

LSL Cost-Effective Beam Solution

TimberStrand® laminated strand lumber (LSL) transforms plentiful, fast growing aspen or yellow poplar trees into long, wide billets of high-grade manufactured timber that has great strength and minimises the natural inconsistencies found in wood. These billets are precision-cut into standard cross sections that match other iLevel™ Trus Joist® floor components.



Manufactured to a low, consistent moisture content, TimberStrand® LSL virtually eliminates cupping, bowing, twisting and splitting. The workability and high strength-to-weight ratio of TimberStrand® LSL make it a logical alternative to steel beams and lintels.

TimberStrand® LSL provides a strong, cost-effective alternative to conventional timber and steel flitch beams. Perfect in residential and light commercial applications, TimberStrand® LSL is the preferred solution for short and intermediate span beams, lintels, purlins and rim board.

1.5E TimberStrand® LSL Allowable Design Stresses (N/mm²)

Bending parallel to grain	13.1 ⁽¹⁾
Tension parallel to grain	11.3
Compression parallel to grain	11.7
Compression perpendicular to grain:	
Load parallel to wide face of strands	4.8
Load perpendicular to wide face of strands	2.4
Shear parallel to grain:	
Load parallel to wide face of strands	2.8
Load perpendicular to wide face of strands	1.0
Modulus of elasticity parallel to grain	10 300
Modulus of rigidity	modulus of elasticity parallel to grain ÷ 20

(1) For 300 mm depth. For other depths, multiply by: $\left(\frac{300}{d}\right)^{0.147}$

TimberStrand® LSL Design Properties

Size		Section Properties			Maximum Section Capacity		Weight (kg/m)
Width (mm)	Depth (mm)	Area (mm ² x 10 ²)	Section Modulus (mm ³ x 10 ³)	Moment of Inertia (mm ⁴ x 10 ⁶)	Maximum Moment (kN-m)	Maximum Shear (kN)	
45	200	88.90	296.3	29.63	4.12	16.59	6.1
	220	97.79	358.6	39.44	4.92	18.25	6.7
	241	107.26	431.4	52.04	5.83	20.02	7.4
	302	134.07	674.0	101.65	8.82	25.03	9.2
	356	158.06	936.8	166.56	11.97	29.51	10.9
89	200	177.80	592.7	59.27	8.24	33.19	12.2
	220	195.58	717.1	78.88	9.83	36.51	13.5
	241	214.52	862.7	104.09	11.67	40.04	14.8
	302	268.14	1,348.0	203.29	17.64	50.05	18.4
	356	316.13	1,873.6	333.12	23.94	59.01	21.7
	406	361.29	2,447.1	497.26	30.66	67.44	24.9
	457	406.45	3,097.2	708.01	38.14	75.87	28.0

General Notes

- Design properties are based on long-term resistance $K_3 = 1.0$ and non-load sharing conditions.
- Lateral support of beam compression edge is required at intervals of 600 mm centres or closer.
- Design properties are based on BBA Agrément Certificate 97/3369. See BBA certificate for additional information.
- Section properties are based on the actual member size. Width and depth shown on the table are converted from imperial sizes and may vary by ± 0.5 mm.
- Values shown throughout this brochure are applicable to TimberStrand® LSL in dry-service conditions only (SC1 and SC2).

Allowable Total Uniform Load (kN/m)

Deflection: $\Delta \leq 0.003L$

Span (m)	89x200 mm		89x220 mm		89x241 mm		89x302 mm		89x356 mm		89x406 mm		89x457 mm	
	Floor Total Load	Roof Total Load	Floor Total Load	Roof Total Load	Floor Total Load	Roof Total Load	Floor Total Load	Roof Total Load	Floor Total Load	Roof Total Load	Floor Total Load	Roof Total Load	Floor Total Load	Roof Total Load
1.5	29.18	30.95	34.83	39.12	41.35	48.75	62.54	78.22	78.47	98.14	89.68	112.16	100.89	126.18
2.0	14.63	14.63	18.86	18.86	23.19	23.99	35.10	41.79	47.67	59.64	61.08	76.41	75.60	94.56
2.5	7.90	7.90	10.30	10.30	13.27	13.27	22.40	23.95	30.43	36.23	39.00	48.81	48.54	60.75
3.0	4.68	4.68	6.15	6.15	7.99	7.99	14.78	14.78	21.07	22.85	27.01	32.07	33.63	42.10
3.5	2.97	2.97	3.93	3.93	5.13	5.13	9.67	9.67	15.18	15.18	19.78	21.62	24.63	29.24
4.0	1.98	1.98	2.63	2.63	3.46	3.46	6.62	6.62	10.51	10.51	15.09	15.14	18.80	20.71
4.5	1.37	1.37	1.83	1.83	2.42	2.42	4.69	4.69	7.53	7.53	10.95	10.95	14.79	15.11
5.0	0.97	0.97	1.31	1.31	1.75	1.75	3.43	3.43	5.55	5.55	8.13	8.13	11.31	11.31
5.5	0.70	0.70	0.96	0.96	1.29	1.29	2.56	2.56	4.19	4.19	6.18	6.18	8.64	8.64
6.0	0.52	0.52	0.71	0.71	0.96	0.96	1.95	1.95	3.22	3.22	4.78	4.78	6.72	6.72
6.5	0.38	0.38	0.53	0.53	0.73	0.73	1.51	1.51	2.51	2.51	3.75	3.75	5.31	5.31
7.0			0.40	0.40	0.56	0.56	1.18	1.18	1.98	1.98	2.99	2.99	4.25	4.25
7.5			0.30	0.30	0.43	0.43	0.93	0.93	1.58	1.58	2.40	2.40	3.44	3.44
8.0					0.33	0.33	0.74	0.74	1.27	1.27	1.95	1.95	2.81	2.81
8.5							0.59	0.59	1.03	1.03	1.60	1.60	2.32	2.32
9.0							0.47	0.47	0.84	0.84	1.31	1.31	1.92	1.92
9.5							0.37	0.37	0.69	0.69	1.09	1.09	1.60	1.60
10.0									0.56	0.56	0.90	0.90	1.34	1.34

General Notes

- Values shown are the maximum uniform loads, in kilonewtons per metre (kN/m), that can be applied to the beam in addition to its own weight.
- TimberStrand® LSL beams are made without camber; therefore, in addition to the code-required deflection limits, other-deflection considerations, such as aesthetics, must be evaluated.
- Lateral support of beam compression edge is required at intervals of 600 mm centres or closer.
- Lateral support of beams is required at bearing points.
- Bearing area to be calculated for specific application; see **Bearing Length Requirements** on page 28.
- Roof members shall either be pitched for drainage or designed to account for load and deflection as specified in the applicable building code.
- Floor Total Load** is based on long term load duration with $K_3 = 1.0$.
- Roof Total Load** is based on medium term load duration with $K_3 = 1.25$.

TIMBERSTRAND® LSL COLUMNS AND POSTS

General Notes

- Table applies to solid, one-piece column members used in dry-service conditions (SC1 and SC2).
- Loads are based on simple axial-loaded columns using the design provisions of BS5268: Part 2, 2002 edition. The modification factor for compression members K_{12} is calculated using the equation in Annex B. The eccentricity factor (η) is taken as 0.01 of the slenderness ratio (λ). For side loads or other combined bending and axial loads, see provisions of BS 5268: Part 2, 2002 edition.
- Table assumes that the column is unbraced, except at the column ends, and the effective column length is equal to the actual column length.

Allowable Axial Loads (kN)

Effective Column Length (m)	TimberStrand® LSL Column Size (mm)	
	89x89	
	100%	125%
1.25	56	68
1.50	50	60
1.75	44	52
2.00	39	45
2.25	34	39
2.50	30	34
2.75	27	29
3.00	24	26
3.25	21	23
3.50	19	20
3.75	17	18
4.00	15	16
4.25	14	15
4.50	13	13