DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
SECTION: 06 17 13—LAMINATED VENEER LUMBER

REPORT HOLDER:
ROSEBURG FOREST PRODUCTS CO.

EVALUATION SUBJECT:
RIGIDLAM® LAMINATED VENEER LUMBER (LVL) AND RIGIDRIM® LVL RIMBOARD

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Section: 06 17 13—Laminated Veneer Lumber

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EVALUATION SUBJECT:
RIGIDLAM® LAMINATED VENEER LUMBER (LVL) AND RIGIDRIM® LVL RIMBOARD

ADDITIONAL LISTEE:
BlueLinx CORPORATION
4300 WILDWOOD PARKWAY
ATLANTA, GEORGIA 30339

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBC), see ESR-1210 LABC and LARC Supplement.

Property evaluated:
Structural

1.2 Evaluation to the following green code(s) and/or standards:
- 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11

Attributes verified:
See Section 3.0

2.0 USES

RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard are laminated veneer lumber (LVL) products used as alternatives to solid sawn lumber. RIGIDLAM® LVL is intended for structural applications such as beams, headers, joists, rafters, columns and wall studs. RIGIDRIM® LVL Rimboard is used in rim board applications.

3.0 DESCRIPTION

RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard are laminated veneer lumber (LVL) complying with ASTM D5456. The veneers are laminated together using an exterior-type structural adhesive that complies with ASTM D2559. All veneers are oriented with the wood grain parallel to the length of the member. The wood species, properties, adhesives, manufacturing parameters and finished product tolerances are as specified in the manufacturer's approved quality control manual.

RIGIDLAM® LVL is available in various grades as indicated in Table 1, thicknesses up to 7 inches (178 mm), depths up to 48 inches (1220 mm) and lengths up to 66 feet (20.13 m). RIGIDRIM® LVL Rimboard is available in the grade indicated in Table 1, 1 1/2-inch (38 mm) to 3 1/2-inch (89 mm) thickness, depths up to 16 inches (406 mm), and lengths up to 66 feet (20.13 m).

The attributes of the LVL products have been verified as conforming to the provisions of (i) CALGreen Sections A4.404.3 for efficient framing techniques; (ii) ICC 700-2015 and ICC 700-2012 Section 608.1(2), 11.608.1(2) and 12(A).608.1 for resource-efficient materials; and (iii) ICC 700-2008 Section 607.1(2) for resource-efficient materials. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

4.0 DESIGN AND INSTALLATION

4.1 Installation:
Installation of RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard must comply with this report and with the manufacturer’s published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

The RIGIDRIM® LVL Rimboard, when installed as a continuously supported structural element located at the joist elevation in an end bearing wall or parallel to the joist framing, and is the full depth of the joist framing, may be used for any combination of the following:
- To transfer, from above to below, all vertical loads at the rim board location.
- To provide diaphragm attachment (sheathing to top edge of rim board).
- To transfer in-plane lateral loads from the diaphragm to the wall plate below.
- To provide lateral support to the joist or rafter...
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||
---|---
**Cr = 1.04.**

by the NDS, the repetitive member factor must be taken as applicable adjustment factors in accordance with the NDS.

where members qualify as repetitive members, as defined given in Table 1 must be adjusted by
given in Table 4.

RIGIDRIM® LVL Rimboard for rim board applications are

American Wood Council (AWC) National Design

in Table 1 of this report. The design provisions in the
definition in the applicable code, are applicable to RIGIDLAM® LVL, except as noted otherwise in this report. Design values for RIGIDRIM® LVL Rimboard for rim board applications are given in Table 4.

Except as noted otherwise in this report, reference design values given in Table 1 must be adjusted by applicable adjustment factors in accordance with the NDS. Where members qualify as repetitive members, as defined by the NDS, the repetitive member factor must be taken as 

C_r = 1.04.

4.2 Design and Allowable Stresses:

4.2.1 General: Reference design values for loads of normal duration in covered, dry conditions of use are given in Table 1 of this report. The design provisions in the American Wood Council (AWC) National Design Specification for Wood Construction (NDS), as indicated in the applicable code, are applicable to RIGIDLAM® LVL, except as noted otherwise in this report. Design values for RIGIDRIM® LVL Rimboard for rim board applications are given in Table 4.

Except as noted otherwise in this report, reference design values given in Table 1 must be adjusted by applicable adjustment factors in accordance with the NDS. Where members qualify as repetitive members, as defined by the NDS, the repetitive member factor must be taken as 

C_r = 1.04.

4.2.2 Connections: Nails installed parallel to the gluelines on the narrow face of material must be spaced in accordance with Table 2 of this report. Reference lateral and withdrawal design values for nails installed perpendicular or parallel to the wide face of the LVL are as specified in the NDS for lumber having a specific gravity as indicated in Table 3 of this report.

Reference lateral design values for connections with bolts installed perpendicular to the wide face of the LVL are as specified in the NDS for lumber having a specific gravity as indicated in Table 3 of this report.

Reference design values for nailed and bolted connections must be adjusted by applicable adjustment factors in accordance with the NDS, except as otherwise noted in this report.

Connections, other than nailed and bolted connections described herein, are outside the scope of this report.

Exception: Lag screw connections between RIGIDRIM® LVL Rimboard and deck ledgers have an allowable lateral load of 400 pounds (1.78 kN) per lag screw, under the following conditions:

a. Lag screws must have a minimum nominal diameter of \( \frac{1}{2} \) inch (12.7 mm), and sufficient length such that the lag screw penetrates through the rim board (not including the length of the tapered tip).

b. Deck ledgers must consist of minimum nominally 2-by-6 lumber having a minimum assigned specific gravity of 0.42.

c. Sheathing between the rim board and the deck ledger must consist of wood structural panels meeting PS-1 or PS-2 and be attached to the rim board in accordance with the applicable code.

d. One flat washer must be used between the deck ledger and the lag screw head.

e. Edge distances from the center of the lag screw to the edges of the rim board and deck ledger must be 2 inches (51 mm) or greater. End distances must be 4 inches (102 mm) or greater.

f. Adjustment factors in accordance with the NDS must be applied as applicable.

g. Rim board and deck ledgers must be checked for load carrying capacity at connections in accordance with Section 11.1.2 of the 2018 and 2015 NDS (10.1.2 of the 2012 NDS).

Toe nailed connections of rim boards are not limited by the 150 plf (2189 N/m) lateral load capacity noted for Seismic Design Categories D, E, and F in Section 4.1.7 of the ANSI/AWC Special Design Provisions for Wind and Seismic and Section 2305.1.4 of the 2006 IBC. See Table 4 for RIGIDRIM® LVL Rimboard allowable design properties.

4.2.3 Wall Stud Applications: RIGIDLAM® LVL grades of 1.5E, 1.8E or 2.0E Douglas fir, may be used as alternatives to sawn lumber wall studs in accordance with the prescriptive requirements of the applicable code, subject to the following conditions:

1. The minimum thickness of the LVL must be \( 1 \frac{1}{2} \) inches.

2. Cutting, notching and boring of RIGIDLAM® LVL studs is permitted in accordance with Sections 2308.5.9 and 2308.5.10 of the 2018 and 2015 IBC, 2308.9.10 and 2308.9.11 of the 2012, 2009, and 2006 IBC and Section R602.6 of the IRC.

3. RIGIDLAM LVL wall studs must be installed in accordance with the following nailing requirements:

a. The maximum allowable nail size for sheathing attachment to RIGIDLAM® LVL studs is 10d common [3 inches long by 0.148 inches diameter (76 mm by 3.76 mm)].

b. For sheathing attached with nails spaced no closer than 6 inches (152 mm) on center, a single RIGIDLAM® LVL stud may be used for framing at adjoining panel edges. Panel edge nails must be installed with a minimum \( \frac{3}{16} \)-inch (9.5 mm) edge distance from the panel edges (see Detail A in Figure 1).

c. For sheathing attached with nails spaced closer than 6 inches (152 mm) on center, a double LVL stud is required at adjoining panel edges, and compliance with the following is required (see Detail B in Figure 1):

i. Double RIGIDLAM® LVL studs must be stitch-nailed together with nails of the same size and spacing as the nailing required to attach the sheathing to the framing at the panel edges, provided a minimum nail penetration of 6 times the nail diameter is achieved in accordance with Section 12.1.6.4 of the 2018 NDS, Section 12.1.6.5 of the 2015 NDS (11.1.6.5 of the 2012 and 2009 NDS and 11.1.5.5 of the 2005 NDS).

ii. Panel-edge nails must be installed with a minimum \( \frac{3}{16} \)-inch (9.5 mm) and maximum 1-inch (25.4 mm) edge distance from the panel edges, and must be staggered a minimum of \( \frac{1}{4} \)-inch (6.4 mm) horizontally within each line of nails.

iii. The minimum allowable spacing for nails smaller than or equal to 8d common [2.5 inches long by 0.131 inches diameter (64 mm by 3.33 mm)] is 3 inches (76 mm) on center. The minimum allowable spacing for nails larger than 8d common is 4 inches (102 mm) on center.
4. The allowable shear values for nailed wood structural panel shear walls utilizing RIGIDLAM® LVL framing are to be determined in accordance with Table 4.3A of the SDPWS, Table 2306.3 of the 2009 IRC or Table 2306.4.1 of the 2006 IRC, based on the values given for shear walls with framing of Douglas fir-Larch.

5. RIGIDLAM® LVL wall studs are permitted to be used in fire-resistance-rated construction and are considered to be a direct replacement for solid-sawn lumber, having the same dimensions in any fire-resistance-rated wall assembly listed in Table 721.1(2) of the 2018, 2015 and 2012 IRC, and Table 720.1(2) of the 2009, and 2006 IRC. Minimum 2.5 pcf mineral wool insulation must be placed in the stud cavity.

6. Engineered design of RIGIDLAM® LVL studs is outside the scope of this evaluation report.

4.2.4 Fire-Blocking: RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard, with a minimum thickness of 1 1/2 inches, may be used as fire blocking in lieu of the materials listed in Section 718.2.1 of the 2018, 2015, and 2012 IBC, and Table R302.11.1 of the 2018, 2015, 2012 and 2009 IRC, in Section 717.2.1 of the 2009 and 2006 IBC, as applicable.

5.0 CONDITIONS OF USE

The RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard described in this report comply with those codes specifically listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation complies with this report, the manufacturer's published installation instructions, and the applicable code. In the event of a conflict, this report governs.

5.2 Design values must not exceed those set forth in Table 1 of this report except for adjustments with the applicable adjustment factors as specified by the NDS. Where members qualify as repetitive members, as defined by the NDS, an additional increase of 4 percent is permitted for the allowable flexural stress.

5.3 Service conditions for RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard must be covered, dry conditions of use. Dry conditions of use are those under which the moisture content in service is less than 16 percent.

5.4 RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard having fire-retardant or preservative chemical treatments are outside the scope of this report.

5.5 Connection design must comply with Section 4.2.2 of this report.

5.6 Minimum bearing length and anchorage of RIGIDLAM® LVL must be as specified in the applicable code, as indicated in this report, for solid sawn lumber.

5.7 Design calculations and details for specific applications, demonstrating that RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard products comply with this report, must be submitted to the code official. The design calculations and details for specific applications must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.8 Except for cutting to final length for installation and when used as wall studs in accordance with Section 4.2.3, cutting and notching of RIGIDLAM® LVL is outside the scope of this report.

5.9 RIGIDRIM® LVL Rimboard and 1 1/4- to 1 3/4-inch-thick (38 to 44 mm) RIGIDLAM® LVL are produced in Riddle, Oregon, under a quality control program by ICC-ES with inspections by ICC-ES and APA—The Engineered Wood Association (AA-649). 3/2", 5 1/4", and 7-inch-thick (89, 133, 178 mm) built-up LVL headers and beams from RIGIDLAM® LVL are produced by Roseburg Forest Products Co. in Riddle, Oregon; under a quality control program by ICC-ES with inspections by ICC-ES and APA—The Engineered Wood Association (AA-649).

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Structural Wood-based Products (AC47), dated June 2017 (Editorially revised March 2018).

6.2 Data in accordance with the ICC-ES Acceptance Criteria for Rim Board Products (AC124), dated October 2016 (Editorially revised March 2018).

6.3 Data in accordance with the ICC-ES Acceptance Criteria for Wood-based Studs (AC202), dated June 2009 (Editorially revised March 2018).

6.4 Engineering analysis comparing the report subjects to the subjects of compressive testing completed on 1.5E LVL, signed and sealed by a registered design professional.

6.5 Engineering analysis to support changes in nail withdrawal specific gravities, signed and sealed by a registered design professional.

7.0 IDENTIFICATION

7.1 The RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard described in this report are identified by a stamp bearing the manufacturer’s name (Roseburg Forest Products or the name of the additional listee noted at the beginning of this report), the product type, grade designation, the mill number (1055), and the evaluation report number (ESR-1210). In addition, RIGIDRIM® LVL Rimboard is marked with the product thickness.

7.2 The report holder’s contact information is the following:

ROSEBURG FOREST PRODUCTS CO.
3660 GATEWAY STREET
SPRINGFIELD, OREGON 97477
(800) 245-1115
www.roseburg.com

7.3 The additional listee’s contact information is the following:

BlueLinx CORPORATION
4300 WILDWOOD PARKWAY
ATLANTA, GEORGIA 30339
1. Reference design values provided in Table 1 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 16 percent or less.
2. Allowable lateral and withdrawal nail load capacities are as specified in the NDS for lumber having a specific gravity as indicated in Table 3 of this report.
3. If more than one row of parallel nails is required for edge nailing, the rows must be offset at least ½ inch and staggered.
4. Tabulated flat-wise (plank-wise) flexural stresses are based on a reference thickness of 13/4 inches. For thicknesses greater than 13/4 inches, the tabulated flat-wise (plank-wise) flexural stress, , must be adjusted by a depth effect factor \( K_d = (1.75/t)^{1/5} \), where \( t \) is the LVL thickness in inches. For thicknesses less than 13/4 inches, this adjustment must not be applied.

### Table 1—RIGIDLAM® LVL AND RIGIDRIM® LVL RIMBOARD DESIGN STRESSES

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RIGIDLAM® LVL Rimboard 1.3E Grade</th>
<th>RIGIDRIM® LVL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexural stress (psi) Joist/Beam</td>
<td>2250</td>
<td>2250</td>
</tr>
<tr>
<td>Flexural stress (psi) Flat-wise/Plank</td>
<td>2250</td>
<td>2250</td>
</tr>
<tr>
<td>Modulus of elasticity (10^6) (psi)</td>
<td>1.3</td>
<td>1.8</td>
</tr>
<tr>
<td>Tension parallel to grain (psi)</td>
<td>1500</td>
<td>1500</td>
</tr>
<tr>
<td>Compression parallel to grain (psi)</td>
<td>1950</td>
<td>1950</td>
</tr>
<tr>
<td>Compression perp. to grain (psi) Joist/Beam</td>
<td>560</td>
<td>560</td>
</tr>
<tr>
<td>Compression perp. to grain (psi) Flat-wise/Plank</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Horizontal Shear (psi) Joist/Beam</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Horizontal Shear (psi) Flat-wise/Plank</td>
<td>130</td>
<td>130</td>
</tr>
</tbody>
</table>

### Table 2—Nail Spacing—Installed Parallel to the Glue Line

<table>
<thead>
<tr>
<th>RIGIDLAM® LVL AND RIGIDRIM® LVL RIMBOARD THICKNESS</th>
<th>NAIL TYPE AND SIZE</th>
<th>MINIMUM NAIL SPACING</th>
<th>NAIL END DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1½ in.</td>
<td>8d box</td>
<td>3</td>
<td>(1\frac{1}{2} )</td>
</tr>
<tr>
<td></td>
<td>8d common</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10d and 12d box</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10d and 12d common</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16d sinker</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16d common</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>1½ in. and greater</td>
<td>8d box</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8d common</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10d and 12d box</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10d and 12d common</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16d sinker</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16d common</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

### Table 3—Minimum Equivalent Specific Gravity for Fasteners

<table>
<thead>
<tr>
<th>VENEER SPECIES</th>
<th>LVL GRADE</th>
<th>NAILS</th>
<th>BOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas fir</td>
<td>1.3E</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>1.5E</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>1.8E</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>2.0E</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>2.2E</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>
4. For 1/2- or 3/4-inch-diameter (12.7 or 19.1 mm) bolts.

### TABLE 4—ALLOWABLE RIM BOARD DESIGN PROPERTIES FOR RIGIDRIM® LVL RIMBOARD

<table>
<thead>
<tr>
<th>LVL GRADE</th>
<th>NOMINAL THICKNESS (in.)</th>
<th>LATERAL LOAD TRANSFER CAPACITY (lbf/ft)</th>
<th>VERTICAL BEARING LOAD CAPACITY (lbf/ft)</th>
<th>LATERAL RESISTANCE (1/2-INCH LAG SCREW) (lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3E</td>
<td>1 1/2</td>
<td>215</td>
<td>4900</td>
<td>400²</td>
</tr>
</tbody>
</table>

For SI: 1 in. = 25.4 mm, 1 lbf/ft = 0.0015 kg/mm, 1 lbf = 0.454 kg.
1. Maximum allowable rim board depth is 16 inches (406 mm).
2. Lag screw connections between RIGIDRIM LVL Rimboard and deck ledgers must meet the conditions under the exception to Section 4.2.2.

**FIGURE 1—NAILING REQUIREMENTS FOR RIGIDLAM LVL STUDS**

**DISCLAIMER**

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1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard, described in ICC-ES master evaluation report ESR-1210, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:
- 2017 City of Los Angeles Building Code (LABC)
- 2017 City of Los Angeles Residential Code (LARC)

2.0 CONCLUSIONS

The RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard, described in Sections 2.0 through 7.0 of the master evaluation report ESR-1210, comply with the LABC Chapter 23, and the LARC, and are subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The RIGIDLAM® LVL and RIGIDRIM® LVL Rimboard, described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the master evaluation report ESR-1210.
- The design, installation, conditions of use and identification are in accordance with the 2015 International Building Code® (IBC) provisions noted in the master evaluation report ESR-1210.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.

This supplement expires concurrently with the master report, reissued September 2018.