

Rosboro X-Beam: Design Values

Product	Layup Combination	Flexural Stress F_b (psi) ²		Compression Perpendicular to Grain F_{ca} (psi)	Shear F_v (psi) ³	MOE (10 ⁶ psi)	
		Tension Zone	Compression Zone			Apparent	True
X-Beam	24F-V4	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 $F_{ca} = 650$ psi	Width (in.)	Depth (in.)	Weight (lb/ft.)	Maximum Resistive Shear (lb)			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.