

VMG LIGNUM LVL

GRADE 1.4E
FLOOR SPAN / FLOOR LOAD TABLES



UNIFORM LOAD SPAN TABLES

MAXIMUM ALLOWABLE UNIFORM LOAD TABLE NOTES

1. Allowable load tables are for single or multiple span beams with uniformly distributed loads based on the reference design values listed in ESR-5621 Table 1 (below). Clear spans are tabulated. The design span assumed in the table calculations is the clear span plus half the required bearing length on each end.
2. For multiple span beams, use the largest clear span. Other spans along the multiple span beam must be at least half of the largest span.
3. Continuous lateral restraint must be provided at the top edge of the beam. For multiple span beams, the bottom of the beam is assumed to be sufficiently braced to assume no reduction in strength for lateral stability. Lateral restraint is required at the supports to prevent rotation of the beam.
4. The Floor $L/360$ values on the 100% load duration tables are maximum live loads to meet the span based live load deflection criteria. Snow or Roof $L/240$ values on the 115% or 125% load duration tables are similar. The Total Load values are the maximum total allowable stress design (ASD) load for bending, shear, and total load deflection. Total load values have been reduced to account for the self-weight of the beam. A total load deflection limit of $L/240$ has been assumed for floor loads and $L/180$ for roof/snow load. Creep has not been considered.
5. The Req Brg values are the minimum required end/interior bearing lengths. Interior bearing is only applicable at interior supports along continuous, multiple span beams. Required bearing is based on 425 psi compression perpendicular to grain strength of a Spruce-Pine-Fir (SPF) wood plate with a bearing area factor, C_b , assuming the plate end is more than 3" away from the beam. For LVL grade 2.0E bearing on steel or other substrates where required bearing length is controlled by the LVL compression perpendicular to grain strength, the bearing lengths are shown in addition to the SPF plate bearing requirements. For the LVL grade 1.4E, the required bearing length does not change for substrates other than a SPF wood plate.
6. Ten year load duration ($CD = 1.0$) is assumed for floors with occupancy live loads, two month duration ($CD = 1.15$) is assumed for roofs with snow load, and seven day duration ($CD = 1.25$) is assumed for roof live load.
7. Dry conditions and sustained temperatures below 100°F have been assumed.
8. Table uniform load cells with no value (--) are less than 10 plf.

HOW TO USE MAXIMUM ALLOWABLE UNIFORM LOAD TABLES

1. Determine bearing condition at the supports. The clear span is the distance between the interior edges of the supports.
2. Calculate the applied uniform live/roof/snow load and total load on the beam using the appropriate ASD load combination (e.g., 1.0D + 1.0L). Determine the applicable live/roof/snow deflection criteria.
3. Use the span table for the appropriate live load type (floor, roof, or snow) and select a beam with tabulated maximum allowable loads that exceed the applied live load and total load. Confirm the available bearing length meets the tabulated minimum required bearing. The beam must satisfy all maximum uniform load requirements and have the minimum required bearing length to be adequate.

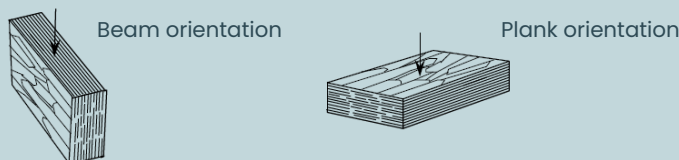


Figure 1 – an illustration of beam and plank orientation as noted in table 1

Table 1-reference design values for VMG LIGNUM LVL^{1,2}

BEAM ORIENTATION ³					PLANK ORIENTATION ³				AXIAL	
Modulus of elasticity		Bending ^{7,8}	Shear F _v	Compression	Modulus of elasticity		Bending	Shear F _v	Compression	Tension
E _{true} ⁴ (x10 ⁶ psi)	E _{apparent} ^{5,6} (x10 ⁶ psi)	F _b (psi)	(psi)	Perp-to-Grain F _{c1} ¹⁰ (psi)	E _{true} ⁴ (x10 ⁶ psi)	E _{apparent} ^{5,6} (x10 ⁶ psi)	F _b (psi)	(psi)	Perp-to-Grain F _{c1} ¹⁰ (psi)	F _t ⁹ (psi)
1.4	1.3	1,850	250	550	1.4	1.3	2,200	150	300	1,600
2.0	1.9	3,050	350	700	2.0	1.9	3,300	150	380	2,700

For SI: 1 inch = 25.4 mm, 1 psi = 6894.8 Pa

¹ The tabulated values are design values for normal duration of load and must be adjusted by the applicable adjustment factors in accordance with Section 8.3 of the 2024 and 2018 NDS. Modulus of elasticity and compression perpendicular-to-grain must not be adjusted for duration of load.

² The tabulated values are limited to dry interior conditions where the average moisture content in lumber is less than 16 percent.

³ Refer to Figure 1 for LVL orientations.

⁴ Reference E_{true} values are the shear-free modulus of elasticity, which do not include the effects of the shear deformation. When calculating the total deflection, both bending and shear deformations must be included. Equations for various span and load conditions are available in engineering references.

⁵ Reference E_{apparent} values are the apparent modulus of elasticity, which include the effects of shear deformation. When calculating the total deflection, standard engineering formulae for the pure bending deflection is sufficient.

⁶ Reference modulus of elasticity, E_{min}, used for beam stability calculations, must be calculated using the tabulated E_{apparent} in accordance with Appendix D of the 2024 and 2018 NDS. The COV_E may be taken as 0.10 when calculating E_{min}.

⁷ Reference bending design value in the beam orientation, F_b, may be increased by 4% when the member qualifies as a repetitive member, in accordance with Section 8.3.7 of the 2024 and 2018 NDS.

⁸ Reference bending design value in beam orientation is based on a reference depth of 12 inches. For other depths, the allowable bending stress, F_b, must be adjusted by multiplying F_b by (12/d)^{0.15}, where d is depth member in inches. For depths 3½ inches or less, multiply F_b by 1.203.

⁹ Reference tension design values, F_t, are assigned for a standard length of 36 inches. For lengths longer than 36 inches, multiply F_t by (36/L)^{0.09}, where L is the length in inches. For lengths less than 36 inches, use the reference tension design value given in the table above.

¹⁰ The bearing area factor, C_b, is permitted to be applied to the reference compression perpendicular-to-grain design values, F_{c1}, in accordance with the 2024 and 2018 NDS.

FLOOR LOAD TABLE 100% LOAD DURATION (PLF)

Clear span (ft)		VMG LIGNUM 1.4E LVL, 1 Ply, 1.5" Thickness												
		Depth (in)												
		3.5	5.5	7.25	9.25	9.5	11.25	11.875	14	16	18	20	22	24
4	Floor L/360	155	564	972	1441	1502	1927	2083	2271	2270	2270	2269	2268	2267
	Total Load	232	609	972	1441	1502	1927	2083	2271	2270	2270	2269	2268	2267
	Req Brg (in)	1.5 / 1.5	1.7 / 4.3	2.8 / 7	4.3 / 10.8	4.5 / 11.3	6.2 / 15.5	6.8 / 17	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
5	Floor L/360	81	299	648	976	1019	1339	1457	1866	1906	1905	1905	1904	1903
	Total Load	120	398	648	976	1019	1339	1457	1866	1906	1905	1905	1904	1903
	Req Brg (in)	1.5 / 1.5	1.5 / 3.5	2.2 / 5.5	3.5 / 8.8	3.7 / 9.3	5 / 12.5	5.5 / 13.8	7.4 / 18.5	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
6	Floor L/360	47	177	393	700	732	973	1064	1385	1642	1642	1641	1640	1639
	Total Load	69	264	458	700	732	973	1064	1385	1642	1642	1641	1640	1639
	Req Brg (in)	1.5 / 1.5	1.5 / 2.8	1.9 / 4.8	2.9 / 7.3	3.1 / 7.8	4.2 / 10.5	4.6 / 11.5	6.2 / 15.5	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
7	Floor L/360	30	113	253	509	549	735	807	1061	1314	1442	1441	1440	1439
	Total Load	43	168	341	524	550	735	807	1061	1314	1442	1441	1440	1439
	Req Brg (in)	1.5 / 1.5	1.5 / 2	1.6 / 4	2.5 / 6.3	2.6 / 6.5	3.6 / 9	3.9 / 9.8	5.3 / 13.3	6.8 / 17	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
8	Floor L/360	20	77	172	348	375	573	629	833	1040	1259	1284	1284	1283
	Total Load	29	113	254	406	426	573	629	833	1040	1259	1284	1284	1283
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 3.5	2.2 / 5.5	2.3 / 5.8	3.1 / 7.8	3.5 / 8.8	4.7 / 11.8	6 / 15	7.4 / 18.5	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
9	Floor L/360	14	54	122	247	267	435	503	670	842	1024	1158	1157	1157
	Total Load	20	79	180	323	339	458	503	670	842	1024	1158	1157	1157
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 2.8	2 / 5	2.1 / 5.3	2.8 / 7	3.1 / 7.8	4.2 / 10.5	5.3 / 13.3	6.6 / 16.5	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
10	Floor L/360	10	40	90	182	197	322	376	549	693	847	1009	1054	1053
	Total Load	14	57	132	263	276	374	411	549	693	847	1009	1054	1053
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.8 / 4.5	1.9 / 4.8	2.5 / 6.3	2.8 / 7	3.8 / 9.5	4.8 / 12	5.9 / 14.8	7.2 / 18	7.5 / 18.8	7.5 / 18.8
11	Floor L/360	--	30	68	138	150	245	286	458	579	710	848	967	966
	Total Load	--	43	99	204	221	310	342	458	579	710	848	967	966
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 2	1.5 / 3.8	1.6 / 4	2.3 / 5.8	2.5 / 6.3	3.4 / 8.5	4.4 / 11	5.4 / 13.5	6.6 / 16.5	7.5 / 18.8	7.5 / 18.8
12	Floor L/360	--	23	52	107	116	190	222	359	491	603	723	850	893
	Total Load	--	32	76	157	170	261	288	387	491	603	723	850	893
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 3.3	1.5 / 3.5	2.1 / 5.3	2.3 / 5.8	3.1 / 7.8	4 / 10	5 / 12.5	6 / 15	7.2 / 18	7.5 / 18.8
13	Floor L/360	--	18	41	85	92	150	176	285	418	518	622	733	829
	Total Load	--	25	59	124	134	221	246	331	421	518	622	733	829
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.8	1.5 / 3	1.9 / 4.8	2.2 / 5.5	2.9 / 7.3	3.7 / 9.3	4.6 / 11.5	5.6 / 14	6.6 / 16.5	7.5 / 18.8
14	Floor L/360	--	15	33	68	74	121	142	229	338	449	540	639	741
	Total Load	--	20	47	99	107	177	208	286	364	449	540	639	741
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.5	1.5 / 2.5	1.7 / 4.3	2 / 5	2.7 / 6.8	3.4 / 8.5	4.3 / 10.8	5.2 / 13	6.1 / 15.3	7.2 / 18

FLOOR LOAD TABLE 100% LOAD DURATION (PLF)

Clear span (ft)		VMG LIGNUM 1.4E LVL, 1 Ply, 1.5" Thickness												
		Depth (in)												
		3.5	5.5	7.25	9.25	9.5	11.25	11.875	14	16	18	20	22	24
15	Floor L/360	--	12	27	56	60	99	116	188	277	389	474	560	652
	Total Load	--	16	38	80	87	144	169	250	318	393	474	560	652
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2	1.5 / 2.3	1.5 / 3.8	1.7 / 4.3	2.5 / 6.3	3.2 / 8	4 / 10	4.8 / 12	5.7 / 14.3	6.7 / 16.8
16	Floor L/360	--	--	22	46	50	82	96	155	230	324	418	495	577
	Total Load	--	--	31	65	71	119	140	219	280	346	418	495	577
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 2	1.5 / 3.3	1.5 / 3.8	2.4 / 6	3 / 7.5	3.7 / 9.3	4.5 / 11.3	5.4 / 13.5	6.3 / 15.8
17	Floor L/360	--	--	19	38	42	69	80	130	193	272	368	440	513
	Total Load	--	--	25	54	59	98	116	190	248	307	371	440	513
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 1.8	1.5 / 3	1.5 / 3.5	2.2 / 5.5	2.8 / 7	3.5 / 8.8	4.3 / 10.8	5.1 / 12.8	6 / 15
18	Floor L/360	--	--	16	32	35	58	68	110	163	230	313	394	460
	Total Load	--	--	21	45	49	82	97	160	221	274	332	394	460
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.5	1.5 / 3	2 / 5	2.7 / 6.8	3.3 / 8.3	4 / 10	4.8 / 12	5.6 / 14
19	Floor L/360	--	--	13	28	30	49	58	94	139	196	267	352	414
	Total Load	--	--	17	38	41	70	82	136	199	246	298	354	414
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.5 / 2.8	1.8 / 4.5	2.5 / 6.3	3.2 / 8	3.8 / 9.5	4.5 / 11.3	5.3 / 13.3
20	Floor L/360	--	--	11	24	26	42	50	81	120	169	230	304	374
	Total Load	--	--	14	32	35	59	70	116	173	222	269	320	374
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.5 / 2.5	1.6 / 4	2.3 / 5.8	3 / 7.5	3.6 / 9	4.3 / 10.8	5.1 / 12.8
22	Floor L/360	--	--	--	18	19	32	38	61	91	128	174	230	297
	Total Load	--	--	--	23	25	43	52	86	129	183	222	265	310
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 2	1.5 / 3.3	2 / 5	2.7 / 6.8	3.3 / 8.3	3.9 / 9.8	4.6 / 11.5
24	Floor L/360	--	--	--	14	15	25	29	47	70	99	135	179	231
	Total Load	--	--	--	17	19	33	39	65	99	142	186	222	260
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 2.8	1.7 / 4.3	2.3 / 5.8	3 / 7.5	3.6 / 9	4.2 / 10.5
26	Floor L/360	--	--	--	11	12	19	23	37	55	78	107	141	182
	Total Load	--	--	--	13	14	25	30	50	77	110	152	189	221
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.5	1.5 / 3.5	2 / 5	2.7 / 6.8	3.3 / 8.3	3.9 / 9.8
28	Floor L/360	--	--	--	--	--	16	18	30	44	63	86	114	147
	Total Load	--	--	--	--	--	19	23	39	60	87	121	162	190
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2	1.5 / 3	1.7 / 4.3	2.3 / 5.8	3.1 / 7.8	3.6 / 9
30	Floor L/360	--	--	--	--	--	13	15	24	36	51	70	93	120
	Total Load	--	--	--	--	--	15	18	31	48	70	97	131	165
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 2.8	1.5 / 3.8	2.1 / 5.3	2.7 / 6.8	3.4 / 8.5

FLOOR LOAD TABLE 100% LOAD DURATION (PLF)

Clear span (ft)		VMG LIGNUM 1.4E LVL, 1 Ply, 1.5" Thickness												
		Depth (in)												
		3.5	5.5	7.25	9.25	9.5	11.25	11.875	14	16	18	20	22	24
4	Floor L/360	180	658	1130	1674	1739	2240	2413	2574	2573	2572	2571	2570	2569
	Total Load	269	711	1130	1674	1739	2240	2413	2574	2573	2572	2571	2570	2569
	Req Brg (in)	1.5 / 1.8	1.7 / 4.3	2.9 / 7.3	4.4 / 11	4.7 / 11.8	6.3 / 15.8	7 / 17.5	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
5	Floor L/360	94	349	753	1135	1185	1557	1695	2161	2160	2159	2158	2157	2156
	Total Load	140	465	753	1135	1185	1557	1695	2161	2160	2159	2158	2157	2156
	Req Brg (in)	1.5 / 1.5	1.5 / 3.5	2.3 / 5.8	3.6 / 9	3.8 / 9.5	5.1 / 12.8	5.6 / 14	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
6	Floor L/360	55	207	458	815	854	1132	1238	1608	1861	1860	1859	1858	1857
	Total Load	81	308	534	815	854	1132	1238	1608	1861	1860	1859	1858	1857
	Req Brg (in)	1.5 / 1.5	1.5 / 2.8	1.9 / 4.8	3 / 7.5	3.1 / 7.8	4.3 / 10.8	4.7 / 11.8	6.4 / 16	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
7	Floor L/360	35	132	294	591	638	855	937	1232	1526	1634	1633	1632	1631
	Total Load	50	196	396	610	640	855	937	1232	1526	1634	1633	1632	1631
	Req Brg (in)	1.5 / 1.5	1.5 / 2	1.7 / 4.3	2.6 / 6.5	2.7 / 6.8	3.7 / 9.3	4.1 / 10.3	5.5 / 13.8	7 / 17.5	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
8	Floor L/360	23	89	200	404	437	667	732	970	1211	1456	1455	1454	1453
	Total Load	33	131	297	473	496	667	732	970	1211	1456	1455	1454	1453
	Req Brg (in)	1.5 / 1.5	1.5 / 1.8	1.5 / 3.5	2.3 / 5.8	2.4 / 6	3.2 / 8	3.6 / 9	4.8 / 12	6.1 / 15.3	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
9	Floor L/360	16	63	142	289	312	507	586	780	979	1190	1312	1311	1311
	Total Load	23	92	210	377	395	533	586	780	979	1190	1312	1311	1311
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 2.8	2 / 5	2.1 / 5.3	2.9 / 7.3	3.2 / 8	4.3 / 10.8	5.5 / 13.8	6.8 / 17	7.5 / 18.8	7.5 / 18.8	7.5 / 18.8
10	Floor L/360	12	46	105	213	230	375	438	640	807	985	1173	1194	1193
	Total Load	16	67	154	306	321	435	479	640	807	985	1173	1194	1193
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.8 / 4.5	1.9 / 4.8	2.6 / 6.5	2.9 / 7.3	3.9 / 9.8	4.9 / 12.3	6.1 / 15.3	7.4 / 18.5	7.5 / 18.8	7.5 / 18.8
11	Floor L/360	--	35	79	161	174	285	333	534	674	826	988	1096	1095
	Total Load	--	50	115	237	257	361	398	534	674	826	988	1096	1095
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 2	1.6 / 4	1.7 / 4.3	2.4 / 6	2.6 / 6.5	3.5 / 8.8	4.5 / 11.3	5.6 / 14	6.7 / 16.8	7.5 / 18.8	7.5 / 18.8
12	Floor L/360	--	27	61	125	135	221	259	418	572	702	841	989	1011
	Total Load	--	38	88	184	199	305	336	451	572	702	841	989	1011
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 3.3	1.5 / 3.5	2.2 / 5.5	2.4 / 6	3.2 / 8	4.1 / 10.3	5.1 / 12.8	6.2 / 15.5	7.4 / 18.5	7.5 / 18.8
13	Floor L/360	--	21	48	99	107	175	205	331	487	603	725	854	940
	Total Load	--	29	69	144	156	258	287	386	490	603	725	854	940
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.8	1.5 / 3	2 / 5	2.2 / 5.5	3 / 7.5	3.8 / 9.5	4.7 / 11.8	5.7 / 14.3	6.8 / 17	7.5 / 18.8
14	Floor L/360	--	17	39	80	86	141	165	267	394	523	630	743	863
	Total Load	--	23	55	115	125	207	243	334	424	523	630	743	863
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.5	1.5 / 2.8	1.7 / 4.3	2 / 5	2.8 / 7	3.5 / 8.8	4.4 / 11	5.3 / 13.3	6.3 / 15.8	7.4 / 18.5

FLOOR LOAD TABLE 100% LOAD DURATION (PLF)

Clear span (ft)		VMG LIGNUM 1.4E LVL, 1 Ply, 1.5" Thickness												
		Depth (in)												
		3.5	5.5	7.25	9.25	9.5	11.25	11.875	14	16	18	20	22	24
15	Floor L/360	--	14	32	65	70	116	135	219	323	454	552	652	759
	Total Load	--	18	44	93	101	168	197	291	371	458	552	652	759
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.5 / 2.3	1.5 / 3.8	1.8 / 4.5	2.6 / 6.5	3.3 / 8.3	4.1 / 10.3	5 / 12.5	5.9 / 14.8	6.9 / 17.3
16	Floor L/360	--	11	26	54	58	96	112	181	268	377	487	577	671
	Total Load	--	15	36	76	83	138	163	256	326	404	487	577	671
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2	1.5 / 2	1.5 / 3.3	1.6 / 4	2.4 / 6	3.1 / 7.8	3.8 / 9.5	4.7 / 11.8	5.5 / 13.8	6.5 / 16.3
17	Floor L/360	--	--	22	45	49	80	94	152	224	316	429	513	598
	Total Load	--	--	29	63	68	115	135	221	289	358	433	513	598
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 1.8	1.5 / 3	1.5 / 3.5	2.2 / 5.5	2.9 / 7.3	3.6 / 9	4.4 / 11	5.2 / 13	6.1 / 15.3
18	Floor L/360	--	--	18	38	41	68	79	129	190	268	364	459	536
	Total Load	--	--	24	52	57	96	113	186	258	320	387	459	536
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 2.8	1.5 / 3	2 / 5	2.8 / 7	3.4 / 8.5	4.1 / 10.3	4.9 / 12.3	5.8 / 14.5
19	Floor L/360	--	--	16	32	35	58	68	110	162	229	311	410	482
	Total Load	--	--	20	44	48	81	96	158	231	287	348	413	482
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.5	1.5 / 2.8	1.8 / 4.5	2.6 / 6.5	3.2 / 8	3.9 / 9.8	4.7 / 11.8	5.5 / 13.8
20	Floor L/360	--	--	13	28	30	49	58	94	140	197	268	354	436
	Total Load	--	--	17	37	40	69	82	135	202	259	314	373	436
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.5 / 2.5	1.6 / 4	2.4 / 6	3.1 / 7.8	3.7 / 9.3	4.4 / 11	5.2 / 13
22	Floor L/360	--	--	10	21	22	37	44	71	106	149	203	268	346
	Total Load	--	--	12	27	29	51	60	100	151	214	259	309	361
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 2.3	1.5 / 3.5	2 / 5	2.8 / 7	3.4 / 8.5	4 / 10	4.7 / 11.8
24	Floor L/360	--	--	--	16	17	29	34	55	82	116	157	208	268
	Total Load	--	--	--	20	22	38	45	76	115	165	217	259	303
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.8	1.5 / 3	1.7 / 4.3	2.4 / 6	3.1 / 7.8	3.7 / 9.3	4.4 / 11
26	Floor L/360	--	--	--	13	14	23	27	43	65	91	124	165	213
	Total Load	--	--	--	15	16	29	34	59	89	129	177	220	258
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.5	1.5 / 3.8	2 / 5	2.8 / 7	3.4 / 8.5	4 / 10
28	Floor L/360	--	--	--	10	11	18	21	35	52	73	100	132	171
	Total Load	--	--	--	11	12	22	27	46	70	102	141	188	222
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2.3	1.5 / 3.3	1.8 / 4.5	2.4 / 6	3.2 / 8	3.7 / 9.3
30	Floor L/360	--	--	--	--	--	15	17	28	42	60	82	108	140
	Total Load	--	--	--	--	--	17	21	36	56	81	113	152	192
	Req Brg (in)	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 1.5	1.5 / 2	1.5 / 2.8	1.6 / 4	2.1 / 5.3	2.8 / 7	3.5 / 8.8

ALLOWABLE UNIFORM LOADS APPLIED TO EITHER FACE OF BEAM

ALLOWABLE UNIFORM LOADS APPLIED TO EITHER FACE OF BEAM NOTES

1. Allowable uniform loads in pounds per linear foot (plf) applied to either face of multi-ply beams with various ply-to-ply fastening. Tabulated allowable loads assume normal load duration.
2. Refer to screw manufacturer's various evaluation reports for spacing requirements.
3. When fastening from both sides, stagger fastener rows by half the row spacing.
4. Concentrated face loads require additional analysis when the concentrated load divided by the tabulated fastener spacing exceeds the tabulated allowable uniform load.

HOW TO USE THE ALLOWABLE UNIFORM LOADS APPLIED TO EITHER FACE OF BEAM TABLES

1. Compute the allowable stress design uniform load on the beam.
2. Ensure the calculated uniform load is less than the allowable uniform load for the desired fastening.

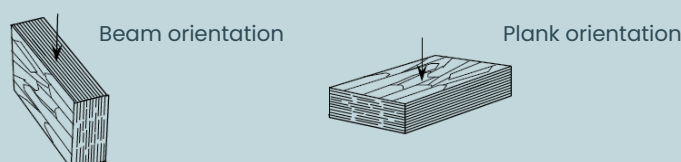


Figure 1 – an illustration of beam and plank orientation as noted in table1

Table 1-reference design values for VMG LIGNUM LVL^{1,2}

BEAM ORIENTATION ³					PLANK ORIENTATION ³					AXIAL	
Modulus of elasticity		Bending ^{7,8} F _b (psi)	Shear F _v (psi)	Compression Perp-to-Grain F _{c⊥} ¹⁰ (psi)	Modulus of elasticity		Bending F _b (psi)	Shear F _v (psi)	Compression Perp-to-Grain F _{c⊥} ¹⁰ (psi)	Compression F _c (psi)	Tension F _t ⁹ (psi)
E _{true} ⁴ (x10 ⁶ psi)	E _{apparent} ^{5,6} (x10 ⁶ psi)				E _{true} ⁴ (x10 ⁶ psi)	E _{apparent} ^{5,6} (x10 ⁶ psi)					
1.4	1.3	1.850	250	550	1.4	1.3	2.200	150	300	2.300	1.600
2.0	1.9	3.050	350	700	2.0	1.9	3.300	150	380	3.000	2.700

For SI: 1 inch = 25.4 mm, 1 psi = 6894.8 Pa

¹ The tabulated values are design values for normal duration of load and must be adjusted by the applicable adjustment factors in accordance with Section 8.3 of the 2024 and 2018 NDS. Modulus of elasticity and compression perpendicular-to-grain must not be adjusted for duration of load.

² The tabulated values are limited to dry interior conditions where the average moisture content in lumber is less than 16 percent.

³ Refer to Figure 1 for LVL orientations.

⁴ Reference E_{true} values are the shear-free modulus of elasticity, which do not include the effects of the shear deformation. When calculating the total deflection, both bending and shear deformations must be included. Equations for various span and load conditions are available in engineering references.

⁵ Reference E_{apparent} values are the apparent modulus of elasticity, which include the effects of shear deformation. When calculating the total deflection, standard engineering formulae for the pure bending deflection is sufficient.

⁶ Reference modulus of elasticity, E_{min} , used for beam stability calculations, must be calculated using the tabulated E_{apparent} in accordance with Appendix D of the 2024 and 2018 NDS. The COV_E may be taken as 0.10 when calculating E_{min} .

⁷ Reference bending design value in the beam orientation, $F_{b'}$, may be increased by 4% when the member qualifies as a repetitive member, in accordance with Section 8.3.7 of the 2024 and 2018 NDS.

⁸ Reference bending design value in beam orientation is based on a reference depth of 12 inches. For other depths, the allowable bending stress, $F_{b'}$, must be adjusted by multiplying F_b by $(12/d)^{0.15}$, where d is depth member in inches. For depths $3\frac{1}{2}$ inches or less, multiply F_b by 1.203.

⁹ Reference tension design values, F_t , are assigned for a standard length of 36 inches. For lengths longer than 36 inches, multiply F_t by $(36/L)^{0.09}$, where L is the length in inches. For lengths less than 36 inches, use the reference tension design value given in the table above.

¹⁰ The bearing area factor, C_b , is permitted to be applied to the reference compression perpendicular-to-grain design values, $F_{c1'}$ in accordance with the 2024 and 2018 NDS.