

**Roseburg RigidLam[®] LVL and
RigidRim[®] LVL Rimboard
Roseburg Forest Products Company**

PR-L289

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Products: RigidLam[®] 1.3E, 1.5E, 2.0E, 2.2E, and 2.3E Laminated Veneer Lumber
RigidRim[®] 1.3E Laminated Veneer Lumber Rimboard

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1. Basis of the product report:

- 2018 and 2015 International Building Code (IBC): Sections 104.11 Alternative materials and 2303.1.10 Structural composite lumber
- 2012 and 2009 IBC: Sections 104.11 Alternative materials and 2303.1.9 Structural composite lumber
- 2018 and 2015 International Residential Code (IRC): Sections R104.11 Alternative materials, and R502.1.5, R602.1.5, and R802.1.4 Structural composite lumber
- 2012 and 2009 IRC: Section R104.11 Alternative materials, and 2012 IRC Sections R502.1.7, R602.1.4, and R802.1.6 Structural composite lumber
- ASTM D5456-17, Standard Specification for Evaluation of Structural Composite Lumber Products
- ASTM D5456-14b, ASTM D5456-13, ASTM D5456-09, and ASTM D5456-05a recognized by the 2018 IBC and IRC, 2015 IBC and IRC, 2012 IBC and IRC, and 2009 IBC, respectively
- ASTM D7672-14 and ASTM D7672-12 recognized by the 2018 IBC and IRC, and 2015 IBC and IRC, respectively
- 2015 ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) recognized by the 2018 and 2015 IBC
- 2008 ANSI/AF&PA SDPWS recognized by the 2012 and 2009 IBC
- APA Reports T2000P-19, T2000P-30, T2001P-11, T2001P-15, T2001P-22, T2001M-81, T2001M-87, T2003P-16, T2003P-33, T2003P-42A, T2003P-49A, T2004P-8, T2005P-50, T2007P-24, T2007P-25A, T2007P-26A, T2007P-30, T2007P-32, T2007P-101, T2010P-27, T2011P-34A, T2011P-35, T2014P-23, T2015P-06, T2016P-32, T2017P-17, and T2018P-01, and other qualification data

2. Product description:

Roseburg RigidLam[®] laminated veneer lumber (LVL) is a structural composite lumber product consisting of veneers laminated with grain parallel to the length of the member in accordance with the in-plant manufacturing standard approved by APA. Roseburg RigidLam LVL is available in thicknesses of 1-1/4 to 1-3/4 inches, depths of 3-1/2 to 48 inches, and lengths up to 66 feet. Additionally, the 1-3/4-inch-thick members are face-bonded together to make 3-1/2, 5-1/4, and 7-inch-thick built-up LVL headers and beams. Roseburg RigidRim[®] LVL Rimboard is available in thicknesses of 1-1/2 to 3-1/2 inches. The 3-1/2-inch LVL rim board is face-bonded from 1-3/4-inch thick LVL products.

3. Design properties:

The structural design provisions for wood construction provided in the building code are applicable to Roseburg RigidLam LVL and RigidRim LVL Rimboard products unless noted otherwise in this report. Table 1 lists the allowable design properties, Table 2 lists the equivalent specific gravities for connection design, Table 3 lists the allowable loads and prescribed nail size and spacing for RigidRim LVL Rimboard, and Table 4 shows the minimum on-center spacing for nails installed in the narrow face of Roseburg RigidLam LVL.

The minimum on-center spacing for nails installed in the wide face of RigidLam LVL and RigidRim LVL Rimboard is 2 inches for nails up to 12d box (0.128 in. x 3-1/2 in.) or 8d common (0.131 in. x 2-1/2 in.), and 3 inches for nails up to 16d common (0.162 in. x 3-1/2 in.). The allowable spans for Roseburg RigidLam LVL and RigidRim LVL Rimboard shall be in accordance with the recommendations provided by the manufacturer (www.roseburg.com).

4. Product installation:
Roseburg RigidLam LVL and RigidRim LVL Rimboard shall be installed in accordance with the recommendations provided by the manufacturer (see link above).
5. Fire-rated assemblies:
The provisions of Section 722.6 of the 2018 through 2012 IBC, or Section 721.6 of the 2009 IBC, Calculated Fire Resistance, shall be applicable to Roseburg RigidLam LVL and RigidRim LVL Rimboard. Fire-rated assemblies for Roseburg RigidLam LVL and RigidRim LVL shall be constructed in accordance with the recommendations provided by APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (www.apawood.org/resource-library) and the manufacturer (see link above). Fire-rated assemblies for Roseburg RigidRim LVL Rimboard shall be constructed in accordance with APA Product Report [PR-S259](#).
6. Limitations:
 - a) Roseburg RigidLam LVL and RigidRim LVL Rimboard shall be designed in accordance with the code using the allowable design properties specified in this report.
 - b) Roseburg RigidLam LVL and RigidRim LVL Rimboard are limited to dry service conditions where the average moisture content of sawn lumber is less than 16 percent.
 - c) Roseburg RigidLam LVL and RigidRim LVL Rimboard are produced at the Roseburg Forest Products facility in Riddle, Oregon under a quality assurance program audited by APA.
 - d) This report is subject to re-examination in one year.
7. Identification:
The Roseburg RigidLam LVL and RigidRim LVL Rimboard described in this report are identified by a label bearing the company name, the product name, the product grade, the APA assigned plant number (1055), the APA logo, the report number PR-L289, and a means of identifying the date of manufacture. The RigidLam product name shall be permitted to be labelled as “onCENTER®”.

Table 1. Allowable Design Values for Roseburg LVL^(a,b,h)

		RigidLam and RigidRim	RigidLam			
Design Property		1.3E	1.5E	2.0E	2.2E	2.3E
Flexural Stress, F_b ^(c) (psi)	beam ^(d)	2,250	2,250	3,100	3,100	3,400
	plank ^(e)	2,250	2,250	3,100	3,100	3,400
Modulus of Elasticity, E (10^6 psi)	beam	1.3	1.5	2.0	2.2	2.3
	plank	1.3	1.5	2.0	2.2	2.3
Horizontal Shear, F_v (psi)	beam	200	220	290	290	325
	plank	130	130	130	130	130
Compression Perpendicular to Grain, $F_{c\perp}$ (psi)	beam	560	575	750	750	850
	plank ^(f)	650	650	650	650	650
Tension Parallel to Grain, F_t ^(g) (psi)		1,500	1,500	2,100	2,100	2,425
Compression Parallel to Grain, F_c (psi)		1,950	1,950	3,000	3,000	3,200

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 4.448 N, 1 psi = 6.9 kPa

- (a) Design values provided in this table are based on covered, dry conditions of use. Dry conditions of use are those environmental conditions represented by solid sawn lumber in which the moisture content is less than 16 percent. All values, except for E and $F_{c\perp}$, are permitted to be adjusted for other load durations as permitted by the code.
- (b) Beam (edgewise) = load parallel to glueline; plank (flatwise) = load perpendicular to glueline.
- (c) The tabulated F_b values are permitted to be increased by 4 percent for repetitive members as provided in the code.
- (d) The tabulated values are based on a reference depth of 12 inches. For other depths, when loaded edgewise, the allowable bending stress (F_b) shall be modified by a depth factor, $K_d = (12/d)^{(1/8)}$, where d is the LVL depth in inches. For depths less than 3-1/2 inches, multiply by 1.17. The size factor is cumulative with other adjustment factors including duration of load and repetitive member factors.
- (e) The tabulated values are based on a reference LVL thickness of 1-3/4 inches. For other thicknesses, when loaded flatwise, the allowable bending stress (F_b) shall be modified by a thickness factor, $K_t = (1.75/t)^{(1/5)}$, where t is the LVL thickness in inches. For thicknesses less than 1-3/4 inches, the factor for the 1-3/4-inch thickness shall be used.
- (f) The tabulated compressive stress perpendicular to grain ($F_{c\perp}$) value is based on the average stress at the proportional limit or 0.04-in. deformation, whichever is less, in accordance with ASTM D5456-17.
- (g) Tabulated tensile stresses are for a 4-foot LVL length. For greater lengths, the value shall be adjusted by multiplying the tabulated value by $(4.0/\text{LVL length in feet})^{1/9}$. For lengths less than 4 feet, use the tabulated value unadjusted.
- (h) The RigidLam product name shall be permitted to be labelled as “onCENTER®”.

Table 2. Equivalent Specific Gravity for Connection Design^(a)

Connection Type	LVL Grade	Face ^(b)	Edge ^(c)
Nail – Withdrawal	1.3E	0.50	0.50
	1.5E		
	2.0E		
	2.2E		
	2.3E		
Nail – Lateral	1.3E	0.50	0.50
	1.5E		
	2.0E		
	2.2E		
	2.3E		
Bolt – Lateral ^(d)	1.3E	0.47	N. A.
	1.5E	0.50	
	2.0E		
	2.2E		
	2.3E		

- (a) Similar to those values provided in the applicable code for solid sawn lumber having a minimum specific gravity shown.
 (b) Installed perpendicular to the wide face of the LVL.
 (c) Installed parallel to the wide face of the LVL.
 (d) For 1/2 or 3/4-inch-diameter bolts.

Table 3. Allowable Loads for RigidRim LVL Rimboard^(a)

Grade	Thickness (in.)	Lateral Load ^(b,c,d) (lb/ft)	Uniform Vertical Load ^(e) (lb/ft)	Lateral Resistance for 1/2-inch-dia. Lag Screws ^(f) (lbf)
1.3E RigidRim	1-1/2	215	4,900	400
	1-3/4	215	5,500	400
	3-1/2	215	9,800	400

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 4.448 N, 1 lbf/ft = 14.6 N/m

- (a) Maximum allowable rim board depth is 16 inches.
 (b) All design values are applicable to the normal load duration (10 years), except for the lateral load, which is based on the short-term load duration (10 minutes). Design values shall be adjusted for other load durations in accordance with the applicable code except that the uniform vertical load is not permitted to be increased for any load durations shorter than the normal load duration (10 years).
 (c) Toe-nailed connections are not limited by the 150 lbf/ft lateral load capacity noted for Seismic Design Categories D, E and F in Section 4.1.7 of the 2008 and 2015 SDPWS.
 (d) The nailing schedule for sheathing to rim and rim board to sill plate (toe-nailed) is based on 8d box (0.113 inch x 2-1/2 inches) nails at 6 inches on center. Framing connectors may be used to achieve lateral load capacities exceeding the values shown in this table using the equivalent specific gravity values listed in Table 2.
 (e) The allowable uniform vertical load is based on the strength of the rim board and may need to be reduced based on the bearing capacity of the supporting wall plate.
 (f) Edge distances from the center of the lag screw to the edge of the rim board and deck ledger must be 2 inches or greater. End distances must be 4 inches or greater.

Table 4. Nail Spacing for RigidLam LVL^(a,b) – Installed Parallel to Gluelines

Dimension	Fastener	Minimum Spacing ^(c,d) (in.)	Nail End Distance ^(c)
Less than 1-1/2-inch-thick	8d box (0.113" x 2-1/2")	3	1-1/2
	8d common (0.131" x 2-1/2")	3	2
	10d (0.128" x 3") and 12d box (0.128" x 3-1/4")	3	2
	10d (0.148" x 3") and 12d common (0.148" x 3-1/4")	4	3
	16d sinker (0.148" x 3-1/4")	4	3
	16d common (0.162" x 3-1/2")	6	4
1-1/2-inch and thicker	8d box (0.113" x 2-1/2")	2	1
	8d common (0.131" x 2-1/2")	3	2
	10d (0.128" x 3") and 12d box (0.128" x 3-1/4")	3	2
	10d (0.148" x 3") and 12d common (0.148" x 3-1/4")	4	3
	16d sinker (0.148" x 3-1/4")	4	3
	16d common (0.162" x 3-1/2")	6	3

For SI: 1 inch = 25.4 mm

- (a) Based on the minimum member depth of 3-1/2 inches when nailing into the narrow face of the material, parallel to gluelines.
- (b) Allowable lateral and withdrawal nail load capacities are as specified in the NDS for lumber having a specific gravity as indicated in Table 2 of this report.
- (c) Spacing and end distance apply to a single row of nails.
- (d) The minimum allowable edge distance is 1/4 inch.

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