

X-Beam: Technical Specifications

Stock Glulam Specs

This stock glulam specification is intended to provide design values and product attributes for X-Beam Glulam that is inventoried in standard sizes by a nationwide network of distributors and lumber dealers that provide next-day delivery.

Certification Specs

Rosboro glulam products are inspected and certified by the APA/EWS to ANSI A190.1-2017 and ANSI 117-2015 standards. The products meet all International Residential Code (IRC) and International Building Code (IBC) specifications as reported by ICC-ES ESR-1940 and APA Product Report PR-L251.

Design Values

Glulam shall be Douglas Fir combination 24F-V4.

ROSBORO X-BEAM™ DESIGN VALUES

Product	Layup Combination	Flexural Stress F_b (psi)		Compression Perpendicular to Grain $F_{c\perp}$ (psi)	Shear F_v (psi)	MOE (10^6 psi)	
		Tension Zone	Compression Zone			Apparent	True
X-Beam	24F-V4	2,400	1,850	650	265	1.8	1.9

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

$$C_v = (5.125/b)^{1/10} \times (12/d)^{1/10} \times (21/L)^{1/10} \leq 1.0 \text{ (NDS-18 Eq. 5.3-1)}$$

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-18 5.3.10), 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.

Beam Widths

3½" • 5½" • 6¾" • 8¾"

Beam Depths

Conventional depths 6" to 24" in 1½" increments

I-Joist compatible depths 9½" • 11⅞" • 14" • 16" • 18"



ROSBORO X-BEAM™ DESIGN PROPERTIES

EWS 24F-V4 | Dry-Use | $F_b=2,400$ psi | $F_v=265$ psi | $F_{c1}=650$ psi | $E_{Apparent}=1.8 \times 10^6$ psi | $E_{True}=1.9 \times 10^6$ psi

Width	Depth (in)	Weight (lbf / ft)	Maximum Resistive Shear (lbf)			Maximum Resistive Moment (ft-lbf)			EI Apparent (10 ⁶ in ² -lbf)
			100%	115%	125%	100%	115%	125%	
3½"	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	
5½"	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	
6¾"	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
	11 7/8	19.5	14,161	16,285	17,701	31,729	36,488	39,661	1,695
	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	
8¾"	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
	11 7/8	25.3	18,357	21,110	22,946	41,130	47,299	51,412	2,198
	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	

Notes for X-Beam Design Properties:

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

(2) Maximum resistive moment shall be adjusted by the volume factor based on NDS-18.

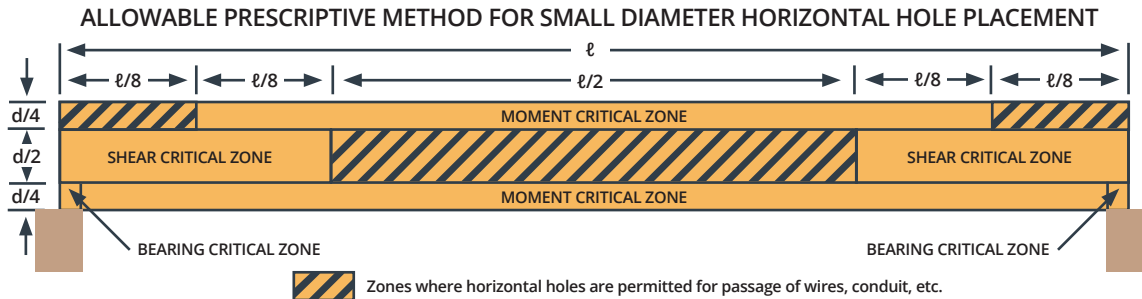
 Indicates I-Joist Compatible Depths

Allowable Horizontal Hole Placement

Horizontal holes to allow for the pass-through of small plumbing pipes, electrical conduits and lightweight HVAC materials are allowed in Rosboro glulam beam products. Two methods for acceptable horizontal hole placement exist:

The Prescriptive Horizontal Hole Method allowing for small diameter holes with **no reduction** in structural capacity.

The Analytical Design Method allowing for horizontal holes as large as $2d/3$, where d is the member depth, in which the **structural capacities of the member are reduced in proportion to the hole size**.



- (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 $1\frac{1}{2}$ " or one-tenth the beam depth, whichever is smaller.
Exception: In beams 9" or greater in depth, the maximum hole diameter shall be allowed to be increased to 2" provided that the central permitted hole zone is reduced to $\ell/3$ for both the member length and depth.
 - 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 areas.
 - C. Hole Spacing: The minimum clear spacing between adjacent holes, as measured between the nearest edge of the holes, should be 2 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 3 holes per any 4 feet of beam length. 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.

ANALYTICAL DESIGN METHOD FOR LARGE DIAMETER HORIZONTAL HOLE PLACEMENT

This analytical procedure was developed to allow the placement of large diameter horizontal holes in glulam beams to account for the necessary **structural design capacity reductions** of the beams when the hole diameters fall outside of the prescriptive limits noted above. For more information see APA Technical Note V700.

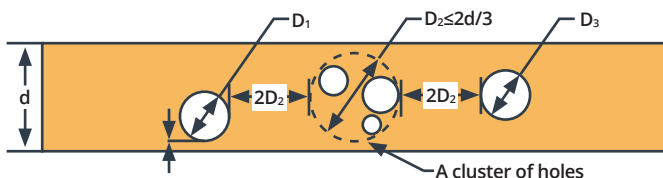


Fig. 1: Hole clusters and hole clear distance

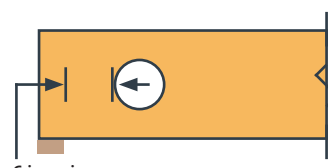


Fig. 2: Min. distance from edge of hole and face of support

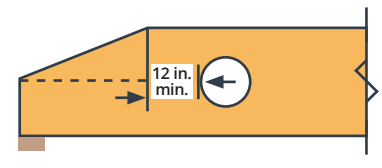


Fig. 3: Min. distance from edge of hole and end of taper

- (1) Field drilled holes designed under this procedure should meet the following placement guidelines:
 - A. Holes shall be round and neatly cut using a hole saw or router and template. Use of other methods, such as a reciprocating saw, and square holes are prohibited.
 - B. Hole Size: The hole diameter should not exceed $2/3$ the beam depth, $D \leq 2d/3$.
 - C. Hole Location: The hole should have a minimum clear distance of 6 in. from the face of any support (Fig. 2) and 12" from the end of a top chord taper (Fig. 3) along the beam length. Placement of holes in cantilevers is not allowed. In no instance should the tension laminations be cut in the beam.
 - D. Hole Spacing: The minimum clear distance between adjacent holes, as measured between the nearest edge of the holes, should be 2 hole diameters based on the largest diameter of any adjacent hole in the beam (Fig. 1). Cluster of small holes shall be analyzed as a single large hole (Fig. 1).
 - E. Number of Holes: The maximum number of holes should not exceed 3 holes in any part of the beam with hole diameters greater than $d/3$. Otherwise the maximum number of holes shall not exceed 8 in any given span.
- (2) All beams with holes drilled following this procedure shall be designed in accordance with Equations 1 through 3 below to determine the reduced structural capacities of the beams:

Eq. 1. Effect of Horizontal Holes on the Bending Capacity

$$M_{net} = C_{hole,M} M_{gross} = \left(\frac{S_{net}}{S_{gross}} \right) M_{gross}$$

where: M_{net} = Net bending capacity with holes, lbf-ft; $C_{hole,M}$ = hole effect factor on bending capacity, M_{gross} = gross bending capacity without holes, lbf-ft;
 S_{net} = net section modulus with holes, in³; S_{gross} = gross section modulus without holes, in³

Eq. 2. Effect of Horizontal Holes on the Bending Stiffness

$$(EI)_{net} = C_{hole,EI} (EI)_{gross} = \left(1 - \frac{(1.6 * N * D)}{L} \right) (EI)_{gross}$$

where: $(EI)_{net}$ = net bending stiffness with holes, lbf-in²; $C_{hole,EI}$ = hole effect factor for bending stiffness; $(EI)_{gross}$ = gross bending stiffness without holes, lbf-in²;
 N = number of holes ≤ 3 ; D = hole diameter $\leq 2d/3$, in.; L = member span, in.

Eq. 3. Effect of horizontal Holes on the Shear Capacity

$$V_{net} = C_{hole,V} V_{gross} = \left(\frac{d-D}{d} \right)^2 V_{gross}$$

where: V_{net} = net shear capacity with holes, lbf; $C_{hole,V}$ = hole effect factor on shear capacity; V_{gross} = gross shear capacity without holes, lbf; d = glulam beam depth, in.; D = hole diameter $\leq 2d/3$, in.; Field holes should be drilled for access only and not for load bearing hardware attachments unless designed specifically by the product engineer. Square and rectangular holes are not allowed.

X-Beam Column: Technical Specifications

Layup Combination	Bending about Y-Y Axis	Bending about X-X Axis	Compression Parallel to Grain	MOE (10 ⁶ psi)		
	F _{by} (psi) ¹	F _{bx} (psi) ²	F _c (psi) ³	E _{Apparent}	E _{True}	E _{min} ⁴
EWS 3 DF	2,100	2,000	2,300	1.9	2.0	1.0

Notes:

1. Applicable to 4 or more lams. This value shall be reduced to 1,850 psi for 3 lams and 1,550 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.
4. Applicable to column stability calculations for member buckling. (NDS-18 5.2.7)

ALLOWABLE AXIAL LOAD VALUES 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 = 3½ in.						Lamination Net Width = 5½ in.								
	Net Depth = 4½ in. (3 lams)			Net Depth = 6 in. (4 lams)			Net Depth = 5½ in. (4 lams)			Net Depth = 6 in. (4 lams)			Net Depth = 7½ 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	17,270	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

Tabulate values are in pounds.

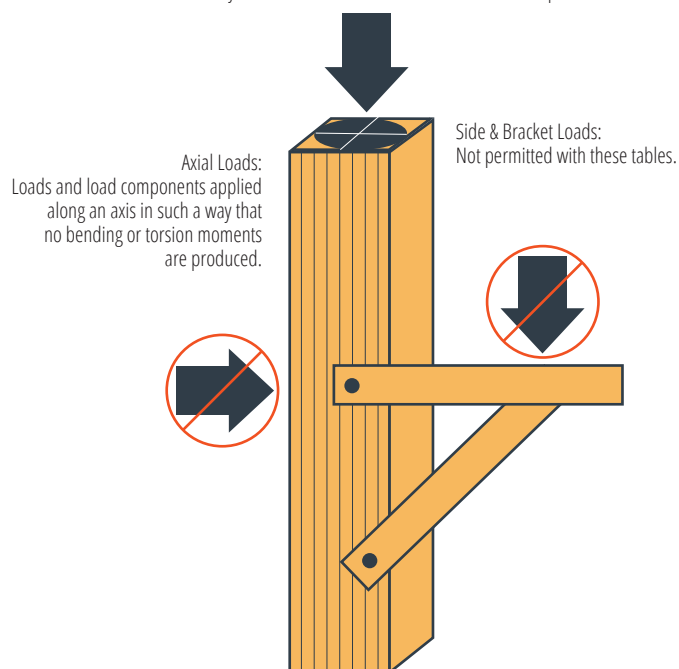
Notes:

1. The tabulated allowable loads apply only to one-piece glulam members with all L2D laminations (EWS Combination 3) without special tension laminations.
2. Applicable to dry-use service conditions (C_M = 1.0).
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 loads, or other combined axial and flexural loads, see 2018 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. Volume factor for F_{bx} is in accordance with 2018 NDS.
6. 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.



Allowable Uniform Load for Simple Span Applications – Floor Beams (LDF=1.00)



Simple Span

EWS 24F-V4

Dry Use

F_{bx}=2,400 psi

F_c=650 psi

F_{vx}=265 psi

E_x=1.8 x 10⁶ psi

Width	Depth		Span												
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
6"		LL (plf)	328	168	97	61	--	--	--	--	--	--	--	--	
		TL (plf)	487	247	141	87	56	--	--	--	--	--	--	--	
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	--	--	--	--	--	--	--	
7½"		LL (plf)	641	328	190	120	80	56	--	--	--	--	--	--	
		TL (plf)	814	486	278	173	114	78	55	--	--	--	--	--	
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--	--	
9"		LL (plf)	1,107	567	328	207	138	97	71	53	--	--	--	--	
		TL (plf)	1,174	748	485	302	200	138	99	72	54	--	--	--	
		BRG (in.)	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	
9½"		LL (plf)	1,302	667	386	243	163	114	83	63	--	--	--	--	
		TL (plf)	1,308	834	571	356	236	163	117	86	64	--	--	--	
		BRG (in.)	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	
10½"		LL (plf)		900	521	328	220	154	113	85	65	51	--	--	
		TL (plf)	1,599	1,020	706	483	321	223	160	118	89	68	53	--	
		BRG (in.)	2.8	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	
11½"		LL (plf)		1,302	754	475	318	223	163	122	94	74	59	--	
		TL (plf)	2,046	1,306	904	661	467	325	234	173	131	101	79	62	
		BRG (in.)	3.6	2.9	2.4	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
13½"		LL (plf)			1,107	697	467	328	239	180	138	109	87	71	
		TL (plf)	2,646	1,690	1,170	856	653	481	347	258	196	152	119	95	
		BRG (in.)	4.7	3.7	3.1	2.7	2.3	1.9	1.6	1.5	1.5	1.5	1.5	1.5	
14"		LL (plf)			1,235	778	521	366	267	200	154	121	97	79	
		TL (plf)	2,846	1,817	1,258	921	703	537	388	289	220	170	134	107	
		BRG (in.)	5.0	4.0	3.4	2.9	2.5	2.2	1.8	1.5	1.5	1.5	1.5	1.5	
15"		LL (plf)				957	641	450	328	247	190	149	120	97	
		TL (plf)	3,268	2,087	1,446	1,059	808	635	479	357	272	211	167	133	
		BRG (in.)	5.8	4.6	3.8	3.3	2.9	2.6	2.2	1.8	1.5	1.5	1.5	1.5	
16"		LL (plf)				1,161	778	546	398	299	230	181	145	118	
		TL (plf)	3,696	2,376	1,646	1,205	920	724	584	435	332	258	204	163	
		BRG (in.)	6.5	5.3	4.4	3.8	3.3	2.9	2.6	2.2	1.8	1.6	1.5	1.5	
16½"		LL (plf)				1,273	853	599	437	328	253	199	159	129	
		TL (plf)	3,873	2,527	1,751	1,282	979	770	621	478	365	284	225	180	
		BRG (in.)	6.8	5.6	4.7	4.0	3.5	3.1	2.8	2.4	2.0	1.7	1.5	1.5	
18"		LL (plf)					1,107	778	567	426	328	258	207	168	
		TL (plf)	4,437	3,009	2,085	1,528	1,166	918	741	605	477	372	295	237	
		BRG (in.)	7.8	6.6	5.5	4.7	4.2	3.7	3.3	3.0	2.6	2.2	1.9	1.7	
19½"		LL (plf)						989	721	542	417	328	263	214	
		TL (plf)	5,060	3,532	2,448	1,794	1,370	1,079	866	706	585	476	377	304	
		BRG (in.)	8.9	7.8	6.5	5.6	4.9	4.3	3.9	3.5	3.2	2.8	2.4	2.1	

Width	Depth		Span												
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
6"		LL (plf)	516	264	153	96	64	--	--	--	--	--	--	--	
		TL (plf)	765	388	221	136	89	60	--	--	--	--	--	--	
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--	--	--	
7½"		LL (plf)	1,007	516	298	188	126	88	64	--	--	--	--	--	
		TL (plf)	1,279	763	438	272	179	123	87	63	--	--	--	--	
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--	
9"		LL (plf)	1,740	891	516	325	218	153	111	84	64	51	--	--	
		TL (plf)	1,844	1,176	761	475	314	217	155	113	85	64	--	--	
		BRG (in.)	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	
9½"		LL (plf)	2,047	1,048	606	382	256	180	131	98	76	60	--	--	
		TL (plf)	2,056	1,311	897	560	371	257	184	135	101	77	59	--	
		BRG (in.)	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	
10½"		LL (plf)		1,415	819	516	345	243	177	133	102	81	64	52	
		TL (plf)	2,513	1,603	1,109	759	504	350	251	185	139	107	83	65	
		BRG (in.)	2.8	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
11½"		LL (plf)		2,047	1,184	746	500	351	256	192	148	116	93	76	
		TL (plf)	3,216	2,052	1,420	1,039	734	511	368	272	206	159	124	98	
		BRG (in.)	3.6	2.9	2.4	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
13½"		LL (plf)			1,740	1,096	734	516	376	282	218	171	137	111	
		TL (plf)	4,159	2,655	1,838	1,346	1,026	755	546	406	308	239	187	149	
		BRG (in.)	4.7	3.7	3.1	2.7	2.3	1.9	1.6	1.5	1.5	1.5	1.5	1.5	
14"		LL (plf)			1,941	1,222	819	575	419	315	243	191	153	124	
		TL (plf)	4,473	2,856	1,978	1,448	1,104	844	610	454	345	268	210	168	
		BRG (in.)	5.0	4.0	3.4	2.9	2.5	2.2	1.8	1.5	1.5	1.5	1.5	1.5	
15"		LL (plf)			1,503	1,007	707	516	387	298	235	188	153	124	
		TL (plf)	5,136	3,280	2,272	1,664	1,266	984	753	561	428	332	262	209	
		BRG (in.)	5.8	4.6	3.8	3.3	2.9	2.5	2.2	1.8	1.5	1.5	1.5	1.5	
16"		LL (plf)			1,824	1,222	858	626	470	362	285	228	185	149	
		TL (plf)	5,809	3,733	2,586	1,894	1,433	1,114	889	684	522	406	321	257	
		BRG (in.)	6.5	5.3	4.4	3.8	3.3	2.9	2.5	2.2	1.8	1.6	1.5	1.5	
16½"		LL (plf)			2,001	1,340	941	686	516	397	312	250	203	168	
		TL (plf)	6,086	3,971	2,751	2,015	1,520	1,182	943	751	574	447	353	283	
		BRG (in.)	6.8	5.6	4.7	4.0	3.4	3.0	2.7	2.4	2.0	1.7	1.5	1.5	
18"		LL (plf)				1,740	1,222	891	669	516	406	325	264	214	
		TL (plf)	6,972	4,728	3,276	2,383	1,795	1,396	1,114	908	749	584	463	372	
		BRG (in.)	7.8	6.6	5.5	4.7	4.1	3.6	3.2	2.9	2.6	2.2	1.9	1.7	
19½"		LL (plf)					1,554	1,133	851	656	516	417	336	276	
		TL (plf)	7,952	5,551	3,847	2,777	2,091	1,627	1,299	1,059	878	738	593	477	
		BRG (in.)	8.9	7.8	6.5	5.5	4.7	4.2	3.7	3.3	3.0	2.8	2.4	2.1	
21"		LL (plf)						1,415	1,063	819	644	516	419	349	
		TL (plf)	9,041	6,250	4,432	3,199	2,410	1,875	1,498	1,221	1,012	851	725	601	
		BRG (in.)	10.1	8.8	7.5	6.3	5.5	4.8	4.3	3.8	3.5	3.2	2.9	2.6	
22½"		LL (plf)							1,307	1,007	792	634	516	436	
		TL (plf)	10,258	6,966	5,055	3,649	2,749	2,140	1,709	1,394	1,156	972	828	712	
		BRG (in.)	11.5	9.8	8.5	7.2	6.2	5.5	4.9	4.4	4.0	3.6	3.4	3.1	
24"		LL (plf)								1,222	961	770	626	526	
		TL (plf)	11,628	7,741	5,716	4,126	3,110	2,421	1,934	1,578	1,309	1,101	938	807	
		BRG (in.)	13.0	10.9	9.6	8.1	7.0	6.2	5.5	5.0	4.5	4.1	3.8	3.5	

Width	Depth		Span											
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
6¾"	9"	LL (plf)	2,136	1,094	633	399	267	188	137	103	79	62	--	--
		TL (plf)	2,263	1,443	934	583	386	266	190	139	104	79	60	--
		BRG (in.)	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	10½"	LL (plf)		1,736	1,005	633	424	298	217	163	126	99	79	64
		TL (plf)	3,084	1,967	1,361	932	619	429	308	227	171	131	101	79
		BRG (in.)	2.8	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	11¾"	LL (plf)		2,512	1,454	915	613	431	314	236	182	143	114	93
		TL (plf)	3,947	2,519	1,743	1,276	900	627	451	334	253	195	152	120
		BRG (in.)	3.6	2.9	2.4	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	13½"	LL (plf)			2,136	1,345	901	633	461	347	267	210	168	137
		TL (plf)	5,104	3,258	2,256	1,652	1,244	927	670	498	378	293	230	183
		BRG (in.)	4.7	3.7	3.1	2.7	2.3	1.9	1.6	1.5	1.5	1.5	1.5	1.5
	15"	LL (plf)				1,845	1,236	868	633	475	366	288	231	188
		TL (plf)	6,304	4,025	2,788	2,023	1,522	1,183	925	689	525	407	321	257
		BRG (in.)	5.8	4.6	3.8	3.3	2.8	2.5	2.2	1.8	1.5	1.5	1.5	1.5
	16½"	LL (plf)					1,645	1,155	842	633	487	383	307	250
		TL (plf)	7,469	4,873	3,364	2,427	1,827	1,420	1,133	922	704	548	433	347
		BRG (in.)	6.8	5.6	4.6	3.9	3.4	3.0	2.6	2.4	2.0	1.7	1.5	1.5
	18"	LL (plf)					2,136	1,500	1,094	822	633	498	399	324
		TL (plf)	8,556	5,802	3,972	2,865	2,157	1,678	1,339	1,091	904	717	568	456
		BRG (in.)	7.8	6.6	5.5	4.6	4.0	3.5	3.1	2.8	2.6	2.2	1.9	1.7
	19½"	LL (plf)						1,907	1,390	1,045	805	633	507	412
		TL (plf)	9,759	6,800	4,626	3,338	2,514	1,956	1,562	1,272	1,055	886	728	586
		BRG (in.)	8.9	7.8	6.4	5.4	4.6	4.1	3.6	3.3	3.0	2.7	2.4	2.1
21"	LL (plf)							1,736	1,305	1,005	790	633	515	
	TL (plf)	11,096	7,671	5,328	3,845	2,897	2,254	1,800	1,467	1,216	1,023	871	737	
	BRG (in.)	10.1	8.8	7.3	6.2	5.3	4.7	4.2	3.8	3.4	3.1	2.9	2.6	
22½"	LL (plf)								1,605	1,236	972	778	633	
	TL (plf)	12,590	8,549	6,077	4,386	3,305	2,572	2,054	1,675	1,389	1,169	995	856	
	BRG (in.)	11.5	9.8	8.4	7.1	6.1	5.4	4.8	4.3	3.9	3.6	3.3	3.1	
24"	LL (plf)									1,500	1,180	945	768	
	TL (plf)	14,271	9,501	6,872	4,961	3,738	2,910	2,325	1,896	1,573	1,323	1,127	970	
	BRG (in.)	13.0	10.9	9.5	8.0	6.9	6.1	5.4	4.9	4.4	4.0	3.7	3.4	
Width	Depth		Span											
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
8¾"	9"	LL (plf)	2,769	1,418	820	517	346	243	177	133	103	81	65	53
		TL (plf)	2,934	1,871	1,211	756	500	345	247	181	135	102	78	60
		BRG (in.)	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	10½"	LL (plf)		2,251	1,303	820	550	386	281	211	163	128	103	83
		TL (plf)	3,997	2,550	1,764	1,208	802	557	400	295	222	170	131	103
		BRG (in.)	2.8	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	11¾"	LL (plf)		3,256	1,884	1,187	795	558	407	306	236	185	148	121
		TL (plf)	5,116	3,265	2,260	1,634	1,167	812	585	433	328	253	197	156
		BRG (in.)	3.6	2.9	2.4	2.0	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	13½"	LL (plf)		2,769	1,743	1,168	820	598	449	346	272	218	177	147
		TL (plf)	6,616	4,224	2,897	2,088	1,570	1,202	868	645	490	380	298	237
		BRG (in.)	4.7	3.7	3.1	2.6	2.2	1.9	1.6	1.5	1.5	1.5	1.5	1.5
	15"	LL (plf)				2,392	1,602	1,125	820	616	475	373	299	243
		TL (plf)	8,171	5,210	3,542	2,554	1,922	1,494	1,191	893	680	528	417	333
		BRG (in.)	5.8	4.6	3.8	3.2	2.7	2.4	2.1	1.8	1.5	1.5	1.5	1.5
	16½"	LL (plf)					2,132	1,498	1,092	820	632	497	398	324
		TL (plf)	9,682	6,247	4,249	3,064	2,306	1,793	1,430	1,164	913	710	562	450
		BRG (in.)	6.8	5.5	4.5	3.8	3.3	2.9	2.6	2.3	2.0	1.7	1.5	1.3
	18"	LL (plf)						1,944	1,418	1,065	820	645	517	420
		TL (plf)	11,092	7,373	5,016	3,618	2,724	2,119	1,691	1,377	1,141	930	737	592
		BRG (in.)	7.8	6.5	5.3	4.5	3.9	3.4	3.0	2.7	2.5	2.2	1.9	1.7
	19½"	LL (plf)							1,802	1,354	1,043	820	657	534
		TL (plf)	12,651	8,587	5,843	4,215	3,174	2,470	1,971	1,606	1,331	1,119	944	760
		BRG (in.)	8.9	7.6	6.2	5.2	4.5	4.0	3.5	3.2	2.9	2.7	2.4	2.1

Tabulated values are pounds per linear foot.

1. Applicable to simply-supported beam with sufficient bracing to avoid lateral buckling ($C_L = 1.0$).
2. Applicable to dry-use service conditions ($C_M = 1.0$).
3. Tabulated live load (LL) is based on the deflection criterion of span/360.
4. Tabulated total load (TL) is based on the deflection criterion of span/240.
5. Tabulated total load (TL) is in addition to beam weight (assumed 35 pcf).
6. Selected beam size shall satisfy both live load and total load.
7. "---" indicates the allowable load is smaller than 50 plf.
8. Blank live load indicates the live load is greater than the total load.
9. Bearing "BRG" is in inches and is calculated based on the total load including the beam weight.

Allowable Uniform Load for Simple Span Applications - Roof Beams, Snow Load (LDF=1.15)



Simple Span

EWS 24F-V4

Dry Use

F_{bx}=2,400 psi

F_c=650 psi

F_{vx}=265 psi

E_x=1.8 x 10⁶ psi

Width	Depth		Span												
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
6"		LL (plf)	492	252	146	92	62	43	--	--	--	--	--	--	
		TL (plf)	599	331	189	117	77	53	--	--	--	--	--	--	
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--	--	--	
7½"		LL (plf)	492	285	179	120	84	62	46	--	--	--	--	--	
		TL (plf)	937	597	373	233	154	106	76	55	41	--	--	--	
		BRG (in.)	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	
9"		LL (plf)	851	492	310	208	146	106	80	62	48	--	--	--	
		TL (plf)	1351	862	596	406	269	187	134	99	74	57	44	--	--
		BRG (in.)	2.4	1.9	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--
9½"		LL (plf)	579	365	244	172	125	94	72	57	46	--	--	--	
		TL (plf)	1505	961	665	478	318	221	159	117	88	68	53	41	--
		BRG (in.)	2.7	2.1	1.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10½"		LL (plf)	782	492	330	232	169	127	98	77	62	50	--	--	
		TL (plf)	1840	1174	813	595	431	300	216	160	121	94	73	58	--
		BRG (in.)	3.3	2.6	2.2	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
11¾"		LL (plf)	712	477	335	244	183	141	111	89	72	--	--	--	
		TL (plf)	2355	1503	1041	762	581	437	316	235	178	138	109	86	--
		BRG (in.)	4.2	3.3	2.8	2.4	2.1	1.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5
3½"	13½"	LL (plf)	701	492	359	270	208	163	131	106	--	--	--	--	
		TL (plf)	3045	1945	1347	987	753	592	467	348	265	206	163	130	--
		BRG (in.)	5.4	4.3	3.6	3.1	2.7	2.4	2.1	1.7	1.5	1.5	1.5	1.5	1.5
14"		LL (plf)	782	549	400	301	232	182	146	119	--	--	--	--	
		TL (plf)	3275	2092	1449	1061	810	637	514	389	297	231	183	146	--
		BRG (in.)	5.8	4.6	3.9	3.3	2.9	2.6	2.3	1.9	1.6	1.5	1.5	1.5	1.5
15"		LL (plf)	675	492	370	285	224	179	146	--	--	--	--	--	
		TL (plf)	3761	2402	1664	1219	931	733	591	480	367	286	226	182	--
		BRG (in.)	6.6	5.3	4.4	3.8	3.3	2.9	2.7	2.4	2.0	1.7	1.5	1.5	1.5
16"		LL (plf)	819	597	449	346	272	218	177	--	--	--	--	--	
		TL (plf)	4253	2734	1895	1388	1060	834	673	554	447	349	277	222	--
		BRG (in.)	7.5	6.0	5.0	4.3	3.8	3.4	3.0	2.7	2.4	2.1	1.8	1.6	1.6
16½"		LL (plf)	655	492	379	298	239	194	--	--	--	--	--	--	
		TL (plf)	4456	2908	2015	1477	1127	888	717	590	490	384	304	245	--
		BRG (in.)	7.9	6.4	5.4	4.6	4.0	3.6	3.2	2.9	2.7	2.3	2.0	1.7	1.7
18"		LL (plf)	851	639	492	387	310	252	--	--	--	--	--	--	
		TL (plf)	5104	3462	2400	1759	1343	1058	854	698	579	487	398	321	--
		BRG (in.)	9.0	7.6	6.4	5.5	4.8	4.2	3.8	3.4	3.1	2.9	2.5	2.2	2.2
19½"		LL (plf)	812	626	492	394	320	--	--	--	--	--	--	--	
		TL (plf)	5822	4065	2818	2066	1578	1243	998	814	675	568	484	411	--
		BRG (in.)	10.3	9.0	7.5	6.4	5.6	5.0	4.5	4.0	3.6	3.3	3.1	2.8	2.8
Width	Depth		Span												
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
6"		LL (plf)	773	396	229	144	97	68	50	--	--	--	--	--	
		TL (plf)	941	520	298	184	121	83	58	42	--	--	--	--	
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--	
7½"		LL (plf)	773	448	282	189	133	97	73	56	44	--	--	--	
		TL (plf)	1472	939	587	366	242	167	119	87	65	49	--	--	
		BRG (in.)	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	
9"		LL (plf)	773	487	326	229	167	126	97	76	61	50	--	--	
		TL (plf)	2123	1354	937	637	423	294	211	155	117	89	69	54	--
		BRG (in.)	2.4	1.9	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9½"		LL (plf)	910	573	384	270	196	148	114	89	72	58	--	--	
		TL (plf)	2366	1510	1044	751	499	347	249	184	139	107	83	65	--
		BRG (in.)	2.7	2.1	1.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10½"		LL (plf)	1119	750	526	384	288	222	175	140	114	--	--		
		TL (plf)	2892	1846	1277	935	677	471	340	252	191	147	115	91	--
		BRG (in.)	3.3	2.6	2.2	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
11¾"		LL (plf)	1101	773	564	424	326	257	205	167	--	--	--	--	
		TL (plf)	3700	2363	1636	1198	913	686	496	369	280	217	171	136	--
		BRG (in.)	4.2	3.3	2.8	2.4	2.1	1.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5
13½"		LL (plf)	1228	863	629	472	364	286	229	186	--	--	--	--	
		TL (plf)	4785	3056	2117	1550	1183	927	734	547	417	324	256	205	--
		BRG (in.)	5.4	4.3	3.6	3.1	2.7	2.4	2.1	1.7	1.5	1.5	1.5	1.5	1.5
14"		LL (plf)	1228	863	629	472	364	286	229	186	--	--	--	--	
		TL (plf)	5147	3287	2277	1668	1273	994	793	611	466	363	287	230	--
		BRG (in.)	5.8	4.6	3.9	3.3	2.9	2.6	2.3	1.9	1.6	1.5	1.5	1.5	1.5
5½"	15"	LL (plf)	1061	773	581	448	352	282	229	--	--	--	--	--	
		TL (plf)	5910	3775	2615	1916	1459	1135	906	738	577	449	356	286	--
		BRG (in.)	6.6	5.3	4.4	3.8	3.3	2.9	2.6	2.3	2.0	1.7	1.5	1.5	1.5
16"		LL (plf)	939	705	543	427	342	278	--	--	--	--	--	--	
		TL (plf)	6683	4296	2977	2182	1651	1284	1025	835	692	548	435	349	--
		BRG (in.)	7.5	6.0	5.0	4.3	3.7	3.3	2.9	2.6	2.4	2.1	1.8	1.6	1.6
16½"		LL (plf)	1029	773	596	469	375	305	--	--	--	--	--	--	
		TL (plf)	7002	4570	3167	2321	1751	1362	1088	886	735	603	478	385	--
		BRG (in.)	7.9	6.4	5.4	4.6	4.0	3.5	3.1	2.8	2.5	2.3	2.0	1.7	1.7
18"		LL (plf)	1004	773	608	487	396	--	--	--	--	--	--	--	
		TL (plf)	8021	5441	3771	2744	2067	1609	1285	1048	869	730	622	504	--
		BRG (in.)	9.0	7.6	6.4	5.4	4.7	4.1	3.7	3.3	3.0	2.7	2.5	2.2	2.2
19½"		LL (plf)	983	773	619	503	--	--	--	--	--	--	--	--	
		TL (plf)	9149	6387	4428	3197	2409	1875	1498	1222	1013	852	726	624	--
		BRG (in.)	10.3	9.0	7.5	6.3	5.4	4.8	4.3	3.8	3.5	3.2	2.9	2.7	2.7
21"		LL (plf)	966	773	629	--	--	--	--	--	--	--	--	--	
		TL (plf)	10401	7192	5101	3683	2775	2161	1726	1408	1168	983	837	721	--
		BRG (in.)	11.7	10.1	8.6	7.3	6.3	5.5	4.9	4.4	4.0	3.7	3.4	3.1	3.1
22½"		LL (plf)	951	773	--	--	--	--	--	--	--	--	--	--	
		TL (plf)	11801	8015	5817	4200	3166	2466	1970	1607	1334	1123	957	824	--
		BRG (in.)	13.2	11.3	9.8	8.3	7.2	6.3	5.6	5.0	4.6	4.2	3.9	3.6	3.6
24"		LL (plf)	13377	8907	6578	4750	3581	2789	2229	1819	1510	1271	1083	933	--
		TL (plf)	13377	8907	6578	4750	3581	2789	2229	1819	1510	1271	1083	933	--
		BRG (in.)	15.0	12.5	11.1	9.4	8.1	7.1	6.3	5.7	5.2	4.7	4.4	4.0	4.0

Width	Depth		Span											
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
6 3/4"	9"	LL (plf)		1640	949	598	400	281	205	154	119	93	75	61
		TL (plf)	2605	1662	1150	782	519	360	259	191	143	110	85	66
		BRG (in.)	2.4	1.9	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	10 1/2"	LL (plf)			1507	949	636	447	326	245	188	148	119	96
		TL (plf)	3549	2265	1568	1147	831	578	417	309	234	180	141	111
		BRG (in.)	3.3	2.6	2.2	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	11 1/8"	LL (plf)				1373	920	646	471	354	273	214	172	140
		TL (plf)	4541	2900	2008	1470	1121	842	608	452	344	266	209	167
		BRG (in.)	4.2	3.3	2.8	2.4	2.1	1.8	1.5	1.5	1.5	1.5	1.5	1.5
	13 1/2"	LL (plf)					1352	949	692	520	400	315	252	205
		TL (plf)	5873	3750	2598	1903	1434	1115	889	671	512	398	314	251
		BRG (in.)	5.4	4.3	3.6	3.1	2.7	2.3	2.1	1.7	1.5	1.5	1.5	1.5
	15"	LL (plf)						1302	949	713	549	432	346	281
		TL (plf)	7253	4633	3210	2330	1754	1364	1089	887	708	551	437	350
		BRG (in.)	6.6	5.3	4.4	3.8	3.2	2.8	2.5	2.3	2.0	1.7	1.5	1.5
	16 1/2"	LL (plf)							1263	949	731	575	460	374
		TL (plf)	8593	5609	3873	2795	2105	1637	1307	1065	883	740	587	472
		BRG (in.)	7.9	6.4	5.3	4.5	3.9	3.4	3.0	2.7	2.5	2.3	2.0	1.7
	18"	LL (plf)								1232	949	747	598	486
		TL (plf)	9844	6677	4572	3299	2485	1934	1544	1259	1044	878	747	618
		BRG (in.)	9.0	7.6	6.3	5.3	4.6	4.0	3.6	3.2	2.9	2.7	2.5	2.2
	19 1/2"	LL (plf)									1207	949	760	618
		TL (plf)	11228	7824	5325	3844	2896	2254	1801	1468	1218	1024	872	750
		BRG (in.)	10.3	9.0	7.3	6.2	5.3	4.7	4.2	3.8	3.4	3.1	2.9	2.7
21"	LL (plf)											949	772	
	TL (plf)	12765	8827	6133	4427	3336	2598	2075	1692	1404	1182	1006	866	
	BRG (in.)	11.7	10.1	8.4	7.1	6.1	5.4	4.8	4.3	3.9	3.6	3.3	3.1	
22 1/2"	LL (plf)												949	
	TL (plf)	14484	9837	6994	5050	3806	2964	2368	1932	1603	1349	1150	990	
	BRG (in.)	13.2	11.3	9.6	8.1	7.0	6.2	5.5	4.9	4.5	4.1	3.8	3.5	
24"	LL (plf)													
	TL (plf)	16417	10932	7909	5711	4305	3353	2679	2186	1815	1528	1302	1121	
	BRG (in.)	15.0	12.5	10.9	9.2	7.9	7.0	6.2	5.6	5.1	4.6	4.3	4.0	
Width	Depth		Span											
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
8 3/4"	9"	LL (plf)		2126	1230	775	519	365	266	200	154	121	97	79
		TL (plf)	3377	2154	1490	1014	673	467	335	247	186	142	110	86
		BRG (in.)	2.4	1.9	1.6	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	10 1/2"	LL (plf)			1954	1230	824	579	422	317	244	192	154	125
		TL (plf)	4600	2936	2032	1487	1077	750	540	400	303	234	183	144
		BRG (in.)	3.3	2.6	2.2	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	11 1/8"	LL (plf)				1780	1192	837	611	459	353	278	222	181
		TL (plf)	5887	3759	2602	1882	1416	1091	789	586	446	345	271	216
		BRG (in.)	4.2	3.3	2.8	2.3	2.0	1.8	1.5	1.5	1.5	1.5	1.5	1.5
	13 1/2"	LL (plf)					1752	1230	897	674	519	408	327	266
		TL (plf)	7613	4862	3336	2405	1810	1407	1122	870	663	516	407	326
		BRG (in.)	1.5	4.3	3.5	3.0	2.6	2.3	2.0	1.7	1.5	1.5	1.5	1.5
	15"	LL (plf)						1688	1230	924	712	560	448	365
		TL (plf)	9402	5996	4078	2942	2215	1722	1374	1119	918	715	566	454
		BRG (in.)	6.6	5.3	4.3	3.7	3.2	2.8	2.5	2.2	2.0	1.7	1.5	1.5
	16 1/2"	LL (plf)							1638	1230	948	745	597	485
		TL (plf)	11139	7189	4891	3529	2657	2067	1650	1344	1114	936	761	612
		BRG (in.)	7.9	6.4	5.2	4.4	3.8	3.3	3.0	2.7	2.4	2.2	2.0	1.7
	18"	LL (plf)									1230	968	775	630
		TL (plf)	12761	8485	5774	4166	3138	2442	1950	1589	1317	1108	942	802
		BRG (in.)	9.0	7.5	6.1	5.2	4.5	3.9	3.5	3.1	2.9	2.6	2.4	2.2
	19 1/2"	LL (plf)										1230	985	801
		TL (plf)	14554	9882	6725	4854	3657	2846	2273	1853	1537	1293	1100	946
		BRG (in.)	10.3	8.7	7.1	6.0	5.2	4.6	4.1	3.7	3.3	3.0	2.8	2.6

Tabulated values are pounds per linear foot.

1. Applicable to simply-supported beam with sufficient bracing to avoid lateral buckling ($C_L = 1.0$).
2. Applicable to dry-use service conditions ($C_M = 1.0$).
3. Tabulated live load (LL) is based on the deflection criterion of span/240.
4. Tabulated total load (TL) is based on the deflection criterion of span/180.
5. Tabulated total load (TL) is in addition to beam weight (assumed 35 pcf).
6. Selected beam size shall satisfy both live load and total load.
7. "-" indicates the allowable load is smaller than 40 plf.
8. Blank live load indicates the live load is greater than the total load.
9. Bearing "BRG" is in inches and is calculated based on the total load including the beam weight.

Allowable Uniform Load for Simple Span Applications – Roof Beams, Non-Snow Load (LDF=1.25)



Simple Span

EWS 24F-V4

Dry Use

F_{bx}=2,400 psi

F_c=650 psi

F_{vx}=265 psi

E_x=1.8 x 10⁶ psi

Width	Depth		Span												
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
3½"	6"	LL (plf)	492	252	146	92	62	43	--	--	--	--	--	--	--
		TL (plf)	651	331	189	117	77	53	--	--	--	--	--	--	--
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--	--	--	--
	7½"	LL (plf)	961	492	285	179	120	84	62	46	--	--	--	--	--
		TL (plf)	1019	650	373	233	154	106	76	55	41	--	--	--	--
		BRG (in.)	1.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--
	9"	LL (plf)		851	492	310	208	146	106	80	62	48	--	--	--
		TL (plf)	1469	937	649	406	269	187	134	99	74	57	44	--	--
		BRG (in.)	2.6	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--
	9½"	LL (plf)		1000	579	365	244	172	125	94	72	57	46	--	--
		TL (plf)	1637	1045	723	478	318	221	159	117	88	68	53	41	--
		BRG (in.)	2.9	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--
	10½"	LL (plf)		782	492	330	232	169	127	98	77	62	50	--	--
		TL (plf)	2001	1277	884	647	431	300	216	160	121	94	73	58	--
		BRG (in.)	3.5	2.8	2.4	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--
	11¾"	LL (plf)		1131	712	477	335	244	183	141	111	89	72	--	--
		TL (plf)	2560	1635	1132	829	626	437	316	235	178	138	109	86	--
		BRG (in.)	4.5	3.6	3.0	2.6	2.2	1.8	1.5	1.5	1.5	1.5	1.5	1.5	--
	13½"	LL (plf)		1046	701	492	359	270	208	163	131	106	--	--	--
		TL (plf)	3311	2115	1465	1073	819	645	467	348	265	206	163	130	--
		BRG (in.)	5.8	4.7	3.9	3.3	2.9	2.6	2.1	1.7	1.5	1.5	1.5	1.5	--
	14"	LL (plf)		782	549	400	301	232	182	146	119	--	--	--	--
		TL (plf)	3561	2275	1576	1155	881	694	522	389	297	231	183	146	--
		BRG (in.)	6.3	5.0	4.2	3.6	3.1	2.8	2.3	1.9	1.6	1.5	1.5	1.5	--
	15"	LL (plf)		961	675	492	370	285	224	179	146	--	--	--	--
		TL (plf)	4089	2612	1810	1327	1013	797	643	480	367	286	226	182	--
		BRG (in.)	7.2	5.8	4.8	4.1	3.4	3.2	2.7	2.2	1.5	1.8	1.6	1.5	--
	16"	LL (plf)		819	597	449	346	272	218	177	--	--	--	--	--
		TL (plf)	4624	2973	2060	1510	1153	908	733	585	447	349	277	222	--
		BRG (in.)	8.2	6.6	5.5	4.7	4.1	3.6	3.3	2.9	2.4	2.1	1.8	1.6	--
	16½"	LL (plf)		899	655	492	379	298	239	194	--	--	--	--	--
		TL (plf)	4844	3162	2192	1606	1227	966	780	642	491	384	304	245	--
		BRG (in.)	8.5	7.0	5.8	5.0	4.4	3.9	3.5	3.2	2.7	2.3	2.0	1.7	--
	18"	LL (plf)		851	639	492	387	310	252	--	--	--	--	--	--
		TL (plf)	5550	3765	2610	1913	1461	1151	930	760	631	501	398	321	--
		BRG (in.)	9.8	8.3	6.9	5.9	5.2	4.6	4.2	3.7	3.4	2.9	2.5	2.2	--
19½"	LL (plf)		1081	812	626	492	394	320	--	--	--	--	--	--	
	TL (plf)	6329	4420	3064	2247	1716	1353	1086	886	736	619	509	411	--	
	BRG (in.)	11.2	9.8	8.1	7.0	6.1	5.4	4.8	4.4	4.0	3.6	3.2	2.8	--	
Width	Depth		Span												
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
5½"	6"	LL (plf)	773	396	229	144	97	68	50	--	--	--	--	--	--
		TL (plf)	1023	520	298	184	121	83	58	42	--	--	--	--	--
		BRG (in.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--	--
	7½"	LL (plf)	1511	773	448	282	189	133	97	73	56	44	--	--	--
		TL (plf)	1601	1021	587	366	242	167	119	87	65	49	--	--	--
		BRG (in.)	1.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--	--	--
	9"	LL (plf)		1337	773	487	326	229	167	126	97	76	61	50	--
		TL (plf)	2308	1473	1019	637	423	294	211	155	117	89	69	54	--
		BRG (in.)	2.6	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--
	9½"	LL (plf)		1572	910	573	384	270	196	148	114	89	72	58	--
		TL (plf)	2573	1642	1136	751	499	347	249	184	139	107	83	65	--
		BRG (in.)	2.9	2.3	1.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--
	10½"	LL (plf)		1228	773	518	364	265	199	154	121	97	79	--	--
		TL (plf)	3144	2007	1390	1017	677	471	340	252	191	147	115	91	--
		BRG (in.)	3.5	2.8	2.4	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	--
	11¾"	LL (plf)		1777	1119	750	526	384	288	222	175	140	114	--	--
		TL (plf)	4024	2569	1779	1303	983	686	496	369	280	217	171	136	--
		BRG (in.)	4.5	3.6	3.0	2.6	2.2	1.8	1.5	1.5	1.5	1.5	1.5	1.5	--
	13½"	LL (plf)		1644	1101	773	564	424	326	257	205	167	--	--	--
		TL (plf)	5203	3323	2302	1687	1287	1010	734	547	417	324	256	205	--
		BRG (in.)	5.8	4.7	3.9	3.3	2.9	2.6	2.1	1.7	1.5	1.5	1.5	1.5	--
	14"	LL (plf)		1228	863	629	472	364	286	229	186	--	--	--	--
		TL (plf)	5596	3575	2477	1815	1385	1083	820	611	466	363	287	230	--
		BRG (in.)	6.3	5.0	4.2	3.6	3.1	2.8	2.3	1.9	1.6	1.5	1.5	1.5	--
	15"	LL (plf)		1511	1061	773	581	448	352	282	229	--	--	--	--
		TL (plf)	6425	4105	2845	2085	1588	1235	986	755	577	449	356	286	--
		BRG (in.)	7.2	5.8	4.8	4.1	3.6	3.2	2.8	2.4	2.0	1.7	1.5	1.5	--
	16"	LL (plf)		1288	939	705	543	427	342	278	--	--	--	--	--
		TL (plf)	7266	4672	3238	2373	1796	1398	1116	910	703	548	435	349	--
		BRG (in.)	8.2	6.6	5.5	4.7	4.1	3.6	3.2	2.9	2.4	2.1	1.8	1.6	--
	16½"	LL (plf)		1412	1029	773	596	469	375	305	--	--	--	--	--
		TL (plf)	7612	4969	3444	2524	1905	1483	1184	965	772	603	478	385	--
		BRG (in.)	8.5	7.0	5.8	5.0	4.3	3.8	3.4	3.0	2.7	2.3	2.0	1.7	--
	18"	LL (plf)		1337	1004	773	608	487	396	--	--	--	--	--	--
		TL (plf)	8721	5916	4101	2985	2249	1751	1399	1141	946	787	625	504	--
		BRG (in.)	9.8	8.3	6.9	5.9	5.1	4.5	4.0	3.6	3.3	2.9	2.5	2.2	--
19½"	LL (plf)		1277	983	773	619	503	--	--	--	--	--	--	--	
	TL (plf)	9946	6945	4815	3478	2621	2041	1631	1330	1104	929	791	645	--	
	BRG (in.)	11.2	9.8	8.1	6.9	5.9	5.2	4.6	4.2	3.8	3.5	3.2	2.8	--	
21"	LL (plf)		1228	966	773	629	503	404	--	--	--	--	--	--	
	TL (plf)	11308	7820	5547	4005	3019	2351	1879	1533	1272	1071	913	786	--	
	BRG (in.)	12.7	11.0	9.4	7.9	6.8	6.0	5.3	4.8	4.4	4.0	3.7	3.4	--	
22½"	LL (plf)		1188	951	773	--	--	--	--	--	--	--	--	--	
	TL (plf)	12830	8715	6326	4568	3444	2683	2144	1750	1453	1223	1043	898	--	
	BRG (in.)	14.4	12.2	10.7	9.0	7.8	6.8	6.1	5.5	5.0	4.6	4.2	3.9	--	
24"	LL (plf)		1155	939	--	--	--	--	--	--	--	--	--	--	
	TL (plf)	14543	9685	7153	5166	3895	3034	2426	1980	1644	1385	1180	1017	--	
	BRG (in.)	16.3	13.6	12.1	10.2	8.8	7.7	6.9	6.2	5.6	5.2	4.7	4.4	--	

Width	Depth		Span											
			8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
6¾"	9"	LL (plf)		1640	949	598	400	281	205	154	119	93	75	61
		TL (plf)	2833	1808	1251	782	519	360	259	191	143	110	85	66
		BRG (in.)	2.6	2.1	1.7	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	10½"	LL (plf)			1507	949	636	447	326	245	188	148	119	96
		TL (plf)	3859	2463	1705	1248	831	578	417	309	234	180	141	111
		BRG (in.)	3.5	2.8	2.4	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	11¾"	LL (plf)			2180	1373	920	646	471	354	273	214	172	140
		TL (plf)	4938	3153	2184	1599	1207	842	608	452	344	266	209	167
		BRG (in.)	4.5	3.6	3.0	2.6	2.2	1.8	1.5	1.5	1.5	1.5	1.5	1.5
	13½"	LL (plf)				2017	1352	949	692	520	400	315	252	205
		TL (plf)	6385	4078	2826	2070	1560	1214	900	671	512	398	314	251
		BRG (in.)	5.8	4.7	3.9	3.3	2.9	2.5	2.1	1.7	1.5	1.5	1.5	1.5
	15"	LL (plf)				1854	1302	949	713	549	432	346	281	
		TL (plf)	7886	5038	3491	2534	1909	1485	1185	926	708	551	437	350
		BRG (in.)	7.2	5.8	4.8	4.1	3.5	3.1	2.8	2.4	2.0	1.7	1.5	1.5
	16½"	LL (plf)					1733	1263	949	731	575	460	374	
		TL (plf)	9343	6099	4212	3040	2290	1782	1423	1160	948	740	587	472
		BRG (in.)	8.5	7.0	5.8	4.9	4.2	3.7	3.3	3.0	2.7	2.3	2.0	1.7
	18"	LL (plf)						1640	1232	949	747	598	486	
		TL (plf)	10703	7260	4972	3589	2704	2105	1681	1371	1137	957	767	618
		BRG (in.)	9.8	8.3	6.8	5.8	5.0	4.4	3.9	3.5	3.2	2.9	2.5	2.2
	19½"	LL (plf)							1567	1207	949	760	618	
		TL (plf)	12207	8507	5791	4181	3151	2453	1960	1599	1326	1116	951	792
		BRG (in.)	11.2	9.7	8.0	6.7	5.8	5.1	4.5	4.1	3.7	3.4	3.1	2.8
21"	LL (plf)								1507	1186	949	772		
	TL (plf)	13878	9597	6669	4815	3629	2826	2259	1843	1529	1287	1097	944	
	BRG (in.)	12.7	11.0	9.2	7.7	6.7	5.9	5.2	4.7	4.3	3.9	3.6	3.3	
22½"	LL (plf)									1458	1167	949		
	TL (plf)	15746	10696	7605	5492	4140	3225	2577	2103	1746	1470	1253	1079	
	BRG (in.)	14.4	12.2	10.5	8.8	7.6	6.7	6.0	5.4	4.9	4.5	4.1	3.8	
24"	LL (plf)											1417	1152	
	TL (plf)	17848	11886	8600	6211	4682	3648	2916	2380	1976	1664	1419	1222	
	BRG (in.)	16.3	13.6	11.8	10.0	8.6	7.6	6.7	6.1	5.5	5.0	4.7	4.3	
Width	Depth		Span											
8¾"	9"	LL (plf)		2126	1230	775	519	365	266	200	154	121	97	79
		TL (plf)	3672	2343	1621	1014	673	467	335	247	186	142	110	86
		BRG (in.)	2.6	2.1	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	10½"	LL (plf)			1954	1230	824	579	422	317	244	192	154	125
		TL (plf)	5002	3193	2211	1618	1077	750	540	400	303	234	183	144
		BRG (in.)	3.5	2.8	2.4	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	11¾"	LL (plf)			2826	1780	1192	837	611	459	353	278	222	181
		TL (plf)	6401	4088	2831	2048	1541	1091	789	586	446	345	271	216
		BRG (in.)	4.5	3.6	3.0	2.6	2.2	1.8	1.5	1.5	1.5	1.5	1.5	1.5
	13½"	LL (plf)				2615	1752	1230	897	674	519	408	327	266
		TL (plf)	8277	5287	3628	2617	1970	1532	1167	870	663	516	407	326
		BRG (in.)	5.8	4.7	3.9	3.3	2.8	2.5	2.1	1.7	1.5	1.5	1.5	1.5
	15"	LL (plf)					2403	1688	1230	924	712	560	448	365
		TL (plf)	10222	6520	4436	3200	2410	1875	1496	1201	918	715	566	454
		BRG (in.)	7.2	5.8	4.7	4.0	3.4	3.0	2.7	2.4	2.0	1.7	1.5	1.5
	16½"	LL (plf)						2247	1638	1230	948	745	597	485
		TL (plf)	12111	7818	5320	3839	2892	2250	1797	1464	1214	959	761	612
		BRG (in.)	8.5	6.9	5.6	4.8	4.1	3.6	3.2	2.9	2.6	2.3	2.0	1.7
	18"	LL (plf)							1597	1230	968	775	630	
		TL (plf)	13874	9226	6279	4532	3414	2658	2123	1731	1435	1207	995	802
		BRG (in.)	9.8	8.1	6.7	5.6	4.9	4.3	3.8	3.4	3.1	2.8	2.5	2.2
	19½"	LL (plf)									1564	1230	985	801
		TL (plf)	15824	10745	7313	5280	3978	3098	2474	2018	1674	1409	1200	1027
		BRG (in.)	11.2	9.5	7.8	6.5	5.7	5.0	4.4	4.0	3.6	3.3	3.1	2.8

Tabulated values are pounds per linear foot.

1. Applicable to simply-supported beam with sufficient bracing to avoid lateral buckling ($C_L = 1.0$).
2. Applicable to dry-use service conditions ($C_M = 1.0$).
3. Tabulated live load (LL) is based on the deflection criterion of span/240.
4. Tabulated total load (TL) is based on the deflection criterion of span/180.
5. Tabulated total load (TL) is in addition to beam weight (assumed 35 pcf).
6. Selected beam size shall satisfy both live load and total load.
7. "-" indicates the allowable load is smaller than 40 plf.
8. Blank live load indicates the live load is greater than the total load.
9. Bearing "BRG" is in inches and is calculated based on the total load including the beam weight.