Boise Cascade®
ENGINEERED WOOD PRODUCTS

Technical Note LVL-13

Versa-Lam® 2.1E 3100 Column Table

Allowable Axial Load [lb] – Smaller Depth Columns

Column Length (ft)	Allowable Axial Load (lb)											
	3 1/2" x 3 1/2"			3 1/2" x 5 1/4"			5 1/4" x 5 1/4"			5 1/4" x 7"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
4	17,455	19,155	20,180	26,210	28,760	30,295						
5	14,650	15,700	16,305	22,000	23,570	24,480	42,305	47,130	50,160			
6	12,015	12,670	13,045	18,045	19,025	19,590	38,545	42,295	44,575			
7	9,865	10,305	10,550	14,810	15,465	15,850	34,465	37,230	38,845			
8	8,180	8,485	8,665	12,280	12,745	13,010	30,390	32,380	33,535	40,550	43,210	44,745
9	6,865	7,090	7,220	10,310	10,650	10,845	26,640	28,110	28,965	35,540	37,510	38,650
10	5,835	6,000	6,100	8,760	9,015	9,160	23,360	24,480	25,130	31,175	32,685	33,535
11	5,010	5,140	5,215	7,525	7,720	7,830	20,565	21,450	21,950	27,445	28,615	29,300
12	4,345	4,445	4,505	6,525	6,680	6,770	18,195	18,895	19,300	24,280	25,220	25,750
13	3,800	3,885	3,930	5,710	5,835	5,905	16,185	16,755	17,075	21,600	22,355	22,795
14	3,350	3,420	3,455	5,035	5,135	5,195	14,475	14,935	15,205	19,315	19,935	20,290
15							13,005	13,395	13,615	17,355	17,875	18,170
16							11,745	12,070	12,255	15,675	16,110	16,355
17							10,655	10,930	11,085	14,220	14,585	14,795
18							9,705	9,940	10,070	12,950	13,265	13,445
19							8,875	9,075	9,190	11,845	12,115	12,265
20							8,145	8,320	8,415	10,870	11,100	11,235
21							7,500	7,650	7,735	10,005	10,210	10,325

Notes:

1. Table assumes that the column is braced at column ends only. Effective column length is equal to actual column length.
2. Allowable loads are based upon one-piece (solid) column members used in dry service conditions. BC Calc® sizing software (www.BCCalc.com) may be used for multi-piece column design.
3. Allowable loads are based on an eccentricity value equal to 0.167 multiplied by either the column thickness or width (worst case).
4. Allowable loads are based on axial loaded columns using the design provisions of the 2024 National Design Specification (NDS) for Wood Construction. Table capacity values based upon a buckling length coefficient, K_e equal to 1.0 (rotation free, translation fixed at each column end per NDS Appendix G). A K_e coefficient of 1.0 conservatively models typical wood column applications. For other end fixity conditions, contact Boise Cascade EWP Engineering. For side or other combined bending and axial loads, see provisions in 2024 NDS.
5. Load values are not shown for short lengths due to loads exceeding common connector capacities. Load values are not shown for longer lengths if the controlling slenderness ratio exceeds 50 (per NDS).
6. Lateral loads (wind loading) are not considered in this table. BC Calc® sizing software (www.BCCalc.com) may be used for out of plane lateral load column application design.

Reference Design Values:

- Modulus of Elasticity (E_t) (True / Shear Free) = 2.1 x 10^6 lb/in^2
- Modulus of Elasticity (E_a) (Apparent) = 2.0 x 10^6 lb/in^2
- Modulus of Elasticity (E_{min}) (Lateral Stability) = 1.06 x 10^6 lb/in^2
- Flexural Stress ($F_{b\parallel}$) (Parallel to Gluelines) = 3100 lb/in^2
- Flexural Stress ($F_{b\perp}$) (Perpendicular to Gluelines) = 2800 lb/in^2
- Compression Parallel to Grain ($F_{c\parallel}$) = 3000 lb/in^2
- Compression Perpendicular to Grain ($F_{c\perp\parallel}$) (Parallel to Gluelines) = 750 lb/in^2
- Compression Perpendicular to Grain ($F_{c\perp\perp}$) (Parallel to Gluelines) = 610 lb/in^2

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