



NYC Department of Buildings
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Patricia Lancaster, FAIA, Commissioner
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Report of Materials and Equipment Acceptance Division

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use subject to the terms and conditions contained herein.

MEA 248-02-E Vol. 2

Manufacturer: Weyerhaeuser, P.O. Box 8449, Boise, Idaho 83707

Trade Name(s): Microllam® LVL

Product: Microllam® Laminated Veneer Lumber (LVL).

Pertinent Code Section(s): 26-617 through 27-624

Prescribed Test(s): ASTM D198, Flexure (Allowable bending stress). Allowable tension parallel to grain stress. Allowable compression parallel to grain stress, beam shear, shear block, shear parallel to grain test. Allowable compression perpendicular to grain and perpendicular to wide face of strand, etc.

Laboratory: PFS Corporation and design tables were certified by Gary R. Schweizer, P.E., New York State License #062261-1.

Test Report(s): ICC Evaluation Service, Inc. Report #ESR-1387, Re-issued January 1, 2006, revised March 2006.

PFS Test Report #WR 040308, 2900 Fb Microllam® LVL Confirmation Testing, dated March 15, 2004.

Description – Microllam LVL is manufactured by laminating veneer sheets of a single wood species or species combinations coated with an exterior type adhesive, in specific lay-up patterns, in a continuous press with all grain oriented parallel to the length of the member. The wood species, species combinations, lay-up patterns and adhesives used are as specified in the Weyerhaeuser Microllam® LVL manufacturing standard. Microllam LVL is available in thicknesses from ¾ inch to 3½ inches, depths from 2½ inches to 48 inches and lengths up to 80 feet. Daily quality control checks and periodic third party inspections are conducted to assure product quality and performance.

TABLE 1 – Microllam® LVL ALLOWABLE FRAMING LUMBER DESIGN STRESSES^{1, 2, 3}
(pounds per square inch)

MATERIAL THICKNESS	GRADE SPECIES ¹	AXIAL		JOIST/BEAM				PLANK		
		Ft ⁴	Fc	Fb ^{5,6}	Fv ⁷	MOE (x10 ⁶)	Fc _⊥ ⁸	Fb ⁹	Fv	Fc _⊥ ⁸
3/4 inch to 3-1/2 inch	1.6 DF/LP/WH	1240	2100	2140	285	1.6	750	2530	190	480
	1.8 DF/LP/WH	1450	2375	2445	285	1.8	750	2890	190	480
	1.9 DF/LP/WH	1555	2510	2600	285	1.9	750	3075	190	480
	2.0 DF/LP/WH	1660	2635	2750	285	2.0	750	3255	190	480
	2.0 DF/LP/WH ¹⁰	1660	2635	2900	285	2.0	750	3430	190	480
	2.2 DF/LP/WH	1865	2870	3060	285	2.2	750	3615	190	480
	2.4 DF/LP/WH	2075	3080	3365	285	2.4	750	3980	190	480
	2.6 DF/LP/WH	2285	3270	3675	285	2.6	750	4345	190	480
3/4 inch to 3-1/2 inch	1.8 SP	1575	2375	2445	285	1.8	880	2890	190	525
	1.9 SP	1690	2510	2600	285	1.9	880	3075	190	525
	2.0 SP	1805	2635	2750	285	2.0	880	3255	190	525
	2.2 SP	2030	2870	3060	285	2.2	880	3615	190	525
	2.4 SP	2260	3080	3365	285	2.4	880	3980	190	525
	2.6 SP	2485	3270	3675	285	2.6	880	4345	190	525
3/4 inch to 3-1/2 inch	1.6 YP	1350	2100	2140	285	1.6	880	2530	190	670
	1.8 YP	1575	2375	2445	285	1.8	880	2890	190	670
	1.9 YP	1690	2510	2600	285	1.9	880	3075	190	670
	2.0 YP	1805	2635	2750	285	2.0	880	3255	190	670
	2.2 YP	2030	2870	3060	285	2.2	880	3615	190	670
3/4 inch to 1-3/4 inch	2.0E-2925Fb SP	1805	3030	2925	285	2.0	880	3455	190	525

- Allowable stresses are based on covered, dry conditions of use. Dry conditions of use are those environmental conditions represented by sawn lumber at which the moisture content is less than or equal to 16%.
- For uniformly loaded simple span beams, deflection is calculated as follows

$$\Delta = \frac{270WL^4}{Ebd^3} + \frac{28.8WL^2}{Ebd} \quad \text{where.} \quad W = \text{Uniform load, plf} \quad b = \text{Beam width, inches}$$

Δ = Deflection, inches d = Beam depth, inches
L = Span, feet E = Modulus of Elasticity, psi

- DF = Douglas fir-larch LP = lodgepole pine; WH = western hemlock, SP = southern pine; YP = yellow poplar. DF, LP and WH are permitted to be combined as Western Species (WS). SP and YP are permitted to be combined as Eastern Species (ES). When using the species group designations WS or ES, the allowable stresses must be the lower values for the species in the group.
- The F_t values in the table are reduced to reflect the volume effects of length, width and thickness for a range of common application conditions. Therefore the F_t values in the Table do not apply to Microllam LVL when used as a component of engineered products manufactured by Weyerhaeuser which are listed in other evaluation reports.
- F_b includes allowances for variations in span to depth ratio and method of loading and must be used without further adjustment except as noted below. For depths other than 12 inches, regardless of thickness, table values must be multiplied by (12/d)^{0.136}. Adjustments for common depths are shown below. For depths less than 3.5 inches, the factor for the 3.5 inch depth must be used.

Depth	3.5	5.5	7.25	9.25	12	16	20	24
Multiplier	1.18	1.11	1.07	1.04	1.00	0.96	0.93	0.91

- When structural members qualify as repetitive members in accordance with the applicable code, a four percent increase in accordance with NDS is permitted, in addition to the increases permitted in Footnote 5, above. This increase does not apply to field assembled multi-member beams.
- For simplicity, use 285 psi for depths up to 24 inches and 260 psi for depths greater than 24 inches. When a more accurate analysis is desired, the allowable horizontal shear for all depths greater than 12 inches is $F_v = 285 (12/d)^{0.065}$.
- Compression perpendicular to grain values (F_{c⊥}) may not be increased for duration of load.
- Values shown are for thicknesses up to 3.5 inches.
- Used in beam or header applications only.

TABLE 2 - Microllam® LVL FASTENER DETAILS

Fastener	Description	Comments
Lateral Nail and Wood Screw Capacity	Edge: Parallel and Perpendicular to WFS Face: Parallel and Perpendicular to WFS	For all grades 1.6E and higher use specific gravity, SG = 0.50 (Douglas-fir-larch).
Nail withdrawal capacity is determined on the basis of a specific gravity, SG = 0.50 (Douglas-fir-larch)		
Bolt Capacity - Bolt parallel to WFS:		Not evaluated
Bolt capacity - Bolt perpendicular to WFS ¹	Load parallel to grain Load perpendicular to grain	For all grades 1.6E and higher use specific gravity, SG = 0.50 (Douglas-fir-larch).
Note: Nail and bolt design values are developed using the specific gravity shown, in accordance with the applicable code.		

Closest Allowable Nail Spacing (inches) ^{2,3}			
Nail Size	Nailing into Narrow Edge	Nailing into Wide Face	Minimum End Distance
8d (2-1/2") box	3	2	2-1/2
8d (2-1/2") common	3	2	2-3/4
10d (3") box	3	2	2-3/4
12d (3-1/4") box	4	2	2-3/4
10d (3") & 12d (3-1/4") common	4	3	3
16d (3-1/2") box	4	3	2-3/4
16d (3-1/4") sinker	4	3	3
16d (3-1/2") common	8	4	3-1/4

1. When loading at an angle to grain, the lateral capacity is calculated using the Hankinson formula using an equivalent SG = 0.50 for load parallel to grain and perpendicular to grain.
2. Multiple rows to be staggered and the minimum spacing between rows must be 1/2 inch.
3. Multiple rows to be equally spaced from the centerline of the narrow face axis.

Terms and Conditions: The Microllam LVL lumber, as described above, is accepted on the condition that:

1. All uses, locations and installations shall comply with the applicable requirements of the New York City Building Code, and that the design provisions and specifications as listed in the above table shall apply.
2. Structures designed using Microllam LVL lumber shall conform to the manufacturer's design specifications except that appropriate design load(s), deflection limitation(s) and other performance standards of the New York City Building Code shall apply.
3. Microllam LVL lumber shall be for interior use only and stamped "INTERIOR MEA 248-02-2" on each beam.
4. Microllam LVL lumber, when stored out-of-doors, or exposed to wetting weather conditions, during construction shall be inspected by the user for separating and for swelling or warping, and replaced, if so damaged. Microllam LVL shall not be used where a maximum moisture content exceeding 19% will result.
5. Beams less than 1½ inches thick shall be firestopped every 500 square feet in floor construction.
6. The adhesive used in the manufacture of Microllam LVL shall not delaminate during a fire.
7. Microllam LVL lumber is identified with a stamp noting the name of the manufacturer (Weyerhaeuser) and the plant number; the product trade name (Microllam® LVL); the production date, the grade, the species or species group; and the name of the quality control agency (PFS Corporation).
8. Length and depth dimensions of Microllam LVL may be cut to size for the required application. Depth shall not be cut to less than 3½ inches (89 mm). Microllam LVL shall not be cut in thickness. For all material used in structural applications, the product identification shall be maintained on all material, or the material shall be re-stamped with the appropriate identification only under the approval and direction of PFS Corporation or Intertek Testing Services. Additionally, Microllam LVL may be notched, drilled, or tapered-end cut provided design is by an authorized design professional.

9. All shipments and deliveries of such equipment shall be provided with a metal tag, suitably placed, certifying that the equipment shipped or delivered is equivalent to that tested and acceptable for use, as provided in Section 27-131 of the Building Code.

NOTE: In accordance with Section 17-131(d), all materials tested and accepted for use shall be subject to periodic retesting as determined by the Commissioner; and any material which upon retesting is found not to comply with code requirements or the requirements set forth in the approval of the Commissioner, shall cease to be acceptable for the use intended. During the period for such retesting, the Commissioner may require the use of such material to be restricted or discontinued, if necessary, to secure safety.

Final Acceptance September 27, 2006
Examined By 