

FRASERWOOD

Key-Laminated Beams

Fusing Modern Innovation with 19th Century Craftsmanship



Updating a building technique common in the late 1800's, FraserWood now offers large, solid-sawn members that are mechanically laminated rather than glue laminated – a unique timber product that speaks to a bygone era of beauty and engineering virtuosity.

Relying on our industry leading, quality wood fiber and the analytical methodology recently developed by Fire Tower Engineered Timber's Joe Miller, Ph.D., P.E., FraserWood can produce beams to depths of 48" and lengths of 60', literally extending the reach of natural timbers.

Exceptional Strength and Enhanced Appearance

To create Key-Laminated Beams, we join HeartDry™ solid-sawn timbers along their lengths using "keys." (For these beams to behave as designed, all the components must be dry.) Typically, the keys are hardwood wedges, joined transversely to the adjacent timbers to transfer shear and limit interlayer slip. Properly designed and engineered, Key-Laminated Beams are up to 90% as efficient as solid wood beams of like dimension.

Efficient Use of Natural Resources

Key-Laminated Beams are certainly a greener option than using a solid sawn alternative of similar dimensions. The wood required for deep keyed beams can be made from smaller trees, sourced from sustainable forests.

The Craftsman-style look of Key-Laminated Beams brings a beauty equal to solid-sawn timber and superior to most glulam beams. Key-Laminated Beams can set a project apart and make the structure a striking example of quality craftsmanship.

The Attributes of Key-Laminated Beams

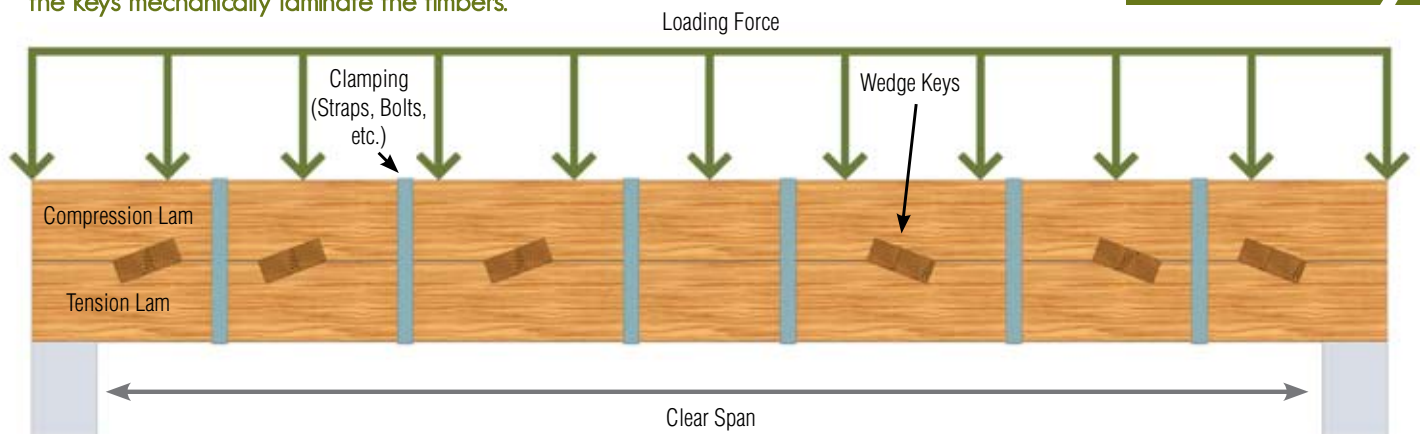
- Beams are joined mechanically—not glued.
- Up to 90% as efficient as solid wood.
- Depths up to 48" and lengths up to 60'.
- Craftsman-style appearance.
- Custom configurations available, including columns.
- FSC-certification available.

Available Species

- White Spruce
- Douglas Fir
- Port Orford Cedar
- Western Red Cedar
- Red Oak



The combination of a clamping mechanism and the keys mechanically laminate the timbers.



Allowable Uniform Loads for Two-Layered Keyed Beams

Using #1 Douglas Fir, Inclined White Oak Wedged Keys, Clamping Bolts and Bearing Plates

Beam Sizes (W x D)	Beam Weight (plf)	Load Condition	Allowable Uniform Load per Lineal Foot Span (ft)													
			14	16	18	20	22	24	26	28	30	32	34	36	38	40
7 ¹ / ₄ " x 14 ¹ / ₂ "	31	L / 240	1121	869	713	581	485	377	-	-	-	-	-	-	-	-
		L / 360	1001	689	533	401	317	245	-	-	-	-	-	-	-	-
7 ¹ / ₄ " x 18 ¹ / ₂ "	38	L / 240	1858	1450	1210	982	838	706	610	490	-	-	-	-	-	-
		L / 360	1858	1330	1054	778	634	490	394	322	-	-	-	-	-	-
7 ¹ / ₄ " x 22 ¹ / ₂ "	46	L / 240	2654	2066	1730	1418	1214	1022	890	758	674	590	-	-	-	-
		L / 360	2654	2066	1730	1322	1082	842	698	566	470	386	-	-	-	-
9 ¹ / ₄ " x 18 ¹ / ₂ "	48	L / 240	2208	1716	1440	1164	996	828	720	624	528	432	-	-	-	-
		L / 360	2208	1668	1332	984	804	624	504	408	336	276	-	-	-	-
9 ¹ / ₄ " x 22 ¹ / ₂ "	57	L / 240	3363	2619	2199	1803	1539	1299	1131	975	855	747	651	543	-	-
		L / 360	3363	2619	2199	1671	1371	1071	891	711	603	495	411	339	-	-
9 ¹ / ₄ " x 26 ¹ / ₂ "	67	L / 240	4457	3485	2933	2393	2045	1745	1517	1313	1157	1013	905	797	725	641
		L / 360	4457	3485	2933	2393	2045	1673	1409	1133	965	797	677	569	485	413
11 ¹ / ₄ " x 22 ¹ / ₂ "	69	L / 240	3819	2967	2487	2043	1743	1467	1275	1095	963	843	747	663	567	483
		L / 360	3819	2967	2487	2031	1659	1299	1083	867	723	591	507	411	351	291
11 ¹ / ₄ " x 26 ¹ / ₂ "	80	L / 240	5404	4216	3544	2908	2500	2104	1840	1588	1408	1228	1096	976	880	784
		L / 360	5404	4216	3544	2908	2500	2032	1708	1372	1168	964	820	688	592	496
11 ¹ / ₄ " x 30 ¹ / ₂ "	92	L / 240	6856	5356	4516	3700	3196	2704	2368	2056	1816	1588	1420	1264	1144	1024
		L / 360	6856	5356	4516	3700	3196	2704	2368	2044	1732	1432	1240	1036	904	772
11 ¹ / ₄ " x 34 ¹ / ₂ "	103	L / 240	8453	6605	5573	4577	3965	3353	2945	2549	2261	1985	1781	1589	1433	1289
		L / 360	8453	6605	5573	4577	3965	3353	2945	2549	2261	1985	1757	1493	1301	1109

Assumptions:

1. Beams are made of two equal size timbers.
2. Uniform load applied to the top face of the beam.
3. Top face of beam is braced against buckling.
4. Normal load duration.
5. Bearing length required at each end can be calculated as:
 $(PLF \times SPAN) / (1300 \times BEAM WIDTH)$
6. Beams can be trimmed up to 12" on each end on-site.

Custom Requirements? Give Us a Call.



Shown here is a tri-laminate keyed beam that has a designed gap in the center lamina.

For metric tables and more standard configurations, go to the Key-Laminated Beams page on the FraserWood website.



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