

Roseburg LVL Studs
Roseburg Forest Products

PR-L270
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Products: Roseburg RIGIDLAM[®] LVL Studs
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1. Basis of the product report:
 - 2012 and 2009 International Building Code (IBC): Sections 104.11 Alternative Materials and 2303.1.9 Structural composite lumber
 - 2012 and 2009 International Residential Code (IRC): Section R104.11 Alternative Materials, and 2012 IRC Sections R502.1.7, R602.1.4, and R802.1.6 Structural composite lumber
 - ASTM D5456-09 and D5456-05a recognized by the 2012 IBC and IRC, and 2009 IBC, respectively
 - APA Reports T2000P-30, T2001P-11, T2001P-15, T2001P-22, T2001M-81, T2001M-87, T2002P-1A, T2003P-16, T2003P-33, T2003P-34, T2004P-8, T2004P-23, T2004P-42, T2005P-24, T2005P-50, T2007P-24, T2007P-25A, T2007P-26A, T2007P-30, T2007P-32, T2010P-31, T2010P-32, T2011P-34A, and other qualification data
2. Product description:

Roseburg RIGIDLAM[®] laminated veneer lumber (LVL) studs are used as wall framing materials in conventional light-frame construction of the applicable code. RIGIDLAM[®] LVL studs are also used as wall framing materials in engineered walls. The minimum thickness of the LVL studs is 1-1/2 inches. The LVL studs described in this report are 1.5E, 1.8E or 2.0E Grade LVL made in accordance with the in-plant manufacturing standard and quality manual approved by APA.
3. Design properties:

The allowable design properties for Roseburg RIGIDLAM[®] LVL studs shall be in accordance with Table 1 provided in this report. The allowable shear values for nailed wood structural panel shear walls using RIGIDLAM[®] LVL studs shall be determined using Table 2306.3 of the 2012 or 2009 IBC where the RIGIDLAM[®] LVL studs shall be considered to be equivalent to sawn lumber studs with a specific gravity of 0.50.
4. Product installation:
 - a) Prescriptive Stud Wall Applications: Cutting, notching and boring of RIGIDLAM[®] LVL studs used in conventional construction is permitted in accordance with Sections 2308.9.10 and 2308.9.11 of the 2012 or 2009 IBC and Section R602.6 of the 2012 or 2009 IRC. Stud wall nailing restrictions and requirements are presented in Section 4(c).
 - b) Engineered Stud Wall Applications: Cutting, notching and boring of RIGIDLAM[®] LVL studs shall be permitted in engineered wall applications with the following restrictions:
 - i) Notches: A notch up to 40 percent of the width of the stud may be placed anywhere along the stud provided the reduced section is accounted for using standard engineering analysis and the allowable bending and/or tension stress is reduced by 30 percent to account for the stress concentrations that occur at the corners of the notch.
 - ii) Holes: A hole with a maximum diameter of 30 percent of the width of the stud may be placed anywhere along the stud, at the centerline of the stud width, without further engineering analysis for lateral bending considerations. For other conditions, holes

- may be placed anywhere along the stud provided the reduced section is accounted for using standard engineering analysis.
- iii) Stud wall nailing restrictions and requirements are presented in Section 4(c).
- c) Stud Wall Nailing Restrictions and Requirements:
- i) For sheathing attached with 10d common nails (0.148 inch x 3 inches) or smaller, with a spacing no closer than 6 inches on center, a single RIGIDLAM® LVL stud may be used for framing at adjoining panel edges.
 - ii) For sheathing attached with 8d common nails (0.131 inch x 2-1/2 inches) or 10d common nails (0.148 inch x 3 inches) spaced closer than 6 inches on center, a double LVL stud is required at adjoining panel edges. Double RIGIDLAM® LVL studs must be stitch-nailed together using a minimum of the same size and frequency of the nailing required to attach the sheathing to the framing at the panel edges. Panel-edge nails must be installed a minimum 3/8 inch from the panel edges, and must be staggered a minimum of 1/2 inch within each line of nails.
 - iii) 8d common (0.131 inch x 2-1/2 inches) and smaller nails shall not be spaced closer than 3 inches on center. 10d common nails (0.148 inch x 3 inches) shall not be spaced closer than 4 inches on center.
 - iv) Maximum nail size is 10d common (0.148 inch x 3 inches).
5. Fire-rated assemblies:
- 5.1 Prescriptive Stud Wall Applications: When used as wall studs in fire-resistance-rated prescriptive construction, Roseburg RIGIDLAM® LVL may be considered a direct replacement for solid-sawn lumber having the same dimensions in any fire-resistance-rated wall assembly listed in Table 721.1(2) of the 2012 IBC or Table 720.1(2) of the 2009 IBC. A minimum of 2.5 lbf/ft³ mineral wool insulation shall be placed in the stud cavity.
- 5.2 Engineered Stud Wall Applications: When used as wall studs in fire-resistance-rated engineered wall construction, Roseburg RIGIDLAM® LVL may be used in the design and construction of one-hour fire-resistance-rated wall assemblies listed in Table 721.1(2) of the 2012 IBC or Table 720.1(2) of the 2009 IBC with the limitations listed below, provided that the applied axial stress (f_c) on each stud does not exceed 365 psi for 1.5E, 439 psi for 1.8E, and 488 psi for 2.0E Roseburg RIGIDLAM® LVL. When the slenderness ratio of the stud exceeds 33, F_c' shall be multiplied by 0.66. F_c' is equal to the $F_{c||}$ value shown in Table 1 for each stud grade further adjusted for all applicable adjustment factors, including the column stability factor, in accordance with the NDS.
- a) The stud spacing shall be no greater than 24 inches on center,
 - b) The top and bottom plates of the wall shall be constructed in accordance with the nailing schedule specified in Table 2304.9.1 of the 2012 or 2009 IBC or Table R602.3(1) of the 2012 or 2009 IRC.
 - c) The wall shall be covered with one layer of 5/8-inch Type X gypsum wall board attached to studs with 2-1/4-inch long Type S drywall screws at 7 inches on center on the perimeter and in the field, and
 - d) A minimum of 2.5 lbf/ft³ mineral wool insulation shall be placed in the stud cavity.
6. Limitations:
- a) Roseburg RIGIDLAM® LVL studs shall be designed in accordance with the code using the design properties specified in this report.
 - b) Roseburg RIGIDLAM® LVL studs are limited to dry service conditions where the average equilibrium moisture content is less than 16 percent.
 - c) Roseburg RIGIDLAM® LVL studs 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:

Roseburg RIGIDLAM® LVL described in this report is identified by a label bearing the manufacturer's name (Roseburg Forest Products) and/or trademark, the APA assigned plant number (1055), the LVL grade, the APA logo, the report number PR-L270, and a means of identifying the date of manufacture.

Table 1. Allowable design properties for Roseburg RIGIDLAM® LVL studs ^(a)

LVL Grade	MOE (10 ⁶ psi)	Axial		Joist Orientation			Plank Orientation		
		F _c (psi)	F _t ^(b) (psi)	F _b ^(c) (psi)	F _v (psi)	F _{c⊥} (psi)	F _b ^(d) (psi)	F _v (psi)	F _{c⊥} (psi)
1.5E	1.5	1950	1500	2250	220	575	2250	130	500
1.8E	1.8	2400	1700	2600	285	700	2600	130	500
2.0E	2.0	2750	1900	2900	285	750	2900	130	500

^(a) Tabulated values are for normal duration of load. All values, except for MOE and F_{c⊥}, shall be permitted to be adjusted for other load durations as permitted by the code.

^(b) Tabulated F_t values are for a 4-foot LVL length. For greater lengths, the F_t value shall be adjusted by multiplying the table value by (4.0/L)^{1/9}, where L is the LVL length in feet. For lengths less than 4 feet, use the value indicated in the table.

^(c) Tabulated F_b values are based on a reference depth of 12 inches. For other depths, the F_b value shall be adjusted by (12/d)^{1/8}, where d is the LVL depth in inches. For depths less than 3-1/2 inches, use the adjustment factor for 3-1/2 inches (i.e., 1.17).

^(d) The tabulated values are based on a reference depth of 1-3/4 inches. For other depths, when loaded flatwise, the allowable bending stress (F_b) shall be modified by a depth factor, K_d = (1.75 / d)^(1/5), where d is the LVL depth in inches. For depths less than 1-3/4 inches, the factor for the 1-3/4-inch depth shall be used.

APA – The Engineered Wood Association is an accredited certification body under ISO 65 by Standards Council of Canada (SCC) and an accredited inspection agency by the International Code Council (ICC) International Accreditation Service (IAS) under ISO/IEC 17020. APA is also an accredited testing organization recognized by IAS and SCC under ISO/IEC 17025. APA is a recognized testing laboratory by Miami-Dade County, and a Product Testing Laboratory, Product Quality Assurance Entity, and Product Validation Entity by the Florida Department of Community Affairs (DCA).

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