SECTION 053100 - STEEL DECKING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Section Includes:

Roof deck.

Acoustical roof deck.

Composite floor deck.

Noncomposite form deck.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.

Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.

Section 055000 "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

* + - 1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For the following:

Roof deck.

Acoustical roof deck.

Composite floor deck.

Noncomposite form deck.

USE PARAGRAPH BELOW WITH EPD REQUIREMENT WHEN PROJECT ESTIMATE IS $1M OR MORE.

* + - * 1. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel sheets within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

* + - * 1. Shop Drawings:

Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

Retain "Welding certificates" Paragraph below if retaining "Welding Qualifications" Paragraph in "Quality Assurance" Article.

* + - * 1. Welding certificates.

Retain "Product Certificates" Paragraph below to require submittal of product certificates from manufacturers.

* + - * 1. Product Certificates: For each type of steel deck.

Retain "Product Test Reports" Paragraph below if required. List other product test reports if required.

* + - * 1. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

Power-actuated mechanical fasteners.

Screw fasteners

Acoustical roof deck.

* + - * 1. Research Reports: For steel deck, from ICC-ES.

Design Consultant to review code references and verify that the referenced sections/tables are current. Note that code references shall be based on the current version of the Uniform Code.

Retain "Source quality-control reports" Paragraph below if Contractor is responsible for source quality-control testing and inspecting.

* + - * 1. Source quality-control reports.

Use subparagraph below for projects over $100,000. See Article 1.3. below.

Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

* + - * 1. Field quality-control reports.
      1. QUALITY ASSURANCE

Retain "Testing Agency Qualifications" Paragraph below if Contractor selects testing agency or if Contractor is required to provide services of a qualified testing agency in "Field Quality Control" Article. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

Retain "Welding Qualifications" Paragraph below if shop or field welding is required. If retaining, also retain "Welding certificates" Paragraph in "Informational Submittals" Article.

* + - * 1. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

Retain "Electrical Raceway Units" Paragraph below if using cellular floor-deck systems as raceways.

* + - * 1. Electrical Raceway Units: Provide UL-labeled cellular floor-deck units complying with UL 209 and listed in UL's "Electrical Construction Equipment Directory" for use with standard header ducts and outlets for electrical distribution systems.

Use paragraph below for projects over $100,000. Paragraph is taken from Article 25.4 of the General Conditions.

* + - * 1. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.
      1. DELIVERY, STORAGE, AND HANDLING
         1. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
         2. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

Retain subparagraph below if acoustical cellular roof deck with insulation is required.

Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS
         1. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

Retain "Fire-Resistance Ratings" Paragraph below only if products specified are part of a fire-resistance-rated assembly. Indicate rating, testing agency, and testing agency's design designation on Drawings.

* + - * 1. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

* + - 1. ROOF DECK

Retain this article if roof deck is required.

* + - * 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Canam Steel Corporation; Canam Group, Inc.

Epic Metals Corporation.

New Millennium Building Systems, LLC.

Nucor Corporation.

Approved equivalent.

* + - * 1. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

Retain one or more steel sheet subparagraphs below to suit Project.

Retain steel grade from options in "Prime-Painted Steel Sheet" Subparagraph below.

Prime-Painted Steel Sheet: ASTM A1008, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]** minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.

Color: **[Manufacturer's standard] [Gray] [White] [Gray top surface with white underside]**.

Retain steel grade and zinc-coating weight from options in "Galvanized-Steel Sheet" Subparagraph below.

Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80], [G60] [G90]** zinc coating.

Retain steel grade from options in "Galvanized and Shop-Primed Steel Sheet" Subparagraph below.

Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]**, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

Color: **[Manufacturer's standard] [Gray] [White] [Gray top surface with white underside]**.

Verify availability of aluminum-zinc-alloy-coated steel sheet with deck manufacturers before retaining "Aluminum-Zinc-Alloy-Coated Steel Sheet" Subparagraph below. Revise steel grade and coating weight, if required, to suit Project.

Aluminum-Zinc-Alloy-Coated Steel Sheet: ASTM A792, Structural Steel (SS), Grade 33 minimum, AZ50 aluminum-zinc-alloy coating.

Retain roof-deck category and profile type from "Deck Profile" and "Cellular Deck Profile" subparagraphs below. Categories and profiles are based on SDI nomenclature; manufacturers may identify same categories and profiles with other designations. Insert different proprietary profiles, if required, to suit Project.

Deck Profile: **[As indicated] [Type NR, narrow rib] [Type IR, intermediate rib] [Type WR, wide rib] [Type 3DR, deep rib] [Long span]**.

Cellular Deck Profile: **[As indicated] [Type WR, wide rib] [Type 3DR, deep rib] [Long span]**, with bottom plate.

Retain one option in "Profile Depth" Subparagraph below or revise to suit Project. Indicate locations on Drawings if various depths are required. FM Approvals approval, if required, is limited to roof deck 1-1/2 inches deep.

Profile Depth: **[As indicated] [1-1/2 inches] [2 inches] [3 inches] [4-1/2 inches] [6 inches] [7-1/2 inches]**.

Retain one steel thickness in "Design Uncoated-Steel Thickness" Subparagraph below or revise to suit Project.

Design Uncoated-Steel Thickness: **[As indicated] [0.0295 inch (22 ga)] [0.0358 inch (20 ga)] [0.0474 inch (18 ga)] [0.0598 inch (16 ga)] [0.0747 inch (14 ga)]**.

Retain one steel thickness in "Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate" Subparagraph below if cellular roof deck, combining a roof-deck profile with a bottom plate, is required. Thickness combinations are based on deck unit (first) and bottom plate (second).

Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: **[As indicated] [0.0358/0.0358 inch (20/20 ga)] [0.0358/0.0474 inch (20/18 ga)] [0.0474/0.0474 inch (18/18 ga)] [0.0474/0.0598 inch (18/16 ga)] [0.0598/0.0474 inch (16/18 ga)] [0.0598/0.0598 inch (16/16 ga)]**.

Retain span used in design from "Span Condition" Subparagraph below.

Span Condition: **[As indicated] [Simple span] [Double span] [Triple span or more]**.

Retain side-lap configuration from "Side Laps" Subparagraph below. Interlocking seams may be fastened by welding or button punching.

Side Laps: **[Overlapped] [Interlocking seam] [Overlapped or interlocking seam at Contractor's option]**.

* + - 1. ACOUSTICAL ROOF DECK

Retain this article if acoustical roof deck is required.

* + - * 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Canam Steel Corporation; Canam Group, Inc.

Epic Metals Corporation.

New Millennium Building Systems, LLC.

Nucor Corporation.

Approved equivalent.

* + - * 1. Acoustical Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

Retain one or more steel sheet subparagraphs below to suit Project.

Retain steel grade from options in "Prime-Painted Steel Sheet" Subparagraph below.

Prime-Painted Steel Sheet: ASTM A1008, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]** minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.

Color: **[Manufacturer's standard] [Gray] [White] [Gray top surface with white underside]**.

Retain steel grade and zinc-coating weight from options in "Galvanized-Steel Sheet" Subparagraph below.

Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80], [G60] [G90]** zinc coating.

Retain steel grade from options in "Galvanized and Shop-Primed Steel Sheet" Subparagraph below.

Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]**, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

Color: **[Manufacturer's standard] [Gray] [White] [Gray top surface with white underside]**.

Verify availability of aluminum-zinc-alloy-coated steel sheet with deck manufacturers before retaining "Aluminum-Zinc-Alloy-Coated Steel Sheet" Subparagraph below. Revise steel grade and coating weight, if required, to suit Project.

Aluminum-Zinc-Alloy-Coated Steel Sheet: ASTM A792, Structural Steel (SS), Grade 33 minimum, AZ50 aluminum-zinc-alloy coating.

Retain roof-deck category and profile type from "Deck Profile" and "Cellular Deck Profile" subparagraphs below. Categories and profiles are based on SDI nomenclature; manufacturers may identify same categories and profiles with other designations. Insert different proprietary profiles, if required, to suit Project.

Deck Profile: **[As indicated] [Type WR, wide rib] [Type 3DR, deep rib] [Long span]**.

Cellular Deck Profile: **[As indicated] [Type WR, wide rib] [Type 3DR, deep rib] [Long span]**, with bottom plate.

Retain one option in "Profile Depth" Subparagraph below or revise to suit Project. Indicate locations on Drawings if various depths are required.

Profile Depth: **[As indicated] [1-1/2 inches] [2 inches] [3 inches] [4-1/2 inches] [6 inches] [7-1/2 inches]**.

Retain one steel thickness in "Design Uncoated-Steel Thickness" Subparagraph below if noncellular acoustical roof deck is required or revise to suit Project.

Design Uncoated-Steel Thickness: **[As indicated] [0.0295 inch** **(22 ga)] [0.0358 inch (20 ga)] [0.0474 inch (18 ga)] [0.0598 inch (16 ga)]**.

Retain one steel thickness in "Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate" Subparagraph below if cellular acoustical roof deck, combining a roof-deck profile with a bottom plate, is required. Thickness combinations are based on deck unit (first) and bottom plate (second).

Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: **[As indicated] [0.0358/0.0358 inch (20/20 ga)] [0.0358/0.0474 inch 20/18 ga)] [0.0474/0.0358 inch (18/20 ga)] [0.0474/0.0474 inch (18/18 ga)] [0.0474/0.0598 inch (18/16 ga)] [0.0598/0.0474 inch (16/18 ga)] [0.0598/0.0598 inch (16/16 ga)]**.

Retain span used in design from "Span Condition" Subparagraph below.

Span Condition: **[As indicated] [Simple span] [Double span] [Triple span or more]**.

Retain side-lap configuration from "Side Laps" Subparagraph below. Interlocking seams may be fastened by welding or button punching.

Side Laps: **[Overlapped] [Interlocking seam] [Overlapped or interlocking seam at Contractor's option]**.

Acoustical Perforations: **[Deck units with manufacturer's standard perforated vertical webs] [Cellular deck units with manufacturer's standard perforated flat-bottom plate welded to ribbed deck]**.

Retain "Sound-Absorbing Insulation" Subparagraph below if sound-absorbing insulation is required.

Sound-Absorbing Insulation: Manufacturer's standard premolded roll or strip of glass or mineral fiber. **<Insert actual physical properties and thicknesses of insulation>**.

Retain first subparagraph below if cellular acoustical roof deck requires factory-installed sound-absorbing insulation.

Factory install sound-absorbing insulation into cells of cellular deck.

Retain first subparagraph below if sound-absorbing insulation is to be field installed in topside deck ribs at same time roofing system is installed.

Installation of sound-absorbing insulation is specified in Section **<Insert Section number> "<Insert Section title>**."

Retain one noise reduction coefficient (NRC) requirement from options in "Acoustical Performance" Subparagraph below or revise to suit Project. Consult deck manufacturer to verify tested NRC values for proposed roof-deck assembly. Published NRC values usually rely on a specific roof insulation above the deck.

Acoustical Performance: NRC **[0.65] [0.75] [0.80] [0.85] [0.90]**, tested according to ASTM C423.

* + - 1. COMPOSITE FLOOR DECK

Retain this article if composite floor deck is required. Insert minimum section properties here or indicate on Drawings.

* + - * 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Canam Steel Corporation; Canam Group, Inc.

Epic Metals Corporation.

New Millennium Building Systems, LLC.

Nucor Corporation.

Approved equivalent.

* + - * 1. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

Retain one or more steel sheet subparagraphs below to suit Project.

Retain steel grade and color, if applicable, from options in "Prime-Painted Steel Sheet" Subparagraph below.

Prime-Painted Steel Sheet: ASTM A1008, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]** minimum, with top surface phosphatized and unpainted and underside surface shop primed with manufacturers' standard **[gray] [or] [white]** baked-on, rust-inhibitive primer.

Retain "Galvanized-Steel Sheet" or "Galvanized and Shop-Primed Steel Sheet" Subparagraph below for galvanized-steel sheet. A lightweight coating, G30, is the minimum recommended by SDI for composite deck because it is the positive bending reinforcement for slab and must last the life of the structure.

Retain zinc-coating weight from options in "Galvanized-Steel Sheet" Subparagraph below.

Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), Grade 33, **[G30] [G60] [G90]** zinc coating.

Retain zinc-coating weight and color, if applicable, from options in "Galvanized and Shop-Primed Steel Sheet" Subparagraph below.

Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel (SS), Grade 33, **[G30] [G60]** zinc coating; with unpainted top surface and cleaned and pretreated bottom surface primed with manufacturer's standard **[gray] [white]** baked-on, rust-inhibitive primer.

Retain one option in "Profile Depth" Subparagraph below or revise to suit Project. Indicate locations on Drawings if various depths are required.

Profile Depth: **[1-1/2 inches] [2 inches] [3 inches] [As indicated]**.

Retain one steel thickness in "Design Uncoated-Steel Thickness" Subparagraph below or revise to suit Project.

Design Uncoated-Steel Thickness: **[0.0295 inch (22 ga)] [0.0358 inch (20 ga)] [0.0474 inch (18 ga)] [0.0598 inch (16 ga)]**.

Retain span used in design from "Span Condition" Subparagraph below.

Span Condition: **[As indicated] [Simple span] [Double span] [Triple span or more]**.

* + - 1. NONCOMPOSITE FORM DECK

Retain this article if noncomposite form deck is required. Form deck may be used as roof deck, floor deck, or both. Insert minimum section properties here or indicate on Drawings.

* + - * 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Canam Steel Corporation; Canam Group, Inc.

New Millennium Building Systems, LLC.

Nucor Corporation.

Approved equivalent.

* + - * 1. Noncomposite Form Deck: Fabricate ribbed-steel sheet noncomposite form-deck panels to comply with "SDI Specifications and Commentary for Noncomposite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

Retain one or more steel sheet subparagraphs below to suit Project.

Retain steel grade from options in "Uncoated Steel Sheet" Subparagraph below.

Uncoated Steel Sheet: ASTM A1008, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]** minimum.

Retain steel grade from options in "Prime-Painted Steel Sheet" Subparagraph below.

Prime-Painted Steel Sheet: ASTM A1008, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80]** minimum, with[ top and] underside surface shop primed with manufacturer's standard baked-on, rust-inhibitive primer.

Color: **[Manufacturer's standard] [Gray] [White] [Gray top surface with white underside]**.

Retain "Galvanized-Steel Sheet" or "Galvanized and Shop-Primed Steel Sheet" Subparagraph below for galvanized-steel sheet. A lightweight coating, G30, is the minimum recommended by SDI for noncomposite form deck.

Retain steel grade and zinc-coating weight from options in "Galvanized-Steel Sheet" Subparagraph below.

Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), **[Grade 33] [Grade 40] [Grade 80], [G30] [G60] [G90]** zinc coating.

Retain steel grade from options in "Galvanized and Shop-Primed Steel Sheet" Subparagraph below.

Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel (SS), **[Grade 33] [Grade 80]**, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

Color: **[Manufacturer's standard] [Gray] [White] [Gray top surface with white underside]**.

Retain one option in "Profile Depth" Subparagraph below or revise to suit Project. Indicate locations on Drawings if various depths are required.

Profile Depth: **[9/16 inch] [15/16 inch] [1-5/16 inches] [1-1/2 inches]**.

Retain one steel thickness in "Design Uncoated-Steel Thickness" Subparagraph below or revise to suit Project.

Design Uncoated-Steel Thickness: **[0.0149 inch (28 ga)] [0.0179 inch (26 ga)] [0.0239 inch (24 ga)] [0.0295 inch (22 ga)] [0.0358 inch (20 ga)] [0.0474 inch (18 ga)] [0.0598 inch (16 ga)]**.

Retain span used in design from "Span Condition" Subparagraph below.

Span Condition: **[As indicated] [Simple span] [Double span] [Triple span or more]**.

Retain side-lap configuration from "Side Laps" Subparagraph below. Interlocking seams may be fastened by welding or button punching.

Side Laps: **[Overlapped] [Interlocking seam] [Overlapped or interlocking seam at Contractor's option]**.

* + - 1. ACCESSORIES
         1. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
         2. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
         3. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
         4. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
         5. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

Revise "Pour Stops and Girder Fillers" Paragraph below to suit Project. Pour-stop thickness and profile guidelines are presented in SDI Publication No. 31.

* + - * 1. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, minimum 16 ga., of same material and finish as deck, and of thickness and profile **[indicated] [recommended by SDI Publication No. 31 for overhang and slab depth]**.
        2. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

Piercing hanger tabs in "Piercing Hanger Tabs" Paragraph below are designed for embedment in deck slab; delete if not permitted or required. See the Evaluations for discussion. Rolled-in hanger tabs are available for floor deck, but improper use could result in overstressing the tabs or overloading the deck slab. If allowed, insert rolled-in hanger tabs here; verify load limits, availability, limitations, and recommendations with deck manufacturers.

* + - * 1. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

Usually retain weld washers in "Weld Washers" Paragraph below if weld-fastening deck with an uncoated minimum steel thickness of less than 0.028 inch. Retain weld washer thickness.

* + - * 1. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, **[0.0598 inch] [0.0747 inch]** thick, with factory-punched hole of 3/8-inch minimum diameter.

Retain "Flat Sump Plates" or "Recessed Sump Pans" Paragraph below if required. Recessed sump pans are seldom used. Coordinate with choice of roof drain if recessed sump pans are required.

* + - * 1. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
        2. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch- wide flanges and [level] [sloped] recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.
        3. Galvanizing Repair Paint: **[ASTM A780] [SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight]**.
        4. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
          2. Proceed with installation only after unsatisfactory conditions have been corrected.
       2. INSTALLATION, GENERAL
          1. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
          2. Install temporary shoring before placing deck panels if required to meet deflection limitations.
          3. Locate deck bundles to prevent overloading of supporting members.
          4. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

Retain subparagraph below if either long-span cellular roof deck or electrified cellular floor deck is required.

Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.

* + - * 1. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
        2. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

Coordinate reinforcing requirements of openings in first paragraph below with applicable Sections.

* + - * 1. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
        2. Comply with AWS requirements and procedures for manual shielded metal arc welding (SMAW), appearance and quality of welds, and methods used for correcting welding work.

Retain paragraph below if mechanical fastening is permitted.

* + - * 1. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.
      1. INSTALLATION OF ROOF DECK

This article includes installation requirements for classes of roof deck and form deck used in roof applications. Revise first paragraph below and insert requirements if mechanical fastening to supports is permitted.

* + - * 1. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

Retain one option in "Weld Diameter" Subparagraph below or revise to suit Project.

Weld Diameter: **[5/8 inch] [3/4 inch]**, nominal.

Retain one option in "Weld Spacing" Subparagraph below. First option is based on SDI specifications for roof deck; second, on FM Loss Prevention Data Sheet 1-29 recommendations for roof deck securement. Retain third if indicating requirements on Drawings. Revise if diaphragm requirements or FM Approvals approval requires closer weld spacings.

Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds **[18 inches apart, maximum] [12 inches apart in the field of roof and 6 inches apart in roof corners and perimeter, based on roof-area definitions in FM Loss Prevention Data Sheet 1-28] [as indicated]**.

Retain "Weld Washers" Subparagraph below if minimum uncoated steel thickness is less than 0.028 inch. See installation considerations in the Evaluations.

Weld Washers: Install weld washers at each weld location.

SDI requires side-lap and perimeter edge fastening if deck spans exceed 60 inches. Revise fastener spacing in "Side-Lap and Perimeter Edge Fastening" Paragraph below if required.

* + - * 1. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or **[18 inches] [36 inches]**, and as follows:

Retain acceptable fastening method(s) from three subparagraphs below. Coordinate with choice of side lap.

Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

Mechanically clinch or button punch.

FM Approvals accepts welding of side laps to deck that is a minimum of 0.0474 inch thick.

Fasten with a minimum of 1-1/2-inch- long welds.

* + - * 1. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

Retain one of three options in "End Joints" Subparagraph below. SDI allows lapped or butted ends for roof deck. FM Approvals recommends that ends lap a minimum of 2 inches.

End Joints: **[Lapped 2 inches minimum] [Butted] [Lapped 2 inches minimum or butted at Contractor's option]**.

* + - * 1. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and **[weld] [mechanically fasten]** flanges to top of deck. Space **[welds] [mechanical fasteners]** not more than 12 inches apart with at least one **[weld] [fastener]** at each corner.

Install reinforcing channels or zees in ribs to span between supports and **[weld] [or] [mechanically fasten]**.

* + - * 1. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. **[Weld] [or] [mechanically fasten]** to substrate to provide a complete deck installation.

Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

Retain "Flexible Closure Strips" Paragraph below if flexible closures are required or permitted. Usually delete if fire-resistance-rated partitions are required.

* + - * 1. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

Retain "Sound-Absorbing Insulation" Paragraph below if installation of sound-absorbing insulation is specified in applicable low-slope roofing Section. Coordinate with roofing installation to prevent exposure to weather.

* + - * 1. Sound-Absorbing Insulation: Installation into topside ribs of deck as specified in Section **<Insert Section number> "<Insert Section title>**."
      1. INSTALLATION OF FLOOR DECK

This article includes installation requirements for classes of floor deck and form deck used in floor applications. Revise first paragraph below and insert requirements if mechanical fastening to supports is permitted.

* + - * 1. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

Retain one option in "Weld Diameter" Subparagraph below or revise to suit Project.

Weld Diameter: **[5/8 inch] [3/4 inch]**, nominal.

Retain one of two "Weld Spacing" subparagraphs below. First subparagraph is based on SDI specifications. Retain second subparagraph if indicating requirements on Drawings.

Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.

Weld Spacing: Space and locate welds as indicated.

Retain "Weld Washers" Subparagraph below if minimum uncoated steel thickness is less than 0.028 inch. See installation considerations in the Evaluations.

Weld Washers: Install weld washers at each weld location.

SDI requires side-lap and perimeter edge fastening if deck spans exceed 60 inches. Revise fastener spacing in "Side-Lap and Perimeter Edge Fastening" Paragraph below if required.

* + - * 1. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

Retain acceptable fastening method(s) from subparagraphs below. Welding may be mandatory for diaphragm deck. Revise fastening requirements as required.

Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

Mechanically clinch or button punch.

Fasten with a minimum of 1-1/2-inch- long welds.

* + - * 1. End Bearing: Install deck ends over supporting frame with a minimum end bearing of **[1-1/2 inches] <Insert dimension>**, with end joints as follows:

Retain one of three options in "End Joints" Subparagraph below or indicate locations of each choice on Drawings. SDI requires butted end joints for composite floor deck and allows lapped or butted ends for noncomposite floor deck.

End Joints: **[Lapped] [Butted] [Lapped or butted at Contractor's option]**.

* + - * 1. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

Revise "Floor-Deck Closures" Paragraph below to suit Project. Sealing cellular deck openings, butt joints, and junctions with trench headers with tape is not included in this Section.

* + - * 1. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

Retain "Electrified Cellular Floor Deck" Paragraph below if electrified cellular floor-deck units are required.

* + - * 1. Electrified Cellular Floor Deck: Install cellular floor system with deck assembled from **[all-cellular units] [alternating cellular units with noncellular composite units] [units indicated]**.

Coordinate layout and installation of trench headers, preset inserts, duct fittings, and other components specified in Section 260539 "Underfloor Raceways for Electrical Systems" with installation of electrified cellular metal floor deck.

Revise spacing of hanger tabs in paragraph below to suit Project.

* + - * 1. Install piercing hanger tabs at **[14 inches] <Insert dimension>** apart in both directions, within 9 inches of walls at ends, and not more than 12 inches from walls at sides unless otherwise indicated.
      1. REPAIR

Retain "Galvanizing Repairs" or "Repair Painting" Paragraph below, or both, if repairs to galvanized or painted surfaces are required. If limiting repairs to roof deck, revise below accordingly.

* + - * 1. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.
        2. Repair Painting:

Retain first subparagraph below if prime-painted deck is required and on-site paint repair is included in this Section. Because shop primer protects for a limited time, repair painting is best applied during or immediately after deck installation.

Wire brush and clean rust spots, welds, and abraded areas on **[both surfaces] [top surface]** of prime-painted deck immediately after installation, and apply repair paint.

Retain one of first two subparagraphs below if appearance is important. Retain first subparagraph if retaining first option in subparagraph above. Retain second subparagraph if preparation and repair painting of bottom surface are specified in Section 099123 "Interior Painting."

Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099123 "Interior Painting."

Retain subparagraph below if repair-painting requirements are included in Section 099123 "Interior Painting." Coordinate field-painting requirements with Section 099123 "Interior Painting."

Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099123 "Interior Painting."

* + - 1. FIELD QUALITY CONTROL
         1. Special Inspections: Director’s Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

END OF SECTION 053100