APA PRODUCT REPORT®

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Roseburg RFPI® Series I-Joists
Roseburg Forest Products Company

PR-L259
Revised August 7, 2024

Products: Roseburg RFPI Series I-Joists
Roseburg Forest Products Company, 4500 Riddle Bypass Road, Riddle, Oregon 97469
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1. Basis of the product report:
   - 2024 International Building Code (IBC): Sections 104.2.3 Alternative materials and 2303.1.2 Prefabricated wood I-joists
   - 2021, 2018, and 2015 IBC: Sections 104.11 Alternative materials and 2303.1.2 Prefabricated wood I-joists
   - 2024 International Residential Code (IRC): Sections R104.2.2 Alternative materials and R502.1.2 and R802.1.7 Prefabricated wood I-joists
   - 2021, 2018, and 2015 IRC: Sections 104.11 Alternative materials, and R502.1.2 and R802.1.8 (2018 IRC only) Prefabricated wood I-joists
   - ASTM D5055-19e1, D5055-16, D5055-13e1, and D5055-13 recognized in the 2024 IBC and IRC, 2021 IBC and IRC, 2018 IBC and IRC, and 2015 IBC and IRC, respectively
   - APA PRI-400, Performance Standard for Residential I-Joists
   - 2021 and 2015 ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) recognized in the 2024 and 2021, and 2018 and 2015 IBC, respectively
   - APA Reports T2000P-14, T2001P-64, T2002P-57, T2002P-62A, T2003P-15, T2003P-20, T2003P-67, T2005P-101C, T2006P-04, T2006P-76A, T2008P-11, T2008P-75, T2009P-33, T2009P-42, T2009P-48, T2009P-50, T2010P-35, T2010P-57, T2011P-51, T2011P-52, T2012P-31, T2013P-22, T2013P-24A, T2015L-05B, T2015P-06, T2017L-25, T2018P-30, and T2023P-23, and other qualification data

2. Product description:
   All RFPI series I-joists, as described in Table 1, are made with laminated veneer lumber (LVL) flanges with the exception of RFPI-40S, RFPI-60S, RFPI-65S, RFPI-70S, RFPI-80S, and RFPI-90S which are made of lumber flanges, and OSB webs in accordance with the in-plant manufacturing standard approved by APA.

3. Design properties:
   Tables 2, 3a, and 3b list the design properties for RFPI series I-joists. Table 4 shows the allowable lateral shear capacities of RFPI series I-joists in diaphragm applications. Table 5 shows web stiffener information. Allowable span information for RFPI series I-joists shall be in accordance with the recommendations provided by the manufacturer (www.roseburg.com).

4. Product installation:
   Installation of RFPI series I-joists shall be in accordance with the recommendations provided by the manufacturer (see link above). Permissible web holes and cantilever reinforcements shall be in accordance with the recommendations provided by the manufacturer.

5. Fire-rated assemblies:
   Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer, APA Product Report PR-S259, or APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (www.apawood.org/resource-library).

6. Limitations:
   a) RFPI series I-joists shall be designed in accordance with the code using the design properties specified in this report.
   b) RFPI series I-joists are limited to dry service conditions where the average equilibrium moisture content of sawn lumber is less than 16%.
   c) RFPI series I-joists, except for RFPI-40S, RFPI-60S, RFPI-65S, RFPI-70S, RFPI-80S, and RFPI-90S, are produced at the Roseburg Forest Products Company facility in Riddle, Oregon under a quality assurance program audited by APA.
   d) RFPI-40S, RFPI-60S, RFPI-65S, and RFPI-80S are produced at the EACOM Timber Corporation (DBA INTERFOR) facility in Sault Ste. Marie, Ontario under a quality assurance program audited by APA.
   e) RFPI-40S, RFPI-60S, RFPI-70S, RFPI-80S, and RFPI-90S are produced at the IB EWP Inc.'s facility in Pohénégamook, Quebec under a quality assurance program audited by APA.
   f) This report is subject to re-examination in one year.

7. Identification:
   The RFPI series I-joists described in this report are identified by a label bearing the manufacturer's name (Roseburg Forest Products Company) and/or trademark, the APA assigned plant number (1053 for Roseburg Forest Products, Riddle, Oregon, 1058 for EACOM (DBA INTERFOR), Sault Ste. Marie, Ontario, and 1135 for IB EWP Inc., Pohénégamook, Quebec), the I-joist series and depth, the APA logo, the report number PR-L259, and a means of identifying the date of manufacture. RFPI-40, RFPI-70, and RFPI-90 are permitted to be labelled as onCENTER® BLI 400, BLI 700, and BLI 900, respectively.

Table 1. Description of Roseburg Forest Products RFPI Series I-Joists[(a)]

Joist Series	Joist Depth (in.)	Flange				Web	
		Material	G[(b)]	Dimension		Material	Thickness (in.)
				Depth (in.)	Width (in.)		
RFPI-20	9-1/2 - 14	LVL	0.50	1-3/8	1-3/4	OSB	3/8
RFPI-40S	9-1/2 - 16	Proprietary SPF	0.42	1-1/2	2-1/2	OSB	3/8
RFPI-400	9-1/2 - 16	LVL	0.50	1-3/8	2-1/16	OSB	3/8
RFPI-40	9-1/2 - 16	LVL	0.50	1-3/8	2-5/16	OSB	3/8
RFPI-60S	9-1/2 - 16	MSR SPF	0.46	1-1/2	2-1/2	OSB	3/8
RFPI-65S	11-7/8 - 16	Proprietary SPF	0.42	1-1/2	3-1/2	OSB	3/8
RFPI-70S	9-1/2 - 16	MSR SPF	0.42	1-1/2	3-1/2	OSB	3/8
RFPI-70	9-1/2 - 16	LVL	0.50	1-1/2	2-5/16	OSB	3/8
RFPI-80S	9-1/2 - 20	MSR SPF	0.46	1-1/2	3-1/2	OSB	3/8
RFPI-90S	9-1/2 - 24	MSR SPF	0.50	1-1/2	3-1/2	OSB	7/16
RFPI-90	9-1/2 - 16	LVL	0.50	1-1/2	3-1/2	OSB	7/16
RFPI-700	18 - 24	LVL	0.50	1-1/2	2-5/16	OSB	7/16
RFPI-900	18 - 24	LVL	0.50	1-1/2	3-1/2	OSB	7/16

For SI: 1 inch = 25.4 mm.

[(a)] Referenced dimensions are nominal. Tolerances are as specified in the plant quality manual.
[(b)] Specific gravity of flanges for use in diaphragm design (see Table 4) based on oven-dry weight and oven-dry volume for lumber flanges or equivalent specific gravity for LVL flanges.

Table 2. Design Properties for Roseburg Forest Products RFPI Series I-Joists[a]

Depth (in.)	Joist Designation	Permitted to Be Labelled as	EI[b] (10^6 lbf-in.^{2})	M[c] (lbf-ft)	V[d] (lbf)	VLC[e] (lbf/ft)	K[f] (10^6 lbf)
9-1/2	RFPI-20		165	2,820	1,220	2,000	4.94
	RFPI-40S		193	2,735	1,185	2,000	4.94
	RFPI-400		193	3,345	1,220	2,000	4.94
	RFPI-40	BLI 400	215	3,760	1,330	2,000	4.94
	RFPI-60S		231	3,780	1,370	2,000	4.94
	RFPI-70S		270	3,965	1,400	2,000	4.94
	RFPI-70	BLI 700	266	5,130	1,330	2,000	4.94
	RFPI-80S		321	5,375	1,405	2,000	4.94
	RFPI-90S		340	6,725	1,590	2,000	6.08
	RFPI-90		398	7,830	1,890	2,000	4.94
11-7/8	RFPI-20		283	3,640	1,420	2,000	6.18
	RFPI-40S		330	3,545	1,480	2,000	6.18
	RFPI-400		330	4,315	1,480	2,000	6.18
	RFPI-40	BLI 400	366	4,855	1,550	2,000	6.18
	RFPI-60S		396	4,900	1,570	2,000	6.18
	RFPI-65S		454	5,085	1,620	2,000	6.18
	RFPI-70S		457	5,140	1,620	2,000	6.18
	RFPI-70	BLI 700	455	6,645	1,550	2,000	6.18
	RFPI-80S		547	6,970	1,590	2,000	6.18
	RFPI-90S		573	8,715	1,925	2,000	7.60
	RFPI-90	BLI 900	676	10,145	2,050	2,000	6.18
14	RFPI-20		420	4,330	1,610	2,000	7.28
	RFPI-40S		482	4,270	1,750	2,000	7.28
	RFPI-400		486	5,140	1,710	2,000	7.28
	RFPI-40	BLI 400	540	5,785	1,770	2,000	7.28
	RFPI-60S		584	5,895	1,750	2,000	7.28
	RFPI-65S		664	6,125	1,815	2,000	7.28
	RFPI-70S		668	6,190	1,815	2,000	7.28
	RFPI-70	BLI 700	672	7,925	1,770	2,000	7.28
	RFPI-80S		802	8,390	1,835	2,000	7.28
	RFPI-90S		836	10,490	2,125	2,000	8.96
	RFPI-90	BLI 900	992	12,100	2,195	2,000	7.28
16	RFPI-40S		657	4,950	2,000	2,000	8.32
	RFPI-400		665	5,880	1,970	2,000	8.32
	RFPI-40	BLI 400	737	6,615	1,970	2,000	8.32
	RFPI-60S		799	6,835	2,000	2,000	8.32
	RFPI-65S		901	7,105	2,000	2,000	8.32
	RFPI-70S		906	7,175	2,000	2,000	8.32
	RFPI-70	BLI 700	918	9,080	1,970	2,000	8.32
	RFPI-80S		1,092	9,730	2,070	2,000	8.32
	RFPI-90S		1,131	12,165	2,330	2,000	10.24
	RFPI-90	BLI 900	1,350	13,865	2,330	2,000	8.32

(footnotes on next page)

Table 2. Design Properties for Roseburg Forest Products RFPI Series I-Joists[a] (Continued)

Depth (in.)	Joist Designation	Permitted to Be Labelled as	EI[b] (10^6 lbf-in.^{2})	M[c] (lbf-ft)	V[d] (lbf)	VLC[e] (lbf/ft)	K[f] (10^6 lbf)
18	RFPI-60S		1,046	7,895	2,250	1,750	9.36
	RFPI-80S		1,445	11,135	2,300	1,810	9.36
	RFPI-90S		1,473	13,755	2,510	1,810	11.52
	RFPI-700		1,245	10,450	2,575	2,200	11.34
	RFPI-900		1,849	16,080	2,885	2,200	11.34
20	RFPI-60S		1,304	8,735	2,500	1,500	10.40
	RFPI-80S		1,799	12,380	2,600	1,625	10.40
	RFPI-90S		1,864	15,225	2,695	1,625	12.80
	RFPI-700		1,579	11,600	2,740	2,200	12.60
	RFPI-900		2,337	17,855	2,945	2,200	12.60
22	RFPI-90S		2,304	16,680	2,875	1,250	14.08
	RFPI-700		1,955	12,740	2,935	1,800	13.86
	RFPI-900		2,886	19,615	3,010	1,800	13.86
24	RFPI-90S		2,794	18,115	3,060	1,250	15.36
	RFPI-700		2,375	13,870	3,060	1,750	15.12
	RFPI-900		3,496	21,355	3,060	1,750	15.12

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

[a] The tabulated values are allowable stress design (ASD) values for normal duration of load. All values, except for EI and K, shall be permitted to be adjusted for other load durations as permitted by the code.
[b] Bending stiffness (EI) of the I-joist.
[c] Moment capacity (M) of the I-joist, which shall not be increased by any repetitive member use factor.
[d] Shear capacity of the I-joist.
[e] Vertical load capacity when continuously supported.
[f] Coefficient of shear deflection (K). For calculating uniform load and center point load deflections of an I-joist in a simple-span application, use Equations 1 and 2.

Uniform Load: $$\delta = \frac{5\,\omega L^4}{384\,EI} + \frac{\omega L^2}{K} \quad [1]$$

Center-Point Load: $$\delta = \frac{P L^3}{48\,EI} + \frac{2\,PL}{K} \quad [2]$$

where δ = calculated deflection (in.), ω = uniform load (lbf/in.),
P = concentrated load (lbf), L = design span (in.),
EI = bending stiffness of the I-joist (lbf-in.^{2}), and K = coefficient of shear deflection (lbf).

Table 3a. Reaction Capacities for Roseburg Forest Products RFPI Series I-Joists[a]

Depth (in.)	Joist Designation	Permitted to Be Labelled as	End Reaction (lbf)						Intermediate Reaction (lbf)				Web Stiff. Nails[b]
			1-3/4 in. Brg. Length		3-1/2 in. Brg. Length		4 in. Brg. Length		3-1/2 in. Brg. Length		5-1/4 in. Brg. Length		
			Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners		
			No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	
9-1/2	RFPI-20		910	1,150	1,150	1,200	1,220	1,220	1,775	1,875	2,000	2,300	4-8d
	RFPI-40S		1,130	1,185	1,185	1,185	1,185	1,185	2,160	2,370	2,345	2,370	4-8d
	RFPI-400		1,025	1,220	1,175	1,220	1,220	1,220	2,150	2,250	2,300	2,440	4-8d
	RFPI-40	BLI 400	1,080	1,220	1,270	1,305	1,330	1,330	2,250	2,500	2,550	2,650	4-8d
	RFPI-60S		1,140	1,275	1,185	1,370	1,185	1,370	2,160	2,740	2,345	2,740	4-8d
	RFPI-70S		1,175	1,370	1,350	1,395	1,400	1,400	2,500	2,800	2,500	2,800	4-10d
	RFPI-70	BLI 700	1,120	1,330	1,280	1,330	1,330	1,330	2,335	2,500	2,550	2,650	4-8d
	RFPI-80S		1,140	1,405	1,185	1,405	1,185	1,405	2,470	2,740	2,470	2,740	4-10d
	RFPI-90S		1,345	1,425	1,525	1,555	1,575	1,590	3,045	3,205	3,060	3,230	4-10d
	RFPI-90		1,330	1,585	1,615	1,820	1,700	1,890	3,020	3,445	3,445	3,475	4-10d
11-7/8	RFPI-20		950	1,225	1,315	1,375	1,420	1,420	1,935	2,035	2,135	2,435	4-8d
	RFPI-40S		1,200	1,430	1,380	1,480	1,430	1,480	2,500	2,800	2,770	2,940	4-8d
	RFPI-400		1,050	1,265	1,380	1,430	1,480	1,480	2,250	2,350	2,350	2,650	4-8d
	RFPI-40	BLI 400	1,200	1,400	1,470	1,515	1,550	1,550	2,500	2,625	2,660	2,870	4-8d
	RFPI-60S		1,200	1,460	1,380	1,570	1,430	1,570	2,500	3,045	2,770	3,130	4-8d
	RFPI-65S		1,200	1,460	1,380	1,585	1,430	1,620	2,810	3,300	3,200	3,550	4-10d
	RFPI-70S		1,265	1,575	1,465	1,610	1,520	1,620	2,500	3,240	2,860	3,240	4-10d
	RFPI-70	BLI 700	1,200	1,470	1,470	1,530	1,550	1,550	2,500	2,625	2,660	2,870	4-8d
	RFPI-80S		1,290	1,590	1,490	1,590	1,550	1,590	2,810	3,180	3,100	3,180	4-10d
	RFPI-90S		1,400	1,635	1,790	1,860	1,885	1,925	3,355	3,355	3,355	3,355	4-10d
	RFPI-90	BLI 900	1,400	1,745	1,775	1,980	1,885	2,050	3,355	3,475	3,475	3,675	4-10d
14	RFPI-20		950	1,290	1,415	1,535	1,550	1,610	1,935	2,035	2,135	2,435	4-8d
	RFPI-40S		1,200	1,620	1,495	1,750	1,550	1,750	2,500	2,825	3,025	3,375	4-8d
	RFPI-400		1,050	1,305	1,435	1,620	1,550	1,710	2,250	2,350	2,350	2,650	4-8d
	RFPI-40	BLI 400	1,200	1,560	1,470	1,720	1,550	1,770	2,500	2,740	2,755	3,065	4-8d
	RFPI-60S		1,200	1,620	1,495	1,750	1,550	1,750	2,500	3,175	3,025	3,425	4-8d
	RFPI-65S		1,200	1,620	1,495	1,770	1,580	1,815	3,020	3,455	3,385	3,710	4-10d
	RFPI-70S		1,345	1,755	1,560	1,805	1,625	1,815	2,500	3,630	3,025	3,630	4-10d
	RFPI-70	BLI 700	1,200	1,590	1,470	1,730	1,550	1,770	2,500	2,740	2,755	3,065	4-8d
	RFPI-80S		1,325	1,760	1,550	1,830	1,600	1,835	3,020	3,455	3,285	3,655	4-10d
	RFPI-90S		1,400	1,800	1,805	1,960	1,885	2,125	3,355	3,600	3,355	3,655	4-10d
	RFPI-90	BLI 900	1,400	1,885	1,775	2,125	1,885	2,195	3,355	3,500	3,500	3,850	4-10d

(footnotes on next page)

Table 3a. Reaction Capacities for Roseburg Forest Products RFPI Series I-Joists[a] (Continued)

Depth (in.)	Joist Designation	Permitted to Be Labelled as	End Reaction (lbf)						Intermediate Reaction (lbf)				Web Stiff. Nails[b]
			1-3/4 in. Brg. Length		3-1/2 in. Brg. Length		4 in. Brg. Length		3-1/2 in. Brg. Length		5-1/4 in. Brg. Length		
			Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners		
			No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	
16	RFPI-40S	BLI 400	1,200	1,750	1,550	1,945	1,550	2,000	2,500	2,850	3,025	3,550	4-8d
	RFPI-400		1,050	1,340	1,435	1,830	1,550	1,970	2,250	2,350	2,350	2,650	4-8d
	RFPI-40		1,200	1,710	1,470	1,910	1,550	1,970	2,500	2,850	2,850	3,250	4-8d
	RFPI-60S		1,200	1,750	1,550	1,945	1,550	2,000	2,500	3,300	3,025	3,560	4-8d
	RFPI-65S		1,200	1,750	1,605	1,945	1,720	2,000	3,265	3,600	3,560	3,865	4-10d
	RFPI-70S		1,420	1,925	1,655	2,000	1,725	2,000	2,500	4,000	3,025	4,000	4-10d
	RFPI-70	BLI 700	1,200	1,710	1,470	1,910	1,550	1,970	2,500	2,850	2,850	3,250	4-8d
	RFPI-80S		1,330	1,915	1,550	2,035	1,600	2,070	3,100	3,600	3,310	3,865	4-10d
	RFPI-90S		1,435	2,000	1,805	2,330	1,885	2,330	3,355	4,000	3,355	4,090	4-10d
	RFPI-90	BLI 900	1,400	2,025	1,775	2,260	1,885	2,330	3,355	3,525	3,525	4,025	4-10d
18	RFPI-60S		1,505	2,095	1,550	2,250	1,550	2,250	2,500	3,425	3,025	3,695	8-8d
	RFPI-80S		1,505	2,270	1,550	2,300	1,600	2,300	3,100	4,225	3,100	4,225	8-16d
	RFPI-90S		1,505	2,270	1,675	2,510	1,885	2,510	3,355	4,270	3,355	4,595	8-16d
	RFPI-700		1,125	2,200	1,650	2,575	1,800	2,575	2,745	4,050	3,025	4,475	8-8d
	RFPI-900		1,475	2,570	1,765	2,885	1,850	2,885	3,000	5,110	3,475	5,710	8-16d
20	RFPI-60S		1,550	2,260	1,550	2,500	1,550	2,500	2,500	3,450	3,025	3,775	8-8d
	RFPI-80S		1,550	2,460	1,550	2,600	1,650	2,600	3,100	4,350	3,100	4,350	8-16d
	RFPI-90S		1,520	2,470	1,675	2,680	1,885	2,695	3,355	4,600	3,355	4,785	8-16d
	RFPI-700		1,090	2,300	1,585	2,740	1,725	2,740	2,745	4,050	3,025	4,475	8-8d
	RFPI-900		1,350	2,665	1,700	2,945	1,800	2,945	3,000	5,110	3,475	5,710	8-16d
22	RFPI-90S		1,470	2,595	1,675	2,820	1,865	2,875	3,355	4,855	3,355	4,870	10-16d
	RFPI-700		N.A.	2,400	N.A.	2,935	N.A.	2,935	N.A.	4,150	N.A.	4,605	10-8d
	RFPI-900		N.A.	2,755	N.A.	3,010	N.A.	3,010	N.A.	5,405	N.A.	6,020	10-16d
24	RFPI-90S		1,470	2,880	1,675	2,960	1,820	3,060	3,355	4,925	3,355	4,925	10-16d
	RFPI-700		N.A.	2,500	N.A.	3,060	N.A.	3,060	N.A.	4,150	N.A.	4,605	10-8d
	RFPI-900		N.A.	2,850	N.A.	3,060	N.A.	3,060	N.A.	5,405	N.A.	6,020	10-16d

For SI: 1 inch = 25.4 mm, 1 lbf = 4.448 N.

General Note: Determine the allowable reaction value using appropriate adjustments for Tables 3a and 3b and use the lesser of the two values (refer to the notes for each table)

[a] The tabulated design values in Table 3a above are for normal duration of load. Interpolation between tabulated values is permitted. All values in Table 3a shall be permitted to be adjusted for other load durations.

[b] Number and size of nails required for web stiffeners. Refer to Table 5 for web stiffener and nail dimensions. Web stiffeners shall be installed in accordance with the recommendations provided by the manufacturer.

Table 3b. Reaction Capacities for Roseburg Forest Products RFPI Series I-Joists Based on the Compressive Stress Perpendicular to the Grain of Flanges Only[a,b]

Depth	Joist Designation	Permitted to Be Labelled as	End Reaction (lbf)						Intermediate Reaction (lbf)			
			1-3/4 in. Brg. Length		3-1/2 in. Brg. Length		4 in. Brg. Length		3-1/2 in. Brg. Length		5-1/4 in. Brg. Length	
			Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners	
			No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
All Depths in each Series	RFPI-20[c]	BLI 400	1,835		3,675		4,205		4,070		5,910	
	RFPI-40S		1,675		3,345		3,825		3,345		5,020	
	RFPI-400[c]		2,195		4,390		5,015		4,860		7,055	
	RFPI-40[c]		2,475		4,955		5,665		5,490		7,970	
	RFPI-60S		2,065		4,135		4,725		4,135		6,200	
	RFPI-65S		2,415		4,835		5,525		4,835		7,250	
	RFPI-70S	BLI 700	2,490		4,985		5,695		4,985		7,475	
	RFPI-70[c]		2,475		4,955		5,665		5,490		7,970	
	RFPI-80S		2,985		5,970		6,825		5,970		8,960	
	RFPI-90S		3,605		7,210		8,240		7,210		10,815	
	RFPI-90[c]	BLI 900	3,830		7,660		8,755		8,480		12,310	
	RFPI-700[c]		2,475		4,955		5,665		5,490		7,970	
	RFPI-900[c]		3,830		7,660		8,755		8,480		12,310	

For SI: 1 inch = 25.4 mm, 1 lbf = 4.448 N.

General Note: Determine the allowable reaction value using appropriate adjustments for Tables 3a and 3b and use the lesser of the two values (refer to the notes for each table)

[a] Maximum allowable reaction capacity based on flange $F_{c\perp}$. Interpolation between tabulated values in Table 3b is permitted.
[b] The tabulated values are for normal duration of load and shall not be adjusted for other durations of load.
[c] The tabulated intermediate reaction values include the bearing area factor $C_b = (\ell_b + 0.375) / \ell_b$, where ℓ_b is the bearing length in inches.

Table 4. Allowable Shear (Pounds Per Foot) for Horizontal Wood Structural Panel Diaphragms Framed with Roseburg RFPI Series I-Joists for Wind[a] or Seismic Loading[b,c]

Panel Grade	Common Nail Size	Minimum Nominal Panel Thickness (in.)	Minimum Nominal Width of Framing Members at Adjoining Panel Edges and Boundaries[e] (in.)	RFPI-Joist series approved for diaphragm construction as indicated	Blocked Diaphragms				Unblocked Diaphragms	
					Nail spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 & 4), and at all panel edges (Cases 5 & 6)[f,g]				Nails Spaced 6 in. max. at supported edges[f,g]	
					6	4	2-1/2	2	Case 1 (No unblocked edges or continuous joints parallel to load	All other configurations (Cases 2, 3, 4, 5 &6)
					Nail spacing (in.) at other panel edges (Cases 1, 2, 3, & 4)					
					6	6	4	3		
Structural I Grades	6d[d]	5/16	2	RFPI 20 & 400	185	250	NP[k]	NP[k]	165	125
			3	RFPI 40, 70, 90, 700 & 900	210	280	420[i]	475[i,j]	185	140
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	210	280[h]	420[i]	NP[k]	185	140
	8d	3/8	2	RFPI 20 & 400	270	360	NP[k]	NP[k]	240	180
			3	RFPI 40, 70, 90, 700 & 900	300	400	600[i]	675[i,j]	265	200
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	300	400[h]	600[i]	NP[k]	265	200
	10d	15/32	2	RFPI 20 & 400	320	425	NP[k]	NP[k]	285	215
			3	RFPI 40, 70, 90, 700 & 900	360	480	720[i]	820[i,j]	320	240
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	360	480[h]	720[i]	NP[k]	320	240
Sheathing, single floor, and other grades covered in DOC PS 1 and PS 2	6d[d]	5/16	2	RFPI 20 & 400	170	225	NP[k]	NP[k]	150	110
			3	RFPI 40, 70, 90, 700 & 900	190	250	380[i]	430[i,j]	170	125
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	190	250[h]	380[i]	NP[k]	170	125
		3/8	2	RFPI 20 & 400	185	250	NP[k]	NP[k]	165	125
			3	RFPI 40, 70, 90,700 & 900	210	280	420[i]	475[i,j]	185	140
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	210	280[h]	420[i]	NP[k]	185	140
	8d	3/8	2	RFPI 20 & 400	240	320	NP[k]	NP[k]	215	160
			3	RFPI 40, 70, 90,700 & 900	270	360	540[i]	610[i,j]	240	180
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	270	360[h]	540[i]	NP[k]	240	180
		7/16	2	RFPI 20 & 400	255	340	NP[k]	NP[k]	230	170
			3	RFPI 40, 70, 90,700 & 900	285	380	570[i]	645[i,j]	255	190
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	285	380[h]	570[i]	NP[k]	255	190
		15/32	2	RFPI 20 & 400	270	360	NP[k]	NP[k]	240	180
			3	RFPI 40, 70, 90,700 & 900	300	400	600[i]	675[i,j]	265	200
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	300	400[h]	600[i]	NP[k]	265	200
	10d	15/32	2	RFPI 20 & 400	290	385	NP[k]	NP[k]	255	190
			3	RFPI 40, 70, 90,700 & 900	325	430	650[i]	735[i,j]	290	215
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	325	430[h]	650[i]	NP[k]	290	215
		19/32	2	RFPI 20 & 400	320	425	NP[k]	NP[k]	285	215
			3	RFPI 40, 70, 90,700 & 900	360	480	720[i]	820[i,j]	320	240
				RFPI 40S, 60S, 65S, 70S, 80S & 90S	360	480[h]	720[i]	NP[k]	320	240

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

(Footnotes on following pages)

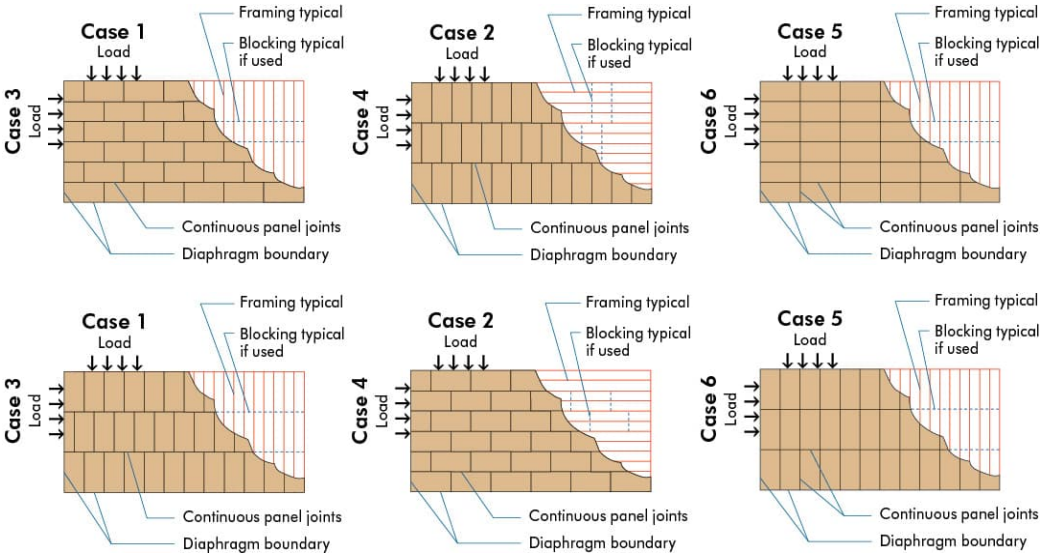

Figure 1. Diaphragm configurations

(a) For wind load applications, the values in the table above shall be permitted to be multiplied by 1.4.
(b) For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
(c) The tabulated allowable shear capacities are for I-joist series with flanges having a specific gravity (G) of 0.50 or higher (see Table 1). For G < 0.50 the allowable shear capacities shall be reduced by multiplying the allowable shear capacities by the Specific Gravity Adjustment Factor = [1-(0.5-G)]. The Specific Gravity Adjustment Factor shall not be greater than 1.
(d) 8d common nails minimum are recommended for roofs due to negative pressures of high winds.
(e) The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
(f) Space nails maximum 12 inches o.c. along intermediate framing members (6 inches o.c. when supports are spaced 48 inches o.c. or greater).
(g) Fasteners shall be located 3/8 inch minimum from panel edges (see Figures 2, 3, and 4).
(h) Adjacent nails within a row must be staggered 1/2 inch at diaphragm boundaries only (see Figure 3).
(i) Adjacent nails within a row must be staggered 1/2 inch at both diaphragm boundaries (see Figure 3) and adjoining panel edges (see Figure 4).
(j) Nail spacing of 2 inches at diaphragm boundaries is permitted only for 1-1/2 inches thick by 2-5/16 inches or wider LVL flange I-joists (RFPI-70, RFPI-90, RFPI-700, and RFPI-900).
(k) Not permitted.

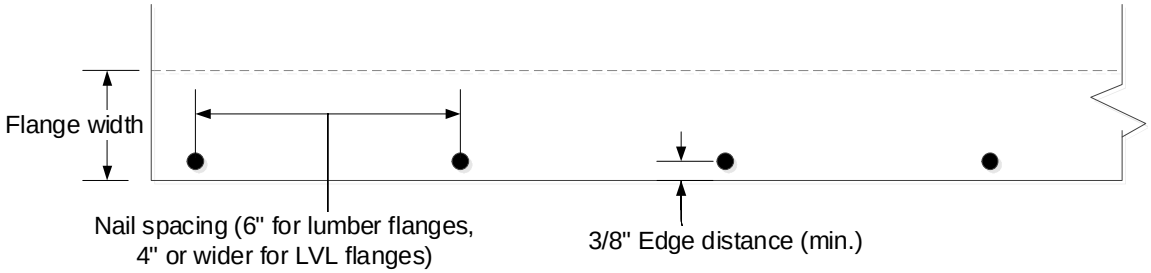

Figure 2. Non-staggered nails at diaphragm boundaries (see Footnote g), not to scale.

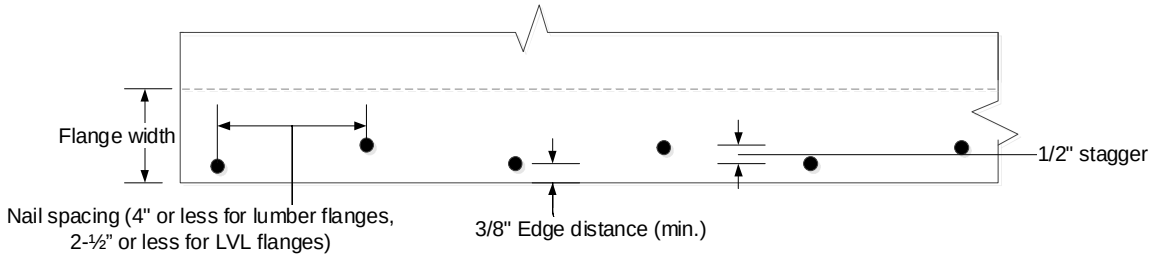

Figure 3. Staggered nails at diaphragm boundaries (see Footnotes h & i), not to scale.

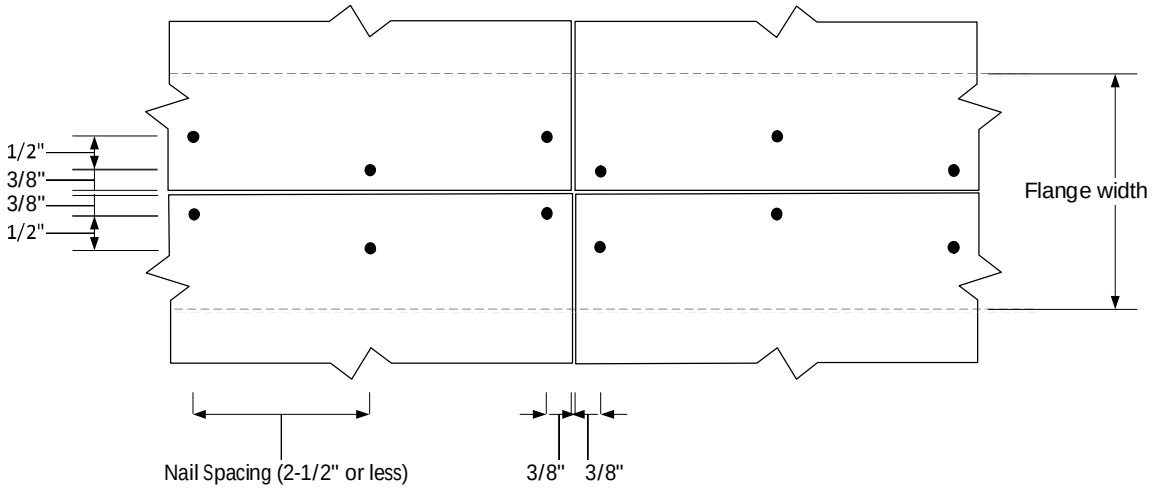

Figure 4. Staggered nails at adjoining panel edges (see Footnote i), not to scale.

Table 5. Minimum Dimensions for Web Stiffeners and Accompanying Nails

Joist Designation	Minimum Dimensions		
	Web Stiffeners		Nails
	Thickness (in.)	Width (in.)	
RFPI-20	19/32	2-5/16	8d box - 2-1/2 in. x 0.113 in.
RFPI-40S	1	2-5/16	8d box - 2-1/2 in. x 0.113 in.
RFPI-400	3/4	2-5/16	8d box - 2-1/2 in. x 0.113 in.
RFPI-40	1	2-5/16	8d box - 2-1/2 in. x 0.113 in.
RFPI-60S	1	2-5/16	8d box - 2-1/2 in. x 0.113 in.
RFPI-65S	1-1/2	3-1/2	10d box - 3 in. x 0.128 in.
RFPI-70S	1-1/2	3-1/2	10d box - 3 in. x 0.128 in.
RFPI-70	1	2-5/16	8d box - 2-1/2 in. x 0.113 in.
RFPI-80S	1-1/2	2-5/16	10d box - 3 in. x 0.128 in.
RFPI-90S	1-1/2	3-1/2	10d box - 3 in. x 0.128 in.
RFPI-90	1-1/2	2-5/16	10d box - 3 in. x 0.128 in.
RFPI-700	7/8	3-1/2	8d box - 2-1/2 in. x 0.113 in.
RFPI-900	1-1/2	3-1/2	16d box - 3-1/2 in. x 0.135 in.

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