

Rosboro

Rosboro
XBEAM[™]
Next-Generation Glulam



- Architectural Appearance
- Full Framing-Width Stock Glulam
- I-Joist and Conventional Depths





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X-BEAM™
Next-Generation Glulam

Rosboro X-Beam: Next-Generation Glulam

X-Beam is the building industry's first full framing-width stock glulam in architectural appearance. X-Beam eliminates the need to fill the 3/8" gaps that 3 1/8" and 5 1/8" beams create. For builders, this translates to lower installed costs and more efficient framing.

X-Beam is available in 3 1/2", 5 1/2", 6 3/4", and 8 3/4" widths, I-Joist compatible and conventional depths. Next-generation X-Beam has gained a reputation as the most adaptable and cost-effective engineered wood product in the market. Along with offering I-Joist compatibility, X-Beam has become the premier choice for short window and door headers due to its ease of installation and price advantages. Major hardware manufacturers like Simpson and USP support the X-Beam products with full lines of compatible hardware. Backed by Rosboro's signature customer support, X-Beam is the ideal glulam product for today's building marketplace.

Uncompromised Strength: 24F-V4

X-Beam's greater width – and increased wood volume – translates to more load-carrying capacity (up to 12% for 3 1/2" and 7% for 5 1/2"). There's greater surface area for continuous and interior bearing, and holes can be drilled within liberal guidelines.

Key Advantages

Now that X-Beam has solved the sizing issue, the innovative glulam represents an all-purpose solution. Key advantages include cost-effectiveness, architectural appearance, lighter weight, greater strength, single-piece installation, compatibility with I-Joist and traditional depths, and wet-use adhesives.

Available Net Widths:

- Beams: 3 1/2", 5 1/2", 6 3/4", and 8 3/4"
- Columns: 3 1/2" x 6", 5 1/2" x 5 1/2", 5 1/2" x 6"

I-Joist and Conventional Glulam Depths

A full range of common depths means our glulam will do the job:

- I-Joist Depths: 9 1/2", 11 7/8", 14", 16" and 18"
- Glulam Depths: 6" through 30" in 1 1/2" increments

Ecological Benefits

Made from renewable 2nd and 3rd generation forests, glulam was green before green was a buzzword. As an even better choice for today's progressive market, X-Beam is manufactured with wet-use adhesives that meet or exceed the most stringent global emission standards.

Rosboro X-Beam: Design Values

Product	Layout Combination	Flexural Stress F_b (psi) ²		Compression Perpendicular to Grain F_{ct} (psi)	Shear F_v (psi) ³	MOE (10 ⁶ psi)	
		Tension Zone	Compression Zone			Apparent	True
X-Beam	24FV4	2400	1850	650	265	1.8	1.9


(1) F_b shall be adjusted by the volume effect factor using the following formula:

$$C_v = (5.125/b)^{1/10} \times (12/d)^{1/10} \times (21/L)^{1/10} \leq 1.0$$

where: b = beam width (in), d = beam depth (in), L = beam length (ft)

(2) For non-prismatic members, notched members, members subject to impact or cyclic loading, or shear design of bending members at connections (NDS-05 3.4.3.3), the design shear (F_v) shall be multiplied by a factor of 0.72.

(3) The F_v values do not include adjustments for checking.

 Design Properties EWS 24F-V4 Dry-Use $F_b = 2,400$ psi $F_v = 265$ psi $E = 1.8 \times 10^6$ psi $F_{ct} = 650$ psi	Width (in.)	Depth (in.)	Weight (lb/ft.)	Maximum Resistive Shear (lbf)			Maximum Resistive Moment (ft.-lbf)			EI (Apparent) (10 ⁶ in. ² - lbf)
				100%	115%	125%	100%	115%	125%	
	3 1/2	6	5.1	3,710	4,267	4,638	4,200	4,830	5,250	113
7 1/2		6.4	4,638	5,333	5,797	6,563	7,547	8,203	221	
9		7.7	5,565	6,400	6,956	9,450	10,868	11,813	383	
9 1/2		8.1	5,874	6,755	7,343	10,529	12,109	13,161	450	
10 1/2		8.9	6,493	7,466	8,116	12,863	14,792	16,078	608	
11 7/8		10.1	7,343	8,444	9,178	16,452	18,920	20,565	879	
13 1/2		11.5	8,348	9,600	10,434	21,263	24,452	26,578	1,292	
14		11.9	8,657	9,955	10,821	22,867	26,297	28,583	1,441	
15		12.8	9,275	10,666	11,594	26,250	30,188	32,813	1,772	
16		13.6	9,893	11,377	12,367	29,867	34,347	37,333	2,150	
16 1/2		14.0	10,203	11,733	12,753	31,763	36,527	39,703	2,358	
18	15.3	11,130	12,800	13,913	37,800	43,470	47,250	3,062		
19 1/2	16.6	12,058	13,866	15,072	44,363	51,017	55,453	3,893		
5 1/2	6	8.0	5,830	6,705	7,288	6,600	7,590	8,250	178	
	7 1/2	10.0	7,288	8,381	9,109	10,313	11,859	12,891	348	
	9	12.0	8,745	10,057	10,931	14,850	17,078	18,563	601	
	9 1/2	12.7	9,231	10,615	11,539	16,546	19,028	20,682	707	
	10 1/2	14.0	10,203	11,733	12,753	20,213	23,244	25,266	955	
	11 7/8	15.9	11,539	13,269	14,423	25,853	29,731	32,316	1,382	
	13 1/2	18.0	13,118	15,085	16,397	33,413	38,424	41,766	2,030	
	14	18.7	13,603	15,644	17,004	35,933	41,323	44,917	2,264	
	15	20.1	14,575	16,761	18,219	41,250	47,438	51,563	2,784	
	16	21.4	15,547	17,879	19,433	46,933	53,973	58,667	3,379	
	16 1/2	22.1	16,033	18,437	20,041	49,913	57,399	62,391	3,706	
	18	24.1	17,490	20,114	21,863	59,400	68,310	74,250	4,811	
	19 1/2	26.1	18,948	21,790	23,684	69,713	80,169	87,141	6,117	
	21	28.1	20,405	23,466	25,506	80,850	92,978	101,063	7,640	
22 1/2	30.1	21,863	25,142	27,328	92,813	106,734	116,016	9,397		
24	32.1	23,320	26,818	29,150	105,600	121,440	132,000	11,405		
6 3/4	9	14.8	10,733	12,342	13,416	18,225	20,959	22,781	738	
	10 1/2	17.2	12,521	14,399	15,652	24,806	28,527	31,008	1,172	
	12	19.7	14,310	16,457	17,888	32,400	37,260	40,500	1,750	
	13 1/2	22.1	16,099	18,514	20,123	41,006	47,157	51,258	2,491	
	15	24.6	17,888	20,571	22,359	50,625	58,219	63,281	3,417	
	16 1/2	27.1	19,676	22,628	24,595	61,256	70,445	76,570	4,548	
	18	29.5	21,465	24,685	26,831	72,900	83,835	91,125	5,905	
	19 1/2	32.0	23,254	26,742	29,067	85,556	98,390	106,945	7,508	
	21	34.5	25,043	28,799	31,303	99,225	114,109	124,031	9,377	
	22 1/2	36.9	26,831	30,856	33,539	113,906	130,992	142,383	11,533	
24	39.4	28,620	32,913	35,775	129,600	149,040	162,000	13,997		
8 3/4	9	19.1	13,913	15,999	17,391	23,625	27,169	29,531	957	
	10 1/2	22.3	16,231	18,666	20,289	32,156	36,980	40,195	1,519	
	12	25.5	18,550	21,333	23,188	42,000	48,300	52,500	2,268	
	13 1/2	28.7	20,869	23,999	26,086	53,156	61,130	66,445	3,229	
	15	31.9	23,188	26,666	28,984	65,625	75,469	82,031	4,430	
	16 1/2	35.1	25,506	29,332	31,883	79,406	91,317	99,258	5,896	
	18	38.3	27,825	31,999	34,781	94,500	108,675	118,125	7,655	
19 1/2	41.5	30,144	34,665	37,680	110,906	127,542	138,633	9,732		

(1) Beam weight is assumed to be 35 pcf.

(2) Maximum resistive moment shall be adjusted by the volume factor based on NDS-05.

Simple Span Application



Floor Beams (LDF=1.00)

$F_b = 2,400$ psi
 $F_v = 265$ psi
 $E = 1.8 \times 10^6$
 $\text{True } E = 1.9 \times 10^6$

Width (in.)	Depth (in.)	Span (feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3 1/2	6	405	205	116	71	-	-	-	-	-	-	-	-	-	-	-	-	-
	7 1/2	795	404	231	143	94	64	-	-	-	-	-	-	-	-	-	-	-
	9	1,174	701	403	251	165	114	81	59	-	-	-	-	-	-	-	-	-
	9 1/2	1,308	825	474	296	195	135	96	70	52	-	-	-	-	-	-	-	-
	10 1/2	1,599	1,020	642	401	266	184	132	97	72	55	-	-	-	-	-	-	-
	11 1/8	2,046	1,306	904	583	387	269	193	143	108	83	64	50	-	-	-	-	-
	13 1/2	2,646	1,690	1,170	856	573	399	288	213	162	125	97	77	62	-	-	-	-
	14	2,846	1,817	1,258	921	639	446	322	239	181	140	110	87	70	56	-	-	-
	15	3,268	2,087	1,446	1,059	788	550	397	295	225	174	137	109	87	71	58	-	-
	16	3,696	2,376	1,646	1,205	920	669	484	360	274	213	168	134	108	88	72	59	-
	16 1/2	3,873	2,527	1,751	1,282	979	735	532	396	302	234	185	148	119	97	80	66	54
	18	4,437	3,009	2,085	1,528	1,166	918	693	517	395	307	243	195	158	129	106	88	73
	19 1/2	5,060	3,532	2,448	1,794	1,370	1,079	866	660	505	394	312	250	203	167	138	115	96
	21	5,753	3,978	2,840	2,082	1,590	1,249	998	814	633	494	392	316	257	211	175	146	123
22 1/2	6,528	4,433	3,262	2,392	1,827	1,426	1,139	929	771	611	485	391	319	263	218	183	154	
Width (in.)	Depth (in.)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
5 1/2	6	637	322	183	112	73	-	-	-	-	-	-	-	-	-	-	-	-
	7 1/2	1,249	635	363	225	147	100	71	51	-	-	-	-	-	-	-	-	-
	9	1,844	1,102	633	394	260	179	127	93	69	51	-	-	-	-	-	-	-
	9 1/2	2,056	1,297	745	465	307	212	151	110	82	62	-	-	-	-	-	-	-
	10 1/2	2,513	1,603	1,009	630	418	289	207	152	114	87	67	51	-	-	-	-	-
	11 1/8	3,216	2,052	1,420	916	609	423	304	224	169	130	101	79	62	-	-	-	-
	13 1/2	4,159	2,655	1,838	1,346	900	626	452	335	254	196	153	121	97	78	63	50	-
	14	4,473	2,856	1,978	1,448	1,005	700	505	375	285	220	172	137	109	88	71	58	-
	15	5,136	3,280	2,272	1,664	1,239	864	624	464	353	273	215	171	137	111	90	74	61
	16	5,809	3,733	2,586	1,894	1,433	1,052	761	566	431	335	264	210	170	138	113	93	76
	16 1/2	6,086	3,971	2,751	2,015	1,520	1,155	836	622	474	368	291	232	187	153	125	103	85
	18	6,972	4,728	3,276	2,383	1,795	1,396	1,090	813	620	483	382	306	248	203	167	138	115
	19 1/2	7,952	5,551	3,847	2,777	2,091	1,627	1,299	1,038	793	618	490	393	320	262	217	180	151
	21	9,041	6,250	4,432	3,199	2,410	1,875	1,498	1,221	995	777	616	496	404	332	275	230	193
22 1/2	10,258	6,966	5,055	3,649	2,749	2,140	1,709	1,394	1,156	960	763	614	501	413	343	287	242	
24	11,628	7,741	5,716	4,126	3,110	2,421	1,934	1,578	1,309	1,101	930	750	612	505	421	353	298	

Tabulated values are pounds per lineal foot.

Notes for X-Beam Floor Beams:

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = $L/360$ under live load. Where additional stiffness is desired or for other live/total load ratios, design for deflection must be modified per requirements.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads based on live/total load = 0.8 and are in addition to the beam weight (assumed 35 pcf).
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

Special order sizes in green.

Simple Span Application



Floor Beams (LDF=1.00)

$F_b = 2,400$ psi

$F_v = 265$ psi

$E = 1.8 \times 10^6$

True $E = 1.9 \times 10^6$

Width (in.)	Depth (in.)	Span (feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
6 3/4	9	2,263	1,352	776	483	319	220	156	114	84	63	-	-	-	-	-	-	-
	10 1/2	3,084	1,967	1,239	774	513	355	254	187	140	106	82	63	-	-	-	-	-
	12	4,030	2,572	1,780	1,161	771	536	385	285	215	165	128	100	79	63	-	-	-
	13 1/2	5,104	3,258	2,256	1,652	1,104	769	555	411	312	240	188	149	119	95	77	62	-
	15	6,304	4,025	2,788	2,023	1,520	1,060	766	570	433	335	264	210	169	136	111	91	74
	16 1/2	7,469	4,873	3,364	2,427	1,827	1,417	1,026	764	582	452	357	285	230	187	153	126	105
	18	8,556	5,802	3,972	2,865	2,157	1,678	1,337	997	761	593	469	375	304	249	205	170	141
	19 1/2	9,759	6,800	4,626	3,338	2,514	1,956	1,562	1,272	974	759	601	483	392	322	266	221	185
	21	11,096	7,671	5,328	3,845	2,897	2,254	1,800	1,467	1,216	954	757	609	495	407	338	282	237
	22 1/2	12,590	8,549	6,077	4,386	3,305	2,572	2,054	1,675	1,389	1,169	936	754	615	506	421	352	297
	24	14,271	9,501	6,872	4,961	3,738	2,910	2,325	1,896	1,573	1,323	1,127	921	752	620	516	433	366
	25 1/2	16,176	10,535	7,713	5,569	4,197	3,268	2,611	2,130	1,767	1,487	1,267	1,090	907	749	625	525	444
	27	18,354	11,664	8,542	6,210	4,681	3,645	2,913	2,376	1,972	1,660	1,415	1,218	1,058	895	747	628	532
	28 1/2	20,868	12,900	9,329	6,884	5,189	4,042	3,230	2,636	2,188	1,842	1,570	1,352	1,175	1,029	884	744	631
30	23,801	14,261	10,172	7,591	5,723	4,458	3,563	2,908	2,414	2,033	1,733	1,493	1,297	1,136	1,002	873	742	
Width (in.)	Depth (in.)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
8 3/4	9	2,934	1,753	1,006	627	413	285	202	147	109	82	62	-	-	-	-	-	-
	10 1/2	3,997	2,550	1,606	1,003	665	460	329	242	181	138	106	82	64	-	-	-	-
	12	5,224	3,334	2,308	1,505	1,000	695	499	369	278	213	166	130	103	81	64	51	-
	13 1/2	6,616	4,224	2,897	2,088	1,431	997	719	533	404	312	244	193	154	123	99	80	65
	15	8,171	5,210	3,542	2,554	1,922	1,375	993	738	561	435	342	272	218	177	144	118	96
	16 1/2	9,682	6,247	4,249	3,064	2,306	1,793	1,330	990	755	586	462	369	298	243	199	164	136
	18	11,092	7,373	5,016	3,618	2,724	2,119	1,691	1,293	987	768	607	487	394	322	266	220	183
	19 1/2	12,651	8,587	5,843	4,215	3,174	2,470	1,971	1,606	1,262	984	780	626	509	417	345	287	240
	21	14,383	9,889	6,729	4,856	3,657	2,846	2,272	1,852	1,535	1,236	981	789	642	528	438	366	307
	22 1/2	16,320	11,082	7,675	5,539	4,173	3,248	2,594	2,115	1,753	1,475	1,213	978	797	657	546	457	385
	24	18,499	12,316	8,679	6,265	4,720	3,675	2,935	2,394	1,985	1,670	1,422	1,193	974	804	669	561	474
	25 1/2	20,969	13,657	9,741	7,032	5,300	4,126	3,297	2,689	2,231	1,877	1,599	1,376	1,176	971	810	680	575
	27	23,793	15,120	10,862	7,842	5,911	4,603	3,678	3,000	2,490	2,096	1,785	1,537	1,335	1,160	968	814	690
	28 1/2	27,051	16,723	12,040	8,694	6,553	5,104	4,079	3,328	2,762	2,325	1,981	1,706	1,482	1,298	1,144	965	819
30	30,853	18,486	13,186	9,587	7,227	5,629	4,499	3,672	3,048	2,566	2,187	1,884	1,637	1,434	1,264	1,122	962	

Tabulated values are pounds per lineal foot.

Notes for X-Beam Floor Beams:

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = $L/360$ under live load. Where additional stiffness is desired or for other live/total load ratios, design for deflection must be modified per requirements.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads based on live/total load = 0.8 and are in addition to the beam weight (assumed 35 pcf).
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

Special order sizes in green.

Simple Span Application



Roof Beams Snow Load

(LDF=1.15)

$F_b = 2,400$ psi

$F_v = 265$ psi

$E = 1.8 \times 10^6$

True $E = 1.9 \times 10^6$

Width (in.)	Depth (in.)	Span (feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3 1/2	6	599	331	189	117	77	53	-	-	-	-	-	-	-	-	-	-	-
	7 1/2	937	597	373	233	154	106	76	55	-	-	-	-	-	-	-	-	-
	9	1,351	862	596	406	269	187	134	99	74	57	-	-	-	-	-	-	-
	9 1/2	1,505	961	665	478	318	221	159	117	88	68	53	-	-	-	-	-	-
	10 1/2	1,840	1,174	813	595	431	300	216	160	121	94	73	58	-	-	-	-	-
	11 7/8	2,355	1,503	1,041	762	581	437	316	235	178	138	109	86	69	56	-	-	-
	13 1/2	3,045	1,945	1,347	987	753	592	467	348	265	206	163	130	105	86	71	58	-
	14	3,275	2,092	1,449	1,061	810	637	514	389	297	231	183	146	118	97	80	66	55
	15	3,761	2,402	1,664	1,219	931	733	591	480	367	286	226	182	147	121	100	83	69
	16	4,253	2,734	1,895	1,388	1,060	834	673	554	447	349	277	222	181	148	123	103	86
	16 1/2	4,456	2,908	2,015	1,477	1,127	888	717	590	490	384	304	245	199	164	136	113	95
	18	5,104	3,462	2,400	1,759	1,343	1,058	854	698	579	487	398	321	262	216	179	150	126
	19 1/2	5,822	4,065	2,818	2,066	1,578	1,243	998	814	675	568	484	411	335	277	231	194	164
	21	6,619	4,577	3,269	2,397	1,831	1,440	1,150	938	779	655	558	481	417	349	291	245	207
22 1/2	7,510	5,101	3,754	2,753	2,103	1,642	1,313	1,071	889	748	638	549	477	418	361	304	258	
5 1/2	6	941	520	298	184	121	83	58	-	-	-	-	-	-	-	-	-	-
	7 1/2	1,472	939	587	366	242	167	119	87	65	-	-	-	-	-	-	-	-
	9	2,123	1,354	937	637	423	294	211	155	117	89	69	54	-	-	-	-	-
	9 1/2	2,366	1,510	1,044	751	499	347	249	184	139	107	83	65	51	-	-	-	-
	10 1/2	2,892	1,846	1,277	935	677	471	340	252	191	147	115	91	72	58	-	-	-
	11 7/8	3,700	2,363	1,636	1,198	913	686	496	369	280	217	171	136	109	88	72	59	-
	13 1/2	4,785	3,056	2,117	1,550	1,183	927	734	547	417	324	256	205	165	135	111	92	76
	14	5,147	3,287	2,277	1,668	1,273	994	793	611	466	363	287	230	186	152	125	104	86
	15	5,910	3,775	2,615	1,916	1,459	1,135	906	738	577	449	356	286	232	190	157	130	109
	16	6,683	4,296	2,977	2,182	1,651	1,284	1,025	835	692	548	435	349	284	233	193	161	135
	16 1/2	7,002	4,570	3,167	2,321	1,751	1,362	1,088	886	735	603	478	385	313	257	213	178	150
	18	8,021	5,441	3,771	2,744	2,067	1,609	1,285	1,048	869	730	622	504	411	339	281	236	199
	19 1/2	9,149	6,387	4,428	3,197	2,409	1,875	1,498	1,222	1,013	852	726	624	527	435	362	304	257
	21	10,401	7,192	5,101	3,683	2,775	2,161	1,726	1,408	1,168	983	837	721	626	548	457	384	326
	22 1/2	11,801	8,015	5,817	4,200	3,166	2,466	1,970	1,607	1,334	1,123	957	824	715	626	552	477	405
	24	13,377	8,907	6,578	4,750	3,581	2,789	2,229	1,819	1,510	1,271	1,083	933	811	710	626	555	495

Tabulated values are pounds per lineal foot.

Notes for X-Beam Roof Beams:

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = $L/180$ under live load. Other deflection limits may apply.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads and include beam weight (assumed 35 pcf).
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

Special order sizes in green.

Simple Span Application



Roof Beams Snow Load (LDF=1.15)

$F_b = 2,400$ psi
 $F_v = 265$ psi
 $E = 1.8 \times 10^6$
 True $E = 1.9 \times 10^6$

Width (in.)	Depth (in.)	Span (feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
6 3/4	9	2,605	1,662	1,150	782	519	360	259	191	143	110	85	66	52	-	-	-	-
	10 1/2	3,549	2,265	1,568	1,147	831	578	417	309	234	180	141	111	89	71	57	-	-
	12	4,638	2,961	2,050	1,501	1,144	869	628	467	355	275	216	172	139	112	91	75	61
	13 1/2	5,873	3,750	2,598	1,903	1,434	1,115	889	671	512	398	314	251	203	166	136	112	93
	15	7,253	4,633	3,210	2,330	1,754	1,364	1,089	887	708	551	437	350	284	233	192	160	134
	16 1/2	8,593	5,609	3,873	2,795	2,105	1,637	1,307	1,065	883	740	587	472	384	316	262	219	183
	18	9,844	6,677	4,572	3,299	2,485	1,934	1,544	1,259	1,044	878	747	618	504	416	345	289	244
	19 1/2	11,228	7,824	5,325	3,844	2,896	2,254	1,801	1,468	1,218	1,024	872	750	647	534	445	373	316
	21	12,765	8,827	6,133	4,427	3,336	2,598	2,075	1,692	1,404	1,182	1,006	866	752	658	561	472	400
	22 1/2	14,484	9,837	6,994	5,050	3,806	2,964	2,368	1,932	1,603	1,349	1,150	990	859	752	663	586	497
	24	16,417	10,932	7,909	5,711	4,305	3,353	2,679	2,186	1,815	1,528	1,302	1,121	974	853	752	667	595
	25 1/2	18,609	12,122	8,877	6,410	4,833	3,764	3,009	2,456	2,038	1,717	1,463	1,260	1,095	959	846	751	670
	27	21,114	13,420	9,830	7,148	5,389	4,199	3,356	2,740	2,275	1,916	1,633	1,407	1,223	1,072	945	839	749
	28 1/2	24,005	14,842	10,735	7,924	5,975	4,655	3,722	3,038	2,523	2,125	1,812	1,562	1,358	1,190	1,050	932	832
30	27,378	16,407	11,705	8,737	6,589	5,134	4,105	3,352	2,784	2,345	2,000	1,724	1,499	1,314	1,160	1,030	920	
Width (in.)	Depth (in.)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
8 3/4	9	3,337	2,154	1,490	1,014	673	467	335	247	186	142	110	86	67	53	-	-	-
	10 1/2	4,600	2,936	2,032	1,487	1,077	750	540	400	303	234	183	144	115	92	74	-	-
	12	6,012	3,838	2,658	1,921	1,445	1,123	814	606	461	357	281	223	180	145	119	97	79
	13 1/2	7,613	4,862	3,336	2,405	1,810	1,407	1,122	870	663	516	407	326	263	215	176	146	121
	15	9,402	5,996	4,078	2,942	2,215	1,722	1,374	1,119	918	715	566	454	369	302	249	207	173
	16 1/2	11,139	7,189	4,891	3,529	2,657	2,067	1,650	1,344	1,114	936	761	612	498	409	339	283	238
	18	12,761	8,485	5,774	4,166	3,138	2,442	1,950	1,589	1,317	1,108	942	802	654	539	448	375	316
	19 1/2	14,554	9,882	6,725	4,854	3,657	2,846	2,273	1,853	1,537	1,293	1,100	946	821	692	577	484	409
	21	16,547	11,379	7,745	5,591	4,213	3,280	2,620	2,137	1,772	1,491	1,270	1,093	948	830	727	612	518
	22 1/2	18,775	12,752	8,833	6,377	4,806	3,742	2,990	2,439	2,024	1,703	1,451	1,249	1,084	949	836	741	644
	24	21,281	14,171	9,988	7,212	5,436	4,234	3,383	2,760	2,291	1,928	1,643	1,415	1,229	1,076	948	841	750
	25 1/2	24,123	15,713	11,211	8,095	6,103	4,753	3,799	3,100	2,573	2,167	1,847	1,590	1,382	1,210	1,067	947	845
	27	27,370	17,396	12,500	9,027	6,806	5,302	4,238	3,459	2,872	2,418	2,062	1,776	1,543	1,352	1,193	1,058	945
	28 1/2	31,118	19,240	13,855	10,007	7,545	5,878	4,700	3,836	3,185	2,683	2,288	1,971	1,713	1,501	1,325	1,176	1,050
30	35,490	21,269	15,174	11,034	8,320	6,483	5,184	4,232	3,514	2,961	2,525	2,176	1,892	1,658	1,463	1,299	1,160	

Tabulated values are pounds per lineal foot.

Notes for X-Beam Roof Beams:

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = $L/180$ under live load. Other deflection limits may apply.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads and include beam weight (assumed 35 pcf).
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

Special order sizes in green.

Simple Span Application



Roof Beams Non-Snow (LDF=1.25)

$F_b = 2,400$ psi
 $F_v = 265$ psi
 $E = 1.8 \times 10^6$
 True $E = 1.9 \times 10^6$

Width (in.)	Depth (in.)	Span (feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3 1/2	6	651	331	189	117	77	53	-	-	-	-	-	-	-	-	-	-	-
	7 1/2	1,019	650	373	233	154	106	76	55	-	-	-	-	-	-	-	-	-
	9	1,469	937	649	406	269	187	134	99	74	57	-	-	-	-	-	-	-
	9 1/2	1,637	1,045	723	478	318	221	159	117	88	68	53	-	-	-	-	-	-
	10 1/2	2,001	1,277	884	647	431	300	216	160	121	94	73	58	-	-	-	-	-
	11 7/8	2,560	1,635	1,132	829	626	437	316	235	178	138	109	86	69	56	-	-	-
	13 1/2	3,311	2,115	1,465	1,073	819	645	467	348	265	206	163	130	105	86	71	58	-
	14	3,561	2,275	1,576	1,155	881	694	522	389	297	231	183	146	118	97	80	66	55
	15	4,089	2,612	1,810	1,327	1,013	797	643	480	367	286	226	182	147	121	100	83	69
	16	4,624	2,973	2,060	1,510	1,153	908	733	585	447	349	277	222	181	148	123	103	86
	16 1/2	4,844	3,162	2,192	1,606	1,227	966	780	642	491	384	304	245	199	164	136	113	95
	18	5,550	3,765	2,610	1,913	1,461	1,151	930	760	631	501	398	321	262	216	179	150	126
	19 1/2	6,329	4,420	3,064	2,247	1,716	1,353	1,086	886	736	619	509	411	335	277	231	194	164
	21	7,196	4,976	3,555	2,607	1,992	1,566	1,252	1,022	848	714	609	516	422	349	291	245	207
22 1/2	8,165	5,546	4,082	2,994	2,288	1,787	1,428	1,166	968	815	695	599	520	432	361	304	258	
Width (in.)	Depth (in.)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
5 1/2	6	1,023	520	298	184	121	83	58	-	-	-	-	-	-	-	-	-	-
	7 1/2	1,601	1,021	587	366	242	167	119	87	65	-	-	-	-	-	-	-	-
	9	2,308	1,473	1,019	637	423	294	211	155	117	89	69	54	-	-	-	-	-
	9 1/2	2,573	1,642	1,136	751	499	347	249	184	139	107	83	65	51	-	-	-	-
	10 1/2	3,144	2,007	1,390	1,017	677	471	340	252	191	147	115	91	72	58	-	-	-
	11 7/8	4,024	2,569	1,779	1,303	983	686	496	369	280	217	171	136	109	88	72	59	-
	13 1/2	5,203	3,323	2,302	1,687	1,287	1,010	734	547	417	324	256	205	165	135	111	92	76
	14	5,596	3,575	2,477	1,815	1,385	1,083	820	611	466	363	287	230	186	152	125	104	86
	15	6,425	4,105	2,845	2,085	1,588	1,235	986	755	577	449	356	286	232	190	157	130	109
	16	7,266	4,672	3,238	2,373	1,796	1,398	1,116	910	703	548	435	349	284	233	193	161	135
	16 1/2	7,612	4,969	3,444	2,524	1,905	1,483	1,184	965	772	603	478	385	313	257	213	178	150
	18	8,721	5,916	4,101	2,985	2,249	1,751	1,399	1,141	946	787	625	504	411	339	281	236	199
	19 1/2	9,946	6,945	4,815	3,478	2,621	2,041	1,631	1,330	1,104	929	791	645	527	435	362	304	257
	21	11,308	7,820	5,547	4,005	3,019	2,351	1,879	1,533	1,272	1,071	913	786	663	548	457	384	326
22 1/2	12,830	8,715	6,326	4,568	3,444	2,683	2,144	1,750	1,453	1,223	1,043	898	780	678	567	477	405	
24	14,543	9,685	7,153	5,166	3,895	3,034	2,426	1,980	1,644	1,385	1,180	1,017	884	774	683	584	496	

Tabulated values are pounds per lineal foot.

Notes for X-Beam Roof Beams:

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = $L/180$ under live load. Other deflection limits may apply.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads and include beam weight (assumed 35 pcf).
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

Special order sizes in green.

Simple Span Application



Roof Beams Non-Snow (LDF=1.25)

$F_b = 2,400$ psi
 $F_v = 265$ psi
 $E = 1.8 \times 10^6$
 True $E = 1.9 \times 10^6$

Width (in.)	Depth (in.)	Span (feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
6 3/4	9	2,833	1,808	1,251	782	519	360	259	191	143	110	85	66	52	-	-	-	-
	10 1/2	3,859	2,463	1,705	1,248	831	578	417	309	234	180	141	111	89	71	57	-	-
	12	5,043	3,220	2,230	1,633	1,245	869	628	467	355	275	216	172	139	112	91	75	61
	13 1/2	6,385	4,078	2,826	2,070	1,560	1,214	900	671	512	398	314	251	203	166	136	112	93
	15	7,886	5,038	3,491	2,534	1,909	1,485	1,185	926	708	551	437	350	284	233	192	160	134
	16 1/2	9,343	6,099	4,212	3,040	2,290	1,782	1,423	1,160	948	740	587	472	384	316	262	219	183
	18	10,703	7,260	4,972	3,589	2,704	2,105	1,681	1,371	1,137	957	767	618	504	416	345	289	244
	19 1/2	12,207	8,507	5,791	4,181	3,151	2,453	1,960	1,599	1,326	1,116	951	792	647	534	445	373	316
	21	13,878	9,597	6,669	4,815	3,629	2,826	2,259	1,843	1,529	1,287	1,097	944	813	672	561	472	400
	22 1/2	15,746	10,696	7,605	5,492	4,140	3,225	2,577	2,103	1,746	1,470	1,253	1,079	937	821	696	586	497
	24	17,848	11,886	8,600	6,211	4,682	3,648	2,916	2,380	1,976	1,664	1,419	1,222	1,062	930	821	716	609
	25 1/2	20,231	13,179	9,652	6,971	5,256	4,095	3,274	2,673	2,219	1,870	1,594	1,373	1,194	1,046	923	820	732
	27	22,954	14,591	10,688	7,773	5,862	4,568	3,652	2,982	2,476	2,086	1,779	1,533	1,333	1,169	1,031	916	818
	28 1/2	26,097	16,137	11,673	8,617	6,498	5,064	4,050	3,307	2,747	2,314	1,974	1,702	1,480	1,297	1,145	1,017	909
30	29,763	17,838	12,728	9,501	7,166	5,585	4,467	3,647	3,030	2,554	2,178	1,878	1,634	1,433	1,265	1,124	1,004	
Width (in.)	Depth (in.)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
8 3/4	9	3,672	2,343	1,621	1,014	673	467	335	247	186	142	110	86	67	53	-	-	-
	10 1/2	5,002	3,193	2,221	1,618	1,007	750	540	400	303	234	183	144	115	92	74	60	-
	12	6,537	4,174	2,891	2,090	1,573	1,127	814	606	461	357	281	223	180	145	119	97	79
	13 1/2	8,277	5,287	3,628	2,617	1,970	1,532	1,167	870	663	516	407	326	263	215	176	146	121
	15	10,222	6,520	4,436	3,200	2,410	1,875	1,496	1,201	918	715	566	454	369	302	249	207	173
	16 1/2	12,111	7,818	5,320	3,839	2,892	2,250	1,797	1,464	1,214	959	761	612	498	409	339	283	238
	18	13,874	9,226	6,279	4,532	3,414	2,658	2,123	1,731	1,435	1,207	995	802	654	539	448	375	316
	19 1/2	15,824	10,745	7,313	5,280	3,978	3,098	2,474	2,018	1,674	1,409	1,200	1,027	839	692	577	484	409
	21	17,990	12,372	8,422	6,081	4,583	3,569	2,852	2,326	1,930	1,625	1,384	1,191	1,035	872	727	612	518
	22 1/2	20,412	13,865	9,605	6,936	5,228	4,072	3,254	2,655	2,204	1,855	1,581	1,361	1,183	1,036	902	759	644
	24	23,136	15,407	10,861	7,844	5,913	4,606	3,682	3,005	2,494	2,101	1,790	1,542	1,340	1,174	1,035	919	789
	25 1/2	26,225	17,084	12,190	8,804	6,638	5,172	4,134	3,375	2,802	2,360	2,012	1,733	1,507	1,320	1,165	1,034	923
	27	29,755	18,914	13,592	9,817	7,403	5,768	4,612	3,765	3,126	2,634	2,246	1,935	1,683	1,475	1,301	1,156	1,032
	28 1/2	33,829	20,919	15,065	10,882	8,206	6,395	5,114	4,175	3,468	2,922	2,492	2,148	1,868	1,637	1,445	1,284	1,146
30	38,582	23,124	16,499	11,999	9,049	7,052	5,640	4,605	3,826	3,224	2,750	2,370	2,062	1,808	1,596	1,418	1,267	

Tabulated values are pounds per lined foot.

Notes for X-Beam Roof Beams:

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = $L/180$ under live load. Other deflection limits may apply.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads and include beam weight (assumed 35 pcf).
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

Special order sizes in green.

Rosboro X-Beam Columns: Design Values

Layup Combination	Bending about Y-Y Axis F_{by} (psi)	Bending about X-X Axis F_{bx} (psi)	Compression Parallel F_c (psi) ³	MOE (10 ⁶ psi)
EWS 3 DF	2100 ⁽¹⁾	2000 ⁽²⁾	2300 ⁽³⁾	1.9

Notes:

1. Applicable to 4 or more lams. This value shall be reduced to 1,850 psi for 3 lams and 1,550 psi for 2 lams.
2. Applicable to column depths up to 15". For column depths exceeding 15", $F_{bx} = 1,760$ psi.
3. Applicable to 4 or more lams. This value shall be reduced to 1,900 psi for 2 or 3 lams.

Allowable Axial Loads (Pounds) for Combination No. 3 Glulam Columns

Side loads are not permitted. End loads are limited to a maximum eccentricity of either 1/6 column width or depth, whichever is worse.

Effective Column Length (ft.)	Lamination Net Width = 3 1/2 in.						Lamination Net Width = 5 1/2 in.								
	Net Depth = 4 1/2 in. (3 lams)			Net Depth = 6 in. (4 lams)			Net Depth = 5 1/2 in. (4 lams)			Net Depth = 6 in. (4 lams)			Net Depth = 7 1/2 in. (5 lams)		
	Load Duration Factor			Load Duration Factor			Load Duration Factor			Load Duration Factor			Load Duration Factor		
	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25
8	8,570	8,970	9,190	11,940	12,440	12,720	26,850	29,050	30,350	30,600	33,220	34,770	38,900	41,980	43,780
9	7,290	7,570	7,740	10,090	10,450	10,660	24,130	25,810	26,790	27,660	29,670	30,770	34,800	37,120	38,460
10	6,250	6,470	6,590	8,610	8,880	9,040	21,580	22,890	23,640	24,790	26,210	27,030	30,990	32,760	33,790
11	5,410	5,570	5,670	7,420	7,630	7,750	19,300	20,330	20,930	22,080	23,190	23,830	27,600	28,980	29,780
12	4,720	4,850	4,920	6,460	6,620	6,720	17,290	18,120	18,600	19,700	20,590	21,100	24,630	25,740	26,380
13	4,150	4,250	4,310	5,660	5,800	5,870	15,540	16,220	16,610	17,650	18,370	18,790	22,070	22,970	23,480
14	3,670	3,760	3,810	5,010	5,110	5,180	14,020	14,580	14,900	15,880	16,470	16,810	19,850	20,590	21,020
15	—	-	-	-	-	-	12,690	13,160	13,430	14,340	14,840	15,120	17,930	18,550	18,900
16	-	-	-	-	-	-	11,540	11,930	12,160	13,010	13,420	13,660	16,260	16,780	17,080
17	-	-	-	-	-	-	10,530	10,860	11,060	11,840	12,200	12,400	14,800	15,250	15,500
18	-	-	-	-	-	-	9,640	9,930	10,090	10,820	11,130	11,300	13,530	13,910	14,120
19	-	-	-	-	-	-	8,850	9,100	9,250	9,920	10,190	10,340	12,410	12,730	12,920
20	-	-	-	-	-	-	8,160	8,370	8,500	9,130	9,360	9,490	11,410	11,700	11,860
21	-	-	-	-	-	-	7,540	7,730	7,840	8,430	8,630	8,740	10,530	10,780	10,920
22	-	-	-	-	-	-	6,980	7,150	7,250	7,800	7,980	8,070	9,750	9,970	10,090

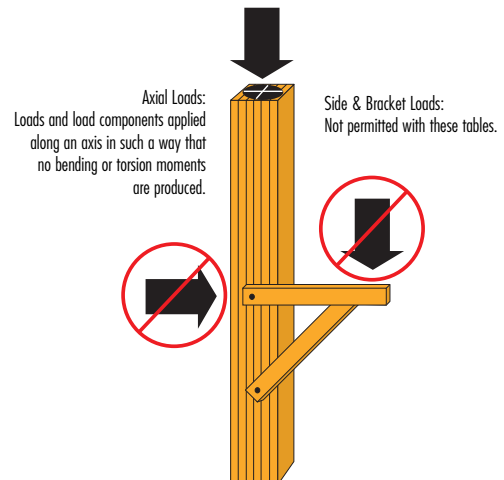
Notes:

- (1) The tabulated allowable loads apply only to one-piece glulam members made with all L2D laminations (Combination 3) without special tension laminations.
- (2) Applicable service conditions = dry.
- (3) The tabulated allowable loads are based on simply axially loaded columns subjected to a maximum eccentricity of either 1/6 column width or 1/6 column depth, whichever is worse. For side loads, other eccentric end loads, or other combined axial and flexural loads, see 2005 NDS.
- (4) The column is assumed to be unbraced, except at the column ends, and the effective column length is equal to the actual column length.
- (5) Design properties for normal load duration and dry-use service conditions:
 Compression parallel to grain (F_c) = 2,300 psi for 4 or more lams, or 1,900 psi for 2 or 3 lams.
 Modulus of elasticity (E) = 1.9×10^6 psi
 Flexural stress when loaded parallel to wide faces of lamination (F_{by}) = 2,100 psi for 4 or more lams, or 1,850 psi for 3 lams. Flexural stress when loaded perpendicular to wide faces of lamination (F_{bx}) = 2,000 psi for 2 lams to 15 in. deep without special tension laminations. Volume factor for F_{bx} is in accordance with 2005 NDS. Size factor for F_{by} is $(12/d)^{1/9}$, where d is equal to the lamination width in inches.

Axial Loads

Allowable Axial Load Tables:

Side loads and bracket loads are not permitted. End loads are limited to a maximum eccentricity of either 1/6 column width or 1/6 column depth.



Minimum Bearing Length (in.)

Product	Width (in.)	Reaction (lb)																	
		3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000
X-Beam	3 1/2	1.50	1.76	2.20	2.64	3.08	3.52	3.96	4.40	5.27	6.15	7.03	7.91	8.79	9.67	10.55	11.43	12.31	13.19
	5 1/2	1.50	1.50	1.50	1.68	1.96	2.24	2.52	2.80	3.36	3.92	4.48	5.03	5.59	6.15	6.71	7.27	7.83	8.39

- (1) Minimum bearing length is 1 1/2".
- (2) Bearing across full width of the beam is required.
- (3) Bearing length shall be adjusted when the allowable bearing stress of the supporting member is less than the tabulated F_{c1} values of the glulam beam.

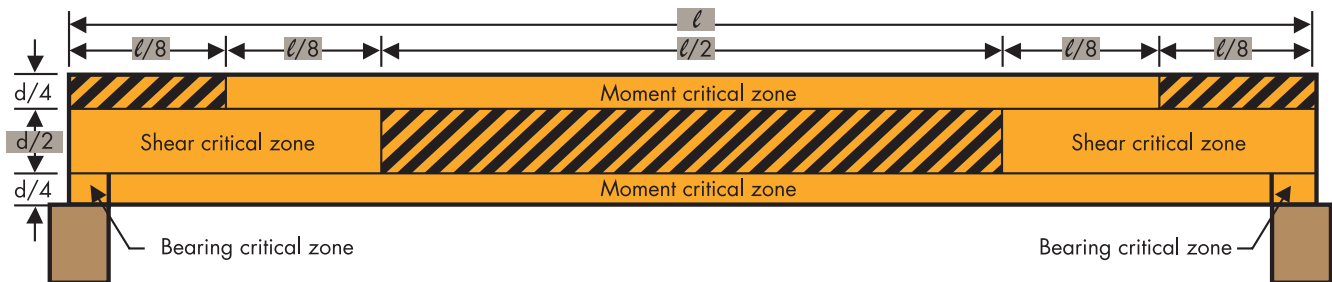
Camber Chart


Length	12			14			16			18		
	Min	Target	Max	Min	Target	Max	Min	Target	Max	Min	Target	Max
Radius 3500'	1/4	0	1/4	1/8	1/8	3/8	1/8	1/8	3/8	1/8	1/8	3/8
Radius 5000'	1/4	0	1/4	1/4	0	1/4	1/8	1/8	3/8	1/8	1/8	3/8
No Camber	1/4	0	1/4	1/4	0	1/4	1/4	0	1/4	1/4	0	1/4
Length	20			22			24			26		
	Min	Target	Max	Min	Target	Max	Min	Target	Max	Min	Target	Max
Radius 3500'	1/8	1/8	3/8	1/8	1/4	5/8	1/8	1/4	5/8	1/8	1/4	5/8
Radius 5000'	1/8	1/8	3/8	1/8	1/8	1/2	1/4	1/8	1/2	1/8	1/4	5/8
No Camber	1/4	0	1/4	3/8	0	3/8	3/8	0	3/8	3/8	0	3/8

Section 4.2.2 of ANSI/AITC A190.1-2007: Tolerances for camber are applicable at the time of manufacture without allowance for dead load deflection. Up to 20 ft, the tolerance is plus or minus 1/4 in. Over 20 ft, increase tolerance 1/8 in. per each additional 20 ft or fraction thereof, but not to exceed 3/4 in.

Up to 20' = plus or minus 1/4" 21' - 40' = plus or minus 3/8" 41' - 60' = plus or minus 1/2" 61' - 72' = plus or minus 5/8"

Zones where small horizontal holes are permitted in a uniformly loaded, simply supported beam



 Zones where horizontal holes are permitted for passage of wires, conduit, etc.

Notes:

- (1) The above diagram applies to horizontal holes and beams properly sized using APA or Rosboro uniform load tables. For concentrated load conditions, contact Rosboro Technical Support.
- (2) Field holes should be drilled for access only (small diameter wires, conduit, cable and other lightweight materials) and not for load bearing hardware attachments unless designed specifically by the project engineer. Square and rectangular holes are not allowed.
- (3) These field drilled holes should meet the following guidelines:
 - A. Hole size: The hole diameter should not exceed 1 1/2" or 1/10 the beam depth, whichever is smaller.
 - B. Hole location: The hole should have a minimum clear distance, as measured from the edge of the hole to the nearest edge of the beam, of 4 hole diameters to the top or bottom of the beam and 8 hole diameters from the end of the beam. Otherwise as shown in the shaded area.
 - C. Hole spacing: The minimum clear spacing between adjacent holes, as measured between the nearest edge of the holes, should be 8 hole diameters based on the largest diameter of any adjacent hole in the beam.
 - D. Number of holes: The maximum number of holes should not exceed 1 hole per every 5 feet of beam length. In other words, the maximum number of holes should not exceed 4 for a 20-foot long beam. The hole spacing limitation, as given above, should be satisfied separately.
- (4) For glulam members that have been over-sized, these guidelines may be relaxed based on an engineering analysis.
- (5) Holes in cantilevered beams require additional analysis, contact Rosboro Technical Support.



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