



NORDIC LAM™

BEAMS AND HEADERS

COMMERCIAL DEPTHS



Built for life



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The mark of responsible forestry

MAXIMUM UNIFORM LOADS (plf)

WIDTH (in.)	DEPTH (in.)	CRITERIA	SPAN (ft)												
			6	8	10	12	14	16	18	20	22	24	26	28	30
3-1/2	18	L/360 LL						1107	778	567	426	328	258	207	168
		L/240 TL								835	624	477	372	295	237
		Fact. Load	6464	4598	3529	2842	2366	1953	1539	1243	1024	857	728	625	542
	20	End/Int. B.	5.6/13.9	5.3/13.2	5.1/12.7	4.9/12.3	4.8/11.9	4.5/11.3	4/10	3.6/9	3.3/8.2	3/7.5	2.8/7.9	2.6/6.4	2.4/6
		L/360 LL							1067	778	584	450	354	283	230
		L/240 TL									860	658	514	408	329
	22	Fact. Load	7047	5013	3847	3098	2580	2200	1903	1537	1267	1061	901	774	671
		End/Int. B.	6.1/15.2	5.8/14.4	5.6/13.8	5.4/13.4	5.2/13	5.1/12.7	5/12.4	4.5/11.1	4.1/10.1	3.7/9.3	3.5/8.6	3.2/8	3/7.4
		L/360 LL							1035	778	599	471	377	307	264
	24	L/240 TL									880	688	547	441	377
		Fact. Load	7620	5420	4160	3350	2789	2379	2067	1823	1535	1286	1092	939	815
		End/Int. B.	6.6/16.4	6.3/15.6	6/15	5.8/14.5	5.7/14.1	5.5/13.7	5.4/13.4	5.3/13.2	4.9/12.2	4.5/11.2	4.2/10.4	3.9/9.6	3.6/9
5-1/2	18	L/360 LL						1740	1222	891	669	516	406	325	264
		L/240 TL								1312	980	749	584	463	372
		Fact. Load	9362	6659	5110	4115	3426	2922	2419	1954	1609	1347	1144	980	839
	20	End/Int. B.	5.2/12.8	4.9/12.2	4.7/11.7	4.6/11.3	4.4/11	4.3/10.8	4/10	3.6/9	3.3/8.2	3/7.5	2.8/6.9	2.6/6.4	2.4/5.9
		L/360 LL							1677	1222	918	707	556	445	362
		L/240 TL									1351	1034	808	641	516
	22	Fact. Load	10,206	7259	5571	4486	3734	3185	2767	2416	1991	1667	1416	1213	1039
		End/Int. B.	5.6/14	5.3/13.3	5.1/12.8	5/12.3	4.8/12	4.7/11.7	4.6/11.5	4.5/11.1	4.1/10.1	3.7/9.3	3.5/8.6	3.2/7.9	3/7.3
		L/360 LL							1627	1222	941	740	593	482	407
	24	L/240 TL									1383	1081	860	694	577
		Fact. Load	11,035	7848	6023	4850	4037	3443	2992	2638	2353	2021	1717	1472	1261
		End/Int. B.	6.1/15.1	5.8/14.4	5.5/13.8	5.4/13.3	5.2/13	5.1/12.7	5/12.4	4.9/12.2	4.8/12	4.5/11.2	4.2/10.4	3.9/9.6	3.6/8.8
7	18	L/360 LL						2215	1556	1134	852	656	516	413	336
		L/240 TL								1670	1247	954	744	589	473
		Fact. Load	11,408	8113	6226	5013	4173	3559	3079	2486	2044	1684	1408	1193	1021
	20	End/Int. B.	4.9/12.3	4.7/11.7	4.5/11.2	4.4/10.9	4.3/10.6	4.1/10.3	4/10	3.6/9	3.3/8.2	3/7.4	2.7/6.7	2.5/6.2	2.3/5.7
		L/360 LL							2134	1556	1169	900	708	567	461
		L/240 TL									1719	1316	1028	816	657
	22	Fact. Load	12,436	8844	6787	5465	4549	3880	3371	2972	2528	2084	1743	1477	1265
		End/Int. B.	5.4/13.4	5.1/12.7	4.9/12.2	4.8/11.8	4.6/11.5	4.5/11.2	4.4/11	4.3/10.8	4.1/10.1	3.7/9.1	3.3/8.3	3.1/7.6	2.8/7
		L/360 LL							2070	1556	1198	942	755	613	507
	24	L/240 TL									1760	1376	1094	883	729
		Fact. Load	13,446	9562	7338	5908	4918	4194	3644	3212	2866	2526	2114	1792	1535
		End/Int. B.	5.8/14.5	5.5/13.8	5.3/13.2	5.1/12.8	5/12.4	4.9/12.1	4.8/11.9	4.7/11.6	4.6/11.4	4.4/11	4/10	3.7/9.2	3.4/8.5
24	L/360 LL							2020	1556	1223	980	796	654	537	
	L/240 TL									1429	1154	931	754	621	
	Fact. Load	14,440	10,269	7880	6345	5281	4504	3913	3449	3077	2772	2517	2137	1831	
24	End/Int. B.	6.3/15.6	5.9/14.8	5.7/14.2	5.5/13.7	5.4/13.3	5.2/13	5.1/12.7	5/12.5	4.9/12.3	4.9/12.1	4.8/11.9	4.4/10.9	4.1/10.1	

See notes on page 3.

24F-1.9E

MAXIMUM UNIFORM LOADS (plf) (continued)

WIDTH (in.)	DEPTH (in.)	CRITERIA	SPAN (ft)													
			6	8	10	12	14	16	18	20	22	24	26	28	30	
3-1/2	27	L/360 LL										1107	871	697	567	
		L/240 TL													828	
		Fact. Load	9012	6410	4919	3961	3298	2813	2444	2155	1923	1732	1574	1420	1234	
		End/Int. B.	7.8/19.4	7.4/18.4	7.1/17.7	6.9/17.1	6.7/16.6	6.5/16.2	6.4/15.9	6.3/15.6	6.2/15.3	6.1/15.1	6/14.9	5.8/14.5	5.4/13.5	
	30	L/360 LL												957	778	
		L/240 TL														
		Fact. Load	9824	6987	5362	4318	3595	3066	2664	2349	2096	1888	1715	1569	1444	
		End/Int. B.	8.5/21.1	8.1/20.1	7.7/19.3	7.5/18.7	7.3/18.1	7.1/17.7	7/17.3	6.8/17	6.7/16.7	6.6/16.4	6.5/16.2	6.4/16	6.3/15.8	
	33	L/360 LL													1035	
		L/240 TL														
		Fact. Load	10,623	7555	5798	4669	3886	3315	2880	2539	2265	2041	1854	1696	1560	
		End/Int. B.	9.2/22.9	8.7/21.7	8.4/20.8	8.1/20.2	7.9/19.6	7.7/19.1	7.5/18.7	7.4/18.4	7.3/18.1	7.1/17.8	7/17.5	6.9/17.3	6.9/17.1	
36	L/360 LL															
	L/240 TL															
	Fact. Load	11,408	8113	6226	5013	4173	3559	3092	2726	2432	2191	1990	1820	1675		
	End/Int. B.	9.8/24.5	9.3/23.3	9/22.4	8.7/21.7	8.5/21.1	8.2/20.5	8.1/20.1	7.9/19.7	7.8/19.4	7.7/19.1	7.6/18.8	7.4/18.5	7.4/18.3		
5-1/2	27	L/360 LL											1369	1096	891	
		L/240 TL													1300	
		Fact. Load	13,051	9282	7123	5735	4774	4071	3537	3118	2782	2506	2276	2082	1910	
		End/Int. B.	7.2/17.9	6.8/17	6.6/16.3	6.3/15.8	6.2/15.3	6/15	5.9/14.7	5.8/14.4	5.7/14.1	5.6/13.9	5.5/13.7	5.4/13.5	5.4/13.3	
	30	L/360 LL													1503	1222
		L/240 TL														
		Fact. Load	14,228	10,118	7764	6252	5204	4438	3855	3399	3032	2731	2481	2269	2087	
		End/Int. B.	7.8/19.5	7.4/18.5	7.1/17.8	6.9/17.2	6.7/16.7	6.6/16.3	6.4/16	6.3/15.7	6.2/15.4	6.1/15.2	6/14.9	5.9/14.7	5.8/14.5	
	33	L/360 LL														
		L/240 TL														
		Fact. Load	15,384	10,940	8395	6759	5626	4798	4168	3674	3277	2952	2681	2452	2256	
		End/Int. B.	8.5/21.1	8/20	7.7/19.2	7.5/18.6	7.3/18.1	7.1/17.6	6.9/17.3	6.8/16.9	6.7/16.6	6.6/16.4	6.5/16.1	6.4/15.9	6.3/15.7	
36	L/360 LL															
	L/240 TL															
	Fact. Load	16,521	11,748	9014	7258	6041	5151	4475	3945	3519	3170	2879	2632	2422		
	End/Int. B.	9.1/22.6	8.6/21.5	8.3/20.6	8/20	7.8/19.4	7.6/18.9	7.4/18.5	7.3/18.2	7.2/17.9	7.1/17.6	7/17.3	6.9/17.1	6.8/16.9		
7	27	L/360 LL											1742	1395	1134	
		L/240 TL														
		Fact. Load	15,903	11,309	8678	6987	5815	4959	4308	3798	3388	3052	2771	2534	2325	
		End/Int. B.	6.9/17.1	6.5/16.3	6.3/15.6	6.1/15.1	5.9/14.7	5.8/14.3	5.6/14	5.5/13.8	5.4/13.5	5.4/13.3	5.3/13.1	5.2/12.9	5.1/12.7	
	30	L/360 LL													1556	
		L/240 TL														
		Fact. Load	17,337	12,328	9459	7616	6339	5405	4696	4139	3692	3326	3020	2762	2541	
		End/Int. B.	7.5/18.7	7.1/17.7	6.8/17	6.6/16.5	6.4/16	6.3/15.6	6.1/15.3	6/15	5.9/14.7	5.8/14.5	5.7/14.3	5.7/14.1	5.6/13.9	
	33	L/360 LL														
		L/240 TL														
		Fact. Load	18,745	13,329	10,227	8234	6853	5844	5076	4475	3991	3595	3265	2985	2746	
		End/Int. B.	8.1/20.2	7.7/19.2	7.4/18.4	7.2/17.8	7/17.3	6.8/16.9	6.6/16.5	6.5/16.2	6.4/15.9	6.3/15.7	6.2/15.5	6.1/15.2	6.1/15.1	
36	L/360 LL															
	L/240 TL															
	Fact. Load	20,130	14,314	10,982	8842	7358	6275	5450	4804	4285	3859	3505	3205	2948		
	End/Int. B.	8.7/21.7	8.3/20.6	7.9/19.8	7.7/19.1	7.5/18.6	7.3/18.1	7.1/17.8	7/17.4	6.9/17.1	6.8/16.8	6.7/16.6	6.6/16.4	6.5/16.2		

NOTES:

- Values shown are the maximum uniform loads, in pounds per linear foot (plf), that can be applied to the beam in addition to its own weight.
- Selected beam shall satisfy both live (LL) and total (TL) specified loads, and the total factored load (Fact. Load). When no value is shown in the live load and/or total load row, the factored total load governs the design.
- Table is based on uniform loads and the most restrictive of simple or continuous spans, and dry-use conditions. Span is measured centre to centre of supports. The maximum uniform loads are for standard term duration of load.
- Maximum deflection = L/360 under specified live load, and L/240 under specified total load. Other deflection limits may apply. For deflection limit of L/480, multiply live load values by 0.75. The resulting live load shall not exceed the factored total load shown.
- Table values assume that lateral support is provided at each support and continuously along the compression edge of the beam.
- Sufficient bearing length shall be provided at supports. Review bearing length requirements (shown in inches) to ensure adequacy.

DESIGN VALUES FOR NORDIC LAM™



SPECIFIED STRENGTHS AND DESIGN PROPERTIES (1,2,3)

APPLICATION	BEAMS AND HEADERS
APPEARANCE GRADE	INDUSTRIAL
STRESS GRADE	24F-1.9E
EWS LAYUP	24F-E/ES1M1
Bending about X-X axis	
Bending at extreme fibre (F_{bx}) ^(4,5)	4453 psi
Longitudinal shear (F_v) ⁽⁶⁾	319 psi
Compression perpendicular to grain (F_{cpv}) ⁽⁷⁾	1088 psi
Shear-free modulus of elasticity (E_x)	1.9E+06 psi
Apparent modulus of elasticity ($E_{x,app}$) ⁽⁸⁾	1.8E+06 psi
Bending about Y-Y axis	
Bending at extreme fibre (F_{by}) ⁽⁵⁾	2045 psi
Longitudinal shear (F_v) ⁽⁶⁾	218 psi
Compression perpendicular to grain (F_{cpv}) ⁽⁷⁾	551 psi
Shear-free modulus of elasticity (E_y)	1.6E+06 psi
Apparent modulus of elasticity ($E_{y,app}$) ⁽⁸⁾	1.5E+06 psi
Axially loaded	
Compression parallel to grain (F_c)	2393 psi
Tension parallel to grain (F_t)	1944 psi
Tension perpendicular to grain (F_{tp})	74 psi
Modulus of elasticity (E_a) ⁽⁸⁾	1.6E+06 psi
Mean relative density	0.42
Density (for member weight)	35 pcf

- (1) The combinations in this table are applicable to members consisting of 4 or more laminations, unless otherwise noted.
- (2) The tabulated design values are for dry service conditions. For wet service conditions, multiply the tabulated values by the wet service condition factors, K_s , per CSA O86-09, Clause 6.4.2.
- (3) The tabulated design values are for standard term duration of load. For other durations of load, see applicable design code (CSA O86-09, Clauses 4.3.2 and 6).
- (4) Nordic Lam bending members are symmetrical throughout the depth of the member (balanced layups). Vertically glued-laminated beams shall be designed using the specified strengths and modulus of elasticity for bending about Y-Y axis. (Clause 6.5.3 of CSA O86-09 is not applicable.)
- (5) The tabulated specified strengths in bending (F_{bx} and F_{by}) shall be multiplied by a size factor, K_{zbg} . The size factor formula is: $K_{zbg} = 1.03 (BL)^{-0.18} \leq 1.0$, where B = net beam width (m), and L = length of beam segment from point of zero moment to point of zero moment (m).
- (6) At the location of notches in rectangular members, the specified strength in shear (F_v) shall be multiplied by a notch factor, K_{Nv} , determined per CSA O86-09, Clause 6.5.7.2.2.
- (7) The compression perpendicular to grain strength values (F_{cpv}) shall be permitted to be adjusted by a size factor for bearing, K_{zcpv} , per CSA O86-09, Clause 6.5.9.2.
- (8) The tabulated apparent E values already include a 5% shear deflection. For column stability calculations, E_{05} shall be determined by multiplying the tabulated apparent modulus of elasticity by 0.87.
- (9) Design of glulam members shall be in accordance to CSA O86-09 Standard.

Refer to Nordic Lam Design and Construction Guide for more information.

Nordic Lam products are listed in APA Product Report PR-L294C and CCMC Evaluation Report 13216-R.



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HEAD OFFICE AND TECHNICAL SERVICES

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