



Steps to Construct a Solid, Squeak-Free Floor System

If not installed properly, floor systems can squeak, buckle, and cause nail-pop. To cut callbacks due to these problems, follow the simple floor construction steps below. APA recommends a glued floor system.

Step 1: Choose the correct materials. Use dry materials such as I-joists or dry lumber. Dry lumber is more dimensionally stable than green lumber. As it dries, green dimension lumber tends to cause nail-pop, making bumps under the finish flooring. These bumps can lead to squeaks and to accelerated wear of the finish flooring.

APA structural panels are manufactured in a variety of grades and thicknesses. When selecting your floor panel, consider the applied load, joist spacing, finish flooring and floor system (e.g., single floor or subflooring plus underlayment). See Table 1 for the panel that is best for your job.

Step 2: Panel spacing is recommended, leaving room for expansion due to changes in moisture content. From their initial mill-dry state, panels will expand as they reach their equilibrium moisture content. If they are installed without room to expand, panels may buckle. APA recommends leaving 1/8-inch space at all sheathing and Sturd-I-Floor edge and end joints, including tongue-and-groove joints.

To further minimize the potential for panel buckling, allow panels to acclimatize prior to installation. To do this, stand panels on edge for several days, allowing air circulation to all sides.

Step 3: If using a glued floor system, select an adhesive conforming to APA Performance Specification AFG-01 or ASTM D3498. To prevent premature dryout of the adhesive, spread enough glue to lay ONLY one or two panels at a time. To assure the panels will be firmly and permanently secured to the joists, wipe away water, dust and debris before applying glue.

Apply glue (about 1/4-inch-diameter bead) to framing members in a continuous line, or in a serpentine pattern in wide areas. Glue all tongue-and-groove joints by spreading glue in groove. Avoid squeeze-out by applying a thinner line in groove (about 1/8 inch) than on joists.

FIGURE 1
APA RATED STURD-I-FLOOR 16, 20, AND 24 oc

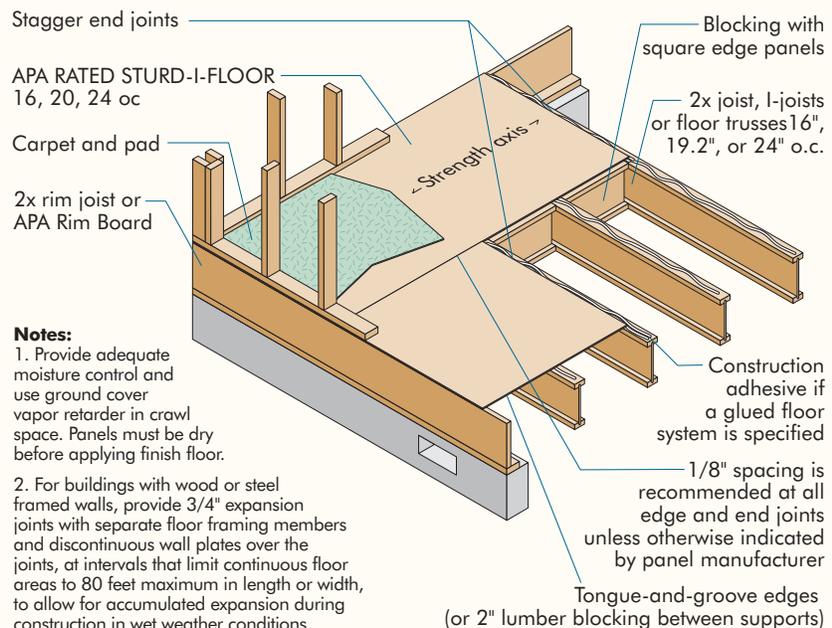


TABLE 1

PANEL AND ATTACHMENT RECOMMENDATIONS FOR APA PANEL FLOORS^(a)

| Joist Spacing (in.) | Finish Flooring Type | APA Panel Grade and Span Rating | Nail Size and Type | Glue-Nailed Maximum Nail Spacing | | Nailed-Only Maximum Nail Spacing | |
|---------------------|---|--|--|--------------------------------------|-----------------------|--------------------------------------|-----------------------|
| | | | | Supported Panel Edges ^(f) | Intermediate Supports | Supported Panel Edges ^(f) | Intermediate Supports |
| 16 | Carpet and Pad | STURD-I-FLOOR 16 oc, 20 oc, 24 oc | 6d ring- or crew-shank ^(b) (0.120 x 2 in.) | 12 | 12 | 6 | 12 |
| | Separate Underlayment or Structural Finish Flooring | RATED SHEATHING 24/16, 32/16, 40/20, 48/24 | 8d common ^(d) (0.131 x 2-1/2 in.) | | | | |
| 19.2 | Carpet and Pad | STURD-I-FLOOR 20 oc, 24 oc | 6d ring- or screw-shank ^(b) (0.120 x 2 in.) | 12 | 12 | 6 | 12 |
| | Separate Underlayment or Structural Finish Flooring | RATED SHEATHING 40/20, 48/24 | 8d common (0.131 x 2-1/2 in.) | | | | |
| 24 | Carpet and Pad | STURD-I-FLOOR 24 oc, 32 oc, 48 oc | 6d ring- or screw-shank ^(b,c) (0.120 x 2 in.) | 12 | 12 | 6 | 12 |
| | Separate Underlayment or Structural Finish Flooring | RATED SHEATHING 48/24 | 8d common (0.131 x 2-1/2 in.) | | | | |
| 32 | Carpet and Pad | STURD-I-FLOOR 32 oc, 48 oc | 8d ring- or screw-shank ^(b) (0.131 x 2-1/2 in.) | 6 | 12 | 6 | 12 |
| 48 | Carpet and Pad | STURD-I-FLOOR 48 oc | 8d ring- or screw-shank ^(e) (0.131 x 2-1/2 in.) | 6 | 6 | 6 | 6 |

- (a) For panel recommendations under ceramic tile, refer to *APA Engineered Wood Construction Guide*, Form E30.
- (b) 8d common nails (0.131 x 2-1/2 in.) may be substituted if ring- or screw-shank nails are unavailable.
- (c) If a 7/8-inch-thick or thicker panel is used, attach with 8d ring- or screw-shank nails (0.131 x 2-1/2 in.). At supported panel edges use a nail spacing of 6-inches on center.
- (d) 6d common nails (0.113 x 2 in.) permitted if panel is 1/2 inch or thinner.
- (e) 10d common nails (0.148 x 3 in.) may be substituted with 1-1/8-inch panels if supports are well seasoned.
- (f) Fasten panels 3/8-inch from panel edges.

Complete all nailing of each panel before the glue sets or skins over. Check glue manufacturer’s recommendations for allowable time. Remember, warm weather accelerates glue setting.

Step 4: Nail panels correctly to prevent squeaks. The correct nail size and spacing for your job depends on your joist spacing and panel thickness, as well as the type of panel product you are using. Attachment schedules and fastener recommendations are provided in Table 1.

For other structural wood panel application recommendations and typical panel trademarks, see APA’s *Engineered Wood Construction Guide*, Form E30.

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