CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC 12472-R

CCMC Canadian code compliance evaluation

CCMC number:	12472-R
Status:	Active
Issue date:	1993-03-02
Modified date:	2026-10-30
Evaluation holder:	**Boise Cascade Company** 70 rue Industrielle Saint-Jacques NB E7B 1T1 Canada Website: www.bc.com Telephone: 506-735-3561 Email: DomLavoie@BC.com
Product name:	VERSA-LAM® LVL
Compliance:	NBC 2015
Criteria:	CCMC-TG-061710-15A, "CCMC Technical Guide for Structural Composite Lumber"

In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.
Learn more about CCMC recognition Look for the trusted CCMC mark on products to verify compliance.

Compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as structural composite lumber (SCL) in accordance with the conditions and limitations stated in this evaluation, complies with the following code:

National Building Code of Canada 2015

Code provision	Solution type
4.3.1.1.(1) Buildings and their structural members m ...	Acceptable
9.23.4.2.(3) Spans for built-up wood and glued-lamina ...	Alternative

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The above opinion(s) is/are based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

Product information

Product name

VERSA-LAM® LVL

Product description

The product is manufactured by laminating veneer sheets of

- Douglas Fir;
- Eucalyptus;
- Southern Yellow Pine;
- Sweetgum;
- Western Hemlock; and
- Yellow Poplar.

The product is available in thicknesses ranging from 38.1 mm to 178 mm and in depths ranging from 88.9 mm to 610 mm. The veneers are oriented vertically and run parallel to the length of the member (see Figure 1). The 2.5-mm to 4.2-mm-thick veneers are bonded using a phenolformaldehyde adhesive to form panels. The fingerjoints are bonded using a phenol-resorcinol-formaldehyde or polyurethane emulsion polymer adhesive. The panels go through a secondary lamination process using an emulsion polymer isocyanate adhesive.

The wood species, species combinations, lay-up patterns and adhesives used are as specified in the manufacturer's quality control manual (QCM). The manufacturing quality assurance program and records are verified by APA – The Engineered Wood Association or PFS TECO as part of the product certification.

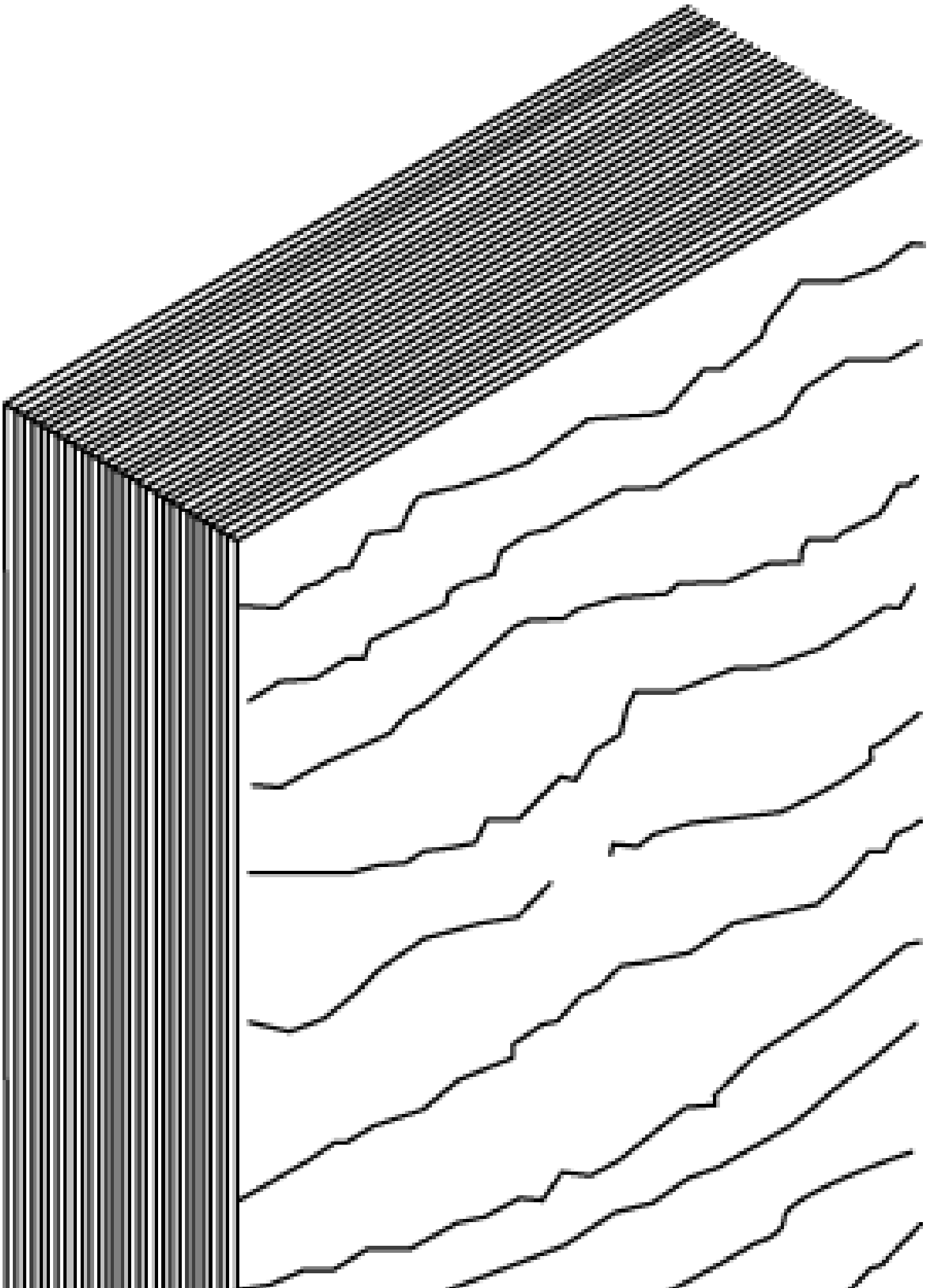

Figure 1. Veneer orientation of the product

Manufacturing plants

This evaluation is limited to products produced at the following plants:

Product name	Manufacturing plants		
	Lena, LA, US	Thorsby, AL, US	White City, OR, US
VERSA-LAM® LVL	✓	✓	✓

✓ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

Conditions and limitations

The CCMC's compliance opinion is bound by this product being used in accordance with the conditions and limitations set out below.

- As with all SCL, this product is intended for dry-service conditions only. (1)
- The product is intended for use in construction as an alternative material to lumber. Proprietary design values presented for the product are to be used by professional engineers for design in accordance with CSA O86, "Engineering Design in Wood," for structural applications such as beams, headers, joists, rafters, and columns as intended by the product manufacturer. The specific application must be qualified through specific testing and validated by the manufacturer. Applications such as I-joist flanges, studs and metal-plated truss chords are beyond the scope of this evaluation.
- The pre-engineered tables, which can be found in the publications referenced below, have been provided to the CCMC by the manufacturer to demonstrate compliance with Part 9, Housing and Small Buildings, of the NBC 2015, for acceptance by the local authority having jurisdiction (AHJ):

  i. **Manufacturer's pre-engineered tables** (2)
  When the product is used to support uniform loads only, the installation must be in accordance with the tables and installation details published by the Boise Cascade Company in the documents entitled:

  - *VERSA-LAM® 2.1E 2800 & 2.1E 3100 Western Specifier Guide, Limit States Design Canada,* January 2019; and
  - *VERSA-LAM® 2.1E 3100 Eastern Specifier Guide, Limit States Design Canada,* January 2019.

  For applications falling within the scope of the above-noted publications, the product must be installed in accordance with the installation guidelines contained therein. Applications outside the scope of these installation guidelines require engineering on a case-by-case basis.

  ii. **Manufacturer's installation details**
  The product must be installed in accordance with the ALLJOIST® VERSA-LAM® Installation Guide, January 2019. Applications falling outside the scope of the installation guidelines will require engineering on a case-by-case basis.

  iii. **Engineering required**
  For structural applications beyond the scope/limitations of the above-referenced documents, or when required by the AHJ, the drawings or related documents must bear the authorized seal of a professional engineer skilled in wood design and licensed to practice under the appropriate provincial or territorial legislation.

  Installations beyond the scope/limitations stated above imply, but are not limited to, the following:

  - higher loads/longer spans than the manufacturer's pre-engineered details;
  - concentrated loads;
  - areas of high wind or high seismicity;
  - design of supporting members/columns when the total beam/header load exceeds the NBC 2015 pre-engineered beam/lintel tables; and
  - design of supporting foundation footings when the total load exceeds the NBC 2015 pre-engineered floor/roof joist tables.

The engineer must design in accordance with CSA O86 and may use the Canadian Wood Council's *Engineering Guide for Wood Frame Construction* as a guide.

The specified strengths for the product must not exceed the values set forth in Table 1. Basic nail withdrawal and lateral nail capacities, as well as the bolt bearing capacities, must be as shown in Table 2. Nail spacing for the product must conform to Table 3 and Table 4.

The ends of all VERSA-LAM® LVL members used as joists, rafters and beams must be restrained to prevent rollover. This is normally achieved by attaching a diaphragm sheathing to the top or to the compression edge, and to an end wall or shear transfer panel capable of transferring a minimum unfactored uniform load of 730 N/m or the required shear forces due to wind or seismic conditions. Blocking or cross bracing with equivalent strength may also be used.

The compression edges of all VERSA-LAM® LVL members used as joists, rafters and beams must be laterally supported at least every 610 mm, except where design is done in accordance with CSA O86.

iv. **Engineering support provided by the manufacturer**
Boise Cascade Company provides engineering support for their product and may be consulted by email at ewp_canada@bc.com or by telephone at 800-232-0788.

- The product must be identified with the phrase "CCMC 12472-R" along the side of the product. This CCMC number is only valid when it appears in conjunction with the APA EWS or PFS TECO certification mark.

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1 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% depending on 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 2015.

2 The pre-engineered tables present the pre-engineered factored resistance of the beam. The AHJ may require further engineering to determine the factored load in accordance with Part 4 of Division B of the NBC 2015.

Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CCMC-TG-061710-15A	CCMC Technical Guide for Structural Composite Lumber

The evaluation holder has submitted technical documentation for CCMC evaluation. Testing was conducted at laboratories recognized by the CCMC. The corresponding technical evidence for this product is summarized below.

Design requirements

Table 1. Specified strengths of the product

True E		Apparent E		Specified flexural strength, F_b (MPa)		Specified tensile strength, [1] F_t (MPa)	Specified compr. strength, F_c (parallel to grain) (MPa)	Specified compr. strength, F_{cp} (perpendicular to grain) (MPa)		Specified horizontal shear strength, F_v (MPa)	
Grade designation [2] [3]	Modulus of elasticity (MOE) [4] [5] (MPa)	Grade designation [6] [3]	Modulus of elasticity [4] [5] (MPa)	Joist [7]	Plank			Joist	Plank	Joist	Plank
1.4E 1600/ 1100	9 653	**1.3 1600**	8 963	20.4	20.3	11.5	27.5	6.59	5.65	2.88	1.85
1.4E 1750/ 1100	9 653	**1.3 1750**	8 963	22.3	20.3	11.5	27.5	6.59	5.65	2.88	1.85
1.5E 1800	10 342	**1.4 1800/ 1100**	9 653	22.9	22.9	11.5	27.5	6.59	5.65	2.88	1.85
1.5E 1950	10 342	**1.4 1950/ 1100**	9 653	24.8	22.9	11.5	27.5	6.59	5.65	2.88	1.85
1.5E 1800/ 1250	10 342	**1.4 1800**	9 653	22.9	22.9	13.0	27.5	6.59	5.65	2.88	1.85
1.5E 1950/ 1250	10 342	**1.4 1950**	9 653	24.8	22.9	13.0	27.5	6.59	5.65	2.88	1.85
1.6E 2050	11 032	**1.5 2050/ 1250**	10 342	26.1	26.1	13.0	27.5	6.59	5.65	2.88	1.85
1.6E 2250	11 032	**1.5 2250/ 1250**	10 342	28.7	26.1	13.0	27.5	6.59	5.65	2.88	1.85
1.6E 2050/ 1400	11 032	**1.5 2050**	10 342	26.1	26.1	14.6	27.5	6.59	5.65	2.88	1.85
1.6E 2250/ 1400	11 032	**1.5 2250**	10 342	28.7	26.1	14.6	27.5	6.59	5.65	2.88	1.85

True E		Apparent E		Specified flexural strength, F_b (MPa)		Specified tensile strength, [1] F_t (MPa)	Specified compr. strength, F_c (parallel to grain) (MPa)	Specified compr. strength, F_{cp} (perpendicular to grain) (MPa)		Specified horizontal shear strength, F_v (MPa)	
Grade designation [2] [3]	Modulus of elasticity (MOE) [4] [5] (MPa)	Grade designation [6] [3]	Modulus of elasticity [4] [5] (MPa)	Joist [7]	Plank			Joist	Plank	Joist	Plank
1.7E 2250	11 721	**1.6 2250/ 1400**	11 032	28.7	28.7	14.6	27.5	6.59	5.65	2.88	1.85
1.7E 2450	11 721	**1.6 2450/ 1400**	11 032	31.2	28.7	14.6	27.5	6.59	5.65	2.88	1.85
1.7E 2250/ 1500	11 721	**1.6 2250**	11 032	28.7	28.7	15.6	27.5	6.59	5.65	2.88	1.85
1.7E 2450/ 1500	11 721	**1.6 2450**	11 032	31.2	28.7	15.6	27.5	6.59	5.65	2.88	1.85
1.8E 2400	12 411	**1.7 2400/ 1500**	11 721	30.6	30.6	15.6	33.0	9.41	5.65	3.65	2.16
1.8E 2650	12 411	**1.7 2650/ 1500**	11 721	33.8	30.6	15.6	33.0	9.41	5.65	3.65	2.16
1.8E 2400/ 1650	12 411	**1.7 2400**	11 721	30.6	30.6	17.2	33.0	9.41	5.65	3.65	2.16
1.8E 2650/ 1650 [3]	12 411	**1.7 2650** [3]	11 721	33.8	30.6	17.2	33.0	9.41	5.65	3.65	2.16
1.9E 2500	13 100	**1.8 2500/ 1650**	12 411	31.9	31.9	17.2	33.0	9.41	5.65	3.65	2.16
1.9E 2750	13 100	**1.8 2750/ 1650**	12 411	35.0	31.9	17.2	33.0	9.41	5.65	3.65	2.16
1.9E 2500/ 1825	13 100	**1.8 2500**	12 411	31.9	31.9	19.0	33.0	9.41	5.65	3.65	2.16
1.9E 2750/ 1825 [3]	13 100	**1.8 2750** [3]	12 411	35.0	31.9	19.0	33.0	9.41	5.65	3.65	2.16
2.0E 2600	13 789	**1.9 2600/ 1825**	13 100	33.1	33.1	19.0	33.0	9.41	5.65	3.65	2.16
2.0E 2850	13 789	**1.9 2850/ 1825**	13 100	36.3	33.1	19.0	33.0	9.41	5.65	3.65	2.16
2.0E 2600/ 1950	13 789	**1.9 2600**	13 100	33.1	33.1	20.3	33.0	9.41	5.65	3.65	2.16
2.0E 2850/ 1950 [3]	13 789	**1.9 2850** [3]	13 100	36.3	33.1	20.3	33.0	9.41	5.65	3.65	2.16

True E		Apparent E		Specified flexural strength, F_b (MPa)		Specified tensile strength, [1] F_t (MPa)	Specified compr. strength, F_c (parallel to grain) (MPa)	Specified compr. strength, F_{cp} (perpendicular to grain) (MPa)		Specified horizontal shear strength, F_v (MPa)	
Grade designation [2] [3]	Modulus of elasticity (MOE) [4] [5] (MPa)	Grade designation [6] [3]	Modulus of elasticity [4] [5] (MPa)	Joist [7]	Plank			Joist	Plank	Joist	Plank
2.1E 2800	14 479	**2.0 2800/ 1950**	13 789	35.7	35.7	20.3	33.0	9.41	5.65	3.65	2.16
2.1E 3100	14 479	**2.0 3100/ 1950**	13 789	39.5	35.7	20.3	33.0	9.41	5.65	3.65	2.16
2.1E 2800/ 2150	14 479	**2.0 2800**	13 789	35.7	35.7	22.4	33.0	9.41	5.65	3.65	2.16
2.1E 3100/ 2150 [3]	14 479	**2.0 3100** [3]	13 789	39.5	35.7	22.4	33.0	9.41	5.65	3.65	2.16
2.2E 2900	15 168	**2.1 2900/ 2150**	14 479	36.9	36.9	22.4	33.0	9.41	5.65	3.65	2.16
2.2E 3200	15 168	**2.1 3200/ 2150**	14 479	40.8	36.9	22.4	33.0	9.41	5.65	3.65	2.16
2.2E 2900/ 2250	15 168	**2.1 2900**	14 479	36.9	36.9	23.4	33.0	9.41	5.65	3.65	2.16
2.2E 3200/ 2250	15 168	**2.1 3200**	14 479	40.8	36.9	23.4	33.0	9.41	5.65	3.65	2.16
2.3E 3100	15 858	**2.2 3100/ 2250**	15 168	39.5	38.9	23.4	33.0	9.41	5.65	3.65	2.16
2.3E 3400	15 858	**2.2 3400/ 2250**	15 168	43.3	38.9	23.4	33.0	9.41	5.65	3.65	2.16
2.3E 3100/ 2425	15 858	**2.2 3100**	15 168	39.5	38.9	25.3	33.0	9.41	5.65	3.65	2.16
2.3E 3400/ 2425	15 858	**2.2 3400**	15 168	43.3	38.9	25.3	33.0	9.41	5.65	3.65	2.16

Notes

1 The specified tensile strength is for a 6 096-mm-long LVL member. For other lengths, multiply by length factor, $K_L = (6096/L)^{1/8}$, where L is the member length in mm. An increase in tension strength for lengths less than 1 219 mm is not permitted. In addition, the maximum cross section is limited to three times the tested specimen's cross sectional area. Contact the manufacturer for the maximum cross section for tension applications.

2 Grade designations (i.e., 2.1E 3100/2150) identify the values for MOE as shear-free E (E_{true}), allowable stress design (ASD) flexural strength (F_b), and the product with the highest ASD tensile strength (F_t). Grade designations for products with the lowest tensile strength may also be labeled to both F_b and F_t values (i.e., 2.1E 2800 is equivalent to 2.1E 2800/1950).

3 The Thorsby, AL plant (Mill No. 1086) only produces 1.8E 2650/1650, 1.9E 2750/1825, 2.0E 2850/1950 and 2.1E 3100/2150 grades (or equivalent apparent E grade designations).

4 The reference MOE for beam stability and column stability calculations, E_{min}, must be calculated using $E_{apparent}$ in accordance with Clause 15.3.3.5, "Slenderness Factor, K_c," of CSA O86.

5 For uniformly loaded, simple span beams, deflection is calculated as follows:

$$\Delta_{true} = \frac{156wL^4 \times 10^6}{E_{true}bd^3} + \frac{2400wL^2}{E_{true}bd} \qquad \Delta_{apparent} = \frac{156wL^4 \times 10^6}{E_{apparent}bd^3}$$

Δ = deflection, mm

w = uniform load, N/m

L = span, m

E = modulus of elasticity, MPa

b = beam width, mm

d = beam depth, mm

6 Grade designations (i.e., 2.0 2800/1950) identify the values for MOE as apparent E ($E_{apparent}$), ASD flexural strength (F_b), and the product with the lowest ASD tensile strength (F_t). Grade designation for the products with the highest tensile strength may also be labeled to both F_b and F_t values (i.e., 2.0 3100 is equivalent to 2.0 3100/2150). *The reference MOE for beam stability and column stability calculations, E_{min}, must be calculated using $E_{apparent}$ in accordance with Clause 15.3.3.5, "Slenderness Factor, K_c," of CSA O86.

7 The specified flexural strength is for a 305-mm-deep LVL member. For other depths, multiply by size factor, $K_{zb} = (305/d)^{1/9}$, where d is the member depth in mm.

Table 2. Fastener capacities of the product

Property (1)	Orientation	Load direction	Specific gravity (SG) of equivalent species for design purposes
Nail withdrawal capacity			
All grades	Edge	Withdrawal	Spruce-Pine-Fir (S-P-F), SG = 0.42
Grades 1.4E–2.3E	Face	Withdrawal	Douglas Fir-Larch, SG = 0.50
Lateral nail capacity			
Grades 1.4E–1.7E	Edge	Parallel to grain	S-P-F, SG = 0.42
	Edge	Perpendicular to grain	S-P-F, SG = 0.42
	Face	Parallel to grain	S-P-F, SG = 0.42
	Face	Perpendicular to grain	S-P-F, SG = 0.42

Property [1]	Orientation	Load direction	Specific gravity (SG) of equivalent species for design purposes
Nail withdrawal capacity			
Grades 1.8E–2.3E	Edge	Parallel to grain	S-P-F, SG = 0.42
	Edge	Perpendicular to grain	S-P-F, SG = 0.42
	Face	Parallel to grain	Douglas Fir-Larch, SG = 0.50
	Face	Perpendicular to grain	Douglas Fir-Larch, SG = 0.50
Bolt bearing capacity (12.5 mm and 19 mm bolt sizes)			
Grades 1.4E–1.7E	Face	Parallel to grain	SG = 0.38
	Face	Perpendicular to grain	SG = 0.38
Grades 1.8E–2.3E	Face	Parallel to grain	SG = 0.50
	Face	Perpendicular to grain	SG = 0.50

Note

1 E values in grade designation are shear-free E (E_{true}).

Table 3. Fastener size and spacing for installation of the product using Douglas Fir and Western Hemlock (Mill No. 1110)

Property	Nails parallel to the glue line								Nails perpendicular to the glue line	
	Minimum thickness (25.4 mm)		Minimum thickness (38.1 mm)		Minimum thickness (44.5 mm)		Minimum thickness (88.9 mm)		All thicknesses [1]	
Fastener size	On centre (o.c.)	End [2]	o.c.	End	o.c.	End	o.c.	End	o.c.	End
8d box	76.2	38.1	76.2	38.1	50.8	25.4	50.8	12.7	50.8	12.7
8d common	101.6	76.2	76.2	50.8	76.2	50.8	50.8	25.4	50.8	25.4
10d and 12d box	101.6	76.2	76.2	50.8	76.2	50.8	50.8	25.4	50.8	25.4
16d box	101.6	76.2	76.2	50.8	76.2	50.8	50.8	25.4	50.8	25.4
10d and 12d common	152.4	101.6	101.6	76.2	101.6	76.2	50.8	50.8	50.8	50.8
16d sinker	152.4	101.6	101.6	76.2	101.6	76.2	50.8	50.8	50.8	50.8
16d common	152.4	101.6	152.4	101.6	152.4	76.2	50.8	50.8	50.8	50.8

	Notes
1	Two rows of fasteners are permitted and must be staggered at a minimum of 12.5 mm.
2	"End" refers to the end of the piece being connected.

Table 4. Fastener size and spacing for installation of the product using Southern Yellow Pine, Yellow Poplar, Sweetgum and Eucalyptus (Mill Nos. 1086 and 1106)

Property	Nails parallel to the glue line								Nails perpendicular to the glue line	
	Minimum thickness (25.4 mm)		Minimum thickness (38.1 mm)		Minimum thickness (44.5 mm)		Minimum thickness (88.9 mm)		All thicknesses [1]	
Fastener size	o.c.	End [2]	o.c.	End	o.c.	End	o.c.	End	o.c.	End
8d box	152.4	152.4	152.4	152.4	101.6	101.6	101.6	101.6	50.8	12.7
8d common	152.4	152.4	152.4	152.4	101.6	101.6	101.6	101.6	50.8	25.4
10d and 12d box	152.4	152.4	152.4	152.4	101.6	101.6	101.6	101.6	50.8	25.4
16d box	152.4	152.4	152.4	152.4	101.6	101.6	101.6	101.6	50.8	25.4
10d and 12d common	152.4	152.4	152.4	152.4	101.6	101.6	101.6	101.6	50.8	50.8
16d sinker	152.4	152.4	152.4	152.4	101.6	101.6	101.6	101.6	50.8	50.8
16d common	203.2	203.2	203.2	203.2	203.2	203.2	203.2	203.2	50.8	50.8

	Notes
1	Two rows of fasteners are permitted and must be staggered at a minimum of 12.5 mm.
2	"End" refers to the end of the piece being connected.

Additional information

The design values obtained from testing to ASTM D 5456-13a, “Evaluation of Structural Composite Lumber Products,” as specified in CSA O86-14, “Engineering Design in Wood,” are summarized below.

Table 5. Additional test information for the product

Property	Test information

Bending	Specimens were tested in edgewise and flatwise bending. A parametric, 5% tolerance limit with a 75% confidence level approach was used to determine the characteristic value. Qualification test data was used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86-09 was used to determine the specified strength.
Shear	Specimens were shear tested edgewise and plank. A parametric, 5% tolerance limit with a 75% confidence level approach was used to determine the characteristic value. Qualification test data was used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86-09 was used to determine the specified strength.
Compression parallel to grain	Compression tests were conducted on 53 specimens. A parametric, 5% tolerance limit with a 75% confidence level approach was used to determine the characteristic value. Qualification test data was used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86-09 was used to determine the specified strength.
Compression perpendicular to grain	Specimens were tested and the average stress for a 1 mm deformation was determined. This value was multiplied by 1.09 to establish the specified strength in accordance with CSA O86-09.
Tension parallel to grain	Single member tension tests were conducted. A parametric, 5% tolerance limit with a 75% confidence level approach was used to determine the characteristic value. Qualification test data was used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86-09 was used to determine the specified strength.
Creep and recovery	Thirty (30) specimens were tested in accordance with ASTM D 6815, “Standard Specification for Evaluation of Duration of Load and Creep Effects of Wood and Wood-Based Products,” whereby the specimens were subjected to a 90-day creep test for duration of load, the equivalent for lumber verification. The three criteria were met and deemed equivalent to lumber.
Adhesive	The adhesives comply with CSA O112.7-M1977, “Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room and Intermediate-Temperature Curing” (CCMC 13213-L), CSA O112.10-08, “Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure) (CCMC 13511-L), and CSA O112.9-10 “Evaluation of Adhesives for Structural Wood Products (Exterior Exposure).”
Nail withdrawal	For products produced at the Thorsby, AL plant, edgewise nail withdrawal values were established following ASTM D 1761-12, “Standard Test Methods for Mechanical Fasteners in Wood.” Specimens were tested and equivalent species capacity was determined in accordance with ASTM D 5456-14b, A2.4, “Standard Specification for Evaluation of Structural Composite Lumber Products.” Flatwise nail withdrawal values were established following ASTM D 1761-06, “Standard Test Methods for Mechanical Fasteners in Wood.” Specimens were tested and equivalent species capacity was determined in accordance with ASTM D 5456-07, A2.4.
Dowel bearing	For products produced at the Thorsby, AL plant, dowel bearing strength was determined in accordance with ASTM D 5764-97a (2007), “Standard Test Methods for Evaluating Dowel-Bearing Strength of Wood and Wood-Based Products,” using the full-hole method. Specimens were tested and the mean bearing capacity was used to establish the equivalent species as per ASTM D 5456-07, “Standard Specification for Evaluation of Structural Composite Lumber Products,” A2.5.
Bolt bearing	For products produced at the Thorsby, AL plant, bolt bearing strength was determined in accordance with ASTM D 5764- 97a (2007) using the full-hole method. Specimens were tested and the mean bolt bearing capacity was used to establish the equivalent species as per ASTM D 5456-07, A2.5.

Administrative information

Use of Canadian Construction Materials Centre (CCMC) assessments

This assessment must be read in the context of the entire CCMC Registry of Product Assessments, any applicable building code or by-law requirements, and/or any other regulatory requirements (for example, the Canada Consumer Product Safety Act, the Canadian Environmental Protection Act, etc.).

It is the responsibility of the user to confirm that the assessment they are using is current and has not been withdrawn or superseded by a later version on the CCMC Registry of Product Assessments.

Disclaimer

The National Research Council of Canada (NRC) has evaluated only the characteristics of the specific product described herein. The information and opinions in this evaluation are directed to those who have the appropriate degree of experience to use and apply its contents (such as authorities having jurisdiction, design professionals and specifiers). This evaluation is valid when the product is used as part of permitted construction, respecting all conditions and limitations stated in the evaluation, and in accordance with applicable building codes and by-laws.

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Language

Une version française de ce document est disponible.
In the case of any discrepancy between the English and French version of this document, the English version shall prevail.

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CCMC recognition

The Canadian Construction Materials Centre (CCMC) assesses compliance with Canadian building, energy and safety codes. We are the only construction code compliance service supported and operated by the Government of Canada. Trusted by over 6,000 regulators across Canada.

> Most Canadian authorities having jurisdiction (AHJs) consider CCMC product assessments acceptable as evidence for product approval.

CCMC assessments are recognized by construction authorities across Canada:

Alliance of Canadian Building Official Associations (ACBOA)	(Alliance of Canadian Building Official Associations (ACBOA))
First Nations National Building Officers Association (FNNBOA)	(First Nations National Building Officers Association (FNNBOA))
Canadian Home Builders' Association (CHBA)	(Canadian Home Builders' Association (CHBA))
Alberta Building Officials Association (ABOA)	(Alberta Building Officials Associations (ABOA))
Saskatchewan Building Officials Association (SBOA)	(Saskatchewan Building Officials Association (SBOA))
Manitoba Building Officials Association (MBOA)	(Manitoba Building Officials Association (MBOA))
Ontario Building Officials Association (OBOA)	(Ontario Building Officials Association (OBOA))
New Brunswick Building Officials Association (NBBOA)	(New Brunswick Building Officials Association (NBBOA))



> The CCMC provides code compliance assessments to Canadian code requirements, consulting nationwide with construction regulators to elicit regional variations in code requirements as well as provincial and local interpretations. Users are advised to review the technical information presented in CCMC assessments when making approval decisions. Learn more about how the CCMC provides a unique service for Canada.

For more information, contact the CCMC by phone at (613) 993-6189 or by email at ccmc@nrc-cnrc.gc.ca

Code compliance as an acceptable solution

Code Compliance via Acceptable Solutions

> If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.
>
> — **National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)**

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

Code compliance as an alternative solution