

**LVL Product Literature For Manufactured/Factory Built Structures**



**MURPHY**  
Engineered Wood



**Uniform Finished Sizes  
Engineered For Strength  
Dimensionally Stable  
Resists Warping and Twisting**

Combining superior customer service with premium quality engineered wood, Murphy Company produces LVL that is stronger, straighter, and more uniform than dimensional lumber. The process begins with Douglas fir of exceptional quality, from which graded veneer is layered with waterproof adhesives and coated with moisture resistant sealer. The end result is beams and headers with outstanding dimensional stability, uniformity, and durability.

### Available Sizes:

Thickness: 1½" and 1¾"

Depths: 3½", 4", 4½", 4¾", 5", 5½", 7", 7¼", 7⅞", 9", 9¼", 9½", 9¾", 11¼", 11⅞", 14", 16", 18", 20", 22", 24"

Lengths: up to 72'-0"

### Fastener Design

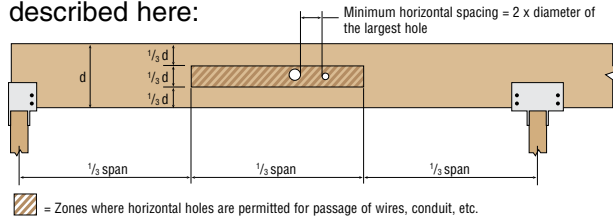
Equivalent Specific Gravity (S.G.)				
Nails				Bolts
Withdrawal Load		Lateral Load		Lateral Load
Installed in Edge	Installed in Face	Installed in Edge	Installed in Face	Installed in Face
0.49	0.50	0.50	0.50	0.50

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 0.454 kg, 1 psi = 6.9 kPa.

- Fastener values based on the equivalent specific gravities in the above table are for normal load duration and shall be permitted to be adjusted using the load duration factors in accordance with the code.
- The bolt edge distance when loaded parallel and perpendicular to the grain shall be a minimum of four times the bolt diameter (4D).

### Allowable Hole Detail

LVL may only be cut drilled or cut in the manner described here:



**Hole Size Limits:** No round holes larger than 2" in diameter.

Notes:

- For beam depth of 3½", 5½", and 7¼ inches, the maximum hole diameter is ¾", 1⅛", and 1½ inches, respectively.
- For deeper beams, the maximum hole diameter is 2 inches.
- The maximum number of holes for each span is limited to 3.
- Holes should not be cut in cantilevers.

### Allowable Design Stresses

		1.8E - 2750 F <sub>b</sub>	2.0E - 2950 F <sub>b</sub>	2.0E - 3100 F <sub>b</sub>
Bending (psi)	F <sub>b</sub> <sup>2</sup>	2750	2950	3100
Longitudinal Shear (psi)	F <sub>v</sub>	285	290	290
Modulus of Elasticity (lb-in <sup>2</sup> )	E	1.8x10 <sup>6</sup>	2.0x10 <sup>6</sup>	2.0x10 <sup>6</sup>
Compression Perpendicular to Grain (psi)	F <sub>c⊥</sub>	750	750	750
Compression Parallel to Grain (psi)	F <sub>c∥</sub>	2350	3200	3200
Tension Parallel to Grain (psi)	F <sub>t</sub> <sup>3</sup>	1950	2100	2100

- Values are based on normal temperatures, dry conditions and 100% load duration and may be increased in accordance with the NDS.
- F<sub>b</sub> must be adjusted by the depth effect formula: (12/d)<sup>0.18</sup> where d = depth (in)
- F<sub>t</sub> must be adjusted by the length effect: (3/l)<sup>0.11</sup> where l = length (ft)

### Minimum Nail Spacing

for nails installed parallel to the glue line

Nail Size	Single Row	Multiple Rows <sup>1</sup>
8d Common (2½")	3"	4"
10d Common (3")	4"	5"
12d Common (3¼")	4"	5"
16d Common (3½")	5"	6" <sup>2</sup>

- Offset multiple rows ½" and stagger nails on equal-equal layout
- Minimum nail spacing may be reduced to 5" for 1¾" wide members
- Nail penetration shall not exceed 2½" for 10d and 12d nor 2" for 16d



**Allowable Design Properties (100% Duration)**

Product	Thickness		Depth (in)																				
			3½"	4"	4½"	4¾"	5"	5½"	7"	7¼"	7½"	9"	9¼"	9½"	9¾"	11¼"	11½"	14"	16"	18"	20"	22"	24"
2.0E - 3100 F <sub>b</sub>	1-1/2"	Moment (ft-lbs)	988	1259	1560	1805	1890	2248	3487	3717	4321	5509	5791	6079	6373	8269	9124	12312	15699	19452	23564	28027	32837
		Shear (lbs)	1015	1160	1305	1414	1450	1595	2030	2103	2284	2610	2683	2755	2828	3263	3444	4060	4640	5220	5800	6380	6960
		EI (lb-in <sup>2</sup> )	10.7	16	22.8	29	31.2	41.6	85.8	95.3	122.1	182.3	198	214.3	231.7	356	418.6	686	1024	1458	2000	2662	3456
		Weight (plf)	1.4	1.6	1.8	1.9	2.0	2.1	2.7	2.8	3.1	3.5	3.6	3.7	3.8	4.4	4.6	5.5	6.3	7.0	7.8	8.6	9.4

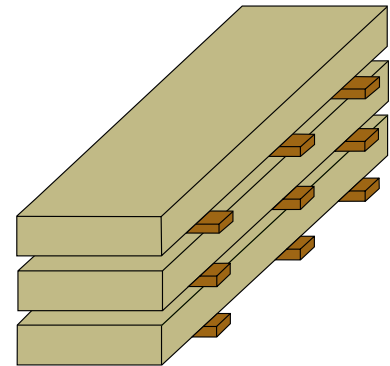
Product	Thickness		Depth (in)														
			5½"	7"	7¼"	9"	9¼"	9½"	9¾"	11¼"	11½"	14"	16"	18"	20"	22"	24"
2.0E - 3100 F <sub>b</sub>	1-3/4"	Moment (ft-lbs)	2623	4068	4336	6427	6756	7092	7435	9648	10645	14364	18315	22694	27491	32699	38309
		Shear (lbs)	1861	2368	2453	3045	3130	3214	3299	3806	4018	4737	5413	6090	6767	7443	8120
		EI (lb-in <sup>2</sup> )	48.5	100.0	111.1	212.6	230.8	250.1	270.3	415.3	488.4	800.3	1194.7	1701.0	2333.3	3105.7	4032.0
		Weight (plf)	2.8	3.6	3.7	4.6	4.7	4.8	5.0	5.7	6.1	7.1	8.2	9.2	10.2	11.2	12.3

1. Values are based on normal temperatures, dry conditions and 100% load duration and may be increased in accordance with the NDS.



**Handling & Storage Guidelines**

- LVL should be protected from the weather and stored lying flat.
- Product must not be stored in contact with the ground.
- Store LVL in wrapped bundles. Provide air circulation and support bundles with 2x4 stickers.
- Protect from the weather on the job site both before and after installation. LVL is intended for use in covered, dry conditions only.
- Except as described in this product guide, LVL should not be cut, drilled or notched.
- Do not install wet or visually damaged product.



**Responsible Manufacturing Practices**

Murphy LVL is certified and approved under strict quality control methods established by the APA EWS, and will perform to the design stresses and strength properties outlined in the APA Product Report. Murphy LVL must be selected, purchased, handled, and installed in accordance with our guidelines and the applicable building codes for the product to be warranted for its expected life. The raw materials that comprise this LVL product are conscientiously procured from smaller trees for more efficient utilization of wood fiber resources and to promote the principles of Sustainable Forest Management.



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