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Engineered Wood Products



Deep Depth RFPI[®] Joist - 18", 20", 22" & 24" Design & Installation Guide

RFPI[®] 700 RFPI[®] 900

- Manufactured deeper to handle longer spans, wider spacing, higher loads
- Lightweight for fast installation
- Deeper depths allow for larger HVAC openings
- Resists bowing, twisting and shrinking
- Works with multiple spans
- FSC certified available
- Environmentally friendly
- Product and performance warranty





FSC CERTIFIED RFPI[®] JOIST & RIGIDLAM[®] LVL Are Available From Roseburg

Architects, structural engineers and builders can now specify FSC certified engineered wood products that can contribute to achieving additional LEED[®] credits for your project.

Roseburg has been certified by Scientific Certification Systems (SCS) to produce Forest Stewardship Council (FSC) Certified RFPI® Joist and RigidLam® LVL under registration code SCS-COC-000300. Wood products certified by SCS are recognized as coming from well-managed forests, adhering to strict environmental and socioeconomic standards in accordance with the principles and criteria of the FSC.



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

DESIGN SUPPORT

The various charts and tables in this literature are based on accepted, typical loading conditions, on center spacing, deflection criteria and/or spans. This printed information allows the end user to identify and install properly sized RFP engineered wood products without the need for specific design or engineering calculations. Design software; however, such as RFP-KeyBeam[®] and RFP-KeyPlan[®] from Keymark Enterprises, LLC, 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 Keymark 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 Roseburg Forest Products at 1-800-347-7260, or at the address listed on the back cover.

Roseburg RFPI Joist and RigidLam LVL LEED Credit and Point Information

LEED CATEGORY/CREDIT	INTENT	REQUIREMENTS	POSSIBLE POINTS
Indoor Environmental Quality EQ Credit 4.4: Low-Emitting Materials	Improves indoor air quality	Wood products used shall contain no added urea-formaldehyde resins	1 point
Materials and Resources MR 5.1 Regional Materials: 10% Extracted, Processed & Manufactured Regionally	Increases the use of materials that are extracted and manufactured within the project region	A min. of 10% of the combined value of building materials or products must be extracted, harvested, or recovered, as well as manufactured within 500 miles of the project	1 point
Materials and Resources MR 5.2 Regional Materials: 20% Extracted, Processed & Manufactured Regionally	Increases the use of materials that are extracted and manufactured within the project region	A min. of 20% of the combined value of building materials or products must be extracted, harvested, or recovered, as well as manufactured within 500 miles of the project	1 point (in addition to MR credit 5.1)
Materials and Resources MR Credit 7.0: Certified Wood FSC - Forest Stewardship Council	Encourage environmentally responsible forest management	Use a minimum of 50% wood based materials and products, which are certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for wood building components	1 point

Safety & Construction Precautions



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.

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, rim board, 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 and 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 4 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, rim board, 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 J735B "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 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.

Storage & Handling Guidelines

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









RFPI®-Joist Design Properties

I-JOIST DIMENSIONS



DESIGN PROPERTIES FOR RFPI-JOISTS⁽¹⁾

Roseburg Designation	El ⁽²⁾ x10 ⁶ lb-in. ²	M ⁽³⁾ Ib-ft	V ⁽⁴⁾ Ib	VLC ⁽⁵⁾ Ib/ft	K ⁽⁶⁾ x10⁴ lb	Weight lb/ft
18" RFPI 700	1245	10,450	2,575	2,200	11.34	3.85
20" RFPI 700	1579	11,600	2,740	2,200	12.60	4.10
22" RFPI 700	1955	12,740	2,935	1,800	13.86	4.36
24" RFPI 700	2375	13,870	3,060	1,750	15.12	4.61
18" RFPI 900	1849	16,080	2,885	2,200	11.34	4.80
20" RFPI 900	2337	17,855	2,945	2,200	12.60	5.21
22" RFPI 900	2886	19,615	3,010	1,800	13.86	5.47
24" RFPI 900	3496	21,355	3,060	1,750	15.12	5.67

(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) of the I-joist.

(5) Vertical Load Capacity when continuously supported.

(6) Coefficient of shear deflection (K), used to calculate deflections for I-joist application. Equations 1 and 2 below are provided for uniform load and center point load conditions for simple spans.

Uniform Load:	Center-Point Load:	where:	
$[1] \delta = \frac{5\omega\ell^4}{384\text{EI}} + \frac{\omega\ell^2}{K}$	$[2] \delta = \frac{P\ell^3}{48EI} + \frac{2P\ell}{K}$	$\begin{split} \delta &= \text{ calculated deflection (in.)} \\ \omega &= \text{ uniform load (lb/in.)} \\ \ell &= \text{ design span (in.)} \\ P &= \text{ concentrated load (lb)} \end{split}$	EI = bending stiffness of the I-joist (Ib-in²) K = coefficient of shear deflection (Ib)

TABLE A: RFPI-JOIST REACTION CAPACITIES WITH OR WITHOUT WEB STIFFENERS (W.S.)^{(1) (2)}

		End Read	tion (lbs)		Intermediate Reaction (lbs)			
Rosebura	1-3/4″	Bearing	3-1/2" Bearing		3-1/2" Bearing		5-1/4" Bearing	
Designation	No W.S.	With W.S.	No W.S.	With W.S.	No W.S.	With W.S.	No W.S.	With W.S.
18" RFPI 700	1,125	2,200	1,650	2,575	2,745	4,050	3,025	4,475
20" RFPI 700	1,090	2,300	1,585	2,740	2,745	4,050	3,025	4,475
22" RFPI 700	-	2,400	-	2,935	-	4,150	-	4,605
24" RFPI 700	-	2,500	-	3,060	-	4,150	-	4,605
18" RFPI 900	1,475	2,570	1,765	2,885	3,000	5,110	3,475	5,710
20" RFPI 900	1,350	2,665	1,700	2,945	3,000	5,110	3,475	5,710
22" RFPI 900	-	2,755	-	3,010	-	5,405	-	6,020
24" RFPI 900	-	2,850	-	3,060	-	5,405	-	6,020

TABLE B: RFPI-JOIST REACTION CAPACITIES BASED ON FLANGE COMPRESSION PERP.-TO-GRAIN^{(1) (2)}

	End Reaction (lbs)						Intermediate Reaction (lbs)				
Rosebura	1-3/4" Bearing		3-1/2" Bearing		3-1/2" Bearing		5-1/4" Bearing				
Designation	No W.S.	With W.S.	No W.S.	With W.S.	No W.S.	With W.S.	No W.S.	With W.S.			
All RFPI 700	2,285		4,575		5,065		7,355				
All RFPI 900	3,535		7,070		7,825		11,365				

General Note: Determine the allowable reaction capacity from Table A <u>and</u> Table B and use the <u>lesser</u> of the two values. See Table A Notes and

Table B Notes below. Table A Notes:

- The values in Table A are for 100% duration of load. Interpolation between tabulated values is permitted. All values in Table A shall be permitted to be adjusted for other load durations.
- 2. Refer to Web Stiffener Requirements on page 7 for web stiffener size and nail requirements.

Table B Notes:

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

Allowable Floor Clear Spans For RFPI®-Joists

40 PSF LIVE LOAD AND 25 PSF DEAD LOAD

DEFLECTION LIMITS - LIVE LOAD = L/480 TOTAL LOAD = L/240

Joist	laist Carias		Simpl	e Span		Multiple Span			
Depth	Joist Series	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.
18″	RFPI® 700	32' - 11"	30' - 1"	28' - 2"	25' - 2"	35' - 7"	30' - 10"	28' - 1"	24' - 8"
20″	RFPI® 700	35' - 8"	32' - 6"	29' - 8"	26' - 6"	37' - 6"	32' - 6"	29' - 7"	24' - 8"
22″	RFPI® 700	38' - 4"	34' - 1"	31' - 1"	27' - 10"	39' - 4"	34' - 0"	31' - 1"	25' - 3"
24″	RFPI® 700	40' - 10"	35' - 7"	32' - 6"	29' - 0"	41' - 1"	35' - 6"	31' - 8"	25' - 3"
18″	RFPI® 900	37' - 2"	33' - 10" *	31' - 10"	29' - 7"	40' - 6"	36' - 10"	34' - 8"	31' - 2"
20″	RFPI® 900	40' - 2"	36' - 7"	34' - 5"	32' - 0"	43' - 10"	39' - 10"	36' - 10"	31' - 2"
22″	RFPI® 900	43' - 1"	39' - 3"	37' - 0"	34' - 5"	47' - 1"	42' - 3"	38' - 7"	33' - 0"
24″	RFPI® 900	46' - 0"	41' - 10"	39' - 5"	36' - 1"	50' - 2"	44' - 2"	40' - 3"	33' - 0"

50 PSF LIVE LOAD, 15 PARTITION, 25 PSF DEAD LOAD AND 2000 LB CONCENTRATED LOAD

DEFLECTION LIMITS - LIVE LOAD = L/600 TOTAL LOAD = L/240

Joist	laist Carias		Simple	e Span		Multiple Span			
Depth	Joist Series	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.
18″	RFPI® 700	25' - 8"	23' - 4"	22' - 0"	20' - 5"	28' - 0"	25' - 5"	22' - 3"	17' - 9"
20″	RFPI® 700	27' - 10"	25' - 3"	23' - 10"	22' - 1"	30' - 3"	26' - 9"	22' - 3"	17' - 9"
22″	RFPI® 700	29' - 10"	27' - 2"	25' - 7"	23' - 7"	32' - 6"	27' - 5"	22' - 10"	18' - 2"
24″	RFPI® 700	31' - 11"	29' - 0"	27' - 4"	24' - 8"	34' - 9"	27' - 5"	22' - 10"	18' - 2"
18″	RFPI [®] 900	28' - 11"	26' - 3"	24' - 8"	22' - 10"	31' - 6"	28' - 6"	26' - 9"	22' - 5"
20″	RFPI [®] 900	31' - 3"	28' - 4"	26' - 8"	24' - 9"	34' - 1"	30' - 10"	28' - 2"	22' - 5"
22″	RFPI® 900	33' - 7"	30' - 6"	28' - 8"	26' - 7"	36' - 7"	33' - 2"	29' - 9"	23' - 9"
24″	RFPI® 900	35' - 10"	32' - 6"	30' - 7"	28' - 4"	39' - 0"	35' - 4"	29' - 9"	23' - 9"

100 PSF LIVE LOAD, 25 PSF DEAD LOAD AND 2000 LB CONCENTRATED LOAD

DEFLECTION LIMITS - LIVE LOAD = L/600 TOTAL LOAD = L/240

Joist	laist Carias		Simple Span				Multiple Span			
Depth	Joist Series	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.	
18″	RFPI® 700	22' - 0"	19' - 11"	18' - 9"	17' - 4"	23' - 11"	19' - 2"	15' - 11"	12' - 8"	
20″	RFPI® 700	23' - 10"	21' - 7"	20' - 4"	18' - 1"	25' - 8"	19' - 2"	15' - 11"	12' - 8"	
22″	RFPI® 700	25' - 7"	23' - 3"	21' - 10"	18' - 1"	26' - 4"	19' - 8"	16' - 4"	13' - 0"	
24″	RFPI® 700	27' - 4"	24' - 10"	22' - 8"	18' - 1"	26' - 4"	19' - 8"	16' - 4"	13' - 0"	
18″	RFPI® 900	24' - 9"	22' - 4"	20' - 11"	19' - 4"	26' - 10"	24' - 3"	20' - 2"	16' - 1"	
20″	RFPI [®] 900	26' - 9"	24' - 2"	22' - 8"	21' - 0"	29' - 1"	24' - 3"	20' - 2"	16' - 1"	
22″	RFPI [®] 900	28' - 9"	26' - 0"	24' - 5"	21' - 10"	31' - 3"	25' - 8"	21' - 4"	17' - 0"	
24″	RFPI® 900	30' - 8"	27' - 9"	26' - 0"	22' - 7"	33' - 4"	25' - 8"	21' - 4"	17' - 0"	

125 PSF LIVE LOAD, 25 PSF DEAD LOAD AND 2000 LB CONCENTRATED LOAD

DEFLECTION LIMITS - LIVE LOAD = L/360 TOTAL LOAD = L/240

Joist	laist Carias		Simple	e Span		Multiple Span			
Depth	Joist Series	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.
18″	RFPI [®] 700	23' - 5"	20' - 3"	18' - 2"	14' - 6"	21' - 4"	15' - 11"	13' - 3"	10' - 6"
20″	RFPI [®] 700	24' - 8"	21' - 4"	18' - 10"	15' - 1"	21' - 4"	15' - 11"	13' - 3"	10' - 6"
22″	RFPI® 700	25' - 11"	22' - 5"	18' - 10"	15' - 1"	21' - 10"	16' - 4"	13' - 7"	10' - 10"
24″	RFPI® 700	27' - 0"	22' - 8"	18' - 10"	15' - 1"	21' - 10"	16' - 4"	13' - 7"	10' - 10"
18″	RFPI® 900	27' - 5"	24' - 11"	21' - 3"	16' - 11"	27' - 0"	20' - 2"	16' - 9"	13' - 4"
20″	RFPI® 900	29' - 8"	26' - 6"	22' - 0"	17' - 7"	27' - 0"	20' - 2"	16' - 9"	13' - 4"
22″	RFPI® 900	31' - 11"	27' - 4"	22' - 9"	18' - 2"	28' - 7"	21' - 4"	17' - 9"	14' - 2"
24″	RFPI® 900	33' - 7"	28' - 4"	23' - 7"	18' - 10"	28' - 7"	21' - 4"	17' - 9"	14' - 2"

Notes:

• Web stiffeners ARE required for spans shown. See Web Stiffener Requirements on page 7.

• For 18" or 20" deep RFPI-Joists web stiffeners may or may not be required for shorter spans or other loading conditions. Use

appropriate software (e.g. RFP-KeyBeam®) or engineering analysis to determine if web stiffeners are required for other conditions.

• Clear span is the clear distance between the face of supports.

• Spans are based on uniform loads and concentrated loads as shown above. Use RFP-KeyBeam® sizing software for other loading.

• A minimum of 1³/₄" is required for end bearing, 3¹/₂" for intermediate bearing.

• Multiple Span lengths shown require adequate bottom flange lateral bracing.

• Spans are based on composite action with glued-nailed sheathing meeting the

following APA requirements:

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

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

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')

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

ear (ft)		12 5	./16"	RFPI	700	" flan	aoc)		RFPI 900 (3-1/2" wide x 1-1/2" flanges)								
a C	12	R″	20″		22	. nun)″	903) 24	1″	12	R″	20)″	2	<u>, nun</u>	24″		
įor	Live	Total	Live	Total	Live	Total	Live	- Total	Live	Total	Live	Total	Live	Total	Live	- Total	
10	-	313	-	313	-	321	-	320	-	395	-	395	-	418	-	417	
12	-	261	-	261	-	267	-	267	-	330	-	329	-	348	-	348	
14	-	224	-	224	-	229	-	229	-	283	-	282	-	299	-	298	
16	-	196	-	196	-	200	-	200	-	247	-	247	-	261	-	261	
18	157	174	-	174	-	178	-	178	218	220	-	219	-	232	-	232	
20	118	156	147	156	-	160	-	160	166	197	-	197	-	208	-	208	
22	91	142	114	142	139	145	-	145	129	179	159	179	-	189	-	189	
24	71	130	89	130	109	133	131	132	102	164	126	164	153	173	-	173	
26	57	118	72	119	88	122	105	122	82	151	102	151	123	159	147	159	
28	46	101	58	111	71	113	86	113	66	140	83	140	101	148	121	148	
30	38	88	48	98	59	106	71	105	55	130	68	130	83	138	100	137	
32	32	75	40	85	49	94	59	98	46	109	57	122	70	129	84	129	
34	26	62	33	75	41	83	49	90	38	91	48	114	59	121	71	121	
36	22	52	28	67	35	73	42	80	33	77	41	97	50	114	60	114	
38	-	-	24	56	30	65	36	71	28	65	35	82	43	102	52	107	
40	-	-	-	-	26	59	31	64	24	55	30	70	37	87	45	100	
42	-	-	-	-	22	51	27	58	-	-	26	61	32	75	39	90	
44	-	-	-	-	-	-	24	52	-	-	23	52	28	65	34	79	
46	-	-	-	-	-	-	-	-	-	-	-	-	25	57	30	69	
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	60	
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	53	
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

To Use PLF Charts:

- 1. Choose the appropriate PLF chart, Floor or Roof
- 2. Select the span required.
- Compare the design total load to the appropriate Total Load column and compare the design live load to the Live Load column.
- 4. Select a product that **meets or exceeds** both the design total and live loads.

Floor PLF Chart Notes:

1. See GENERAL NOTES below.

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

Allowable Roof Uniform Load For RFPI-Joists (PLF)

L		R	FPI 7	00 ((2-5/	16″ v	vide	x 1-1	/2″ f	lang	es)		RFPI 900 (3-1/2" wide x 1-1/2" flanges)											
_∎€		18″			20″			22″			24″			18″			20″			22″			24″	
a t	Live	То	tal	Live	То	tal	Live	То	tal	Live	То	tal	Live	То	tal	Live	То	tal	Live	То	tal	Live	То	tal
Spie	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%
10	-	361	392	-	361	392	-	369	392	-	369	392	-	455	495	-	455	495	-	481	523	-	481	523
12	-	301	328	-	301	327	-	308	327	-	308	327	-	380	413	-	380	413	-	401	437	-	401	437
14	-	258	281	-	258	281	-	264	281	-	264	280	-	326	355	-	325	354	-	344	375	-	344	374
16	-	226	246	-	226	246	-	231	245	-	231	245	-	285	310	-	285	310	-	301	328	-	301	328
18	-	201	218	-	200	218	-	205	218	-	205	218	-	253	276	-	253	275	-	267	291	-	267	291
20	-	180	196	-	180	196	-	184	196	-	184	196	-	228	248	-	227	248	-	240	262	-	240	262
22	-	164	178	-	164	178	-	167	178	-	167	178	-	207	225	-	206	225	-	218	238	-	218	238
24	-	150	163	-	150	163	-	153	163	-	153	163	-	189	206	-	189	206	-	200	218	-	200	218
26	-	136	148	-	138	150	-	141	150	-	141	150	-	175	190	-	174	190	-	184	201	-	184	200
28	116	117	127	-	128	139	-	131	139	-	131	139	-	162	176	-	161	176	-	171	186	-	171	186
30	95	101	111	-	113	123	-	122	130	-	122	129	137	151	164	-	150	164	-	159	173	-	159	173
32	79	89	97	-	99	108	-	109	118	-	114	121	114	138	147	-	141	153	-	149	162	-	149	162
34	66	78	84	83	87	95	-	96	104	-	104	114	96	122	123	120	132	144	-	140	152	-	140	152
36	56	69	71	71	77	84	-	85	93	-	93	101	82	104	104	102	120	131	125	132	144	-	132	144
38	48	60	60	60	69	75	74	76	83	-	83	90	70	88	88	88	107	112	107	118	129	-	124	136
40	41	51	51	52	62	65	64	68	74	-	74	81	60	76	76	76	96	96	93	106	116	112	116	126
42	-	-	-	45	56	56	56	61	67	-	67	73	52	65	65	66	82	82	81	96	102	97	105	114
44	-	-	-	-	-	-	49	56	60	59	61	66	46	56	56	57	71	71	71	87	89	85	95	104
46	-	-	-	-	-	-	43	51	53	52	55	60	-	-	-	51	62	62	62	77	77	75	86	94
48	-	-	-	-	-	-	-	-	-	46	50	55	-	-	-	45	54	54	55	68	68	66	79	82
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49	59	59	59	72	73
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	52	52	52	64	64
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	57	57
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	51	51
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Roof PLF Chart Notes:

- 1. See GENERAL NOTES below.
- Deflection under total load is limited to L/180.
- Roofs must be sloped at least 1/4" in 12" to assure drainage.
- 4. 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 7.
- 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.

GENERAL NOTES

- 1. Web stiffeners ARE required for the PLF loads shown. See Web Stiffener Requirements on Page 7.
- For 18" or 20" deep RFPI-Joists web stiffeners may or may not be required for PLF loads lighter than those shown. Use appropriate software (e.g. RFP-KeyBeam[®]) or engineering analysis to determine if web stiffeners are required for other PLF loading.
- 3. Table values apply to uniformly loaded simple or multiple span joists.
- 4. Clear span is the clear distance between the face of supports.
- Use RFP-KeyBeam[®] sizing software to analyze multiple span joists if the length of any span is less than half the length of an adjacent span.
- 6. Minimum end bearing length is 1%4". Minimum intermediate bearing length is 3½".
- This table does not account for added stiffness from glued or nailed sheathing.

- 8. Use beam sizing software to analyze conditions outside of the scope of this table such as cantilevers and concentrated loads.
- Both live and total loads must be checked live load against the Live column and total load against the Total column. When no value is shown in the Live column, total load will govern.
- 10. Verify that the deflection criteria conforms to local building code requirements.
- 11. Provide lateral support at bearing points and continuous lateral support along the compression flange of each joist.
- 12. For proper installation procedures, refer to the appropriate sections in this publication.

Web Stiffener Requirements

Web stiffeners are required for all 22" and 24" deep RFPI joist applications. Depending on the loads and spans, web stiffeners may or may not be required for 18" and 20" deep RFPI joists. The span charts and PLF tables in this guide are based on the use of web stiffeners for all series and depths. For other conditions, use appropriate software (e.g. RFP-KeyBeam®) or engineering analysis to determine if web stiffeners are required. A web stiffener is a block of plywood, OSB, or 2x that is added to stiffen the I-joist's web, increase the bearing surface between the web and the flange, and provide additional support for a hanger or other connector. The proper installation of web stiffeners is very important, particularly for deeper depth I-joists which are capable of carrying large loads and developing high reactions. When used at end or intermediate bearings, web stiffeners must be installed on both sides of the web and tight against the bottom flange of the I-joist, but with a minimum 1/8" gap between the top of the stiffener and the bottom of the top flange. Web stiffeners must be made of Utility grade SPF (south) or better for lumber and/or Sheathing grade or better for wood structural panels.

Web stiffeners are also required for the following:

- When sides of the hangers do not laterally brace the top flange of the I-joist.
- When I-joists are designed to support concentrated loads greater than 1000 lbs applied to the I-joist's top flange between supports. In these applications only, the gap between the web stiffener and the flange shall be at the bottom flange. (See Figure B below.)

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

FIGURE B

RFPI-JOIST WEB STIFFENER REQUIREMENTS



WEB STIFFENER NAILING SCHEDULE

RFPI®-Joist Series	Joist Depth	Minimum Web Stiffener Size	Nail Requirement
RFPI 700	18" & 20"	7/8″ x 3-1/2″	8 - 8d box (0.113" dia x 2-1/2")
RFPI 700	22" & 24"	7/8" x 3-1/2"	10 - 8d box (0.113″ dia x 2-1/2″)
RFPI 900	18" & 20"	1-1/2″ x 3-1/2″	8 - 16d box (0.135″ dia x 3-1/2″)
RFPI 900	22" & 24"	1-1/2″ x 3-1/2″	10 - 16d box (0.135" dia x 3-1/2")

Slope Length Conversion Chart



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

		Joist Depth (inches)								
Slope	Slope	18	20	22	24					
	Fucior		Depth Corr	ection (feet)						
1 in 12	1.00	0.13	0.14	0.15	0.17					
2 in 12	1.01	0.25	0.28	0.31	0.33					
2.5 in 12	1.02	0.31	0.35	0.38	0.42					
3 in 12	1.03	0.38	0.42	0.46	0.50					
3.5 in 12	1.04	0.44	0.49	0.53	0.58					
4 in 12	1.05	0.50	0.56	0.61	0.67					
4.5 in 12	1.07	0.56	0.63	0.69	0.75					
5 in 12	1.08	0.63	0.69	0.76	0.83					
6 in 12	1.12	0.75	0.83	0.92	1.00					
7 in 12	1.16	0.88	0.97	1.07	1.17					
8 in 12	1.20	1.00	1.11	1.22	1.33					
9 in 12	1.25	1.13	1.25	1.38	1.50					
10 in 12	1.30	1.25	1.39	1.53	1.67					
11 in 12	1.36	1.38	1.53	1.68	1.83					
12 in 12	1 4 1	1.50	1 67	1.83	2.00					



INSTALLATION NOTES

- Except for cutting to length, top and bottom flanges of RFPI-Joists shall not be 1. cut, drilled or notched.
- Web stiffeners are required for all 22" and 24" deep RFPI joist applications. 2. Depending on the loads and spans, web stiffeners may or may not be required for 18" and 20" deep RFPI joists.
- Install joist hangers per hanger manufacturers recommendations.
- Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist web.
- Any fastening, resistance to uplift or application not specifically detailed is 5. subject to local approval.
- I-Joist end bearing length must be at least 13/4". Intermediate bearings of multiple span joists must be at least 31/2"
- 7. Engineered lumber must not remain in direct contact with concrete or masonry construction and must be used in **dry-service conditions only**.
- 8. RFPI-Joists must be restrained against rotation at the ends of joists by use of rimboard, rim joists, blocking panels, or cross-bracing. To laterally support cantilevered joists, blocking panels must also be installed over supports nearest the cantilever
- Additionally, rimboard, rim joists, blocking panels, or squash blocks must be

provided under all exterior walls and interior load bearing walls to transfer loads from above to the wall or foundation below.

- 10. Plywood or OSB subfloor nailed to the top flange of an RFPI-Joist is adequate to provide lateral support.
- 11. Install I-joists so that top and bottom flanges are straight and remain within $\frac{1}{2}$ inch of true alignment.
- 12. Roseburg does not require mid-span blocking or bridging in RFPI floor or roof applications
- 13. 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.
- 14. 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.

Recomme	nded Nail Size and Spacing	Flange Face N	lailing (in) ^{(a)(b)}	Flange Edge Nailing (in)					
Material	Fastener Diameter ^{(c) (d)}	End Distance	Nail Spacing	End Distance	Nailed to one flange edge	Nailed to both flange edges ^(e)			
LVL Flange	dia.≤ 0.128″ (8d box or sinker, 10d box or sinker, 12d box)	3	2	3	3	6			
	0.128″ <dia.≤ (8d="" 0.148″="" 10d="" com,="" com,<br="">12d sinker or com, 16d box or sinker)</dia.≤>	3	3	3	3 ^(f)	6 ^(f)			

f.

Nailing Notes:

Attach sheathing to RFPI-Joist in accordance with applicable building α. code or approved building plan. However, do not use nails larger or spaced closer than shown in the table above.

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

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

- Nails on opposing flange edges must be offset one-half the minimum e. If more than one row of nails is required, rows must be offset by at least spacina.
 - Maximum of 0.131" diameter (8d common)

1/2" and staggered.

b.







BACKER BLOCK AND HEADER DETAIL

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

See charts below for backer block thickness & depth.

Install backer block tight to the top flange.

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

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

GENERAL NOTES:

For hanger capacity see hanger manufacture recommendations.

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

If a double I-joist is required to support "header joist" load, refer to Detail 20 on Page 12 for filler block and double I-joist connection guidelines.

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

I-Joist Flange Width	Backer block Material Thickness Required ^{(a)(b)}	Max. load capacity using 16-10d com. nails					
2-5/16″	1″	1250 lbs					
3-1/2″	1-1/2″	1250 lbs					

(a) Minimum grade for backer material shall be Utility grade SPF or better for

solid sawn lumber and Rated Sheathing grade for wood structural panels. (b) Glue 2-ply backer blocks together with construction grade adhesive (ASTM D-3498)



Backer Block Depth											
Joist Depth	18″	20″	22″	24″							
Top Mount Hangers - Min. Backer Block Depth	7-1/4″	7-1/4″	7-1/4″	7-1/4″							
Face Mount Hangers - Req'd Backer Block Depth	14-3/4″	16-3/4″	18-3/4″	20-3/4″							













2x6 min. (Utility grade SPF south or better) each side (see calculations at right)

3





Cantilever Details

Please refer to note 8 on page 8.



14 WALL TENSION TIE - WITH STRAPS



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

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

$$L_{1} = \frac{0.75 \times P \times Z \times \left(\frac{a}{D}\right)}{50 \times C_{D} \times \left[1 - \left(\frac{0.75 V_{LL} + V_{Dl}}{C_{D} V_{A}}\right)\right]}$$

2. Find number of nails required: $n = \frac{1}{C_D V_r}$

3. Find required length of block based on number of nails. Use 2 rows of 16d (0.135" x 31/2") box nails at 3" o.c. with 3" end distance

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

4. Use the larger of L₁ and L₂ to determine the minimum required length of 2x6 block.

- P = Axial load (lbs)
- d = Distance from top of I-joist to center line of axial connection (in.)
- D = Depth of I-joist
- C_{D} = Load duration factor = 1.6 for wind or seismic
- L_1 , L_2 = Length "L" of block (in.). Use larger of L, and L,
- Z = 1.0 for wind; 0.7 for seismic
- n = Number of 16d (0.135" x 31/2") nails
- V_{A} = Allowable shear load (lbs) on RFPI joist at 100% DOL (See page 4)
- V_{DL} = Design shear load due to gravity dead load (lbs)
- V_{LL} = Design shear load due to gravity live load (lbs)
- V_n = 16d (0.135" x 3¹/₂") box nail shear capacity; see table below

RFPI Web Thickness	V _n @ 100% (lbs)
3/8″	107
7/16″	124

LUMBER CANTILEVER DETAIL FOR BALCONIES

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



18) CANTILEVER DETAIL FOR VERTICAL BUILDING OFFSET - (Use KeyMark software to determine required reinforcement)

METHOD 1

SHEATHING REINFORCEMENT ONE SIDE

METHOD 2



19 CANTILEVER DETAIL FOR VERTICAL BUILDING OFFSET

ALTERNATIVE METHOD 2



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

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

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



DOUBLE RFPI®-JOIST CONSTRUCTION

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

Flange Width	Joist Depth	Joist Designation	Net Filler Block Thickness	Minimum Filler Block Depth
	18″	700	2″	10″
0 5 / 1 / //	20″	700	2″	10″
2-5/10	22″	700	2″	10″
	24″	700	2″	10″
	18″	900	3″	10″
3-1/2″	20″	900	3″	10″
	22″	900	3″	10″
	24″	900	3″	10″

Notes:

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

Roof Framing & Construction Details



Holes For RFPI[®]-Joists Used In Floor/Roof Applications

RFPI-JOIST TYPICAL HOLES - See "HOW TO USE HOLE CHART" below

_ Minimum distance from inside face of support to the center of hole. See Hole Chart.



HOLE CHART - 40 PSF Live Load and 25 PSF Dead Load ONLY MINIMUM DISTANCE FROM INSIDE FACE OF NEAREST JOIST SUPPORT TO CENTER OF HOLE ^{(1) (2)}

							R	lound H	ole Dian	neter (in	.)								
Joist Decignation	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Designation	Minimum Distance from Inside Face of Nearest Support to Center of Hole (ft-in.) ⁽¹⁾⁽²⁾																		
18" RFPI 700	0'-7"	0'-8"	0'-8"	1'-4"	2'-5"	3'-7"	4'-9"	6'-0"	7'-3"	8'-8"	10'-3"	12'-3"	14'-11"						
20" RFPI 700	0'-7"	0'-8"	0'-8"	0'-9"	0'-10"	1'-11"	3'-0"	4'-4"	5'-9"	7'-2"	8'-8"	10'-2"	11'-11"	14'-2"	16'-10"				
22" RFPI 700	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-8"	3'-0"	4'-4"	5'-8"	7'-1"	8'-6"	10'-0"	11'-6"	13'-4"	15'-10"	18'-5"		
24" RFPI 700	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	0'-10"	1'-7"	2'-10"	4'-2"	5'-5"	6'-9"	8'-1"	9'-8"	11'-4"	13'-1"	15'-3"	17'-8"	20'-2"
18" RFPI 900	0'-7"	1'-2"	2'-5"	3'-9"	5'-0"	6'-4"	7'-8"	9'-1"	10'-6"	12'-0"	13'-9"	15'-8"	17'-8"						
20" RFPI 900	0'-7"	0'-8"	1'-7"	2'-9"	3'-11"	5'-1"	6'-5"	7'-11"	9'-6"	11'-1"	12'-9"	14'-6"	16'-3"	18'-5"	20'-8"				
22" RFPI 900	0'-7"	0'-10"	1'-11"	3'-0"	4'-1"	5'-2"	6'-4"	7'-6"	8'-11"	10'-4"	11'-10"	13'-5"	15'-1"	17'-0"	18'-11"	21'-1"	23'-10"		
24" RFPI 900	0'-7"	0'-8"	1'-3"	2'-3"	3'-4"	4'-7"	5'-11"	7'-2"	8'-6"	9'-10"	11'-3"	12'-8"	14'-1"	15'-8"	17'-5"	19'-4"	21'-9"	24'-4"	26'-11"

Notes:

- Distances in this hole chart are conservatively based on uniformly loaded joists and the maximum allowed single or multi-span applications with 40 live/25 dead at on-center spacings of 12", 16", 19.2" or 24". Holes that fall outside of these hole chart guidelines (e.g. floors with concentrated loads) may still be acceptable based on actual span and loading conditions. The most accurate method of determining the acceptability of a given hole is the use of appropriate software (e.g. RFP-KeyBeam[®] by Keymark Enterprises,LLC) or engineering analysis for the actual condition.
- 2. Hole location distance is measured from inside face of nearest support to center of hole.
- 3. Use KeyMark software to analyze duct chase openings.

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.

RULES FOR CUTTING HOLES

- See chart 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.
- 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.
- 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

Example: Need a $13\frac{1}{2}$ -inch hole in an 18'' RFPI®-900 joist:

From Hole Chart,

For a 13-inch round hole, the minimum distance is 15'-8''. For a 14-inch round hole, the minimum distance is 17'-8''. Therefore the minimum distance for the $13^{1/2}$ -inch round hole is 16'-8'' (halfway between 15'-8'' and 17'-8'').

> 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.

- 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.
- 11/2" 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 $1\frac{1}{2}''$ hole can be placed anywhere in the web provided that it meets the requirements of rule 6 on this page.
- 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.
- 12. All holes shall be cut in a workmanlike manner in accordance with the restrictions listed herein.

Deep Depth RFPI®-Joist

Fire & Sound Rated Floor Assemblies

ONE-HOUR FIRE-RATED ASSEMBLIES WITH APA PERFORMANCE RATED I-JOISTS

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 720.1(3) of the 2006 and 2009 IBC and Table 721.1(3) of the 2012 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, lists the various IBC and APA fire-rated floor-ceiling assemblies for which RFPI-Joists have specific code approval. The website addresses for these publications are as follows:



(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.

2006 IBC Table 720.1(3)	2009 IBC Table 720.1(3) 2012 IBC Table 721.1(3)	APA ICC-ES Report ESR-1405	American Wood Council DCA3	APA "Fire Rated Systems" W305	Duration	RFPI-Joist series that meet the assembly requirements
Item 21-1.1	ltem 21-1.1	Assembly 2	-	-	1 hr.	All RFPI series
Item 23-1.1	Item 23-1.1	-	WIJ-1.3	Fig. 4.3C	1 hr.	All RFPI series
Item 25-1.1	ltem 24-1.1	-	WIJ-1.1	Fig. 4.3A	1 hr.	RFPI 90 & 900
Item 26-1.1	Item 25-1.1	-	WIJ-1.2	Fig. 4.3B	1 hr.	RFPI 90 & 900
Item 27-1.1	ltem 26-1.1	-	WIJ-1.5	Fig. 4.3E	1 hr.	RFPI 40S, 60S, 70, 90, 700 & 900
Item 28-1.1	ltem 27-1.1	-	WIJ-1.6	Fig. 4.3F	1 hr.	All RFPI series
-	-	-	WIJ-1.4	Fig. 4.3D	1 hr.	RFPI 40S, 60S, 70, 90, 700 & 900
-	-	-	WIJ-1.7	-	1 hr.	RFPI 40S, 60S, 70, 90, 700 & 900
-	-	Assembly 1	-	-	1 hr.	RFPI 40S, 60S, 90, & 900
-	-	Assembly 3	-	-	1 hr.	All RFPI series
Item 29-1.1	ltem 28-1.1	-	WIJ-2.1	Fig. 5	2 hr.	RFPI 40S, 60S, 70, 90, 700 & 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 I-JOISTS

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	5 /0 // L	Official states and the second	58	50	21.0
	Carpet & Pad	over 3/4" APA Rated Sheathing	5/8" screwed to resilient	3 glass fiber	58	77	21.0
GAR USDA TTX ST	None	subfloor on I-joist at 24" o.c.	meiar chuimeis	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.

Available RigidLam[®] LVL Grades and Sizes*

RIGIDLAM LVL GRADES: RIGIDLAM LVL THICKNESSES: RIGIDLAM LVL DEPTHS:

1.3E, 1.5E , 2.0E and 2.2E 1-1/2", 1-3/4", 3-1/2", 5-1/4" and 7" 3-1/2", 4-3/8", 5-1/2", 7-1/4", 9-1/4", 9-1/2", 11-1/4", 11-7/8", 14", 16", 18", 20", 22" & 24" RIGIDLAM LVL COLUMN SIZES: 3-1/2" x 3-1/2", 3-1/2" x 5-1/2", 3-1/2" x 7" 5-1/4" x 5-1/4", 5-1/4" x 5-1/2", 5-1/4" x 7" 7″ x 7″

MOISTURE REPELLENT SEALER

RigidLam LVL is coated with a wax-based moisture repellent sealer that is formulated specifically for LVL. It is applied to all six sides of the LVL during the manufacturing process. After the sealer dries, it is inert and clear in appearance.

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

RigidLam[®] LVL Allowable Design Stresses¹

		1.3E RigidLam LVL	1.5E RigidLam LVL	2.0E RigidLam LVL	2.2E RigidLam LVL
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	2,900	3,400
Bending – Flatwise ⁵	F _b flat (psi) =	2,250	2,250	2,900	3,400
Horizontal Shear - Edgewise	F_v edge (psi) =	200	220	285	325
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	850
Compression Perp. To Grain ² - Flatwise	F _{c perp} flat (psi) =	500	500	500	500
Compression Parallel to Grain	F _{c para} (psi) =	1,950	1,950	2,750	3,200
Tension Parallel to Grain ⁶	F _t (psi) =	1,500	1,500	1,900	2,425
MOE for stability calculations ²	E _{min} (psi) =	660,660	762,300	1,016,400	1,118,050

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 edge by $(12/d)^{1/8}$ where d = depth of member (in). 4. A factor of 1.04 may be applied for repetitive members as defined in the National

Design Specification for Wood Construction.

PERMISSIBLE HORIZONTAL ROUND HOLE LOCATION FOR **RIGIDLAM® LVL BEAMS** Minimum horizontal spacing



• 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 or engineering analysis.

MINIMUM NAIL SPACING FOR RIGIDLAM LVL BEAMS

Spacing parallel to glue lines Parallel end distance



Nail Size	Minimum Parallel Spacing	Minimum Parallel End Distance	Minimum Perpendicular Spacing
8d Box	3″	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″

5. Tabulated F, flat values are based on a thickness of 13/4". For other thicknesses, when loaded flatwise, multiply F, flat by (1.75/t) ^{1/5}, where t is the LVL thickness in inches. For thicknesses less than $1\frac{5}{4}$, use the tabulated value.

6. Tensile stress is based on a 4-foot gage length. For greater lengths, multiply $\mathrm{F_{t}}$ by (4/L)^{1/9} where L=length in feet. For lengths less than 4 feet, use the tabulated value.

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 job site 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 nonstandard depth provided it is structurally adequate for the applied loads (non-standard depths may be analyzed using KeyBeam software).
- 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.

Spacing

RigidLam[®] LVI

RigidLam LVL Bearing Details

BEAM-TO-BEAM CONNECTION BEARING ON WOOD COLUMN BEARING ON STEEL COLUMN Make sure hanger capacity is appropriate Verify the required bearing length and the ability Verify the required bearing length and the for each application. Hangers must be of the supporting column member to ability of the supporting column member properly installed to accommodate provide adequate strength. to provide adequate strength. full capacity. BEARING ON EXTERIOR WALL BEARING FOR DOOR OR WINDOW HEADER POCKET CONSTRUCTION Provide 1/2" air space on top, sides and end of RigidLam Check for proper beam LVL beams. bearing length based on plate material. Install the appropriate number of jack studs to provide required bearing length. Provide moisture barrier between RigidLam LVL beams and concrete.

Fastening Recommendations For Multiple Ply Members

TOP LOADED MEMBERS

- For 12" deep (or less) members, nail plies together with 2 rows of 16dx31/2" 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 16dx31/2" 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 16dx31/2" com. nails at 12" o.c. (add 1 row for 16d sinkers).

2-Ply 3-Ply 4-Ply

SIDE LOADED MEMBERS

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

			Na	iled		Bolted						
1-1/2" Thick Pieces in	Nail Size	2 rows 10d common at 12″ o.c.		0d common 3 rows 10d common 2″ o.c. 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.		
Member		1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	
2 - 1-1/2"	10d com. (0.148″ x 3″)	465	465	700	700	395	435	795	870	1190	1305	
3 - 1-1/2"	10d com. (0.148" x 3")	350	350	525	525	295	325	595	650	895	980	
4 - 1-1/2"	use bolts	-	-	-	-	265	290	530	580	795	870	
			Na	iled				Bol	ted			
1-3/4" Thick Pieces in	Nail Size	2 rows 16 at 12	d common ″ o.c.	3 rows 16 at 12	d common ″ o.c.	a 2 rows 1/2" bolts 2 rows 1/2" bolts at 24" o.c. at 12" o.c.		/2″ bolts ″ o.c.	s 3 rows 1/2" bolts at 12" o.c.			
Member		1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL	
2 - 1-3/4"	16d com. (0.162" x 3-1/2")	560	560	845	845	460	505	925	1015	1390	1520	
3 - 1-3/4"	16d com. (0.162" x 3-1/2")	420	420	635	635	345	380	695	760	1040	1140	
4 - 1-3/4"	use bolts	-	-	-	-	305	335	615	675	925	1015	
2 - 3-1/2"	use bolts	-	-	-	-	820	860	1640	1720	2465	2580	

RECOMMENDED FASTENER DESIGN INFORMATION IN TERMS OF EQUIVALENT SPECIFIC GRAVITY FOR HEADER GRADES OF RIGIDLAM LVL

	Fa	ice	Edge	
	1.3E & 1.5E LVL	2.0E & 2.2E LVL	1.3E & 1.5E LVL	2.0E & 2.2E LVL
Withdrawal - nail	0.50	0.50	0.47	0.50
Dowel Bearing - nail	0.50	0.50	0.47	0.50
Dowel Bearing - bolt	0.47	0.50	Not applicable	

- Use RFP-KeyBeam[®] sizing software 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 below 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.



Refer to the manufacturers' information for the appropriate design and installation guidelines.

Simpson SDW Wood Screws



SIMPSON

Strong-Drive* screw identifier and diameter	← L	Model No.	
W22	+	SDW22338	
1.Xt		SDW22500	
	0.22"	SDW22634	

- Code Evaluation Report IAPMO ER-0192
- For SDW design and installation information, refer to the current Simpson Strong-Tie literature, www.strongtie.com ٠ or contact Simpson Strong-Tie at 800-999-5099.

Simpson SDS Wood Screws SIMPSON

Strong-Tie [®]
CONNECTORS

inde-	Model No.	L ₁ (in)	T (in)	Head Stamp
	SDS25312	3-1/2	2-1/4	\$3.5
	SDS25412	4-1/2	2-3/4	S4.5
1	SDS25600	6	3-1/4	S6

L (in)

3-3/8

.5

6-3/4

TL (in)

1-9/16

1-9/16

1-9/16

- 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





Serrations	Cut threads	Self drilling point
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Model No.	L (in)	SH (in)	T (in)
W\$35	3-1/2	3/4	2-3/4
W\$45	4-1/2	1-1/4	3-1/4
WS6	6	1-3/4	4-1/4

Head Stamp

Length

3 37

5.00

6.75

- 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.	FastenMaster TrussLok W	ood Scre	ews		
ENGINEERED WOOD FASTENER		Model No.	L (in)	TL (in)	Head Marking
		FMTSL338	3-3/8	1-1/2	F3.3
		FMTSL005	5	1-1/2	F5.0
 Code Evaluation 	Report – ICC-ES ESR-1078	FMTSL634	6-3/4	1-1/2	F6.7

For TrussLok design and installation information, refer to the current FastenMaster literature, www.fastenmaster.com or contact FastenMaster at 800-518-3569



RigidRim® OSB Rim Board Specifications

As a component of the Roseburg Framing System[®], RigidRim[®] OSB Rim Board 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 OSB Rim Board is currently available in two thicknesses and three grades:

1¹/8" RigidRim[®] OSB Rim Board

- 11/8" RigidRim® OSB Rim Board Plus
- 1¹/4" RigidRim[®] OSB Rim Board Seismic (Ainsworth Durastrand)

The RigidRim[®] OSB Rim Board products are available in lengths up to 24-ft. All RigidRim OSB Rim Board products are available in all of the deep I-joist depths.

All three products are manufactured in accordance with ICC Evaluation Service, Inc. Acceptance Criteria For Rim Board Products (AC124) and PRR-401, Performance Standard for APA EWS Rim Boards. Ainsworth 1¹/4" Durastrand® Rim Board has an ICC ES Report (ESR-1210) and can also be designed for edgewise bending applications to support loads over window and door openings. For additional information regarding spanning window and door openings and cutting holes in Rim Board, refer to the APA Publications "I-Joist Construction Details" (Form D710) and "APA Performance Rated Rim Board" (Form W345G).

Roseburg's Rim Board 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 8 for additional framing information.

RigidRim Rim Board Design Properties (1)(2)(4)							
Panel ThicknessVertical Load (PLF) Depth ≤ 16"Vertical Load (PLF) 16"Horizontal Load (PLF)Post Load (Pounds) Depth ≤ 24"Lag Screw (1/2" (Pounds) Depth ≤ 24"							
OSB RigidRim Rim Board	1-1/8″	4400	3000	180 (8d box or com)	3500	350	
OSB RigidRim Rim Board Plus	1-1/8″	4850	3200	200 (8d box or com)	3500	350	
OSB RigidRim Rim Board Seismic	1-1/4″	5700	3500	240 ⁽³⁾ (8d com)	5500 ⁽⁵⁾	400	

(1) All design properties assume:

- Maximum joist spacing of 24" on-center
- Maximum joist depth of 16"
- Rimboard nailing of 8d nails @ 6" on-center
- (2) All design values, except Horizontal Load, are based on long-term load duration (100%) and may be adjusted for other load durations in accordance with the applicable code. Horizontal Load may not be adjusted for duration of load.
- (3) Horizontal load may be increased to 330 PLF when Rim Board nailing of 8d com. nails @ 4" on-center is used.

(4) The 16d (box or common) nails used to connect the bottom plate of a wall to the Rim Board through the sheathing do not reduce the horizontal load capacity of the Rim Board provided that the 8d nail spacing (sheathing to Rim Board) is 6" o.c. and the 16d nail spacing (bottom plate to sheathing to Rim Board) is in accordance with the prescriptive requirements of the applicable code.

(5) For 1-1/4" RigidRim Rim Board Siesmic, the allowable Post Load is 5900 lbs. for depths 16" or less.

RigidRim Rim Board Edgewise Design Properties						
	Flexural Stress Modulus of Elasticity Tension Parallel to Grain Horizontal Shear Compression Per to Grain					
1-1/8" OSB Rim Board & Rim Board Plus	600 psi (1)	0.55 x 10 ⁶ psi	-	270 psi	550 psi	
1-1/4" OSB Rim Board Seismic	1130 psi	0.80 x 10 ⁶ psi	680 psi	355 psi	1415 psi	

(1) Allowable edgewise bending stress is applicable only to a span of 4' or less

(2) Applicable for lengths up to 14 ft.

(3) Compression Perpendicular to Grain value may not be increased for duration of load

CODE REPORT INDEX

ROSEBURG EWP CODE REPORTS	PRODUCT
ICC ESR-1251	I-JOIST
ICC ESR-1210	LVL & LVL Rim
APA PR-L259	I-JOIST
APA PR-L289	LVL
APA PR-L270	LVL STUDS
City of Los Angeles RR 25439	I-JOIST
City of Los Angeles RR-25680	LVL & LVL Rim
DSA PA-131	I-JOIST
DSA PA-136	LVL
DSA AC 23-1	I-JOIST
Florida FL2440	I-JOIST & LVL
CCMC 13323-R (Canada)	I-JOIST
CCMC 13310-R (Canada)	LVL



The code reports listed above are available at www.roseburg.com, in the Engineered Wood Products section, Technical Information.

Software Tools

Roseburg Forest Products offers several software tools that will aide you in generating accurate and professional layout drawings and calculations. These software tools include RFP-KeyBeam[®] and RFP-KeyPlan[®] developed by Keymark Enterprises, LLC, a company long recognized as an industry leader in the development of progressive software solutions. Also available is the SmartFramer[™] layout software developed by Roseburg.

RFP-KEYBEAM®

RFP-KeyBeam is a powerful, yet easy to use single member sizing program that enables you to size RFP engineered wood products for almost any structural condition. You provide a description of the spans, supports, and loads of a specific sizing problem and RFP-KeyBeam will present you with a list of multiple product solutions. After selecting a product you can print out a professional and easy to read calc sheet. You can also use RFP-KeyBeam to determine if a particular I-Joist or LVL beam works for a specific application.

The program designs RFPI®-Joists at their optimum on-center spacing and RIGIDLAM® LVL beams at their optimum depth. Rectangular or circular holes can also be designed for RFPI-Joists and the program can determine the maximum size hole for a given location. Cantilever reinforcement is automatically specified when required for RFPI-Joists used in load bearing cantilever applications.

A new software module, KeyColumn[®], is also provided in conjunction with the RFP-KeyBeam. KeyColumn is a single member sizing software for use with columns and wall studs. 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.

Roseburg Forest Products will provide this powerful program to you at no cost. You can obtain it in any of the following ways:

- Visit our Website at www.Roseburg.com and download it directly to your computer.
- Send us an e-mail at ewpsales@rfpco.com and request it. We will mail an installation CD to you.
- Call us at 1-800-347-7260 and request it.
- In all cases, please provide your name, job title, company name and address, phone number and e-mail address.

RFP-KEYPLAN®

Also available is RFP-KeyPlan, the complete automation system for engineered wood products. With this remarkable tool, the operator describes the framing geometry and RFP-KeyPlan does the rest. In fact, the program will automatically:

- Develop loads throughout the structure
- · Size all framing members for RFP engineered wood products
- Select hangers
- Generate placement plans
- · Generate inventory management, cut optimization, & material consolidation

Keymark provides all training and software support necessary to successfully learn and implement these two programs. You can obtain more information about the RFP-KeyBeam and RFP-KeyPlan software systems by contacting Keymark directly at 1-800-652-6050 or visiting Keymark's website at www. keymark.com. While talking with Keymark, make sure to schedule a free interactive software demonstration.

SMARTFRAMERTh

SmartFramer software is a proprietary, user-friendly drafting tool that allows you to quickly draw joists, beams, rimboard and hangers for residential or light commercial applications on your computer and print the results with a professional looking color-coded plot. The software program also gives you the opportunity to automatically generate a material list and a bid sheet if desired. SmartFramer is a simple to use layout tool, but does not check the structural adequacy of the framing members. The SmartFramer software is an "add-on" module that runs on the SmartSketch™ drawing program developed by Intergraph Corporation. The SmartFramer is a well-established drafting program that you can purchase directly from the Intergraph Corporation. Roseburg will provide the SmartFramer module at no cost to you.



10599 Old Hwy 99 South | Dillard Oregon 97432 tel 800-347-7260 | fax 541-679-2612 web www.Roseburg.com | email ewpsales@rfpco.com

RFPI®, RIGIDLAM®, RIGIDRIM®, RFP-KEYBEAM®, RFP-KEYPLAN®, RFP-KEYCOLUMN®, SmartFramer™, Roseburg Framing System®, Quality Engineered Wood Products For Today's Builder® are trademarks of Roseburg Forest Products, Roseburg, Oregon.