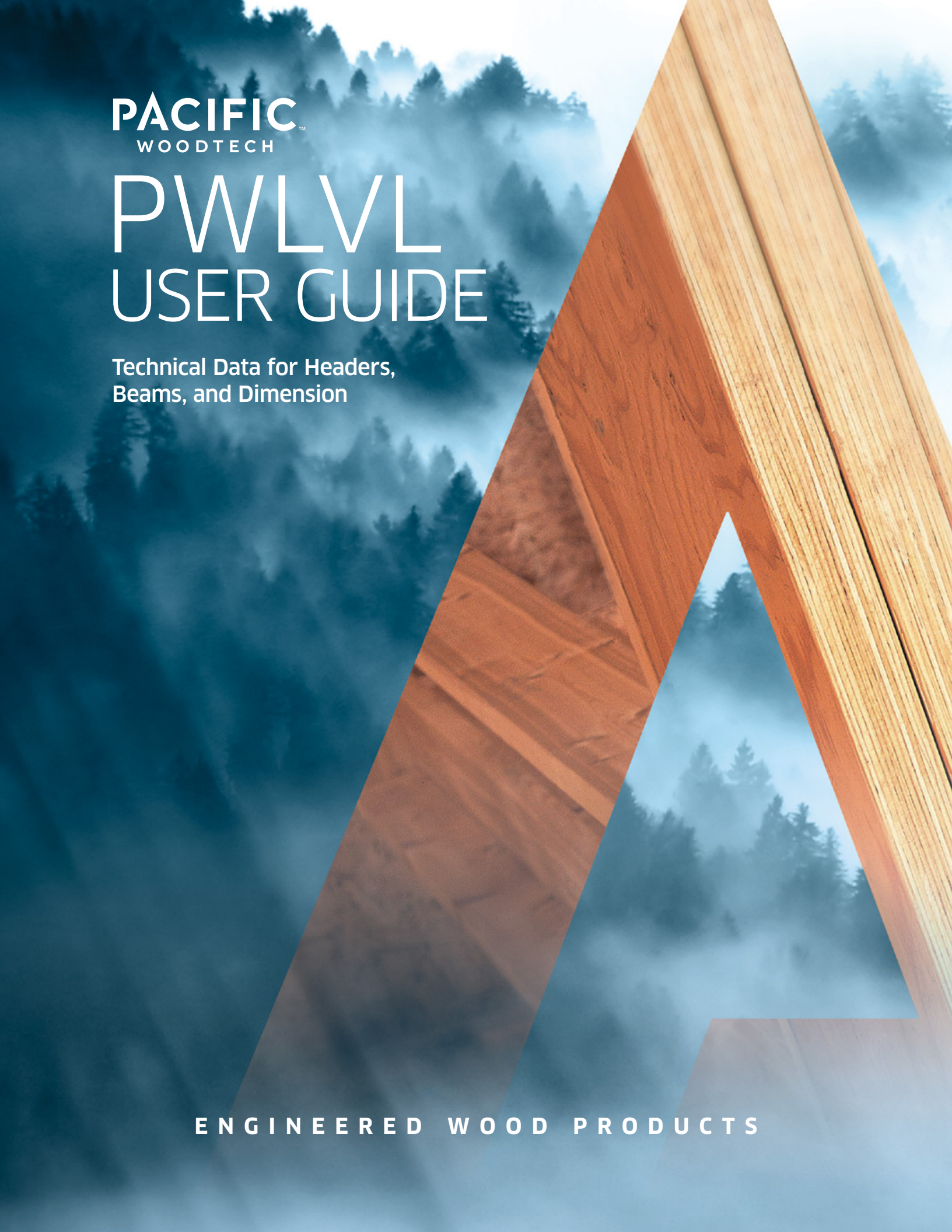


PACIFIC WOODTECH

PWLVL USER GUIDE

Technical Data for Headers, Beams, and Dimension

ENGINEERED WOOD PRODUCTS

Table of Contents

Storage and Handling Guidelines

Storage

- Store bundles upright on a smooth, level, well-drained and supportive surface.
- Bundles should not be in contact with the ground.
- Place 2x or LVL spacers (at a maximum of 10' apart) between bundles and the ground and bundles stored on top of one another.
- Bundles should remain wrapped, strapped and protected from the weather until time of installation.

LVL Sealer

Pacific Woodtech's LVL has a wax-based sealer specifically formulated for laminated veneer lumber to help protect it from weather-related issues during storage and construction. LVL is very dry when it is produced. It will absorb moisture and grow in size slightly as it acclimates to the climate. The sealer helps to reduce the rate of moisture absorption and increases protection from UV rays. However, it is not meant for protection from long-term or high concentrations of moisture exposure.

Handling

- Avoid excessive bowing during all phases of handling and installation (i.e., measuring, sawing or placement).
- Damage may result if the beam is twisted or a load is applied to it while it's lying flat.

Code Reports

LVL CODE REPORTS

Building Code / Authority	Evaluation Service / Department	Report No.
International Building Code International Residential Code	APA – The Engineered Wood Association	PR-L233
	ICC-ES / APA	ESR-2909
National Building Code of Canada	CCMC	13006-R
City of Los Angeles	Department of Building and Safety (LADBS)	RR 25448

GREEN VERIFICATION REPORT

Subject	Certification Body	Report No.
Green Verification	APA – The Engineered Wood Association	GR-L233
Low Formaldehyde Emissions	APA – The Engineered Wood Association	PR-E720

For information about Pacific Woodtech's Code Reports, please visit pacificwoodtech.com.

A better alternative than traditional sawn lumber pieces.

2.1E PWLVL

Reference Design Values

1¾" x 2.1E PWLVL REFERENCE DESIGN VALUES

Depth	Maximum Vertical Shear (lb)			Maximum Bending Moment (ft-lb)			Moment of Inertia (in^4)	Weight (plf)
	100%	115%	125%	100%	115%	125%		
3½"	1164	1338	1455	1181	1358	1476	6.3	1.6
5½"	1829	2103	2286	2664	3064	3330	24.3	2.5
7¼"	2411	2772	3013	4380	5037	5475	55.6	3.3
9¼"	3076	3537	3845	6791	7810	8489	115.4	4.2
9½"	3159	3633	3948	7125	8194	8907	125.0	4.3
11¼"	3741	4302	4676	9660	11109	12075	207.6	5.1
11⅞"	3948	4541	4936	10647	12245	13309	244.2	5.4
14"	4655	5353	5819	14320	16468	17900	400.2	6.4
16"	5320	6118	6650	18210	20942	22763	597.3	7.3
18"	5985	6883	7481	22511	25888	28139	850.5	8.2
20"	6650	7648	8313	27212	31294	34015	1166.7	9.1
22"	7315	8412	9144	32305	37150	40381	1552.8	10.0
24"	7980	9177	9975	37782	43449	47227	2016.0	10.9

3½" x 2.1E PWLVL REFERENCE DESIGN VALUES

Depth	Maximum Vertical Shear (lb)			Maximum Bending Moment (ft-lb)			Moment of Inertia (in^4)	Weight (plf)
	100%	115%	125%	100%	115%	125%		
3½"	2328	2677	2909	2362	2716	2952	12.5	3.2
5½"	3658	4206	4572	5328	6128	6660	48.5	5.0
7¼"	4821	5544	6027	8761	10075	10951	111.1	6.6
9¼"	6151	7074	7689	13583	15620	16978	230.8	8.4
9½"	6318	7265	7897	14251	16388	17813	250.1	8.6
11¼"	7481	8603	9352	19320	22218	24150	415.3	10.2
11⅞"	7897	9081	9871	21295	24489	26619	488.4	10.8
14"	9310	10707	11638	28639	32935	35799	800.3	12.7
16"	10640	12236	13300	36421	41884	45526	1194.7	14.5
18"	11970	13766	14963	45022	51775	56277	1701.0	16.4
20"	13300	15295	16625	54424	62587	68030	2333.3	18.2
22"	14630	16825	18288	64609	74301	80761	3105.7	20.0
24"	15960	18354	19950	75564	86898	94455	4032.0	21.8

2.1E PWLVL Reference Design Values[1]

True (Shear-Free) Modulus of Elasticity, E = 2,100,000 psi[2][5][6]
Bending (beam), F_b = 3,100 psi[3][4]
Horizontal Shear (beam), F_v = 285 psi
Compression Perpendicular to Grain (beam), $F_{c\perp}$ = 850 psi[2]

(1) Values apply to dry service conditions
(2) Do not adjust for load duration
(3) Adjust by $(12/d)^{1/5}$, where d is the depth of the member [inches]
(4) Adjust by 1.04 for repetitive members as defined in the *ANSI/AWC NDS*
(5) True or shear-free modulus of elasticity does not account for shear deformation
(6) See APA Product Report *PR-L233*.

LVL Sealer

Pacific Woodtech's LVL has a wax-based sealer specifically formulated for laminated veneer lumber to help protect it from weather during storage and construction. The sealer helps to reduce the rate of moisture absorption and increases protection from UV rays.

EQUIVALENT SPECIFIC GRAVITY FOR FASTENER DESIGN

Nails & Wood Screws	Face	Lateral	0.50
		Withdrawal	0.50
	Edge	Lateral	0.50
		Withdrawal	0.47
Bolts & Lag Screws	Face	Lateral	0.50

AVAILABLE SIZES (INCHES)

1¾" 2.1E PWLVL												
3½	5½	7¼	9¼	9½	11¼	11⅞	14	16	18	20	22	24
3½" 2.1E PWLVL												
3½	5½	7¼	9¼	9½	11¼	11⅞	14	16	18	20	22	24

To review Pacific Woodtech's LVL products, please visit pacificwoodtech.com.

Allowable Uniform Loads

2.1E Beam–Floor 100%

ALLOWABLE UNIFORM LOADS*–POUNDS PER LINEAL FOOT
ONE-PLY x 1¾" 2.1E PWLVL

Span (ft)	Key	3½"	5½"	7¼"	9¼"	9½"	11¼"	11⅞"	14"
6	LL	86	333	762	-	-	-	-	-
	TL	127	497	763	1028	1063	1325	1425	1796
	BRG	1.5/3	1.5/3	1.5/3.9	2.1/5.2	2.2/5.4	2.7/6.7	2.9/7.2	3.6/9.1
7	LL	54	210	480	-	-	-	-	-
	TL	71	278	636	849	877	1083	1161	1445
	BRG	1.5/3	1.5/3	1.5/3.8	2/5	2.1/5.2	2.6/6.4	2.7/6.9	3.4/8.5
8	LL		140	322	668	724	-	-	-
	TL		162	374	723	746	916	979	1208
	BRG		1.5/3	1.5/3	2/4.9	2/5	2.5/6.2	2.6/6.6	3.3/8.2
9	LL		99	226	469	508	-	-	-
	TL		100	232	629	649	793	846	1038
	BRG		1.5/3	1.5/3	1.9/4.8	2/4.9	2.4/6	2.6/6.4	3.2/7.9
10	LL		-	-	342	370	615	724	-
	TL		65	151	509	551	699	745	909
	BRG		1.5/3	1.5/3	1.7/4.3	1.9/4.7	2.4/5.9	2.5/6.3	3.1/7.7
11	LL		-	-	257	278	462	544	-
	TL		44	102	381	413	625	665	809
	BRG		1.5/3	1.5/3	1.5/3.6	1.5/3.9	2.3/5.8	2.5/6.2	3/7.5
12	LL			-	198	214	356	419	686
	TL			71	293	317	529	586	729
	BRG			1.5/3	1.5/3	1.5/3.2	2.2/5.4	2.4/6	3/7.4
13	LL			-	156	169	280	329	540
	TL			51	229	249	415	489	663
	BRG			1.5/3	1.5/3	1.5/3	1.8/4.6	2.2/5.4	2.9/7.3
14	LL			-	125	135	224	264	432
	TL			37	183	198	331	390	578
	BRG			1.5/3	1.5/3	1.5/3	1.6/4	1.9/4.7	2.8/6.9
15	LL				101	110	182	214	351
	TL				148	160	268	316	503
	BRG				1.5/3	1.5/3	1.5/3.4	1.6/4.1	2.6/6.4
16	LL				83	90	150	177	289
	TL				121	131	220	260	428
	BRG				1.5/3	1.5/3	1.5/3	1.5/3.6	2.3/5.8
17	LL				70	75	125	147	241
	TL				100	109	183	216	356
	BRG				1.5/3	1.5/3	1.5/3	1.5/3.2	2.1/5.2
18	LL				59	64	105	124	203
	TL				84	91	153	181	299
	BRG				1.5/3	1.5/3	1.5/3	1.5/3	1.8/4.6
19	LL					54	90	105	173
	TL					77	129	153	253
	BRG					1.5/3	1.5/3	1.5/3	1.7/4.1
20	LL						77	90	148
	TL						110	130	216
	BRG						1.5/3	1.5/3	1.5/3.7
21	LL						66	78	128
	TL						95	112	186
	BRG						1.5/3	1.5/3	1.5/3.4
22	LL						58	68	111
	TL						82	97	161
	BRG						1.5/3	1.5/3	1.5/3.1
23	LL							59	97
	TL							84	140
	BRG							1.5/3	1.5/3
24	LL								86
	TL								122
	BRG								1.5/3
25	LL								76
	TL								107
	BRG								1.5/3
26	LL								67
	TL								95
	BRG								1.5/3
27	LL								60
	TL								84
	BRG								1.5/3
28	LL								54
	TL								75
	BRG								1.5/3
29	LL								
	TL								
	BRG								
30	LL								
	TL								
	BRG								

ALLOWABLE UNIFORM LOADS*–POUNDS PER LINEAL FOOT
TWO-PLY x 1¾" 2.1E PWLVL (or 3½")

Span (ft)	Key	3½"	5½"	7¼"	9¼"	9½"	11¼"	11⅞"	14"	16"	18"	20"	22"	24"
6	LL	172	666	1525	-	-	-	-	-	-	-	-	-	-
	TL	254	993	1526	2056	2127	2650	2850	3591	4388	5304	6366	7613	8997
	BRG	1.5/3	1.5/3	1.5/3.9	2.1/5.2	2.2/5.4	2.7/6.7	2.9/7.2	3.6/9.1	4.4/11.1	5.4/13.4	6.4/16.1	7.7/19.2	9.1/22.7
7	LL	108	419	960	-	-	-	-	-	-	-	-	-	-
	TL	141	556	1272	1698	1754	2166	2322	2889	3484	4147	4893	5736	6634
	BRG	1.5/3	1.5/3	1.5/3.8	2/5	2.1/5.2	2.6/6.4	2.7/6.9	3.4/8.5	4.1/10.3	4.9/12.2	5.8/14.4	6.8/16.9	7.8/19.6
8	LL		281	643	1336	1447	-	-	-	-	-	-	-	-
	TL		324	747	1446	1493	1831	1958	2416	2887	3404	3972	4600	5252
	BRG		1.5/3	1.5/3	2/4.9	2/5	2.5/6.2	2.6/6.6	3.3/8.2	3.9/9.8	4.6/11.5	5.4/13.4	6.2/15.5	7.1/17.7
9	LL		197	452	938	1016	-	-	-	-	-	-	-	-
	TL		200	464	1259	1298	1586	1693	2075	2465	2885	3342	3838	4346
	BRG		1.5/3	1.5/3	1.9/4.8	2/4.9	2.4/6	2.6/6.4	3.2/7.9	3.8/9.4	4.4/11	5.1/12.7	5.8/14.6	6.6/16.5
10	LL		-	-	684	741	1230	1447	-	-	-	-	-	-
	TL		130	302	1018	1103	1398	1490	1819	2150	2504	2884	3292	3705
	BRG		1.5/3	1.5/3	1.7/4.3	1.9/4.7	2.4/5.9	2.5/6.3	3.1/7.7	3.6/9.1	4.2/10.6	4.9/12.2	5.6/13.9	6.3/15.7
11	LL		-	-	514	557	924	1087	-	-	-	-	-	-
	TL	87	204	762	826	1250	1331	1618	1905	2211	2535	2882	3228	
	BRG	1.5/3	1.5/3	1.5/3.6	1.5/3.9	2.3/5.8	2.5/6.2	3/7.5	3.5/8.9	4.1/10.3	4.7/11.8	5.4/13.4	6/15	
12	LL			-	396	429	712	837	1372	-	-	-	-	-
	TL		142	585	635	1058	1172	1457	1711	1979	2262	2562	2860	
	BRG		1.5/3	1.5/3	1.5/3.2	2.2/5.4	2.4/6	3/7.4	3.5/8.7	4/10.1	4.6/11.5	5.2/13	5.8/14.5	
13	LL		-	311	337	560	659	1079	-	-	-	-	-	-
	TL		102	459	497	830	977	1325	1552	1790	2041	2305	2566	
	BRG		1.5/3	1.5/3	1.5/3	1.8/4.6	2.2/5.4	2.9/7.3	3.4/8.6	3.9/9.9	4.5/11.2	5.1/12.7	5.7/14.1	
14	LL		-	249	270	448	527	864	1290	-	-	-	-	-
	TL		74	365	396	662	780	1156	1420	1635	1859	2095	2327	
	BRG		1.5/3	1.5/3	1.5/3	1.6/4	1.9/4.7	2.8/6.9	3.4/8.4	3.9/9.7	4.4/11	5/12.4	5.5/13.8	
15	LL			203	220	365	429	703	1049	1493	-	-	-	-
	TL			296	321	537	632	1006	1280	1504	1707	1920	2128	
	BRG			1.5/3	1.5/3	1.5/3.4	1.6/4.1	2.6/6.4	3.3/8.2	3.8/9.6	4.3/10.9	4.9/12.2	5.4/13.5	
16	LL			167	181	300	353	579	864	1230	-	-	-	-
	TL			242	263	440	519	856	1124	1391	1578	1771	1960	
	BRG			1.5/3	1.5/3	1.5/3	1.5/3.6	2.3/5.8	3.1/7.7	3.8/9.5	4.3/10.7	4.8/12	5.3/13.3	
17	LL			139	151	250	295	483	720	1026	1407	-	-	-
	TL			200	218	365	431	711	994	1230	1466	1644	1817	
	BRG			1.5/3	1.5/3	1.5/3	1.5/3.2	2.1/5.2	2.9/7.2	3.6/8.9	4.2/10.6	4.8/11.9	5.3/13.1	
18	LL			117	127	211	248	407	607	864	1185	-	-	-
	TL			168	182	306	361	597	885	1095	1326	1534	1693	
	BRG			1.5/3	1.5/3	1.5/3	1.5/3	1.8/4.6	2.7/6.8	3.4/8.4	4.1/10.2	4.7/11.8	5.2/13	
19	LL				108	179	211	346	516	735	1008	1342	-	
	TL				153	259	306	506	760	981	1188	1412	1584	
	BRG				1.5/3	1.5/3	1.5/3	1.7/4.1	2.5/6.2	3.2/8	3.9/9.6	4.6/11.4	5.1/12.8	
20	LL					154	181	296	442	630	864	1150	1470	
	TL					220	261	432	649	884	1070	1272	1475	
	BRG					1.5/3	1.5/3	1.5/3.7	2.2/5.6	3/7.6	3.7/9.1	4.3/10.9	5/12.6	
21	LL					133	156	256	382	544	747	994	1270	
	TL					189	224	371	559	800	969	1152	1336	
	BRG					1.5/3	1.5/3	1.5/3.4	2/5.1	2.9/7.2	3.5/8.7	4.1/10.3	4.8/12	
22	LL					116	136	223	332	473	649	864	1105	
	TL					163	193	321	484	694	881	1048	1216	
	BRG					1.5/3	1.5/3	1.5/3.1	1.8/4.6	2.6/6.6	3.3/8.3	3.9/9.9	4.6/11.4	
23	LL						119	195	291	414	568	756	967	
	TL						168	280	422	605	805	957	1110	
	BRG						1.5/3	1.5/3	1.7/4.2	2.4/6	3.2/8	3.8/9.4	4.4/10.9	
24	LL							172	256	365	500	666	851	
	TL							245	370	530	732	877	1018	
	BRG							1.5/3	1.5/3.9	2.2/5.5	3/7.6	3.6/9	4.2/10.5	
25	LL							152	227	323	442	589	753	
	TL							215	325	467	646	807	936	
	BRG							1.5/3	1.5/3.6	2/5.1	2.8/7	3.5/8.7	4/10.1	
26	LL							135	201	287	393	524	669	
	TL							190	288	414	572	745	864	
	BRG							1.5/3	1.5/3.3	1.9/4.7	2.6/6.4	3.3/8.4	3.9/9.7	
27	LL							120	180	256	351	468	598	
	TL							168	255	368	509	681	800	
	BRG							1.5/3	1.5/3.1	1.7/4.4	2.4/6	3.2/8	3.7/9.3	
28	LL							108	161	230	315	419	536	
	TL							149	227	328	454	609	742	
	BRG							1.5/3	1.5/3	1.6/4.1	2.2/5.6	3/7.4	3.6/9	
29	LL								145	207	283	377	482	
	TL								203	294	407	546	690	
	BRG								1.5/3	1.5/3.8	2.1/5.2	2.8/6.9	3.5/8.7	
30	LL								131	187	256	341	436	
	TL								182	264	366	491	632	
	BRG								1.5/3	1.5/3.5	1.9/4.8	2.6/6.4	3.3/8.2	

* Can be applied to the beam in addition to its own weight.
Simple or multiple beam spans.

2 plies minimum for depths greater than 14 inches.

Wax-based sealer applied to mitigate moisture issues associated with wood products during storage and construction.

Key to Table:

LL = Maximum live load – limits deflection to L/360

TL = Maximum total load – limits deflections to L/240 (or a maximum of 0.3125" for beams 7¼" deep or less)

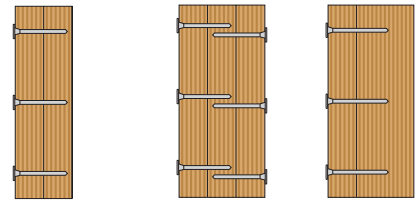
BRG = Required end/intermediate bearing length (inches), based on bearing stress of 850 psi.

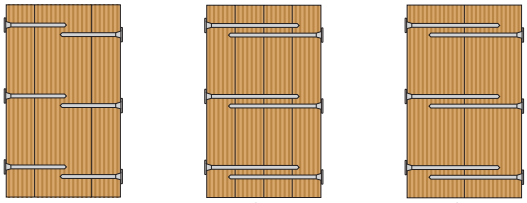
Multiple-Ply

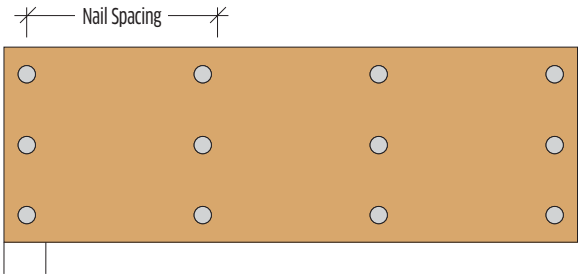
PWLVL Beam Assembly

COMBINATIONS OF 1¾" AND 3½" PLIES

NAILS







1¾" AND 3½" PLIES–MAXIMUM UNIFORM SIDE LOAD (PLF)

Condition	3¼" x 0.131" Nails		16d Common Nails	
	2 Rows at 12" o.c.	3 Rows at 12" o.c.	2 Rows at 12" o.c.	3 Rows at 12" o.c.
Condition A (2-1¾")	390	585	565	845
Condition B (3-1¾" OR 1-1¾" + 1-3½")	290	435	425	635
Condition C (2-1¾" + 1-3½")	260	390	375	565
Condition D (4-1¾")	Use bolts for this condition (see note 1).			
Condition E (2-3½")	Use bolts for this condition (see note 1).			

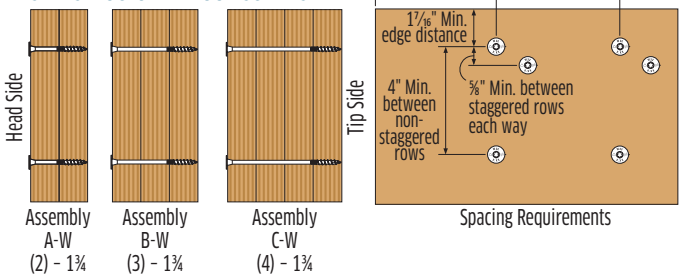
Notes:

1. Minimum fastener schedule for smaller side loads and top-loaded beams:
   Conditions A, B & C, beams 12" deep or less: 2 rows 3¼" x 0.131" at 12" o.c.
   Conditions A, B & C, beams deeper than 12": 3 rows 3¼" x 0.131" at 12" o.c.
   Conditions D & E, all beam depths: 2 rows ½" bolts at 24" o.c.
2. The table values for nails may be doubled for 6" o.c. and tripled for 4" o.c. nail spacings.
3. The nail schedules shown apply to both sides of a three-ply beam.
4. The table values apply to bolts meeting the requirements of *ANSI/ASME Standard B18.2.1*. A standard cut washer, or metal plate or strap of equal or greater dimensions, shall be provided between the wood and the bolt head and between the wood and the nut. The distance from the edge of the beam to the bolt holes must be at least 2" for ½" bolts. Bolt holes shall be the same diameter as the bolt.
5. 7" wide beams must be loaded from both sides and/or top loaded.
6. Beams wider than 7" must be designed by the engineer of record.
7. Load duration factors may be applied to the table values.
8. For proprietary fastener alternatives, consult the manufacturer's literature.

To review Pacific Woodtech's Installation Guide, please visit pacificwoodtech.com/products.

COMBINATIONS OF 1¾" PLIES

STRONG-DRIVE® SDW STRUCTURAL WOOD SCREWS



SIDELOADED 1¾ MULTI-PLY SCL ASSEMBLIES – ALLOWABLE UNIFORM LOAD APPLIED TO EITHER OUTSIDE MEMBER

Multiple Members		Nominal Screw Length (in)	Loaded Side	Structural Composite Lumber					
				SDW @ 12" o.c.		SDW @ 16" o.c.		SDW @ 24" o.c.	
Assembly	Components			2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
A-W	2-ply SCL	3⅜	Either	1600	2400	1200	1800	800	1200
B-W	3-ply SCL	5	Head	1200	1800	900	1350	600	900
			Tip	900	1350	675	1015	450	675
C-W	4-ply SCL	6¾	Head	1065	1600	800	1200	535	800
			Tip	800	1200	600	900	400	600

1. Each ply is assumed to carry same proportion of load.
2. Loads may be applied to the head side and point side concurrently provided neither published allowable load is exceeded. (Example: a 3-ply assembly with a head side load of 1300 plf and point side load of 1000 plf may be fastened together with 3 rows of SDW @ 16" o.c.)
3. When hangers are installed on point side, hanger face fasteners must be a minimum of 3" long.
4. Tables are based on Main Member Penetration as noted in Single-Fastener Load Tables of the *Simpson Strong-Tie Fastening Systems* 2017-2018 Catalog C-F-2017 (page 358).
5. Please consult strongtie.com for the latest fastener details and data.

Installation

- SDW screws install best with a low-speed ½" drill and a T-40 6-lobe bit. The matched bit included with the screws is recommended for best results.
- Screw heads that are countersunk flush to the wood surface are acceptable if the screw has not spun out.
- Individual screw locations may be adjusted up to 3" to avoid conflicts with other hardware or to avoid lumber defects.

SCREW DIMENSIONS

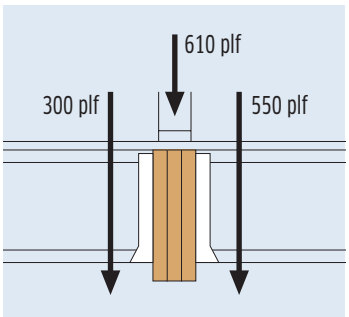
Model No.	Nominal Screw Length (L) (in)	Thread Length (TL) (in)	Head Stamp Length
SDW22338	3⅜	1⁹⁄₁₆	3.37
SDW22500	5	1⁹⁄₁₆	5.00
SDW22634	6¾	1⁹⁄₁₆	6.75

- Pre-drilling is typically not required.

How to Use the Maximum Uniform Side Load Table

EXAMPLE: THREE 1¾" PLIES LOADED FROM BOTH SIDES AND ABOVE (COND. B)

1. Use allowable load tables or sizing software to size the beam to carry a total load of (300 + 610 + 550) = 1460 plf.
2. Refer to the Condition B row in the table. Scan across the row from left to right for a table value greater than 550 plf, which is the greatest side load carried by the beam. The fourth value in the row indicates that 3 rows of 16d common nails at 12" o.c. will accommodate a side load of 635 plf which is greater than the 550 plf required. Use 3 rows of 16d common nails at 12" o.c., from both sides, to assemble the beam.



PWLVL Dimension

Laminated Veneer Lumber Engineered for Structural Framing

Extra-long PWLVL Dimension floor framing offers a stronger, stiffer, and straighter product than dimension lumber for all your structural applications. PWLVL Dimension is competitive in materials cost and is easy to handle and install, which can result in shorter construction schedules, saving you time and money. Build with confidence.

Use beam-calculating software for better optimization of material selection and on-center spacing.

PWLVL Dimension is available in virtually any length.

PWLVL DIMENSION DESIGN PROPERTY COMPARISON[1][2]

Product		Modulus of Elasticity E (psi)	Bending F_b (psi)[3]	Horizontal Shear F_v (psi)	Compression Parallel to Grain F_c (psi)[4]
2 x 4	1.5" x 3.5" x 2.1E PWLVL	2100000	4125	285	2750
	1.5" x 3.5" x 1.9E PWLVL	1900000	3660	285	2450
	1.5" x 3.5" x 1.6E PWLVL	1600000	2995	230	1950
	2x4 Douglas Fir-Larch No. 2	1600000	1555	180	1550
	2x4 Spruce-Pine-Fir No. 1 / No. 2	1400000	1510	135	1325
	2x4 Hem-Fir No. 2	1300000	1465	150	1495
	2x4 Western Woods No. 2	1000000	1165	135	1035
2 x 6	1.5" x 5.5" x 2.1E PWLVL	2100000	3770	285	2750
	1.5" x 5.5" x 1.9E PWLVL	1900000	3345	285	2450
	1.5" x 5.5" x 1.6E PWLVL	1600000	2735	230	1950
	2x6 Douglas Fir-Larch No. 2	1600000	1345	180	1485
	2x6 Spruce-Pine-Fir No. 1 / No. 2	1400000	1310	135	1265
	2x6 Hem-Fir No. 2	1300000	1270	150	1430
	2x6 Western Woods No. 2	1000000	1010	135	990
2 x 8	1.5" x 7.25" x 2.1E PWLVL	2100000	3565	285	2750
	1.5" x 7.25" x 1.9E PWLVL	1900000	3165	285	2450
	1.5" x 7.25" x 1.6E PWLVL	1600000	2590	230	1950
	2x8 Douglas Fir-Larch No. 2	1600000	1240	180	1420
	2x8 Spruce-Pine-Fir No. 1 / No. 2	1400000	1205	135	1210
	2x8 Hem-Fir No. 2	1300000	1175	150	1365
	2x8 Western Woods No. 2	1000000	930	135	945
2 x 10	1.5" x 9.25" x 2.1E PWLVL	2100000	3395	285	2750
	1.5" x 9.25" x 1.9E PWLVL	1900000	3015	285	2450
	1.5" x 9.25" x 1.6E PWLVL	1600000	2465	230	1950
	2x10 Douglas Fir-Larch No. 2	1600000	1140	180	1350
	2x10 Spruce-Pine-Fir No. 1 / No. 2	1400000	1105	135	1150
	2x10 Hem-Fir No. 2	1300000	1075	150	1300
	2x10 Southern Pine No. 2	1400000	920	175	1300
2 x 12	1.5" x 11.25" x 2.1E PWLVL	2100000	3265	285	2750
	1.5" x 11.25" x 1.9E PWLVL	1900000	2895	285	2450
	1.5" x 11.25" x 1.6E PWLVL	1600000	2370	230	1950
	2x12 Douglas Fir-Larch No. 2	1600000	1035	180	1350
	2x12 Spruce-Pine-Fir No. 1 / No. 2	1400000	1005	135	1150
	2x12 Hem-Fir No. 2	1300000	975	150	1300
	2x12 Southern Pine No. 2	1400000	860	175	1250

(1) Refer to *APA PR-L233* for PWLVL adjustment factors and other design properties.
(2) Refer to the *2015 NDS*® for lumber adjustment factors and other design properties.
(3) Load applied to the narrow face of the member. Repetitive member and size factors have been applied where applicable.
(4) Size factors have been applied to lumber values where applicable.
(5) MOE is a True (Shear-Free MOE) and it does not account for shear deformation.

For information about our complete line of products, please visit pacificwoodtech.com.

1¼" Stair Stringers

Maximum Stringer Run

1¼" x 1.6E PWLVL MAXIMUM STRINGER RUN 40 PSF LIVE LOAD AND 12 PSF DEAD LOAD

Stringer Depth	36" Tread Width				42" Tread Width		44" Tread Width		48" Tread Width	
	2 Stringers		3 Stringers		3 Stringers		3 Stringers		3 Stringers	
	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement
9½"	5'-3"	6'-0"	6'-0"	7'-6"	6'-0"	6'-9"	6'-0"	6'-9"	5'-3"	6'-9"
11⅞"	9'-0"	9'-9"	10'-6"	11'-3"	9'-9"	10'-6"	9'-9"	10'-6"	9'-0"	9'-9"
14"	12'-0"	12'-9"	12'-9"	12'-9"	12'-9"	12'-9"	12'-9"	12'-9"	12'-9"	12'-9"

Table values are based on a maximum step rise of 7¾" and a minimum step run of 9".

1¼" x 1.6E PWLVL MAXIMUM STRINGER RUN 100 PSF LIVE LOAD AND 12 PSF DEAD LOAD

Stringer Depth	36" Tread Width				42" Tread Width		44" Tread Width		48" Tread Width	
	2 Stringers		3 Stringers		3 Stringers		3 Stringers		3 Stringers	
	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement	No Reinforcement	With Reinforcement
9½"	3'-8"	4'-7"	4'-7"	5'-6"	4'-7"	5'-6"	4'-7"	5'-6"	3'-8"	4'-7"
11⅞"	6'-5"	7'-4"	8'-3"	8'-3"	7'-4"	8'-3"	7'-4"	8'-3"	7'-4"	7'-4"
14"	9'-2"	10'-1"	11'-0"	11'-0"	10'-1"	10'-1"	10'-1"	10'-1"	10'-1"	10'-1"

Table values are based on a maximum step rise of 7¾" and a minimum step run of 9".

General Notes

1. Verify compliance with the local building code.
2. Table values are limited by deflection equal to L/360 at live load or L/240 at total load.
3. For other design loads, stair constructions or attachment details, consult with the project designer or engineer of record.
4. Stringers are unstable until treads are installed.
5. To minimize squeaks, install treads with panel adhesive in addition to nails or screws.
6. Stringers shall be separated from concrete or masonry in accordance with the building code.

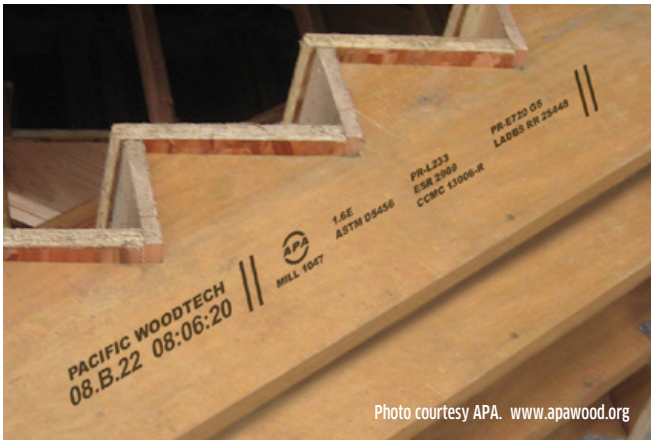


Photo courtesy APA. www.apawood.org

LVL Properties

1.6E LVL ALLOWABLE DESIGN STRESSES(1)

True (Shear-Free) Modulus of Elasticity	E	=	1,600,000 psi(2)
Bending	F_b	=	2,250 psi(3)(4)
Horizontal Shear (joist)	F_v	=	230 psi
Compression Perpendicular to Grain (joist)	$F_{c\perp}$	=	750 psi(2)
Compression Parallel to Grain	F_c	=	1,950 psi

(1) These allowable design stresses apply to dry service conditions.
(2) No increase is allowed for load duration.
(3) Multiply by $(12/d)^{1/5}$ where d = depth of member (in).
(4) A factor of 1.04 may be applied for repetitive members as defined in the *National Design Specification® for Wood Construction*.
(5) True or shear-free modulus of elasticity does not account for shear deformation.

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Columns 2.1E Laminated Veneer Lumber

The properties that make PWLVL a superior beam material make it ideal for column use as well. In PWLVL columns, you'll find only quality construction, free of deep cracks, checks or twists. These columns are desirable enough to leave exposed, for a beautiful finish.

2.1E PWLVL COLUMNS ARE AVAILABLE IN:

3½" x 3½"	5¼" x 5½"	7 x 7¼"
3½" x 5½"	5¼" x 7¼"	
3½" x 7¼"		

2.1E PWLVL Reference Design Values(1)

True (Shear-Free) Modulus of Elasticity,	E	=	2,100,000 psi(2)(5)(6)
	E_{min}	=	1,036,825 psi(2)
Apparent Modulus of Elasticity,	E	=	2,000,000 psi(2)
Bending (beam),	F_b	=	3,100 psi(3)(4)
Horizontal Shear (beam),	F_v	=	285 psi
Compression Perpendicular to Grain (beam),	$F_{c\perp}$	=	850 psi(2)

(1) Values apply to dry service conditions
(2) Do not adjust for load duration
(3) Adjust by $(12/d)^{1/5}$, where *d* is the depth of the member [inches]
(4) Adjust by 1.04 for repetitive members as defined in the *ANSI/AWC NDS*
(5) True or shear-free modulus of elasticity does not account for shear deformation
(6) See APA Product Report *PR-L233*.

Software Tools

iStruct™ Software Suite, featuring isDesign™ and isPlan™

- isDesign™– Single member sizing software
- isPlan™ – Drawing program for designing floor and roof framing plans with engineered wood products

For information about software tools, please visit pacificwoodtech.com/products or call 888.707.2285.

Product Warranty

Pacific Woodtech Corporation warrants that its products, as manufactured, will be free from manufacturing errors or defects in workmanship and material.

In addition, provided the product, as manufactured, is stored, handled, installed and used correctly, Pacific Woodtech Corporation warrants the adequacy of its design.

This warranty is backed by the full resources of Pacific Woodtech Corporation and by underwritten product liability insurance.

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HISTORY BUILT. FUTURE BOUND.

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