

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





The products in this guide are readily available in the western United States through our nationwide network of distributors and dealers. For more information on other applications or other Trus Joist® products, contact your Weyerhaeuser representative.

Code Evaluation:
ICC-ES ESR-1387

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Certified Sourcing
www.sfipprogram.org
SFI-00008

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.

Weyerhaeuser 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"

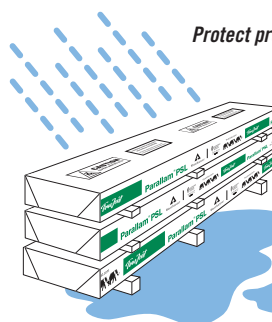
Lengths: 48' and 60'



WARNING: This product can expose you to chemicals including wood dust which are known to the State of California to cause cancer, and methanol, which are known to the State of California to cause birth defects or other reproductive harm. Drilling, sawing, sanding or machining wood products can expose you to wood dust. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov and www.P65Warnings.ca.gov/wood.

Safety data sheets for all Weyerhaeuser wood products can be found on our website at: weyerhaeuser.com/sustainability/environment/product-stewardship/safety-data-sheets.

PRODUCT STORAGE



Protect product from sun and water

CAUTION:
Wrap is slippery when wet or icy

Align stickers (2x3 or larger)
directly over support blocks

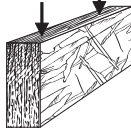
Use support blocks (6x6 or larger)
at 10' on-center to keep bundles
out of mud and water

DESIGN PROPERTIES

Design Stresses⁽¹⁾ (100% Load Duration)

Shear modulus of elasticity	G	=	137,500 psi
Modulus of elasticity⁽²⁾	E	=	2.2 x 10⁶ psi
Adjusted modulus of elasticity ⁽³⁾	E _{min}	=	1,118,190 psi
Flexural stress	F _b	=	2,900 psi ⁽⁴⁾
Tension stress	F _t	=	2,300 psi ⁽⁵⁾
Compression perpendicular to grain	F _{c⊥}	=	625 psi ⁽⁶⁾
Compression parallel to grain	F _c	=	2,900 psi ⁽⁷⁾
Horizontal shear parallel to grain	F _v	=	290 psi
Equivalent specific gravity	SG	=	0.50 ⁽⁸⁾
Density		=	45 lbs/ft ³

Beam Orientation



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

(2) To properly calculate deflections for the full range of typical SCL span and loading applications, bending and shear deflection must be considered. Use the following equation for simple span, uniformly loaded beams:

$$\Delta = \frac{270 wL^4}{Ebd^3} + \frac{28.8 wL^2}{Ebd}$$

Where: Δ = deflection (in.) w = uniform load (plf)
 L = span (feet) b = beam thickness (in.)
 d = beam depth (in.) E = modulus of elasticity (psi)

For other span and loading conditions, use engineering mechanics to account for both bending and shear deflection or use ForteWEB™ software.

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

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

(5) Referenced tension design value is based on a standard 4-foot length. For lengths longer than 4 feet, multiply F_t by $(4/L)^{0.056}$ (where L is length in feet).

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

(7) For column applications, use $F_{c||}$ of 500 psi. Alternatively, refer to ESR-1387, Table 1, footnote 13.

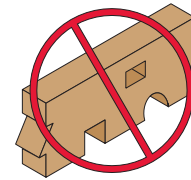
(8) For lateral connection design only.

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 $5L/4608$ (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 below 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.
- Contact your Weyerhaeuser representative for connections not addressed in this guide.
- 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 ⁽¹⁾	Wide Face
8d (0.131" x 2 1/2") or 10d (0.128" x 3")	4"	2"
10d (0.148" x 3") or 12d (0.148" x 3 1/4")	4"	3"
16d (0.162" x 3 1/2")	6"	4"

(1) To minimize splitting, member edge distance and spacing between rows shall be 2.5 x nail diameter or 3/8", whichever is greater. Where multiple rows are used, fasteners in adjacent rows must be staggered and the rows must be equally spaced from the centerline of the narrow face axis.



Weyerhaeuser also offers Parallam® PSL headers and columns. For more information on these products, see the Trus Joist® Beam, Header, and Column Specifier's Guides, TJ-9000 or TJ-9020, or contact your Weyerhaeuser representative.

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"		24"
	100% TL 100% LL	115% TL 125% TL	100% TL 100% LL
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

LOAD TABLES

Allowable Uniform Load (PLF) *continued*

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

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

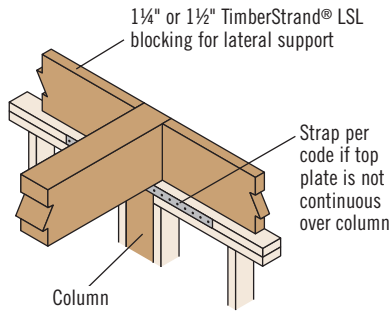
General Notes

- 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 ForteWEB™ 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

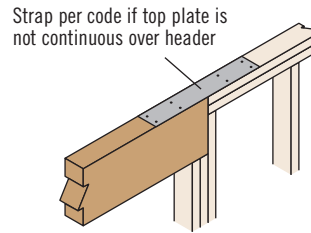
BEAM AND COLUMN DETAILS

Bearing at Wall



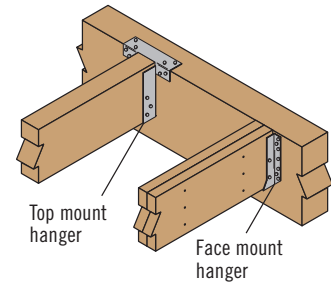
L1

Bearing for Door or Window Header



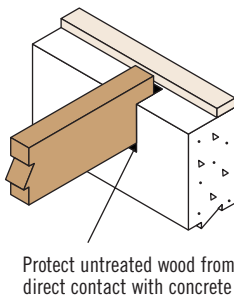
L2

Beam to Beam Connection



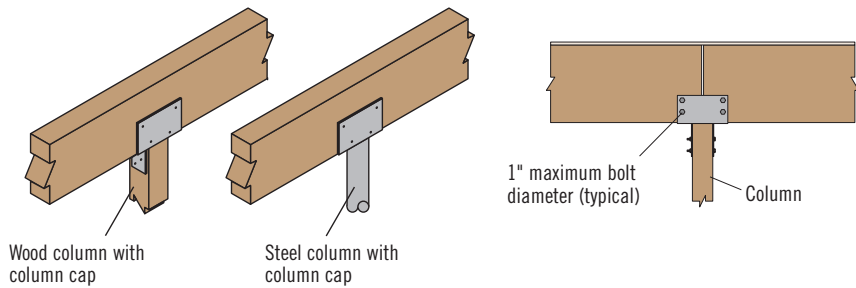
L3

Bearing at Concrete Wall



L4

Bearing on Wood or Steel Column



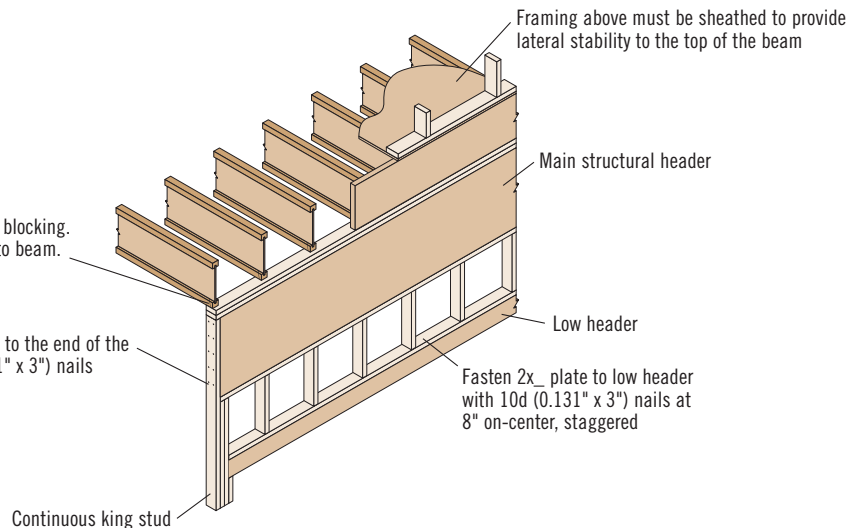
L5

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

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-center or less.

Nail continuous king studs to the end of the beam using ten 10d (0.131" x 3") nails

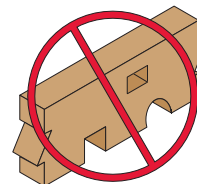


L15



WARNING: This product can expose you to chemicals including wood dust which are known to the State of California to cause cancer, and methanol, which are known to the State of California to cause birth defects or other reproductive harm. Drilling, sawing, sanding or machining wood products can expose you to wood dust. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov and www.P65Warnings.ca.gov/wood.

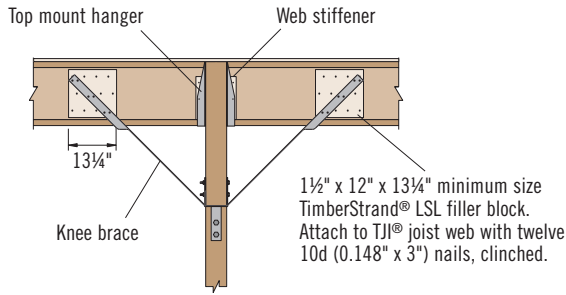
Safety data sheets for all Weyerhaeuser wood products can be found on our website at: weyerhaeuser.com/sustainability/environment/product-stewardship/safety-data-sheets.



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

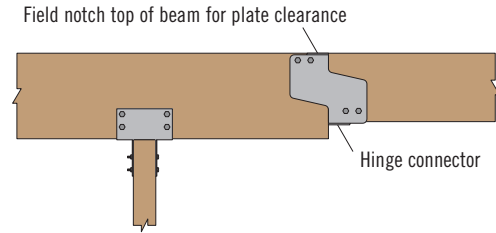
BEAM AND COLUMN DETAILS

Joist Bearing on Beam with Knee Braces Required



L22

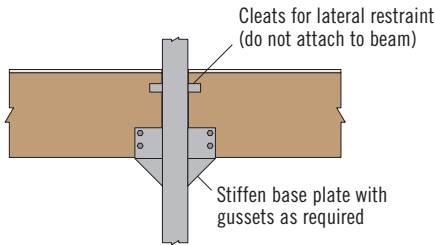
Bearing on Column with Hinge Connector



L23

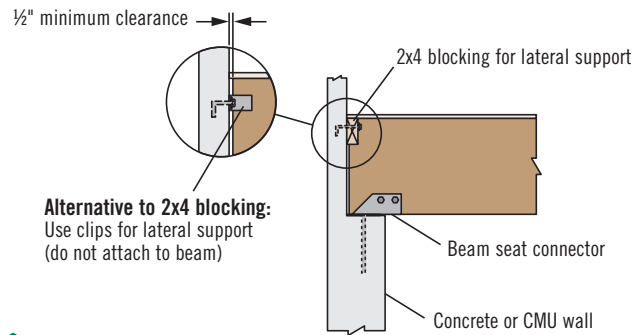
Hinge connector and required bracing are the responsibility of the design professional of record

Bearing on Gusseted Steel Column



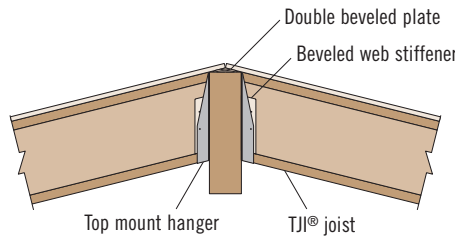
L24

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		
	3 1/2"	5 1/4"	7"
4,000	2"	1 1/2"	1 1/2"
6,000	2 3/4"	2"	1 1/2"
8,000	3 3/4"	2 1/2"	2"
10,000	4 3/4"	3 1/4"	2 1/2"
12,000	5 1/2"	3 3/4"	2 3/4"
14,000	6 1/2"	4 1/2"	3 1/4"
16,000	7 1/2"	5"	3 3/4"
18,000	8 1/4"	5 1/2"	4 1/4"
20,000	9 1/4"	6 1/4"	4 3/4"
22,000	10 1/4"	6 3/4"	5 1/4"
24,000	11"	7 1/2"	5 1/2"
26,000	12"	8"	6"

General Notes

- Minimum bearing length: 1 1/2" at ends, 3 1/2" at intermediate supports.
- Bearing across full beam width is required.
- Bearing lengths for Parallam® PSL are based on 625 psi bearing stress.
- Bearing length may need to be increased if allowable bearing stress of the support member is less than 625 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. Weyerhaeuser 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 Weyerhaeuser Edge Gold™ floor panels and durable Weyerhaeuser 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 Weyerhaeuser wall sheathing with its handy two-way nail lines.

Software Solutions: Whether you are a design professional or lumber dealer, Weyerhaeuser 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 Weyerhaeuser representative to find out how to get the software you need.

Technical Support: Need technical help? Weyerhaeuser 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.



LIMITED LIFETIME PRODUCT WARRANTY

Weyerhaeuser provides a limited warranty for the expected life of the structure for all Trus Joist® branded products. Product information, installation instructions, and the full text of each product's limited warranty (including limitations and exclusions) are available on the Weyerhaeuser website, from your Weyerhaeuser representative, or by calling toll free: 888-453-8358.

Additionally, Weyerhaeuser offers limited warranties on a broad variety of its other products. To see complete details of all Weyerhaeuser product warranties, visit weyerhaeuser.com/woodproducts/warranty.

1.888.453.8358
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Contact your local representative or dealer at:

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August 2020 • Reorder TJ-7001

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