



AMERICAN NATIONAL STANDARDS INSTITUTE/ STEEL DECK INSTITUTE

RD - 2017 Standard for
Steel Roof Deck



Documents

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1. General

1.1 Scope:

- A. This Standard for Steel Roof Deck, hereafter referred to as the Standard, shall govern the materials, design, and erection of cold formed steel deck used for roof applications in buildings and similar structures.

User Note: This Standard is not intended to apply to metal panel roof systems constructed of cold-formed steel, where the roof panel acts as the roof covering providing both weather protection and support for structural loads. These panels are commonly used a roof panels over open framing in pre-engineering buildings, post frame buildings, and canopy structures.

- B. The User Notes and Commentary shall not be part of the Standard.

User Note: User Notes and Commentary are intended to provide practical guidance in the use and application of this Standard.

- C. Where the Standard refers to “designer,” this shall mean the entity that is responsible to the Owner for the overall structural design of the project, including the steel deck.

User Note: This is usually the Structural Engineer of Record.

- D. Equations that appear in this Standard are compatible with the US Customary System (USCS) of units. However, any consistent system of units shall be permitted to be used. SI units or equations shown in parenthesis in this Standard are for information only and are not part of this Standard.

User Note: The USCS is also referred to as English Units or the inch-pound system.

- E. Terms not defined in this Standard, AISI S100 or AISI/AISC shall have the ordinary accepted meaning for the context for which they are intended.

- F. It shall be permitted to specify deck base steel thickness either by dimensional thickness, or by gage when the relationship of base steel thickness to gage has been defined by the deck manufacturer. However, for the purpose of design, the dimensional thickness shall be used.

Commentary: Both AISI and SDI now specify steel thickness in terms of design thickness in lieu of gage thickness. Gage thicknesses, however, are still commonly referred to in the metal deck industry. Table UN-1.1 shows common gages and corresponding uncoated design and minimum steel thicknesses.

Table UN-1.1

Gage No.	Design Thickness		Minimum Thickness ¹	
	in.	mm.	in.	mm.
22	0.0295	0.75	0.028	0.71
20	0.0358	0.91	0.034	0.86
18	0.0474	1.20	0.045	1.14
16	0.0598	1.52	0.057	1.44

¹ Minimum delivered thickness is 95% of the design thickness.

1.2 Reference Codes, Standards, and Documents:

A. Codes and Standards: The following documents or portions thereof are referenced in this Standard and shall be considered part of the requirements of this Standard. Where these documents conflict with this Standard, the requirements of this Standard shall control:

1. American Iron and Steel Institute (AISI)
 - a. AISI S100-16, North American Specification for the Design of Cold-Formed Steel Structural Members.
 - b. AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels.
 - c. AISI S905-13, Test Methods for Mechanically Fastened Cold-Formed Steel Connections.
 - d. AISI/AISC, Standard Definitions for Use in the Design of Steel Structures, 2007 edition.
2. American Welding Society (AWS)
 - a. AWS D1.3:2008, Structural Welding Code-Sheet Steel
3. American Society of Civil Engineers (ASCE)
 - a. ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures
4. American Institute of Steel Construction (AISC)
 - a. ANSI/AISC 360-16, Specification for Structural Steel Buildings

Commentary: The following documents are referenced within the Commentary and User Notes:

1. American Iron and Steel Institute (AISI)
 - a. AISI S100-16, North American Specification for the Design of Cold-Formed Steel Structural Members.
 - b. AISI S907-16, Test Standard for Cantilever Test Method for Cold-Formed Steel Diaphragms
2. American Society for Testing and Materials (ASTM)
 - a. ASTM A653 / A653M - 15 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - b. ASTM A1008 / A1008M - 15, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

- c. ASTM E119 - 14, Standard Test Methods for Fire Tests of Building Construction and Materials
- 3. American Society of Civil Engineers (ASCE)
 - a. ASCE/SEI 8-02, Specification for the Design of Cold-Formed Stainless Steel Structural Members
- 4. Underwriters Laboratories (UL)
 - a. Fire Resistance Directory
- 5. Steel Deck Institute (SDI)
 - a. SDI COSP-2017, Code of Standard Practice.
 - b. SDI-DDM, Diaphragm Design Manual, 4th Edition.
 - c. SDI-MOC, Manual of Construction with Steel Deck, 3rd Edition
 - d. SDI-RDDM, Roof Deck Design Manual, 1st Edition.

1.3 Construction Documents: The construction documents shall describe the roof decks that are to be constructed and shall include not less than the following information:

- A. Loads
 - 1. Loads as required by the applicable building code. Where applicable, load information shall include concentrated loads.
 - 2. Assumed construction phase loads.
- B. Structural framing plans for all roof deck areas showing the size, location and type of all deck supports.
- C. Deck and Deck Attachment
 - 1. Depth, type (profile), and design thickness.
 - 2. Deck material (including yield strength) and deck finish,
 - 3. Deck attachment type, spacing, and details.

User Note: The following is an example of a roof deck as it could be specified on the contract drawings: "Roof Deck shall consist of 1-1/2 inch deep Wide Rib, G-60 galvanized steel deck, design thickness 0.0358 inch (20 gage), $F_y = 33$ ksi, (Type XX by YY, Inc or approved equivalent). Deck shall be attached to supporting framing using #12 screws in a 36/7 pattern. (4) #10 sidelap screws shall be installed per deck span."

2. Products

2.1 Material:

- A. Sheet steel for deck shall conform to AISI S100, Section A3.
- B. Sheet steel for accessories that carry defined loads shall conform to AISI S100, Section A3. Sheet steel for non-structural accessories that do not carry defined loads shall be permitted to be any steel that is adequate for the proposed application.
- C. All sheet steel used for deck or accessories that carry defined loads shall have a minimum specified yield stress that meets or exceeds 33 ksi (230 Mpa).