



# Engineered Wood Products



## Commercial Design & Installation Guide

### ROSEBURG FRAMING SYSTEM®

RigidLam® LVL • RigidLam® LVL Studs • RigidLam® LVL Columns  
RigidLam® LVL Stair Stringers • RigidRim® Rimboard • RFPT®-Joist

USA - ALLOWABLE STRESS DESIGN



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# Conscientious Stewards Of Our Environment.

These five words are the foundation for every action Roseburg takes in its interactions with the environment. The phrase means not just taking care of the lands, but making them better for future generations. Harvesting a tree is easy; studying how our harvest activity impacts everything around it and finding ways to improve upon the environment is more difficult.

We have been up to the task.

We are not only in the business of producing quality wood products, but also in the business of conserving and enhancing the wonderful natural resources that each of us enjoys. Visit any of our harvest sites, and you'll see these words in action.

While using tractors and skidders may often be the easiest and least expensive alternative for removing logs, we look at other, more environmentally-friendly harvesting options such as helicopter logging to protect the soils that grow our trees. Often, you'll find us placing large, woody debris in streams to enhance the fish spawning habitat, or replacing old culverts with larger, better-placed culverts to provide better fish passage.

Roseburg was among the first in the industry to set aside some of its own land in order to study and improve upon fish habitat. Several years ago, we began working with Oregon State University and other agencies on a company-owned area near the Hinkle Creek Watershed to gain current research on the effects of logging on fish. We are now lobbying other companies to replicate the study on their own lands.

Finally, it's important to note that we are a highly self-sufficient manufacturer. We now own more than 600,000 acres of timberland, which supply the majority of wood fiber we need to produce our products. The ability to rely on our own forests gives us the flexibility to match our resources to our product mix. We take a great deal of pride in our partnership with the natural world. However, we don't go to all of this effort and expense simply because it makes us feel good; we do it because it's the right thing to do.

- We manage our natural resources in a responsible manner
- Our EWP products enable builders to use timber resources more efficiently
- We offer composite panels and plywood products that have no added urea formaldehyde
- We have biomass cogeneration plants which use wood waste material from our mills to produce clean energy for our plants and nearby communities
- We produce a broad array of products that are SCS and EPP certified
- Our integrated manufacturing facilities dramatically reduce vehicle carbon emissions
- We plant over 5 million tree seedlings annually
- We are progressively involved in stream research and enhancement

## Design Support

The various charts and tables in this literature are based on accepted, typical loading conditions, on center spacing, deflection criteria and/or spans. **This printed information allows the end user to identify and install properly sized RFP engineered wood products without the need for specific design or engineering calculations.** Design software; however, such as Simpson Strong-Tie® Component Solutions™, allows the user to input project specific information into the software which may give a less restrictive solution than the generic information in the printed literature. Rest assured that both the literature and the Component Solutions™ software are based on the appropriate design properties listed in the current code reports.

For additional assistance with specific product design questions, product availability, and Roseburg representative locations, please visit our website at [www.Roseburg.com](http://www.Roseburg.com), or contact Roseburg Forest Products at 1-800-347-7260, or at the address listed on the back cover.

## Important

**All Roseburg Engineered Wood Products are intended and warranted for use in dry-service conditions (i.e. where the average equilibrium moisture content of solid-sawn lumber is less than 16%).**



# Safety & Construction Precautions

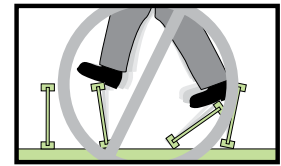
**WARNING:** I-joists and LVL beams are not stable until completely installed, and will not carry any load until fully braced and sheathed.

## AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

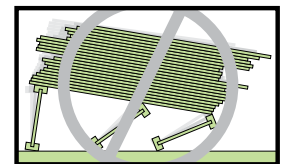
1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rimboard, and/or cross-bridging at joist ends.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.  
Temporary bracing or struts must be 1 x 4 inch minimum, at least 8 feet long, spaced no more than 8 feet on center, and must be secured with a minimum of two 8d nails fastened to the top surface of each I-joist. Nail bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists. Or, sheathing (temporary or permanent) can be nailed to the top flange of the first feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rimboard, or cross-bridging.
4. Install and nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only. See APA Technical Note number J735 "Temporary Construction Loads Over I-Joist Roofs and Floors" for additional information regarding proper stacking of building materials.
5. Never install a damaged I-joist or LVL beam.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for RFPI®-Joists or RigidLam® LVL, failure to properly use allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

*These are general recommendations and in some cases additional precautions may be required.*



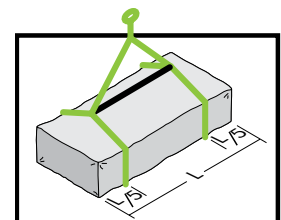
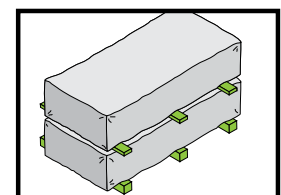
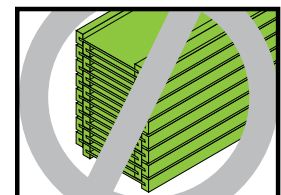
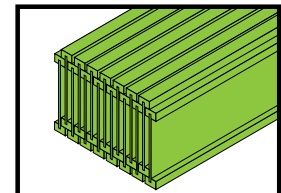
Do not allow workers to walk on I-joists or LVL beams until they are fully installed and braced, or serious injuries can result.



Never stack building materials over unbraced I-joists. Stack only over braced beams or walls.

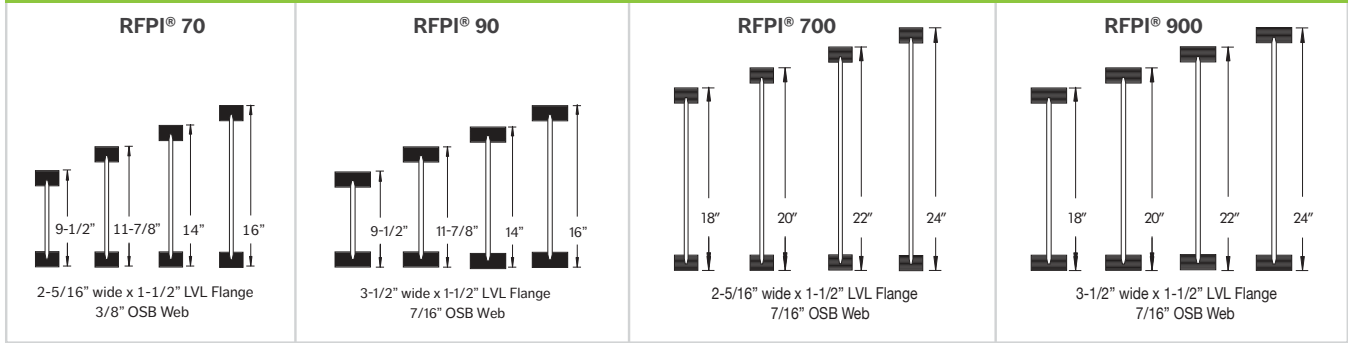
# Storage & Handling Guidelines

- Do not drop I-joists or LVL off the delivery truck. Best practice is use of a forklift or boom.
- Store bundles upright on a smooth, level, well-drained supportive surface.
- Do not store I-joists or LVL in direct contact with the ground. Bundles should be a minimum of 6" off the ground and supported every 10' or less.
- Always stack and handle I-joists in their upright position only.
- Place 2x or LVL spacers (at a maximum of 10' apart) between bundles stored on top of one another. Spacers above should be lined up with spacers below.
- Bundles should remain wrapped, strapped, and protected from the weather until time of installation.
- Do not lift I-joist bundles by top flange.
- Avoid excessive bowing or twisting of I-joists or LVL during all phases of handling and installation (i.e. measuring, sawing or placement). Never load I-joists in the flat-wise orientation.
- Take care to avoid forklift damage. Reduce forklift speed to avoid "bouncing" the load.
- When handling I-joists with a crane ("picking"), take a few simple precautions to prevent damage to the I-joists and injury to your work crew:
  - Pick I-joists in the bundles as shipped by the supplier.
  - Orient the bundles so that the webs of the I-joists are vertical.
  - Pick the bundles at the 5th points, using a spreader bar if necessary.
- Do not stack LVL bundles on top of I-Joist bundles.
- NEVER USE A DAMAGED I-JOIST OR LVL. All field repairs must be approved by a Design Professional.



# RFPI®-Joist Design Properties

## I-JOIST DIMENSIONS



**TABLE 1: DESIGN PROPERTIES FOR RFPI®-JOISTS<sup>(1)</sup>**

| Roseburg Designation | EI <sup>(2)</sup> x10 <sup>6</sup> lb-in <sup>2</sup> | M <sup>(3)</sup> lb-ft | V <sup>(4)</sup> lbs | VLC <sup>(5)</sup> lbs/ft | K <sup>(6)</sup> x10 <sup>6</sup> lb | Weight lb/ft |
|----------------------|---|------------------------|----------------------|---------------------------|--------------------------------------|--------------|
| 9-1/2" RFPI 70       | 266   | 5,130                  | 1,330                | 2,000                     | 4.94                                 | 2.57         |
| 11-7/8" RFPI 70      | 455   | 6,645                  | 1,550                | 2,000                     | 6.18                                 | 2.95         |
| 14" RFPI 70          | 672   | 7,925                  | 1,770                | 2,000                     | 7.28                                 | 3.21         |
| 16" RFPI 70          | 918   | 9,080                  | 1,970                | 2,000                     | 8.32                                 | 3.48         |
| 9-1/2" RFPI 90       | 398   | 7,830                  | 1,890                | 2,000                     | 4.94                                 | 3.70         |
| 11-7/8" RFPI 90      | 676   | 10,145                 | 2,050                | 2,000                     | 6.18                                 | 4.17         |
| 14" RFPI 90          | 992   | 12,100                 | 2,195                | 2,000                     | 7.28                                 | 4.51         |
| 16" RFPI 90          | 1,350   | 13,865                 | 2,330                | 2,000                     | 8.32                                 | 4.80         |
| 18" RFPI 700         | 1,245   | 10,450                 | 2,575                | 2,200                     | 11.34                                | 3.98         |
| 20" RFPI 700         | 1,579   | 11,600                 | 2,740                | 2,200                     | 12.60                                | 4.23         |
| 22" RFPI 700         | 1,955   | 12,740                 | 2,935                | 1,800                     | 13.86                                | 4.48         |
| 24" RFPI 700         | 2,375   | 13,870                 | 3,060                | 1,750                     | 15.12                                | 4.76         |
| 18" RFPI 900         | 1,849   | 16,080                 | 2,885                | 2,200                     | 11.34                                | 4.90         |
| 20" RFPI 900         | 2,337   | 17,855                 | 2,945                | 2,200                     | 12.60                                | 5.31         |
| 22" RFPI 900         | 2,886   | 19,615                 | 3,010                | 1,800                     | 13.86                                | 5.57         |
| 24" RFPI 900         | 3,496   | 21,355                 | 3,060                | 1,750                     | 15.12                                | 5.77         |

- The tabulated values are design values for 100% duration of load. All values except for EI and K are permitted to be adjusted for other load durations as permitted by code with the further exception that VLC shall not be increased for shorter durations of load. Design values listed are applicable for Allowable Stress Design (ASD).
- Bending stiffness (EI) of the I-joist.
- Moment capacity (M) of a single I-joist. Moment capacity of the I-joist shall not be increased by any repetitive member use factor.
- Shear capacity (V) of the I-joist.
- Vertical Load Capacity when continuously supported.
- Coefficient of shear deflection (K), used to calculate deflections for I-joist application. Equations 1 and 2 below are provided for uniform load and center point load conditions for simple spans.

Uniform Load:  $[1] \delta = \frac{5\omega\ell^4}{384EI} + \frac{\omega\ell^2}{K}$       Center-Point Load:  $[2] \delta = \frac{P\ell^3}{48EI} + \frac{2P\ell}{K}$

where:  
 $\delta$  = calculated deflection (in.)      EI = bending stiffness of the I-joist (lb-in<sup>2</sup>)  
 $\omega$  = uniform load (lb/in.)  
 $\ell$  = design span (in.)      K = coefficient of shear deflection (lb)  
P = concentrated load (lb)

**TABLE A: RFPI®-JOIST REACTION CAPACITIES WITH OR WITHOUT WEB STIFFENERS (W.S.)<sup>(1)(2)</sup>**

| Roseburg Designation | End Reaction (lbs) |           |                |           | Intermediate Reaction (lbs) |           |                |           |
|----------------------|--------------------|-----------|----------------|-----------|-----------------------------|-----------|----------------|-----------|
|                      | 1-3/4" Bearing     |           | 3-1/2" Bearing |           | 3-1/2" Bearing              |           | 5-1/4" Bearing |           |
|                      | No W.S.            | With W.S. | No W.S.        | With W.S. | No W.S.                     | With W.S. | No W.S.        | With W.S. |
| 9-1/2" RFPI 70       | 1,120              | 1,330     | 1,280          | 1,330     | 2,335                       | 2,500     | 2,550          | 2,650     |
| 11-7/8" RFPI 70      | 1,200              | 1,470     | 1,470          | 1,530     | 2,500                       | 2,625     | 2,660          | 2,870     |
| 14" RFPI 70          | 1,200              | 1,590     | 1,470          | 1,730     | 2,500                       | 2,740     | 2,755          | 3,065     |
| 16" RFPI 70          | 1,200              | 1,710     | 1,470          | 1,910     | 2,500                       | 2,850     | 2,850          | 3,250     |
| 9-1/2" RFPI 90       | 1,330              | 1,585     | 1,615          | 1,820     | 3,020                       | 3,445     | 3,445          | 3,475     |
| 11-7/8" RFPI 90      | 1,400              | 1,745     | 1,775          | 1,980     | 3,355                       | 3,475     | 3,475          | 3,675     |
| 14" RFPI 90          | 1,400              | 1,885     | 1,775          | 2,125     | 3,355                       | 3,500     | 3,500          | 3,850     |
| 16" RFPI 90          | 1,400              | 2,025     | 1,775          | 2,260     | 3,355                       | 3,525     | 3,525          | 4,025     |
| 18" RFPI 700         | 1,125              | 2,200     | 1,650          | 2,575     | 2,745                       | 4,050     | 3,025          | 4,475     |
| 20" RFPI 700         | 1,090              | 2,300     | 1,585          | 2,740     | 2,745                       | 4,050     | 3,025          | 4,475     |
| 22" RFPI 700         | -                  | 2,400     | -              | 2,935     | -                           | 4,150     | -              | 4,605     |
| 24" RFPI 700         | -                  | 2,500     | -              | 3,060     | -                           | 4,150     | -              | 4,605     |
| 18" RFPI 900         | 1,475              | 2,570     | 1,765          | 2,885     | 3,000                       | 5,110     | 3,475          | 5,710     |
| 20" RFPI 900         | 1,350              | 2,665     | 1,700          | 2,945     | 3,000                       | 5,110     | 3,475          | 5,710     |
| 22" RFPI 900         | -                  | 2,755     | -              | 3,010     | -                           | 5,405     | -              | 6,020     |
| 24" RFPI 900         | -                  | 2,850     | -              | 3,060     | -                           | 5,405     | -              | 6,020     |

**General Note: Determine the allowable reaction capacity from Table A and Table B and use the lesser of the two values. See Table A Notes and Table B Notes below.**

**Table A Notes:**

- The values in Table A are for 100% duration of load. Interpolation between tabulated values is permitted. All values in Table A shall be permitted to be adjusted for other load durations.
- Refer to *Web Stiffener Requirements* on page 9 for web stiffener size and nail requirements.

**TABLE B: RFPI-JOIST REACTION CAPACITIES BASED ON FLANGE COMPRESSION PERP.-TO-GRAIN<sup>(1)(2)</sup>**

| Roseburg Designation | End Reaction (lbs) |           |                |           | Intermediate Reaction (lbs) |           |                |           |
|----------------------|--------------------|-----------|----------------|-----------|-----------------------------|-----------|----------------|-----------|
|                      | 1-3/4" Bearing     |           | 3-1/2" Bearing |           | 3-1/2" Bearing              |           | 5-1/4" Bearing |           |
|                      | No W.S.            | With W.S. | No W.S.        | With W.S. | No W.S.                     | With W.S. | No W.S.        | With W.S. |
| All RFPI 70          | 2,475              |           | 4,955          |           | 5,490                       |           | 7,970          |           |
| All RFPI 90          | 3,830              |           | 7,660          |           | 8,480                       |           | 12,310         |           |
| All RFPI 700         | 2,475              |           | 4,955          |           | 5,490                       |           | 7,970          |           |
| All RFPI 900         | 3,830              |           | 7,660          |           | 8,480                       |           | 12,310         |           |

**Table B Notes:**

- Maximum allowable reaction capacity based on flange Fc perp. Interpolation between tabulated values in Table B is permitted.
- The values in Table B are for 100% duration of load and **shall not** be increased for shorter durations of load.



# Allowable Floor Clear Spans For RFPI®-Joists

Deflection Limits - Live Load = L/600 Total Load = L/360

## 50 PSF LIVE LOAD, 15 PSF PARTITION, 25 PSF DEAD LOAD AND 2,000 LB CONCENTRATED LOAD (2 1/2' X 2 1/2' FOOTPRINT)

| Joist Depth | Joist Series | Simple Span |           |            |           | Multiple Span |           |            |          |
|-------------|--------------|-------------|-----------|------------|-----------|---------------|-----------|------------|----------|
|             |              | 12" o.c.    | 16" o.c.  | 19.2" o.c. | 24" o.c.  | 12" o.c.      | 16" o.c.  | 19.2" o.c. | 24" o.c. |
| 9-1/2"      | RFPI 70      | 12' - 11"   | 10' - 10" | 9' - 8"    | 4' - 10"  | 15' - 4"      | 12' - 5"  | -          | -        |
| 11-7/8"     | RFPI 70      | 17' - 3"    | 14' - 8"  | 13' - 2"   | 6' - 6"   | 19' - 10"     | 17' - 3"  | 10' - 6"   | -        |
| 14"         | RFPI 70      | 20' - 9"    | 18' - 1"  | 16' - 4"   | 8' - 7"   | 22' - 7"      | 18' - 0"  | 15' - 0"   | 5' - 2"  |
| 16"         | RFPI 70      | 23' - 1"    | 20' - 11" | 19' - 4"   | 11' - 3"  | 25' - 1"      | 18' - 9"  | 15' - 7"   | 11' - 2" |
| 9-1/2"      | RFPI 90      | 15' - 6"    | 13' - 0"  | 11' - 7"   | 8' - 6"   | 18' - 6"      | 15' - 7"  | 13' - 11"  | 8' - 5"  |
| 11-7/8"     | RFPI 90      | 20' - 6"    | 17' - 6"  | 15' - 8"   | 12' - 1"  | 22' - 3"      | 20' - 1"  | 18' - 8"   | 12' - 1" |
| 14"         | RFPI 90      | 23' - 4"    | 21' - 1"  | 19' - 5"   | 16' - 1"  | 25' - 4"      | 22' - 11" | 19' - 2"   | 15' - 4" |
| 16"         | RFPI 90      | 25' - 10"   | 23' - 5"  | 22' - 0"   | 20' - 3"  | 28' - 1"      | 23' - 3"  | 19' - 4"   | 15' - 5" |
| 18"         | RFPI 700     | 25' - 8"    | 23' - 4"  | 22' - 0"   | 20' - 5"  | 28' - 0"      | 25' - 5"  | 22' - 3"   | 17' - 9" |
| 20"         | RFPI 700     | 27' - 10"   | 25' - 3"  | 23' - 10"  | 22' - 1"  | 30' - 3"      | 26' - 9"  | 22' - 3"   | 17' - 9" |
| 22"         | RFPI 700     | 29' - 10"   | 27' - 2"  | 25' - 7"   | 23' - 7"  | 32' - 6"      | 27' - 5"  | 22' - 10"  | 18' - 2" |
| 24"         | RFPI 700     | 31' - 11"   | 29' - 0"  | 27' - 4"   | 24' - 8"  | 34' - 9"      | 27' - 5"  | 22' - 10"  | 18' - 2" |
| 18"         | RFPI 900     | 28' - 11"   | 26' - 3"  | 24' - 8"   | 22' - 10" | 31' - 6"      | 28' - 6"  | 26' - 9"   | 22' - 5" |
| 20"         | RFPI 900     | 31' - 3"    | 28' - 4"  | 26' - 8"   | 24' - 9"  | 34' - 1"      | 30' - 10" | 28' - 2"   | 22' - 5" |
| 22"         | RFPI 900     | 33' - 7"    | 30' - 6"  | 28' - 8"   | 26' - 7"  | 36' - 7"      | 33' - 2"  | 29' - 9"   | 23' - 9" |
| 24"         | RFPI 900     | 35' - 10"   | 32' - 6"  | 30' - 7"   | 28' - 4"  | 39' - 0"      | 35' - 4"  | 29' - 9"   | 23' - 9" |

Deflection Limits - Live Load = L/480 Total Load = L/240

## 100 PSF LIVE LOAD, 25 PSF DEAD LOAD

| Joist Depth | Joist Series | Simple Span |           |            |           | Multiple Span |           |            |           |
|-------------|--------------|-------------|-----------|------------|-----------|---------------|-----------|------------|-----------|
|             |              | 12" o.c.    | 16" o.c.  | 19.2" o.c. | 24" o.c.  | 12" o.c.      | 16" o.c.  | 19.2" o.c. | 24" o.c.  |
| 9-1/2"      | RFPI 70      | 14' - 2"    | 12' - 10" | 12' - 0"   | 10' - 5"  | 15' - 4"      | 11' - 9"  | 9' - 9"    | 7' - 9"   |
| 11-7/8"     | RFPI 70      | 16' - 11"   | 15' - 4"  | 14' - 5"   | 11' - 7"  | 16' - 6"      | 12' - 4"  | 10' - 3"   | 8' - 2"   |
| 14"         | RFPI 70      | 19' - 3"    | 17' - 5"  | 15' - 9"   | 12' - 6"  | 17' - 3"      | 12' - 11" | 10' - 8"   | 8' - 6"   |
| 16"         | RFPI 70      | 21' - 4"    | 19' - 5"  | 16' - 11"  | 13' - 6"  | 18' - 0"      | 13' - 5"  | 11' - 2"   | 8' - 10"  |
| 9-1/2"      | RFPI 90      | 15' - 11"   | 14' - 4"  | 13' - 5"   | 12' - 5"  | 17' - 3"      | 15' - 6"  | 13' - 6"   | 10' - 9"  |
| 11-7/8"     | RFPI 90      | 19' - 0"    | 17' - 2"  | 16' - 1"   | 13' - 9"  | 20' - 7"      | 16' - 5"  | 13' - 8"   | 10' - 10" |
| 14"         | RFPI 90      | 21' - 7"    | 19' - 6"  | 18' - 3"   | 14' - 11" | 22' - 2"      | 16' - 6"  | 13' - 9"   | 10' - 11" |
| 16"         | RFPI 90      | 23' - 11"   | 21' - 8"  | 20' - 1"   | 16' - 0"  | 22' - 4"      | 16' - 8"  | 13' - 10"  | 11' - 0"  |
| 18"         | RFPI 700     | 23' - 10"   | 21' - 8"  | 20' - 3"   | 17' - 5"  | 25' - 7"      | 19' - 2"  | 15' - 11"  | 12' - 8"  |
| 20"         | RFPI 700     | 25' - 10"   | 23' - 5"  | 21' - 4"   | 18' - 3"  | 25' - 8"      | 19' - 2"  | 15' - 11"  | 12' - 8"  |
| 22"         | RFPI 700     | 27' - 9"    | 24' - 6"  | 22' - 5"   | 19' - 0"  | 26' - 4"      | 19' - 8"  | 16' - 4"   | 13' - 0"  |
| 24"         | RFPI 700     | 29' - 7"    | 25' - 7"  | 23' - 4"   | 19' - 7"  | 26' - 4"      | 19' - 8"  | 16' - 4"   | 13' - 0"  |
| 18"         | RFPI 900     | 26' - 10"   | 24' - 3"  | 22' - 10"  | 20' - 4"  | 29' - 2"      | 24' - 3"  | 20' - 2"   | 16' - 1"  |
| 20"         | RFPI 900     | 29' - 0"    | 26' - 4"  | 24' - 8"   | 21' - 2"  | 31' - 7"      | 24' - 3"  | 20' - 2"   | 16' - 1"  |
| 22"         | RFPI 900     | 31' - 2"    | 28' - 3"  | 26' - 6"   | 21' - 10" | 33' - 11"     | 25' - 8"  | 21' - 4"   | 17' - 0"  |
| 24"         | RFPI 900     | 33' - 3"    | 30' - 2"  | 28' - 4"   | 22' - 7"  | 34' - 4"      | 25' - 8"  | 21' - 4"   | 17' - 0"  |

Deflection Limits - Live Load = L/360 Total Load = L/240

## 125 PSF LIVE LOAD, 25 PSF DEAD LOAD

| Joist Depth | Joist Series | Simple Span |           |            |           | Multiple Span |           |            |           |
|-------------|--------------|-------------|-----------|------------|-----------|---------------|-----------|------------|-----------|
|             |              | 12" o.c.    | 16" o.c.  | 19.2" o.c. | 24" o.c.  | 12" o.c.      | 16" o.c.  | 19.2" o.c. | 24" o.c.  |
| 9-1/2"      | RFPI 70      | 14' - 6"    | 13' - 1"  | 10' - 11"  | 8' - 8"   | 13' - 1"      | 9' - 9"   | 8' - 1"    | 6' - 5"   |
| 11-7/8"     | RFPI 70      | 17' - 4"    | 14' - 6"  | 12' - 1"   | 9' - 7"   | 13' - 9"      | 10' - 3"  | 8' - 6"    | 6' - 9"   |
| 14"         | RFPI 70      | 19' - 9"    | 15' - 9"  | 13' - 1"   | 10' - 5"  | 14' - 4"      | 10' - 8"  | 8' - 10"   | 7' - 1"   |
| 16"         | RFPI 70      | 21' - 10"   | 16' - 11" | 14' - 1"   | 11' - 3"  | 14' - 11"     | 11' - 2"  | 9' - 3"    | 7' - 4"   |
| 9-1/2"      | RFPI 90      | 16' - 3"    | 14' - 8"  | 13' - 0"   | 10' - 5"  | 17' - 8"      | 13' - 6"  | 11' - 3"   | 8' - 11"  |
| 11-7/8"     | RFPI 90      | 19' - 5"    | 17' - 3"  | 14' - 4"   | 11' - 5"  | 18' - 3"      | 13' - 8"  | 11' - 4"   | 9' - 0"   |
| 14"         | RFPI 90      | 22' - 1"    | 18' - 8"  | 15' - 6"   | 12' - 5"  | 18' - 5"      | 13' - 9"  | 11' - 5"   | 9' - 1"   |
| 16"         | RFPI 90      | 24' - 6"    | 20' - 1"  | 16' - 8"   | 13' - 4"  | 18' - 6"      | 13' - 10" | 11' - 6"   | 9' - 2"   |
| 18"         | RFPI 700     | 23' - 5"    | 20' - 3"  | 18' - 2"   | 14' - 6"  | 21' - 4"      | 15' - 11" | 13' - 3"   | 10' - 6"  |
| 20"         | RFPI 700     | 24' - 8"    | 21' - 4"  | 19' - 0"   | 15' - 2"  | 21' - 4"      | 15' - 11" | 13' - 3"   | 10' - 6"  |
| 22"         | RFPI 700     | 25' - 11"   | 22' - 5"  | 19' - 10"  | 15' - 10" | 21' - 10"     | 16' - 4"  | 13' - 7"   | 10' - 10" |
| 24"         | RFPI 700     | 27' - 0"    | 23' - 4"  | 20' - 5"   | 16' - 4"  | 21' - 10"     | 16' - 4"  | 13' - 7"   | 10' - 10" |
| 18"         | RFPI 900     | 27' - 5"    | 24' - 11" | 21' - 3"   | 16' - 11" | 27' - 0"      | 20' - 2"  | 16' - 9"   | 13' - 4"  |
| 20"         | RFPI 900     | 29' - 8"    | 26' - 6"  | 22' - 0"   | 17' - 7"  | 27' - 0"      | 20' - 2"  | 16' - 9"   | 13' - 4"  |
| 22"         | RFPI 900     | 31' - 11"   | 27' - 4"  | 22' - 9"   | 18' - 2"  | 28' - 7"      | 21' - 4"  | 17' - 9"   | 14' - 2"  |
| 24"         | RFPI 900     | 33' - 7"    | 28' - 4"  | 23' - 7"   | 18' - 10" | 28' - 7"      | 21' - 4"  | 17' - 9"   | 14' - 2"  |

**Notes:**

Web stiffeners ARE Required for spans shown. See Web Stiffener Requirements on page 9.

- For 9-1/2" through 20" deep RFPI-Joists web stiffeners may or may not be required for shorter spans or other loading conditions. 22" and 24" deep RFPI-Joists always require web stiffeners at bearing locations. Use appropriate software or engineering analysis to determine if web stiffeners are required for other conditions.
- Clear span is the clear distance between the face of supports.
- Spans are based on uniform loads and concentrated loads as shown above. Use appropriate software or engineering analysis for other loading.
- A minimum of 1-3/4" is required for end bearing, 3-1/2" for intermediate bearing.
- Multiple Span lengths shown require adequate bottom flange lateral bracing.

- Spans are based on composite action with glued-nailed sheathing meeting the following APA requirements:

|                     | Min. Thickness | Span Rating | Floor Joist Spacing |
|---------------------|----------------|-------------|---------------------|
| Rated Sheathing     | 19/32"         | (40/20)     | 19.2" or less       |
| Rated Sheathing     | 23/32"         | (48/24)     | 24" or less         |
| Rated Sturd-I Floor | 19/32"         | 20" o.c.    | 19.2" or less       |
| Rated Sturd-I Floor | 23/32"         | 24" o.c.    | 24" or less         |

Adhesives shall meet APA Specification AFG-01 or ASTM D3498.



# Web Hole Specifications

One of the benefits of using RFPI-Joists in floor and roof construction is that holes may be cut in the joist webs to accommodate electrical wiring, plumbing lines and other mechanical systems, therefore minimizing the depth of the floor system.

## RULES FOR CUTTING HOLES IN RFPI-JOISTS

1. See charts on page 7 for allowable hole sizes and locations. The distance between the inside edge of the nearest support and the centerline of any hole shall not be less than that shown in the appropriate chart on page 7.
2. Except for cutting to length, NEVER cut, drill or notch I-joist flanges.
3. Whenever possible center holes vertically in the middle of the web. However, holes may be located vertically anywhere in the web provided a minimum of 1/8" of web remains between the edge of the hole and the flanges.
4. The maximum size hole that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4". A minimum of 1/8" should always be maintained between the top or bottom of the hole and the adjacent I-joist flange.
5. The sides of square holes or longest side of rectangular holes should not exceed three fourths of the diameter of the maximum round hole permitted at that location. Do not over-cut the sides of square or rectangular holes.
6. Where more than one hole is necessary, the distance between adjacent hole edges must be a minimum of twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole) and each hole must be sized and located in compliance with the requirements of the appropriate chart on page 7.
7. Knockouts are pre-scored holes for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2" in diameter, and are spaced approximately 16" on center along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field cutting holes. For floor applications, positioning the I-joists so the knockouts are all on the bottom of the joist, may ease the installation of electrical wiring or residential sprinkler systems. DO NOT hammer holes in web, except at knockouts.
8. A knockout is not considered a hole and may be utilized anywhere it occurs. It can be ignored for purposes of calculating minimum distances between holes.
9. 1 1/2" holes shall be permitted anywhere in a cantilevered section of an RFPI-Joist. Holes of greater size may be permitted subject to verification.
10. A 1 1/2" hole can be placed anywhere in the web provided that it meets the requirements of rule 6 on this page.
11. A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them. (See diagram on page 7).
12. All holes shall be cut in a workman-like manner in accordance with the restrictions listed herein.

## HOW TO USE HOLE CHARTS ON PAGE 7

1. Choose appropriate Hole Chart  
Hole Chart 1 is for office floor loading with a 2,000 lb. concentrated load. (appropriate load combinations of 50 live, 15 partition, 25 dead and a 2-1/2' x 2-1/2' - 2,000 lb. concentrated load)  
Hole Chart 2 is for corridor or light storage uniform loads. (100 or 125 live and 25 dead load)
2. Read across the top of Hole Chart to the desired hole size.
3. Follow this column down to the row that represents the I-joist depth and series. This number indicates the minimum distance from the face of the nearest support to the centerline of the hole.

Example: Need a 12 1/2-inch hole in an 18" RFPI®-700 joist in a floor corridor:

From Hole Chart 2 (corridor):

For a 12-inch round hole, the minimum distance is 10'-6".

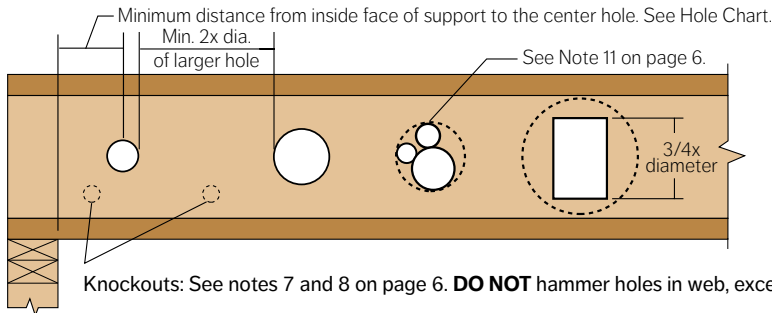
For a 13-inch round hole, the minimum distance is 12'-0".

Therefore the minimum distance for the 12 1/2-inch round hole is 11'-3" (halfway between 10'-6" and 12'-0").



**Never** drill, cut or notch the flange, or over-cut the web. Holes in webs should be cut with a sharp saw. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Start the rectangular hole by drilling a 1"-diameter hole in each of the four corners and then make the cuts between the holes to minimize damage to the I-joist.

# Holes For RFPI®-Joists Used in Commercial Floor Applications



**RFPI-JOIST TYPICAL HOLES - See "HOW TO USE HOLE CHARTS" and "Rules for Cutting Holes in RFPI Joists" on page 6**

**50 PSF live load, 15 PSF partition load, 25 PSF dead load and a 2-1/2' x 2-1/2'-2,000 lb. concentrated load\***

## HOLE CHART 1 - MINIMUM DISTANCE FROM INSIDE FACE OF NEAREST JOIST SUPPORT TO CENTER OF HOLE <sup>(1) (2)</sup>

| Joist Series    | Round Hole Diameter (in)  |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
|-----------------|---|--------|-------|--------|--------|---------|---------|---------|---------|---------|----|----|----|----|----|----|----|----|----|--|
|                 | 2   | 3      | 4     | 5      | 6      | 7       | 8       | 9       | 10      | 11      | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |  |
|                 | Minimum Distance from Inside Face of Nearest Support to Center of Hole (ft-in) <sup>(1) (2)</sup> |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 9-1/2" RFPI 70  |   |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 11-7/8" RFPI 70 |   |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 14" RFPI 70     |   |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 16" RFPI 70     | 4'-8"   | 7'-2"  |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 9-1/2" RFPI 90  |   |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 11-7/8" RFPI 90 | 5'-8"   |        |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 14" RFPI 90     | 4'-2"   | 7'-3"  |       |        |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 16" RFPI 90     | 1'-6"   | 4'-5"  | 7'-4" | 10'-3" |        |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 18" RFPI 700    | 0'-7"   | 0'-8"  | 3'-3" | 6'-1"  | 8'-11" |         |         |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 20" RFPI 700    | 0'-7"   | 0'-8"  | 0'-8" | 2'-2"  | 4'-11" | 7'-8"   | 10'-5"  |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 22" RFPI 700    | 0'-7"   | 0'-8"  | 0'-8" | 0'-9"  | 1'-3"  | 3'-11"  | 6'-7"   | 9'-3"   | 11'-11" |         |    |    |    |    |    |    |    |    |    |  |
| 24" RFPI 700    | 0'-7"   | 0'-8"  | 0'-8" | 0'-9"  | 0'-9"  | 1'-2"   | 3'-8"   | 6'-3"   | 8'-10"  | 11'-4"  |    |    |    |    |    |    |    |    |    |  |
| 18" RFPI 900    | 0'-7"   | 0'-10" | 1'-9" | 4'-6"  | 7'-9"  | 10'-11" | 14'-2"  |         |         |         |    |    |    |    |    |    |    |    |    |  |
| 20" RFPI 900    | 0'-7"   | 0'-8"  | 1'-5" | 2'-6"  | 5'-0"  | 7'-11"  | 10'-10" | 13'-10" |         |         |    |    |    |    |    |    |    |    |    |  |
| 22" RFPI 900    | 0'-7"   | 0'-9"  | 1'-8" | 2'-8"  | 3'-8"  | 6'-0"   | 8'-9"   | 11'-6"  | 14'-2"  |         |    |    |    |    |    |    |    |    |    |  |
| 24" RFPI 900    | 0'-7"   | 0'-8"  | 1'-1" | 2'-1"  | 3'-2"  | 4'-4"   | 6'-3"   | 8'-9"   | 11'-4"  | 13'-11" |    |    |    |    |    |    |    |    |    |  |

**\*IMPORTANT:**  
Hole Chart 1 is applicable for office floor loading using the appropriate load combinations of 50 live, 15 partition, 25 dead and a 2,000 lb concentrated load with a 2-1/2' x 2-1/2' footprint located anywhere along the I-joist.

**Notes:**

- Distances in this hole chart are conservatively based on the maximum allowed single or multi-span applications with the appropriate load combinations of 50 PSF live, 15 PSF partition, 25 PSF dead and a 2-1/2' x 2-1/2' - 2,000 lb. concentrated load at on-center spacings of 12", 16", 19.2" or 24". **Holes that fall outside of these hole chart guidelines may still be acceptable based on actual span and loading conditions.**

- The most accurate method of determining the acceptability of a given hole is the use of appropriate software or engineering analysis for the actual condition.
- Hole location distance is measured from inside face of nearest support to center of hole.
- Use appropriate software or engineering analysis to analyze duct chase openings.

**100 or 125 PSF live load and 25 PSF dead load\***

## HOLE CHART 2 - MINIMUM DISTANCE FROM INSIDE FACE OF NEAREST JOIST SUPPORT TO CENTER OF HOLE <sup>(1) (2)</sup>

| Joist Series    | Round Hole Diameter (in)  |        |        |        |        |        |        |       |        |        |        |         |         |        |        |         |         |        |        |  |
|-----------------|---|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|---------|---------|--------|--------|---------|---------|--------|--------|--|
|                 | 2   | 3      | 4      | 5      | 6      | 7      | 8      | 9     | 10     | 11     | 12     | 13      | 14      | 15     | 16     | 17      | 18      | 19     | 20     |  |
|                 | Minimum Distance from Inside Face of Nearest Support to Center of Hole (ft-in) <sup>(1) (2)</sup> |        |        |        |        |        |        |       |        |        |        |         |         |        |        |         |         |        |        |  |
| 9-1/2" RFPI 70  | 1'-6"   | 2'-7"  | 3'-10" | 5'-2"  | 6'-8"  |        |        |       |        |        |        |         |         |        |        |         |         |        |        |  |
| 11-7/8" RFPI 70 | 1'-0"   | 1'-8"  | 2'-5"  | 3'-6"  | 4'-8"  | 6'-0"  | 7'-4"  |       |        |        |        |         |         |        |        |         |         |        |        |  |
| 14" RFPI 70     | 0'-7"   | 1'-1"  | 1'-10" | 2'-7"  | 3'-7"  | 4'-7"  | 5'-8"  | 6'-9" | 8'-0"  |        |        |         |         |        |        |         |         |        |        |  |
| 16" RFPI 70     | 0'-7"   | 0'-8"  | 1'-3"  | 2'-2"  | 3'-1"  | 4'-0"  | 5'-0"  | 6'-0" | 7'-1"  | 8'-3"  | 9'-6"  |         |         |        |        |         |         |        |        |  |
| 9-1/2" RFPI 90  | 1'-4"   | 2'-9"  | 4'-2"  | 5'-9"  | 7'-6"  |        |        |       |        |        |        |         |         |        |        |         |         |        |        |  |
| 11-7/8" RFPI 90 | 0'-7"   | 1'-5"  | 2'-8"  | 3'-11" | 5'-3"  | 6'-11" | 8'-8"  |       |        |        |        |         |         |        |        |         |         |        |        |  |
| 14" RFPI 90     | 0'-7"   | 0'-11" | 1'-9"  | 2'-10" | 4'-2"  | 5'-7"  | 7'-1"  | 8'-8" | 10'-5" |        |        |         |         |        |        |         |         |        |        |  |
| 16" RFPI 90     | 0'-7"   | 0'-9"  | 1'-6"  | 2'-4"  | 3'-2"  | 4'-0"  | 5'-1"  | 6'-5" | 7'-11" | 9'-5"  | 11'-0" |         |         |        |        |         |         |        |        |  |
| 18" RFPI 700    | 0'-7"   | 0'-8"  | 0'-11" | 1'-7"  | 2'-6"  | 3'-9"  | 5'-0"  | 6'-3" | 7'-7"  | 9'-0"  | 10'-6" | 12'-0"  | 13'-9"  |        |        |         |         |        |        |  |
| 20" RFPI 700    | 0'-7"   | 0'-8"  | 0'-8"  | 1'-2"  | 1'-9"  | 2'-4"  | 3'-2"  | 4'-4" | 5'-7"  | 6'-10" | 8'-1"  | 9'-6"   | 10'-11" | 12'-5" | 14'-1" |         |         |        |        |  |
| 22" RFPI 700    | 0'-7"   | 0'-8"  | 0'-8"  | 0'-9"  | 1'-3"  | 1'-10" | 2'-5"  | 3'-1" | 4'-0"  | 5'-2"  | 6'-4"  | 7'-7"   | 8'-11"  | 10'-3" | 11'-8" | 13'-2"  | 14'-10" |        |        |  |
| 24" RFPI 700    | 0'-7"   | 0'-8"  | 0'-8"  | 0'-9"  | 0'-10" | 1'-5"  | 1'-11" | 2'-6" | 3'-2"  | 3'-10" | 4'-7"  | 5'-9"   | 6'-11"  | 8'-1"  | 9'-4"  | 10'-8"  | 12'-1"  | 13'-6" | 15'-1" |  |
| 18" RFPI 900    | 0'-7"   | 1'-1"  | 2'-2"  | 3'-3"  | 4'-5"  | 5'-7"  | 6'-10" | 8'-1" | 9'-5"  | 10'-9" | 12'-3" | 13'-10" | 15'-9"  |        |        |         |         |        |        |  |
| 20" RFPI 900    | 0'-7"   | 0'-11" | 1'-8"  | 2'-6"  | 3'-6"  | 4'-9"  | 6'-1"  | 7'-5" | 8'-9"  | 10'-2" | 11'-8" | 13'-2"  | 14'-10" | 16'-6" | 18'-5" |         |         |        |        |  |
| 22" RFPI 900    | 0'-7"   | 0'-10" | 1'-9"  | 2'-10" | 4'-0"  | 5'-2"  | 6'-4"  | 7'-7" | 8'-10" | 10'-1" | 11'-5" | 12'-10" | 14'-3"  | 15'-9" | 17'-4" | 19'-1"  | 20'-10" |        |        |  |
| 24" RFPI 900    | 0'-7"   | 1'-0"  | 1'-7"  | 2'-4"  | 3'-5"  | 4'-5"  | 5'-6"  | 6'-8" | 7'-10" | 9'-0"  | 10'-2" | 11'-5"  | 12'-8"  | 14'-0" | 15'-5" | 16'-10" | 18'-4"  | 20'-0" | 21'-9" |  |

**\*IMPORTANT:**  
Hole Chart 2 is applicable for Uniform Loads of 100 or 125 PSF Live Load and 25 PSF Dead Load ONLY.

**Notes:**

- Distances in this hole chart are conservatively based on **uniformly loaded joists** and the maximum allowed single or multi-span applications with 100 live/25 dead or 125 live/25 dead at on-center spacings of 12", 16", 19.2" or 24". **Holes that fall outside of these hole chart guidelines (e.g. floors with concentrated loads) may still be acceptable based on actual span and loading conditions.** The most accurate

- method of determining the acceptability of a given hole is the use of appropriate software or engineering analysis for the actual condition.
- Hole location distance is measured from inside face of nearest support to center of hole.
- Use appropriate software or engineering analysis to analyze duct chase openings.

# Allowable Floor Uniform Load For RFPI®-Joists (plf)

| Joist Clear Span (ft) | RFPI 70 (2-5/16" wide x 1-1/2" flanges) |       |         |       |      |       |      |       | RFPI 90 (3-1/2" wide x 1-1/2" flanges) |       |         |       |      |       |      |       |
|-----------------------|---|-------|---------|-------|------|-------|------|-------|--|-------|---------|-------|------|-------|------|-------|
|                       | 9-1/2"                                  |       | 11-7/8" |       | 14"  |       | 16"  |       | 9-1/2"                                 |       | 11-7/8" |       | 14"  |       | 16"  |       |
|                       | Live                                    | Total | Live    | Total | Live | Total | Live | Total | Live                                   | Total | Live    | Total | Live | Total | Live | Total |
| 8                     | -                                       | 241   | -       | 253   | -    | 264   | -    | 274   | -                                      | 332   | -       | 334   | -    | 336   | -    | 339   |
| 10                    | 177                                     | 193   | -       | 203   | -    | 211   | -    | 220   | 239                                    | 266   | -       | 268   | -    | 270   | -    | 272   |
| 12                    | 110                                     | 161   | -       | 169   | -    | 176   | -    | 183   | 153                                    | 222   | -       | 224   | -    | 225   | -    | 226   |
| 14                    | 73                                      | 138   | 119     | 145   | -    | 151   | -    | 157   | 103                                    | 190   | 164     | 192   | -    | 193   | -    | 194   |
| 16                    | 51                                      | 121   | 84      | 127   | 119  | 132   | -    | 137   | 72                                     | 166   | 117     | 168   | 164  | 168   | -    | 169   |
| 18                    | 36                                      | 88    | 60      | 112   | 87   | 117   | 116  | 122   | 52                                     | 127   | 85      | 149   | 121  | 149   | -    | 150   |
| 20                    | 27                                      | 65    | 45      | 101   | 65   | 105   | 87   | 109   | 39                                     | 94    | 64      | 134   | 91   | 134   | 121  | 135   |
| 22                    | -                                       | -     | 34      | 83    | 50   | 96    | 67   | 99    | 30                                     | 71    | 49      | 120   | 71   | 122   | 94   | 122   |
| 24                    | -                                       | -     | 27      | 64    | 39   | 87    | 53   | 91    | 23                                     | 55    | 39      | 93    | 56   | 111   | 74   | 112   |
| 26                    | -                                       | -     | 21      | 51    | 31   | 75    | 42   | 84    | -                                      | -     | 31      | 74    | 45   | 103   | 60   | 103   |
| 28                    | -                                       | -     | -       | -     | 25   | 60    | 34   | 77    | -                                      | -     | 25      | 59    | 36   | 86    | 49   | 96    |
| 30                    | -                                       | -     | -       | -     | -    | -     | 28   | 67    | -                                      | -     | -       | 30    | 70   | 40    | 89   |       |
| 32                    | -                                       | -     | -       | -     | -    | -     | 23   | 55    | -                                      | -     | -       | 25    | 58   | 33    | 79   |       |
| 34                    | -                                       | -     | -       | -     | -    | -     | -    | -     | -                                      | -     | -       | -     | -    | 28    | 66   |       |
| 36                    | -                                       | -     | -       | -     | -    | -     | -    | -     | -                                      | -     | -       | -     | -    | 24    | 55   |       |
| 38                    | -                                       | -     | -       | -     | -    | -     | -    | -     | -                                      | -     | -       | -     | -    | -     | -    |       |

**To Use PLF Charts:**

1. Find appropriate I-Joist series and depth.
2. Select the span required.
3. Compare the design total load to the Total Load column and compare the design live load to the Live Load column.
4. Select a product that **meets or exceeds** both the design total and live loads.

**Floor PLF Chart Notes:**

1. See GENERAL NOTES below.
2. Live load column is based on an L/600 deflection limit.
3. For a live load deflection limit of L/480 multiply the L/600 value by 1.25.
4. Deflection under total load is limited to L/240.
5. Total load is based on 100% duration of load.

| Joist Clear Span (ft) | RFPI 700 (2-5/16" wide x 1-1/2" flanges) |       |      |       |      |       |      |       | RFPI 900 (3-1/2" wide x 1-1/2" flanges) |       |      |       |      |       |      |       |
|-----------------------|--|-------|------|-------|------|-------|------|-------|---|-------|------|-------|------|-------|------|-------|
|                       | 18"                                      |       | 20"  |       | 22"  |       | 24"  |       | 18"                                     |       | 20"  |       | 22"  |       | 24"  |       |
|                       | Live                                     | Total | Live | Total | Live | Total | Live | Total | Live                                    | Total | Live | Total | Live | Total | Live | Total |
| 8                     | -  | 390   | -    | 390   | -    | 400   | -    | 399   | -                                       | 493   | -    | 492   | -    | 521   | -    | 520   |
| 10                    | -  | 313   | -    | 313   | -    | 321   | -    | 320   | -                                       | 395   | -    | 395   | -    | 418   | -    | 417   |
| 12                    | -  | 261   | -    | 261   | -    | 267   | -    | 267   | -                                       | 330   | -    | 329   | -    | 348   | -    | 348   |
| 14                    | -  | 224   | -    | 224   | -    | 229   | -    | 229   | -                                       | 283   | -    | 282   | -    | 299   | -    | 298   |
| 16                    | -  | 196   | -    | 196   | -    | 200   | -    | 200   | -                                       | 247   | -    | 247   | -    | 261   | -    | 261   |
| 18                    | 157                                      | 174   | -    | 174   | -    | 178   | -    | 178   | 218                                     | 220   | -    | 219   | -    | 232   | -    | 232   |
| 20                    | 118                                      | 156   | 147  | 156   | -    | 160   | -    | 160   | 166                                     | 197   | -    | 197   | -    | 208   | -    | 208   |
| 22                    | 91                                       | 142   | 114  | 142   | 139  | 145   | -    | 145   | 129                                     | 179   | 159  | 179   | -    | 189   | -    | 189   |
| 24                    | 71                                       | 130   | 89   | 130   | 109  | 133   | 131  | 132   | 102                                     | 164   | 126  | 164   | 153  | 173   | -    | 173   |
| 26                    | 57                                       | 118   | 72   | 119   | 88   | 122   | 105  | 122   | 82                                      | 151   | 102  | 151   | 123  | 159   | 147  | 159   |
| 28                    | 46                                       | 101   | 58   | 111   | 71   | 113   | 86   | 113   | 66                                      | 140   | 83   | 140   | 101  | 148   | 121  | 148   |
| 30                    | 38                                       | 88    | 48   | 98    | 59   | 106   | 71   | 105   | 55                                      | 130   | 68   | 130   | 83   | 138   | 100  | 137   |
| 32                    | 32                                       | 75    | 40   | 85    | 49   | 94    | 59   | 98    | 46                                      | 109   | 57   | 122   | 70   | 129   | 84   | 129   |
| 34                    | 26                                       | 62    | 33   | 75    | 41   | 83    | 49   | 90    | 38                                      | 91    | 48   | 114   | 59   | 121   | 71   | 121   |
| 36                    | 22                                       | 52    | 28   | 67    | 35   | 73    | 42   | 80    | 33                                      | 77    | 41   | 97    | 50   | 114   | 60   | 114   |
| 38                    | -  | -     | 24   | 56    | 30   | 65    | 36   | 71    | 28                                      | 65    | 35   | 82    | 43   | 102   | 52   | 107   |
| 40                    | -  | -     | -    | -     | 26   | 59    | 31   | 64    | 24                                      | 55    | 30   | 70    | 37   | 87    | 45   | 100   |
| 42                    | -  | -     | -    | -     | 22   | 51    | 27   | 58    | -                                       | -     | 26   | 61    | 32   | 75    | 39   | 90    |
| 44                    | -  | -     | -    | -     | -    | -     | 24   | 52    | -                                       | -     | 23   | 52    | 28   | 65    | 34   | 79    |
| 46                    | -  | -     | -    | -     | -    | -     | -    | -     | -                                       | -     | -    | -     | 25   | 57    | 30   | 69    |
| 48                    | -  | -     | -    | -     | -    | -     | -    | -     | -                                       | -     | -    | -     | -    | 26    | 60   |       |
| 50                    | -  | -     | -    | -     | -    | -     | -    | -     | -                                       | -     | -    | -     | -    | 23    | 53   |       |
| 52                    | -  | -     | -    | -     | -    | -     | -    | -     | -                                       | -     | -    | -     | -    | -     | -    |       |

**General Notes:**

1. Web stiffeners are required for the PLF loads shown. See Web Stiffener Requirements on Page 9.
2. For 9-1/2" through 20" deep RFPI-Joists web stiffeners may or may not be required for PLF loads lighter than those shown. 22" and 24" deep RFPI-Joists always require web stiffeners at bearing locations. Use appropriate software or engineering analysis to determine if web stiffeners are required for other PLF loading.
3. Table values apply to uniformly loaded simple or multiple span joists.
4. Clear span is the clear distance between the face of supports.
5. Use appropriate software or engineering analysis to analyze multiple span joists if the length of any span is less than half the length of an adjacent span.
6. Minimum end bearing length is 1-3/4". Minimum intermediate bearing length is 3-1/2".
7. This table does not account for added stiffness from glued or nailed sheathing.
8. Use appropriate software or engineering analysis to analyze conditions outside of the scope of this table such as cantilevers and concentrated loads.
9. Both live and total loads must be checked – live load against the Live column and total load against the Total column. When no value is shown in the Live column, total load will govern.
10. Verify that the deflection criteria conforms to local building code requirements.
11. Provide lateral support at bearing points and continuous lateral support along the compression flange of each joist.
12. For proper installation procedures, refer to the appropriate sections in this publication.





# Web Stiffener Requirements

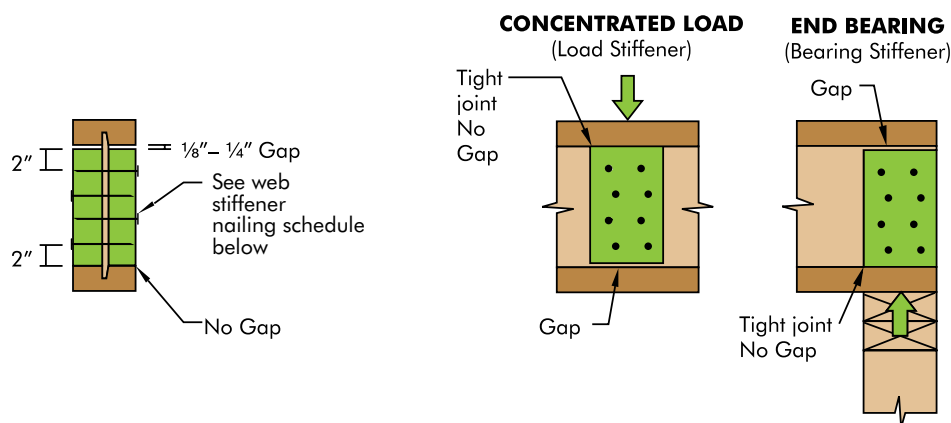
**Web stiffeners are required for all 22" and 24" deep RFPI joist applications. Depending on the loads and spans, web stiffeners may or may not be required for 9-1/2" through 20" deep RFPI joists. The span charts and PLF tables in this guide are based on the use of web stiffeners for all series and depths.** For other conditions, use appropriate software or engineering analysis to determine if web stiffeners are required. A web stiffener is a block of plywood, OSB, or 2x that is added to stiffen the I-joist's web, increase the bearing surface between the web and the flange, and provide additional support for a hanger or other connector. **The proper installation of web stiffeners is very important, particularly for deeper depth I-joists which are capable of carrying large loads and developing high reactions.** When used at end or intermediate bearings, web stiffeners must be installed on both sides of the web and tight against the bottom flange of the I-joist, but with a minimum 1/8" gap between the top of the stiffener and the bottom of the top flange. **Web stiffeners must be made of Utility grade SPF (south) or better for lumber and/or Sheathing grade or better for wood structural panels.**

Web stiffeners are also required for the following:

- When sides of the hangers do not laterally brace the top flange of the I-joist.
- When I-joists are designed to support concentrated loads greater than 1,500 lbs applied to the I-joist's top flange between supports. In these applications only, the gap between the web stiffener and the flange shall be at the bottom flange. (See Figure B below.)

Web stiffeners may be cut in the field as required for the application.

**FIGURE B**  
**RFPI-JOIST WEB STIFFENER REQUIREMENTS**



| TABLE B: WEB STIFFENER NAILING SCHEDULE |                           |                            |                                    |
|---|---------------------------|----------------------------|------------------------------------|
| RFPI®-Joist Series                      | Joist Depth               | Minimum Web Stiffener Size | Nail Requirement                   |
| RFPI 70                                 | 9-1/2", 11-7/8", 14", 16" | 7/8" x 2-5/16"             | 4 - 8d box (0.113" dia x 2-1/2")   |
| RFPI 90                                 | 9-1/2", 11-7/8", 14", 16" | 1-1/2" x 2-5/16" *         | 4 - 10d box (0.128" dia x 3")      |
| RFPI 700                                | 18" & 20"                 | 7/8" x 3-1/2"              | 8 - 8d box (0.113" dia x 2-1/2")   |
| RFPI 700                                | 22" & 24"                 | 7/8" x 3-1/2"              | 10 - 8d box (0.113" dia x 2-1/2")  |
| RFPI 900                                | 18" & 20"                 | 1-1/2" x 3-1/2" *          | 8 - 16d box (0.135" dia x 3-1/2")  |
| RFPI 900                                | 22" & 24"                 | 1-1/2" x 3-1/2" *          | 10 - 16d box (0.135" dia x 3-1/2") |

\* 2x4 sawn lumber permitted. (see paragraph above)

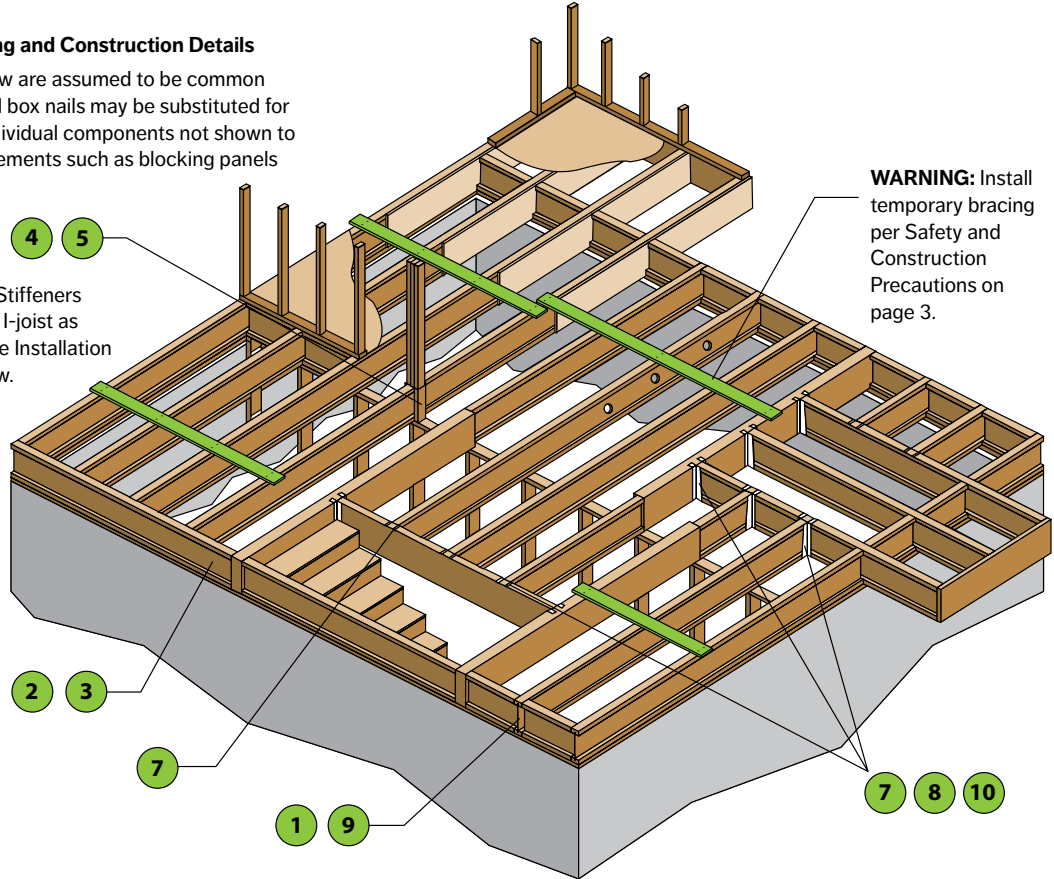
# Floor Framing & Construction Details

## Typical RFPI®-Joist floor Framing and Construction Details

All nails shown in the details below are assumed to be common nails unless otherwise noted. 10d box nails may be substituted for 8d common shown in details. Individual components not shown to scale for clarity. Some framing elements such as blocking panels have been omitted for clarity.

Install Web Stiffeners each side of I-joist as required. See Installation Note 2 below.

**WARNING:** Install temporary bracing per Safety and Construction Precautions on page 3.



### Installation Notes:

- Except for cutting to length, top and bottom flanges of RFPI-Joists shall not be cut, drilled or notched.
- Web stiffeners are required for all 22" and 24" deep RFPI joist applications. Depending on the loads and spans, web stiffeners may or may not be required for 9-1/2" through 20" deep RFPI joists.
- Install joist hangers per hanger manufacturers recommendations.
- Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist web.
- Any fastening, resistance to uplift or application not specifically detailed is subject to local approval.
- I-joist end bearing length must be at least 1-3/4". Intermediate bearings of multiple span joists must be at least 3-1/2".
- Engineered lumber must not remain in direct contact with concrete or masonry construction and must be used in **dry-service conditions only**.
- RFPI-Joists must be restrained against rotation at the ends of joists by use of rimboard, rim joists, blocking panels, or cross-bracing. To laterally support cantilevered joists, blocking panels must also be installed over supports nearest the cantilever.
- Additionally, rimboard, rim joists, blocking panels, or squash blocks must be provided under all exterior walls and interior load bearing walls to transfer loads from above to the wall or foundation below.
- Plywood or OSB subfloor nailed to the top flange of an RFPI-Joist is adequate to provide lateral support.
- Install I-joists so that top and bottom flanges are straight and remain within 1/2 inch of true alignment.
- Roseburg does not require mid-span blocking or bridging in RFPI floor or roof applications.
- RFPI-Joists are produced without camber so either flange can be the top or bottom flange; however, orienting the floor I-joists so the pre-scored knockouts are on the bottom may ease installation of electrical wiring or residential sprinkler systems.
- See table below for recommended sheathing attachment with nails. If sheathing is to be attached with screws, the screw size should be equal to or only slightly larger than the recommended nail size. Space the screws the same as the required nail spacing. The unthreaded shank of the screw should extend beyond the thickness of the panel to assure that the panel is pulled securely against the I-joist flange. Use screws intended for structural assembly of wood structures. It is recommended to use screws from a manufacturer that can provide an ICC-ES Report (or similar) with approved application specifications and design values. Drywall screws can be brittle and should not be used.

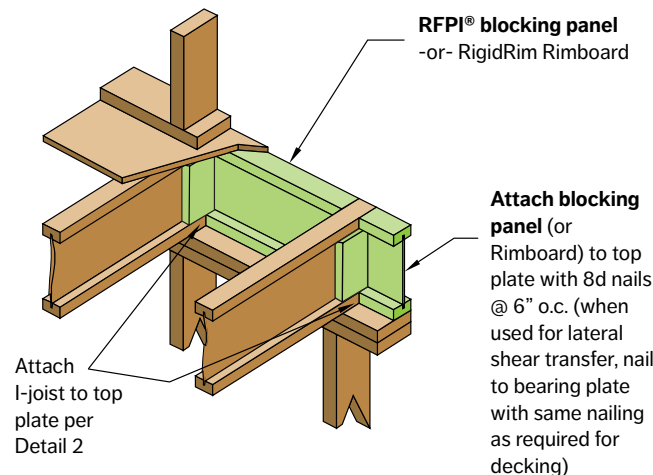
## RECOMMENDED NAIL SIZE & SPACING <sup>(a)</sup>

| Flange Material    | Fastener Diameter <sup>(d)(e)</sup>  | Flange Face Nailing (in) <sup>(b)(c)</sup> |              | Flange Edge Nailing (in) |                           |  |
|--------------------|--|--|--------------|--------------------------|---------------------------|--|
|                    |  | End Distance                               | Nail Spacing | End Distance             | Nailed to one flange edge | Nailed to both flange edges <sup>(f)</sup> |
| LVL Flange I-Joist | dia. ≤ 0.128" (8d box or sinker, 10d box or sinker, 12d box)                   | 3  | 2            | 3                        | 3                         | 6  |
|                    | 0.128" ≤ dia. ≤ 0.148" (8d com, 10d com, 12d sinker or com, 16d box or sinker) | 3  | 3            | 3                        | 3 <sup>(g)</sup>          | 6 <sup>(g)</sup>                           |

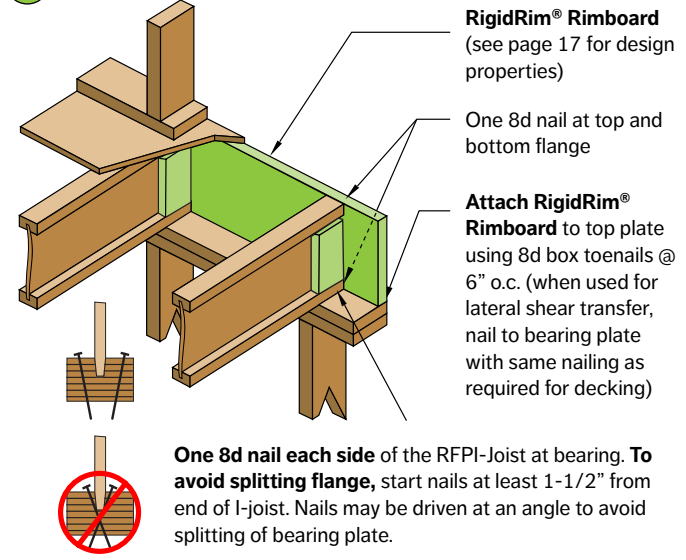
### Installation Notes:

- Nail spacings shown are guidelines for RFPI®-Joists used in conventional framing applications. For cases where horizontal diaphragm load capacity is required, refer to diaphragm table on page 19 (or Table 8 of ICC-ES ESR-1251 or Table 4 of APA Product Report® PR-L259) for allowable diaphragm loads and the applicable RFPI® Joist series, panel grade and thickness, and nail size and spacing.
- For conventional framing, attach sheathing to RFPI-Joist in accordance with applicable building code or approved building plan. However, do not use nails larger or spaced closer than shown in the table above.
- If more than one row of nails is required, rows must be offset by at least 1/2" and staggered.
- 14 gauge staples may be substituted for 8d (2-1/2") nails if staples penetrate the joist at least 1".
- 10d (3") box nails may be substituted for 8d (2-1/2") common nails.
- Nails on opposing flange edges must be offset one-half the minimum spacing.
- Maximum of 0.131" diameter (8d common)

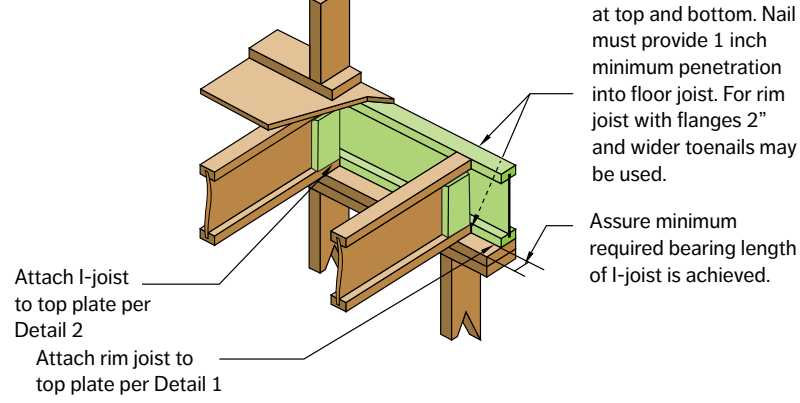
**1 BLOCKING PANELS**



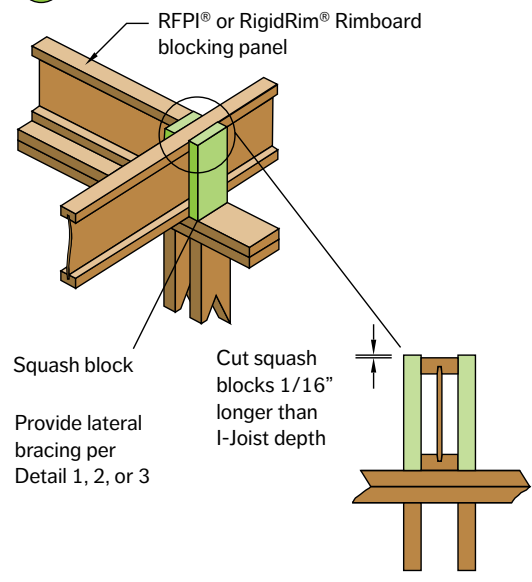
**2 RIGIDRIM® RIMBOARD**



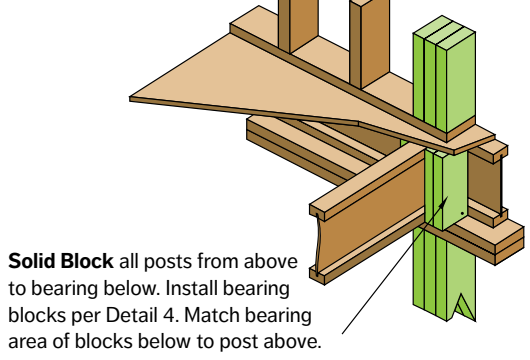
**3 RFPI® RIM JOIST**



**4 SQUASH BLOCK DETAIL**

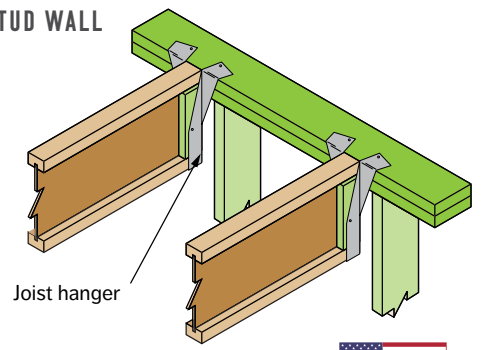


**5 BEARING BLOCK DETAIL**

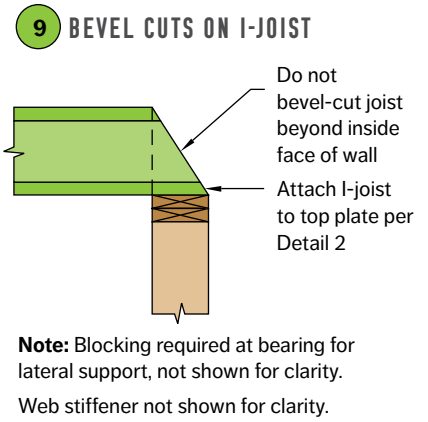
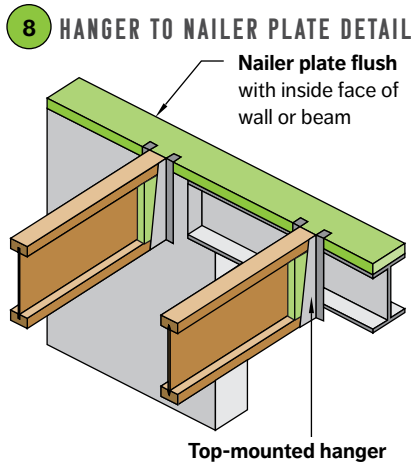
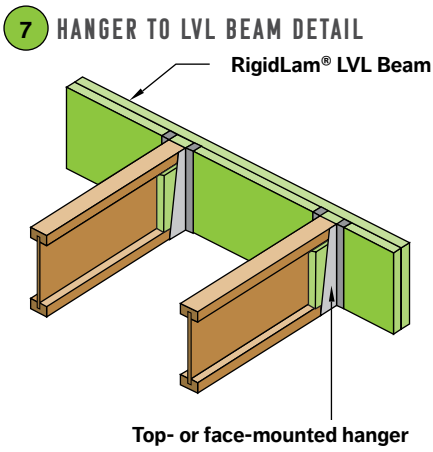


| Pair of Squash Blocks | Maximum vertical load per pair of squash blocks (lb) |             |
|-----------------------|--|-------------|
|                       | 3-1/2" wide  | 5-1/2" wide |
| 2x lumber             | 3,800  | 5,900       |

**6 HANGER ON STUD WALL**



**Note: Web stiffeners are shown in every detail for illustrative purposes. Web stiffeners are required for all 22" and 24" deep RFPI joist applications. Depending on the loads and spans, web stiffeners may or may not be required for 9-1/2" through 20" deep RFPI joists.**



**Backer Block and Header Detail**

Backer block required for face-mount hangers (both sides of I-joist) & when top mount hanger load exceeds 250 lbs.

See charts below for backer block thickness & depth.

Install backer block tight to the top flange.

Attach backer block to web with 16 - 10d (3") common nails, clinched. See chart below for maximum capacity for this detail.

Backer block must be wide enough to permit required nailing without splitting (min. width of 12" recommended)

**General Notes:**

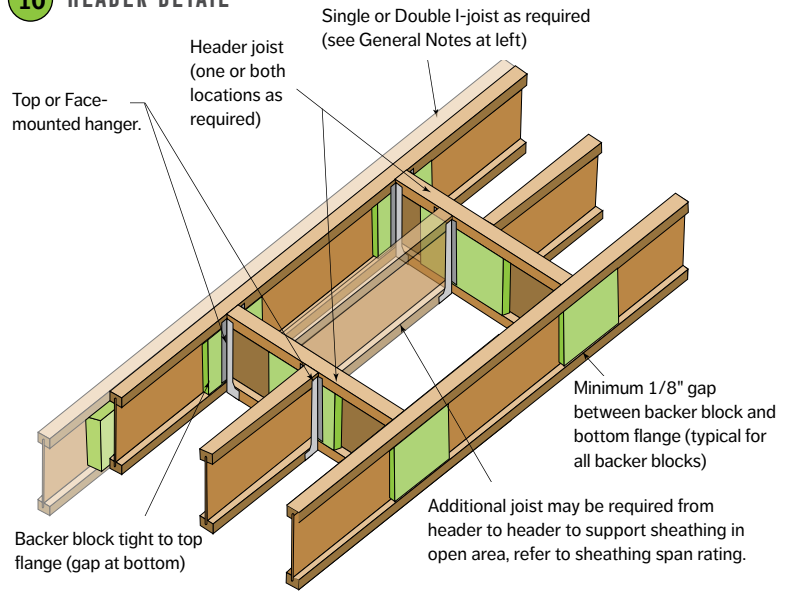
For hanger capacity see hanger manufacturer recommendations.

Verify I-joist capacity to support concentrated load from "header joist" in addition to all other loads.

If a double I-joist is required to support "header joist" load, refer to Detail 20 on Page 15 for filler block and double I-joist connection guidelines.

Before installing a backer block to a double I-joist, drive 4 additional 10d nails from both sides of double I-joist through the webs and filler block at backer block location. Clinch nails.

**10 HEADER DETAIL**



| I-Joist Flange Width | Backer block Material Thickness Required <sup>(a)(b)</sup> | Max. load capacity using 16-10d com. nails |
|----------------------|--|--|
| 2-5/16"              | 1"   | 1,250 lbs                                  |
| 3-1/2"               | 1-1/2"   | 1,250 lbs                                  |

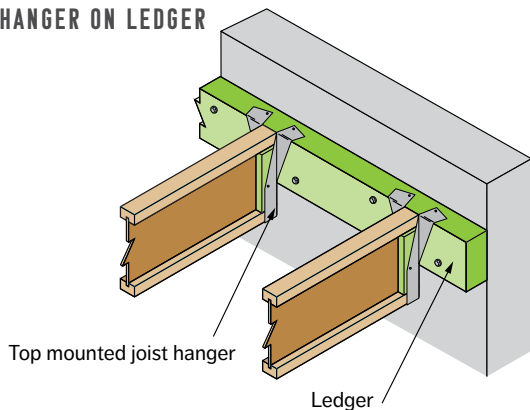
(a) Minimum grade for backer material shall be Utility grade SPF or better for solid sawn lumber and Rated Sheathing grade for wood structural panels.

(b) Glue 2-ply backer blocks together with construction grade adhesive (ASTM D-3498)

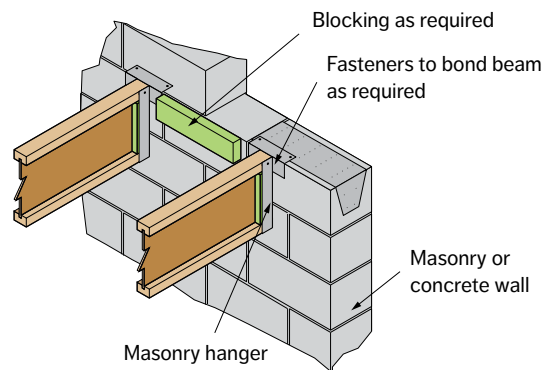
**BACKER BLOCK DEPTH**

| Joist Depth  | 9-1/2" | 11-7/8" | 14"     | 16"     | 18"     | 20"     | 22"     | 24"     |
|--|--------|---------|---------|---------|---------|---------|---------|---------|
| <b>Top Mount Hangers - Min Backer Block Depth</b>    | 5-1/2" | 5-1/2"  | 7-1/4"  | 7-1/4"  | 9-1/4"  | 9-1/4"  | 9-1/4"  | 9-1/4"  |
| <b>Face Mount Hangers - Req'd Backer Block Depth</b> | 6-1/4" | 8-5/8"  | 10-3/4" | 12-3/4" | 14-3/4" | 16-3/4" | 18-3/4" | 20-3/4" |

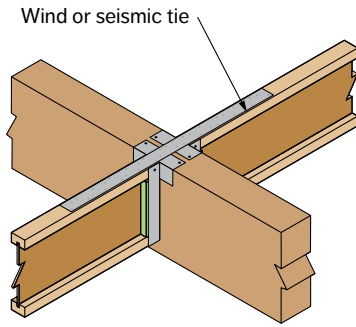
**11 HANGER ON LEDGER**



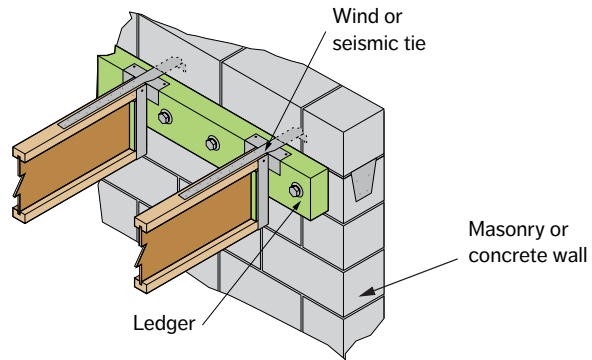
**12 HANGER ON MASONRY WALL**



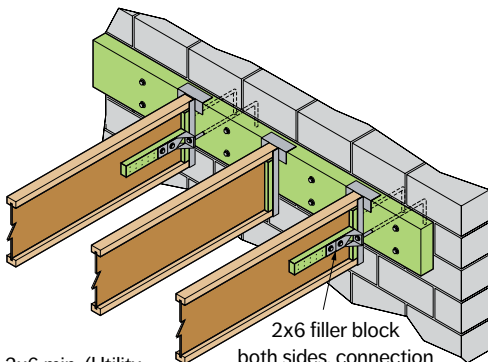
**13 WIND OR SEISMIC TIE AT BUTTING JOIST**



**14 WALL TENSION TIE - WITH STRAPS**



**15 WIND OR SEISMIC WALL TENSION TIE**

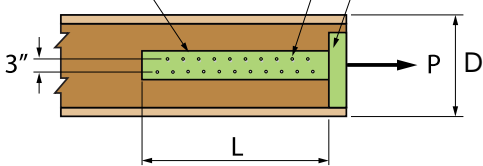


2x6 min. (Utility grade SPF south or better) each side (see calculations at right). Filler block may be placed anywhere on web depth; however, at or above I-joist mid-height is preferred.

2x6 filler block both sides, connection hardware one or both sides

Two rows 16d (0.135" x 3-1/2") nails at 3" o.c.

Web stiffener as required



To calculate the length "L" of the 2x6 block (attached to both sides of RFPI joist):

1. Find required length of block based on RFPI joist shear capacity.

$$L_1 = \frac{0.75(ZP)D}{(C_D V_A) - (0.75V_{LL} + V_{DL})}$$

Find number of nails required:

$$n = \frac{ZP}{C_D V_n}$$

3. Find required length of block based on number of nails. Use 2 rows of 16d (0.135" x 3-1/2") box nails at 3" o.c. with 3" end distance

$$L_2 = \frac{3n + 3}{2}$$

4. Use the larger of  $L_1$  and  $L_2$  to determine the minimum required length of 2x6 block.

P = Axial load (lbs) due to unfactored wind or seismic from ASCE 7-10 or 7-16

D = Depth of I-joist

$C_D$  = Load duration factor = 1.6 for wind or seismic

$L_1, L_2$  = Length "L" of block (in.). Use larger of  $L_1$  and  $L_2$

Z = 0.6 for wind; 0.7 for seismic

n = Number of 16d (0.135" x 3-1/2") nails

$V_A$  = Allowable shear load (lbs) on RFPI joist at 100% DOL (See page 4)

$V_{LL}$  = Design shear load due to gravity live or snow load (lbs)

$V_{DL}$  = Design shear load due to gravity dead load (lbs)

$V_n$  = 16d (0.135" x 3-1/2") box nail shear capacity; see table below

| RFPI Web Thickness | $V_n$ @ 100% (lbs) |
|--------------------|--------------------|
| 3/8"               | 107                |
| 7/16"              | 124                |

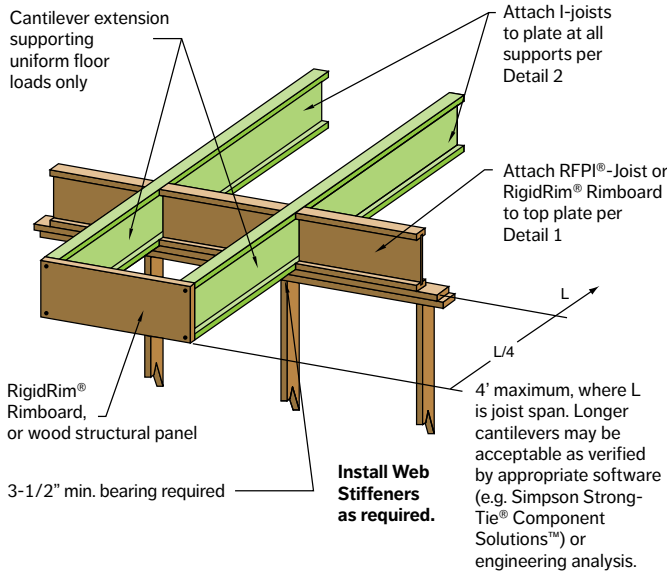


**CANTILEVER DETAILS**

Please refer to note 8 on page 10.

**16 RFPI®-JOIST INTERIOR CANTILEVER DETAIL**

Cantilever extension supporting uniform floor loads only



**17 LUMBER CANTILEVER DETAIL FOR BALCONIES**

Backer block equal to or deeper than cantilever extension member. See Detail 10 for backer block thickness. Install backer block tight to bottom flange. Minimum of 1/4" gap between backer block and top of I-joist. Nail with 2 rows of 10d nails @ 6" o.c. and clinch. Install web stiffener as required above backer block and on opposite side of I-joist per standard web stiffener instructions.

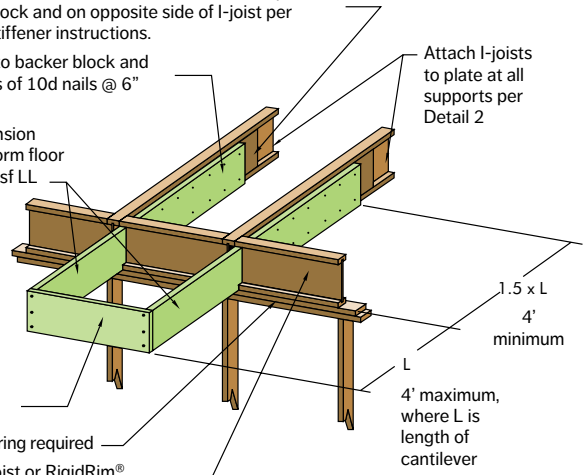
2x8 min.<sup>(1)</sup> Nail to backer block and joist with 2 rows of 10d nails @ 6" o.c. and clinch.

Cantilever extension supporting uniform floor loads only (60 psf LL plus 10 psf DL max.)

Lumber or wood structural panel closure

3-1/2" min. bearing required

Attach RFPI®-Joist or RigidRim® Rimboard to top plate per Detail 1



(1) See APA Technical Topic TT-125 for additional information regarding required size, grade and design considerations for lumber cantilevers.

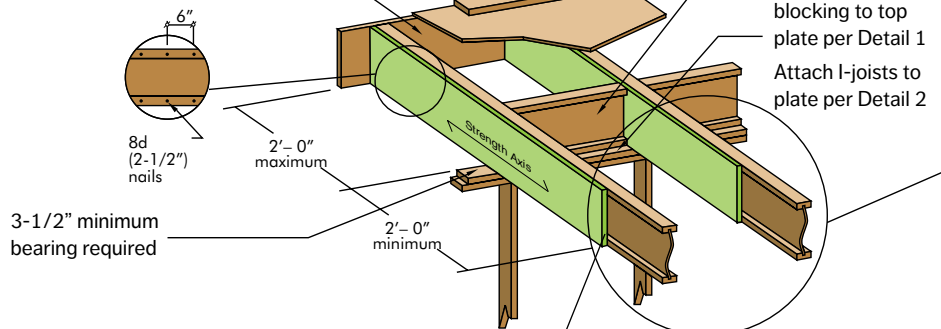
**18 CANTILEVER DETAIL FOR VERTICAL BUILDING OFFSET**

Use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis to determine required reinforcement.

**METHOD 1**

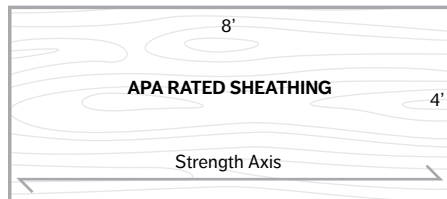
Sheathing Reinforcement One Side

RigidRim® Rimboard or wood structural panel closure (23/32" minimum thickness), attach per Detail 2



APA RATED SHEATHING 48/24 (minimum thickness 23/32"), or RigidRim Rimboard, required on sides of I-joist. Depth shall match the full height of the I-joist. Nail with 8d nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per Detail 2.

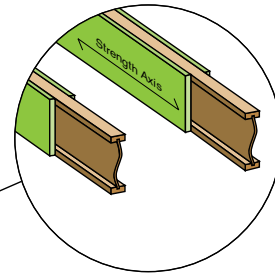
**Reinforcement does not function as a web stiffener. Install web stiffeners as required prior to attaching reinforcement.**



**METHOD 2**

Sheathing Reinforcement Two Sides

Use same installation as Method 1 but reinforce both sides of I-joist with sheathing or RigidRim Rimboard



Use nailing pattern shown for Method 1 with opposite face nailing offset by 3"

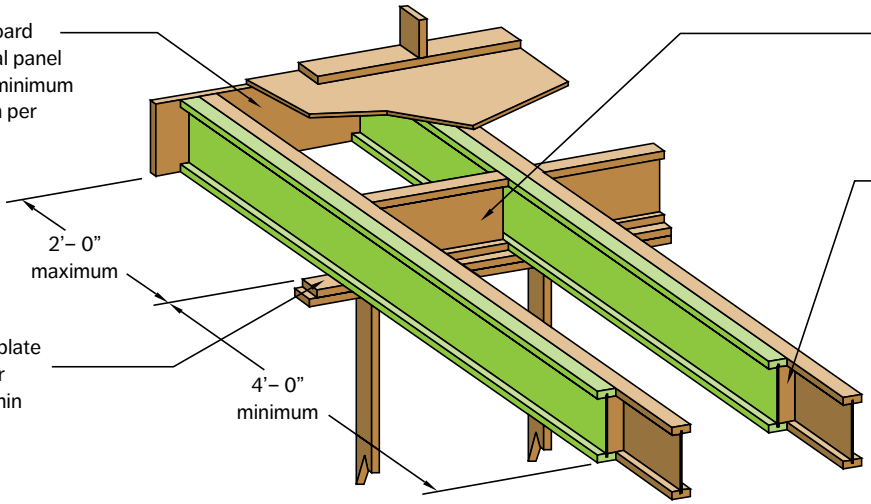
**19 CANTILEVER DETAIL FOR VERTICAL BUILDING OFFSET**

**ALTERNATIVE METHOD 2**

Double RFPI®-Joist

**RigidRim®** Rimboard or wood structural panel closure (22/32" minimum thickness), attach per Detail 2

Attach I-joists to plate at all supports per Detail 2. 3-1/2" min bearing required



Attach RFPI®-Joist blocking panel or RigidRim® Rimboard blocking to top plate per Detail 1

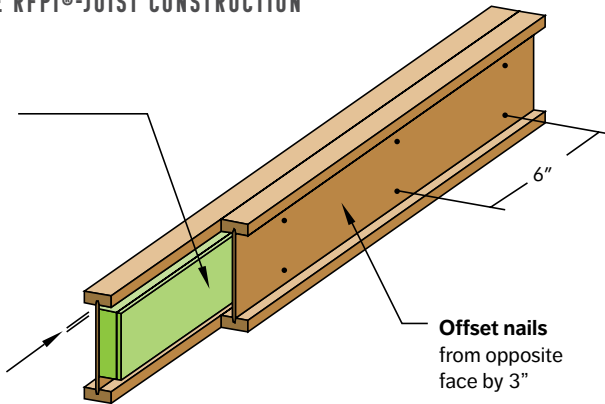
Block I-joists together with filler blocks for the full length of the reinforcement, sized and attached in accordance with Detail 20 below. For I-joist flange widths greater than 3 inches place an additional row of 10d nails along the centerline of the reinforcing panel from each side. Clinch when possible.

**Filler block does not function as a web stiffener. If web stiffeners are required it is recommended to install continuous filler block and install web stiffener below filler block prior to attaching I-joist reinforcement. Leave a 1/4" gap between top of filler block and bottom of top I-joist flange. Web stiffeners must be tight between top of bottom flange and bottom of filler block.**

**20 DOUBLE RFPI®-JOIST CONSTRUCTION**

**Filler blocking** per Table A

1/8"-1/4" gap between top flange and filler block



**Offset nails** from opposite face by 3"

**Notes:**

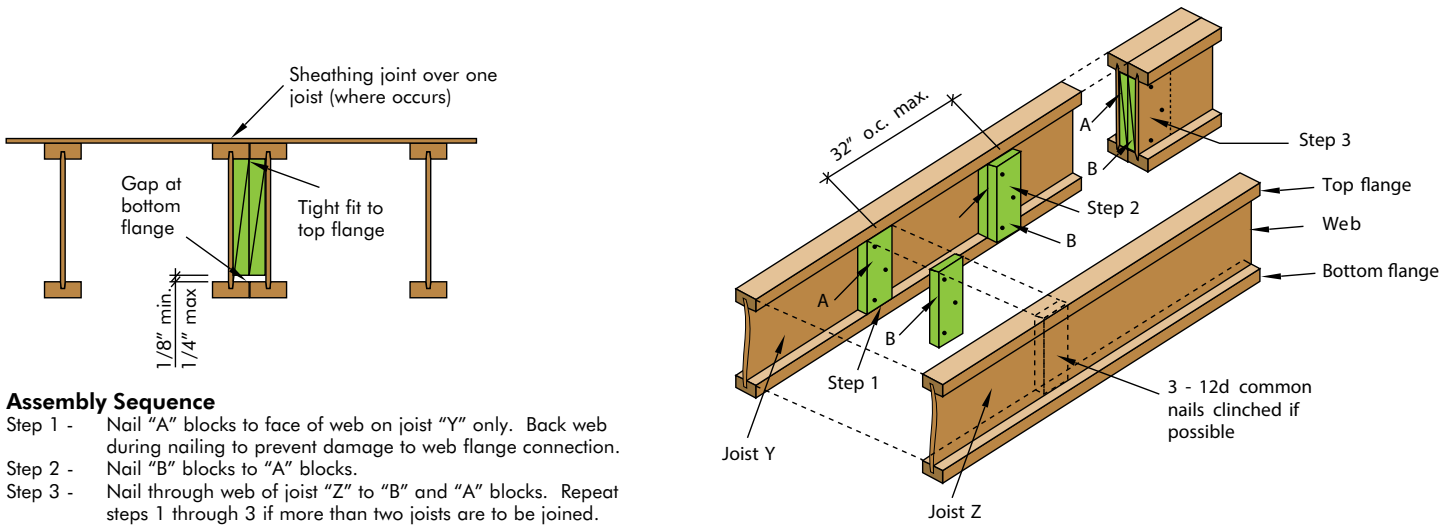
1. Filler blocks do not function as web stiffeners. Install web stiffeners as required.
2. Support back of I-joist web during nailing to prevent damage to web/flange connection.
3. Leave a 1/8"-1/4" gap between top of filler block and bottom of I-joist top flange.
4. For side-loaded conditions or cantilever reinforcement, filler block is required between joists for full length of double members.
5. Nail joists together with two rows of 10d nails at 6" o.c. (staggered) on each side of the double I-joist. Total of 8 nails per foot required.
6. The maximum load that may be applied to one side of the double joist using this detail is 620 lbs/ft.

**TABLE A: FILLER BLOCK REQUIREMENTS FOR DOUBLE RFPI®-JOIST CONSTRUCTION**

| Flange Width | Joist Depth | Joist Series | Min. Net Filler Block Thickness | Recommended Minimum Filler Block Size |
|--------------|-------------|--------------|---------------------------------|---------------------------------------|
| 2-5/16"      | 9.5"        | 70           | 2"                              | 5-1/2"                                |
|              | 11.875"     | 70           | 2"                              | 5-1/2"                                |
|              | 14"         | 70           | 2"                              | 7-1/4"                                |
|              | 16"         | 70           | 2"                              | 7-1/4"                                |
|              | 18"         | 700          | 2"                              | 9-1/4"                                |
|              | 20"         | 700          | 2"                              | 9-1/4"                                |
|              | 22"         | 700          | 2"                              | 9-1/4"                                |
| 3-1/2"       | 9.5"        | 90           | 3"                              | 5-1/2"                                |
|              | 11.875"     | 90           | 3"                              | 5-1/2"                                |
|              | 14"         | 90           | 3"                              | 7-1/4"                                |
|              | 16"         | 90           | 3"                              | 7-1/4"                                |
|              | 18"         | 900          | 3"                              | 9-1/4"                                |
|              | 20"         | 900          | 3"                              | 9-1/4"                                |
|              | 22"         | 900          | 3"                              | 9-1/4"                                |
| 24"          | 900         | 3"           | 9-1/4"                          |                                       |



**21 DOUBLE I-JOIST - (FOR UNIFORMLY TOP-LOADED I-JOISTS ONLY)**  
 Block thickness should be equal to or slightly thicker than flange overhang.

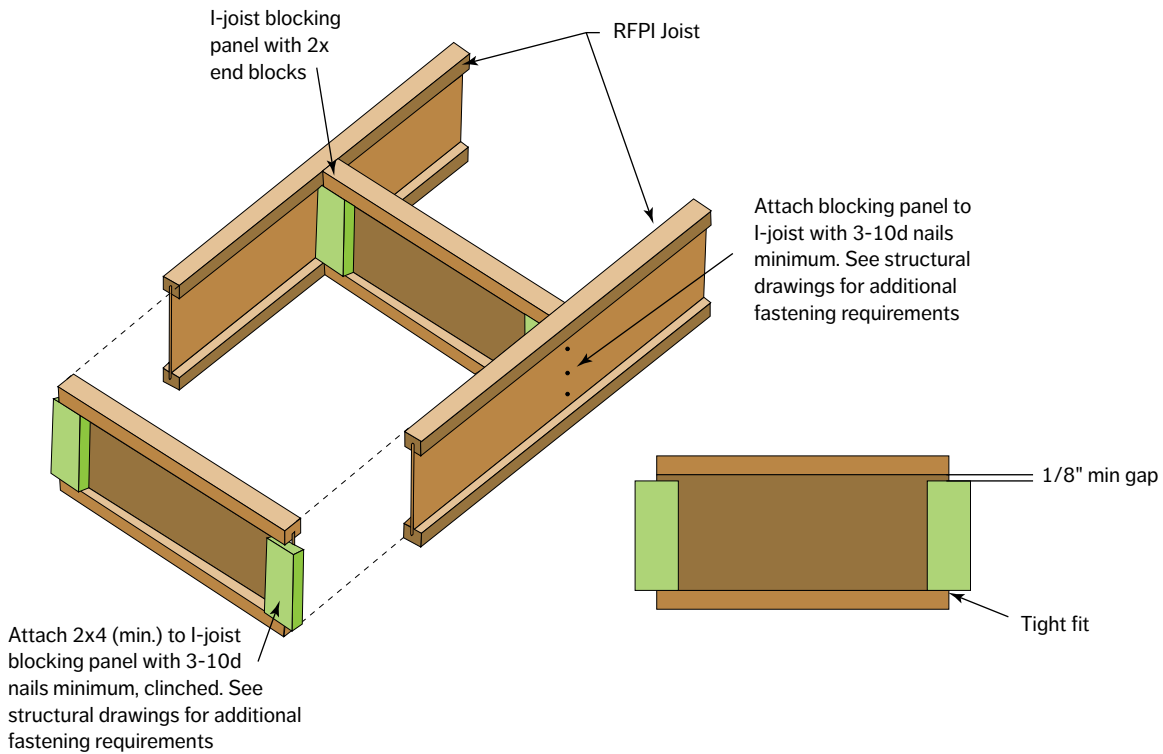


**Assembly Sequence**

- Step 1 - Nail "A" blocks to face of web on joist "Y" only. Back web during nailing to prevent damage to web flange connection.
- Step 2 - Nail "B" blocks to "A" blocks.
- Step 3 - Nail through web of joist "Z" to "B" and "A" blocks. Repeat steps 1 through 3 if more than two joists are to be joined.

**22 BLOCKING PANEL**

Note: If mid-span blocking is required per the project specifications this is one method for field installation of blocking panels. There may be other acceptable methods and/or attachment requirements.





# RigidRim® OSB & LVL Rimboard Specifications

As a component of the Roseburg Framing System®, RigidRim® rimboard allows your customers to quickly frame the perimeter of their floor system and is one of the most cost effective methods to properly transfer vertical and horizontal loads around the I-joist and directly into the supporting walls. RigidRim rimboard is dimensionally stable and resists shrinking and warping. It also provides a smooth nailing surface for the attachment of exterior sheathing, siding and ledgers. Refer to page 11 for additional framing information.

RigidRim rimboard is currently available in the following materials, thicknesses and grades\*:

- 1-1/8" RigidRim® OSB Rimboard
- 1-1/8" RigidRim® Plus OSB Rimboard
- 1-1/2" & 1-3/4" 1.4E RigidRim® LVL Rimboard

\*Not all products are available in all markets. Contact your Roseburg EWP representative for availability.

The RigidRim OSB rimboard products are available in lengths up to 24 ft., and the 1.4E RigidRim LVL rimboard is available in lengths up to 60 ft.

All RigidRim rimboard products are manufactured in accordance with ANSI/APA PRR 410 Standard for Performance-Rated Engineered Wood Rim Boards which meets or exceeds the requirements given in the ICC-ES Acceptance Criteria for Wood-Based Rim Board Products, AC 124. Furthermore, the 1.4E LVL rimboard is included in ICC-ES code report ESR-1210. See Table 1 below for RigidRim rimboard design capacities. All RigidRim rimboard products have been tested in the edgewise bending orientation and therefore may be designed for applications to support loads over window and door openings. See Table 2 below for allowable design properties for edgewise bending. See Table 3 below for allowable uniform loads for specified spans (see APA publication W345 Performance Rated Rim Boards® for additional information).



**TABLE 1: RIGIDRIM RIMBOARD DESIGN CAPACITIES <sup>(1)(2)(3)</sup>**

|                    | Rimboard Thickness (in) | Horizontal Load (plf)  | Vertical Load (plf)                     | 1/2" Lag Screw Load (lbs) <sup>(4)</sup> | Post Load (lbs)    |
|--------------------|-------------------------|------------------------|---|--|--------------------|
| RigidRim® OSB      | 1-1/8"                  | 180 (8d box or common) | 4,850 <sup>5</sup> / 3,200 <sup>6</sup> | 350                                      | 3,500 <sup>7</sup> |
| RigidRim® Plus OSB | 1-1/8"                  | 200 (8d box or common) | 4,850 <sup>5</sup> / 3,200 <sup>6</sup> | 350                                      | 3,500 <sup>7</sup> |
| 1.4E RigidRim® LVL | 1-1/2"                  | 215 (8d box or common) | 4,900 <sup>5</sup> / N.A. <sup>6</sup>  | 400                                      | 3,500 <sup>5</sup> |
| 1.4E RigidRim® LVL | 1-3/4"                  | 215 (8d box or common) | 5,500 <sup>5</sup> / N.A. <sup>6</sup>  | 400                                      | 3,500 <sup>5</sup> |

1. All design properties assume rimboard nailing of 8d nails @ 6" on-center. Additional nailing does not guarantee additional load capacity. Refer to APA document Y250 for additional load transfer details.
2. All design values, except Horizontal Load, are based on a 10-year load duration (100%) and should be adjusted for other load durations in accordance with the applicable code. Horizontal Load may not be adjusted for duration of load.
3. The 16d (box or common) nails used to connect the bottom plate of a wall to the rimboard through the sheathing do not reduce the horizontal load capacity of the rimboard provided that the 8d nail spacing (sheathing to rimboard) is 6" o.c. and the 16d nail spacing (bottom plate to sheathing to rimboard) is in accordance with the prescriptive requirements of the applicable code.
4. Allowable load for lag screw installed perpendicular to wide face of rimboard.
5. Depth ≤ 16"
6. 16" < Depth ≤ 24". Allowable load for intermediate depths can be found in APA publication W345.
7. Depth ≤ 24"

**TABLE 2: RIGIDRIM RIMBOARD EDGEWISE DESIGN PROPERTIES**

|                                    | Flexural Stress        | Modulus of Elasticity      | Horizontal Shear | Compression Perpendicular to Grain <sup>(2)</sup> |
|------------------------------------|------------------------|----------------------------|------------------|---|
| RigidRim® OSB & RigidRim® Plus OSB | 600 psi <sup>(1)</sup> | 0.55 x 10 <sup>6</sup> psi | 270 psi          | 550 psi   |
| 1.4E RigidRim® LVL                 | 2,250 psi              | 1.4 x 10 <sup>6</sup> psi  | 200 psi          | 560 psi   |

- (1) Allowable edgewise bending stress is applicable only to a span of 4' or less (2) Compression Perpendicular to Grain value may not be increased for duration of load

**TABLE 3: ALLOWABLE UNIFORM LOAD FOR RIGIDRIM® OSB AND RIGIDRIM® PLUS OSB RIMBOARD USED AS HEADERS<sup>(1)(2)(3)(4)</sup>**

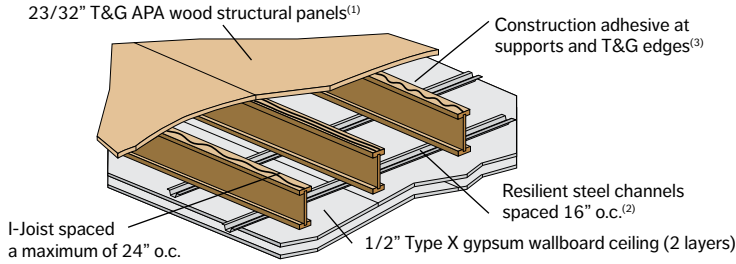
| Rimboard Size     | Span   |             |             |             |             |
|-------------------|--|-------------|-------------|-------------|-------------|
|                   | 24"  | 30"         | 36"         | 42"         | 48"         |
|                   | <b>Total Load (plf)/Minimum End Bearing (in)</b> |             |             |             |             |
| 1-1/8"x 9-1/2"    | 1,330 / 3.0                                      | 890 / 3.0   | 630 / 3.0   | 510 / 1.5   | 390 / 1.5   |
| 1-1/8"x 11-7/8"   | 1,870 / 4.5                                      | 1,270 / 4.5 | 990 / 3.0   | 740 / 3.0   | 580 / 3.0   |
| 2 ply 1-1/8"x 14" | 4,520 / 6.0                                      | 3,540 / 4.5 | 2,570 / 4.5 | 1,940 / 4.5 | 1,610 / 3.0 |
| 2 ply 1-1/8"x 16" | 5,170 / 6.0                                      | 4,250 / 6.0 | 3,120 / 6.0 | 2,540 / 4.5 | 1,990 / 4.5 |
| 2 ply 1-1/8"x 18" | 5,810 / 6.0                                      | 4,840 / 6.0 | 3,950 / 6.0 | 3,020 / 6.0 | 2,520 / 4.5 |
| 2 ply 1-1/8"x 20" | 6,000 / 7.5                                      | 5,170 / 7.5 | 4,450 / 7.5 | 3,510 / 7.5 | 2,940 / 6.0 |
| 2 ply 1-1/8"x 22" | 6,000 / 7.5                                      | 5,680 / 7.5 | 4,900 / 7.5 | 4,250 / 7.5 | 3,370 / 7.5 |
| 2 ply 1-1/8"x 24" | 6,000 / 7.5                                      | 5,960 / 9.0 | 5,160 / 9.0 | 4,550 / 9.0 | 4,020 / 7.5 |

- (1) This table is for preliminary design use only. Final design should include a complete analysis. (2) Span = clear span for simply supported member with uniform loads only. (3) Joints in rimboard shall not be located within opening. (4) Spans shown can conservatively be used for 1-1/4" thick RigidRim Plus and 1.4E RigidRim LVL (16" deep max. for 1.4E RigidRim LVL).

# Fire & Sound Rated Floor Assemblies

## FIRE-RATED I-JOIST FLOOR-CEILING ASSEMBLIES

Wood I-joists have been used successfully in fire-rated floor assemblies for many years. Several I-joist fire-rated assemblies (1-hour and 2-hour) have been published that are applicable to I-joists that meet or exceed the required specifications provided in the fire-rated assembly description. These “generic” assemblies can be found in the American Wood Council (AWC) publication entitled “Design for Code Acceptance 3” (DCA 3). Most of these DCA 3 assemblies have been adopted by the International Building Code (IBC) and can be found in Table 721.1(3) of the 2012, 2015, 2018, and 2021 IBC. Additional fire-rated systems and associated information can be found in the APA ICC-ES code report ESR-1405 and various other APA publications. The Roseburg ICC-ES I-joist code report, ESR-1251, and APA Product Report, PR-S259, list the various IBC and APA fire-rated floor-ceiling assemblies for which RFPI-Joists have specific code approval. The website addresses for these organizations are as shown below.



- Roseburg: • [www.roseburg.com](http://www.roseburg.com)  
 AWC: • [awc.org](http://awc.org) and search for DCA 3  
 APA: • [apawood.org](http://apawood.org) and search for ESR 1405  
 W305 for I-joists and other D350 for rimboard

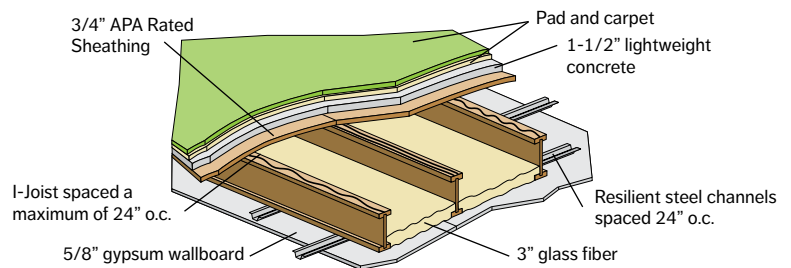
The fire-rated assembly shown at left is one of the more common assemblies shown in DCA 3 (WIJ-1.6) and published in the 2012, 2015, 2018, and 2021 IBC (Item 27-1.1) and can be used with any of the RFPI®-Joist series and depths.

1. Tests have shown that substitution of OSB or composite APA Rated Sturd-I-Floor for plywood panels in fire-rated single-layer assemblies will not jeopardize fire-resistance ratings. Substitution is based on equivalent panel thickness. OSB panels are listed as alternates to plywood for finish flooring in accordance with product evaluation reports for APA PRI trademarked I-joists.
2. For improved acoustical performance, gypsum wallboard is fastened to resilient metal furring channels in some assemblies.
3. Construction adhesive must conform to APA Specification AFG-01, or ASTM D3498.

| APA PR-S259 | American Wood Council DCA3 | 2012, 2015, 2018, 2021 IBC Table 721.1(3) | APA “Fire Rated Systems” W305 | APA ICC-ES Report ESR-1405 | Duration | RFPI-Joist series that meet the assembly requirements |
|-------------|----------------------------|---|-------------------------------|----------------------------|----------|---|
| RFP 1.1     | WIJ-1.1                    | Item 24-1.1                               | Fig. 4.3A                     | -                          | 1 hr.    | RFPI 80S, 90 and 900                                  |
| RFP 1.2     | WIJ-1.2                    | Item 25-1.1                               | Fig. 4.3B                     | -                          | 1 hr.    | RFPI 90 and 900                                       |
| RFP 1.3     | WIJ-1.3                    | Item 23-1.1                               | Fig. 4.3C                     | -                          | 1 hr.    | All RFPI series                                       |
| RFP 1.4     | WIJ-1.4                    | -   | Fig. 4.3D                     | -                          | 1 hr.    | RFPI 40S, 60S, 70, 80S, 90, 700 and 900               |
| RFP 1.5     | WIJ-1.5                    | -   | Fig. 4.3E                     | -                          | 1 hr.    | RFPI 40S, 60S, 70, 80S, 90, 700 and 900               |
| RFP 1.6     | WIJ-1.6                    | Item 27-1.1                               | Fig. 4.3F                     | -                          | 1 hr.    | All RFPI series                                       |
| RFP 1.7     | WIJ-1.7                    | Item 30-1.1                               | -                             | -                          | 1 hr.    | RFPI 40S, 60S, 70, 80S, 90, 700 and 900               |
| RFP 1.7a    | -                          | -   | -                             | -                          | 1 hr.    | All RFPI series                                       |
| RFP 1.8     | -                          | Item 26-1.1                               | -                             | -                          | 1 hr.    | RFPI 40S, 60S, 70, 80S, 90, 700 and 900               |
| RFP 1.9     | -                          | Item 21-1.1                               | -                             | Assembly 2                 | 1 hr.    | All RFPI series                                       |
| RFP 1.10    | -                          | -   | -                             | Assembly 4                 | 1 hr.    | RFPI 40S, 60S, 80S, 90 and 900                        |
| -           | -                          | -   | -                             | Assembly 1                 | 1 hr.    | RFPI 40S, 60S, 80S, 90 and 900                        |
| -           | -                          | -   | -                             | Assembly 3                 | 1 hr.    | All RFPI series                                       |
| RFP 2.1     | WIJ-2.1                    | Item 28-1.1                               | Fig. 5                        | -                          | 2 hr.    | RFPI 40S, 60S, 70, 80S, 90, 700 and 900               |

## SOUND-RATED FLOOR ASSEMBLY WITH APA PERFORMANCE RATED I-JOISTS

The sound-rated assembly shown at right is one of several assemblies that can be used with I-Joists. For additional STC and IIC sound rating systems for Roseburg RFPI-Joists, refer to APA Product Report PR-S259. Additional general information regarding STC and IIC sound ratings can be found in APA Form No.W460 (<http://apawood.org/publications>).



### EXAMPLE: Sound Ratings for Floors Using APA Performance Rated RFPI®-Joist

| Test Sponsor and Number <sup>1</sup> | Floor        | Deck  | Gypsum Wallboard Ceiling                 | Insulation     | STC Rating | IIC Rating | Weight (lbs/sq. ft) |
|--------------------------------------|--------------|---|--|----------------|------------|------------|---------------------|
| G&H USDA 11 ST                       | Vinyl Tile   | 1-1/2" of 100-pcf cellular concrete over 3/4" APA Rated Sheathing | 5/8" screwed to resilient metal channels | 3" glass fiber | 58         | 50         | 21.0                |
| G&H USDA 11x ST                      | Carpet & Pad | subfloor on I-joist at 24" o.c.                                   |  | None           | 58         | 77         |                     |
|                                      | None         |   |  |                | 57         | None       | 20.7                |

1. USDA Forest Service Wood Construction Research (Seattle, WA); acoustical tests by Geiger & Hamme, Inc. (Ann Arbor, MI)

## SPRINKLER ATTACHMENT

See APA-The Engineered Wood Association publication J745 “Sprinkler Pipe Installation for APA Performance Rated I-Joists” and supplement for sprinkler attachment guidelines.

# Horizontal Diaphragms

## ALLOWABLE SHEAR (POUNDS PER FOOT) FOR HORIZONTAL WOOD STRUCTURAL PANEL DIAPHRAGMS FRAMED WITH ROSEBURG RFPI-JOISTS FOR WIND<sup>(a)</sup> OR SEISMIC LOADING<sup>(b,c)</sup>

| Panel Grade   | Common Nail Size  | Minimum Nominal Panel Thickness (in.) | Minimum Nominal Width of Framing Members at Adjoining Panel Edges and Boundaries <sup>(e)</sup> (in.) | RFPI-Joist series approved for diaphragm construction as indicated | Blocked Diaphragms  |                   |                      | Unblocked Diaphragms  |   |
|---|-------------------|---------------------------------------|---|--|---|-------------------|----------------------|---|---|
|   |                   |                                       |   |  | Nail spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 & 4), and at all panel edges (Cases 5 & 6) <sup>(d,g)</sup> |                   |                      | Nails Spaced 6 in. max. at supported edges <sup>(d,g)</sup>       |   |
|   |                   |                                       |   |  | 6   | 4 <sup>(h)</sup>  | 2-1/2 <sup>(i)</sup> | Case 1 (No unblocked edges or continuous joints parallel to load) | All other configurations (Cases 2, 3, 4, 5 & 6) |
|   |                   |                                       |   |  | Nail spacing (in.) at other panel edges (Cases 1, 2, 3, & 4)  |                   |                      |   |   |
| 6   | 6                 | 4                                     | 6   | 6  | 4   |                   |                      |   |   |
| Structural 1 Grades   | 6d <sup>(d)</sup> | 5/16                                  | 2   | RFPI 20 & 400  | 185   | 250               | NA <sup>(k)</sup>    | 165   | 125   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 210   | 280               | 420 <sup>(l)</sup>   | 185   | 140   |
|   | 8d                | 3/8                                   | 2   | RFPI 20 & 400  | 270   | 360               | NA <sup>(k)</sup>    | 240   | 180   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 300   | 400               | 600 <sup>(l)</sup>   | 265   | 200   |
|   | 10d               | 15/32                                 | 2   | RFPI 20 & 400  | 320   | 425               | NA <sup>(k)</sup>    | 285   | 215   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 360   | 480               | 720 <sup>(l)</sup>   | 320   | 240   |
| Sheathing, single floor and other grades covered in DOC PS 1 and PS 2 | 6d <sup>(d)</sup> | 5/16                                  | 2   | RFPI 20 & 400  | 170   | 225               | NA <sup>(k)</sup>    | 150   | 110   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 190   | 250               | 380 <sup>(l)</sup>   | 170   | 125   |
|   |                   | 3/8                                   | 2   | RFPI 20 & 400  | 185   | 250               | NA <sup>(k)</sup>    | 165   | 125   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 210   | 280               | 420 <sup>(l)</sup>   | 185   | 140   |
|   | 8d                | 3/8                                   | 2   | RFPI 20 & 400  | 240   | 320               | NA <sup>(k)</sup>    | 215   | 160   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 270   | 360               | 540 <sup>(l)</sup>   | 240   | 180   |
|   |                   | 7/16                                  | 2   | RFPI 20 & 400  | 255   | 340               | NA <sup>(k)</sup>    | 230   | 170   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 285   | 380               | 570 <sup>(l)</sup>   | 255   | 190   |
|   | 15/32             | 2                                     | RFPI 20 & 400   | 270  | 360   | NA <sup>(k)</sup> | 240                  | 180   |   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 300   | 400               | 600 <sup>(l)</sup>   | 265   | 200   |
|   |                   | 15/32                                 | 2   | RFPI 20 & 400  | 290   | 385               | NA <sup>(k)</sup>    | 255   | 190   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 325   | 430               | 650 <sup>(l)</sup>   | 290   | 215   |
|   | 19/32             | 2                                     | RFPI 20 & 400   | 320  | 425   | NA <sup>(k)</sup> | 285                  | 215   |   |
|   |                   |                                       | 3   | RFPI 40, 40S, 60S, 70, 80S, 90, 700 & 900                          | 360   | 480               | 720 <sup>(l)</sup>   | 320   | 240   |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 4.448 N, 1 lbf/ft = 0.0146 N/mm.

- For wind load applications, the values in the table above shall be permitted to be multiplied by 1.4.
- For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
- The tabulated allowable shear capacities are for I-joist series with flanges having a specific gravity (G) of 0.50 or higher (all LVL flanged RFPI-joists). For G < 0.50 the allowable shear capacities shall be reduced by multiplying the allowable shear capacities by the Specific Gravity Adjustment Factor =  $[1 - (0.5 - G)]$ . The Specific Gravity Adjustment Factor shall not be greater than 1. RFPI 40S: G=0.42, RFPI 60S & 80S: G=0.46
- 8d common nails minimum are recommended for roofs due to negative pressures of high winds.
- The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
- Space nails maximum 12 inches o.c. along intermediate framing members (6 inches o.c. when supports are spaced 48 inches o.c. or greater).
- Fasteners shall be located 3/8 inch minimum from panel edges (see Figures 2, 3, and 4).
- For lumber flange I-joists (RFPI-40S, RFPI-60S, and RFPI-80S), adjacent nails within a row must be staggered 1/2 inch at diaphragm boundaries when nail spacing is 4 inches or less (see Figure 3).
- Adjacent nails within a row must be staggered 1/2 inch at adjoining panel edges when nail spacing is 2-1/2 inches o.c. (see Figure 4).
- Nail spacing of 2-1/2 inches at diaphragm boundaries is permitted only for lumber flange I-joists (RFPI-40S, RFPI-60S, and RFPI-80S).
- Not allowed.

FIGURE 1 - DIAPHRAGM CONFIGURATIONS

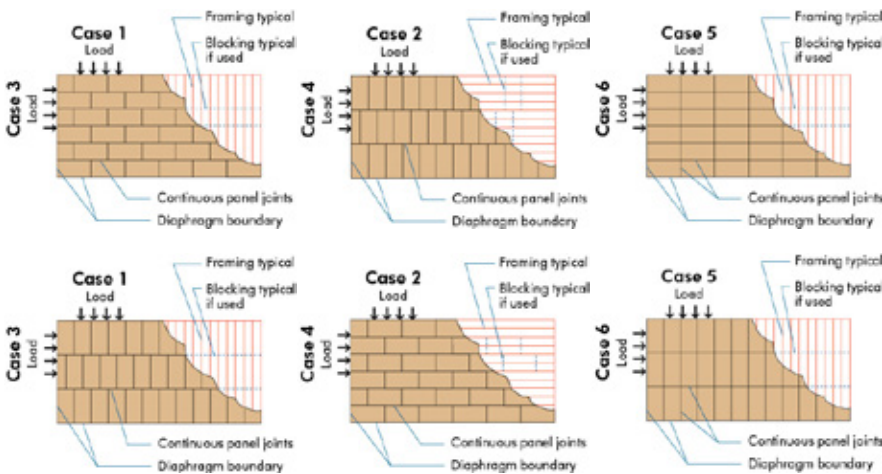


FIGURE 2

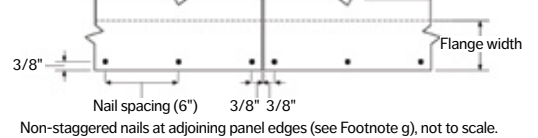


FIGURE 3

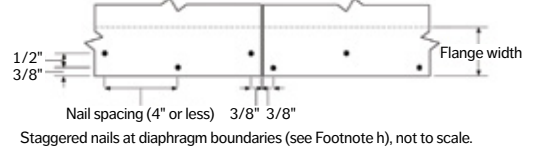
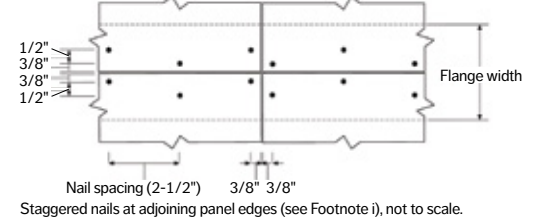
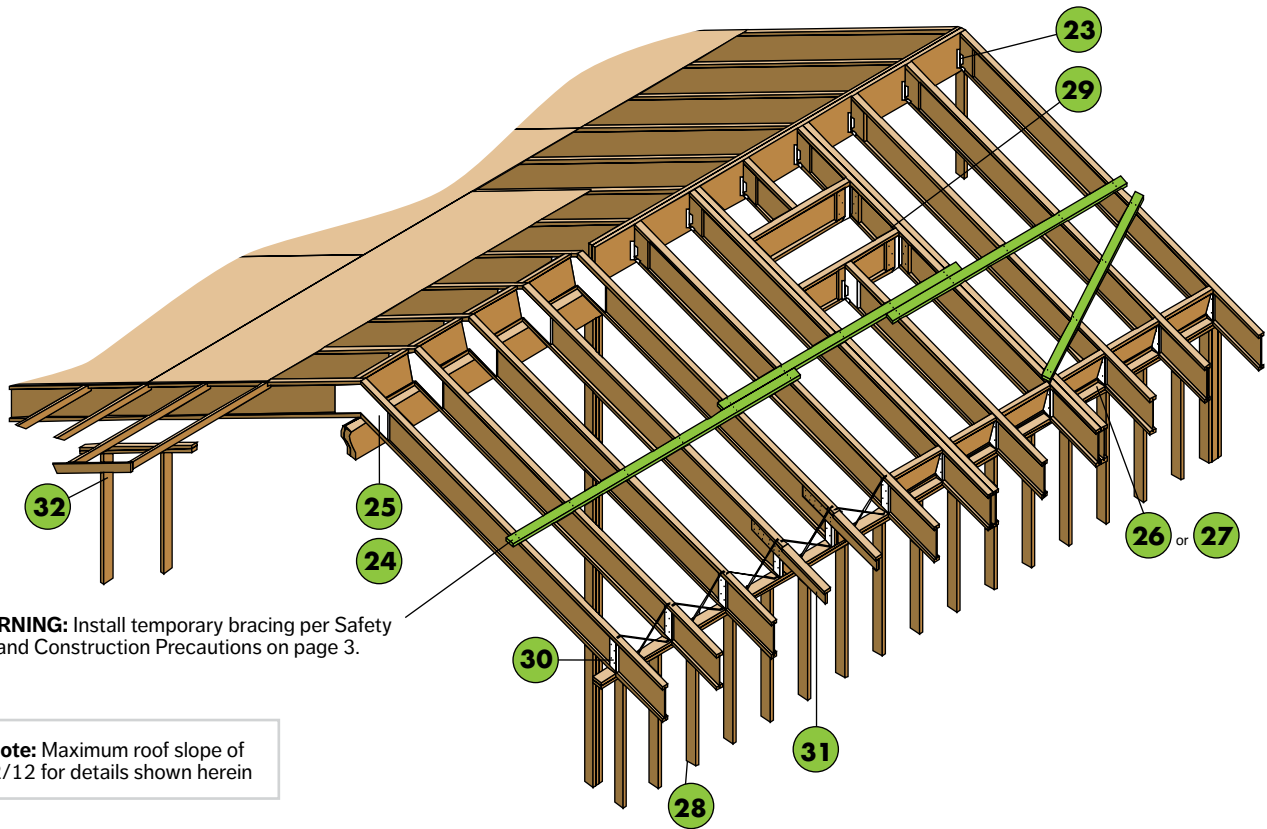


FIGURE 4



# Roof Framing & Construction Details



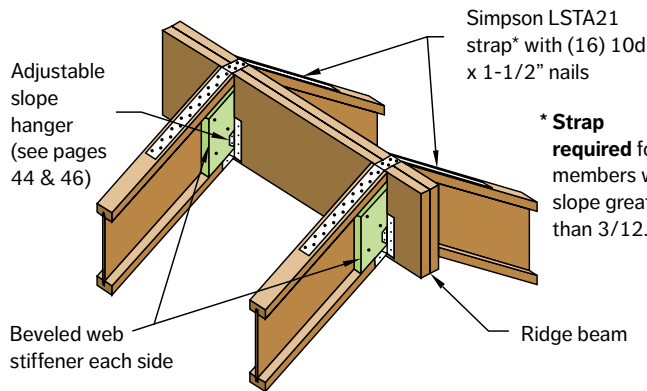
**WARNING:** Install temporary bracing per Safety and Construction Precautions on page 3.

**Note:** Maximum roof slope of 12/12 for details shown herein

## TYPICAL RFPI®-JOIST ROOF FRAMING AND CONSTRUCTION DETAILS

All nails shown in the details below are assumed to be common nails unless otherwise noted. 10d box nails may be substituted for 8d common shown in details. If nails must be installed into the sides of LVL flanges, see table on page 10 for "Recommended Nail Size and Spacing". Individual components not shown to scale for clarity.

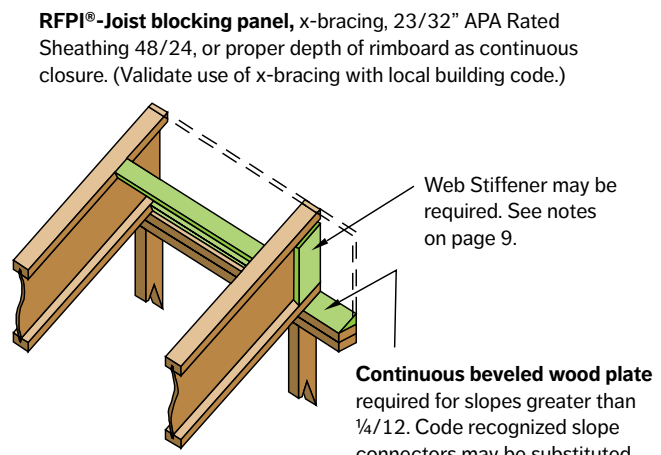
### 23 RIDGE JOIST CONNECTION - 12/12 MAXIMUM SLOPE



\* **Strap required** for members with slope greater than 3/12.

**Uplift connections may be required.**

### 24 UPPER END, BEARING ON WALL



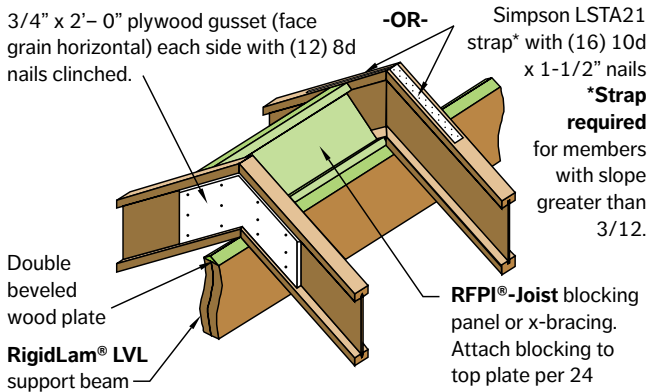
**Attach blocking panel** (or Rimboard) to top plate with 8d nails @ 6" o.c. (when used for lateral shear transfer, nail to bearing plate with same nailing as required for decking)

**Continuous beveled wood plate** required for slopes greater than 1/4/12. Code recognized slope connectors may be substituted. For slopes greater than 4/12 connectors are required to resist lateral thrust.

**Uplift connections may be required.**

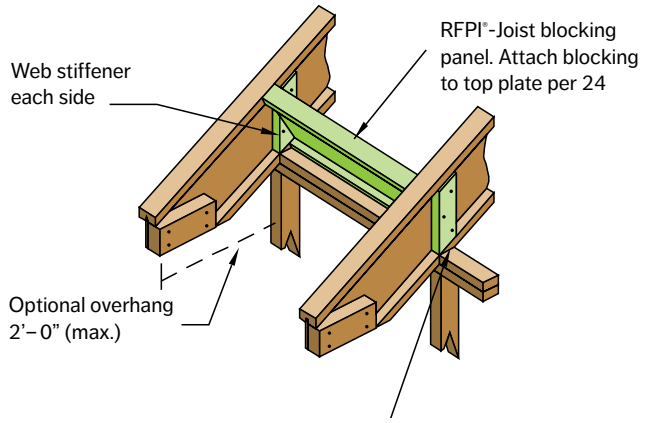


**25 RFPI®-JOISTS ABOVE RIDGE SUPPORT BEAM**



**Uplift connections may be required.**

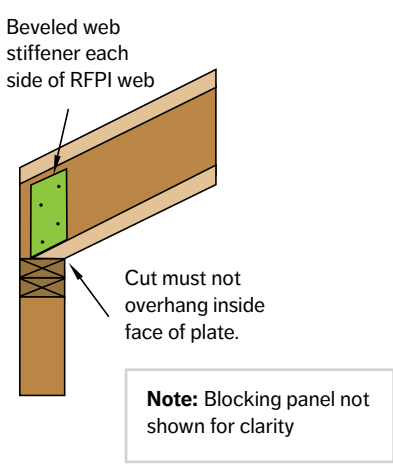
**26 BIRDSMOUTH CUT - LOW END OF RFPI®-JOIST ONLY**



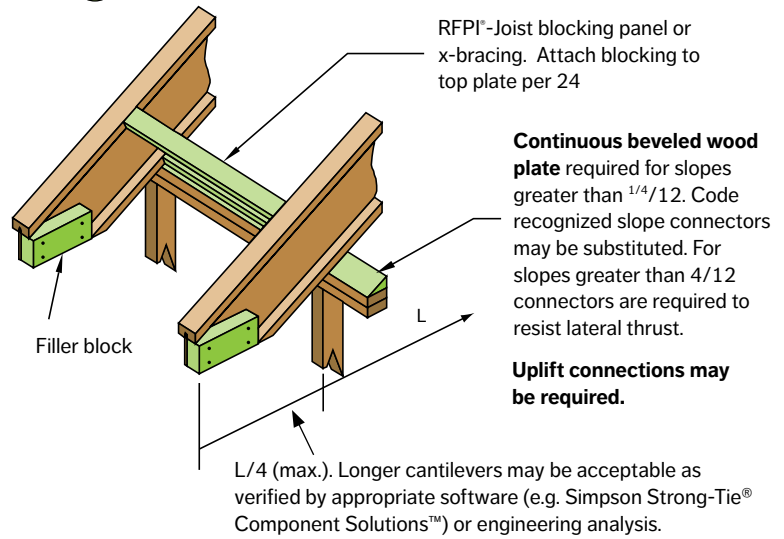
Birdsmouth cut RFPI®-Joist to provide full bearing for bottom flange. Cut must not overhang inside face of plate.

**Uplift connections may be required.**

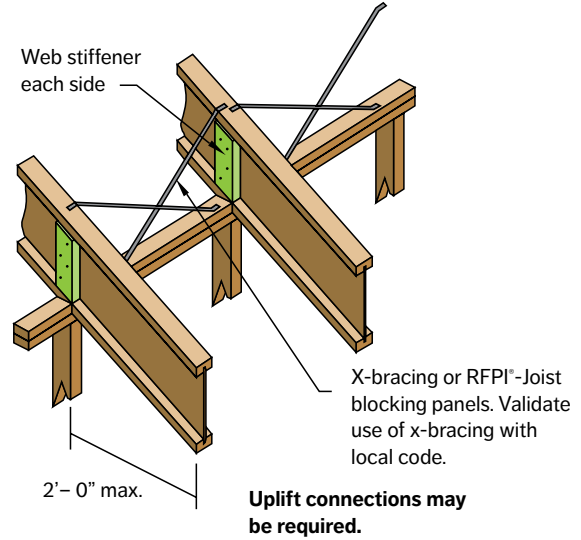
**26 sim. BIRDSMOUTH CUT, NO OVERHANG - LOW END OF RFPI®-JOIST ONLY**



**27 RFPI®-JOISTS ON BEVELED PLATE**

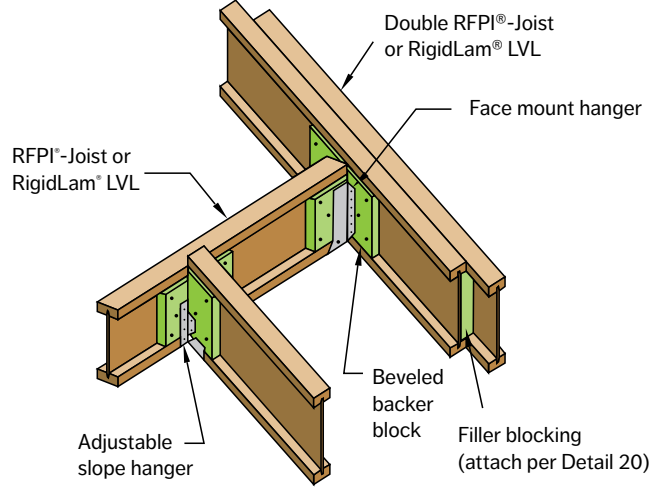


**28 BIRDSMOUTH CUT - LOW END OF RFPI®-JOIST ONLY**



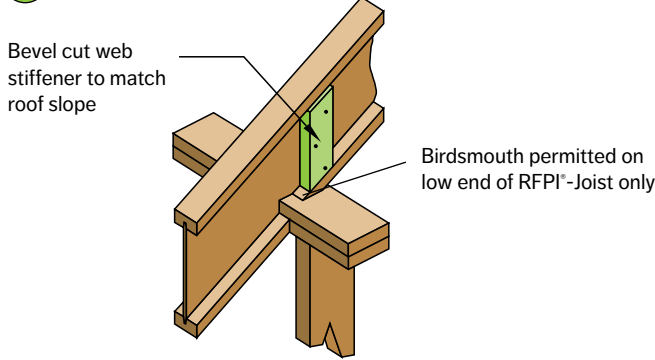
**Uplift connections may be required.**

**29 ROOF OPENINGS, FACE MOUNTED HANGERS**



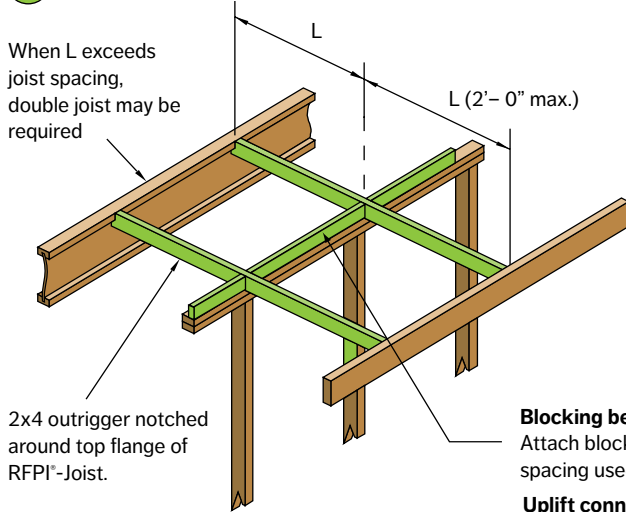
**Uplift connections may be required.**

**30 BEVELED CUT BEARING STIFFENER**



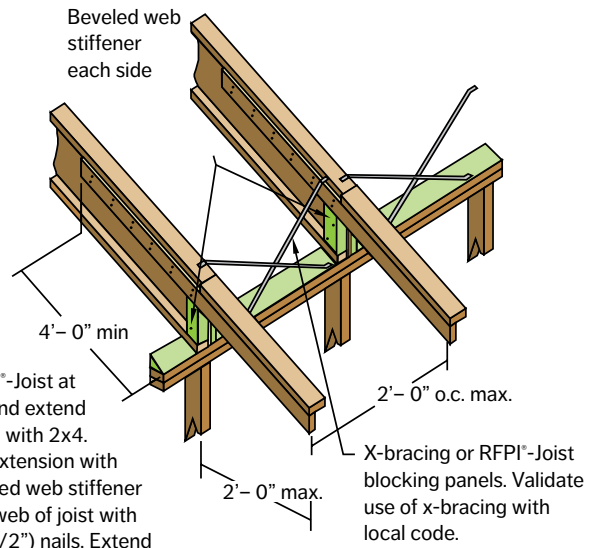
Uplift connections may be required.

**32 OVERHANG PARALLEL TO RFPI®-JOIST**



**Blocking between outriggers.**  
Attach blocking to top plate with nail size and spacing used for roof sheathing edge nailing.  
Uplift connections may be required.

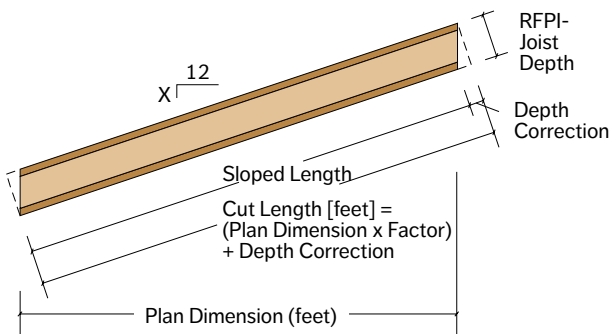
**31 OPTIONAL OVERHANG EXTENSIONS**



Stop RFPI®-Joist at wall line and extend top flange with 2x4. Support extension with 2x4 beveled web stiffener nailed to web of joist with 6-8d (2-1/2") nails. Extend 2x4 support at least 4' into joist span and nail to web with 2 rows of 8d nails at 8" o.c., clinched.

Uplift connections may be required.

# Slope Length Conversion Chart



**ALONG-THE-SLOPE SPANS & CUTTING LENGTHS FOR SLOPED ROOFS**

| Slope     | Slope Factor | Joist Depth (in)      |         |      |      |      |      |      |      |
|-----------|--------------|-----------------------|---------|------|------|------|------|------|------|
|           |              | 9-1/2"                | 11-7/8" | 14"  | 16"  | 18"  | 20"  | 22"  | 24"  |
|           |              | Depth Correction (ft) |         |      |      |      |      |      |      |
| 1 in 12   | 1.00         | 0.07                  | 0.08    | 0.10 | 0.11 | 0.13 | 0.14 | 0.15 | 0.17 |
| 2 in 12   | 1.01         | 0.13                  | 0.16    | 0.19 | 0.22 | 0.25 | 0.28 | 0.31 | 0.33 |
| 2.5 in 12 | 1.02         | 0.16                  | 0.21    | 0.24 | 0.28 | 0.31 | 0.35 | 0.38 | 0.42 |
| 3 in 12   | 1.03         | 0.20                  | 0.25    | 0.29 | 0.33 | 0.38 | 0.42 | 0.46 | 0.50 |
| 3.5 in 12 | 1.04         | 0.23                  | 0.29    | 0.34 | 0.39 | 0.44 | 0.49 | 0.53 | 0.58 |
| 4 in 12   | 1.05         | 0.26                  | 0.33    | 0.39 | 0.44 | 0.50 | 0.56 | 0.61 | 0.67 |
| 4.5 in 12 | 1.07         | 0.30                  | 0.37    | 0.44 | 0.50 | 0.56 | 0.63 | 0.69 | 0.75 |
| 5 in 12   | 1.08         | 0.33                  | 0.41    | 0.49 | 0.56 | 0.63 | 0.69 | 0.76 | 0.83 |
| 6 in 12   | 1.12         | 0.40                  | 0.49    | 0.58 | 0.67 | 0.75 | 0.83 | 0.92 | 1.00 |
| 7 in 12   | 1.16         | 0.46                  | 0.58    | 0.68 | 0.78 | 0.88 | 0.97 | 1.07 | 1.17 |
| 8 in 12   | 1.20         | 0.53                  | 0.66    | 0.78 | 0.89 | 1.00 | 1.11 | 1.22 | 1.33 |
| 9 in 12   | 1.25         | 0.59                  | 0.74    | 0.88 | 1.00 | 1.13 | 1.25 | 1.38 | 1.50 |
| 10 in 12  | 1.30         | 0.66                  | 0.82    | 0.97 | 1.11 | 1.25 | 1.39 | 1.53 | 1.67 |
| 11 in 12  | 1.36         | 0.73                  | 0.91    | 1.07 | 1.22 | 1.38 | 1.53 | 1.68 | 1.83 |
| 12 in 12  | 1.41         | 0.79                  | 0.99    | 1.17 | 1.33 | 1.50 | 1.67 | 1.83 | 2.00 |



# Allowable Roof Clear Spans For RFPI®-Joists

## 20 LIVE LOAD / 20 DEAD 125% - Deflection Limits - Live load = L/360 Total Load = L/240

| Joist Depth | Joist Series | Slope of 4/12 or less |            |          | Slope of 8/12 or less |            |          | Slope of 12/12 or less |            |          |
|-------------|--------------|-----------------------|------------|----------|-----------------------|------------|----------|------------------------|------------|----------|
|             |              | 16" o.c.              | 19.2" o.c. | 24" o.c. | 16" o.c.              | 19.2" o.c. | 24" o.c. | 16" o.c.               | 19.2" o.c. | 24" o.c. |
| 9-1/2"      | RFPI 70      | 21'-2"                | 19'-10"    | 18'-4"   | 19'-10"               | 18'-7"     | 17'-2"   | 18'-3"                 | 17'-1"     | 15'-10"  |
| 11-7/8"     | RFPI 70      | 25'-4"                | 23'-9"     | 22'-0"   | 23'-9"                | 22'-3"     | 20'-7"   | 21'-10"                | 20'-6"     | 19'-0"   |
| 14"         | RFPI 70      | 28'-11"               | 27'-1"     | 25'-1"   | 27'-1"                | 25'-5"     | 23'-6"   | 24'-11"                | 23'-5"     | 21'-8"   |
| 16"         | RFPI 70      | 32'-1"                | 30'-1"     | 27'-10"  | 30'-1"                | 28'-3"     | 26'-1"   | 27'-8"                 | 26'-0"     | 24'-1"   |
| 9-1/2"      | RFPI 90      | 24'-2"                | 22'-8"     | 20'-11"  | 22'-7"                | 21'-3"     | 19'-7"   | 20'-10"                | 19'-6"     | 18'-1"   |
| 11-7/8"     | RFPI 90      | 28'-10"               | 27'-1"     | 25'-0"   | 27'-0"                | 25'-5"     | 23'-6"   | 24'-11"                | 23'-4"     | 21'-7"   |
| 14"         | RFPI 90      | 32'-10"               | 30'-10"    | 28'-6"   | 30'-9"                | 28'-11"    | 26'-9"   | 28'-4"                 | 26'-7"     | 24'-7"   |
| 16"         | RFPI 90      | 36'-5"                | 34'-2"     | 31'-7"   | 34'-2"                | 32'-1"     | 29'-8"   | 31'-5"                 | 29'-6"     | 27'-4"   |
| 18"         | RFPI 700     | 35'-8"                | 33'-6"     | 31'-0"   | 33'-5"                | 31'-4"     | 29'-0"   | 30'-8"                 | 28'-10"    | 26'-9"   |
| 20"         | RFPI 700     | 38'-7"                | 36'-3"     | 33'-7"   | 36'-2"                | 34'-0"     | 31'-5"   | 33'-3"                 | 31'-3"     | 28'-11"  |
| 22"         | RFPI 700     | 41'-6"                | 39'-0"     | 36'-1"   | 38'-10"               | 36'-6"     | 33'-10"  | 35'-9"                 | 33'-7"     | 31'-1"   |
| 24"         | RFPI 700     | 44'-4"                | 41'-7"     | 38'-6"   | 41'-6"                | 39'-0"     | 36'-1"   | 38'-2"                 | 35'-10"    | 33'-3"   |
| 18"         | RFPI 900     | 40'-7"                | 38'-2"     | 35'-4"   | 38'-1"                | 35'-9"     | 33'-1"   | 35'-0"                 | 32'-11"    | 30'-5"   |
| 20"         | RFPI 900     | 43'-11"               | 41'-3"     | 38'-2"   | 41'-2"                | 38'-8"     | 35'-10"  | 37'-11"                | 35'-7"     | 32'-11"  |
| 22"         | RFPI 900     | 47'-2"                | 44'-4"     | 41'-0"   | 44'-2"                | 41'-6"     | 38'-5"   | 40'-8"                 | 38'-2"     | 35'-5"   |
| 24"         | RFPI 900     | 50'-4"                | 47'-3"     | 43'-9"   | 47'-2"                | 44'-3"     | 41'-0"   | 43'-4"                 | 40'-9"     | 37'-9"   |

## 30 LIVE LOAD / 15 DEAD 115% - Deflection Limits - Live load = L/240 Total Load = L/180

| Joist Depth | Joist Series | Slope of 4/12 or less |            |          | Slopes over 4/12 up to 8/12 |            |          | Slope over 8/12 up to 12/12 |            |          |
|-------------|--------------|-----------------------|------------|----------|-----------------------------|------------|----------|-----------------------------|------------|----------|
|             |              | 16" o.c.              | 19.2" o.c. | 24" o.c. | 16" o.c.                    | 19.2" o.c. | 24" o.c. | 16" o.c.                    | 19.2" o.c. | 24" o.c. |
| 9-1/2"      | RFPI 70      | 22'-6"                | 21'-1"     | 19'-6"   | 21'-3"                      | 19'-11"    | 18'-5"   | 19'-9"                      | 18'-6"     | 17'-2"   |
| 11-7/8"     | RFPI 70      | 26'-11"               | 25'-4"     | 23'-5"   | 25'-5"                      | 23'-11"    | 22'-1"   | 23'-7"                      | 22'-2"     | 20'-6"   |
| 14"         | RFPI 70      | 30'-9"                | 28'-10"    | 26'-8"   | 29'-0"                      | 27'-3"     | 25'-3"   | 26'-11"                     | 25'-4"     | 23'-5"   |
| 16"         | RFPI 70      | 34'-2"                | 32'-1"     | 28'-4"   | 32'-3"                      | 30'-3"     | 27'-0"   | 29'-11"                     | 28'-1"     | 25'-4"   |
| 9-1/2"      | RFPI 90      | 25'-8"                | 24'-1"     | 22'-3"   | 24'-3"                      | 22'-9"     | 21'-1"   | 22'-6"                      | 21'-2"     | 19'-7"   |
| 11-7/8"     | RFPI 90      | 30'-8"                | 28'-10"    | 26'-8"   | 29'-0"                      | 27'-3"     | 25'-2"   | 26'-11"                     | 25'-4"     | 23'-5"   |
| 14"         | RFPI 90      | 34'-11"               | 32'-10"    | 30'-4"   | 33'-0"                      | 31'-0"     | 28'-8"   | 30'-8"                      | 28'-9"     | 26'-8"   |
| 16"         | RFPI 90      | 38'-9"                | 36'-5"     | 33'-8"   | 36'-7"                      | 34'-4"     | 31'-10"  | 34'-0"                      | 31'-11"    | 29'-7"   |
| 18"         | RFPI 700     | 37'-11"               | 35'-7"     | 32'-2"   | 35'-9"                      | 33'-7"     | 31'-1"   | 33'-2"                      | 31'-2"     | 28'-11"  |
| 20"         | RFPI 700     | 41'-1"                | 37'-11"    | 33'-10"  | 38'-9"                      | 36'-5"     | 33'-1"   | 36'-0"                      | 33'-10"    | 31'-4"   |
| 22"         | RFPI 700     | 43'-7"                | 39'-9"     | 35'-6"   | 41'-7"                      | 38'-10"    | 34'-8"   | 38'-8"                      | 36'-4"     | 33'-7"   |
| 24"         | RFPI 700     | 45'-5"                | 41'-6"     | 37'-1"   | 44'-5"                      | 40'-6"     | 36'-2"   | 41'-3"                      | 38'-9"     | 35'-0"   |
| 18"         | RFPI 900     | 43'-2"                | 40'-7"     | 37'-7"   | 40'-9"                      | 38'-4"     | 35'-6"   | 37'-10"                     | 35'-7"     | 32'-11"  |
| 20"         | RFPI 900     | 46'-9"                | 43'-11"    | 40'-8"   | 44'-1"                      | 41'-5"     | 38'-4"   | 41'-0"                      | 38'-6"     | 35'-8"   |
| 22"         | RFPI 900     | 50'-2"                | 47'-2"     | 43'-8"   | 47'-4"                      | 44'-6"     | 41'-2"   | 44'-0"                      | 41'-4"     | 38'-3"   |
| 24"         | RFPI 900     | 53'-6"                | 50'-3"     | 46'-1"   | 50'-6"                      | 47'-5"     | 43'-11"  | 46'-11"                     | 44'-1"     | 40'-10"  |

## 40 LIVE LOAD / 15 DEAD 115% - Deflection Limits - Live load = L/240 Total Load = L/180

| Joist Depth | Joist Series | Slope of 4/12 or less |            |          | Slopes over 4/12 up to 8/12 |            |          | Slope over 8/12 up to 12/12 |            |          |
|-------------|--------------|-----------------------|------------|----------|-----------------------------|------------|----------|-----------------------------|------------|----------|
|             |              | 16" o.c.              | 19.2" o.c. | 24" o.c. | 16" o.c.                    | 19.2" o.c. | 24" o.c. | 16" o.c.                    | 19.2" o.c. | 24" o.c. |
| 9-1/2"      | RFPI 70      | 21'-0"                | 19'-8"     | 18'-2"   | 19'-11"                     | 18'-8"     | 17'-3"   | 18'-6"                      | 17'-5"     | 16'-1"   |
| 11-7/8"     | RFPI 70      | 25'-2"                | 23'-7"     | 21'-4"   | 23'-10"                     | 22'-4"     | 20'-7"   | 22'-3"                      | 20'-10"    | 19'-4"   |
| 14"         | RFPI 70      | 28'-8"                | 26'-11"    | 22'-4"   | 27'-2"                      | 25'-6"     | 21'-6"   | 25'-4"                      | 23'-9"     | 20'-4"   |
| 16"         | RFPI 70      | 31'-11"               | 29'-1"     | 23'-3"   | 30'-2"                      | 28'-0"     | 22'-4"   | 28'-2"                      | 26'-5"     | 21'-2"   |
| 9-1/2"      | RFPI 90      | 24'-0"                | 22'-6"     | 20'-9"   | 22'-8"                      | 21'-4"     | 19'-8"   | 21'-2"                      | 19'-11"    | 18'-5"   |
| 11-7/8"     | RFPI 90      | 28'-8"                | 26'-11"    | 24'-10"  | 27'-2"                      | 25'-6"     | 23'-7"   | 25'-4"                      | 23'-9"     | 22'-0"   |
| 14"         | RFPI 90      | 32'-7"                | 30'-7"     | 28'-4"   | 30'-11"                     | 29'-0"     | 26'-10"  | 28'-10"                     | 27'-1"     | 25'-1"   |
| 16"         | RFPI 90      | 36'-2"                | 34'-0"     | 28'-10"  | 34'-3"                      | 32'-2"     | 27'-8"   | 32'-0"                      | 30'-0"     | 26'-3"   |
| 18"         | RFPI 700     | 35'-5"                | 32'-7"     | 29'-1"   | 33'-6"                      | 31'-6"     | 28'-6"   | 31'-3"                      | 29'-4"     | 27'-2"   |
| 20"         | RFPI 700     | 37'-7"                | 34'-4"     | 30'-8"   | 36'-4"                      | 33'-8"     | 30'-1"   | 33'-10"                     | 31'-10"    | 29'-3"   |
| 22"         | RFPI 700     | 39'-5"                | 36'-0"     | 32'-2"   | 38'-8"                      | 35'-3"     | 31'-6"   | 36'-4"                      | 34'-2"     | 30'-8"   |
| 24"         | RFPI 700     | 41'-2"                | 37'-6"     | 33'-7"   | 40'-4"                      | 36'-10"    | 32'-8"   | 38'-10"                     | 35'-10"    | 30'-11"  |
| 18"         | RFPI 900     | 40'-4"                | 37'-11"    | 35'-1"   | 38'-3"                      | 35'-11"    | 33'-3"   | 35'-7"                      | 33'-6"     | 31'-0"   |
| 20"         | RFPI 900     | 43'-8"                | 41'-0"     | 37'-11"  | 41'-4"                      | 38'-10"    | 35'-11"  | 38'-6"                      | 36'-2"     | 33'-6"   |
| 22"         | RFPI 900     | 46'-11"               | 44'-0"     | 39'-11"  | 44'-5"                      | 41'-8"     | 38'-7"   | 41'-4"                      | 38'-10"    | 36'-0"   |
| 24"         | RFPI 900     | 50'-0"                | 46'-8"     | 41'-8"   | 47'-4"                      | 44'-6"     | 40'-11"  | 44'-1"                      | 41'-5"     | 38'-5"   |

## 50 LIVE LOAD / 15 DEAD 115% - Deflection Limits - Live load = L/240 Total Load = L/180

| Joist Depth | Joist Series | Slope of 4/12 or less |            |          | Slopes over 4/12 up to 8/12 |            |          | Slope over 8/12 up to 12/12 |            |          |
|-------------|--------------|-----------------------|------------|----------|-----------------------------|------------|----------|-----------------------------|------------|----------|
|             |              | 16" o.c.              | 19.2" o.c. | 24" o.c. | 16" o.c.                    | 19.2" o.c. | 24" o.c. | 16" o.c.                    | 19.2" o.c. | 24" o.c. |
| 9-1/2"      | RFPI 70      | 19'-9"                | 18'-6"     | 17'-1"   | 18'-10"                     | 17'-8"     | 16'-4"   | 17'-7"                      | 16'-6"     | 15'-3"   |
| 11-7/8"     | RFPI 70      | 23'-8"                | 22'-2"     | 18'-1"   | 22'-7"                      | 21'-2"     | 17'-6"   | 21'-1"                      | 19'-9"     | 16'-8"   |
| 14"         | RFPI 70      | 27'-0"                | 23'-8"     | 18'-11"  | 25'-9"                      | 22'-11"    | 18'-3"   | 24'-1"                      | 21'-10"    | 17'-5"   |
| 16"         | RFPI 70      | 29'-7"                | 24'-8"     | 19'-8"   | 28'-7"                      | 23'-10"    | 19'-0"   | 26'-9"                      | 22'-9"     | 18'-2"   |
| 9-1/2"      | RFPI 90      | 22'-6"                | 21'-1"     | 19'-6"   | 21'-6"                      | 20'-2"     | 18'-7"   | 20'-1"                      | 18'-10"    | 17'-5"   |
| 11-7/8"     | RFPI 90      | 26'-11"               | 25'-3"     | 23'-4"   | 25'-8"                      | 24'-1"     | 22'-3"   | 24'-0"                      | 22'-7"     | 20'-10"  |
| 14"         | RFPI 90      | 30'-8"                | 28'-9"     | 24'-2"   | 29'-3"                      | 27'-5"     | 23'-5"   | 27'-4"                      | 25'-8"     | 22'-4"   |
| 16"         | RFPI 90      | 34'-0"                | 30'-6"     | 24'-5"   | 32'-5"                      | 29'-6"     | 23'-7"   | 30'-4"                      | 28'-2"     | 22'-6"   |
| 18"         | RFPI 700     | 32'-10"               | 29'-11"    | 26'-9"   | 31'-9"                      | 29'-6"     | 26'-4"   | 29'-8"                      | 27'-10"    | 25'-9"   |
| 20"         | RFPI 700     | 34'-7"                | 31'-7"     | 28'-1"   | 34'-0"                      | 31'-1"     | 27'-2"   | 32'-2"                      | 30'-2"     | 25'-11"  |
| 22"         | RFPI 700     | 36'-3"                | 33'-1"     | 28'-9"   | 35'-8"                      | 32'-7"     | 27'-10"  | 34'-6"                      | 31'-10"    | 26'-7"   |
| 24"         | RFPI 700     | 37'-10"               | 34'-7"     | 28'-9"   | 37'-3"                      | 34'-0"     | 27'-10"  | 36'-5"                      | 33'-2"     | 26'-7"   |
| 18"         | RFPI 900     | 37'-11"               | 35'-7"     | 32'-11"  | 36'-2"                      | 34'-0"     | 31'-5"   | 33'-10"                     | 31'-9"     | 29'-5"   |
| 20"         | RFPI 900     | 41'-1"                | 38'-7"     | 35'-1"   | 39'-2"                      | 36'-9"     | 34'-0"   | 36'-7"                      | 34'-4"     | 31'-10"  |
| 22"         | RFPI 900     | 44'-1"                | 41'-2"     | 36'-9"   | 42'-0"                      | 39'-6"     | 36'-2"   | 39'-3"                      | 36'-11"    | 34'-2"   |
| 24"         | RFPI 900     | 47'-0"                | 42'-11"    | 37'-6"   | 44'-10"                     | 42'-1"     | 36'-3"   | 41'-11"                     | 39'-4"     | 34'-8"   |

**Notes:**

1. Web stiffeners ARE Required for spans shown. See *Web Stiffener Requirements* on page 9.
2. Roofs must be sloped at least 1/4" in 12" to assure drainage.
3. Verify that the deflection criteria shown on each table conforms to local building code requirements.
4. Table values apply to uniformly loaded simple or multiple span joists. Span is the horizontal distance from face to face of supports. Use appropriate software or engineering analysis to analyze multiple span joists if the length of any span is less than half the length of an adjacent span.
5. Minimum end bearing length is 1-3/4". Minimum intermediate bearing length is 3-1/2".
6. Table values are based on cantilever lengths up to 2' max. Use beam sizing software for longer cantilever lengths.





# RigidLam® LVL Product Line

You've probably been building with traditional solid sawn lumber beams, headers, columns and studs for as long as you've been building. Now through advances in technology and design, there is a better choice – RigidLam LVL (Laminated Veneer Lumber) beams, headers, columns and studs. They are simply a better alternative than traditional solid sawn lumber pieces. Work with a stronger, stiffer, more consistent and more predictable building material. Compared with similar sized sections, our RigidLam LVL products can support heavier loads and allow greater spans than conventional lumber.

## MOISTURE REPELLENT SEALER

RigidLam LVL is coated with a wax-based moisture repellent sealer that is formulated specifically for LVL to provide temporary protection against moisture issues during normal storage and construction schedules. It is applied to all six sides of the LVL during the manufacturing process.

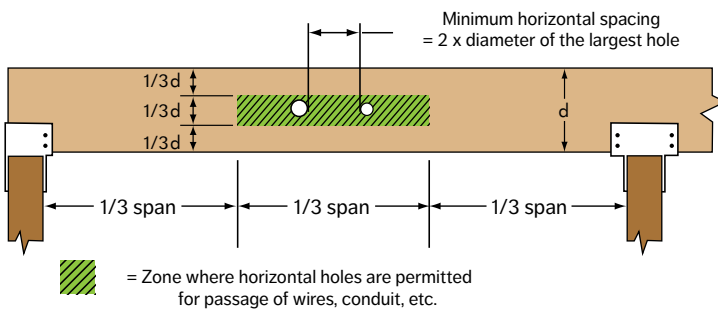
## STORAGE, HANDLING & INSTALLATION

- Do not drop RigidLam LVL off the delivery truck. Best practice is use of a forklift or boom.
- RigidLam LVL should be stored lying flat and protected from the weather.
- Keep the material a minimum of 6" above ground to minimize the absorption of ground moisture and allow circulation of air.
- Bundles should be supported every 10' or less.
- RigidLam LVL is for use in covered, dry conditions only. Protect from the weather on the jobsite both before and after installation.
- 1-1/2" x 14" and deeper and 1-3/4" x 16" and deeper must be a minimum of two plies unless designed by a design professional for a specific application.
- RigidLam LVL headers and beams shall not be cut, notched or drilled except as shown below. Heel cuts may be possible. Contact your Roseburg Forest Products representative.
- It is permissible to rip RigidLam LVL to a non-standard depth provided it is structurally adequate for the applied loads. Use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis to analyze non-standard depths.
- Protect RigidLam LVL from direct contact with concrete or masonry.
- Ends of RigidLam LVL bearing in concrete or masonry pockets must have a minimum of 1/2" airspace on top, sides and end.
- RigidLam LVL is manufactured without camber and therefore may be installed with either edge up or down.
- Do not install damaged RigidLam LVL.
- Do not walk on beams until they are fully braced, or serious injuries may result.

See additional notes on page 3

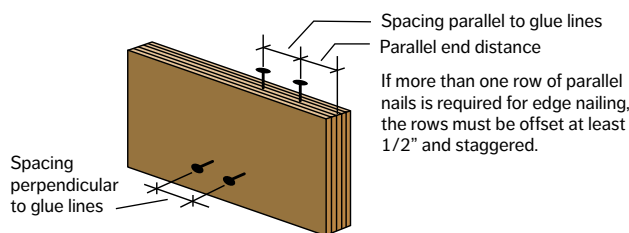


## PERMISSIBLE HORIZONTAL ROUND HOLE LOCATION FOR RIGIDLAM® LVL BEAMS



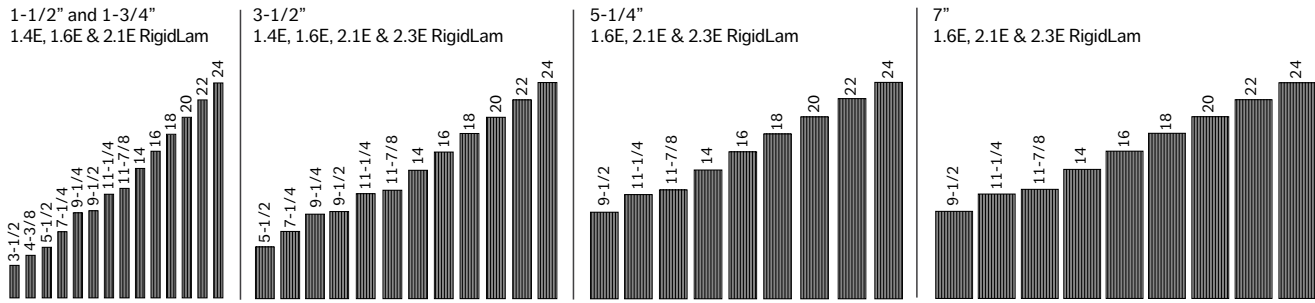
- For beam depths (d) of 4-3/8, 5-1/2, and 7-1/4 inches, the maximum hole diameter is 1, 1-1/8, and 1-1/2 inches, respectively.
- For deeper beams, the maximum hole diameter is 2 inches.
- Diagram applies for simple and multi-span applications with uniform loading.
- No more than 3 holes per span are permitted.
- Holes should not be cut in cantilevers.
- Note: Larger holes, more holes and/or holes that are located outside of the shaded area shown may be permissible as verified by appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis.

## MINIMUM NAIL SPACING FOR RIGIDLAM LVL BEAMS



| Nail Size        | Minimum Parallel Spacing | Minimum Parallel End Distance | Minimum Perpendicular Spacing |
|------------------|--------------------------|-------------------------------|-------------------------------|
| 8d Box           | 2"                       | 1-1/2"                        | 2"                            |
| 8d Common        | 3"                       | 2"                            | 2"                            |
| 10d & 12d Box    | 3"                       | 2"                            | 2"                            |
| 10d & 12d Common | 4"                       | 3"                            | 3"                            |
| 16d Sinker       | 4"                       | 3"                            | 3"                            |
| 16d Common       | 6"                       | 4"                            | 3"                            |

# Available RigidLam® LVL Sizes and Grades\*



\*Not all grades and/or sizes available in all markets. Contact your Roseburg EWP representative for availability.

## RigidLam® LVL Allowable Design Stresses<sup>1</sup>

|  | 1.4E LVL                             | 1.6E LVL  | 2.1E LVL  | 2.3E LVL  |
|--|--------------------------------------|-----------|-----------|-----------|
| True Modulus of Elasticity (MOE) <sup>2</sup> – Edgewise or Flatwise     | E (psi) = 1,400,000                  | 1,600,000 | 2,100,000 | 2,300,000 |
| Apparent Modulus of Elasticity (MOE) <sup>2</sup> – Edgewise or Flatwise | E (psi) = 1,300,000                  | 1,500,000 | 2,000,000 | 2,200,000 |
| Bending – Edgewise <sup>3,4</sup>  | F <sub>b</sub> edge (psi) = 2,250    | 2,250     | 3,100     | 3,100     |
| Bending – Flatwise <sup>5</sup>  | F <sub>b</sub> flat (psi) = 2,250    | 2,250     | 3,100     | 3,100     |
| Horizontal Shear - Edgewise  | F <sub>v</sub> edge (psi) = 200      | 220       | 290       | 290       |
| Horizontal Shear - Flatwise  | F <sub>v</sub> flat (psi) = 130      | 130       | 130       | 130       |
| Compression Perp. To Grain <sup>2</sup> - Edgewise                       | F <sub>c</sub> perp edge (psi) = 560 | 575       | 750       | 750       |
| Compression Perp. To Grain <sup>2</sup> - Flatwise                       | F <sub>c</sub> perp flat (psi) = 650 | 650       | 650       | 650       |
| Compression Parallel to Grain  | F <sub>c</sub> para (psi) = 1,950    | 1,950     | 3,000     | 3,000     |
| Tension Parallel to Grain <sup>6</sup>                                   | F <sub>t</sub> (psi) = 1,500         | 1,500     | 2,100     | 2,100     |
| MOE for stability calculations <sup>2</sup>                              | E min (psi) = 704,639                | 805,301   | 1,056,958 | 1,157,620 |

- These allowable design stresses apply to dry service conditions.
- No increase is allowed for duration of load.
- The tabulated values are based on a reference depth of 12 inches. For other depths, when loaded edgewise, the allowable bending stress (F<sub>b</sub>) shall be modified by a depth factor, K<sub>d</sub> = (12/d)<sup>1/8</sup> for Douglas fir LVL (Mill #1055) or K<sub>d</sub> = (12/d)<sup>1/5</sup> for Southern Pine LVL (Mill #1125), where d is the LVL depth in inches. For depths less than 3-1/2 inches, multiply the tabulated value by 1.17 for DF LVL or 1.28 for SP LVL.
- A factor of 1.04 may be applied for repetitive members as defined in the National Design Specification for Wood Construction.
- Tabulated F<sub>b</sub> flat values are based on a thickness of 1-3/4". For other thicknesses, when loaded flatwise, multiply F<sub>b</sub> flat by (1.75/t)<sup>1/5</sup>, where t is the LVL thickness in inches. For thicknesses less than 1-3/4", use the tabulated value.
- Tensile stress is based on a 4-foot gage length. For greater lengths, multiply F<sub>t</sub> by (4/L)<sup>1/9</sup> where L = length in feet. For lengths less than 4 feet, use the tabulated value.

## RigidLam® LVL Design Values (1-Ply 1-3/4" Edgewise)

| Depth (in) | 1.6E Douglas-fir RigidLam LVL |                      |  |                         | 2.1E Douglas-fir RigidLam LVL |                      |  |                         | 2.3E Douglas-fir RigidLam LVL |                      |  |                         | 2.1E Southern Pine RigidLam LVL |                      |  |                         |
|------------|-------------------------------|----------------------|--|-------------------------|-------------------------------|----------------------|--|-------------------------|-------------------------------|----------------------|--|-------------------------|---------------------------------|----------------------|--|-------------------------|
|            | Max. Vert. Shear (lbs)        | Max. Moment (ft-lbs) | EI x10 <sup>6</sup> (lbs-in <sup>2</sup> ) | Approx. Weight (lbs/ft) | Max. Vert. Shear (lbs)        | Max. Moment (ft-lbs) | EI x10 <sup>6</sup> (lbs-in <sup>2</sup> ) | Approx. Weight (lbs/ft) | Max. Vert. Shear (lbs)        | Max. Moment (ft-lbs) | EI x10 <sup>6</sup> (lbs-in <sup>2</sup> ) | Approx. Weight (lbs/ft) | Max. Vert. Shear (lbs)          | Max. Moment (ft-lbs) | EI x10 <sup>6</sup> (lbs-in <sup>2</sup> ) | Approx. Weight (lbs/ft) |
| 3-1/2      | 898                           | 781                  | 10   | 1.53                    | 1,184                         | 1,077                | 13   | 1.62                    | 1,184                         | 1,077                | 14   | 1.62                    | 1,184                           | 1,181                | 13   | 1.79                    |
| 4-3/8      | 1,123                         | 1,187                | 20   | 1.91                    | 1,480                         | 1,636                | 26   | 2.02                    | 1,480                         | 1,636                | 28   | 2.02                    | 1,480                           | 1,765                | 26   | 2.23                    |
| 5-1/4      | 1,348                         | 1,671                | 34   | 2.30                    | 1,776                         | 2,303                | 44   | 2.42                    | 1,776                         | 2,303                | 49   | 2.42                    | 1,776                           | 2,450                | 44   | 2.68                    |
| 5-1/2      | 1,412                         | 1,824                | 39   | 2.41                    | 1,861                         | 2,513                | 51   | 2.54                    | 1,861                         | 2,513                | 56   | 2.54                    | 1,861                           | 2,664                | 51   | 2.81                    |
| 7          | 1,797                         | 2,866                | 80   | 3.06                    | 2,368                         | 3,949                | 105  | 3.23                    | 2,368                         | 3,949                | 115  | 3.23                    | 2,368                           | 4,112                | 105  | 3.57                    |
| 7-1/4      | 1,861                         | 3,061                | 89   | 3.17                    | 2,453                         | 4,218                | 117  | 3.35                    | 2,453                         | 4,218                | 128  | 3.35                    | 2,453                           | 4,380                | 117  | 3.70                    |
| 9-1/4      | 2,374                         | 4,834                | 185  | 4.05                    | 3,130                         | 6,660                | 242  | 4.27                    | 3,130                         | 6,660                | 265  | 4.27                    | 3,130                           | 6,791                | 242  | 4.72                    |
| 9-1/2      | 2,438                         | 5,082                | 200  | 4.16                    | 3,214                         | 7,002                | 263  | 4.39                    | 3,214                         | 7,002                | 288  | 4.39                    | 3,214                           | 7,125                | 263  | 4.85                    |
| 11-1/4     | 2,888                         | 6,977                | 332  | 4.92                    | 3,806                         | 9,613                | 436  | 5.20                    | 3,806                         | 9,613                | 478  | 5.20                    | 3,806                           | 9,660                | 436  | 5.74                    |
| 11-7/8     | 3,048                         | 7,722                | 391  | 5.20                    | 4,018                         | 10,639               | 513  | 5.48                    | 4,018                         | 10,639               | 562  | 5.48                    | 4,018                           | 10,647               | 513  | 6.06                    |
| 14         | 3,593                         | 10,514               | 640  | 6.13                    | 4,737                         | 14,486               | 840  | 6.47                    | 4,737                         | 14,486               | 920  | 6.47                    | 4,737                           | 14,320               | 840  | 7.15                    |
| 16         | 4,107                         | 13,506               | 956  | 7.00                    | 5,413                         | 18,608               | 1,254                                      | 7.39                    | 5,413                         | 18,608               | 1,374                                      | 7.39                    | 5,413                           | 18,210               | 1,254                                      | 8.17                    |
| 18         | 4,620                         | 16,843               | 1,361                                      | 7.88                    | 6,090                         | 23,206               | 1,786                                      | 8.31                    | 6,090                         | 23,206               | 1,956                                      | 8.31                    | 6,090                           | 22,511               | 1,786                                      | 9.19                    |
| 20         | 5,133                         | 20,522               | 1,867                                      | 8.75                    | 6,767                         | 28,275               | 2,450                                      | 9.24                    | 6,767                         | 28,275               | 2,683                                      | 9.24                    | 6,767                           | 27,212               | 2,450                                      | 10.21                   |
| 22         | 5,647                         | 24,537               | 2,485                                      | 9.63                    | 7,443                         | 33,807               | 3,261                                      | 10.16                   | 7,443                         | 33,807               | 3,572                                      | 10.16                   | 7,443                           | 32,305               | 3,261                                      | 11.23                   |
| 24         | 6,160                         | 28,886               | 3,226                                      | 10.50                   | 8,120                         | 39,798               | 4,234                                      | 11.08                   | 8,120                         | 39,798               | 4,637                                      | 11.08                   | 8,120                           | 37,782               | 4,234                                      | 12.25                   |

- Allowable shear and moment values are for 100% Duration of Load and may be adjusted for other durations of load. EI shall not be adjusted for duration of load.
- For 2-Ply, 3-Ply and 4-Ply LVL members, the values in the tables may be multiplied by 2, 3 and 4 respectively.
- For 1-1/2" thick LVL members, allowable design values may be obtained by multiplying the table values by 0.857.
- 1-1/2" thick members 14" and deeper must be a minimum of two plies unless designed by a design professional for a specific application.
- 1-3/4" thick members 16" and deeper must be a minimum of two plies unless designed by a design professional for a specific application.
- Single ply 1-1/2" thick members are assumed to be laterally braced at 16" o.c. or less.
- Single ply 1-3/4" thick members are assumed to be laterally braced at 24" o.c. or less.

# RigidLam® LVL Columns

Douglas-fir LVL and Southern Pine LVL

## 1.6E RIGIDLAM LVL COLUMNS ALLOWABLE AXIAL LOAD CAPACITY (LBS)

| Effective Column Length (ft.) | Column Size     |                |                |               |                |                |             |                |                |             |                |                |            |                |                |            |                |                |
|-------------------------------|-----------------|----------------|----------------|---------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|------------|----------------|----------------|------------|----------------|----------------|
|                               | 3-1/2" x 3-1/2" |                |                | 3-1/2" x 5/4" |                |                | 3-1/2" x 7" |                |                | 5/4" x 5/4" |                |                | 5/4" x 7"  |                |                | 7" x 7"    |                |                |
|                               | Floor 100%      | Roof Snow 115% | Roof Live 125% | Floor 100%    | Roof Snow 115% | Roof Live 125% | Floor 100%  | Roof Snow 115% | Roof Live 125% | Floor 100%  | Roof Snow 115% | Roof Live 125% | Floor 100% | Roof Snow 115% | Roof Live 125% | Floor 100% | Roof Snow 115% | Roof Live 125% |
| 6                             | 8,555           | 9,110          | 9,425          | 12,835        | 13,665         | 14,140         | 17,115      | 18,220         | 18,855         | 25,325      | 28,070         | 29,770         | 33,770     | 37,430         | 39,690         | 48,660     | 54,850         | 58,825         |
| 7                             | 7,160           | 7,530          | 7,745          | 10,740        | 11,295         | 11,620         | 14,320      | 15,060         | 15,490         | 23,170      | 25,330         | 26,625         | 30,890     | 33,775         | 35,500         | 46,360     | 51,865         | 55,345         |
| 8                             | 6,015           | 6,275          | 6,430          | 9,020         | 9,415          | 9,645          | 12,030      | 12,555         | 12,860         | 20,905      | 22,540         | 23,500         | 27,870     | 30,055         | 31,330         | 43,820     | 48,590         | 51,545         |
| 9                             | 5,095           | 5,290          | 5,400          | 7,645         | 7,935          | 8,105          | 10,195      | 10,585         | 10,805         | 18,675      | 19,910         | 20,630         | 24,905     | 26,550         | 27,505         | 41,080     | 45,105         | 47,535         |
| 10                            | 4,360           | 4,510          | 4,590          | 6,545         | 6,765          | 6,890          | 8,725       | 9,020          | 9,185          | 16,625      | 17,575         | 18,125         | 22,165     | 23,430         | 24,165         | 38,210     | 41,520         | 43,480         |
| 11                            | 3,770           | 3,880          | 3,945          | 5,655         | 5,825          | 5,920          | 7,540       | 7,765          | 7,895          | 14,800      | 15,550         | 15,985         | 19,735     | 20,735         | 21,310         | 35,305     | 37,990         | 39,565         |
| 12                            | 3,285           | 3,375          | 3,425          | 4,925         | 5,060          | 5,140          | 6,570       | 6,750          | 6,850          | 13,215      | 13,815         | 14,165         | 17,625     | 18,425         | 18,885         | 32,470     | 34,655         | 35,930         |
| 13                            | 2,885           | 2,955          | 3,000          | 4,330         | 4,435          | 4,500          | 5,770       | 5,915          | 6,000          | 11,845      | 12,335         | 12,615         | 15,795     | 16,445         | 16,820         | 29,795     | 31,600         | 32,645         |
| 14                            | 2,555           | 2,610          | 2,645          | 3,830         | 3,920          | 3,970          | 5,110       | 5,225          | 5,295          | 10,660      | 11,065         | 11,295         | 14,215     | 14,750         | 15,060         | 27,335     | 28,840         | 29,710         |
| 15                            |                 |                |                |               |                |                |             |                |                | 9,630       | 9,970          | 10,160         | 12,845     | 13,290         | 13,550         | 25,105     | 26,370         | 27,105         |
| 16                            |                 |                |                |               |                |                |             |                |                | 8,740       | 9,025          | 9,185          | 11,655     | 12,030         | 12,250         | 23,090     | 24,170         | 24,790         |
| 17                            |                 |                |                |               |                |                |             |                |                | 7,960       | 8,200          | 8,340          | 10,615     | 10,935         | 11,120         | 21,285     | 22,205         | 22,740         |
| 18                            |                 |                |                |               |                |                |             |                |                | 7,275       | 7,485          | 7,600          | 9,705      | 9,980          | 10,135         | 19,660     | 20,460         | 20,920         |
| 19                            |                 |                |                |               |                |                |             |                |                | 6,675       | 6,855          | 6,955          | 8,900      | 9,140          | 9,275          | 18,200     | 18,895         | 19,295         |
| 20                            |                 |                |                |               |                |                |             |                |                | 6,145       | 6,300          | 6,385          | 8,190      | 8,400          | 8,515          | 16,890     | 17,495         | 17,845         |
| 21                            |                 |                |                |               |                |                |             |                |                | 5,670       | 5,805          | 5,885          | 7,560      | 7,745          | 7,845          | 15,705     | 16,240         | 16,545         |
| 22                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 14,635     | 15,110         | 15,380         |
| 23                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 13,670     | 14,085         | 14,330         |
| 24                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 12,790     | 13,165         | 13,380         |
| 25                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 11,990     | 12,325         | 12,515         |

## 2.1E RIGIDLAM LVL COLUMNS ALLOWABLE AXIAL LOAD CAPACITY (LBS)

| Effective Column Length (ft.) | Column Size     |                |                |               |                |                |             |                |                |             |                |                |            |                |                |            |                |                |
|-------------------------------|-----------------|----------------|----------------|---------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|------------|----------------|----------------|------------|----------------|----------------|
|                               | 3-1/2" x 3-1/2" |                |                | 3-1/2" x 5/4" |                |                | 3-1/2" x 7" |                |                | 5/4" x 5/4" |                |                | 5/4" x 7"  |                |                | 7" x 7"    |                |                |
|                               | Floor 100%      | Roof Snow 115% | Roof Live 125% | Floor 100%    | Roof Snow 115% | Roof Live 125% | Floor 100%  | Roof Snow 115% | Roof Live 125% | Floor 100%  | Roof Snow 115% | Roof Live 125% | Floor 100% | Roof Snow 115% | Roof Live 125% | Floor 100% | Roof Snow 115% | Roof Live 125% |
| 6                             | 11,585          | 12,280         | 12,685         | 17,380        | 18,420         | 19,025         | 23,175      | 24,565         | 25,370         | 35,465      | 39,095         | 41,315         | 47,285     | 52,130         | 55,085         | 69,150     | 77,705         | 83,160         |
| 7                             | 9,615           | 10,085         | 10,360         | 14,420        | 15,130         | 15,540         | 19,230      | 20,175         | 20,725         | 32,035      | 34,805         | 36,445         | 42,715     | 46,406         | 48,595         | 65,395     | 72,855         | 77,530         |
| 8                             | 8,040           | 8,375          | 8,570          | 12,060        | 12,565         | 12,855         | 16,080      | 16,755         | 17,145         | 28,560      | 30,625         | 31,835         | 38,085     | 40,835         | 42,450         | 61,290     | 67,615         | 71,490         |
| 9                             | 6,795           | 7,040          | 7,185          | 10,190        | 10,565         | 10,780         | 13,590      | 14,085         | 14,375         | 25,295      | 26,855         | 27,765         | 33,725     | 35,810         | 37,025         | 56,945     | 62,150         | 65,270         |
| 10                            | 5,800           | 5,990          | 6,100          | 8,705         | 8,985          | 9,150          | 11,605      | 11,985         | 12,200         | 22,380      | 23,590         | 24,295         | 29,845     | 31,455         | 32,395         | 52,490     | 56,700         | 59,185         |
| 11                            | 5,005           | 5,150          | 5,235          | 7,510         | 7,725          | 7,855          | 10,015      | 10,305         | 10,470         | 19,850      | 20,810         | 21,365         | 26,470     | 27,745         | 28,485         | 48,115     | 51,515         | 53,510         |
| 12                            | 4,355           | 4,470          | 4,540          | 6,535         | 6,710          | 6,810          | 8,715       | 8,945          | 9,080          | 17,675      | 18,445         | 18,890         | 23,570     | 24,595         | 25,190         | 43,980     | 46,755         | 48,375         |
| 13                            | 3,825           | 3,915          | 3,970          | 5,735         | 5,875          | 5,955          | 7,650       | 7,835          | 7,940          | 15,810      | 16,435         | 16,800         | 21,080     | 21,915         | 22,400         | 40,175     | 42,470         | 43,810         |
| 14                            | 3,380           | 3,455          | 3,500          | 5,075         | 5,185          | 5,250          | 6,765       | 6,915          | 7,000          | 14,205      | 14,720         | 15,020         | 18,940     | 19,630         | 20,030         | 36,740     | 38,655         | 39,775         |
| 15                            |                 |                |                |               |                |                |             |                |                | 12,820      | 13,250         | 13,500         | 17,090     | 17,670         | 18,000         | 33,655     | 35,275         | 36,215         |
| 16                            |                 |                |                |               |                |                |             |                |                | 11,620      | 11,980         | 12,190         | 15,490     | 15,975         | 16,255         | 30,895     | 32,275         | 33,075         |
| 17                            |                 |                |                |               |                |                |             |                |                | 10,570      | 10,880         | 11,060         | 14,095     | 14,510         | 14,745         | 28,430     | 29,615         | 30,300         |
| 18                            |                 |                |                |               |                |                |             |                |                | 9,655       | 9,920          | 10,075         | 12,875     | 13,230         | 13,435         | 26,225     | 27,250         | 27,845         |
| 19                            |                 |                |                |               |                |                |             |                |                | 8,850       | 9,080          | 9,215          | 11,805     | 12,110         | 12,285         | 24,255     | 25,145         | 25,660         |
| 20                            |                 |                |                |               |                |                |             |                |                | 8,140       | 8,340          | 8,455          | 10,855     | 11,120         | 11,275         | 22,480     | 23,260         | 23,710         |
| 21                            |                 |                |                |               |                |                |             |                |                | 7,510       | 7,685          | 7,785          | 10,015     | 10,250         | 10,380         | 20,890     | 21,575         | 21,970         |
| 22                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 19,450     | 20,060         | 20,410         |
| 23                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 18,155     | 18,695         | 19,000         |
| 24                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 16,975     | 17,455         | 17,735         |
| 25                            |                 |                |                |               |                |                |             |                |                |             |                |                |            |                |                | 15,905     | 16,340         | 16,585         |

**Notes:**

- Column is a single, one-piece member for dry-use applications only. **DO NOT use these tables for multi-ply, built-up column applications.**
- Column is assumed to have adequate bracing in all directions at both ends.
- Loads are calculated per the 2015 National Design Specification® for axial loads only.
- For side-loaded columns, use appropriate design software or consult with a design professional.
- Table assumes an eccentricity of 1/6 of the smaller column dimension.
- Table assumes column bearing to be steel or concrete. When bearing on a wood plate (with F<sub>c</sub> perp = 425 PSI), axial loads shall not exceed the load shown below for the given column size for all durations of load:

| Column Size | 3/2" x 3/2" | 3/2" x 5/4" | 3/2" x 7" | 5/4" x 5/4" | 5/4" x 7" | 7" x 7" |
|-------------|-------------|-------------|-----------|-------------|-----------|---------|
| Load (lbs.) | 5,206       | 7,809       | 10,412    | 11,714      | 15,618    | 20,825  |

**1.6E RigidLam LVL Allowable Design Stresses<sup>(1)</sup>**

|  |   |                              |
|--|---|------------------------------|
| True Modulus of Elasticity (MOE) E           | = | 1,600,000 PSI <sup>(2)</sup> |
| Bending (edgewise & flatwise) F <sub>b</sub> | = | 2,250 PSI <sup>(3)(4)</sup>  |
| Compression Parallel to Grain F <sub>c</sub> | = | 1,950 PSI                    |

**2.1E RigidLam LVL Allowable Design Stresses<sup>(1)</sup>**

|  |   |                              |
|--|---|------------------------------|
| True Modulus of Elasticity (MOE) E           | = | 2,100,000 PSI <sup>(2)</sup> |
| Bending (edgewise & flatwise) F <sub>b</sub> | = | 3,100 PSI <sup>(3)(4)</sup>  |
| Compression Parallel to Grain F <sub>c</sub> | = | 3,000 PSI                    |

- (1) These allowable design stresses apply to dry service conditions.
- (2) No increase is allowed for duration of load.
- (3) Edgewise bending: For depths other than 12" multiply F<sub>b</sub> by (12/d)<sup>1/8</sup>, where d = depth of member (inches).
- (4) Flatwise bending: For thicknesses greater than 1-3/4" multiply F<sub>b</sub> by (1.75/t)<sup>1/5</sup>, where t = thickness of member (inches).



# RigidLam® LVL Studs\*

\*Currently, only Douglas-fir RigidLam LVL, grades 1.6E through 2.1E, have been qualified for use in conventional or engineered stud wall construction. Although conventional construction methods have allowed builders to meet the needs of homeowners, they are constantly being challenged with the need for straighter, stronger and taller wall framing components. Roseburg Forest Products RigidLam® LVL studs are an answer to the needs of both homeowners and builders. RigidLam studs are manufactured to the industry's highest standards and unlike solid-sawn lumber, RigidLam studs are straight, strong, and stiff, resulting in a faster installation time, fewer callbacks, and straight walls that give homeowners peace of mind.

## FIRE RATED STUD WALL APPLICATIONS

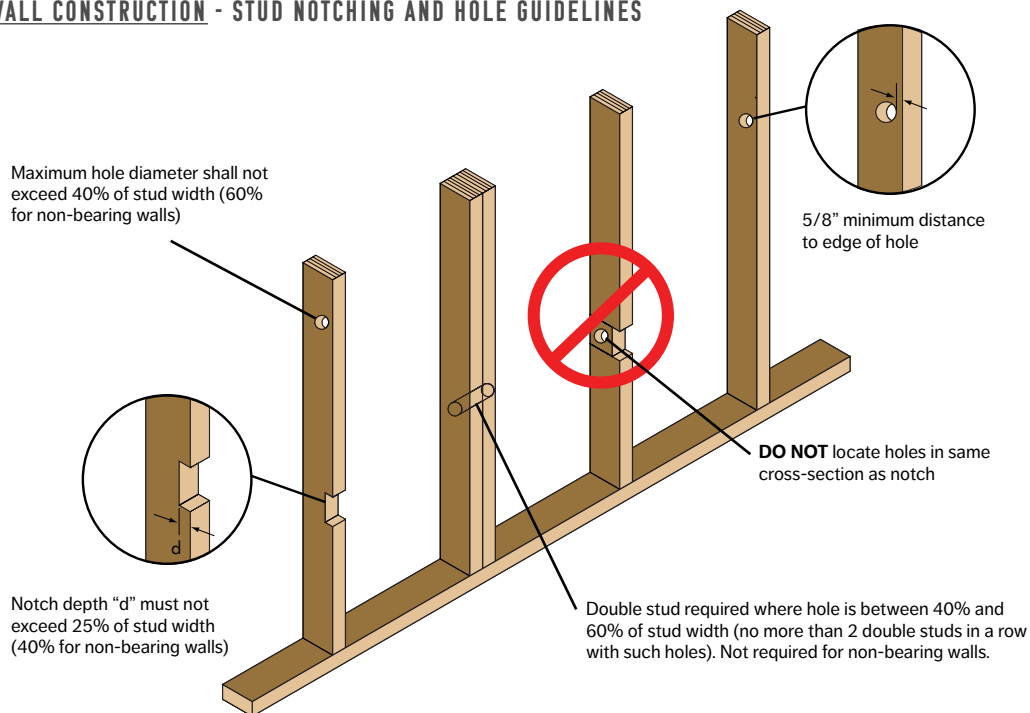
**Conventional Stud Wall Construction:** RigidLam studs are permitted to be used in fire-resistance-rated conventional wall construction and are considered to be a direct replacement for solid-sawn lumber, having the same dimensions, in any fire-resistance-rated wall assembly listed in Table 721.1(2) of the IBC. A minimum of 2.5 pcf of mineral wool insulation must be placed in the stud cavity.

**Engineered Stud Wall Construction:** See APA Product Report PR-L289 for additional limitations and design value adjustments when using RigidLam studs in fire-resistance-rated engineered wall construction. PR-L289 can be found on the Roseburg website ([www.roseburg.com](http://www.roseburg.com)) in the Engineered Wood Products section or on the APA website ([www.apawood.org](http://www.apawood.org)).

## CONVENTIONAL CONSTRUCTION

Based on testing conducted in accordance with ICC Evaluation Service Acceptance Criteria for Wood-Based Studs, AC202, RigidLam LVL studs are considered to be alternatives to sawn lumber studs complying with Section 2308.5 of the IBC, and Section R602 of the IRC.

## CONVENTIONAL WALL CONSTRUCTION - STUD NOTCHING AND HOLE GUIDELINES



## ENGINEERED CONSTRUCTION

For building applications that fall outside the scope of conventional construction, RigidLam LVL studs may be used provided they are designed in accordance with accepted engineering practice. RigidLam LVL studs are available in 1.6E and 2.1E grades in thicknesses of 1-1/2" and 1-3/4".

### RIGIDLAM® LVL STUD ALLOWABLE DESIGN STRESSES VS. SOLID-SAWN LUMBER<sup>(1)(a)</sup>

| 2x4                            |       | Joist (edgewise)     |                |                                | Plank (flatwise)     |                |                                | Axial                |                      | MOE       |
|--------------------------------|-------|----------------------|----------------|--------------------------------|----------------------|----------------|--------------------------------|----------------------|----------------------|-----------|
|                                |       | F <sub>b</sub>       | F <sub>v</sub> | F <sub>C⊥</sub> <sup>(2)</sup> | F <sub>b</sub>       | F <sub>v</sub> | F <sub>C⊥</sub> <sup>(2)</sup> | F <sub>c</sub>       | F <sub>t</sub>       |           |
| Species                        | Grade | (psi)                | (psi)          | (psi)                          | (psi)                | (psi)          | (psi)                          | (psi)                | (psi)                | (psi)     |
| RigidLam LVL Stud              | 1.6E  | 2,730 <sup>(4)</sup> | 220            | 575                            | 2,250                | 130            | 650                            | 1,950                | 1,500 <sup>(3)</sup> | 1,600,000 |
| RigidLam LVL Stud              | 2.1E  | 3,761 <sup>(4)</sup> | 290            | 750                            | 3,100                | 130            | 650                            | 3,000                | 2,100 <sup>(3)</sup> | 2,100,000 |
| Douglas-fir <sup>(b)</sup>     | No. 2 | 1,553 <sup>(c)</sup> | 180            | 625                            | 1,485 <sup>(d)</sup> | 180            | 625                            | 1,553 <sup>(e)</sup> | 863 <sup>(e)</sup>   | 1,600,000 |
| Spruce-Pine-Fir <sup>(b)</sup> | No. 2 | 1,509 <sup>(c)</sup> | 135            | 425                            | 1,444 <sup>(d)</sup> | 135            | 425                            | 1,323 <sup>(e)</sup> | 675 <sup>(e)</sup>   | 1,400,000 |

| 2x6                            |       | Joist (edgewise)     |                |                                | Plank (flatwise)     |                |                                | Axial                |                      | MOE       |
|--------------------------------|-------|----------------------|----------------|--------------------------------|----------------------|----------------|--------------------------------|----------------------|----------------------|-----------|
|                                |       | F <sub>b</sub>       | F <sub>v</sub> | F <sub>C⊥</sub> <sup>(2)</sup> | F <sub>b</sub>       | F <sub>v</sub> | F <sub>C⊥</sub> <sup>(2)</sup> | F <sub>c</sub>       | F <sub>t</sub>       |           |
| Species                        | Grade | (psi)                | (psi)          | (psi)                          | (psi)                | (psi)          | (psi)                          | (psi)                | (psi)                | (psi)     |
| RigidLam LVL Stud              | 1.6E  | 2,580 <sup>(4)</sup> | 220            | 575                            | 2,250                | 130            | 650                            | 1,950                | 1,500 <sup>(3)</sup> | 1,600,000 |
| RigidLam LVL Stud              | 2.1E  | 3,554 <sup>(4)</sup> | 290            | 750                            | 3,100                | 130            | 650                            | 3,000                | 2,100 <sup>(3)</sup> | 2,100,000 |
| Douglas-fir <sup>(b)</sup>     | No. 2 | 1,346 <sup>(c)</sup> | 180            | 625                            | 1,346 <sup>(d)</sup> | 180            | 625                            | 1,485 <sup>(e)</sup> | 748 <sup>(e)</sup>   | 1,600,000 |
| Spruce-Pine-Fir <sup>(b)</sup> | No. 2 | 1,308 <sup>(c)</sup> | 135            | 425                            | 1,308 <sup>(d)</sup> | 135            | 425                            | 1,265 <sup>(e)</sup> | 585 <sup>(e)</sup>   | 1,400,000 |

#### RigidLam LVL Notes

- These allowable design stresses apply to dry service conditions
- Duration of Load increases not allowed
- Tabulated values are based on a 4 ft length. For lengths greater than 4 ft, multiply by  $(4/\text{Length})^{1/9}$ . For lengths less than 4 ft, use the table values.
- Bending values have been multiplied by  $(12/d)^{1/8}$  and a repetitive member factor of 1.04

#### Solid-Sawn Notes

- These allowable design stresses apply to dry service conditions
- Solid-sawn design values taken from 2018 National Design Specification
- F<sub>b</sub> has been adjusted for repetitive member use and size factor increases
- F<sub>b</sub> has been adjusted for size factor increases and flat-use increases
- F<sub>c</sub> and F<sub>t</sub> have been adjusted for size factor increases

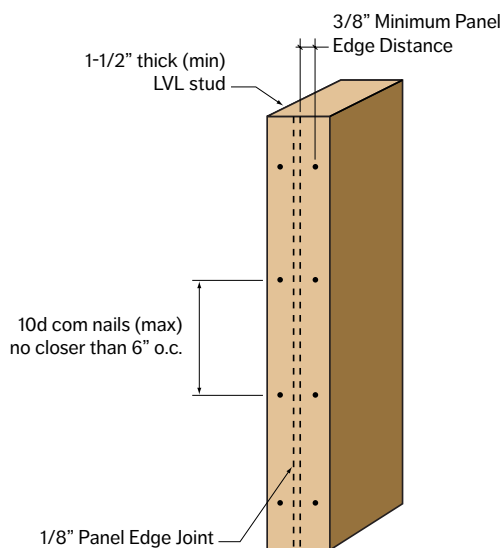
## ENGINEERED WALL CONSTRUCTION - RIGIDLAM STUD HOLE AND NOTCHING GUIDELINES

**Notches:** A notch up to 40% of the width of the stud may be placed anywhere along the stud provided the reduced section is accounted for using standard engineering analysis and the allowable bending and/or tension stress is reduced by 30% to account for the stress concentrations that occur at the corners of the notch.

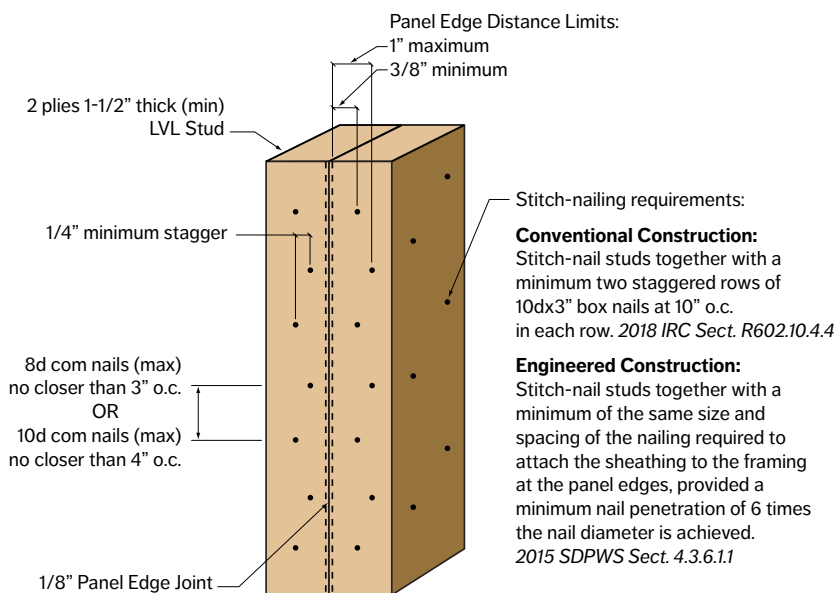
**Holes:** A hole with a maximum diameter of 30% of the width of the stud may be placed anywhere along the stud **at the centerline of the stud width** without further engineering analysis for lateral bending considerations. For other conditions, holes may be placed anywhere along the stud provided the reduced section is accounted for using standard engineering analysis.

## CONVENTIONAL AND ENGINEERED WALL CONSTRUCTION - RIGIDLAM LVL NAILING RESTRICTIONS

### Nailing Restrictions for Single Stud at Adjoining Panel Edges



### Nailing Restrictions for Double Studs at Adjoining Panel Edges



# RigidLam® LVL Stair Stringers

Maximum Horizontal Stair Stringer Run for Both Douglas-fir and Southern Pine LVL

| 1.4E RigidLam LVL                      |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| 1-1/2" Thick LVL                       |             |             |             |             |             |
| Gross Stringer Depth                   | Tread Width |             |             |             |             |
|  | 36"         |             | 42"         |             | 48"         |
|  | 2 Stringers | 3 Stringers | 3 Stringers | 3 Stringers | 3 Stringers |
| 40 psf Live Load and 12 psf Dead Load  |             |             |             |             |             |
| 9-1/2"                                 | 4'-10"      | 5'-5"       | 5'-2"       | 5'-1"       | 5'-0"       |
| 11-7/8"                                | 8'-8"       | 9'-10"      | 9'-4"       | 9'-3"       | 9'-0"       |
| 14"                                    | 12'-2"      | 13'-9"      | 13'-1"      | 12'-11"     | 12'-7"      |
| 16"                                    | 15'-5"      | 17'-5"      | 16'-7"      | 16'-5"      | 15'-11"     |
| 100 psf Live Load and 12 psf Dead Load |             |             |             |             |             |
| 9-1/2"                                 | 4'-3"       | 4'-9"       | 4'-7"       | 4'-6"       | 4'-5"       |
| 11-7/8"                                | 7'-3"       | 8'-2"       | 7'-9"       | 7'-8"       | 7'-6"       |
| 14"                                    | 9'-11"      | 11'-2"      | 10'-8"      | 10'-6"      | 10'-3"      |
| 16"                                    | 12'-5"      | 14'-0"      | 13'-5"      | 13'-3"      | 12'-11"     |

| 1.4E RigidLam LVL                      |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| 1-3/4" Thick LVL                       |             |             |             |             |             |
| Gross Stringer Depth                   | Tread Width |             |             |             |             |
|  | 36"         |             | 42"         |             | 48"         |
|  | 2 Stringers | 3 Stringers | 3 Stringers | 3 Stringers | 3 Stringers |
| 40 psf Live Load and 12 psf Dead Load  |             |             |             |             |             |
| 9-1/2"                                 | 5'-0"       | 5'-8"       | 5'-5"       | 5'-4"       | 5'-3"       |
| 11-7/8"                                | 9'-1"       | 10'-3"      | 10'-3"      | 9'-8"       | 9'-5"       |
| 14"                                    | 12'-9"      | 14'-4"      | 13'-9"      | 13'-6"      | 13'-2"      |
| 16"                                    | 16'-2"      | 18'-2"      | 17'-5"      | 17'-2"      | 16'-9"      |
| 100 psf Live Load and 12 psf Dead Load |             |             |             |             |             |
| 9-1/2"                                 | 4'-5"       | 5'-0"       | 4'-9"       | 4'-9"       | 4'-7"       |
| 11-7/8"                                | 7'-7"       | 8'-6"       | 8'-2"       | 8'-1"       | 7'-10"      |
| 14"                                    | 10'-5"      | 11'-8"      | 11'-2"      | 11'-0"      | 10'-9"      |
| 16"                                    | 13'-0"      | 14'-8"      | 14'-0"      | 13'-10"     | 13'-6"      |

| 1.6E RigidLam LVL                      |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| 1-1/2" Thick LVL                       |             |             |             |             |             |
| Gross Stringer Depth                   | Tread Width |             |             |             |             |
|  | 36"         |             | 42"         |             | 48"         |
|  | 2 Stringers | 3 Stringers | 3 Stringers | 3 Stringers | 3 Stringers |
| 40 psf Live Load and 12 psf Dead Load  |             |             |             |             |             |
| 9-1/2"                                 | 5'-0"       | 5'-8"       | 5'-5"       | 5'-4"       | 5'-2"       |
| 11-7/8"                                | 9'-1"       | 10'-3"      | 9'-9"       | 9'-8"       | 9'-5"       |
| 14"                                    | 12'-8"      | 14'-4"      | 13'-8"      | 13'-6"      | 13'-2"      |
| 16"                                    | 16'-1"      | 18'-2"      | 17'-4"      | 17'-1"      | 16'-8"      |
| 100 psf Live Load and 12 psf Dead Load |             |             |             |             |             |
| 9-1/2"                                 | 4'-5"       | 5'-0"       | 4'-9"       | 4'-8"       | 4'-7"       |
| 11-7/8"                                | 7'-7"       | 8'-6"       | 8'-2"       | 8'-0"       | 7'-10"      |
| 14"                                    | 10'-4"      | 11'-8"      | 11'-2"      | 11'-0"      | 10'-8"      |
| 16"                                    | 13'-0"      | 14'-8"      | 14'-0"      | 13'-9"      | 13'-5"      |

| 1.6E RigidLam LVL                      |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| 1-3/4" Thick LVL                       |             |             |             |             |             |
| Gross Stringer Depth                   | Tread Width |             |             |             |             |
|  | 36"         |             | 42"         |             | 48"         |
|  | 2 Stringers | 3 Stringers | 3 Stringers | 3 Stringers | 3 Stringers |
| 40 psf Live Load and 12 psf Dead Load  |             |             |             |             |             |
| 9-1/2"                                 | 5'-3"       | 5'-11"      | 5'-8"       | 5'-7"       | 5'-5"       |
| 11-7/8"                                | 9'-6"       | 10'-9"      | 10'-3"      | 10'-1"      | 9'-10"      |
| 14"                                    | 13'-3"      | 15'-0"      | 14'-4"      | 14'-2"      | 13'-9"      |
| 16"                                    | 16'-10"     | 18'-11"     | 18'-2"      | 17'-11"     | 17'-6"      |
| 100 psf Live Load and 12 psf Dead Load |             |             |             |             |             |
| 9 1/2"                                 | 4'-8"       | 5'-3"       | 5'-0"       | 4'-11"      | 4'-10"      |
| 11-7/8"                                | 7'-11"      | 8'-11"      | 8'-6"       | 8'-5"       | 8'-2"       |
| 14"                                    | 10'-10"     | 12'-3"      | 11'-8"      | 11'-6"      | 11'-3"      |
| 16"                                    | 13'-7"      | 15'-4"      | 14'-8"      | 14'-5"      | 14'-1"      |

| 2.1E RigidLam LVL                      |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| 1-1/2" Thick LVL                       |             |             |             |             |             |
| Gross Stringer Depth                   | Tread Width |             |             |             |             |
|  | 36"         |             | 42"         |             | 48"         |
|  | 2 Stringers | 3 Stringers | 3 Stringers | 3 Stringers | 3 Stringers |
| 40 psf Live Load and 12 psf Dead Load  |             |             |             |             |             |
| 9-1/2"                                 | 5'-6"       | 6'-2"       | 5'-11"      | 5'-10"      | 5'-8"       |
| 11-7/8"                                | 9'-11"      | 11'-3"      | 10'-8"      | 10'-6"      | 10'-3"      |
| 14"                                    | 13'-10"     | 15'-8"      | 15'-0"      | 14'-9"      | 14'-4"      |
| 16"                                    | 17'-7"      | 19'-10"     | 19'-0"      | 18'-9"      | 18'-3"      |
| 100 psf Live Load and 12 psf Dead Load |             |             |             |             |             |
| 9-1/2"                                 | 4'-10"      | 5'-5"       | 5'-2"       | 5'-1"       | 5'-0"       |
| 11-7/8"                                | 8'-3"       | 9'-3"       | 8'-10"      | 8'-9"       | 8'-6"       |
| 14"                                    | 11'-3"      | 12'-9"      | 12'-2"      | 12'-0"      | 11'-8"      |
| 16"                                    | 14'-2"      | 15'-11"     | 15'-3"      | 15'-0"      | 14'-8"      |

| 2.1E RigidLam LVL                      |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| 1-3/4" Thick LVL                       |             |             |             |             |             |
| Gross Stringer Depth                   | Tread Width |             |             |             |             |
|  | 36"         |             | 42"         |             | 48"         |
|  | 2 Stringers | 3 Stringers | 3 Stringers | 3 Stringers | 3 Stringers |
| 40 psf Live Load and 12 psf Dead Load  |             |             |             |             |             |
| 9-1/2"                                 | 5'-9"       | 6'-6"       | 6'-2"       | 6'-1"       | 5'-11"      |
| 11-7/8"                                | 10'-4"      | 11'-9"      | 11'-3"      | 11'-1"      | 10'-9"      |
| 14"                                    | 14'-6"      | 16'-5"      | 15'-8"      | 15'-6"      | 15'-1"      |
| 16"                                    | 18'-5"      | 20'-9"      | 19'-10"     | 19'-7"      | 19'-1"      |
| 100 psf Live Load and 12 psf Dead Load |             |             |             |             |             |
| 9-1/2"                                 | 5'-1"       | 5'-8"       | 5'-5"       | 5'-4"       | 5'-3"       |
| 11-7/8"                                | 8'-7"       | 9'-9"       | 9'-3"       | 9'-2"       | 8'-11"      |
| 14"                                    | 11'-10"     | 13'-4"      | 12'-9"      | 12'-7"      | 12'-3"      |
| 16"                                    | 14'-10"     | 16'-9"      | 15'-11"     | 15'-9"      | 15'-4"      |

**How To Use Tables**

- Determine grade and thickness of Roseburg RigidLam LVL
- Locate appropriate table
- Locate appropriate load (40 or 100 psf live load)
- Locate appropriate gross depth of LVL (9-1/2", 11-7/8", 14" or 16")
- Determine maximum allowable horizontal stringer run based on tread width and number of stringers

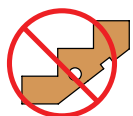
**General Notes**

- For 40/12 loading (residential), stringer runs are based on a rise of 7-3/4" (maximum per 2018 IRC) and a run of 11" (1" longer than minimum run of 10" per 2018 IRC).
- For 100/12 loading (commercial), stringer runs are based on a rise of 7" (maximum per 2018 IBC) and a run of 11" (minimum per 2018 IBC).
- Consult a design professional for allowable stringer run if above rise and/or run values are exceeded.

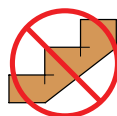
- Stringer runs are based on deflection criteria of L/360 Live Load and L/240 Total Load.
- All stringer runs are based on a 100% duration of load.
- Stringer runs account for self-weight of member.
- Stringers are unstable until connections at low and high ends are completed and treads are attached.
- Use subfloor adhesive to minimize squeaks and improve stair performance.
- When stringer is in direct contact with concrete, use moisture barrier.
- Refer to appropriate building code for story height restrictions.
- For loading and/or framing conditions outside the scope of this document, consult a design professional.
- Refer to pages 3 and 25 for RigidLam LVL storage and handling information.

RigidLam LVL Code Evaluation ICC ESR-1210

**INSTALLATION GUIDELINES**



**DO NOT** notch or drill holes in stringer



**DO NOT** overcut stringer. Use hand saw to finish cut



**DO NOT** support stringer on nailer only



**DO NOT** walk on stringers until treads are attached

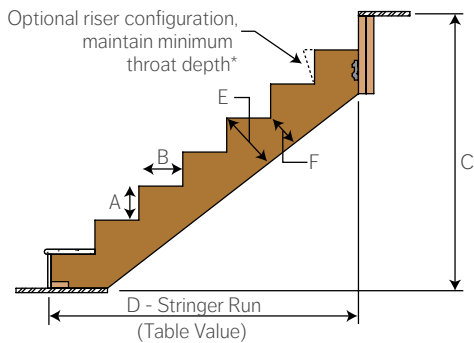


## RIGIDLAM® LVL ALLOWABLE DESIGN STRESSES<sup>1</sup>

|  |                                  | 1.4E RigidLam LVL | 1.6E RigidLam LVL | 2.1E RigidLam LVL |
|--|----------------------------------|-------------------|-------------------|-------------------|
| True Modulus of Elasticity (MOE) <sup>2</sup> – Edgewise or Flatwise     | E (psi) =                        | 1,400,000         | 1,600,000         | 2,100,000         |
| Apparent Modulus of Elasticity (MOE) <sup>2</sup> – Edgewise or Flatwise | E (psi) =                        | 1,300,000         | 1,500,000         | 2,000,000         |
| Bending – Edgewise <sup>3,4</sup>  | F <sub>b</sub> edge (psi) =      | 2,250             | 2,250             | 3,100             |
| Bending – Flatwise <sup>5</sup>  | F <sub>b</sub> flat (psi) =      | 2,250             | 2,250             | 3,100             |
| Horizontal Shear - Edgewise  | F <sub>v</sub> edge (psi) =      | 200               | 220               | 290               |
| Horizontal Shear - Flatwise  | F <sub>v</sub> flat (psi) =      | 130               | 130               | 130               |
| Compression Perp. To Grain <sup>2</sup> - Edgewise                       | F <sub>c</sub> perp edge (psi) = | 560               | 575               | 750               |
| Compression Perp. To Grain <sup>2</sup> - Flatwise                       | F <sub>c</sub> perp flat (psi) = | 650               | 650               | 650               |
| Compression Parallel to Grain  | F <sub>c</sub> para (psi) =      | 1,950             | 1,950             | 3,000             |
| Tension Parallel to Grain <sup>6</sup>                                   | F <sub>t</sub> (psi) =           | 1,500             | 1,500             | 2,100             |
| MOE for stability calculations <sup>2</sup>                              | E <sub>min</sub> (psi) =         | 687,023           | 792,718           | 1,056,958         |

- These allowable design stresses apply to dry service conditions.
- No increase is allowed for duration of load.
- For depths other than 12", multiply F<sub>b</sub> by (12/d)<sup>1/8</sup> for Douglas-fir or (12/d)<sup>1/8</sup> for SP, where d = depth of member (inches).
- A factor of 1.04 may be applied for repetitive members as defined in the *National Design Specification for Wood Construction*.
- Tabulated F<sub>b</sub> flat values are based on a thickness of 1-3/4". For other thicknesses, when loaded flatwise, multiply F<sub>b</sub> flat by (1.75/t)<sup>1/8</sup>, where t is the LVL thickness in inches. For thicknesses less than 1-3/4", use the tabulated value.
- Tensile stress is based on a 4-foot gage length. For greater lengths, multiply F<sub>t</sub> by (4/L)<sup>1/8</sup> where L = length in feet. For lengths less than 4-feet, use the published value.

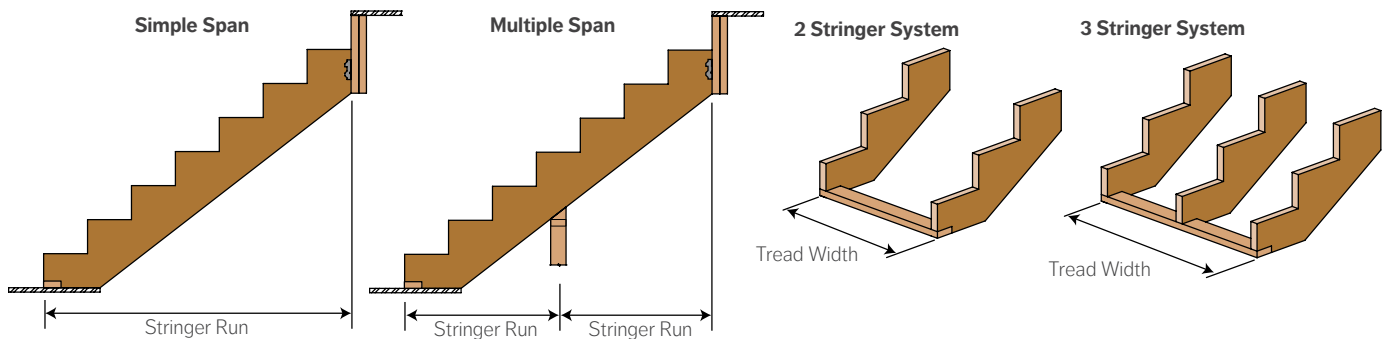
## STAIR STRINGER TERMS AND DEFINITIONS



|                           |  |
|---------------------------|--|
| A - Step Rise:            | Vertical rise of a single step   |
| B - Step Run:             | Horizontal length of a single step   |
| C - Total Rise:           | Vertical distance from top of finished framing on low end to top of finished framing on high end |
| D - Stringer Run:         | Out-to-out horizontal span of stringer (table value)   |
| E - Gross Stringer Depth: | Depth of stringer before steps are cut   |
| F - Throat Depth*:        | Net stringer depth after steps are cut (measured perpendicular to bottom edge of stringer)       |

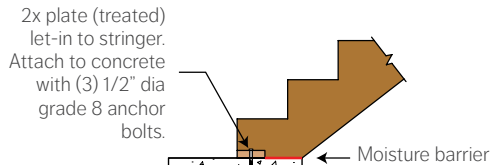
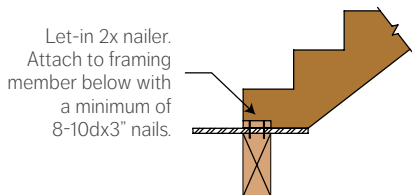
| Stringer Depth | *Minimum Throat Depth               |                                |
|----------------|-------------------------------------|--------------------------------|
|                | Residential - 7-3/4" rise & 11" run | Commercial - 7" rise & 11" run |
| 9-1/2" LVL     | 3-1/8"                              | 3-9/16"                        |
| 11-7/8" LVL    | 5-1/2"                              | 5-15/16"                       |
| 14" LVL        | 7-5/8"                              | 8-1/16"                        |
| 16" LVL        | 9-5/8"                              | 10-1/16"                       |

## STAIR STRINGER CONFIGURATIONS



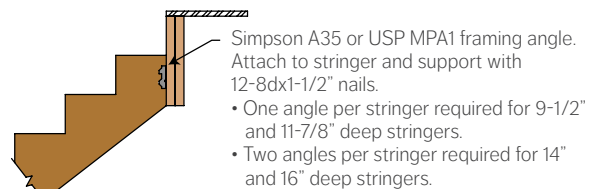
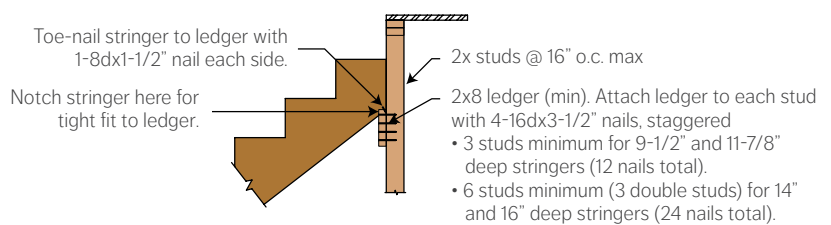
## CONNECTION DETAILS - 40 PSF LIVE LOAD & 12 PSF DEAD LOAD (FOR HIGHER LOADING, CONSULT DESIGN PROFESSIONAL)

### Low End



NOTE: Only use fasteners approved for use with the corresponding wood treatment.

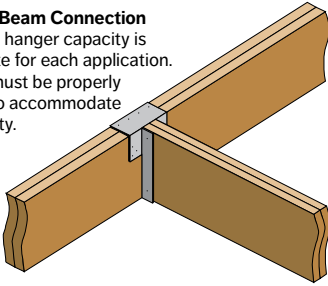
### High End



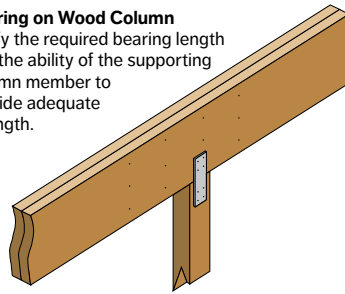
# RigidLam LVL Bearing Details

Please refer to the RigidLam LVL Bearing Length Requirements document on the Roseburg website ([www.roseburg.com](http://www.roseburg.com)).

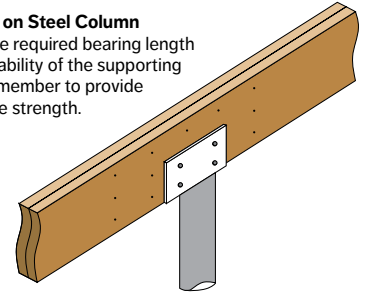
**Beam-to-Beam Connection**  
Make sure hanger capacity is appropriate for each application. Hangers must be properly installed to accommodate full capacity.



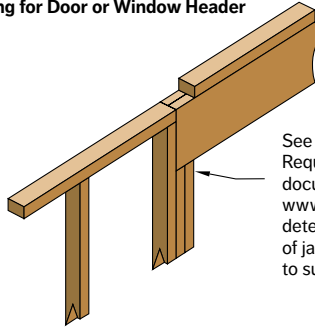
**Bearing on Wood Column**  
Verify the required bearing length and the ability of the supporting column member to provide adequate strength.



**Bearing on Steel Column**  
Verify the required bearing length and the ability of the supporting column member to provide adequate strength.

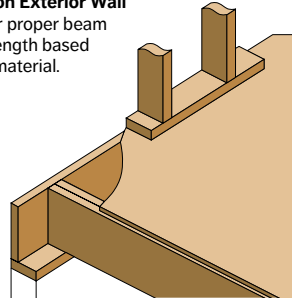


**Bearing for Door or Window Header**

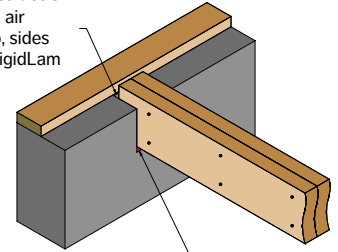


See "Bearing Length Requirements" document online at [www.roseburg.com](http://www.roseburg.com) to determine the number of jack studs required to support header.

**Bearing on Exterior Wall**  
Check for proper beam bearing length based on plate material.



**Pocket Construction**  
Provide 1/2" air space on top, sides and end of RigidLam LVL beams.



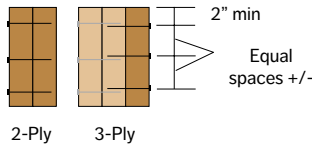
Provide moisture barrier between RigidLam LVL beams and concrete.

## Fastening Recommendations For Multiple Ply Members

### Top Loaded Members - 2 & 3 Ply

For 12" deep (or less) members, nail plies together with 2 rows of 16dx3-1/2" com. nails at 12" o.c. (add 1 row for 16d sinkers).

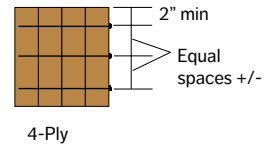
For 14", 16" or 18" deep members, nail plies together with 3 rows of 16dx3-1/2" com. nails at 12" o.c. (add 1 row for 16d sinkers).  
For 20", 22" or 24" deep members, nail plies together with 4 rows of 16dx3-1/2" com. nails at 12" o.c. (add 1 row for 16d sinkers).



### Top Loaded Members - 4 Ply

For 4-Ply Top Loaded members, it is recommended to connect the plies together with appropriate wood screws (see page 33 for approved wood screws).

The recommended fastener spacing is two rows at 24" o.c. for up to and including 16" deep members, and 3 rows at 24" o.c. for members up to and including 24" deep. If the fastener point penetrates a minimum of 75% of the 4th ply, they may be applied from one side of the beam; otherwise, the fasteners must be applied from both sides and staggered. Load must be applied evenly to all 4 plies; otherwise, use connections for side loaded members.



### Side Loaded Members

#### MAXIMUM UNIFORM LOAD APPLIED TO EITHER OUTSIDE PIECE - POUNDS PER LINEAL FOOT

| 1-1/2" Thick Pieces in Member | Nail Size              | Nailed                        |                 |                               |                 | Bolted                        |                 |                               |                 |                               |                 |
|-------------------------------|------------------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|
|                               |                        | 2 rows 10d common at 12" o.c. |                 | 3 rows 10d common at 12" o.c. |                 | 2 rows 1/2" bolts at 24" o.c. |                 | 2 rows 1/2" bolts at 12" o.c. |                 | 3 rows 1/2" bolts at 12" o.c. |                 |
|                               |                        | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL |
| 2 - 1-1/2"                    | 10d com. (0.148" x 3") | 465                           | 465             | 700                           | 700             | 395                           | 435             | 795                           | 870             | 1,190                         | 1,305           |
| 3 - 1-1/2"                    | 10d com. (0.148" x 3") | 350                           | 350             | 525                           | 525             | 295                           | 325             | 595                           | 650             | 895                           | 980             |
| 4 - 1-1/2"                    | 1/2" dia. bolts        | -                             | -               | -                             | -               | 265                           | 290             | 530                           | 580             | 795                           | 870             |

| 1-3/4" Thick Pieces in Member | Nail Size                  | Nailed                        |                 |                               |                 | Bolted                        |                 |                               |                 |                               |                 |
|-------------------------------|----------------------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|
|                               |                            | 2 rows 16d common at 12" o.c. |                 | 3 rows 16d common at 12" o.c. |                 | 2 rows 1/2" bolts at 24" o.c. |                 | 2 rows 1/2" bolts at 12" o.c. |                 | 3 rows 1/2" bolts at 12" o.c. |                 |
|                               |                            | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL | 1.4E & 1.6E LVL               | 2.1E & 2.3E LVL |
| 2 - 1-3/4"                    | 16d com. (0.162" x 3-1/2") | 560                           | 560             | 845                           | 845             | 460                           | 505             | 925                           | 1,015           | 1,390                         | 1,520           |
| 3 - 1-3/4"                    | 16d com. (0.162" x 3-1/2") | 420                           | 420             | 635                           | 635             | 345                           | 380             | 695                           | 760             | 1,040                         | 1,140           |
| 4 - 1-3/4"                    | 1/2" dia. bolts            | -                             | -               | -                             | -               | 305                           | 335             | 615                           | 675             | 925                           | 1,015           |
| 2 - 3-1/2"                    | 1/2" dia. bolts            | -                             | -               | -                             | -               | 820                           | 860             | 1,640                         | 1,720           | 2,465                         | 2,580           |

### RIGIDLAM LVL EQUIVALENT SPECIFIC GRAVITY VALUES FOR FASTENER DESIGN

|                      | Face            |                 |                 | Edge            |                 |                 |
|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                      | Douglas-fir     |                 | SP              | Douglas-fir     |                 | SP              |
|                      | 1.4E & 1.6E LVL | 2.1E & 2.3E LVL | 1.6E & 2.1E LVL | 1.4E & 1.6E LVL | 2.1E & 2.3E LVL | 1.6E & 2.1E LVL |
| Withdrawal - nail    | 0.50            | 0.50            | 0.50            | 0.47            | 0.50            | 0.43            |
| Dowel Bearing - nail | 0.50            | 0.50            | 0.55            | 0.50            | 0.50            | 0.49            |
| Dowel Bearing - bolt | 0.47            | 0.50            | 0.55            | Not applicable  |                 |                 |

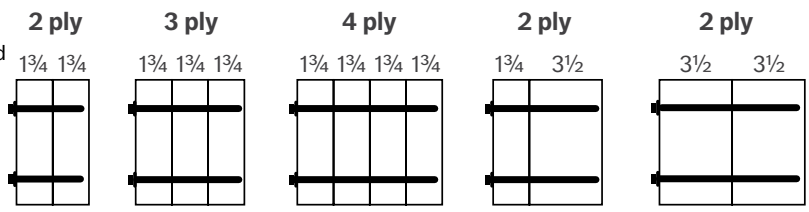
- Use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or beam/header Quick Reference Tables or PLF load tables to size the beam.
- The table values apply to common (A307) bolts. Bolt holes must be centered at least two inches from the top and bottom edges of the beam. Bolt holes must be the same diameter as the bolts. Washers must be used under the bolt heads and nuts. Offset or stagger rows of bolt holes by one-half of the bolt spacing.
- The specified nailing applies to both sides of a three-piece beam.
- 7 inch wide beams may not be loaded from one side only. They must be loaded from both sides and/or top-loaded.
- The side loaded table values for nails may be doubled for 6" o.c. spacing and tripled for 4" o.c. spacing.
- Duration of load factors (e.g. 115%, 125% etc...) may be applied to the table values.





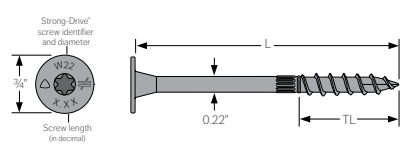
# Fastening Recommendations For Multiple Ply LVL Members (cont.)

- The wood screws listed are approved for use in connecting multiple plies of RigidLam® LVL together and may be used as an alternative to the nailing or bolting guidelines on the previous page.
- Pre-drilling of the LVL members is not required for the screws listed below.
- Carefully review and adhere to the design and installation information available from each of the screw manufacturers listed below.



The diagrams above are for illustrative purposes only, screws may need to be applied to both sides. Refer to the manufacturers' information for the appropriate design and installation guidelines.

## Simpson SDW Wood Screws



| Model No. | L (in) | TL (in) | Head Stamp Length |
|-----------|--------|---------|-------------------|
| SDW22338  | 3-3/8  | 1-9/16  | 3.37              |
| SDW22500  | 5      | 1-9/16  | 5.00              |
| SDW22634  | 6-3/4  | 1-9/16  | 6.75              |

- Code Evaluation Report – IAPMO ER-0192
- For SDW design and installation information or hanger information, refer to the current Simpson Strong-Tie literature, [www.strongtie.com](http://www.strongtie.com) or contact Simpson Strong-Tie at 800-999-5099.

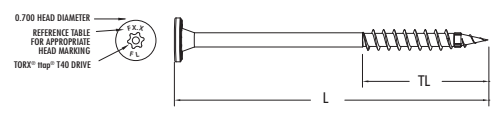
## MiTek WSWH Washer Head Structural Wood Screws



| Model No. | L (in) | SH (in) | T (in) |
|-----------|--------|---------|--------|
| WSWH338   | 3-3/8  | 1-1/8   | 2      |
| WSWH5     | 5      | 2-3/4   | 2      |
| WSWH634   | 6-3/4  | 4-1/2   | 2      |

- Code Evaluation Report: ICC-ES ESR-2761
- For WSWH design and installation information or hanger information, refer to the current MiTek Structural Product Catalog, [www.MiTek-us.com](http://www.MiTek-us.com) or contact MiTek at 800-328-5934.

## FastenMaster FlatLOK™ Wood Screws



| Product | L (in) | TL (in) | Head Marking |
|---------|--------|---------|--------------|
| FL312   | 3-1/2  | 2       | F3.5FL       |
| FL005   | 5      | 2       | F5.0FL       |
| FL634   | 6-3/4  | 2       | F6.75FL      |

- Code Evaluation Report – DrJ - TER 1501-08
- For FlatLOK design and installation information, refer to the current FastenMaster literature, [www.fastenmaster.com](http://www.fastenmaster.com) or contact FastenMaster at 800-518-3569.













# Load and Deflection

- 1. Live Load, Dead Load & Total Load:** Most people would feel very uncomfortable on a floor system where no consideration had been given for deflection (or sag) even though the floor had been designed to safely support the total design load. In general, structures (buildings, bridges, floors, etc.) can safely deflect well beyond the limits that make us feel uncomfortable. Limiting deflection is considered a “serviceability” requirement rather than a “strength” requirement. In addition to comfort, limiting deflection may also be a requirement to prevent cracking in the materials that are used to finish the floor, ceiling or wall systems (i.e. gypsum board, stucco, plaster, etc).

When determining deflection limits, two types of loading are considered, Live Load and Dead Load. By definition, live load is a transient load and includes people, furniture, partitions, snow, wind, etc. Dead load is the actual weight of the building materials used to frame and finish the floor, roof or wall system and any other loads permanently attached to the system. Together, the live load and dead load make up the total load of the system. Building codes give guidance regarding the appropriate live loads and deflection limits to use for various applications.

- 2. L/360, L/480, L/600:** This is a calculation used to define the maximum allowable deflection of a framing member such as a joist, beam, stud, etc. Specifically, the term “L” is the span of the member expressed in inches and the ratio of L/480, for instance, would be the maximum allowable deflection in inches that the member would be allowed to deflect. It does not represent what the actual deflection of the member is in the field, just the maximum value it would be allowed to deflect for the given design load.

The “L over” ratio is always associated with either live load or total load. The most common values are:

|         |                                   |                             |
|---------|-----------------------------------|-----------------------------|
| Floors: | Live Load – L/600, L/480 or L/360 | Total Load – L/360 or L/240 |
| Roofs:  | Live Load – L/360 or L/240        | Total Load – L/240 or L/180 |

For example, a typical commercial floor (50 psf LL/15 psf PL/25 psf DL) would be designed for a maximum Live Load deflection limit of L/600 and a maximum Total Load deflection limit of L/360. For an 18’ span, the limits would be as follows:

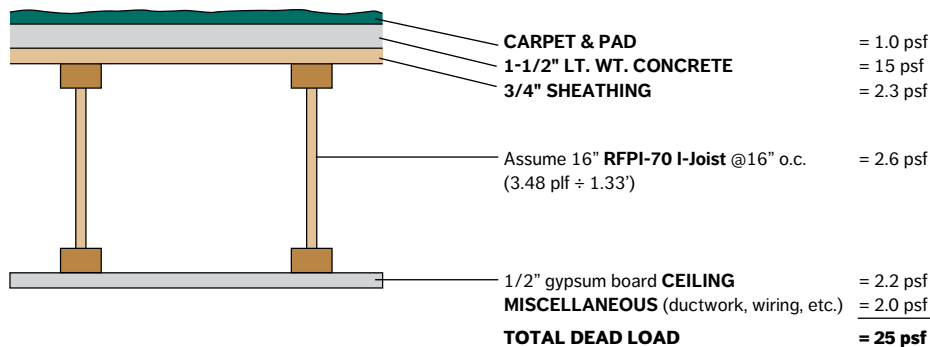
$$\frac{L}{600} = \frac{18' \times 12}{600} = \frac{216}{600} = 0.36" \text{ Allowable Live Load Deflection} \text{ And } \frac{L}{360} = \frac{18' \times 12}{360} = \frac{216}{360} = 0.60" \text{ Allowable Total Load Deflection}$$

- 3. PSF Load:** This is the design load, in pounds per square foot (psf) that is “applied” to the entire floor or roof area. By code, most commercial floors must be designed to support a live load of 50 psf. The live load or snow load for roofs is based on local conditions and can be found in the appropriate building code or by contacting the local building department.

The design dead load psf is determined by the weight of each component of the floor or roof. A typical commercial floor will have a dead load of approximately 25 psf depending on the components used. A typical method for calculating dead load is shown below:

Figure 1

## DEAD LOAD CALCULATION FOR TYPICAL COMMERCIAL FLOOR



## TYPICAL BUILDING MATERIAL WEIGHTS

### Floors

|                             |          |     |
|-----------------------------|----------|-----|
| Hardwood - 1" thick         | 4.0      | psf |
| Concrete - 1" thick         |          |     |
| Regular                     | 12.0     | psf |
| Lightweight                 | 8.0-12.0 | psf |
| Gypcrete - 3/4" thick       | 6.5      | psf |
| Sheet vinyl                 | 0.5      | psf |
| Carpet and pad              | 1.0      | psf |
| 3/4" ceramic or quarry tile | 10.0     | psf |
| Linoleum or soft tile       | 1.5      | psf |
| 1/2" mortar bed             | 6.0      | psf |
| 1" mortar bed               | 12.0     | psf |

### Ceilings

|  |     |     |
|--|-----|-----|
| Acoustical fiber tile                    | 1.0 | psf |
| 1/2" gypsum board                        | 2.2 | psf |
| 5/8" gypsum board                        | 2.8 | psf |
| Plaster - 1" thick                       | 8.0 | psf |
| Metal suspension system (including tile) | 1.8 | psf |

### Insulation - 1" Thick

|                              |     |     |
|------------------------------|-----|-----|
| Polystyrene foam & Styrofoam | 0.2 | psf |
| Foamglass                    | 0.8 | psf |
| Rigid fiberglass             | 1.5 | psf |
| Glass wool                   | 0.1 | psf |
| Rock wool                    | 0.2 | psf |

### Douglas-fir Sheathing

|              |     |     |
|--------------|-----|-----|
| 1/2" plywood | 1.5 | psf |
| 5/8" plywood | 1.8 | psf |
| 3/4" plywood | 2.3 | psf |
| 1/2" OSB     | 1.7 | psf |
| 5/8" OSB     | 2.0 | psf |
| 3/4" OSB     | 2.5 | psf |
| 7/8" OSB     | 2.9 | psf |

### Miscellaneous

|                   |         |     |
|-------------------|---------|-----|
| Mechanical ducts  | 2.0-4.0 | psf |
| Stucco - 1" thick | 10.0    | psf |

### Roofing Materials

|                    |          |     |
|--------------------|----------|-----|
| Asphalt shingles   | 2.5      | psf |
| Wood shingles      | 2.0      | psf |
| Clay tile          | 9.0-14.0 | psf |
| Slate - 3/8" thick | 15.0     | psf |

### Weights of Douglas-Fir Framing - PSF

| Nominal Size | Joist Spacing |     |       |     |
|--------------|---------------|-----|-------|-----|
|              | 12"           | 16" | 19.2" | 24" |
| 2x4          | 1.4           | 1.1 | 0.9   | 0.7 |
| 2x6          | 2.2           | 1.7 | 1.4   | 1.1 |
| 2x8          | 2.9           | 2.2 | 1.8   | 1.5 |

### Weights of Sprinkler Lines

| Size of Pipe | Schedule 40 |           | Schedule 10 |           |
|--------------|-------------|-----------|-------------|-----------|
|              | Dry (plf)   | Wet (plf) | Dry (plf)   | Wet (plf) |
| 1"           | 1.7         | 2.1       | 1.4         | 1.8       |
| 1-1/2"       | 2.7         | 3.6       | 2.1         | 3.1       |
| 2"           | 3.7         | 5.2       | 2.7         | 4.2       |



# Load Development

## LOAD DEVELOPMENT FOR RFPI-JOISTS WITH UNIFORM LOAD

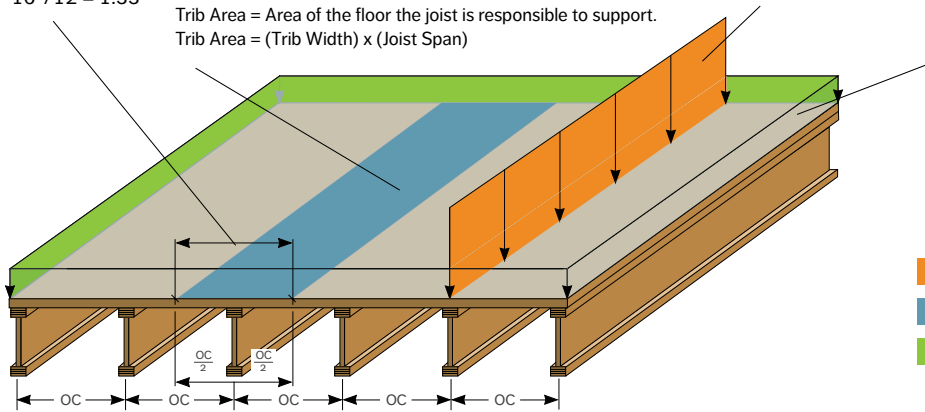
### STEP ONE: CALCULATE THE TRIBUTARY WIDTH

Tributary Width (or Trib width) = Half of the distance to the next supporting member on both sides of the joist. It represents the width of the floor the joist is responsible to support.

Trib Width =  $(O.C. \div 2) + (O.C. \div 2) = O.C.$  (expressed in units of feet)

In the diagram below, if the O.C. spacing equals 16", the Trib Width =  $16" / 12 = 1.33'$

Trib Area = Area of the floor the joist is responsible to support.  
Trib Area = (Trib Width) x (Joist Span)



### STEP TWO: CALCULATE THE PLF ON THE JOIST

Pounds per Lineal Foot (or "PLF") = (PSF Load) x (Trib Width). This is the loading that the joist "feels" being applied along the top flange.

$$PLF_{Live\ Load} = (40\ PSF) \times (1.33') = 53\ PLF\ Live\ Load$$

$$PLF_{Total\ Load} = (50\ PSF) \times (1.33') = 67\ PLF\ Total\ Load$$

(Use these numbers to size the RFPI-Joist from the PLF table on page 8)

### Design Load

for floor given in pounds per square foot (PSF) for entire floor. Typical Residential Value is:

40 PSF Live Load

10 PSF Dead Load

- Pounds per Lineal Foot (PLF)
- Trib Area of I-joist
- Design Load - Pounds per Square Foot (PSF)

## LOAD DEVELOPMENT FOR RFPI-JOISTS WITH LOAD BEARING WALL

### STEP ONE

Calculate the portion of the wall load carried by each joist. This is also determined by the joist O.C. spacing and is given by:

$$P_{Live\ Load} = (PLF)_{Wall\ Live\ Load} \times (O.C.)$$

$$P_{Total\ Load} = (PLF)_{Wall\ Total\ Load} \times (O.C.)$$

Where: O.C. = Joist on-center spacing (feet)

PLF = Wall loading (pounds per lineal foot)

P = Concentrated load supported by joist (pounds)

As far as each joist is concerned, it feels the wall as a concentrated load (units of pounds). The greater the on-center spacing, the greater the portion of wall it must support.

### STEP TWO

Calculate the equivalent uniform PLF load due to this concentrated wall load. This equivalent PLF load will allow you to safely size the joist using the PLF table on page 8 no matter where the wall is located over the joists. It is given by:

$$PLF_{EQ\ Live\ Load} = 2P_{Live\ Load} \div L$$

$$PLF_{EQ\ Total\ Load} = 2P_{Total\ Load} \div L$$

For example, assume the wall was applying a 400 PLF total load on the joists. If the joists are spaced at 16" O.C. and span 20 ft, then:

$$P_{Live\ Load} = \frac{4}{5} (400\ PLF) \times (1.33') = 426\ lbs$$

$$P_{Total\ Load} = (400\ PLF) \times (1.33') = 532\ lbs$$

$$PLF_{EQ\ Live\ Load} = \frac{2 \times 426\ lbs}{20'} = 43\ PLF$$

$$PLF_{EQ\ Total\ Load} = \frac{2 \times 532\ lbs}{20'} = 54\ PLF$$

(Assuming a 40/10 loading from above)

These PLF loads are in addition to the original PSF Design Loads and must be added before using the table. Using the example from above, these joists should be sized to carry:

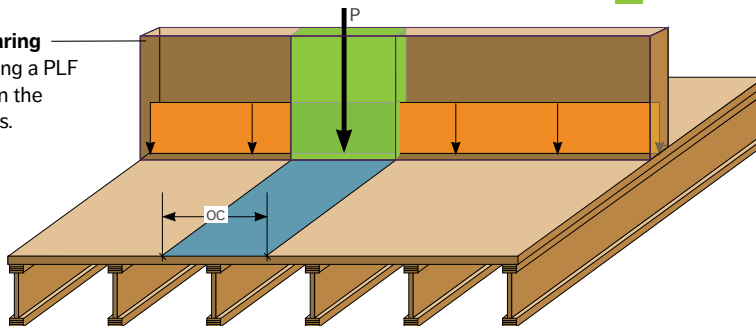
Live Load PLF:  $53\ PLF + 43\ PLF = 96\ PLF\ Live\ Load$

Total Load PLF:  $67\ PLF + 54\ PLF = 121\ PLF\ Total\ Load$

If a joist could not be sized, redo this with a smaller on-center spacing or use Simpson Strong-Tie® Component Solutions™ to size the joist more accurately.

### Load Bearing

Wall adding a PLF loading on the floor joists.



- PLF Wall Load
- Portion of PLF wall load carried by joist
- Trib Area of I-joist

## PSF TO PLF CONVERSION – LOAD IN POUNDS PER LINEAL FOOT (PLF)

| O.C. Spacing |      | Load in Pounds per Square Foot (PSF) |    |    |    |    |    |     |     |     |     |     |     |
|--------------|------|--------------------------------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| (in)         | (ft) | 20                                   | 25 | 30 | 35 | 40 | 45 | 50  | 55  | 60  | 65  | 70  | 75  |
| 12           | 1.00 | 20                                   | 25 | 30 | 35 | 40 | 45 | 50  | 55  | 60  | 65  | 70  | 75  |
| 16           | 1.33 | 27                                   | 33 | 40 | 47 | 53 | 60 | 67  | 73  | 80  | 87  | 93  | 100 |
| 19.2         | 1.60 | 32                                   | 40 | 48 | 56 | 64 | 72 | 80  | 88  | 96  | 104 | 112 | 120 |
| 24           | 2.00 | 40                                   | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |

O.C. spacing [ft] x load [PSF] = load [PLF]. See load development above.



# Software Tools

Roseburg offers a software tool that will aid you in generating accurate, professional layout drawings and member calculations. This software tool includes the Component Solutions™ (CS) EWP Studio Software Suite provided by Simpson Strong-Tie®.

As a supplier of connectors for engineered wood products, Simpson Strong-Tie has been involved in the structural building industry for decades. This experience has provided invaluable insights into the needs of designers and suppliers, resulting in the latest addition to the Simpson Strong-Tie® software product line for light-frame construction. Choose Simpson Strong-Tie® Component Solutions™ EWP Studio™ for your EWP design needs.

## COMPONENT SOLUTIONS™ EWP STUDIO™

CS EWP Studio is a state-of-the-art EWP analysis program. Whether you are looking for a single-member sizing utility or a robust layout and design solution, CS EWP Studio offers a wide range of tools and functions to meet your design, supply and reporting needs.

### DESIGN TOOL

The Design tool is a powerful yet easy-to-use single-member sizing feature that enables you to size Roseburg engineered wood products for almost any structural condition. You provide a description of the spans, supports and loads of a specific sizing problem, and CS EWP Studio will deliver pass/fail information and even present you with a list of multiple product solutions. After selecting a product, you can print out a professional, easy-to-read calc sheet.

The program designs RFP1®-Joists at their optimum on-center spacing and RigidLam® LVL beams at their optimum depth. Rectangular or circular holes can be analyzed for RFP1 Joists and circular holes can be analyzed for RigidLam® LVL at a given size and location. Cantilever reinforcements can be utilized for RFP1®-Joists used in load-bearing cantilever applications.

RigidLam® LVL columns and studs can be sized using any combination of axial and lateral loading and a variety of default and custom bracing conditions for individual stud and column members.

### PLAN TOOL

The Plan tool is the complete automation system for Roseburg engineered wood products. The Plan tool software is available to qualified users who use the software to promote and support the sale of Roseburg engineered wood products. The Plan tool includes all of the analysis functionality within the Design tool as well as additional features for creating a 3D model, defining floor and roof systems, generating layouts, and reporting. With this effective tool, the designer describes the building geometry and specifies the framing layout while the software does the analysis, including the following:

- Developing loads throughout the structure
- Sizing all framing members for Roseburg engineered wood products
- Specifying hangers
- Generating placement plans
- Generating material cut lists and hanger schedules

Installing and updating CS EWP Studio is easy and can be done online. Check back occasionally to ensure you are using the most up-to-date version of the software.

Simpson Strong-Tie provides all training and software support necessary to successfully learn and implement these software programs. You can obtain more information about the Component Solutions™ programs at <https://www.strongtie.com/products/connectors/ics/component-solutions-software> or by contacting Simpson Strong-Tie at 1-866-252-8606.



**EWP Studio** Report for **J1 RFP1 40 11.875" - PASSED**

**Member Information**

|                            |                                  |                                  |                                  |
|----------------------------|----------------------------------|----------------------------------|----------------------------------|
| Type: J1                   | Application: Floor               | Design Method: ASD               | Design Code: 2018                |
| Roofing: 12 PSF            | Design Method: ASD               | Building Code: 2018              | Design Code: 2018                |
| Member Condition: Dry      | Load Sharing: No                 | Class: 50 APL (Steel Stud)       | Fastener: RigidLam Stud and Stud |
| Deflection LL: 1/32        | Class: 50 APL (Steel Stud)       | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |
| Impermeable: Normal        | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |
| Temperature: Temp in 100°F | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |
| Overall Load: 42 PSF       | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |
| Floor Live: 12 PSF         | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |
| Dead: 12 PSF               | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |
| Wind: 12 PSF               | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud | Fastener: RigidLam Stud and Stud |

**Reactions (k/PLF)**

| Req | Line     | Dead     | Wind  | Wind  | Combi | Total    |
|-----|----------|----------|-------|-------|-------|----------|
| 1   | 299 (24) | 88 (7)   | 0 (0) | 0 (0) | 0 (0) | 387 (31) |
| 2   | 85 (7)   | 252 (20) | 0 (0) | 0 (0) | 0 (0) | 339 (27) |

**Analysis Results**

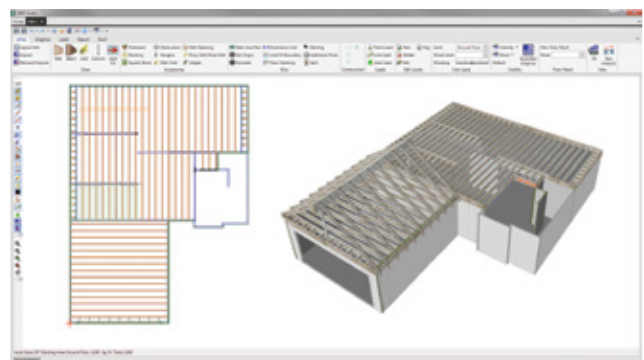
| Analysis     | Actual        | Location | Allowed       | Capacity    | CRS | Case |
|--------------|---------------|----------|---------------|-------------|-----|------|
| Hng Moment   | 470 k-ft      | 10'      | 488 k-ft      | 0.10 (17%)  | D-L | PL   |
| SPRNGED      | 470 k-ft      | 10'      | 2788 k-ft     | 0.10 (17%)  | D-L | L    |
| Moment (adj) | 558 k-ft      | 41.75'   | 455 k-ft      | 0.176 (18%) | D-L | L    |
| Shear        | 415 lb        | 8'0" L   | 1550 lb       | 0.264 (26%) | D-L | L    |
| LL Dead Load | 0.228 (L/240) | 41.75'   | 0.241 (L/405) | 0.100 (10%) | L   | L    |
| TL Dead Load | 0.245 (L/255) | 49.50'   | 0.482 (L/240) | 0.500 (50%) | D-L | L    |
| LL Cant      | 0.218         | 75' Cant | 0.200 (L/500) | 0.888 (89%) | L   | L    |
| TL Cant      | 0.222 (L/450) | 75' Cant | 0.200 (L/500) | 0.888 (89%) | D-L | L    |

**Design Notes**

1. All notes Vertical location may vary and hanger location may vary.

2. System design per code.

| ID | Load Type | Location | Req (k-ft) | Dead (k-ft) | Line 1  | Slope 1:10 | Wind 1.0 | Combi 1.20 | Comments |
|----|-----------|----------|------------|-------------|---------|------------|----------|------------|----------|
| 1  | Uniform   | 1-40     | 10.95      | 10.95       | 40' PSF | 0.05       | 0.05     | 0.05       |          |
| 2  | Point     | +0.0     | 45.0       | 45.0        | 80 lb   | 8 lb       | 8 lb     | 8 lb       |          |
| 3  | Point     | -10.0    | 100.0      | 100.0       | 80 lb   | 8 lb       | 8 lb     | 8 lb       |          |



# Frequently Asked Questions

## 1. What types of adhesives are used in Roseburg RFPI®-Joists and RigidLam® LVL and are they NAUF?

Roseburg RigidLam LVL is manufactured to the U.S. Structural Composite Lumber (SCL) standard, ASTM D5456 and Roseburg RFPI-Joists are manufactured to the U.S. I-joist standard, ASTM D5055. These standards require the use of exterior type, moisture resistant adhesives. All grades of RigidLam LVL are manufactured with phenol-formaldehyde and melamine-formaldehyde based adhesive systems and contain no added urea-formaldehyde (NAUF) resins. All series of Roseburg RFPI-Joists (inclusive of LVL flanged I-joists and solid sawn lumber flanged I-joists) are manufactured with phenol-formaldehyde, phenol-resorcinol-formaldehyde and/or melamine formaldehyde based adhesive systems and contain no added urea-formaldehyde (NAUF) resins.

These adhesives are not affected by in-service elevated temperatures. This is proven by testing to ASTM D7247 in which the adhesive is shown to not deteriorate prior to the wood burning.

It is important to note that even though the adhesives are rated for exterior type, the finished Roseburg LVL and I-joist products are designed and warranted for dry-use applications (i.e. where the average equilibrium moisture content of solid-sawn lumber is less than 16%).

## 2. Do RFPI-Joists and RigidLam LVL meet CARB or HUD regulations regarding formaldehyde emissions?

I-Joist and Structural Composite Lumber products, including LVL, are not subject to CARB or HUD regulations. California Air Resources Board (CARB) Regulation Section 93120.1 Definition (8) specifically excludes Structural Composite Lumber that is manufactured to the requirements of ASTM D5456 and prefabricated wood I-joists that are manufactured to the requirements of ASTM D5055. Similarly, HUD excludes panel products manufactured with phenol formaldehyde adhesives. These exterior type adhesives form a chemically stable bond that emits such low amounts of formaldehyde gas it is often indistinguishable from background levels. Because these adhesives have long demonstrated very low emission levels, currently there are no U.S. standards or regulations governing formaldehyde emissions for structural composite lumber or prefabricated wood I-joists. Since there are no U.S. standards requiring the monitoring of emissions from I-joists or SCL, there are no standard test procedures either. However, in order to confirm low emission rates of formaldehyde, various I-joist and SCL products, including RFPI-Joists and RigidLam LVL, have been tested based on test procedures for panel products in accordance with the ASTM E1333 Large Chamber Test method. Please refer to APA Product Reports PR-E720 (LVL) and PR-E730 (I-Joists) for more detailed information regarding formaldehyde emission testing. These reports can be found on the APA website, [www.apawood.org](http://www.apawood.org) and on the Roseburg website, [www.roseburg.com](http://www.roseburg.com). Another source of information regarding engineered wood products and formaldehyde is APA Technical Note J330 which can be found on the APA website.

## 3. Do RFPI-Joists and RigidLam LVL contribute to any LEED credits?

**LEED 2009:** Yes, a document titled "EWP LEED Credit Support" can be found in the EWP section of the Roseburg website, [www.roseburg.com](http://www.roseburg.com), under "Sustainability Reference Docs"

**LEED V4 and V4.1:** Yes, a document titled "EWP LEED Credit Support" can be found in the EWP section of the Roseburg website, [www.roseburg.com](http://www.roseburg.com), under "Sustainability Reference Docs"

## 4. Do Roseburg RFPI-Joists and RigidLam LVL qualify for use in green building codes, standards or certifications?

Yes, RFPI-Joists and RigidLam LVL meet various green building requirements. Refer to APA Green Verification Reports GR-L259 (I-Joists) and GR-L289 (LVL) and to Roseburg ICC-ES Evaluation Reports ESR-1251 (I-Joists) and ESR-1210 (LVL) for pertinent information. These reports can be found on their respective websites,

[www.apawood.org](http://www.apawood.org) and [www.icc-es.org](http://www.icc-es.org) as well as on the Roseburg website, [www.roseburg.com](http://www.roseburg.com). For green building codes, standards or certifications not addressed in the APA reports, please contact your local Roseburg representative for more information.

## 5. Can RFPI-Joists be used in diaphragm construction?

Yes, Roseburg has conducted the required testing to show that RFPI-Joists can be used as framing members in horizontal wood diaphragms. Refer to page 19 of this document or Table 4 in APA Product Report PR-L259 or Table 7 in ICC-ES Evaluation Report ESR-1251 for allowable shear loads for diaphragms framed with Roseburg RFPI-Joists. Both reports can be found on their respective websites, [www.apawood.org](http://www.apawood.org) and [www.icc-es.org](http://www.icc-es.org) as well as on the Roseburg website, [www.roseburg.com](http://www.roseburg.com).

## 6. Can RFPI-Joists be used for fire and sound rated floor/ceiling construction?

Yes, RFPI-Joists are approved for use in several fire and sound rated floor/ceiling assemblies. Refer to APA Product Report PR-S259 or ICC-ES Evaluation Report ESR-1251 for detailed information. Both reports can be found on their respective websites, [www.apawood.org](http://www.apawood.org) and [www.icc-es.org](http://www.icc-es.org) as well as on the Roseburg website, [www.roseburg.com](http://www.roseburg.com).

## 7. Can RFPI-Joists or RigidLam LVL be pressure treated with a fire retardant?

Roseburg does not recommend the application of fire retardants to engineered wood products using pressure treatment or dipping. These processes have a negative effect on engineered wood products resulting in reduced structural capacities. Roseburg does not have data regarding the extent of these reductions. Any fire retardant pressure treatment or dip treatment applied to Roseburg EWP products will void the Roseburg warranty.

## 8. Can RFPI-Joists or RigidLam LVL be treated for pests or decay?

Yes, RFPI-Joists and RigidLam LVL can be pressure treated with Permapost Hi-Clear II preservative or dip treated with Preservetech™ HW by Royal Pacific Industries and are acceptable for use in above-ground, interior or covered exterior, dry-use environments. These treatments contain a fungicide and insecticide for protection against both wood degrading fungi and insect attack. Roseburg has tested product treated with both of these treatment products and has verified that these treatments do not adversely affect the strength or stiffness properties of Roseburg LVL or I-Joists. Roseburg Engineered Wood Products (RFPI-Joists and RigidLam LVL) appropriately treated with either of these treatment products will continue to be covered by Roseburg's Engineered Wood Products and Performance Warranty. Roseburg does not assure nor warrant the efficacy of either of these treatment products. It is the responsibility of the end user of any treated material to be familiar with the appropriate material safety data sheets and handling instructions associated with the treated product.

## 9. Can sprinkler pipes or other types of loads be suspended from the bottom flange of an I-joist?

Yes, relatively light loads, e.g. track lighting fixtures, audio equipment, security cameras, smaller sprinkler lines, etc., can be supported from the bottom flange of an I-joist. Never suspend heavy loads from an I-joist bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist or attach the load to filler blocking that has been securely fastened to the I-joist web. Check the capacity of the I-joist with the applied uniform loads and any additional concentrated loads.

For sprinkler attachment guidelines, see APA-The Engineered Wood Association publication J745 "Sprinkler Pipe Installation for APA Performance Rated I-Joists" and the supplement J745\_SUP.

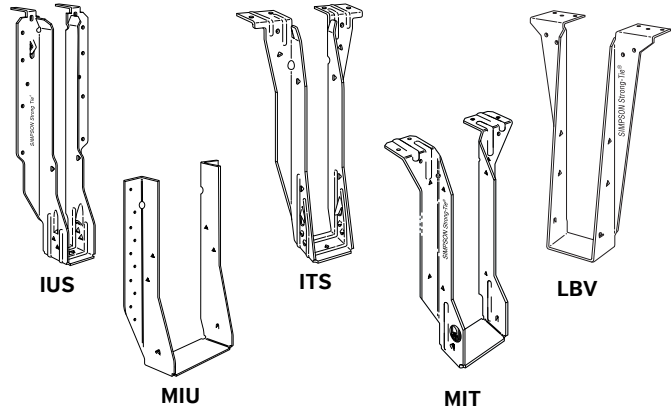


# I-Joist Framing Connectors



## FACE MOUNT HANGERS

| Single I-Joist |            |               |           | Double I-Joist |            |            |           |
|----------------|------------|---------------|-----------|----------------|------------|------------|-----------|
| Width          | Depth      | Hanger        | Down Load | Width          | Depth      | Hanger     | Down Load |
| 2-5/16"        | 9-1/2"     | IUS2.37/9.5   | 950       | 4-5/8"         | 9-1/2"     | MIU4.75/9  | 2,305     |
|                | 11-7/8"    | IUS2.37/11.88 | 1,185     |                | 11-7/8"    | MIU4.75/11 | 2,880     |
|                | 14"        | IUS2.37/14    | 1,420     |                | 14"        | MIU4.75/14 | 3,170     |
|                | 16"        | IUS2.37/16    | 1,660     |                | 16"        | MIU4.75/16 | 3,455     |
|                | 18"        | MIU2.37/18    | 3,745     |                | 18"        | MIU4.75/18 | 3,745     |
|                | 20"        | MIU2.37/20    | 4,030     |                | 20"        | MIU4.75/20 | 4,030     |
| 3-1/2"         | 22"        | MIU2.37/20    | 4,030     | 22"            | MIU4.75/20 | 4,030      |           |
|                | 24"        | MIU2.37/20    | 4,030     | 24"            | MIU4.75/20 | 4,030      |           |
|                | 11-7/8"    | IUS3.56/11.88 | 1,420     | 7"             | 11-7/8"    | HU412-2    | 2,380     |
|                | 14"        | IUS3.56/14    | 1,420     | 14"            | HU414-2    | 2,975      |           |
|                | 16"        | IUS3.56/16    | 1,660     | 16"            | HU414-2    | 2,975      |           |
|                | 18"        | MIU3.56/18    | 3,745     | 18"            | HU414-2    | 2,975      |           |
|                | 20"        | MIU3.56/20    | 4,030     | 20"            | HU414-2    | 2,975      |           |
|                | 22"        | MIU3.56/20    | 4,030     | 22"            | HU414-2    | 2,975      |           |
| 24"            | MIU3.56/20 | 4,030         | 24"       | -              | -          |            |           |

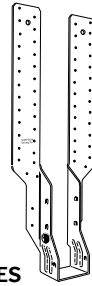
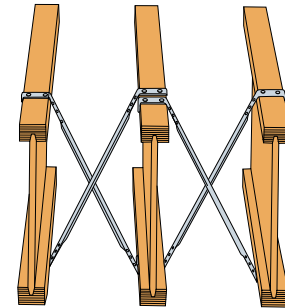


## TOP FLANGE HANGERS

| Single I-Joist |         |                 |           | Double I-Joist |               |               |           |
|----------------|---------|-----------------|-----------|----------------|---------------|---------------|-----------|
| Width          | Depth   | Hanger          | Down Load | Width          | Depth         | Hanger        | Down Load |
| 2-5/16"        | 9-1/2"  | ITS2.37/9.5     | 1,420     | 4-5/8"         | 9-1/2"        | MIT359.5-2    | 2,305     |
|                | 11-7/8" | ITS2.37/11.88   | 1,420     |                | 11 7/8"       | MIT3511.88-2  | 2,305     |
|                | 14"     | ITS2.37/14      | 1,660     |                | 14"           | MIT3514-2     | 2,305     |
|                | 16"     | ITS2.37/16      | 1,520     |                | 16"           | MIT4.75/16    | 2,305     |
|                | 18"     | MIT3518         | 2,305     |                | 18"           | B4.75/18      | 3,800     |
|                | 20"     | MIT3520         | 2,305     |                | 20"           | B4.75X (H=20) | 3,800     |
| 3-1/2"         | 22"     | LBV2.37X (H=22) | 2,590     | 22"            | B4.75X (H=22) | 3,800         |           |
|                | 24"     | LBV2.37X (H=24) | 2,590     | 24"            | B4.75X (H=24) | 3,800         |           |
|                | 11-7/8" | ITS3.56/11.88   | 1,520     | 7"             | 11-7/8"       | B7.12/11.88   | 3,800     |
|                | 14"     | ITS3.56/14      | 1,520     | 14"            | B7.12/14      | 3,800         |           |
|                | 16"     | ITS3.56/16      | 1,520     | 16"            | B7.12/16      | 3,800         |           |
|                | 18"     | MIT418          | 2,305     | 18"            | B7.12/18      | 3,800         |           |
|                | 20"     | MIT420          | 2,305     | 20"            | B7.12/20      | 3,800         |           |
|                | 22"     | HIT422          | 2,550     | 22"            | B7.12/22      | 3,800         |           |
| 24"            | HIT424  | 2,550           | 24"       | B7.12/24       | 3,800         |               |           |

## TENSION BRIDGING FOR I-JOIST

| Joist Height | Joist Spacing (in) |      |      |      |      |      |      |      |      |
|--------------|--------------------|------|------|------|------|------|------|------|------|
|              | 12                 | 16   | 19.2 | 24   | 30   | 32   | 36   | 42   | 48   |
| 9-1/2"       | TB20               | TB27 | TB27 | TB30 | TB36 | TB36 | TB42 | TB48 | TB54 |
| 11-7/8"      | TB20               | TB27 | TB27 | TB30 | TB36 | TB36 | TB42 | TB48 | TB54 |
| 14"          | TB27               | TB27 | TB27 | TB36 | TB36 | TB42 | TB42 | TB48 | TB54 |
| 16"          | TB27               | TB27 | TB30 | TB36 | TB42 | TB42 | TB42 | TB48 | TB54 |
| 18"          | TB27               | TB30 | TB30 | TB36 | TB42 | TB42 | TB48 | TB54 | TB56 |
| 20"          | TB30               | TB30 | TB36 | TB36 | TB42 | TB42 | TB48 | TB54 | TB56 |
| 22"          | TB30               | TB36 | TB36 | TB36 | TB42 | TB42 | TB48 | TB54 | TB56 |
| 24"          | TB36               | TB36 | TB36 | TB42 | TB42 | TB48 | TB48 | TB54 | TB56 |



THAI SERIES

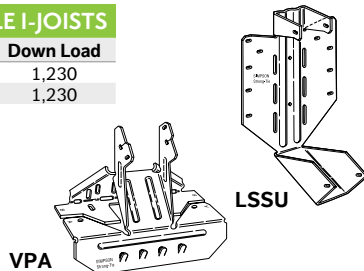
## ADJUSTABLE HEIGHT HANGERS

| Single I-Joist |            |          |           | Double I-Joist |            |        |           |
|----------------|------------|----------|-----------|----------------|------------|--------|-----------|
| Width          | Depth      | Hanger   | Down Load | Width          | Depth      | Hanger | Down Load |
| 2-5/16"        | 9-1/2"-14" | THAI3522 | 1,715     | 4-5/8"         | 9-1/2"-14" | THAI-2 | 2,095     |
| 3-1/2"         | 9-1/2"-14" | THAI422  | 1,715     | -              | -          | -      | -         |

THAI-2 are special order. Specify width

## VARIABLE PITCH - SINGLE I-JOISTS

| Width   | Depth | Hanger | Down Load |
|---------|-------|--------|-----------|
| 2-5/16" | ALL   | VPA35  | 1,230     |
| 3-1/2"  | ALL   | VPA4   | 1,230     |



VPA

LSSU

## SKEWED 45° HANGERS

| Single I-Joist |         |              |           | Double I-Joist |         |               |           |
|----------------|---------|--------------|-----------|----------------|---------|---------------|-----------|
| Width          | Depth   | Hanger       | Down Load | Width          | Depth   | Hanger        | Down Load |
| 2-5/16"        | 9-1/2"  | SUR/L2.37/9  | 2,015     | 4-5/8"         | 9-1/2"  | HSUR/L4.75/9  | 1,785     |
|                | 11-7/8" | SUR/L2.37/11 | 2,305     |                | 11-7/8" | HSUR/L4.75/11 | 2,380     |
|                | 14"     | SUR/L2.37/14 | 2,590     |                | 14"     | HSUR/L4.75/14 | 2,975     |
|                | 16"     | SUR/L2.37/14 | 2,590     |                | 16"     | HSUR/L4.75/16 | 3,330     |
| 3-1/2"         | 11-7/8" | SUR/L410     | 2,015     | 7"             | 11-7/8" | HU412-2X      | 1,900     |
|                | 14"     | SUR/L414     | 2,500     |                | 14"     | HU414-2X      | 2,380     |
|                | 16"     | SUR/L414     | 2,500     |                | 16"     | HU414-2X      | 2,380     |
|                | 18"     | SUR/L414     | 2,500     |                | 18"     | HU414-2X      | 2,380     |
|                | 20"     | SUR/L414     | 2,500     |                | 20"     | HU414-2X      | 2,380     |
|                | 22"     | -            | -         |                | 22"     | HU414-2X      | 2,380     |
| 24"            | -       | -            | 24"       | -              | -       |               |           |

HU4-X are special order. Specify angle and direction

## FIELD SLOPE AND SKEW

| Single I-Joist |            |         |           | Double I-Joist |            |           |           |
|----------------|------------|---------|-----------|----------------|------------|-----------|-----------|
| Width          | Depth      | Hanger  | Down Load | Width          | Depth      | Hanger    | Down Load |
| 2-5/16"        | 9-1/2"-14" | LSSU35  | 995       | 4-5/8"         | 9-1/2"-14" | LSU3510-2 | 2,300     |
| 3-1/2"         | 9-1/2"-14" | LSSU410 | 1,625     | 7"             | -          | -         | -         |

Orange highlighted hangers require web stiffeners at I-joist ends.



# LVL Framing Connectors

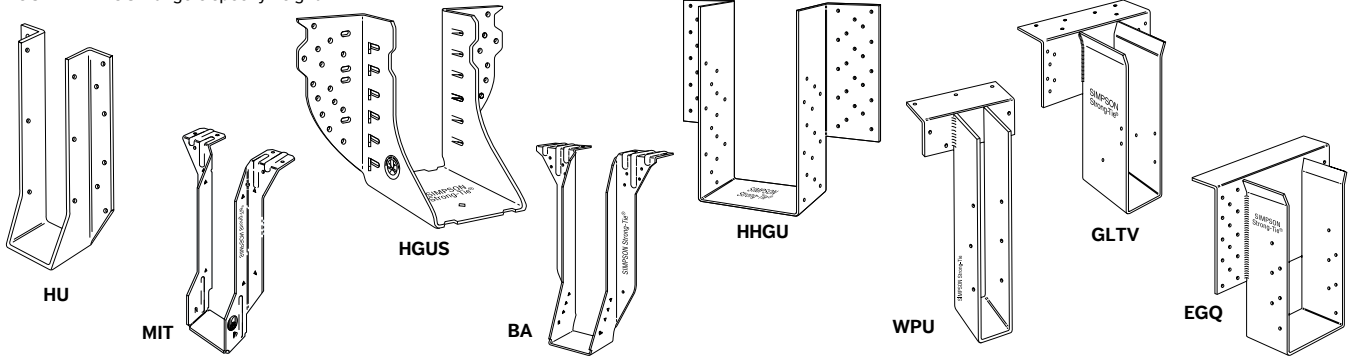


RIGIDLAM® LVL

## FACE MOUNT LVL HANGERS

| Single Ply-1-3/4" wide |                    |                | Double Ply-3-1/2" wide |                        |                  | Triple Ply-5-1/4" wide |                             |                  | Quadruple-Ply 7" wide |                             |                  |
|------------------------|--------------------|----------------|------------------------|------------------------|------------------|------------------------|-----------------------------|------------------|-----------------------|-----------------------------|------------------|
| Depth                  | Hanger             | Down Load      | Depth                  | Hanger                 | Down Load        | Depth                  | Hanger                      | Down Load        | Depth                 | Hanger                      | Down Load        |
| 9-1/4"                 | HU9<br>HUS1.81/10  | 3,570<br>5,135 | 9-1/4"                 | HHUS410<br>HGUS410     | 5,660<br>9,100   | 9-1/4"                 | HHUS5.50/10<br>HGUS5.50/10  | 5,660<br>9,100   | 9-1/4"                | HHUS7.25/10<br>HGUS7.25/10  | 5,660<br>9,100   |
| 9-1/2"                 | HU9<br>HUS1.81/10  | 3,570<br>5,135 | 9-1/2"                 | HHUS410<br>HGUS410     | 5,660<br>9,100   | 9-1/2"                 | HHUS5.50/10<br>HGUS5.50/10  | 5,660<br>9,100   | 9-1/2"                | HHUS7.25/10<br>HGUS7.25/10  | 5,660<br>9,100   |
| 11-1/4"                | HU11<br>HUS1.81/10 | 4,465<br>5,135 | 11-1/4"                | HHUS410<br>HGUS412     | 5,660<br>9,100   | 11-1/4"                | HHUS5.50/10<br>HGUS5.50/12  | 5,660<br>9,600   | 11-1/4"               | HHUS7.25/10<br>HGUS7.25/12  | 5,660<br>9,600   |
| 11-7/8"                | HU11<br>HUS1.81/10 | 4,465<br>5,135 | 11-7/8"                | HHUS410<br>HGUS412     | 5,660<br>9,100   | 11-7/8"                | HHUS5.50/10<br>HGUS5.50/12  | 5,660<br>9,600   | 11-7/8"               | HHUS7.25/10<br>HGUS7.25/12  | 5,660<br>9,600   |
| 14"                    | HU14<br>HUS1.81/10 | 5,055<br>5,135 | 14"                    | HHUS410<br>HGUS414     | 5,660<br>10,100  | 14"                    | HHUS5.50/10<br>HGUS5.50/14  | 5,660<br>10,100  | 14"                   | HGUS7.25/14<br>HGU7.25-SDS  | 10,100<br>14,145 |
| 16"                    | HU14<br>HUS1.81/10 | 5,055<br>5,135 | 16"                    | HHUS410<br>HGUS414     | 5,660<br>10,100  | 16"                    | HGUS5.50/14<br>HGUS5.50-SDS | 10,100<br>14,145 | 16"                   | HGUS7.25/14<br>HHGU7.25-SDS | 10,100<br>17,845 |
| 18"                    | -                  | -              | 18"                    | HHUS410<br>HGUS414     | 5,660<br>10,100  | 18"                    | HGUS5.50/14<br>HGU5.50-SDS  | 10,100<br>14,145 | 18"                   | HGUS7.25/14<br>HHGU7.25-SDS | 10,100<br>17,845 |
| 20"                    | -                  | -              | 20"                    | HGUS414<br>HGU3.63-SDS | 10,100<br>14,145 | 20"                    | HGU5.50-SDS<br>HHGU5.50-SDS | 14,145<br>17,845 | 20"                   | HHGU7.25-SDS                | 17,845           |
| 22"                    | -                  | -              | 22"                    | HGUS414<br>HGU3.63-SDS | 10,100<br>14,145 | 22"                    | HHGU5.50-SDS                | 17,845           | 22"                   | HHGU7.25-SDS                | 17,845           |
| 24"                    | -                  | -              | 24"                    | HGUS414<br>HGU3.63-SDS | 10,100<br>14,145 | 24"                    | HHGU5.50-SDS                | 17,845           | 24"                   | HHGU7.25-SDS                | 17,845           |

HGU AND HHGU Hangers specify height



## TOP FLANGE LVL HANGERS

| Single Ply-1-3/4" wide |                                |                | Double Ply-3-1/2" wide |                               |                  | Triple Ply-5-1/4" wide |                                |                  | Quadruple-Ply 7" wide |                               |                  |
|------------------------|--------------------------------|----------------|------------------------|-------------------------------|------------------|------------------------|--------------------------------|------------------|-----------------------|-------------------------------|------------------|
| Depth                  | Hanger                         | Down Load      | Depth                  | Hanger                        | Down Load        | Depth                  | Hanger                         | Down Load        | Depth                 | Hanger                        | Down Load        |
| 9-1/4"                 | LBV1.81/9.25<br>WPU1.81/9.25   | 2,910<br>4,700 | 9-1/4"                 | LBV3.56/9.25<br>HB3.56/9.25   | 2,910<br>5,815   | 9-1/4"                 | HB5.50/9.25<br>GLTV5.50/9.25   | 5,815<br>7,500   | 9-1/4"                | HB7.12/9.25<br>GLTV49.25-2    | 5,815<br>7,500   |
| 9-1/2"                 | MIT9.5<br>LBV1.81/9.5          | 2,550<br>2,910 | 9-1/2"                 | LBV3.56/9.5<br>HB3.56/9.5     | 2,910<br>5,815   | 9-1/2"                 | HB5.50/9.5<br>GLTV5.59         | 5,815<br>7,500   | 9-1/2"                | HB7.12/9.5<br>GLTV49.5-2      | 5,815<br>7,500   |
| 11-1/4"                | LBV1.81/11.25<br>WPU1.81/11.25 | 2,910<br>4,700 | 11-1/4"                | LBV3.56/11.25<br>HB3.56/11.25 | 2,910<br>5,815   | 11-1/4"                | HB5.50/11.25<br>GLTV5.50/11.25 | 5,815<br>7,500   | 11-1/4"               | HB7.12/11.25<br>HGLTV411.25-2 | 5,815<br>10,585  |
| 11-7/8"                | MIT11.88<br>BA1.81/11.88       | 2,550<br>4,715 | 11-7/8"                | BA3.56/11.88<br>HB3.56/11.88  | 4,715<br>5,815   | 11-7/8"                | HB5.50/11.88<br>HGLTV5.511     | 5,815<br>10,585  | 11-7/8"               | GLTV411.88-2<br>EGQ7.25-SDS3  | 7,500<br>19,800  |
| 14"                    | MIT1.81/14<br>LBV1.81/14       | 2,550<br>2,910 | 14"                    | BA3.56/14<br>GLTV3.514        | 4,715<br>7,500   | 14"                    | HB5.50/14<br>EGQ5.50-SDS3      | 5,815<br>19,800  | 14"                   | GLTV414-2<br>EGQ7.25-SDS3     | 7,500<br>19,800  |
| 16"                    | MIT1.81/16<br>B1.81/16         | 2,550<br>4,135 | 16"                    | BA3.56/16<br>GLTV3.516        | 4,715<br>7,500   | 16"                    | HB5.50/16<br>EGQ5.50-SDS3      | 5,815<br>19,800  | 16"                   | HGLTV416-2<br>EGQ7.25-SDS3    | 10,585<br>19,800 |
| 18"                    | -                              | -              | 18"                    | HB3.56/18<br>HGLTV3.518       | 5,815<br>10,585  | 18"                    | HGLTV5.518<br>EGQ5.50-SDS3     | 10,585<br>19,800 | 18"                   | HGLTV418-2<br>EGQ7.25-SDS3    | 10,585<br>19,800 |
| 20"                    | -                              | -              | 20"                    | HGLTV3.520<br>EGQ3.62-SDS3    | 10,585<br>19,800 | 20"                    | EGQ5.50-SDS3                   | 19,800           | 20"                   | EGQ7.25-SDS3                  | 19,800           |
| 22"                    | -                              | -              | 22"                    | HGLTV3.520<br>EGQ3.62-SDS3    | 10,585<br>19,800 | 22"                    | EGQ5.50-SDS3                   | 19,800           | 22"                   | EGQ7.25-SDS3                  | 19,800           |
| 24"                    | -                              | -              | 24"                    | HGLTV3.520<br>EGQ3.62-SDS3    | 10,585<br>19,800 | 24"                    | EGQ5.50-SDS3                   | 19,800           | 24"                   | EGQ7.25-SDS3                  | 19,800           |

EGQ Hanger specify height

### General Notes

1. Loads listed are the lowest hanger/header limitations assuming header material is Douglas Fir-Larch, Southern Pine, or LVL manufactured in the United States. Top Flange LVL Hanger loads assume header material is LVL. Joist reaction should be checked by a qualified designer to ensure proper hanger selection.
2. Refer to current Simpson Strong-Tie Wood Construction Connectors catalog to verify allowable loads and fastener size and quantity.
3. Loads shown are gravity (floor) loads (100% D.O.L.). Other load durations may apply. Refer to the current version of Wood Construction Connectors for allowable increases.
4. Top Flange Hanger configurations and thickness of top flange needs to be considered for flush frame conditions.
5. All loads shown are based on 16d common nails into the header and all nail holes filled (Exceptions: IUS and ITS use 10d common nails and some hangers use SDS screws which are supplied with the hanger).

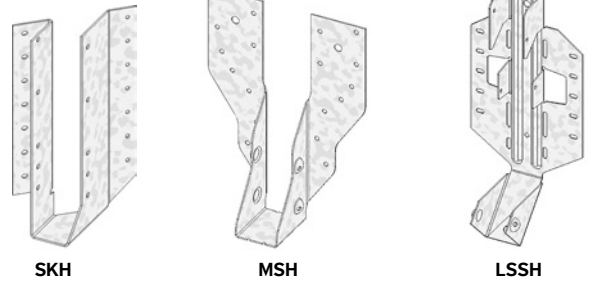
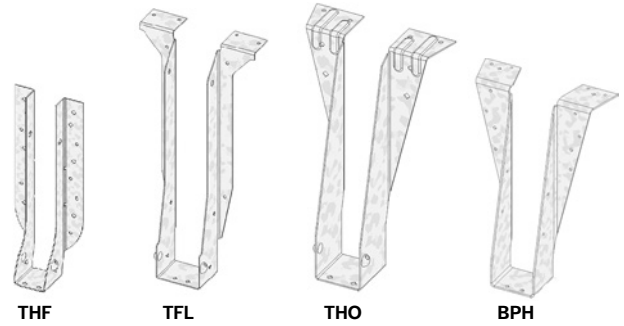
All hangers listed are manufactured by Simpson Strong-Tie® Co., Inc. For additional information, refer to the current Simpson Strong-Tie literature, [www.strongtie.com](http://www.strongtie.com) or contact Simpson Strong-Tie at 800-999-5099.

# I-Joist Framing Connectors



## FACE MOUNT HANGERS

| Single I-Joist |         |          |           | Double I-Joist |         |            |           |
|----------------|---------|----------|-----------|----------------|---------|------------|-----------|
| Width          | Depth   | Hanger   | Down Load | Width          | Depth   | Hanger     | Down Load |
| 2-5/16"        | 9-1/2"  | THF23925 | 1,370     | 4-5/8"         | 9-1/2"  | THF23925-2 | 1,390     |
|                | 11-7/8" | THF23118 | 1,595     |                | 11-7/8" | THF23118-2 | 1,855     |
|                | 14"     | THF23140 | 2,090     |                | 14"     | THF23140-2 | 2,540     |
|                | 16"     | THF23160 | 2,550     |                | 16"     | THF23160-2 | 3,050     |
|                | 18"     | THF23180 | 2,785     |                | 18"     | THF23160-2 | 3,050     |
|                | 20"     | THF23180 | 2,785     |                | 20"     | THF23160-2 | 3,050     |
| 3-1/2"         | 11-7/8" | THF35112 | 1,825     | 7"             | 11-7/8" | HD7120     | 2,255     |
|                | 14"     | THF35140 | 2,320     |                | 14"     | HD7140     | 2,820     |
|                | 16"     | THF35157 | 2,550     |                | 16"     | HD7160     | 3,385     |
|                | 18"     | THF35157 | 2,550     |                | 18"     | HD7160     | 3,385     |
|                | 20"     | THF35157 | 2,550     |                | 20"     | HD7180     | 3,950     |
|                | 22"     | THF35157 | 2,550     |                | 22"     | HD7180     | 3,950     |



MiTek Notes: (1) Loads assume maximum nailing schedule for single I-Joists.

## TOP FLANGE HANGERS

| Single I-Joist |         |                       |           | Double I-Joist |         |                         |           |
|----------------|---------|-----------------------|-----------|----------------|---------|-------------------------|-----------|
| Width          | Depth   | Hanger                | Down Load | Width          | Depth   | Hanger                  | Down Load |
| 2-5/16"        | 9-1/2"  | TFL2395               | 1,600     | 4-5/8"         | 9-1/2"  | THO23950-2              | 2,630     |
|                | 11-7/8" | TFL23118              | 1,600     |                | 11-7/8" | THO23118-2              | 2,630     |
|                | 14"     | TFL2314               | 1,600     |                | 14"     | THO23140-2              | 2,630     |
|                | 16"     | TFL2316               | 1,600     |                | 16"     | THO23160-2              | 2,630     |
|                | 18"     | TFI3518               | 2,560     |                | 18"     | THO23180-2              | 2,630     |
|                | 20"     | TFI3520               | 2,560     |                | 20"     | THO23200-2              | 2,630     |
| 3-1/2"         | 11-7/8" | XPHM2322 <sup>1</sup> | 2,865     | 7"             | 11-7/8" | XPHM2322-2 <sup>1</sup> | 3,255     |
|                | 14"     | XPHM2324 <sup>1</sup> | 2,865     |                | 14"     | XPHM2324-2 <sup>1</sup> | 3,255     |
|                | 16"     | THO35118              | 2,050     |                | 16"     | BPH71118                | 3,455     |
|                | 18"     | THO35140              | 2,715     |                | 18"     | BPH7114                 | 3,455     |
|                | 20"     | THO35160              | 2,715     |                | 20"     | BPH7116                 | 3,455     |
|                | 22"     | TFI420                | 2,560     |                | 22"     | BPH7120                 | 3,455     |

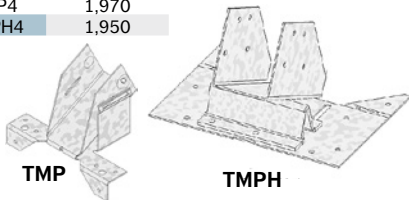
MiTek Notes: (1) Hangers are special order. Consult USP for pricing and lead times.

## ADJUSTABLE HEIGHT HANGERS

| Single I-Joist |         |         |           | Double I-Joist |         |           |           |
|----------------|---------|---------|-----------|----------------|---------|-----------|-----------|
| Width          | Depth   | Hanger  | Down Load | Width          | Depth   | Hanger    | Down Load |
| 2-5/16"        | 9-1/2"  | MSH2322 | 2,355     | 4-5/8"         | 9-1/2"  | MSH2322-2 | 2,430     |
|                | 11-7/8" | MSH2322 | 2,355     |                | 11-7/8" | MSH2322-2 | 2,430     |
|                | 14"     | MSH2322 | 2,355     |                | 14"     | MSH2322-2 | 2,430     |
|                | 16"     | MSH2322 | 2,355     |                | 16"     | MSH2322-2 | 2,430     |
|                | 18"     | MSH2322 | 2,355     |                | 18"     | MSH2322-2 | 2,430     |
|                | 20"     | MSH2322 | 2,355     |                | 20"     | MSH2322-2 | 2,430     |
| 3-1/2"         | 11-7/8" | MSH422  | 2,025     | 7"             | 11-7/8" | MSH422-2  | 3,740     |
|                | 14"     | MSH422  | 2,025     |                | 14"     | MSH422-2  | 3,740     |
|                | 16"     | MSH422  | 2,025     |                | 16"     | MSH422-2  | 3,740     |
|                | 18"     | MSH422  | 2,025     |                | 18"     | MSH422-2  | 3,740     |
|                | 20"     | MSH422  | 2,025     |                | 20"     | MSH422-2  | 3,740     |
|                | 22"     | MSH422  | 2,025     |                | 22"     | MSH422-2  | 3,740     |

## VARIABLE PITCH - SINGLE I-JOISTS

| Width   | Depth         | Hanger | Down Load |
|---------|---------------|--------|-----------|
| 2-5/16" | 9-1/2" - 24"  | TMP    | 1,970     |
|         |               | TMPH23 | 1,950     |
| 3-1/2"  | 11-7/8" - 24" | TMP4   | 1,970     |
|         |               | TMPH4  | 1,950     |



## SKewed 45° HANGERS

| Single I-Joist |         |                                 |           | Double I-Joist |         |                                  |           |
|----------------|---------|---------------------------------|-----------|----------------|---------|----------------------------------|-----------|
| Width          | Depth   | Hanger                          | Down Load | Width          | Depth   | Hanger                           | Down Load |
| 2-5/16"        | 9-1/2"  | SKH2320L/R                      | 1,625     | 4-5/8"         | 9-1/2"  | SKH2320L/R-2                     | 1,665     |
|                | 11-7/8" | SKH2320L/R                      | 1,625     |                | 11-7/8" | SKH2320L/R-2                     | 1,665     |
|                | 14"     | SKH2324L/R                      | 1,855     |                | 14"     | SKH2324L/R-2                     | 1,905     |
|                | 16"     | SKH2324L/R                      | 1,855     |                | 16"     | SKH2324L/R-2                     | 1,905     |
|                | 18"     | SKH2324L/R                      | 1,855     |                | 18"     | SKH2324L/R-2                     | 1,905     |
|                | 20"     | ---                             | ---       |                | 20"     | ---                              | ---       |
| 3-1/2"         | 11-7/8" | HD410_SK45L/R_BV <sup>1,2</sup> | 2,540     | 7"             | 11-7/8" | HD7120_SK45L/R_BV <sup>1,2</sup> | 2,255     |
|                | 14"     | HD414_SK45L/R_BV <sup>1,2</sup> | 3,385     |                | 14"     | HD7140_SK45L/R_BV <sup>1,2</sup> | 2,820     |
|                | 16"     | HD414_SK45L/R_BV <sup>1,2</sup> | 3,385     |                | 16"     | HD7160_SK45L/R_BV <sup>1,2</sup> | 3,385     |
|                | 18"     | HD414_SK45L/R_BV <sup>1,2</sup> | 3,385     |                | 18"     | HD7160_SK45L/R_BV <sup>1,2</sup> | 3,385     |
|                | 20"     | HD414_SK45L/R_BV <sup>1,2</sup> | 3,385     |                | 20"     | HD7180_SK45L/R_BV <sup>1,2</sup> | 3,950     |
|                | 22"     | HD418_SK45L/R_BV <sup>1,2</sup> | 3,950     |                | 22"     | HD7180_SK45L/R_BV <sup>1,2</sup> | 3,950     |

MiTek Notes: (1) Bevel cut required on end of joist to achieve design loads. (2) Hangers are special order and loads assume maximum nailing schedule. Consult MiTek for pricing and lead times.

## FIELD SLOPE AND SKEW

| Single I-Joist |               |                     |           | Double I-Joist |              |        |           |
|----------------|---------------|---------------------|-----------|----------------|--------------|--------|-----------|
| Width          | Depth         | Hanger              | Down Load | Width          | Depth        | Hanger | Down Load |
| 2-5/16"        | 9-1/2" - 14"  | LSSH23              | 1,180     | 4-5/8"         | 9-1/2" - 14" | ---    | ---       |
|                | 16" - 24"     | LSSH23 <sup>1</sup> | 1,180     |                | 16" - 24"    | ---    | ---       |
| 3-1/2"         | 11-7/8" - 14" | LSSH35              | 1,920     | 7"             | 11-7/8"      | ---    | ---       |
|                | 16" - 24"     | LSSH35 <sup>1</sup> | 1,920     |                | 16"          | ---    | ---       |

MiTek Notes: (1) Supplemental lateral support connection recommended when hanger height is less than 60% of joist height.

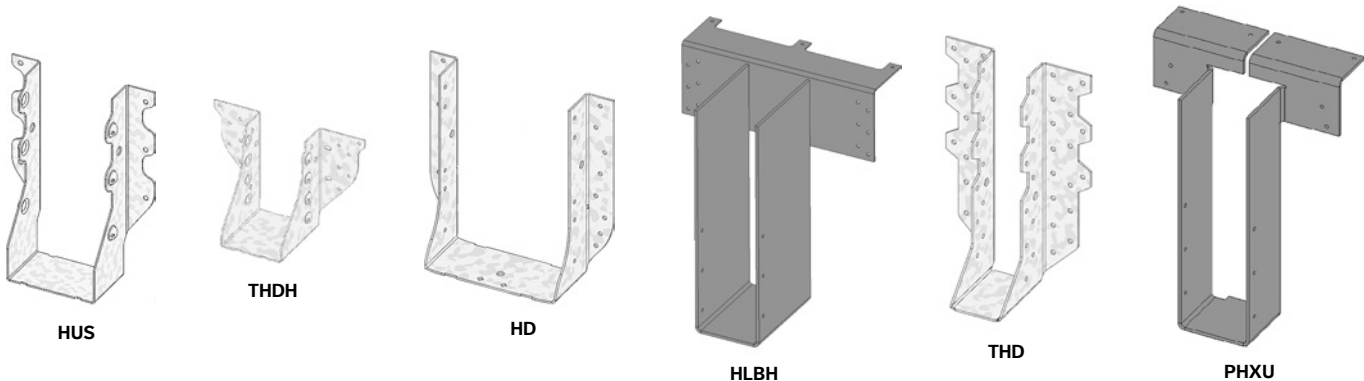
Blue highlighted hangers require web stiffeners at I-joist ends.



**FACE MOUNT LVL HANGERS**

| Single Ply-1-3/4" wide |           |           | Double Ply-3-1/2" wide |          |           | Triple Ply-5-1/4" wide |          |           | Quadruple-Ply 7" wide |           |           |
|------------------------|-----------|-----------|------------------------|----------|-----------|------------------------|----------|-----------|-----------------------|-----------|-----------|
| Depth                  | Hanger    | Down Load | Depth                  | Hanger   | Down Load | Depth                  | Hanger   | Down Load | Depth                 | Hanger    | Down Load |
| 9-1/4"                 | HD17925   | 2,540     | 9-1/4"                 | THD410   | 5,850     | 9-1/4"                 | THD610   | 6,535     | 9-1/4"                | THD7210   | 6,535     |
| 9-1/2"                 | HUS1791   | 5,510     | 9-1/2"                 | THDH4101 | 9,010     | 9-1/2"                 | THDH6101 | 8,990     | 9-1/2"                | THDH72101 | 8,990     |
| 11-1/4"                | HD17112   | 2,870     | 11-1/4"                | THD410   | 5,850     | 11-1/4"                | THD610   | 6,535     | 11-1/4"               | THD7210   | 6,535     |
| 11-7/8"                | HUS1791   | 5,510     | 11-7/8"                | THDH4121 | 9,845     | 11-7/8"                | THDH6121 | 10,365    | 11-7/8"               | THDH72121 | 8,990     |
| 14"                    | HD1714    | 3,140     | 14"                    | THD410   | 5,850     | 14"                    | THD610   | 6,535     | 14"                   | THD7210   | 6,535     |
|                        | HUS1791   | 5,510     | 14"                    | THDH4141 | 12,510    | 14"                    | THDH6141 | 12,510    | 14"                   | THDH72141 | 12,510    |
| 16"                    | HD1714    | 3,140     | 16"                    | THD412   | 7,045     | 16"                    | THD612   | 8,255     | 16"                   | HD7120    | 2,255     |
|                        | THF17157  | 2,735     | 16"                    | THDH4141 | 12,510    | 16"                    | THDH6141 | 12,510    | 16"                   | THDH72141 | 12,510    |
| 18"                    | HD1714    | 3,140     | 18"                    | THD412   | 7,045     | 18"                    | THD612   | 8,255     | 18"                   | HD7140    | 2,820     |
|                        | THF17157  | 2,735     | 18"                    | THDH4141 | 12,510    | 18"                    | THDH6141 | 12,510    | 18"                   | THDH72141 | 12,510    |
| 20"                    | HD1714    | 3,140     | 20"                    | THD414   | 7,045     | 20"                    | THD614   | 8,415     | 20"                   | HD7140    | 2,820     |
|                        | THF17157  | 2,735     | 20"                    | THDH4141 | 12,510    | 20"                    | THDH6141 | 12,510    | 20"                   | THDH72141 | 12,510    |
| 22"                    | HD1714    | 3,140     | 22"                    | HD418    | 3,950     | 22"                    | HD5216   | 4,230     | 22"                   | HD7180    | 3,950     |
|                        | THF17157  | 2,735     |                        | ---      | ---       |                        | ---      | ---       |                       | ---       | ---       |
| 24"                    | THF17157  | 2,735     | 24"                    | HD418    | 3,950     | 24"                    | HD5216   | 4,230     | 24"                   | HD7180    | 3,950     |
|                        | HDQ1714IF | 4,660     |                        | ---      | ---       |                        | ---      | ---       |                       | ---       | ---       |

MiTek Notes: (1) Joist nails need to be toe nailed at a 30° to 45° angle to achieve listed loads.



**TOP FLANGE LVL HANGERS**

| Single Ply-1-3/4" wide |           |           | Double Ply-3-1/2" wide |           |           | Triple Ply-5-1/4" wide |            |           | Quadruple-Ply 7" wide |           |           |
|------------------------|-----------|-----------|------------------------|-----------|-----------|------------------------|------------|-----------|-----------------------|-----------|-----------|
| Depth                  | Hanger    | Down Load | Depth                  | Hanger    | Down Load | Depth                  | Hanger     | Down Load | Depth                 | Hanger    | Down Load |
| 9-1/4"                 | BPH17925  | 3,340     | 9-1/4"                 | HBPH35925 | 7,000     | 9-1/4"                 | HBPH55925  | 6,930     | 9-1/4"                | HBPH71925 | 6,930     |
|                        | PHXU17925 | 4,420     |                        | HLBH35925 | 10,620    |                        | HLBH55925  | 10,620    |                       | HLBH71925 | 10,620    |
| 9-1/2"                 | THO17950  | 1,345     | 9-1/2"                 | HBPH3595  | 7,000     | 9-1/2"                 | HBPH5595   | 6,930     | 9-1/2"                | HBPH7195  | 6,930     |
|                        | PHXU1795  | 4,420     |                        | HLBH3595  | 10,620    |                        | HLBH5595   | 10,620    |                       | HLBH7195  | 10,620    |
| 11-1/4"                | BPH17112  | 3,340     | 11-1/4"                | HBPH35112 | 7,000     | 11-1/4"                | HBPH55112  | 6,930     | 11-1/4"               | HBPH71112 | 6,930     |
|                        | PHXU17112 | 4,420     |                        | HLBH35112 | 10,620    |                        | HLBH55112  | 10,620    |                       | HLBH71112 | 10,620    |
| 11-7/8"                | THO17118  | 1,345     | 11-7/8"                | HBPH35118 | 7,000     | 11-7/8"                | HBPH55118  | 6,930     | 11-7/8"               | HBPH71118 | 6,930     |
|                        | PHXU17118 | 4,420     |                        | HLBH35118 | 10,620    |                        | HLBH55118  | 10,620    |                       | HLBH71118 | 10,620    |
| 14"                    | BPH1714   | 3,340     | 14"                    | HBPH3514  | 7,000     | 14"                    | HBPH5514   | 6,930     | 14"                   | HBPH7114  | 6,930     |
|                        | PHXU1714  | 4,420     |                        | HLBH3514  | 10,620    |                        | HLBH5514   | 10,620    |                       | HLBH7114  | 10,620    |
| 16"                    | TFL1716   | 1,645     | 16"                    | HBPH3516  | 7,000     | 16"                    | HBPH5516   | 6,930     | 16"                   | HBPH7116  | 6,930     |
|                        | BPH1716   | 3,340     |                        | HLBH3516  | 10,620    |                        | HLBH5516   | 10,620    |                       | HLBH7116  | 10,620    |
| 18"                    | ---       | ---       | 18"                    | HBPH3518  | 7,000     | 18"                    | HBPH5518   | 6,930     | 18"                   | HBPH7118  | 6,930     |
|                        | ---       | ---       |                        | HLBH3518  | 10,620    |                        | HLBH5518   | 10,620    |                       | HLBH7118  | 10,620    |
| 20"                    | ---       | ---       | 20"                    | HBPH3520  | 7,000     | 20"                    | HBPH5520   | 6,930     | 20"                   | HBPH7120  | 6,930     |
|                        | ---       | ---       |                        | HLBH3520  | 10,620    |                        | HLBH5520   | 10,620    |                       | HLBH7120  | 10,620    |
| 22"                    | ---       | ---       | 22"                    | HBPH3522  | 7,000     | 22"                    | XHLBH55221 | 10,620    | 22"                   | HBPH7122  | 6,930     |
|                        | ---       | ---       |                        | PHXU3522  | 6,650     |                        | ---        | ---       |                       | HLBH7122  | 10,620    |
| 24"                    | ---       | ---       | 24"                    | HBPH3524  | 7,000     | 24"                    | XHLBH55241 | 10,620    | 24"                   | HBPH7124  | 6,930     |
|                        | ---       | ---       |                        | PHXU3524  | 6,650     |                        | ---        | ---       |                       | HLBH7124  | 10,620    |

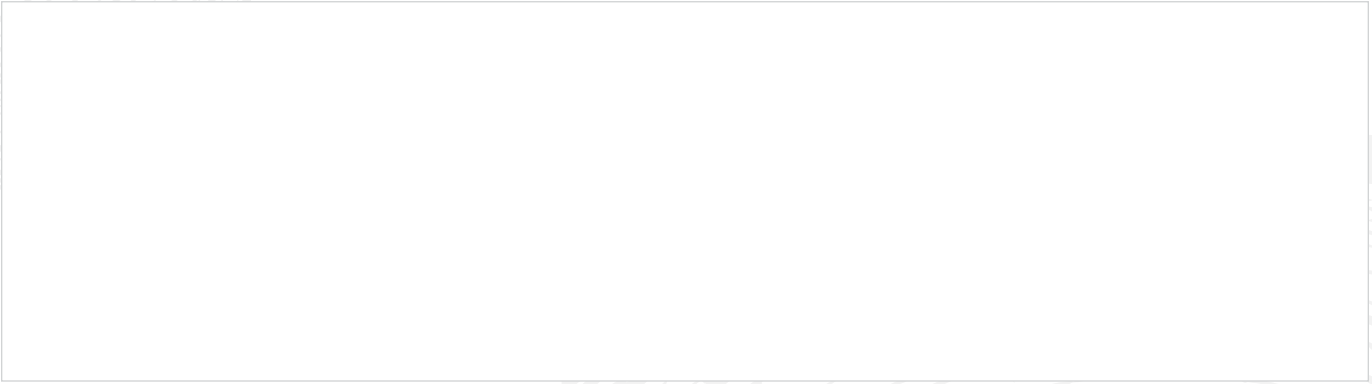
MiTek Notes: (1) Hangers are special order. Consult USP for pricing and lead times.

**General Notes**

- Loads listed are the lowest hanger/header limitations assuming header material is Douglas Fir-Larch, Southern Pine, or LVL manufactured in the United States. Top Flange LVL Hanger loads assume header material is LVL. Joist reaction should be checked by a qualified designer to ensure proper hanger selection.
- Refer to current USP product catalog to verify allowable loads and fastener size and quantity.
- Loads shown are gravity (floor) loads (100% D.O.L.). Other load durations may apply. Refer to the current USP product catalog for allowable increases.
- Top Flange Hanger configurations and thickness of top flange needs to be considered for flush frame conditions.

All hangers listed are manufactured by MiTek®. For more information refer to the current MiTek literature, [www.mitek-us.com](http://www.mitek-us.com) or contact MiTek at 800-328-5934.

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An electronic version of this Design Guide can be found at [www.Roseburg.com](http://www.Roseburg.com) under "Design Guides" in the Engineered Wood section.

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[roseburg.com](http://roseburg.com)

### CODE REPORT INDEX

| Roseburg EWP Code Reports  | Product       |
|--|---------------|
| ICC ESR-1251 (with LABC/LARC supplement, CBC/CRC supplement including DSA & OSHPD, and FBC supplement) | I-JOIST       |
| ICC ESR-1210 (with LABC/LARC supplement, CBC/CRC supplement including DSA & OSHPD, and FBC supplement) | LVL & LVL Rim |
| APA PR-L259 (U.S.) and APA PR-L259C (Canada)   | I-JOIST       |
| APA PR-L289 (U.S.) and APA PR-L289C (Canada)   | LVL           |
| APA PR-L270  | LVL STUDS     |
| Florida FL2440   | I-JOIST & LVL |
| CCMC 13323-R (Canada)  | I-JOIST       |
| CCMC 13310-R (Canada)  | LVL           |

The code reports listed above are available at [Roseburg.com](http://Roseburg.com), in the Engineered Wood Products section under Code Reports.

## PRODUCT & PERFORMANCE WARRANTY

Roseburg Forest Products warrants that its **RFPI®-Joists, RigidLam® laminated veneer lumber (LVL) and RigidRim® Rimboard** will be free from manufacturing errors and defects in workmanship and materials in accordance with our specifications.

Furthermore, we warrant that these products, when properly stored, installed and used in dry use service conditions, will meet or exceed our performance specifications for the expected life of the structure.

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