

# Ultralam™ LVL 2.0E/2900psi

Span Tables and Allowable Loads



*ultralam*™



Taleon Terra product

# ultralam™



Taleon Terra product

Superior Quality Laminated Veneer Lumber is manufactured by Modern Lumber Technology Ltd (MLT Ltd) at their Taleon-Terra plant in Russia, one of the most advanced LVL production facilities in the world.

The plant features the 60-meter plus continuous LVL press from Germany's Dieffenbacher GmbH, the longest of its kind, which delivers:

- Exceptional Dimensional Stability
- Uniform Thickness Tolerance Control
- Production Size Versatility

Taleon-Terra runs its own FSC-certified logging operation and produces its entire veneer supply.



## General Notes for the following Ultralam™ 2.0E/2900psi Load Tables

1. All uniform loads given in the tables are in pounds per lineal foot (plf).
2. Floor Systems are designed using a Load Duration Factor ( $C_d$ ) =1.0. The Live Load Deflection Limit is  $l/360$  and the Total Load Deflection Limit is  $l/240$ .
3. Roof Systems are designed using  $C_d$ =1.15 or 1.25. The Live Load Deflection Limit is  $l/240$  and the Total Load Deflection Limit is  $l/180$ .
4. The top line of each table indicates the allowable load carrying capacity using the total load deflection limit and includes the weight of the member.
5. The middle line of each table indicates the allowable load-carrying capacity using the live load deflection limit.
6. The bottom line of each table indicates the required bearing length at each end of the beam in inches when loaded to the maximum loads allowed and assumes that the compression strength of the bearing material is greater than or equal to the compression perpendicular to grain design value of the Ultralam beam. Shorter bearing lengths may be required with lighter loads, and longer bearing lengths may be required where the compression strength of the bearing material is less than the compression perpendicular to grain design value of the Ultralam beam.
7. Values provided are the maximum uniform load that can be applied to the beam in addition to its own weight. Allowable loads are based on the minimum bearing length required to carry the load.
8. Interpolation between clear openings is permitted.
9. For live load deflection factors of  $l/180$  and  $l/360$ , multiply the maximum live load value (row 2) by 1.333 and 0.667, respectively. The result shall not exceed the maximum allowable total load (row 1).
10. Design span is assumed to be the clear opening plus  $1/2$  the actual required bearing length at each end.
11. These tables are for gravity loads only. Consult a professional engineer for wind and seismic load analysis and design.
12. All tables are based on uniform load conditions. Any concentrated load applications must be analyzed separately or converted to an equivalent uniform load.
13. The compression edge of the header or beam must be laterally supported at intervals of 24" or less. In addition, lateral support must be provided at bearing points.
14. Allowable total and live loads used to select a header or beam must be equal to or greater than the actual loads applied.

# Allowable loads (plf) for Ultralam LVL 2.0E/2900psi – Load Duration of 1.15 – Snow Loads

**TO USE THESE CHARTS:**

1. Calculate the live load and total load to be applied to the beam.
2. Select the correct table based on the beam application you need (i.e. roof, floor, etc).
3. From the "clear span" column, select the span required for the application.
4. Moving left to right, find the column where both the live load and total load from the table is greater than the loads applied to the beam as calculated in step 1.
5. Check the bearing requirements to ensure proper bearing.
6. Note that there may be several options available that will meet the requirements. Chose the one that best fits the application.

DESIGN VALUES (ALLOWABLE STRESS DESIGN-PSI)					
Grade	Bending $F_b$ (Parallel To Grain)	MOE( $\times 10^6$ )	Compression $F_c$ (Parallel To Grain)	Compression $F_{cp}$ (Perpendicular To Grain)	Shear $F_v$
2.0E	2900	2.0	3150	900	320

These values are based on dry-use (moisture content not to exceed 16%) and normal duration (100%) as published TER 1203-02 for new or like-new product with loads applied parallel to the glue lines. The allowable bending stress ( $F_b$ ) is for a 12" depth. For depths less than 12", multiply  $F_b$  by  $(12/d)^{0.162}$

Clear Span		2.0E 1 Ply LL/240 TL/180 $C_g=1.15$							2.0E 2 Ply LL/240 TL/180 $C_g=1.15$							2.0E 3 Ply LL/240 TL/180 $C_g=1.15$						
		7.25	9.5	12	14	16	18	24	7.25	9.5	12	14	16	18	24	7.25	9.5	12	14	16	18	24
6	LL	1013	1573	2268	2777	3462	4069	--	2026	3147	4537	5555	6925	8139	--	3143	4892	7042	8667	10719	12580	--
	TL	1013	1573	2268	2777	3462	4069	--	2026	3147	4537	5555	6925	8139	--	3153	4892	7042	8667	10719	12580	--
	Brg	2	3.25	5	7.5	8	10	--	2	3.25	5	7.5	8	10	--	2	3.5	5	7.5	8.5	10.25	--
8	LL	464	918	1348	1685	2128	2546	--	928	1836	2697	3371	4256	5092	--	1393	2860	4196	5259	6609	7899	--
	TL	467	918	1348	1685	2128	2546	--	935	1836	2697	3371	4256	5092	--	1402	2860	4196	5259	6609	7899	--
	Brg	1.5	2.5	3.75	6	6	7.5	--	1.5	2.5	3.75	6	6	7.5	--	1.5	2.5	3.75	6	6.25	7.75	--
10	LL	241	531	885	1124	1420	1715	2671	482	1063	1770	2248	2841	3431	5343	724	1595	2757	3497	4419	5333	8286
	TL	241	536	885	1124	1420	1715	2671	482	1072	1770	2248	2841	3431	5343	724	1608	2757	3497	4419	5333	8286
	Brg	1.5	1.75	3	5	5	6	10	1.5	1.75	3	5	5	6	10	1.5	1.75	3	5	5	6.25	10.25
12	LL	139	312	615	800	1009	1225	1942	278	625	1231	1600	2018	2450	3884	418	938	1847	2497	3142	3812	6034
	TL	139	312	621	800	1009	1225	1942	278	625	1243	1600	2018	2450	3884	418	938	1865	2497	3142	3812	6034
	Brg	1.5	1.5	2.5	4	4	5	8.25	1.5	1.5	2.5	4	4	5	8.25	1.5	1.5	2.5	4	4.25	5.25	8.5
14	LL	87	197	395	598	751	914	1467	174	394	790	1196	1502	1829	2934	261	591	1185	1847	2339	2849	4563
	TL	87	197	395	598	751	914	1467	174	394	790	1196	1502	1829	2934	261	591	1186	1864	2339	2849	4563
	Brg	1.5	1.5	1.75	2.75	3.5	4.25	7	1.5	1.5	1.75	2.75	3.5	4.25	7	1.5	1.5	1.75	2.75	3.75	4.5	7.5
16	LL	57	131	265	419	579	707	1143	115	263	530	839	1158	1414	2286	173	394	796	1258	1805	2204	3558
	TL	57	131	265	419	579	707	1143	115	263	530	839	1158	1414	2286	173	394	796	1258	1805	2204	3558
	Brg	1.5	1.5	1.5	2.25	3	3.75	6.25	1.5	1.5	1.5	2.25	3	3.75	6.25	1.5	1.5	1.5	2.25	3.25	4	6.5
18	LL	39	91	186	295	438	562	913	79	183	372	590	877	1124	1827	119	274	558	886	1316	1752	2845
	TL	39	91	186	295	438	562	913	79	183	372	590	877	1124	1827	119	274	558	886	1316	1752	2845
	Brg	1.5	1.5	1.5	1.75	2.5	3.25	5.5	1.5	1.5	1.5	1.75	2.5	3.25	5.5	1.5	1.5	1.5	1.75	2.5	3.5	5.75
20	LL	28	66	134	215	320	454	745	56	132	269	430	641	909	1491	85	198	404	645	962	1364	2323
	TL	28	66	134	215	320	454	745	56	132	269	430	641	909	1491	85	198	404	645	962	1364	2323
	Brg	1.5	1.5	1.5	1.5	2	3	5	1.5	1.5	1.5	1.5	2	3	5	1.5	1.5	1.5	1.5	2	3	5.25
22	LL	20	48	100	160	240	342	619	41	97	201	321	481	684	1238	62	146	301	482	722	1026	1930
	TL	20	48	100	160	240	342	619	41	97	201	321	481	684	1238	62	146	301	482	722	1026	1930
	Brg	1.5	1.5	1.5	1.5	1.75	2.5	4.5	1.5	1.5	1.5	1.5	1.75	2.5	4.5	1.5	1.5	1.5	1.5	1.75	2.5	4.75
24	LL	--	36	76	123	184	263	521	30	73	153	246	369	526	1043	46	110	229	369	554	790	1627
	TL	--	36	76	123	184	263	521	30	73	153	246	369	526	1043	46	110	229	369	554	790	1627
	Brg	--	1.5	1.5	1.5	1.5	2	4.25	1.5	1.5	1.5	1.5	1.5	2	4.25	1.5	1.5	1.5	1.5	1.5	2	4.25
26	LL	--	28	59	95	144	206	445	23	56	119	191	289	413	890	34	85	178	287	433	619	1389
	TL	--	28	59	95	144	206	445	23	56	119	191	289	413	890	34	85	178	287	433	619	1389
	Brg	--	1.5	1.5	1.5	1.5	1.75	3.75	1.5	1.5	1.5	1.5	1.5	1.75	3.75	1.5	1.5	1.5	1.5	1.5	1.75	4
28	LL	--	22	46	75	114	164	384	--	44	93	151	229	329	768	26	66	140	227	344	493	1174
	TL	--	22	46	75	114	164	384	--	44	93	151	229	329	768	26	66	140	227	344	493	1174
	Brg	--	1.5	1.5	1.5	1.5	1.5	3.5	--	1.5	1.5	1.5	1.5	1.5	3.5	1.5	1.5	1.5	1.5	1.5	1.5	3.5
30	LL	--	--	37	60	92	132	318	--	34	74	121	184	265	636	20	52	112	182	277	398	954
	TL	--	--	37	60	92	132	318	--	34	74	121	184	265	636	20	52	112	182	277	398	954
	Brg	--	--	1.5	1.5	1.5	1.5	3.25	--	1.5	1.5	1.5	1.5	1.5	3.25	1.5	1.5	1.5	1.5	1.5	1.5	3.25
32	LL	--	--	30	49	75	108	261	--	27	60	98	150	217	522	--	41	90	148	225	325	784
	TL	--	--	30	49	75	108	261	--	27	60	98	150	217	522	--	41	90	148	225	325	784
	Brg	--	--	1.5	1.5	1.5	1.5	2.75	--	1.5	1.5	1.5	1.5	1.5	2.75	--	1.5	1.5	1.5	1.5	1.5	2.75
34	LL	--	--	24	40	61	89	217	--	21	48	80	123	179	434	--	32	73	121	185	269	651
	TL	--	--	24	40	61	89	217	--	21	48	80	123	179	434	--	32	73	121	185	269	651
	Brg	--	--	1.5	1.5	1.5	1.5	2.5	--	1.5	1.5	1.5	1.5	1.5	2.5	--	1.5	1.5	1.5	1.5	1.5	2.5
36	LL	--	--	--	33	51	74	182	--	--	39	66	102	149	364	--	26	59	100	154	223	546
	TL	--	--	--	33	51	74	182	--	--	39	66	102	149	364	--	26	59	100	154	223	546
	Brg	--	--	--	1.5	1.5	1.5	2.25	--	--	1.5	1.5	1.5	1.5	2.25	--	1.5	1.5	1.5	1.5	1.5	2.25
38	LL	--	--	--	27	42	62	153	--	--	32	55	85	125	307	--	20	49	83	128	187	461
	TL	--	--	--	27	42	62	153	--	--	32	55	85	125	307	--	20	49	83	128	187	461
	Brg	--	--	--	1.5	1.5	1.5	2	--	--	1.5	1.5	1.5	1.5	2	--	1.5	1.5	1.5	1.5	1.5	2
40	LL	--	--	--	23	36	52	130	--	--	26	46	72	105	261	--	--	40	69	108	158	392
	TL	--	--	--	23	36	52	130	--	--	26	46	72	105	261	--	--	40	69	108	158	392
	Brg	--	--	--	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75
42	LL	--	--	--	--	30	44	112	--	--	22	38	60	89	224	--	--	33	57	91	134	336
	TL	--	--	--	--	30	44	112	--	--	22	38	60	89	224	--	--	33	57	91	134	336
	Brg	--	--	--	--	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

Allowable loads (plf) for Ultralam LVL 2.0E/2900psi – Load Duration of 1.25 – Construction Loads

Clear Span		2.0E 1 Ply LL/240 TL/180 C <sub>d</sub> =1.25							2.0E 2 Ply LL/240 TL/180 C <sub>d</sub> =1.25							2.0E 3 Ply LL/240 TL/180 C <sub>d</sub> =1.25						
		7.25	9.5	12	14	16	18	24	7.25	9.5	12	14	16	18	24	7.25	9.5	12	14	16	18	24
6	LL	1046	1697	2439	2959	3700	4335	--	2092	3395	4878	5918	7400	8670	--	3138	5277	7569	9233	11447	13391	--
	TL	1072	1697	2439	2959	3700	4335	--	2144	3395	4878	5918	7400	8670	--	3217	5277	7569	9233	11447	13391	--
	Brg	2.25	3.5	5.25	8.25	8.75	10.75	--	2.25	3.5	5.25	8.25	8.75	10.75	--	2.25	3.75	5.5	8.25	9	11.25	--
8	LL	464	994	1456	1812	2290	2734	--	928	1988	2913	3624	4580	5468	--	1393	2991	4531	5651	7109	8478	--
	TL	467	994	1456	1812	2290	2734	--	935	1988	2913	3624	4580	5468	--	1402	3061	4531	5651	7109	8478	--
	Brg	1.5	2.75	4	6.75	6.75	8.25	--	1.5	2.75	4	6.75	6.75	8.25	--	1.5	2.75	4.25	6.75	7	8.5	--
10	LL	241	531	958	1214	1534	1849	2867	482	1063	1917	2428	3068	3699	5734	724	1595	2985	3775	4771	5748	8888
	TL	241	536	958	1214	1534	1849	2867	482	1072	1917	2428	3068	3699	5734	724	1608	2985	3775	4771	5748	8888
	Brg	1.5	1.75	3.25	5.25	5.25	6.5	10.75	1.5	1.75	3.25	5.25	5.25	6.5	10.75	1.5	1.75	3.25	5.5	5.5	6.75	11.25
12	LL	139	312	615	870	1092	1324	2092	278	625	1231	1740	2184	2648	4184	418	938	1847	2715	3399	4120	6497
	TL	139	312	621	870	1092	1324	2092	278	625	1243	1740	2184	2648	4184	418	938	1865	2715	3399	4120	6497
	Brg	1.5	1.5	2.5	4	4.5	5.5	9	1.5	1.5	2.5	4	4.5	5.5	9	1.5	1.5	2.5	4	4.5	5.75	9.25
14	LL	87	197	395	615	813	990	1584	174	394	790	1231	1627	1981	3168	261	591	1185	1847	2535	3084	4925
	TL	87	197	395	621	813	990	1584	174	394	790	1242	1627	1981	3168	261	591	1186	1847	2535	3084	4925
	Brg	1.5	1.5	1.75	2.75	3.75	4.75	7.75	1.5	1.5	1.75	2.75	3.75	4.75	7.75	1.5	1.5	1.75	2.75	4	4.75	8
16	LL	57	131	265	419	615	766	1236	115	263	530	839	1231	1533	2472	173	394	796	1258	1847	2389	3847
	TL	57	131	265	419	620	766	1236	115	263	530	839	1241	1533	2472	173	394	796	1258	1862	2389	3847
	Brg	1.5	1.5	1.5	2.25	3.25	4	6.75	1.5	1.5	1.5	2.25	3.25	4	6.75	1.5	1.5	1.5	2.25	3.25	4.25	7
18	LL	39	91	186	295	438	609	989	79	183	372	590	877	1219	1978	119	274	558	886	1316	1847	3081
	TL	39	91	186	295	438	609	989	79	183	372	590	877	1219	1978	119	274	558	886	1316	1860	3081
	Brg	1.5	1.5	1.5	1.75	2.5	3.75	6	1.5	1.5	1.5	1.75	2.5	3.75	6	1.5	1.5	1.5	1.75	2.5	3.75	6.25
20	LL	28	66	134	215	320	454	808	56	132	269	430	641	909	1616	85	198	404	645	962	1364	2518
	TL	28	66	134	215	320	454	808	56	132	269	430	641	909	1616	85	198	404	645	962	1364	2518
	Brg	1.5	1.5	1.5	1.5	2	3	5.5	1.5	1.5	1.5	1.5	2	3	5.5	1.5	1.5	1.5	1.5	2	3	5.75
22	LL	20	48	100	160	240	342	671	41	97	201	321	481	684	1343	62	146	301	482	722	1026	2093
	TL	20	48	100	160	240	342	671	41	97	201	321	481	684	1343	62	146	301	482	722	1026	2093
	Brg	1.5	1.5	1.5	1.5	1.75	2.5	5	1.5	1.5	1.5	1.5	1.75	2.5	5	1.5	1.5	1.5	1.5	1.75	2.5	5
24	LL	--	36	76	123	184	263	566	30	73	153	246	369	526	1133	46	110	229	369	554	790	1766
	TL	--	36	76	123	184	263	566	30	73	153	246	369	526	1133	46	110	229	369	554	790	1766
	Brg	--	1.5	1.5	1.5	1.5	2	4.5	1.5	1.5	1.5	1.5	1.5	2	4.5	1.5	1.5	1.5	1.5	1.5	2	4.75
26	LL	--	28	59	95	144	206	483	23	56	119	191	289	413	967	34	85	178	287	433	619	1464
	TL	--	28	59	95	144	206	483	23	56	119	191	289	413	967	34	85	178	287	433	619	1464
	Brg	--	1.5	1.5	1.5	1.75	4.25	1.5	1.5	1.5	1.5	1.5	1.75	4.25	1.5	1.5	1.5	1.5	1.5	1.75	4.25	
28	LL	--	22	46	75	114	164	391	--	44	93	151	229	329	782	26	66	140	227	344	493	1174
	TL	--	22	46	75	114	164	391	--	44	93	151	229	329	782	26	66	140	227	344	493	1174
	Brg	--	1.5	1.5	1.5	1.5	1.5	3.5	--	1.5	1.5	1.5	1.5	1.5	3.5	1.5	1.5	1.5	1.5	1.5	1.5	3.5
30	LL	--	--	37	60	92	132	318	--	34	74	121	184	265	636	20	52	112	182	277	398	954
	TL	--	--	37	60	92	132	318	--	34	74	121	184	265	636	20	52	112	182	277	398	954
	Brg	--	--	1.5	1.5	1.5	3.25	--	1.5	1.5	1.5	1.5	1.5	3.25	1.5	1.5	1.5	1.5	1.5	1.5	3.25	
32	LL	--	--	30	49	75	108	261	--	27	60	98	150	217	522	--	41	90	148	225	325	784
	TL	--	--	30	49	75	108	261	--	27	60	98	150	217	522	--	41	90	148	225	325	784
	Brg	--	--	1.5	1.5	1.5	1.5	2.75	--	1.5	1.5	1.5	1.5	1.5	2.75	--	1.5	1.5	1.5	1.5	1.5	2.75
34	LL	--	--	24	40	61	89	217	--	21	48	80	123	179	434	--	32	73	121	185	269	651
	TL	--	--	24	40	61	89	217	--	21	48	80	123	179	434	--	32	73	121	185	269	651
	Brg	--	--	1.5	1.5	1.5	1.5	2.5	--	1.5	1.5	1.5	1.5	1.5	2.5	--	1.5	1.5	1.5	1.5	1.5	2.5
36	LL	--	--	--	33	51	74	182	--	--	39	66	102	149	364	--	26	59	100	154	223	546
	TL	--	--	--	33	51	74	182	--	--	39	66	102	149	364	--	26	59	100	154	223	546
	Brg	--	--	--	1.5	1.5	1.5	2.25	--	--	1.5	1.5	1.5	1.5	2.25	--	1.5	1.5	1.5	1.5	1.5	2.25
38	LL	--	--	--	27	42	62	153	--	--	32	55	85	125	307	--	20	49	83	128	187	461
	TL	--	--	--	27	42	62	153	--	--	32	55	85	125	307	--	20	49	83	128	187	461
	Brg	--	--	--	1.5	1.5	1.5	2	--	--	1.5	1.5	1.5	1.5	2	--	1.5	1.5	1.5	1.5	1.5	2
40	LL	--	--	--	23	36	52	130	--	--	26	46	72	105	261	--	--	40	69	108	158	392
	TL	--	--	--	23	36	52	130	--	--	26	46	72	105	261	--	--	40	69	108	158	392
	Brg	--	--	--	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75
42	LL	--	--	--	--	30	44	112	--	--	22	38	60	89	224	--	--	33	57	91	134	336
	TL	--	--	--	--	30	44	112	--	--	22	38	60	89	224	--	--	33	57	91	134	336
	Brg	--	--	--	--	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

Allowable loads (plf) for Ultralam LVL 2.0E/2900psi – Load Duration of 1.00 – Floor Loads

Clear Span		2.0E 1 Ply LL/360 TL/240 C <sub>g</sub> =1.00							2.0E 2 Ply LL/360 TL/240 C <sub>g</sub> =1.00							2.0E 3 Ply LL/360 TL/240 C <sub>g</sub> =1.00						
		7.25	9.5	12	14	16	18	24	7.25	9.5	12	14	16	18	24	7.25	9.5	12	14	16	18	24
6	LL	718	1383	2005	2487	3090	3650	--	1436	2767	4010	4974	6180	7300	--	2154	4303	6229	7760	9574	11294	--
	TL	729	1383	2005	2487	3090	3650	--	1458	2767	4010	4974	6180	7300	--	2187	4303	6229	7760	9574	11294	--
	Brg	1.5	2.75	4.25	6.5	7	8.75	--	1.5	2.75	4.25	6.5	7	8.75	--	1.5	3	4.5	6.5	7.25	9	--
8	LL	313	683	1183	1490	1879	2255	3444	627	1367	2367	2981	3758	4511	6889	940	2050	3684	4651	5839	7002	10663
	TL	313	692	1183	1490	1879	2255	3444	627	1385	2367	2981	3758	4511	6889	941	2078	3684	4651	5839	7002	10663
	Brg	1.5	1.75	3.25	5.25	5.25	6.5	10.75	1.5	1.75	3.25	5.25	5.25	6.5	10.75	1.5	1.75	3.25	5.25	5.5	6.75	11.25
10	LL	160	359	704	995	1247	1509	2368	321	719	1408	1990	2495	3019	4737	482	1079	2112	3105	3882	4695	7352
	TL	160	360	713	995	1247	1509	2368	321	720	1426	1990	2495	3019	4737	482	1080	2139	3105	3882	4695	7352
	Brg	1.5	1.5	2.25	3.75	4.25	5.25	8.75	1.5	1.5	2.25	3.75	4.25	5.25	8.75	1.5	1.5	2.25	3.75	4.5	5.5	9
12	LL	92	208	417	650	883	1073	1712	184	417	835	1300	1766	2147	3424	277	626	1252	1950	2750	3343	5322
	TL	92	208	418	656	883	1073	1712	184	417	836	1313	1766	2147	3424	277	626	1254	1970	2750	3343	5322
	Brg	1.5	1.5	1.75	2.5	3.5	4.25	7.25	1.5	1.5	1.75	2.5	3.5	4.25	7.25	1.5	1.5	1.75	2.5	3.75	4.5	7.5
14	LL	57	130	264	417	613	799	1288	114	261	528	835	1226	1599	2576	172	392	792	1252	1839	2492	4008
	TL	57	130	264	417	617	799	1288	114	261	528	835	1235	1599	2576	172	392	792	1252	1853	2492	4008
	Brg	1.5	1.5	1.5	2	2.75	3.75	6.25	1.5	1.5	1.5	2	2.75	3.75	6.25	1.5	1.5	1.5	2	2.75	4	6.5
16	LL	37	86	176	280	416	586	1001	75	173	353	560	833	1172	2002	113	260	529	841	1250	1758	3117
	TL	37	86	176	280	416	589	1001	75	173	353	560	833	1178	2002	113	260	529	841	1250	1767	3117
	Brg	1.5	1.5	1.5	1.5	2.25	3	5.5	1.5	1.5	1.5	1.5	2.25	3	5.5	1.5	1.5	1.5	1.5	2.25	3	5.75
18	LL	25	60	123	196	293	416	798	51	120	246	392	586	832	1597	77	180	369	589	879	1248	2488
	TL	25	60	123	196	293	416	798	51	120	246	392	586	832	1597	77	180	369	589	879	1248	2488
	Brg	1.5	1.5	1.5	1.5	1.75	2.5	4.75	1.5	1.5	1.5	1.5	1.75	2.5	4.75	1.5	1.5	1.5	1.5	1.75	2.5	5
20	LL	--	43	88	142	213	303	650	36	86	177	284	426	607	1301	54	129	266	427	639	911	2028
	TL	--	43	88	142	213	303	650	36	86	177	284	426	607	1301	54	129	266	427	639	911	2028
	Brg	--	1.5	1.5	1.5	1.5	2	4.25	1.5	1.5	1.5	1.5	1.5	2	4.25	1.5	1.5	1.5	1.5	1.5	2	4.5
22	LL	--	31	65	106	159	227	536	26	63	131	212	318	455	1072	39	94	197	318	478	683	1609
	TL	--	31	65	106	159	227	536	26	63	131	212	318	455	1072	39	94	197	318	478	683	1609
	Brg	--	1.5	1.5	1.5	1.5	1.75	4	1.5	1.5	1.5	1.5	1.5	1.75	4	1.5	1.5	1.5	1.5	1.5	1.75	4
24	LL	--	23	49	80	121	174	414	--	47	99	161	243	349	828	28	70	149	242	365	523	1242
	TL	--	23	49	80	121	174	414	--	47	99	161	243	349	828	28	70	149	242	365	523	1242
	Brg	--	1.5	1.5	1.5	1.5	1.5	3.25	--	1.5	1.5	1.5	1.5	1.5	3.25	1.5	1.5	1.5	1.5	1.5	1.5	3.25
26	LL	--	--	38	62	94	136	325	--	35	76	125	189	272	651	20	53	115	187	284	408	977
	TL	--	--	38	62	94	136	325	--	35	76	125	189	272	651	20	53	115	187	284	408	977
	Brg	--	--	1.5	1.5	1.5	1.5	2.75	--	1.5	1.5	1.5	1.5	1.5	2.75	1.5	1.5	1.5	1.5	1.5	1.5	2.75
28	LL	--	--	29	49	74	108	260	--	27	59	98	149	216	520	--	41	89	147	224	324	780
	TL	--	--	29	49	74	108	260	--	27	59	98	149	216	520	--	41	89	147	224	324	780
	Brg	--	--	1.5	1.5	1.5	1.5	2.5	--	1.5	1.5	1.5	1.5	1.5	2.5	--	1.5	1.5	1.5	1.5	1.5	2.5
30	LL	--	--	23	39	59	86	210	--	21	47	78	119	173	421	--	31	70	117	179	260	631
	TL	--	--	23	39	59	86	210	--	21	47	78	119	173	421	--	31	70	117	179	260	631
	Brg	--	--	1.5	1.5	1.5	2	--	1.5	1.5	1.5	1.5	1.5	2	--	1.5	1.5	1.5	1.5	1.5	1.5	2
32	LL	--	--	--	31	48	70	172	--	--	37	62	97	141	345	--	24	56	94	145	211	517
	TL	--	--	--	31	48	70	172	--	--	37	62	97	141	345	--	24	56	94	145	211	517
	Brg	--	--	--	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75	--	1.5	1.5	1.5	1.5	1.5	1.75
34	LL	--	--	--	25	39	57	142	--	--	29	50	79	115	285	--	--	44	76	118	173	428
	TL	--	--	--	25	39	57	142	--	--	29	50	79	115	285	--	--	44	76	118	173	428
	Brg	--	--	--	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75	--	--	1.5	1.5	1.5	1.5	1.75
36	LL	--	--	--	20	32	47	119	--	--	23	41	65	95	238	--	--	35	62	97	143	357
	TL	--	--	--	20	32	47	119	--	--	23	41	65	95	238	--	--	35	62	97	143	357
	Brg	--	--	--	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
38	LL	--	--	--	--	26	39	100	--	--	--	33	53	79	200	--	--	28	50	80	119	300
	TL	--	--	--	--	26	39	100	--	--	--	33	53	79	200	--	--	28	50	80	119	300
	Brg	--	--	--	--	1.5	1.5	1.5	--	--	--	1.5	1.5	1.5	1.5	--	--	1.5	1.5	1.5	1.5	1.5
40	LL	--	--	--	--	22	33	84	--	--	--	27	44	66	169	--	--	22	41	66	99	254
	TL	--	--	--	--	22	33	84	--	--	--	27	44	66	169	--	--	22	41	66	99	254
	Brg	--	--	--	--	1.5	1.5	1.5	--	--	--	1.5	1.5	1.5	1.5	--	--	1.5	1.5	1.5	1.5	1.5
42	LL	--	--	--	--	--	27	72	--	--	--	22	37	55	144	--	--	--	33	55	83	216
	TL	--	--	--	--	--	27	72	--	--	--	22	37	55	144	--	--	--	33	55	83	216
	Brg	--	--	--	--	--	1.5	1.5	--	--	--	1.5	1.5	1.5	1.5	--	--	--	1.5	1.5	1.5	1.5

# Ultralam LVL 2.0E/2900psi – Floor Joist Span Tables

30 psf live load, 10 psf dead load		I/360 deflection				I/480 deflection				I/600 deflection			
Size	Grade	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	17-8	16-0	15-1	14-0	16-0	14-7	13-8	12-9	14-11	13-6	12-9	11-10
1 3/4 x 9 1/2	2.0E	23-1	21-0	19-9	18-4	21-0	19-1	17-11	16-8	19-6	17-9	16-8	15-6
1 3/4 x 12	2.0E	29-2	26-6	25-0	23-2	26-6	24-1	22-8	21-1	24-8	22-4	21-1	19-7
1 3/4 x 14	2.0E	34-1	30-11	29-1	27-0	30-11	28-1	26-6	24-7	28-9	26-1	24-7	22-10
1 3/4 x 16	2.0E	38-11	35-4	33-3	30-11	35-4	32-2	30-3	28-1	32-10	29-10	28-1	26-1
1 3/4 x 18	2.0E	43-10	39-9	37-5	34-9	39-9	36-2	34-0	31-7	36-11	33-7	31-7	29-4
1 3/4 x 24	2.0E	58-5	53-1	49-11	46-4	53-1	48-2	45-4	42-1	49-3	44-9	42-1	39-1
40 psf live load, 10 psf dead load		I/360 deflection				I/480 deflection				I/600 deflection			
Size	Grade	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	16-0	14-7	13-8	12-9	14-7	13-3	12-5	11-7	13-6	12-3	11-7	10-9
1 3/4 x 9 1/2	2.0E	21-0	19-1	17-11	16-8	19-1	17-4	16-4	15-2	17-9	16-1	15-2	14-1
1 3/4 x 12	2.0E	26-6	24-1	22-8	21-1	24-1	21-11	20-7	19-2	22-4	20-4	19-2	17-9
1 3/4 x 14	2.0E	30-11	28-1	26-6	24-7	28-1	25-7	24-0	22-4	26-1	23-9	22-4	20-9
1 3/4 x 16	2.0E	35-4	32-2	30-3	28-1	32-2	29-2	27-6	25-6	29-10	27-1	25-6	23-8
1 3/4 x 18	2.0E	39-9	36-2	34-0	31-7	36-2	32-10	30-11	28-8	33-7	30-6	28-8	26-8
1 3/4 x 24	2.0E	53-1	48-2	45-4	42-1	48-2	43-10	41-3	38-3	44-9	40-8	38-3	35-6
30 psf live load, 15 psf dead load		I/360 deflection				I/480 deflection				I/600 deflection			
Size	Grade	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	17-8	16-0	15-1	14-0	16-0	14-7	13-8	12-9	14-11	13-6	12-9	11-10
1 3/4 x 9 1/2	2.0E	23-1	21-0	19-9	18-4	21-0	19-1	17-11	16-8	19-6	17-9	16-8	15-6
1 3/4 x 12	2.0E	29-2	26-6	25-0	23-2	26-6	24-1	22-8	21-1	24-8	22-4	21-1	19-7
1 3/4 x 14	2.0E	34-1	30-11	29-1	27-0	30-11	28-1	26-6	24-7	28-9	26-1	24-7	22-10
1 3/4 x 16	2.0E	38-11	35-4	33-3	30-11	35-4	32-2	30-3	28-1	32-10	29-10	28-1	26-1
1 3/4 x 18	2.0E	43-10	39-9	37-5	34-9	39-9	36-2	34-0	31-7	36-11	33-7	31-7	29-4
1 3/4 x 24	2.0E	58-5	53-1	49-11	46-4	53-1	48-2	45-4	42-1	49-3	44-9	42-1	39-1
40 psf live load, 15 psf dead load		I/360 deflection				I/480 deflection				I/600 deflection			
Size	Grade	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	16-0	14-7	13-8	12-9	14-7	13-3	12-5	11-7	13-6	12-3	11-7	10-9
1 3/4 x 9 1/2	2.0E	21-0	19-1	17-11	16-8	19-1	17-4	16-4	15-2	17-9	16-1	15-2	14-1
1 3/4 x 12	2.0E	26-6	24-1	22-8	21-1	24-1	21-11	20-7	19-2	22-4	20-4	19-2	17-9
1 3/4 x 14	2.0E	30-11	28-1	26-6	24-7	28-1	25-7	24-0	22-4	26-1	23-9	22-4	20-9
1 3/4 x 16	2.0E	35-4	32-2	30-3	28-1	32-2	29-2	27-6	25-6	29-10	27-1	25-6	23-8
1 3/4 x 18	2.0E	39-9	36-2	34-0	31-7	36-2	32-10	30-11	28-8	33-7	30-6	28-8	26-8
1 3/4 x 24	2.0E	53-1	48-2	45-4	42-1	48-2	43-10	41-3	38-3	44-9	40-8	38-3	35-6
50 psf live load, 10 psf dead load		I/360 deflection				I/480 deflection				I/600 deflection			
Size	Grade	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	14-11	13-6	12-9	11-10	13-6	12-3	11-7	10-9	12-7	11-5	10-9	10-0
1 3/4 x 9 1/2	2.0E	19-6	17-9	16-8	15-6	17-9	16-1	15-2	14-1	16-5	14-11	14-1	13-1
1 3/4 x 12	2.0E	24-8	22-4	21-1	19-7	22-4	20-4	19-2	17-9	20-9	18-10	17-9	16-6
1 3/4 x 14	2.0E	28-9	26-1	24-7	22-10	26-1	23-9	22-4	20-9	24-3	22-0	20-9	19-3
1 3/4 x 16	2.0E	32-10	29-10	28-1	26-1	29-10	27-1	25-6	23-8	27-8	25-2	23-8	22-0
1 3/4 x 18	2.0E	36-11	33-7	31-7	29-4	33-7	30-6	28-8	26-8	31-2	28-4	26-8	24-9
1 3/4 x 24	2.0E	49-3	44-9	42-1	39-1	44-9	40-8	38-3	35-6	41-6	37-9	35-6	33-0
50 psf live load, 20 psf dead load		I/360 deflection				I/480 deflection				I/600 deflection			
Size	Grade	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	14-11	13-6	12-9	11-10	13-6	12-3	11-7	10-9	12-7	11-5	10-9	10-0
1 3/4 x 9 1/2	2.0E	19-6	17-9	16-8	15-6	17-9	16-1	15-2	14-1	16-5	14-11	14-1	13-1
1 3/4 x 12	2.0E	24-8	22-4	21-1	19-7	22-4	20-4	19-2	17-9	20-9	18-10	17-9	16-6
1 3/4 x 14	2.0E	28-9	26-1	24-7	22-10	26-1	23-9	22-4	20-9	24-3	22-0	20-9	19-3
1 3/4 x 16	2.0E	32-10	29-10	28-1	26-1	29-10	27-1	25-6	23-8	27-8	25-2	23-8	22-0
1 3/4 x 18	2.0E	36-11	33-7	31-7	29-4	33-7	30-6	28-8	26-8	31-2	28-4	26-8	24-9
1 3/4 x 24	2.0E	49-3	44-9	42-1	39-1	44-9	40-8	38-3	35-6	41-6	37-9	35-6	33-0

# Ultralam LVL 2.0E/2900psi – Roof Rafter Span Tables

		20 psf live load, 10 psf dead load, l/240 deflection, CD = 1.15				20 psf live load, 15 psf dead load, l/240 deflection, CD = 1.15			
Size	Grade	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	23-1	21-0	19-9	18-4	23-1	21-0	19-9	18-4
1 3/4 x 9 1/2	2.0E	30-3	27-6	25-11	24-0	30-3	27-6	25-11	24-0
1 3/4 x 12	2.0E	38-3	34-9	32-9	30-4	38-3	34-9	32-9	30-4
1 3/4 x 14	2.0E	44-8	40-7	38-2	35-5	44-8	40-7	38-2	35-5
1 3/4 x 16	2.0E	51-0	46-4	43-7	40-6	51-0	46-4	43-7	40-6
1 3/4 x 18	2.0E	57-5	52-2	49-1	45-7	57-5	52-2	49-1	45-7
1 3/4 x 24	2.0E	60-0	60-0	60-0	60-0	60-0	60-0	60-0	60-0
		20 psf live load, 10 psf dead load, l/240 deflection, CD = 1.25				20 psf live load, 15 psf dead load, l/240 deflection, CD = 1.25			
Size	Grade	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	23-1	21-0	19-9	18-4	23-1	21-0	19-9	18-4
1 3/4 x 9 1/2	2.0E	30-3	27-6	25-11	24-0	30-3	27-6	25-11	24-0
1 3/4 x 12	2.0E	38-3	34-9	32-9	30-4	38-3	34-9	32-9	30-4
1 3/4 x 14	2.0E	44-8	40-7	38-2	35-5	44-8	40-7	38-2	35-5
1 3/4 x 16	2.0E	51-0	46-4	43-7	40-6	51-0	46-4	43-7	40-6
1 3/4 x 18	2.0E	57-5	52-2	49-1	45-7	57-5	52-2	49-1	45-7
1 3/4 x 24	2.0E	60-0	60-0	60-0	60-0	60-0	60-0	60-0	60-0
		25 psf live load, 10 psf dead load, l/240 deflection, CD = 1.15				25 psf live load, 15 psf dead load, l/240 deflection, CD = 1.15			
Size	Grade	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	21-5	19-6	18-4	17-0	21-5	19-6	18-4	17-0
1 3/4 x 9 1/2	2.0E	28-1	25-7	24-0	22-4	28-1	25-7	24-0	22-4
1 3/4 x 12	2.0E	35-6	32-3	30-4	28-2	35-6	32-3	30-4	28-2
1 3/4 x 14	2.0E	41-5	37-8	35-5	32-11	41-5	37-8	35-5	32-11
1 3/4 x 16	2.0E	47-4	43-0	40-6	37-7	47-4	43-0	40-6	37-7
1 3/4 x 18	2.0E	53-3	48-5	45-7	42-3	53-3	48-5	45-7	42-3
1 3/4 x 24	2.0E	60-0	60-0	60-0	56-5	60-0	60-0	60-0	56-5
		30 psf live load, 10 psf dead load, l/240 deflection, CD = 1.15				30 psf live load, 15 psf dead load, l/240 deflection, CD = 1.15			
Size	Grade	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	20-2	18-4	17-3	16-0	20-2	18-4	17-3	16-0
1 3/4 x 9 1/2	2.0E	26-6	24-0	22-7	21-0	26-6	24-0	22-7	21-0
1 3/4 x 12	2.0E	33-5	30-4	28-7	26-6	33-5	30-4	28-7	26-6
1 3/4 x 14	2.0E	39-0	35-5	33-4	30-11	39-0	35-5	33-4	30-11
1 3/4 x 16	2.0E	44-7	40-6	38-1	35-4	44-7	40-6	38-1	35-4
1 3/4 x 18	2.0E	50-2	45-7	42-10	39-9	50-2	45-7	42-10	39-9
1 3/4 x 24	2.0E	60-0	60-0	57-2	53-1	60-0	60-0	57-2	53-1
		35 psf live load, 10 psf dead load, l/240 deflection, CD = 1.15				35 psf live load, 15 psf dead load, l/240 deflection, CD = 1.15			
Size	Grade	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	19-2	17-5	16-5	15-3	19-2	17-5	16-5	15-3
1 3/4 x 9 1/2	2.0E	25-2	22-10	21-6	19-11	25-2	22-10	21-6	19-11
1 3/4 x 12	2.0E	31-9	28-10	27-2	25-2	31-9	28-10	27-2	25-2
1 3/4 x 14	2.0E	37-0	33-8	31-8	29-5	37-0	33-8	31-8	29-5
1 3/4 x 16	2.0E	42-4	38-6	36-2	33-7	42-4	38-6	36-2	33-7
1 3/4 x 18	2.0E	47-7	43-3	40-9	37-10	47-7	43-3	40-9	37-10
1 3/4 x 24	2.0E	60-0	57-8	54-3	50-5	60-0	57-8	54-3	50-5
		40 psf live load, 10 psf dead load, l/240 deflection, CD = 1.15				40 psf live load, 15 psf dead load, l/240 deflection, CD = 1.15			
Size	Grade	12	16	19.2	24	12	16	19.2	24
1 3/4 x 7 1/4	2.0E	18-4	16-8	15-8	14-7	18-4	16-8	15-8	14-7
1 3/4 x 9 1/2	2.0E	24-0	21-10	20-7	19-1	24-0	21-10	20-7	19-1
1 3/4 x 12	2.0E	30-4	27-7	26-0	24-1	30-4	27-7	26-0	24-1
1 3/4 x 14	2.0E	35-5	32-2	30-3	28-1	35-5	32-2	30-3	28-1
1 3/4 x 16	2.0E	40-6	36-9	34-7	32-2	40-6	36-9	34-7	32-2
1 3/4 x 18	2.0E	45-7	41-5	38-11	36-2	45-7	41-5	38-11	36-2
1 3/4 x 24	2.0E	60-0	55-2	51-11	48-2	60-0	55-2	51-11	48-2



# Ultralam LVL 2.0E/2900psi – Roof Rafter Span Tables

Size		Grade	50 psf live load, 10 psf dead load, l/240 deflection, CD = 115				50 psf live load, 15 psf dead load, l/240 deflection, CD = 115			
			12	16	19.2	24	12	16	19.2	24
1 3/4	x 7 1/4	2.0E	17-0	15-6	14-7	13-6	17-0	15-6	14-7	13-6
1 3/4	x 9 1/2	2.0E	22-4	20-3	19-1	17-9	22-4	20-3	19-1	17-9
1 3/4	x 12	2.0E	28-2	25-7	24-1	22-4	28-2	25-7	24-1	22-4
1 3/4	x 14	2.0E	32-11	29-11	28-1	26-1	32-11	29-11	28-1	26-1
1 3/4	x 16	2.0E	37-7	34-2	32-2	29-10	37-7	34-2	32-2	29-10
1 3/4	x 18	2.0E	42-3	38-5	36-2	33-7	42-3	38-5	36-2	33-7
1 3/4	x 24	2.0E	56-5	51-3	48-2	44-9	56-5	51-3	48-2	44-9
Size		Grade	60 psf live load, 10 psf dead load, l/240 deflection, CD = 115				60 psf live load, 15 psf dead load, l/240 deflection, CD = 115			
			12	16	19.2	24	12	16	19.2	24
1 3/4	x 7 1/4	2.0E	16-0	14-7	13-8	12-9	16-0	14-7	13-8	12-9
1 3/4	x 9 1/2	2.0E	21-0	19-1	17-11	16-8	21-0	19-1	17-11	16-8
1 3/4	x 12	2.0E	26-6	24-1	22-8	21-1	26-6	24-1	22-8	21-1
1 3/4	x 14	2.0E	30-11	28-1	26-6	24-7	30-11	28-1	26-6	24-7
1 3/4	x 16	2.0E	35-4	32-2	30-3	28-1	35-4	32-2	30-3	28-1
1 3/4	x 18	2.0E	39-9	36-2	34-0	31-7	39-9	36-2	34-0	31-7
1 3/4	x 24	2.0E	53-1	48-2	45-4	42-1	53-1	48-2	45-4	41-8
Size		Grade	70 psf live load, 10 psf dead load, l/240 deflection, CD = 115				70 psf live load, 15 psf dead load, l/240 deflection, CD = 115			
			12	16	19.2	24	12	16	19.2	24
1 3/4	x 7 1/4	2.0E	15-3	13-10	13-0	12-1	15-3	13-10	13-0	12-1
1 3/4	x 9 1/2	2.0E	19-11	18-1	17-1	15-10	19-11	18-1	17-1	15-10
1 3/4	x 12	2.0E	25-2	22-11	21-7	20-0	25-2	22-11	21-7	20-0
1 3/4	x 14	2.0E	29-5	26-9	25-2	23-4	29-5	26-9	25-2	23-4
1 3/4	x 16	2.0E	33-7	30-6	28-9	26-8	33-7	30-6	28-9	26-8
1 3/4	x 18	2.0E	37-10	34-4	32-4	30-0	37-10	34-4	32-4	30-0
1 3/4	x 24	2.0E	50-5	45-9	43-1	39-1	50-5	45-9	43-1	36-9

## Design Assumptions for MLT Ultralam 2.0E/2900psi Joist & Rafter Tables

### **SUPPORT REQUIREMENTS**

Joists and rafters must have adequate support. Ridge beams must be installed at roof peaks with rafters bearing directly on the ridge beam or supported by hangers or framing anchors. Ceiling joists are not required when properly designed ridge beams are used. A ridge board may be substituted for a ridge beam when the roof slope equals or exceeds 3 in 12, except that ridge beams are required for cathedral ceilings. Ridge boards must be at least 1" nominal in thickness and not less than the depth of the cut end of the rafter. Rafters must be placed directly opposite each other, and ceiling joists must be installed parallel to the rafters to provide a continuous tie between exterior walls.

### **SPANS**

The spans provided in these tables were determined on the same basis as those given in the code-recognized *Span Tables for Joists and Rafters* and *Wood Structural Design Data*, both published by AF&PA. Maximum spans were computed using Allowable Stress Design (ASD) and standard engineering design formulas for simple span beams with uniformly distributed gravity loads. The calculated spans assume fully supported members, properly sheathed and nailed on the top edge of the joist or rafter. They do not, however, include composite action of adhesive and sheathing. Listed spans also do not include checks for concentrated or partition loads that may be required by building codes for specific occupancy or use categories. Uplift loads caused by wind also have not been considered. Spans in the tables are given in feet and inches and are the maximum allowable horizontal span of the member from inside to inside of bearings. For sloping rafters, the span is also measured along the horizontal projection.

### **REFERENCE DESIGN VALUES**

The reference design values used to determine the spans in the accompanying tables are as published in Technical Evaluation Report (TER) TER No. 1203-02: *MLT Ultralam Laminated Veneer Lumber (LVL)*. Reference design values are based on normal load duration and dry service conditions.

### **ADJUSTMENT FACTORS**

Reference design values must be multiplied by all applicable adjustment factors to determine adjusted design values. Adjusted design values are then used to calculate the maximum allowable span for a specified load condition. The adjustment factors used to develop the accompanying span tables are described below. For more complete information on adjustment factors, refer to TER No. 1203-02 and NDS®, *National Design Specification® for Wood Construction*.

**REPETITIVE MEMBER FACTOR,  $C_r$**  – Bending design values,  $F_b$ , for the MLT Ultralam product listed in these tables are multiplied by the repetitive member factor,  $C_r = 1.04$ , when such members are in contact or spaced not more than 24" on-center, are not less than three in number, and are joined by floor, roof or other load distributing elements adequate to support the design load.

**LOAD DURATION FACTOR,  $C_D$**  – Wood has the ability to carry substantially greater maximum loads for short durations than for long durations. Reference design values apply to the normal 10-year load duration. With the exception of modulus of elasticity,  $E$  and  $E_{min}$ , and compression perpendicular-to-grain,  $F_{cPerp}$ , reference design values must be multiplied by the appropriate load duration factor,  $C_D$ . Floor joist and ceiling joist tables are based on the normal load duration, which implies  $C_D = 1.0$ . For rafters, the load duration factor,  $C_D$ , is typically either 1.15 for two-month snow loads or 1.25 for seven-day construction loads. All rafter tables are labeled to indicate the load duration factor used.

## **CALCULATIONS**

The spans provided in these tables are limited to the minimum value calculated for the following design parameters using ASD:

- **BENDING (FLEXURE)**
- **DEFLECTION (BASED ON LIVELOAD)**
- **COMPRESSION PERPENDICULAR-TO-GRAIN**
- **SHEAR PARALLEL-TO-GRAIN (HORIZONTAL SHEAR)**

### ***BENDING***

Bending design values assume a fully supported member, properly sheathed and nailed on the top edge of the joist or rafter. The repetitive member factor,  $C_r$ , of 1.04 was included due to the assumption of the installation of at least three joists or rafters spaced not more than 24" on-center. The load duration factor,  $C_D$ , has also been applied as appropriate.

### ***DEFLECTION***

Deflection may be the controlling factor in determining the member size required when appearance or rigidity is important. Control of floor vibration is another important reason to limit deflection. Deflection limits are expressed as a fraction of the span length in inches ( $l$ ), and consider only live load in accordance with established engineering practice for the design of joists and rafters. The live load deflection ratio used to develop each table is listed in the caption for each table.

### ***COMPRESSION PERPENDICULAR-TO-GRAIN***

The compression perpendicular-to-grain check used to develop these span tables assumes a 2.0" bearing length to account for the end of the joist or rafter bearing on a 2x4 wall with a 1-1/2" rim board applied along the outside edge of the wall. An additional check is required for shorter bearing lengths, such as for 1.5" ledgers.

### ***SHEAR PARALLEL-TO-GRAIN (HORIZONTAL SHEAR)***

All uniformly distributed loads within a distance from the inside face of each support equal to the depth of the member have been ignored for determining the maximum allowable span based on horizontal shear.

## **Contact Us**

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