

# ICC-ES Evaluation Report

**ESR-1387**

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This report also contains:

- [City of LA Supplement](#)

- [FL Supplement w/ HVHZ](#)

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| <p><b>DIVISION: 06 00 00—</b><br/><b>WOOD, PLASTICS AND</b><br/><b>COMPOSITES</b></p> <p><b>Section: 06 17 13—</b><br/><b>Laminated Veneer</b><br/><b>Lumber</b></p> <p><b>Section: 06 17 23—</b><br/><b>Parallel Strand Lumber</b></p> <p><b>Section: 06 17 25—</b><br/><b>Laminated Strand</b><br/><b>Lumber</b></p> | <p><b>REPORT HOLDER:</b><br/><b>WEYERHAEUSER</b></p> <p><b>ADDITIONAL LISTEE:</b><br/><b>REDBUILT™ LLC</b></p>  | <p><b>EVALUATION SUBJECT:</b></p> <p><b>STRUCTURAL</b><br/><b>COMPOSITE LUMBER</b><br/><b>AND ORIENTED</b><br/><b>STRAND BOARD:</b><br/><b>TIMBERSTRAND®</b><br/><b>LAMINATED STRAND</b><br/><b>LUMBER (LSL);</b><br/><b>PARALLAM® PARALLEL</b><br/><b>STRAND LUMBER</b><br/><b>(PSL); MICROLLAM®</b><br/><b>LAMINATED VENEER</b><br/><b>LUMBER (LVL);</b><br/><b>TIMBERSTRAND® LSL</b><br/><b>RIM BOARD; REDBUILT</b><br/><b>LSL RIM BOARD; TJ®</b><br/><b>RIM BOARD; AND</b><br/><b>WEYERHAEUSER RIM</b><br/><b>BOARD</b></p> |  |
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## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2024, 2021, and 2018 [International Building Code® \(IBC\)](#)
- 2024, 2021, and 2018 [International Residential Code® \(IRC\)](#)

**Properties evaluated:**

- Structural
- Fire resistance

## 2.0 USES

The structural composite lumber and oriented strand board products described in this evaluation report are used as alternatives to sawn lumber for wall, floor, and roof structural members. These structural applications include use as beams, headers, joists, rafters, columns, wall studs, and rim boards. The products are also used as components of built-up structural members, such as flanges for I-joists and chords for trusses, as detailed in a current ICC-ES evaluation report. TJ® Rim Board and Weyerhaeuser Rim Board are used for rim board applications only.

## 3.0 DESCRIPTION

### 3.1 General:

The structural composite lumber and oriented strand board products described in this report comply with ASTM D5456 (PS-2, AC124 and ASTM D7672, where applicable), and are described in Sections 3.2, 3.3, 3.4 and 3.5.

### 3.2 Microllam LVL:

Microllam laminated veneer lumber (LVL) is manufactured from wood veneers laminated together using an exterior-type structural adhesive. 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 approved quality documentation and manufacturing standard. Microllam LVL is available in various grades and thicknesses as indicated in [Table 1](#), with depths ranging from 2.50 inches (63.5 mm) to 48 inches (1219 mm), and lengths up to 80 feet (24 380 mm).

### 3.3 Parallam PSL:

Parallam parallel strand lumber (PSL) is manufactured from wood strands that are oriented parallel to the length of the member and bonded together using an exterior-type structural adhesive. The wood species, properties, adhesives, manufacturing parameters and finished product tolerances are as specified in the approved quality documentation and manufacturing standard. Parallam PSL is available in various grades as indicated in [Table 1](#), with rectangular cross sections having a maximum thickness of 11 inches (279 mm), a maximum depth of 19 inches (483 mm), and lengths up to 66 feet (20 120 mm). Cross sections with depths up to 54 inches (1372 mm) are available through secondary lamination. See Footnote 13 to [Table 1](#).

### 3.4 TimberStrand LSL, TimberStrand LSL Rim Boards and RedBuilt LSL Rim Boards:

TimberStrand laminated strand lumber (LSL), TimberStrand LSL Rim Boards and RedBuilt LSL Rim Boards are manufactured from wood strands that are oriented in a direction parallel to the length of the member and bonded together using an exterior-type structural adhesive. The wood species, properties, adhesives, manufacturing parameters and finished product tolerances are as specified in the approved quality documentation and manufacturing standard. TimberStrand LSL is available in various grades as indicated in [Table 1](#), with lengths up to 64 feet (19 500 mm), thicknesses of 1.25 to 5.50 inches (31.8 mm to 140 mm), and depths up to 48 inches (1219 mm). TimberStrand LSL Rim Board and RedBuilt LSL Rim Board are available in a 1.3E grade, with lengths up to 48 feet (14 630 mm), thicknesses of 1.25 to 1.50 inches (31.8 mm to 38.1 mm), and depths up to 24 inches (610 mm), as indicated in [Table 4](#). TimberStrand LSL having a grade of 1.6E or lower may contain finger joints. TimberStrand LSL may be treated with zinc borate (ZB), as specified in the approved quality documentation and manufacturing standard, and is additionally identified with a StrandGuard<sup>®</sup> stamp (see [Figure 5](#)). For TimberStrand LSL product identified with a StrandGuard<sup>®</sup> stamp, the design guidelines, and properties for TimberStrand LSL noted in Section 4, Section 5 and [Tables 1-4](#) of this report shall be used.

### 3.5 TJ<sup>®</sup> Rim Board and Weyerhaeuser Rim Board:

TJ<sup>®</sup> Rim Board and Weyerhaeuser Rim Board consist of either laminated strand lumber (LSL) (described in Section 3.4) or oriented strand board (OSB). The OSB consists of wood strands that are oriented at varying angles with respect to the length of the member, and bonded together using an exterior-type structural adhesive. The wood species, properties, adhesives, manufacturing parameters and finished product tolerances are as specified in the approved quality documentation and manufacturing standard. TJ<sup>®</sup> Rim Board and Weyerhaeuser Rim Board are 1.125 inches (28.6 mm) thick, and are available in depths ranging from 9.50 to 16 inches (241 to 406 mm). They are available in lengths ranging from 8 to 24 feet (2440 to 7315 mm), as indicated in [Table 4](#).

## 4.0 DESIGN AND INSTALLATION

### 4.1 General:

The design and installation of Weyerhaeuser structural composite lumber and oriented strand board products must comply with this report and the report holder's published installation instructions. Design of the structural composite lumber products described in this report is governed by the applicable code and the ANSI/AWC *National Design Specification<sup>®</sup> for Wood Construction* (NDS). In the event of a conflict between the report holder's published installation instructions and this report, the more restrictive governs. Reference design values for Microllam<sup>®</sup> LVL, Parallam<sup>®</sup> PSL, TimberStrand<sup>®</sup> LSL, TimberStrand<sup>®</sup> LSL Rim Board, RedBuilt LSL Rim Board, TJ<sup>®</sup> Rim Board, and Weyerhaeuser Rim Board are given in [Table 1](#).

### 4.2 Connections:

The design of mechanical connections for Microllam<sup>®</sup> LVL, Parallam<sup>®</sup> PSL, TimberStrand<sup>®</sup> LSL, TimberStrand<sup>®</sup> LSL Rim Board, RedBuilt LSL Rim Board, TJ<sup>®</sup> Rim Board, and Weyerhaeuser Rim Board must be in accordance with the NDS. Equivalent specific gravities for nailed, screwed, bolted and lag screwed connections are given in [Table 2](#). Minimum nail spacing, and end and edge distance requirements, are given in [Table 3](#). Nailing requirements for the attachment of wall sheathing are given in Section 4.5.

**Exception:** Lag screw connections between rim board products and deck ledgers have allowable lateral loads as specified in [Table 4](#), under the following conditions:

1. Lag screws must have a minimum diameter of 0.50 inch (12.7 mm), and sufficient length to penetrate through the rim board, not including tips.
2. Deck ledgers must consist of minimum nominally 2-by-6 lumber having a minimum assigned specific gravity of 0.42.
3. Sheathing between the rim board and 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.
4. One flat washer must be used between the deck ledger and the lag screw head.
5. Adjustment factors in accordance with the NDS must be applied as applicable.

For nail and bolt connections other than those described in this report, specific approval by the authority having jurisdiction is required.

### 4.3 Fire Resistance and Fire Blocking:

**4.3.1 Fire Resistance:** For applications under the IBC, the fire resistance of exposed TimberStrand LSL, Microllam LVL and Parallam PSL members may be calculated in accordance with Chapter 16 of the ANSI/AWC *National Design Specification<sup>®</sup> for Wood Construction* (NDS). The fire resistance of protected TimberStrand LSL, Microllam LVL and Parallam PSL members may be calculated in accordance with Chapter 3 of the ANSI/AWC *Fire Design Specification<sup>®</sup> for Wood Construction* (FDS). TimberStrand LSL, Microllam LVL and Parallam PSL of equivalent sizes to that of sawn lumber may be substituted for those of sawn lumber in fire-resistance-rated assemblies, as specified in Tables 721.1(2) and 721.1(3) of the IBC.

**4.3.2 Fire Blocking:** TimberStrand LSL, Microllam LVL, Parallam PSL, TJ Rim Board, Weyerhaeuser Rim Board and RedBuilt LSL Rim Board, having a minimum net thickness of 1.125 inches (31.7 mm), may be used in fire blocking applications in accordance with Section 2.5.2 of the ANSI/AWC *Fire Design Specification<sup>®</sup> for Wood Construction* (FDS), as an alternative to the materials listed in Section 718.2.1(1) of the IBC and Section R302.11.1(1) of the IRC.

Holes and notches in the rim board shall comply with applicable codes and the manufacturer's published literature. Penetrations into and through fire-resistance-rated wall assemblies must also be detailed and constructed in accordance with Section 714 of the IBC.

### 4.4 Rim Board:

Each rim board product described in this evaluation report is used as a structural rim board element located at the joist elevation in an end bearing wall or parallel to the joist framing that is the full depth of the joist space and manufactured in minimum continuous 8-foot-long (2.44 m) segments for the length of the wall. Design values for rim board applications are provided in [Table 4](#). Rim board products in this report are not required to be continuously supported provided they are designed as flexural members using the reference design values shown in [Table 1](#). The rim boards may be used for any combination of the following:

1. To transfer, from above to below, all vertical loads at the rim board location. Allowable vertical loads are given in [Table 4](#).
2. To provide diaphragm attachment (sheathing to top edge of rim board).
3. To transfer in-plane lateral loads from the diaphragm to the wall plate below. Allowable lateral loads are given in [Table 4](#).
4. To provide lateral support to the joist or rafter (resistance against rotation) through attachment to the joist or rafter.
5. To provide closure for ends of joists or rafters.
6. To provide an attachment base for siding or an exterior deck ledger.

### 4.5 Wall Framing:

Subject to the limitations of [Table 5](#), TimberStrand<sup>®</sup> LSL and Microllam<sup>®</sup> LVL are permitted to be used as wall framing material in accordance with the requirements for engineered, conventional light-frame, and prescriptive construction of the applicable code for sawn lumber wall framing. For prescriptive construction in accordance with the IRC, cutting, notching and boring are permitted in accordance with the requirements of Section R602.6 of the 2024, 2021 and 2018 IRC. For the conventional construction in accordance with the IBC, cutting,

notching, and boring are permitted in accordance with the requirements of Sections 2308.6.2 and 2308.6.3 of the 2024 IBC and the requirements of Sections 2308.5.9 and 2308.5.10 of the 2021 and 2018 IBC. For engineered construction, the effects of cutting, notching, and boring on wall framing shall be addressed by a registered design professional or manufacturer's guidelines.

The allowable shear values for nailed wood structural panel shear walls utilizing TimberStrand<sup>®</sup> LSL and Microllam<sup>®</sup> LVL framing must be determined using Table 4.3A of the ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) subject to the limitations in [Table 5](#). All other shear wall design and detailing provisions shall follow the normal requirements applicable to sawn lumber framing.

## 5.0 CONDITIONS OF USE:

The structural composite lumber and oriented strand board [TimberStrand<sup>®</sup> Laminated Strand Lumber (LSL), Parallam<sup>®</sup> Parallel Strand Lumber (PSL), and Microllam<sup>®</sup> Laminated Veneer Lumber (LVL)]; TimberStrand<sup>®</sup> LSL Rim Board; RedBuilt LSL Rim Board; TJ<sup>®</sup> Rim Board; and Weyerhaeuser Rim Board products described in this report comply with, or are suitable alternatives to what is specified, in those codes listed in Section 1.0, subject to the following conditions:

- 5.1 Installation, fabrication, identification, and connection details must be in accordance with this report, the manufacturer's published installation instructions and the applicable code.
- 5.2 Design calculations and details must be furnished to the code official, verifying that the material is used in compliance with this report. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.3 The products described in this report must be limited to covered end-use installations with dry conditions of use in which the in-service equilibrium moisture content is less than 16 percent.
- 5.4 Length and depth dimensions of TimberStrand LSL, Parallam PSL and Microllam LVL may be cut to size for required application. Depth must not be cut to less than 3.50 inches (89 mm). Thickness dimension of Parallam PSL may be cut to a minimum of 1.75 inches (45 mm). Microllam LVL and TimberStrand LSL must not be cut in thickness. For all material used in structural applications, the product identification described in Section 7.0 must be maintained on all material, or the material must be re-stamped with the appropriate identification only under the approval and direction of PFS Corporation, Intertek Testing Services, or APA—The Engineered Wood Association. Additionally, TimberStrand LSL, Parallam PSL, Microllam LVL, TJ Rim Board, and Weyerhaeuser Rim Board may be notched, drilled, or tapered end cut provided design is by a design professional.
- 5.5 TimberStrand LSL that has been treated with zinc borate (ZB) may be used within the building envelope, such as for sill plates supported by masonry or concrete footings, foundations, or slabs (including where preservative-treated lumber is required within the building envelope) in accordance with the American Wood Protection Association (AWPA) "Use Category UC2". When used under these conditions, the corrosion rate of carbon steel and/or galvanized steel in contact with ZB-treated TimberStrand LSL is not increased by the ZB treatment. TimberStrand LSL treated with ZB must not be used in exposed exterior or ground-contact applications.
- 5.6 TimberStrand LSL, TimberStrand LSL Rim Board and RedBuilt LSL Rim Board are produced at the Weyerhaeuser manufacturing plant located in Kenora, Ontario, Canada; with quality-control inspections by ICC-ES and PFS Corporation (AI-3954).
- 5.7 Parallam PSL is produced at the Weyerhaeuser manufacturing plants located in Annacis Island, British Columbia, Canada; and Buckhannon, West Virginia; with quality-control inspections by ICC-ES and PFS Corporation (AI-3954).
- 5.8 Parallam PSL is secondary laminated for Weyerhaeuser at American Laminators, Drain, Oregon, OK Laminators, Okanagan Falls, British Columbia, Canada, with quality-control inspections by ICC-ES and PFS Corporation (AI-3954) or Intertek Testing Services (AA-691).
- 5.9 Microllam LVL is produced at the Weyerhaeuser manufacturing plants located in Buckhannon, West Virginia; Eugene, Oregon; Natchitoches, Louisiana; and Castleberry, Alabama; and at the RedBuilt<sup>™</sup> LLC plant in Stayton, Oregon; with quality-control inspections by ICC-ES and PFS Corporation (AI-3954).
- 5.10 TJ<sup>®</sup> Rim Board is produced at the Weyerhaeuser manufacturing plant located in Elkin, North Carolina; with inspections by ICC-ES and APA—The Engineered Wood Association (AA-649) or PFS Corporation (AA-652); and at the Weyerhaeuser manufacturing plant located in Kenora, Ontario, Canada; with quality-control inspections by ICC-ES and PFS Corporation (AI-3954).

- 5.11 Weyerhaeuser Rim Board is produced at the Weyerhaeuser manufacturing plants located in Elkin, North Carolina and Kenora, Ontario, Canada; with inspections by ICC-ES and APA—The Engineered Wood Association (AA-649) or PFS Corporation (AI-3954).

## 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the [ICC-ES Acceptance Criteria for Structural Wood-based Products \(AC47\)](#), dated May 2023 (editorially revised January 2025).
- 6.2 Data in accordance with the [ICC-ES Acceptance Criteria for Rim Board Products \(AC124\)](#), dated June 2019 (editorially revised January 2025).
- 6.3 Data in accordance with the [ICC-ES Acceptance Criteria for Zinc Borate \(ZB\) Preservative Treatment of Structural Composite Wood Products by Non-pressure Processes \(AC203\)](#), dated August 2017 (editorially revised February 2025).
- 6.4 Data in accordance with the [ICC-ES Acceptance Criteria for Wood-Based Studs \(AC202\)](#), dated June 2009 (editorially revised January 2025).
- 6.5 Reports of fire tests conducted in accordance with ASTM E119.

## 7.0 IDENTIFICATION

### 7.1 General:

Product labeling shall include the name of the report holder or listee, and the ICC-ES mark of conformity. The listing or evaluation report number (ICC-ES ESR-1387) may be used in lieu of the mark of conformity. The structural composite lumber and rim board products described in this report are identified with a stamp bearing the plant number, the product designation or type, the production date, the grade, the report holder's or listee's name (Weyerhaeuser or RedBuilt) or report holder's or listee's registered tradename or trademark (Weyerhaeuser, TrusJoist or RedBuilt), the name or logo of the inspection agency (PFS Corporation, Intertek Testing Services or APA EWS), and the evaluation report number (ESR-1387). Example labels are shown in [Figures 4](#) and [5](#) at the end of this report.

### 7.2 Additional Identification for Specific Products:

In addition to the information noted in Section 7.1, specific products are further identified with the following information:

1. The stamps on Microllam<sup>®</sup> LVL and Parallam<sup>®</sup> PSL also identify the species or species group, as listed in [Table 1](#).
2. TimberStrand LSL treated with zinc borate (ZB), as described in Section 3.4 of this report, is identified by a StrandGuard<sup>®</sup> stamp with the designations "ZB" and "AWPA UC2" (see [Figure 5](#)).
3. The stamps on rim board products also indicate the rim board thickness.

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

**WEYERHAEUSER**  
**32901 WEYERHAEUSER WAY SOUTH**  
**SUITE 102**  
**FEDERAL WAY, WASHINGTON 98001**  
**(888) 453-8358**  
[www.woodbywy.com](http://www.woodbywy.com)  
[techsupport@wy.com](mailto:techsupport@wy.com)

### 7.4 The Additional Listee's contact information is the following:

**REDBUILT™ LLC**  
**200 EAST MALLARD DRIVE**  
**BOISE, IDAHO 83706**



TABLE 1—REFERENCE DESIGN VALUES FOR MICROLLAM® LVL, PARALLAM® PSL AND TIMBERSTRAND® LSL<sup>1,2,5</sup>

| GRADE <sup>(3)</sup>                       | BILLET MATERIAL THICKNESS (in.) | Modulus of Elasticity <sup>(5)</sup>                                      |                                                        | JOIST / BEAM ORIENTATION <sup>(4)</sup>     |                            |                                                 | FACE / PLANK ORIENTATION <sup>(4)</sup>     |                            |                                                                   | AXIAL                                       |                                  |
|--------------------------------------------|---------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------|----------------------------|-------------------------------------------------|---------------------------------------------|----------------------------|-------------------------------------------------------------------|---------------------------------------------|----------------------------------|
|                                            |                                 |                                                                           |                                                        | Bending F <sub>b</sub> <sup>(7)</sup> (psi) | Shear F <sub>v</sub> (psi) | Compression Perp-to-Grain F <sub>c⊥</sub> (psi) | Bending F <sub>b</sub> <sup>(7)</sup> (psi) | Shear F <sub>v</sub> (psi) | Compression Perp-to-Grain <sup>(14)</sup> , F <sub>c⊥</sub> (psi) | Tension F <sub>t</sub> <sup>(9)</sup> (psi) | Compression F <sub>c</sub> (psi) |
|                                            |                                 | E x10 <sup>6</sup> (psi)                                                  | E <sub>min</sub> <sup>(6)</sup> x10 <sup>6</sup> (psi) |                                             |                            |                                                 |                                             |                            |                                                                   |                                             |                                  |
|                                            |                                 | Microllam® LVL <sup>(22)</sup>                                            |                                                        |                                             |                            |                                                 |                                             |                            |                                                                   |                                             |                                  |
| 1.6E WS                                    | 0.75 to 3.50                    | 1.6                                                                       | 0.813                                                  | 2140                                        | 285 <sup>(11)</sup>        | 750                                             | 2420                                        | 190                        | 680                                                               | 1510                                        | 2100                             |
| 1.8E WS                                    |                                 | 1.8                                                                       | 0.915                                                  | 2445                                        | 285 <sup>(11)</sup>        | 750                                             | 2600                                        | 190                        | 680                                                               | 1765                                        | 2375                             |
| 1.9E WS                                    |                                 | 1.9                                                                       | 0.966                                                  | 2600                                        | 285 <sup>(11)</sup>        | 750                                             | 2690                                        | 190                        | 680                                                               | 1895                                        | 2510                             |
| 2.0E-2600F <sub>b</sub> WS                 |                                 | 2.0                                                                       | 1.017                                                  | 2600                                        | 285 <sup>(11)</sup>        | 750                                             | 2690                                        | 190                        | 680                                                               | 1895                                        | 2510                             |
| 2.0E-2750F <sub>b</sub> WS                 |                                 | 2.0                                                                       | 1.017                                                  | 2750                                        | 285 <sup>(11)</sup>        | 750                                             | 2775                                        | 190                        | 680                                                               | 2025                                        | 2635                             |
| 2.0E-2900F <sub>b</sub> WS <sup>(10)</sup> |                                 | 2.0                                                                       | 1.017                                                  | 2900                                        | 285 <sup>(11)</sup>        | 750                                             | 2865                                        | 190                        | 680                                                               | 2025                                        | 2635                             |
| 2.2E WS                                    |                                 | 2.2                                                                       | 1.118                                                  | 3060                                        | 285 <sup>(11)</sup>        | 750                                             | 2955                                        | 190                        | 680                                                               | 2275                                        | 2870                             |
| 2.4E WS                                    |                                 | 2.4                                                                       | 1.220                                                  | 3365                                        | 285 <sup>(11)</sup>        | 750                                             | 3135                                        | 190                        | 680                                                               | 2530                                        | 3080                             |
| 2.6E WS                                    |                                 | 2.6                                                                       | 1.312                                                  | 3675                                        | 285 <sup>(11)</sup>        | 750                                             | 3315                                        | 190                        | 680                                                               | 2785                                        | 3270                             |
| 1.6E ES                                    |                                 | 1.6                                                                       | 0.813                                                  | 2140                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2420                                        | 190                        | 715 <sup>(20)</sup>                                               | 1645                                        | 2100                             |
| 1.8E ES                                    |                                 | 1.8                                                                       | 0.915                                                  | 2445                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2600                                        | 190                        | 715 <sup>(20)</sup>                                               | 1920                                        | 2375                             |
| 1.9E ES                                    |                                 | 1.9                                                                       | 0.966                                                  | 2600                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2690                                        | 190                        | 715 <sup>(20)</sup>                                               | 2060                                        | 2510                             |
| 2.0E-2600F <sub>b</sub> ES                 |                                 | 2.0                                                                       | 1.017                                                  | 2600                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2690                                        | 190                        | 715 <sup>(20)</sup>                                               | 1895                                        | 2510                             |
| 2.0E ES                                    |                                 | 2.0                                                                       | 1.017                                                  | 2750                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2775                                        | 190                        | 715 <sup>(20)</sup>                                               | 2200                                        | 2635                             |
| 2.0E-2900F <sub>b</sub> ES                 | 2.0                             | 1.017                                                                     | 2900                                                   | 285 <sup>(11)</sup>                         | 800 <sup>(19)</sup>        | 2865                                            | 190                                         | 715 <sup>(20)</sup>        | 2025                                                              | 2635                                        |                                  |
| 2.0E-2925F <sub>b</sub> ES                 | 0.75 to 1.75                    | 2.0                                                                       | 1.017                                                  | 2925                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2880                                        | 190                        | 715 <sup>(20)</sup>                                               | 2200                                        | 2635                             |
| 2.0E-3100F <sub>b</sub> ES                 | 0.75 to 3.50                    | 2.0                                                                       | 1.017                                                  | 3100                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2980                                        | 190                        | 715 <sup>(20)</sup>                                               | 2200                                        | 2635                             |
| 2.2E ES                                    |                                 | 2.2                                                                       | 1.118                                                  | 3060                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 2955                                        | 190                        | 715 <sup>(20)</sup>                                               | 2475                                        | 2870                             |
| 2.4E ES                                    |                                 | 2.4                                                                       | 1.220                                                  | 3365                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 3135                                        | 190                        | 715 <sup>(20)</sup>                                               | 2755                                        | 3080                             |
| 2.6E ES                                    |                                 | 2.6                                                                       | 1.312                                                  | 3675                                        | 285 <sup>(11)</sup>        | 800 <sup>(19)</sup>                             | 3315                                        | 190                        | 715 <sup>(20)</sup>                                               | 3030                                        | 3270                             |
|                                            |                                 | Parallam® PSL <sup>(12)</sup>                                             |                                                        |                                             |                            |                                                 |                                             |                            |                                                                   |                                             |                                  |
| 1.8E WS                                    | Up to 11.0                      | 1.8                                                                       | 0.915                                                  | 2500 <sup>(8)</sup>                         | 230                        | 545                                             | 2400                                        | 190 <sup>(23)</sup>        | 570                                                               | 1995                                        | 2500                             |
| 1.9E WS                                    |                                 | 1.9                                                                       | 0.966                                                  | 2700 <sup>(8)</sup>                         | 260                        | 580                                             | 2525                                        | 200 <sup>(23)</sup>        | 595                                                               | 2150                                        | 2700 <sup>(13)</sup>             |
| 2.0E WS                                    |                                 | 2.0                                                                       | 1.017                                                  | 2900 <sup>(8)</sup>                         | 290                        | 625                                             | 2650                                        | 210 <sup>(23)</sup>        | 660                                                               | 2300                                        | 2900 <sup>(13)</sup>             |
| 2.1E WS                                    |                                 | 2.1                                                                       | 1.067                                                  | 2900 <sup>(8)</sup>                         | 290                        | 625                                             | 2650                                        | 210 <sup>(23)</sup>        | 660                                                               | 2300                                        | 2900 <sup>(13)</sup>             |
| 2.2E WS                                    |                                 | 2.2                                                                       | 1.118                                                  | 2900 <sup>(8)</sup>                         | 290                        | 625                                             | 2650                                        | 210 <sup>(23)</sup>        | 660                                                               | 2300                                        | 2900 <sup>(13)</sup>             |
| 1.8E ES                                    |                                 | 1.8                                                                       | 0.915                                                  | 2500 <sup>(8)</sup>                         | 230                        | 600                                             | 2400                                        | 190 <sup>(23)</sup>        | 660 <sup>(18)</sup>                                               | 1995                                        | 2500                             |
| 1.9E ES                                    |                                 | 1.9                                                                       | 0.966                                                  | 2700 <sup>(8)</sup>                         | 260                        | 675                                             | 2600                                        | 200 <sup>(23)</sup>        | 705 <sup>(18)</sup>                                               | 2150                                        | 2700 <sup>(13)</sup>             |
| 2.0E ES                                    |                                 | 2.0                                                                       | 1.017                                                  | 2900 <sup>(8)</sup>                         | 290                        | 750                                             | 2800                                        | 210 <sup>(23)</sup>        | 750 <sup>(18)</sup>                                               | 2300                                        | 2900 <sup>(13)</sup>             |
| 2.1E ES                                    |                                 | 2.1                                                                       | 1.067                                                  | 2900 <sup>(8)</sup>                         | 290                        | 750                                             | 2800                                        | 210 <sup>(23)</sup>        | 750 <sup>(18)</sup>                                               | 2300                                        | 2900 <sup>(13)</sup>             |
| 2.2E ES                                    |                                 | 2.2                                                                       | 1.118                                                  | 2900 <sup>(8)</sup>                         | 290                        | 750                                             | 2800                                        | 210 <sup>(23)</sup>        | 790 <sup>(18)</sup>                                               | 2300                                        | 2900 <sup>(13)</sup>             |
|                                            |                                 | TimberStrand® LSL, TimberStrand® LSL Rim Board and RedBuilt LSL Rim Board |                                                        |                                             |                            |                                                 |                                             |                            |                                                                   |                                             |                                  |
| 1.3E                                       | 1.25 to 5.50                    | 1.3                                                                       | 0.661                                                  | 1700                                        | 425                        | 710                                             | 1900                                        | 150                        | 635 <sup>(15)</sup>                                               | 1300                                        | 1835                             |
| 1.35E                                      |                                 | 1.35                                                                      | 0.686                                                  | 1840                                        | 445                        | 750                                             | 2055                                        | 150                        | 665                                                               | 1430                                        | 1905                             |
| 1.4E                                       |                                 | 1.4                                                                       | 0.712                                                  | 1975                                        | 465                        | 785                                             | 2215                                        | 150                        | 690                                                               | 1560                                        | 1970                             |
| 1.45E                                      |                                 | 1.45                                                                      | 0.737                                                  | 2115                                        | 485                        | 825                                             | 2370                                        | 150                        | 720                                                               | 1690                                        | 2035                             |
| 1.5E                                       |                                 | 1.5                                                                       | 0.762                                                  | 2250                                        | 505                        | 860                                             | 2525                                        | 150                        | 750                                                               | 1815                                        | 2105                             |
| 1.55E                                      |                                 | 1.55                                                                      | 0.788                                                  | 2325                                        | 525                        | 900                                             | 2615                                        | 150                        | 775                                                               | 1935                                        | 2170                             |
| 1.6E                                       |                                 | 1.6                                                                       | 0.813                                                  | 2425                                        | 545                        | 935                                             | 2700                                        | 150                        | 805 <sup>(21)</sup>                                               | 2060                                        | 2235                             |
| 1.65E                                      |                                 | 1.65                                                                      | 0.839                                                  | 2500                                        | 565                        | 975                                             | 2800                                        | 150                        | 835                                                               | 2135                                        | 2305                             |
| 1.7E                                       |                                 | 1.7                                                                       | 0.864                                                  | 2600                                        | 585                        | 1010                                            | 2900                                        | 150                        | 860                                                               | 2210 <sup>(16)</sup>                        | 2370                             |
| 1.75E                                      |                                 | 1.75                                                                      | 0.889                                                  | 2720                                        | 605                        | 1050                                            | 3040                                        | 150                        | 890                                                               | 2305                                        | 2435                             |
| 1.8E                                       |                                 | 1.8                                                                       | 0.915                                                  | 2840                                        | 625                        | 1090                                            | 3175                                        | 150                        | 920                                                               | 2410                                        | 2505                             |
| 1.85E                                      |                                 | 1.85                                                                      | 0.940                                                  | 2955                                        | 625                        | 1090                                            | 3315                                        | 150                        | 945                                                               | 2505                                        | 2505                             |
| 1.9E                                       |                                 | 1.9                                                                       | 0.966                                                  | 3075                                        | 625                        | 1090                                            | 3450                                        | 150                        | 975                                                               | 2605                                        | 2505                             |
| 1.95E                                      |                                 | 1.95                                                                      | 0.991                                                  | 3180                                        | 625                        | 1090                                            | 3570                                        | 150                        | 1005                                                              | 2710                                        | 2505                             |
| 2.0E                                       |                                 | 2.0                                                                       | 1.017                                                  | 3290                                        | 625                        | 1090                                            | 3690                                        | 150                        | 1030                                                              | 2815                                        | 2505                             |
| 2.05E                                      |                                 | 2.05                                                                      | 1.042                                                  | 3395                                        | 625                        | 1090                                            | 3805                                        | 150                        | 1060                                                              | 2920                                        | 2505                             |
| 2.1E                                       |                                 | 2.1                                                                       | 1.067                                                  | 3500                                        | 625                        | 1090                                            | 3925                                        | 150                        | 1090                                                              | 3025                                        | 2505                             |
|                                            |                                 | TJ® Rim Board                                                             |                                                        |                                             |                            |                                                 |                                             |                            |                                                                   |                                             |                                  |
| 0.6E OSB                                   | 1.125                           | 0.6                                                                       | 0.305                                                  | 700 <sup>(17)</sup>                         | 425                        | 710                                             | -                                           | -                          | --                                                                | -                                           | -                                |
| 1.0E TimberStrand® LSL                     |                                 | 1.0                                                                       | 0.508                                                  | 1300 <sup>(17)</sup>                        | 425                        | 710                                             | -                                           | -                          | --                                                                | -                                           | -                                |
|                                            |                                 | Weyerhaeuser Rim Board                                                    |                                                        |                                             |                            |                                                 |                                             |                            |                                                                   |                                             |                                  |
| 0.6E                                       | 1.125                           | 0.6                                                                       | 0.305                                                  | 700 <sup>(17)</sup>                         | 425                        | 710                                             |                                             |                            |                                                                   |                                             |                                  |

For **SI**: 1 psi = 0.00689 MPa, 1 inch = 25.4 mm.

<sup>1</sup>Reference design values are based on dry conditions of use where the in-service moisture content is less than 16 percent (See Section 5.3).

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

<sup>3</sup>Eastern Species grades (ES) for Parallam PSL and Microllam LVL are produced primarily with southern pine (SP) and/or yellow poplar (YP). Western Species grade (WS) products are produced primarily with Douglas fir larch (DF) for Parallam PSL, and DF and/or lodgepole pine (LP) for Microllam LVL.

Additional species may be included in accordance with approved manufacturing standard.

<sup>4</sup>See Figure 1 for an illustration of member orientations with respect to load direction.

<sup>5</sup>Applies for both joist and plank orientation. Calculated deflection of flexural members must account for combined bending and shear deflection. For example, the deflection of a uniformly loaded simple span beam is calculated as follows:

$$\Delta = \frac{270 WL^4}{E b d^3} + \frac{28.8 WL^2}{E b d}$$

Where:

Δ = Deflection, inches

L = Span, feet

d = Beam depth, inches

W = Uniform load, plf

b = Beam thickness, inches

E = Modulus of Elasticity, psi

<sup>6</sup>E<sub>min</sub> is the reference modulus of elasticity for beam and column stability calculations, per the NDS.

<sup>7</sup>Reference bending design values, F<sub>b</sub>, for the applicable orientation, must be adjusted by the appropriate factor (C<sub>v</sub>) in the following tables:

| MATERIAL<br>IN JOIST/BREAM<br>ORIENTATION | EQUATION                         | Member Depth, d (in.) (See Figure 1) |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------------------------------------|----------------------------------|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                           |                                  | ≤ 3.5                                | 5.5  | 7.25 | 9.25 | 9.5  | 12.0 | 14.0 | 16.0 | 18.0 | 20.0 | 24.0 | 48.0 | 54.0 |
|                                           |                                  | C <sub>v</sub> Adjustment Factor     |      |      |      |      |      |      |      |      |      |      |      |      |
| Microllam® LVL                            | $C_v = (12/d)^{0.136} \leq 1.18$ | 1.18                                 | 1.11 | 1.07 | 1.04 | 1.03 | 1.00 | 0.98 | 0.96 | 0.95 | 0.93 | 0.91 | 0.83 | -    |
| Parallam® PSL                             | $C_v = (12/d)^{0.111} \leq 1.15$ | 1.15                                 | 1.09 | 1.06 | 1.03 | 1.03 | 1.00 | 0.98 | 0.97 | 0.96 | 0.94 | 0.93 | 0.86 | 0.85 |
| TimberStrand® LSL                         | $C_v = (12/d)^{0.092} \leq 1.12$ | 1.12                                 | 1.07 | 1.05 | 1.02 | 1.02 | 1.00 | 0.99 | 0.97 | 0.96 | 0.95 | 0.94 | 0.88 | -    |

| MATERIAL<br>IN FACE/PLANK<br>ORIENTATION | EQUATION                               | Member Thickness, t (in.)<br>(See Figure 1) |      |                |      |
|------------------------------------------|----------------------------------------|---------------------------------------------|------|----------------|------|
|                                          |                                        | ≤ 1.75                                      | 3.5  | 5.25           | 7.0  |
|                                          |                                        | C <sub>v</sub> Adjustment Factor            |      |                |      |
| Microllam® LVL                           | $C_v = (1.75/t)^{0.136} \leq 1.0$      | 1.0                                         | 0.91 | Not Applicable |      |
| Parallam® PSL                            | $C_v = (12/t)^{0.111} \leq 1.15$       | 1.15                                        | 1.15 | 1.1            | 1.06 |
| TimberStrand® LSL                        | Not Applicable (C <sub>v</sub> = 1.00) |                                             |      |                |      |

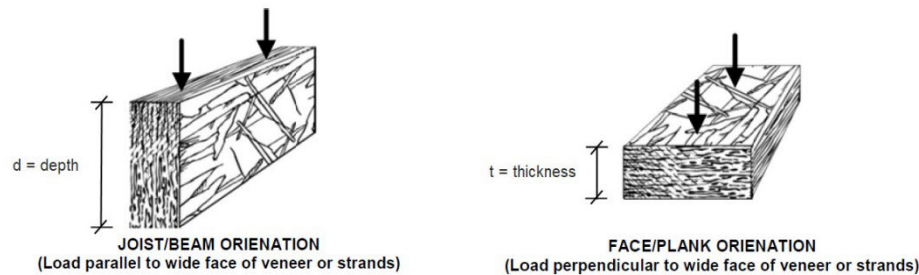


FIGURE 1—MEMBER ORIENTATION WITH RESPECT TO LOAD DIRECTION

<sup>8</sup>For Parallam® PSL, the tabulated reference edgewise design bending,  $F_b$ , values must additionally be multiplied by 0.93, when the cross-sectional thickness is less than 2.69 inches.

<sup>9</sup>Reference tension design values are based on a standard length of 4 feet. For lengths longer than 4 feet, multiply  $F_t$  by the following adjustment:

Microllam LVL:  $(4/L)^{0.085}$ , where L is length in feet.

Parallam PSL:  $(4/L)^{0.056}$ , where L is length in feet.

TimberStrand LSL:  $(4/L)^{0.083}$ , where L is length in feet.

For lengths less than 4 feet, use the tabular reference design value.

<sup>10</sup>The 2.0E-2900F<sub>b</sub> WS grade Microllam LVL is used in header or beam applications only.

<sup>11</sup>For depths greater than 24 inches, the reference design value,  $F_v$ , for joist/beam orientation for Microllam LVL is 260 psi.

<sup>12</sup>The allowable design stresses given in this table for Parallam PSL are also applicable to Parallam PSL that has been secondary laminated in accordance with the approved Weyerhaeuser quality control manuals for secondary lamination.

<sup>13</sup>For column applications,  $F_c = 500$  psi. Alternatively, column capacity can be determined using the provisions of Chapter 15 of the NDS in conjunction with the published  $F_c$  value above and a minimum eccentricity,  $e_z$ , applied parallel to the narrow face of the column. See Figure 2 for an illustration.

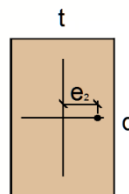
$$e_z = t/6 + 5L^2/4608$$

Where:

$e_z$  = Eccentricity applied parallel to the narrow face of the column, inches

$t$  = Member thickness of the narrow face of the column, inches

$L$  = Unbraced column length about the weak axis, feet.

FIGURE 2—ILLUSTRATION OF ECCENTRICITY,  $e_z$ , USED FOR PARALLAM® PSL COLUMN DESIGN

<sup>14</sup>The bearing area factor,  $C_b$ , shall be in accordance with the NDS Section 3.10.4 for plank orientation compression perpendicular-to-grain reference design values.

<sup>15</sup>Reference design value applies to products labeled "Rim Board". For all other 1.3E TimberStrand® LSL, the compression-perpendicular-to-grain design value,  $F_{c\perp}$ , is 670 psi.

<sup>16</sup>When 1.7E grade TimberStrand® LSL is used as truss chords and webs of engineered wood trusses, the reference axial tension design value is 2050 psi. This value includes an adjustment for length effect. The TimberStrand LSL material must be marked as "Truss Chord Grade," and the engineered wood trusses must be manufactured under the approved quality control program.

<sup>17</sup>The design bending strengths for OSB and TimberStrand LSL based TJ Rim Board and Weyerhaeuser Rim Board are applicable to depths of up to 16 inch (406 mm) and spans up to 8 feet (2438 mm).

Footnotes continuous on the next page

<sup>18</sup>When produced as YP or YP/red maple (RM), the following compression perpendicular-to-grain for face/plank orientation,  $F_{c\perp}(\text{plank})$ , applies for

$F_{c\perp}(\text{plank}) = 735$  psi for 1.8E ES

$F_{c\perp}(\text{plank}) = 775$  psi for 1.9E ES

$F_{c\perp}(\text{plank}) = 815$  psi for 2.0E ES

$F_{c\perp}(\text{plank}) = 855$  psi for 2.1E ES

$F_{c\perp}(\text{plank}) = 900$  psi for 2.2E ES

<sup>19</sup>When produced as SP the compression perpendicular-to-grain for joist/beam orientation,  $F_{c\perp}(\text{joist/beam})$ , is 880 psi.

<sup>20</sup>When produced as YP or YP/RM the compression perpendicular-to-grain for face/plank orientation,  $F_{c\perp}(\text{plank})$ , is 910 psi.

<sup>21</sup>The compression-perpendicular-to-grain design value,  $F_{c\perp}$ , for 1.6E TimberStrand LSL with thicknesses less than 2.5 inches is 900 psi.

<sup>22</sup>When Microllam® LVL labeled as a mixed species, ES/WS, use the lower tabulated design properties between the same grade WS LVL and ES LVL, except that 2.0E-3100F<sub>b</sub> ES/WS LVL uses the tabulated design properties for 2.0E-3100F<sub>b</sub> ES.

<sup>23</sup>For Parallam PSL, the tabulated reference plank orientation design shear,  $F_v$ , values must be additionally multiplied by 0.95 when the beam thickness is greater than 7 inches.

**TABLE 2—EQUIVALENT SPECIFIC GRAVITIES FOR FASTENER DESIGN<sup>1,2,3</sup>**

| PRODUCT                                                                   | EQUIVALENT SPECIFIC GRAVITY |                   |                   |                   |                                                |                                     |                                                |                                     |
|---------------------------------------------------------------------------|-----------------------------|-------------------|-------------------|-------------------|------------------------------------------------|-------------------------------------|------------------------------------------------|-------------------------------------|
|                                                                           | Nails and Screws            |                   |                   |                   | Bolts                                          |                                     | Lag Screws                                     |                                     |
|                                                                           | Withdrawal                  |                   | Dowel Bearing     |                   | Dowel Bearing (Installed in Face) <sup>4</sup> |                                     | Dowel Bearing (Installed in Face) <sup>4</sup> |                                     |
|                                                                           | Installed in Edge           | Installed in Face | Installed in Edge | Installed in Face | Load Applied Parallel to Grain                 | Load Applied Perpendicular to Grain | Load Applied Parallel to Grain                 | Load Applied Perpendicular to Grain |
| Microllam® LVL                                                            | 0.50                        | 0.50              | 0.50              | 0.50              | 0.50                                           | 0.50                                | 0.50                                           | 0.50                                |
| Parallam® PSL                                                             | 0.50                        | 0.50              | 0.50              | 0.50              | 0.50                                           | 0.50                                | 0.50                                           | 0.50                                |
| TimberStrand® LSL, TimberStrand® LSL Rim Board and RedBuilt LSL Rim Board | 0.42                        | 0.50              | 0.50              | 0.50              | 0.50                                           | 0.58                                | 0.50                                           | 0.55 <sup>(5)</sup>                 |
| TJ® Rim Board and Weyerhaeuser Rim Board                                  | —                           | 0.42              | —                 | 0.50              | 0.32                                           | 0.50                                | —                                              | <sup>(5)</sup>                      |

<sup>1</sup>Connection design values must be calculated in accordance with NDS Chapters 11 and 12, using the tabulated equivalent specific gravities given above, and must be adjusted by the applicable factors specified in the NDS.

<sup>2</sup>See Figure 3 for an illustration depicting face and edge nailing.

<sup>3</sup>Minimum nail spacing, and end and edge distances, must be as specified in Table 3. Minimum spacing, end and edge distances for bolts and lag screws must be as specified in the NDS.

<sup>4</sup>Equivalent specific gravity values for bolts and lag screws apply only to bolts and lag screws installed into the face of the member.

<sup>5</sup>The allowable lateral load for lag screws used in deck ledger connections between the rim board products listed in this report and deck ledgers complying with the exceptions in Section 4.2 are given in Table 4.

**TABLE 3—MINIMUM NAIL AND STAPLE SPACING ALONG THE EDGE OF THE MEMBER<sup>1,2,3,4</sup>**

| NAIL TYPE AND SIZE    |                         | MINIMUM NAIL AND STAPLE SPACING (in.) |                  |                             |                                         |                                                                                         |                  |                  |
|-----------------------|-------------------------|---------------------------------------|------------------|-----------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------|------------------|------------------|
| Penny Weight          | Diameter x Length (in.) | Microllam LVL <sup>(5)</sup>          |                  | Parallam PSL <sup>(5)</sup> | TJ Rim Board and Weyerhaeuser Rim Board | TimberStrand LSL <sup>(5)</sup> , TimberStrand LSL Rim Board and RedBuilt LSL Rim Board |                  |                  |
|                       |                         | Minimum Member Thickness (in.)        |                  |                             |                                         |                                                                                         |                  |                  |
|                       |                         | 0.75                                  | 1.5              | 1.75                        | 1.125                                   | 1.25                                                                                    | 1.5              | 1.75-3.5         |
| 8d Box                | 0.113 x 2.5             | 3                                     | 3                | 3                           | 6                                       | 4                                                                                       | 3                | 3                |
| 8d Common             | 0.131 x 2.5             | 4                                     | 4                | 4                           | 6                                       | 4                                                                                       | 3                | 3                |
| 10d Box               | 0.128 x 3.0             | 4                                     | 4                | 4                           | 6                                       | 4                                                                                       | 3                | 3                |
| 10d Common            | 0.148 x 3.0             | 5                                     | 5                | 4                           | 6                                       | 4                                                                                       | 3                | 3                |
| 12d Box               | 0.128 x 3.25            | 5                                     | 5                | 4                           | 6                                       | 4                                                                                       | 3                | 3                |
| 12d Common/16d Sinker | 0.148 x 3.25            | 5                                     | 5                | 4                           | 12 <sup>(6)</sup>                       | 4                                                                                       | 3                | 3                |
| 16d Box               | 0.135 x 3.5             | —                                     | 5                | 4                           | 12 <sup>(6)</sup>                       | 4                                                                                       | 3                | 3                |
| 16d Common            | 0.162 x 3.5             | —                                     | 8 <sup>(6)</sup> | 6                           | 16 <sup>(7)</sup>                       | 6 <sup>(8)</sup>                                                                        | 6 <sup>(8)</sup> | 6 <sup>(9)</sup> |
| No. 14 gage staple    | —                       | 4                                     | 4                | —                           | —                                       | —                                                                                       | —                | —                |

For SI: 1 inch = 25.4 mm

<sup>1</sup>Tabulated minimum spacing values are for nails and staples in a row driven into the edge of the member. The closest permitted on-center spacing for nails driven into the face is the same as permitted by the code for sawn lumber, and must be sufficient to prevent splitting. See Figure 3 for an illustration depicting face and edge nailing.

<sup>2</sup>To minimize splitting, member edge distance and spacing between rows shall be per the NDS Commentary or 0.375 inch, whichever is greater. Where multiple rows are used, fasteners in adjacent rows must be staggered and the rows must be equally spaced from the centerline of the narrow face axis.

<sup>3</sup>Maximum permissible number of rows is 2 for 1.25- and 1.5-inch thicknesses, 3 for 1.75 inch thickness and 6 for thicknesses greater or equal to 3.5 inches.

<sup>4</sup>Nail and staple spacings are not for shear wall design, see Section 4.5.

<sup>5</sup>Other nail spacings for specific applications, such as prefabricated steel components or hangers, may be used as detailed for Microllam® LVL, Parallam® PSL and TimberStrand® LSL in a current ICC-ES evaluation report.

<sup>6</sup>When nailing through the wall sill plate and floor sheathing, such that the maximum nailing penetration into the rim board is 1.25 inches, the minimum allowable on-center spacing may be decreased to 5 inches.

Footnotes continuous on the next page



<sup>7</sup>When nailing through the wall sill plate and floor sheathing, such that the maximum nail penetration into the rim board is 1.25 inches, the minimum allowable on-center spacing may be decreased to 8 inches.

<sup>8</sup>When nailing through the wall sill plate and floor sheathing, such that the maximum nail penetration into the rim board is 1.25 inches, the minimum allowable on-center spacing may be decreased to 4 inches.

<sup>9</sup>When nailing through the wall sill plate and floor sheathing, such that the maximum nailing penetration into the rim board is 1.25 inches, the minimum allowable on-center spacing may be decreased to 3.5 inches.

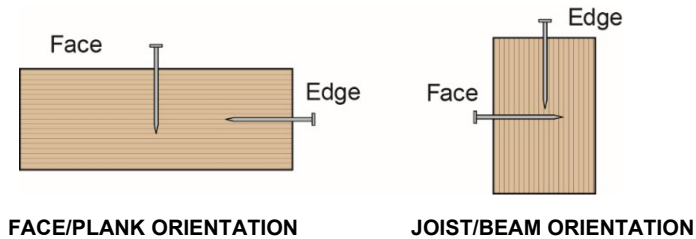


FIGURE 3—FACE AND EDGE NAILING EXAMPLES

TABLE 4—ALLOWABLE DESIGN LOADS FOR TIMBERSTRAND® LSL, TIMBERSTRAND® LSL RIM BOARD, REDBUILT LSL RIM BOARD, TJ® RIM BOARD, AND WEYERHAEUSER RIM BOARD PRODUCTS

| Rim Board Product:                              |                            | TimberStrand® LSL, TimberStrand® LSL Rim Board, and RedBuilt LSL Rim Board |                     |                     |                     |                     |                     |                     |                     | TJ® Rim Board and Weyerhaeuser Rim Board |                      |  |
|-------------------------------------------------|----------------------------|----------------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------------------------------|----------------------|--|
| Rim Board Grade:                                |                            | ≥1.3E                                                                      |                     |                     | 1.5E                |                     |                     | ≥1.55E              |                     |                                          | 0.60E/1.0E           |  |
| Rim Thickness (in.):                            |                            | ≥1.25                                                                      | 1.5                 | ≥1.75               | ≥1.25               | 1.5                 | ≥1.75               | ≥1.25               | 1.5                 | ≥1.75                                    | 1.125                |  |
| Uniform Vertical Load (lbs/ft) <sup>(1)</sup>   |                            |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
| Depth (in.)                                     | ≤9.5                       | 5400 <sup>(2)</sup>                                                        | 6480 <sup>(2)</sup> | 7560 <sup>(2)</sup> | 5400 <sup>(2)</sup> | 6480 <sup>(2)</sup> | 7560 <sup>(2)</sup> | 5400 <sup>(2)</sup> | 6480 <sup>(2)</sup> | 7560 <sup>(2)</sup>                      | 4860 <sup>(2)</sup>  |  |
|                                                 | 11.875                     |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
|                                                 | 14                         |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
|                                                 | 16                         | 5000                                                                       |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
|                                                 | 18                         | 4340                                                                       | 6380                |                     |                     |                     |                     |                     |                     |                                          |                      |  |
|                                                 | 20                         | 3700                                                                       | 5740                | 4960                | 4340                |                     |                     |                     |                     |                                          |                      |  |
|                                                 | 22                         | 3160                                                                       | 5070                | 4210                | 3690                |                     |                     |                     |                     |                                          |                      |  |
|                                                 | 24                         | 2710                                                                       | 4440                | 7130                | 3580                | 5980                |                     |                     |                     |                                          |                      |  |
|                                                 |                            | 6470                                                                       | 3070                | 5060                | 7430                | 3160                | 5210                |                     |                     |                                          |                      |  |
| Lateral Load (lbs/ft) <sup>(4,5,6)</sup>        |                            |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
| Depth (in.)                                     | 9.5-24 <sup>(3)</sup>      | See footnote 7                                                             |                     |                     |                     |                     |                     |                     |                     |                                          | 220 <sup>(3,8)</sup> |  |
| Concentrated Vertical Load (lbs) <sup>(9)</sup> |                            |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
| Depth (in.)                                     | 9.5-24 <sup>(3)</sup>      | 3760                                                                       | 4520                | 4520                | 4520                | 4520                | 4520                | 4520                | 4520                | 7470                                     | 4150 <sup>(3)</sup>  |  |
| Deck Ledger Capacity (lbs/bolt) <sup>(10)</sup> |                            |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
| Fastener Type                                   | 0.50 in. Lag               | 610                                                                        | 675                 |                     |                     |                     |                     |                     |                     | 725                                      | 480                  |  |
|                                                 | 0.50 in. Bolt              | 725                                                                        |                     |                     |                     |                     |                     |                     |                     |                                          | 695                  |  |
|                                                 | 0.50 in. Bolt w/ air space | 615 <sup>(11)</sup>                                                        |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
| Axial Stiffness <sup>(12)</sup>                 |                            |                                                                            |                     |                     |                     |                     |                     |                     |                     |                                          |                      |  |
| Axial Stiffness                                 |                            | 147000                                                                     |                     |                     | 166000              |                     |                     | 170000              |                     |                                          | 220000               |  |

For SI: 1 inch = 25.4 mm; 1 plf = 14.59 N/m.

<sup>1</sup>Tabulated uniform vertical load values shall not be increased for duration of load.

<sup>2</sup>The capacity for this product is limited by a maximum of 360 psi per ASTM D7672.

<sup>3</sup>TJ® Rim Board and Weyerhaeuser Rim Board are limited to a depth of 16 inch or less.

<sup>4</sup>The maximum lateral load transfer capacities are for seismic design applications. They may be increased by a factor of 1.4 for wind design applications.

<sup>5</sup>Additional hardware, blocking, overlapped sheathing, or other attachment details may be designed to transfer loads into, and out of, the product's wide face.

<sup>6</sup>Toe-nailed connections are not limited by the 150 lb/ft allowable lateral load capacity as noted for Seismic Design Categories D, E, and F in Section 4.1.7 of the SPDWS.

<sup>7</sup>Subject to the nail installation limitations of Table 3, these rim board products may be designed as permitted in the applicable code for wood structural panel diaphragms with framing consisting of Douglas-fir larch or southern pine lumber. Products with a thickness greater than or equal to 1.25 in. may be designed as 2-inch nominal framing. Products with a thickness greater than or equal to 2.5 in. may be designed as 3-inch nominal framing.

<sup>8</sup>The tabulated allowable in-plane lateral load for TJ Rim Board and Weyerhaeuser Rim Board are applicable to installations using the following nailing schedule:

- Sheathing to rim board: 8d Common nails (0.131 x 2.5 in.) (or equivalent) at 6 inches on center;
- Rim board to sill plate: 10d pneumatic nails (0.131 x 3.0 in.) (or equivalent), toe-nailed at 6 inches on center
- I-joist to sill plate: 8d Box (0.113 x 2.5 in.) (or equivalent), one slanted nail each side of the bottom flange
- Rim board to I-joist: 10d pneumatic nails (0.131 x 3.0 in.) (or equivalent) one each into the top and bottom flanges.

<sup>9</sup>The allowable concentrated vertical load capacities require a minimum bearing width of 4.5 in. Tabulated concentrated vertical load values shall not be increased for duration of load.

<sup>10</sup>These deck ledger attachment details correspond with those described by Section R507.9 of the IRC. These 10-year load duration allowable design loads may be increased per the applicable code for shorter duration loadings and used to design alternative deck ledger connections as permitted by Section R301.1.3 of the IRC.

<sup>11</sup>Maximum 0.50 inch (13 mm) shimmed air space.

<sup>12</sup>Axial stiffness is in the cross-grain orientation and is measured in accordance with ASTM D7672 for vertical rim applications.

TABLE 5—TIMBERSTRAND® LSL AND MICROLLAM® LVL WALL FRAMING APPLICATIONS<sup>1</sup>

| PRODUCT GRADE                    | PRODUCT THICKNESS (in.) | PERMITTED PANEL EDGE NAIL SPACING (in.) | SHEATHING NAIL TYPE (Common) | EQUIVALENT SPECIFIC GRAVITY |
|----------------------------------|-------------------------|-----------------------------------------|------------------------------|-----------------------------|
| 1.3E ≤ TimberStrand® LSL < 1.5E  | ≥ 1.5                   | 6                                       | 6d, 8d, 10d                  | 0.42                        |
| 1.5E ≤ TimberStrand® LSL < 1.6E  | ≥ 1.5                   | 2 to 6                                  | 6d, 8d, 10d                  | 0.42                        |
| 1.6E ≤ TimberStrand® LSL < 1.7E  | ≥ 1.5                   | 2 to 6                                  | 6d, 8d, 10d                  | 0.50                        |
| 2.0E Microllam® LVL <sup>2</sup> | 1.75                    | 6                                       | 6d, 8d                       | 0.50                        |
| 2.0E Microllam® LVL <sup>2</sup> | 1.75                    | 6                                       | 10d                          | 0.45                        |

For SI: 1 psi = 0.00689 MPa, 1 inch = 25.4 mm.  
<sup>1</sup>All design and detailing must follow the AWC SDPWS provisions for sawn lumber wall framing with the equivalent specific gravity shown.  
<sup>2</sup>Limited to shear walls sheathed on one side.



FIGURE 4—EXAMPLE LABEL OF PRODUCT PRESENTED IN THIS EVALUATION REPORT



FIGURE 5—EXAMPLE LABEL OF ZINC BORATE TREATED PRODUCT WITH STRANDGUARD® STAMP

**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES****Section: 06 17 13—Laminated Veneer Lumber****Section: 06 17 23—Parallel Strand Lumber****Section: 06 17 25—Laminated Strand Lumber****REPORT HOLDER:****WEYERHAEUSER****EVALUATION SUBJECT:**

**STRUCTURAL COMPOSITE LUMBER AND ORIENTED STRAND BOARD: TIMBERSTRAND® LAMINATED STRAND LUMBER (LSL); PARALLAM® PARALLEL STRAND LUMBER (PSL); MICROLLAM® LAMINATED VENEER LUMBER (LVL); TIMBERSTRAND® LSL RIM BOARD; REDBUILT LSL RIM BOARD; TJ® RIM BOARD; AND WEYERHAEUSER RIM BOARD**

**1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that Weyerhaeuser structural composite lumber and rim board products, described in ICC-ES evaluation report [ESR-1387](#), 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:**

- 2023 *City of Los Angeles Building Code* ([LABC](#))
- 2023 *City of Los Angeles Residential Code* ([LARC](#))

**2.0 CONCLUSIONS**

The Weyerhaeuser structural composite lumber and rim board products, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1387](#), comply with the LABC Chapter 23, and the LARC, and are subject to the conditions of use described in this supplement.

**3.0 CONDITIONS OF USE**

The Weyerhaeuser structural composite lumber and rim board products described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-1387](#).
- The design, installation, conditions of use and identification are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-1387](#).
- 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-1387, reissued February 2025 and revised June 2025.

# ICC-ES Evaluation Report

# ESR-1387 FL Supplement w/ HVHZ

Reissued February 2025

Revised June 2025

*This report is subject to renewal February 2027.*

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**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**

**Section: 06 17 13—Laminated Veneer Lumber**

**Section: 06 17 23—Parallel Strand Lumber**

**Section: 06 17 25—Laminated Strand Lumber**

## REPORT HOLDER:

WEYERHAEUSER

## EVALUATION SUBJECT:

**STRUCTURAL COMPOSITE LUMBER AND ORIENTED STRAND BOARD: TIMBERSTRAND® LAMINATED STRAND LUMBER (LSL); PARALLAM® PARALLEL STRAND LUMBER (PSL); MICROLLAM® LAMINATED VENEER LUMBER (LVL); TIMBERSTRAND® LSL RIM BOARD; REDBUILT LSL RIM BOARD; TJ® RIM BOARD; AND WEYERHAEUSER RIM BOARD**

## 1.0 REPORT PURPOSE AND SCOPE

### Purpose:

The purpose of this evaluation report supplement is to indicate that Structural Composite Lumber and Oriented Strand Board: TimberStrand® Laminated Strand Lumber (LSL); Parallam® Parallel Strand Lumber (PSL); Microllam® Laminated Veneer Lumber (LVL); TimberStrand® LSL Rim Board; Redbuilt LSL Rim Board; TJ® Rim Board; and Weyerhaeuser Rim Board, described in ICC-ES evaluation report [ESR-1387](#), have also been evaluated for compliance with the codes noted below.

### Applicable code editions:

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

## 2.0 CONCLUSIONS

The Structural Composite Lumber and Oriented Strand Board: TimberStrand® Laminated Strand Lumber (LSL); Parallam® Parallel Strand Lumber (PSL); Microllam® Laminated Veneer Lumber (LVL); TimberStrand® LSL Rim Board; Redbuilt LSL Rim Board; TJ® Rim Board; and Weyerhaeuser Rim Board, described in Sections 2.0 through 7.0 of ICC-ES evaluation report [ESR-1387](#), comply with the *Florida Building Code—Building* or the *Florida Building Code—Residential*. The design requirements shall be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report [ESR-1387](#) for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the Structural Composite Lumber and Oriented Strand Board: TimberStrand® Laminated Strand Lumber (LSL); Parallam® Parallel Strand Lumber (PSL); Microllam® Laminated Veneer Lumber (LVL); TimberStrand® LSL Rim Board; Redbuilt LSL Rim Board; TJ® Rim Board; and Weyerhaeuser Rim Board have also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and *Florida Building Code—Residential*.

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). Florida Rule 61G20-3 is applicable to products and/or systems which comprise the building envelope and structural frame for compliance with the structural requirements of the Florida Building Code.

This supplement expires concurrently with the evaluation report ESR-1387, reissued February 2025 and revised June 2025.