Changes to the Deck Code Coming in 2018

by Chuck Bajnai

Last fall, I introduced *PDB* readers to the Deck Code Coalition (DCC) and wrote about the code changes that our group had proposed for the 2018 International Residential Code (see "Code Update," Sept/Oct 2016). Of the 18 code proposals that the DCC submitted, 14 were approved at ICC committee hearings in Louisville, Ky., and Kansas City and in member online voting last year. Here's an overview of the more significant changes that deck builders can expect to see in the 2018 edition of the IRC.

Organizational rewrite (RB198). Section R507—the deck section of the IRC—has been reorganized to improve readability and provide a logical framework for understanding the code section. It will now be laid out like this:

- R507.1 Decks
- R507.2 Materials
- R507.3 Footings
- R507.4 Deck posts
- R507.5 Deck beams
- R507.6 Deck joists
- R507.7 Decking
- R507.8 Vertical and lateral supports

Materials (RB202). In the 2012 and 2015 IRC, the deck section included specific language regarding plastic composite materials, but the requirements for wood were tacit. In the 2018 IRC, wood used for decks will be required to be at least #2 grade or better, preservative-treated or naturally durable lumber, and designed using the "wet" service factor from the NDS. Preservative-treated wood used for structural framing in contact with the ground will have to be labeled for such use. There is also a new table that adds prescriptive requirements for connectors and fasteners, while acknowledging acceptance for proprietary alternatives.

Footings (RB206, RB207, RB208). To eliminate the math required to size deck footings, builders will be able to specify the size and thickness of deck footings by knowing the tributary area and the local frost depth, thanks to the new table in section R507.3 Footings (shown at left). The table prescriptively sizes the footing based on total loads, soil bearing capacity, and the shape of the footing.

Three useful exceptions have been added for freestanding decks. The first—a carryover from Section R403.1.4.1 in the 2015 IRC—allows for freestanding decks to be built above frost-depth. A second exception will allow for freestanding

MINIMUM FOOTING SIZE FOR DECKS (sq ft)[a,c,d]

LIVE OR GROUND SNOW LOAD[b] (psf)	TRIBUTARY AREA[e]	SOIL BEARING CAPACITY (psf) 1500			2000			2500			≥ 3000		
		SIDE OF A SQUARE FOOTING (in)	DIAMETER OF A ROUND FOOTING (in)	THICKNESS (in)	SIDE OF A SQUARE FOOTING (in)	DIAMETER OF A ROUND FOOTING (in)	THICKNESS (in)	SIDE OF A SQUARE FOOTING (in)	DIAMETER OF A ROUND FOOTING (in)	THICKNESS (in)	SIDE OF A SQUARE FOOTING (in)	DIAMETER OF A ROUND FOOTING (in)	THICKNESS (in)
40	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	14	16	6	12	14	6	12	14	6	12	14	6
	60	17	19	6	15	17	6	13	15	6	12	14	6
	80	20	22	7	17	19	6	15	17	6	14	16	6
	100	22	25	8	19	21	6	17	19	6	15	17	6
	120	24	27	9	21	23	7	19	21	6	17	19	6
	140	26	29	10	22	25	8	20	23	7	18	21	6
	160	28	31	11	24	27	9	21	24	8	20	22	7
50	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	15	17	6	13	15	6	12	14	6	12	14	6
	60	19	21	6	16	18	6	14	16	6	13	15	6
	80	21	24	8	19	21	6	17	19	6	15	17	6
	100	24	27	9	21	23	7	19	21	6	17	19	6
	120	26	30	10	23	26	8	20	23	7	19	21	6
	140	28	32	11	25	28	9	22	25	8	20	23	7
	160	30	34	12	26	30	10	24	27	9	21	24	8
60	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	16	19	6	14	16	6	13	14	6	12	14	6
	60	20	23	7	17	20	6	16	18	6	14	16	6
	80	23	26	9	20	23	7	18	20	6	16	19	6
	100	26	29	10	22	25	8	20	23	7	18	21	6
	120	28	32	11	25	28	9	22	25	8	20	23	7
	140	31	35	12	27	30	10	24	27	9	22	24	8
	160	33	37	13	28	32	11	25	29	10	23	25	9
70	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	18	20	6	15	17	6	14	15	6	12	14	6
	60	21	24	8	19	21	6	17	19	6	15	17	6
	80	25	29	9	21	24	8	19	22	7	18	20	6
	100	28	31	11	24	27	9	21	24	8	20	22	7
	120	30	34	12	25	30	10	24	27	9	21	24	8
	140	33	37	13	28	32	11	25	29	10	23	26	9
	160	35	40	15	30	34	12	27	31	11	25	28	9

a. Interpolation permitted, extrapolation not permitted
b. Based on highest load case: Dead + Live or Dead + Snow
c. Assumes minimum square footing to be 12"x12"x6" for 6x6 post
d. If the support is a brick or cmu pier, the footing shall have a minimum 2" projection on all sides.
e. Area, in square feet, of deck surface supported by post and footing

Builders will be able to specify the size and thickness of deck footings by knowing the tributary area and the local frost depth.

decks to be built on grade using precast pier blocks (typically sold at local home improvement stores). But there are a few limitations:

· The joists must bear directly on the pier blocks (that is, without any vertical posts).

· The deck surface is not more than 20 inches above grade.

· The deck does not exceed 200 square feet.

Wood patios (RB205). The third exception allows for freestanding decks to be built with joists sitting directly on grade—sometimes referred to as wood patios. Because joist sizing is not specified, any PT members rated for ground contact can be used. Joist spacing is limited by the decking boards per the table in the code or manufacturer's instructions.

Footing and post connection (RB213, RB214). The old deck post-to-footing drawing, Figure R507.8.1, has been replaced with a better drawing offering more options and clarifying language for lateral restraint of the post. One of the details in the new drawing reflects that deck posts do not have to be physically attached to the footing as long as the post is restrained laterally (that is, buried) with at least 12 inches of soil around the base.

In addition, other engineered footing systems, such as helical piers, cannot be "not permitted" by the local building official.

Deck posts (RB212). The post-height table was expanded to include 8x8 wood posts with a maximum height of 14 feet based on a 40-psf live load.

Deck beams (RB200). A few subtle changes have been made to the section dealing with beams, including the addition of single-ply beams to the deck beam span table and the notched post-to-beam connection detail. The implication of this is that 4x4 posts can be notched to carry a single-ply beam, while notched 4x6 or 6x6 posts are allowed to carry two-ply beams. It also clarifies that beams must be supported on the posts over their entire bearing length and width. This eliminates notched 4x4 posts supporting two-ply beams, one of which is cantilevered off the post.

Deck joists (RB210). The section on joists has been amended slightly to say that all joists attached to ledger boards now have to be connected with joist hangers—they cannot bear on 2x2 ledger strips.

Additionally, the DCC modified the lengths for cantilevered deck joists based on joist spacing. The maximum cantilever is now limited to either the span length divided by 4 (that is, L/4) or the value in the table—whichever is the lesser, because the limit may be governed by the bending strength of the wood or the deflection of the wood under full loading.

Decking (RB209). Proprietary engineered decking and fastening systems are now specifically permitted by code if installed in accordance with the manufacturer's requirements. ❖

Chuck Bajnai is Chief Residential Plan Reviewer in Chesterfield County, Va., and chairman of the Deck Code Coalition.