DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Housing - Federal Housing Commissioner	Series and Series Number: **MATERIALS RELEASE NO:** 1241d (Supersedes issue dated April 17, 2019)
TO: DIRECTORS, SINGLE FAMILY HOCs **DIRECTORS, MULTIFAMILY HUBs**	**ISSUE DATE** July 27, 2023
	REVIEW DATE July 27, 2026

SUBJECT: **1. Product** VERSA-LAM® LAMINATED VENEER LUMBER

2. Name and address of Manufacturer

Boise Cascade Wood Products, LLC
P. O. Box 2400
White City, OR 97503-0400

Data on the nonstandard product described herein have been reviewed by the Department of Housing and Urban Development (HUD) and determination has been made that it is considered suitable from a technical standpoint for the use indicated herein. This Release does not purport to establish a comparative quality or value rating for this product as compared to standard products normally used in the same manner.

This Materials Release cannot be used as an indication of endorsement or approval by HUD of the described product, and any statement or representation, however made, indicating such approval or endorsement by HUD is unauthorized. See Code 18, U.S.C. 709.

Any reproduction of this Release must be in its entirety.

USE: VERSA-LAM® LVL is used for structural framing lumber in beams, headers, joists, rafters, wall studs and rim joists.

DESCRIPTION:

Versa-Lam® LVL is structural composite lumber products complying with ASTM D5456 and is manufactured with the wood fibers primarily oriented parallel to the length of the member, such that the veneers are vertical when the member is installed in its primary application (joist orientation). Qualified adhesives, veneer species and veneer grades are as specified in the approved Quality Control Manual.

Versa-Lam® LVL is available in various grades as indicated in Table 1. Versa-Lam® LVL is produced in thicknesses from minimum 1 inch (25.4 mm) up to 7 inches (178 mm), with depths up to 48 inches (1219 mm) and lengths up to 66 feet (20.1 m).

Versa-Lam® LVL is also distributed under the proprietary name of Versa-Stud® and Versa-Lam Plus® that are manufactured to match commonly available solid-sawn lumber sizes.

Versa-Lam® LVL is also distributed under the proprietary name of VersaWorks™ that is manufactured in sizes for use in mass timber construction. VersaWorks™ is produced in thicknesses from 7-inches (178 mm) up to 24-inches (610 mm), with depths up to 24-inches (610 mm) and lengths up to 66-feet (20.1 m).

.

REQUIREMENTS:

General:

VERSA-LAM® LVL shall be manufactured to meet the requirements of the Manufacturing Standards/Quality Control Manual for Laminated Veneer Lumber on file with HUD. The quality control test records shall be made available to HUD upon request.

Veneer:

Veneer shall be of an approved species and thickness meeting grading requirements described in the facility quality manual.

Adhesive:

The adhesive shall meet the requirements of ASTM D2559 Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions, and ASTM D7247 Standard Test Method for Evaluating the Shear Strength of Adhesive Bonds in Laminated Wood Products at Elevated Temperatures. The adhesive bond shall meet the requirements of PS 1-09 for Exposure 1.

Design:

The customary design practices for structural composite lumber are applicable to VERSA-LAM® LVL. Design shall be in accordance with the National Design Specification for Wood Construction {ANSI/AWC NDS} unless modified by this Materials Release (MR). The allowable design properties shall be in accordance with TABLE 1 – DESIGN VALUES, TABLE 2 - VERSA-LAM® LVL RIM BOARD DESIGN CAPACITIES, TABLE 3 — ALLOWABLE NAIL SPACING FOR VERSA-LAM® LVL, and TABLE 4 — EQUIVALENT SPECIFIC GRAVITIES FOR CONNECTOR DESIGN.

TABLE 1 – DESIGN VALUES (psi)[1,2]

TRUE E		APPARENT E		FLEXURAL STRESS, F_b		TENSION PARALLEL TO GRAIN[4], F_t	COMP. PARALLEL TO GRAIN, F_C	COMPRESSION PERPENDICULAR TO GRAIN, $F_{c\perp}$		HORIZONTAL SHEAR, F_v	
PRODUCT GRADE[7]	MOE[5] E (×106 psi)	PRODUCT GRADE[8]	MOE[5] E (×106 psi)	Joist[3]	Plank			Perp. to Narrow Face (Plank)	Parallel to Narrow Face (Joist)	Parallel to Narrow Face (Plank)	Perp. to Narrow Face (Joist)
1.4E 1600/1100	1.4	1.3E 1600[6]	1.3	1600	1600	1100	2500	450	525	150	225
1.4E 1750/1100	1.4	1.3 17506	1.3	1750	1600	1100	2500	450	525	150	225
1.5E 1800	1.5	1.4 1800/1100	1.4	1800	1800	1100	2500	450	525	150	225
1.5E 1800$_{Plank}$	1.5	1.4 1800/1200	1.4	1500	1800	1200	2500	450	525		
1.5E 1950	1.5	1.4 1950/1100	1.4	1950	1800	1100	2500	450	525	150	225
1.5E 1800/1250	1.5	1.4 1800[6]	1.4	1800	1800	1250	2500	450	525	150	225
1.5E 1950/1250	1.5	1.4 1950[6]	1.4	1950	1800	1250	2500	450	525	150	225
1.6E 2050	1.6	1.5 2050/1250	1.5	2050	2050	1250	2500	450	525	150	225
1.6E 2250	1.6	1.5 2250/1250	1.5	2250	2050	1250	2500	450	525	150	225
1.6E 2050/1400	1.6	1.5 2050[6]	1.5	2050	2050	1400	2500	450	525	150	225
1.6E 2250/1400	1.6	1.5 2250[6]	1.5	2250	2050	1400	2500	450	525	150	225
1.7E 2250	1.7	1.6 2250/1400	1.6	2250	2250	1400	2500	450	525	150	225
1.7E 2450	1.7	1.6 2450/1400	1.6	2450	2250	1400	2500	450	525	150	225
1.7E 2250/1500	1.7	1.6 2250[6]	1.6	2250	2250	1500	2500	450	525	150	225
1.7E 2450/1500	1.7	1.6 2450[6]	1.6	2450	2250	1500	2500	450	525	150	225
1.8E 2400	1.8	1.7 2400/1500	1.7	2400	2400	1500	3000	610[9]	750	190	285
1.8E 2650	1.8	1.7 2650/1500	1.7	2650	2400	1500	3000	610[9]	750	190	285
1.8E 2400/1650	1.8	1.7 2400[6]	1.7	2400	2400	1650	3000	610[9]	750	190	285
1.8E 2650/1650	1.8	1.7 2650[6]	1.7	2650	2400	1650	3000	610[9]	750	190	285
1.9E 2500	1.9	1.8 2500/1650	1.8	2500	2500	1650	3000	610[9]	750	190	285
1.9E 2750	1.9	1.8 2750/1650	1.8	2750	2500	1650	3000	610[9]	750	190	285
1.9E 2500/1825	1.9	1.8 2500[6]	1.8	2500	2500	1825	3000	610[9]	750	190	285
1.9E 2750/1825	1.9	1.8 2750[6]	1.8	2750	2500	1825	3000	610[9]	750	190	285
2.0E 2600	2.0	1.9 2600/1825	1.9	2600	2600	1825	3000	610[9]	750	190	285
2.0E 2850	2.0	1.9 2850/1825	1.9	2850	2600	1825	3000	610[9]	750	190	285
2.0E 2600/1950	2.0	1.9 2600[6]	1.9	2600	2600	1950	3000	610[9]	750	190	285
2.0E 2850/1950	2.0	1.9 2850[6]	1.9	2850	2600	1950	3000	610[9]	750	190	285
2.1E 2800	2.1	2.0 2800/1950	2.0	2800	2800	1950	3000	610[9]	750	190	285
2.1E 3100	2.1	2.0 3100/1950	2.0	3100	2800	1950	3000	610[9]	750	190	285
2.1E 2800/2150	2.1	2.0 2800[6]	2.0	2800	2800	2150	3000	610[9]	750	190	285
2.1E 3100/2150	2.1	2.0 3100[6]	2.0	3100	2800	2150	3000	610[9]	750	190	285
2.2E 2900	2.2	2.1 2900/2150	2.1	2900	2900	2150	3000	610[9]	750	190	285
2.2E 3200	2.2	2.1 3200/2150	2.1	3200	2900	2150	3000	610[9]	750	190	285
2.2E 2900/2250	2.2	2.1 2900[6]	2.1	2900	2900	2250	3000	610[9]	750	190	285
2.2E 3200/2250	2.2	2.1 3200[6]	2.1	3200	2900	2250	3000	610[9]	750	190	285
2.3E 3100	2.3	2.2 3100/2250	2.2	3100	3100	2250	3000	610[9]	750	190	285
2.3E 3400	2.3	2.2 3400/2250	2.2	3400	3100	2250	3000	610[9]	750	190	285
2.3E 3100/2425	2.3	2.2 3100[6]	2.2	3100	3100	2425	3000	610[9]	750	190	285
2.3E 3400/2425	2.3	2.2 3400[6]	2.2	3400	3100	2425	3000	610[9]	750	190	285

For **SI:** 1 psi=0.00689 MPa.

[1]Reference design values are based on dry conditions of use where the in-service moisture content of the LVL is less than 16 percent.

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

[3]The tabulated reference flexural stress, F_b, is for LVL with a 12-inch depth. For other depths, multiply by the size factor $C_f = (12/d)^{1/9}$, where d is the member depth in inches.

[4]The tabulated reference tension stress, F^t, is for LVL with a 4-foot length. For longer lengths, multiply by the length factor $C_L = (4/L)^{1/8}$, where L is the member length in feet.

[5]The reference modulus of elasticity for beam stability and column stability calculations, E_{min}, must be calculated in accordance with Appendix D of the NDS. When calculating E_{min}, the coefficient of variation of modulus of elasticity, COV_E, may be taken as 0.10.

[6]Product may also be labeled according to both F_b and F_t. Example: 2.0 2800 is equivalent to 2.0 2800/2150.

[7]Values are true E (E_{true})

[8]Values are apparent E ($E_{apparent}$)

[10]Minimum thickness = 1½ inches (38.1 mm). For thickness less than 1½ inches (38.1 mm) use 450 psi.

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

where:

D	=	Deflection (inches)
W	=	Uniform load (plf)
L	=	Span (feet)
E	=	Modulus of elasticity (psi)
b	=	Beam width (inches)
d	=	Beam depth (inches)

$$D_{true} = \frac{270WL^4}{E_{true}bd^3} + \frac{28.8WL^2}{E_{true}bd}$$

$$D_{apparent} = \frac{270WL^4}{E_{apparent}bd^3}$$

TABLE 2—VERSA-LAM® LVL RIM BOARD DESIGN CAPACITIES

MODULUS OF ELASTICITY, E ($x10^6$ psi)		MINIMUM THICKNESS (inches)	ALLOWABLE VERTICAL LOAD[1]						LATERAL CAPACITY[5,6,7] (lb/ft)	CONTAINS CROSS-PLY VENEER
			Distributed Load (lbf/ft)			Concentrated Load (lbf) ($4^1/_2$ in. Min. Width)				
True	Apparent		$d^2 \leq 16$	$16 < d2 \leq 20$	$20 < d^2 \leq 24$	$d^2 \leq 16$	$16 < d^2 \leq 20$	$20 < d^2 \leq 24$		
1.4 - 1.7	1.3 - 1.6	1	2000	N/A	-	N/A	N/A	-	190	No
		$1^1/_{16}$	2000	N/A	-	N/A	N/A	-	205	No
		$1^1/_8$	2000	N/A	-	N/A	N/A	-	220	No
		$1^3/_{16}$	2000	N/A	-	N/A	N/A	-	230	No
		$1^1/_4$	3250	3250	-	2250	2250	-	See Note 3	No
		$1^5/_{16}$	6000	5450	5200	4450	4450	3850	See Note 3	Yes
		$1^1/_2$	6480	5600	5600	4600	4450	4450	See Note 3	Yes
		$2^1/_4$	3250	3250	-	2250	2250	-	See Note 4	No
1.8 - 2.3	1.7 - 2.2	1	4250	3700	-	3700	3500	-	190	No
		$1^1/_{16}$	4250	3700	-	3700	3500	-	205	No
		$1^1/_8$	4250	3700	-	3700	3500	-	220	No
		$1^3/_{16}$	4250	3700	-	3700	3500	-	230	No
		$1^1/_4$	4250	3700	-	3700	3500	-	See Note 3	No
		$1^1/_2$	4250	3700	1490	3700	3500	3300	See Note 3	No
		$1^3/_4$	4250	3700	2350	3700	3500	3500	See Note 3	No
		$3^1/_2$	4250	3700	3700	6000	6000	6000	See Note 4	No
2.1 - 2.2	2.0 - 2.2	$1^1/_2$	5450	4300	1490	4300	3900	3300	See Note 3	No
		$1^3/_4$	5700	4300	2350	4300	3900	3630	See Note 3	No
		$2^1/_4$	5700	4300	2350	4300	3900	3630	See Note 4	No
		$3^1/_2$	5700	4300	4300	6000	6000	6000	See Note 4	No

For **SI:** 1 inch = 25.4 mm, 1 lb = 4.4 N, 1 lb/ft = 47.8 Pa.

[1]Allowable loads given in this table are not permitted to be increased by the load duration factor, C_D.
[2]d = member depth (inches).
[3]The lateral capacity (in-plane shear) is as permitted in the applicable code for solid-sawn lumber framing in horizontal wood diaphragms with nominally 2-inch-thick framing.
[4]The lateral capacity (in-plane shear) is as permitted in the applicable code for solid-sawn lumber framing in horizontal wood diaphragms with nominally 3-inch-thick framing.
[5]Versa-Lam® LVL used as rim joist may be substituted for solid-sawn framing in horizontal wood diaphragms as shown in Tables 4.2A, 4.2B and 4.2C of the 2021 and 2015 ANSI/AWC SDPWS, Tables 2306.2(1) and 2306.2(2) of the 2021, 2018, 2015, 2012 and 2009 IBC and Table 2306.3.1 of the 2006 IBC (maximum horizontal shear values must be limited as noted).
[6]Toe-nailed connections are not limited by the 150 plf lateral load capacity noted for Seismic Design Categories D, E, and F in Section 4.1.10 and Section 4.1.7 of the 2021 and 2015 ANSI/AWC SDPWS respectively, and Section 2305.1.4 of the 2006 IBC.
[7]See Table 3 for minimum nail spacing requirements.

TABLE 3—ALLOWABLE NAIL SPACING FOR VERSA-LAM® LVL (inches)[1]

CONNECTOR SIZE	NAILS PARALLEL TO THE GLUE LINE										NAILS PERP. TO THE GLUE LINE	
	Minimum Thickness 1 inch		Minimum Thickness $1^1/_4$ inches		Minimum Thickness[2] $1^1/_2$ inches		Minimum Thickness[2] $1^3/_4$ inches		Minimum Thickness[2] $3^1/_2$ inches		All Thicknesses[2]	
	o.c.	End[3]	o.c.	End[3]	o.c.	End[3]	o.c.	End[3]	o.c.	End[3]	o.c.	End[3]
8d box	3	$1^1/_2$	3	$1^1/_2$	3	$1^1/_2$	2	1	2	$^1/_2$	2	$^1/_2$
8d common	4	3	3	2	3	2	3	2	2	1	2	1
10d & 12d box	4	3	3	2	3	2	3	2	2	1	2	1
16d box	4(5)[4]	3	3(5)[4]	$2(2^1/_2)$[4]	3(5)[4]	2	3(5)[4]	$2(2^1/_2)$[4]	2	$1(2^1/_2)$[4]	2	1
10d & 12d common	6	4	4(5)[4]	3	4(5)[4]	3	4(5)[4]	3	2(3)[4]	2(3)[4]	2	2
16d sinker	6	4	4(6)[4]	3	4(6)[4]	3	4(6)[4]	3	2(4)[4]	2(3)[4]	2	2
16d common	6(8)[4]	4	6(8)[4]	4	6(8)[4]	4	6(8)[4]	3(4)[4]	2(4)[4]	2(3)[4]	2(3)[4]	$2(2^1/_2)$[4]

For **SI:** 1 inch = 25.4 mm.

[1] Edge distances must be sufficient to prevent splitting.
[2] For multiple rows of fasteners, the rows must be offset $^1/_2$ inch or more from each other, equally spaced from the centerline of the VERSA-LAM® LVL member and staggered.
[3] "End" refers to the minimum distance between the nail and the end(s) of the piece(s) being connected.
[4] Nail spacing in the parentheses are applicable only to Versa-Lam LVL manufactured in Thorsby, Alabama. All other spacings without parentheses are also applicable to Thorsby LVL.

TABLE 4—EQUIVALENT SPECIFIC GRAVITIES FOR CONNECTOR DESIGN

PRODUCT	MODULUS OF ELASTICITY, E ($x10^6$ psi)[1]	NAILS					
		Lateral Installed into Wide Face		Lateral Installed into Narrow Face		Withdrawal	
		Loaded Parallel to Length	Loaded Perpendicular to Length	Loaded Parallel to Length	Loaded Perpendicular to Length	Installed into Wide Face	Installed into Narrow Face
VERSA-LAM®	1.3 – 2.3	0.50	0.50	0.50	0.50	0.50	0.50 (0.43)[2]

PRODUCT	MODULUS OF ELASTICITY, E ($x10^6$ psi)[1]	BOLTS			
		Lateral Installed into Wide face		Lateral Installed into Narrow Face	
		Loaded Parallel to Length	Loaded Perpendicular to Length	Loaded Parallel to Length	Loaded Perpendicular to Length
VERSA-LAM®	1.3 – 2.3	0.50	0.50	0.50	0.50

[1] Values are true E (E_{true}) or apparent E ($E_{apparent}$).
[2] Equivalent specific gravity in the parentheses are applicable only to Versa-Lam LVL manufactured in Thorsby, Alabama. All other equivalent specific gravities without parentheses are also applicable to Thorsby LVL.

INSTALLATION:

Installation shall be in accordance with the HUD Minimum Property Standards (MPS) and the requirements of the applicable local code for wood construction with the following modifications:

QUALITY ASSURANCE AND CERTIFICATION:

Boise Cascade Wood Products, LLC shall certify that VERSA-LAM® conforms to the requirements of this MR. APA – The Engineered Wood Association (IAS Accreditation Number AA-649) shall validate the manufacturer's certification that VERSA-LAM® meets the requirements of this MR.

Each piece of VERSA-LAM® certified as conforming to this MR shall be marked with the following information:

1. Boise Cascade
2. Product designation
3. The registered APA Validation Mark
4. MR 1241*
5. Date of manufacture
6. Identification of the manufacturing plant

*HUD MR 1241 may be used instead of HUD MR 1241d if the products are date stamped.

SAMPLE STAMP

BOISE CASCADE®	VERSA-LAM®	2.0 3100/1950	ICC ES ESR 1040	Prod. Date
			CCMC 12472-R	00/00/00 00:00
			HUD MR-1241	White City, OR
				APA

WARRANTY:

Boise Cascade warrants its BCI® Joists, ALLJOIST®, and VERSA-LAM® products to comply with our specifications, to be free from defects in material and workmanship, and to meet or exceed our performance specifications for the normal and expected life of the structure when correctly stored, installed and used according to our Installation Guide.

The manufacturer's warranty does not relieve the builder, in any way, of responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. A copy of the manufacturer's warranty shall be furnished by the builder to the owner.

MANUFACTURER'S RESPONSIBILITIES:

Issuance of this Materials Release (MR) commits the manufacturer to fulfill, as a minimum, the following:

1. Produce, label and certify the material, product, or system in strict accordance with the terms of this MR.

2. Provide necessary corrective action in a timely manner for all cases of justified complaint, poor performance or failure reported by HUD.

3. When requested, provide the Office of Manufactured Housing Programs, HUD Headquarters, with a representative list of properties in which the material, product or system has been used, including complete addresses or descriptions of locations, and dates of installation.

4. Inform HUD in advance of changes in production facilities, methods, design of the product, company name, ownership or mailing address.

5. If between the annual reviews of the QCM, significant changes are made to the product which would by definition revise the previously recognized facts, HUD will be informed within 30 days of formal implantations of these significant changes.

EVALUATION:

This Materials Release shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this Materials Release shall apply for renewal or revision 90 days prior to the Review Date printed on this Materials Release. Submittals for renewal or revision shall be sent to:

U.S. Department of Housing and Urban Development
Office of Manufactured Housing Programs
451 Seventh Street, SW, Room 9170
Washington, DC 20410-8000

Appropriate user fee(s) for the TSP program can be submitted through the Pay.gov website at https://pay.gov/public/form/start/73881741.

The holder of this Materials Release may apply for revision at any time prior to the Review Date. Minor revisions may be in the form of a supplement to the Materials Release.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate user fee for a revision will need to be submitted in accordance with 24 CFR § 200.934 User fee system for the technical suitability of products program, and the current user fee schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of the Materials Release. HUD will notify the manufacturer that the Materials Release may be canceled when:

1. Conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system;

2. The manufacturer has changed its organizational form without notifying HUD; or,

3. The manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice, of the specific reasons for cancellation, and the opportunity to present views on why the Materials Release should not be canceled. No refund of fees will be made on a canceled document.

****

This Materials Release is issued solely for the captioned firm and is not transferable to any person or successor entity.

****