

Public Comment 1

IRC: R502.11, R502.11.1, 502.11.2, 502.11.3

Proponents: David Cooper, representing Stairbuilders and Manufacturers Association (coderep@stairways.org); Erik Farrington, representing myself (ewfarrington@sgh.com); Renda Barr, representing Stairbuilders and Manufacturers Association (rbarr@srg-ventures.com); Robert Aulicky, representing Stairbuilders & Manufacturers Association (acitizen@reagan.com); Marvin Strzyzewski, representing Truss Engineering Company (marvins@mii.com); Thomas Zuzik Jr, representing NOMMA (coderep@railingcodes.com); Daniel Obrien, representing Universal Building Systems, Inc. (dano@stairfasteners.com) requests As Modified by Public Comment

Modify as follows:

2021 International Residential Code

R502.11 Floor framing supporting guards. The framing at the open edge of a floor supporting a required guard assembly ~~not exceeding 44 inches (1118 mm) in height~~ shall be constructed in accordance with Sections R502.11.1 or R502.11.2 for guard assemblies not exceeding 44 inches (1118mm) in height or shall be designed in accordance with accepted engineering practice to support the guard assembly. Where Trusses and Joists are used ~~prohibited~~ as edge framing members supporting guards, except where the effects of the guard loads shall be ~~are~~ specifically considered in the design of the edge member.

R502.11.1 Conventional edge framing. Where a roll brace is aligned with each guard post, the ~~The~~ framing at the edge of the floor shall consist of a solid or built-up ~~wood~~ member of lumber, structural glued laminated timber, or structural composite lumber having a minimum net width of 3 inches (76mm) and a minimum net depth of 9-1/4 inches (235 mm) and shall be braced to resist rotation by roll bracing as described in Section R502.11.3 ~~with a roll brace aligned with each guard post.~~

R502.11.2 Timber edge framing. Where a roll brace is not aligned with each guard post, the ~~The~~ framing at the edge of the floor shall consist of a minimum 6x10 sawn timber or a minimum 5-1/8 inch x 9-1/4 inch (130 mm x 235 mm) structural glued laminated timber and shall be braced to resist rotation by roll bracing as described in Section R502.11.3 at intervals of 48 inches (1219 mm) or less.

R502.11.3 Roll bracing. Each roll brace shall be a joist or blocking matching the depth of the edge member and extending perpendicular to the edge member a minimum of 16 inches (406 mm) from the edge. Blocking shall have end connections with a minimum of six (6) – 16d common nails. Floor sheathing shall be continuous for a minimum of 24 inches (610 mm) from the edge and shall be fastened to each roll brace with a minimum of twelve (12) – 10d common

nails and shall be fastened to the edge member with a minimum of twelve (12) – 10d common nails within 12 inches (305 mm) of the roll brace.

Commenter's Reason: The Committee approved this proposal because it provides a prescriptive solution for floor framing supporting guards that will resist required design loads applied to the top of the guard and *corrects a serious deficit* in the current requirements for floor framing *that void the warranties of engineered floor systems and allows the potential failure of the floor and connected guard assembly/system*. However the Committee specifically requested clarification by public comment. The changes included in this modification are described below. They address not only the Committee's request but also those issues raised in testimony, further collaboration of industry and editorial changes to aid in understanding.

1. Moving the text *"not exceeding 44 inches (1118 mm) in height"* and adding the words *"for guard assemblies"* to the moved phrase eliminates a possible interpretation that R502.11 would not allow engineered design for guards in excess of 44 inches in height, which is certainly not the intent.
2. Subsequent to the CAH, with recent input from truss and I-joist manufacturers participating in the task group, the inference of conditional prohibition was rephrased to more clearly state that *"Where trusses and I-joists are used as edge framing members supporting guards the guard loads shall be specifically considered in the design of the edge member."*
3. Questions from the committee and testimony inquired as to the difference between the application of R502.11.1 and R502.11.2. The purposeful application of each section has been clarified by moving the text related to the *alignment of roll bracing with the guard posts* to the beginning of both sections to clearly establish and differentiate the dependent condition for use of each section.
4. Some of the Committee members questioned that it was not clear that R502.11.1 does not preclude the use of Structural Composite Lumber. To clarify this the phrase *"...member of lumber, structural glued laminated timber, or structural composite lumber"* has been substituted for *"wood"* to specifically include these options. Structural composite lumber would include: LVL, PSL, LSL, or OSL. The drawings included for the commentary have also been clarified.
5. Editorial changes include correction of the section titles and references to include "R" and adding "structural" prior to glued laminated timber to use the accepted terminology as in the code and related standard ANSI A190.1 *Product Standard for Structural Glued Laminated Timber*.
6. Please note the addition of many of the task group members as proponents of this public comment.

In the original published version of the monograph the drawings submitted with the proposal for inclusion in the commentary were not printed with the proposal. Although they were and continue to be accessed at the link provided in the reason statement they were requested by the committee to be included for the commentary. In the version of the proposal now available online the drawings have been included however the quality is poor. The drawings have been resubmitted with this proposal with the change to the drawing notes to clarify that in addition to lumber, structural composite lumber is included as described in point 3 above.

The committee requested a better understanding of only the cost differential between current deficient construction of floors supporting guards and one that complies with the proposal without consideration of the corrective measures cited in the original cost impact statement. Please see the revised cost impact statement included in this public comment. Related to cost it is worthwhile to note that 2 x 8 floor systems are not precluded however a prescriptive solution is not offered here. It was our intent to provide a prescriptive that could be simply done with available materials and nails. Special hardware options similar to those provided for the hardening of 2 x 8 deck systems are not excluded and could be used to resist the additional rotation.

It cannot be emphasized strongly enough that ***this proposal corrects a dangerous deficit to building safety. Current code actually requires nullification of manufacturers' warranties*** as it is not possible to connect guard posts to voids in a floor system that has not been engineered for guard connection. Current code does not provide a hardened floor system that is capable of resisting the required guard design load applied to the top of the guard. Specifically when guards and or blocking are added subsequent to engineering of a floor system and are not included in the engineered design it not only nullifies the engineered solution and any warranty of serviceability but could result in the failure of the guard system to serve its defined purpose to "...minimize the possibility of a fall from the walking surface to a lower level".

Supplemental Information

Engineering Calculations

[Torsion Calculations](#)

[Rotation Calculations](#)

Engineering Drawings

[Floor Edge Bracing Details](#)