Rosboro

TREATED X BEAM

When You Need It To Last

- 24F 1.9E(True) Treated Glulam
- Architectural Appearance
- Resistant to rot and decay

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TREATED X BEAM™

When You Need It To Last

Architectural Appearance Treated Glulam Beams

Finally a treated glulam that doesn't look treated! Rosboro Treated X-Beam™ is finished a full 3¹/₂" or 5¹/₂" wide, in architectural appearance and it is treated with Hi-Clear II – a clear treatment that leaves the beam a light honey color.

As the leading producer of glulam products in the U.S., Rosboro continues to respond to demand by producing Treated X-Beam. These beams are made from coastal region Douglas fir and then treated to resist rot, decay and insect attack or other conditions that can destroy wood. Installation is easy because the beams are straight and manufactured to match standard framing widths and depths. Backed with a 25-year warranty, Rosboro Treated X-Beam products are an excellent choice for decks, porches and balconies.

X-Beams Treated with Hi-Clear II

Rosboro Treated X-Beam is pressure treated with Hi-Clear II, a clear industrial wood preservative that provides chemical resistance against insect attack, decay, mold, mildew, bacterial growths and is also effective against the Formosan termite. Hi-Clear II is intended to be used in above ground exterior applications. The treatment is clean, non-swelling and non-leaching and leaves the beam a light honey color. For more information on Hi-Clear II, please visit the Rosboro website at www.rosboro.com.

Beams Are Available in Common Sizes
Widths: 3¹/₂" and 5¹/₂"
Depths: 9¹/₂", 11⁷/₈", 14", 16" and 18"

Appearance Classification

Rosboro Treated X-Beam is sized to match standard framing widths. The beams are finished to an Architectural Appearance and are sanded three sides prior to treatment. Grade stamps and treating stamps are applied to the top of the beam for easy identification.

Columns Approved for Ground Contact

Rosboro Treated Columns are pressure treated with a mineral-spirit borne copper naphthenate preservative. The treatment is an ideal fungicide and insecticide for the long-term preservation of glulam columns in both ground contact and above ground uses. The treatment is effective against the dampwood termite, drywood termite and subterranean termites including the Formosan termite. Rosboro recommends that columns be placed on a pier block, but if the column is used in a direct ground contact application, then it should sit in a gravel bed that allows proper drainage. The framing appearance columns are incised and treated with the more aggressive copper naphthenate which is intended for exterior applications. After treatment, the color ranges between chocolate-brown and dark green. Visit Rosboro's website at www.rosboro.com for more information.

Columns Are Available in Common Sizes:
Widths: $3\,1/2$", $5\,1/2$" and 7"
Depths: $3\,1/2$", $5\,1/2$" and 7"

## Recommended Hardware, Resealing and Finishing

Moisture can accumulate around connections, such as hangers, fasteners, bolts, nails and screws. Rosboro Treated X-Beam provides protection from moisture induced rot and decay at these locations when fabrication is done before treating. Field fabrication, trimming, hole drilling or minor surface damage should be sealed with copper naphthenate, which is available at local home centers. Rosboro has specifically selected treatments that are known to be non-corrosive to metal, however we recommend the use of hangers and fasteners specified for treated wood products such as hot-dip galvanized or stainless steel. Oil-based stains and paints can be applied as a final finish once the treatment has flashed off.

Understanding Wet-Use vs. Dry-Use

Wet-use and dry-use are terms that are associated with in-service conditions. Usually a glulam member is exposed to water on an intermittent basis only. Any wetting is typically followed by a drying cycle, and the product never reaches a consistent wet-use condition. This situation is classified as dry-use.

The technical measure of wet-use is accepted as consistent moisture content within the beam of 16% or greater. A wet-use condition is rarely reached unless the beam is submerged in water or subjected to an artificially humid moisture condition. For example, using the chart to the right, a beam in an environment having a constant relative humidity of 80% and a temperature above 70° F will not reach a consistent moisture content of 16% or greater. Since a combination of high relative humidity and temperature outside of this range is seldom reached in the U.S., ambi-

ent air conditions rarely result in a wet-use classification. If there is any question regarding use condition, a licensed design professional should be consulted to determine if wet-use design adjustments apply.
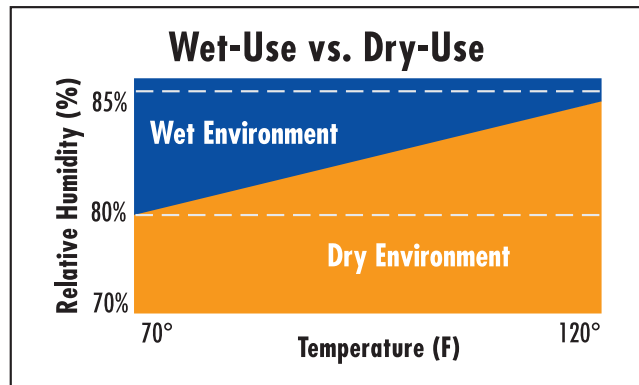
To retain an open-air moisture content of at least 16% (wet-use application), a beam must stay in a constant wet environment for a prolonged period (as illustrated above).

Easy and Safe to Work With

Treated X-Beam and Columns not only resist rot and decay but, with simple precautions, the products are safe and easy to work with. The treatment used for Rosboro Treated X-Beam is low in toxicity to humans. However, gloves should be worn when handling treated products and dust masks and eye protection should be worn when cutting treated material. Always follow site, handling and disposal instructions provided by Materials Safety Data Sheets (MSDS) available from the Rosboro website (www.rosboro.com).

Code Recognized

Rosboro glulam is manufactured in accordance with ANSI Standard A190.1, which is a code-recognized national consensus standard for glulam, using wet-use adhesives complying with ASTM Standard D2559. The lay-up combinations EWS 24F-V4 DF/DF and Combination Number 3 are recognized under ICC-ES Report ESR-1940. Rosboro's glulam production is inspected and certified by APA-EWS.

Restricted Uses

Although Rosboro Treated X-Beam and Column products are pressure treated, they should not be used in marine applications such as docks and marinas or in conditions where the product is in contact with standing water.

Rosboro Treated X-Beam: Design Values[1]

Product	Layup Combination	Flexural Stress F_b (psi)[2]		Compression Perpendicular to Grain (psi) F_cⱼ	Shear F_v (psi)[3]	MOE (10^6 psi)	
		Tension Zone	Compression Zone			Apparent	True
Treated X-Beam	24F-V4	2400	1850	650	265	1.8	1.9
Wet-Use factor		0.80	0.80	0.53	0.875	0.833	

(1) The tabulated values are for dry conditions of use (moisture content of less than 16%). For Wet-Use, the design values shall be multiplied by the Wet-Use factor given at the bottom of the table.

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

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

where: b = beam width (in.),

d = beam depth (in.),

L = beam length (ft.)

x = 10

(3) For non-prismatic members, notched members, members subject to impact or cyclic loading, or shear design of bending members at connections (NDS-12, 3.4.3.3), the design shear (F_v) shall be multiplied by a factor of 0.72.

Minimum Bearing Length (in.)

Product	Width (in.)	Reaction (lbf)																		
		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
Treated Glulam - Dry-Use (F_cⱼ = 650 psi)	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
Treated Glulam - Wet-Use (F_cⱼ = 392 psi)	3 1/2	2.49	3.32	4.15	4.98	5.81	6.63	7.46	8.29	9.95	11.61	13.27	14.93	16.59	18.25	19.90	21.56	23.22	24.88
	5 1/2	1.58	2.11	2.64	3.17	3.69	4.22	4.75	5.28	6.33	7.39	8.44	9.50	10.56	11.61	12.67	13.72	14.78	15.83

(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_cⱼ values of the glulam beam.

Treated X-Beam Design Properties

EWS 24F-V4

Dry-Use

F_b = 2,400 psi

F_v = 265 psi

E = 1.8 x 10^6 psi

F_cⱼ = 650 psi

Width (in.)	Depth (in.)	Weight (lbf/ft.)	Maximum Resistive Shear (lbf)			Maximum Resistive Moment (ft.-lbf)			EI (10^6 in.^2- lb)
			100%	115%	125%	100%	115%	125%	
3 1/2	9 1/2	8.4	5,874	6,755	7,343	10,529	12,109	13,161	450
	11 7/8	10.5	7,343	8,444	9,178	16,452	18,920	20,565	879
	14	12.4	8,657	9,955	10,821	22,867	26,297	28,583	1,441
	16	14.2	9,893	11,377	12,367	29,867	34,347	37,333	2,150
	18	16.0	11,130	12,800	13,913	37,800	43,470	47,250	3,062
5 1/2	9 1/2	13.2	9,231	10,615	11,539	16,546	19,028	20,682	707
	11 7/8	16.6	11,539	13,269	14,423	25,853	29,731	32,316	1,382
	14	19.5	13,603	15,644	17,004	35,933	41,323	44,917	2,264
	16	22.3	15,547	17,879	19,433	46,933	53,973	58,667	3,379
	18	25.0	17,490	20,114	21,863	59,400	68,310	74,250	4,811

(1) Beam weight is assumed to be 36.5 pcf.

(2) Maximum resistive moment shall be adjusted by the volume factor based on NDS-12.

Rosboro's Treated X-Beam is a 24F-V4 glulam that is manufactured with an unbalanced lay-up. In unbalanced beams, the strength of the lumber used on the beams tension side is greater than the lumber used on the corresponding compression side (top). As a result, unbalanced beams may not carry as much load in a multi-span or cantilever application. The load carrying capacity is reduced as the span length or cantilever length is increased. **It is a common misconception that unbalanced beams cannot be used in multi-span or cantilever applications.** The table on page 5 lists the loads that can be carried by an unbalanced Treated X-beam in both simple-span and multi-span applications. The top or compression face is clearly marked with a "TOP" and treatment stamp.

Unbalanced Glulam Layup

Compression

Core

Tension
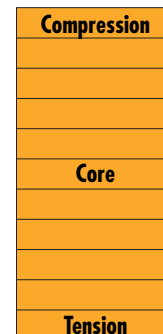
Treated X-Beam Roof Non-Snow (plf)

(LDF = 1.25)
Dry-Use

F_b = 2,400 psi
F_v = 265 psi
E = 1.8 x 10⁶ psi
$F_{c\perp}$ = 650 psi
EWS 24F-V4

Width (in.)	Depth (in.)	Load Condition	8'	10'	12'	14'	16'	18'	20'	24'	28'	32'
3½	9½	Simple	1637	1045	723	478	318	221	159	88	53	–
		Multiple	1260	804	556	406	309	242	195	119	72	–
		Min. Bearing (Mult. / Simple)	2.9 / 5.5	2.3 / 4.4	1.9 / 3.7	1.5 / 3.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	–
	11⅞	Simple	2560	1635	1132	829	626	437	316	178	109	69
		Multiple	1971	1258	871	637	485	381	307	210	146	94
		Min. Bearing (Mult. / Simple)	4.5 / 8.7	3.6 / 6.9	3.0 / 5.7	2.6 / 4.9	2.2 / 4.3	1.7 / 3.8	1.5 / 3.4	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	14	Simple	3561	2275	1576	1155	881	694	522	297	183	118
		Multiple	2742	1751	1212	887	677	532	429	294	213	159
		Min. Bearing (Mult. / Simple)	6.3 / 12.1	5.0 / 9.6	4.2 / 8.0	3.6 / 6.8	3.1 / 5.9	2.7 / 5.3	2.3 / 4.7	1.6 / 3.9	1.5 / 3.3	1.5 / 3.0
	16	Simple	4624	2973	2060	1510	1153	908	733	447	277	181
		Multiple	3359	2289	1585	1161	886	697	562	386	280	211
		Min. Bearing (Mult. / Simple)	8.1 / 14.8	6.5 / 12.6	5.4 / 10.5	4.6 / 8.9	4.1 / 7.8	3.6 / 6.9	3.2 / 6.2	2.4 / 5.1	1.7 / 4.3	1.5 / 3.7
	18	Simple	5550	3765	2610	1913	1461	1151	930	631	398	262
		Multiple	3960	2898	2008	1471	1123	884	713	491	356	269
		Min. Bearing (Mult. / Simple)	9.8 / 17.4	8.3 / 15.9	6.9 / 13.2	5.9 / 11.3	5.1 / 9.9	4.6 / 8.7	4.1 / 7.8	3.3 / 6.5	2.4 / 5.5	1.8 / 4.7
5½	9½	Simple	2573	1642	1136	751	499	347	249	139	83	51
		Multiple	1980	1263	873	638	486	381	306	187	113	71
		Min. Bearing (Mult. / Simple)	2.9 / 5.5	2.3 / 4.4	1.9 / 3.7	1.5 / 3.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	11⅞	Simple	4024	2569	1779	1303	983	686	496	280	171	109
		Multiple	3098	1977	1368	1001	763	599	482	330	229	148
		Min. Bearing (Mult. / Simple)	4.5 / 8.7	3.6 / 6.9	3.0 / 5.7	2.6 / 4.9	2.2 / 4.3	1.7 / 3.8	1.5 / 3.4	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	14	Simple	5596	3575	2477	1815	1385	1083	820	466	287	186
		Multiple	4309	2751	1905	1394	1063	836	674	462	335	251
		Min. Bearing (Mult. / Simple)	6.3 / 12.1	5.0 / 9.6	4.2 / 8.0	3.6 / 6.8	3.1 / 5.9	2.7 / 5.3	2.3 / 4.7	1.6 / 3.9	1.5 / 3.3	1.5 / 3.0
	16	Simple	7266	4672	3238	2373	1796	1398	1116	703	435	284
		Multiple	5279	3596	2491	1824	1392	1095	883	607	440	329
		Min. Bearing (Mult. / Simple)	8.1 / 14.8	6.5 / 12.6	5.4 / 10.5	4.6 / 8.9	4.0 / 7.8	3.5 / 6.9	3.1 / 6.2	2.4 / 5.1	1.7 / 4.3	1.5 / 3.7
	18	Simple	8721	5916	4101	2985	2249	1751	1399	946	625	411
		Multiple	6222	4555	3156	2312	1765	1389	1121	771	556	414
		Min. Bearing (Mult. / Simple)	9.8 / 17.4	8.3 / 15.9	6.9 / 13.2	5.8 / 11.3	5.0 / 9.9	4.4 / 8.7	3.9 / 7.8	3.2 / 6.5	2.4 / 5.4	1.8 / 4.6

Treated X-Beam Roof Snow Loads (plf)

(LDF = 1.15)
Dry-Use

F_b = 2,400 psi
F_v = 265 psi
E = 1.8 x 10⁶ psi
$F_{c\perp}$ = 650 psi
EWS 24F-V4

Width (in.)	Depth (in.)	Load Condition	8'	10'	12'	14'	16'	18'	20'	24'	28'	32'
3½	9½	Simple	1505	961	665	478	318	221	159	88	53	–
		Multiple	1159	739	510	373	284	222	179	119	72	–
		Min. Bearing (Mult. / Simple)	2.6 / 5.1	2.1 / 4.1	1.8 / 3.4	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	–
	11⅞	Simple	2355	1503	1041	762	581	437	316	178	109	69
		Multiple	1813	1157	800	585	446	350	282	192	139	94
		Min. Bearing (Mult. / Simple)	4.1 / 8.0	3.3 / 6.4	2.7 / 5.3	2.3 / 4.5	2.0 / 3.9	1.7 / 3.5	1.5 / 3.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	14	Simple	3275	2092	1449	1061	810	637	514	297	183	118
		Multiple	2522	1610	1114	815	622	489	393	270	195	146
		Min. Bearing (Mult. / Simple)	5.8 / 11.1	4.6 / 8.8	3.8 / 7.3	3.3 / 6.3	2.8 / 5.5	2.5 / 4.8	2.3 / 4.3	1.6 / 3.6	1.5 / 3.0	1.5 / 3.0
	16	Simple	4253	2734	1895	1388	1060	834	673	447	277	181
		Multiple	3089	2104	1457	1067	814	640	516	354	257	193
		Min. Bearing (Mult. / Simple)	7.5 / 13.6	6.0 / 11.6	5.0 / 9.6	4.3 / 8.2	3.7 / 7.2	3.3 / 6.3	3.0 / 5.7	2.4 / 4.7	1.7 / 3.9	1.5 / 3.4
	18	Simple	5104	3462	2400	1759	1343	1058	854	579	398	262
		Multiple	3642	2665	1846	1352	1032	812	655	450	327	246
		Min. Bearing (Mult. / Simple)	9.0 / 16.0	7.6 / 14.6	6.3 / 12.2	5.4 / 10.4	4.7 / 9.1	4.2 / 8.0	3.8 / 7.2	3.1 / 5.9	2.4 / 5.0	1.8 / 4.3
5½	9½	Simple	2366	1510	1044	751	499	347	249	139	83	51
		Multiple	1821	1161	802	586	446	349	281	187	113	71
		Min. Bearing (Mult. / Simple)	2.6 / 5.1	2.1 / 4.1	1.8 / 3.4	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	11⅞	Simple	3700	2363	1636	1198	913	686	496	280	171	109
		Multiple	2849	1818	1257	920	700	550	442	302	218	148
		Min. Bearing (Mult. / Simple)	4.1 / 8.0	3.3 / 6.4	2.7 / 5.3	2.3 / 4.5	2.0 / 3.9	1.7 / 3.5	1.5 / 3.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	14	Simple	5147	3287	2277	1668	1273	994	793	466	287	186
		Multiple	3963	2530	1751	1281	977	768	618	424	306	230
		Min. Bearing (Mult. / Simple)	5.8 / 11.1	4.6 / 8.8	3.8 / 7.3	3.3 / 6.3	2.8 / 5.5	2.5 / 4.8	2.2 / 4.3	1.6 / 3.6	1.5 / 3.0	1.5 / 3.0
	16	Simple	6683	4296	2977	2182	1651	1284	1025	692	435	284
		Multiple	4855	3307	2290	1677	1279	1006	811	556	403	301
		Min. Bearing (Mult. / Simple)	7.5 / 13.6	6.0 / 11.6	5.0 / 9.6	4.3 / 8.2	3.7 / 7.2	3.2 / 6.3	2.9 / 5.7	2.3 / 4.7	1.7 / 3.9	1.5 / 3.4
	18	Simple	8021	5441	3771	2744	2067	1609	1285	869	622	411
		Multiple	5723	4188	2901	2125	1621	1276	1029	707	509	379
		Min. Bearing (Mult. / Simple)	9.0 / 16.0	7.6 / 14.6	6.3 / 12.2	5.4 / 10.4	4.6 / 9.1	4.1 / 8.0	3.6 / 7.2	2.9 / 5.9	2.4 / 5.0	1.8 / 4.2

(1) SPAN is the on-center distance between supports and is valid for simple- or multiple-span applications as noted in the table.
(2) Dry-use conditions.
(3) Total load deflection limit = Span/180.
(4) Live load ≤ 0.75 x Total load
(5) Full lateral support on the compression side.
(6) The values are based on the X-Beam design properties listed in in the table adn include the beam weight (assumed to be 36.5 pdf).

Treated X-Beam Floor Loads (plf)
(LDF = 1.0)
Dry-Use

F_b = 2,400 psi
F_v = 265 psi
E = 1.8 x 10^6 psi
$F_{c\perp}$ = 650 psi
EWS 24F-V4

Width (in.)	Depth (in.)	Load Condition	8'	10'	12'	14'	16'	18'	20'	24'	28'	32'
3 1/2	9 1/2	Simple	1308	834	571	356	236	163	117	64	-	-
		Multiple	1006	641	443	323	246	192	154	87	-	-
		Min. Bearing (Mult. / Simple)	2.3 / 4.4	1.8 / 3.5	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	-	-
	11 7/8	Simple	2046	1306	904	661	467	325	234	131	79	50
		Multiple	1575	1004	694	508	386	303	244	166	107	68
		Min. Bearing (Mult. / Simple)	3.6 / 6.9	2.9 / 5.5	2.4 / 4.6	2.0 / 3.9	1.6 / 3.4	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	14	Simple	2846	1817	1258	921	703	537	388	220	134	86
		Multiple	2191	1398	967	708	539	423	341	233	168	117
		Min. Bearing (Mult. / Simple)	5.0 / 9.6	4.0 / 7.7	3.3 / 6.4	2.8 / 5.4	2.5 / 4.7	2.1 / 4.2	1.7 / 3.7	1.5 / 3.1	1.5 / 3.0	1.5 / 3.0
	16	Simple	3696	2376	1646	1205	920	724	584	332	204	132
		Multiple	2685	1828	1265	926	706	555	447	306	221	166
		Min. Bearing (Mult. / Simple)	6.5 / 11.8	5.2 / 10.0	4.3 / 8.3	3.7 / 7.1	3.2 / 6.2	2.9 / 5.5	2.6 / 4.9	1.8 / 4.0	1.5 / 3.4	1.5 / 3.0
	18	Simple	4437	3009	2085	1528	1166	918	741	477	295	192
		Multiple	3165	2316	1603	1174	895	704	567	389	282	212
		Min. Bearing (Mult. / Simple)	7.8 / 13.9	6.6 / 12.7	5.5 / 10.6	4.7 / 9.0	4.1 / 7.9	3.6 / 7.0	3.3 / 6.2	2.5 / 5.1	1.8 / 4.3	1.5 / 3.7
5 1/2	9 1/2	Simple	2056	1311	897	560	371	257	184	101	59	-
		Multiple	1582	1008	696	508	386	302	242	137	81	-
		Min. Bearing (Mult. / Simple)	2.3 / 4.4	1.8 / 3.5	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	-
	11 7/8	Simple	3216	2052	1420	1039	734	511	368	206	124	78
		Multiple	2475	1578	1091	798	607	476	383	261	168	107
		Min. Bearing (Mult. / Simple)	3.6 / 6.9	2.9 / 5.5	2.4 / 4.6	2.0 / 3.9	1.6 / 3.4	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0
	14	Simple	4473	2856	1978	1448	1104	844	610	345	210	135
		Multiple	3444	2197	1520	1112	847	665	535	366	264	183
		Min. Bearing (Mult. / Simple)	5.0 / 9.6	4.0 / 7.7	3.3 / 6.4	2.8 / 5.4	2.5 / 4.7	2.1 / 4.2	1.7 / 3.7	1.5 / 3.1	1.5 / 3.0	1.5 / 3.0
	16	Simple	5809	3733	2586	1894	1433	1114	889	522	321	208
		Multiple	4219	2873	1988	1455	1109	872	702	481	348	259
		Min. Bearing (Mult. / Simple)	6.5 / 11.8	5.2 / 10.0	4.3 / 8.3	3.7 / 7.1	3.2 / 6.2	2.8 / 5.5	2.5 / 4.9	1.8 / 4.0	1.5 / 3.4	1.5 / 3.0
	18	Simple	6972	4728	3276	2383	1795	1396	1114	749	463	302
		Multiple	4973	3639	2520	1845	1407	1106	892	612	440	326
		Min. Bearing (Mult. / Simple)	7.8 / 13.9	6.6 / 12.7	5.5 / 10.6	4.7 / 9.0	4.0 / 7.9	3.5 / 7.0	3.1 / 6.2	2.5 / 5.1	1.8 / 4.3	1.5 / 3.7

(1) SPAN is the on-center distance between supports and is valid for simple- or multiple-span applications as noted in the table.
(2) Dry-use conditions.
(3) Total load deflection limit = Span/240.
(4) Live load ≤ 0.67 x Total load
(5) Full lateral support on the compression side.
(6) The values are based on the X-Beam design properties listed in in the table adn include the beam weight (assumed to be 36.5 pdf).

Allowable Axial Loads (Pounds) for Combination No. 3 Glulam Columns – Dry-Use and Wet-Use

Effective Column Length (ft.)	Width = 5 1/2 in.					
	Dry-Use			Wet-Use		
	Depth = 5 1/2 in. (4 lams) Load Duration Factor			Depth = 5 1/2 in. (4 lams) Load Duration Factor		
	1.00	1.15	1.25	1.00	1.15	1.25
8	26,850	29,050	30,350	22,270	24,360	25,610
9	24,130	25,810	26,790	20,380	22,020	22,970
10	21,580	22,890	23,640	18,490	19,770	20,510
11	19,300	20,330	20,930	16,710	17,720	18,300
12	17,290	18,120	18,600	15,090	15,900	16,360
13	15,540	16,220	16,610	13,640	14,300	14,680
14	14,020	14,580	14,900	12,360	12,910	13,220
15	12,690	13,160	13,430	11,240	11,690	11,960
16	11,540	11,930	12,160	10,250	10,630	10,860
17	10,530	10,860	11,060	9,380	9,700	9,890
18	9,640	9,930	10,090	8,600	8,890	9,050
19	8,850	9,100	9,250	7,920	8,160	8,300
20	8,160	8,370	8,500	7,310	7,520	7,640
21	7,540	7,730	7,840	6,770	6,950	7,060

Design property notes for both Dry-Use and Wet-Use service conditions
(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 or wet as tabulated.
(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 2012 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 in dry use or 0.73 x 2,300 psi for wet use.
Modulus of elasticity (E) = 1.9 x 10^6 psi in dry use or 0.833 x 1.9 x 106 psi for wet use.
Flexural stress when loaded parallel to wide faces of lamination (F_{by}) = 2,100 psi in dry use or 0.8 x 2,100 psi in wet use.
Flexural stress when loaded perpendicular to wide faces of lamination (F_{bx}) = 2,000 psi in dry use or 0.8 x 2,000 psi in wet use.
Volume factor for F_{bx} is in accordance with 2012 NDS. Size factor for Fby is $(12/d)^{1/9}$, where d is equal to the lamination width in inches.

Treated X-Beam Floor Loads (plf)

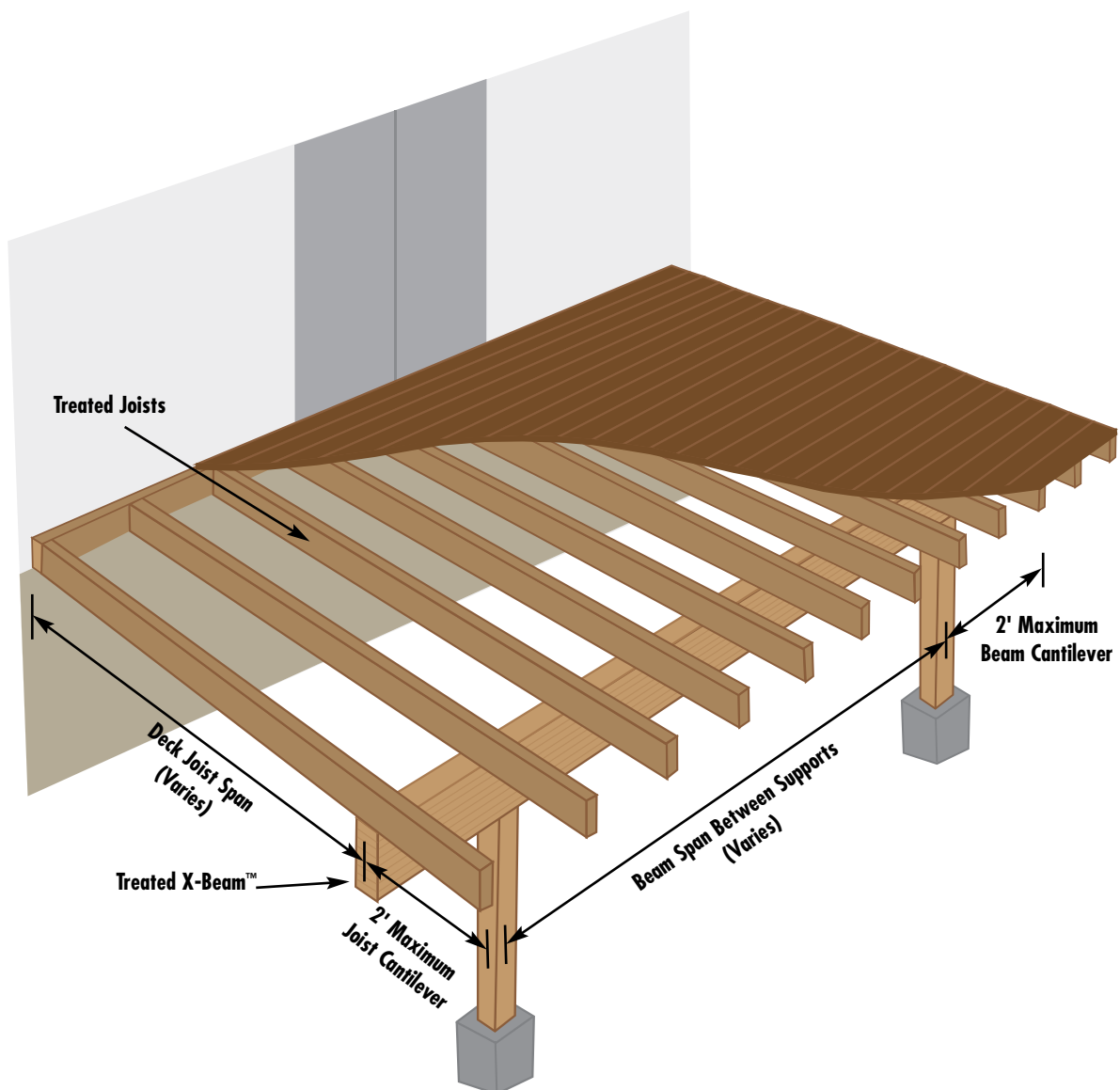(LDF = 1.0)
Dry-Use

F_b = 2,400 psi
F_v = 265 psi
E = 1.8 x 10⁶ psi
$F_{c\perp}$ = 650 psi
EWS 24F-V4

Load	Glulam Span (ft)	Deck Joist Span (ft)					
		8'	10'	12'	14'	16'	18'
40 PSF Live Load 10 PSF Dead Load	10	3½ x 9½	3½ x 9½	3½ x 9½	3½ x 9½	3½ x 9½	3½ x 9½
		5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½
	12	3½ x 9½	3½ x 9½	3½ x 9½	3½ x 9½	3½ x 11⅞	3½ x 11⅞
		5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½
	14	3½ x 9½	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞
		5½ x 9½	5½ x 9½	5½ x 9½	5½ x 9½	5½ x 11⅞	5½ x 11⅞
	16	3½ x 11⅞	3½ x 11⅞	3½ x 14	3½ x 14	3½ x 14	3½ x 14
		5½ x 9½	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞
	18	3½ x 14	3½ x 14	3½ x 14	3½ x 14	3½ x 16	3½ x 16
		5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 14	5½ x 14	5½ x 14
	20	3½ x 14	3½ x 16	3½ x 16	3½ x 16	3½ x 18	3½ x 18
		5½ x 11⅞	5½ x 14	5½ x 14	5½ x 14	5½ x 14	5½ x 16
	22	3½ x 16	3½ x 16	3½ x 18	3½ x 18	3½ x 18	-
		5½ x 14	5½ x 14	5½ x 16	5½ x 16	5½ x 16	5½ x 16

(1) Deck shall be designed and constructed in compliance with the applicable codes.
(2) Glulam is subject to uniform gravity loads only.
(3) Maximum deflection under live load = span/360; Maximum deflection under total load = span/240.
(4) Beam weight (preservative treated) = 36.5 pcf.
(5) Minimum bearing length for glulam with full glulam width = 3½ inches.

Treated Joists

2' Maximum Beam Cantilever

Deck Joist Span (Varies)

Treated X-Beam™

Beam Span Between Supports (Varies)

2' Maximum Joist Cantilever

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In addition to Treated X-Beam, Rosboro manufacturers a full line of laminated timber that fits any application.

X-BEAM
Next-Generation Glulam

X-Beam™: The industry's first full-width stock glulam in architectural appearance, the time and money-saving X-Beam is available in widths of $3^1/_2$" and $5^1/_2$", I-Joist compatible and traditional glulam depths as well as columns.

Custom
Glulam Solutions

Custom Glulam: Our industry-leading glulam is available in custom sizes, curved shapes and in a variety of wood species that give our customers greater flexibility and the convenience of combining custom orders with other building materials.

Rosboro isDesign™ Software

Created by Calculated Structured Designs, isDesign uses the powerful .NET technology and takes all of the guesswork out of specifying and using glulam. This software allows users to easily enter the span and load conditions for a given project and automatically determine the best product for that application. Users can also calculate multiple spans, point loads, cantilevers, and other applications. isDesign is ideal for architects, designers, and builders and recognizes all United States building codes while offering printable design calculations and beam capacities. Visit our website for more information.

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