

TRUSS CHORD SPECIFIER'S GUIDE

Featuring MEL and MSR Lumber
and Trus Joist® Microllam® LVL
for Truss Chord Applications

- Performance Tested
- Reduced Material Waste
- Straight and Consistent
- Design Flexibility
- Provides Economical Truss Solutions
- Limited Product Warranty



TRUSS CHORD INFORMATION



Weyerhaeuser MEL and MSR Truss Chord

Machine Evaluated Lumber (MEL)

- M12:** 2x4, 2x6, 2x8, 2x10, and 2x12 nominal sizes; lengths from 8' to 20'
- M23:** 2x8, 2x10, and 2x12 nominal sizes; lengths from 8' to 20'

Machine Stress Rated (MSR) Lumber*

- 1650f, 1800f, and 2100f:** 2x4 and 2x6 nominal sizes; lengths from 8' to 20'
- 2400f:** 2x4, 2x6, 2x8, 2x10, and 2x12 nominal sizes; lengths from 8' to 20'

* Other MSR lumber products may be available in your area. Check with your Weyerhaeuser representative.

Trus Joist® 2.0E Microllam® LVL Truss Chord

The 2.0E Microllam® LVL Truss Chord is available in the following sizes:

- Width:** 1½"
- Depths:** 3½", 5½", 7¼", 9¼", 9½", 11¼", 11⅝", and 14"
- Lengths:** 10' to 60' in 1' foot increments

*2.0E Microllam® LVL truss chords are available only in select markets. Contact your local Weyerhaeuser representative for information.

Grade Options and Product Benefits

Weyerhaeuser's line of truss products includes several grades of performance tested MEL and MSR lumber, plus a unique grade of Microllam® LVL produced specifically for plated-truss applications.

- **M-12** is our newest performance tested MEL product. Made from Southern Pine, it's designed to meet the requirements of most truss applications.
- **1650f and 2100f MSR SPF** lumber and **1800f and 2400f MSR DFLN** lumber come in 2x4 and 2x6 depths, making them versatile, multi-purpose truss chord products. The **1650f SP** product is available in 2x4 depth only.
- **M-23 MEL SP** lumber provides more strength than M-12 and is available in deeper nominal sizes. It performs well in high-load applications, and when limited deflection is critical or a reduced cross section is desired.
- **2400f** lumber is our strongest Southern Pine MSR product and is available in deeper nominal sizes. It performs well in high-load applications, and when limited deflection is critical or a reduced cross section is desired.
- **2.0E Microllam® LVL Grade** is our premium chord product, designed for plate-connected truss applications that require high-stress members — such as bottom chords in girder trusses, bonus room trusses, or top chords in tail-bearing trusses.

MEL and MSR benefits:

- Both MEL and MSR lumber grades contain less wane than industry standards, providing a superior plating surface and an appealing appearance while also reducing material waste.
- The consistent strength of MEL and MSR lumber — something you can't count on with visually graded lumber — means trusses will deflect similarly under load, resulting in smoother ceilings and ridgelines.

2.0E Microllam® LVL manufacturing benefits:

- Fewer plies are required in most girder assemblies.
- Chords resist shrinking and splitting.
- Standard depths (up to 14") match depths of adjoining floor systems; longer lengths (up to 60') reduce the need for chord splicing.

Note: To ensure appropriate specification and design, Microllam® LVL can be used only by authorized truss manufacturers who use truss design software by the following companies: ITW Building Components (Alpine Engineered Products and Truswal Systems) and MiTek Industries, Inc.

Application Examples

Example 1:

All M-12, 1650f, 1800f, or 2400f



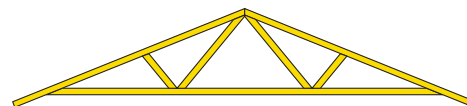
Example 2:

M12, 1650f, or 2400f webs and top chords; 2100f, 2400f, or M-23 bottom chord



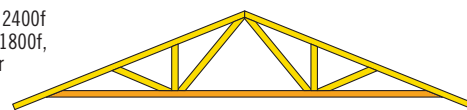
Example 3:

All M-12, 1650f, 1800f, or 2400f



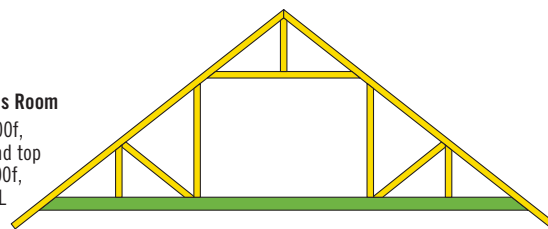
Example 4:

M12, 1650f, 1800f, or 2400f webs and top chords; 1800f, 2100f, M-23, 2400f, or Microllam® LVL bottom chord



Example 5: Bonus Room

M-12, 1650f, 1800f, or 2400f webs and top chords; M23, 2400f, or Microllam® LVL bottom chord



Weyerhaeuser MEL and MSR lumber and 2.0E Microllam® LVL are intended for dry-use applications.

Code Evaluations: See ICC-ES ESR-1387

DESIGN VALUES

Design Values for MEL, MSR, and Microllam® LVL (Values based on 2x4 nominal cross section)

Properties	MEL				MSR			Microllam® LVL Truss Chord Grade
	Southern Pine (SP)		Spruce-pine-fir (SPF) ⁽¹⁾		Douglas Fir-Larch (North) (DFLN)	Southern Pine (SP) ⁽²⁾		
	M-12	M-23	1650f-1.5E	2100f-1.8E	1800f-1.6E	2400f-2.0E		
Flexural Stress	$F_b =$	1,600 psi	2,400 psi	1,650 psi	2,100 psi	1,800 psi	2,400 psi	3,250 ⁽³⁾ psi
Tension Stress	$F_t =$	850 psi	1,900 psi	1,020 psi	1,575 psi	1,175 psi	1,925 psi	1,760 ⁽⁴⁾⁽⁵⁾ psi
Compression Perpendicular to Grain	$F_{c\perp} =$	565 psi	805 psi	425 psi ⁽¹⁾	525 psi	625 psi	805 psi ⁽²⁾	750 psi
Compression Parallel to Grain	$F_{c\parallel} =$	1,675 psi	1,975 psi	1,700 psi	1,875 psi	1,750 psi	1,975 psi	2,635 ⁽⁴⁾ psi
Horizontal Shear Parallel to Grain	$F_v =$	175 psi	190 psi	135 psi ⁽¹⁾	160 psi	180 psi	190 psi ⁽²⁾	285 psi
Modulus of Elasticity	$E =$	1.6×10^6 psi	1.8×10^6 psi	1.5×10^6 psi	1.8×10^6 psi	1.6×10^6 psi	2.0×10^6 psi	2.0×10^6 psi
Adjusted Modulus of Elasticity	$E_{min} =$	750,000 psi	840,000 psi	760,000 psi	910,000 psi	810,000 psi	1,020,000 psi	1,016,535 psi

(1) If product species is stamped SP, Compression perpendicular to grain ($F_{c\perp}$) is 565 psi and Horizontal shear parallel to grain (F_v) is 175 psi.

(2) If product species is stamped DFLN, Compression perpendicular to grain ($F_{c\perp}$) is 715 psi and Horizontal shear parallel to grain (F_v) is 180 psi.

(3) For 2x4. For 2x6, $F_b = 3,060$ psi. For 2x8, $F_b = 2,945$ psi. For other depths, multiply $F_b = 2,750$ psi by $\left[\frac{12}{d}\right]^{0.136}$.

(4) Values for 2x6 and 2x8 are the same as 2x4.

(5) F_t has been adjusted for length effects in accordance with ANSI/TPI.

Using Microllam® LVL in Truss Chord Applications

Only Microllam® LVL that is stamped 2.0E–2750 F_b or 2925 F_b and “ICC-ES ER-1387” is suitable for use in plated trusses. This special grade of Microllam® LVL must be used in accordance with truss design software, using truss plate values supplied by the truss plate manufacturer. The purchaser is solely responsible for proper design, fabrication, shipping, and for providing installation and bracing instructions for the finished truss.

APPROVED APPLICATIONS

Do

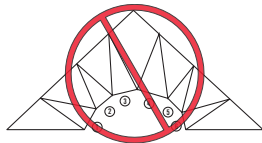
Weyerhaeuser truss chord products are recommended for the following truss applications:

- Flat bottom chord girder and common trusses
- Attic trusses
- Tail-bearing (tray) trusses
- Scissor trusses
- Parallel top and bottom chord, including girder trusses
- Mono-pitched trusses
- Trusses over 60' in length.

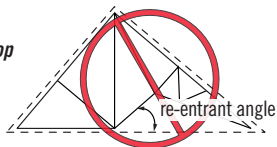
DO NOT

Weyerhaeuser truss chord products should not be used in truss applications with the following highly irregular chord features:

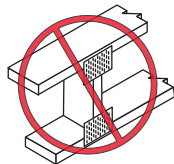
DO NOT use in trusses with bottom or top chords that contain more than three different sloping sections.



DO NOT use in trusses with bottom or top chords that contain a re-entrant angle greater than 45° (fillers do not count).



DO NOT plate into narrow edges of Microllam® LVL as is commonly done in 4x2 flat-chord truss systems.



SPECIAL CONSIDERATIONS

General Information

All truss design and fabrication should follow provisions in the *National Design Standard for Metal Plate Connected Wood Truss Construction*. A commitment to a quality assurance program is a must. The role of a quality assurance program is to “assure and document” that key elements of the end product are manufactured to pre-determined minimum requirements. Weyerhaeuser recommends the quality assurance provisions in ANSI/TPI *National Design Standard For Metal Plate Connected Wood Truss Construction*.

There are unique aspects regarding the handling and installation of metal-plate-connected trusses. The Structural Building Components Association's (SBCA) Building Component Safety Information (BCSI) summary sheets provide a wealth of information on truss issues, including:

- Best practices for truss installation
- Long span applications
- Temporary bracing during construction
- Fall protection
- Proper storage and handling

Environmental Conditions

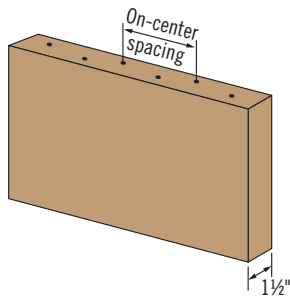
Microllam® LVL must be protected from the weather. Frequent or prolonged exposure to moisture or sunlight will reduce the service life of the product.

Avoid environments where steam or caustic chemicals may come in contact with the trusses, including environments such as commercial laundries, food-processing facilities, indoor swimming facilities, and recycling plants.

NAILING INFORMATION

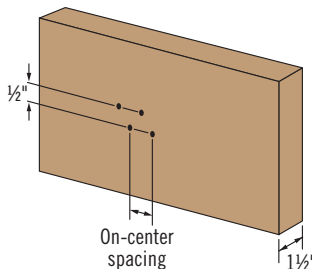
Nailing Requirements

Nails Installed on the Narrow Face



Nails Installed on the Wide Face

Nail rows should be offset 1/2" and staggered



Microllam® LVL Minimum Nail Spacing

Nail Size	Closest On-Center Spacing	
	Narrow Face	Wide Face
8d (0.131" x 2½")	4"	2"
10d (0.148" x 3")	5"	3"
16d (0.162" x 3½")	8" ⁽¹⁾	4"

(1) Can be reduced to 5" on-center if nail penetration into the narrow edge is no more than 1¼" (to minimize splitting).

- To minimize splitting, member edge distance and spacing between rows shall be 2.5 x nail diameter or ¾", 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.

MEL and MSR Minimum Nail Spacing

For solid-sawn lumber, see the NDS for nail spacing requirements.

Contact your local representative or dealer at:

Nailing Recommendations

Nail and Screw Types

When using nails, screws, or bolts to connect multiple truss plies together, follow the fastener schedule supplied by the design professional.

Smaller-diameter nails may increase nailability and can be used to achieve the same capacity. However, you will need additional nails, and the design professional must approve any changes from the original printout. See conversion procedures at right.

Fastener Conversion Procedure (for multiple-ply trusses)

These steps explain how to convert from a specified fastener to an alternate pneumatic nail.

This example assumes that the original specifications required three rows of 10d (0.148" x 3") nails at 12" on-center. To convert to a 0.113" x 2½" pneumatic nail, use the following steps:

- Determine adjustment factor.** Using the table below, find the load factor for each nail. Divide the allowable load of the specified 10d (0.148" x 3") nail (117 lbs) by the allowable load of the 0.113" x 2½" pneumatic nail (72 lbs): $117/72 = 1.63$. Use this factor to adjust the spacing in step 2.
- Calculate adjusted on-center spacing.** Divide original 12" on-center spacing by adjustment factor: $12/1.63 = 7.4$. Three rows of 0.113" x 2½" pneumatic nails at 7" on-center will meet the capacity requirements.

Load Factors for Fastener Conversion

Fastener	Type	Size	Load Factor (lbs)	
Nail	Pneumatic	0.113" x 2¾"	72	
		0.131" x 2¾"	90	
		0.113" x 2½"	72	
		0.131" x 2½"	97	
		0.120" x 3"	81	
		0.131" x 3"	97	
	10d		0.148" x 3"	117
	16d		0.162" x 3½"	141

CONTACT US

1.888.453.8358 • weyerhaeuser.com/woodproducts/contact



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