

2.1E PWLVL

Reference Design Values

1 3/4" 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%		
3 1/2"	1164	1338	1455	1181	1358	1476	6.3	1.6
5 1/2"	1829	2103	2286	2664	3064	3330	24.3	2.5
7 1/4"	2411	2772	3013	4380	5037	5475	55.6	3.3
9 1/4"	3076	3537	3845	6791	7810	8489	115.4	4.2
9 1/2"	3159	3633	3948	7125	8194	8907	125.0	4.3
11 1/4"	3741	4302	4676	9660	11109	12075	207.6	5.1
11 1/8"	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

2.1E PWLVL Reference Design Values⁽¹⁾

True (Shear-Free) Modulus of Elasticity, $E = 2,100,000 \text{ psi}^{(2)(5)(6)}$

Bending (beam), $F_b = 3,100 \text{ psi}^{(3)(4)}$

Horizontal Shear (beam), $F_v = 285 \text{ psi}$

Compression Perpendicular to Grain (beam), $F_{CL} = 850 \text{ psi}^{(2)}$

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

3 1/2" 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%		
3 1/2"	2328	2677	2909	2362	2716	2952	12.5	3.2
5 1/2"	3658	4206	4572	5328	6128	6660	48.5	5.0
7 1/4"	4821	5544	6027	8761	10075	10951	111.1	6.6
9 1/4"	6151	7074	7689	13583	15620	16978	230.8	8.4
9 1/2"	6318	7265	7897	14251	16388	17813	250.1	8.6
11 1/4"	7481	8603	9352	19320	22218	24150	415.3	10.2
11 1/8"	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

EQUIVALENT SPECIFIC GRAVITY FOR FASTENER DESIGN

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

AVAILABLE SIZES (INCHES)

1 3/4" 2.1E PWLVL												
3 1/2"	5 1/2"	7 1/4"	9 1/4"	9 1/2"	11 1/4"	11 1/8"	14"	16"	18"	20"	22"	24"
3 1/2" 2.1E PWLVL												
3 1/2"	5 1/2"	7 1/4"	9 1/4"	9 1/2"	11 1/4"	11 1/8"	14"	16"	18"	20"	22"	24"

2.1E PWLVL

Floor Beams

This table provides PWLVL beam sizes for center support of one level of floor framing over various column spacings. Where floor joists are continuous over the beam, this table applies only when the 'A' span is between 45% and 55% of the building width.

1 3/4" x 2.1E PWLVL

Width of Building	Column Spacing									
	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
24'	2 - 1 1/8"	2 - 1 1/8"	2 - 1 1/8"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"
	3 - 9 1/2"	3 - 9 1/2"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"
28'	2 - 1 1/8"	2 - 1 1/8"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"
	3 - 9 1/2"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"
32'	2 - 1 1/8"	2 - 1 1/8"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"
	3 - 9 1/2"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"
36'	2 - 1 1/8"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"
	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"
40'	2 - 1 1/8"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"	2 - 1 1/4"
	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"	3 - 11 1/8"

+ see note 3

Notes:

- PWLVL beam sizes are listed as the number of 1 3/4" thick pieces by the beam depth. e.g. 2 - 9 1/2" indicates two 1 3/4" pieces by 9 1/2" deep.
- All PWLVL beams require support across their full width.
- The minimum required end and intermediate bearing lengths (based on 850 psi) are 3" and 7 1/2" respectively unless the + symbol is shown. In that case, 4 1/2" and 10 1/2" end and intermediate bearing lengths are required.
- PWLVL beam sizes are based on residential floor loading of 40 psf live load and 10 psf dead load. The roof framing must be trusses supported at the exterior walls only.
- Deflection is limited to L/360 at live load and L/240 at total load.
- PWLVL beam sizes are based on continuous floor joist spans and simple or continuous beam spans. If the floor joists are not continuous, it is permissible to consider a Width of Building dimension equal to 0.8 times the actual width of the building.

