings as directed by Contractor.

3.3.1.2 Side Lapped Arrangement: Fasten panels together at their side lapped joints with #10 self-drilling screws, spaced as indicated on the Drawings. Fasten panels to supporting steel framing with #10 self-drilling screws, unless otherwise indicated in the Fastener Connection Schedule.

3.3.1.3 Side Lapped Arrangement: Fasten panels together at their side lapped joints with #10 self-drilling screws, spaced as indicated on the Drawings. Fasten panels to supporting steel framing with #10 self-drilling screws, unless otherwise indicated in the Fastener Connection Schedule.

3.3.2 Welding: Install deck units and accessories by welding. Comply with AWS and manufacturer's instructions. Weld to supporting steel framing. Frame openings as indicated on Drawings. Structurally reinforce openings as required. Where openings are not indicated on Drawings, but are necessary for the work, provide openings as directed by Contractor.

3.3.2.1 Where decking is to be welded to supporting steel framing, frame openings as indicated on Drawings. Structurally reinforce openings as required. Where openings are not indicated on Drawings, but are necessary for the work, provide openings as directed by Contractor.

3.3.2.2 Where decking is to be welded to supporting steel framing, frame openings as indicated on Drawings. Structurally reinforce openings as required. Where openings are not indicated on Drawings, but are necessary for the work, provide openings as directed by Contractor.

3.3.3 Mechanical Fastening: Install deck units and accessories by mechanical fastening with self-drilling screws, as indicated on Drawings. Structurally reinforce openings as required. Where openings are not indicated on Drawings, but are necessary for the work, provide openings as directed by Contractor.

3.3.4 Miscellaneous Steel Deck Accessories: Install sidelap and pattern plates, finish strips, cover plates, and accessories as indicated on Drawings. Structurally reinforce openings as required. Where openings are not indicated on Drawings, but are necessary for the work, provide openings as directed by Contractor.

3.4 Mechanical Fastening Roof Deck Panels Attached to Weldings

3.4.1 Provide screws and fasteners. Fasteners and screws shall meet provided shear resistance ASTM diameter and washer specifications and conforming to ASTM D633, Sec 5, Type II, and SDI design requirements. Pilot required.

3.4.1.1 Acceptable Fasteners for Steel Deck 0.028" thickness or 19 Gauge Minimum Thickness: Hilti #X-ENP-19 L15 or X-ENP-19 L15 MX with Hilti #S-DNI 22 MX or #S-DNI 19 MX.

3.4.1.2 Acceptable Fasteners for Steel Deck 20 GA (0.036") Thickness or Greater: Hilti #X-HSN 24 or #X-HSN 24 MX.

3.4.2 Use of Powder Actuated Tools shall only be by a qualified operator, trained and licensed for the tool manufacturer in accordance with the manufacturer's and OSHA requirements.

3.4.3 Install fasteners in steel members as indicated.

3.4.3.1 For #10-16 x 0.5" Diameter or larger screw fasteners, use a hex washer head screw conforming to ASTM A307, Grade A, with a 5/8" diameter x 0.059" thick steel washer.

3.4.3.2 For #10-16 x 0.5" Diameter or larger screw fasteners, use a hex washer head screw conforming to ASTM A307, Grade A, with a 5/8" diameter x 0.059" thick steel washer.

3.4.3.3 For #10-16 x 0.5" Diameter or larger screw fasteners, use a hex washer head screw conforming to ASTM A307, Grade A, with a 5/8" diameter x 0.059" thick steel washer. Powder actuated fasteners shall be set by a qualified operator, trained and licensed for the tool manufacturer in accordance with the manufacturer's and OSHA requirements.

3.4.3.4 Powder actuated fasteners shall be set by a qualified operator, trained and licensed for the tool manufacturer in accordance with the manufacturer's and OSHA requirements.

3.4.3.5 Powder actuated fasteners shall be set by a qualified operator, trained and licensed for the tool manufacturer in accordance with the manufacturer's and OSHA requirements.

3.4.4 Sidelaps: Fasten sidelaps between deck units at spacing indicated on Drawings, but not more than 24" o.c.

3.4.5 Miscellaneous Framing: Attach miscellaneous deck framing and supports to steel supporting members as indicated on Drawings, using welds, screws, or other fasteners as required for a complete installation.

3.4.6 Cutting and Fitting: Cut and fit deck units and accessories around openings and other projections. Repair coating as required to the decking as shown.

3.4.7 Protection: Protect installed deck from damage by other trades during remainder of construction period. Do not permit storage or placement of materials on deck that may cause damage.

3.4.8 Maintain bearing and attachment of roof deck during construction period with temporary supports, as needed, or as recommended by deck manufacturer.

3.4.9 Remove and replace damaged deck that is bent, crushed, or otherwise damaged or does not provide adequate support for design loads.

3.4.10 Do not allow equipment or stored materials to be supported directly on deck.

3.4.11 Do not allow personnel to walk on deck until it is adequately secured.

3.4.12 Do not allow personnel to walk on deck until it is adequately secured.

3.4.13 Do not allow personnel to walk on deck until it is adequately secured.