



# BEAMS, HEADERS, AND COLUMNS

Featuring Trus Joist® TimberStrand® LSL,  
Microllam® LVL, and Parallam® PSL

- Uniform and Predictable
- Minimal Bowing, Twisting, and Shrinking
- Strong and Straight
- Limited Product Warranty



FLOOR SOLUTIONS

ROOF SOLUTIONS

WALL SOLUTIONS



## About This Guide

iLevel provides products for use in residential, multi-family, and light commercial construction. The products in this guide are readily available through our nationwide network of distributors and dealers. For more information on other applications or iLevel products, contact your iLevel representative.

## Why Choose iLevel® Trus Joist® Beams, Columns, and Headers?

- Dependable performance
- Consistent quality and dependable uniformity
- Flexible solutions for your beam and header needs

Using advanced technology, iLevel manufactures engineered lumber that is consistently straight and strong, and that resists bowing, twisting, and shrinking. That means less waste, easier installation, and higher design values for starters; plus fewer callbacks, shorter cycle times, more design flexibility, and lower overall installed cost in the end. iLevel® Trus Joist® TimberStrand® LSL, Microllam® LVL, and Parallam® PSL are structural solutions you can count on—guaranteed.

## Available Widths and Depths for iLevel® Trus Joist® Engineered Lumber

### ▪ TimberStrand® LSL

**1.5E TimberStrand® LSL** is available in the following sizes:

Widths: 1¾" and 3½"

Depths: 9¼", 9½", 11¼", 11⅞", 14", and 16"

**1.3E TimberStrand® LSL** headers are available in the following sizes:

Width: 3½"

Depths: 4⅜", 5½", 7¼", 8⅝", 9¼", and 11¼"

**1.3E TimberStrand® LSL** columns and posts are available in the following sizes:

3½" x 3½"    3½" x 4⅜"    3½" x 5½"    3½" x 7¼"    3½" x 8⅝"

### ▪ Microllam® LVL

**1.9E Microllam® LVL** headers and beams are available in the following sizes:

Width: 1¾"

Depths: 5½", 7¼", 9¼", 9½", 11¼", 11⅞", 14", 16", 18", and 20"

### ▪ Parallam® PSL

**2.0E Parallam® PSL** headers and beams are available in the following sizes:

Widths: 1¾", 3½", 5¼", and 7"

Depths: 9¼", 9½", 11¼", 11⅞", 14", 16", and 18"

**1.8E Parallam® PSL** columns and posts are available in the following sizes:

3½" x 3½"    3½" x 5¼"    3½" x 7"    5¼" x 5¼"    5¼" x 7"    7" x 7"

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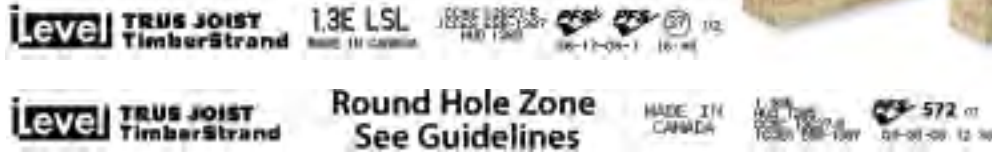


## iLevel® Trus Joist® TimberStrand® Laminated Strand Lumber (LSL)

- One-piece members reduce labor time
- Every piece is straight and strong
- Unique properties allow you to drill larger holes through 1.55E TimberStrand® LSL. See **Allowable Holes** on page 14.

### TimberStrand® LSL Grade Verification

TimberStrand® LSL is available in more than one grade. The product is stamped with its grade information, as shown in the examples below. With 1.55E TimberStrand® LSL, larger holes can be drilled through the beam.



Actual stamps shown.

Code Evaluation: See CCMC 12627-R



## iLevel® Trus Joist® Microllam® Laminated Veneer Lumber (LVL)

- Can easily be built up on site to reduce heavy lifting
- Offers reliable and economical solutions for beam and header applications
- Manufacturing process minimizes many of the natural inconsistencies found in wood
- Available in some regions with a Watershed® overlay for on-site weather protection

Code Evaluation: See CCMC 08675-R



## iLevel® Trus Joist® Parallam® Parallel Strand Lumber (PSL)

- Allows long spans for open floor plans without intermediate posts or columns
- Has warm, unique grain that is perfect for applications with exposed beams
- Provides ideal solutions for cantilever and multi-span applications
- Solid sections save time on site assembly
- Available in some regions with preservative treatment for exterior applications

Code Evaluation: See CCMC 11161-R



# DESIGN PROPERTIES

## Factored Resistances<sup>(1)</sup> (Standard Term)

Grade	Width	Design Property	Depth															
			4¾"	5½"	5½" Plank Orientation	7¼"	8¾"	9¼"	9½"	11¼"	11¾"	14"	16"	18"	18¾"	19"	20"	
<b>TimberStrand® LSL</b>																		
1.3E	3½"	Factored Moment Resistance (ft-lbs)	2,885	4,465	2,960	7,565	10,535	12,040		17,490								
		Factored Shear Resistance (lbs)	6,845	8,605	3,235	11,345	13,495	14,470		17,600								
		Moment of Inertia (in. <sup>4</sup> )	24	49	20	111	187	231		415								
		Weight (plf)	4.5	5.6	5.6	7.4	8.8	9.4		11.5								
1.55E	1¾"	Factored Moment Resistance (ft-lbs)						8,235	8,665	11,960	13,260	18,155	23,425					
		Factored Shear Resistance (lbs)						5,585	5,735	6,790	7,170	8,455	9,660					
		Moment of Inertia (in. <sup>4</sup> )						115	125	208	244	400	597					
		Weight (plf)						5.1	5.2	6.2	6.5	7.7	8.8					
	3½"	Factored Moment Resistance (ft-lbs)						16,465	17,325	23,925	26,525	36,310	46,850					
		Factored Shear Resistance (lbs)						11,170	11,470	13,585	14,340	16,905	19,320					
		Moment of Inertia (in. <sup>4</sup> )						231	250	415	488	800	1,195					
		Weight (plf)						10.1	10.4	12.3	13.0	15.3	17.5					
	<b>Microllam® LVL</b>																	
	1.9E	1¾"	Factored Moment Resistance (ft-lbs)				5,915		9,315	9,790	13,420	14,845	20,175	25,875	32,230	34,775		39,220
			Factored Shear Resistance (lbs)				4,035		5,150	5,285	6,260	6,610	7,790	8,905	10,015	10,435		11,130
			Moment of Inertia (in. <sup>4</sup> )				56		115	125	208	244	400	597	851	961		1,167
Weight (plf)						3.7		4.7	4.8	5.7	6.1	7.1	8.2	9.2	9.6		10.2	
<b>Parallam® PSL</b>																		
2.0E	1¾"	Factored Moment Resistance (ft-lbs)						10,325	10,860	14,945	16,555	22,590	29,075		39,230	40,220		
		Factored Shear Resistance (lbs)						5,245	5,385	6,380	6,735	7,940	9,070		10,630	10,775		
		Moment of Inertia (in. <sup>4</sup> )						115	125	208	244	400	597		961	1,000		
		Weight (plf)						5.1	5.2	6.2	6.5	7.7	8.8		10.3	10.4		
	3½"	Factored Moment Resistance (ft-lbs)						20,655	21,720	29,890	33,105	45,180	58,145		78,455	80,445		
		Factored Shear Resistance (lbs)						10,490	10,775	12,760	13,465	15,875	18,145		21,265	21,545		
		Moment of Inertia (in. <sup>4</sup> )						231	250	415	488	800	1,195		1,923	2,001		
		Weight (plf)						10.1	10.4	12.3	13.0	15.3	17.5		20.5	20.8		
	5¼"	Factored Moment Resistance (ft-lbs)						30,980	32,580	44,840	49,660	67,775	87,220		117,685	120,665		
		Factored Shear Resistance (lbs)						15,735	16,160	19,135	20,200	23,815	27,215		31,895	32,320		
		Moment of Inertia (in. <sup>4</sup> )						346	375	623	733	1,201	1,792		2,884	3,001		
		Weight (plf)						15.2	15.6	18.5	19.5	23.0	26.3		30.8	31.2		
	7"	Factored Moment Resistance (ft-lbs)						41,305	43,440	59,785	66,215	90,365	116,290		156,915	160,890		
		Factored Shear Resistance (lbs)						20,980	21,545	25,515	26,935	31,750	36,290		42,525	43,090		
		Moment of Inertia (in. <sup>4</sup> )						462	500	831	977	1,601	2,389		3,845	4,001		
		Weight (plf)						20.2	20.8	24.6	26.0	30.6	35.0		41.0	41.6		

(1) For product in beam orientation, unless otherwise noted.

Some sizes may not be available in your region.



# DESIGN PROPERTIES

## Specified Strengths<sup>(1)</sup> and Moduli of Elasticity (Standard Term)

Grade	Orientation	G Shear Modulus of Elasticity (psi)	E Modulus of Elasticity (psi)	f <sub>b</sub> Flexural Stress <sup>(2)</sup> (psi)	f <sub>t</sub> Tension Stress <sup>(3)</sup> (psi)	f <sub>c⊥</sub> Compression Perpendicular to Grain <sup>(4)</sup> (psi)	f <sub>c  </sub> Compression Parallel to Grain (psi)	f <sub>v</sub> Horizontal Shear Parallel to Grain (psi)	SG Equivalent Specific Gravity <sup>(5)</sup>
<b>TimberStrand® LSL</b>									
1.3E	Beam/Column	81,250	1.3 x 10 <sup>6</sup>	3,140	1,985	1,240	2,235	745	0.50 <sup>(6)</sup>
	Plank	81,250	1.3 x 10 <sup>6</sup>	3,510 <sup>(7)</sup>	—	790	2,235	280	0.50 <sup>(6)</sup>
1.55E	Beam	96,875	1.55 x 10 <sup>6</sup>	4,295	1,975 <sup>(8)</sup>	1,455	3,270	575 <sup>(8)</sup>	0.50 <sup>(6)</sup>
<b>Microllam® LVL</b>									
1.9E	Beam	118,750	1.9 x 10 <sup>6</sup>	4,805	2,870	1,365	4,005	530	0.50
<b>Parallam® PSL</b>									
1.8E	Column	112,500	1.8 x 10 <sup>6</sup>	4,435 <sup>(9)</sup>	3,245	775 <sup>(9)</sup>	3,990	355 <sup>(9)</sup>	0.50
2.0E	Beam	125,000	2.0 x 10 <sup>6</sup>	5,360	3,750	1,365	4,630 <sup>(10)</sup>	540	0.50

(1) To obtain factored resistances, apply the appropriate formulae from CSA O86 to the specified strengths shown.

(2) For 12" depth. For other depths, multiply f<sub>b</sub> by the appropriate factor as follows:

- For TimberStrand® LSL, multiply by  $\left[\frac{12}{d}\right]^{0.092}$
- For Microllam® LVL, multiply by  $\left[\frac{12}{d}\right]^{0.136}$
- For Parallam® PSL, multiply by  $\left[\frac{12}{d}\right]^{0.111}$

(3) f<sub>t</sub> has been adjusted to reflect the volume effects for most standard applications.

(4) f<sub>c⊥</sub> shall not be increased for duration of load.

(5) For lateral connection design only.

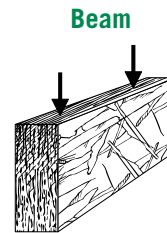
(6) Specific gravity of 0.58 may be used for bolts installed perpendicular to face and loaded perpendicular to grain.

(7) Values are for thicknesses up to 3½".

(8) Values account for large hole capabilities. See **Allowable Holes** on page 14.

(9) Values are for plank orientation.

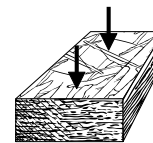
(10) For column and stud applications, use a specified strength of 800 psi to account for initial eccentricity.



Column



Plank



## General Assumptions for iLevel® Trus Joist® Residential Beams

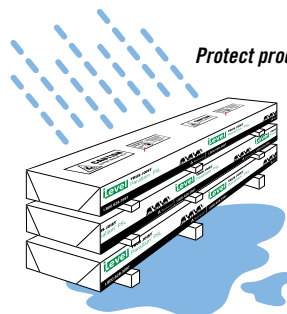
- Specified strengths and factored resistances are based on Limit States Design per CSA O86-01.
- Lateral support is required at bearing and along the span at 24" on-centre, maximum.
- Bearing lengths are based on each product's bearing resistance for applicable grade and orientation.
- All members 7¼" and less in depth are restricted to a maximum deflection of 5/16".
- Beams that are 1¾" thick members that are 16" or deeper must be used in multiple-ply units only.
- No camber.
- Beams and columns must remain straight to within 5L/4608 (in.) of true alignment. L is the unrestrained length of the member in feet.

For applications not covered in this guide, contact your iLevel representative.

See pages 16–18 for multiple-member beam connections.

*TimberStrand® LSL, Microllam® LVL, and untreated Parallam® PSL are intended for dry-use applications*

## Product Storage



Protect product from sun and water

**CAUTION:**  
Wrap is slippery when wet or icy

Use support blocks at 10' on-centre to keep bundles out of mud and water

# FLOOR AND/OR SNOW LOAD TABLES

## How to Use This Table

1. Calculate the factored and unfactored total load (TL) (neglect beam weight) and the unfactored live load (LL) on the beam or header in pounds per linear foot (plf).
2. Select appropriate **Span** (centre-to-centre of bearing).
3. Scan horizontally to find the proper width and a depth that has a capacity that meets or exceeds actual loads.
4. Review bearing length requirements to ensure adequacy.

Also see **General Notes** on page 7.

## TimberStrand® LSL: Floor and/or Snow—Standard Term (PLF)

Span	Condition	1.3E Grade						1.55E Grade					
		3½" Width						5½" Plank Orientation	1¾" Width				
		4¾"	5½"	7¼"	8¾"	9¾"	11¼"	3½"	9¼"	9½"	11¼"	11½"	14"
4'	Unfactored Resistance (LL)	652	1,215	2,477	*	*	*	547	*	*	*	*	*
	Unfactored Resistance (TL)	973	*	*	*	*	*	814	*	*	*	*	*
	Total Factored Resistance	1,437	2,225	3,772	5,256	6,008	7,798	1,457	3,223	3,351	4,339	4,574	4,574
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	2.2/5.4	3.0/7.6	3.5/8.7	4.5/11.3	1.5/3.5	3.2/8.0	3.3/8.2	4.3/10.7	4.5/11.3	4.5/11.3
5'	Unfactored Resistance (LL)	348	662	1,399	2,189	2,605	*	288	1,553	1,658	*	*	*
	Unfactored Resistance (TL)	517	*	*	*	*	*	426	*	*	*	*	*
	Total Factored Resistance	918	1,422	2,411	3,360	3,841	5,582	1,052	2,366	2,452	3,097	3,349	3,657
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.7/4.4	2.4/6.1	2.8/6.9	4.0/10.1	1.5/3.5	3.0/7.3	3.0/7.5	3.9/9.6	4.1/10.3	4.5/11.3
6'	Unfactored Resistance (LL)	206	397	857	1,367	1,642	*	169	979	1,049	1,605	*	*
	Unfactored Resistance (TL)	305	590	*	*	*	*	248	*	*	*	*	*
	Total Factored Resistance	636	985	1,672	2,330	2,664	3,872	729	1,823	1,919	2,407	2,589	3,046
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.6	2.0/5.1	2.3/5.8	3.4/8.4	1.5/3.5	2.7/6.8	2.8/7.1	3.6/8.9	3.8/9.6	4.5/11.3
8'	Unfactored Resistance (LL)	89	174	384	626	760	1,290	72	453	487	769	887	1,353
	Unfactored Resistance (TL)	100	198	443	*	*	*	79	675	726	*	*	*
	Total Factored Resistance	355	551	936	1,306	1,493	2,172	407	1,023	1,076	1,488	1,650	2,195
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.8	1.7/4.3	2.5/6.3	1.5/3.5	2.1/5.1	2.1/5.3	3.0/7.4	3.3/8.1	4.3/10.8
9'-6"	Unfactored Resistance (LL)	53	104	232	386	471	811	43	281	303	484	561	870
	Unfactored Resistance (TL)	48	98	225	571	697	*	37	416	449	719	*	*
	Total Factored Resistance	250	389	661	923	1,055	1,536	286	724	761	1,053	1,167	1,600
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.6	2.1/5.3	1.5/3.5	1.8/4.3	1.8/4.5	2.5/6.2	2.7/6.9	3.8/9.4
10'	Unfactored Resistance (LL)	43	85	190	334	407	705	35	243	262	420	487	760
	Unfactored Resistance (TL)	39	79	183	492	602	*	29	359	388	624	725	*
	Total Factored Resistance	225	350	596	832	951	1,385	258	652	687	949	1,053	1,443
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	2.0/5.0	1.5/3.5	1.7/4.1	1.7/4.3	2.4/5.9	2.6/6.5	3.6/9.0
12'	Unfactored Resistance (LL)		41	93	198	242	423	17	144	156	252	294	464
	Unfactored Resistance (TL)		36	86	288	353	623	11	211	228	372	434	689
	Total Factored Resistance		241	411	574	657	957	177	451	475	657	729	999
	Min. End/Int. Bearing (in.)		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.7/4.2	1.5/3.5	1.5/3.5	1.5/3.5	2.0/4.9	2.2/5.4	3.0/7.5
14'	Unfactored Resistance (LL)		22	51	126	155	273		92	100	163	190	303
	Unfactored Resistance (TL)		17	43	181	223	398		133	144	238	278	446
	Total Factored Resistance		175	299	419	480	700		330	347	481	533	731
	Min. End/Int. Bearing (in.)		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.6		1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.6/6.4
16'-6"	Unfactored Resistance (LL)			27	78	96	170		57	62	101	118	190
	Unfactored Resistance (TL)			19	108	134	243		81	87	146	171	277
	Total Factored Resistance			213	299	342	500		236	248	344	382	524
	Min. End/Int. Bearing (in.)			1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5		1.5/3.5	1.5/3.5	1.5/3.6	1.6/3.9	2.2/5.4
18'-6"	Unfactored Resistance (LL)				56	68	122		41	44	72	85	137
	Unfactored Resistance (TL)				75	93	171		56	61	103	121	198
	Total Factored Resistance				235	270	394		186	196	272	302	415
	Min. End/Int. Bearing (in.)				1.5/3.5	1.5/3.5	1.5/3.5		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.9/4.8
20'	Unfactored Resistance (LL)				44	54	97				58	68	109
	Unfactored Resistance (TL)				57	72	134				80	95	156
	Total Factored Resistance				200	229	335				232	257	354
	Min. End/Int. Bearing (in.)				1.5/3.5	1.5/3.5	1.5/3.5				1.5/3.5	1.5/3.5	1.8/4.5

\* Indicates **Total Factored Resistance** value controls.

# FLOOR AND/OR SNOW LOAD TABLES

## General Notes

- Table is based on:
  - Uniform loads (beam weight considered).
  - More restrictive of simple or continuous span.
  - Deflection criteria of L/360 live load (LL) and L/240 total load (TL).
- For a live load deflection limit of L/480, multiply **Unfactored Resistance (LL)** by 0.75. For a total load limit of L/180 multiply **Unfactored Resistance (TL)** by 1.33. The resulting loads may not exceed the **Total Factored Resistance** shown.

Also see *How to Use This Table* on page 6 and *General Assumptions* on page 5.

## TimberStrand® LSL: Floor and/or Snow—Standard Term (PLF) *continued*

Span	Condition	1.55E Grade											
		3½" Width						5¼" Width					
		9¼"	9½"	11¼"	11½"	14"	16"	9¼"	9½"	11¼"	11½"	14"	16"
4'	Unfactored Resistance (LL)	*	*	*	*	*	*	*	*	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	*
	Total Factored Resistance	6,447	6,702	8,679	9,145	9,145	9,145	9,670	10,053	13,018	13,717	13,717	13,717
	Min. End/Int. Bearing (in.)	3.2/8	3.3/8.2	4.3/10.7	4.5/11.3	4.5/11.3	4.5/11.3	3.2/8	3.3/8.2	4.3/10.7	4.5/11.3	4.5/11.3	4.5/11.3
5'	Unfactored Resistance (LL)	3,107	3,317	*	*	*	*	4,660	4,975	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	*
	Total Factored Resistance	4,732	4,903	6,195	6,699	7,311	7,311	7,098	7,355	9,292	10,048	10,967	10,967
	Min. End/Int. Bearing (in.)	3.0/7.3	3.0/7.5	3.9/9.6	4.1/10.3	4.5/11.3	4.5/11.3	3.0/7.3	3.0/7.5	3.9/9.6	4.1/10.3	4.5/11.3	4.5/11.3
6'	Unfactored Resistance (LL)	1,958	2,098	3,211	*	*	*	2,937	3,146	4,816	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	*
	Total Factored Resistance	3,647	3,837	4,815	5,178	6,089	6,089	5,470	5,756	7,222	7,767	9,134	9,134
	Min. End/Int. Bearing (in.)	2.7/6.8	2.8/7.1	3.6/8.9	3.8/9.6	4.5/11.3	4.5/11.3	2.7/6.8	2.8/7.1	3.6/8.9	3.8/9.6	4.5/11.3	4.5/11.3
8'	Unfactored Resistance (LL)	906	975	1,538	1,774	2,706	*	1,359	1,462	2,307	2,660	4,058	*
	Unfactored Resistance (TL)	1,349	1,452	*	*	*	*	2,024	2,178	*	*	*	*
	Total Factored Resistance	2,046	2,153	2,975	3,299	4,391	4,561	3,069	3,229	4,463	4,949	6,586	6,842
	Min. End/Int. Bearing (in.)	2.1/5.1	2.1/5.3	3.0/7.4	3.3/8.1	4.3/10.8	4.5/11.3	2.1/5.1	2.1/5.3	3.0/7.4	3.3/8.1	4.3/10.8	4.5/11.3
9'-6"	Unfactored Resistance (LL)	561	605	968	1,121	1,740	2,456	842	908	1,451	1,682	2,611	3,685
	Unfactored Resistance (TL)	832	897	1,439	*	*	*	1,248	1,346	2,158	*	*	*
	Total Factored Resistance	1,447	1,523	2,105	2,335	3,200	3,838	2,171	2,284	3,158	3,502	4,799	5,757
	Min. End/Int. Bearing (in.)	1.8/4.3	1.8/4.5	2.5/6.2	2.7/6.9	3.8/9.4	4.5/11.3	1.8/4.3	1.8/4.5	2.5/6.2	2.7/6.9	3.8/9.4	4.5/11.3
10'	Unfactored Resistance (LL)	486	524	840	975	1,520	2,155	729	786	1,260	1,462	2,280	3,232
	Unfactored Resistance (TL)	719	775	1,248	1,449	*	*	1,078	1,163	1,872	2,174	*	*
	Total Factored Resistance	1,305	1,373	1,899	2,106	2,886	3,645	1,957	2,060	2,848	3,158	4,329	5,467
	Min. End/Int. Bearing (in.)	1.7/4.1	1.7/4.3	2.4/5.9	2.6/6.5	3.6/8.9	4.5/11.3	1.7/4.1	1.7/4.3	2.4/5.9	2.6/6.5	3.6/8.9	4.5/11.3
12'	Unfactored Resistance (LL)	288	311	505	588	929	1,335	433	467	757	881	1,393	2,002
	Unfactored Resistance (TL)	423	457	745	868	1,378	*	634	685	1,117	1,303	2,067	*
	Total Factored Resistance	902	950	1,314	1,457	1,998	2,581	1,353	1,424	1,971	2,186	2,997	3,871
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	2.0/4.9	2.2/5.4	3.0/7.4	3.9/9.6	1.5/3.5	1.5/3.5	2.0/4.9	2.2/5.4	3.0/7.4	3.9/9.6
14'	Unfactored Resistance (LL)	185	199	325	380	605	877	277	299	488	569	908	1,316
	Unfactored Resistance (TL)	267	289	475	556	892	1,299	400	433	713	835	1,339	1,948
	Total Factored Resistance	659	694	961	1,066	1,463	1,890	989	1,041	1,442	1,600	2,194	2,835
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.5/6.4	3.3/8.3	1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.5/6.4	3.3/8.3
16'-6"	Unfactored Resistance (LL)	114	123	202	237	380	555	171	185	303	355	570	833
	Unfactored Resistance (TL)	161	175	291	342	555	815	242	262	437	513	832	1,223
	Total Factored Resistance	471	496	688	763	1,048	1,355	707	744	1,031	1,145	1,572	2,032
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.6	1.6/3.9	2.2/5.4	2.8/7.0	1.5/3.5	1.5/3.5	1.5/3.6	1.6/3.9	2.2/5.4	2.8/7.0
18'-6"	Unfactored Resistance (LL)	82	88	145	170	274	401	122	132	217	255	410	602
	Unfactored Resistance (TL)	112	122	205	242	395	584	168	183	308	362	593	877
	Total Factored Resistance	372	392	544	604	830	1,073	558	588	816	906	1,244	1,610
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.9/4.8	2.5/6.3	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.9/4.8	2.5/6.3
20'	Unfactored Resistance (LL)	65	70	115	135	218	321	97	105	173	203	327	481
	Unfactored Resistance (TL)	87	95	161	190	312	464	131	142	241	285	468	696
	Total Factored Resistance	317	334	463	514	707	915	475	500	695	771	1,061	1,373
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.8/4.5	2.3/5.8	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.8/4.5	2.3/5.8

\* Indicates **Total Factored Resistance** value controls.

# FLOOR AND/OR SNOW LOAD TABLES

## How to Use This Table

1. Calculate the factored and unfactored total load (TL) (neglect beam weight) and the unfactored live load (LL) on the beam or header in pounds per linear foot (plf).
2. Select appropriate **Span** (centre-to-centre of bearing).
3. Scan horizontally to find the proper width and a depth that has a capacity that meets or exceeds actual loads.
4. Review bearing length requirements to ensure adequacy.

Also see **General Notes** on page 9.

## 1.9E Microllam® LVL: Floor and/or Snow—Standard Term (PLF)

Span	Condition	1¾" Width						3½" Width (2-ply)						
		7¼"	9¼"	9½"	11¼"	11½"	14"	7¼"	9¼"	9½"	11¼"	11½"	14"	16"
6'	Unfactored Resistance (LL)	627	*	*	*	*	*	1,253	*	*	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	*	
	Total Factored Resistance	1,278	1,723	1,782	2,220	2,387	2,858	2,557	3,446	3,564	4,440	4,775	5,707	5,707
	Min. End/Int. Bearing (in.)	2.0/5.0	2.7/6.8	2.8/7.0	3.5/8.7	3.8/9.4	4.5/11.3	2.0/5.0	2.7/6.8	2.8/7.0	3.5/8.7	3.8/9.4	4.5/11.3	4.5/11.3
8'	Unfactored Resistance (LL)	281	555	598	943	1,087	*	562	1,111	1,195	1,885	2,174	*	*
	Unfactored Resistance (TL)	326	*	*	*	*	*	652	*	*	*	*	*	*
	Total Factored Resistance	735	1,159	1,219	1,535	1,641	2,025	1,471	2,319	2,438	3,070	3,283	4,050	4,274
	Min. End/Int. Bearing (in.)	1.5/3.9	2.4/6.1	2.6/6.4	3.2/8.1	3.4/8.6	4.3/10.6	1.5/3.9	2.4/6.1	2.6/6.4	3.2/8.1	3.4/8.6	4.3/10.6	4.5/11.3
9'-6"	Unfactored Resistance (LL)	170	344	371	593	687	1,067	340	688	742	1,186	1,374	2,133	*
	Unfactored Resistance (TL)	166	511	552	*	*	*	332	1,023	1,103	*	*	*	*
	Total Factored Resistance	520	821	863	1,183	1,309	1,625	1,041	1,642	1,726	2,367	2,619	3,251	3,595
	Min. End/Int. Bearing (in.)	1.5/3.5	2.1/5.1	2.2/5.4	3.0/7.4	3.3/8.2	4.1/10.1	1.5/3.5	2.1/5.1	2.2/5.4	3.0/7.4	3.3/8.2	4.1/10.1	4.5/11.3
10'	Unfactored Resistance (LL)	139	298	321	515	598	932	278	595	642	1,030	1,195	1,863	*
	Unfactored Resistance (TL)	135	442	477	*	*	*	271	884	953	*	*	*	*
	Total Factored Resistance	469	740	778	1,067	1,181	1,525	939	1,481	1,557	2,135	2,362	3,051	3,414
	Min. End/Int. Bearing (in.)	1.5/3.5	1.9/4.9	2.0/5.1	2.8/7.0	3.1/7.8	4.0/10.0	1.5/3.5	1.9/4.9	2.0/5.1	2.8/7.0	3.1/7.8	4.0/10.0	4.5/11.3
12'	Unfactored Resistance (LL)	68	177	191	309	360	569	136	354	382	618	720	1,138	1,636
	Unfactored Resistance (TL)	64	261	282	458	534	*	129	521	563	916	1,068	*	*
	Total Factored Resistance	325	512	539	739	818	1,113	650	1,025	1,078	1,479	1,637	2,227	2,841
	Min. End/Int. Bearing (in.)	1.5/3.5	1.6/4.1	1.7/4.3	2.3/5.8	2.6/6.5	3.5/8.8	1.5/3.5	1.6/4.1	1.7/4.3	2.3/5.8	2.6/6.5	3.5/8.8	4.5/11.3
14'	Unfactored Resistance (LL)	37	113	122	199	233	371	74	226	245	399	465	742	1,076
	Unfactored Resistance (TL)	33	165	179	293	343	549	67	330	357	586	686	1,098	*
	Total Factored Resistance	237	375	394	542	599	816	475	751	789	1,084	1,199	1,632	2,095
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.7	2.0/5.0	2.2/5.5	3.0/7.5	1.5/3.5	1.5/3.5	1.5/3.7	2.0/5.0	2.2/5.5	3.0/7.5	3.9/9.7
16'-6"	Unfactored Resistance (LL)		70	76	124	145	233	39	140	151	248	290	466	680
	Unfactored Resistance (TL)		100	109	180	211	342	31	201	217	360	423	684	1,004
	Total Factored Resistance		269	282	388	430	585	340	538	565	777	860	1,171	1,504
	Min. End/Int. Bearing (in.)		1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.6/6.4	1.5/3.5	1.5/3.5	1.5/3.5	1.7/4.3	1.9/4.7	2.6/6.4	3.3/8.2
18'-6"	Unfactored Resistance (LL)		50	54	89	104	168	25	100	108	178	208	335	492
	Unfactored Resistance (TL)		70	76	128	150	244	17	141	152	255	300	489	721
	Total Factored Resistance		213	224	307	340	464	269	426	448	615	681	928	1,193
	Min. End/Int. Bearing (in.)		1.5/3.5	1.5/3.5	1.5/3.8	1.7/4.2	2.3/5.7	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.8	1.7/4.2	2.3/5.7	2.9/7.3
20'	Unfactored Resistance (LL)		40	43	71	83	134	18	79	86	141	166	268	393
	Unfactored Resistance (TL)		55	60	100	118	194	11	110	119	201	236	387	574
	Total Factored Resistance		181	191	262	290	396	229	363	381	525	581	792	1,018
	Min. End/Int. Bearing (in.)		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.9	2.1/5.3	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.6/3.9	2.1/5.3	2.7/6.8
24'	Unfactored Resistance (LL)				41	48	79		46	50	83	97	157	232
	Unfactored Resistance (TL)				56	67	111		60	65	112	133	222	332
	Total Factored Resistance				180	200	273		249	262	361	400	546	702
	Min. End/Int. Bearing (in.)				1.5/3.5	1.5/3.5	1.8/4.4		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.8/4.4	2.3/5.6
28'	Unfactored Resistance (LL)						50		29	32	52	61	100	148
	Unfactored Resistance (TL)						68		34	38	67	80	136	206
	Total Factored Resistance						198		180	190	262	290	397	511
	Min. End/Int. Bearing (in.)						1.5/3.8		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.8	1.9/4.8

\* Indicates **Total Factored Resistance** value controls.



# FLOOR AND/OR ROOF LOAD TABLES

## General Notes

- Table is based on:
  - Uniform loads (beam weight considered).
  - More restrictive of simple or continuous span.
  - Deflection criteria of L/360 live load (LL) and L/240 total load (TL).
- For a live load deflection limit of L/480, multiply **Unfactored Resistance (LL)** by 0.75. For a total load limit of L/180 multiply **Unfactored Resistance (TL)** by 1.33. The resulting loads may not exceed the **Total Factored Resistance** shown.

Also see **How to Use This Table** on page 8 and **General Assumptions** on page 5.

## 1.9E Microllam® LVL: Floor and/or Snow—Standard Term (PLF) *continued*

Span	Condition	3½" Width (2-ply)			5¼" Width (3-ply)									
		18"	18¾"	20"	7¼"	9¼"	9½"	11¼"	11½"	14"	16"	18"	18¾"	20"
6'	Unfactored Resistance (LL)	*	*	*	1,880	*	*	*	*	*	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	*	*
	Total Factored Resistance	5,707	5,707	5,707	3,836	5,169	5,346	6,660	7,163	8,561	8,561	8,561	8,561	8,561
	Min. End/Int. Bearing (in.)	4.5/11.3	4.5/11.3	4.5/11.3	2.0/5.0	2.7/6.8	2.8/7.0	3.5/8.7	3.8/9.4	4.5/11.3	4.5/11.3	4.5/11.3	4.5/11.3	4.5/11.3
8'	Unfactored Resistance (LL)	*	*	*	843	1,666	1,793	2,828	3,261	*	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	978	*	*	*	*	*	*	*	*	*
	Total Factored Resistance	4,274	4,274	4,274	2,207	3,479	3,657	4,606	4,925	6,075	6,411	6,411	6,411	6,411
	Min. End/Int. Bearing (in.)	4.5/11.3	4.5/11.3	4.5/11.3	1.5/3.9	2.4/6.1	2.6/6.4	3.2/8.1	3.4/8.6	4.3/10.6	4.5/11.3	4.5/11.3	4.5/11.3	4.5/11.3
9'-6"	Unfactored Resistance (LL)	*	*	*	509	1,032	1,113	1,779	2,062	3,200	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	498	1,534	1,655	*	*	*	*	*	*	*
	Total Factored Resistance	3,595	3,595	3,595	1,562	2,463	2,589	3,551	3,929	4,877	5,393	5,393	5,393	5,393
	Min. End/Int. Bearing (in.)	4.5/11.3	4.5/11.3	4.5/11.3	1.5/3.5	2.1/5.1	2.2/5.4	3.0/7.4	3.3/8.2	4.1/10.1	4.5/11.3	4.5/11.3	4.5/11.3	4.5/11.3
10'	Unfactored Resistance (LL)	*	*	*	417	893	963	1,545	1,793	2,795	*	*	*	*
	Unfactored Resistance (TL)	*	*	*	406	1,326	1,430	*	*	*	*	*	*	*
	Total Factored Resistance	3,414	3,414	3,414	1,408	2,221	2,335	3,203	3,544	4,576	5,121	5,121	5,121	5,121
	Min. End/Int. Bearing (in.)	4.5/11.3	4.5/11.3	4.5/11.3	1.5/3.5	1.9/4.9	2.0/5.1	2.8/7.0	3.1/7.8	4.0/10.0	4.5/11.3	4.5/11.3	4.5/11.3	4.5/11.3
12'	Unfactored Resistance (LL)	*	*	*	205	530	573	928	1,081	1,708	2,454	*	*	*
	Unfactored Resistance (TL)	*	*	*	193	781	845	1,374	1,603	*	*	*	*	*
	Total Factored Resistance	2,841	2,841	2,841	975	1,538	1,617	2,219	2,455	3,340	4,261	4,261	4,261	4,261
	Min. End/Int. Bearing (in.)	4.5/11.3	4.5/11.3	4.5/11.3	1.5/3.5	1.6/4.1	1.7/4.3	2.3/5.9	2.6/6.5	3.5/8.8	4.5/11.3	4.5/11.3	4.5/11.3	4.5/11.3
14'	Unfactored Resistance (LL)	1,483	1,655	*	112	339	367	598	698	1,113	1,613	2,225	2,483	*
	Unfactored Resistance (TL)	*	*	*	100	495	536	880	1,029	1,648	*	*	*	*
	Total Factored Resistance	2,431	2,431	2,431	713	1,126	1,184	1,626	1,799	2,448	3,143	3,647	3,647	3,647
	Min. End/Int. Bearing (in.)	4.5/11.3	4.5/11.3	4.5/11.3	1.5/3.5	1.5/3.5	1.5/3.7	2.0/5.0	2.2/5.5	3.0/7.5	3.9/9.7	4.5/11.3	4.5/11.3	4.5/11.3
16'-6"	Unfactored Resistance (LL)	946	1,059	1,264	58	210	227	372	435	699	1,021	1,419	1,588	1,896
	Unfactored Resistance (TL)	*	*	*	47	301	326	541	634	1,026	1,506	*	*	*
	Total Factored Resistance	1,875	2,020	2,059	510	807	848	1,165	1,290	1,757	2,256	2,813	3,036	3,089
	Min. End/Int. Bearing (in.)	4.1/10.2	4.5/11.1	4.5/11.3	1.5/3.5	1.5/3.5	1.5/3.5	1.7/4.3	1.9/4.7	2.6/6.4	3.3/8.2	4.1/10.2	4.4/11.0	4.5/11.3
18'-6"	Unfactored Resistance (LL)	687	770	922	37	150	162	266	312	503	738	1,030	1,155	1,384
	Unfactored Resistance (TL)	1,012	*	*	26	211	229	382	450	733	1,082	1,518	*	*
	Total Factored Resistance	1,488	1,606	1,813	403	639	672	923	1,022	1,393	1,790	2,232	2,409	2,719
	Min. End/Int. Bearing (in.)	3.6/9.1	3.9/9.8	4.4/11.1	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.8	1.7/4.2	2.3/5.7	2.9/7.3	3.6/9.1	3.9/9.8	4.4/11.1
20'	Unfactored Resistance (LL)	551	618	742	27	119	129	212	248	401	590	826	928	1,113
	Unfactored Resistance (TL)	808	909	*	16	164	179	301	354	581	861	1,212	1,363	*
	Total Factored Resistance	1,270	1,371	1,548	343	544	573	788	872	1,189	1,528	1,906	2,057	2,322
	Min. End/Int. Bearing (in.)	3.4/8.4	3.6/9.1	4.1/10.3	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.6/3.9	2.1/5.3	2.7/6.8	3.4/8.4	3.6/9.1	4.1/10.3
24'	Unfactored Resistance (LL)	327	368	442	13	69	75	124	145	236	348	490	551	664
	Unfactored Resistance (TL)	472	532	643	2	90	98	169	200	332	498	708	798	965
	Total Factored Resistance	876	946	1,069	235	374	393	541	600	819	1,053	1,315	1,420	1,603
	Min. End/Int. Bearing (in.)	2.8/7.0	3.0/7.6	3.4/8.6	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.8/4.4	2.3/5.6	2.8/7.0	3.0/7.6	3.4/8.5
28'	Unfactored Resistance (LL)	209	235	284		44	48	79	92	150	222	313	353	426
	Unfactored Resistance (TL)	295	334	405		52	57	101	120	204	309	442	501	608
	Total Factored Resistance	639	690	780		271	285	393	436	596	767	958	1,035	1,170
	Min. End/Int. Bearing (in.)	2.4/6.0	2.6/6.5	2.9/7.3		1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.8	1.9/4.8	2.4/6.0	2.6/6.5	2.9/7.3

\* Indicates **Total Factored Resistance** value controls.

# FLOOR AND/OR SNOW LOAD TABLES

## How to Use This Table

1. Calculate the factored and unfactored total load (TL) (neglect beam weight) and the unfactored live load (LL) on the beam or header in pounds per linear foot (plf).
2. Select appropriate **Span** (centre-to-centre of bearing).
3. Scan horizontally to find the proper width and a depth that has a capacity that meets or exceeds actual loads.
4. Review bearing length requirements to ensure adequacy.

Also see **General Notes** on page 11.

## 2.OE Parallam® PSL: Floor and/or Snow—Standard Term (PLF)

Span	Condition	1¾" Width					3½" Width						
		9¼"	9½"	11¼"	11½"	14"	9¼"	9½"	11¼"	11½"	14"	16"	19"
8'	Unfactored Resistance (LL)	585	629	992	1,144	*	1,169	1,258	1,985	2,289	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	
	Total Factored Resistance	1,234	1,273	1,562	1,671	2,061	2,468	2,547	3,125	3,342	4,122	4,274	4,274
	Min. End/Int. Bearing (in.)	2.6/6.5	2.7/6.7	3.3/8.2	3.5/8.8	4.3/10.8	2.6/6.5	2.7/6.7	3.3/8.2	3.5/8.8	4.3/10.8	4.5/11.3	4.5/11.3
9'-6"	Unfactored Resistance (LL)	362	390	624	723	1,123	724	781	1,248	1,447	2,246	*	*
	Unfactored Resistance (TL)	538	580	*	*	*	1,077	1,161	*	*	*	*	*
	Total Factored Resistance	909	956	1,268	1,353	1,654	1,818	1,912	2,536	2,705	3,309	3,595	3,595
	Min. End/Int. Bearing (in.)	2.3/5.7	2.4/6.0	3.2/7.9	3.4/8.5	4.1/10.3	2.3/5.7	2.4/6.0	3.2/7.9	3.4/8.5	4.1/10.3	4.5/11.3	4.5/11.3
10'	Unfactored Resistance (LL)	313	338	542	629	981	627	676	1,084	1,258	1,961	*	*
	Unfactored Resistance (TL)	465	502	807	*	*	930	1,003	1,614	*	*	*	*
	Total Factored Resistance	820	862	1,188	1,272	1,552	1,640	1,725	2,376	2,544	3,104	3,414	3,414
	Min. End/Int. Bearing (in.)	2.2/5.4	2.3/5.7	3.1/7.8	3.3/8.4	4.1/10.2	2.2/5.4	2.3/5.7	3.1/7.8	3.3/8.4	4.1/10.2	4.5/11.3	4.5/11.3
12'	Unfactored Resistance (LL)	186	201	326	379	599	372	402	651	758	1,198	1,722	*
	Unfactored Resistance (TL)	274	296	482	562	*	548	592	964	1,124	*	*	*
	Total Factored Resistance	567	597	823	912	1,244	1,135	1,194	1,645	1,823	2,488	2,841	2,841
	Min. End/Int. Bearing (in.)	1.8/4.5	1.9/4.7	2.6/6.5	2.9/7.2	3.9/9.8	1.8/4.5	1.9/4.7	2.6/6.5	2.9/7.2	3.9/9.8	4.5/11.3	4.5/11.3
14'	Unfactored Resistance (LL)	119	129	210	245	390	238	257	420	490	781	1,132	*
	Unfactored Resistance (TL)	174	188	308	361	578	347	376	617	722	1,156	*	*
	Total Factored Resistance	415	437	602	668	913	830	874	1,205	1,335	1,825	2,351	2,431
	Min. End/Int. Bearing (in.)	1.5/3.9	1.6/4.1	2.2/5.6	2.5/6.2	3.4/8.4	1.5/3.9	1.6/4.1	2.2/5.6	2.5/6.2	3.4/8.4	4.3/10.9	4.5/11.3
16'-6"	Unfactored Resistance (LL)	74	80	130	153	245	147	159	261	305	490	716	1,156
	Unfactored Resistance (TL)	105	114	190	222	360	211	229	379	445	720	1,057	*
	Total Factored Resistance	297	313	431	478	654	594	625	863	957	1,309	1,687	2,059
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.9/4.7	2.1/5.2	2.9/7.2	1.5/3.5	1.5/3.5	1.9/4.7	2.1/5.2	2.9/7.2	3.7/9.2	4.5/11.3
18'-6"	Unfactored Resistance (LL)	53	57	93	109	176	105	114	187	219	353	518	842
	Unfactored Resistance (TL)	74	80	134	158	257	148	160	268	315	514	759	1,241
	Total Factored Resistance	235	247	342	379	518	470	495	683	758	1,037	1,337	1,833
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.6/6.4	1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.6/6.4	3.3/8.2	4.5/11.3
20'	Unfactored Resistance (LL)	42	45	74	87	141	84	90	149	174	282	414	676
	Unfactored Resistance (TL)	58	63	105	124	204	115	125	211	249	407	604	993
	Total Factored Resistance	200	211	291	323	442	400	421	582	646	885	1,141	1,583
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.6/3.9	1.7/4.3	2.4/5.9	1.5/3.5	1.5/3.5	1.6/3.9	1.7/4.3	2.4/5.9	3.0/7.6	4.2/10.5
24'	Unfactored Resistance (LL)			43	51	83	49	53	87	102	166	244	402
	Unfactored Resistance (TL)			59	70	116	63	69	118	140	233	349	582
	Total Factored Resistance			200	222	304	274	289	400	444	608	786	1,091
	Min. End/Int. Bearing (in.)			1.5/3.5	1.5/3.6	2.0/4.9	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.6	2.0/4.9	2.5/6.3	3.5/8.8
28'	Unfactored Resistance (LL)					53	31	33	55	65	105	156	257
	Unfactored Resistance (TL)					71	36	40	70	84	143	216	365
	Total Factored Resistance					221	198	209	290	322	442	571	795
	Min. End/Int. Bearing (in.)					1.7/4.2	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.7/4.2	2.2/5.4	3.0/7.5
32'	Unfactored Resistance (LL)								37	44	71	105	174
	Unfactored Resistance (TL)								43	52	91	140	241
	Total Factored Resistance								218	242	334	432	602
	Min. End/Int. Bearing (in.)								1.5/3.5	1.5/3.5	1.5/3.7	1.9/4.8	2.6/6.6

\* Indicates **Total Factored Resistance** value controls.

# FLOOR AND/OR SNOW LOAD TABLES

## General Notes

- Table is based on:
  - Uniform loads (beam weight considered).
  - More restrictive of simple or continuous span.
  - Deflection criteria of L/360 live load (LL) and L/240 total load (TL).
- For a live load deflection limit of L/480, multiply **Unfactored Resistance (LL)** by 0.75. For a total load limit of L/180 multiply **Unfactored Resistance (TL)** by 1.33. The resulting loads may not exceed the **Total Factored Resistance** shown.

Also see *How to Use This Table* on page 10 and *General Assumptions* on page 5.

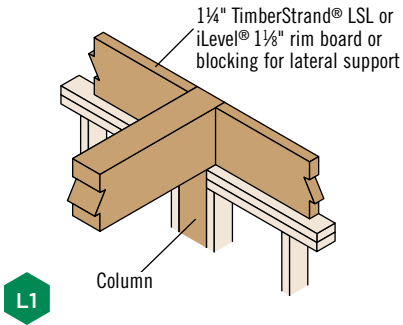
## 2.OE Parallam® PSL: Floor and/or Snow—Standard Term (PLF) *continued*

Span	Condition	5¼" Width							7" Width						
		9¼"	9½"	11¼"	11½"	14"	16"	19"	9¼"	9½"	11¼"	11½"	14"	16"	19"
8'	Unfactored Resistance (LL)	1,754	1,887	2,977	3,433	*	*	*	2,338	2,516	3,969	4,577	*	*	*
	Unfactored Resistance (TL)	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Total Factored Resistance	3,701	3,820	4,687	5,012	6,184	6,411	6,411	4,935	5,094	6,250	6,683	8,245	8,548	8,548
	Min. End/Int. Bearing (in.)	2.6/6.5	2.7/6.7	3.3/8.2	3.5/8.8	4.3/10.8	4.5/11.3	4.5/11.3	2.6/6.5	2.7/6.7	3.3/8.2	3.5/8.8	4.3/10.8	4.5/11.3	4.5/11.3
9'-6"	Unfactored Resistance (LL)	1,087	1,171	1,873	2,170	3,368	*	*	1,449	1,562	2,497	2,894	4,491	*	*
	Unfactored Resistance (TL)	1,615	1,741	*	*	*	*	*	2,153	2,322	*	*	*	*	*
	Total Factored Resistance	2,727	2,868	3,804	4,058	4,963	5,392	5,392	3,636	3,825	5,072	5,411	6,617	7,190	7,190
	Min. End/Int. Bearing (in.)	2.3/5.7	2.4/6.0	3.2/7.9	3.4/8.5	4.1/10.3	4.5/11.3	4.5/11.3	2.3/5.7	2.4/6.0	3.2/7.9	3.4/8.5	4.1/10.3	4.5/11.3	4.5/11.3
10'	Unfactored Resistance (LL)	940	1,014	1,626	1,887	2,942	*	*	1,254	1,352	2,168	2,516	3,923	*	*
	Unfactored Resistance (TL)	1,395	1,505	2,421	*	*	*	*	1,860	2,007	3,228	*	*	*	*
	Total Factored Resistance	2,459	2,587	3,564	3,816	4,656	5,121	5,121	3,279	3,449	4,752	5,087	6,208	6,828	6,828
	Min. End/Int. Bearing (in.)	2.2/5.4	2.3/5.7	3.1/7.8	3.3/8.4	4.1/10.2	4.5/11.3	4.5/11.3	2.2/5.4	2.3/5.7	3.1/7.8	3.3/8.4	4.1/10.2	4.5/11.3	4.5/11.3
12'	Unfactored Resistance (LL)	558	603	977	1,137	1,798	2,583	*	744	804	1,302	1,517	2,397	3,444	*
	Unfactored Resistance (TL)	822	889	1,446	1,687	*	*	*	1,096	1,185	1,929	2,249	*	*	*
	Total Factored Resistance	1,702	1,790	2,468	2,735	3,731	4,261	4,261	2,269	2,387	3,291	3,646	4,975	5,681	5,681
	Min. End/Int. Bearing (in.)	1.8/4.5	1.9/4.7	2.6/6.5	2.9/7.2	3.9/9.8	4.5/11.3	4.5/11.3	1.8/4.5	1.9/4.7	2.6/6.5	2.9/7.2	3.9/9.8	4.5/11.3	4.5/11.3
14'	Unfactored Resistance (LL)	357	386	629	735	1,171	1,698	*	476	515	839	980	1,562	2,265	*
	Unfactored Resistance (TL)	521	564	925	1,083	1,734	*	*	694	751	1,234	1,443	2,312	*	*
	Total Factored Resistance	1,245	1,310	1,807	2,003	2,738	3,527	3,647	1,661	1,747	2,409	2,670	3,650	4,703	4,862
	Min. End/Int. Bearing (in.)	1.5/3.9	1.6/4.1	2.2/5.6	2.5/6.2	3.4/8.4	4.3/10.9	4.5/11.3	1.5/3.9	1.6/4.1	2.2/5.6	2.5/6.2	3.4/8.4	4.3/10.9	4.5/11.3
16'-6"	Unfactored Resistance (LL)	221	239	391	458	735	1,074	1,734	295	319	522	611	980	1,432	2,312
	Unfactored Resistance (TL)	316	343	569	667	1,080	1,585	*	422	457	758	890	1,440	2,113	*
	Total Factored Resistance	891	938	1,294	1,435	1,963	2,530	3,088	1,188	1,250	1,726	1,913	2,617	3,373	4,118
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.9/4.7	2.1/5.2	2.9/7.2	3.7/9.2	4.5/11.3	1.5/3.5	1.5/3.5	1.9/4.7	2.1/5.2	2.9/7.2	3.7/9.2	4.5/11.3
18'-6"	Unfactored Resistance (LL)	158	171	280	328	529	777	1,262	210	228	374	438	706	1,036	1,683
	Unfactored Resistance (TL)	222	241	402	473	771	1,139	1,862	295	321	536	631	1,028	1,518	2,483
	Total Factored Resistance	705	742	1,025	1,136	1,555	2,006	2,750	940	989	1,367	1,515	2,074	2,675	3,667
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.6/6.4	3.3/8.2	4.5/11.3	1.5/3.5	1.5/3.5	1.7/4.2	1.9/4.7	2.6/6.4	3.3/8.2	4.5/11.3
20'	Unfactored Resistance (LL)	125	136	223	262	423	621	1,014	167	181	298	349	563	828	1,352
	Unfactored Resistance (TL)	173	188	316	373	611	906	1,490	231	251	422	497	814	1,208	1,986
	Total Factored Resistance	601	632	874	969	1,327	1,712	2,374	801	843	1,165	1,292	1,769	2,282	3,166
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.6/3.9	1.7/4.3	2.4/5.9	3.0/7.6	4.2/10.5	1.5/3.5	1.5/3.5	1.6/3.9	1.7/4.3	2.4/5.9	3.0/7.6	4.2/10.5
24'	Unfactored Resistance (LL)	73	79	130	153	248	367	603	97	105	174	204	331	489	804
	Unfactored Resistance (TL)	94	103	177	210	349	524	873	126	137	236	280	466	698	1,164
	Total Factored Resistance	411	433	600	665	913	1,179	1,637	548	577	800	887	1,217	1,571	2,183
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.6	2.0/4.9	2.5/6.3	3.5/8.8	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.6	2.0/4.9	2.5/6.3	3.5/8.8
28'	Unfactored Resistance (LL)	46	50	83	97	158	234	386	62	67	110	129	210	312	515
	Unfactored Resistance (TL)	54	59	106	126	214	324	548	72	79	141	168	285	432	731
	Total Factored Resistance	297	313	434	482	663	857	1,192	396	417	579	643	884	1,143	1,590
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.7/4.2	2.2/5.4	3.0/7.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.7/4.2	2.2/5.4	3.0/7.5
32'	Unfactored Resistance (LL)	31	34	56	65	106	158	262	41	45	74	87	142	210	349
	Unfactored Resistance (TL)	31	35	65	78	137	210	361	42	46	87	105	182	281	481
	Total Factored Resistance	223	235	327	364	501	649	904	297	313	436	485	668	865	1,205
	Min. End/Int. Bearing (in.)	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.7	1.9/4.8	2.6/6.6	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.5	1.5/3.7	1.9/4.8	2.6/6.6

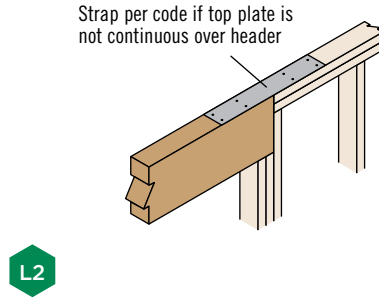
\* Indicates Total Factored Resistance value controls.

# BEAM DETAILS

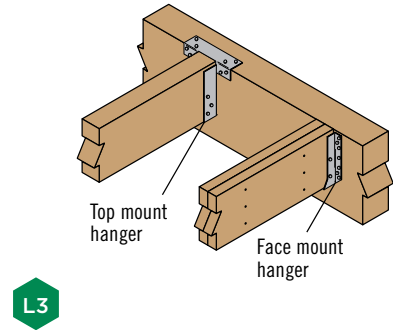
## Bearing at Wall



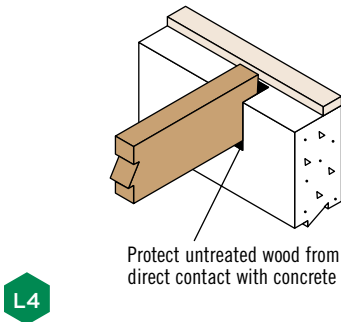
## Bearing for Door or Window Header



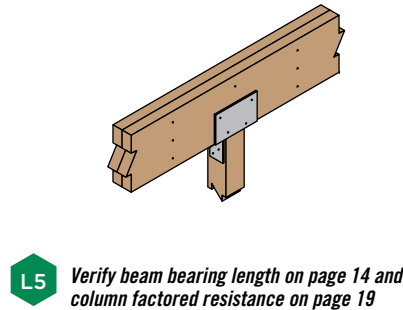
## Beam to Beam Connection



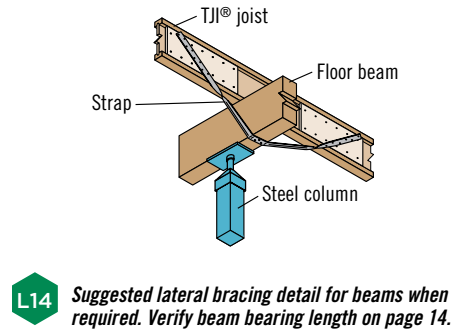
## Bearing at Concrete Wall



## Bearing at Column



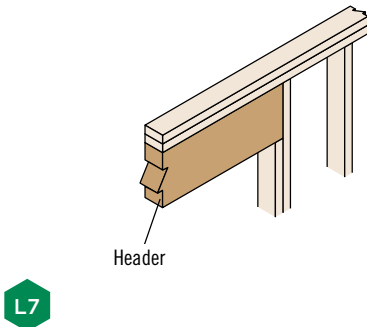
## Beam to Column Lateral Brace



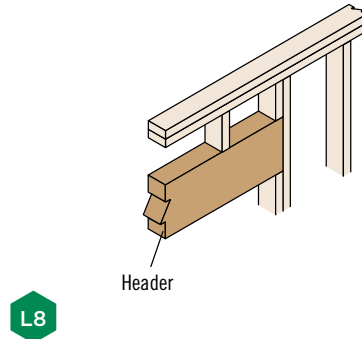
# WINDOW AND DOOR HEADER DETAILS

## 2x4 Wall Framing

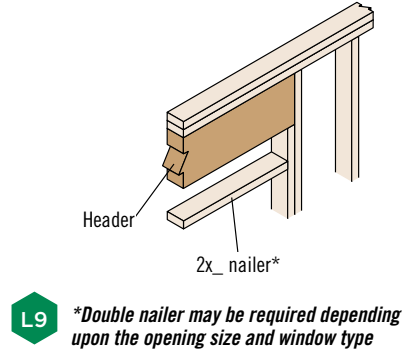
### Full Depth Header



### Low Header



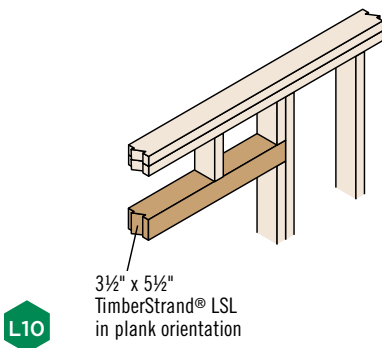
### High Header



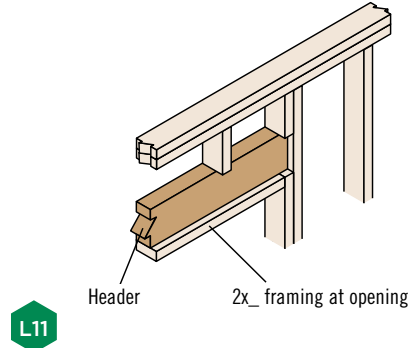
## 2x6 Wall Framing

Headers not matching wall thickness may be installed flush to the inside or outside of the wall depending upon sheathing and trim attachment requirements

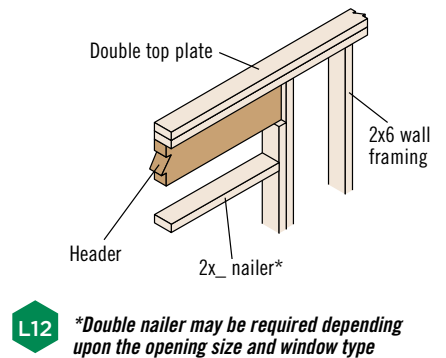
### Plank Orientation Header



### Low Header



### High Header

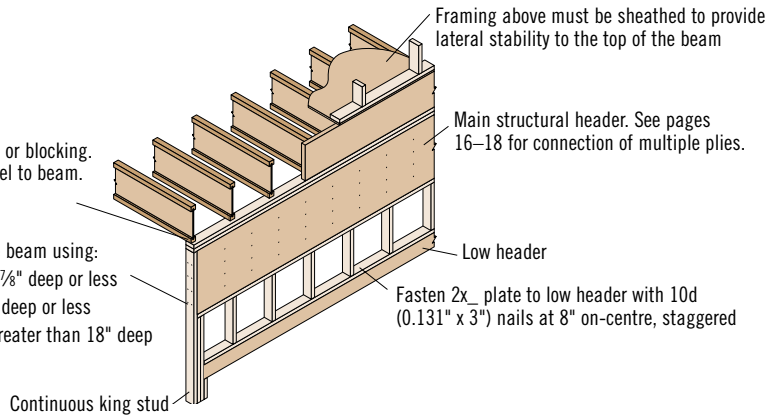


# WINDOW AND DOOR HEADER DETAILS

## Dropped Header with Full Lateral Bracing

One 8d (0.113" x 2½") nail each side of joist or blocking. Blocking is required if joist framing is parallel to beam. Joist spacing must be 24" on-centre or less.

Nail continuous king studs to the end of the beam using:  
 – Four 10d (0.131" x 3") nails for beams 11⅞" deep or less  
 – Six 10d (0.131" x 3") nails for beams 18" deep or less  
 – Eight 10d (0.131" x 3") nails for beams greater than 18" deep

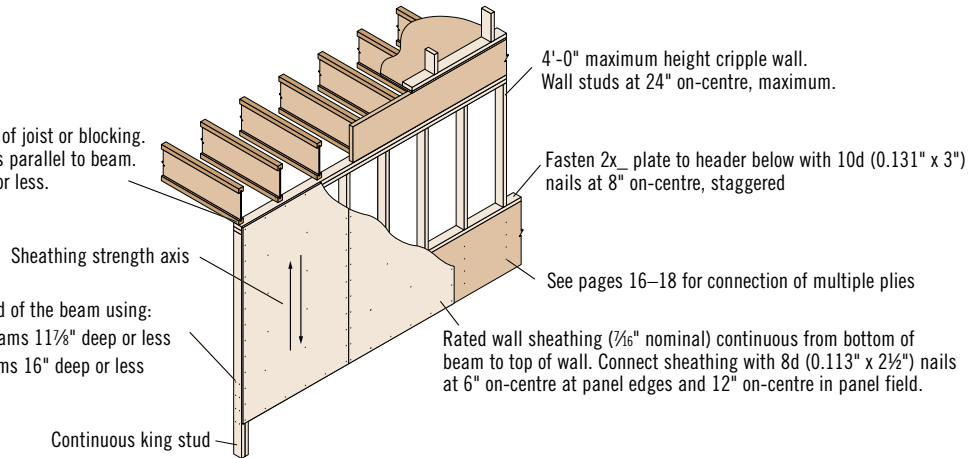


L15

## Dropped Header with Acceptable Lateral Bracing

One 8d (0.113" x 2½") nail each side of joist or blocking. Blocking is required if joist framing is parallel to beam. Joist spacing must be 24" on-centre or less.

Nail continuous king studs to the end of the beam using:  
 – Four 10d (0.131" x 3") nails for beams 11⅞" deep or less  
 – Six 10d (0.131" x 3") nails for beams 16" deep or less



L16

When framed as shown above, the following dropped headers are considered fully braced under uniform-load, simple-span conditions:

### Single-ply:

- 1¾" wide headers, 11⅞" deep or less
- 3½" wide headers, 16" deep or less, with a maximum span of 18'-6"

### Multiple-ply:

- Headers up to four 1¾" plies, 11⅞" deep or less
- Headers up to four 1¾" x 14" plies, with a maximum span of 8'-6"

## NAILING ON NARROW FACE

### Nails Installed on the Narrow Face

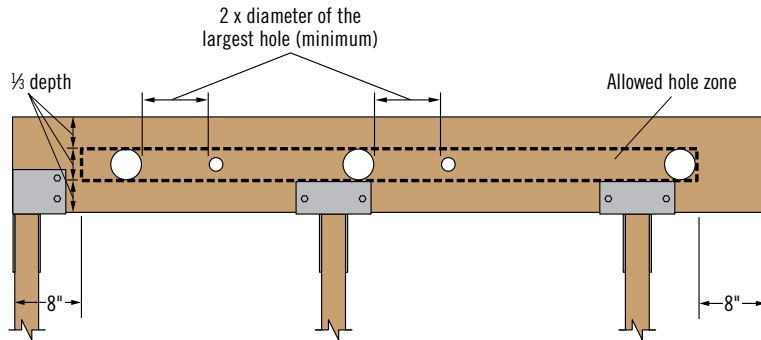
Nail Size	Closest On-Centre Spacing Per Row			
	1¾" TimberStrand® LSL	3½" TimberStrand® LSL	Microllam® LVL	Parallam® PSL
8d (0.131" x 2½") or 10d (0.128" x 3")	3"	3"	3"	3"
10d (0.148" x 3") or 12d (0.148" x 3¼")	4"	3"	4"	4"
16d (0.162" x 3½")	6"	3½"	8"	6"

▪ If more than one row of nails is used, the rows must be offset at least ½" and staggered.



# ALLOWABLE HOLES

## 1.55E TimberStrand® LSL Headers and Beams



## General Notes

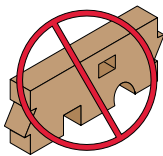
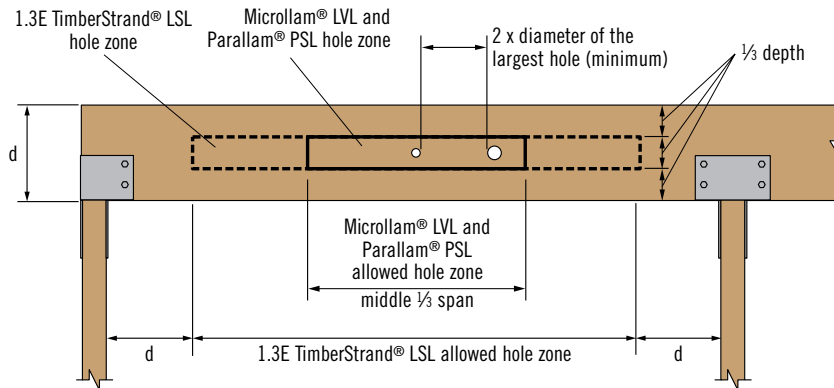
- Allowed hole zone suitable for headers and beams with **uniform and/or concentrated loads** anywhere along member.
- Round holes only.
- No holes in headers or beams in plank orientation.

## 1.55E TimberStrand® LSL

Header or Beam Depth	Maximum Round Hole Size
9¼"–9½"	3"
11¼"–11¾"	3½"
14"–16"	4½"

- See illustration for allowed hole zone.

## Other iLevel® Trus Joist® Headers and Beams



**DO NOT** cut, notch, or drill holes in headers or beams except as indicated in the illustrations and tables

## General Notes

- Allowed hole zone suitable for headers and beams with **uniform loads only**.
- Round holes only.
- No holes in cantilevers.
- No holes in headers or beams in plank orientation.

## Other iLevel® Beams

Header or Beam Depth	Maximum Round Hole Size
4¾"	1"
5½"	1¾"
7¼"–20"	2"

- See illustration for allowed hole zone.

# BEARING LENGTH REQUIREMENTS

Factored Reaction (lbs)	1.3E TimberStrand® LSL		1.55E TimberStrand® LSL			1.9E Microllam® LVL			2.0E Parallam® PSL			
	Beam Orientation	Plank Orientation	Beam Orientation			Beam Orientation			Beam Orientation			
	Width	Width	Width			Width			Width			
	3½"	5½"	1¾"	3½"	5¼"	1¾"	3½"	5¼"	1¾"	3½"	5¼"	7"
6,000	1¾"	1¾"	3"	1½"	1½"	3¼"	1¾"	1½"	3¼"	1¾"	1½"	1½"
8,000	2½"	2½"	4"	2"	1½"	4¼"	2¼"	1½"	4¼"	2¼"	1½"	1½"
10,000	3"	3"	5"	2½"	1¾"	5¼"	2¾"	1¾"	5¼"	2¾"	1¾"	1½"
12,000	3½"	3½"	6"	3"	2"	6½"	3¼"	2¼"	6½"	3¼"	2¼"	1¾"
14,000	4¼"	4¼"	7"	3½"	2½"	7½"	3¾"	2½"	7½"	3¾"	2½"	2"
16,000	4¾"	4¾"	8"	4"	2¾"		4¼"	3"		4¼"	3"	2¼"
18,000	5¼"	5¼"		4½"	3"		4¾"	3¼"		4¾"	3¼"	2½"
20,000	6"	6"		5"	3½"		5¼"	3½"		5¼"	3½"	2¾"
22,000	6½"	6½"		5½"	3¾"		6"	4"		6"	4"	3"
24,000	7"	7"		6"	4"		6½"	4¼"		6½"	4¼"	3¼"
26,000	7½"	7½"		6½"	4½"		7"	4¾"		7"	4¾"	3½"
28,000				7"	4¾"		7½"	5"		7½"	5"	3¾"
30,000				7½"	5"		8"	5¼"		8"	5¼"	4"
32,000				8"	5¼"			5¾"			5¾"	4¼"
34,000					5¾"			6"			6"	4½"

## General Notes

- Minimum bearing length:** 1½" at ends, 3½" at intermediate supports.
- Bearing across full beam width required.
- Interpolation between reaction loads is permitted for determining bearing lengths.
- Bearing lengths based on the following factored bearing resistances:
  - 1.3E TimberStrand® LSL: 990 psi; 630 psi for plank orientation.
  - 1.55E TimberStrand® LSL: 1,165 psi.
  - 1.9E Microllam® LVL: 1,090 psi.
  - 2.0E Parallam® PSL: 1,090 psi.

# TAPERED END CUTS

## Factored Reactions for 3 1/2" (1) TimberStrand® LSL Headers and Beams (lbs)

Bearing	Beam Depth	Outside Heel Height D <sub>1</sub>							
		4 1/2"	5"	5 1/2"	6"	6 1/2"	7"	7 1/2"	8"
3 1/2" Wood Plate <sup>(2)</sup>	7 1/4"–11 7/8"	7,595	7,595	7,595	7,595	7,595	7,595	7,595	7,595
	14"		7,595	7,595	7,595	7,595	7,595	7,595	7,595
	16"				7,595	7,595	7,595	7,595	7,595
5 1/4" Wood Plate <sup>(2)</sup>	7 1/4"	11,345	11,345	11,345					
	8 5/8"–9 1/4"	8,775	9,530	10,285	11,035	11,170	11,170	11,170	
	9 1/2"	8,775	9,530	10,285	11,035	11,395	11,395	11,395	11,395
	11 1/4"	8,775	9,530	10,285	11,035	11,395	11,395	11,395	11,395
	11 7/8"–14"	8,775	9,530	10,285	11,035	11,395	11,395	11,395	11,395
	16"			10,285	11,035	11,395	11,395	11,395	11,395
3 1/2" Column <sup>(3)</sup>	7 1/4"	10,510	11,345	11,345	11,345				
	8 5/8"–9 1/4"	8,115	8,870	9,620	10,375	11,130	11,170	11,170	11,170
	9 1/2"	8,115	8,870	9,620	10,375	11,130	11,470	11,470	11,470
	11 1/4"	8,115	8,870	9,620	10,375	11,130	11,885	12,150	12,150
	11 7/8"	8,115	8,870	9,620	10,375	11,130	11,885	12,640	13,395
	14"		8,870	9,620	10,375	11,130	11,885	12,640	13,395
	16"				10,375	11,130	11,885	12,640	13,395

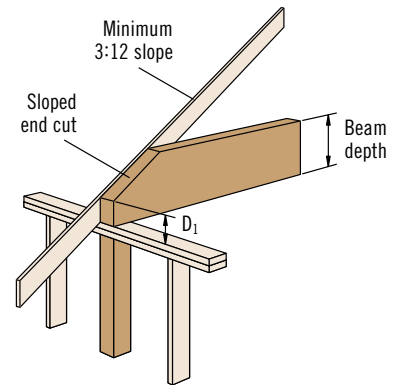
(1) For 1 3/4" and 5 1/4" beams, multiply by 0.5 and 1.5, respectively.

(2) Bearing lengths are based on factored bearing resistance of 615 psi.

(3) Bearing lengths are based on factored bearing resistance of 990 psi for 1.3E TimberStrand® LSL, and 1,165 psi for 1.55E TimberStrand® LSL.

## General Notes

- No increase for duration of load is permitted above standard term.
- No holes or concentrated load within tapered cut.
- Table considers only downward loading. Contact your iLevel representative for assistance with uplift loading or other conditions.



Tapered end cut detailed above is not allowed with TJ® joists

## Factored Reactions for 3 1/2" (1) Microllam® LVL and Parallam® PSL Beams (lbs)

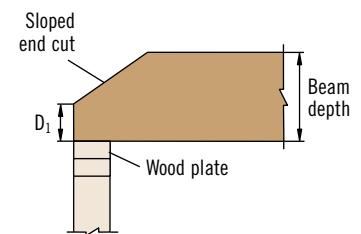
Bearing	Beam Depth	Outside Heel Height D <sub>1</sub>								
		4 1/2"	5"	5 1/2"	6"	6 1/2"	7"	7 1/2"	8"	10"
3 1/2" Wood Plate <sup>(2)</sup>	7 1/4"	7,480	7,595	7,595	7,595	7,595	7,595			
	9 1/4"	7,480	7,595	7,595	7,595	7,595	7,595	7,595	7,595	
	9 1/2"	7,480	7,595	7,595	7,595	7,595	7,595	7,595	7,595	
	11 1/4"	7,480	7,595	7,595	7,595	7,595	7,595	7,595	7,595	7,595
	11 7/8"	7,480	7,595	7,595	7,595	7,595	7,595	7,595	7,595	7,595
	14"		7,595	7,595	7,595	7,595	7,595	7,595	7,595	7,595
	16"				7,595	7,595	7,595	7,595	7,595	7,595
	18"					7,595	7,595	7,595	7,595	7,595
	18 3/4"–19"						7,595	7,595	7,595	7,595
20"							7,595	7,595	7,595	
5 1/4" Wood Plate <sup>(2)</sup>	7 1/4"	8,070	8,070	8,070						
	9 1/4"	8,085	8,780	9,480	10,175	10,295	10,295	10,295		
	9 1/2"	8,085	8,780	9,480	10,175	10,575	10,575	10,575	10,575	
	11 1/4"	8,085	8,780	9,480	10,175	10,870	11,395	11,395	11,395	11,395
	11 7/8"	8,085	8,780	9,480	10,175	10,870	11,395	11,395	11,395	11,395
	14"	8,085	8,780	9,480	10,175	10,870	11,395	11,395	11,395	11,395
	16"			9,480	10,175	10,870	11,395	11,395	11,395	11,395
	18"				10,175	10,870	11,395	11,395	11,395	11,395
	18 3/4"–19"					10,870	11,395	11,395	11,395	11,395
20"						11,395	11,395	11,395	11,395	
3 1/2" Column <sup>(3)</sup>	7 1/4"	7,480	8,070	8,070	8,070					
	9 1/4"	7,480	8,175	8,870	9,565	10,260	10,295	10,295	10,295	
	9 1/2"	7,480	8,175	8,870	9,565	10,260	10,575	10,575	10,575	
	11 1/4"	7,480	8,175	8,870	9,565	10,260	10,955	11,650	12,345	12,520
	11 7/8"	7,480	8,175	8,870	9,565	10,260	10,955	11,650	12,345	13,215
	14"		8,175	8,870	9,565	10,260	10,955	11,650	12,345	13,375
	16"				9,565	10,260	10,955	11,650	12,345	13,375
	18"					10,260	10,955	11,650	12,345	13,375
	18 3/4"–19"						10,955	11,650	12,345	13,375
20"							11,650	12,345	13,375	

(1) For 1 3/4", 5 1/4", and 7" beams, multiply by 0.5, 1.5, and 2.0, respectively.

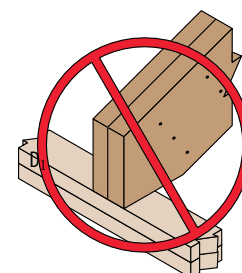
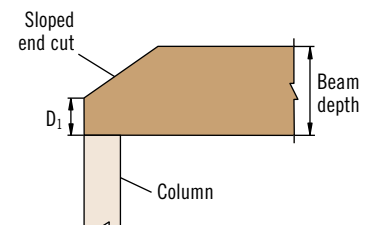
(2) Bearing lengths based on a factored bearing resistance of 620 psi.

(3) Bearing lengths based on factored bearing resistance of 1,090 psi for Microllam® LVL and Parallam® PSL.

## Wood Plate Connection



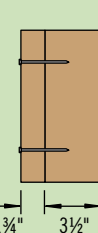
## Column Connection



DO NOT overhang seat cuts on beams beyond inside face of support member

# MULTIPLE-MEMBER CONNECTIONS FOR SIDE-LOADED BEAMS

## L17 Uniform Load—Maximum Factored Uniform Load Applied to Either Outside Member (PLF)

Connector Type	Number of Rows	Connector On-Centre Spacing	Connector Pattern					
			Assembly A	Assembly B	Assembly C	Assembly D	Assembly E	Assembly F
								
3 1/2" wide 2-ply	5 1/4" wide 3-ply	5 1/4" wide 2-ply	7" wide 3-ply	7" wide 2-ply	7" wide 4-ply			
10d (0.128" x 3") Nail <sup>(1)</sup>	2	12"	590	<b>445</b>	445	<b>395</b>		
	3	12"	890	<b>665</b>	665	<b>590</b>		
1/2" A307 Through Bolts <sup>(2)(3)</sup>	2	24"	680	510	765	680	1,360	455
		19.2"	850	640	955	850	1,700	570
		16"	1,020	765	1,150	1,020	2,040	680
SDS 1/4" x 3 1/2" or WS35 <sup>(3)</sup>	2	24"	660	<b>495</b>	495	<b>440</b>		
		19.2"	825	<b>620</b>	620	<b>550</b>		
		16"	990	<b>745</b>	745	<b>660</b>		
SDS 1/4" x 6" or WS6 <sup>(3)</sup>	2	24"				<b>440</b>	<b>660</b>	<b>440</b>
		19.2"				<b>550</b>	<b>825</b>	<b>550</b>
		16"				<b>660</b>	<b>990</b>	<b>660</b>
3 3/8" TrussLok™ <sup>(3)</sup>	2	24"	755	<b>565</b>	565	<b>505</b>		
		19.2"	945	<b>705</b>	705	<b>630</b>		
		16"	1,135	<b>850</b>	850	<b>760</b>		
5" TrussLok™ <sup>(3)</sup>	2	24"		540	590	<b>525</b>	<b>720</b>	<b>525</b>
		19.2"		675	740	<b>655</b>	<b>900</b>	<b>655</b>
		16"		810	885	<b>790</b>	<b>1,080</b>	<b>790</b>
6 3/4" TrussLok™ <sup>(3)</sup>	2	24"				480	790	480
		19.2"				600	990	600
		16"				720	1,185	720

(1) Nailed connection values may be doubled for 6" on-centre or tripled for 4" on-centre nail spacing.

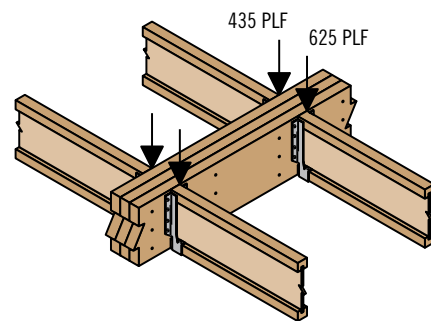
(2) Washers required. Bolt holes to be 1/16" maximum.

(3) 24" on-centre bolted and screwed connection values may be doubled for 12" on-centre spacing.

### General Notes

- Connections are based on Limit States Design per CSA 086-01.
- Use specific gravity of 0.5 when designing lateral connections.
- Values listed are for standard term loading.
- Bold Italic** cells indicate **Connector Pattern** must be installed on both sides. Stagger fasteners on opposite side of beam by 1/2 of the required **Connector On-Centre Spacing**.
- Verify adequacy of beam in load tables on pages 6–11.
- 7" wide beams should only be side-loaded when loads are applied to both sides of the members (to minimize rotation).
- Minimum end distance for bolts and screws is 6".
- Beams wider than 7" require special consideration by the design professional.

### Uniform Load Design Example



First, check load tables on pages 6–11 to verify that three pieces can carry the total factored load of 1,060 plf with proper live load deflection criteria. Total factored load = (1.25 x dead load) + (1.5 x live load). Maximum factored load applied to either outside member is 625 plf. For a multiple-ply assembly of three 1 3/4" plies (Assembly B), two rows of 10d (0.128" x 3") nails at 12" on-centre is good for only 445 plf. Therefore, use three rows of 10d (0.128" x 3") nails at 12" on-centre (good for 665 plf).

#### Alternatives:

Two rows of 1/2" bolts or 3 3/8" TrussLok™ screws at 19.2" on-centre.

# MULTIPLE-MEMBER CONNECTIONS FOR SIDE-LOADED BEAMS

## L18 Point Load—Maximum Factored Point Load Applied to Either Outside Member (lbs)

Connector Type	Number of Connectors	Connector Pattern					
		Assembly A	Assembly B	Assembly C	Assembly D	Assembly E	Assembly F
3 1/2" wide 2-ply	5 1/4" wide 3-ply	5 1/4" wide 2-ply	7" wide 3-ply	7" wide 2-ply	7" wide 4-ply		
10d (0.128" x 3") Box Nail	6	1,775	<b>1,330</b>	1,330			
	12	3,550	<b>2,660</b>	2,660	<b>2,365</b>		
	18	5,325	<b>3,995</b>	3,995	<b>3,550</b>		
	24	7,100	<b>5,325</b>	5,325	<b>4,735</b>		
1/2" A307 Through Bolts <sup>(1)</sup>	4	2,720	2,040	3,060	2,720	5,440	1,810
	6	4,080	3,060	4,590	4,080	8,160	2,720
	8	5,440	4,080	6,120	5,440	10,880	3,625
SDS Screws 1/4" x 3 1/2" or WS35 1/4" x 6" or WS6	4	2,645	<b>1,985</b>	1,985	<b>1,765</b>	<b>2,645<sup>(2)</sup></b>	<b>1,765<sup>(2)</sup></b>
	6	3,970	<b>2,975</b>	2,975	<b>2,645</b>	<b>3,970<sup>(2)</sup></b>	<b>2,645<sup>(2)</sup></b>
	8	5,295	<b>3,970</b>	3,970	<b>3,530</b>	<b>5,295<sup>(2)</sup></b>	<b>3,530<sup>(2)</sup></b>
3 3/8", 5", or 6 3/4" TrussLok™	4	3,015	<b>2,260</b>	2,260	<b>2,010</b>	<b>2,880<sup>(3)</sup></b>	<b>2,105<sup>(3)</sup></b>
	6	4,520	<b>3,390</b>	3,390	<b>3,015</b>	<b>4,320<sup>(3)</sup></b>	<b>3,160<sup>(3)</sup></b>
	8	6,030	<b>4,520</b>	4,520	<b>4,020</b>	<b>5,760<sup>(3)</sup></b>	<b>4,210<sup>(3)</sup></b>

(1) Washers required. Bolt holes to be 1/16" maximum.

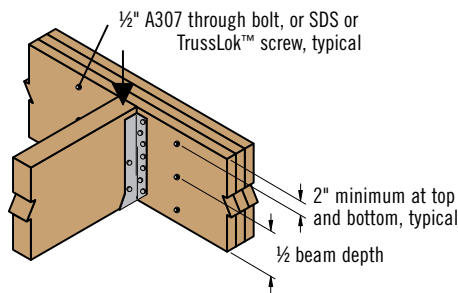
(2) 6" long screws required.

(3) 5" long screws required.

See General Notes on page 16

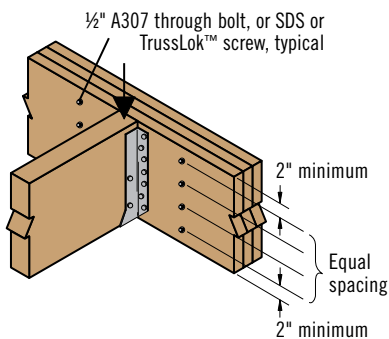
## Point Load Connections

### 4- or 6- Bolt or Screw Connection



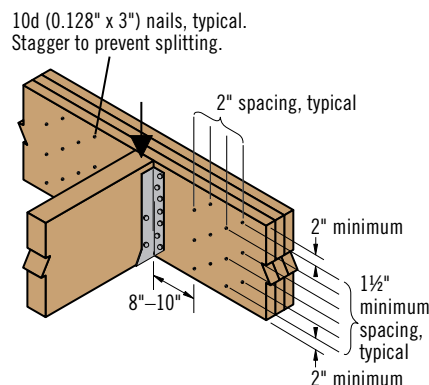
L19 Minimum beam depth is 9 1/2" for 1/2" diameter bolts

### 8 Bolt or Screw Connection



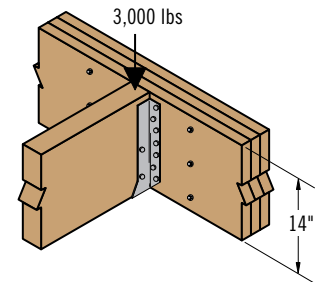
L20 Minimum beam depth is 11 1/8" for 1/2" diameter bolts

### Nail Connection



L21 There must be an equal number of nails on each side of the connection

### Point Load Design Example

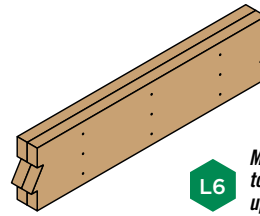


First, verify that 3-ply of 1 3/4" x 14" beam material is capable of supporting the factored 3,000 lb point load, as well as all other loads applied. The factored 3,000 lb point load is being transferred to the beam with a face mount hanger. For a 3-ply 1 3/4" assembly, six 1/2" diameter bolts are good for 3,060 lbs with a face mount hanger.

# MULTIPLE-MEMBER CONNECTIONS FOR TOP-LOADED BEAMS

## 1¾"-Wide Pieces:

- Minimum of three rows of 10d (0.128" x 3") nails at 12" on-center for depths 11⅞" or less.
- Minimum of four rows of 10d (0.128" x 3") nails at 12" on-centre for 14" or deeper.
- If using 12d–16d (0.148"– 0.162" diameter) nails, the number of nailing rows may be reduced by one.
- Minimum of two rows of SDS, WS, or TrussLok™ screws at 24" on-centre. Use 3⅝" minimum length with two or three plies; 5" minimum for 4-ply members. For 3- or 4-ply members, connectors must be installed on both sides. Stagger fasteners on opposite side of beam by ½ of the required connector spacing.
- Load must be applied evenly across entire beam width. Otherwise, use connections for side-loaded beams.



L6

Multiple pieces can be nailed or bolted together to form a header or beam of the required size, up to a maximum width of 7"

## 3½"-Wide Pieces:

- Minimum of two rows of ½" bolts at 24" on-centre, staggered.
- Minimum of two rows of SDS, WS, or TrussLok™ screws, 5" minimum length, at 24" on-centre. Connectors must be installed on both sides. Stagger fasteners on opposite side of beam by ½ of the required connector spacing.
- Load must be applied evenly across entire beam width. Otherwise, use connections for side-loaded beams.

## Metric to Imperial

Metric Unit	Imperial Conversion
1 kN	0.2248 kip
1 N	0.2248 lb
1 m	3.281 ft
1 mm	0.0394 in.
1 kg	2.205 lb mass
1 N • m	0.7376 lb • ft
1 N • m	8.851 lb • in.
1 mm <sup>4</sup>	2.402 x 10 <sup>-6</sup> in. <sup>4</sup>
1 Pa	0.0209 lb/ft <sup>2</sup>
1 kPa	0.1450 lb/in. <sup>2</sup>

## Imperial to Metric

Imperial Unit	Metric Conversion
1 kip	4.448 kN
1 lb	4.448 N
1 ft	0.3048 m
1 in.	25.40 mm
1 lb mass	0.4536 kg
1 lb • ft	1.356 N • m
1 lb • in.	0.1130 N • m
1 in. <sup>4</sup>	0.4162 x 10 <sup>6</sup> mm <sup>4</sup>
1 lb/ft <sup>2</sup>	47.88 Pa
1 lb/in. <sup>2</sup>	6.895 kPa

See General Notes on page 16

## EXAMPLE HEADER DESIGN PROBLEM

Determine the size of 1.55E TimberStrand® LSL header required for a 10' rough opening for the given loads and assumptions:

- House width = 36'
- Trussed roof with 24" roof truss overhangs
- Roof Load = 30 psf snow + 15 psf dead
- Floor Load = 40 psf live + 12 psf dead

Calculated unfactored plf loads acting on the beam (20' roof and 9' floor tributary):

- Snow = 600 plf
- Floor = 360 plf
- Dead = 490 plf (includes wall load at 80 plf)

Calculate design loads per 2005 NBCC load combinations (primary load and companion load action):

### 1. Unfactored live load:

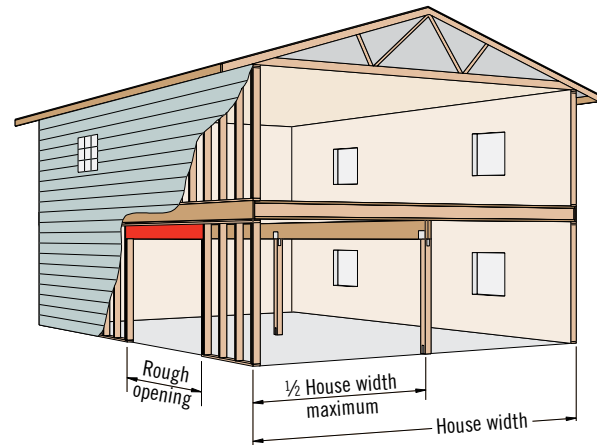
Case 2:  $1.0 \times 360 + 0.5 \times 600 = 660$  plf  
 Case 3:  $1.0 \times 600 + 0.5 \times 360 = 780$  plf  
 Therefore use Case 3 at 780 plf

### 2. Unfactored total load:

For Cases 2 and 3:  
 Unfactored dead load =  $1.0 \times 490 = 490$  plf  
 Unfactored total load =  $780$  plf +  $490$  plf =  $1,270$  plf

### 3. Factored total load:

Case 2:  $1.5 \times 360 + 0.5 \times 600 = 840$  plf  
 Case 3:  $1.5 \times 600 + 0.5 \times 360 = 1,080$  plf  
 Therefore use Case 3 at 1,080 plf  
 Factored dead load =  $1.25 \times 490 = 613$  plf  
 Factored total load =  $1,080 + 613 = 1,693$  plf



Span	Condition	The 1.55E				
		3½" Width				
		9¼"	9½"	11¼"	11½"	14"
10'	Unfactored Resistance (LL)	486	524	840	975	1,520
	Unfactored Resistance (TL)	719	775	1,248	1,449	*
	Total Factored Resistance	1,305	1,373	1,899	2,106	2,886
	Min. End/Int. Bearing (in.)	1.7/4.1	1.7/4.3	2.4/5.9	2.6/6.5	3.6/8.0
	Resistance (LL)	2.88	3.11	5.05	5.88	

Summary:

- Unfactored Resistance (LL) = 975 > 780 OK
- Unfactored Resistance (TL) = 1,449 > 1,270 OK
- Total Factored Resistance = 2,106 > 1,693 OK

Therefore a 3½" x 11½" 1.55E TimberStrand® LSL header is acceptable. Beam requires 2.6" of bearing at end supports and 6.5" of bearing at intermediate support.



## Axial Factored Resistances (lbs) for 1.3E TimberStrand® LSL

Column Bearing Type	Effective Column Length	Column Size				
		3½" x 3½"	3½" x 4¾"	3½" x 5½"	3½" x 7¼"	3½" x 8¾"
On Column Base	5'	11,120	13,910	17,485	23,035	27,410
	6'	9,910	12,385	15,570	20,525	24,415
	7'	8,665	10,830	13,620	17,960	21,345
	8'	7,460	9,330	11,730	15,455	18,385
	9'	6,355	7,945	9,990	13,165	15,665
	10'	5,380	6,725	8,455	11,140	13,255
	12'	3,820	4,775	6,000	7,910	9,415
Wood Plate Bearing <sup>(1)</sup>	3'-8'	7,165	8,960	11,260	14,845	17,660
	9'	6,355	7,945	9,990	13,165	15,665
	10'	5,380	6,725	8,455	11,140	13,255
	12'	3,820	4,775	6,000	7,910	9,415
	14'	2,725	3,405	4,285	5,645	6,715

(1) See Top or Bottom Plate Connection detail at right.

## Axial Factored Resistances (lbs) for 1.8E Parallam® PSL

Column Bearing Type	Effective Column Length	Column Size						
		3½" x 3½"	3½" x 5¼"	3½" x 7"	5¼" x 5¼"	5¼" x 7"	7" x 7"	
On Column Base	6'	15,342	23,013	30,684	43,054	57,406	81,855	
	7'	13,216	19,823	26,431	40,209	53,612	78,921	
	8'	11,227	16,841	22,455	37,152	49,536	75,642	
	9'	9,450	14,175	18,900	34,003	45,338	71,899	
	10'	7,910	11,871	15,821	30,869	41,160	67,984	
	12'	5,522	8,287	11,048	24,964	33,285	59,793	
	14'	3,892	5,837	7,782	19,853	26,470	51,644	
	16'	Slenderness ratio exceeds 50			15,664	20,885	43,999	
	18'				12,357	16,464	37,135	
	20'				9,773	13,030	31,166	
	22'							26,111
	24'							21,852

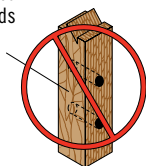
## General Notes

- Tables are based on:
  - Solid, one-piece column members used in dry-service conditions.
  - Bracing in both directions at column ends.
  - CSA 086-01.
  - Simple columns with axial loads only. For side loads or other combined bending and axial loads, see the CSA 086-01 provisions.
- Factored resistances have been adjusted to accommodate the worst case of the following eccentric conditions:
  - ½ of column thickness (first dimension) or ½ of column width.
- Beams and columns must remain straight to within  $5L/4608$  (in.) of true alignment. L is the unrestrained length of the member in feet.

For column specified strengths see page 5.

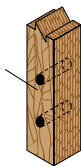
**The column values listed are for dry-service conditions ONLY. When wet-service conditions exist, contact your iLevel representative for other product solutions.**

Wide face of strands



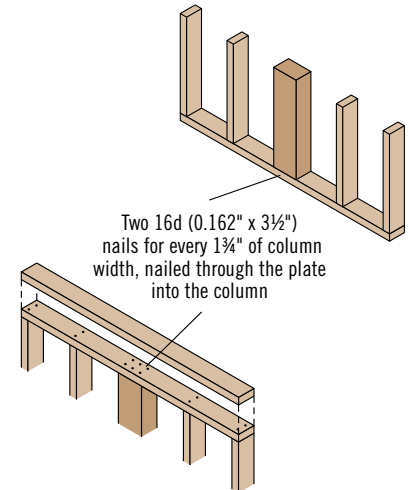
**DO NOT install bolts or screws into the narrow face of strands**

Wide face of strands

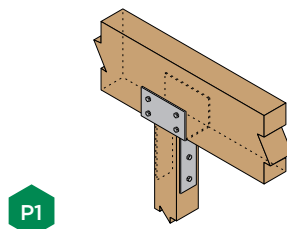


**In order to use the manufacturer's published uplift capacities for column caps, bases, or holdowns, the bolts or screws must be installed perpendicular to the wide face of strands, as shown above.**

## Top or Bottom Plate Connection

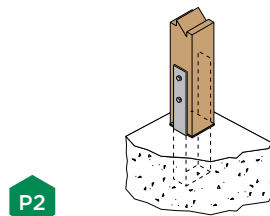


## Beam on Column Cap



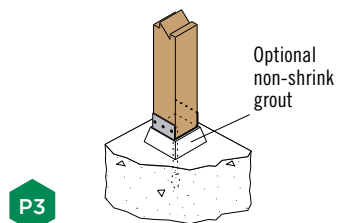
P1

## Column Base



P2

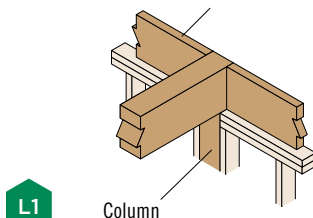
## Elevated Column Base



P3

## Beam on Column

1¼" TimberStrand® LSL or iLevel® 1½" rim board or blocking for lateral support



L1



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