

The Steel Deck Institute provides an update on its steel floor and roof deck standards and other publications.

product expert series

ON DECK AND UP TO DATE

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STEEL DECK IS A PRODUCT that oftentimes receives little consideration from a building designer. But nearly every steel-framed building that is constructed uses steel deck in the floor and roof structure.

Properly specified steel deck and deck accessories are a vital component to any successful building project. To this end, the Steel Deck Institute (SDI) supports the needs of not only its manufacturers, but also engineers, architects and building officials, with technical publications and standards on the proper, economical use of steel deck products.

Since becoming an ANSI-accredited standards developer in 2003, SDI has developed five consensus standards for the design and installation of steel floor and roof deck products.

- ANSI/SDI C-2011 *Standard for Composite Steel Floor Deck-Slabs*
- ANSI/SDI T-CD-2011 *Test Standard for Composite Steel Deck-Slabs*
- ANSI/SDI NC-2010 *Standard for Non-Composite Steel Floor Deck*
- ANSI/SDI RD-2010 *Standard for Steel Roof Deck*
- ANSI/SDI QA/QC-2011 *Standard for Quality Control and Quality Assurance for Installation of Steel Deck*

All SDI standards reference AISI S100-07, the American Iron and Steel Institute *North American Specification for the Design of Cold-Formed Steel Structural Members* as the base standard for the calculation of member strength. The AISI Standard is incorporated by reference into the International Building Code.

Additionally, in 2012, SDI updated its *Code of Standard Practice*, which provides information regarding proper practice and scope of responsibility for specifying and installing steel deck products. Below are brief descriptions of the five deck standards, plus a new one on quality control/assurance.

ANSI/SDI C-2011 *Standard for Composite Steel Floor Deck-Slabs*. This standard provides criteria for the proper design, specification and installation of composite steel floor deck and is a revision of the previous 2006 version. Substantial changes in the new version include increased information regarding the use of fibers for concrete crack control purposes and concrete serviceability, consideration of moving and concentrated loads and use of “pre-qualified sections.”

The scope of this standard includes:

- Criteria for design of the deck as a form prior to the curing of the concrete, including requirements for construction loading
- Criteria for the design of the deck and concrete as a composite deck-slab
- Criteria for design as a diaphragm
- Serviceability criteria for control of cracking due to concrete shrinkage and temperature change being provided either by welded wire reinforcing, reinforcing steel, steel fibers or macro-synthetic fibers

ANSI/SDI T-CD-2011 *Test Standard for Composite Steel Deck-Slabs*. This new standard provides criteria for the testing of composite steel deck-slabs and the determination of the nominal resistance through this testing. It is incorporated by reference into ANSI/SDI C-2011.

ANSI/SDI NC-2010 *Standard for Non-Composite Steel Floor Deck*. ANSI/SDI NC-2010 provides criteria for the proper design, specification and installation of non-composite steel floor deck, also referred to as “form deck,” and is a revision of the previous 2006 version, which was included by reference in the 2009 International Building Code (IBC). The current version is included by reference in the 2012 IBC. Included in this Standard are:

- Criteria for design of the deck as a form prior to the curing of the concrete, including requirements for construction loading
- Criteria for the design of the concrete as a reinforced concrete slab in accordance with ACI 318
- Criteria for design as a diaphragm

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Preutek



Canam



Canam



Wheeling Corrugating

ANSI/SDI RD-2010 *Standard for Steel Roof Deck.* This standard provides criteria for the proper design, specification and installation of steel roof deck and is a revision of the previous 2006 version, which was included by reference in the 2009 IBC (the current version is included by reference in the 2012 IBC). It includes:

- Criteria for structural design of the deck, including requirements for construction loading and service loading
- Criteria for design as a diaphragm

ANSI/SDI QA/QC-2011 *Standard for Quality Control and Quality Assurance for Installation of Steel Deck.* This new standard provides criteria for quality control and quality assurance for the installation of steel floor and roof deck and accessories. Included within this scope are welding and mechanical fastening methods. The format will look familiar to users of Chapter N of the AISC 360-10 *Specification for Structural Steel Buildings*. It was written to interface with AISC 360 and AISC 341 standards and provides requirements for deck installer quality control and inspector quality assurance. It is written in a format that allows it to be used for special inspection requirements as required by the IBC. Additionally, suggested modifications to the requirements are found in a Commentary, which will allow the standard to be incorporated into project specifications for quality control and quality assurance outside of code mandated special inspections.

ANSI/SDI COSP-2012 *Code of Standard Practice for Composite Deck, Form Deck, and Roof Deck Construction.* The updated 2012 SDI *Code of Standard Practice* is intended to promote safety and quality in construction and to set forth responsibilities for all parties involved with steel deck design and installation. Engineers can incorporate this code into project specifications in much the same way as the AISC *Code of Standard Practice*.

Other SDI Publications

The SDI is in the process of updating three of its popular design handbooks, all of which will be available within the next year.

The *Diaphragm Design Handbook, 4th Edition* is being prepared to incorporate requirements contained in the draft *AISI Diaphragm Design Standard*. Additional design examples and, for the first time, diaphragm load tables for roof deck on cold-formed trusses or rafters, are included.

The scope of the *Composite Deck Design Handbook* is being expanded to include both composite and non-composite floor deck in a new *Floor Deck Design Handbook*. This new handbook will include numerous design examples and design guidance regarding all aspects of steel floor deck design in accordance with ANSI/SDI C-2011 and ANSI/SDI NC-2010.

A completely updated and revised *Roof Deck Design Handbook* will replace the existing *Roof Deck Construction Handbook*. Written to incorporate the requirements of ANSI/SDI RD-2010, this handbook will contain numerous examples that illustrate the proper use of roof deck.

The Institute has also released a white paper on Perforated Metal Deck Diaphragm Design, which is applicable to acoustical steel deck.

For a look at how steel deck is made, see "Rolling Along" in the September 2007 issue of MSC.

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