Trus Joist™

2.2E Parallam® PSL Deep Beam

Featuring 20"–24" Deep Trus Joist® Parallam® PSL Beams

- Ideal for multi-family and light commercial applications
- Offers high strength and consistent performance
- Efficiently manufactured using renewable resources
- Easy to drill and trim in the field
- Limited product warranty

Why Choose 2.2E Parallam® PSL Deep Beams?

- High strength and easy field modifications
- SFI certified and eligible for points under most green-building programs
- Unsurpassed technical support

High-strength 2.2E Parallam® PSL engineered wood beams deliver the support you need, and they resist bowing, twisting, and shrinking—both before and after installation. These deep-depth beams are also easy to work with in the field using traditional construction tools and hardware. And like all Trus Joist® products, 2.2E Parallam® PSL is supported by the industry's largest technical staff. Put it all together and you get more design flexibility, less waste, easier installation, and lower overall installed cost.

Weekes manufactures engineered lumber using wood that is sourced from independently certified sustainable forests, and our products have been independently verified for sustainable attributes by the ICC Evaluation Service (VAR-1008). Plus, Parallam® PSL contains no added urea formaldehyde resins. Strong, sustainable, easy to use, and backed by technical support, Trus Joist® 2.2E Parallam® PSL is a structural solution you can count on.

2.2E Parallam® PSL Availability and Sizes

The 2.2E Parallam® PSL shown in this guide is readily available in the western United States, with limited availability in other parts of the U.S.

2.2E Parallam® PSL headers and beams are available in the following standard sizes:

Widths: 3½", 5¼", and 7"

Depths: 20", 22", and 24"

Lengths: up to 66'*

*The span and load tables in this guide cover beam spans up to 60 feet; however, 2.2E Parallam® PSL beams can be delivered in lengths up to 66 feet.

Code Evaluation:
ICC ES ESR-1387

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SFI-00000

PRODUCT STORAGE

DESIGN STRESSES

Design Stresses[1] (100% Load Duration)

Shear modulus of elasticity	G	=	137,500 psi
Modulus of elasticity	**E**	**=**	**2.2 x 10^6 psi**
Adjusted modulus of elasticity[2]	E_{min}	=	1,118,190 psi
Flexural stress	F_b	=	2,900 psi[3]
Compression perpendicular to grain	$F_{c\perp}$	=	750 psi[4]
Compression parallel to grain	$F_{c\parallel}$	=	2,900 psi
Horizontal shear parallel to grain	F_v	=	290 psi
Equivalent specific gravity	SG	=	0.50[5]
Density		=	45 lbs/ft^3

(1) Unless otherwise noted, adjustment to the design stresses for duration of load are permitted in accordance with applicable code.

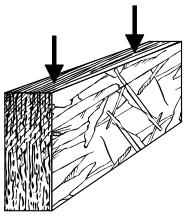
(2) Reference modulus of elasticity for beam and column stability calculations per NDS®.

(3) For 12" depth. For other depths, multiply by $\left[\frac{12}{d}\right]^{0.111}$

(4) $F_{c\perp}$ must not be increased for duration of load.

(5) For dowel connection design only.

Beam Orientation

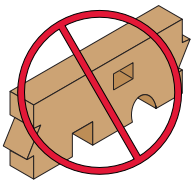


General Assumptions for Trus Joist® Beams

- Lateral support is required at bearing and along the compression edge at intervals of 48" on-center, maximum.
- No camber.
- Beams and columns must remain straight to within $^{5L^2/4608}$ (in.) of true alignment. L is the unrestrained length of the member in feet.

For applications not covered in this brochure, contact your Weyerhaeuser representative.

Untreated Parallam® PSL is intended for dry-use applications



DO NOT cut, notch, or drill holes except as approved by the design professional of record

CONNECTIONS AND NAILING REQUIREMENTS

- Parallam® PSL lateral nail resistance and nail withdrawal are equivalent to that of Douglas fir (specific gravity = 0.50).
- See table at right for closest allowable nailing.
- Bolt design values are as provided in the adopted code for Douglas fir (specific gravity = 0.50).
- Bolt holes must be minimum of bolt diameter plus 1/32" and no greater than bolt diameter plus 1/16". Bolt size not to exceed 1" diameter.
- The following two manufacturers have met the technical requirements to supply proprietary connectors for Trus Joist® products. For additional information, please refer to their literature.
  - Simpson Strong-Tie Co., Inc.: 1-800-999-5099
  - USP Structural Connectors®: 1-800-328-5934

Closest Allowable Nail Spacing

Nail Size	Closest On-center Spacing Per Row	
	Narrow Face	Wide Face
8d (0.131" x 2½") or 10d (0.128" x 3")	3"	2"
10d (0.148" x 3") or 12d (0.148" x 3¼")	4"	3"
16d (0.162" x 3½")	6"	4"

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

LOAD TABLES

Allowable Uniform Load (PLF)

Span	3½" Width						5¼" Width					
	20"		22"		24"		20"		22"		24"	
	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL
16'	1,643 1,591	1,892 2,059	1,969 1,969	2,268 2,467	2,323 2,323	2,675 2,910	2,464 2,387	2,839 3,089	2,954 2,954	3,402 3,701	3,485 3,485	4,013 4,366
18'	1,293 1,152	1,491 1,622	1,551 1,497	1,787 1,944	1,830 1,830	2,108 2,294	1,940 1,728	2,236 2,433	2,326 2,245	2,680 2,917	2,745 2,745	3,163 3,441
20'	1,043 858	1,203 1,310	1,251 1,120	1,443 1,570	1,477 1,423	1,703 1,853	1,565 1,288	1,805 1,965	1,877 1,680	2,164 2,356	2,216 2,135	2,554 2,780
22'	858 656	990 1,078	1,030 858	1,188 1,293	1,216 1,095	1,402 1,527	1,288 984	1,486 1,618	1,545 1,288	1,782 1,940	1,824 1,642	2,104 2,290
24'	718 512	829 903	861 671	994 1,083	1,018 858	1,174 1,279	1,077 768	1,243 1,354	1,292 1,007	1,492 1,625	1,527 1,288	1,761 1,918
26'	588 407	703 766	730 535	844 919	863 685	997 1,085	882 610	1,054 1,149	1,096 802	1,266 1,379	1,295 1,028	1,495 1,628
28'	470 328	603 635	624 432	724 789	740 555	856 932	706 492	905 952	937 648	1,086 1,184	1,111 832	1,284 1,399
30'	381 268	515 515	507 354	628 684	642 455	742 809	572 403	773 773	761 531	942 1,027	963 683	1,113 1,213
32'	312 222	423 423	417 294	549 564	541 378	649 707	468 334	635 635	625 441	823 846	811 567	973 1,061
34'	258 186	351 351	345 246	468 468	449 317	572 608	387 279	526 526	518 369	703 703	674 476	858 913
36'	214 157	293 293	288 208	393 393	377 268	507 511	322 236	440 440	433 312	589 589	565 403	761 767
38'	180 134	247 247	243 178	332 332	318 229	433 433	270 201	371 371	364 267	498 498	477 344	649 649
40'	151 115	209 209	205 153	282 282	270 197	369 369	227 173	314 314	308 229	423 423	405 296	553 553
42'	128 100	178 178	175 132	241 241	230 171	316 316	192 150	267 267	262 199	362 362	346 257	474 474
44'	109 87	152 152	149 115	207 207	198 149	272 272	163 131	229 229	224 173	311 311	297 224	409 409
46'							139 114	196 196	192 152	268 268	255 196	354 354
48'							119 101	169 169	165 134	232 232	221 173	307 307
50'							101 89	146 146	142 119	201 201	191 153	268 268
52'							86 79	126 126	122 105	175 175	166 137	234 234

- Green numbers refer to **115% TL** (Total Load).

How to Use This Table

To size floor beams:

- Check both total load (**100% TL**) (neglect beam weight) and live load (**100% LL**).
- Total load values are based on a deflection of L/240. Live load values are based on a deflection of L/360. For live load deflection limits of L/240 or L/480, multiply live load values by 1.5 and 0.75 respectively. The resulting live load must not exceed the total load shown.

To size roof beams:

- Check the appropriate snow load area (**115% TL**) value or non-snow area (**125% TL**) value. Total load values are based on a deflection of L/180.
- For live load deflection limits of L/240, multiply live load (**100% LL**) values by 1.5. The resulting live load must not exceed the total load shown.

100% TL (Total Load)
Use **100% TL** and the **100% LL** to select floor member. **100% TL** is the maximum allowable total load in pounds per linear foot of beam. Values are based on a deflection equal to L/240 at total load.

100% LL (Live Load)
Use **100% LL** and the **100% TL** to select floor member. **100% LL** is the maximum allowable live load capacity in pounds per linear foot of beam. Value is based on a deflection of L/360.

Span	3½" Width		
	20"		
	100% TL 100% LL	115% TL 125% TL	100% 100%
16'	1,643 1,591	1,892 2,059	

115% TL (Total Load)
Use **115% TL** to select roof member in snow load areas. This is the maximum allowable total load in pounds per linear foot of beam. Values are based on a deflection equal to L/180 at total load.

125% TL (Total Load)
Use **125% TL** to select roof member in non-snow load areas. This is the maximum allowable total load in pounds per linear foot of beam. Values are based on a deflection equal to L/180 at total load.

See General Notes on page 5

Allowable Uniform Load (PLF) *continued*

	7" Width					
	20"		22"		24"	
Span	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL	115% TL 125% TL
16'	3,286 3,182	3,785 4,118	3,938 3,938	4,536 4,935	4,646 4,646	5,351 5,821
18'	2,587 2,304	2,982 3,245	3,102 2,994	3,574 3,889	3,660 3,660	4,217 4,588
20'	2,087 1,717	2,407 2,620	2,503 2,241	2,886 3,141	2,954 2,847	3,406 3,706
22'	1,717 1,312	1,981 2,157	2,060 1,717	2,376 2,587	2,433 2,190	2,805 3,054
24'	1,436 1,024	1,658 1,806	1,723 1,343	1,989 2,166	2,036 1,717	2,349 2,558
26'	1,177 814	1,406 1,532	1,461 1,070	1,688 1,839	1,727 1,370	1,994 2,171
28'	941 657	1,206 1,270	1,249 865	1,449 1,579	1,481 1,110	1,712 1,865
30'	762 537	1,031 1,031	1,015 709	1,256 1,369	1,284 911	1,484 1,618
32'	624 445	847 847	834 588	1,098 1,128	1,082 756	1,298 1,415
34'	516 373	702 702	691 493	937 937	899 634	1,144 1,217
36'	429 315	587 587	577 417	786 786	754 537	1,014 1,023
38'	360 269	494 494	486 356	664 664	636 459	866 866
40'	303 231	419 419	411 306	564 564	540 395	738 738
42'	256 200	357 357	350 265	482 482	461 342	633 633
44'	218 174	305 305	299 231	414 414	396 299	545 545
46'	186 153	262 262	256 203	357 357	341 262	472 472
48'	158 135	226 226	220 179	309 309	294 231	410 410
50'	135 119	195 195	189 158	269 269	255 205	357 357
52'	115 106	169 169	163 141	234 234	221 182	313 313
54'	99 95	146 146	141 126	204 204	192 163	274 274
56'	84 84	127 127	121 113	178 178	167 146	241 241
58'	71 71	110 110	105 102	156 156	145 132	212 212
60'	60 60	95 95	90 90	136 136	126 119	186 186

- Green numbers refer to **115% TL** (Total Load).

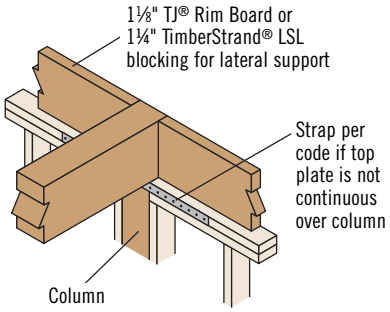
General Notes

- Values shown are maximum uniform loads in pounds per linear foot (plf).
- Tables are based on uniform loads (beam weight considered) and **simple-span conditions**. For cantilever and multi-span conditions, refer to Forte® sizing software.
- Roof members shall either be sloped for positive drainage or designed (per code) to account for resulting loads and deflection.
- Lateral support is required at bearing and along compression edge at intervals of 48" on-center, maximum.
- Bearing length to be calculated for specific application; see table on page 7.

See How to Use This Table on page 4

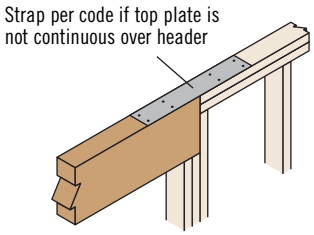
BEAM AND COLUMN DETAILS

Bearing at Wall



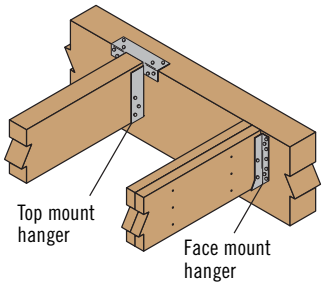
L1

Bearing for Door or Window Header



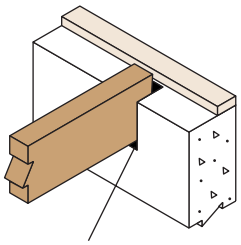
L2

Beam to Beam Connection



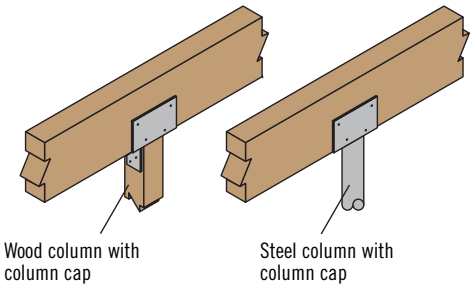
L3

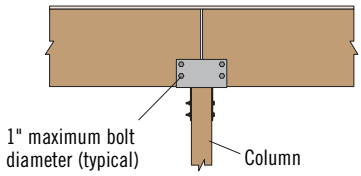
Bearing at Concrete Wall



L4

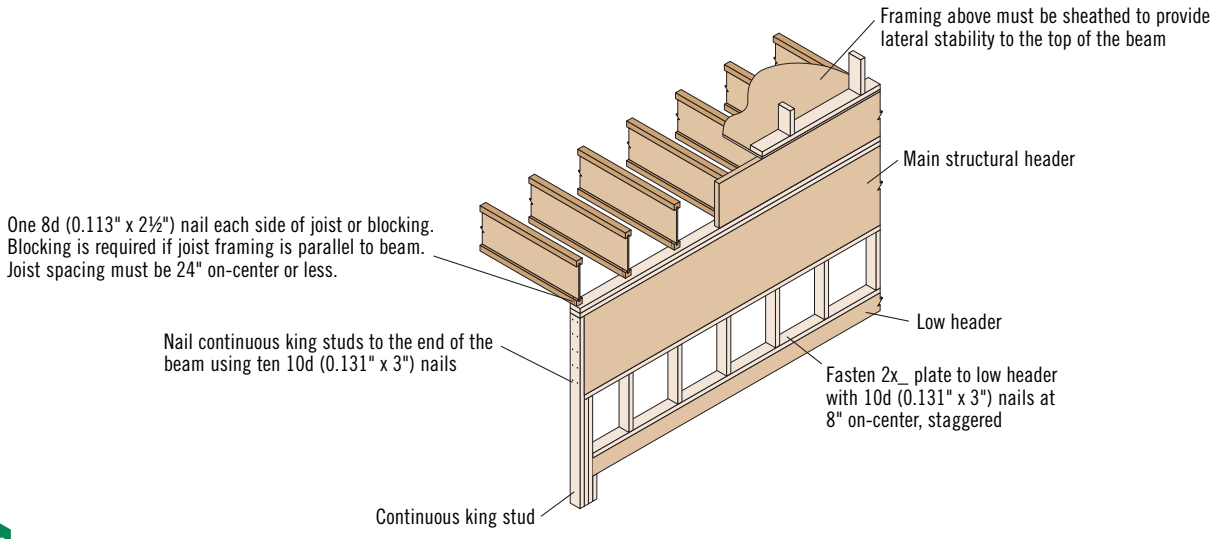
Bearing on Wood or Steel Column





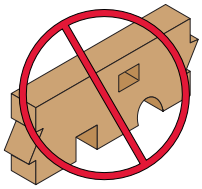
L5 ***Verify beam bearing length on page 7 and column capacity in the Trus Joist® Beam, Headers, and Columns Specifier's Guide, TJ-9000***

Dropped Header with Full Lateral Bracing



L15

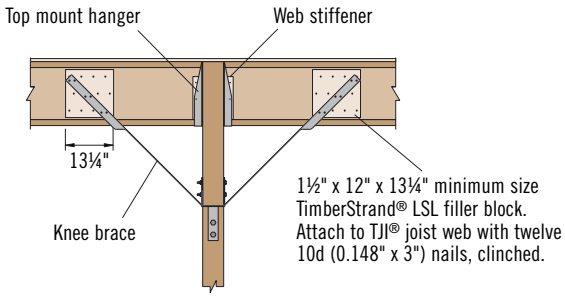
WARNING: Drilling, sawing, sanding or machining wood products generates wood dust. The paint and/or coatings on this product may contain titanium dioxide. Wood dust and titanium dioxide are substances known to the State of California to cause cancer.



DO NOT cut, notch, or drill holes except as approved by the design professional of record

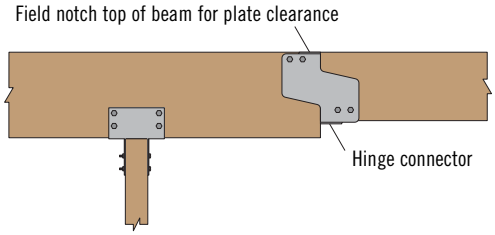
BEAM AND COLUMN DETAILS

Joist Bearing on Beam with Knee Braces Required



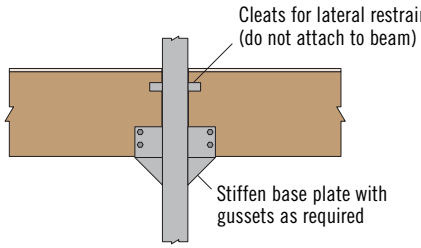
L22

Bearing on Column with Hinge Connector



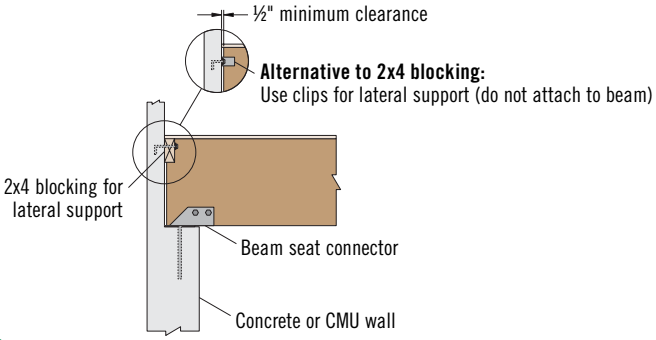
L23 ***Hinge connector and required bracing are the responsibility of the design professional of record***

Bearing on Gusseted Steel Column



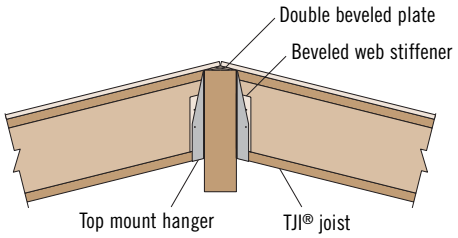
L24

Bearing on Concrete or Masonry Pocket



L25

Joist Bearing on Ridge Beam



L26

BEARING LENGTH REQUIREMENTS

Bearing Length for 2.2E Parallam® PSL

Reaction (lbs)	Beam Width		
	3½"	5¼"	7"
4,000	1¾"	1½"	1½"
6,000	2½"	1¾"	1½"
8,000	3¼"	2¼"	1¾"
10,000	4"	2¾"	2"
12,000	4¾"	3¼"	2½"
14,000	5½"	3¾"	2¾"
16,000	6¼"	4¼"	3¼"
18,000	7"	4¾"	3½"
20,000	7¾"	5¼"	4"
22,000	8½"	5¾"	4¼"
24,000	9¼"	6¼"	4¾"
26,000	10"	6¾"	5"

General Notes

- **Minimum bearing length:** 1½" at ends, 3½" at intermediate supports.
- Bearing across full beam width is required.
- Bearing lengths for Parallam® PSL are based on 750 psi bearing stress.
- Bearing length may need to be increased if allowable bearing stress of the support member is less than 750 psi.
- Bearing stresses must not be increased for duration of load.
- Interpolation between reaction loads is permitted for determining bearing lengths.

WE CAN HELP YOU BUILD SMARTER

You want to build solid and durable structures—we want to help. Weekes provides high-quality building products and unparalleled technical and field assistance to support you and your project from start to finish.

Floors and Roofs: Start with the best framing components in the industry: our Trus Joist® TJI® joists; TimberStrand® LSL rim board; and TimberStrand® LSL, Microllam® LVL, and Parallam® PSL headers and beams. Pull them all together with our self-gapping and self-draining Edge Gold™ floor panels and durable roof sheathing.

Walls: Get the best value out of your framing package—use TimberStrand® LSL studs for tall walls, kitchens, and bathrooms, and our traditional, solid-sawn lumber everywhere else. Cut down installation time by using TimberStrand® LSL headers for doors and windows, and wall sheathing with its handy two-way nail lines.

Software Solutions: Whether you are a design professional or lumber dealer, Weekes offers an array of software packages to help you specify individual framing members, create cut lists, manage inventories—even help you design a complete structural frame. Contact your representative to find out how to get the software you need.

Technical Support: Need technical help? Weekes has one of the largest networks of engineers and sales representatives in the business. Call us for help, and a skilled member from our team of experts will answer your questions and work with you to develop solutions that meet all your structural framing needs.

February 2015 • Reorder TJ-7001