Roseburg

Engineered Wood Products

Residential Design & Installation Guide

ROSEBURG FRAMING SYSTEM®

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

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

ENGINEERED WOOD PRODUCTS

Roseburg's engineered wood plants are located in Riddle, Oregon and Chester, South Carolina. These state-of-the-art facilities are focused on ensuring the highest quality standards are maintained.

Roseburg's signature trademarks of vertical integration capabilities and cutting-edge manufacturing practices help ensure that quality Engineered Wood Products are produced. Our production capacity, complete product offering, focus on service and product availability, commitment to the EWP business, and acceptability of the product by builders and homeowners all translate into significant advantages for our clients.

ROSEBURG FRAMING SYSTEM®

The Roseburg Framing System® consists of: RFPI® Joists used in floor and roof construction; RigidLam® LVL which is used for headers, beams, studs and columns; and RigidRim® Rimboard. All of the components are engineered to the industry's highest standards to help contractors build solid, durable, and better performing framing systems compared to ordinary dimension lumber.

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

As a supporting member of APA – The Engineered Wood Association, Roseburg has adopted the Performance Standard for wood I-Joists, the Performance Standard for rimboard and the Performance Standard for laminated veneer lumber (LVL). Roseburg believes these standards will aid specifiers in quickly and easily selecting the proper product for each application and will help builders simplify the process of installing I-Joists and LVL in residential applications. All engineered wood products described in this document meet the APA standards.

This guide emphasizes residential applications, including technical information on span ratings, installation details, cantilever designs, architectural specifications and engineering design properties. However, much of the basic information can be used for other construction applications. Review by a design professional is required for applications beyond the scope of this document. The Roseburg Framing System®, combined with other wood components produced by Roseburg, offers one of the most complete framing packages available from a single manufacturing supplier today.

DESIGN SUPPORT

The various charts and tables in this literature are based on accepted, typical residential loading conditions, on center spacing, deflection criteria and/or spans. This printed information allows the end user to identify and install properly sized Roseburg EWP 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 territory sales manager locations, please visit our website at www.Roseburg.com, or contact us at 1-800-347-7260.

WHAT DOES ROSEBURG'S EWP PROGRAM HAVE TO OFFER?

- Dependable supply of engineered wood
- Experienced sales, technical, engineering and customer service teams
- A commitment to quality and predictable performance
- A complete framing package with RFPI-Joists, RigidLam LVL, and RigidRim Rimboard.

THE COMPANY

Since 1936, Roseburg has served the industry providing quality products for residential, commercial, industrial applications. Our natural resource base, state-of-the-art manufacturing facilities, talented and experienced associates, and reputation for quality products and service have been keys to our clients' success.

Integrated manufacturing, wide variety of wood products, and over 600,000 acres of forestlands throughout Southern Oregon, North Carolina and Virginia are assets that will support our strategic growth plans well into the 21st Century.

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 RFPI®-Joists at their optimum on-center spacing and RigidLam® LVL beams at their optimum depth. Rectangular or circular holes can be analyzed for RFPI Joists and circular holes can be analyzed for RigidLam® LVL at a given size and location. Cantilever reinforcements can be utilized for RFPI®-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.

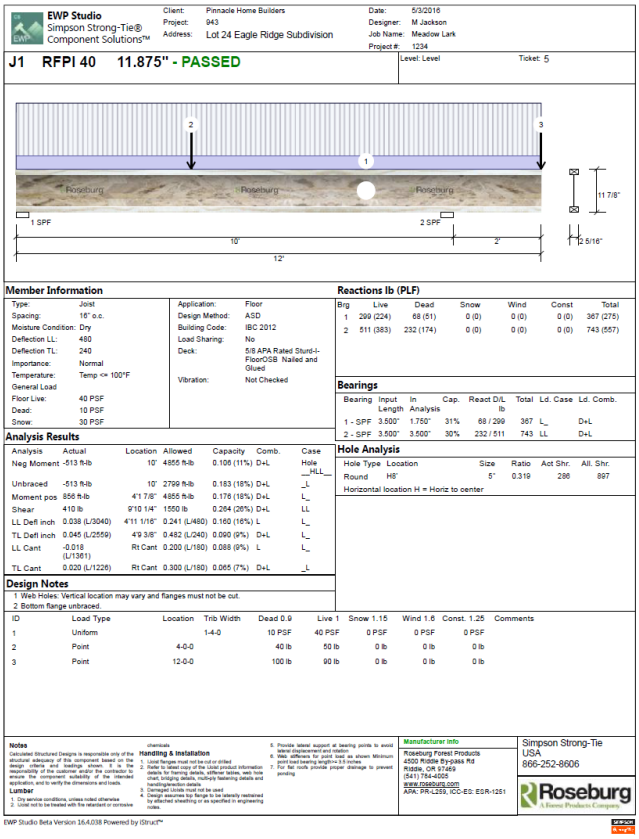
PLAN TOOL

The Plan tool is the complete automation system for Roseburg engineered wood products. The Plan tool 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 design professional 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
Simpson Strong-Tie® Component Solutions™

Client: Pinnacle Home Builders
Project: 943
Address: Lot 24 Eagle Ridge Subdivision

Date: 5/3/2016
Designer: M Jackson
Job Name: Meadow Lark
Project #: 1234

J1 RFPI 40 11.875" - PASSED

Level: Level Ticket: 5

Member Information

Type:	Joist
Spacing:	16" o.c.
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	240
Importance:	Normal
Temperature:	Temp <= 100°F
General Load	
Floor Live:	40 PSF
Dead:	10 PSF
Snow:	30 PSF

Application:	Floor
Design Method:	ASD
Building Code:	IBC 2012
Load Sharing:	No
Deck:	5/8 APA Rated Sturd-I-FloorOSB Nailed and Glued
Vibration:	Not Checked

Reactions lb (PLF)

Brg	Live	Dead	Snow	Wind	Const	Total
1	299 (224)	68 (51)	0 (0)	0 (0)	0 (0)	367 (275)
2	511 (383)	232 (174)	0 (0)	0 (0)	0 (0)	743 (557)

Bearings

Bearing	Input Length	In Analysis	Cap.	React lb	D/L	Total lb	Ld. Case	Ld. Comb.
1 - SPF	3.500"	1.750"	31%	68 / 299	367	L	D+L	
2 - SPF	3.500"	3.500"	30%	232 / 511	743	LL	D+L	

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-513 ft-lb	10'	4655 ft-lb	0.106 (11%)	D+L	Hole —HLL—
Unbraced	-513 ft-lb	10'	2799 ft-lb	0.183 (18%)	D+L	_L
Moment pos	856 ft-lb	4'1 7/8"	4655 ft-lb	0.176 (18%)	D+L	L_
Shear	410 lb	9'10 1/4"	1550 lb	0.264 (26%)	D+L	LL
LL Defl inch	0.038 (L/3040)	4'11 1/16"	0.241 (L/480)	0.160 (16%)	L	L_
TL Defl inch	0.045 (L/2559)	4'9 3/8"	0.482 (L/240)	0.090 (9%)	D+L	L_
LL Cant	-0.018 (L/1361)	Rt Cant	0.200 (L/180)	0.088 (9%)	L	L_
TL Cant	0.020 (L/1226)	Rt Cant	0.300 (L/180)	0.065 (7%)	D+L	_L

Hole Analysis

Hole Type	Location	Size	Ratio	Act Shr.	All. Shr.
Round	H8"	5"	0.319	286	897

Horizontal location H = Horiz to center

Design Notes
1. Web Holes: Vertical location may vary and flanges must not be cut.
2. Bottom flange unbraced.

ID	Load Type	Location	Trib Width	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform		1-4-0	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	
2	Point	4-0-0		40 lb	50 lb	0 lb	0 lb	0 lb	
3	Point	12-0-0		100 lb	90 lb	0 lb	0 lb	0 lb	

Notes
Calculated Structured Designs is responsible only for the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the building designer, not the truss designer, to ensure the component suitability of the intended application, and to verify the dimensions and loads.
Lumber
1. Dry service conditions, unless noted otherwise.
2. Lumber not to be treated with fire retardant or corrosive chemicals.
Handling & Installation
1. Lateral flanges must not be cut or drilled
2. Refer to latest copy of the Uniloft product information chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Uniloft must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.
5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum joint load bearing length=+ 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info
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Riddle, OR 97469
(541) 784-4000
www.roseburg.com
APA: PR-L259, ICC-ES: ESR-1261

Simpson Strong-Tie
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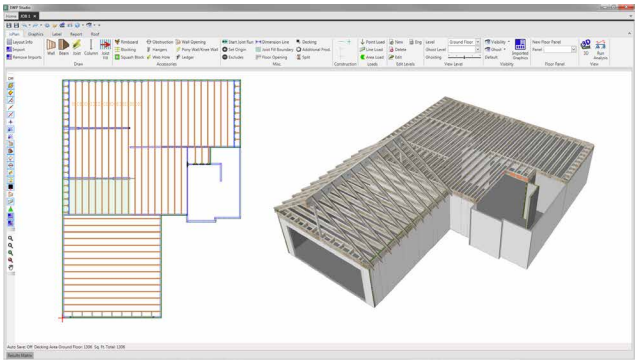
Roseburg
A Boise Products Company

EWP Studio Beta Version 16.4.038 Powered by iStruct™



Floor System Performance

It is always a good idea to consider the performance (i.e., vibration, bounce etc.) of **any floor system**. Currently, there are no true industry standard guidelines to use for I-joists but there are several practical aids that have shown to be useful. Some are design aids, some are installation aids and some are retrofit aids. They are offered as tools to help you minimize complaints about floor performance but cannot be guaranteed to eliminate all floor performance problems.

Begin by using the concepts of **fundamental natural frequency** and **damping** when designing floor systems. The **fundamental natural frequency** (FNF) is a measure of how the floor vibrates when you walk on it and is measured in cycles per second (called a Hertz or Hz). **Damping** is a measure of how quickly a floor stops vibrating and is expressed as a percent between 1 and 100 (most residential floors have a range between 5% – 25% damping).

Our bodies are extremely sensitive to vibrations below 9 Hz so the ideal floor would have a high FNF with high damping. Most problem floors have a combination of a low FNF (below 9 Hz) and a low damping (around 5%). The following list will help you determine the effect of different parameters on floor performance. **It is the combination and interaction of these parameters that determines how the floor "feels".**

DESIGN PARAMETERS	EFFECT ON FNF	EFFECT ON DAMPING
Longer Spans	**significantly lowers**	little or no effect
Higher "L over" deflection limit (L/480 vs. L/360)	**significantly increases**	little or no effect
Using an absolute upper limit on live load deflection (Usually between 1/3" to 1/2" max)	**significantly increases**	little or no effect
Using deeper I-joists	increases	little or no effect
Reduced on-center spacing	increases	little or no effect
Adding perpendicular partition walls	little or no effect	**significantly increases**
Increasing overall weight of floor	**significantly lowers**	**significantly increases**
INSTALLATION PARAMETERS		
Unlevel bearings (walls, beams & hangers)	**significantly lowers**	**significantly lowers**
Direct applied sheet-rock ceiling	**significantly increases**	**significantly increases**
Thicker sub-floor	increases	increases
Screw & Glued sub-floor	increases	increases
T&G sub-floor	increases	increases
RETROFIT PARAMETERS		
I-joist mid span blocking (one row)	little or no effect	increases
2x4 flat on I-joist bottom (perpendicular)	little or no effect	increases
2x4 strong back on I-joist bottom (perpendicular) (vertical 2x4 nailed to side of flat 2x4)	increases	**significantly increases**

2x10 & 2x12 Comparison

RFPI®-JOIST SUBSTITUTION GUIDE FOR SOLID-SAWN LUMBER[1]

2x10 No. 2 Solid-Sawn Live Load Deflection = L/360		**Simple Span**			**Multiple Span**		
		9-1/2" RFPI Joist Live Load Deflection = L/480			**9-1/2" RFPI Joist** Live Load Deflection = L/480		
Species	**Maximum Simple Span @16" o.c.[2]**	**16" o.c.**	**19.2" o.c.**	**24" o.c.**	**16" o.c.**	**19.2" o.c.**	**24" o.c.**
Spruce-Pine-Fir	15'-5"	RFPI 20	RFPI 40S/400	RFPI 70	RFPI 20	RFPI 20	RFPI 400/40
Hem-Fir	15'-2"	RFPI 20	RFPI 40S/400	RFPI 60S/70	RFPI 20	RFPI 20	RFPI 400/40
Douglas Fir-Larch	15'-7"	RFPI 20	RFPI 40/60S	RFPI 70	RFPI 20	RFPI 20	RFPI 400/40
Southern Pine	14'-0"	RFPI 20	RFPI 20	RFPI 40S/400	RFPI 20	RFPI 20	RFPI 20

2x12 No. 2 Solid-Sawn Live Load Deflection = L/360		**Simple Span**			**Multiple Span**		
		11-7/8" RFPI Joist Live Load Deflection = L/480			**11-7/8" RFPI Joist** Live Load Deflection = L/480		
Species	**Maximum Simple Span @16" o.c.[2]**	**16" o.c.**	**19.2" o.c.**	**24" o.c.**	**16" o.c.**	**19.2" o.c.**	**24" o.c.**
Spruce-Pine-Fir	17'-10"	RFPI 20	RFPI 40S/400	RFPI 60S/70	RFPI 20	RFPI 40S	RFPI 40/60S
Hem-Fir	17'-7"	RFPI 20	RFPI 20	RFPI 40/60S	RFPI 20	RFPI 40S	RFPI 400
Douglas Fir-Larch	18'-1"	RFPI 20	RFPI 40S/400	RFPI 60S/70	RFPI 20	RFPI 40S	RFPI 40/60S
Southern Pine	16'-6"	RFPI 20	RFPI 20	RFPI 20	RFPI 20	RFPI 20	RFPI 40S

(1) Comparison chart based on uniform loads (Live load = 40 psf, Dead load = 10 psf).
(2) Spans taken from 2018 International Residential Code.

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:

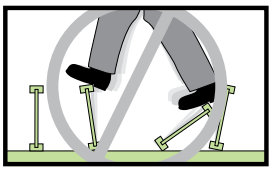
1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rimboard, and/or cross-bridging at joist ends.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, 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.

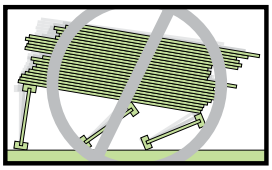
   Or, sheathing (temporary or permanent) can be nailed to the top flange of the first feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rimboard, or cross-bridging.
4. Install and nail permanent sheathing to each I-joist 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.



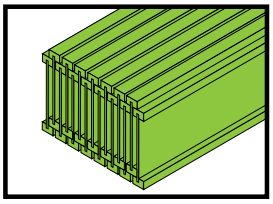
Do not allow workers to walk on I-joists or LVL beams until they are fully installed and braced, or serious injuries can result.

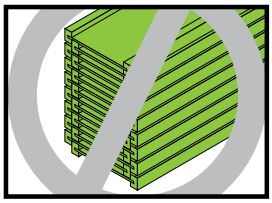


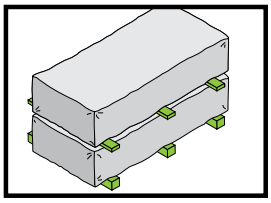
Never stack building materials over unsheathed I-joists. Stack only over braced beams or walls.

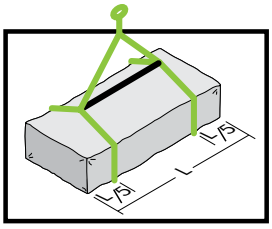
Storage & Handling Guidelines

- 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®-Joists Are Engineered to Make the Job Easier

RFPIs are the ideal choice for designers and builders who want to provide their customers with high-quality floor systems. They provide consistent performance for the most demanding residential applications.

SIMPLE TO INSTALL

I-joists save builders time, and money. I-joists are typically precut and shipped to the jobsite ready to install. This minimizes jobsite cutting and material waste. I-joists can be cut and fastened with traditional framing tools and fasteners – no special tools are required. Since I-joists can typically be used at greater joist spacings than lumber, fewer pieces must be cut and handled on the jobsite, making I-joist installation less costly and less wasteful for the builder.

DESIGN FLEXIBILITY

The availability of long lengths allows multiple span installations thus speeding construction by eliminating the need to lap joists over bearing walls or support beams. This also means fewer pieces to handle. The availability of long lengths and relatively deep joists also gives designers the freedom to create more open spaces and reduces the need for supporting walls, columns, or beams.

LIGHTWEIGHT

Because I-joists typically weigh less than half of comparable conventional framing lumber, they can be installed quickly and efficiently.

DIMENSIONALLY STABLE

I-joists will not warp, twist, or shrink, and are more uniform in their dimensions than sawn lumber joists. The floor vibration criteria combined with their straightness and uniformity provides a stiffer, more uniform floor with fewer squeaks, and higher customer satisfaction.

WEB HOLES

The OSB webs in Roseburg's I-joists permit holes to be easily cut on the jobsite to permit the passage of electrical wiring, plumbing and ductwork. This cannot always be accomplished with sawn lumber joists where the mechanical systems must be passed under the joist system. Roseburg also provides knockout holes along the length of the joists to facilitate the installation of electrical wiring or light plumbing lines. These knockouts can easily be removed with a hammer as needed.

APA QUALITY ASSURED

The APA trademark ensures superior I-joist quality and consistent performance. All products are subject to the proven quality assurance program of APA.

RESOURCE FRIENDLY

Wood I-joists use up to 50% less wood fiber in their production than conventional lumber joists, allowing more efficient use of our natural resources.

INSTALLATION NOTES

1. Except for cutting to length, top and bottom flanges of RFPI-Joists shall not be cut, drilled or notched.
2. 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.
3. Any fastening, resistance to uplift or application not specifically detailed is subject to local approval.
4. 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".
5. Engineered lumber must not remain in direct contact with concrete or masonry construction and must be used in dry use conditions only.
6. 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.
7. 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.
8. Plywood or OSB subfloor nailed to the top flange of an RFPI-Joist is adequate to provide lateral support.
9. Install I-joists so that top and bottom flanges are straight and remain within 1/2 inch of true alignment.
10. Roseburg does not require mid-span blocking or bridging in RFPI floor or roof applications.
11. 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.
12. 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[a]		FLANGE FACE NAILING (in)[b][c]		FLANGE EDGE NAILING (in)		
Flange Material	**Fastener Diameter[d][e]**	**End Distance**	**Nail Spacing**	**End Distance**	**Nailed to one flange edge**	**Nailed to both flange edges[f]**
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[g]	6[g]
Solid Sawn Flange I-Joist	dia. ≤ 0.128" (8d box or sinker, 10d box or sinker, 12d box)	2	2	2	2	4
	0.128" ≤ dia. ≤ 0.148" (8d com, 10d com, 12d sinker or com, 16d box or sinker) 15'-2"	2	3	2	3	6

Nailing Notes:

a. Nail spacings shown are guidelines for RFPI®-Joists used in conventional framing applications. For cases where horizontal diaphragm load capacity is required, refer to 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.

b. For conventional framing, attach sheathing to RFPI-Joists 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.

c. If more than one row of nails is required, rows must be offset by at least 1/2" and staggered.

d. 14 gauge staples may be substituted for 8d (2-1/2") nails if staples penetrate the joist at least 1".

e. 10d (3") box nails may be substituted for 8d (2-1/2") common nails.

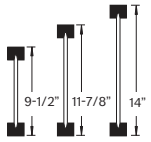
f. Nails on opposing flange edges must be offset one-half the minimum spacing.

g. Maximum of 0.131" diameter (8d common)

RFPI®-Joist Design Properties

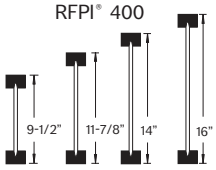
LVL FLANGE I-JOIST DIMENSIONS

RFPI® 20



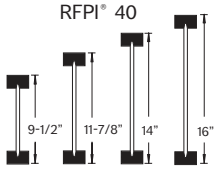
1-3/4" wide x 1-3/8" LVL Flange
3/8" OSB Web

RFPI® 400



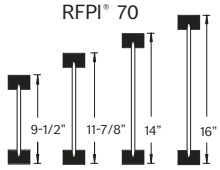
2-1/16" wide x 1-3/8" LVL Flange
3/8" OSB Web

RFPI® 40



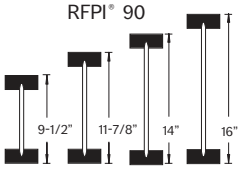
2-5/16" wide x 1-3/8" LVL Flange
3/8" OSB Web

RFPI® 70



2-5/16" wide x 1-1/2" LVL Flange
3/8" OSB Web

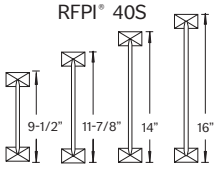
RFPI® 90



3-1/2" wide x 1-1/2" LVL Flange
7/16" OSB Web

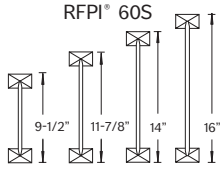
SOLID SAWN FLANGE I-JOIST DIMENSIONS

RFPI® 40S



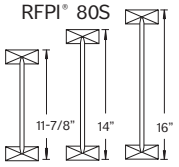
2-1/2" wide x 1-1/2" Solid Sawn Flange
3/8" OSB Web

RFPI® 60S



2-1/2" wide x 1-1/2" Solid Sawn Flange
3/8" OSB Web

RFPI® 80S



3-1/2" wide x 1-1/2" Solid Sawn Flange
3/8" OSB Web

DESIGN PROPERTIES FOR RFPI®-JOISTS[1]

Joist Depth	Joist Series	APA Designation	EI[2]x10⁶ lb-in²	M[3] lb-ft	V[4] lbs	VLC[5] lbs/ft	K[6]x10⁶ lb	Weight plf
9-1/2"	RFPI 20[7]	9-1/2" PRI 20	165	2,820	1,220	2,000	4.94	2.06
	RFPI 40S[7]	9-1/2" PRI 40	193	2,735	1,120	2,000	4.94	2.56
	RFPI 400	Not Applicable	193	3,345	1,220	2,000	4.94	2.29
	RFPI 40[7]	9-1/2" PRI 40	215	3,760	1,330	2,000	4.94	2.56
	RFPI 60S[7]	9-1/2" PRI 60	231	3,780	1,120	2,000	4.94	2.56
	RFPI 70	Not Applicable	266	5,130	1,330	2,000	4.94	2.57
	RFPI 90	Not Applicable	398	7,830	1,890	2,000	4.94	3.70
11-7/8"	RFPI 20[7]	11-7/8" PRI 20	283	3,640	1,420	2,000	6.18	2.37
	RFPI 40S[7]	11-7/8" PRI 40	330	3,545	1,420	2,000	6.18	2.83
	RFPI 400	Not Applicable	330	4,315	1,480	2,000	6.18	2.60
	RFPI 40[7]	11-7/8" PRI 40	366	4,855	1,550	2,000	6.18	2.81
	RFPI 60S[7]	11-7/8" PRI 60	396	4,900	1,420	2,000	6.18	2.83
	RFPI 70[7]	11-7/8" PRI 70	455	6,645	1,550	2,000	6.18	2.95
	RFPI 80S[7]	11-7/8" PRI 80	547	6,970	1,590	2,000	6.18	3.79
	RFPI 90[7]	11-7/8" PRI 90	676	10,145	2,050	2,000	6.18	4.17
14"	RFPI 20	Not Applicable	420	4,330	1,610	2,000	7.28	2.60
	RFPI 40S[7]	14" PRI 40	482	4,270	1,710	2,000	7.28	3.07
	RFPI 400	Not Applicable	486	5,140	1,710	2,000	7.28	2.98
	RFPI 40[7]	14" PRI 40	540	5,785	1,770	2,000	7.28	3.13
	RFPI 60S[7]	14" PRI 60	584	5,895	1,710	2,000	7.28	3.07
	RFPI 70[7]	14" PRI 70	672	7,925	1,770	2,000	7.28	3.21
	RFPI 80S[7]	14" PRI 80	802	8,390	1,835	2,000	7.28	4.03
	RFPI 90[7]	14" PRI 90	992	12,100	2,195	2,000	7.28	4.51
16"	RFPI 40S[7]	16" PRI 40	657	4,950	1,970	2,000	8.32	3.31
	RFPI 400	Not Applicable	665	5,880	1,970	2,000	8.32	3.19
	RFPI 40[7]	16" PRI 40	737	6,615	1,970	2,000	8.32	3.34
	RFPI 60S[7]	16" PRI 60	799	6,835	1,970	2,000	8.32	3.31
	RFPI 70[7]	16" PRI 70	918	9,080	1,970	2,000	8.32	3.48
	RFPI 80S[7]	16" PRI 80	1,092	9,730	2,070	2,000	8.32	4.26
	RFPI 90[7]	16" PRI 90	1,350	13,865	2,330	2,000	8.32	4.80

1. 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).
2. Bending stiffness (EI) of the I-joist.
3. Moment capacity (M) of a single I-joist. **Moment capacity of the I-Joist shall not be increased by any repetitive member use factor.**
4. Shear capacity (V) with a minimum bearing length of 4 inches.
5. Vertical Load Capacity when continuously supported.
6. Coefficient of shear deflection (K), used to calculate deflections for I-joist applications. 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:
δ = calculated deflection (in)
ω = uniform load (lb/in)
ℓ = design span (in)
P = concentrated load (lb)

EI = bending stiffness of the I-joist (lb-in²)
K = coefficient of shear deflection (lb)

7. Design properties meet or exceed the requirements of the PRI-400 Performance Standard for APA I-Joists for the corresponding I-joist series and depth.

RFPI®-Joist Allowable Reaction Information

TABLE 1: RFPI®-JOIST REACTION CAPACITIES WITH OR WITHOUT WEB STIFFENERS (W.S.)[1]

Joist Depth	Joist Series	End Reaction (lbs)				Intermediate Reaction (lbs)				Web Stiffener Nails[2]
		1-3/4" Bearing		4" 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-20	910	1,150	1,220	1,220	1,775	1,875	2,000	2,300	4-8d
	RFPI-40S	1,080	1,120	1,120	1,120	2,160	2,240	2,240	2,240	4-8d
	RFPI-400	1,025	1,220	1,220	1,220	2,150	2,250	2,300	2,440	4-8d
	RFPI-40	1,080	1,220	1,330	1,330	2,250	2,500	2,550	2,650	4-8d
	RFPI-60S	1,080	1,120	1,120	1,120	2,160	2,240	2,240	2,240	4-8d
	RFPI-70	1,120	1,330	1,330	1,330	2,335	2,500	2,550	2,650	4-8d
	RFPI-90	1,330	1,585	1,700	1,890	3,020	3,445	3,445	3,475	4-8d
11-7/8"	RFPI-20	950	1,225	1,420	1,420	1,935	2,035	2,135	2,435	4-8d
	RFPI-40S	1,200	1,340	1,420	1,420	2,500	2,625	2,660	2,840	4-8d
	RFPI-400	1,050	1,265	1,480	1,480	2,250	2,350	2,350	2,650	4-8d
	RFPI-40	1,200	1,400	1,550	1,550	2,500	2,625	2,660	2,870	4-8d
	RFPI-60S	1,200	1,340	1,420	1,420	2,500	2,625	2,660	2,840	4-8d
	RFPI-70	1,200	1,470	1,550	1,550	2,500	2,625	2,660	2,870	4-8d
	RFPI-80S	1,280	1,590	1,550	1,590	2,810	3,180	3,100	3,180	4-10d
	RFPI-90	1,400	1,745	1,885	2,050	3,355	3,475	3,475	3,675	4-10d
14"	RFPI-20	950	1,290	1,550	1,610	1,935	2,035	2,135	2,435	4-8d
	RFPI-40S	1,200	1,530	1,550	1,710	2,500	2,740	2,755	3,050	4-8d
	RFPI-400	1,050	1,305	1,550	1,710	2,250	2,350	2,350	2,650	4-8d
	RFPI-40	1,200	1,560	1,550	1,770	2,500	2,740	2,755	3,065	4-8d
	RFPI-60S	1,200	1,530	1,550	1,710	2,500	2,740	2,755	3,050	4-8d
	RFPI-70	1,200	1,590	1,550	1,770	2,500	2,740	2,755	3,065	4-8d
	RFPI-80S	1,280	1,750	1,550	1,835	3,020	3,360	3,210	3,600	4-10d
	RFPI-90	1,400	1,885	1,885	2,195	3,355	3,500	3,500	3,850	4-10d
16"	RFPI-40S	1,200	1,710	1,550	1,970	2,500	2,850	2,850	3,250	4-8d
	RFPI-400	1,050	1,340	1,550	1,970	2,250	2,350	2,350	2,650	4-8d
	RFPI-40	1,200	1,710	1,550	1,970	2,500	2,850	2,850	3,250	4-8d
	RFPI-60S	1,200	1,710	1,550	1,970	2,500	2,850	2,850	3,250	4-8d
	RFPI-70	1,200	1,710	1,550	1,970	2,500	2,850	2,850	3,250	4-8d
	RFPI-80S	1,280	1,900	1,550	2,070	3,020	3,525	3,310	4,000	4-10d
	RFPI-90	1,400	2,025	1,885	2,330	3,355	3,525	3,525	4,025	4-10d

General Note: Determine the allowable reaction capacity from Table 1 and Table 2 and use the lesser of the two values (refer to the notes for each table).

1. The tabulated design values in Table 1 are for 100% duration of load. Interpolation between tabulated values is permitted. All values in Table 1 shall be permitted to be adjusted for other load durations.
2. Number of nails required for web stiffeners. Refer to page 23 for web stiffener and nail installation requirements.

TABLE 2: RFPI®-JOIST REACTION CAPACITIES BASED ON FLANGE ALLOWABLE COMPRESSION PERP.-TO-GRAIN[1][2]

Depth	Joist Series	End Reaction (lbs)				Intermediate Reaction (lbs)			
		1-3/4" Bearing		4" 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 Depths in each series	RFPI-20	1,835		4,205		4,070		5,910	
	RFPI-40S	1,760		4,020		3,895		5,655	
	RFPI-400	2,195		5,015		4,860		7,055	
	RFPI-40	2,475		5,665		5,490		7,970	
	RFPI-60S	2,175		4,970		4,815		6,990	
	RFPI-70	2,475		5,665		5,490		7,970	
	RFPI-80S	3,090		7,070		6,850		9,940	
	RFPI-90	3,830		8,755		8,480		12,310	

General Note: Determine the allowable reaction capacity from Table 1 and Table 2 and use the lesser of the two values (refer to the notes for each table).

1. Maximum allowable reaction capacity based on flange Fc perp. Interpolation between tabulated values in Table 2 is permitted.
2. The values in Table 2 are for 100% duration of load and shall not be increased for shorter durations of load.

Allowable Floor Clear Spans For RFPI®-Joists

40 PSF LIVE LOAD AND 10 PSF DEAD LOAD

Joist Depth	Joist Series	40/10 Simple Span				40/10 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 20	17' - 2"	15' - 9"	14' - 10"	13' - 10"	18' - 9"	17' - 1"	16' - 2"	14' - 0"
	RFPI 40S	18' - 0"	16' - 5"	15' - 6"	14' - 6"	19' - 7"	17' - 11"	16' - 4"	14' - 7"
	RFPI 400	18' - 0"	16' - 5"	15' - 6"	14' - 6"	19' - 7"	17' - 10"	16' - 10"	15' - 9"
	RFPI 40	18' - 7"	16' - 11"	16' - 0"	14' - 11"	20' - 2"	18' - 5"	17' - 5"	16' - 2"
	RFPI 60S	18' - 11"	17' - 4"	16' - 4"	15' - 3"	20' - 8"	18' - 10"	17' - 9"	16' - 6"
	RFPI 70	19' - 9"	18' - 0"	17' - 0"	15' - 10"	21' - 6"	19' - 7"	18' - 5"	17' - 2"
	RFPI 90	22' - 3"	20' - 3"	19' - 0"	17' - 9"	24' - 2"	22' - 0"	20' - 8"	19' - 3"
11-7/8"	RFPI 20	20' - 6"	18' - 9"	17' - 9"	16' - 6"	22' - 4"	20' - 5"	18' - 10"	15' - 3"
	RFPI 40S	21' - 5"	19' - 7"	18' - 6"	16' - 8"	23' - 5"	20' - 5"	18' - 7"	16' - 7"
	RFPI 400	21' - 5"	19' - 7"	18' - 6"	17' - 3"	23' - 4"	21' - 4"	20' - 1"	17' - 9"
	RFPI 40	22' - 1"	20' - 2"	19' - 0"	17' - 9"	24' - 1"	22' - 0"	20' - 8"	19' - 3"
	RFPI 60S	22' - 7"	20' - 8"	19' - 6"	18' - 2"	24' - 8"	22' - 6"	21' - 2"	19' - 7"
	RFPI 70	23' - 7"	21' - 6"	20' - 3"	18' - 10"	25' - 8"	23' - 5"	22' - 0"	19' - 9"
	RFPI 80S	24' - 11"	22' - 8"	21' - 4"	19' - 11"	27' - 1"	24' - 8"	23' - 3"	21' - 7"
	RFPI 90	26' - 6"	24' - 1"	22' - 8"	21' - 1"	28' - 10"	26' - 3"	24' - 8"	22' - 11"
14"	RFPI 20	23' - 4"	21' - 4"	20' - 2"	18' - 6"	25' - 5"	22' - 7"	19' - 2"	15' - 3"
	RFPI 40S	24' - 4"	22' - 3"	20' - 6"	18' - 4"	25' - 11"	22' - 5"	20' - 5"	18' - 3"
	RFPI 400	24' - 4"	22' - 3"	21' - 0"	19' - 7"	26' - 7"	24' - 3"	22' - 3"	17' - 9"
	RFPI 40	25' - 2"	22' - 11"	21' - 8"	20' - 2"	27' - 5"	25' - 0"	23' - 7"	19' - 9"
	RFPI 60S	25' - 9"	23' - 6"	22' - 2"	20' - 8"	28' - 0"	25' - 7"	24' - 1"	19' - 9"
	RFPI 70	26' - 10"	24' - 5"	23' - 0"	21' - 5"	29' - 3"	26' - 7"	24' - 9"	19' - 9"
	RFPI 80S	28' - 3"	25' - 9"	24' - 3"	22' - 7"	30' - 9"	28' - 0"	26' - 4"	23' - 11"
	RFPI 90	30' - 1"	27' - 5"	25' - 9"	23' - 11"	32' - 10"	29' - 10"	28' - 1"	26' - 0"
16"	RFPI 40S	26' - 11"	24' - 3"	22' - 1"	19' - 9"	27' - 11"	24' - 2"	22' - 0"	19' - 8"
	RFPI 400	27' - 0"	24' - 8"	23' - 4"	20' - 10"	29' - 6"	26' - 4"	22' - 3"	17' - 9"
	RFPI 40	27' - 10"	25' - 5"	24' - 0"	22' - 4"	30' - 4"	27' - 8"	24' - 9"	19' - 9"
	RFPI 60S	28' - 6"	26' - 0"	24' - 7"	22' - 11"	31' - 1"	28' - 4"	24' - 9"	19' - 9"
	RFPI 70	29' - 9"	27' - 1"	25' - 6"	23' - 9"	32' - 5"	29' - 6"	24' - 9"	19' - 9"
	RFPI 80S	31' - 4"	28' - 6"	26' - 10"	25' - 0"	34' - 2"	31' - 1"	29' - 3"	23' - 11"
	RFPI 90	33' - 4"	30' - 4"	28' - 7"	26' - 7"	36' - 5"	33' - 1"	31' - 1"	26' - 7"

40 PSF LIVE LOAD AND 20 PSF DEAD LOAD

Joist Depth	Joist Series	40/20 Simple Span				40/20 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 20	17' - 2"	15' - 9"	14' - 10"	13' - 7"	18' - 9"	16' - 7"	14' - 7"	11' - 7"
	RFPI 40S	18' - 0"	16' - 5"	14' - 11"	13' - 4"	18' - 11"	16' - 4"	14' - 11"	13' - 3"
	RFPI 400	18' - 0"	16' - 5"	15' - 6"	14' - 6"	19' - 7"	17' - 10"	16' - 6"	14' - 1"
	RFPI 40	18' - 7"	16' - 11"	16' - 0"	14' - 11"	20' - 2"	18' - 5"	17' - 5"	14' - 9"
	RFPI 60S	18' - 11"	17' - 4"	16' - 4"	15' - 3"	20' - 8"	18' - 10"	17' - 6"	14' - 2"
	RFPI 70	19' - 9"	18' - 0"	17' - 0"	15' - 10"	21' - 6"	19' - 7"	18' - 5"	15' - 4"
	RFPI 90	22' - 3"	20' - 3"	19' - 0"	17' - 9"	24' - 2"	22' - 0"	20' - 8"	19' - 3"
11-7/8"	RFPI 20	20' - 6"	18' - 9"	17' - 3"	15' - 5"	21' - 10"	18' - 10"	15' - 11"	12' - 8"
	RFPI 40S	21' - 5"	18' - 8"	17' - 1"	15' - 3"	21' - 6"	18' - 7"	17' - 0"	15' - 2"
	RFPI 400	21' - 5"	19' - 7"	18' - 6"	16' - 10"	23' - 4"	20' - 7"	18' - 6"	14' - 9"
	RFPI 40	22' - 1"	20' - 2"	19' - 0"	17' - 9"	24' - 1"	21' - 10"	19' - 11"	16' - 5"
	RFPI 60S	22' - 7"	20' - 8"	19' - 6"	17' - 11"	24' - 8"	21' - 11"	20' - 0"	16' - 5"
	RFPI 70	23' - 7"	21' - 6"	20' - 3"	18' - 10"	25' - 8"	23' - 5"	20' - 7"	16' - 5"
	RFPI 80S	24' - 11"	22' - 8"	21' - 4"	19' - 11"	27' - 1"	24' - 8"	23' - 2"	18' - 6"
	RFPI 90	26' - 6"	24' - 1"	22' - 8"	21' - 1"	28' - 10"	26' - 3"	24' - 8"	22' - 2"
14"	RFPI 20	23' - 4"	20' - 8"	18' - 10"	15' - 8"	23' - 10"	19' - 2"	15' - 11"	12' - 8"
	RFPI 40S	23' - 9"	20' - 6"	18' - 9"	16' - 9"	23' - 8"	20' - 5"	18' - 8"	16' - 5"
	RFPI 400	24' - 4"	22' - 3"	20' - 7"	17' - 4"	26' - 0"	22' - 3"	18' - 6"	14' - 9"
	RFPI 40	25' - 2"	22' - 11"	21' - 8"	19' - 6"	27' - 5"	23' - 10"	20' - 7"	16' - 5"
	RFPI 60S	25' - 9"	23' - 6"	22' - 0"	19' - 8"	27' - 10"	24' - 1"	20' - 7"	16' - 5"
	RFPI 70	26' - 10"	24' - 5"	23' - 0"	19' - 10"	29' - 3"	24' - 9"	20' - 7"	16' - 5"
	RFPI 80S	28' - 3"	25' - 9"	24' - 3"	21' - 2"	30' - 9"	28' - 0"	24' - 11"	19' - 11"
	RFPI 90	30' - 1"	27' - 5"	25' - 9"	23' - 2"	32' - 10"	29' - 10"	27' - 9"	22' - 2"
16"	RFPI 40S	25' - 7"	22' - 1"	20' - 2"	18' - 0"	25' - 6"	22' - 0"	20' - 1"	16' - 5"
	RFPI 400	27' - 0"	24' - 1"	21' - 9"	17' - 4"	27' - 9"	22' - 3"	18' - 6"	14' - 9"
	RFPI 40	27' - 10"	25' - 5"	23' - 4"	19' - 10"	29' - 6"	24' - 9"	20' - 7"	16' - 5"
	RFPI 60S	28' - 6"	26' - 0"	23' - 9"	19' - 10"	30' - 0"	24' - 9"	20' - 7"	16' - 5"
	RFPI 70	29' - 9"	27' - 1"	24' - 10"	19' - 10"	32' - 5"	24' - 9"	20' - 7"	16' - 5"
	RFPI 80S	31' - 4"	28' - 6"	26' - 6"	21' - 2"	34' - 2"	30' - 0"	24' - 11"	19' - 11"
	RFPI 90	33' - 4"	30' - 4"	28' - 7"	23' - 2"	36' - 5"	33' - 1"	27' - 9"	22' - 2"

Notes:

- Clear span is the clear distance between the face of supports.
- Spans are based on uniform loads as shown above. Use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis for other loading.
- Web stiffeners are not required for spans shown but may be required for hangers.
- Maximum deflection is limited to L/480 for live load and L/240 for total load.
- 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

Layout Guide For 19.2" O.C. Spacing					
1	19-3/16"	6	115-3/16"	11	211-3/16"
2	38-3/8"	7	134-3/8"	12	230-3/8"
3	57-5/8"	8	153-5/8"	13	249-5/8"
4	76-13/16"	9	172-13/16"	14	268-13/16"
5	96" (8')	10	192" (16')	15	288" (24')

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

Spans shall be reduced by 12 inches when floor sheathing is nailed only.

Web Hole Specifications

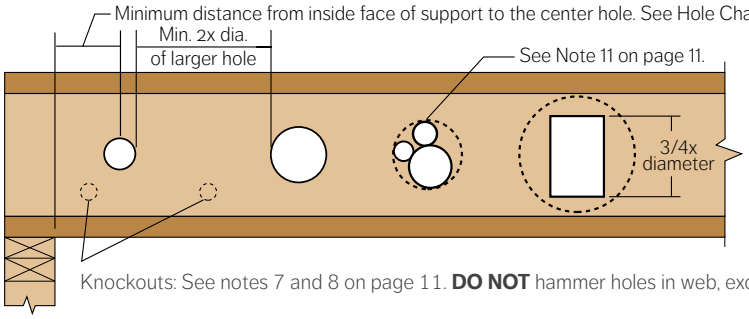
One of the benefits of using RFPI-Joists in residential floor and roof construction is that holes may be cut in the joist webs to accommodate electrical wiring, plumbing lines and other mechanical systems, therefore minimizing the depth of the floor system.

RULES FOR CUTTING HOLES IN RFPI-JOISTS

1. See chart on page 12 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 chart on page 12.
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 chart on page 12.
7. Knockouts are prescored 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 knock outs.
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 12).
12. All holes shall be cut in a workman-like manner in accordance with the restrictions listed herein

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 Residential Floor/ Roof Applications



Knockouts: See notes 7 and 8 on page 11. **DO NOT** hammer holes in web, except at knockouts.

HOLE CHART - MINIMUM DISTANCE FROM FACE OF NEAREST JOIST SUPPORT TO CENTER OF HOLE [1][2]

Joist Depth	Joist Series	SAF(3)	Round Hole Diameter (in)														
			2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4
			Minimum Distance from Inside Face of Nearest Support to Center of Hole (ft-in) [1][2]														
9-1/2"	RFPI 20	11.58	0'-7"	0'-8"	2'-0"	3'-6"	5'-4"	5'-9"									
	RFPI 40S	13.25	1'-2"	2'-2"	3'-3"	4'-4"	5'-9"	6'-3"									
	RFPI 400	14.08	1'-0"	2'-1"	3'-3"	4'-9"	6'-4"	6'-9"									
	RFPI 40	14.75	0'-8"	1'-11"	3'-2"	4'-9"	6'-6"	6'-11"									
	RFPI 60S	14.17	2'-0"	3'-3"	4'-8"	6'-1"	7'-7"	8'-0"									
	RFPI 70	15.33	1'-1"	2'-3"	3'-10"	5'-6"	7'-3"	7'-8"									
	RFPI 90	17.75	3'-7"	4'-11"	6'-3"	7'-8"	9'-2"	9'-6"									
11-7/8"	RFPI 20	12.67	0'-7"	0'-8"	0'-8"	1'-9"	3'-4"	3'-9"	5'-0"	6'-10"	8'-0"						
	RFPI 40S	15.17	0'-7"	0'-10"	1'-10"	2'-11"	4'-0"	4'-4"	5'-2"	6'-8"	7'-11"						
	RFPI 400	14.75	0'-7"	0'-8"	1'-7"	2'-11"	4'-4"	4'-8"	5'-10"	7'-8"	8'-10"						
	RFPI 40	16.42	0'-7"	0'-10"	2'-0"	3'-5"	4'-11"	5'-3"	6'-5"	8'-2"	9'-6"						
	RFPI 60S	16.42	0'-8"	1'-10"	3'-2"	4'-5"	5'-10"	6'-2"	7'-4"	8'-11"	10'-1"						
	RFPI 70	16.42	0'-7"	1'-0"	2'-5"	3'-10"	5'-6"	6'-0"	7'-4"	9'-4"	10'-8"						
	RFPI 80S	18.50	0'-11"	2'-4"	3'-10"	5'-4"	6'-11"	7'-4"	8'-7"	10'-4"	11'-6"						
	RFPI 90	21.08	0'-7"	1'-4"	2'-9"	4'-4"	5'-11"	6'-4"	7'-7"	9'-5"	10'-10"						
14"	RFPI 20	12.67	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	1'-1"	2'-3"	4'-2"	5'-4"	6'-1"	8'-2"	9'-11"			
	RFPI 40S	16.42	0'-7"	0'-8"	0'-8"	1'-4"	2'-5"	2'-8"	3'-6"	4'-7"	5'-5"	6'-0"	7'-7"	9'-4"			
	RFPI 400	14.75	0'-7"	0'-8"	0'-8"	0'-9"	1'-11"	2'-4"	3'-7"	5'-3"	6'-4"	7'-0"	9'-0"	10'-10"			
	RFPI 40	16.42	0'-7"	0'-8"	0'-8"	1'-3"	2'-7"	2'-11"	4'-2"	5'-11"	7'-0"	7'-9"	9'-8"	11'-7"			
	RFPI 60S	16.42	0'-7"	0'-8"	0'-8"	1'-8"	3'-2"	3'-6"	4'-9"	6'-6"	7'-8"	8'-4"	10'-4"	12'-2"			
	RFPI 70	16.42	0'-7"	0'-8"	0'-8"	1'-6"	3'-1"	3'-6"	4'-10"	6'-7"	7'-9"	8'-6"	10'-11"	12'-11"			
	RFPI 80S	19.92	0'-7"	0'-9"	2'-2"	3'-7"	5'-1"	5'-5"	6'-7"	8'-5"	9'-7"	10'-4"	12'-5"	14'-0"			
	RFPI 90	22.17	0'-7"	0'-8"	1'-3"	2'-11"	4'-7"	5'-1"	6'-5"	8'-3"	9'-5"	10'-2"	12'-3"	14'-0"			
16"	RFPI 40S	16.42	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-5"	2'-9"	3'-7"	4'-1"	5'-6"	6'-7"	7'-0"	8'-9"	10'-9"
	RFPI 400	14.75	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	0'-10"	1'-11"	3'-1"	3'-10"	5'-11"	7'-6"	8'-0"	10'-4"	12'-3"
	RFPI 40	16.42	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-10"	3'-6"	4'-6"	5'-2"	6'-11"	8'-5"	9'-0"	11'-5"	13'-4"
	RFPI 60S	16.42	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-10"	3'-6"	4'-6"	5'-2"	7'-3"	8'-11"	9'-6"	11'-10"	13'-9"
	RFPI 70	16.42	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	2'-1"	4'-2"	5'-6"	6'-4"	8'-7"	10'-5"	11'-0"	13'-6"	15'-6"
	RFPI 80S	19.92	0'-7"	0'-8"	0'-8"	1'-2"	2'-10"	3'-3"	4'-6"	6'-3"	7'-5"	8'-1"	9'-11"	11'-5"	11'-11"	14'-3"	16'-5"
	RFPI 90	22.17	0'-7"	0'-8"	0'-8"	0'-10"	2'-9"	3'-2"	4'-7"	6'-7"	7'-10"	8'-7"	10'-8"	12'-4"	12'-11"	15'-2"	17'-1"

How to Use Hole Chart

1. Read across the top of Hole Chart to the desired hole size.
2. Follow this column down to the row that represents the I-joist depth and designation. This number indicates the minimum distance from the face of the nearest support to the centerline of the hole.

Example: Need a 4-1/2-inch hole in an 11-7/8" RFPI®-400 joist: From Hole Chart,

- For a 4-inch round hole, the minimum distance is 1'– 7".
- For a 5-inch round hole, the minimum distance is 2'– 11".
- Therefore the minimum distance for the 4-1/2-in round hole is 2'– 3" (halfway between 1'-7" and 2'-11").

Notes:

1. Distances in this hole chart are based on uniformly loaded I-joists and allowable I-joist reactions **without web stiffeners** on minimum required bearing lengths. This chart conservatively accounts for the worst case created by the allowable **simple or multiple** floor spans shown elsewhere in this guide at on-center spacings of 12", 16", 19.2" and 24" with floor loads of 40 psf live load + 10 psf dead load or 40 psf live load + 20 psf dead load. **Holes in conditions that fall outside of the hole chart parameters (including the use of web stiffeners, longer bearing lengths or other loading conditions) may still be acceptable. The most accurate method of determining the acceptability of a given hole is the use of appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis for the actual condition.**
2. Hole location distance is measured from inside face of nearest support to center of hole.
3. SAF = Span Adjustment Factor for optional hole calculation, used as defined on this page.

Optional Hole Calculation

The Hole Chart is based on the I-joists being used at their maximum span. If the I-joists are placed at less than their full allowable span the minimum distance from the centerline of the hole to the face of the nearest joist support (D) as given above may be reduced as follows:

$$D_{reduced} = \frac{L_{actual}}{SAF} \times D$$

Where:

$D_{reduced}$ = Minimum distance from the inside face of the nearest joist support to center of hole, reduced for less-than-maximum span applications (ft).

L_{actual} = The actual measured span distance between the inside faces of supports (ft) (for multi-span joist, use the longest span for L_{actual}).

SAF = Span Adjustment Factor given in chart.

D = The minimum distance from the inside face of the nearest joist support to center of hole from Hole Chart above.

If $\frac{L_{actual}}{SAF}$ is greater than 1.0, use 1.0 in the above calculation.

Rectangular Duct Chases

A duct chase is a large rectangular hole that is often required within the web of an I-joist to provide passage for ventilation ducts. While rectangular holes can be cut in the webs of I-joists using the Rules For Cutting Holes in RFPI®-Joists discussed on page 11, the size of rectangular holes generated by this method is often insufficient for this use. **The tables below have been generated specifically for duct chase applications.**

SIMPLE SPAN-MINIMUM DISTANCE FROM FACE OF NEAREST JOIST SUPPORT TO CENTER OF DUCT CHASE [1][2][3]

Joist Depth	Joist Series	Minimum Distance from Inside Face of Nearest Support to Center of Duct Chase (ft-in)								
		Duct Chase Length (in)								
		8	10	12	14	16	18	20	22	24
9-1/2"	RFPI-20	6'-3"	6'-7"	6'-11"	7'-3"	7'-8"	8'-1"	8'-6"		
	RFPI-40S	4'-11"	5'-4"	5'-9"	6'-3"	6'-8"	7'-2"	7'-7"	8'-1"	8'-8"
	RFPI-400	6'-3"	6'-7"	6'-11"	7'-4"	7'-9"	8'-3"	8'-10"		
	RFPI-40	5'-9"	6'-1"	6'-6"	6'-10"	7'-2"	7'-6"	7'-11"	8'-5"	9'-0"
	RFPI-60S	6'-0"	6'-4"	6'-8"	7'-0"	7'-4"	7'-9"	8'-2"	8'-8"	9'-3"
	RFPI-70	6'-4"	6'-8"	7'-0"	7'-4"	7'-9"	8'-2"	8'-7"	9'-1"	9'-9"
	RFPI-90	6'-7"	6'-11"	7'-4"	7'-8"	8'-0"	8'-4"	8'-9"	9'-2"	9'-8"
11-7/8"	RFPI-20	8'-0"	8'-4"	8'-9"	9'-2"	9'-8"	10'-1"			
	RFPI-40S	6'-3"	6'-9"	7'-3"	7'-9"	8'-4"	8'-11"	9'-6"	10'-2"	
	RFPI-400	7'-11"	8'-4"	8'-9"	9'-2"	9'-9"	10'-4"			
	RFPI-40	7'-6"	7'-10"	8'-2"	8'-7"	8'-11"	9'-5"	9'-11"	10'-7"	
	RFPI-60S	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-9"	10'-3"	10'-10"	
	RFPI-70	8'-2"	8'-6"	8'-11"	9'-4"	9'-9"	10'-3"	10'-10"	11'-6"	
	RFPI-80S	7'-11"	8'-3"	8'-7"	9'-0"	9'-4"	9'-8"	10'-2"	10'-8"	11'-3"
	RFPI-90	8'-7"	9'-0"	9'-4"	9'-8"	10'-1"	10'-6"	11'-0"	11'-7"	12'-2"
14"	RFPI-20	9'-6"	9'-11"	10'-5"	10'-11"	11'-4"				
	RFPI-40S	7'-6"	8'-0"	8'-7"	9'-2"	9'-9"	10'-4"	10'-11"	11'-7"	
	RFPI-400	9'-5"	9'-11"	10'-4"	10'-11"	11'-6"	12'-1"			
	RFPI-40	8'-11"	9'-4"	9'-9"	10'-2"	10'-8"	11'-2"	11'-10"	12'-5"	
	RFPI-60S	9'-2"	9'-7"	10'-0"	10'-6"	11'-0"	11'-7"	12'-2"	12'-10"	
	RFPI-70	9'-9"	10'-2"	10'-7"	11'-1"	11'-7"	12'-3"	12'-10"		
	RFPI-80S	9'-4"	9'-9"	10'-2"	10'-7"	11'-1"	11'-6"	12'-0"	12'-7"	13'-3"
	RFPI-90	10'-3"	10'-8"	11'-1"	11'-7"	12'-1"	12'-7"	13'-1"	13'-9"	14'-5"
16"	RFPI-40S	8'-8"	9'-3"	9'-10"	10'-5"	11'-0"	11'-8"	12'-5"	13'-3"	
	RFPI-400	10'-10"	11'-4"	12'-0"	12'-7"	13'-2"				
	RFPI-40	10'-3"	10'-9"	11'-2"	11'-8"	12'-3"	12'-10"	13'-6"		
	RFPI-60S	10'-7"	11'-1"	11'-7"	12'-0"	12'-8"	13'-3"	13'-11"		
	RFPI-70	11'-3"	11'-9"	12'-3"	12'-9"	13'-5"	14'-0"	14'-8"		
	RFPI-80S	10'-9"	11'-3"	11'-9"	12'-3"	12'-9"	13'-3"	13'-10"	14'-6"	15'-2"
	RFPI-90	12'-0"	12'-5"	12'-10"	13'-4"	13'-10"	14'-5"	15'-1"	15'-9"	16'-5"

MULTIPLE SPAN-MINIMUM DISTANCE FROM FACE OF NEAREST JOIST SUPPORT TO CENTER OF DUCT CHASE [1][2][3]

Joist Depth	Joist Series	Minimum Distance from Inside Face of Nearest Support to Center of Duct Chase (ft-in)								
		Duct Chase Length (in)								
		8	10	12	14	16	18	20	22	24
9-1/2"	RFPI-20	9'-5"								
	RFPI-40S	7'-5"	7'-11"	8'-6"	9'-1"	9'-7"				
	RFPI-400	9'-4"	9'-10"							
	RFPI-40	8'-10"	9'-3"	9'-8"	10'-1"					
	RFPI-60S	9'-0"	9'-5"	9'-11"						
	RFPI-70	9'-7"	10'-0"	10'-6"						
	RFPI-90	10'-3"	10'-8"	11'-0"	11'-5"	11'-11"				
11-7/8"	RFPI-20									
	RFPI-40S	9'-4"	10'-0"	10'-8"	11'-5"					
	RFPI-400									
	RFPI-40	11'-3"	11'-8"							
	RFPI-60S	11'-5"	12'-1"							
	RFPI-70	12'-5"								
	RFPI-80S	12'-0"	12'-6"	12'-11"	13'-5"					
	RFPI-90	13'-2"	13'-8"	14'-2"						
14"	RFPI-20									
	RFPI-40S	11'-2"	11'-11"	12'-8"						
	RFPI-400									
	RFPI-40	13'-6"								
	RFPI-60S	13'-10"								
	RFPI-70									
	RFPI-80S	14'-6"	15'-0"							
	RFPI-90	15'-10"	16'-4"							
16"	RFPI-40S	12'-9"	13'-5"							
	RFPI-400									
	RFPI-40	15'-1"								
	RFPI-60S	15'-6"								
	RFPI-70									
	RFPI-80S	16'-9"								
	RFPI-90									

Chart Notes:

1. Top chart is applicable to uniformly loaded Simple Span conditions only. Bottom chart is applicable to uniformly loaded Multiple Span conditions only.
2. Duct chase location distance is measured from inside face of nearest support to center of duct chase.
3. Distances in these duct charts are based on uniformly loaded I-joists and allowable I-joist reactions **without web stiffeners** on minimum required bearing lengths. These charts conservatively account for the worst case created by the allowable **Simple Spans (top chart) or Multiple Spans (bottom chart)** shown elsewhere in this guide at on-center spacings of 12", 16", 19.2" and 24" with floor loads of 40 psf live load + 10 psf dead load or 40 psf live load + 20 psf dead load. **Ducts in conditions that fall outside of the duct chart parameters (including the use of web stiffeners, longer bearing lengths or other loading conditions) may still be acceptable. The most accurate method of determining the acceptability of a given duct is the use of appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis for the actual condition.**

Rules for cutting duct chases in RFPI-Joists:

1. The maximum length of duct chase shall be as shown in the tables above.
2. Except for cutting to length, I-joist top and bottom flanges must NEVER be cut, notched or otherwise modified.
3. The maximum depth of the duct chases 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 the bottom of the chase and the adjacent I-joist flange.
4. When a duct chase is being placed within the web of an I-joist in conjunction with additional holes, the edge of the holes shall not be placed any closer to the edge of the duct than two times the length of the duct. All holes must be sized in accordance with the chart on page 12.
5. A knockout is not considered a hole and may be utilized wherever it occurs and may be ignored for purposes of calculating minimum distances between holes and duct chases.
6. All duct chases shall be cut in a workman-like manner in accordance with the restrictions listed above.

Load Development

LOAD DEVELOPMENT FOR RFPI-JOISTS WITH UNIFORM LOAD

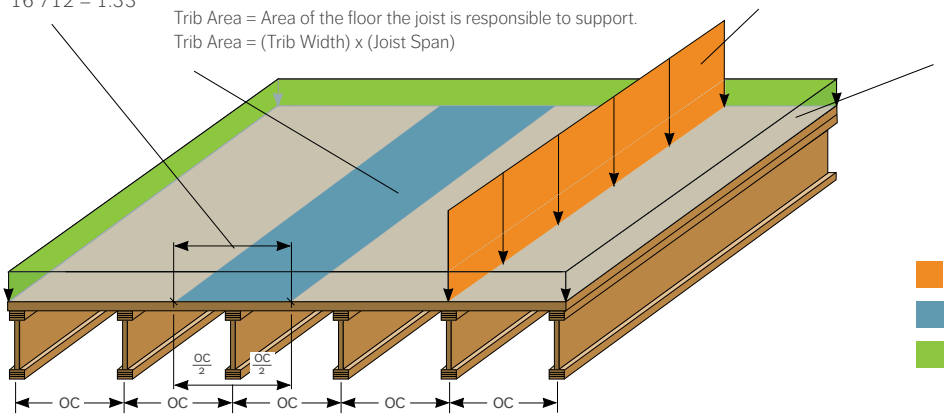
STEP ONE: CALCULATE THE TRIBUTARY WIDTH

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.÷2) + (O.C.÷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 Linear 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) x (1.33') = 53 PLF Live Load

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

(Use these numbers to size the RFPI-Joist from the PLF table on page 15)

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 Linear 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

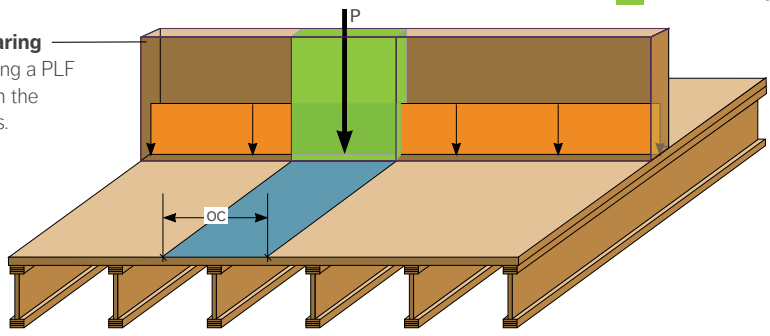
Calculate the portion of the wall load carried by each joist. This is also determined by the joist O.C. spacing and is given by:

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

Where: O.C. = Joist on-center spacing (feet)
PLF = Wall loading (pounds per linear 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.

Load Bearing Wall adding a PLF loading on the floor joists.



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 15 no matter where the wall is located over the joists. It is given by:

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

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:

PLF Wall Load

Portion of PLF wall load carried by joist

Trib Area of I-joist joist

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

$P_{Total\ Load}$ = (400 PLF) x (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.

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.

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

Joist Clear Span (ft)	RFPI 20 (1-3/4" wide x 1-3/8" flanges)						RFPI 40S (2-1/2" wide x 1-1/2" flanges)								RFPI 400 (2-1/16" wide x 1-3/8" flanges)							
	9-1/2"		11-7/8"		14"		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	Live	Total	Live	Total	Live	Total
6	-	226	-	247	-	246	-	275	-	319	-	319	-	318	-	274	-	287	-	287	-	286
7	-	195	-	212	-	212	-	237	-	274	-	274	-	274	-	236	-	247	-	247	-	246
8	-	171	-	186	-	186	-	208	-	241	-	240	-	240	-	207	-	216	-	216	-	216
9	-	152	-	166	-	165	-	185	-	214	-	214	-	214	-	184	-	193	-	192	-	192
10	-	137	-	149	-	149	-	167	-	193	-	193	-	192	-	166	-	174	-	173	-	173
11	116	125	-	136	-	135	133	151	-	175	-	175	-	175	133	151	-	158	-	158	-	157
12	91	114	-	124	-	124	105	139	-	161	-	161	-	160	105	138	-	145	-	145	-	144
13	73	105	-	115	-	115	84	123	139	148	-	148	-	148	84	128	-	134	-	133	-	133
14	59	98	99	107	-	106	69	106	113	137	-	138	-	137	69	119	113	124	-	124	-	124
15	49	91	82	99	-	99	57	92	94	120	-	128	-	128	57	111	94	116	-	115	-	115
16	41	80	68	93	-	93	47	81	79	105	112	120	-	120	47	92	79	108	-	108	-	108
17	34	67	58	88	84	87	40	71	66	93	95	112	-	113	40	77	66	102	96	102	-	102
18	29	56	49	83	71	82	34	63	56	83	81	100	-	106	34	65	56	96	82	96	-	96
19	-	-	42	77	61	78	29	55	48	74	70	89	93	101	29	56	48	91	70	91	-	91
20	-	-	36	69	53	74	-	-	42	67	60	80	81	94	-	-	42	81	61	86	82	86
21	-	-	32	61	46	70	-	-	36	60	52	73	71	85	-	-	36	70	53	82	71	82
22	-	-	28	53	40	67	-	-	32	55	46	66	62	77	-	-	32	61	46	78	63	78
23	-	-	-	-	36	62	-	-	28	50	41	60	55	70	-	-	28	54	41	73	55	75
24	-	-	-	-	31	57	-	-	-	-	36	55	48	64	-	-	-	-	36	67	49	71
25	-	-	-	-	28	52	-	-	-	-	32	51	43	59	-	-	-	-	32	62	44	68

Joist Clear Span (ft)	RFPI 40 (2-5/16" wide x 1-3/8" flanges)								RFPI 60S (2-1/2" 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
6	-	287	-	319	-	319	-	318	-	275	-	319	-	319	-	318
7	-	247	-	274	-	274	-	274	-	237	-	274	-	274	-	274
8	-	217	-	241	-	240	-	240	-	208	-	241	-	240	-	240
9	-	193	-	214	-	214	-	214	-	185	-	214	-	214	-	214
10	-	174	-	193	-	193	-	193	-	167	-	193	-	193	-	192
11	145	158	-	176	-	175	-	175	-	151	-	175	-	175	-	175
12	115	145	-	161	-	161	-	161	123	139	-	161	-	161	-	160
13	93	134	-	149	-	148	-	148	99	128	-	148	-	148	-	148
14	76	124	124	138	-	138	-	138	81	119	133	138	-	138	-	137
15	62	116	103	129	-	128	-	128	67	111	110	129	-	128	-	128
16	52	102	86	121	-	120	-	120	56	104	92	120	-	120	-	120
17	44	85	73	113	105	113	-	113	47	91	78	113	112	113	-	113
18	37	72	62	107	90	107	-	107	40	77	67	107	96	107	-	106
19	32	62	53	101	77	101	-	101	34	66	57	101	83	101	-	101
20	28	53	46	90	67	96	90	96	30	57	50	93	72	96	-	96
21	-	-	40	78	58	91	78	91	-	-	43	84	63	91	84	91
22	-	-	35	68	51	87	69	87	-	-	38	73	55	87	74	87
23	-	-	31	59	45	83	61	83	-	-	33	64	48	83	65	83
24	-	-	27	52	40	76	54	79	-	-	30	56	43	77	58	79
25	-	-	-	-	36	68	48	76	-	-	26	50	38	71	52	76
26	-	-	-	-	32	61	43	73	-	-	-	-	34	65	46	73
27	-	-	-	-	28	54	38	68	-	-	-	-	31	58	41	70
28	-	-	-	-	-	-	35	63	-	-	-	-	28	52	37	65
29	-	-	-	-	-	-	31	59	-	-	-	-	-	-	34	61
30	-	-	-	-	-	-	28	54	-	-	-	-	-	-	31	57

To Use PLF Chart:

1. Select the span required.
2. Compare the design total load (plf) to the *Total* column and compare the design live load (plf) to the *Live* column.
3. Select a product that **meets or exceeds both the design total and live loads.** When no value is shown in the Live column, Total load will govern.

General Notes:

1. Table values apply to uniformly loaded simple or multiple span joists.
2. Clear span is the clear distance between the face of supports.
3. *Live* load column is based on an L/480 deflection limit.
4. An L/480 live load deflection limit is recommended (see Floor System Performance on page 5). For L/360 (minimum stiffness allowed by code), multiply the L/480 value by 1.33.
5. *Total* load column is based on an L/240 deflection limit.
6. Verify that the deflection criteria conform to local building code requirements.
7. Total load is based on 100% duration of load.
8. Minimum end bearing length is 1-3/4". Minimum intermediate bearing length is 3-1/2".
9. Web stiffeners are not required for loads shown.
10. This table does not account for added stiffness from glued or nailed sheathing.
11. Use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis to analyze multiple span joists if the length of any span is less than half the length of an adjacent span.
12. Use appropriate software or engineering analysis to analyze conditions outside of the scope of this table such as cantilevers and concentrated loads.
13. Provide lateral support at bearing points and continuous lateral support along the compression flange of each joist.
14. For double joists, double the table values and connect the joists per the detail on page 21.
15. For proper installation procedures refer to the appropriate sections in this publication.

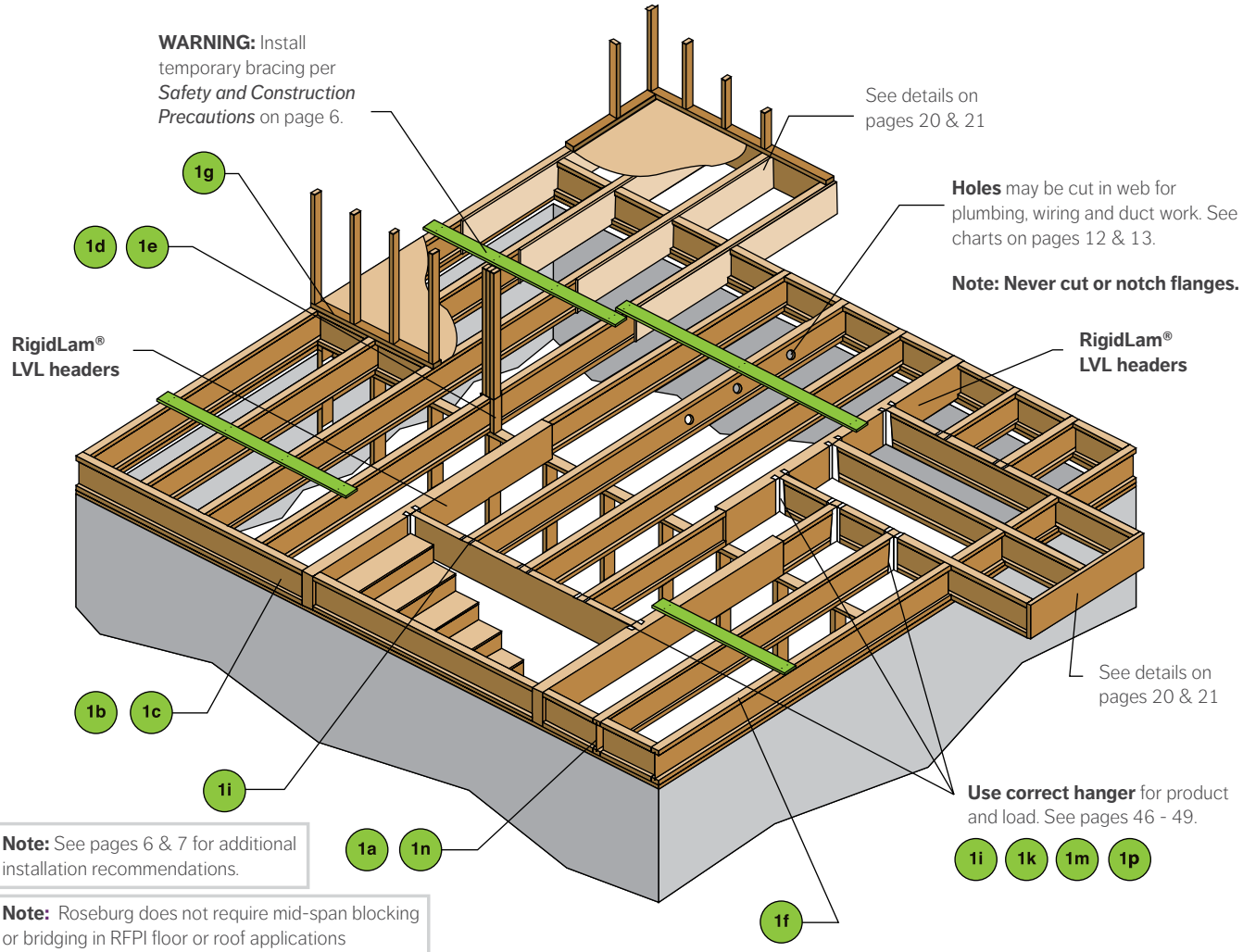
Joist Clear Span (ft)	RFPI 70 (2-5/16" wide x 1-1/2" flanges)								RFPI 80S (3-1/2" wide x 1-1/2" flanges)						RFPI 90 (3-1/2" wide x 1-1/2" flanges)							
	9-1/2"		11-7/8"		14"		16"		11-7/8"		14"		16"		9-1/2"		11-7/8"		14"		16"	
	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total	Live	Total
6	-	298	-	319	-	318	-	318	-	358	-	384	-	384	-	385	-	428	-	427	-	427
7	-	256	-	274	-	274	-	274	-	308	-	331	-	330	-	331	-	368	-	368	-	367
8	-	225	-	240	-	240	-	240	-	270	-	290	-	290	-	290	-	323	-	322	-	322
9	-	200	-	214	-	214	-	214	-	240	-	258	-	258	-	258	-	287	-	287	-	287
10	-	180	-	193	-	193	-	192	-	216	-	232	-	232	-	233	-	259	-	258	-	258
11	-	164	-	175	-	175	-	175	-	197	-	211	-	211	-	212	-	235	-	235	-	235
12	138	150	-	161	-	161	-	160	-	180	-	194	-	193	191	194	-	216	-	215	-	215
13	112	139	-	148	-	148	-	148	-	166	-	179	-	179	156	179	-	199	-	199	-	199
14	91	129	-	138	-	138	-	137	-	154	-	166	-	166	129	166	-	185	-	185	-	184
15	76	120	124	129	-	128	-	128	-	144	-	155	-	154	107	155	172	173	-	172	-	172
16	63	113	104	120	-	120	-	120	122	135	-	145	-	145	90	145	146	162	-	161	-	161
17	53	104	88	113	-	113	-	113	104	127	-	136	-	136	77	137	124	152	-	152	-	151
18	45	88	76	107	-	107	-	106	89	120	127	129	-	128	65	127	107	143	-	143	-	143
19	39	76	65	101	94	101	-	101	77	113	109	122	-	121	56	109	92	136	131	135	-	135
20	34	65	56	96	81	96	-	96	67	107	95	115	-	115	49	94	80	129	114	129	-	128
21	29	56	49	91	71	91	-	91	58	102	83	110	-	110	43	82	70	123	100	122	-	122
22	-	-	43	83	62	87	84	87	51	97	73	105	98	104	37	71	62	117	88	117	-	116
23	-	-	38	73	55	83	74	83	45	86	65	100	87	100	33	62	55	105	78	111	104	111
24	-	-	34	64	49	79	66	79	40	76	58	96	77	95	29	55	49	93	70	107	93	106
25	-	-	30	57	44	76	59	76	36	67	51	92	69	92	-	-	43	83	62	102	83	102
26	-	-	27	51	39	73	53	73	32	60	46	88	62	88	-	-	39	74	56	98	74	98
27	-	-	-	-	35	67	47	70	29	53	41	78	55	85	-	-	35	66	50	94	67	94
28	-	-	-	-	32	60	43	68	-	-	37	70	50	81	-	-	31	59	45	86	61	91
29	-	-	-	-	29	54	39	65	-	-	34	63	45	78	-	-	28	53	41	78	55	87
30	-	-	-	-	-	-	35	63	-	-	31	57	41	76	-	-	-	-	37	70	50	84

RFPI® - JOIST

15

Floor Framing & Construction Details

Some framing elements such as blocking panels have been omitted for clarity.



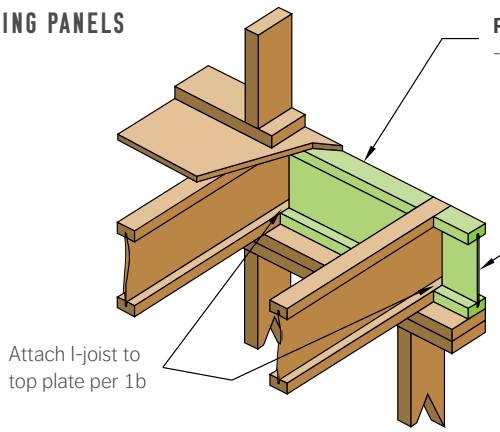
Note: See pages 6 & 7 for additional installation recommendations.

Note: Roseburg does not require mid-span blocking or bridging in RFPI floor or roof applications

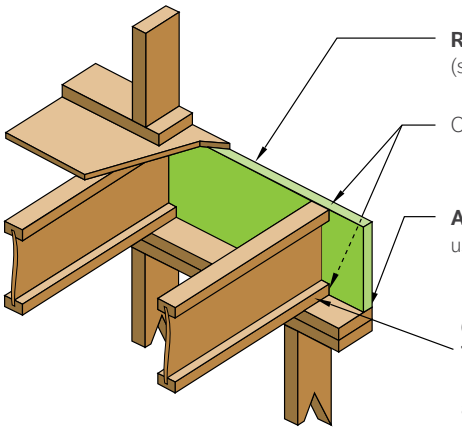
TYPICAL RFPI-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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 nails shown in details. If nails must be installed into the sides of LVL flanges, see table on page 7 for "Recommended Nail Size and Spacing". Individual components not shown to scale for clarity.

1a BLOCKING PANELS



1b RIGIDRIM® RIMBOARD

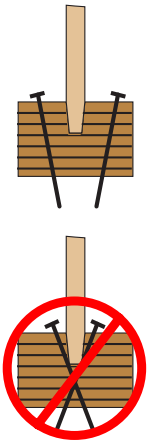


RigidRim® Rimboard
(see page 34 for design properties)

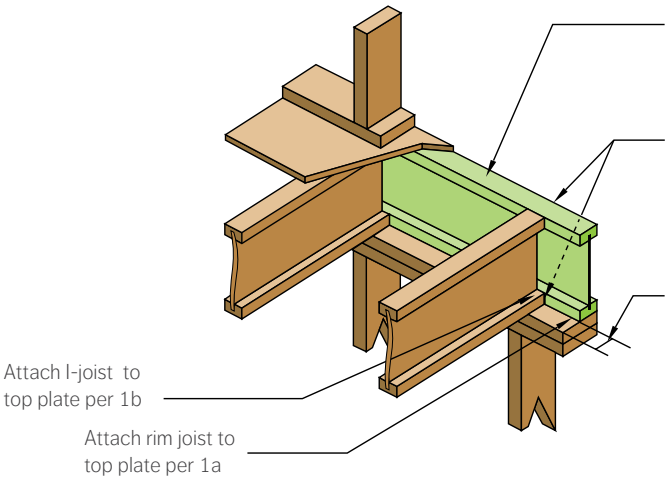
One 8d nail at top and bottom flange

Attach RigidRim® Rimboard to top plate using 8d box toenails @ 6" o.c.

One 8d nail each side of the RFPI-Joist at bearing. **To avoid splitting flange,** install nails a minimum of 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.



1c RFPI® RIM JOIST



RFPI® Rim Joist vertical load transfer = 2,000 plf maximum

Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. For rim joist with flanges 2" and wider toenails may be used.

Minimum 1-3/4" bearing required (2x6 bearing plate required for rim joists with flange widths greater than 1-3/4")

Attach I-joist to top plate per 1b

Attach rim joist to top plate per 1a

BLOCKING PANELS

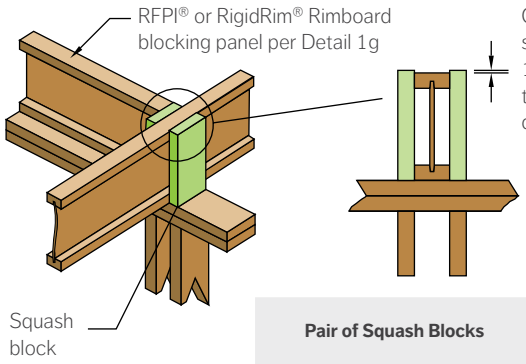
Blocking panels prevent floor joists from overturning and help transfer loads through the floor system into the structure below.

Due to differences in depth and possible shrinkage, common framing lumber set on edge is unacceptable as blocking. I-joist blocking panels must be cut to the proper length to fit between the I-joists, and their depth must match the depth of the I-joists.

Blocking panels may be used:

1. To stabilize I-joists laterally at supports, as shown in Figures 1a and 1g. Lateral support is required during installation and is necessary to obtain design carrying capacity.
2. To transmit vertical loads up to 2,000 plf per blocking panel in accordance with Figures 1a, 1c, 1f, and 1g.
3. For closures such as that shown in Figures 1a and 1e.
4. To transmit lateral forces to shear walls. Shear transfer nailing into the flanges must be specified by the building designer.
5. To provide lateral stability to walls.

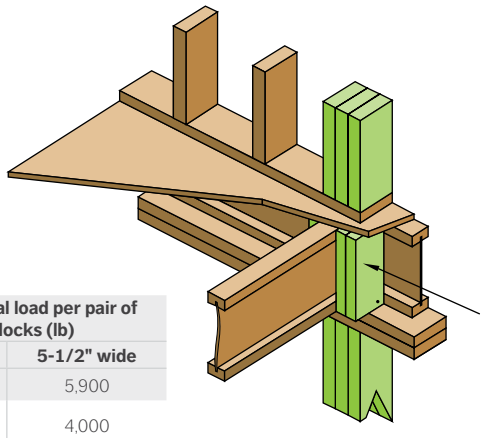
1d SQUASH BLOCK DETAIL



Provide lateral bracing per Detail 1a, 1b, or 1c

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
1-1/8" APA Rim Board, Rim Board Plus, or Rated Sturd-I-Floor 48 oc	2,600	4,000
1" APA Rim Board or Rated Sturd-I-Floor 32 oc	1,900	3,000

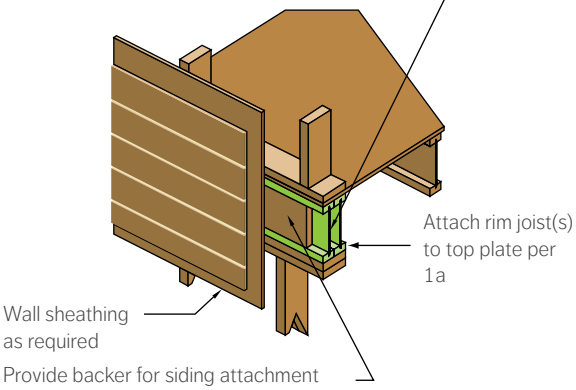
1e BEARING BLOCK DETAIL



Solid Block all posts from above to bearing below. Install bearing blocks per Detail 1d. Match bearing area of blocks below to post above.

1f RIM JOIST AT PARALLEL WALL

Use single I-joist for loads up to 2,000 plf, double I-joists for loads up to 4,000 plf (filler block not required)

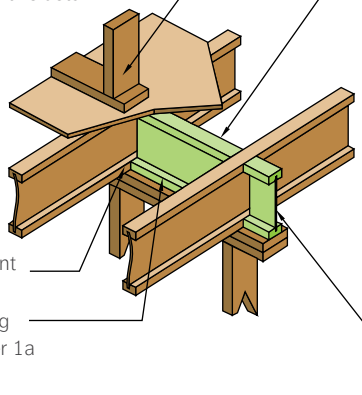


Provide backer for siding attachment unless nailable sheathing is used.

RigidRim® Rimboard may be used in lieu of I-joists. Backer is not required when RigidRim® Rimboard is used.

1g RFPI BLOCKING PANELS AT INTERIOR SUPPORT

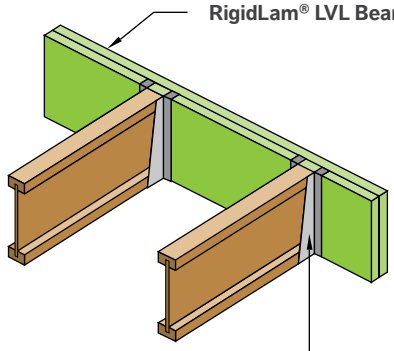
Load bearing wall above shall align vertically with the wall below. Other conditions such as offset walls are not covered by this detail.



Roseburg requires blocking over all interior supports under load-bearing walls or when floor joists are not continuous over supports. In addition, blocking may be required at interior supports by project designer or by code for seismic design.

RFPI® blocking panel vertical load transfer = 2,000 plf maximum -or- RigidRim Rimboard (see Page 34 for design properties)

1i HANGER TO LVL BEAM DETAIL

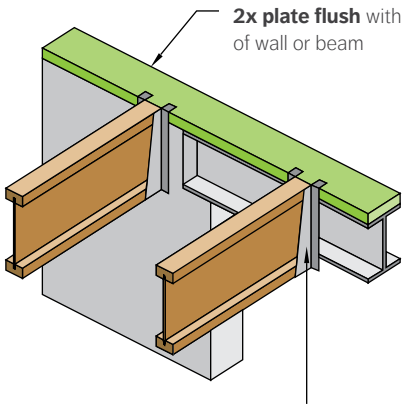


Top- or face-mounted hanger installed per hanger manufacturer's recommendations

Note: Unless hanger sides laterally support the top flange, web stiffeners shall be used. (See Figure B on page 23)

See pages 42 and 43 for details on attaching multiple ply LVL beams.

1k HANGER TO 2X PLATE DETAIL

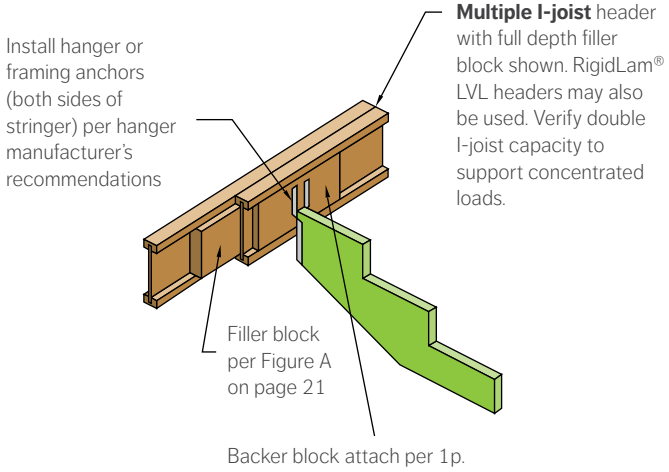


Top-mounted hanger installed per hanger manufacturer's recommendations

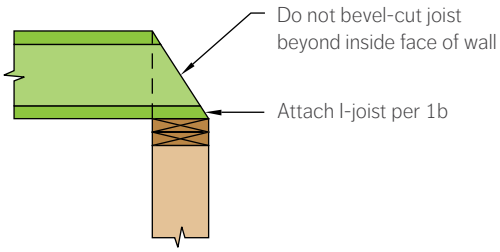
Note: Unless hanger sides laterally support the top flange, web stiffeners shall be used. (See Figure B on page 23)

1m STRINGER TO JOIST DETAIL

Maximum support capacity = 1,280 lb

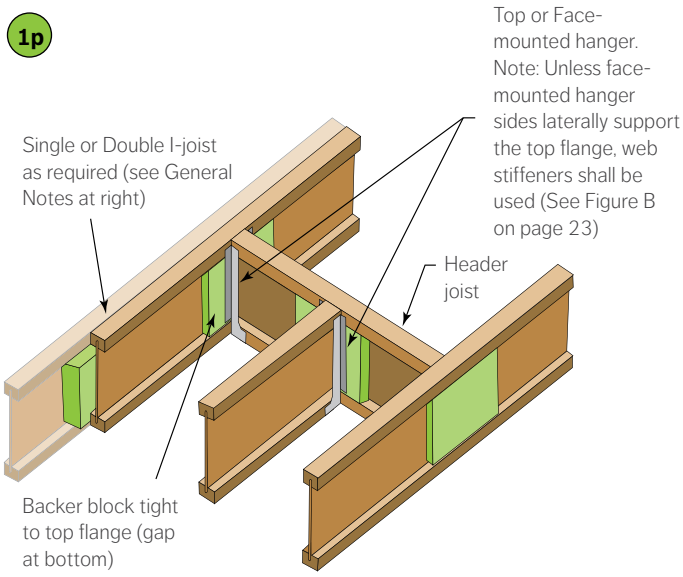


1n BEVEL CUTS ON I-JOIST



Note: Blocking required at bearing for lateral support, not shown for clarity.

1p



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 for backer block thickness & depth.

Install backer block tight to the top flange.

Attach backer block to web with 16 - 10d common nails, clinched. See chart 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 page 21 for 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.

BACKER BLOCK DEPTH

Joist Depth	9-1/2"	11-7/8"	14"	16"
Top Mount Hangers - Min Backer Block Depth	5-1/2"	5-1/2"	7-1/4"	7-1/4"
Face Mount Hangers - Req'd Backer Block Depth	6-1/4"	8-5/8"	10-3/4"	12-3/4"

I-Joist Flange Width	Backer block Material Thickness Required(a)(b)	Max. load capacity using 16-10d com. nails
1-3/4"	23/32"	975 lbs
2-1/16"	7/8"	1,135 lbs
2-5/16"	1"	1,250 lbs
2-1/2"	1-1/8"	1,250 lbs
3-1/2"	1-1/2"	1,250 lbs

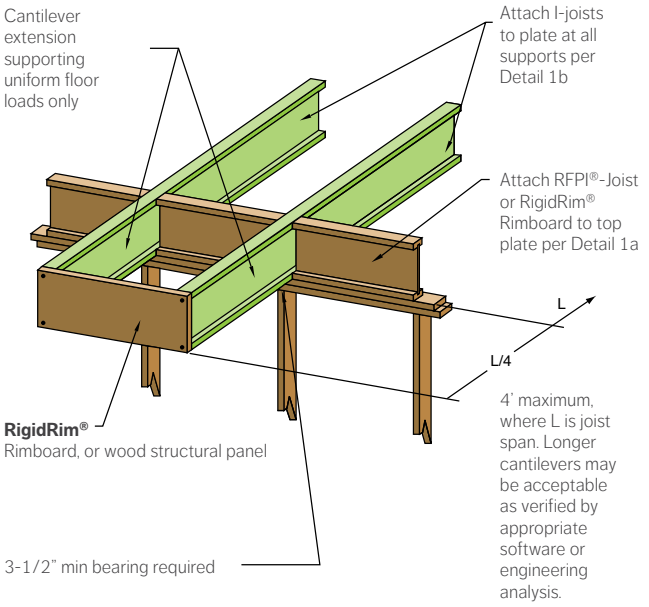
(a) Minimum grade for backer material shall be Utility grade SPF or better for solid sawn lumber and Rated Sheathing grade for wood structural panels.

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

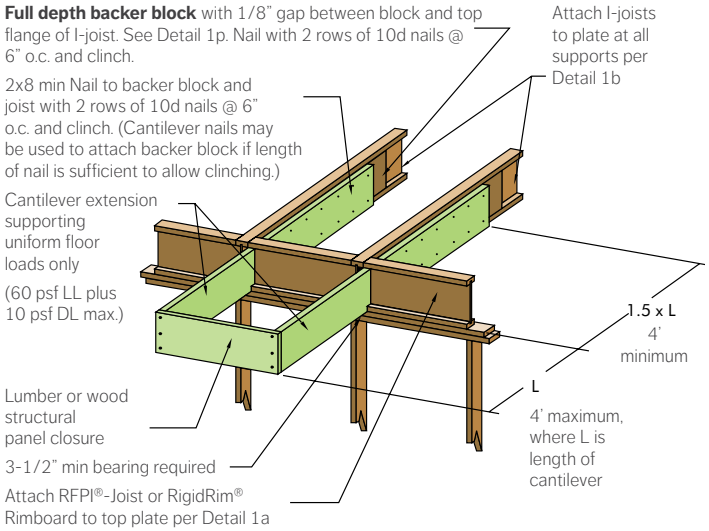
Cantilever Details

Please refer to note 6 on page 7.

RFPI®-JOIST INTERIOR CANTILEVER DETAIL



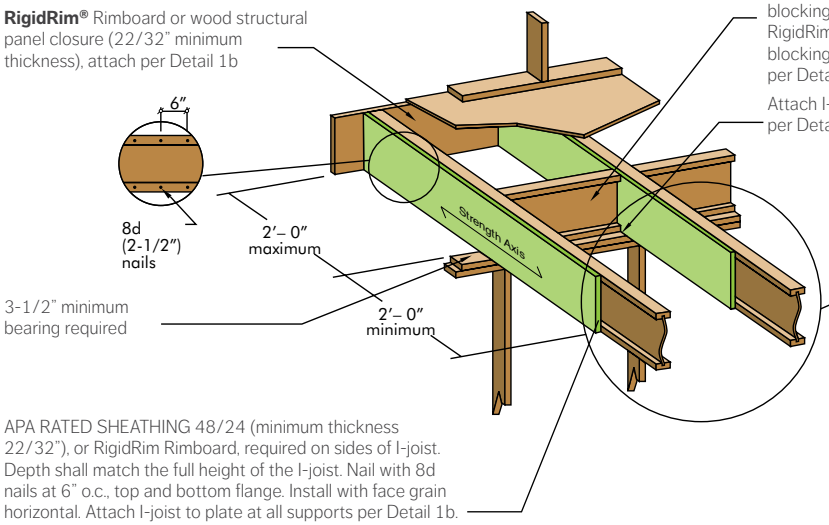
LUMBER CANTILEVER DETAIL FOR BALCONIES

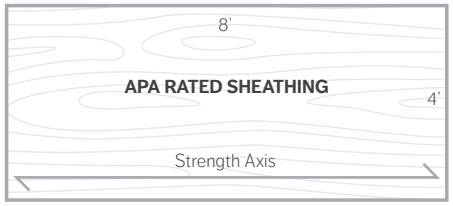


CANTILEVER DETAIL FOR VERTICAL BUILDING OFFSET - (REFER TO TABLE ON PAGE 22 FOR RECOMMENDED REINFORCEMENT)

METHOD 1

Sheathing Reinforcement One Side

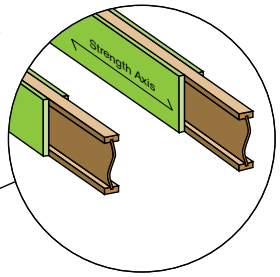




METHOD 2

Sheathing Reinforcement Two Sides

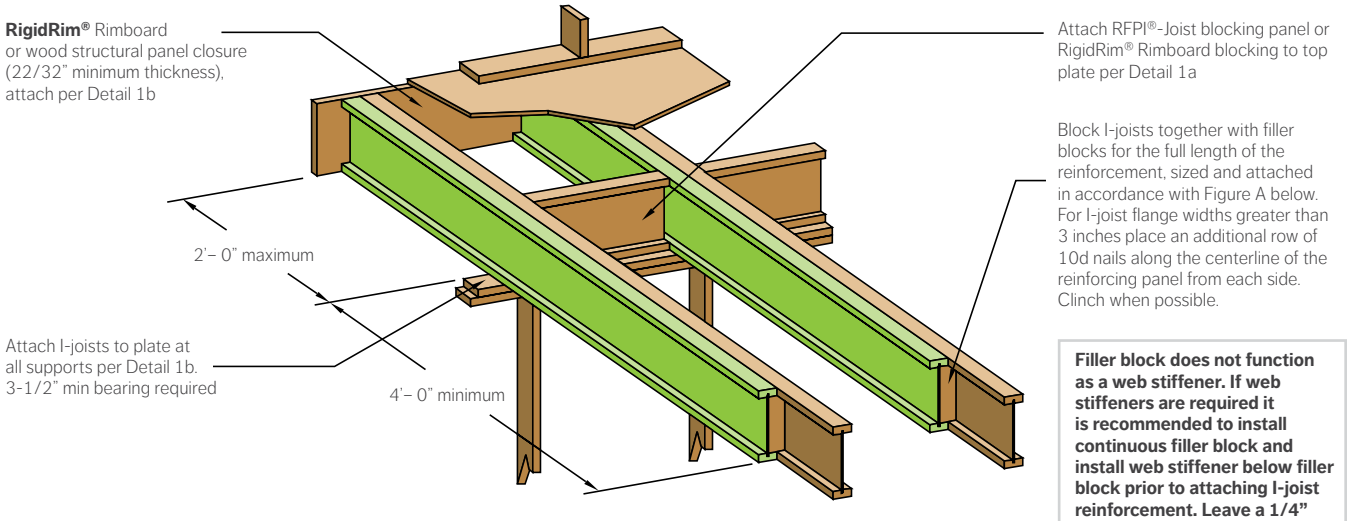
Use same installation as Method 1 but reinforce both sides of I-joist with sheathing or RigidRim Rimboard



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

CANTILEVER DETAIL FOR VERTICAL BUILDING OFFSET ALTERNATIVE METHOD 2

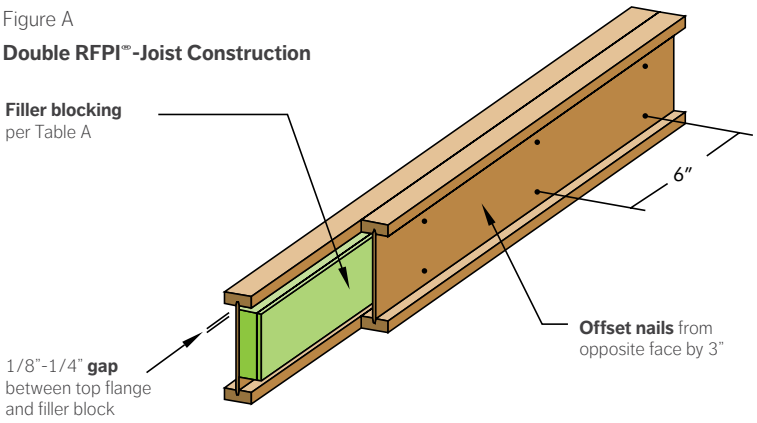
Double RFPI®-Joist



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.

Figure A

Double RFPI®-Joist Construction



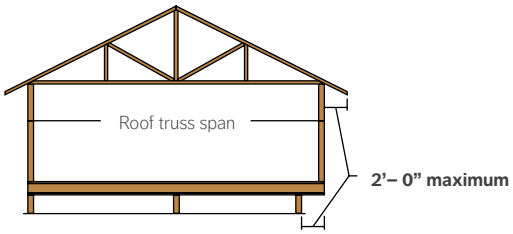
Notes:

1. Double I-joists may be required to frame openings, support concentrated loads, support partitions parallel to floor joists, or support any other loads which would exceed the capacity of a single I-joist. Install double I-joists when noted in the building drawings.
2. Filler blocks do not function as web stiffeners. Install web stiffeners as required.
3. Support back of I-joist web during nailing to prevent damage to web/flange connection.
4. Leave a 1/8"-1/4" gap between top of filler block and bottom of top I-joist flange.
5. For side-loaded conditions or cantilever reinforcement, filler block is required between joists for full length of double member.
6. Nail joists together with two rows of 10d nails at 6 inches o.c. (staggered) on each side of the double I-joist. Total of 8 nails per foot required.
7. Filler block thickness may be achieved by using multiple layers of structural wood panels.
8. The maximum load that may be applied to one side of the double joist using this detail is 620 lbs/ft

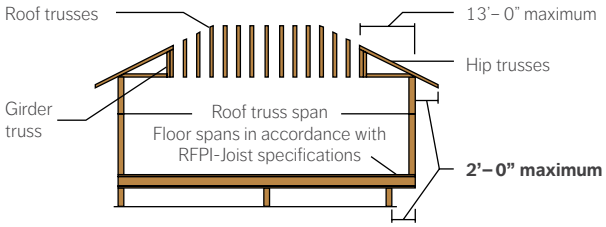
TABLE A: FILLER BLOCK REQUIREMENTS FOR DOUBLE RFPI®-JOIST CONSTRUCTION

Flange Width	Joist Depth	Joist Series	Recommended Min Filler Block Size
1-3/4"	9-1/2"	20	1-3/8" x 5-1/2"
	11-7/8"	20	1-3/8" x 5-1/2"
	14"	20	1-3/8" x 7-1/4"
2-1/16"	9-1/2"	400	1-3/4" x 5-1/2"
	11-7/8"	400	1-3/4" x 5-1/2"
	14"	400	1-3/4" x 7-1/4"
	16"	400	1-3/4" x 7-1/4"
2-5/16"	9-1/2"	40, 70	2" x 5-1/2"
	11-7/8"	40, 70	2" x 5-1/2"
	14"	40, 70	2" x 7-1/4"
	16"	40, 70	2" x 7-1/4"
2-1/2"	9-1/2"	40S, 60S	2-1/8" x 5-1/2"
	11-7/8"	40S, 60S	2-1/8" x 5-1/2"
	14"	40S, 60S	2-1/8" x 7-1/4"
	16"	40S, 60S	2-1/8" x 7-1/4"
3-1/2"	9-1/2"	90	3" x 5-1/2"
	11-7/8"	80S, 90	3" x 5-1/2"
	14"	80S, 90	3" x 7-1/4"
	16"	80S, 90	3" x 7-1/4"

RFPI®-Joist Cantilever Reinforcement



See table below for RFPI-Joist reinforcement requirements at cantilever.



For hip roofs with the hip trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26' may be used.

RFPI®-JOIST CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in)	Roof Truss Span (ft)	ROOF LOADINGS											
		TL = 35 psf LL not to exceed 20 psf				TL = 45 psf LL not to exceed 30 psf				TL = 55 psf LL not to exceed 40 psf			
		Joist Spacing (in)				Joist Spacing (in)				Joist Spacing (in)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	N	1	N	N	1	2	N	1	2	X
	28	N	N	N	1	N	N	1	2	N	1	2	X
	30	N	N	N	1	N	N	1	2	N	1	2	X
	32	N	N	1	2	N	1	1	X	N	1	2	X
	34	N	N	1	2	N	1	2	X	N	2	X	X
	36	N	N	1	2	N	1	2	X	N	2	X	X
11-7/8"	26	N	N	N	1	N	N	1	1	N	N	1	1
	28	N	N	N	1	N	N	1	1	N	1	1	2
	30	N	N	N	1	N	N	1	1	N	1	1	2
	32	N	N	N	1	N	N	1	1	N	1	1	2
	34	N	N	1	1	N	N	1	2	N	1	1	2
	36	N	N	1	1	N	1	1	2	N	1	1	2
	38	N	N	1	1	N	1	1	2	N	1	2	X
14"	26	N	N	N	1	N	N	1	1	N	N	1	2
	28	N	N	N	1	N	N	1	1	N	1	1	2
	30	N	N	N	1	N	N	1	1	N	1	1	2
	32	N	N	1	1	N	N	1	2	N	1	1	2
	34	N	N	1	1	N	1	1	2	N	1	1	2
	36	N	N	1	1	N	1	1	2	N	1	1	2
	38	N	N	1	1	N	1	1	2	N	1	2	2
	40	N	N	1	1	N	1	1	2	N	1	2	X
16"	26	N	N	N	1	N	N	N	1	N	N	1	1
	28	N	N	N	1	N	N	N	1	N	N	1	1
	30	N	N	N	1	N	N	N	1	N	N	1	2
	32	N	N	N	1	N	N	1	1	N	N	1	2
	34	N	N	N	1	N	N	1	1	N	1	1	2
	36	N	N	N	1	N	N	1	1	N	1	1	2
	38	N	N	N	1	N	N	1	2	N	1	1	2
	40	N	N	N	1	N	N	1	2	N	1	1	2
	42	N	N	1	1	N	1	1	2	N	1	2	2

Cantilever Reinforcement Legend:

N = No reinforcement required.

1 = RFPI®-Joists reinforced with 22/32" Wood Structural panel or RigidRim® Rimboard on one side only (see Method 1 on Page 20).

2 = RFPI®-Joists reinforced with 22/32" Wood Structural panel or RigidRim® Rimboard on both sides or double I-joist (see Method 2 on Page 20 or alternate Method 2 on Page 21).

X = Try a deeper joist or closer spacing.

Note: For more information see pages 20 & 21

Notes:

- Maximum load shall be: Total roof load as shown in chart (includes 15 psf roof dead load), 50 psf floor total load, and 80 plf wall load. Wall load is based on 3'–0" maximum width window or door opening. For larger openings, or multiple 3'–0" width openings spaced less than 6'–0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. Use 12" o.c. requirements for o.c. spacings less than 12".
- For a given I-joist depth, table conservatively accounts for multiple I-joist series.
- For conditions other than those shown or to analyze a specific I-joist series, software with the appropriate design properties, such as Simpson Strong-Tie® Component Solutions™ software, can be used to analyze specific applications and loading.

Web Stiffener Requirements

A web stiffener is a block of plywood, OSB, or even a 2x4 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. Web stiffeners are common with certain types of joist hanger installations, particularly in roof systems. They are typically placed at the end of the I-joist, between the flanges and against both sides of the web. When used at end bearings, web stiffeners should be installed 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.**

When designed in accordance with the load/span conditions set forth in the tables in this guide, RFPI-Joists do not require web stiffeners, with the following exceptions:

- When sides of the hangers do not laterally brace the top flange of each I-joist.
- Birds mouth cuts for roof joists.
- When I-joists are designed to support concentrated loads greater than 1,000 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.

The use of web stiffeners or bearing lengths that are longer than the minimum required may result in allowable spans that are longer than those shown in this guide. The most accurate method of determining if a joist is adequate and if web stiffeners are required is to use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis for the actual conditions.

FIGURE B

RFPI-JOIST WEB STIFFENER REQUIREMENTS

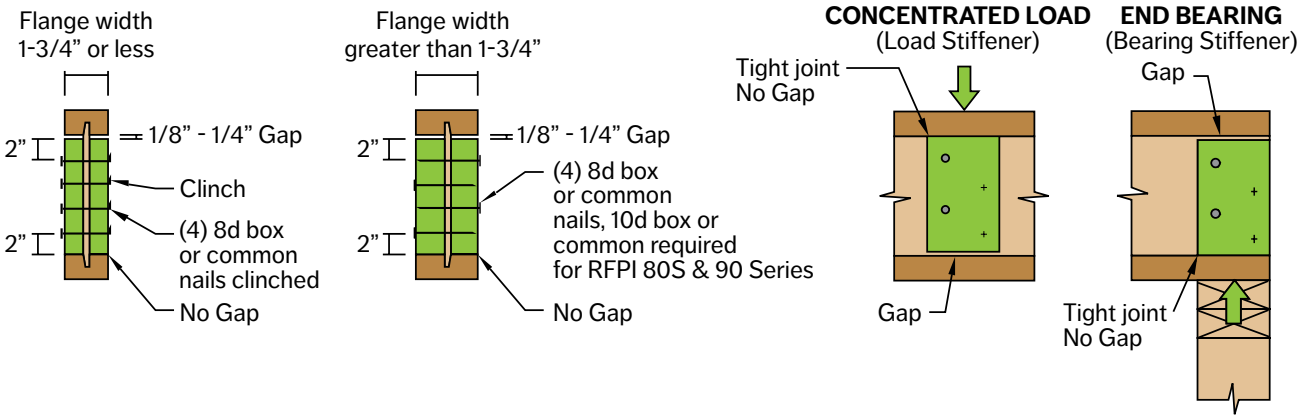


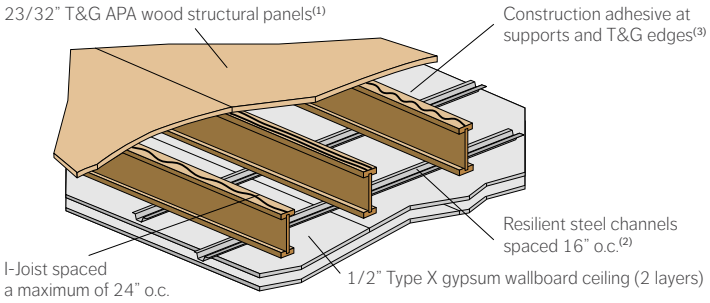
TABLE B: WEB STIFFENER SIZE REQUIRED

RFPI®-Joist Flange Width	Web Stiffener Size Each Side of Web
1-3/4"	19/32" x 2-5/16" minimum width
2-1/16"	3/4" x 2-5/16" minimum width
2-5/16"	7/8" x 2-5/16" minimum width
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

Fire & Sound Rated Floor Assemblies

ONE-HOUR 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 and 2018 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-L289, lists 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 follows:



Roseburg:	• www.roseburg.com
AWC:	• awc.org and search for DCA 3
APA:	• apawood.org and search for ESR 1405 W305 for I-joists D350A for rimboard

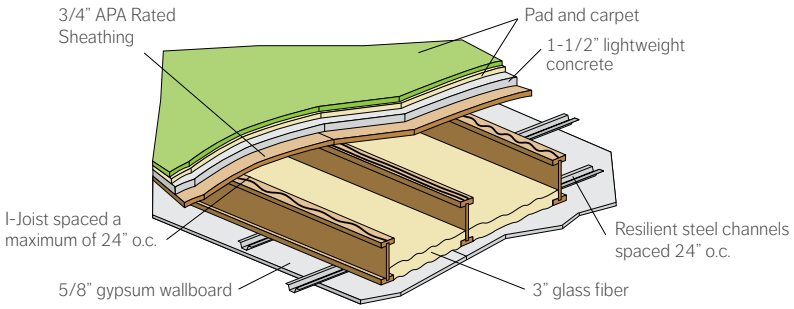
The fire-rated assembly shown at left is one of the more common assemblies shown in DCA 3 (WIJ-1.6) and published in the 2012, 2015 and 2018 IBC (Item 27-1.1) and can be used with any of the RFPI®-Joist series and depths.

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 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

NOISE-RATED FLOOR ASSEMBLY WITH APA PERFORMANCE RATED I-JOISTS

The noise-rated assembly shown below is one of several assemblies that can be used with I-Joists. For additional STC and IIC sound rating systems, refer to the AWC and APA publications noted above. Additional general information regarding STC and IIC sound ratings can be found in APA Form No.W460 at the following website: (http://apawood.org/publications) Search for publication W460.



SOUND RATINGS FOR FLOORS USING APA PERFORMANCE RATED RFPI®-JOIST

Test Sponsor and Number[1]	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 subfloor on I-joist at 24" o.c.	5/8" screwed to resilient metal channels	3" glass fiber	58	50	21.0
G&H USDA 11x ST	Carpet & Pad				58	77	
	None			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 "Sprinker Pipe Installation for APA Performance Rated I-Joists" for sprinkler attachment guidelines.

The Code Plus® Floor

The Code Plus Program was developed by APA as a way to help builders and remodelers use the best materials and construction methods available. Because Code Plus builders and remodelers agree to use APA trademarked I-joists, laminated veneer lumber, glued laminated timbers, plywood, and OSB in their construction, the Code Plus designation is also a symbol of quality to home buyers and homeowners.

When Code Plus floor criteria are met and I-Joists are used, the resulting floor system will exceed building code requirements, and provide superior performance.

Code Plus®

APA – The Engineered Wood Association

APA's Code Plus floor requirements are:

1. APA trademarked I-joists, glued laminated timber or LVL headers or beams, and plywood or OSB floor panels must be used.
2. Panel Floor allowable span must be at least 24 for I-joist spacing up to 20" o.c., and 32 for I-joists spaced 24" o.c.
3. Panels must be installed using the APA Glued Floor System guidelines.
4. Panels shall be fastened with 8d nails or other building code approved fasteners spaced per table below. Nail size and spacing may vary, depending on span and sheathing thickness.
5. A 1/8" space at all panel end and edge joints must be left to allow for panel expansion.
6. Panels must be installed continuously over two or more spans, with the long dimension or strength axis of the panel across the I-joist.

APA RATED STURD-I-FLOOR™ FASTENER SCHEDULES FOR RFPI®-JOISTS[1]

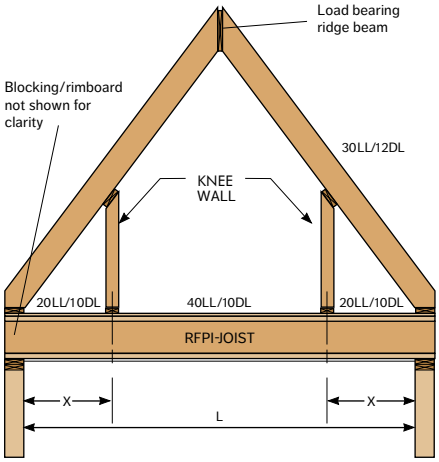
Maximum Joist Spacing (in)	Panel Thickness[2] (in)	Fastening: Glued-Nailed[3]		
		Nail Size and Type	Maximum Spacing (in)[4]	
			Supported Panel Edges	Intermediate Supports
16	23/32[5], 3/4	6d ring-or screw-shank[6]	6	12
20	23/32[5], 3/4	6d ring-or screw-shank[6]	6	12
24	7/8	8d ring-or screw-shank[6]	6	12

1. Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
2. Panels in a given thickness may be manufactured in more than one allowable span. Panels with an allowable span greater than the actual joist spacing may be substituted for panels of the same thickness with an allowable span matching the actual joist spacing.
3. Use only adhesives conforming to APA Specification AFG-01 or ASTM D3498, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.
4. Increased fastening schedules may be required where floor is engineered as a diaphragm.
5. Recommended minimum thickness for use with I-joists.
6. 8d common nails may be substituted if ring- or screw-shank nails are not available.

Bonus Room Floor Joist Selection Guide

L (Span)	X (Kneewall)	RFPI SERIES			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
20'	4' to 6'	14" 20 • 11-7/8" 40	16" 40S • 14" 400 • 11-7/8" 80S	16" 400 •14" 40 • 11-7/8" 90	16" 70[a] • 14" 80S[a]
22'	4' to 6'	14" 40S • 11-7/8" 80S	16" 400 • 14" 70 • 11-7/8" 90	16" 40[a] • 14" 80S[a]	14" 90[a]
24'	4' to 7'	16" 40S • 14" 70 • 11-7/8" 90	16" 60S • 14" 90	16" 80S[a]	16" 90[ab]

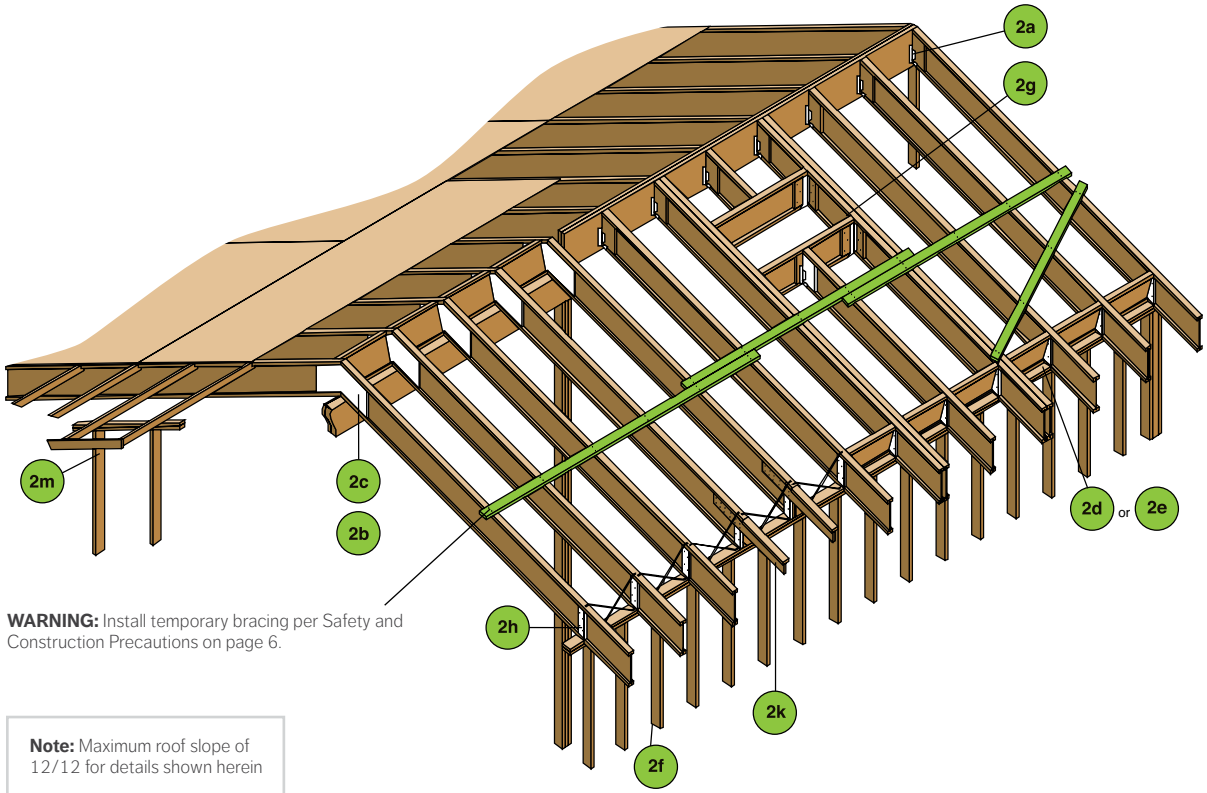
a) Install Concentrated Load Stiffeners to Floor I-joists below Knee Walls (see page 23)
b) Install web stiffeners to each end of I-Joist.



Design Parameters:

1. Roof live load of 30 psf at 115% (snow load).
2. Roof dead load of 12 psf (asphalt shingles).
3. Roof rafter slope between 8/12 and 12/12.
4. Kneewall weight of 40 plf.
5. Attic storage load of 20 psf live load (outside the kneewalls).
6. Floor live load of 40 psf (within the kneewalls).
7. Attic and floor dead load of 10 psf.
8. Straight gable roof framing. No hip framing is permitted.
9. Maximum floor deflection is limited to L/480 live load and L/240 total load.
10. Spans are based on composite action with glued-nailed sheathing.
11. For all other conditions, call your local representative.
12. Consult local building code for other bonus room framing and/or loading requirements or restrictions.

Roof Framing & Construction Details



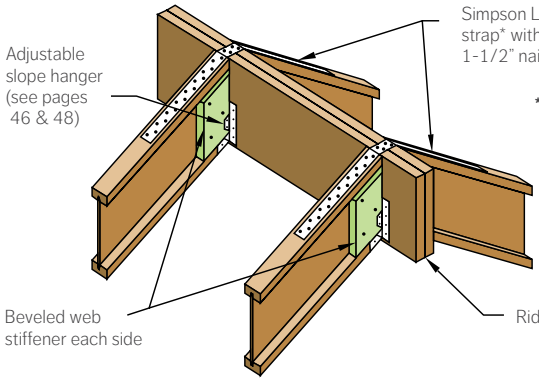
WARNING: Install temporary bracing per Safety and Construction Precautions on page 6.

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 7 for "Recommended Nail Size and Spacing". Individual components not shown to scale for clarity.

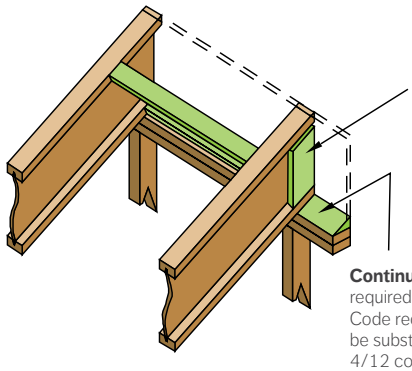
2a RIDGE JOIST CONNECTION - 12/12 MAXIMUM SLOPE



Uplift connections may be required.

2b UPPER END, BEARING ON WALL

RFPI®-Joist blocking panel, x-bracing, 23/32" APA Rated Sheathing 48/24, or proper depth of rimboard as continuous closure. (Validate use of x-bracing with local building code.)

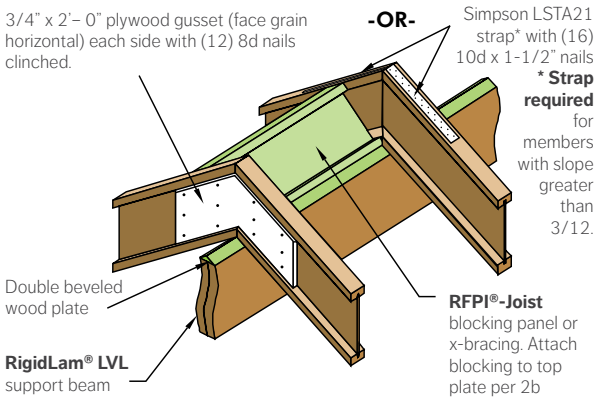


Continuous beveled wood plate required for slopes greater than ¼/12. Code recognized slope connectors may be substituted. For slopes greater than 4/12 connectors are required to resist lateral thrust.

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)

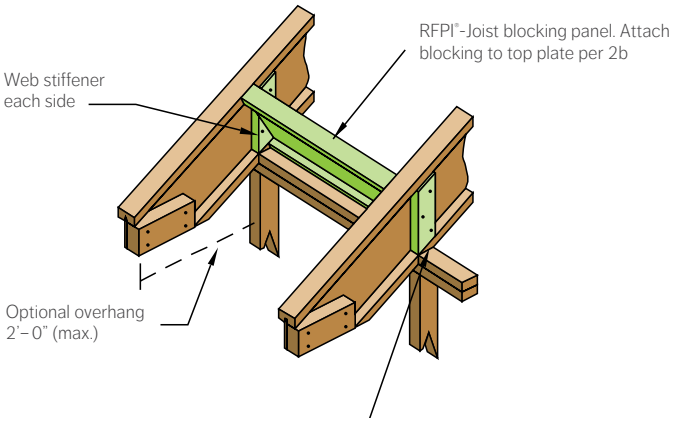
Uplift connections may be required.

2c RFPI®-JOISTS ABOVE RIDGE SUPPORT BEAM



Uplift connections may be required.

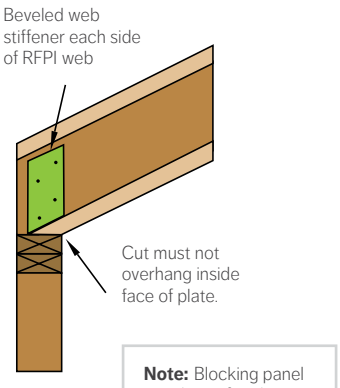
2d BIRDSMOUTH CUT - LOW END OF RFPI®-JOIST ONLY



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

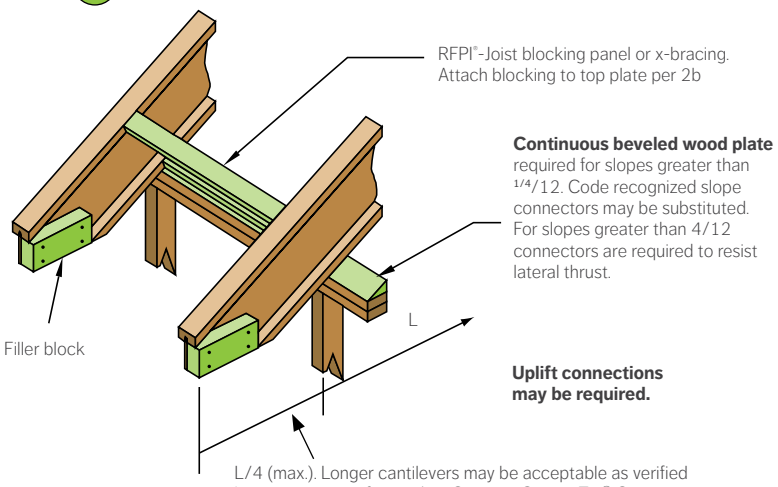
Uplift connections may be required.

2d sim. BIRDSMOUTH CUT, NO OVERHANG - LOW END OF RFPI®-JOIST ONLY

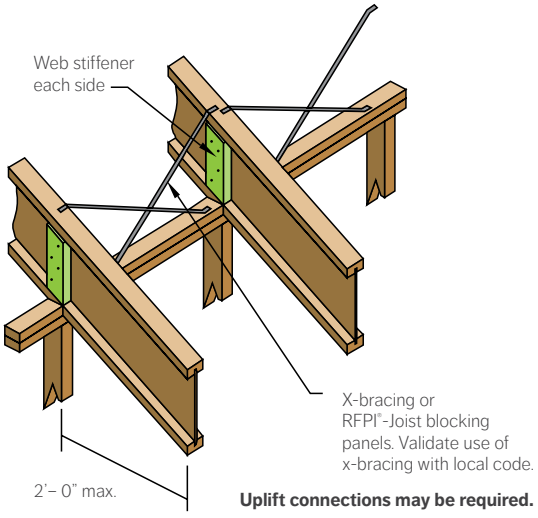


Note: Blocking panel not shown for clarity

2e RFPI®-JOISTS ON BEVELED PLATE

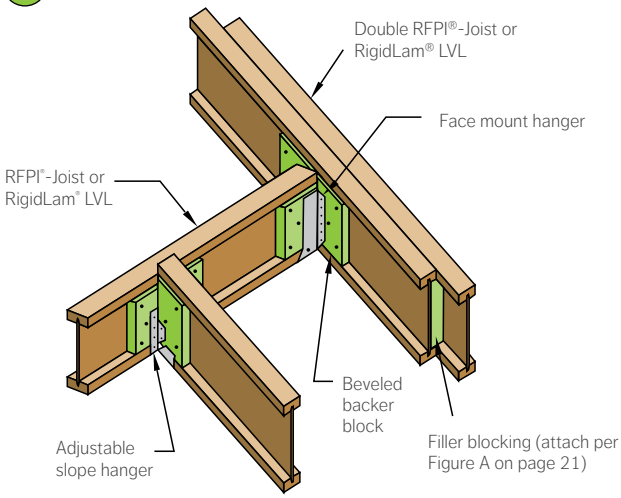


2f BIRDSMOUTH CUT - LOW END OF RFPI®-JOIST ONLY



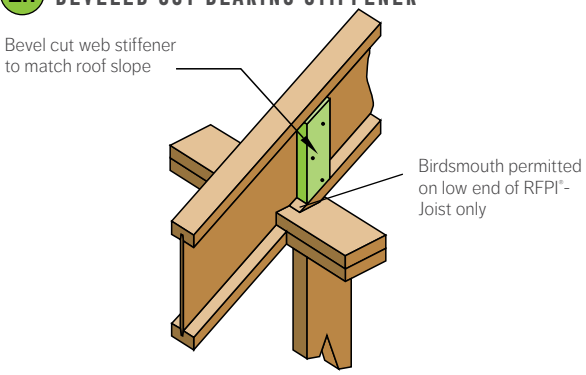
Uplift connections may be required.

2g ROOF OPENINGS, FACE MOUNTED HANGERS



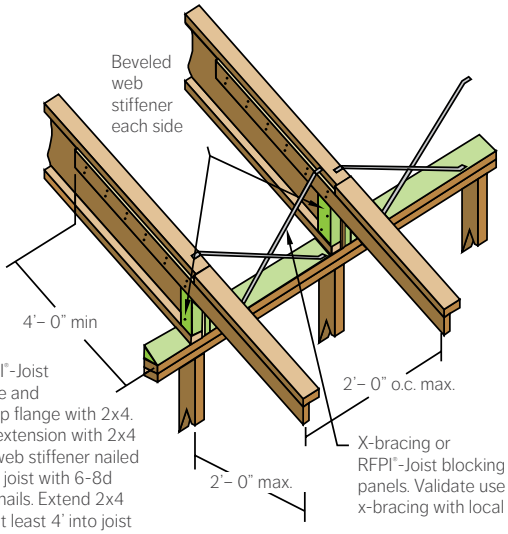
Uplift connections may be required.

2h BEVELED CUT BEARING STIFFENER



Uplift connections may be required.

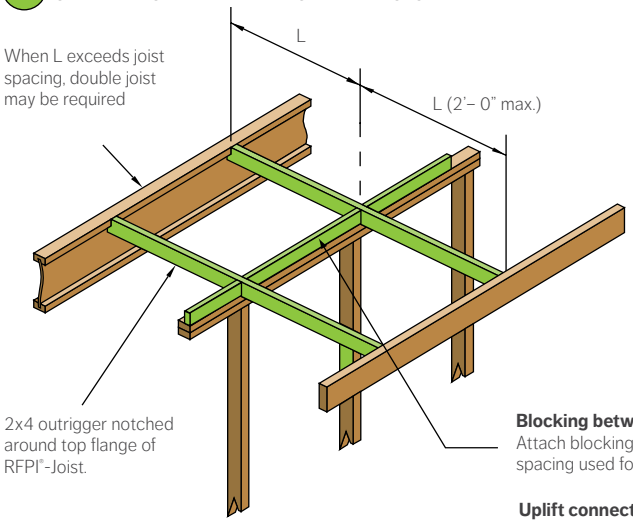
2k OPTIONAL OVERHANG EXTENSIONS



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.

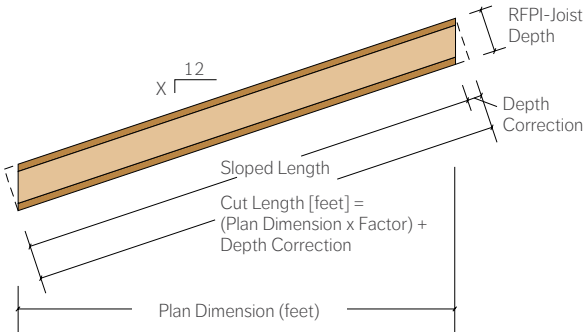
2m OVERHANG PARALLEL TO RFPI®-JOIST



Blocking between outriggers.
Attach blocking to top plate with nail size and spacing used for roof sheathing edge nailing.

Uplift connections may be required.

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"
		Depth Correction (ft)			
1 in 12	1.00	0.07	0.08	0.10	0.11
2 in 12	1.01	0.13	0.16	0.19	0.22
2.5 in 12	1.02	0.16	0.21	0.24	0.28
3 in 12	1.03	0.20	0.25	0.29	0.33
3.5 in 12	1.04	0.23	0.29	0.34	0.39
4 in 12	1.05	0.26	0.33	0.39	0.44
4.5 in 12	1.07	0.30	0.37	0.44	0.50
5 in 12	1.08	0.33	0.41	0.49	0.56
6 in 12	1.12	0.40	0.49	0.58	0.67
7 in 12	1.16	0.46	0.58	0.68	0.78
8 in 12	1.20	0.53	0.66	0.78	0.89
9 in 12	1.25	0.59	0.74	0.88	1.00
10 in 12	1.30	0.66	0.82	0.97	1.11
11 in 12	1.36	0.73	0.91	1.07	1.22
12 in 12	1.41	0.79	0.99	1.17	1.33

Allowable Roof Uniform Load For RFPI®-Joists (plf)

Joist Clear Span (ft)	RFPI 20 (1-3/4" wide x 1-3/8" flanges)									RFPI 40S (2-1/2" wide x 1-1/2" flanges)										RFPI 400 (2-1/16" wide x 1-3/8" flanges)									
	9-1/2"			11-7/8"			14"			9-1/2"			11-7/8"			14"			16"			9-1/2"			11-7/8"			14"		
	Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total	
	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%
8	-	197	214	-	214	233	-	214	233	-	239	260	-	277	301	-	277	301	-	277	301	-	238	259	-	249	271	-	249	271
9	-	175	191	-	191	208	-	191	207	-	213	232	-	247	268	-	246	268	-	246	268	-	212	231	-	222	241	-	222	241
10	-	158	172	-	172	187	-	172	187	-	192	209	-	222	242	-	222	242	-	222	241	-	191	208	-	200	218	-	200	217
11	-	144	156	-	156	170	-	156	170	-	175	190	-	202	220	-	202	220	-	202	220	-	174	189	-	182	198	-	182	198
12	-	132	143	-	143	156	-	143	156	-	160	174	-	185	202	-	185	202	-	185	201	-	160	174	-	167	182	-	167	181
13	-	122	132	-	132	144	-	132	144	-	141	154	-	171	186	-	171	186	-	171	186	-	147	160	-	154	168	-	154	167
14	-	113	123	-	123	134	-	123	134	-	122	133	-	158	173	-	159	173	-	158	173	-	137	149	-	143	156	-	143	155
15	98	105	115	-	115	125	-	114	125	-	106	116	-	138	150	-	148	161	-	148	161	113	128	139	-	133	145	-	133	145
16	82	97	105	-	107	117	-	107	117	-	93	101	-	121	132	-	139	151	-	139	151	94	115	124	-	125	136	-	125	136
17	69	86	89	-	101	110	-	101	110	79	82	90	-	107	117	-	129	141	-	130	142	79	102	104	-	118	128	-	117	128
18	58	76	76	-	95	104	-	95	104	68	73	80	-	95	104	-	115	126	-	123	134	68	88	88	-	111	121	-	111	121
19	50	64	64	84	88	96	-	90	98	58	66	71	-	85	93	-	103	113	-	116	127	58	75	75	97	105	114	-	105	114
20	43	55	55	73	80	87	-	86	93	50	59	64	-	77	84	-	93	101	-	108	118	50	64	64	84	95	103	-	100	108
21	-	-	-	63	72	79	-	81	89	43	53	55	-	70	76	-	84	92	-	98	107	43	55	55	73	86	93	-	95	103
22	-	-	-	55	66	71	-	78	85	-	-	-	-	63	69	-	77	83	-	89	97	-	-	-	64	78	82	-	90	98
23	-	-	-	49	60	62	71	71	78	-	-	-	56	58	63	-	70	76	-	81	89	-	-	-	56	71	72	82	85	93
24	-	-	-	43	55	55	63	65	71	-	-	-	50	53	58	-	64	70	-	74	81	-	-	-	50	64	64	72	78	85
25	-	-	-	-	-	-	56	60	66	-	-	-	-	-	-	-	59	64	-	68	75	-	-	-	44	56	56	64	72	78
26	-	-	-	-	-	-	50	55	60	-	-	-	-	-	-	-	54	59	-	63	69	-	-	-	39	50	50	57	66	72
27	-	-	-	-	-	-	45	51	56	-	-	-	-	-	-	-	50	55	-	58	64	-	-	-	-	-	-	52	61	66
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	59	-	-	-	-	-	-	46	57	59
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	55	-	-	-	-	-	-	42	53	53

Joist Clear Span (ft)	RFPI 40 (2-5/16" wide x 1-3/8" flanges)												RFPI 60S (2-1/2" 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	
	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%
8	-	249	271	-	277	301	-	277	301	-	277	301	-	239	260	-	277	301	-	277	301	-	277	301
9	-	222	242	-	247	268	-	247	268	-	246	268	-	213	232	-	247	268	-	246	268	-	246	268
10	-	200	218	-	222	242	-	222	242	-	222	242	-	192	209	-	222	242	-	222	242	-	222	241
11	-	182	198	-	202	220	-	202	220	-	202	220	-	175	190	-	202	220	-	202	220	-	202	220
12	-	167	182	-	186	202	-	185	202	-	185	201	-	160	174	-	185	202	-	185	202	-	185	201
13	-	154	168	-	171	186	-	171	186	-	171	186	-	148	161	-	171	186	-	171	186	-	171	186
14	-	143	156	-	159	173	-	159	173	-	159	173	-	137	149	-	159	173	-	159	173	-	158	173
15	125	134	145	-	148	162	-	148	161	-	148	161	-	128	139	-	148	161	-	148	161	-	148	161
16	104	125	136	-	139	151	-	139	151	-	139	151	111	120	131	-	139	151	-	139	151	-	139	151
17	88	114	115	-	131	143	-	131	142	-	130	142	94	113	123	-	131	142	-	131	142	-	130	142
18	75	97	97	-	124	135	-	123	134	-	123	134	80	102	104	-	123	134	-	123	134	-	123	134
19	64	83	83	107	117	127	-	117	127	-	117	127	68	89	89	115	117	127	-	117	127	-	116	127
20	55	71	71	92	107	116	-	111	121	-	111	121	59	76	76	99	107	117	-	111	121	-	110	120
21	48	62	62	80	97	104	-	105	115	-	105	115	51	66	66	86	97	106	-	105	115	-	105	115
22	42	54	54	70	88	91	-	101	110	-	100	109	45	57	57	76	88	96	-	100	109	-	100	109
23	-	-	-	62	80	80	90	96	104	-	96	105	40	50	50	67	81	86	-	96	105	-	96	104
24	-	-	-	55	70	70	80	88	96	-	92	100	-	-	-	59	74	76	86	89	97	-	92	100
25	-	-	-	49	62	62	71	81	88	-	88	96	-	-	-	53	67	67	76	82	90	-	88	96
26	-	-	-	43	55	55	63	74	81	-	85	92	-	-	-	47	60	60	68	76	83	-	84	92
27	-	-	-	-	-	-	57	69	73	77	79	86	-	-	-	42	53	53	61	70	76	-	81	89
28	-	-	-	-	-	-	51	64	65	69	73	80	-	-	-	-	-	-	55	65	71	75	76	83
29	-	-	-	-	-	-	46	59	59	63	68	74	-	-	-	-	-	-	50	60	63	68	70	77
30	-	-	-	-	-	-	42	53	53	57	64	69	-	-	-	-	-	-	45	56	57	61	66	72

To Use PLF Chart:

1. Select the span required (see General Note 3 below).
2. Compare the design total load (plf) to the appropriate *Total* column and compare the design live load (plf) to the *Live* column.
3. Select a product that **meets or exceeds both the design total and live loads.** When no value is shown in the Live column, Total load will govern.

General Notes:

1. Table values apply to uniformly loaded simple or multiple span joists.
2. Clear span is the clear distance between the face of supports.
3. Use the horizontal span dimension from the building plans to size joists for roofs that slope up to 2" in 12". For roof slopes greater than 2" in 12", multiply the horizontal span dimension by the appropriate Slope Factor from the table on page 28.
4. Roofs must be sloped at least 1/4" in 12" to assure drainage.
5. *Live* load column is based on an L/240 deflection limit.
6. *Total* load column is based on an L/180 deflection limit. Use 115% column for snow loads and 125% for non-snow loads. Check with local code (based on location of building) for snow load requirements.
7. Verify that the deflection criteria conform to local building code requirements.
8. Minimum end bearing length is 1-3/4". Minimum intermediate bearing length is 3-1/2".
9. Web stiffeners are not required for loads shown.
10. This table does not account for added stiffness from glued or nailed sheathing.

Joist Clear Span (ft)	RFPI 70 (2-5/16" wide x 1-1/2" flanges)												RFPI 80S (3-1/2" 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"			11-7/8"			14"			16"			9-1/2"			11-7/8"			14"		
	Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total		Live	Total	
	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%	L/240	115%	125%
8	-	259	282	-	277	301	-	277	301	-	276	301	-	311	338	-	334	363	-	334	363	-	334	364	-	372	404	-	371	404
9	-	230	251	-	247	268	-	246	268	-	246	268	-	277	301	-	297	324	-	297	323	-	298	324	-	331	360	-	331	360
10	-	208	226	-	222	242	-	222	242	-	222	241	-	249	271	-	268	292	-	268	291	-	268	292	-	298	324	-	298	324
11	-	189	206	-	202	220	-	202	220	-	202	219	-	227	247	-	244	265	-	243	265	-	244	265	-	271	295	-	271	295
12	-	173	189	-	185	202	-	185	201	-	185	201	-	208	226	-	223	243	-	223	243	-	224	243	-	249	271	-	248	270
13	-	160	174	-	171	186	-	171	186	-	171	186	-	192	209	-	206	224	-	206	224	-	206	225	-	230	250	-	229	250
14	-	149	162	-	159	173	-	159	173	-	158	172	-	178	194	-	191	208	-	191	208	-	192	209	-	213	232	-	213	232
15	-	139	151	-	148	161	-	148	161	-	148	161	-	166	181	-	179	194	-	178	194	-	179	195	-	199	217	-	199	216
16	127	130	141	-	139	151	-	139	151	-	138	151	-	156	169	-	167	182	-	167	182	-	168	183	-	186	203	-	186	203
17	107	122	133	-	131	142	-	130	142	-	130	142	-	146	159	-	157	171	-	157	171	153	158	172	-	175	191	-	175	191
18	91	115	119	-	123	134	-	123	134	-	123	134	-	138	150	-	148	162	-	148	162	131	149	162	-	166	180	-	165	180
19	78	102	102	-	117	127	-	117	127	-	116	127	-	131	142	-	141	153	-	140	153	113	141	147	-	157	171	-	156	170
20	68	87	87	-	111	121	-	111	121	-	110	120	-	124	135	-	133	145	-	133	145	98	127	127	-	149	162	-	148	162
21	59	76	76	98	105	115	-	105	115	-	105	114	116	118	129	-	127	138	-	127	138	85	110	110	141	142	154	-	141	154
22	51	66	66	86	101	110	-	100	109	-	100	109	102	113	123	-	121	132	-	121	132	75	96	96	124	135	147	-	135	147
23	45	58	58	76	96	98	-	96	105	-	96	104	90	108	116	-	116	126	-	115	126	66	84	84	109	129	141	-	129	140
24	40	51	51	67	87	87	-	92	100	-	92	100	80	103	103	-	111	121	-	110	120	59	74	74	97	124	125	-	123	134
25	-	-	-	60	77	77	87	88	96	-	88	96	71	91	91	103	106	116	-	106	115	52	66	66	86	111	111	-	118	129
26	-	-	-	53	68	68	78	85	92	-	84	92	64	81	81	92	102	111	-	102	111	47	58	58	77	99	99	111	114	124
27	-	-	-	48	61	61	70	81	89	-	81	88	57	72	72	83	98	106	-	98	107	42	52	52	70	89	89	100	109	119
28	-	-	-	43	55	55	63	78	81	-	78	85	51	65	65	74	93	95	-	94	103	-	-	-	63	80	80	91	105	115
29	-	-	-	-	-	-	57	73	73	-	75	82	47	58	58	67	86	86	91	91	99	-	-	-	57	72	72	82	101	105
30	-	-	-	-	-	-	52	66	66	70	73	79	42	52	52	61	77	77	82	88	96	-	-	-	52	65	65	75	95	95

11. Use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis to analyze multiple span joists if the length of any span is less than half the length of an adjacent span.
12. Use appropriate software or engineering analysis to analyze conditions outside of the scope of this table such as cantilevers and concentrated loads.
13. Provide lateral support at bearing points and continuous lateral support along the compression flange of each joist.
14. For double joists, double the table values and connect the joists per the detail on page 21.
15. For proper installation procedures, refer to the appropriate sections in this publication.

Allowable Roof Clear Spans 115% Snow

Please refer to notes on page 33.

			Slope of 4/12 or less			Slopes over 4/12 up to 8/12			Slope over 8/12 up to 12/12		
	Joist Depth	Joist Series	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.
25 LIVE/15 DEAD	9-1/2"	RFPI 20	20' - 0"	18' - 10"	17' - 5"	18' - 10"	17' - 8"	16' - 5"	17' - 5"	16' - 5"	15' - 2"
		RFPI 40S	21' - 1"	19' - 5"	17' - 4"	19' - 10"	18' - 8"	16' - 11"	18' - 5"	17' - 3"	16' - 0"
		RFPI 400	21' - 1"	19' - 10"	18' - 4"	19' - 10"	18' - 8"	17' - 3"	18' - 5"	17' - 3"	16' - 0"
		RFPI 40	21' - 10"	20' - 6"	19' - 0"	20' - 7"	19' - 4"	17' - 11"	19' - 1"	17' - 11"	16' - 7"
		RFPI 60S	22' - 5"	21' - 0"	19' - 5"	21' - 1"	19' - 10"	18' - 4"	19' - 6"	18' - 4"	17' - 0"
		RFPI 70	23' - 5"	22' - 0"	20' - 4"	22' - 1"	20' - 9"	19' - 2"	20' - 6"	19' - 3"	17' - 10"
		RFPI 90	26' - 9"	25' - 2"	23' - 3"	25' - 3"	23' - 8"	21' - 11"	23' - 5"	22' - 0"	20' - 4"
	11-7/8"	RFPI 20	24' - 0"	22' - 5"	20' - 0"	22' - 7"	21' - 3"	19' - 6"	20' - 11"	19' - 8"	18' - 3"
		RFPI 40S	24' - 3"	22' - 2"	19' - 9"	23' - 7"	21' - 7"	19' - 3"	22' - 0"	20' - 8"	18' - 7"
		RFPI 400	25' - 3"	23' - 9"	21' - 10"	23' - 9"	22' - 4"	20' - 8"	22' - 0"	20' - 8"	19' - 2"
		RFPI 40	26' - 2"	24' - 7"	22' - 9"	24' - 7"	23' - 1"	21' - 5"	22' - 10"	21' - 5"	19' - 10"
		RFPI 60S	26' - 10"	25' - 2"	23' - 3"	25' - 3"	23' - 9"	22' - 0"	23' - 5"	22' - 0"	20' - 4"
		RFPI 70	28' - 1"	26' - 4"	24' - 5"	26' - 5"	24' - 10"	23' - 0"	24' - 6"	23' - 0"	21' - 4"
		RFPI 80S	29' - 10"	28' - 0"	25' - 11"	28' - 1"	26' - 5"	24' - 5"	26' - 1"	24' - 6"	22' - 8"
		RFPI 90	32' - 0"	30' - 1"	27' - 10"	30' - 2"	28' - 4"	26' - 2"	27' - 11"	26' - 3"	24' - 4"
	14"	RFPI 20	26' - 10"	24' - 6"	21' - 7"	25' - 10"	23' - 10"	20' - 6"	23' - 11"	22' - 6"	19' - 1"
		RFPI 40S	26' - 8"	24' - 4"	21' - 9"	25' - 11"	23' - 8"	21' - 2"	25' - 0"	22' - 10"	20' - 5"
		RFPI 400	28' - 9"	26' - 8"	23' - 10"	27' - 1"	25' - 5"	23' - 3"	25' - 1"	23' - 7"	21' - 10"
		RFPI 40	29' - 9"	28' - 0"	25' - 4"	28' - 1"	26' - 4"	24' - 5"	26' - 0"	24' - 5"	22' - 7"
		RFPI 60S	30' - 7"	28' - 7"	25' - 7"	28' - 10"	27' - 1"	24' - 11"	26' - 8"	25' - 1"	23' - 3"
		RFPI 70	32' - 0"	30' - 1"	27' - 10"	30' - 2"	28' - 4"	26' - 3"	27' - 11"	26' - 3"	24' - 4"
		RFPI 80S	33' - 11"	31' - 10"	29' - 6"	32' - 0"	30' - 0"	27' - 10"	29' - 8"	27' - 10"	25' - 9"
		RFPI 90	36' - 5"	34' - 2"	31' - 8"	34' - 4"	32' - 3"	29' - 10"	31' - 9"	29' - 10"	27' - 8"
	16"	RFPI 40S	28' - 9"	26' - 2"	23' - 5"	27' - 11"	25' - 6"	22' - 9"	27' - 0"	24' - 7"	22' - 0"
		RFPI 400	31' - 4"	28' - 7"	25' - 2"	30' - 1"	27' - 10"	23' - 10"	27' - 11"	26' - 2"	22' - 2"
		RFPI 40	33' - 1"	30' - 4"	27' - 1"	31' - 2"	29' - 3"	26' - 4"	28' - 10"	27' - 1"	24' - 8"
		RFPI 60S	33' - 9"	30' - 10"	27' - 6"	32' - 0"	30' - 0"	26' - 6"	29' - 8"	27' - 10"	24' - 8"
		RFPI 70	35' - 7"	33' - 5"	28' - 0"	33' - 6"	31' - 6"	26' - 6"	31' - 0"	29' - 2"	24' - 8"
		RFPI 80S	37' - 8"	35' - 4"	32' - 9"	35' - 6"	33' - 4"	30' - 10"	32' - 10"	30' - 11"	28' - 7"
		RFPI 90	40' - 5"	37' - 11"	35' - 1"	38' - 1"	35' - 9"	33' - 1"	35' - 3"	33' - 1"	30' - 8"

			Slope of 4/12 or less			Slopes over 4/12 up to 8/12			Slope over 8/12 up to 12/12		
	Joist Depth	Joist Series	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.
30 LIVE/15 DEAD	9-1/2"	RFPI 20	19' - 3"	18' - 1"	16' - 7"	18' - 2"	17' - 1"	15' - 9"	16' - 10"	15' - 10"	14' - 8"
		RFPI 40S	20' - 1"	18' - 4"	16' - 4"	19' - 1"	17' - 11"	16' - 0"	17' - 9"	16' - 8"	15' - 5"
		RFPI 400	20' - 3"	19' - 0"	17' - 7"	19' - 1"	17' - 11"	16' - 7"	17' - 9"	16' - 8"	15' - 5"
		RFPI 40	21' - 0"	19' - 9"	18' - 3"	19' - 10"	18' - 7"	17' - 3"	18' - 5"	17' - 3"	16' - 0"
		RFPI 60S	21' - 6"	20' - 2"	18' - 8"	20' - 4"	19' - 1"	17' - 8"	18' - 10"	17' - 8"	16' - 5"
		RFPI 70	22' - 6"	21' - 2"	19' - 7"	21' - 3"	20' - 0"	18' - 6"	19' - 9"	18' - 7"	17' - 2"
		RFPI 90	25' - 9"	24' - 2"	22' - 4"	24' - 4"	22' - 10"	21' - 1"	22' - 7"	21' - 2"	19' - 7"
	11-7/8"	RFPI 20	23' - 1"	21' - 2"	18' - 11"	21' - 9"	20' - 5"	18' - 4"	20' - 3"	19' - 0"	17' - 2"
		RFPI 40S	22' - 11"	20' - 11"	18' - 8"	22' - 4"	20' - 5"	18' - 2"	21' - 3"	19' - 9"	17' - 8"
		RFPI 400	24' - 3"	22' - 9"	20' - 7"	22' - 11"	21' - 6"	19' - 11"	21' - 3"	20' - 0"	18' - 6"
		RFPI 40	25' - 1"	23' - 7"	21' - 10"	23' - 8"	22' - 3"	20' - 7"	22' - 0"	20' - 8"	19' - 2"
		RFPI 60S	25' - 9"	24' - 2"	22' - 0"	24' - 4"	22' - 10"	21' - 2"	22' - 7"	21' - 3"	19' - 8"
		RFPI 70	27' - 0"	25' - 4"	23' - 5"	25' - 6"	23' - 11"	22' - 2"	23' - 8"	22' - 3"	20' - 7"
		RFPI 80S	28' - 8"	26' - 11"	24' - 11"	27' - 1"	25' - 5"	23' - 6"	25' - 2"	23' - 7"	21' - 10"
		RFPI 90	30' - 9"	28' - 10"	26' - 8"	29' - 0"	27' - 3"	25' - 3"	27' - 0"	25' - 4"	23' - 5"
	14"	RFPI 20	25' - 4"	23' - 1"	19' - 3"	24' - 9"	22' - 7"	18' - 4"	23' - 1"	21' - 6"	17' - 2"
		RFPI 40S	25' - 2"	22' - 11"	20' - 6"	24' - 7"	22' - 5"	20' - 0"	23' - 9"	21' - 8"	19' - 4"
		RFPI 400	27' - 7"	25' - 2"	22' - 4"	26' - 1"	24' - 6"	21' - 4"	24' - 3"	22' - 9"	20' - 0"
		RFPI 40	28' - 8"	26' - 9"	23' - 11"	27' - 0"	25' - 5"	23' - 4"	25' - 1"	23' - 7"	21' - 10"
		RFPI 60S	29' - 5"	27' - 0"	24' - 1"	27' - 9"	26' - 1"	23' - 7"	25' - 9"	24' - 2"	22' - 3"
		RFPI 70	30' - 9"	28' - 11"	24' - 11"	29' - 1"	27' - 3"	23' - 9"	27' - 0"	25' - 4"	22' - 3"
		RFPI 80S	32' - 7"	30' - 7"	28' - 4"	30' - 10"	28' - 11"	26' - 9"	28' - 7"	26' - 10"	24' - 11"
		RFPI 90	35' - 0"	32' - 10"	30' - 5"	33' - 0"	31' - 0"	28' - 8"	30' - 8"	28' - 10"	26' - 8"
	16"	RFPI 40S	27' - 1"	24' - 8"	22' - 1"	26' - 5"	24' - 2"	21' - 7"	25' - 7"	23' - 4"	20' - 10"
		RFPI 400	29' - 6"	26' - 11"	22' - 4"	28' - 10"	26' - 4"	21' - 4"	26' - 11"	25' - 1"	20' - 0"
		RFPI 40	31' - 4"	28' - 7"	24' - 11"	30' - 0"	27' - 11"	23' - 9"	27' - 10"	26' - 2"	22' - 3"
		RFPI 60S	31' - 10"	29' - 1"	24' - 11"	30' - 10"	28' - 5"	23' - 9"	28' - 7"	26' - 11"	22' - 3"
		RFPI 70	34' - 2"	31' - 2"	24' - 11"	32' - 3"	29' - 9"	23' - 9"	29' - 11"	27' - 10"	22' - 3"
		RFPI 80S	36' - 2"	34' - 0"	30' - 1"	34' - 2"	32' - 1"	28' - 8"	31' - 9"	29' - 10"	26' - 11"
		RFPI 90	38' - 10"	36' - 5"	33' - 6"	36' - 8"	34' - 5"	31' - 10"	34' - 0"	32' - 0"	29' - 7"

40 LIVE/15 DEAD

		Slope of 4/12 or less			Slopes over 4/12 up to 8/12			Slope over 8/12 up to 12/12		
Joist Depth	Joist Series	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 20	18' - 0"	16' - 10"	14' - 5"	17' - 0"	16' - 0"	13' - 10"	15' - 10"	14' - 11"	13' - 1"
	RFPI 40S	18' - 2"	16' - 7"	14' - 10"	17' - 10"	16' - 3"	14' - 6"	16' - 8"	15' - 8"	14' - 1"
	RFPI 400	18' - 11"	17' - 9"	16' - 5"	17' - 11"	16' - 10"	15' - 7"	16' - 8"	15' - 8"	14' - 6"
	RFPI 40	19' - 7"	18' - 5"	17' - 0"	18' - 7"	17' - 5"	16' - 1"	17' - 4"	16' - 3"	15' - 0"
	RFPI 60S	20' - 1"	18' - 10"	17' - 5"	19' - 0"	17' - 10"	16' - 6"	17' - 9"	16' - 8"	15' - 5"
	RFPI 70	21' - 0"	19' - 9"	18' - 3"	19' - 11"	18' - 8"	17' - 4"	18' - 7"	17' - 5"	16' - 2"
	RFPI 90	24' - 0"	22' - 6"	20' - 10"	22' - 9"	21' - 4"	19' - 9"	21' - 3"	19' - 11"	18' - 5"
11-7/8”	RFPI 20	21' - 0"	19' - 2"	15' - 9"	20' - 5"	18' - 9"	15' - 1"	19' - 0"	17' - 10"	14' - 4"
	RFPI 40S	20' - 9"	18' - 11"	16' - 10"	20' - 4"	18' - 6"	16' - 7"	19' - 9"	18' - 0"	16' - 1"
	RFPI 400	22' - 8"	20' - 10"	18' - 4"	21' - 6"	20' - 2"	17' - 7"	20' - 0"	18' - 9"	16' - 8"
	RFPI 40	23' - 6"	22' - 0"	19' - 9"	22' - 3"	20' - 10"	19' - 4"	20' - 8"	19' - 5"	18' - 0"
	RFPI 60S	24' - 1"	22' - 3"	19' - 11"	22' - 10"	21' - 5"	19' - 6"	21' - 3"	20' - 0"	18' - 6"
	RFPI 70	25' - 2"	23' - 8"	20' - 5"	23' - 10"	22' - 5"	19' - 7"	22' - 3"	20' - 11"	18' - 7"
	RFPI 80S	26' - 9"	25' - 2"	22' - 11"	25' - 4"	23' - 10"	22' - 0"	23' - 8"	22' - 3"	20' - 7"
	RFPI 90	28' - 8"	26' - 11"	24' - 11"	27' - 2"	25' - 6"	23' - 7"	25' - 4"	23' - 10"	22' - 0"
14”	RFPI 20	22' - 11"	19' - 9"	15' - 9"	22' - 6"	18' - 11"	15' - 1"	21' - 7"	17' - 11"	14' - 4"
	RFPI 40S	22' - 9"	20' - 9"	18' - 6"	22' - 4"	20' - 4"	18' - 2"	21' - 9"	19' - 10"	17' - 8"
	RFPI 400	25' - 0"	22' - 10"	18' - 4"	24' - 5"	22' - 1"	17' - 7"	22' - 9"	20' - 11"	16' - 8"
	RFPI 40	26' - 6"	24' - 2"	20' - 5"	25' - 4"	23' - 9"	19' - 7"	23' - 7"	22' - 2"	18' - 7"
	RFPI 60S	26' - 9"	24' - 5"	20' - 5"	26' - 0"	23' - 11"	19' - 7"	24' - 3"	22' - 9"	18' - 7"
	RFPI 70	28' - 9"	25' - 6"	20' - 5"	27' - 3"	24' - 7"	19' - 7"	25' - 5"	23' - 3"	18' - 7"
	RFPI 80S	30' - 6"	28' - 7"	24' - 8"	28' - 10"	27' - 1"	23' - 9"	26' - 11"	25' - 3"	22' - 6"
	RFPI 90	32' - 8"	30' - 8"	27' - 5"	30' - 11"	29' - 1"	26' - 5"	28' - 10"	27' - 1"	25' - 0"
16”	RFPI 40S	24' - 6"	22' - 4"	20' - 0"	24' - 1"	21' - 11"	19' - 7"	23' - 5"	21' - 4"	18' - 7"
	RFPI 400	26' - 9"	23' - 0"	18' - 4"	26' - 3"	22' - 1"	17' - 7"	25' - 2"	20' - 11"	16' - 8"
	RFPI 40	28' - 5"	25' - 6"	20' - 5"	27' - 10"	24' - 7"	19' - 7"	26' - 2"	23' - 3"	18' - 7"
	RFPI 60S	28' - 10"	25' - 6"	20' - 5"	28' - 3"	24' - 7"	19' - 7"	26' - 11"	23' - 3"	18' - 7"
	RFPI 70	30' - 8"	25' - 6"	20' - 5"	29' - 6"	24' - 7"	19' - 7"	28' - 0"	23' - 3"	18' - 7"
	RFPI 80S	33' - 10"	30' - 11"	24' - 8"	32' - 0"	29' - 8"	23' - 9"	29' - 10"	28' - 0"	22' - 6"
	RFPI 90	36' - 3"	34' - 0"	27' - 5"	34' - 4"	32' - 3"	26' - 5"	32' - 0"	30' - 1"	25' - 0"

50 LIVE/15 DEAD

		Slope of 4/12 or less			Slopes over 4/12 up to 8/12			Slope over 8/12 up to 12/12		
Joist Depth	Joist Series	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 20	16' - 11"	15' - 3"	12' - 2"	16' - 1"	14' - 9"	11' - 9"	15' - 1"	14' - 1"	11' - 3"
	RFPI 40S	16' - 9"	15' - 3"	13' - 7"	16' - 5"	15' - 0"	13' - 5"	15' - 10"	14' - 8"	13' - 1"
	RFPI 400	17' - 9"	16' - 8"	14' - 10"	16' - 11"	15' - 11"	14' - 4"	15' - 10"	14' - 11"	13' - 8"
	RFPI 40	18' - 5"	17' - 3"	15' - 6"	17' - 7"	16' - 6"	15' - 0"	16' - 5"	15' - 5"	14' - 3"
	RFPI 60S	18' - 10"	17' - 8"	14' - 11"	18' - 0"	16' - 11"	14' - 3"	16' - 10"	15' - 10"	13' - 5"
	RFPI 70	19' - 9"	18' - 7"	16' - 1"	18' - 10"	17' - 8"	15' - 7"	17' - 8"	16' - 7"	14' - 10"
	RFPI 90	22' - 7"	21' - 2"	19' - 6"	21' - 6"	20' - 2"	18' - 8"	20' - 2"	18' - 11"	17' - 6"
11-7/8”	RFPI 20	19' - 4"	16' - 8"	13' - 4"	19' - 0"	16' - 2"	12' - 10"	18' - 1"	15' - 5"	12' - 3"
	RFPI 40S	19' - 1"	17' - 5"	15' - 6"	18' - 9"	17' - 1"	15' - 3"	18' - 4"	16' - 8"	14' - 11"
	RFPI 400	21' - 1"	19' - 2"	15' - 6"	20' - 4"	18' - 10"	15' - 0"	19' - 0"	17' - 10"	14' - 4"
	RFPI 40	22' - 1"	20' - 5"	17' - 3"	21' - 0"	19' - 9"	16' - 8"	19' - 8"	18' - 5"	15' - 11"
	RFPI 60S	22' - 5"	20' - 6"	17' - 3"	21' - 7"	20' - 2"	16' - 8"	20' - 2"	18' - 11"	15' - 11"
	RFPI 70	23' - 8"	21' - 7"	17' - 3"	22' - 7"	20' - 11"	16' - 8"	21' - 1"	19' - 10"	15' - 11"
	RFPI 80S	25' - 2"	23' - 7"	19' - 5"	24' - 0"	22' - 6"	18' - 9"	22' - 5"	21' - 1"	17' - 11"
	RFPI 90	27' - 0"	25' - 4"	23' - 3"	25' - 9"	24' - 2"	22' - 4"	24' - 1"	22' - 7"	20' - 11"
14”	RFPI 20	20' - 1"	16' - 8"	13' - 4"	19' - 5"	16' - 2"	12' - 10"	18' - 6"	15' - 5"	12' - 3"
	RFPI 40S	20' - 11"	19' - 1"	17' - 1"	20' - 7"	18' - 9"	16' - 8"	20' - 1"	18' - 4"	15' - 11"
	RFPI 400	23' - 0"	19' - 5"	15' - 6"	22' - 7"	18' - 10"	15' - 0"	21' - 7"	17' - 11"	14' - 4"
	RFPI 40	24' - 5"	21' - 7"	17' - 3"	24' - 0"	20' - 11"	16' - 8"	22' - 5"	20' - 0"	15' - 11"
	RFPI 60S	24' - 8"	21' - 7"	17' - 3"	24' - 3"	20' - 11"	16' - 8"	23' - 0"	20' - 0"	15' - 11"
	RFPI 70	26' - 0"	21' - 7"	17' - 3"	25' - 2"	20' - 11"	16' - 8"	24' - 0"	20' - 0"	15' - 11"
	RFPI 80S	28' - 8"	26' - 2"	20' - 11"	27' - 4"	25' - 4"	20' - 2"	25' - 6"	24' - 0"	19' - 3"
	RFPI 90	30' - 8"	28' - 10"	23' - 3"	29' - 3"	27' - 6"	22' - 6"	27' - 5"	25' - 9"	21' - 5"
16”	RFPI 40S	22' - 7"	20' - 7"	17' - 3"	22' - 2"	20' - 3"	16' - 8"	21' - 8"	19' - 9"	15' - 11"
	RFPI 400	23' - 4"	19' - 5"	15' - 6"	22' - 7"	18' - 10"	15' - 0"	21' - 7"	17' - 11"	14' - 4"
	RFPI 40	26' - 0"	21' - 7"	17' - 3"	25' - 2"	20' - 11"	16' - 8"	24' - 0"	20' - 0"	15' - 11"
	RFPI 60S	26' - 0"	21' - 7"	17' - 3"	25' - 2"	20' - 11"	16' - 8"	24' - 0"	20' - 0"	15' - 11"
	RFPI 70	26' - 0"	21' - 7"	17' - 3"	25' - 2"	20' - 11"	16' - 8"	24' - 0"	20' - 0"	15' - 11"
	RFPI 80S	31' - 5"	26' - 2"	20' - 11"	30' - 4"	25' - 4"	20' - 2"	28' - 4"	24' - 2"	19' - 3"
	RFPI 90	34' - 1"	29' - 1"	23' - 3"	32' - 6"	28' - 2"	22' - 6"	30' - 5"	26' - 10"	21' - 5"

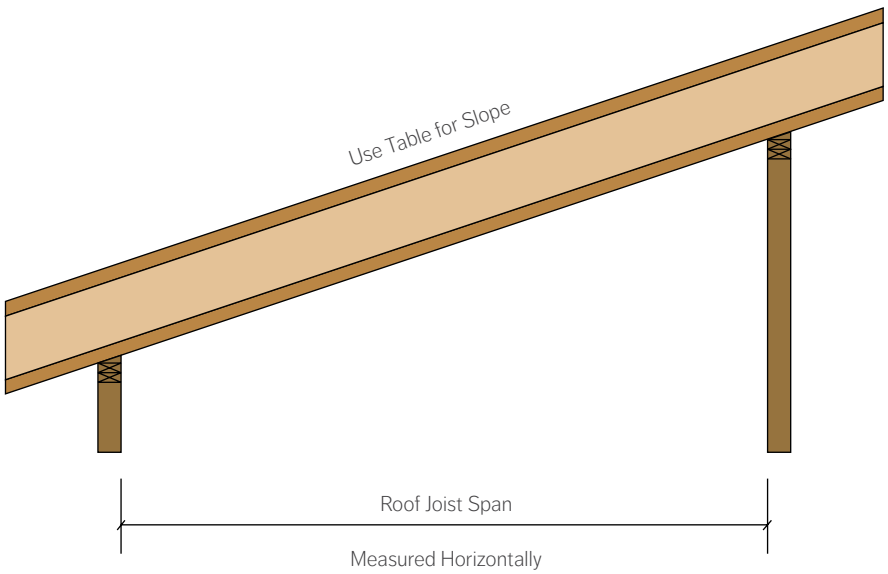
Allowable Roof Clear Spans 125% Non-Snow

			Slope of 4/12 or less			Slopes over 4/12 up to 8/12			Slope over 8/12 up to 12/12		
	Joist Depth	Joist Series	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.
20 LIVE/10 DEAD	9-1/2”	RFPI 20	22' - 1"	20' - 9"	19' - 3"	20' - 10"	19' - 7"	18' - 2"	19' - 4"	18' - 2"	16' - 10"
		RFPI 40S	23' - 4"	21' - 11"	20' - 3"	22' - 0"	20' - 8"	19' - 1"	20' - 5"	19' - 2"	17' - 9"
		RFPI 400	23' - 4"	21' - 11"	20' - 3"	22' - 0"	20' - 8"	19' - 1"	20' - 5"	19' - 2"	17' - 9"
		RFPI 40	24' - 2"	22' - 8"	21' - 0"	22' - 9"	21' - 5"	19' - 10"	21' - 2"	19' - 10"	18' - 5"
		RFPI 60S	24' - 9"	23' - 3"	21' - 6"	23' - 4"	21' - 11"	20' - 4"	21' - 8"	20' - 4"	18' - 10"
		RFPI 70	25' - 11"	24' - 4"	22' - 6"	24' - 5"	23' - 0"	21' - 3"	22' - 8"	21' - 4"	19' - 9"
		RFPI 90	29' - 7"	27' - 10"	25' - 9"	27' - 11"	26' - 3"	24' - 4"	25' - 11"	24' - 4"	22' - 7"
	11-7/8”	RFPI 20	26' - 6"	24' - 11"	23' - 1"	25' - 0"	23' - 6"	21' - 9"	23' - 3"	21' - 10"	20' - 3"
		RFPI 40S	27' - 11"	26' - 3"	23' - 10"	26' - 4"	24' - 9"	22' - 11"	24' - 5"	22' - 11"	21' - 3"
		RFPI 400	27' - 11"	26' - 3"	24' - 3"	26' - 4"	24' - 9"	22' - 11"	24' - 5"	22' - 11"	21' - 3"
		RFPI 40	28' - 10"	27' - 1"	25' - 1"	27' - 3"	25' - 7"	23' - 8"	25' - 3"	23' - 9"	22' - 0"
		RFPI 60S	29' - 8"	27' - 10"	25' - 9"	28' - 0"	26' - 3"	24' - 4"	25' - 11"	24' - 5"	22' - 7"
		RFPI 70	31' - 0"	29' - 2"	27' - 0"	29' - 3"	27' - 6"	25' - 6"	27' - 2"	25' - 6"	23' - 8"
		RFPI 80S	33' - 0"	31' - 0"	28' - 8"	31' - 1"	29' - 3"	27' - 1"	28' - 11"	27' - 2"	25' - 2"
		RFPI 90	35' - 4"	33' - 3"	30' - 9"	33' - 5"	31' - 4"	29' - 0"	31' - 0"	29' - 1"	27' - 0"
	14”	RFPI 20	30' - 3"	28' - 5"	26' - 4"	28' - 7"	26' - 10"	24' - 10"	26' - 6"	24' - 11"	23' - 1"
		RFPI 40S	31' - 8"	29' - 4"	26' - 3"	29' - 11"	28' - 1"	25' - 7"	27' - 9"	26' - 1"	24' - 2"
		RFPI 400	31' - 9"	29' - 10"	27' - 8"	30' - 0"	28' - 2"	26' - 1"	27' - 10"	26' - 2"	24' - 3"
		RFPI 40	32' - 11"	30' - 11"	28' - 8"	31' - 0"	29' - 2"	27' - 0"	28' - 10"	27' - 1"	25' - 1"
		RFPI 60S	33' - 9"	31' - 9"	29' - 5"	31' - 10"	29' - 11"	27' - 9"	29' - 7"	27' - 9"	25' - 9"
		RFPI 70	35' - 4"	33' - 3"	30' - 9"	33' - 4"	31' - 4"	29' - 1"	31' - 0"	29' - 1"	27' - 0"
		RFPI 80S	37' - 6"	35' - 3"	32' - 7"	35' - 5"	33' - 3"	30' - 10"	32' - 10"	30' - 10"	28' - 7"
		RFPI 90	40' - 3"	37' - 9"	35' - 0"	38' - 0"	35' - 8"	33' - 0"	35' - 3"	33' - 2"	30' - 8"
	16”	RFPI 40S	34' - 8"	31' - 7"	28' - 3"	33' - 2"	30' - 10"	27' - 7"	30' - 9"	28' - 11"	26' - 8"
		RFPI 400	35' - 4"	33' - 2"	30' - 9"	33' - 4"	31' - 4"	29' - 0"	30' - 11"	29' - 1"	26' - 11"
		RFPI 40	36' - 6"	34' - 4"	31' - 9"	34' - 5"	32' - 5"	30' - 0"	32' - 0"	30' - 1"	27' - 10"
		RFPI 60S	37' - 6"	35' - 3"	32' - 8"	35' - 5"	33' - 3"	30' - 10"	32' - 10"	30' - 10"	28' - 7"
		RFPI 70	39' - 3"	36' - 11"	34' - 2"	37' - 1"	34' - 10"	32' - 3"	34' - 5"	32' - 4"	29' - 11"
		RFPI 80S	41' - 7"	39' - 1"	36' - 2"	39' - 3"	36' - 11"	34' - 2"	36' - 5"	34' - 3"	31' - 9"
		RFPI 90	44' - 7"	41' - 11"	38' - 10"	42' - 1"	39' - 7"	36' - 8"	39' - 1"	36' - 9"	34' - 0"

			Slope of 4/12 or less			Slopes over 4/12 up to 8/12			Slope over 8/12 up to 12/12		
	Joist Depth	Joist Series	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.
20 LIVE/15 DEAD	9-1/2”	RFPI 20	20' - 11"	19' - 8"	18' - 2"	19' - 8"	18' - 6"	17' - 1"	18' - 2"	17' - 1"	15' - 10"
		RFPI 40S	22' - 1"	20' - 9"	19' - 2"	20' - 9"	19' - 6"	18' - 0"	19' - 2"	18' - 0"	16' - 8"
		RFPI 400	22' - 1"	20' - 9"	19' - 2"	20' - 9"	19' - 6"	18' - 0"	19' - 2"	18' - 0"	16' - 8"
		RFPI 40	22' - 10"	21' - 6"	19' - 10"	21' - 6"	20' - 2"	18' - 8"	19' - 10"	18' - 7"	17' - 3"
		RFPI 60S	23' - 5"	22' - 0"	20' - 4"	22' - 0"	20' - 8"	19' - 1"	20' - 4"	19' - 1"	17' - 8"
		RFPI 70	24' - 6"	23' - 0"	21' - 4"	23' - 1"	21' - 8"	20' - 0"	21' - 3"	20' - 0"	18' - 6"
		RFPI 90	28' - 0"	26' - 4"	24' - 4"	26' - 4"	24' - 9"	22' - 11"	24' - 4"	22' - 10"	21' - 2"
	11-7/8”	RFPI 20	25' - 1"	23' - 7"	21' - 10"	23' - 7"	22' - 2"	20' - 6"	21' - 9"	20' - 5"	18' - 11"
		RFPI 40S	26' - 5"	24' - 8"	22' - 0"	24' - 10"	23' - 4"	21' - 4"	22' - 11"	21' - 6"	19' - 11"
		RFPI 400	26' - 5"	24' - 10"	23' - 0"	24' - 10"	23' - 4"	21' - 7"	22' - 11"	21' - 6"	19' - 11"
		RFPI 40	27' - 4"	25' - 8"	23' - 9"	25' - 8"	24' - 2"	22' - 4"	23' - 9"	22' - 3"	20' - 8"
		RFPI 60S	28' - 1"	26' - 4"	24' - 5"	26' - 4"	24' - 9"	22' - 11"	24' - 4"	22' - 10"	21' - 2"
		RFPI 70	29' - 5"	27' - 7"	25' - 6"	27' - 7"	25' - 11"	24' - 0"	25' - 6"	23' - 11"	22' - 2"
		RFPI 80S	31' - 3"	29' - 4"	27' - 2"	29' - 4"	27' - 7"	25' - 6"	27' - 1"	25' - 5"	23' - 7"
		RFPI 90	33' - 6"	31' - 5"	29' - 1"	31' - 6"	29' - 7"	27' - 4"	29' - 1"	27' - 4"	25' - 3"
	14”	RFPI 20	28' - 8"	26' - 11"	24' - 4"	26' - 11"	25' - 4"	23' - 5"	24' - 10"	23' - 4"	21' - 8"
		RFPI 40S	29' - 8"	27' - 1"	24' - 2"	28' - 2"	26' - 3"	23' - 6"	26' - 0"	24' - 5"	22' - 7"
		RFPI 400	30' - 1"	28' - 3"	26' - 2"	28' - 3"	26' - 7"	24' - 7"	26' - 1"	24' - 6"	22' - 9"
		RFPI 40	31' - 2"	29' - 3"	27' - 1"	29' - 3"	27' - 6"	25' - 6"	27' - 0"	25' - 5"	23' - 6"
		RFPI 60S	32' - 0"	30' - 0"	27' - 10"	30' - 0"	28' - 3"	26' - 2"	27' - 9"	26' - 1"	24' - 2"
		RFPI 70	33' - 6"	31' - 5"	29' - 1"	31' - 6"	29' - 7"	27' - 5"	29' - 1"	27' - 4"	25' - 3"
		RFPI 80S	35' - 6"	33' - 4"	30' - 10"	33' - 4"	31' - 4"	29' - 0"	30' - 10"	28' - 11"	26' - 10"
		RFPI 90	38' - 1"	35' - 9"	33' - 1"	35' - 10"	33' - 7"	31' - 2"	33' - 1"	31' - 1"	28' - 9"
	16”	RFPI 40S	32' - 0"	29' - 2"	26' - 1"	31' - 0"	28' - 4"	25' - 4"	28' - 10"	27' - 2"	24' - 3"
		RFPI 400	33' - 5"	31' - 5"	28' - 5"	31' - 5"	29' - 6"	27' - 4"	29' - 0"	27' - 3"	25' - 3"
		RFPI 40	34' - 7"	32' - 6"	30' - 1"	32' - 6"	30' - 6"	28' - 3"	30' - 0"	28' - 2"	26' - 1"
		RFPI 60S	35' - 6"	33' - 4"	30' - 8"	33' - 4"	31' - 4"	29' - 0"	30' - 10"	28' - 11"	26' - 10"
		RFPI 70	37' - 2"	34' - 11"	32' - 4"	34' - 11"	32' - 10"	30' - 5"	32' - 3"	30' - 4"	28' - 1"
		RFPI 80S	39' - 5"	37' - 0"	34' - 3"	37' - 0"	34' - 9"	32' - 2"	34' - 2"	32' - 1"	29' - 9"
		RFPI 90	42' - 3"	39' - 8"	36' - 9"	39' - 8"	37' - 3"	34' - 6"	36' - 8"	34' - 5"	31' - 11"

20 LIVE/20 DEAD

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 20	20' - 0"	18' - 9"	17' - 4"	18' - 8"	17' - 7"	16' - 3"	17' - 2"	16' - 2"	14' - 11"
	RFPI 40S	21' - 0"	19' - 9"	18' - 0"	19' - 8"	18' - 6"	17' - 2"	18' - 1"	17' - 0"	15' - 9"
	RFPI 400	21' - 0"	19' - 9"	18' - 3"	19' - 8"	18' - 6"	17' - 2"	18' - 1"	17' - 0"	15' - 9"
	RFPI 40	21' - 10"	20' - 6"	18' - 11"	20' - 5"	19' - 2"	17' - 9"	18' - 9"	17' - 8"	16' - 4"
	RFPI 60S	22' - 4"	21' - 0"	19' - 5"	20' - 11"	19' - 8"	18' - 2"	19' - 3"	18' - 1"	16' - 9"
	RFPI 70	23' - 5"	22' - 0"	20' - 4"	21' - 11"	20' - 7"	19' - 1"	20' - 2"	18' - 11"	17' - 6"
	RFPI 90	26' - 9"	25' - 1"	23' - 2"	25' - 0"	23' - 6"	21' - 9"	23' - 0"	21' - 8"	20' - 0"
11-7/8"	RFPI 20	23' - 11"	22' - 6"	20' - 10"	22' - 5"	21' - 1"	19' - 6"	20' - 7"	19' - 4"	17' - 11"
	RFPI 40S	25' - 2"	23' - 0"	20' - 7"	23' - 7"	22' - 2"	19' - 10"	21' - 8"	20' - 5"	18' - 11"
	RFPI 400	25' - 2"	23' - 8"	21' - 11"	23' - 7"	22' - 2"	20' - 6"	21' - 8"	20' - 5"	18' - 11"
	RFPI 40	26' - 1"	24' - 6"	22' - 8"	24' - 5"	22' - 11"	21' - 3"	22' - 6"	21' - 1"	19' - 6"
	RFPI 60S	26' - 9"	25' - 2"	23' - 3"	25' - 1"	23' - 7"	21' - 10"	23' - 1"	21' - 8"	20' - 1"
	RFPI 70	28' - 0"	26' - 4"	24' - 4"	26' - 3"	24' - 8"	22' - 10"	24' - 2"	22' - 8"	21' - 0"
	RFPI 80S	29' - 9"	27' - 11"	25' - 10"	27' - 11"	26' - 2"	24' - 3"	25' - 8"	24' - 1"	22' - 4"
	RFPI 90	31' - 11"	30' - 0"	27' - 9"	29' - 11"	28' - 1"	26' - 0"	27' - 6"	25' - 10"	23' - 11"
14"	RFPI 20	27' - 4"	25' - 5"	22' - 9"	25' - 7"	24' - 1"	21' - 9"	23' - 7"	22' - 2"	19' - 10"
	RFPI 40S	27' - 8"	25' - 3"	22' - 7"	26' - 9"	24' - 5"	21' - 10"	24' - 8"	23' - 2"	20' - 10"
	RFPI 400	28' - 8"	27' - 0"	24' - 10"	26' - 11"	25' - 3"	23' - 5"	24' - 9"	23' - 3"	21' - 6"
	RFPI 40	29' - 9"	27' - 11"	25' - 10"	27' - 10"	26' - 2"	24' - 3"	25' - 7"	24' - 1"	22' - 3"
	RFPI 60S	30' - 6"	28' - 8"	26' - 6"	28' - 7"	26' - 10"	24' - 10"	26' - 3"	24' - 8"	22' - 10"
	RFPI 70	31' - 11"	30' - 0"	27' - 9"	29' - 11"	28' - 1"	26' - 0"	27' - 6"	25' - 10"	23' - 11"
	RFPI 80S	33' - 10"	31' - 10"	29' - 5"	31' - 9"	29' - 10"	27' - 7"	29' - 2"	27' - 5"	25' - 5"
	RFPI 90	36' - 4"	34' - 1"	31' - 7"	34' - 0"	32' - 0"	29' - 7"	31' - 4"	29' - 5"	27' - 3"
16"	RFPI 40S	29' - 10"	27' - 3"	24' - 4"	28' - 10"	26' - 3"	23' - 6"	27' - 4"	25' - 1"	22' - 5"
	RFPI 400	31' - 11"	29' - 8"	26' - 6"	29' - 10"	28' - 1"	25' - 4"	27' - 6"	25' - 10"	23' - 1"
	RFPI 40	33' - 0"	31' - 0"	28' - 2"	30' - 11"	29' - 0"	26' - 11"	28' - 5"	26' - 8"	24' - 9"
	RFPI 60S	33' - 11"	31' - 10"	28' - 7"	31' - 9"	29' - 10"	27' - 7"	29' - 2"	27' - 5"	25' - 5"
	RFPI 70	35' - 6"	33' - 4"	30' - 2"	33' - 3"	31' - 3"	28' - 2"	30' - 7"	28' - 9"	25' - 8"
	RFPI 80S	37' - 7"	35' - 3"	32' - 8"	35' - 2"	33' - 1"	30' - 7"	32' - 5"	30' - 5"	28' - 2"
	RFPI 90	40' - 4"	37' - 10"	35' - 0"	37' - 9"	35' - 5"	32' - 10"	34' - 9"	32' - 8"	30' - 3"



Notes:

1. Roofs must be sloped at least 1/4" in 12" to assure drainage.
2. Deflection under live load is limited to L/240. Deflection under total load is limited to L/180. Verify that the deflection criteria conform to local building code requirements.
3. 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 (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis to analyze multiple span joists if the length of any span is less than half the length of an adjacent span.
4. Minimum end bearing length is 1-3/4". Minimum intermediate bearing length is 3-1/2".
5. Table values are based on cantilever lengths up to 2' max. Use beam sizing software for longer cantilever lengths.
6. Web stiffeners are not required for spans shown.

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 17 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" & 1-1/4" 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 Rimboard products are available in all of the standard I-joist depths.

RigidRim Rimboard is 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 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 [1][2][3]

	Rimboard Thickness (in)	Horizontal Load (plf)	Vertical Load (plf) depth ≤ 16"	1/2" Lag Screw Load (lbs)[4]	Post Load (lbs)
RigidRim® OSB	1-1/8"	180 (8d box or common)	4,400	350	3,500
RigidRim® Plus OSB	1-1/8" or 1-1/4"	200 (8d box or common)	4,850	350	3,500
1.4E RigidRim® LVL	1-1/2"	215 (8d box or common)	4,900	400	3,500
1.4E RigidRim® LVL	1-3/4"	215 (8d box or common)	5,500	400	3,500

(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.

TABLE 2: RIGIDRIM RIMBOARD EDGEWISE DESIGN PROPERTIES

	Flexural Stress	Modulus of Elasticity	Horizontal Shear	Compression Perpendicular to Grain[2]
RigidRim® OSB & RigidRim® Plus OSB	600 psi [1]	0.55 x 10^6 psi	270 psi	550 psi
1.4E RigidRim® LVL	2,250 psi	1.4 x 10^6 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[1][2][3][4]

Rimboard Size	Span				
	24"	30"	36"	42"	48"
	Total Load (plf)/Minimum End Bearing (in)				
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

(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.

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

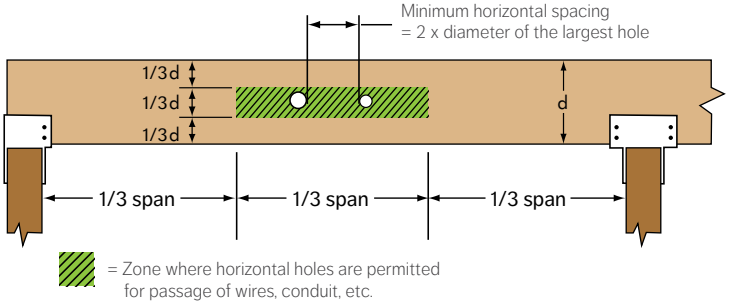
RigidLam LVL is coated with a wax-based moisture repellent sealer that is formulated specifically for LVL to provide temporary protection against moisture issues during normal storage and construction schedules. It is applied to all six sides of the LVL during the manufacturing process.

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.

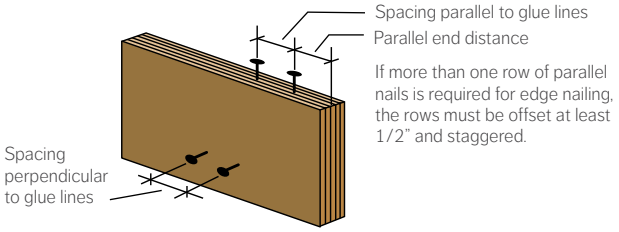
See additional notes on page 6

PERMISSIBLE HORIZONTAL ROUND HOLE LOCATION FOR RIGIDLAM® LVL BEAMS



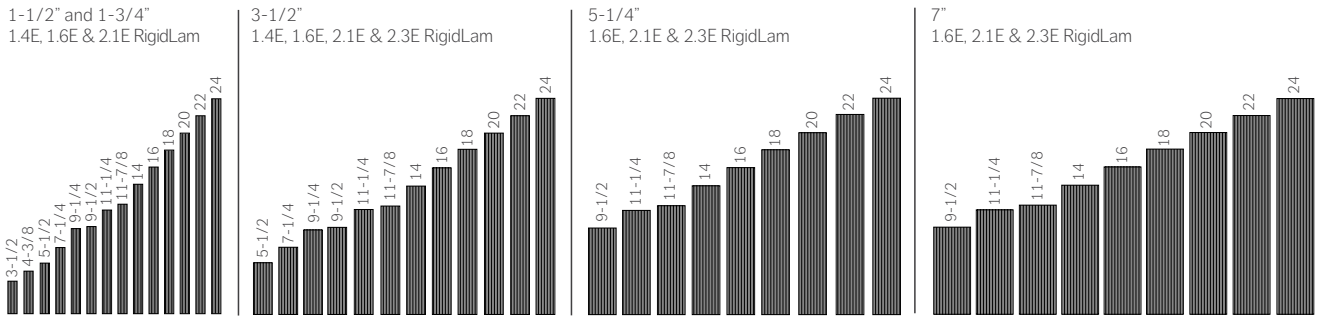
- For beam depths (d) of 4-3/8, 5-1/2, and 7-1/4 inches, the maximum hole diameter is 1, 1-1/8, and 1-1/2 inches, respectively.
- For deeper beams, the maximum hole diameter is 2 inches.
- Diagram applies for simple and multi-span applications with uniform loading.
- No more than 3 holes per span are 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*



*Not all grades and/or sizes available in all markets. Contact your Roseburg EWP representative for availability.
See pages 37-41 for additional stud and stair stringer information. Additional column information can be found online at www.roseburg.com.

RigidLam® LVL Allowable Design Stresses[1]

		1.4E LVL	1.6E LVL	2.1E LVL	2.3E LVL
True Modulus of Elasticity (MOE)[2] – Edgewise or Flatwise	E (psi) =	1,400,000	1,600,000	2,100,000	2,300,000
Apparent Modulus of Elasticity (MOE)[2] – Edgewise or Flatwise	E (psi) =	1,300,000	1,500,000	2,000,000	2,200,000
Bending – Edgewise[3,4]	F_b edge (psi) =	2,250	2,250	3,100	3,100
Bending – Flatwise[5]	F_b flat (psi) =	2,250	2,250	3,100	3,100
Horizontal Shear - Edgewise	F_v edge (psi) =	200	220	290	290
Horizontal Shear - Flatwise	F_v flat (psi) =	130	130	130	130
Compression Perp. To Grain[2] - Edgewise	$F_{c\ perp}$ edge (psi) =	560	575	750	750
Compression Perp. To Grain[2] - Flatwise	$F_{c\ perp}$ flat (psi) =	650	650	650	650
Compression Parallel to Grain	$F_{c\ para}$ (psi) =	1,950	1,950	3,000	3,000
Tension Parallel to Grain[6]	F_t (psi) =	1,500	1,500	2,100	2,100
MOE for stability calculations[2]	E_{min} (psi) =	704,639	805,301	1,056,958	1,157,620

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

	1.4E Douglas-fir RigidLam LVL				2.1E Douglas-fir RigidLam LVL				2.3E Douglas-fir RigidLam LVL				2.1E Southern Pine RigidLam LVL			
Depth (in)	Max. Vert. Shear (lbs)	Max. Moment (ft-lbs)	EI x10^6 (lbs-in^2)	Approx. Weight (lbs/ft)	Max. Vert. Shear (lbs)	Max. Moment (ft-lbs)	EI x10^6 (lbs-in^2)	Approx. Weight (lbs/ft)	Max. Vert. Shear (lbs)	Max. Moment (ft-lbs)	EI x10^6 (lbs-in^2)	Approx. Weight (lbs/ft)	Max. Vert. Shear (lbs)	Max. Moment (ft-lbs)	EI x10^6 (lbs-in^2)	Approx. Weight (lbs/ft)
3-1/2	817	781	9	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	1,021	1,187	17	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	1,225	1,671	30	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	1,283	1,824	34	2.41	1,861	2,513	51	2.54	1,861	2,513	56	2.54	1,861	2,664	51	2.81
7	1,633	2,866	70	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	1,692	3,061	78	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	2,158	4,834	162	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	2,217	5,082	175	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	2,625	6,977	291	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	2,771	7,722	342	5.20	4,018	10,639	513	5.48	4,018	10,639	562	5.48	4,018	10,647	513	6.06
14	3,267	10,514	560	6.13	4,737	14,486	840	6.47	4,737	14,486	920	6.47	4,737	14,320	840	7.15
16	3,733	13,506	836	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	4,200	16,843	1,191	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	4,667	20,522	1,633	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	5,133	24,537	2,174	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	5,600	28,886	2,822	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

1. 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.
2. For 2-Ply, 3-Ply and 4-Ply LVL members, the values in the tables may be multiplied by 2, 3 and 4 respectively.
3. For 1-1/2" thick LVL members, allowable design values may be obtained by multiplying the table values by 0.857.
4. 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.
5. 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.
6. Single ply 1-1/2" thick members are assumed to be laterally braced at 16" o.c. or less.
7. Single ply 1-3/4" thick members are assumed to be laterally braced at 24" o.c. or less.

RigidLam® LVL Online Resources Are Available!

The following additional RigidLam LVL resources can be accessed online at www.roseburg.com:

- PLF (pounds per lineal foot) Charts for Douglas-fir and Southern Pine LVL
- Quick Reference Charts for Douglas-fir and Southern Pine LVL
  - Floor beams
  - 1-story garage door headers
  - 2-story garage door headers
  - 1-story window & patio door headers
  - 2-story window & patio door headers
- RigidLam LVL Column Tables for Douglas-fir and Southern Pine
- RigidLam LVL Bearing Length Requirements

RigidLam® LVL Studs*

*Currently, only Douglas-fir LVL, grades 1.6E through 2.1E, has 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-L270 for additional limitations and design value adjustments when using RigidLam studs in fire-resistance-rated engineered wall construction. PR-L270 can be found on the Roseburg website (www.roseburg.com) in the Engineered Wood Products section or on the APA website (www.apawood.org).

CONVENTIONAL CONSTRUCTION

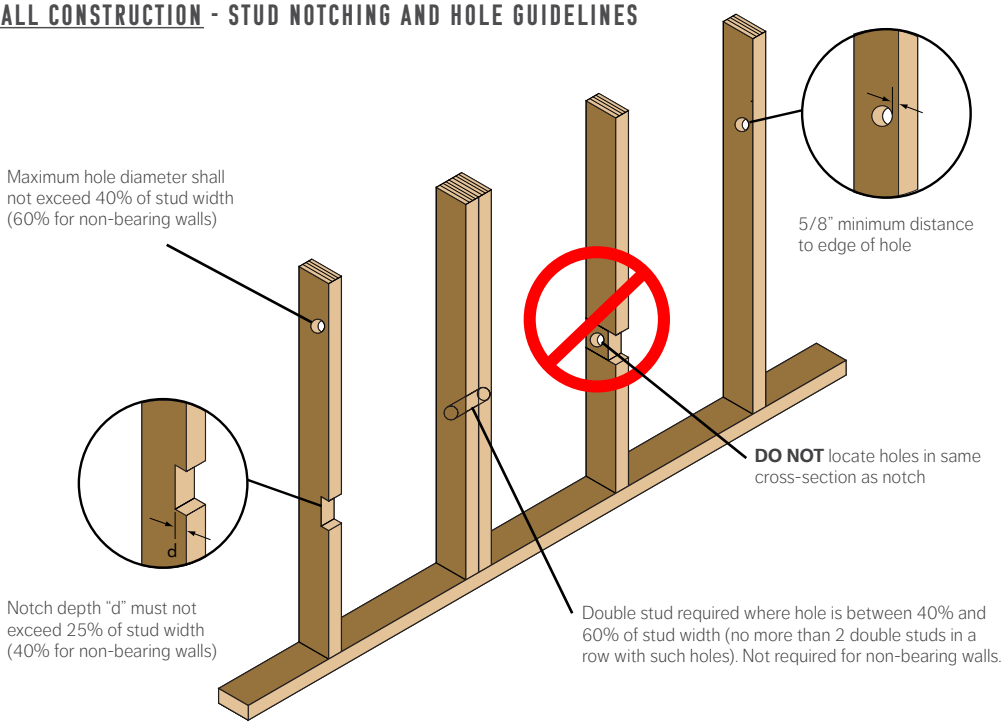
Based on testing conducted in accordance with ICC Evaluation Service Acceptance Criteria for Wood-Based Studs, AC202, RigidLam LVL studs are considered to be alternatives to sawn lumber studs complying with Section 2308.9 of the IBC, Section R602 of the IRC, Section 2305 of the BNBC, Section 2308 of the SBC and Section 2320.11 of the UBC.

TYPICAL CONVENTIONAL CONSTRUCTION LIMITATIONS (2006 INTERNATIONAL RESIDENTIAL CODE)

- Maximum story height of 10'-0" plus 16" for floor framing (11'-4" total) *Section R301.3*
- Maximum stud height of 10'-0" between points of lateral support *Table R602.3(5)*
- Maximum on-center stud spacing = 24 inches *Table R602.3(5)*
- Building height limited to 3 stories above grade *Section R101.2*
- Maximum wind speed less than 110 mph (100 mph in hurricane zone regions) *Section R301.2.1.1*
- Maximum tabulated rafter, ceiling joist and floor joist spacing = 24" o.c. *Tables R502.3.1(1)(2) & R802.4(1) & R802.5(1)-(8)*
- Maximum tabulated rafter, ceiling joist, and joist span = 26'-0" *Table R502.3.1(1) & Footnotes to R802.4(1)(2) & R802.5(1)-(8)*
- Maximum floor loads: 40 psf Live and 20 psf Dead *Section R502.3.2*
- Maximum roof/ceiling dead load = 20 psf *Tables R802.5(1)-(8)*
- Maximum ground snow load = 70 psf *Section R301.2(3)*
- Minimum stud thickness = 2" nominal (1-1/2" actual) *Section R602.3(5)*
- Applicable for Seismic Design Categories A, B, C, D0, D1 and D2 (except for irregular buildings) *Section R301.2.2*

NOTE: Other limitations may apply. Please refer to your local building code.

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[1][a]

2x4		Joist (edgewise)			Plank (flatwise)			Axial		MOE
		F_b	F_v	$Fc_{\perp}$[2]	F_b	F_v	$Fc_{\perp}$[2]	F_c	F_t	
Species	**Grade**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**
RigidLam LVL Stud	**1.6E**	**2,730[4]**	**220**	**575**	**2,250**	**130**	**650**	**1,950**	**1,500[3]**	**1,600,000**
RigidLam LVL Stud	**2.1E**	**3,761[4]**	**290**	**750**	**3,100**	**130**	**650**	**3,000**	**2,100[3]**	**2,100,000**
Douglas-fir[b]	No. 2	1,553[c]	180	625	1,485[d]	180	625	1,553[e]	863[e]	1,600,000
Spruce-Pine-Fir[b]	No. 2	1,509[c]	135	425	1,444[d]	135	425	1,323[e]	675[e]	1,400,000

2x6		Joist (edgewise)			Plank (flatwise)			Axial		MOE
		F_b	F_v	$Fc_{\perp}$[2]	F_b	F_v	$Fc_{\perp}$[2]	F_c	F_t	
Species	**Grade**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**	**(psi)**
RigidLam LVL Stud	**1.6E**	**2,580[4]**	**220**	**575**	**2,250**	**130**	**650**	**1,950**	**1,500[3]**	**1,600,000**
RigidLam LVL Stud	**2.1E**	**3,554[4]**	**290**	**750**	**3,100**	**130**	**650**	**3,000**	**2,100[3]**	**2,100,000**
Douglas-fir[b]	No. 2	1,346[c]	180	625	1,346[d]	180	625	1485[e]	748[e]	1,600,000
Spruce-Pine-Fir[b]	No. 2	1,308[c]	135	425	1,308[d]	135	425	1,265[e]	585[e]	1,400,000

RigidLam LVL Notes
1. These allowable design stresses apply to dry service conditions
2. Duration of Load increases not allowed
3. 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.
4. Bending values have been multiplied by $(12/d)^{1/8}$ and a repetitive member factor of 1.04

Solid-Sawn Notes
a. These allowable design stresses apply to dry service conditions
b. Solid-sawn design values taken from 2018 National Design Specification
c. F_b has been adjusted for repetitive member use and size factor increases
d. F_b has been adjusted for size factor increases and flat-use increases
e. F_c and F_t have been adjusted for size factor increases

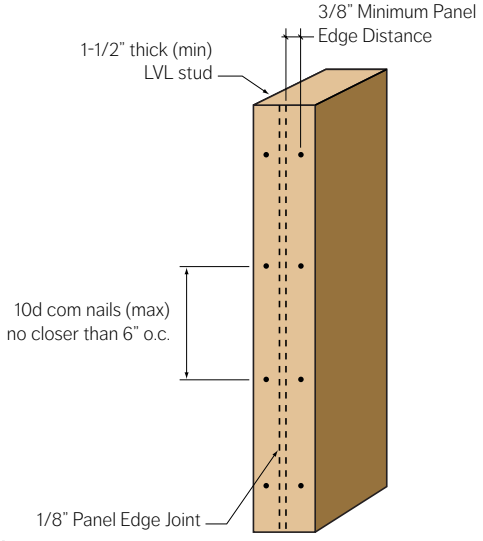
ENGINEERED WALL CONSTRUCTION - RIGIDLAM STUD HOLE AND NOTCHING GUIDELINES

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.

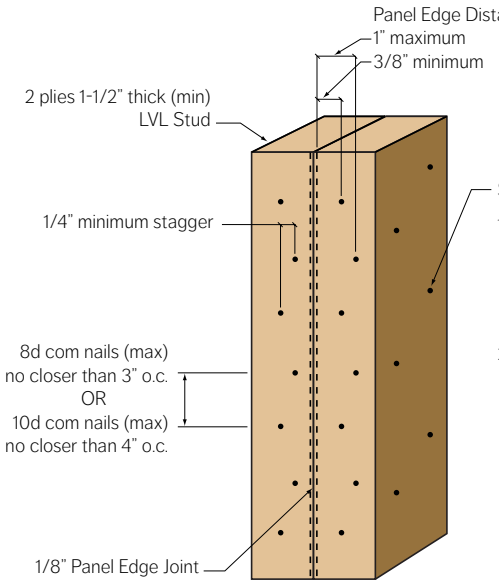
Holes: A hole with a maximum diameter of 30% of the width of the stud may be placed anywhere along the stud **at the centerline of the stud width** without further engineering analysis for lateral bending considerations. For other conditions, holes may be placed anywhere along the stud provided the reduced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



Stitch-nailing requirements:

1997 UBC, 1999 SBC or 1999 BNBC:
Stitch-nail studs together with a minimum two staggered rows of 10dx3" common nails at 8" o.c. in each row.

2006 IBC:
Stitch-nail per requirements above or stitch-nail studs together with a minimum of the same size and spacing of the nailing required to attach the sheathing to the framing at the panel edges, provided a minimum nail penetration of 6 times the nail diameter is achieved.

RigidLam® LVL Stair Stringers

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

1.4E RigidLam LVL — 1-1/2" Thick LVL

Gross Stringer Depth	Tread Width 36" 2 Stringers	36" 3 Stringers	42" 3 Stringers	44" 3 Stringers	48" 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" 2 Stringers	36" 3 Stringers	42" 3 Stringers	44" 3 Stringers	48" 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"	9'-10"	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" 2 Stringers	36" 3 Stringers	42" 3 Stringers	44" 3 Stringers	48" 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" 2 Stringers	36" 3 Stringers	42" 3 Stringers	44" 3 Stringers	48" 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					
9½"	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" 2 Stringers	36" 3 Stringers	42" 3 Stringers	44" 3 Stringers	48" 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" 2 Stringers	36" 3 Stringers	42" 3 Stringers	44" 3 Stringers	48" 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 Chart

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

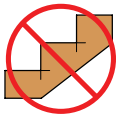
General Notes

- For 40/12 loading (residential), stringer runs are based on a rise of 7-3/4" (maximum per 2006 IRC) and a run of 11" (1" longer than minimum run of 10" per 2006 IRC).
- For 100/12 loading (commercial), stringer runs are based on a rise of 7" (maximum per 2006 IBC) and a run of 11" (minimum per 2006 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 6 and 35 for RigidLam LVL storage and handling information.

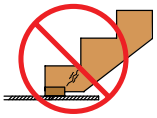
RigidLam LVL Code Evaluation ICC ESR-1210

INSTALLATION GUIDELINES

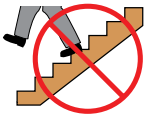
DO NOT notch or drill holes in stringer



DO NOT overcut stringer. Use hand saw to finish cut



DO NOT support stringer on nailer only



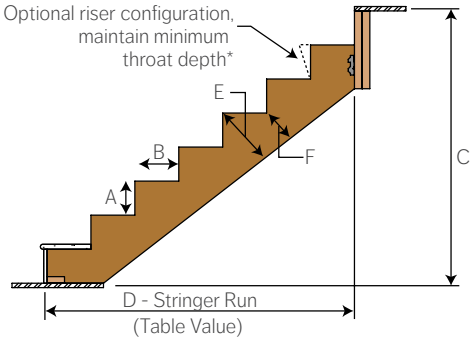
DO NOT walk on stringers until treads are attached

RIGIDLAM® LVL ALLOWABLE DESIGN STRESSES[1]

		1.4E RigidLam LVL	1.6E RigidLam LVL	2.1E RigidLam LVL
True Modulus of Elasticity (MOE)[2] – Edgewise or Flatwise	E (psi) =	1,400,000	1,600,000	2,100,000
Apparent Modulus of Elasticity (MOE)[2] – Edgewise or Flatwise	E (psi) =	1,300,000	1,500,000	2,000,000
Bending – Edgewise[3,4]	F_b edge (psi) =	2,250	2,250	3,100
Bending – Flatwise[5]	F_b flat (psi) =	2,250	2,250	3,100
Horizontal Shear - Edgewise	F_v edge (psi) =	200	220	290
Horizontal Shear - Flatwise	F_v flat (psi) =	130	130	130
Compression Perp. To Grain[2] - Edgewise	$F_{c\ perp}$ edge (psi) =	560	575	750
Compression Perp. To Grain[2] - Flatwise	$F_{c\ perp}$ flat (psi) =	650	650	650
Compression Parallel to Grain	$F_{c\ para}$ (psi) =	1,950	1,950	3,000
Tension Parallel to Grain[6]	F_t (psi) =	1,500	1,500	2,100
MOE for stability calculations[2]	E_{min} (psi) =	687,023	792,718	1,056,958

1. These allowable design stresses apply to dry service conditions.
2. No increase is allowed for duration of load.
3. For depths other than 12", multiply F_b by $(12/d)^{1/8}$ for Douglas-fir or $(12/d)^{1/5}$ for SP, where d = depth of member (inches).
4. A factor of 1.04 may be applied for repetitive members as defined in the *National Design Specification for Wood Construction*.
5. Tabulated F_b flat values are based on a thickness of 1-3/4". For other thicknesses, when loaded flatwise, multiply F_b flat by $(1.75/t)^{1/5}$, where t is the LVL thickness in inches. For thicknesses less than 1-3/4", use the tabulated value.
6. Tensile stress is based on a 4-foot gage length. For greater lengths, multiply F_t by $(4/L)^{1/9}$ where L = length in feet. For lengths less than 4-feet, use the published value.

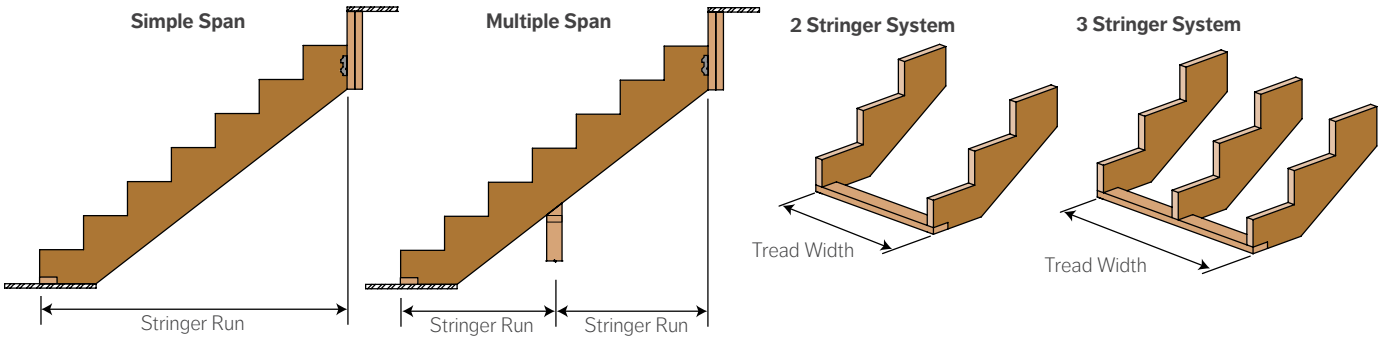
STAIR STRINGER TERMS AND DEFINITIONS



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)

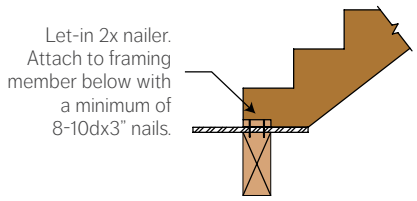
	*Minimum Throat Depth	
Stringer Depth	Residential - 7-3/4" rise & 11" run	Commercial - 7" rise & 11" run
9-1/2" LVL	3-1/8"	3-9/16"
11-7/8" LVL	5-1/2"	5-15/16"
14" LVL	7-5/8"	8-1/16"
16" LVL	9-5/8"	10-1/16"

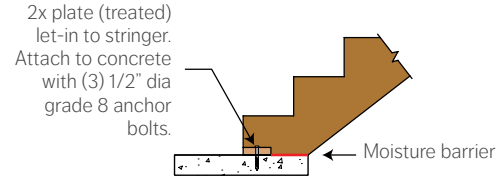
STAIR STRINGER CONFIGURATIONS



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

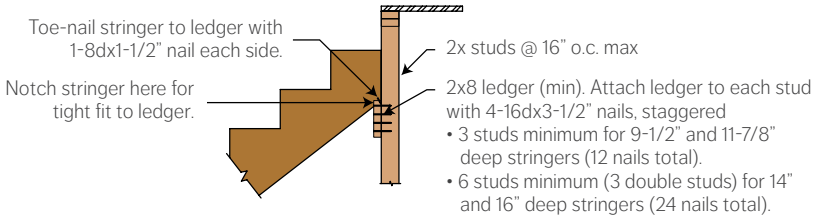
Low End

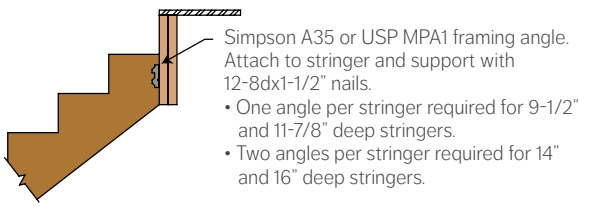




NOTE: Only use fasteners approved for use with the corresponding wood treatment.

High End

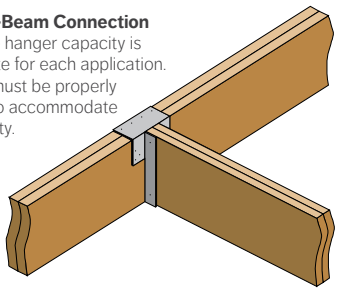




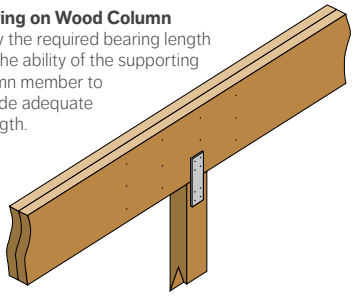
RigidLam LVL Bearing Details

Please refer to the RigidLam LVL Bearing Length Requirements document on the Roseburg website (www.roseburg.com).

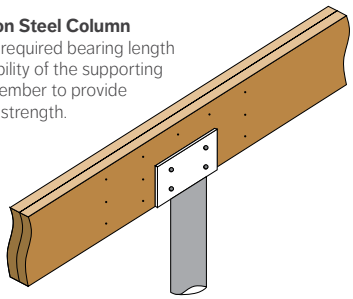
Beam-to-Beam Connection
Make sure hanger capacity is appropriate for each application. Hangers must be properly installed to accommodate full capacity.



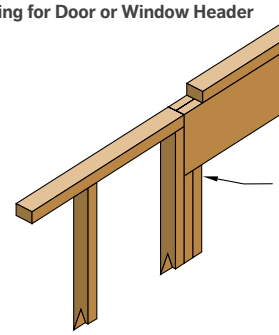
Bearing on Wood Column
Verify the required bearing length and the ability of the supporting column member to provide adequate strength.



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

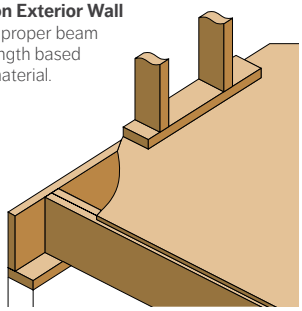


Bearing for Door or Window Header

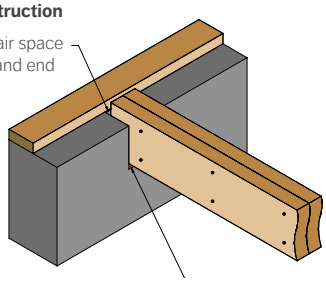


See "Bearing Length Requirements" document online at www.roseburg.com to determine the number of jack studs required to support header.

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.

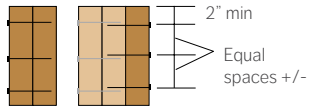


Provide moisture barrier between RigidLam LVL beams and concrete.

Fastening Recommendations For Multiple Ply Members

Top Loaded Members - 2 & 3 Ply

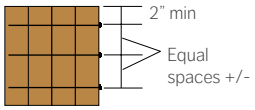
For 12" deep (or less) members, nail plies together with 2 rows of 16dx3-1/2" com. nails at 12" o.c. (add 1 row for 16d sinkers).
For 14", 16" or 18" deep members, nail plies together with 3 rows of 16dx3-1/2" com. nails at 12" o.c. (add 1 row for 16d sinkers).
For 20", 22" or 24" deep members, nail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



2-Ply 3-Ply

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 43 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.



4-Ply

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

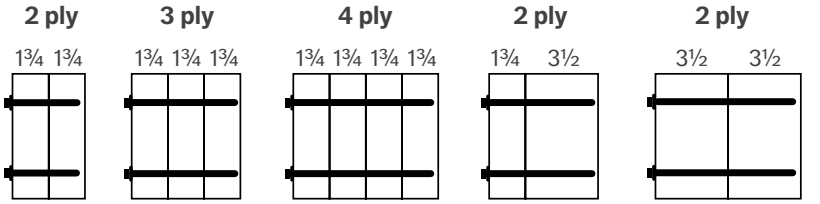
RIGIDLAM LVL EQUIVALENT SPECIFIC GRAVITY VALUES FOR FASTENER DESIGN

	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 charts 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.

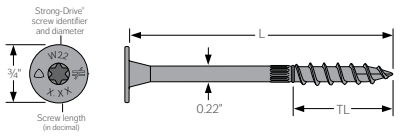
Fastening Recommendations For Multiple Ply LVL Members (cont.)

- 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.

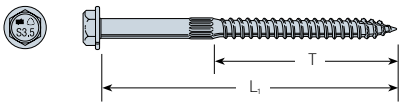
Simpson SDW Wood Screws



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, refer to the current Simpson Strong-Tie literature, www.strongtie.com or contact Simpson Strong-Tie at 800-999-5099.

Simpson SDS Wood Screws

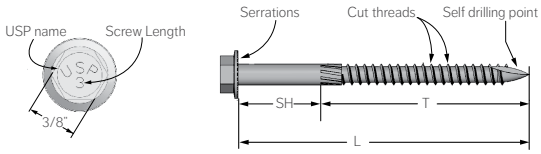


Model No.	L_1 (in)	T (in)	Head Stamp
SDS25312	3-1/2	2-1/4	S3.5
SDS25412	4-1/2	2-3/4	S4.5
SDS25600	6	3-1/4	S6

- Code Evaluation Report – ICC-ES ESR-2236
- For SDS design and installation information, refer to the current Simpson Strong-Tie literature, www.strongtie.com or contact Simpson Strong-Tie at 800-999-5099.

For hanger information refer to the current Simpson Strong-Tie literature, www.strongtie.com or contact Simpson Strong-Tie at 800-999-5099

USP WS Wood Screws

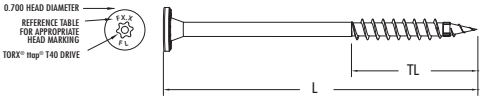


Model No.	L (in)	SH (in)	T (in)
WS35	3-1/2	3/4	2-3/4
WS45	4-1/2	1-1/4	3-1/4
WS6	6	1-3/4	4-1/4

- Code Evaluation Report – ICC-ES ESR-2761
- For WS design and installation information, refer to the current USP Structural Connectors literature, www.uspconnectors.com or contact USP Structural Connectors at 800-328-5934.

For hanger information refer to the current USP Structural Connectors literature, www.uspconnnectors.com or contact USP Structural Connectors 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 or contact FastenMaster at 800-518-3569

Explanation Of Important EWP Terms

1. **Live Load, Dead Load & Total Load:** Most people would feel very uncomfortable in buildings if there were no consideration to deflection or sag even though they were designed to safely support their total design load. That's because all structures (buildings, bridges, floors, etc.) can safely deflect well beyond the limits that make us feel uncomfortable. Limiting deflection is considered a "serviceability" requirement because it is independent of strength. In floor design, limiting sag is also necessary to prevent cracking in the sheet rock (on the bottom of the joists) due to load being applied and removed during the day.

   To do this, it is necessary to define that portion of the load that varies and that portion of the load that is always present. By definition, Live Load is people, furniture and pets etc. that can be moved on and off the floor. Dead Load is defined as the weight of the floor system itself or any other load that is permanently attached to the floor. Together, the dead load and the live load make up the total load.

2. **L/360, L/480:** A method used to limit the maximum allowable deflection (or sag) when designing joists and beams. Specifically, the term L is the span of the joist or beam expressed in inches and the ratio L/480 would be the maximum allowable deflection the joist would be expected to deflect. It does not represent what the actual deflection of the joist is in the field, just the maximum value it would be allowed to deflect under full 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/480 (or L/360)	Total Load – L/240
Roofs:	Live Load – L/240	Total Load – L/180

   For example, a typical residential floor (40 psf LL / 10 psf DL) with RFPI-Joists would be designed to an L/480 Live Load limit and an L/240 Total Load limit. For an 18' span, this would be equivalent to:

   $\frac{L}{480} = \frac{18' \times 12}{480} = \frac{216}{480} = 0.45"$ Allowable Live Load Deflection *And* $\frac{L}{240} = \frac{18' \times 12}{240} = \frac{216}{240} = 0.90"$ Allowable Total Load Deflection

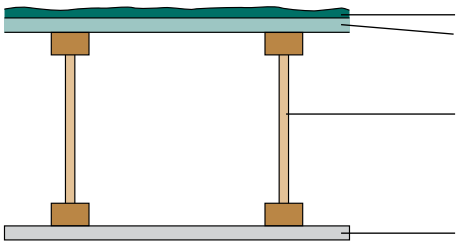
   The actual Live Load deflection of the floor system would be determined with a surveyor's transit taking readings before and after a true 40 psf load (i.e., cinder blocks) was applied. The deflection reading obtained in the field must be less than (or equal to) the 0.45". The same applies to the 0.9" under a true 50 psf load.

3. **PSF Load:** This is the design load, in pounds per square foot that is "applied" to the entire floor or roof area. By code, most residential floors must be designed to support a live load of 40 psf. The live load for roofs is determined by local code and depends on the amount of annual snow expected for that region where the house is.

   The design dead load psf is determined by the weight of each component of the floor or roof. A typical residential floor will have a dead load of 10 psf but depending on the components used, it can be as high as 20–24 psf. Dead load psf is based on standard material weights found in any of the National Model Building Codes. A typical method for calculating dead load is shown below:

Figure 1

DEAD LOAD CALCULATION FOR TYPICAL RESIDENTIAL FLOOR



CARPET & PAD	= 1.3 psf
T&G SUB-FLOOR	= 2.7 psf
Assume 11-7/8" **RFPI-20 I-Joist** @16" o.c. (2.2 plf ÷ 1.33')	= 1.7 psf
5/8" Sheet Rock **CEILING**	= 2.8 psf
MISCELLANEOUS (ductwork, wiring, etc.)	= 1.5 psf
TOTAL DEAD LOAD	**= 10 psf**

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

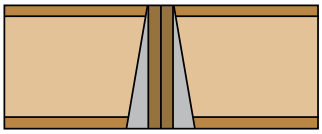
Nominal Size	Joist Spacing			
	12"	16"	19.2"	24"
2x4	1.4	1.1	0.9	0.7
2x6	2.2	1.7	1.4	1.1
2x8	2.9	2.2	1.8	1.5

WEIGHTS OF SPRINKLER LINES

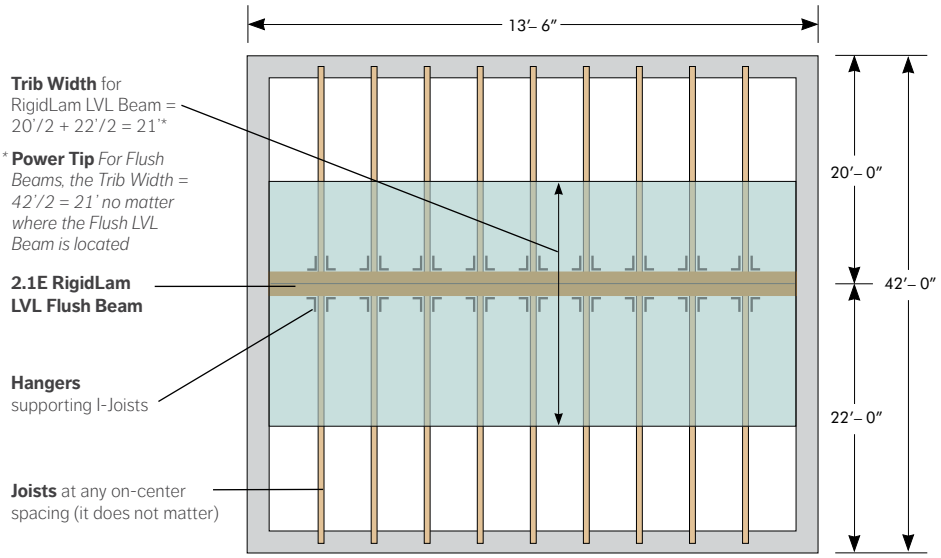
Size of Pipe	Schedule 40		Schedule 10	
	Dry (plf)	Wet (plf)	Dry (plf)	Wet (plf)
1"	1.7	2.1	1.4	1.8
1-1/2"	2.7	3.6	2.1	3.1
2"	3.7	5.2	2.7	4.2

PLF Load Development

CASE ONE: FLUSH BEAM



Typical **Flush Beam** Framing



Step 1 Determine the Trib Width (expressed in units of feet). In the example at right, the Trib Width = 21′.

Step 2 Determine the Live Load plf and Total Load plf on the Beam:
plf_{LL} = (psf_{LL}) x (Trib Width). Here,
plf_{LL} = 40 psf x 21′ = 840 plf_{LL}
plf_{TL} = (psf_{TL}) x (Trib Width). Here,
plf_{TL} = 50 psf x 21′ = 1,050 plf_{TL}

Step 3 Use the appropriate plf Table (online at www.roseburg.com), and match the span of the LVL beam with the left "Span" column of the table. Always round the beam span up to the next whole foot.

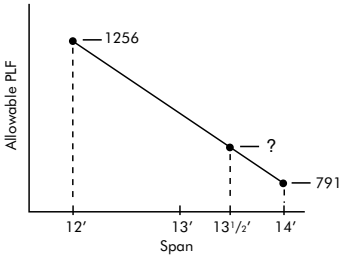
Step 4 Going from left to right, find a beam that supports a LL equal to or greater than 840 plf and a TL equal to or greater than 1,050 plf. Both checks must be made to properly size the beam.

Step 5 A 2 ply 14" Douglas-fir RigidLam LVL will work (864>840 and 1,170>1,050) but a 3 ply 11-7/8," comes close. To check if the 3 ply 11-7/8," LVL works at the actual span of 13′– 6", interpolate the table between 12′ and 14′. If you are not familiar with this, use the diagram as shown below to set up the interpolation as follows:

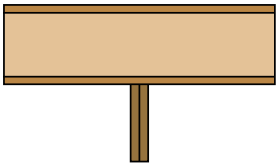
For LL $\frac{(1256-791)}{(14'-12')} = \frac{(?-791)}{(14'-13.5')} \Rightarrow 232.5 = \frac{(?-791)}{0.5} \Rightarrow (232.5 \times 0.5) + 791 = ? \Rightarrow ? = 907.25$ plf > 840 plf OK

The plf value for TL at 14′ is 1,171 plf and since this is greater than the required 1,050 plf, interpolation is not required for total load.

Therefore, an alternative solution would be a 3 ply 11-7/8," 2.1E RigidLam LVL (907>840 and 1171>1050)



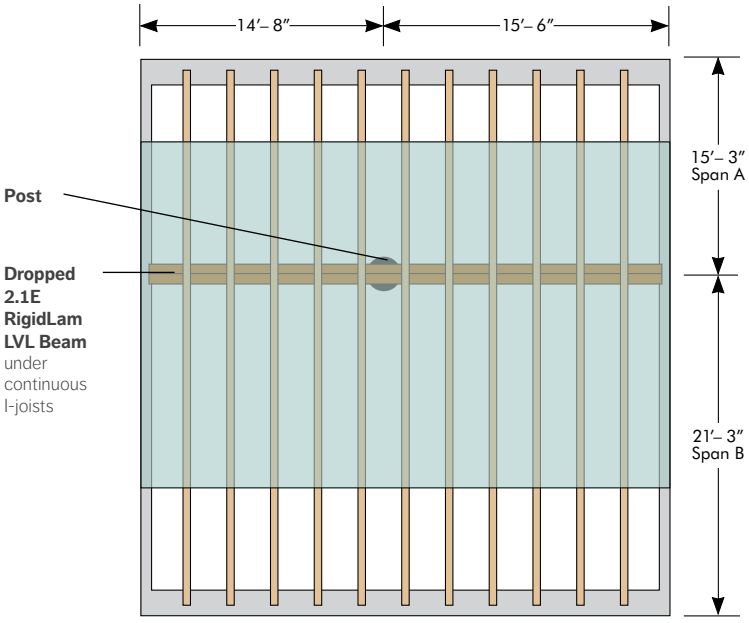
CASE TWO: DROPPED BEAM



Typical **Dropped Beam** Framing

When the LVL beam is dropped and the I-joists are continuous over the beam, there is more load transferred to the beam. This is because the continuous I-joists increase the trib width of the beam (green shaded area).

If both spans of the I-joist are equal, there is 25% more load put onto the LVL beam. If both spans are not equal, like shown in the diagram to the right (Span B > Span A), there is even more load placed onto the LVL beam. The exact formula is complicated but fortunately there is a simple and safe way to size the LVL beam:



Step 1 Assume both spans of the I-joist to be the longest span. In the example to the right, this would be Span B (21.25 ft).

Step 2 Calculate the plf on the LVL beam as if it were flush and increase by 25%:
plf_{LL}= 40 psf x 21.25′ x 1.25 = 1,063 plf_{LL}
plf_{TL}= 50 psf x 21.25′ x 1.25 = 1,329 plf_{TL}

Step 3 Use the longest span of the LVL beam (round up to the next whole foot , 16′ for this example) and use the appropriate plf table. In this example, use a 2 ply 2.1E 18" RigidLam LVL beam (1,230>1,063 & 1,417>1,329).

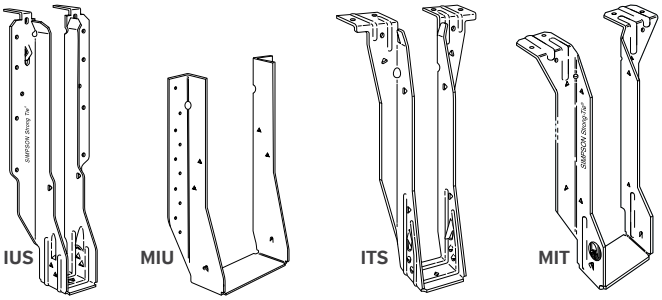
This method will always be safe provided the long span of the I-joist (Span B) is not more than 5 times longer than the shorter span (Span A). When possible, use appropriate software (e.g. Simpson Strong-Tie® Component Solutions™) or engineering analysis to determine solution.

I-Joist Framing Connectors

SIMPSON Strong-Tie® CONNECTORS

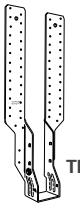
FACE MOUNT HANGERS

Single I-Joist				Double I-Joist			
Width	Depth	Hanger	Down Load	Width	Depth	Hanger	Down Load
1-3/4"	9-1/2"	IUS1.81/9.5	950	3-1/2"	9-1/2"	MIU3.56/9	2,305
	11-7/8"	IUS1.81/11.88	1,185		11-7/8"	MIU3.56/11	2,880
	14"	IUS1.81/14	1,420		14"	MIU3.56/14	3,170
	16"	IUS1.81/16	1,660		16"	MIU3.56/16	3,455
2-1/16"	9-1/2"	IUS2.06/9.5	950	4-1/8"	9-1/2"	MIU4.28/9	2,305
	11-7/8"	IUS2.06/11.88	1,185		11-7/8"	MIU4.28/11	2,880
	14"	IUS2.06/14	1,420		14"	MIU4.28/14	3,170
	16"	IUS2.06/16	1,660		16"	MIU4.28/16	3,455
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
2-1/2"	9-1/2"	IUS2.56/9.5	950	5"	9-1/2"	MIU5.12/9	2,305
	11-7/8"	IUS2.56/11.88	1,185		11-7/8"	MIU5.12/11	2,880
	14"	IUS2.56/14	1,420		14"	MIU5.12/14	3,170
	16"	IUS2.56/16	1,660		16"	MIU5.12/16	3,455
3-1/2"	9-1/2"	IUS3.56/9.5	1,185	7"	9-1/2"	HU410-2	2,680
	11-7/8"	IUS3.56/11.88	1,420		11-7/8"	HU412-2	3,275
	14"	IUS3.56/14	1,420		14"	HU414-2	3,870
	16"	IUS3.56/16	1,475		16"	HU414-2	3,870



TOP FLANGE HANGERS

Single I-Joist				Double I-Joist			
Width	Depth	Hanger	Down Load	Width	Depth	Hanger	Down Load
1-3/4"	9-1/2"	ITS1.81/9.5	1,550	3-1/2"	9-1/2"	MIT49.5	2,550
	11-7/8"	ITS1.81/11.88	1,550		11-7/8"	MIT411.88	2,550
	14"	ITS1.81/14	1,550		14"	MIT414	2,550
	16"	ITS1.81/16	1,550		16"	MIT416	2,550
2-1/16"	9-1/2"	ITS2.06/9.5	1,550	4-1/8"	9-1/2"	MIT4.28/9.5	2,575
	11-7/8"	ITS2.06/11.88	1,550		11-7/8"	MIT4.28/11.88	2,575
	14"	ITS2.06/14	1,550		14"	MIT4.28/14	2,575
	16"	ITS2.06/16	1,550		16"	BA4.28/16	4,715
2-5/16"	9-1/2"	ITS2.37/9.5	1,550	4-5/8"	9-1/2"	MIT359.5-2	2,550
	11-7/8"	ITS2.37/11.88	1,550		11 7/8"	MIT3511.88-2	2,550
	14"	ITS2.37/14	1,550		14"	MIT3514-2	2,550
	16"	ITS2.37/16	1,550		16"	MIT4.75/16	2,550
2-1/2"	9-1/2"	ITS2.56/9.5	1,550	5"	9-1/2"	MIT39.5-2	2,550
	11-7/8"	ITS2.56/11.88	1,550		11-7/8"	MIT311.88-2	2,550
	14"	ITS2.56/14	1,550		14"	MIT314-2	2,550
	16"	ITS2.56/16	1,550		16"	MIT5.12/16	2,550
3-1/2"	9-1/2"	ITS3.56/9.5	1,475	7"	9-1/2"	BA7.12/9.5	4,715
	11-7/8"	ITS3.56/11.88	1,475		11-7/8"	BA7.12/11.88	4,715
	14"	ITS3.56/14	1,475		14"	BA7.12/14	4,715
	16"	ITS3.56/16	1,475		16"	BA7.12/16	4,715



THAI Series

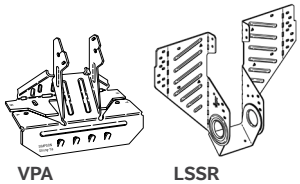
ADJUSTABLE HEIGHT HANGERS

Single I-Joist				Double I-Joist			
Width	Depth	Hanger	Down Load	Width	Depth	Hanger	Down Load
1-3/4"	9-1/2"-14"	THAI1.8/22	1,710	3-1/2"	9-1/2"-14"	THAI422	1,710
2-1/16"	9-1/2"-14"	THAI2.1/22	1,710	4-1/8"	9-1/2"-14"	THAI-2	2,020
2-5/16"	9-1/2"-14"	THAI3522	1,710	4-5/8"	9-1/2"-14"	THAI-2	2,020
2-1/2"	9-1/2"-14"	THAI322	1,710	5"	9-1/2"-14"	THAI-2	2,020
3-1/2"	9-1/2"-14"	THAI422	1,710	7"	-	-	-

THAI-2 are special order. Specify width.

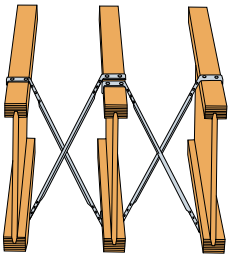
VARIABLE PITCH - SINGLE I-JOISTS

Width	Depth	Hanger	Down Load
1-3/4"	ALL	VPA25	1,105
2-1/16"	ALL	VPA2.1	1,245
2-5/16"	ALL	VPA35	1,245
2-1/2"	ALL	VPA3	1,245
3-1/2"	ALL	VPA4	1,245



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



SKEWED 45 HANGERS

Single I-Joist				Double I-Joist			
Width	Depth	Hanger	Down Load	Width	Depth	Hanger	Down Load
1-3/4"	9-1/2"	SUR/L1.81/9	1,730	3-1/2"	9-1/2"	SUR/L410	2,015
	11-7/8"	SUR/L1.81/11	2,305		11-7/8"	SUR/L410	2,015
	14"	SUR/L1.81/14	2,470		14"	SUR/L414	2,400
	16"	SUR/L1.81/14	2,470		16"	SUR/L414	2,400
2-1/16"	9-1/2"	SUR/L2.1/9	2,015	4-1/8"	9-1/2"	HSUR/L4.28/9	1,785
	11-7/8"	SUR/L2.1/11	2,305		11-7/8"	HSUR/L4.28/11	2,380
	14"	SUR/L2.1/14	2,525		14"	HSUR/L4.28/11	2,380
	16"	SUR/L2.1/14	2,525		16"	HSUR/L4.28/11	2,380
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	2,525		14"	HSUR/L4.75/14	2,975
	16"	SUR/L2.37/14	2,525		16"	HSUR/L4.75/16	3,330
2-1/2"	9-1/2"	SUR/L2.56/9	2,015	5"	9-1/2"	HSUR/L5.12/9	1,785
	11-7/8"	SUR/L2.56/11	2,305		11-7/8"	HSUR/L5.12/11	2,380
	14"	SUR/L2.56/14	2,525		14"	HSUR/L5.12/14	2,975
	16"	SUR/L2.56/14	2,525		16"	HSUR/L5.12/16	3,330
3-1/2"	9-1/2"	SUR/L410	2,015	7"	9-1/2"	HU410-2X	2,145
	11-7/8"	SUR/L410	2,015		11-7/8"	HU412-2X	2,620
	14"	SUR/L414	2,400		14"	HU414-2X	3,095
	16"	SUR/L414	2,400		16"	HU414-2X	3,095

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
1-3/4"	9-1/2"-14"	LSSR1.81Z	1,060	3-1/2"	9-1/2"-14"	LSSR410Z	1,810
2-1/16"	9-1/2"-14"	LSSR2.1Z	1,060	4-1/8"	9-1/2"-14"	LSU4.28	2,300
2-5/16"	9-1/2"-14"	LSSR2.37Z	1,060	4-5/8"	9-1/2"-14"	LSU3510-2	2,300
2-1/2"	9-1/2"-14"	LSSR2.56Z	1,060	5"	9-1/2"-14"	LSU5.12	1,790
3-1/2"	9-1/2"-14"	LSSR410Z	1,810	7"	-	-	-

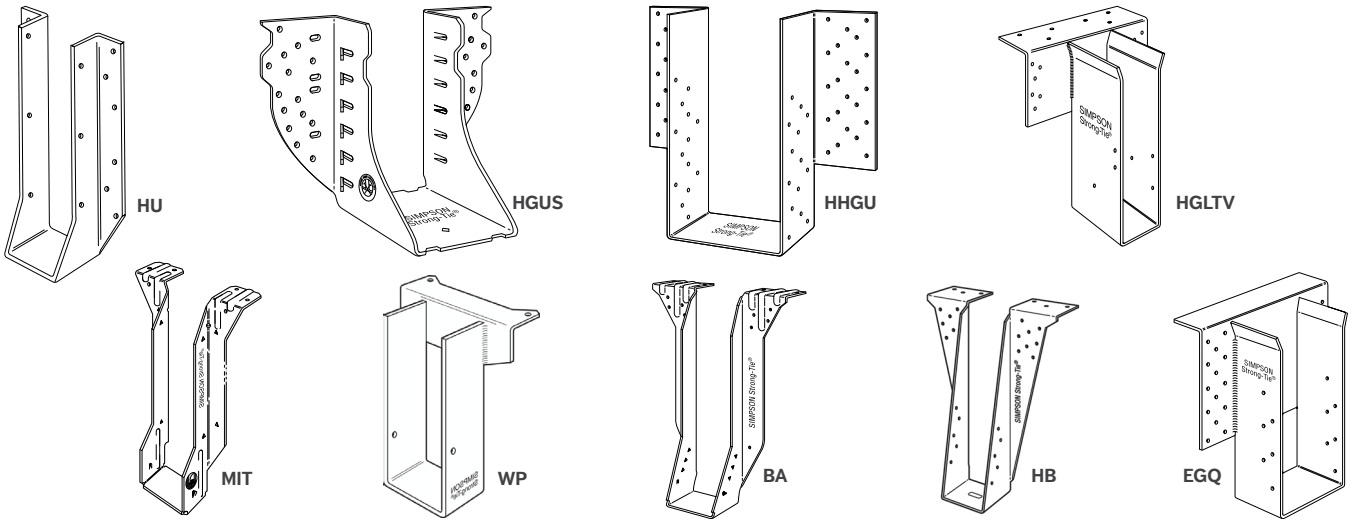
Orange highlighted hangers require web stiffeners at I-joist ends.

LVL Framing Connectors

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	Load (100%)	Depth	Hanger	Load (100%)	Depth	Hanger	Load (100%)	Depth	Hanger	Load (100%)
9-1/4"	HU9	3,570	9-1/4"	HHUS410	5,660	9-1/4"	HHUS5.50/10	5,660	9-1/4"	HHUS7.25/10	5,660
	HUS1.81/10	5,135		HGUS410	9,100		HGUS5.50/10	9,100		HGUS7.25/10	9,100
9-1/2"	HU9	3,570	9-1/2"	HHUS410	5,660	9-1/2"	HHUS5.50/10	5,660	9-1/2"	HHUS7.25/10	5,660
	HUS1.81/10	5,135		HGUS410	9,100		HGUS5.50/10	9,100		HGUS7.25/10	9,100
11-1/4"	HU11	4,465	11-1/4"	HHUS410	5,660	11-1/4"	HHUS5.50/10	5,660	11-1/4"	HHUS7.25/10	5,660
	HUS1.81/10	5,135		HGUS412	9,100		HGUS5.50/12	9,600		HGUS7.25/12	9,600
11-7/8"	HU11	4,465	11-7/8"	HHUS410	5,660	11-7/8"	HHUS5.50/10	5,660	11-7/8"	HHUS7.25/10	5,660
	HUS1.81/10	5,135		HGUS412	9,100		HGUS5.50/12	9,600		HGUS7.25/12	9,600
14"	HU14	5,055	14"	HHUS410	5,660	14"	HHUS5.50/10	5,660	14"	HGUS7.25/14	10,100
	HUS1.81/10	5,135		HGUS414	10,100		HGUS5.50/14	10,100		HGU7.25-SDS	14,145
16"	HU14	5,055	16"	HHUS410	5,660	16"	HGUS5.50/14	10,100	16"	HGUS7.25/14	10,100
	HUS1.81/10	5,135		HGUS414	10,100		HGU5.50-SDS	14,145		HHGU7.25-SDS	17,845
18"	-	-	18"	HHUS410	5,660	18"	HGUS5.50/14	10,100	18"	HGUS7.25/14	10,100
	-	-		HGUS414	10,100		HGU5.50-SDS	14,145		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	Download	Depth	Hanger	Download	Depth	Hanger	Download	Depth	Hanger	Download
9-1/4"	WP1.81X(H=9.25)	3,635	9-1/4"	BA3.56/9.25	4,715	9-1/4"	HGLTV5.37	10,585	9-1/4"	HGLTV7.12	10,585
	BA1.81/9.25	4,715		HB3.56/9.25	5,815		HB5.50/9.25	5,815		HB7.12/9.25	5,815
9-1/2"	MIT9.5	2,550	9-1/2"	BA3.56/9.5	4,715	9-1/2"	HGLTV5.37	10,585	9-1/2"	HGLTV7.12	10,585
	BA1.81/9.5	4,715		HB3.56/9.5	5,815		HB5.50/9.5	5,815		HB7.12/9.5	5,815
11-1/4"	WP1.81X(H=11.25)	3,635	11-1/4"	BA3.56/11.25	4,715	11-1/4"	HGLTV5.37	10,585	11-1/4"	HGLTV7.12	10,585
	BA1.81/11.25	4,715		HB3.56/11.25	5,815		HB5.50/11.25	5,815		HB7.12/11.25	5,815
11-7/8"	MIT11.88	2,550	11-7/8"	BA3.56/11.88	4,715	11-7/8"	HGLTV5.37	10,585	11-7/8"	HB7.12/11.88	5,815
	BA1.81/11.88	4,715		HB3.56/11.88	5,815		HB5.50/11.88	5,815		EGQ7.25-SDS3	19,800
14"	MIT1.81/14	2,550	14"	HGLTV3.514	10,585	14"	HB5.50/14	5,815	14"	HGLTV7.12	10,585
	BA1.81/14	4,715		BA3.56/14	4,715		EGQ5.37-SDS3	19,800		EGQ7.25-SDS3	19,800
16"	MIT1.81/16	2,550	16"	HGLTV3.516	10,585	16"	HB5.50/16	5,815	16"	HGLTV7.12	10,585
	BA1.81X(H=16)	4,715		BA3.56/16	4,715		EGQ5.37-SDS3	19,800		EGQ7.25-SDS3	19,800
18"	BA1.81X(H=18)	4,715	18"	HGLTV3.518	10,585	18"	HGLTV5.37	10,585	18"	HGLTV7.12	10,585
	HB1.81X(H=18)	5,815		HB3.56/18	5,815		EGQ5.37-SDS3	19,800		EGQ7.25-SDS3	19,800

EGQ Hanger specify height

General Notes

1. Loads listed are the lowest hanger/header limitations assuming header material is Dougals-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. 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 or contact Simpson Strong-Tie at 800-999-5099.

I-Joist Framing Connectors

FACE MOUNT HANGERS

Single I-Joists				Double I-Joists			
Width	Depth	MiTek Hanger	Down Load (100%)	Width	Depth	MiTek Hanger	Down Load (100%)
1-3/4"	9-1/2"	IHFL17925	960	3-1/2"	9-1/2"	IHF35925	3,530
	11-7/8"	IHFL17112	1,200		11-7/8"	IHF35112	3,530
	14"	IHFL1714	1,680		14"	IHF3514	4,115
2-1/16"	9-1/2"	IHFL20925	960	4-1/8"	9-1/2"	IHF20925-2	3,530
	11-7/8"	IHFL20112	1,200		11-7/8"	IHF20112-2	3,530
	14"	IHFL2014	1,680		14"	IHF2014-2	3,960
	16"	IHFL2016	1,920		16"	IHF2014-2	3,960
2-5/16"	9-1/2"	IHFL23925	960	4-5/8"	9-1/2"	IHF23925-2	3,530
	11-7/8"	IHFL23112	1,200		11-7/8"	THF23118-2	1,890
	14"	IHFL2314	1,680		14"	THF23140-2	2,660
	16"	IHFL2316	1,920		16"	THF23160-2	3,190
2-1/2"	9-1/2"	THFI2595	960	5"	9-1/2"	IHF25925-2	3,530
	11-7/8"	THFI25118	1,200		11-7/8"	IHF25112-2	3,530
	14"	THFI2514	1,680		14"	THF25140-2	2,660
	16"	IHFL2516	1,920		16"	THF25160-2	3,190
3-1/2"	9-1/2"	IHFL35925	1,200	7"	9-1/2"	HD7100	2,770
	11-7/8"	IHFL35112	1,440		11-7/8"	HD7120	3,390
	14"	IHFL3514	1,680		14"	HD7140	4,005
	16"	IHFL3516	1,920		16"	HD7160	3,695

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

TOP FLANGE HANGERS

Single I-Joists				Double I-Joists			
Width	Depth	MiTek Hanger	Down Load (100%)	Width	Depth	MiTek Hanger	Down Load (100%)
1-3/4"	9-1/2"	THO17950	1,235	3-1/2"	9-1/2"	THO35950	2,370
	11-7/8"	THO17118	1,235		11-7/8"	THO35118	2,525
	14"	TFL1714	1,585		14"	THO35140	2,400
2-1/16"	9-1/2"	TFL2095	1,585	4-1/8"	9-1/2"	THO20950-2	2,920
	11-7/8"	TFL20118	1,585		11-7/8"	THO20118-2	2,920
	14"	TFL2014	1,585		14"	THO20140-2	3,640
	16"	TFL2016	1,585		16"	THO20160-2	3,640
2-5/16"	9-1/2"	TFL2395	1,585	4-5/8"	9-1/2"	THO23950-2	3,640
	11-7/8"	TFL23118	1,585		11-7/8"	THO23118-2	3,640
	14"	TFL2314	1,585		14"	THO23140-2	4,420
	16"	TFL2316	1,585		16"	THO23160-2	4,420
2-1/2"	9-1/2"	TFL2595	1,585	5"	9-1/2"	THO25950-2	3,640
	11-7/8"	TFL25118	1,585		11-7/8"	THO25118-2	3,640
	14"	TFL2514	1,585		14"	THO25140-2	4,420
	16"	TFL2516	1,585		16"	THO25160-2	4,420
3-1/2"	9-1/2"	THO35950	2,370	7"	9-1/2"	BPH7195	3,100
	11-7/8"	THO35118	2,525		11-7/8"	BPH71118	3,075
	14"	THO35140	2,400		14"	BPH7114	3,075
	16"	THO35160	2,400		16"	BPH7116	3,075

MiTek Notes: For I-Joists, consult MiTek for joist limitations.

ADJUSTABLE HEIGHT HANGERS

Single I-Joists				Double I-Joists			
Width	Depth	MiTek Hanger	Down Load (100%)	Width	Depth	MiTek Hanger	Down Load (100%)
1-3/4"	9-1/2"	MSH1722	2,390	3-1/2"	9-1/2"	MSH422	2,530
	11-7/8"	MSH1722	2,390		11-7/8"	MSH422	2,530
	14"	MSH1722	2,390		14"	MSH422	2,530
2-1/16"	9-1/2"	MSH2022	2,390	4-1/8"	9-1/2"	-- --	-- --
	11-7/8"	MSH2022	2,390		11-7/8"	-- --	-- --
	14"	MSH2022	2,390		14"	-- --	-- --
	16"	MSH2022	2,390		16"	-- --	-- --
2-5/16"	9-1/2"	MSH2322	2,395	4-5/8"	9-1/2"	MSH2322-2	2,530
	11-7/8"	MSH2322	2,395		11-7/8"	MSH2322-2	2,530
	14"	MSH2322	2,395		14"	MSH2322-2	2,530
	16"	MSH2322	2,395		16"	MSH2322-2	2,530
2-1/2"	9-1/2"	MSH322	2,395	5"	9-1/2"	MSH2622-2	2,530
	11-7/8"	MSH322	2,395		11-7/8"	MSH2622-2	2,530
	14"	MSH322	2,395		14"	MSH2622-2	2,530
	16"	MSH322	2,395		16"	MSH2622-2	2,530
3-1/2"	9-1/2"	MSH422	2,530	7"	9-1/2"	MSH422-2	3,740
	11-7/8"	MSH422	2,530		11-7/8"	MSH422-2	3,740
	14"	MSH422	2,530		14"	MSH422-2	3,740
	16"	MSH422	2,530		16"	MSH422-2	3,740

Blue highlighted areas require web stiffeners at joist ends.


THF


TFL


THO

USP STRUCTURAL CONNECTORS® A MiTek® Company


BPH


SKH


MSH


LSSH

SKEWED 45° HANGERS

Single I-Joists				Double I-Joists			
Width	Depth	MiTek Hanger	Down Load (100%)	Width	Depth	MiTek Hanger	Down Load (100%)
1-3/4"	9-1/2"	SKH1720L/R	1,650	3-1/2"	9-1/2"	HD410_ SK45L/R_BV[1,2]	3,080
	11-7/8"	SKH1720L/R	1,650		11-7/8"	HD410_ SK45L/R_BV[1,2]	3,080
	14"	SKH1724L/R	1,890		14"	HD414_ SK45L/R_BV[1,2]	4,005
2-1/16"	9-1/2", 11-7/8"	SKH2020L/R	1,650	4-1/8"	9-1/2", 11-7/8"	SKH2020L/R-2[1]	1,710
	14", 16"	SKH2024L/R	1,890		14", 16"	SKH2024L/R-2[1]	1,950
2-5/16"	9-1/2", 11-7/8"	SKH2320L/R	1,650	4-5/8"	9-1/2", 11-7/8"	SKH2320L/R-2[1]	1,710
	14", 16"	SKH2324L/R	1,890		14", 16"	SKH2324L/R-2[1]	1,950
2-1/2"	9-1/2", 11-7/8"	SKH2520L/R	1,650	5"	9-1/2", 11-7/8"	SKH2520L/R-2[1]	1,710
	14", 16"	SKH2524L/R	1,890		14", 16"	SKH2524L/R-2[1]	1,950
3-1/2"	9-1/2"	HD410_ SK45L/R_BV[1,2]	3,080	7"	9-1/2"	HD7100_ SK45L/R_BV[1,2]	2,770
	11-7/8"	HD410_ SK45L/R_BV[1,2]	3,080		11-7/8"	HD7120_ SK45L/R_BV[1,2]	3,390
	14"	HD414_ SK45L/R_BV[1,2]	4,005		14"	HD7140_ SK45L/R_BV[1,2]	4,005
	16"	HD414_ SK45L/R_BV[1,2]	4,005		16"	HD7160_ SK45L/R_BV[1,2]	3,695

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.

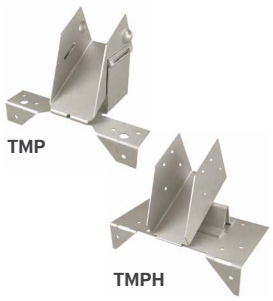
FIELD SLOPE AND SKEW

Single I-Joists				Double I-Joists			
Width	Depth	MiTek Hanger	Down Load (100%)	Width	Depth	MiTek Hanger	Down Load (100%)
1-3/4"	9-1/2"-14"	LSSH179	1,200	3-1/2"	9-1/2"-14"	LSSH35	1,610
2-1/16"	9-1/2"-14"	LSSH20	1,200	4-1/8"	9-1/2"-14"	--	--
	16"	LSSH20[1]	1,200		16"	--	--
2-5/16"	9-1/2"-14"	LSSH23	1,200	4-5/8"	9-1/2"-14"	--	--
	16"	LSSH23[1]	1,200		16"	--	--
2-1/2"	9-1/2"-14"	LSSH25	1,610	5"	9-1/2"-14"	--	--
	16"	LSSH25[1]	1,610		16"	--	--
3-1/2"	9-1/2"-14"	LSSH35	1,610	7"	9-1/2"-14"	--	--
	16"	LSSH35[1]	1,610		16"	--	--

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

VARIABLE PITCH HANGERS

Single I-Joists			
Width	Depth	MiTek Hanger	(100%)
1-3/4"	9-1/2" - 16"	TMP175	1,705
		TMPH175[1]	3,190
2-1/8"	9-1/2" - 16"	TMP21	1,705
		TMPH21[1]	3,190
2-5/16"	9-1/2" - 16"	TMP23	1,705
		TMPH23[1]	3,190
2-1/2"	9-1/2" - 16"	TMP25	1,705
		TMPH25[1]	3,190
3-1/2"	9-1/2" - 16"	TMP4	1,705
		TMPH4[1]	3,190


TMP

TMPH

MiTek Notes: (1) TMPH design values are based on a 6/12 Pitch.

LVL Framing Connectors

USP STRUCTURAL CONNECTORS® A MiTek® Company

FACE MOUNT HANGERS

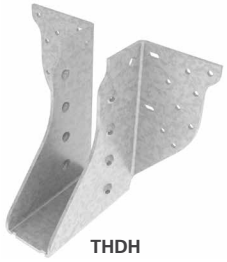
Single Ply - 1-3/4" wide			Double Ply - 3-1/2" wide			Triple Ply - 5-1/4" wide			Quadruple Ply - 7" wide		
Depth	MiTek Hanger	Down Load (100%)	Depth	MiTek Hanger	Down Load (100%)	Depth	MiTek Hanger	Down Load (100%)	Depth	MiTek Hanger	Down Load (100%)
9-1/4", 9-1/2"	HD17925[2] HUS179[1]	3,695 5,580	9-1/4", 9-1/2"	THD410 THDH410[1]	5,850 9,020	9-1/4", 9-1/2"	THD610 THDH610[1]	6,535 9,020	9-1/4", 9-1/2"	THD7210 THDH7210[1]	6,535 9,020
11-1/4", 11-7/8"	HD17112[2] HUS179[1]	4,320 5,580	11-1/4", 11-7/8"	THD410 THDH412[1]	5,850 9,710	11-1/4", 11-7/8"	THD610 THDH612[1]	6,535 9,530	11-1/4", 11-7/8"	THD7210 THDH7212[1]	6,535 9,020
14"	HD1714[2] HUS179[1]	4,580 5,580	14"	THD410 THDH414[1]	5,850 11,325	14"	THD610 THDH614[1]	6,535 11,325	14"	THD7210 THDH7214[1]	6,535 11,325
16"	HD1714[2] --	4,580 --	16"	THD412 THDH414[1]	7,045 11,325	16"	THD612 THDH614[1]	8,255 11,325	16"	HD7120[2] THDH7214[1]	3,390 11,325
18"	HD1714[2] --	4,580 --	18"	THD412 THDH414[1]	7,045 11,325	18"	THD612 THDH614[1]	8,255 11,325	18"	HD7140[2] THDH7214[1]	4,005 11,325

MiTek Notes: (1) Joist nails need to be toe nailed at a 30° to 45° angle to achieve listed loads. (2) Loads assume maximum nailing schedule.

HUS

HD

THD



THDH

HLBH

PHXU

TOP FLANGE HANGERS

Single Ply - 1-3/4" wide			Double Ply - 3-1/2" wide			Triple Ply - 5-1/4" wide			Quadruple Ply - 7" wide		
Depth	MiTek Hanger	Down Load (100%)	Depth	MiTek Hanger	Down Load (100%)	Depth	MiTek Hanger	Down Load (100%)	Depth	MiTek Hanger	Down Load (100%)
9-1/4"	BPH17925 PHXU17925	2,970 4,350	9-1/4"	HBPH35925 HLBH35925	6,310 10,045	9-1/4"	HBPH55925 HLBH55925	6,185 10,045	9-1/4"	HBPH71925 HLBH71925	6,185 10,045
9-1/2"	BPH1795 PHXU1795	2,970 4,350	9-1/2"	HBPH3595 HLBH3595	6,310 10,045	9-1/2"	HBPH5595 HLBH5595	6,185 10,045	9-1/2"	HBPH7195 HLBH7195	6,185 10,045
11-1/4"	BPH17112 PHXU17112	2,970 4,350	11-1/4"	HBPH35112 HLBH35112	6,310 10,045	11-1/4"	HBPH55112 HLBH55112	6,185 10,045	11-1/4"	HBPH71112 HLBH71112	6,185 10,045
11-7/8"	BPH17118 PHXU17118	2,970 4,350	11-7/8"	HBPH35118 HLBH35118	6,310 10,045	11-7/8"	HBPH55118 HLBH55118	6,185 10,045	11-7/8"	HBPH71118 HLBH71118	6,185 10,045
14"	BPH1714 PHXU1714	2,970 4,350	14"	HBPH3514 HLBH3514	6,310 10,045	14"	HBPH5514 HLBH5514	6,185 10,045	14"	HBPH7114 HLBH7114	6,185 10,045
16"	BPH1716 --	2,970 --	16"	HBPH3516 HLBH3516	6,310 10,045	16"	HBPH5516 HLBH5516	6,185 10,045	16"	HBPH7116 HLBH7116	6,185 10,045
18"	-- --	-- --	18"	HBPH3518 HLBH3518	6,310 10,045	18"	HBPH5518 HLBH5518	6,185 10,045	18"	HBPH7118 HLBH7118	6,185 10,045

General Notes

1. Loads listed are the lowest hanger/header limitations assuming header material is Dougals-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 USP product catalog to verify allowable loads and fastener size and quantity.
3. Loads shown are gravity (floor) loads. Other load durations may apply. Refer to the current USP product catalog for allowable increases.
4. 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 USP literature, www.uspconnectors.com or contact USP at 800-328-5934.

CODE REPORT INDEX

Roseburg EWP Code Reports	Product
ICC ESR-1251 *(with LABC/LARC supplement and CBC/CRC supplement including DSA & OSHPD)*	I-JOIST
ICC ESR-1210 *(with LABC/LARC supplement and CBC/CRC supplement including DSA & OSHPD)*	LVL & LVL Rim
APA PR-L259	I-JOIST
APA PR-L289	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, 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 specications.

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

RFPI®, RigidLam®, RigidRim® are registered trademarks of Roseburg Forest Products, Roseburg, Oregon.

Roseburg

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Engineered Wood Products

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