



TECH NOTES

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Design Load Tables for Solid-Sawn Lumber Beams and Headers

- **Single 4x and 6x**
- **Built-Up Members With Double and Triple 2x's**

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Lumber beams and headers are used to carry transverse loads over a given span. The materials used to perform this function have expanded beyond conventional lumber products. With the increasing use of engineered materials, which are often more costly and excessive, traditional solid-sawn lumber may be overlooked as a suitable structural material for beams and headers. This *Tech Note* is intended to make building with lumber beams and headers more user-friendly by providing load tables. These tables give total loads for single 4x and 6x and built-up double and triple 2x wood members from 3 to 14 foot spans.

Lumber for built-up members comes from the same grade and size category as floor joists. Higher grade pieces from mixed grade bundles can be selected for this use to maximize utilization. Lumber is easily cut to length and built-up members can be fabricated on the job site.

Design Considerations

Engineering computations for values in this table are based on the following assumptions:

- 1.) Design values and appropriate adjustment factors are those published in the 1997 edition of the *National Design Specification (NDS) for Wood Construction* and its supplement.
- 2.) End splits and checks are limited to 3/4 the depth (wide face) for 2x lumber or equal to the thickness on the wide face for 4x and 6x lumber. This limitation allowed an increase to the allowable shear stress by a factor of 1.5 for 2x lumber and 1.33 for 4x and 6x lumber. This limitation can be relieved for tabulated load values not governed by shear.
- 3.) For double and triple 2x members, lumber pieces are tied together by mechanical fasteners (nails, screws or bolts) making the pieces work as a unit. Fastening requirements are discussed in the section **Built-Up Member Fastening Requirements**. A repetitive member increase multiplier for F_b of 1.15 is used for triple 2x configurations.
- 4.) Live load reduction for large tributary areas is permitted by codes, but is not considered in these load tables. Designers can increase the tabulated load if live load reduction is permitted.
- 5.) A load duration factor of 1.15 (the roof snow load is part of the total load considered) is used in determining values for Tables 1, 2 and 3. A normal duration of load factor of 1.0 (occupancy load) is used in determining values for floor beams in Tables 4, 5 and 6.
- 6.) Live load deflection limit of span/240 for Tables 1, 2 and 3 and span/360 for Tables 4, 5 and 6. Load values marked with an asterisk (*) satisfy span/360 live load deflection for Tables 1, 2 and 3 and span/480 for Tables 4, 5 and 6.
- 7.) Each member is supported for lateral movement at the ends and at the top along the length. For example, caps, straps, hangers, wood panels, boards, decking, etc. may provide the lateral support.

- 8.) The member's own weight (a part of dead load) is considered as a part of the total load carried by the header.
- 9.) A live load-to-dead load ratio of 3 to 1 is used for values in Tables 1, 2 and 3. A live load-to-dead load ratio of 4 to 1 is used for values in Tables 4, 5 and 6.

Design loads were computed according to code-accepted engineering procedures, which consider only the strength of bare lumber members. In reality, the sheathing elements covering the headers and the band joists over the headers contribute to the load carrying capacity, even though it is not often considered in the engineering procedures. The load table is applicable to floor and roof beams, garage door headers, window and door headers, or any uniformly loaded horizontal member.

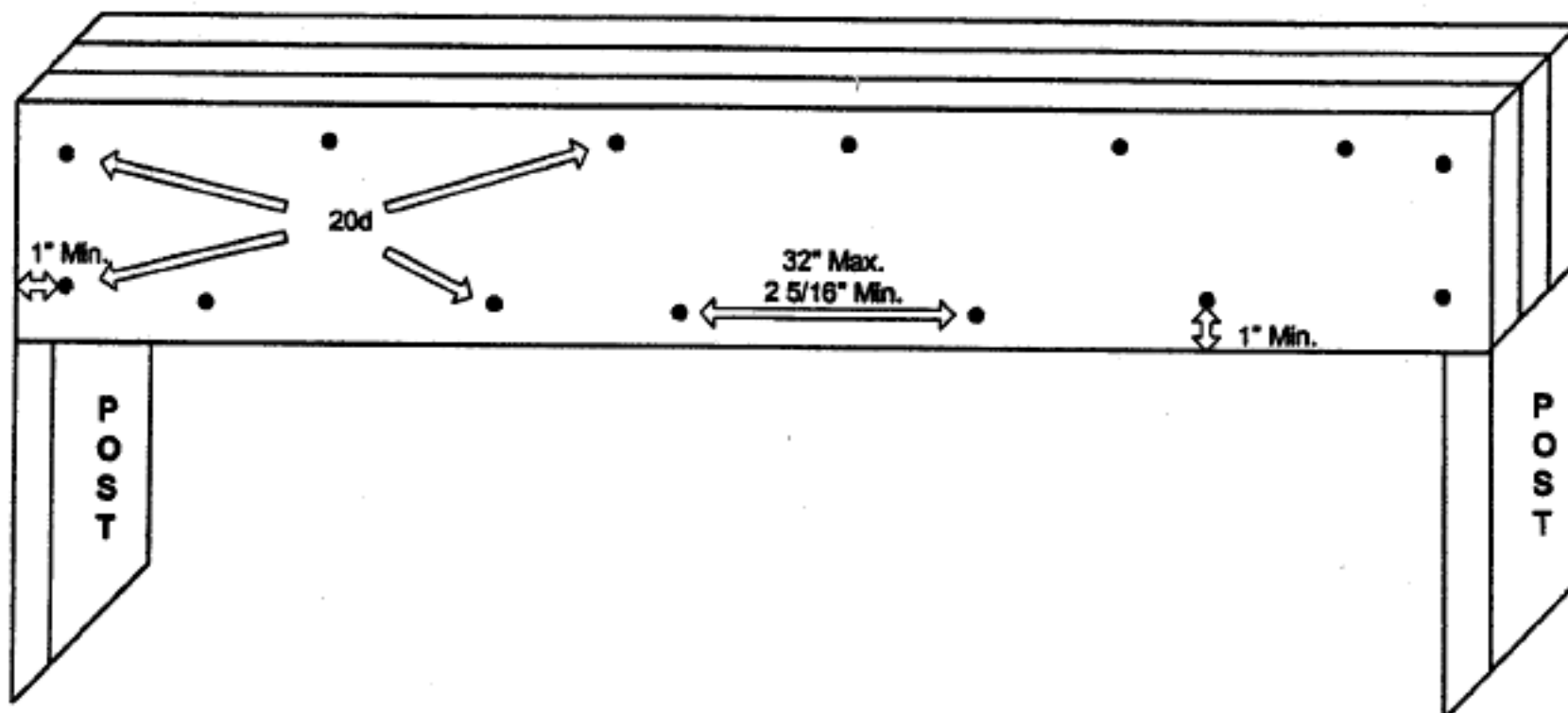
Douglas Fir-Larch and Hem-Fir are the major Western softwood species groups available in all parts of the country. Douglas Fir-Larch and Hem-Fir No. 1&Btr 2x lumber provides higher load ratings than No. 1, and is also available in the marketplace. The use of a higher grade will allow fewer pieces or smaller size lumber needed for a member, which could translate into cost savings.

For more custom design, WWPA offers the *SpanMaster*TM - a hand-held electronic design calculator for sizing or spanning uniformly loaded Western lumber beams, headers, joists and rafters up to 24" in thickness and width. Order forms for the *SpanMaster*TM are available by fax by calling (732) 544-2876 and following the instructions. Point loads and uniform loads can be calculated easily using the *Western Wood Use Book, Fourth Edition*. The *WWUB* comes with a CAB (Column and Beam) Software Program and is listed in the order form mentioned above.

Built-Up Member Fastening Requirements

Each of the model building codes list requirements for built-up lumber members. The nail patterns and schedules are uniform in all but the CABO One and Two Family Dwelling Code. Built-up members require 20d nails at 32" o.c. top and bottom staggered with two 20d nails at each end. CABO One and Two Family Dwelling Code requires 10d nails 32" o.c. at the top and bottom staggered with two nails at ends. The minimum nail on-center spacing and depth of penetration vary with nail type (i.e. box or common) and wire diameter. Depth of nail penetration and on-center spacing should be 12 times the nail diameter. The minimum distances shown in the diagram are for 20d common wire nails. For other nailing patterns and schedules, refer to NER-272.

Fastening Diagram



End Bearing Length

Sufficient length of end bearing should be provided. The allowable end bearing load in pounds at each end of the headers is listed in the table below.

END BEARING LOAD (LBS.)																
Length of Bearing (Inches)	Two 2X's				Three 2X's				One 4X				One 6X			
	1.5"	2.0"	3.0"	3.5"	1.5"	2.0"	3.0"	3.5"	1.5"	2.0"	3.0"	3.5"	1.5"	2.0"	3.0"	3.5"
DF-L	2813	3750	5625	6563	4219	5625	8438	9844	3281	4375	6563	7656	5156	6875	10313	12031
HEM-FIR	1823	2430	3645	4253	2734	3645	5468	6379	2126	2835	4253	4965	3341	4455	6682	7796

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Species	Grade	Nominal Lumber Size	MAXIMUM TOTAL LOAD (pounds per lineal foot, PLF) FOR 4X & 6X LUMBER HEADERS											
			3 to 1 Live Load to Dead Load Ratio											
			Span/240											
			Snow Load Duration (C _D =1.15)											
			BEAM AND HEADER SPAN								TABLE 1			
			For Floor Beam Loads, Refer to Tables 4, 5 & 6											
			3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
DOUGLAS FIR- LARCH	Select Structural	4x6	*1790	*1210	*913	*733	*539	412	326	263	<u>205</u>	<u>159</u>	<u>124</u>	<u>100</u>
		4x8	*2744	*1761	*1297	*1026	*849	*716	*566	458	379	318	271	<u>228</u>
		4x10	*4301	*2552	*1814	*1407	*1147	*971	*841	*689	*569	*478	408	351
		4x12	*6782	*3590	*2441	*1850	*1489	*1246	*1071	*939	*772	*649	*553	*477
		4x14	*11350	*5015	*3219	*2370	*1875	*1551	*1323	*1153	*973	*818	*697	*601
		6x6	*2717	*1701	*1284	*886	*651	498	394	319	264	<u>211</u>	<u>165</u>	<u>132</u>
		6x8	*4086	*2600	*1907	*1505	*1210	*926	*732	*593	490	439	374	322
	6x10	*6393	*3748	*2651	*2051	*1672	*1412	*1221	*1014	*839	*705	600	518	
	No.1 & Btr	4x6	*1790	*1210	*844	*586	*431	*330	261	211	175	147	<u>117</u>	<u>95</u>
		4x8	*2744	*1761	*1297	*1026	*748	*573	*453	*367	303	255	217	140
		4x10	*4302	*2552	*1814	*1407	*1125	*861	*686	*551	*455	*383	*326	*281
		4x12	*6782	*3590	*2441	*1850	*1489	*1167	*922	*747	*617	*519	*442	*381
		4x14	*10469	*5015	*3219	*2370	*1875	*1472	*1163	*942	*779	*654	*558	*481
	No. 1	4x6	*1790	*1098	*703	*488	*359	*275	*217	176	145	122	104	90
		4x8	*2744	*1761	*1227	*849	*624	*477	*377	*306	*253	*212	181	156
		4x10	*4302	*2552	*1814	*1275	*937	*717	*567	*459	*379	*319	*272	*234
		4x12	*6782	*3590	*2441	*1730	*1271	*973	*769	*623	*515	*432	*368	*318
		4x14	*8723	*4907	*3141	*2181	*1602	*1227	*969	*785	*648	*545	*465	*401
		6x6	*2517	*1594	*1020	*708	*521	*399	*315	255	211	177	151	130
		6x8	*4086	*2600	*1907	*1318	*968	*741	*586	*474	*392	*329	281	242
	6x10	*6393	*3748	*2651	*2051	*1672	*1338	*1058	*856	*708	*595	*507	*437	
	No. 2	4x6	*1790	*990	*663	*440	*323	*247	*195	158	131	110	94	81
		4x8	*2744	*1719	*1110	*764	*561	*430	*340	*275	*227	*191	163	140
		4x10	*4302	*2583	*1653	*1148	*843	*646	*510	*413	*342	*287	*245	*211
		4x12	*6226	*3502	*2241	*1557	*1144	*876	*692	*560	*463	*389	*332	*286
		4x14	*7851	*4416	*2827	*1967	*1442	*1104	*872	*707	*584	*491	*418	*361
		6x6	*1654	*930	*595	*413	*304	*233	*184	*149	*123	*103	*88	76
		6x8	*3075	*1729	*1107	*768	*565	*432	*342	*277	*229	*192	*164	*141
6x10	*6166	*3469	*2220	*1542	*1133	*867	*685	*554	*459	*385	*328	*283		
HEM-FIR	Select Structural	4x6	*1413	*955	*721	*579	484	385	304	<u>231</u>	<u>173</u>	<u>133</u>	<u>105</u>	<u>84</u>
		4x8	*2167	*1391	*1024	*810	*670	*571	498	427	354	297	<u>240</u>	<u>192</u>
		4x10	*3396	*2015	*1432	*1111	*907	*767	*664	*586	*524	446	374	299
		4x12	*5354	*2834	*1927	*1460	*1175	*983	*845	*741	*660	*595	*516	*445
	No.1 & Btr	4x6	*1413	*955	*721	*537	*395	302	239	194	160	<u>125</u>	<u>99</u>	<u>79</u>
		4x8	*2167	*1391	*1024	*810	*670	*525	*415	336	277	233	199	172
		4x10	*3396	*2014	*1432	*1111	*907	*767	*624	*505	*417	*351	*299	258
		4x12	*5354	*2834	*1927	*1460	*1175	*983	*845	*685	*566	*476	*405	*349
	No. 1	4x6	*1413	*955	*686	*476	*350	*268	212	172	142	118	<u>99</u>	<u>79</u>
		4x8	*2167	*1391	*1024	*810	*608	*466	*368	*298	*246	207	176	152
		4x10	*3396	*2015	*1432	*1111	*907	*700	*553	*448	*370	*311	*265	*228
		4x12	*5354	*2834	*1927	*1460	*1175	*949	*750	*607	*502	*422	*359	*310
	No. 2	4x6	*1413	*934	*598	*415	*305	*234	185	150	124	104	<u>85</u>	<u>68</u>
		4x8	*2167	*1391	*1024	*722	*530	*406	*321	*260	*215	180	154	133
		4x10	*3396	*2015	*1432	*1084	*797	*610	*482	*390	*323	*271	*231	*199
		4x12	*5354	*2834	*1927	*1460	*1080	*827	*653	*529	*437	*368	*313	*270

Bold numbers governed by shear; *(asterisk) represents l/360 deflection satisfied; *italicized* numbers are limited by l/240 deflection.

Species	Grade	Nominal Lumber Size	MAXIMUM TOTAL LOAD (pounds per lineal foot, PLF) FOR DOUBLE 2X LUMBER HEADERS																				
			3 to 1 Live Load to Dead Load Ratio																				
			Span/240 Deflection																				
			Snow Load Duration (C _D =1.15)																				
BEAM & HEADER SPAN												TABLE 2											
For Floor Beam Loads, Refer to Tables 4, 5 & 6												3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
DOUGLAS FIR- LARCH	Select Structural	2x6	*1731	*1169	*883	*624	*461	352	279	226	<i>176</i>	<i>136</i>	<i>107</i>	<i>85</i>									
		2x8	*2653	*1703	*1254	*992	*740	*567	*448	363	302	252	215	185									
		2x10	*4159	*2467	*1754	*1361	*1111	*846	*668	*541	*447	*376	*320	276									
		2x12	*6557	*3471	*2361	*1788	*1439	*1137	*898	*723	*601	*505	*431	*371									
		2x14	*10974	*4849	*3112	*2291	*1813	*1420	*1122	*909	*751	*631	*538	*464									
	No.1 & Btr	2x6	*1731	*1130	*723	*502	*369	*282	223	181	150	126	<i>101</i>	<i>81</i>									
		2x8	*2654	*1703	*1161	*806	*592	*453	*360	*290	*240	201	172	148									
		2x10	*4159	*2467	*1754	*1203	*884	*676	*534	*433	*360	*301	*256	*221									
		2x12	*6557	*3471	*2361	*1617	*1188	*910	*718	*582	*481	*404	*344	*297									
		2x14	*8076	*4543	*2907	*2019	*1483	*1136	*897	*727	*601	*505	*430	*371									
	No. 1	2x6	*1674	*942	*603	*419	*308	*235	*186	151	125	105	89	<i>76</i>									
		2x8	*2654	*1509	*967	*672	*493	*378	*299	*242	*200	*168	*143	123									
		2x10	*4009	*2259	*1443	*1002	*736	*564	*445	*361	*298	*251	*213	*184									
		2x12	*5391	*3032	*1941	*1348	*990	*758	*599	*485	*401	*336	*287	*248									
		2x14	*6730	*3786	*2723	*1682	*1236	*946	*748	*606	*501	*421	*358	*309									
	No. 2	2x6	*1507	*848	*543	*377	*277	*212	*167	135	112	94	80	69									
		2x8	*2353	*1360	*870	*604	*444	*340	*269	*218	*180	*151	*129	*111									
		2x10	*3681	*2029	*1299	*902	*663	*507	*401	*325	*268	*225	*192	*166									
		2x12	*4851	*2729	*1747	*1213	*891	*682	*539	*437	*361	*303	*258	*223									
		2x14	*6057	*3407	*2180	*1514	*1112	*852	*673	*545	*451	*379	*323	*278									
No. 3	2x6	*879	*495	*317	*220	*162	*124	*98	*79	*65	*55	*47	*40										
	2x8	*1411	*794	*508	*353	*259	*198	*157	*127	*105	*88	*75	*65										
	2x10	*2104	*1184	*758	*526	*387	*296	*234	*189	*157	*132	*112	*97										
	2x12	*2831	*1593	*1019	*708	*520	*398	*315	*255	*211	*177	*151	*130										
HEM-FIR	Select Structural	2x6	*1366	*923	*697	*560	431	330	261	<i>197</i>	<i>148</i>	<i>115</i>	<i>89</i>	<i>72</i>									
		2x8	*2095	*1345	*990	*783	*648	*529	*418	338	280	235	200	<i>165</i>									
		2x10	*3284	*1948	*1385	*1074	*877	*741	*624	*502	*417	*351	299	258									
		2x12	*5177	*2741	*1864	*1412	*1136	*951	*817	*679	*561	*471	*402	*347									
	No.1 & Btr	2x6	*1366	*923	*663	*460	*338	259	205	166	137	<i>107</i>	<i>84</i>	<i>67</i>									
		2x8	*2095	*1345	*990	*739	*543	*416	*328	*266	220	185	157	136									
		2x10	*3284	*1948	*1385	*1074	*810	*620	*490	*397	*328	*275	*235	*202									
		2x12	*5177	*2741	*1846	*1412	*1089	*834	*659	*534	*441	*371	*316	*272									
	No. 1	2x6	*1366	*923	*588	*408	*300	*230	181	147	122	102	<i>84</i>	<i>67</i>									
		2x8	*2095	*1345	*943	*655	*481	*368	*291	*236	*195	*164	140	120									
		2x10	*3284	*1948	*1385	*977	*718	*550	*434	*352	*291	*245	*208	*180									
		2x12	*5177	*2741	*1864	*1314	*965	*739	*584	*473	*391	*328	*280	*241									
	No. 2	2x6	*1366	*801	*513	*356	*261	*200	158	128	106	89	<i>73</i>	<i>59</i>									
		2x8	*2095	*1284	*822	*571	*419	*321	*254	*206	*170	*143	122	105									
		2x10	*3284	*1948	*1227	*852	*626	*479	*379	*307	*253	*213	*181	*156									
		2x12	*4582	*2577	*1650	*1146	*842	*644	*509	*412	*341	*286	*244	*210									

Bold numbers governed by shear; *(asterix) represents *V*/360 deflection satisfied; *italicized* numbers are limited by *V*/240 deflection.

Species	Grade	Nominal Lumber Size	MAXIMUM TOTAL LOAD (pounds per lineal foot, PLF) FOR TRIPLE 2X LUMBER HEADERS											
			3 to 1 Live Load to Dead Load Ratio											
			Span/240 Deflection											
			Snow Load Duration (C _D =1.15)											
BEAM & HEADER SPAN												TABLE 3		
For Floor Beam Loads, Refer to Tables 4, 5 & 6														
			3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
DOUGLAS FIR- LARCH	Select Structural	2x6	*2594	*1753	*1324	*1070	796	609	481	<u>352</u>	<u>264</u>	<u>204</u>	<u>163</u>	<u>128</u>
		2x8	*4073	*2592	*1881	*1488	*1231	*978	773	626	517	434	370	<u>293</u>
		2x10	*6235	*3699	*2629	*2040	*1666	*1408	*1152	*933	*771	*648	552	476
		2x12	*9828	*5203	*3538	*2680	*2157	*1805	*1550	*1255	*1037	*872	*743	*641
		2x14	*17413	*7273	*4668	*3437	*2720	*2250	*1919	*1567	*1295	*1088	*927	*800
	No.1 & Btr	2x6	*2594	*1753	*1248	*867	*637	488	385	312	<u>251</u>	<u>192</u>	<u>152</u>	<u>121</u>
		2x8	*3981	*2555	*1881	*1390	*1021	*782	*618	*500	414	348	296	255
		2x10	*6239	*3701	*2631	*2041	*1524	*1167	*922	*747	*617	*518	*442	*381
		2x12	*9833	*5206	*3540	*2682	*2050	*1569	*1240	*1004	*830	*697	*594	*512
		2x14	*13931	*7273	*4668	*3437	*2559	*1959	*1548	*1254	*1036	*871	*742	*640
	No. 1	2x6	*2596	*1625	*1040	*722	*530	*406	323	260	215	181	<u>143</u>	<u>115</u>
		2x8	*3981	*2555	*1668	*1159	*851	*652	*515	*417	*345	290	247	213
		2x10	*6239	*3701	*2489	*1556	*1270	*972	*768	*622	*514	*432	*368	*318
		2x12	*9299	*5230	*3348	*2325	*1708	*1308	*1033	*837	*692	*581	*495	*433
		2x14	*11609	*6530	*4179	*2902	*2132	*1633	*1290	*1045	*863	*726	*618	*533
	No. 2	2x6	*2596	*1462	*936	*650	*477	*366	289	234	193	162	<u>135</u>	<u>108</u>
		2x8	*3981	*2555	*1501	*1043	*766	*587	*463	*375	*310	*261	222	192
		2x10	*6239	*3501	*2240	*1556	*1143	*875	*691	*560	*463	*389	*331	*286
		2x12	*8369	*4707	*3013	*2092	*1537	*1177	*930	*753	*622	*523	*446	*384
		2x14	*10448	*5877	*3761	*2612	*1919	*1469	*1161	*940	*777	*653	*556	*480
No. 3	2x6	*1517	*853	*546	*379	*279	*213	*169	*137	*113	*95	81	70	
	2x8	*2435	*1370	*877	*609	*447	*343	*271	*219	*181	*152	*130	*112	
	2x10	*3632	*2043	*1307	*908	*667	*511	*404	*327	*270	*227	*193	*167	
	2x12	*4887	*2749	*1759	*1222	*898	*687	*543	*440	*364	*305	*260	*224	
HEM-FIR	Select Structural	2x6	*2079	*1385	*1046	*840	702	569	<u>405</u>	<u>296</u>	<u>223</u>	<u>171</u>	<u>135</u>	<u>108</u>
		2x8	*3143	*2017	*1485	*1175	*972	*829	721	584	483	<u>392</u>	<u>308</u>	<u>247</u>
		2x10	*4925	*2922	*2077	*1611	*1316	*1112	*963	*849	725	609	516	445
		2x12	*7763	*4110	*2795	*2117	*1704	*1426	*1226	*1075	*957	*814	*693	*598
	No.1 & Btr	2x6	*2049	*1389	*1046	*794	584	447	353	<u>277</u>	<u>208</u>	<u>160</u>	<u>127</u>	<u>101</u>
		2x8	*3142	*2016	*1485	*1175	*936	*717	*566	459	379	319	272	234
		2x10	*4925	*2922	*2077	*1611	*1316	*1070	*845	*685	*566	*475	405	349
		2x12	*7763	*4110	*2795	*2117	*1704	*1426	*1134	*921	*761	*639	*545	*470
	No. 1	2x6	*2049	*1385	*1014	*704	*517	396	313	253	<u>209</u>	<u>160</u>	<u>127</u>	<u>101</u>
		2x8	*3143	*2017	*1485	*1130	*830	*635	*502	*407	336	282	241	207
		2x10	*4925	*2922	*2077	*1611	*1238	*948	*749	*607	*501	*421	*359	*310
		2x12	*7763	*4110	*2795	*2117	*1665	*1264	*1007	*816	*674	*567	*483	*416
	No. 2	2x6	*2049	*1385	*884	*614	*451	345	273	221	<u>180</u>	<u>139</u>	<u>109</u>	<u>88</u>
		2x8	*3143	*2017	*1418	*985	*724	*554	*438	*355	293	246	210	181
		2x10	*4925	*2922	*2077	*1469	*1080	*827	*653	*529	*437	*367	*313	*270
		2x12	*7764	*4110	*2795	*1976	*1452	*1112	*878	*711	*588	*494	*421	*363

Bold numbers governed by shear; *(asterisk) represents $l/360$ deflection satisfied; *italicized* numbers are limited by $l/240$ deflection.

Species	Grade	Nominal Lumber Size	MAXIMUM TOTAL LOAD (pounds per lineal foot, PLF) FOR 4X & 6X LUMBER FLOOR BEAMS											
			4 to 1 Live Load to Dead Load Ratio											
			Span/360 Deflection											
			Normal Load Duration (C _D =1.0)											
			FLOOR BEAM SPAN										TABLE 4	
			3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
DOUGLAS FIR- LARCH	Select Structural	4x6	*1557	*1052	*794	638	468	<i>334</i>	<i>233</i>	<i>171</i>	<i>129</i>	<i>99</i>	<i>78</i>	<i>62</i>
		4x8	*2386	*1532	*1128	*892	*738	623	492	<i>391</i>	<i>294</i>	<i>226</i>	<i>178</i>	<i>143</i>
		4x10	*3741	*2219	*1577	*1224	*999	*845	*731	*599	495	416	354	<i>296</i>
		4x12	*5897	*3122	*2123	*1608	*1294	*1083	*931	*817	*671	*564	*481	414
		4x14	*9870	*4361	*2798	*2061	*1631	*1349	*1150	*1003	*846	*711	*606	*523
		6x6	*2189	*1479	*1117	*770	566	433	<i>310</i>	<i>226</i>	<i>170</i>	<i>137</i>	<i>103</i>	<i>82</i>
		6x8	*3553	*2261	*1658	*1309	*1052	*806	637	516	426	<i>332</i>	<i>261</i>	<i>209</i>
		6x10	*5559	*3259	*2305	*1783	*1453	*1227	*1062	*882	729	613	522	<i>424</i>
	No.1 & Btr	4x6	*1557	*1052	*734	*510	375	287	<i>222</i>	<i>162</i>	<i>122</i>	<i>94</i>	<i>74</i>	<i>58</i>
		4x8	*2386	*1532	*1128	*892	*651	*498	394	319	264	<i>214</i>	<i>169</i>	<i>135</i>
		4x10	*3741	*2219	*1577	*1224	*978	*749	*592	*479	*396	*333	284	245
		4x12	*5897	*3122	*2123	*1608	*1294	*1015	*802	*650	*537	*451	*384	*331
		4x14	*9103	*4361	*2799	*2061	*1631	*1280	*1011	*819	*677	*569	*484	*418
	No. 1	4x6	*1557	*956	*613	*425	*312	239	189	153	<i>115</i>	<i>88</i>	<i>70</i>	<i>56</i>
		4x8	*2386	*1532	*1063	*738	*542	*415	*328	266	220	185	157	<i>128</i>
		4x10	*3741	*2219	*1577	*1109	*815	*624	*493	*399	*330	*277	*236	204
		4x12	*5897	*3122	*2123	*1504	*1105	*846	*668	*541	*447	*376	*320	*276
		4x14	*7586	*4267	*2731	*1896	*1393	*1067	*843	*683	*564	*474	*404	*348
		6x6	*2189	*1387	*887	*616	*453	347	274	222	<i>170</i>	<i>131</i>	<i>103</i>	<i>82</i>
		6x8	*3553	*2261	*1658	*1146	*842	*645	*509	*415	341	286	244	210
		6x10	*5559	*3259	*2305	*1783	*1453	*1163	*919	*745	*615	517	441	379
	No. 2	4x6	*1530	*860	*551	*382	*281	215	170	138	<i>108</i>	<i>83</i>	<i>65</i>	<i>52</i>
		4x8	*2386	*1495	*957	*664	*488	*374	*295	*239	198	166	142	<i>120</i>
		4x10	*3741	*2219	*1437	*998	*733	*561	*444	*359	*297	*250	*213	*183
		4x12	*5414	*3046	*1949	*1354	*994	*761	*602	*487	*403	*339	*288	*248
		4x14	*6827	*3840	*2458	*1707	*1254	*960	*759	*614	*508	*427	*364	*314
		6x6	*1438	*809	*518	*359	*264	*202	*160	*130	107	90	77	66
		6x8	*2673	*1504	*962	*668	*491	*376	*297	*241	*199	*167	*142	*123
6x10		*5362	*3016	*1930	*1341	*985	*754	*596	*483	*399	*335	*286	*246	
HEM-FIR	Select Structural	4x6	*1229	*830	*627	*504	<i>419</i>	<i>281</i>	<i>197</i>	<i>144</i>	<i>108</i>	<i>83</i>	<i>65</i>	<i>52</i>
		4x8	*1884	*1209	*890	*705	*583	497	433	<i>329</i>	<i>247</i>	<i>191</i>	<i>150</i>	<i>120</i>
		4x10	*2953	*1752	*1245	*966	*789	*667	*577	*509	455	388	<i>311</i>	<i>249</i>
		4x12	*4656	*2465	*1676	*1270	*1022	*855	*735	*645	*574	*517	449	387
	No.1 & Btr	4x6	*1229	*830	*627	*467	343	263	<i>185</i>	<i>134</i>	<i>101</i>	<i>78</i>	<i>61</i>	<i>49</i>
		4x8	*1884	*1209	*890	*705	*583	*457	361	292	<i>232</i>	<i>179</i>	<i>141</i>	<i>113</i>
		4x10	*2953	*1752	*1245	*966	*789	*667	*542	*439	*363	305	260	224
		4x12	*4656	*2465	*1676	*1270	*1022	*855	*735	*596	*492	*414	*352	*304
	No. 1	4x6	*1229	*830	*597	*414	304	233	184	<i>135</i>	<i>101</i>	<i>78</i>	<i>61</i>	<i>49</i>
		4x8	*1884	*1209	*890	*705	*529	*405	*320	259	214	186	<i>141</i>	<i>112</i>
		4x10	*2953	*1752	*1245	*966	*789	*608	*481	*389	*322	*270	230	199
		4x12	*4656	*2465	*1676	*1270	*1022	*825	*652	*528	*436	*367	*312	*269
	No. 2	4x6	*1229	*811	*519	*360	265	203	160	<i>117</i>	<i>88</i>	<i>68</i>	<i>53</i>	<i>43</i>
		4x8	*1884	*1209	*890	*627	*461	*353	*279	226	187	<i>155</i>	<i>121</i>	<i>98</i>
		4x10	*2953	*1752	*1245	*945	*693	*530	*419	*339	*280	*236	201	173
		4x12	*4656	*2465	*1676	*1270	*939	*719	*568	*460	*380	*320	*272	*235

Bold numbers governed by shear; * (asterisk) represents span/480 satisfied; *italicized* numbers governed by deflection.

Species	Grade	Nominal Lumber Size	MAXIMUM TOTAL LOAD (pounds per lineal foot, PLF) FOR DOUBLE 2X LUMBER FLOOR BEAMS											
			4 to 1 Live Load to Dead Load Ratio											
			Span/360 Deflection											
			Normal Load Duration (C _D =1.0)											
			FLOOR BEAM SPAN											
			3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
DOUGLAS FIR- LARCH	Select Structural	2x6	*1505	*1017	*768	546	401	286	201	146	110	85	67	52
		2x8	*2308	*1481	*1090	*863	*644	*493	389	315	252	194	153	122
		2x10	*3617	*2146	*1525	*1183	*966	*735	*581	*471	*389	327	278	240
		2x12	*5702	*3019	*2053	*1555	*1252	*989	*781	*633	*523	*439	*374	*323
		2x14	*8778	*4216	*2706	*1992	*1577	*1234	*975	*790	*653	*549	*468	*403
	No.1 & Btr	2x6	*1505	*983	*629	*437	321	246	190	139	104	80	63	50
		2x8	*2308	*1481	*1009	*701	*515	*394	*311	252	209	175	145	116
		2x10	*3617	*2146	*1525	*1046	*768	*588	*465	*376	*311	*261	*223	192
		2x12	*5702	*3019	*2053	*1406	*1033	*791	*625	*506	*418	*352	*300	*258
		2x14	*7022	*3950	*2528	*1756	*1290	*988	*780	*632	*522	*439	*374	*322
	No. 1	2x6	*1456	*819	*524	*364	*267	205	162	131	98	76	60	48
		2x8	*2336	*1314	*841	*584	*429	*329	*260	*210	174	146	124	107
		2x10	*3486	*1961	*1255	*871	*640	*490	*387	*314	*259	*218	*186	*160
		2x12	*4687	*2637	*1687	*1172	*861	*659	*520	*422	*349	*293	*250	*215
		2x14	*5852	*3292	*2107	*1463	*1075	*823	*650	*527	*435	*366	*312	*269
	No. 2	2x6	*1310	*737	*471	*328	*241	184	146	118	93	71	56	45
		2x8	*2102	*1183	*757	*526	*386	*296	*234	*189	*156	131	112	97
		2x10	*3137	*1765	*1129	*784	*576	*441	*349	*282	*233	*196	*167	*144
		2x12	*4219	*2373	*1519	*1055	*775	*593	*469	*380	*314	*264	*225	*194
		2x14	*5267	*2963	*1896	*1317	*967	*741	*585	*474	*392	*329	*280	*242
No. 3	2x6	*764	*430	*275	*191	*140	*107	*85	*69	*57	48	40	35	
	2x8	*1226	*690	*442	*307	*225	*172	*136	*110	*91	*77	*65	*56	
	2x10	*1830	*1029	*659	*458	*336	*257	*203	*165	*136	*114	*97	*84	
	2x12	*2461	*1384	*886	*615	*452	*346	*273	*221	*183	*154	*131	*113	
HEM-FIR	Select Structural	2x6	*1188	*808	*606	487	359	241	169	123	93	71	56	45
		2x8	*1822	*1169	*861	*681	*564	460	363	282	212	163	128	103
		2x10	*2855	*1694	*1204	*934	*763	*645	*542	*439	363	305	260	214
		2x12	*4501	*2383	*1620	*1228	*988	*827	*711	*591	*488	*410	*349	301
	No.1 & Btr	2x6	*1188	*808	*577	*400	294	226	159	116	87	67	53	41
		2x8	*1822	*1169	*861	*642	*472	*361	286	231	191	153	120	96
		2x10	*2855	*1694	*1204	*934	*704	*539	*426	*345	*285	*240	204	176
		2x12	*4501	*2383	*1620	*1228	*947	*725	*573	*464	*384	*322	*275	*237
	No. 1	2x6	*1188	*808	*511	*355	*261	200	158	116	87	67	53	41
		2x8	*1822	*1169	*820	*569	*418	*320	*253	*205	169	142	120	96
		2x10	*2855	*1694	*1204	*850	*624	*478	*378	*306	*253	*212	*181	*156
		2x12	*4501	*2383	1620	*1143	*839	*643	*508	*411	*340	*286	*243	*210
	No. 2	2x6	*1188	*696	*446	*309	227	174	138	100	75	58	45	36
		2x8	*1822	*1117	*715	*496	*365	*279	*221	179	148	124	104	84
		2x10	*2855	*1694	*1067	*741	*544	*417	*329	*267	*220	*185	*158	136
		2x12	*3984	*2241	*1434	*996	*732	*560	*443	*359	*296	*249	*212	*183

Bold numbers governed by shear; * (asterisk) represents span/480 satisfied; *italicized* numbers are governed by deflection.

Species	Grade	Nominal Lumber Size	MAXIMUM TOTAL LOAD (pounds per lineal foot, PLF) FOR TRIPLE 2X LUMBER FLOOR BEAMS											
			4 to 1 Live Load to Dead Load Ratio											
			Span/360 Deflection											
			Normal Load Duration (C _D =1.0)											
			3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
DOUGLAS FIR- LARCH	Select Structural	2x6	*2257	*1525	*1152	925	<i>640</i>	<i>429</i>	301	220	<i>165</i>	<i>127</i>	<i>100</i>	<i>80</i>
		2x8	*3461	*2221	*1636	*1294	1071	850	672	<i>503</i>	<i>378</i>	<i>291</i>	<i>229</i>	<i>183</i>
		2x10	*5425	*3218	*2288	*1775	*1449	*1225	*1002	812	671	564	<i>475</i>	<i>381</i>
		2x12	*8551	*4527	*3078	*2332	*1877	*1571	*1350	*1092	*902	*758	*646	557
		2x14	*14314	*6325	*4059	*2989	*2365	*1957	*1668	*1363	*1126	*946	*806	*695
	No.1 & Btr	2x6	*2257	*1525	*1085	753	554	<i>406</i>	<i>285</i>	<i>208</i>	<i>156</i>	<i>120</i>	<i>95</i>	<i>76</i>
		2x8	*3461	*2221	*1636	*1209	*888	*680	537	435	<i>358</i>	<i>276</i>	<i>217</i>	<i>174</i>
		2x10	*5425	*3218	*2288	*1775	*1325	*1015	*802	*649	*537	451	384	331
		2x12	*8551	*4527	*3078	*2332	*1782	*1364	*1078	*873	*722	*606	*517	*446
		2x14	*12114	*6325	*4059	*2989	*2225	*1703	*1346	*1090	*901	*757	*645	*556
	No. 1	2x6	*2257	*1413	*904	*628	461	353	<i>269</i>	<i>196</i>	<i>148</i>	<i>114</i>	<i>88</i>	<i>72</i>
		2x8	*3461	*2221	*1451	*1007	*740	*567	*448	363	300	252	<i>205</i>	<i>164</i>
		2x10	*5425	*3218	*2165	*1503	*1104	*846	*668	*541	*447	*376	*320	276
		2x12	*8086	*4548	*2911	*2021	*1485	*1137	*898	*728	*601	*505	*431	*371
		2x14	*10095	*5678	*3634	*2524	*1854	*1420	*1122	*909	*751	*631	*538	*464
	No. 2	2x6	*2257	*1272	*814	*565	415	318	251	<i>185</i>	<i>139</i>	<i>107</i>	<i>84</i>	<i>67</i>
		2x8	*3461	*2040	*1306	*907	*666	*510	*403	326	270	227	193	<i>154</i>
		2x10	*5425	*3044	*1948	*1353	*994	*761	*601	*487	*403	*338	*288	249
		2x12	*7277	*4093	*2620	*1819	*1337	*1023	*809	*655	*541	*455	*388	*334
		2x14	*9085	*5110	*3271	*2271	*1669	*1278	*1009	*818	*676	*568	*484	*417
No. 3	2x6	*1319	*742	*475	*330	*242	*185	*146	*119	98	82	70	<i>59</i>	
	2x8	*2116	*1190	*762	*529	*389	*297	*235	*190	*157	*132	*113	*97	
	2x10	*3157	*1776	*1136	*789	*580	*444	*351	*284	*235	*197	*168	*145	
	2x12	*4245	*2388	*1528	*1061	*780	*597	*472	*382	*316	*265	*226	*195	
HEM-FIR	Select Structural	2x6	*1782	*1204	*909	730	<i>539</i>	<i>361</i>	<i>254</i>	<i>185</i>	<i>139</i>	<i>107</i>	<i>84</i>	<i>67</i>
		2x8	*2733	*1754	*1291	*1022	*845	721	<i>581</i>	<i>423</i>	<i>318</i>	<i>245</i>	<i>193</i>	<i>154</i>
		2x10	*4283	*2541	*1806	*1401	*1144	*967	*837	738	626	<i>509</i>	<i>400</i>	<i>320</i>
		2x12	*6751	*3574	*2430	*1841	*1482	*1240	*1066	*935	*832	708	603	520
	No.1 & Btr	2x6	*1782	*1204	*909	690	507	<i>339</i>	<i>238</i>	<i>173</i>	<i>130</i>	<i>100</i>	<i>79</i>	<i>63</i>
		2x8	*2733	*1754	*1291	*1022	*814	623	493	399	<i>298</i>	<i>230</i>	<i>181</i>	<i>145</i>
		2x10	*4283	*2541	*1806	*1401	*1144	*930	*735	*595	492	413	352	<i>300</i>
		2x12	*6751	*3574	*2430	*1841	*1482	*1240	*988	*800	*662	*556	*474	*408
	No. 1	2x6	*1782	*1204	*882	*612	450	344	<i>238</i>	<i>173</i>	<i>130</i>	<i>100</i>	<i>79</i>	<i>63</i>
		2x8	*2733	*1754	*1291	*982	*722	*553	437	354	<i>292</i>	<i>230</i>	<i>181</i>	<i>145</i>
		2x10	*4283	*2541	*1806	*1404	*1077	*824	*651	*528	*436	366	312	269
		2x12	*6751	*3574	*2430	*1841	*1448	*1109	*876	*710	*586	*493	*420	*362
	No. 2	2x6	*1782	*1204	*769	534	392	<i>293</i>	<i>206</i>	<i>150</i>	<i>113</i>	<i>87</i>	<i>68</i>	<i>55</i>
		2x8	*2733	*1754	*1233	*856	*629	*482	381	308	<i>254</i>	<i>199</i>	<i>157</i>	<i>125</i>
		2x10	*4283	*2541	*1806	*1277	*939	*719	*568	*460	*380	319	272	235
		2x12	*6751	*3574	*2430	*1718	*1262	*967	*764	*619	*511	*430	*366	*316

Bold numbers governed by shear; *(asterisk) represents span/480 satisfied; *italicized* numbers are governed by deflection.