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DIVISION: 06—WOOD AND PLASTICS
Section: 06170—Prefabricated Structural Wood

REPORT HOLDER:

GEORGIA-PACIFIC WOOD PRODUCTS SOUTH LLC
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EVALUATION SUBJECT:

BROADSPAN™ LAMINATED VENEER LUMBER

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Properties evaluated:

Structural

2.0 USES

Broadspan™ Laminated Veneer Lumber (LVL) is used as beams, headers, joists, and rafters.

3.0 DESCRIPTION

Broadspan™ is manufactured by laminating southern pine, sweet gum, yellow poplar and eucalyptus veneers singularly or in combination. Veneer sheets are stress graded based on Ultrasonic Propagation Time (UPT) and sorted in accordance with their UPT classification. Graded veneer sheets are then scarfed or lapped before being sent to the sheet feeder. From the sheet feeder, veneer is sequenced into prescribed lay-ups, with glue applied on the top face of each veneer sheet, with the exception of the top veneer. Adhesive is exterior-grade phenolic resin complying with the requirements of ASTM D 2559. The grain of all veneer is oriented along the length of the billet. The lay-up is then subjected to hot pressing until the glue is cured. Broadspan™ LVL members are available in thicknesses from $\frac{3}{4}$ inch (19.1 mm) to $3\frac{1}{2}$ inches (89 mm), depths of $3\frac{1}{2}$ inches (38 mm) to 48 inches (1219 mm), and lengths up to 80 feet (24.4 m).

4.0 DESIGN AND INSTALLATION

Application and installation of Broadspan™ LVL shall comply with this report and the applicable code. Drawings, and/or manufacturer's published installation instructions for the erection and installation on each job, shall be available on the jobsite during installation.

4.1 Design and Allowable Stresses:

Broadspan™ LVL is designed as solid-sawn lumber in accordance with the applicable code and National Design Specification for Wood Construction (NDS). Allowable design values are listed within this report. Maximum allowable member design values are as noted in Table 1.

4.2 Fasteners:

Maximum allowable connection design values are as noted in Table 2. Nails installed perpendicular to the gluelines on the wide face shall be permitted, with the same spacing, edge and end distances as specified in the NDS for solid sawn lumber. Nails installed parallel to the gluelines on the narrow face of material at least $\frac{3}{4}$ inch (19.1 mm) thick and $3\frac{1}{2}$ inches (89 mm) wide shall be spaced at a minimum of 4 inches (102 mm) for 10d and 12d common nails, and 3 inches (76 mm) for 8d common nails. Sixteen-penny common nails shall be spaced a minimum of 8 inches (203 mm) when installed parallel to the gluelines on the narrow face of material that is at least $1\frac{1}{2}$ inches (38 mm) thick and $5\frac{1}{4}$ inches (133 mm) wide.

5.0 CONDITIONS OF USE

The Broadspan™ LVL described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1** Design calculations and details for specific applications shall be furnished to the code official to verify compliance with this report and the applicable code. The documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is constructed.
- 5.2** LVL shall not be used in applications where it will obtain a moisture content greater than 16 percent.
- 5.3** This report does not contain an evaluation of connectors other than those specifically noted in Section 4.0 of this report.
- 5.4** Cutting, drilling or notching of LVL is beyond the scope of this report.

- 5.5** This report does not evaluate the effect of fire retardant or preservative treatment on LVL.
- 5.6** The compression edges of all applications of Broadspan™ LVL shall be laterally restrained.
- 5.7** The Broadspan™ LVL is produced in Thorsby, Alabama, under a quality control program with inspections by APA—The Engineered Wood Association.

6.0 EVIDENCE SUBMITTED

- 6.1** Data in accordance with the ICC-ES Acceptance Criteria for Structural Wood-based Products (AC47), dated October 2006.

- 6.2** A quality control manual.

7.0 IDENTIFICATION

All Broadspan™ Laminated Veneer Lumber covered by this report shall be identified by a stamp containing the manufacturer's name and/or trademark, the product trade name, the grade, the species, the evaluation report number (ESR-1342), the production shift and date of manufacture, and the name and/or trademark of the inspection agency (APA-EWS).

TABLE 1—ALLOWABLE DESIGN STRESSES

PROPERTY		DESIGN STRESS (psi)		
		1.9E Grade ^{1,6}	2.0E Grade ^{1,6,7}	2.0E Grade ^{1,7}
Bending (F_b)	Joist	2750	3100	3100
	Plank	3000	3500	3500
Tension parallel to grain (F_t)		1700	1900	2100
Longitudinal shear (F_v)	Joist	300	300	350
Compression parallel to grain (F_c)		2500	3000	3000
Compression perpendicular to grain ($F_{c\perp}$)		750	750	750
Modulus of Elasticity (10^6), MOE		1.9	2.0	2.0

For **SI**: 1 psi = 6.9 kPa, 1 inch = 25.4 mm.

¹The tabulated values are based on loads of normal duration and a reference depth of 12 inches. For depths of 3½ inches and deeper, when loaded edgewise, the allowable bending stress shall be modified by $(\frac{12}{d})^{0.1538}$ for 1.9 and 2.0, as shown in the table below:

1.9E 2750 F_b and 2.0E 3100 F_b									
Depth (in.)	3½	5½	7¼	9½	11¾	14	16	18	24
Multiply by	1.21	1.13	1.08	1.04	1	0.98	0.96	0.94	0.9

²Tension (F_t) of the 1.9E and 2.0E grades is based on a gauge length of 4 feet. For specimens longer than 4 feet, a length factor of $(4/L)^{1/11}$ shall be used to adjust the F_t , where L is the actual length in feet.

³Load parallel to glue line is for joist, and perpendicular to glue line is for plank.

⁴Stresses may be adjusted for duration of load in accordance with the applicable code.

⁵Tabulated flexural stress (F_b) shall be permitted to be increased by 4 percent when the member qualifies as a repetitive member as defined in AFPA NDS.

⁶LVL grades produced in southern pine; or southern pine, sweet gum and poplar in combination.

⁷LVL grades produced in southern pine and eucalyptus in combination.

TABLE 2—FASTENER DETAILS^{1,2}

FASTENER DESCRIPTION		1.9E GRADE	2.0E GRADE
Nail Withdrawal			
Face	Installed perpendicular to the wide face	Douglas fir–larch (0.50)	Douglas fir–larch (0.50)
Edge	Installed parallel to the wide face	Hem-fir (0.43)	Hem-fir (0.43)
Nail Dowel Bearing			
Face	Installed perpendicular to the wide face	Douglas fir–larch (0.50)	Douglas fir–larch (0.50)
Edge	Installed parallel to the wide face	Hem-fir (0.43)	Douglas fir–larch (0.50)
Bolt Dowel Bearing Installed in Wide Face³			
Parallel to grain		Douglas fir–larch (0.50)	Douglas fir–larch (0.50)
Perpendicular to grain		Douglas fir (0.50)	Douglas fir–larch (0.50)

¹Allowable lateral values for nails noted in the applicable code apply to the LVL for conditions and the species noted in the table.

²See Figure 1 for orientation details.

³Installed perpendicular to the wide face.

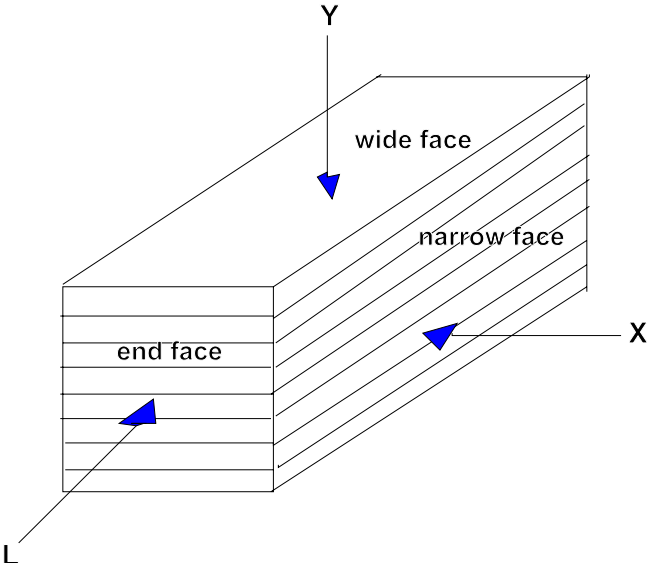


FIGURE 1—BROADSPAN™ LVL FASTENER ORIENTATION