PACIFIC WOODTECH

2.1E PWLVL BILLET BEAMS

Billet Beams are factory-laminated, wide-width LVL beams that provide the convenience of *drop-in* framing members to your jobsite. Additionally, narrow LVL members can be field-laminated, offering flexibility and versatility to both the construction yard and jobsite. For customer convenience, fastening schedules can be found online in the Pacific Woodtech User's Guide and custom fastening for dynamic loadings can be determined via our iStruct® software.

Reference Design Values

5¼" OR THREE-PLY 1¾" 2.1E PWLVL REFERENCE DESIGN VALUES

Depth (in)	MOI (in⁴)	2.1E PWLVL Maximum Vertical Shear (lb)			2.1E PWLVL Maximum Bending Moment (ft-lb)			Weight (plf)
		100%	115%	125%	100%	115%	125%	
3½	18.8	3491	4015	4364	3543	4074	4429	4.8
5½	72.8	5486	6309	6858	7992	9191	9991	7.5
7¼	166.7	7232	8317	9040	13141	15112	16426	9.9
9¼	346.3	9227	10611	11534	20374	23430	25468	12.6
9½	375.1	9476	10898	11845	21376	24582	26720	13.0
11¼	622.9	11222	12905	14027	28980	33327	36225	15.3
11⅞	732.6	11845	13622	14807	31942	36734	39928	16.2
14	1200.5	13965	16060	17456	42959	49403	53699	19.1
16	1792.0	15960	18354	19950	54631	62826	68289	21.8
18	2551.5	17955	20648	22444	67533	77663	84416	24.5
20	3500.0	19950	22943	24938	81635	93881	102044	27.3
22	4658.5	21945	25237	27431	96914	111451	121142	30.0
24	6048.0	23940	27531	29925	113346	130348	141682	32.7

7" OR FOUR-PLY 1¾" 2.1E PWLVL REFERENCE DESIGN VALUES

Depth (in)	MOI (in⁴)	2.1E PWLVL Maximum Vertical Shear (lb)			2.1E PWLVL Maximum Bending Moment (ft-lb)			Weight (plf)
		100%	115%	125%	100%	115%	125%	
3½	25.0	4655	5353	5819	4724	5432	5905	6.4
5½	97.1	7315	8412	9144	10657	12255	13321	10.0
7¼	222.3	9643	11089	12053	17522	20150	21902	13.2
9¼	461.7	12303	14148	15378	27166	31240	33957	16.8
9½	500.1	12635	14530	15794	28501	32777	35627	17.3
11¼	830.6	14963	17207	18703	38640	44436	48300	20.5
11⅞	976.8	15794	18163	19742	42590	48978	53237	21.6
14	1600.7	18620	21413	23275	57279	65871	71599	25.5
16	2389.3	21280	24472	26600	72842	83768	91052	29.1
18	3402.0	23940	27531	29925	90044	103550	112555	32.7
20	4666.7	26600	30590	33250	108847	125174	136059	36.4
22	6211.3	29260	33649	36575	129218	148601	161523	40.0
24	8064.0	31920	36708	39900	151128	173797	188909	43.6

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*.

Equivalent Specific Gravity for Fastener Design

Nails & Wood Screws:	Lateral, face	= 0.50
	Lateral, edge	= 0.50
	Withdrawal, face	= 0.50
	Withdrawal, edge	= 0.47
Bolts & Lag Screws:	Lateral, face	= 0.50
	Lateral, edge	= N.A.

For fastening schedules and custom fastening information, visit pacificwoodtech.com

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2.1E PWLVL COLUMN LOADS

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.

Allowable axial load (lb)

3½" x 3½" 2.1E PWLVL COLUMNS

Column Length	100%	115%	125%
6'- 0"	11000	11695	12095
7'- 0"	9185	9655	9925
8'- 0"	7710	8045	8240
9'- 0"	6535	6780	6925
10'- 0"	5595	5780	5890
12'- 0"	4215	4330	4395
14'- 0"	3280	3355	3400
> 14'- 0"	Not Allowed		

3½" x 5½" 2.1E PWLVL COLUMNS

Column Length	100%	115%	125%
6'- 0"	17285	18380	19005
7'- 0"	14435	15170	15595
8'- 0"	12115	12640	12950
9'- 0"	10270	10655	10880
10'- 0"	8790	9085	9255
12'- 0"	6625	6805	6905
14'- 0"	5155	5270	5345
> 14'- 0"	Not Allowed		

3½" x 7¼" 2.1E PWLVL COLUMNS

Column Length	100%	115%	125%
6'- 0"	22785	24225	25055
7'- 0"	19025	20000	20560
8'- 0"	15970	16665	17070
9'- 0"	13535	14045	14345
10'- 0"	11590	11975	12200
12'- 0"	8730	8970	9105
14'- 0"	6795	6950	7045
> 14'- 0"	Not Allowed		

5¼" x 5½" 2.1E PWLVL COLUMNS

Column Length	100%	115%	125%
6'- 0"	33650	37245	39450
7'- 0"	30650	33460	35135
8'- 0"	27570	29695	30945
9'- 0"	24590	26220	27160
10'- 0"	21900	23155	23895
12'- 0"	17445	18255	18725
14'- 0"	14105	14660	14975
16'- 0"	11585	11980	12205
18'- 0"	9670	9955	10115
20'- 0"	8175	8390	8510
22'- 0"	Not Allowed		
24'- 0"			

5¼" x 7¼" 2.1E PWLVL COLUMNS

Column Length	100%	115%	125%
6'- 0"	–	–	–
7'- 0"	–	–	–
8'- 0"	36340	39145	–
9'- 0"	32415	34565	35800
10'- 0"	28870	30525	31500
12'- 0"	22995	24065	24685
14'- 0"	18595	19325	19740
16'- 0"	15270	15790	16090
18'- 0"	12745	13125	13335
20'- 0"	10775	11060	11220
22'- 0"	Not Allowed		
24'- 0"			

7" x 7¼" 2.1E PWLVL COLUMNS

Column Length	100%	115%	125%
6'- 0"	–	–	–
7'- 0"	–	–	–
8'- 0"	–	–	–
9'- 0"	–	–	–
10'- 0"	–	–	–
12'- 0"	–	–	–
14'- 0"	35095	37075	38235
16'- 0"	29735	31180	32020
18'- 0"	25405	26495	27110
20'- 0"	21885	22715	23190
22'- 0"	19015	19665	20035
24'- 0"	16650	17165	17460

Notes:

1. Table values are based on:
   - Solid, one-piece column
   - Dry service conditions
   - Axial loads only
   - Load eccentricity of either 1/6 column width or thickness
   - Bracing in both directions at column ends
2. For all other conditions, such as side loads and multiple-ply columns, consult a registered, professional engineer.
3. Column capacity might be limited by the capacity of wood plates, the slab, column caps/bases, etc. *ANSI/AWC NDS-2015*
4. Column design requires calculating Emin in accordance with the NDS. When calculating Emin use Apparent MOE.

No drilling except for column cap or base installation. Follow hardware manufacturer's instructions.

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*.