

Product Guide

GL3000 2.1E IJC
Beams & Headers

CALVERT CO., INC.
GL3000
3000F 2.1E



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Calvert GL3000 Features & Benefits

■ **A Hybrid Engineered Product:** The Calvert GL3000 2.1E Beam and Header utilizes the benefits of LVL as the outermost tension lams and a Southern Yellow Pine core for added structural properties combined with the cost efficient technology of Glulam manufacturing. The resulting product exhibits competitive performance characteristics with other engineered products such as LVL and PSL.

■ **Cost Effective:** Glulams have held a decided cost advantage over other engineered products for several years. The added cost benefit of the Hybrid Beam and Header comes as a result of utilizing Glulam raw material and manufacturing costs. Since the properties and features of the GL3000 match other engineered products, the GL3000 2.1E is the Beam and Header of choice.

■ **Conventional Framing Features:** The GL3000 Beam and Header is manufactured with a “Balanced Layup” and Zero Camber, so there is no “Top” or “Bottom”. Because the product is intended for framing applications where appearance is not critical, the GL3000 2.1E is produced to the APA EWS Framing Appearance Standard. Finally, the product is touch planed to meet proper tolerances and to match standard framing widths for 2x4, 2x6 and 2X8 construction. The product is I-Joist Compatible with standard depths of 9 1/2, 11 7/8, 14 and 16. We also offer depths of 7 1/4” & 18” to 30” upon request.

■ **Custom Projects:** If your project calls for the structural properties of the GL3000, Calvert can provide section sizes up to 12 1/4 wide, up to 30” deep, and up to 60’ in length.

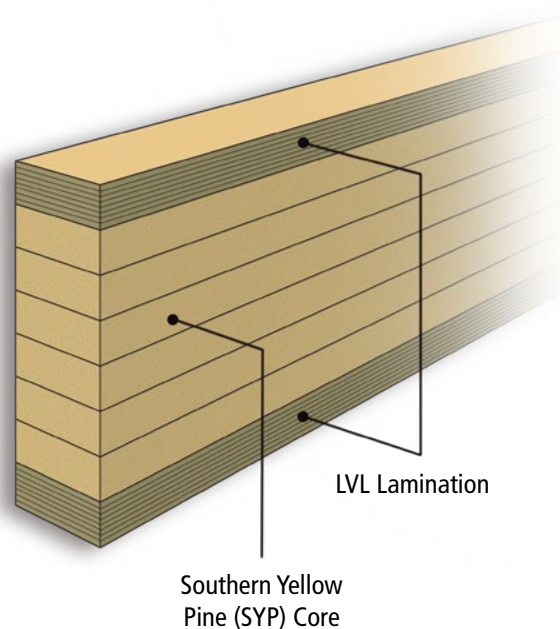
■ **Standard and Custom Lengths:** Standard stocking lengths of 48’, 60’, 63’ and 66’ are available. However, cut to length orders can be manufactured on a custom basis.

■ **Packaging:** The GL3000 is individually wrapped and sealed for moisture protection. They can be purchased in bundle or single piece volumes.

■ **Calvert Flexibility:** At Calvert, we deliver the products the way you need to order them. We offer both stock lengths for inventory and orders specified to custom lengths. We do packaging and unit size to your specification.

■ **Code Approvals and Certifications:**

- APA-EWS PR-L269
- ESR-1940
- City of LA RR25635



Calvert GL3000 Specifications

Glulam Beam Design Values

Product	Layup Combination	F_b^1 (psi)		F_{c1} (psi)	F_v^2 (psi)	MOE (10 ⁶ psi)	
		Tension Zone Stressed in Tension	Compressed Zone Stressed in Tension			Apparent	True
GL3000	30F-E2M3	3,000	3,000	650	300	2.1	2.2

NOTES:

(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.

Design Properties ($F_b = 3,000$ psi; $F_v = 300$ psi; $E = 2.1 \times 10^6$ psi)

Beam Width (inches)	Beam Depth (inches)	Weight (lbf/ft)	Max. Resistive Shear (lbf)			Max. Resistive Moment (ft-lbf)			EI (10 ⁶ lbf-in. ²)
			100%	115%	125%	100%	115%	125%	
3 1/2	9 1/2	8.3	6,650	7,648	8,313	13,161	15,136	16,452	525
	11 7/8	10.4	8,313	9,559	10,391	20,565	23,649	25,706	1,026
	14	12.3	9,800	11,270	12,250	28,583	32,871	35,729	1,681
	16	14.0	11,200	12,880	14,000	37,333	42,933	46,667	2,509
	18	15.8	12,600	14,490	15,750	47,250	54,338	59,063	3,572
5 7/16	9 1/2	12.9	10,331	11,881	12,914	20,447	23,514	25,559	816
	11 7/8	16.1	12,914	14,851	16,143	31,949	36,741	39,936	1,593
	14	19.0	15,225	17,509	19,031	44,406	51,067	55,508	2,611
	16	21.8	17,400	20,010	21,750	58,000	66,700	72,500	3,898
	18	24.5	19,575	22,511	24,469	73,406	84,417	91,758	5,550
7	9 1/2	16.6	13,300	15,295	16,625	26,323	30,271	32,904	1,050
	11 7/8	20.8	16,625	19,119	20,781	41,130	47,299	51,412	2,051
	14	24.5	19,600	22,540	24,500	57,167	65,742	71,458	3,361
	16	28.0	22,400	25,760	28,000	74,667	85,867	93,333	5,018
	18	31.5	25,200	28,980	31,500	94,500	108,675	118,125	7,144

NOTES:

(1) Beam weight is assumed to be 36 pcf.

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

(3) Maximum resistive shear shall be reduced by 10% if checking is a consideration.

Minimum Bearing Length ($F_{c1} = 650$ psi)

Beam 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
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 7/16	1.50	1.50	1.50	1.70	1.98	2.26	2.55	2.83	3.40	3.96	4.53	5.09	5.66	6.22	6.79	7.36	7.92	8.49
7	1.50	1.50	1.50	1.50	1.54	1.76	1.98	2.20	2.64	3.08	3.52	3.96	4.40	4.84	5.27	5.71	6.15	6.59

NOTES:

(1) Minimum bearing length is 1 1/2". Bearing across full width of the beam is required.

(2) Bearing length shall be adjusted when the allowable bearing stress of the supporting member is less than the tabulated F_{c1} values.

Calvert GL3000 Specifications

Floor Beam Allowable Loads Simple Span (LDF = 1.00), $F_b = 3,000$ psi; $F_v = 300$ psi; $E = 2.1 \times 10^6$ psi

Width (in.)	Depth (in.)	Load Condition	Span (ft.)												
			8	10	12	14	16	18	20	22	24	26	28	30	
3 1/2	9 1/4	Live Load L/360	1,403	718	416	262	175	123	90	67	52	-	-	-	
		Live Load L/480	1,052	539	312	196	132	92	67	51	-	-	-	-	
		Total Load L/240	1,552	990	615	384	255	177	127	93	70	53	-	-	
	9 1/2	Live Load L/360	1,520	778	450	284	190	133	97	73	56	-	-	-	
		Live Load L/480	1,140	583	338	213	142	100	73	55	-	-	-	-	
		Total Load L/240	1,637	1,045	667	417	277	192	138	101	76	58	-	-	
	11 1/4	Live Load L/360	2,297	1,292	748	471	315	222	161	121	93	74	59	-	
		Live Load L/480	1,893	969	561	353	237	166	121	91	70	55	-	-	
		Total Load L/240	2,297	1,467	1,016	696	463	322	232	172	130	100	78	62	
	11 7/8	Live Load L/360	2,560	1,520	879	554	371	261	190	143	110	86	69	56	
		Live Load L/480	2,226	1,140	660	415	278	195	142	107	82	65	52	-	
		Total Load L/240	2,560	1,635	1,132	820	546	380	275	204	154	119	93	74	
	14	Live Load L/360	3,447	2,274	1,441	907	608	427	311	234	180	142	113	92	
		Live Load L/480	3,447	1,867	1,081	681	456	320	233	175	135	106	85	69	
		Total Load L/240	3,447	2,274	1,576	1,154	881	628	455	339	258	200	158	126	
	16	Live Load L/360	4,186	2,973	2,060	1,354	907	637	465	349	269	211	169	138	
		Live Load L/480	4,186	2,788	1,613	1,016	681	478	348	262	202	159	127	103	
		Total Load L/240	4,186	2,973	2,060	1,510	1,153	908	683	510	389	303	240	192	
	18	Live Load L/360	5,024	3,584	2,609	1,913	1,292	907	662	497	383	301	241	196	
		Live Load L/480	5,024	3,584	2,297	1,446	969	681	496	373	287	226	181	147	
		Total Load L/240	5,024	3,584	2,609	1,913	1,461	1,151	929	730	558	436	346	278	
	5 7/16	9 1/4	Live Load L/360	2,179	1,116	646	407	272	191	139	105	81	63	51	-
			Live Load L/480	1,634	837	484	305	204	143	105	79	61	-	-	-
			Total Load L/240	2,411	1,538	956	597	396	274	197	145	108	83	64	-
9 1/2		Live Load L/360	2,361	1,209	699	440	295	207	151	114	87	69	55	-	
		Live Load L/480	1,770	906	525	330	221	155	113	85	66	52	-	-	
		Total Load L/240	2,543	1,623	1,036	648	430	298	214	157	118	90	70	54	
11 1/4		Live Load L/360	3,569	2,007	1,162	731	490	344	251	189	145	114	91	74	
		Live Load L/480	2,940	1,505	871	549	368	258	188	141	109	86	69	56	
		Total Load L/240	3,569	2,279	1,578	1,082	720	501	361	267	203	156	122	96	
11 7/8		Live Load L/360	3,977	2,361	1,366	860	576	405	295	222	171	134	108	87	
		Live Load L/480	3,458	1,770	1,025	645	432	304	221	166	128	101	81	66	
		Total Load L/240	3,977	2,540	1,759	1,274	848	591	426	316	240	185	145	115	
14		Live Load L/360	5,354	3,533	2,239	1,410	944	663	484	363	280	220	176	143	
		Live Load L/480	5,354	2,901	1,679	1,057	708	497	363	272	210	165	132	107	
		Total Load L/240	5,354	3,533	2,448	1,793	1,369	976	706	526	401	311	245	196	
16		Live Load L/360	6,503	4,618	3,200	2,104	1,410	990	722	542	418	329	263	214	
		Live Load L/480	6,503	4,331	2,506	1,578	1,057	743	541	407	313	246	197	160	
		Total Load L/240	6,503	4,618	3,200	2,346	1,777	1,383	1,061	792	605	471	373	299	
18		Live Load L/360	7,806	5,568	4,054	2,954	2,007	1,410	1,028	772	595	468	375	305	
		Live Load L/480	7,806	5,568	3,568	2,247	1,505	1,057	771	579	446	351	281	228	
		Total Load L/240	7,806	5,568	4,054	2,954	2,226	1,733	1,384	1,128	868	677	537	432	
7		9 1/4	Live Load L/360	2,805	1,436	831	523	351	246	180	135	104	82	65	53
			Live Load L/480	2,104	1,077	623	393	263	185	135	101	78	61	-	-
			Total Load L/240	3,103	1,980	1,231	769	510	353	253	186	140	106	82	64
	9 1/2	Live Load L/360	3,039	1,556	900	567	380	267	194	146	113	89	71	58	
		Live Load L/480	2,279	1,167	675	425	285	200	146	110	84	66	53	-	
		Total Load L/240	3,274	2,089	1,334	834	553	384	275	203	152	116	90	70	
	11 1/4	Live Load L/360	4,595	2,584	1,495	942	631	443	323	243	187	147	118	96	
		Live Load L/480	3,785	1,938	1,122	706	473	332	242	182	140	110	88	72	
		Total Load L/240	4,595	2,933	2,031	1,393	927	645	465	344	261	201	157	124	
	11 7/8	Live Load L/360	5,120	3,039	1,759	1,108	742	521	380	285	220	173	138	113	
		Live Load L/480	4,452	2,279	1,319	831	556	391	285	214	165	130	104	84	
		Total Load L/240	5,120	3,270	2,264	1,640	1,092	761	549	407	309	239	187	148	
	14	Live Load L/360	6,893	4,549	2,882	1,815	1,216	854	622	468	360	283	227	184	
		Live Load L/480	6,893	3,735	2,161	1,361	912	640	467	351	270	212	170	138	
		Total Load L/240	6,893	4,549	3,151	2,295	1,728	1,256	909	677	516	400	316	252	
	16	Live Load L/360	8,372	5,945	4,104	2,709	1,815	1,275	929	698	538	423	339	275	
		Live Load L/480	8,372	5,575	3,226	2,032	1,361	956	697	524	403	317	254	206	
		Total Load L/240	8,372	5,945	4,104	2,961	2,230	1,735	1,366	1,019	779	606	480	385	
	18	Live Load L/360	10,049	7,169	5,136	3,707	2,584	1,815	1,323	994	766	602	482	392	
		Live Load L/480	10,049	7,169	4,594	2,893	1,938	1,361	992	745	574	452	362	294	
		Total Load L/240	10,049	7,169	5,136	3,707	2,793	2,174	1,736	1,416	1,117	872	692	557	

DESIGN ASSUMPTIONS:

- SPAN is the on-center distance between supports and is valid for simple span applications.
- These tables assume full lateral support of the compression side.
- The values represent the load carrying capacity of the beam in pounds per lineal foot (plf) of the beam length.
- The values are based on uniform loads of stated duration and specified deflection limit in dry-use conditions.
- The values are in addition to the beam weight (assumed 36 pcf).
- The designer must check both the Total Load and the appropriate Live Load columns.
- Where the Live Load is blank, the Total Load governs the design.
- Do not use a product where designated "-" without further analysis by a design professional.

TO USE:

- Select the on-center span required.
- Compare the design total load to the Total Load column and compare the design live load to either the live load column as needed.
- Select a product that exceeds both the design total and live loads.

Calvert GL3000 Specifications

Floor Beams

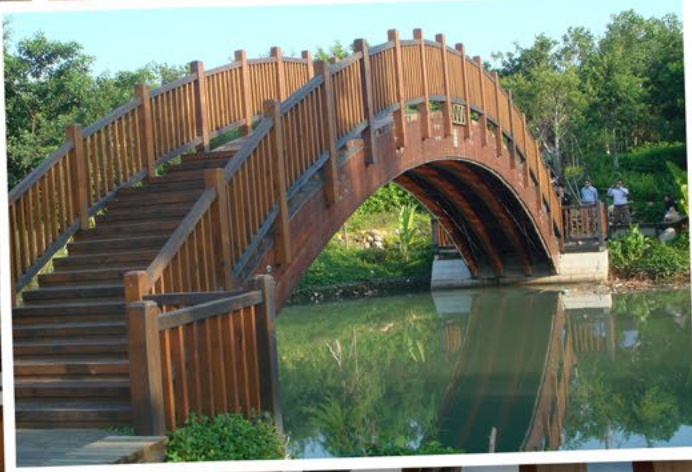
Floor Loading	Floor Joists	Column On Center Spacing (ft.)	Width of House (ft.)							
			20	24	26	30	32	36	40	
Simple or Multiple Span Floor Beams (LDF = 1.0)	Simple-Span Continuous Floor Joists	8	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2
		8	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		10	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8
		10	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		12	3 1/2 x 9 1/2	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 14	3 1/2 x 14
		12	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8
		16	3 1/2 x 14	3 1/2 x 14	3 1/2 x 14	3 1/2 x 16	3 1/2 x 16	3 1/2 x 16	3 1/2 x 18	3 1/2 x 18
		16	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 16	5 7/16 x 16
		20	3 1/2 x 16	3 1/2 x 18	3 1/2 x 18	5 7/16 x 16	5 7/16 x 18	5 7/16 x 18	5 7/16 x 18	5 7/16 x 18
		20	5 7/16 x 14	5 7/16 x 16	5 7/16 x 16	7 x 16	7 x 16	7 x 16	7 x 16	7 x 18
Multiple-Span Continuous Floor Joists	Multiple-Span Continuous Floor Joists	8	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2
		8	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		10	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8
		10	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		12	3 1/2 x 9 1/2	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 14
		12	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8
		16	3 1/2 x 14	3 1/2 x 14	3 1/2 x 14	3 1/2 x 16	3 1/2 x 16	3 1/2 x 16	3 1/2 x 18	3 1/2 x 18
		16	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14
		20	3 1/2 x 16	3 1/2 x 18	3 1/2 x 18	5 7/16 x 16	5 7/16 x 16	5 7/16 x 16	5 7/16 x 18	5 7/16 x 18
		20	5 7/16 x 14	5 7/16 x 14	5 7/16 x 16	7 x 14	7 x 16	7 x 16	7 x 16	7 x 16
Simple-Span Non-Continuous Floor Joists	Simple-Span Non-Continuous Floor Joists	8	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2
		8	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		10	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 11 7/8
		10	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		12	3 1/2 x 9 1/2	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8
		12	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 11 7/8	5 7/16 x 11 7/8
		16	3 1/2 x 11 7/8	3 1/2 x 14	3 1/2 x 14	3 1/2 x 14	3 1/2 x 16	3 1/2 x 16	3 1/2 x 16	3 1/2 x 16
		16	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14
		20	3 1/2 x 16	3 1/2 x 16	3 1/2 x 18	3 1/2 x 18	3 1/2 x 18	5 7/16 x 16	5 7/16 x 16	5 7/16 x 18
		20	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 16	5 7/16 x 16	7 x 16	7 x 16	7 x 16
Multiple-Span Non-Continuous Floor Joists	Multiple-Span Non-Continuous Floor Joists	8	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2
		8	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		10	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2
		10	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		12	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 9 1/2	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8	3 1/2 x 11 7/8
		12	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2	5 7/16 x 9 1/2
		16	3 1/2 x 11 7/8	3 1/2 x 14	3 1/2 x 14	3 1/2 x 14	3 1/2 x 14	3 1/2 x 16	3 1/2 x 16	3 1/2 x 16
		16	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 11 7/8	5 7/16 x 14
		20	3 1/2 x 16	3 1/2 x 16	3 1/2 x 16	3 1/2 x 18	3 1/2 x 18	3 1/2 x 18	3 1/2 x 18	5 7/16 x 16
		20	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 14	5 7/16 x 16	5 7/16 x 16	5 7/16 x 16	7 x 16

NOTES:

(1) Service Condition = dry.

(2) Maximum deflection under live load = L/360. Maximum deflection under total load = L/240.

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