



## Changes for steel decks

The Steel Deck Institute has updated publications that will affect roof system designers

by Mark S. Graham

The Steel Deck Institute has revised and updated two publications applicable to steel roof decks. If you design and/or specify steel roof decks, you should be aware of the updated information.

### Roof deck design manual

In June 2022, SDI published *Roof Deck Design, Second Edition*. It updates, expands upon and replaces the first edition of the manual, which was published in 2012.

SDI indicates the manual is the steel deck industry's primary manual addressing steel roof deck design. It was developed to conform to ANSI/SDI RD-2017, "Standard for Steel Roof Deck," and complies with the requirements of the 2018 and 2021 editions of The International Building Code.<sup>®</sup> Review of the manual's second edition reveals a number of changes, which follow.

Wide rib decks, commonly referred to as Type B decks, and deep rib decks, commonly referred to as Type N decks, are primarily discussed and included in the manual's load tables. Load tables for narrow rib (Type A), intermediate rib (Type F), long span, cellular and acoustic roof decks, which were included in the manual's first edition,



have been removed from the second edition. SDI indicates specific steel deck manufacturers can be consulted for load tables applicable to the roof deck profiles removed from the second edition.

Section 2.14 provides new information addressing steel roof deck design for mechanically attached single-ply membrane roof systems. SDI indicates when loaded for wind uplift, mechanically attached single-ply membrane roof systems can increase the bending moment on steel roof decks by several hundred percent compared with uniformly applied uplift loading, such

as that with adhered membrane roof systems. SDI's Technical Note 7, "Mechanical Attachment of Single-ply Membranes to Steel Roof Deck: Implications for Steel Deck Design," can be referred to for additional information.

Section 4.6 updates the reference to quality control and quality-assurance guidelines for steel deck application to ANSI/SDI QC/QA-2017, "Standard for Quality Control and Quality Assurance for Installation of Steel Deck."

In Section 5, the load tables have been revised to be based on a minimum yield strength of 40 ksi and minimum tensile strength of 50 ksi for steel roof decks. The manual's first edition assumed a yield strength of 33 ksi and tensile strength of 45 ksi. As a result, steel decks' allowable loads are increased in the second edition. The extent

of the increases varies based on the specific load and allowable deflection conditions.

Section 6 provides examples of representative design calculations for steel roof decks. A new example calculation, Example 14, addresses a structural design for a mechanically attached single-ply membrane roof system on a steel roof deck. The calculations address analysis of deck loading in a roof's Zone 1 field, Zone 2 perimeter with membrane attachment perpendicular to deck span, Zone 2 perimeter with membrane attachment parallel to span and Zone 3 corners.

#### ANSI/SDI SD-2022

SDI published ANSI/SDI SD-2022, "Standard for Steel Deck," in late 2021. It replaces and combines SDI's previous individual standards for composite steel deck-slabs, noncomposite steel floor decks and steel roof decks into a single standard.

The previous edition of ANSI/SDI RD-2017 was published in 2017.

ANSI/SDI SD-2022 has been submitted to the International Code Council® to replace ANSI/SDI RD-2017 in IBC 2024.

### DID YOU KNOW?

Specific language intended to limit contractors' liability for steel roof decks is provided as Item 15-Roof Deck Conditions in NRCA's *Contract Provisions, Volume III*, which is available free to NRCA members at [nrca.net](http://nrca.net).

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#### Closing thoughts

Designers and specifiers of steel roof decks should be aware of updates and changes incorporated in SDI's new publications. ANSI/SDI RD-2017 and ANSI/SDI SD-2022 can be downloaded free under the Resources tab on SDI's website, [sdi.org](http://sdi.org). SDI's roof deck

design manual also can be purchased on SDI's website.

The design and analysis of steel roof decks is beyond the capabilities of most roofing contractors and, as a result, I encourage roofing contractors not to make representations either express or implied about the structural capacity, wind-uplift resistance, corrosion resistance or suitability for use of steel roof decks.

Additional information about steel roof decks is provided in Chapter 2-Roof Decks of *The NRCA Roofing Manual: Membrane Roof Systems—2019*. 🌟🌟

For an article related to this topic, see "Consider the deck," January 2020 issue.

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