



Valued Quality. Delivered.

DIVISION: 06 00 00 – WOOD, PLASTICS AND COMPOSITES

Section: 06 17 25 – Laminated Strand Lumber

Weyerhaeuser
33663 Weyerhaeuser Way S
Federal Way, WA 98003
www.woodbywy.com

REPORT SUBJECT:

TJ® Rim Board and TimberStrand® LSL; for use in rim board applications.

1.0 SCOPE OF EVALUATION

This research report addresses compliance with the following Codes:

- 2010 National Building Code of Canada (NBC)

TJ® Rim Board and TimberStrand® LSL; when used as a rimboard around the perimeter of engineered wood joists in accordance with the conditions and limitations stated in this Report, complies with the following Sections of the NBC:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
- Sentence 4.3.1.1.(1) Design Basis for Wood (CAN/CSA-O86-09, "Engineering Design in Wood")
- Part 9 Applications, Section 9.23 Wood-Frame Construction

Additional Requirements:

Further limitations on design values are based upon evaluation in accordance with ASTM D7672 - Standard Specification for Evaluating Structural Capacities of Rim Board Products and Assemblies.

TJ® Rim Board and TimberStrand® LSL; for use in rim board applications, has been evaluated for the following:

- Structural and Material Properties as indicated in Tables 1 – 3 of this report.

2.0 USES

2.1 TJ® Rim Board and TimberStrand® LSL; as described in this report are intended for use as a rimboard around the perimeter of engineered wood joists in accordance with the conditions and limitations stated in this Report for Part 4 and Part 9 buildings subject to acceptance by the local authority having jurisdiction (AHJ).

3.0 DESCRIPTION

3.1 TJ® Rim Board - is a composite of wood strand elements with the wood strands 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 or the manufacturing standard. TJ® Rim Board is 28 mm (1.125 in) thick and is available in depths up to 406 mm (16 in) deep. It is available in lengths up to 19.5m (64 ft).

3.2 TimberStrand® LSL - is a composite of wood strand elements with the wood fibers primarily oriented along the direction 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 or the manufacturing standard. Timberstrand® LSL for rim board applications is available in thicknesses of 32 mm (1.25in) to 140 mm (5.5in) and depths up to 610 mm (24in). It is available in lengths up to 19.5m (64 ft).

4.0 PERFORMANCE CHARACTERISTICS

4.1 Table 1 outlines the specified shear, bending, stiffness and compression perpendicular to grain properties of TJ® Rim Board and TimberStrand® LSL.

4.2 Table 2 outlines the factored vertical load transfer, lateral load transfer and deck ledger capacities and axial stiffness of TJ® Rim Board and TimberStrand® LSL.

4.3 Table 3 outlines the equivalent specific gravity for connections for TJ® Rim Board and TimberStrand® LSL.

5.0 INSTALLATION

TJ® Rim Board and TimberStrand® LSL; for use in rim board applications must be installed in accordance with the manufacturer's published installation instructions, the applicable Code and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

The product shall be installed as a rim board around the perimeter of engineered wood joists to:

- Transfer vertical loads above the rim board to the support element below.
- Provide floor diaphragm attachment.
- Transfer in plane lateral loads from the diaphragm to the shear wall below.
- Provide lateral support for joists, rafters and beams.
- Provide closure at the ends of joists, rafters and beams.
- Provide an attachment surface for exterior ledgers and finish.

6.0 SUPPORTING EVIDENCE

6.1 Reports of testing demonstrating compliance with ASTM D5456, as referenced in Section 16.3 of CAN/CSA-O86.

6.2 Reports of testing in accordance with ASTM D7672.

Manufacturer's specifications / installation instructions.

"Trus Joist Rim Board Guide for Canada, TJ-8500, dated October, 2014."

7.0 CONDITION OF USE

The TJ® Rim Board and TimberStrand® LSL; for use in rim board applications described in this Research Report complies with, or is a suitable alternative to,

what is specified in those Codes listed in Sections 1.0 and 2.0 of this report, subject to the following conditions:

7.1 Installation must comply with this Research Report, the manufacturer's published installation instructions and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

7.2 TJ® Rim Board is produced at the Weyerhaeuser manufacturing plants located in Elkin, North Carolina and Kenora, Ontario. TimberStrand LSL is produced at the Weyerhaeuser manufacturing plant located in Kenora, Ontario. All material is manufactured under an approved Quality Control system with follow up inspections by an approved inspection agency.

7.3 The product is intended for structural applications for dry service use. All lumber, wood-based panels and proprietary engineered wood products are intended for dry service conditions. "Dry service" is defined as the in-service environment under which the equilibrium moisture content (MC) of lumber is 15% or less over a year and does not exceed 19% at any time. Wood contained within the interior of dry, heated or unheated buildings has generally been found to have a MC between 6% and 14% according to season and location. During construction, all wood-based products should be protected from the weather to ensure that the 19% MC is not exceeded in accordance with Article 9.3.2.5., Moisture Content, of Division B of the NBC.

7.4 Installation, fabrication, identification and connection details must be in accordance with this report, the manufacturer's published installation instructions, and the applicable code.

7.5 The product must be installed in accordance with the manufacturer's installation guidelines noted in this document for those applications falling within the scope of the document. Applications outside the scope of these installation guidelines shall require engineering on a case-by-case basis.

For structural applications beyond the scope/limitations of the above referenced Weyerhaeuser publication, or when required by the AHJ, the drawings or related documents shall bear the authorized seal of a professional engineer skilled in wood design and licensed to

practice under the appropriate provincial or territorial legislation.

The engineer must design in accordance with CAN/CSA-O86, and may use as a guide, the "Engineering Guide for Wood Frame Construction," published by the Canadian Wood Council.

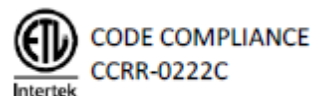
Member design and application must be performed in accordance with this report, manufacturer's published literature or manufacturer's design software (Forte® or Javelin®)

7.6 TimberStrand® LSL is considered equivalent to sawn lumber for use as fire blocking material.

8.0 IDENTIFICATION

The TJ® Rim Board and TimberStrand® LSL; for use in rim board applications described in this Research Report are identified by marking bearing the report holder's name (Weyerhaeuser), the Intertek CCRR

Mark, and Code Compliance Research Report number (CCRR-0222C) as shown below.



9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

9.3 Reference to the Intertek website address: whdirectory.intertek.com is recommended to ascertain the current version and status of this report.

This Code Compliance Research Report ("Report") is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Report. Only the Client is authorized to permit copying or distribution of this Report and then only in its entirety, and the Client shall not use the Report in a misleading manner. Client further agrees and understands that reliance upon the Report is limited to the representations made therein. The Report is not an endorsement or recommendation for use of the subject and/or product described herein. This Report is not the Intertek Listing Report covering the subject product and utilized for Intertek Certification and this Report does not represent authorization for the use of any Intertek certification marks. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.

Table 1: Specified Strengths⁽¹⁾⁽²⁾

Grade	Thickness, mm (in)	Modulus of Elasticity MOE, MPa (psi)	Bending, f_b MPa (psi)	Shear, f_v MPa (psi)	Compression Perp. To Grain, $f_{cp}^{(4)}$ MPa (psi)
TimberStrand® LSL					
1.3E	32 (1.25) – 140 (5.5)	8965 (1300000)	21.65 (3140) ⁽³⁾	5.15 (745)	8.55 (1240)
1.5E		10345 (1500000)	28.7 (4165) ⁽³⁾	5.15 (745)	9.7 (1405)
1.55E		10685 (1550000)	29.6 (4295) ⁽³⁾	5.15 (745)	10.05 (1460)
1.6E		11030 (1600000)	30.9 (4480) ⁽³⁾	5.15 (745)	10.35 (1500)
1.7E		11720 (1700000)	33.15 (4810) ⁽³⁾	5.15 (745)	11.05 (1605)
1.9E		13100 (1900000)	39.2 (5685) ⁽³⁾	5.15 (745)	11.05 (1605)
2.1E		14480 (2100000)	44.6 (6470) ⁽³⁾	5.15 (745)	11.05 (1605)
TJ® Rim Board					
0.6E OSB	29 (1.125)	4135 (600000)	7.80 (1130) ⁽⁵⁾	4.40 (635)	8.25 (1200)
1.0E TimberStrand® LSL		6895 (1000000)	14.45 (2095) ⁽⁵⁾	4.40 (635)	8.25 (1200)

(1) Values are for dry service use.

(2) Values must be adjusted as applicable in accordance with CSA O86.

(3) For depths other than 305 mm (12 in), multiply values by $(305 \text{ mm}/d \text{ mm})^{0.092}$ or $(12 \text{ in}/d \text{ in})^{0.092}$. For depths less than 89 mm (3.5 in), use the 89mm (3.5 in) factor.

(4) Values may not be increased for duration of load.

(5) Values are applicable for depths up to 406mm (16 in) and spans up to 2438mm (8ft)

Table 2: Factored Vertical and Lateral Load Capacities – Joist Orientation

Rim Board Product		TimberStrand® LSL								TJ® Rim Board ⁽³⁾	
Rim Grade		≥1.3E			1.5E			≥1.55E			0.6E/1.0E
Thickness, mm (in)		≥32 (1.25)	38 (1.5)	≥45 (1.75)	≥32 (1.25)	38 (1.5)	≥45 (1.75)	≥32 (1.25)	38 (1.5)	≥45 (1.75)	29 (1.125)
Factored Uniform Vertical Load, kN/m (lbs/ft) ⁽¹⁾											
Depth, mm (in)	≤241 (9.5)	114.27 ⁽²⁾ (7830)	137.13 ⁽²⁾ (9395)	159.98 ⁽²⁾ (10960)	114.27 ⁽²⁾	137.13 ⁽²⁾ (9395)	159.98 ⁽²⁾ (10960)	114.27 ⁽²⁾ (7830)	137.13 ⁽²⁾ (9395)	159.98 ⁽²⁾ (10960)	102.84 ⁽²⁾ (7045)
	302 (11.875)										96.71 (6625)
	356 (14)										84.65 (5800)
	406 (16)	105.81 (7250)	135.01 (9250)	150.88 (10340)	104.96 (7190)	122.74 (8410)	157.23 (10775)	108.35 (7425)	126.55 (8670)	110.25 (7555)	-
	457 (18)	91.84 (6295)									
	508 (20)	78.3 (5365)									
	559 (22)	66.87 (4580)	107.29 (7350)	136.91 (9380)	75.76 (5190)	107.08 (7335)	78.09 (5350)	110.25 (7555)			
	610 (24)	57.35 (3930)	93.96 (6440)	136.91 (9380)	64.97 (4450)	107.08 (7335)	157.23 (10775)	66.87 (4580)	110.25 (7555)		
Lateral Load ⁽⁴⁾ , kN/m (lbs/ft)											
Depth ⁽³⁾ mm (in)	≤24 (610)	-(5)								4.19 ⁽⁶⁾ (285)	
Concentrated Vertical Load ⁽⁷⁾ , kN (lbs)											
Depth ⁽³⁾ mm (in)	≤24 (610)	24.25 (5450)	29.15 (6555)	29.15 (6555)	29.15 (6555)	29.15 (6555)	29.15 (6555)	29.15 (6555)	29.15 (6555)	48.18 (10830)	21.93 (4930)

Table 2: Factored Vertical and Lateral Load Capacities – Joist Orientation (Cont.)

Rim Board Product		TimberStrand® LSL								TJ® Rim Board	
Rim Grade		≥1.3E			1.5E			≥1.55E			0.6E/1.0E
Thickness, mm (in)		≥32 (1.25)	38 (1.5)	≥45 (1.75)	≥32 (1.25)	38 (1.5)	≥45 (1.75)	≥32 (1.25)	38 (1.5)	≥45 (1.75)	29 (1.125)
Deck Ledger Capacity, kN (lbs)											
Fastener Type, mm (in)	12.7 (0.5) Lag	3.93 (885)	4.35 (980)						4.68 (1050)	3.10 (695)	
	12.7 (0.5) Bolt	4.68 (1050)								4.48 (1010)	
	12.7 (0.5) Bolt w/ air space ⁽⁸⁾	3.97 (890)									
Axial Stiffness ⁽⁹⁾											
Axial Stiffness		1013.54 (147000)			1144.54 (166000)			1172.12 (170000)			999.75 (145000)

- (1) Tabulated uniform vertical load values shall not be increased for duration of load.
- (2) The capacity is limited by a maximum of 3.60 MPa (5220 psi) per ASTM D7672.
- (3) TJ® Rim Board is limited to a depth of 406 mm (16 in) or less.
- (4) Additional hardware, blocking, overlapped sheathing, or other attachment details may be designed to transfer loads into and out of the product's wide face.
- (5) 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 32 mm (1.25 in) and less than 64 mm (2.5 in) may be designed as 38 mm (1.5in) framing. Products with a thickness greater than or equal to 64 mm (2.5 in) may be designed as 64mm (2.5 in) framing.
- (6) Value is applicable to the following nailing schedule:
 - Sheathing to rim board: 8d (3.33 mm x 64mm) or (0.131 in x 2.5 in) or equivalent at 152mm (6 in) on center
 - Rim board to sill plate: 10d pneumatic nails (3.33 mm x 76 mm) o (0.131in x 3.0 in) or equivalent toe-nailed at 152mm (6in) on center
 - I-Joist to sill plate: 8d (2.87 mm x 64mm) or (0.113 in x 2.5 in) or equivalent, one slanted nail into each side of the bottom flange.
 - Rim board to I-joist: 10d pneumatic nails (3.33mm x 76mm) or (0.131in x 3.0 in) or equivalent one each into the top and bottom flange.
- (7) The factored concentrated vertical load capacities require a bearing width of 114mm (4.5 in). These factored allowable loads shall not be increased for duration of load.
- (8) Maximum 13mm (0.5in) shimmed air space.
- (9) Product stiffness in the cross-grain orientation and measured in accordance with ASTM D7672 for vertical rim applications.

Table 3: Equivalent Specific Gravity for Connections

Product	Equivalent Specific Gravity							
	Nails and Screws				Bolts ⁽¹⁾		Lag Screws ⁽¹⁾	
	Withdrawal		Dowel Bearing		Dowel Bearing (Installed in Face)		Dowel Bearing (Installed in Face)	
	Installed in Edge	Installed in Face	Installed in Edge	Installed in Face	Load Parallel to Grain	Load Perpendicular to Grain	Load Parallel to Grain	Load Perpendicular to Grain
TimberStrand® LSL	0.42	0.5	0.5	0.5	0.5	0.58	0.5	0.55
TJ® Rim Board	-	0.38	-	0.5	0.38	0.5	-	-

(1) Refer to Table 2 for the capacity of deck ledger connections,