

VMG LIGNUM LVL

GRADE 2.0E

ALLOWABLE HOLES FOR BEAMS



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1. Allowable hole tables for flexural members based on APA V900D (Feb 2021) and the reference design values listed in ESR-5621 Table 1. Allowable shear and moment demands at the hole location are tabulated for various beam depths and hole diameters. Allowable demands assume capacities with all applicable adjustment factors equal to 1.0. Apply the appropriate adjustment factors for load duration, wet service, temperature, and beam stability to the tabulated values.
2. Interpolation of table values is permitted if the interpolated shear or moment allowable is multiplied by 0.95 in addition to applicable adjustment factors. Shaded table values exceed the maximum hole diameter and are provided for interpolation only.
3. Refer to APA V900D for hole effects on bending stiffness and hole placement requirements. Shear values have been reduced when necessary to permit consideration of a maximum hole diameter of $2d/3$ within 0.15d or 1.75" of an edge, where d is the beam depth, as discussed in V900D section 6(i).
4. Maximum hole diameter has been limited to 7 inches. Holes up to $2d/3$ are permitted if shear and moment capacities are determined per APA V900D meeting placement requirements.

HOW TO USE THE ALLOWABLE HOLE FOR BEAM TABLES

1. Ensure hole(s) meet APA V900D placement requirements.
2. Determine the ASD shear and moment forces in the beam at the hole location along the span.
3. Determine any additional adjustment factors for the condition (load duration, wet service, etc.)
4. Determine allowable shear and moment forces for the beam depth and hole diameter.
5. Ensure the calculated shear and moment forces are less than the table allowable values multiplied by applicable adjustment factors.
6. Refer to APA V900D for effective stiffness of the beam with hole(s) when checking deflection

Allowable Shear and Moment Capacity for VMG LIGNUM 2.0E LVL, 1.50" Thickness

Depth (in)	Max Hole Dia. (in)	Capacity	No Hole	Hole Diameter (in)					
				2	3	4	5	6	7
9.25	5.7	Shear (lb)	3235	1075	1075	1040	680	395	0
		Moment (lb-ft)	5650	4120	3915	3915	3915	3695	0
9.5	6.0	Shear (lb)	3325	1105	1105	1105	745	450	0
		Moment (lb-ft)	5935	4305	4050	4050	4050	4050	0
11.25	7.0	Shear (lb)	3935	1310	1310	1310	1215	855	560
		Moment (lb-ft)	8120	5730	5260	4960	4960	4960	4960
11.875	7.0	Shear (lb)	4155	1385	1385	1385	1385	1015	700
		Moment (lb-ft)	8970	6335	5780	5475	5345	5345	5345
14	7.0	Shear (lb)	4900	1630	1630	1630	1630	1600	1225
		Moment (lb-ft)	12165	8905	8135	7640	7365	7250	7250
16	7.0	Shear (lb)	5600	1865	1865	1865	1865	1865	1770
		Moment (lb-ft)	15575	11710	10740	10060	9620	9375	9280
18	7.0	Shear (lb)	6300	2100	2100	2100	2100	2100	2100
		Moment (lb-ft)	19370	14885	13710	12845	12235	11840	11620

Allowable Shear and Moment Capacity for VMG LIGNUM 2.0E LVL, 1.75" Thickness

Depth (in)	Max Hole Dia. (in)	Capacity	No Hole	Hole Diameter (in)					
				2	3	4	5	6	7
9.25	5.7	Shear (lb)	3775	1255	1255	1215	795	465	0
		Moment (lb-ft)	6595	4810	4570	4570	4570	4315	0
9.5	6.0	Shear (lb)	3875	1290	1290	1290	870	525	0
		Moment (lb-ft)	6925	5020	4725	4725	4725	4725	0
11.25	7.0	Shear (lb)	4590	1530	1530	1530	1415	1000	655
		Moment (lb-ft)	9470	6685	6135	5785	5785	5785	5785
11.875	7.0	Shear (lb)	4845	1615	1615	1615	1615	1185	815
		Moment (lb-ft)	10470	7395	6745	6385	6235	6235	6235
14	7.0	Shear (lb)	5715	1905	1905	1905	1905	1865	1425
		Moment (lb-ft)	14195	10390	9490	8915	8590	8455	8455
16	7.0	Shear (lb)	6530	2175	2175	2175	2175	2175	2065
		Moment (lb-ft)	18175	13660	12530	11735	11225	10940	10825
18	7.0	Shear (lb)	7350	2450	2450	2450	2450	2450	2450
		Moment (lb-ft)	22600	17370	16000	14985	14275	13810	13555