Joint Evaluation Report

ESR-2909

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 13—Laminated Veneer Lumber

REPORT HOLDER:
PACIFIC WOODTECH CORPORATION

EVALUATION SUBJECT:
PACIFIC WOODTECH® LAMINATED VENEER LUMBER (LVL) AND PACIFIC WOODTECH® RIM BOARDS

ADDITIONAL LISTEES:
ALLIANCE LUMBER
BLUELINX CORPORATION

1.0 EVALUATION SCOPE

Compliance with the following codes:

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see ESR-2909 LABC and LARC Supplement.

Properties evaluated:
- Structural
- Fireblocking

2.0 USES

Pacific Woodtech® laminated veneer lumber (LVL) is used in structural applications such as beams, headers, joists, rafters, columns, and truss chords. Pacific Woodtech® Rim Boards are used in rim board applications as described in this report.

3.0 DESCRIPTION

Pacific Woodtech Corporation manufactures and private-labels the LVL products described in this report. Private-label products are produced for the additional listee in this report, and also for others. The company names and associated product trade names for LVL and rim board products are as follows:

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT TRADE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Woodtech Corp.</td>
<td>Pacific Woodtech®</td>
</tr>
<tr>
<td>Alliance Lumber</td>
<td>Integri-Lam™</td>
</tr>
<tr>
<td>BlueLinx Corp.</td>
<td>onCENTER®</td>
</tr>
</tbody>
</table>

Pacific Woodtech LVL and Pacific Woodtech Rim Boards are structural composite lumber products complying with ASTM D5456 and additional performance requirements specified in the ICC-ES Acceptance Criteria for Structural Wood-based Products (AC47) and the Acceptance Criteria for Rim Board Products (AC124). Qualified adhesives, veneer species and veneer grades are as specified in the approved quality control manual. The veneers are laminated with the grain parallel to the length of the LVL member. Pacific Woodtech LVL is available in thicknesses from 3/4 inch (19.1 mm) to 7 inches (178 mm) and depths from 1 3/4 inches (44.5 mm) to 48 inches (1219 mm). Products thicker than 3 1/2 inches (89 mm) are fabricated by means of a secondary face-bonding process. Pacific Woodtech Rim Boards are manufactured from Pacific Woodtech LVL in thicknesses of 1 1/4, 1 1/2 and 1 3/4 inches (32 mm, 38 mm and 44 mm), a maximum depth of 24 inches (610 mm), and a minimum length of 8 feet (2438 mm).

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: The design provisions for structural composite lumber in the ANSI/AWC National Design Specification® (NDS) for Wood Construction, as referenced in the applicable code, are applicable to Pacific Woodtech LVL, unless otherwise noted in this report. Reference design values for Pacific Woodtech LVL are provided in Table 1.

4.1.2 Connections: Reference lateral and withdrawal design values for nailed or bolted connections in Pacific Woodtech LVL are as specified in the NDS for structural composite lumber having equivalent specific gravities as given in Table 3 of this report. For fasteners installed perpendicular to the wide face of the veneers, spacing, edge distances and end distances must be as required in the NDS for sawn lumber. Minimum required spacing, edge distances and end distances for fasteners installed into the narrow face of the LVL (faces showing the narrow edge of all veneers) are as given in Table 4. Bolted connections are not allowed in member edges.

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

Exception: Lag screw connections between Pacific Woodtech Rim Boards and deck ledgers have an allowable lateral load of 350 pounds (1.56 kN) per lag screw, under the following conditions:

a. Lag screws must have a minimum nominal diameter of 1/2 inch (12.7 mm), and sufficient length so that the full diameter of the lag screw shank penetrates through the rim board (the tapered tip must pass completely through the rim board).

b. Deck ledgers must consist of minimum 2-by-8 lumber having a minimum assigned specific gravity of 0.42.
5.0 CONDITIONS OF USE

The Pacific Woodtech® LVL and Pacific Woodtech® Rim Boards described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Design and installation must comply with this report, the manufacturer's published installation instructions, and the applicable code. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.2 Design calculations and/or drawings, demonstrating compliance with this report, must be provided to the code official upon request. These documents must be sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.3 Plank compression perpendicular to grain, $F_{c,l}$, values in Table 1 are allowed to be adjusted by the NDS specified bearing area factor, $C_{b}$.

5.4 Applications in unprotected, wet service conditions, where the moisture content of the LVL will reach 16 percent or greater, are beyond the scope of this report.

5.5 Pacific Woodtech® LVL products are produced at the Pacific Woodtech Corporation manufacturing plant located in Burlington, Washington, under a quality-control program 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 June 2019.

7.0 IDENTIFICATION

7.1 Pacific Woodtech® LVL is identified by a stamp noting the manufacturer's name (Pacific Woodtech), product trade name, grade, production date, evaluation report number (ESR-2909), qualified inspection agency name or logo (APA), and manufacturer's APA mill number (1047).

7.2 Pacific Woodtech® Rim Boards are identified by a stamp noting the manufacturer's name (Pacific Woodtech), product trade name, product name or registered trademark, grade, thickness, production date, evaluation report number (ESR-2909), name of the inspection agency (APA—The Engineered Wood Association) and manufacturer's APA mill number (1047).

7.3 The report holder's contact information is the following:

PACIFIC WOODTECH CORPORATION
1850 PARK LANE
BURLINGTON, WASHINGTON 98233
(360) 707-2200
www.pacificwoodtech.com

7.4 The additional listee' contact information is the following:

ALLIANCE LUMBER
1800 WEST BROADWAY ROAD, SUITE 1
TEMPE, ARIZONA 85282

BLUELINX CORPORATION
1950 SPECTRUM CIRCLE
MARIETTA, GEORGIA 30067
### TABLE 1—PACIFIC WOODTECH® LVL REFERENCE DESIGN VALUES (psi)1, 2

<table>
<thead>
<tr>
<th>Grade</th>
<th>MOE (10^6 psi)2</th>
<th>MOE (10^6 psi)2</th>
<th>Fb (psi)5</th>
<th>Fv (psi)6</th>
<th>Ft (psi)7</th>
<th>Fc (psi)8</th>
<th>Fc (psi)8</th>
<th>Ft (psi)7</th>
<th>Ft (psi)7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6E</td>
<td>1.6</td>
<td>1.6</td>
<td>2,250</td>
<td>230</td>
<td>750</td>
<td>2,250</td>
<td>150</td>
<td>650</td>
<td>1,500</td>
</tr>
<tr>
<td>1.9E</td>
<td>1.9</td>
<td>1.9</td>
<td>2,750</td>
<td>285</td>
<td>850</td>
<td>2,750</td>
<td>150</td>
<td>650</td>
<td>1,850</td>
</tr>
<tr>
<td>2.1E</td>
<td>2.1</td>
<td>2.1</td>
<td>2,900</td>
<td>285</td>
<td>850</td>
<td>2,900</td>
<td>150</td>
<td>650</td>
<td>2,100</td>
</tr>
<tr>
<td>2.1E</td>
<td>2.1</td>
<td>2.1</td>
<td>3,100</td>
<td>285</td>
<td>850</td>
<td>3,100</td>
<td>150</td>
<td>650</td>
<td>2,100</td>
</tr>
<tr>
<td>2.3E</td>
<td>2.3</td>
<td>2.2E</td>
<td>3,100</td>
<td>285</td>
<td>850</td>
<td>3,100</td>
<td>150</td>
<td>650</td>
<td>2,350</td>
</tr>
</tbody>
</table>

For SI: 1 psi = 6.895 kPa, 1 inch = 25.4 mm.

1Reference design values are based on dry conditions of use, in which the environmental conditions (temperature and relative humidity) will result in an average equilibrium moisture content (EMC) of sawn lumber of less than 16 percent. Applications where the EMC will equal or exceed 16 percent are outside the scope of this report.

2Reference design values must be adjusted, as applicable, in accordance with Section 8.3 of the NDS.

3Beam values apply to members loaded and supported on faces showing the narrow edge of all veneers, typically the narrow faces of the member.

4Plank values apply to members loaded and supported on faces showing the wide face of one veneer, typically the wide faces of the member.

5Tabulated values are the true (shear-free) modulus of elasticity. Coefficient of variation of Etrue may be taken as 0.10.

6Plank compression perpendicular to grain, Fc, values are allowed to be adjusted by the NDS specified bearing area factor, Cb.

7Lag screw connections between rim boards and deck ledgers have an allowable lateral load of 350 pounds per lag screw, provided the conditions in the exception to Section 4.1.2 are met.

8Reference tension design values parallel to grain, Ft, apply to a 4-foot member length. For member lengths greater than 4 feet, Ft must be multiplied by a factor of (4/L)1.10, where L is the length of the member, in feet.

9Reference design values must be adjusted, as applicable, in accordance with Section 8.3 of the NDS.

10Reference design values are based on dry conditions of use, in which the environmental conditions (temperature and relative humidity) will result in an average equilibrium moisture content (EMC) of sawn lumber of less than 16 percent. Applications where the EMC will equal or exceed 16 percent are outside the scope of this report.

### TABLE 2—1-1/4, 1-1/2, 1-3/4-INCH RIM BOARD ALLOWABLE LOADS1, 2, 3, 4

<table>
<thead>
<tr>
<th>True E (10^6 psi)</th>
<th>Apparent E (10^6 psi)</th>
<th>Minimum Thickness (in.)</th>
<th>Depth (in.)</th>
<th>Vertical Load Capacity</th>
<th>Lateral Load Capacity</th>
<th>Deck Ledger Connection</th>
<th>Deck Ledger Connection</th>
<th>Deck Ledger Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Uniform Load (plf)</td>
<td>Concentrated Load (lbf)</td>
<td>(1/2&quot; dia. lag screw) (lbf)</td>
<td>(1/2&quot; dia. bolt w/ air gap) (lbf)</td>
<td>(1/2&quot; dia. bolt w/ air gap) (lbf)</td>
</tr>
<tr>
<td>1-1/4</td>
<td>1.1/4</td>
<td>11-1/8</td>
<td>11-7/8</td>
<td>4,250</td>
<td>3,760</td>
<td>200</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>1-1/2</td>
<td>1.1/2</td>
<td>14</td>
<td>11-7/8</td>
<td>6,480</td>
<td>4,500</td>
<td>250</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>1-3/4</td>
<td>1.3/4</td>
<td>16</td>
<td>11-7/8</td>
<td>6,480</td>
<td>4,500</td>
<td>250</td>
<td>675</td>
<td>725</td>
</tr>
</tbody>
</table>

For SI: 1 plf = 14.59 N/m, 1 lb = 4.448 N.

1The design loads given in this table are for rim boards installed in accordance with Section 4.2.2.

2Tabulated design values are based on dry conditions of use, in which the environmental conditions (temperature and relative humidity) will result in an average equilibrium moisture content (EMC) of sawn lumber of less than 16 percent. Applications where the EMC will equal or exceed 16 percent are outside the scope of this report.

3All design values are applicable to the normal load duration (10 years) for wood products, except for the lateral load capacity, which is based on the short-term load duration (10 minutes). Design values shall be adjusted for other load durations in accordance Section 2.3.2 of the NDS except the uniform vertical load and concentrated vertical load are not allowed to be increased for any load durations shorter than the normal load duration (10 years).

4Other design values are as provided for 1.6E grade Pacific Woodtech LVL in Table 1.

5Lag screw connections between rim boards and deck ledgers have an allowable lateral load of 350 pounds per lag screw, provided the conditions in the exception to Section 4.1.2 are met.

### TABLE 3—EQUIVALENT SPECIFIC GRAVITY FOR CONNECTION DESIGN1, 2

<table>
<thead>
<tr>
<th>Connection Type – Load Direction</th>
<th>Fastener Orientation</th>
<th>Face3</th>
<th>Edge4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nail – Withdrawal</td>
<td>0.50</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td>Nail – Lateral</td>
<td>0.50</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>Bolt – Lateral</td>
<td>0.50</td>
<td>N.A.</td>
<td></td>
</tr>
</tbody>
</table>

1Reference lateral and withdrawal design values for bolted and nailed connections in Pacific Woodtech LVL are as specified in the NDS for structural composite lumber having equivalent specific gravities as indicated in the table above.

2Connections in which fasteners are installed into the end grain of the LVL are outside the scope of this report.

3Values given under the heading ‘Face’ apply to connections in which the fastener axis is installed parallel to the faces showing the wide face of one veneer.

4Values given under the heading ‘Edge’ apply to connections in which the fastener axis is installed perpendicular to the faces showing the narrow edge of all veneers.
### TABLE 4—MINIMUM NAIL SPACING AND END DISTANCE

<table>
<thead>
<tr>
<th>Nominal LVL Thickness</th>
<th>Orientation</th>
<th>Nail Size</th>
<th>Nail Diameter (in.)</th>
<th>Nail Length (in.)</th>
<th>Minimum End Distance (in.)</th>
<th>Minimum Nail Spacing (in.)</th>
<th>Maximum Nail Penetration (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Single Row</td>
<td>Double Row</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1-1/2 in.</td>
<td>Edge</td>
<td>8d &amp; smaller</td>
<td>0.131</td>
<td>2.5</td>
<td>2-1/2</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10d &amp; 12d</td>
<td>0.148</td>
<td>3.25</td>
<td>2-1/2</td>
<td>4</td>
<td>2.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16d</td>
<td>0.162</td>
<td>3.5</td>
<td>3-1/2</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Face</td>
<td>12d &amp; smaller</td>
<td>0.148</td>
<td>3.25</td>
<td>1-1/2</td>
<td>3</td>
<td>3 LVL Thickness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16d</td>
<td>0.162</td>
<td>3.5</td>
<td>1-1/2</td>
<td>5</td>
<td>5 LVL Thickness</td>
</tr>
<tr>
<td>1-1/2 in. and greater</td>
<td>Edge</td>
<td>8d &amp; smaller</td>
<td>0.131</td>
<td>2.5</td>
<td>2-1/2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10d &amp; 12d</td>
<td>0.148</td>
<td>3.25</td>
<td>3-1/2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16d</td>
<td>0.162</td>
<td>3.5</td>
<td>3-1/2</td>
<td>5</td>
<td>6 LVL Thickness</td>
</tr>
<tr>
<td></td>
<td>Face</td>
<td>12d &amp; smaller</td>
<td>0.148</td>
<td>3.25</td>
<td>1-1/2</td>
<td>3</td>
<td>3 LVL Thickness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16d</td>
<td>0.162</td>
<td>3.5</td>
<td>1-1/2</td>
<td>5</td>
<td>5 LVL Thickness</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm.

1Edge distance shall be sufficient to prevent splitting.
2Nail sizes and closest on-center spacing not specifically described in this table are outside the scope of this report.
3Penetration length includes nail tip.
4Tabulated closest on-center spacing for face orientation is applicable to nails that are installed in rows parallel to the grain (length) of the LVL. For nails installed in rows perpendicular to the direction of grain (width/depth) of the LVL, the closest on-center spacing for face orientation shall be sufficient to prevent splitting of the LVL.
5Minimum end distance is allowed to be reduced to 2 1/2 in. for single row nailing.
6Minimum nail spacing may be reduced to 5 in. when LVL is 1 1/4 in. or thicker.

**DISCLAIMER**

APA Product Report® is a trademark of APA – The Engineered Wood Association, Tacoma, Washington. ICC-ES Evaluation Report is a trademark of ICC Evaluation Service, LLC (ICC-ES). The information contained herein is based on the product evaluation in accordance with the references noted in this report. Neither ICC-ES, nor APA or its members make any warranty, expressed or implied, or assume any legal liability or responsibility for the use, application of, and/or reference to opinions, findings, conclusions, or recommendations included in this report. The joint ICC-ES/APA Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. Consult the local jurisdiction or design professional to assure compliance with code, construction, and performance requirements. Because neither APA, nor ICC-ES, has any control over quality of workmanship or the conditions under which engineered wood products are used, it cannot accept responsibility for product performance or designs as actually constructed.
DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 13—Laminated Veneer Lumber

REPORT HOLDER:

PACIFIC WOODTECH CORPORATION

EVALUATION SUBJECT:

PACIFIC WOODTECH® LAMINATED VENEER LUMBER (LVL), PACIFIC WOODTECH® TREATED LVL AND PACIFIC WOODTECH® RIM BOARDS

1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Pacific Woodtech® Laminated Veneer Lumber (LVL), Pacific Woodtech® Treated LVL, and Pacific Woodtech® Rim Boards, described in ICC-ES evaluation report ESR-2909, 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:
- 2020 City of Los Angeles Building Code (LABC)
- 2020 City of Los Angeles Residential Code (LARC)

2.0 CONCLUSIONS

The Pacific Woodtech® Laminated Veneer Lumber (LVL), Pacific Woodtech® Treated LVL, and Pacific Woodtech® Rim Boards described in Sections 2.0 through 7.0 of the evaluation report ESR-2909, 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 Pacific Woodtech® Laminated Veneer Lumber (LVL), Pacific Woodtech® Treated LVL, and Pacific Woodtech® Rim Boards described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-2909.
- The design, installation, conditions of use and identification are in accordance with the 2018 International Building Code® (IBC) provisions noted in the evaluation report ESR-2909.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.

This evaluation report supplement expires concurrently with the evaluation report ESR-2909, reissued September 2019 and revised December 2020.
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Pacific Woodtech® Laminated Veneer Lumber (LVL) and Pacific Woodtech® Rim Boards, described in ICC-ES evaluation report ESR-2909, have also been evaluated for compliance with the codes noted below.

Applicable code editions:
- 2020 and 2017 Florida Building Code—Building
- 2020 and 2017 Florida Building Code—Residential

2.0 CONCLUSIONS

The Pacific Woodtech® Laminated Veneer Lumber (LVL) and Pacific Woodtech® Rim Boards, described in Sections 2.0 through 7.0 of the evaluation report ESR-2909, comply with the Florida Building Code—Building and the Florida Building Code—Residential, provided the design requirements are determined in accordance with the Florida Building Code—Building or the Florida Building Code—Residential, as applicable. The installation requirements noted in evaluation report ESR-2909 for the International Building Code® meet the requirements of the Florida Building Code—Building or the Florida Building Code—Residential, as applicable.

Use of the Pacific Woodtech® Laminated Veneer Lumber (LVL) and Pacific Woodtech® Rim Boards for compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code—Building and the Florida Building Code—Residential has not been evaluated, and is outside the scope of this evaluation report supplement.

For products falling under Florida Rule 61G20-3, verification that the report holder’s quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This evaluation report supplement expires concurrently with the evaluation report ESR-2909, reissued September 2019 and revised December 2020.