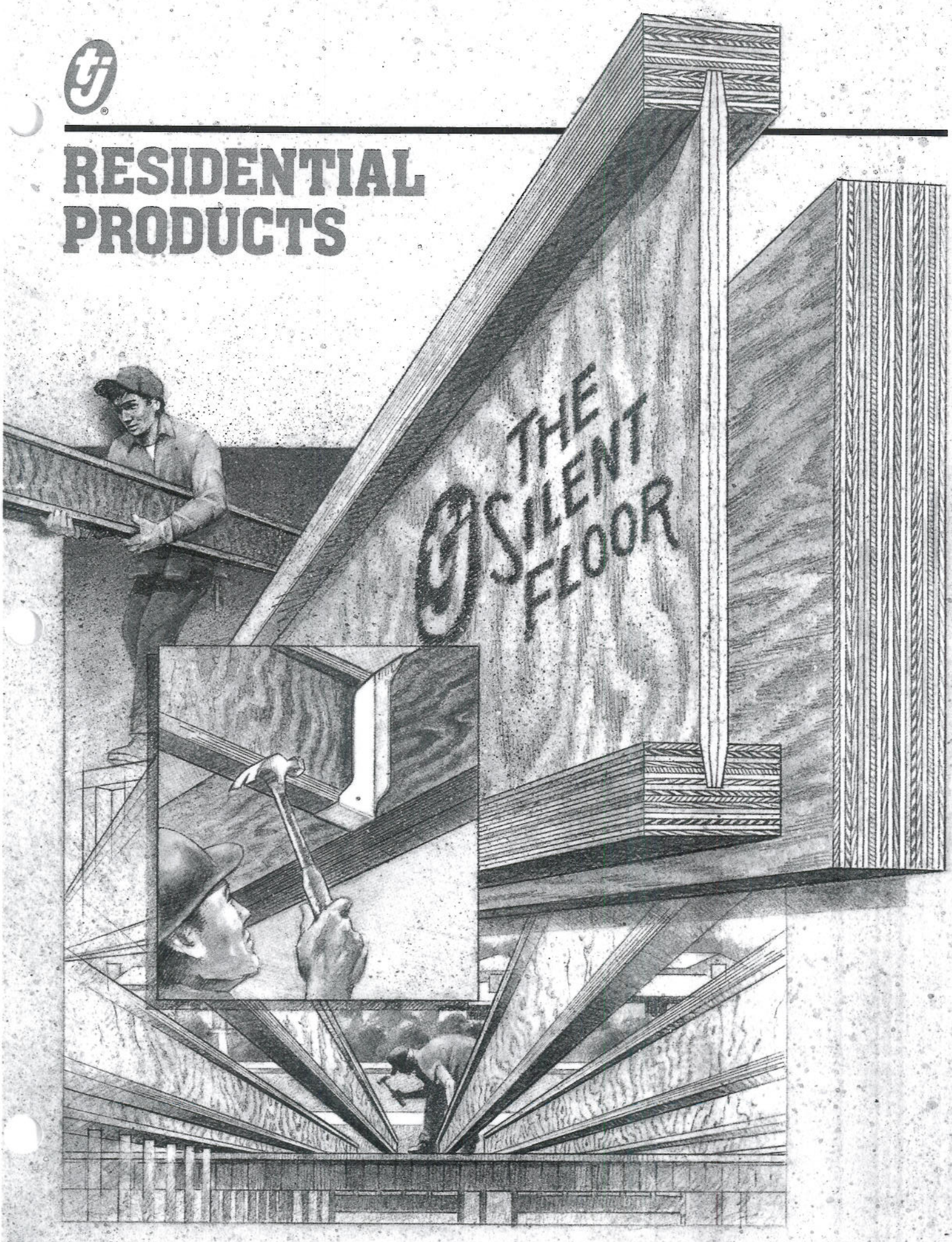
RESIDENTIAL PRODUCTS

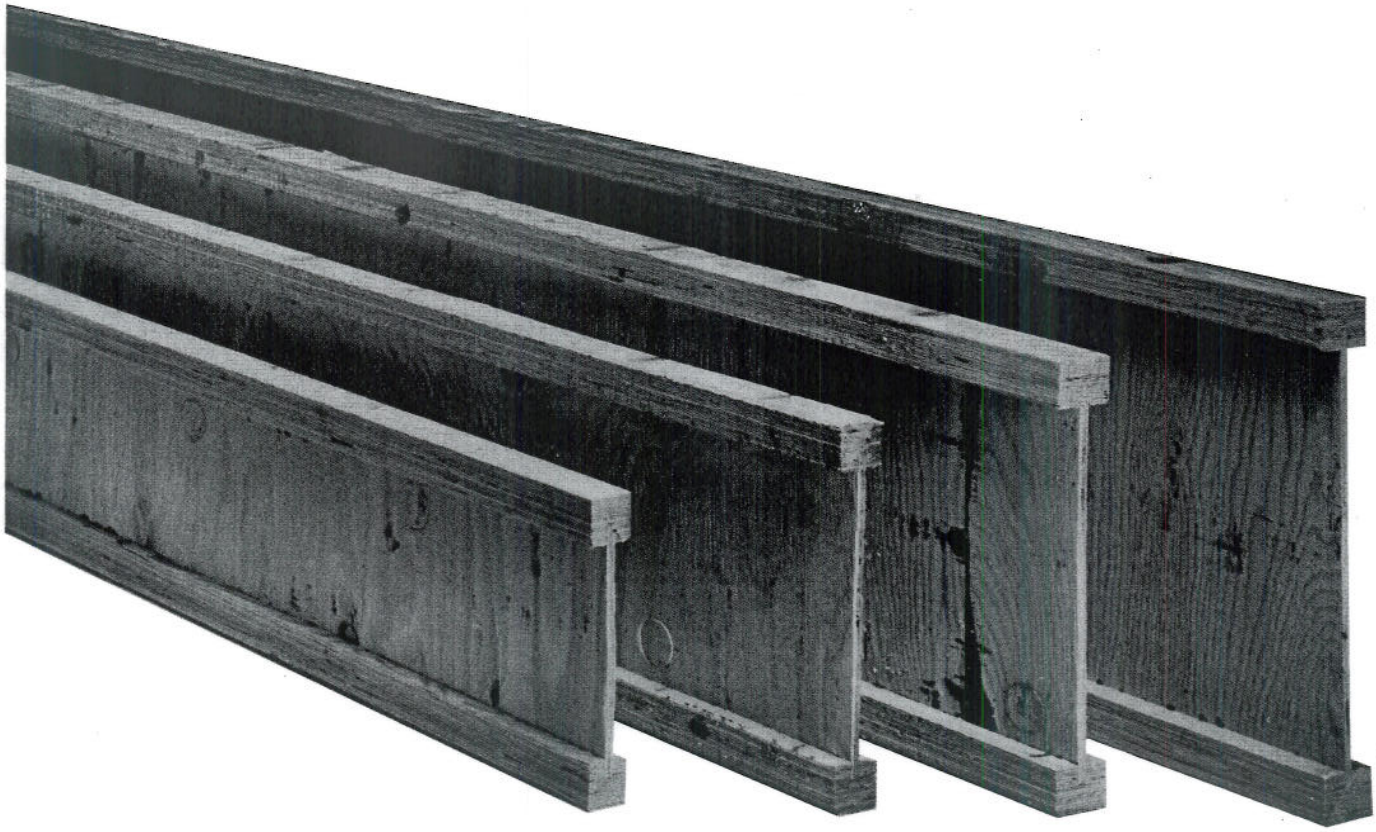


THE RESIDENTIAL TJI® JOIST

TJI® joists are the essential ingredient to constructing today's highest quality floors and roofs with the greatest of ease. Lightweight, long lengths, and the unique I-configuration make for fast, efficient construction. Precision-engineered design is the key to stiff, silent floors.

Joists in lengths to 60′ speed installation by eliminating laps over beams or walls, and, since a TJI® joist is only about half the weight of an ordinary joist, a typical floor or roof can be put in place in a fraction of the time. The I-shape makes nailing to the plate much easier, too.

TJI® joists are available from Trus Joist stocking lumber dealers throughout the United States and Canada in four depths, 9½″, 11⅞″, 14″, and 16″.



9½″ TJI®/25 Joist 11⅞″ TJI®/25 Joist 14″ TJI®/35 Joist 16″ TJI®/35 Joist

CODE EVALUATIONS: FHA 689, NER 119.

NOTE: NER Evaluation includes BOCA, ICBO and SBCCI.

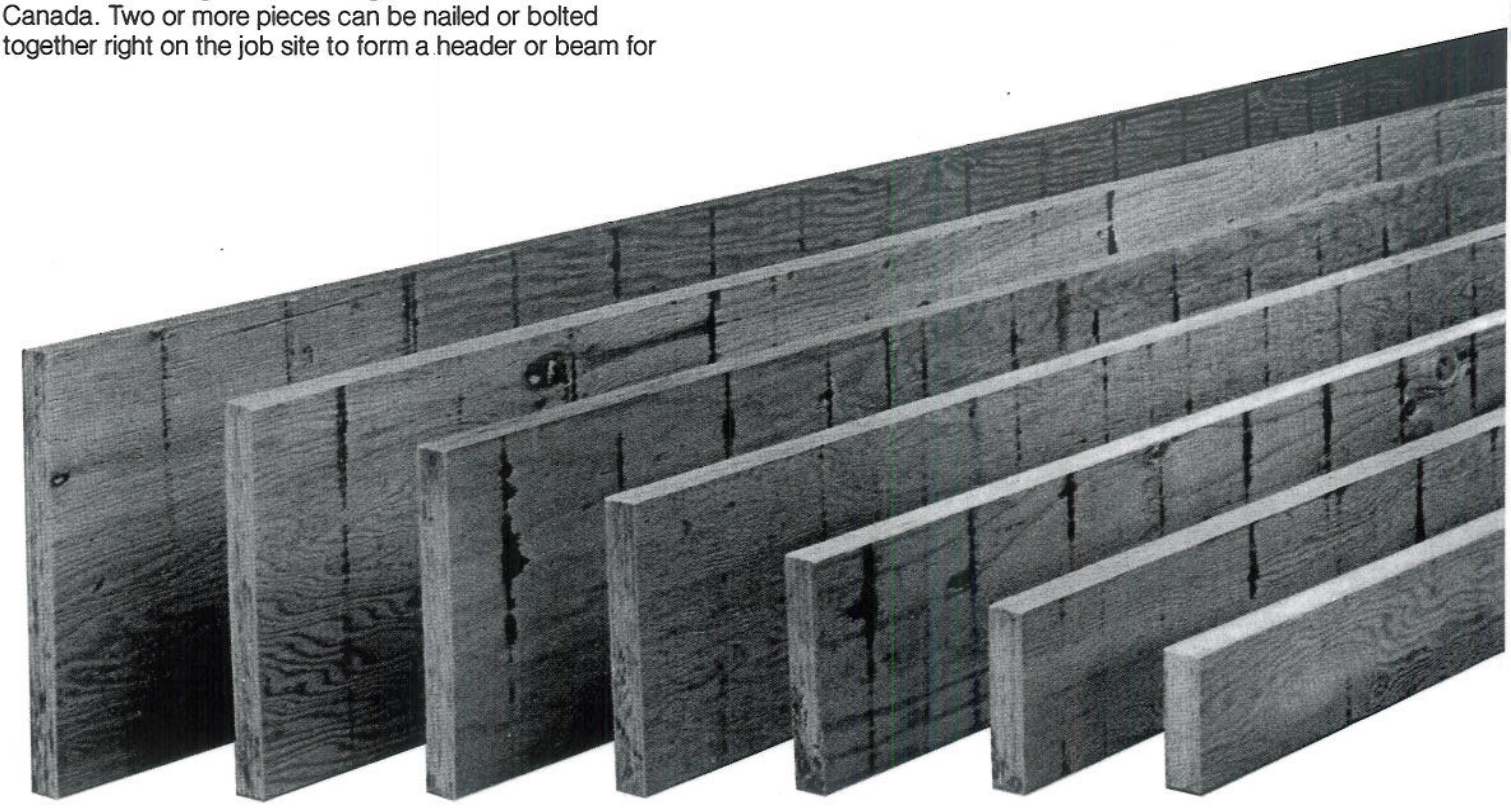
CONTENTS

MICRO=LAM® L.V.L. HEADERS & BEAMS

High strength, consistent dimensions, and exceptional workability make MICRO=LAM® laminated veneer lumber (L.V.L.) the perfect material for almost every header and beam application in residential construction.

MICRO=LAM® L.V.L. is available in 1¾″ thicknesses and seven depths from 5½″ to 18″ and in lengths to 60′ from Trus Joist stocking dealers throughout the United States and Canada. Two or more pieces can be nailed or bolted together right on the job site to form a header or beam for almost any load condition found in residential construction. Two 1¾″ thick pieces match conventional 2x4 wall framing to eliminate shimming.

MICRO=LAM® L.V.L.'s unique manufacturing process eliminates many of the problems caused by twisting, shrinking, splitting, and checking, and thus reduces material waste.



18″ 16″ 14″ 11⅞″ 9½″ 7¼″ 5½″

CODE EVALUATIONS: NER 119, NER 126, FHA 925.

NOTE: NER evaluation includes BOCA, ICBO, and SBCCI.

TRUS JOIST CORPORATION
a division of TJ International

Quality Guarantee

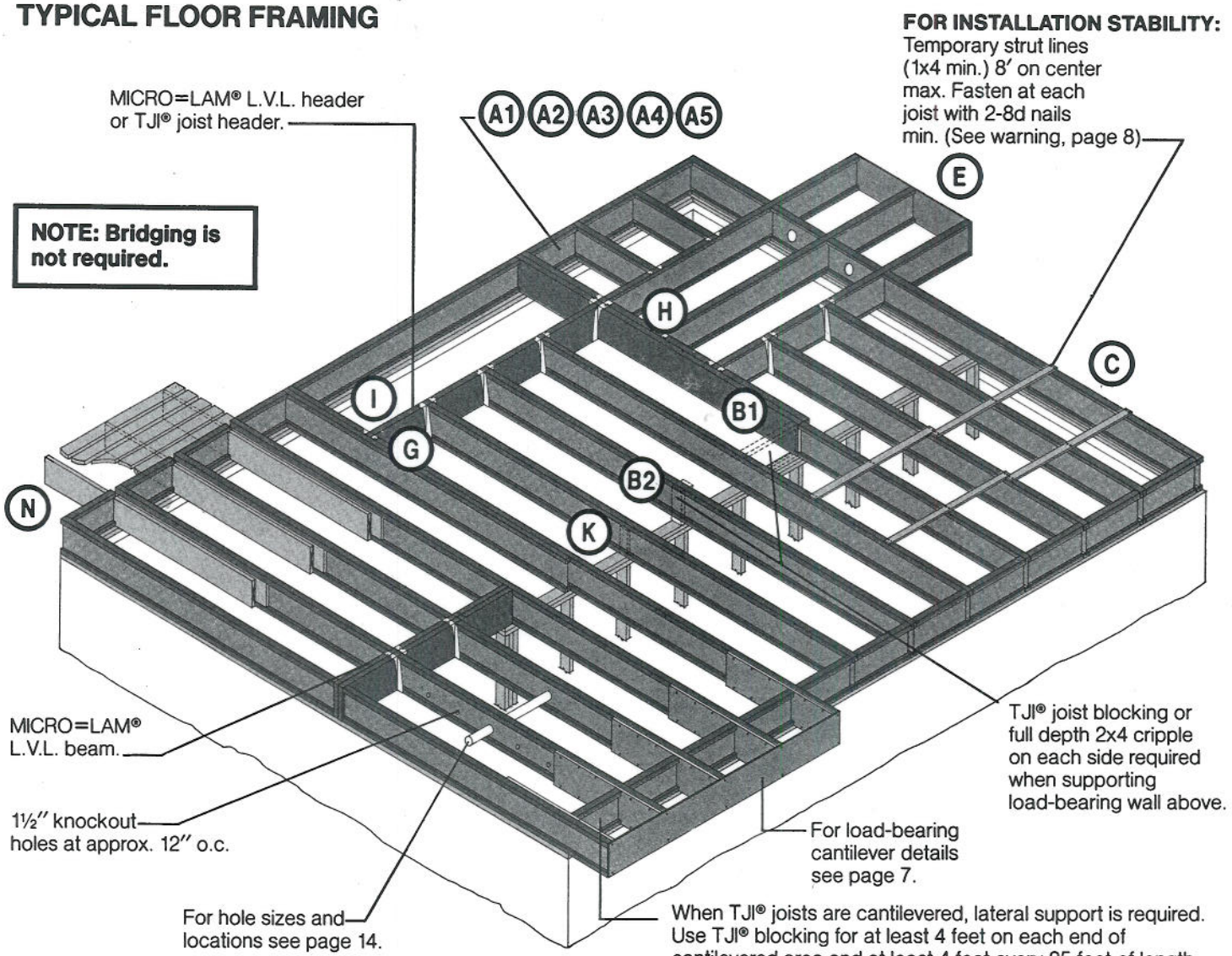
TRUS JOIST CORPORATION warrants its structural products
Residential TJI® Joists and MICRO=LAM® L.V.L. Headers
to be free from manufacturing errors or defects in workmanship and material. These products, correctly installed and used, are guaranteed to perform to our specifications for:

The Normal and Expected Life of Your Home

This guarantee is backed by the full resources of Trus Joist Corporation and by underwritten product liability insurance.

TJI® JOIST FLOOR DETAILS & SPAN CHARTS

TYPICAL FLOOR FRAMING



RESIDENTIAL FLOOR SPAN CHARTS

MINIMUM CRITERIA PER CODE

o.c. spacing	JOIST DEPTH 9½″	11⅞″	14″	16″
12″	18′-7″	22′-2″	24′-3″	30′-1″
16″	16′-11″	20′-2″	24′-8″	27′-4″
19.2″	15′-4″	18′-11″	23′-2″	25′-8″
24″	14′-9″	17′-6″	20′-3″	21′-10″

CODE ALLOWED MINIMUM

NOTE: Based on minimum code deflection criteria of L/360 at live load. For stiffer floors, please see "Trus Joist Recommended Span" table. See page 11 for "A Word About Floor Performance."

TRUS JOIST RECOMMENDED SPANS

o.c. spacing	JOIST DEPTH 9½″	11⅞″	14″	16″
12″	16′-10″	20′-0″	24′-6″	27′-1″
16″	15′-4″	18′-2″	22′-3″	24′-8″
19.2″	14′-5″	17′-1″	20′-11″	23′-2″
24″	13′-4″	15′-10″	19′-4″	21′-5″

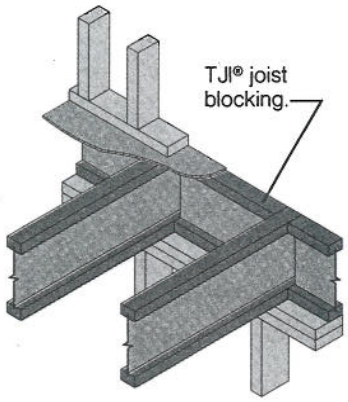
NOTE: Based on L/480 live load deflection.

GENERAL NOTES:

1. Span charts based on residential floor load of 40 PSF live load and 10 PSF dead load.
2. Span charts assume composite action with single layer of glue-nailed plywood decking for deflection only. **Spans shall be reduced 5″ where sheathing panels are nailed only.**
3. Spans are based on clear distance between supports.
4. Web stiffeners (see detail "K", page 6) are required at intermediate supports where joists are continuous span, bearing width is less than 5¼″, and either span is greater than:
   13′-8″: for 9½″ and 11⅞″ TJI® joists @ 24″ o.c.
   17′-2″: for 11⅞″ TJI® joists @ 19.2″ o.c.
   19′-2″: for 14″ and 16″ TJI® joists @ 24″ o.c.
   24′-0″: for 16″ TJI® joists @ 19.2″ o.c.

TJI® JOIST FLOOR DETAILS

A1



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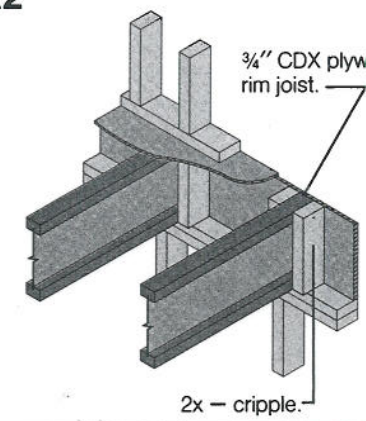
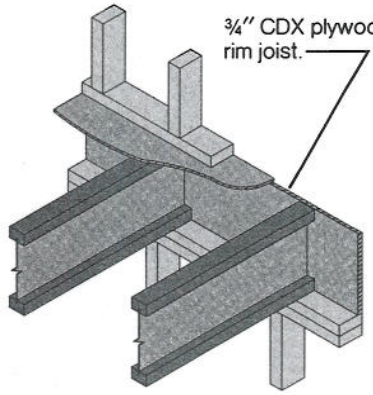
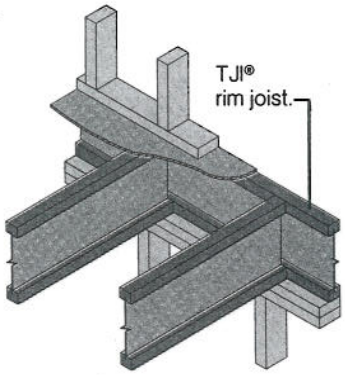


A3 **(9½" and 11⅞" TJI® joist only.)**

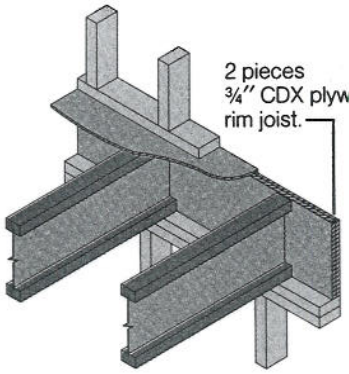


A4

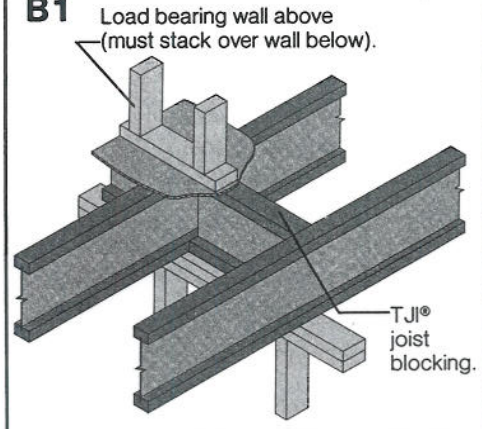


Note: If used with 14" or 16" joists, must have minimum 2x6 bearing plate.

A5 **(9½" and 11⅞" TJI® joist only.)**



B1



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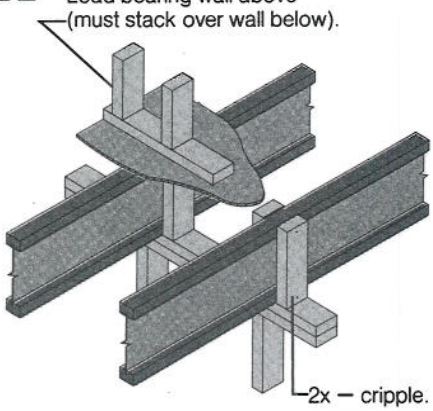

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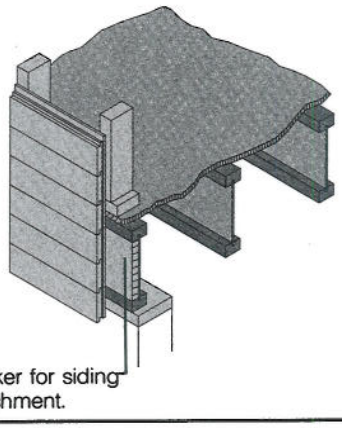

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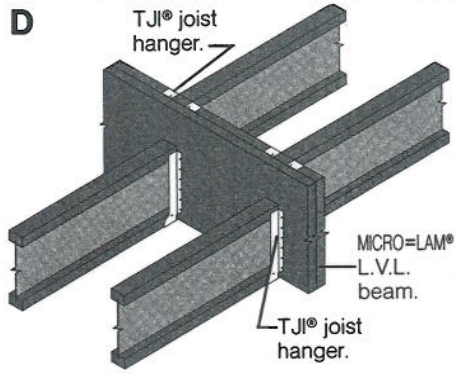


Note: If the sides of the hanger do not extend up to support the top flange laterally, web stiffeners are required.

GENERAL NOTES

MINIMUM BEARING LENGTH

1¾" minimum bearing required at joist ends; 3½" minimum bearing at intermediate supports.

RIM JOISTS OR BLOCKING

1. For single story applications and second floors of two story applications, use detail A1, A2, A3, A4, or A5.
2. For main floor rim of two story applications, use detail A1, A2, A4 or A5.
3. Assumes 1000 PLF vertical load transfer for each layer of ¾" CDX plywood rim joist.
4. Assumes 2000 PLF vertical load transfer for each TJI® joist blocking panel or rim joist.
5. When plywood rim is used, bracing complying with code shall be carried to the foundation or TJI® joist solid blocking used for a minimum of 4' at each end and at least 4' every 25' of length of bearing wall.
6. 2x – cripples for details A2 and B2 must be 1/16" longer than depth of joist. Web stiffeners may also be required per Note 4, page 4.
7. Other ¾" APA 48/24 rated sheathing may be used for rim joist in lieu of ¾" CDX plywood.

NAILING REQUIREMENTS

1. Nail joists at bearings with 2-8d nails (1 each side), 1½" minimum from end to avoid splitting.
2. Nail TJI® joist blocking or rim to bearing plate with 8d nails at 6" on center. When used for shear transfer, nail to bearing plate with same nailing as the plywood shear schedule.
3. Nail TJI® rim joist, ¾" CDX plywood rim, or plywood closure to TJI® joist with 2-8d nails, one each at top and bottom flange. With 14" and 16" TJI® rim joists, use 16d nails.

FILLER AND BACKER BLOCKS

9½" and 11⅞" TJI® joist:
Filler block – 2x6
Backer block – ¾" plywood

14" and 16" TJI® joist:
Filler block – 2x8 + ½" plywood
Backer block – 2 pieces ½" plywood

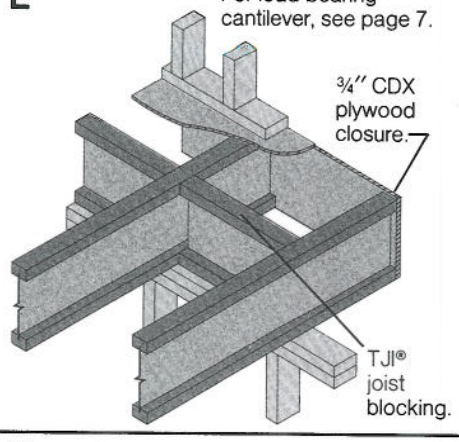
TJI® JOIST HANGERS

See page 15.

See page 6 for additional Floor Details.

TJI® JOIST FLOOR DETAILS

E



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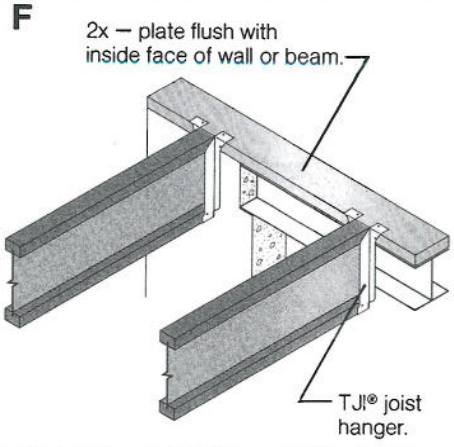

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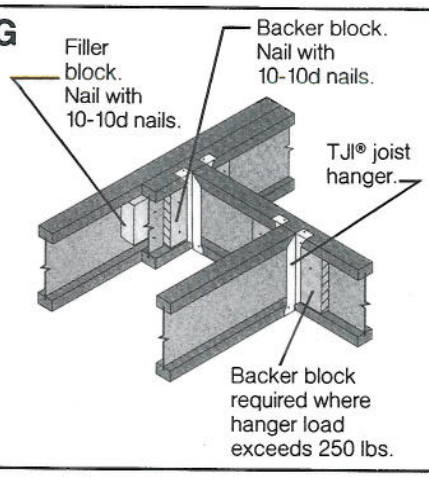

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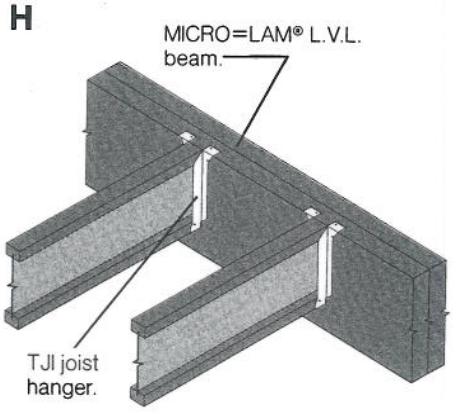

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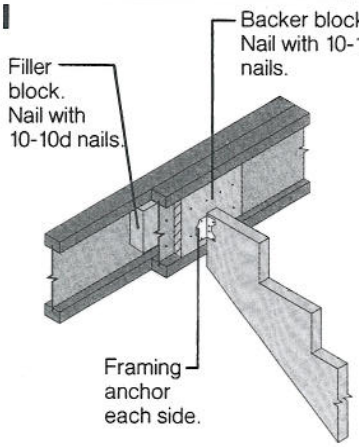

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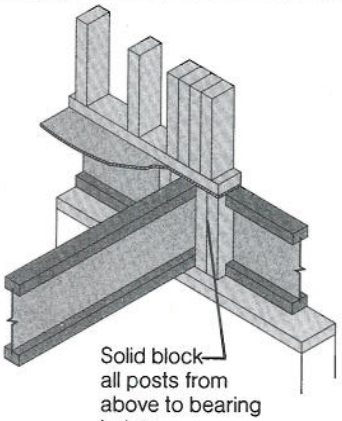

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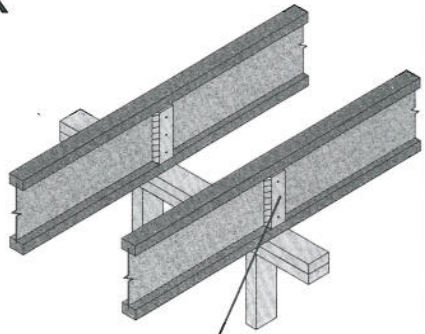

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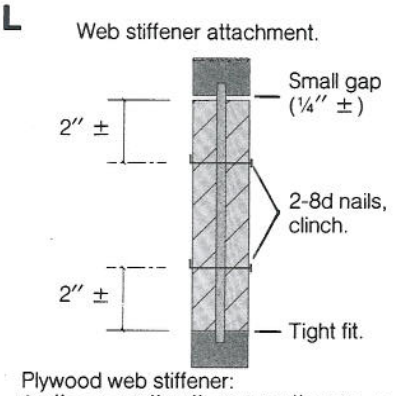
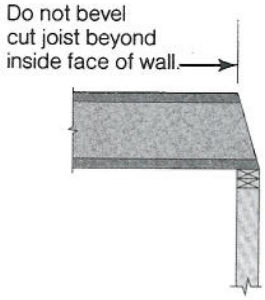


Plywood web stiffener:
9½″ and 11⅞″: ¾″ x 2-5/16″ minimum.
14″ and 16″: 1″ x 2-5/16″ minimum.

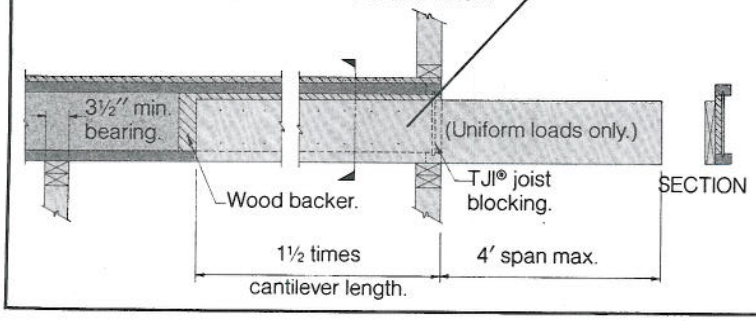
M



NOTE: TJI® joist blocking or metal or wood x-bracing required at bearing for lateral support.

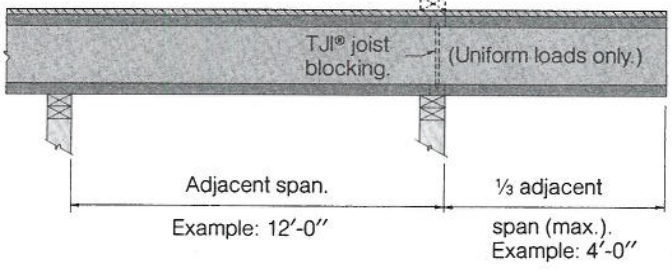
N NON-LOAD BEARING CANTILEVER DETAILS

2x – nailed to the side of the TJI® joist with wood backer (see General Notes, page 5). Nail through the TJI® joist and backer into the 2x – with 2 rows 10d nails at 6″ o.c. and clinch.



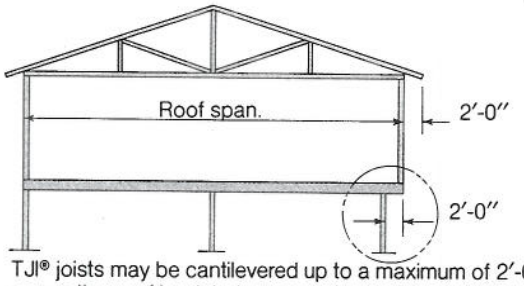
TJI® joists may be cantilevered up to ⅓ the adjacent span if not supporting concentrated load at end of cantilever. (In that situation, see details, page 7.)

TJI® joists should be protected from the weather.



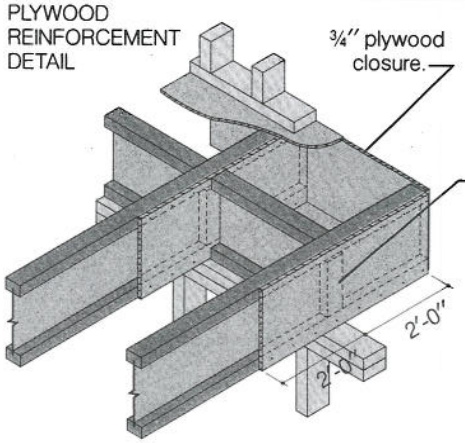
TJI® JOIST LOAD BEARING CANTILEVER DETAILS

LOAD BEARING CANTILEVER DETAILS



TJI® joists may be cantilevered up to a maximum of 2'-0" when supporting roof load, but may require reinforcement. Consult tables on this page to determine required reinforcement and details on this page for methods of reinforcement.

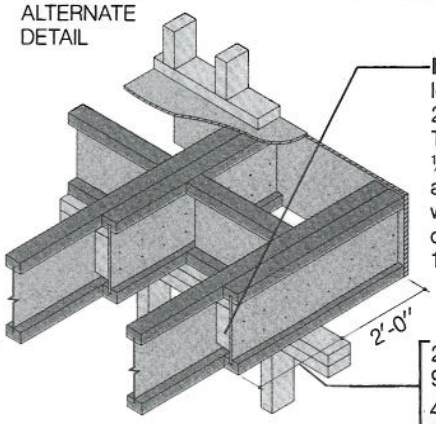
PLYWOOD REINFORCEMENT DETAIL



Web stiffener required each side with 14" and 16" TJI® joists.

NOTE: ¾"x48" CDX plywood reinforcement or other ¾" APA 48/24 rated sheathing must match the full depth of the TJI® joist. Nail to the TJI® joist with 8d nails @ 6" o.c. When reinforcing both sides, stagger nails to avoid splitting. Install with face grain horizontal.

ALTERNATE DETAIL



NOTE: Block together full length with filler blocks. Use 2x6x4'-0" with 9½" and 11⅞" TJI® joist. Use 2x10x6'-0" + ½" plywood (2" net) with 14" and 16" TJI® joist. Nail block with 2 rows 10d nails at 6" o.c. and clinch (3 rows with 14" and 16" TJI® joist).

2'-0" with 9½" and 11⅞" TJI® joist
4'-0" with 14" and 16" TJI® joist

Numbers in charts refer to footnotes below.

0. No reinforcement required.
K. Web stiffener required each side of joist at bearing. See detail "L" page 6.
1. ¾"x48" plywood reinforcement required on one side of joist or double the joists as shown in alternate detail. When reinforcing with plywood, add web stiffener each side of joist bearing for 14" and 16" TJI® joists.
2. ¾"x48" plywood reinforcement required on two sides of joist or double the joists as shown in alternate detail. When reinforcing with plywood, add web stiffener each side of joist bearing for 14" and 16" TJI® joists.
3. Double the joists as shown in alternate detail.
4. Will not work. Reduce spacing of joists.

NOTE: Assumes a 10 psf roof dead load and 60 plf wall load. Additional support may be required for other loadings.

9½" Load Bearing Cantilever Table

Roof Total Load		30 PSF			40 PSF			50 PSF		
Joist Spcg.		16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Roof Truss Span w/ 24" Soffit Assumed	24'	0	0	1	1	1	2	1	2	4
	26'	0	1	1	1	1	2	1	2	4
	28'	0	1	1	1	2	2	2	2	4
	30'	0	1	2	1	2	4	2	4	4
	32'	1	1	2	1	2	4	2	4	4
	34'	1	1	2	1	2	4	2	4	4
	36'	1	1	2	2	2	4	2	4	4

11⅞" Load Bearing Cantilever Table

Roof Total Load		30 PSF			40 PSF			50 PSF		
Joist Spcg.		16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Roof Truss Span w/ 24" Soffit Assumed	26'	0	0	1	0	1	1	1	1	2
	28'	0	0	1	0	1	1	1	1	2
	30'	0	0	1	1	1	2	1	1	2
	32'	0	1	1	1	1	2	1	1	2
	34'	0	1	1	1	1	2	1	2	4
	36'	0	1	1	1	1	2	1	2	4
	38'	0	1	1	1	1	2	2	2	4

14" Load Bearing Cantilever Table

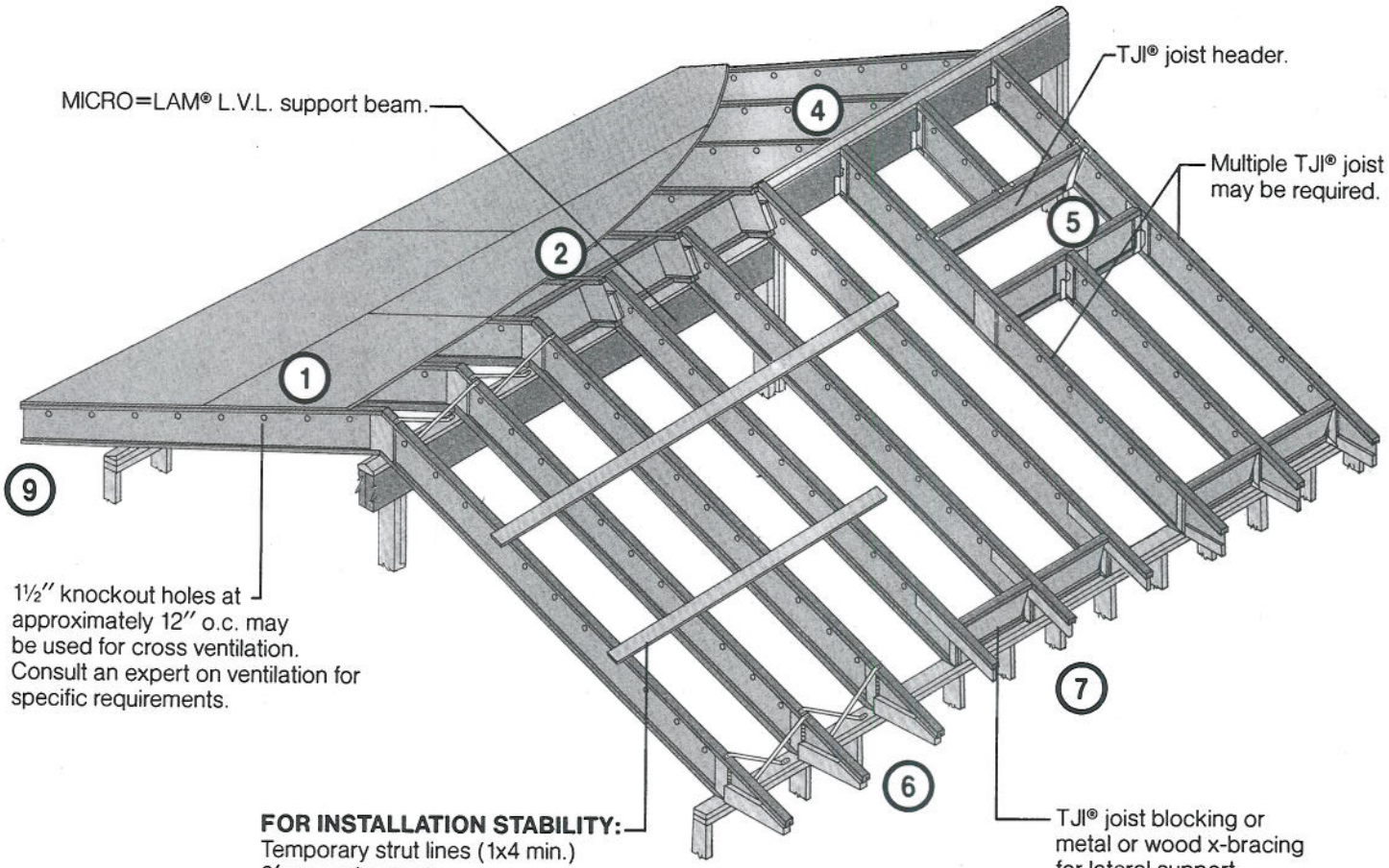
Roof Total Load		30 PSF			40 PSF			50 PSF		
Joist Spcg.		16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Roof Truss Span w/ 24" Soffit Assumed	26'	0	0	0	0	0	1	0	1	2
	28'	0	0	0	0	0	1	0	1	2
	30'	0	0	0	0	0	1	0	1	3
	32'	0	0	K	0	1	2	1	2	3
	34'	0	0	1	0	1	2	1	2	3
	36'	0	0	1	0	1	2	1	2	3
	38'	0	0	1	0	1	3	1	2	3
	40'	0	0	1	K	1	3	2	3	3
	42'	0	K	1	1	2	3	2	3	3

16" Load Bearing Cantilever Table

Roof Total Load		30 PSF			40 PSF			50 PSF		
Joist Spcg.		16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Roof Truss Span w/ 24" Soffit Assumed	26'	0	0	0	0	0	K	0	K	1
	28'	0	0	0	0	0	K	0	K	1
	30'	0	0	0	0	0	1	0	1	2
	32'	0	0	K	0	K	1	K	1	2
	34'	0	0	K	0	K	1	K	1	2
	36'	0	0	K	0	K	1	K	1	2
	38'	0	0	K	0	1	2	1	1	3
	40'	0	0	1	K	1	2	1	2	3
	42'	0	K	1	K	1	2	1	2	3

TJI® JOIST ROOF DETAILS

TYPICAL ROOF FRAMING



NAILING OF SHEATHING TO TOP FLANGE

Nail Size	Closest o.c. spacing per row
8d box	2″
8d common	2″
10d, 12d box	2″
10d, 12d common	3″

- Maximum spacing of nails is:
  18″ o.c. for 9½″ and 11⅞″ TJI® joists
  24″ o.c. for 14″ and 16″ TJI® joists
- If more than 1 row of nails is used, the rows must be offset at least ½″.
- 14 ga. staples may be substituted for 8d nails if minimum penetration of 1″ into the TJI® joist is achieved.

WARNING

DO NOT ALLOW WORKERS ON TJI® JOISTS UNTIL ALL BLOCKING, RIM JOISTS, HANGERS AND TEMPORARY BRACING ARE COMPLETED IN ACCORDANCE WITH ITEMS 1, 2, and 3 BELOW.

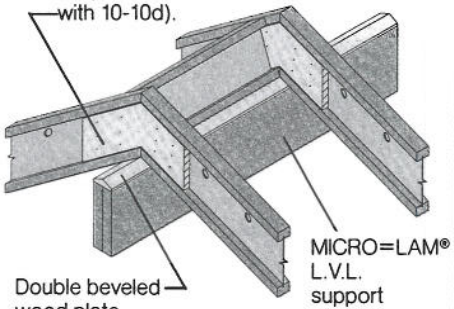
Improper concern for bracing during construction can result in serious accidents. Under normal conditions if the following guidelines are observed, accidents will be avoided.

1. A lateral strength, like a braced end wall or an existing deck, must be established at the ends of the bay. This can also be accomplished by a temporary or permanent deck (sheathing) nailed to the first 4 feet of joists at the end of the bay.
2. All blocking, hangers and rim joists at the end supports of the TJI® joists must be completely installed and properly nailed.
3. Temporary strut lines of 1x4 minimum must be nailed to the braced end wall or sheathed area as in 1 above and to each joist at the on-center spacing shown. Without this bracing, buckling sideways or roll over is highly probable under light construction loads — like two workers and one layer of unnailed sheathing.
4. Sheathing must be totally attached to each TJI® joist before additional loads can be placed on the system.
5. Ends of cantilevers require strut lines on both the top and bottom flanges.
6. The top flanges must remain straight within a tolerance of ½″ ± from true alignment.

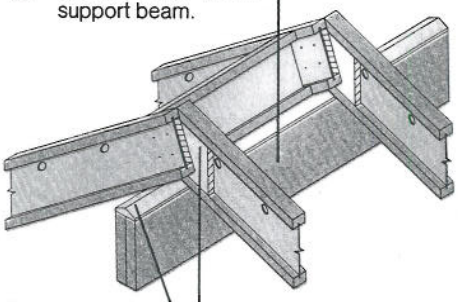
NOTE: TJI® JOISTS SHOULD BE PROTECTED FROM THE WEATHER.

TJI® JOIST ROOF DETAILS

1 ¾″ x 2′0″ plywood gusset each side with 12-8d nails and clinch (or use Simpson MSTI with 10-10d).

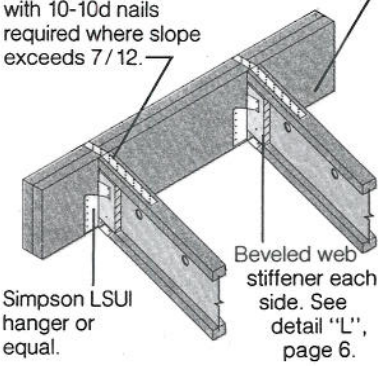


2 MICRO=LAM® L.V.L. support beam.



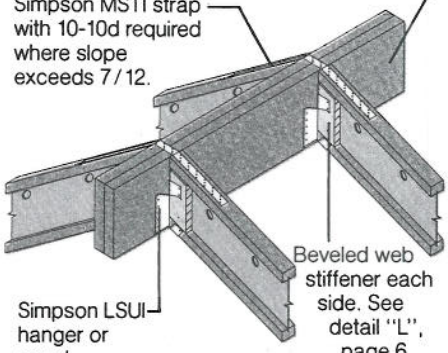
3 Simpson MSTI strap with 10-10d nails required where slope exceeds 7/12.

MICRO=LAM® L.V.L. support beam.

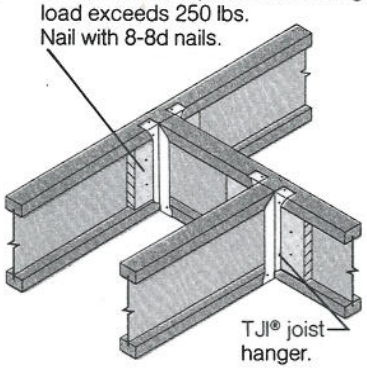


4 MICRO=LAM® L.V.L. support beam.

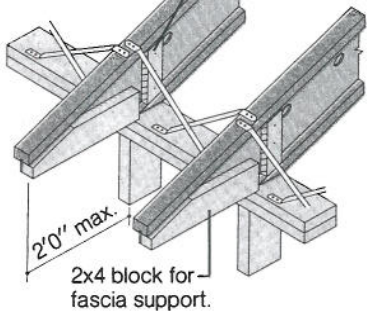
Simpson MSTI strap with 10-10d required where slope exceeds 7/12.



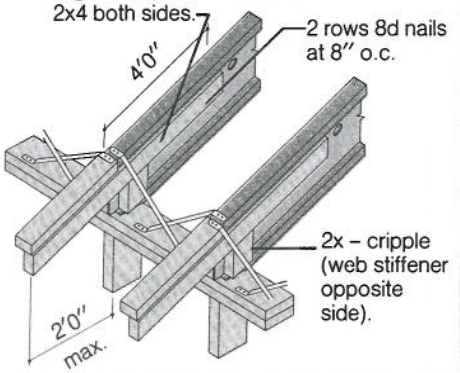
5 Backer block required where hanger load exceeds 250 lbs. Nail with 8-8d nails.



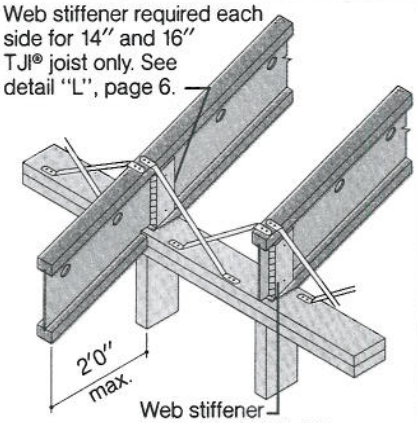
6 Web stiffener required each side for 14″ and 16″ TJI® joist only. See detail "L", page 6.



7 2x4 one side. If load is greater than 50 psf, or if joist spacing is greater than 32″ o.c., use 2x4 both sides.



8 Web stiffener required each side for 14″ and 16″ TJI® joist only. See detail "L", page 6.



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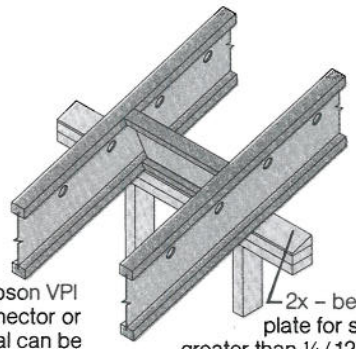
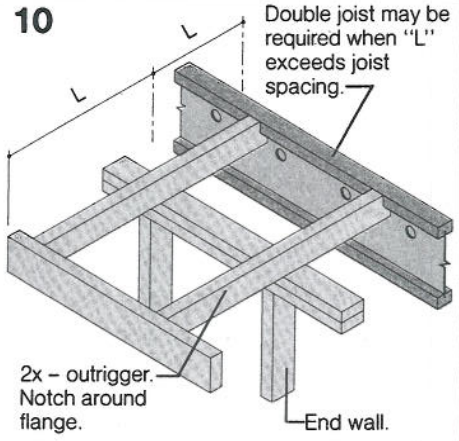


Simpson VPI connector or equal can be used in lieu of beveled plate for slopes from 1/12 to 6/12.

2x – beveled plate for slope greater than ¼/12. For slope greater than 4/12 additional connectors may be required.

10



GENERAL NOTES:

MAXIMUM SLOPE
Unless otherwise noted, all details are valid to maximum 12/12 slope.

MINIMUM BEARING
1¾″ minimum bearing required at joist ends; 3½″ minimum bearing at intermediate supports.

BIRDSMOUTH CUTS AT BEARING
TJI® joist flange may be birdsmouth cut only at the low end of the joist. Birdsmouth cut must not overhang inside face of plate, so that TJI® joist flange bears fully on plate.

LATERAL SUPPORT
All roof joist end bearings must be laterally supported. Use TJI® joist blocking or metal or wood X-bracing.

VENTILATION
1½″ knockout holes at 12″ o.c. may be used for cross-ventilation of joist space. Consult an expert on ventilation for specific requirements.

TJI® JOIST HANGERS
See page 15.

TJI® JOIST ROOF SPAN CHART

Low slope (6/12 or less) and high slope (over 6/12 through 12/12)
Max. clear span in feet and inches (based on horizontal spans)

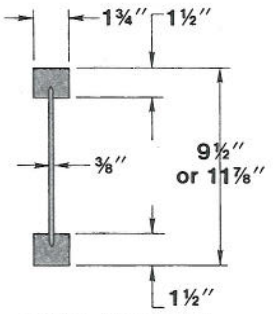
JOIST SPACING		LIVE / DEAD LOAD P.S.F.	9½" TJI®/25		11⅞" TJI®/25		14" TJI®/35		16" TJI®/35	
			LOW SLOPE	HIGH SLOPE	LOW SLOPE	HIGH SLOPE	LOW SLOPE	HIGH SLOPE	LOW SLOPE	HIGH SLOPE
12" o.c.	Non-Snow (125%)	20/10	23'-10"	21'-5"	28'-4"	25'-6"	35'-3"	31'-9"	39'-1"	35'-2"
		20/15	22'-6"	20'-1"	26'-9"	23'-11"	33'-4"	29'-9"	36'-11"	33'-0"
		20/20	21'-5"	19'-0"	25'-6"	22'-7"	31'-9"	28'-2"	35'-2"	31'-3"
	Snow (115%)	25/10	22'-7"	20'-5"	26'-11"	24'-4"	33'-6"	30'-4"	37'-1"	33'-7"
		25/15	21'-6"	19'-3"	25'-7"	23'-0"	31'-11"	28'-7"	35'-4"	31'-8"
		30/10	21'-7"	19'-7"	25'-9"	23'-4"	32'-0"	29'-1"	35'-6"	32'-2"
		30/15	20'-8"	18'-7"	24'-7"	22'-2"	30'-8"	27'-7"	33'-11"	30'-7"
		40/10	19'-9"	18'-3"	23'-6"	21'-9"	29'-3"	27'-1"	32'-5"	30'-0"
		40/15	19'-4"	17'-6"	23'-0"	20'-10"	28'-8"	25'-11"	31'-9"	28'-9"
		50/10	18'-3"	17'-0"	21'-9"	20'-3"	27'-1"	25'-2"	30'-0"	27'-11"
		50/15	18'-3"	16'-7"	21'-9"	19'-9"	27'-1"	24'-7"	30'-0"	27'-3"
16" o.c.	Non-Snow (125%)	20/10	21'-6"	19'-5"	25'-8"	23'-1"	31'-11"	28'-9"	35'-4"	31'-10"
		20/15	20'-4"	18'-2"	24'-3"	21'-8"	30'-2"	26'-11"	33'-5"	29'-10"
		20/20	19'-4"	17'-2"	23'-0"	20'-6"	28'-8"	25'-6"	31'-9"	28'-3"
	Snow (115%)	25/10	20'-5"	18'-6"	24'-4"	22'-0"	30'-4"	27'-5"	33'-7"	30'-5"
		25/15	19'-5"	17'-5"	23'-2"	20'-9"	28'-10"	25'-11"	31'-11"	28'-8"
		30/10	19'-6"	17'-9"	23'-3"	21'-1"	29'-0"	26'-4"	32'-1"	29'-2"
		30/15	18'-8"	16'-10"	22'-3"	20'-1"	27'-8"	25'-0"	30'-8"	27'-8"
		40/10	17'-10"	16'-6"	21'-3"	19'-8"	26'-5"	24'-6"	29'-4"	27'-2"
		40/15	17'-5"	15'-10"	20'-9"	18'-10"	25'-10"	23'-6"	28'-8"	26'-0"
		50/10	16'-6"	15'-4"	19'-7"	18'-3"	24'-5"	22'-9"	26'-9"	25'-3"
		50/15	16'-5"	15'-0"	19'-6"	17'-10"	24'-5"	22'-3"	24'-8"	23'-3"
19.2" o.c.	Non-Snow (125%)	20/10	20'-2"	18'-2"	24'-1"	21'-8"	30'-0"	27'-0"	33'-2"	29'-11"
		20/15	19'-1"	17'-1"	22'-9"	20'-4"	28'-3"	25'-3"	31'-4"	28'-0"
		20/20	18'-2"	16'-2"	21'-7"	19'-3"	26'-11"	23'-11"	29'-10"	26'-6"
	Snow (115%)	25/10	19'-2"	17'-4"	22'-10"	20'-8"	28'-5"	25'-9"	31'-6"	28'-6"
		25/15	18'-3"	16'-5"	21'-9"	19'-6"	27'-0"	24'-4"	29'-11"	26'-11"
		30/10	18'-4"	16'-8"	21'-10"	19'-10"	27'-2"	24'-8"	30'-1"	27'-4"
		30/15	17'-6"	15'-10"	20'-10"	18'-10"	26'-0"	23'-5"	28'-9"	26'-0"
		40/10	16'-8"	15'-6"	19'-11"	18'-5"	24'-9"	23'-0"	26'-8"	25'-4"
		40/15	16'-4"	14'-10"	19'-2"	17'-8"	24'-0"	22'-0"	24'-3"	22'-8"
		50/10	15'-5"	14'-5"	17'-10"	17'-1"	22'-5"	21'-4"	22'-8"	21'-8"
		50/15	15'-0"	14'-1"	16'-6"	15'-7"	20'-8"	19'-6"	20'-11"	19'-9"
24" o.c.	Non-Snow (125%)	20/10	18'-8"	16'-10"	22'-3"	20'-1"	27'-8"	25'-0"	30'-8"	27'-8"
		20/15	17'-7"	15'-9"	21'-0"	18'-9"	26'-2"	23'-5"	29'-0"	25'-11"
		20/20	16'-9"	14'-11"	20'-0"	17'-9"	24'-10"	22'-1"	27'-6"	24'-6"
	Snow (115%)	25/10	17'-9"	16'-1"	21'-1"	19'-1"	26'-3"	23'-10"	29'-2"	26'-5"
		25/15	16'-10"	15'-2"	20'-1"	18'-0"	25'-0"	22'-6"	26'-2"	23'-10"
		30/10	16'-11"	15'-5"	20'-2"	18'-4"	25'-1"	22'-10"	26'-6"	24'-11"
		30/15	16'-2"	14'-7"	18'-8"	17'-2"	23'-4"	21'-6"	23'-7"	21'-9"
		40/10	15'-5"	14'-4"	17'-2"	16'-3"	21'-6"	20'-5"	21'-9"	20'-8"
		40/15	14'-2"	13'-2"	15'-7"	14'-7"	19'-6"	18'-3"	19'-10"	18'-6"
		50/10	13'-2"	12'-8"	14'-7"	14'-0"	18'-3"	17'-6"	18'-6"	17'-9"
		50/15	12'-2"	11'-6"	13'-6"	12'-9"	16'-10"	15'-11"	17'-1"	16'-2"

1. Roof joists to be sloped ¼" in 12" minimum. No camber provided.
2. Maximum deflection is limited to L/180 at total load, L/240 at live load.
3. Tables are based on a support beam or wall at the high end. Applications utilizing ridge boards are not covered by these tables.

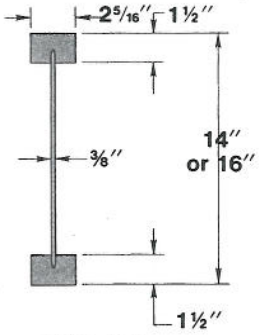
NOTE: For loads or on-center spacings not shown, refer to allowable uniform load table, page 13.

TJI® JOIST DESIGN PROPERTIES & SPAN CHARTS

DEPTH (INCHES)	WEIGHT (PLF)[1]	EI* 10^6IN²LBS.	MAXIMUM VERTICAL SHEAR (LBS.)			MAXIMUM RESISTIVE MOMENT (FT.-LBS.)		
			100%	115%	125%	100%	115%	125%
9½" TJI/25 Joist	1.9	170	805	925	1006	2940	3380	3675
11⅞" TJI/25 Joist	2.2	285	875	1006	1094	3935	4525	4920
14" TJI/35 Joist	2.8	550	1100	1265	1375	6450	7420	8060
16" TJI/35 Joist	3	745	1100	1265	1375	7570	8705	9460



9½" & 11⅞" Joists



14" & 16" Joists

*The following formula approximates the uniform load deflection of Δ (inches)

$$\Delta = \frac{5w\ell^4}{384\ EI} + \frac{w\ell^2}{2.7dx10^5}$$

w = uniform load in pounds per lineal inch
ℓ = clear span in inches
d = out to out depth of the joist
EI = value from table

NOTE: The shear values above are based on an assumed minimum bearing length of 1¾".

[1] Weights shown are for Douglas Fir MICRO=LAM® L.V.L. flanges. For Southern Yellow Pine MICRO=LAM® L.V.L. flanges, increase weight approximately 20%.

RESIDENTIAL FLOOR SPAN CHARTS

MINIMUM CRITERIA PER CODE

o.c. spacing	JOIST DEPTH			
	9½"	11⅞"	14"	16"
12"	18'-7"	20'-2"	27'-3"	30'-1"
16"	16'-11"	20'-2"	24'-8"	27'-4"
19.2"	15'-11"	18'-11"	23'-2"	25'-8"
24"	14'-9"	17'-6"	20'-3"	21'-10"

NOTE: Based on minimum code deflection criteria of L/360 at live load. For stiffer floors, please see "Trus Joist Recommended Span" table. See "A Word About Floor Performance" below.

TRUS JOIST RECOMMENDED SPANS

o.c. spacing	JOIST DEPTH			
	9½"	11⅞"	14"	16"
12"	16'-10"	20'-0"	24'-6"	27'-1"
16"	15'-4"	18'-2"	22'-3"	24'-8"
19.2"	14'-5"	17'-1"	20'-11"	23'-2"
24"	13'-4"	15'-10"	19'-4"	21'-5"

NOTE: Based on L/480 live load deflection.

GENERAL NOTES:

1. Based on residential floor load of 40 PSF live load and 10 PSF dead load.
2. Assumes composite action with single layer of glue-nailed plywood decking for deflection only. **Spans shall be reduced 5" where sheathing panels are nailed only.**
3. Spans are based on clear distance between supports.
4. Web stiffeners (see detail "K", page 6) are required at intermediate supports where joists are continuous span, bearing width is less than 5¼" and either span is greater than:
   13'-8": for 9½" and 11⅞" TJI® joists @ 24" o.c.
   17'-2": for 11⅞" TJI® joists @ 19.2" o.c.
   19'-2": for 14" and 16" TJI® joists @ 24" o.c.
   24'-0": for 16" TJI® joists @ 19.2" o.c.

A WORD ABOUT FLOOR PERFORMANCE

The spans indicated in the "Minimum Criteria Per Code" chart above meet or exceed all code requirements and may provide acceptable performance to the user. But, in addition to safely supporting the loads to be imposed on it, a floor system must perform to the satisfaction of the end user. Since expectancy levels may vary from one user to another, designing a floor system becomes a subjective issue requiring judgement as to the sensitivity of the occupant.

The second span chart above entitled "Trus Joist Recommended Spans" has been developed as a guide to help builders construct higher quality floors. Spans in the "Trus Joist Recommended Spans" chart were developed using stricter deflection limits (see note under chart) to limit deflection over longer spans.

In addition to joist deflection, several other factors may affect the performance of the floor system. A glue-nailed floor system will perform better than a nailed floor. Deflection of the sheathing material between the joists can be reduced by increasing the thickness of sheathing or decreasing the spacing of the joist. Proper installation, including adequate and level support for the joists, and care in fastening of the joists and sheathing are essential to the system performance.

In some cases where the system is stiff and very little dead load (i.e. partition walls, ceilings, furniture, etc.) exists, vibrations may occur. Vibrations are generally sufficiently dampened when a ceiling is directly attached to the bottom flange of the joists. When the joists occur in a crawl space or over an unfinished basement, the vibration can be minimized by nailing a continuous 2x4 (flat) perpendicular to the joists' bottom flanges at midspan and tying off to the end walls.

TJI® JOIST ALLOWABLE UNIFORM LOAD – FLOOR

In lbs. per lin. foot (PLF)

SPAN	9½" TJI®/25 JOIST		11⅞" TJI®/25 JOIST		14" TJI®/35 JOIST		16" TJI®/35 JOIST		SPAN
	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	
6		268		291		345		345	6
7		230		250		296		296	7
8		201		219		259		259	8
9		179		194		230		230	9
10	140	161		175		207		207	10
11	110	146		159		188		188	11
12	88	132	138	146		173		173	12
13	71	121	113	135		158		159	13
14	58	111	93	124		145		148	14
15	48	97	78	115		134		137	15
16	41	81	65	107	115	125		127	16
17	34	69	55	100	98	116		118	17
18	29	58	47	94	85	109		111	18
19	25	50	41	82	73	103	96	104	19
20	22	43	35	71	64	97	84	99	20
21	19	38	31	62	56	92	74	93	21
22	17	33	27	54	50	87	65	89	22
23	15	29	24	48	44	83	58	84	23
24			21	42	39	78	52	80	24
25			19	38	35	70	46	77	25
26			17	34	31	62	41	74	26
27			15	30	28	56	37	71	27
28					25	51	34	68	28
29					23	46	31	61	29
30					21	42	28	56	30
31					19	38	25	51	31
32					17	35	23	46	32
33					16	32	21	43	33
34					15	29	20	39	34

1. Live load values are based on deflection of L/480. For deflection limits of L/180, L/240, and L/360, multiply live load by 2.67, 2.0, and 1.33 respectively.
2. Total load column limits joist deflection to L/240.
3. To size a joist for use in a floor, it is necessary to check both live load and total load. When live load is not shown, total load will control.
4. Load capacity assumes no composite action provided by sheathing.
5. The values above reflect the most restrictive of simple span or multiple span applications.

PSF TO PLF CONVERSION TABLE

Load in lbs. per lineal foot (PLF)

o.c. spacing	LOAD IN LBS. PER SQUARE FOOT (PSF)								
	20	25	30	35	40	45	50	55	60
12"	20	25	30	35	40	45	50	55	60
16"	27	34	40	47	54	60	67	74	80
19.2"	32	40	48	56	64	72	80	88	96
24"	40	50	60	70	80	90	100	110	120

TJI® JOIST ALLOWABLE UNIFORM LOAD – ROOF

In lbs. per lin. foot (PLF)

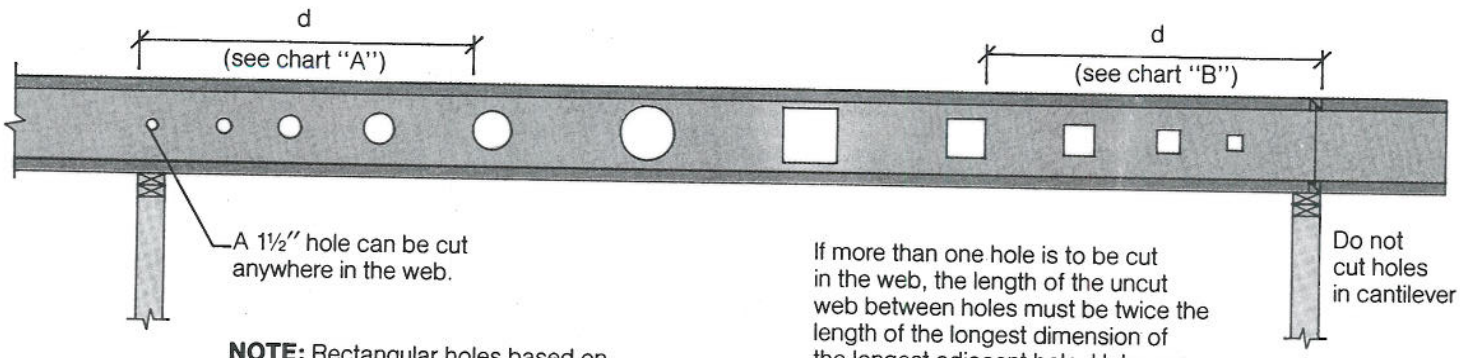
SPAN	9½" TJI®/25 JOIST			11⅞" TJI®/25 JOIST			14" TJI®/35 JOIST			16" TJI®/35 JOIST			SPAN
	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	
6	290	316		316	343		397	431		397	431		6
7	249	271		271	294		340	370		340	370		7
8	218	237		237	257		298	324		298	324		8
9	192	208		210	229		265	288		265	288		9
10	170	184		189	206		238	259		238	259		10
11	152	165		171	186		216	235		216	235		11
12	138	150		155	168		198	216		198	216		12
13	126	137		141	153		182	198		183	199		13
14	116	126	117	130	141		167	181		170	185		14
15	108	117	97	120	130		154	168		157	171		15
16	101	108	81	112	121		143	156		146	159		16
17	91	91	69	104	114	111	134	145		136	148		17
18	78	78	58	98	107	95	125	136		128	139		18
19	67	67	50	92	100	82	118	128		120	130		19
20	58	58	43	87	94	71	112	121		113	123		20
21	50	50	38	82	82	62	106	115	112	107	117		21
22	44	44	33	72	72	54	101	109	99	102	111		22
23	39	39	29	64	64	48	96	104	88	97	105		23
24	34	34	26	56	56	42	91	99	78	93	101		24
25	31	31	23	50	50	38	87	93	70	89	96	92	25
26	27	27	20	45	45	34	83	83	62	85	92	83	26
27	24	24	18	40	40	30	75	75	56	81	88	75	27
28	22	22	16	36	36	27	68	68	51	78	85	68	28
29	20	20	15	33	33	25	61	61	46	75	82	61	29
30				30	30	22	56	56	42	73	74	56	30
31				27	27	20	51	51	38	68	68	51	31
32				25	25	18	46	46	35	62	62	46	32
33				23	23	17	42	42	32	57	57	43	33
34				21	21	15	39	39	29	52	52	39	34

1. Roof joists to be sloped ¼" in 12" minimum. No camber provided.
2. For roof slopes greater than 2/12, consideration must be given to the increased dead load and deflection caused by actual sloped length.
3. Total load column limits joist deflection to L/180. For stiffer deflection criteria, check L/240 column.
4. Values shown are for worst case of simple or continuous span.

Actual slope length can be approximated by multiplying the horizontal span by the following factors.

SLOPE LENGTH TABLE	
SLOPE	FACTOR
2½ in 12	1.02
3 in 12	1.03
3½ in 12	1.04
4 in 12	1.05
4½ in 12	1.07
5 in 12	1.08
6 in 12	1.12
7 in 12	1.16
8 in 12	1.20
9 in 12	1.25
10 in 12	1.30
11 in 12	1.36
12 in 12	1.41

TJI® JOIST HOLE CHARTS



NOTE: Rectangular holes based on measurement of longest side.

If more than one hole is to be cut in the web, the length of the uncut web between holes must be twice the length of the longest dimension of the longest adjacent hole. Holes may be located vertically anywhere within the web.

TJI® Joists are manufactured with 1½" perforated "knockouts" in the web at approx. 12" o.c.

CHART A – ROUND HOLES

MINIMUM DISTANCE (d) FROM ANY SUPPORT TO HOLE

JOIST TYPE	ROUND HOLE SIZE													
	2"	3"	4"	5"	6"	6½"	7"	8"	8⅞"	9"	10"	11"	12"	13"
9½" TJI®/25	1'-0"	2'-0"	3'-0"	4'-0"	5'-0"	5'-0"	—	—	—	—	—	—	—	—
11⅞" TJI®/25	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"	5'-0"	5'-0"	5'-6"	6'-0"	—	—	—	—	—
14" TJI®/35	2'-6"	3'-6"	4'-0"	4'-6"	5'-0"	5'-0"	5'-0"	5'-6"	6'-0"	6'-0"	6'-6"	7'-0"	—	—
16" TJI®/35	2'-6"	3'-6"	4'-0"	4'-6"	5'-0"	5'-0"	5'-0"	5'-6"	6'-0"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"

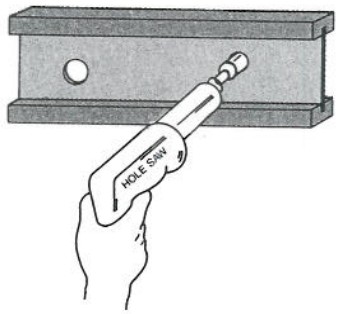
CHART B – RECTANGULAR HOLES

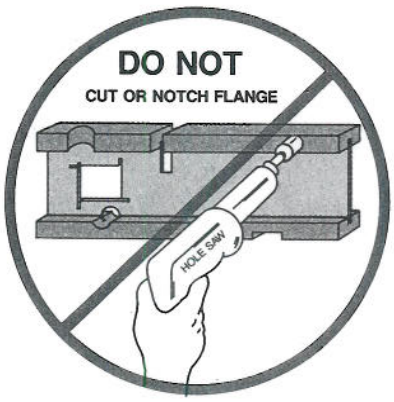
MINIMUM DISTANCE (d) FROM ANY SUPPORT TO HOLE

JOIST TYPE	RECTANGULAR HOLE SIZE – LONGEST DIMENSION										
	4"	5"	6"	6½"	7"	8"	8½"	9"	10"	11"	12"
9½" TJI®/25	4'-0"	5'-0"	5'-6"	6'-0"	—	—	—	—	—	—	—
11⅞" TJI®/25	4'-0"	5'-0"	5'-6"	6'-0"	6'-0"	6'-6"	6'-6"	—	—	—	—
14" TJI®/35	4'-6"	5'-0"	5'-6"	6'-0"	6'-0"	6'-6"	6'-6"	7'-0"	8'-0"	—	—
16" TJI®/35	4'-6"	5'-0"	5'-6"	6'-0"	6'-0"	6'-6"	6'-6"	7'-0"	8'-0"	8'-6"	9'-0"

NOTE: The distances in the above charts are based on uniformly loaded joists supporting the maximum loads shown for any of the tables listed in this reference guide. For other load conditions, contact your Trus Joist representative.

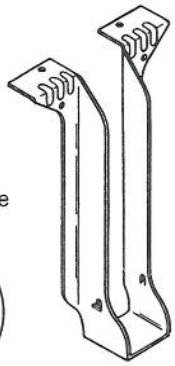
DO





TJI® JOIST FRAMING CONNECTORS

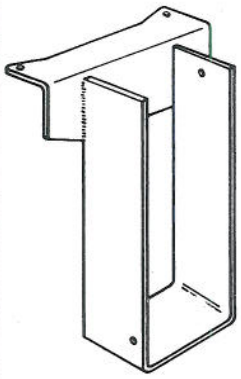
H1 TOP MOUNT SINGLE JOIST HANGER



Positive angle nailing

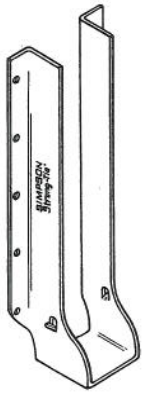
Joist	Hanger Required
9½" TJI®/25	IT-9
11⅞" TJI®/25	IT-11
14" TJI®/35	IT-3514
16" TJI®/35	MIT-3516

H2 TOP MOUNT DOUBLE JOIST HANGER



Joist	Double Hanger Required
9½" TJI®/25	W9-2
11⅞" TJI®/25	W11-2
14" TJI®/35	WP3514-2
16" TJI®/35	WP3516-2

H3 FACE MOUNT SINGLE JOIST HANGER

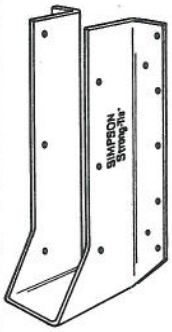


Positive angle nailing

Joist	Hanger Required
9½" TJI®/25	IU-9
11⅞" TJI®/25	IU-11
14" TJI®/35	IU-3514
16" TJI®/35	IU-3514*

*Web stiffeners are required whenever the sides of the hanger do not extend up to support the top flange laterally.

H4 FACE MOUNT DOUBLE JOIST HANGER

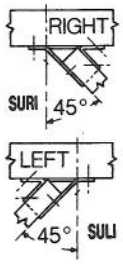


Joist	Double Hanger Required
9½" TJI®/25	U-410*
11⅞" TJI®/25	U-410*
14" TJI®/35	HU3514-2*
16" TJI®/35	HU3516-2*

*Web stiffeners are required.

H5 FACE MOUNT SKEWED JOIST HANGER

Available for both left hand and right hand applications.

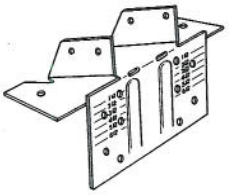


TOP VIEW

Joist	Skewed Hanger Required
9½" TJI®/25	SURI-9/SULI-9 45° skew
11⅞" TJI®/25	SURI-11/SULI-11 45° skew*
14" TJI®/35	SURI 3510-12/SULI 3510-12 45° skew* OR
16" TJI®/35	SURI 3514-20/SULI 3514-20 45° skew*

*Web stiffeners are required.

H6 VARIABLE SLOPE SEAT CONNECTOR

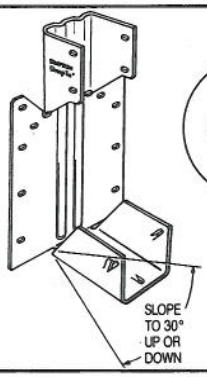


Max. 6:12 Slope

Joist	Hanger Required
9½" & 11⅞" TJI®/25	VPI/25
14" & 16" TJI®/35	VPI/35

NOTE: Requires 3½" bearing surface.

H7 VARIABLE SLOPE SEAT JOIST HANGER



Joist	Hanger Required
9½" TJI®/25	LSUI 25*
11⅞" TJI®/25	LSUI 25*
14" TJI®/35	LSUI 35*
16" TJI®/35	LSUI 35*
DBL 9½" TJI®/25	LSU 410*(1)
DBL 11⅞" TJI®/25	LSU 410*(1)

LSUI 25 and LSUI 35 are also available in 45° skews left or right.

*Web stiffeners are required.

(1)Maximum load on hanger is 1175 lb.

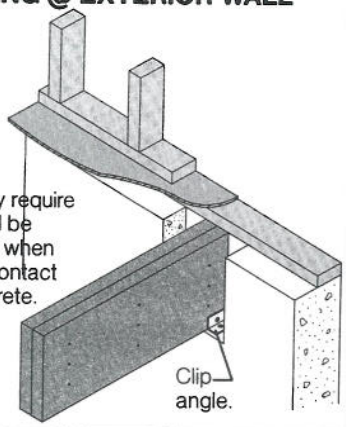
TJI® joist framing connectors illustrated above are manufactured by Simpson Strong-Tie Company, Inc.

NOTE: For Web Stiffener Detail, see page 6.

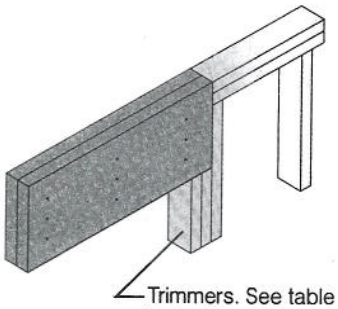
NOTE: Maximum loads assume all nail holes used with proper nails.

MICRO=LAM® L.V.L. DETAILS

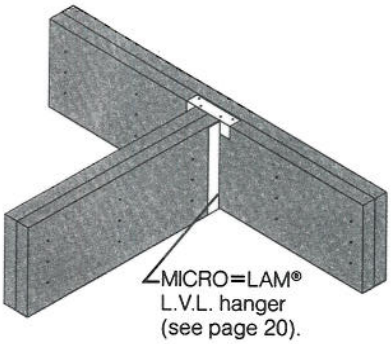
BEARING @ EXTERIOR WALL



BEARING FOR DOOR OR WINDOW HEADER



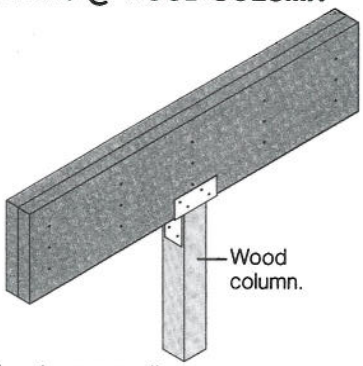
BEAM TO BEAM CONNECTION



See Table 7, page 21, for side loaded MICRO=LAM® L.V.L. beams.

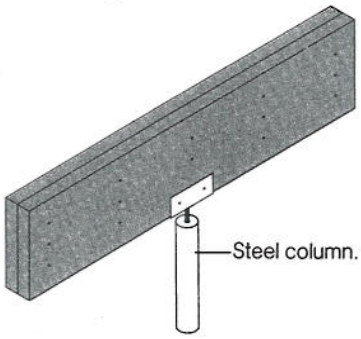
NOTE: BEARING LENGTH IS EXTREMELY CRITICAL AND MUST BE CONSIDERED FOR EACH APPLICATION.

BEARING @ WOOD COLUMN



Verify column capacity and bearing length.

BEARING @ STEEL COLUMN

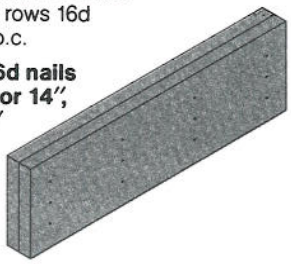


Verify column capacity and bearing length.

NAILING PATTERN FOR MULTIPLE PIECES

For Top Loaded Beams
Minimum of 2 rows 16d nails @ 12″ o.c.

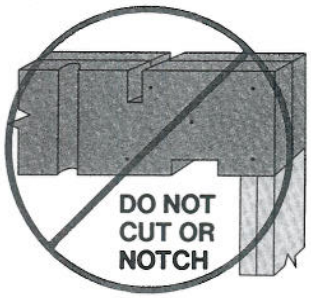
3 rows of 16d nails @ 12″ o.c. for 14″, 16″, and 18″ beams.



NOTE: For side loaded multiple member beams, additional nailing or bolting may be required. See Table 7, page 21.

BEARING LENGTH REQUIREMENTS

REACTION (POUNDS X 1,000)	MINIMUM BEARING LENGTH IN INCHES								
	ONE PIECE BEAM			TWO PIECE BEAM			THREE PIECE BEAM		
	100%	115%	125%	100%	115%	125%	100%	115%	125%
1	1.5″	1.5″	1.5″	1.5″	1.5″	1.5″	1.5″	1.5″	1.5″
2	3″	2.5″	2.5″	1.5″	1.5″	1.5″	1.5″	1.5″	1.5″
3	4″	3.5″	3″	2″	1.5″	1.5″	1.5″	1.5″	1.5″
4	5″	4.5″	4″	3″	2.5″	2.5″	2″	1.5″	1.5″
5	6″	5.5″	5″	3.5″	3″	3″	2.5″	2″	2″
6	7.5″	6.5″	6″	4″	3.5″	3″	3″	2.5″	2.5″
7	8.5″	7.5″	7″	4.5″	4″	3.5″	3″	3″	2.5″
8	9.5″	8.5″	8″	5″	4.5″	4″	3.5″	3″	3″
9				5.5″	5″	4.5″	4″	3.5″	3″
10				6″	5.5″	5″	4.5″	4″	3.5″
11				6.5″	6″	5.5″	4.5″	4″	4″
12				7.5″	6.5″	6″	5″	4.5″	4″
13				8″	7″	6.5″	5.5″	5″	4.5″
14				8.5″	7.5″	7″	6″	5″	5″
15				9″	8″	7.5″	6″	5.5″	5″
16				9.5″	8.5″	8″	6.5″	6″	5.5″
17							7″	6″	5.5″
18							7.5″	6.5″	6″
19							7.5″	7″	6.5″
20							8″	7″	6.5″
21							8.5″	7.5″	7″
22							9″	8″	7″



NO DRILLING UNLESS APPROVED BY TRUS JOIST CORPORATION.

NOTES

1. A minimum of 1.5″ of bearing length is required.
2. Bearing across full width of beam is assumed.
3. Assumes structural adequacy of supporting member.
4. Assumes 500 psi bearing stress on beam. May be further limited by bearing stress on supported member.
5. **16″ and 18″ deep beams are to be used in multiple member units only.**
6. Lateral support required at bearing points.
7. Nails installed on the narrow face (top edge) shall not be spaced any closer than 4″ for 10d common and 3″ for 8d common.

MICRO=LAM® L.V.L. BEAM SIZING – REFERENCE DIAGRAM

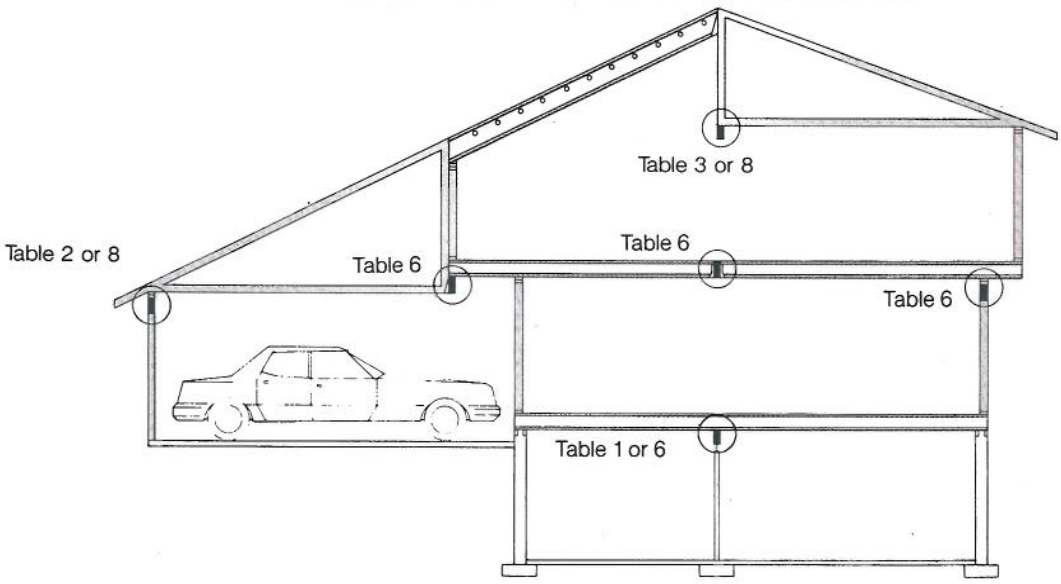
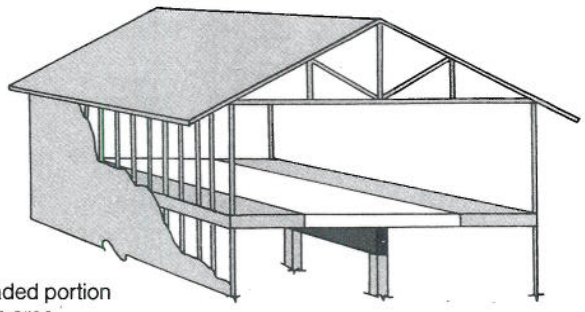


TABLE 1 – MICRO=LAM® L.V.L. FLOOR BEAM

1. Determine supported floor joist span by adding ½ the sum of the joist spans on both sides of the beam.
2. Determine column spacing.
3. From chart below, select proper beam size.

NOTE: In non-shaded portion of table, support beam ends with double trimmers (3″ bearing). At intermediate supports of continuous spans, use 5 trimmers (7½″ bearing). In **shaded portion** of table, use 3 trimmers (4½″ bearing) at beam ends and 7 trimmers (10½″ bearing) at intermediate supports of continuous spans. These trimmer requirements are based on the narrowest beam combination shown. Actual required bearing length can be determined from table, page 16.



Non-shaded portion indicates area of load on beam.

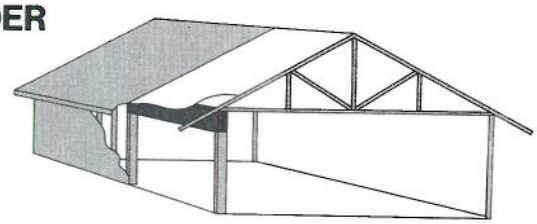
COLUMN SPACING	FLOOR JOIST SPAN (Use ½ the sum of the joist spans on both sides of the beam)								
	11′	12′	13′	14′	15′	16′	17′	18′	20′
10′	2-9½″	2-9½″	2-9½″	3-9½″ or 2-11⅞″	3-9½″ or 2-11⅞″	3-9½″ or 2-11⅞″	3-9½″ or 2-11⅞″	3-9½″ or 2-11⅞″	3-9½″ or 2-11⅞″
12′	3-9½″ or 2-11⅞″	3-9½″ or 2-11⅞″	2-11⅞″	2-11⅞″	2-11⅞″	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″
14′	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″	3-11⅞″ or 2-14″	2-14″	3-14″ or 2-16″	3-14″ or 2-16″	3-14″
16′	3-14″ or 2-16″	3-14″ or 2-16″	3-14″ or 2-16″	3-14″ or 2-16″	3-14″ or 2-16″	3-14″ or 2-16″	3-14″ or 2-16″	3-14″	3-16″
18′	3-14″ or 2-16″	3-14″ or 2-18″	3-16″ or 2-18″	3-16″ or 2-18″	3-16″	3-16″	3-16″	3-16″	3-16″
20′	3-16″ or 2-18″	3-16″	3-16″	3-18″	3-18″	3-18″	3-18″	3-18″	3-18″

- Based on residential loading of 40 PSF live load and 10 PSF dead load.
- Deflection limited to L/360 at live load.
- Calculations are based on continuous floor joist span and simple or continuous beam span conditions.
- For applications other than shown, refer to Table 6.
- Reduction in live load has been applied in accordance with UBC section 2306.

MICRO=LAM® L.V.L. DESIGN DATA

TABLE 2 – MICRO=LAM® L.V.L. GARAGE DOOR HEADER

For Single Story Applications

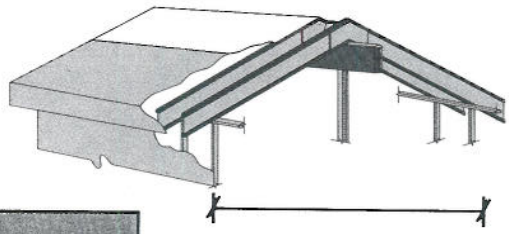


Non-shaded portion indicates area of load on header.

ROOF LOAD (P.S.F.)		NON-SNOW (125%) 20LL+10DL			NON-SNOW (125%) 20LL+20DL			SNOW (115%) 25LL+10DL			SNOW (115%) 30LL+10DL			SNOW (115%) 40LL+10DL		
DOOR OPENING SIZE		9′-3″	16′-3″	18′-3″	9′-3″	16′-3″	18′-3″	9′-3″	16′-3″	18′-3″	9′-3″	16′-3″	18′-3″	9′-3″	16′-3″	18′-3″
ROOF TRUSS SPAN IN FEET WITH 24″ SOFFIT ASSUMED	22′	1-9½″ or 2-7¼″	2-11⅞″ or 3-9½″	2-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″ or 3-9½″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″
	24′	1-9½″ or 2-7¼″	2-11⅞″ or 3-9½″	2-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	2-9½″	2-14″ or 3-11⅞″	2-16″ or 3-14″
	26′	1-9½″ or 2-7¼″	2-11⅞″ or 3-9½″	2-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	2-9½″	2-14″ or 3-11⅞″	2-16″ or 3-14″
	28′	1-9½″ or 2-7¼″	2-11⅞″ or 3-9½″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	2-9½″	2-14″ or 3-11⅞″	2-16″ or 3-14″
	30′	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-11⅞″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″	2-9½″	2-14″ or 3-11⅞″	2-16″ or 3-14″
	32′	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	1-11⅞″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″	1-9½″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	2-7¼″	2-14″ or 3-11⅞″	2-16″ or 3-14″	2-9½″	2-16″ or 3-14″	2-18″ or 3-14″
	34′	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	2-9½″ or 3-7¼″	2-14″ or 3-11⅞″	2-16″ or 3-14″	1-11⅞″ or 2-7¼″	2-14″ or 3-11⅞″	2-14″	2-9½″	2-14″ or 3-11⅞″	2-16″ or 3-14″	2-9½″	2-16″ or 3-14″	2-18″ or 3-14″
	36′	1-9½″ or 2-7¼″	2-11⅞″	2-14″ or 3-11⅞″	2-9½″ or 3-7¼″	2-14″ or 3-11⅞″	2-16″ or 3-14″	2-7¼″	2-14″ or 3-11⅞″	2-16″ or 3-14″	2-9½″	2-14″ or 3-11⅞″	2-16″ or 3-14″	2-9½″	2-16″ or 3-14″	2-18″ or 3-16″

- This table is for headers carrying roof load only. For headers supporting both floor and roof loads refer to Table 5.
- For loads other than those shown, refer to Table 8.
- Deflection limited to L/240 at live load or L/180 at total load.
- Reduction in live load for non-snow load condition only has been applied in accordance with UBC section 2306.
- Support header with double trimmer (3″ bearing) except headers in **shaded portion** of table, support with triple trimmers (4½″ bearing). These trimmer requirements are based on the narrowest beam combination shown. Actual required bearing length may be determined from table, page 16.

TABLE 3 – MICRO=LAM® L.V.L. RIDGE BEAM



Non-shaded portion indicates area of load on beam.

36′-0″ Max. Assumed.

ROOF LOAD (P.S.F.)		NON-SNOW (125%) 20LL+10DL	NON-SNOW (125%) 20LL+20DL	SNOW (115%) 25LL+10DL	SNOW (115%) 30LL+10DL	SNOW (115%) 40LL+10DL	SNOW (115%) 50LL+10DL
COLUMN SPACING	10′	2-7¼″	2-9½″ or 3-7¼″	2-9½″ or 3-7¼″	2-9½″ or 3-7¼″	2-9½″	2-9½″
	12′	2-9½″	2-9½″	2-9½″	2-9½″	2-11⅞″ or 3-9½″	2-11⅞″ or 3-9½″
	14′	2-11⅞″ or 3-9½″	2-11⅞″ or 3-9½″	2-11⅞″ or 3-9½″	2-11⅞″ or 3-9½″	2-11⅞″	2-14″ or 3-11⅞″
	16′	2-11⅞″ or 3-9½″	2-14″ or 3-11⅞″	2-11⅞″	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	2-16″ or 3-14″
	18′	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	2-14″ or 3-11⅞″	2-14″	2-16″ or 3-14″	3-16″
	20′	2-14″ or 3-11⅞″	2-16″ or 3-14″	2-16″ or 3-14″	2-16″ or 3-14″	3-16″	3-16″
	22′	2-16″ or 3-14″	2-18″ or 3-16″	2-18″ or 3-14″	2-18″ or 3-16″	3-18″	3-18″
	24′	2-16″ or 3-14″	2-18″ or 3-16″	2-18″ or 3-16″	3-16″	3-18″	—

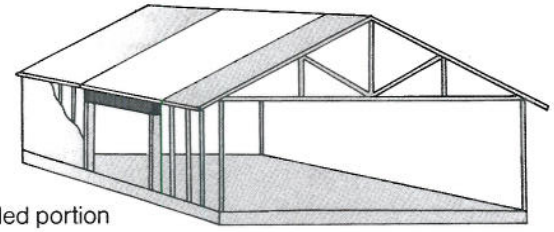
NOTES

1. Based on deflection of L/240 at live load or L/180 at total load.
2. Based on worst case of simple or continuous beam span.
3. Reduction in live load for non-snow load condition only has been applied in accordance with UBC section 2306.
4. In non-shaded portion of table, support beam ends with double trimmers (3″ bearing). At intermediate supports of continuous spans use 5 trimmers (7½″ bearing). In **shaded portion** of table, use 3 trimmers (4½″ bearing) at beam ends and 7 trimmers (10½″ bearing) at intermediate supports of continuous spans. These trimmer requirements are based on the narrowest beam combination shown. Actual required bearing length can be determined from table, page 16.

TABLE 4 – MICRO=LAM® L.V.L. WINDOW & PATIO DOOR HEADER

NOTES

1. Based on total load deflection of L/240 or 5/16″ maximum.
2. For roof support applications only.
3. Reduction in live load for non-snow load condition only has been applied in accordance with UBC section 2306.
4. Support header with double trimmer. This requirement is based on the narrowest beam combination shown. Actual required bearing length may be determined from table, page 16.



Non-shaded portion indicates area of load on header.

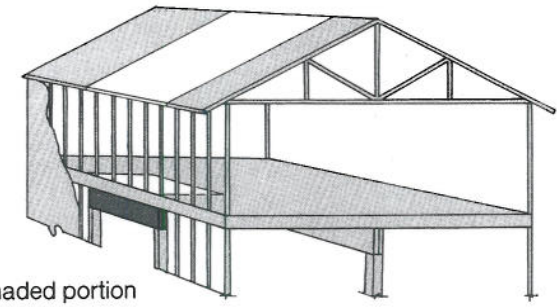
Assumed 36′ Roof Truss Max. with 24″ Soffit.

		Non-Snow (125%)		Snow (115%)			
ROOF LOAD (P.S.F.)		20LL/10DL	20LL/20DL	25LL/10DL	30LL/10DL	40LL/10DL	50LL/10DL
HEADER CLEAR SPAN	4 ft.	1-5½″	1-5½″	1-5½″	1-5½″	1-5½″	2-5½″ 1-7¼″
	6 ft.	2-5½″ 1-7¼″	2-5½″ 1-7¼″	2-5½″ 1-7¼″	2-5½″ 1-7¼″	2-7¼″ 1-9½″	2-7¼″
	8 ft.	2-7¼″ 1-9½″	2-9½″ 1-11⅞″	2-9½″ 1-11⅞″	2-9½″ 1-11⅞″	2-9½″	2-9½″
	10 ft.	2-11⅞″ 1-14″	2-11⅞″	2-11⅞″	2-11⅞″	2-11⅞″	3-11⅞″ 2-14″
	12 ft.	3-11⅞″ 2-14″	3-11⅞″ 2-14″	3-11⅞″ 2-14″	3-11⅞″ 2-14″	3-14″ 2-16″	3-14″ 2-16″
	14 ft.	3-14″ 2-16″	3-16″ 2-18″	3-14″ 2-16″	3-16″ 2-18″	3-16″	3-18″

TABLE 5 – MICRO=LAM® L.V.L. WINDOW & PATIO DOOR HEADER

NOTES

1. Based on live load deflection of L/360 or 5/16″ maximum.
2. Assumes header is supporting ½ of the total roof load and ¼ of the total floor load, plus 60 plf wall load.
3. Reduction in roof live load for non-snow load condition only has been applied in accordance with UBC section 2306.
4. Support header with double trimmer (3″ bearing) except headers in **shaded portion** of table, support with triple trimmer (4½″ bearing). These trimmer requirements are based on the narrowest beam combination shown. Actual required bearing length may be determined from table, page 16.



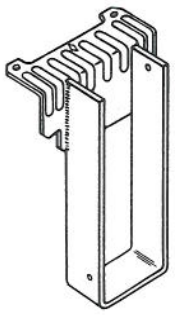
Non-shaded portion indicates area of load on header

Assumed 36′ Roof Truss Max. with 24″ Soffit.

		Non-Snow (125%)		Snow (115%)			
ROOF LOAD (P.S.F.)		20LL/10DL	20LL/20DL	25LL/10DL	30LL/10DL	40LL/10DL	50LL/10DL
HEADER CLEAR SPAN	4 ft.	1-5½″	2-5½″ 1-7¼″	2-5½″	2-5½″ 1-7¼″	2-5½″ 1-7¼″	2-5½″
	6 ft.	2-7¼″ 1-9½″	2-7¼″	2-7¼″	2-7¼″	2-7¼″	2-9½″
	8 ft.	2-9½″	2-9½″	2-9½″	2-9½″	2-9½″	2-11⅞″
	10 ft.	2-11⅞″	3-9½″ 2-11⅞″	3-9½″ 2-11⅞″	2-11⅞″	3-11⅞″ 2-14″	3-11⅞″ 2-14″
	12 ft.	3-11⅞″ 2-14″	3-11⅞″ 2-14″	3-11⅞″ 2-14″	3-14″ 2-16″	3-14″	3-14″

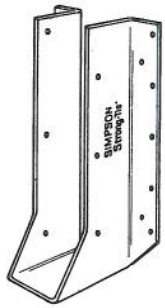
MICRO=LAM® L.V.L. FRAMING CONNECTORS

H8 TOP MOUNT SINGLE MEMBER HANGER



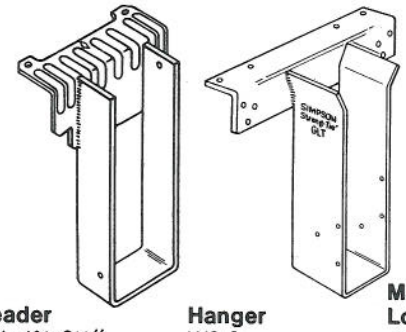
Header	Hanger	Maximum Load (lbs.)
Single 1¾x9½"	W9	1985
Single 1¾x11⅞"	W11	1985

H9 FACE MOUNT SINGLE MEMBER HANGER



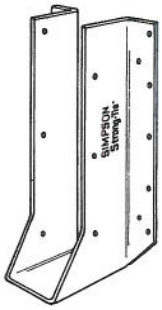
Header	Hanger	Maximum Load (lbs.)
Single 1¾x9½"	HHU9	3130
Single 1¾x11⅞"	HHU11	3230
Single 1¾x14" or larger	HHU14	3580

H10 TOP MOUNT DOUBLE MEMBER HANGER



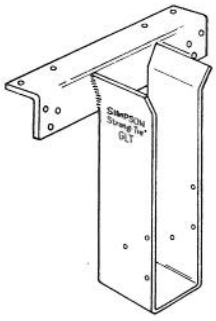
Header	Hanger	Maximum Load (lbs.)
DBL-1¾x9½"	W9-2	2200
DBL-1¾x9½"	GLT 3.59	6320
DBL-1¾x11⅞"	W11-2	2200
DBL-1¾x11⅞"	GLT 3.511	7000
DBL-1¾x14"	HGLTL 3.514	9300
DBL-1¾x16"	HGLTL 3.516	10640
DBL-1¾x18"	HGLTL 3.518	10950

H11 FACE MOUNT DOUBLE MEMBER HANGER



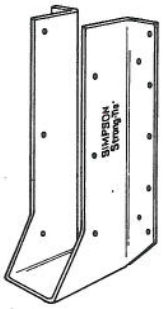
Header	Hanger	Maximum Load (lbs.)
DBL-1¾x9½"	HHU410	2435
DBL-1¾x11⅞"	HHU414	3130
DBL-1¾x14"	HHU416	3475

H12 TOP MOUNT TRIPLE MEMBER HANGER



Header	Hanger	Maximum Load (lbs.)
TRPL-1¾x9½"	HGLTL 5.59	9480
TRPL-1¾x11⅞"	HGLTL 5.511	11850
TRPL-1¾x14"	HGLTL 5.514	12750
TRPL-1¾x16"	HGLTL 5.516	12750
TRPL-1¾x18"	HGLTL 5.518	12750

H13 FACE MOUNT TRIPLE MEMBER HANGER



Header	Hanger	Maximum Load (lbs.)
TRPL-1¾x9½"	HHU610	2435
TRPL-1¾x11⅞"	HHU612	2780
TRPL-1¾x14"	HHU614	3130

NOTE:
Hanger capacities listed may be less than the capacity of the MICRO=LAM® L.V.L., therefore all applications should be checked for the needed capacity.

- Maximum loads assume all nail holes used with proper nails.
- In some cases hanger maximum loads may be increased for load duration.
- Hangers illustrated above are manufactured by Simpson Strong-Tie Company, Inc. For additional application and hanger capacities, please refer to Simpson Catalog of Connectors for use with Residential Trus Joist Products.

MICRO=LAM® L.V.L. ALLOWABLE LOAD (FLOOR)

TABLE 6 – ALLOWABLE LOAD LBS./LIN. FOOT (PLF)

	One-1¾"x5½"		One-1¾"x7¼"		One-1¾"x9½"		One-1¾"x11⅞"		One-1¾"x14"		One-1¾"x16"*		One-1¾"x18"*	
SPAN (ft.)	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD	LIVE LOAD	TOTAL LOAD
6	305	458	660	865	1353	1419		1964		2539		3192		3990
7	197	295	431	635	903	1043		1570		1995		2455		2993
8	134	201	296	444	629	798	1144	1202		1625		1995		2394
9	95	142	211	317	454	631	837	949		1284		1640		1995
10	70	104	156	234	338	507	629	769	981	1040		1329		1649
11	53	79	118	177	258	387	484	636	760	860	1085	1098		1363
12	41	61	92	138	201	301	379	534	599	722	861	923		1145
13			73	109	160	239	302	454	480	615	694	786	952	976
14			58	88	129	193	245	367	390	531	566	678	781	841
15			48	71	105	158	201	301	321	462	468	590	647	733
16			39	59	87	131	167	250	268	401	390	519	542	644
17					73	109	140	210	225	338	329	460	458	570
18					62	93	119	178	191	286	280	410	390	509
19					53	79	101	152	163	245	240	360	335	457
20					45	68	87	131	141	211	207	311	290	412
21					39	59	76	113	122	183	180	270	252	374
22									107	160	157	236	221	331
23									94	141	138	207	194	292
24									83	124	122	183	172	258
25											109	163	153	229
26											97	145	136	205

1. To size a beam for use in a floor it is necessary to check both live load and total load. Make sure the selected beam will work in both columns.
2. Live load column is based on deflection of L/360. Check local code for other deflection criteria.
3. Total load column limits deflection to L/240.
4. For deflection limits of L/240 and L/480 multiply loads shown in L/360 column by 1.5 and 0.75 respectively.

NOTES

- This table is based on uniform loads and simple spans.
- Table is for one beam. When properly fastened together, double the values for two beams, triple for three, etc. When top loaded, fasten together with a minimum of two rows of 16d nails at 12" o.c. **Use three rows of 16d nails at 12" o.c. for 14", 16" and 18" beams.** For side loaded beams, see Table 7.
- MICRO=LAM® L.V.L. beams are made without camber and will deflect under load.
- Assumes continuous lateral support of the top edge of beam.
- Lateral support required at bearing points.
- Bearing area to be calculated for specific application. See page 16.

***16" and 18" deep beams are to be used in multiple member units only.**

TABLE 7 – SIDE LOADED MICRO=LAM® L.V.L. CONNECTION FOR MULTIPLE MEMBER UNITS

	MAXIMUM UNIFORM LOAD APPLIED TO OUTSIDE MEMBER (lbs. per lin. foot)				
	NAILED CONNECTION(1)		THROUGH BOLTED CONNECTION(2)		
No. of pieces	2 rows 16d common wire at 12" o.c.	3 rows 16d common wire at 12" o.c.	2 rows ½" bolts at 24" o.c. staggered	2 rows ½" bolts at 12" o.c.	2 rows ½" bolts at 6" o.c.
2	420	630	580	1160	2320
3	320	480	440	880	1760
4	NOT RECOMMENDED		Should only be used when loads are applied to both sides of the members.		
			390	780	1560

NOTES

- Verify adequacy of beam in Table 6 or Table 8.
- Values listed are for 100% stress level. Increase 15% for snow loaded roof conditions; increase 25% for non-snow roof conditions.
- Other connections are possible with specific design by the design professional.

(1) For a three-piece member, the nailing specified is from each side for a total of 6 nails/foot (3 from each side).
(2) Bolt holes are to be the same diameter as the bolt and located 2" from the top and bottom of the member.

TABLE 8 – ALLOWABLE LOAD LBS./LIN. FT. (PLF)

Total load column limits deflection to L/180. For stiffer criteria, check L/240 column.
CHECK LOCAL CODE FOR DEFLECTION CRITERIA.

	One-1¾"x5½"			One-1¾"x7¼"			One-1¾"x9½"			One-1¾"x11⅞"		
	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.
SPAN (ft.)	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
4	1348	1465	1402	1986	2159		3006	3268		4494	4885	
5	863	938	764	1432	1556		2126	2311		3006	3268	
6	599	611	458	994	1081	989	1632	1774		2259	2455	
7	393	393	295	730	794	646	1199	1303		1805	1962	
8	267	267	201	559	591	444	918	998	943	1382	1502	
9	190	190	142	423	423	317	725	788	681	1092	1187	
10	139	139	104	312	312	234	587	639	507	884	961	943
11	105	105	79	236	236	177	486	516	387	731	795	725
12	81	81	61	183	183	138	402	402	301	614	668	569
13	64	64	48	145	145	109	319	319	239	523	569	454
14	52	52	39	117	117	88	257	257	193	451	490	367
15	42	42	31	95	95	71	211	211	158	393	402	301
16				79	79	59	174	174	131	334	334	250
17				66	66	49	146	146	109	280	280	210
18				56	56	42	123	123	93	237	237	178
19				47	47	35	105	105	79	203	203	152
20				41	41	30	90	90	68	174	174	131
21							78	78	59	151	151	113
22							68	68	51	132	132	99
23							60	60	45	116	116	87
24							53	53	40	102	102	77
25							47	47	35	90	90	68
26							42	42	31	81	81	60
27										72	72	54
28										65	65	49
29										58	58	44
30										53	53	40

MICRO=LAM® L.V.L. DESIGN PROPERTIES

SIZE	Maximum Vertical Shear (lbs.)			Maximum Resistive Moment (ft.-lbs.)			Moment of Inertia (in.⁴)	Weight (lbs./ft.)[1]
	100%	115%	125%	100%	115%	125%		
1¾"x5½"	1830	2105	2285	2345	2695	2930	25	2.50
1¾"x7¼"	2410	2770	3010	3890	4475	4860	55	3.25
1¾"x9½"	3160	3630	3950	6385	7345	7980	125	4.25
1¾"x11⅞"	3950	4540	4940	9615	11055	12015	245	5.30
1¾"x14"	4655	5355	5820	13000	14950	16250	400	6.25
1¾"x16"	5320	6120	6650	16605	19100	20760	595	7.15
1¾"x18"	5985	6880	7480	20610	23700	25760	850	8.00

ALLOWABLE DESIGN STRESSES

Modulus of elasticity	E	= 2.0x10⁶ psi
Flexural stress	F_b*	= 2800 psi
Tension parallel to grain	F_t	= 1850 psi
Compression perpendicular to grain parallel to glue line	F_c	= 500 psi
Compression parallel to grain	F_cII	= 2700 psi
Horizontal shear perpendicular to glue line	F_v	= 285 psi

*For 12-inch depth. For other depths, multiply by $\left[\frac{12}{d}\right]^{\frac{1}{6}}$

*See NER 126 for additional design information.

*Assumes continuous lateral support of top of beam (simple span applications).

[1] Weights shown are for Douglas Fir MICRO=LAM® L.V.L. For Southern Yellow Pine MICRO=LAM® L.V.L., increase weight approximately 10%.

ALLOWABLE LOAD (ROOF)

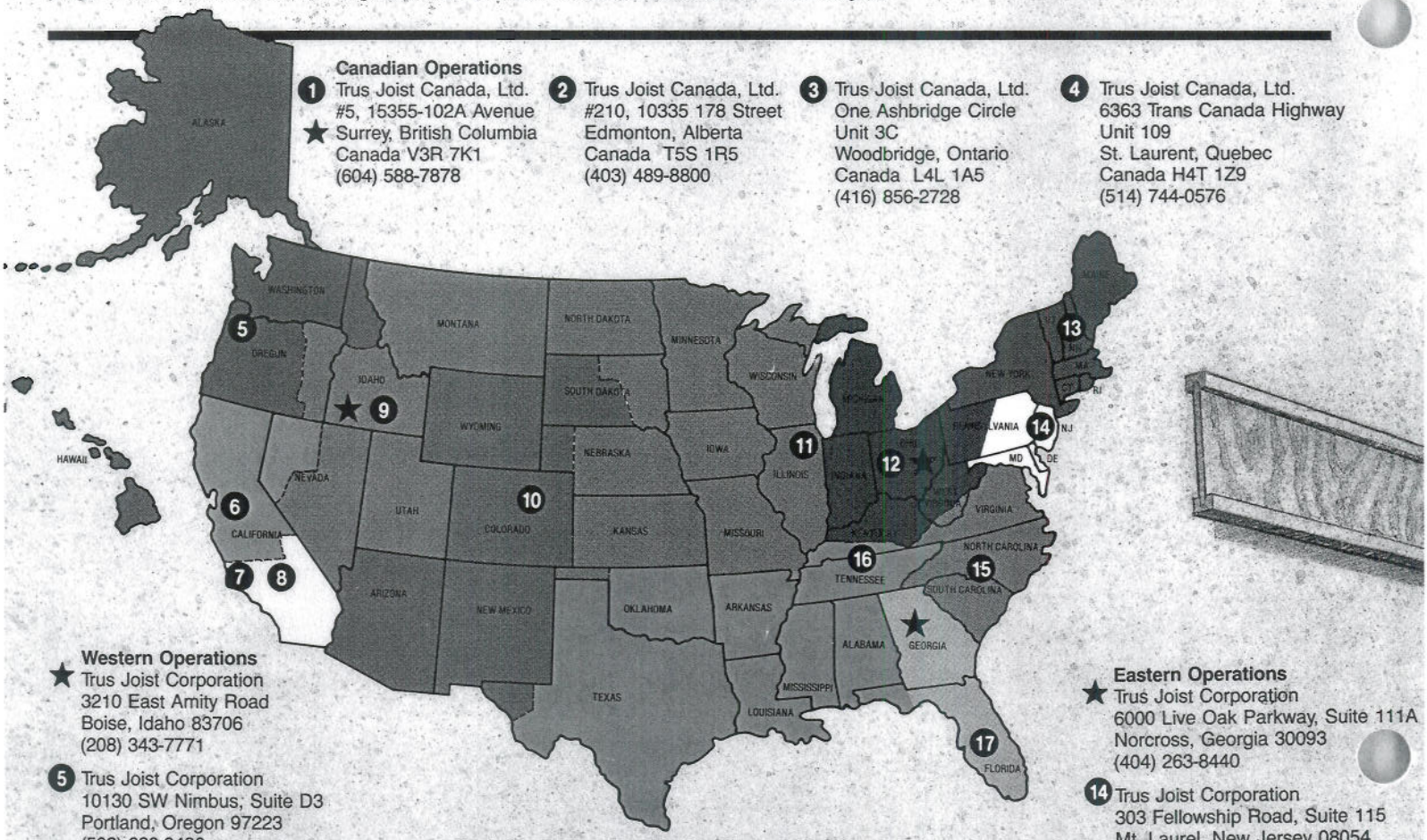
One-1¾"x14"			One-1¾"x16"*			One-1¾"x18"*			
TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	TOTAL LOAD		DEFL.	
Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	SPAN (ft.)
6424	6983		9177	9975					4
4015	4364		5244	5700		6883	7481		5
2920	3174		3671	3990		4588	4988		6
2294	2494		2824	3069		3441	3741		7
1869	2031		2294	2494		2753	2993		8
1477	1605		1886	2050		2294	2494		9
1196	1300		1528	1661		1896	2061		10
988	1074		1263	1372		1567	1703		11
831	903	899	1061	1153		1317	1431		12
708	769	720	904	983		1122	1219		13
610	663	586	779	847		967	1051		14
532	578	482	679	738	701	843	916		15
467	508	401	597	649	586	741	805		16
414	450	338	529	575	494	656	713	687	17
369	382	286	472	513	420	585	636	586	18
327	327	245	423	460	360	525	571	503	19
282	282	211	382	414	311	474	515	435	20
244	244	183	346	360	270	430	467	379	21
213	213	160	315	315	236	392	426	331	22
187	187	141	277	277	207	358	389	292	23
166	166	124	244	244	183	329	344	258	24
147	147	110	217	217	163	303	306	229	25
131	131	98	194	194	145	273	273	205	26
117	117	88	173	173	130	244	244	183	27
105	105	79	156	156	117	220	220	165	28
95	95	71	141	141	105	198	198	149	29
86	86	64	127	127	95	180	180	135	30

NOTES

- This table is based on uniform loads and simple spans.
- Table is for one beam. When properly fastened together, double the values for two beams, triple for three. When top loaded, fasten together with a minimum of two rows of 16d nails at 12" o.c. **Use three rows of 16d nails at 12" o.c. for 14", 16" and 18" beams.** For side loaded beams, see Table 7.
- MICRO-LAM® lumber beams are made without camber; therefore, in addition to complying with the deflection limits of the applicable Building Code, other deflection considerations should be evaluated such as ponding (positive drainage is essential) and aesthetics.
- Roof members should either be sloped for drainage or designed to account for load and deflection as specified in the applicable Building Code.
- Assumes continuous lateral support of the top edge of beam.
- Lateral support required at bearing points.
- Bearing area to be calculated for specific application. See page 16.

***16" and 18" deep beams are to be used in multiple member units only.**

Trus Joist Corporation has over 200 salesmen in 100 offices throughout the United States and Canada. Check your yellow pages or contact one of the regional offices listed to find the salesman nearest you.



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