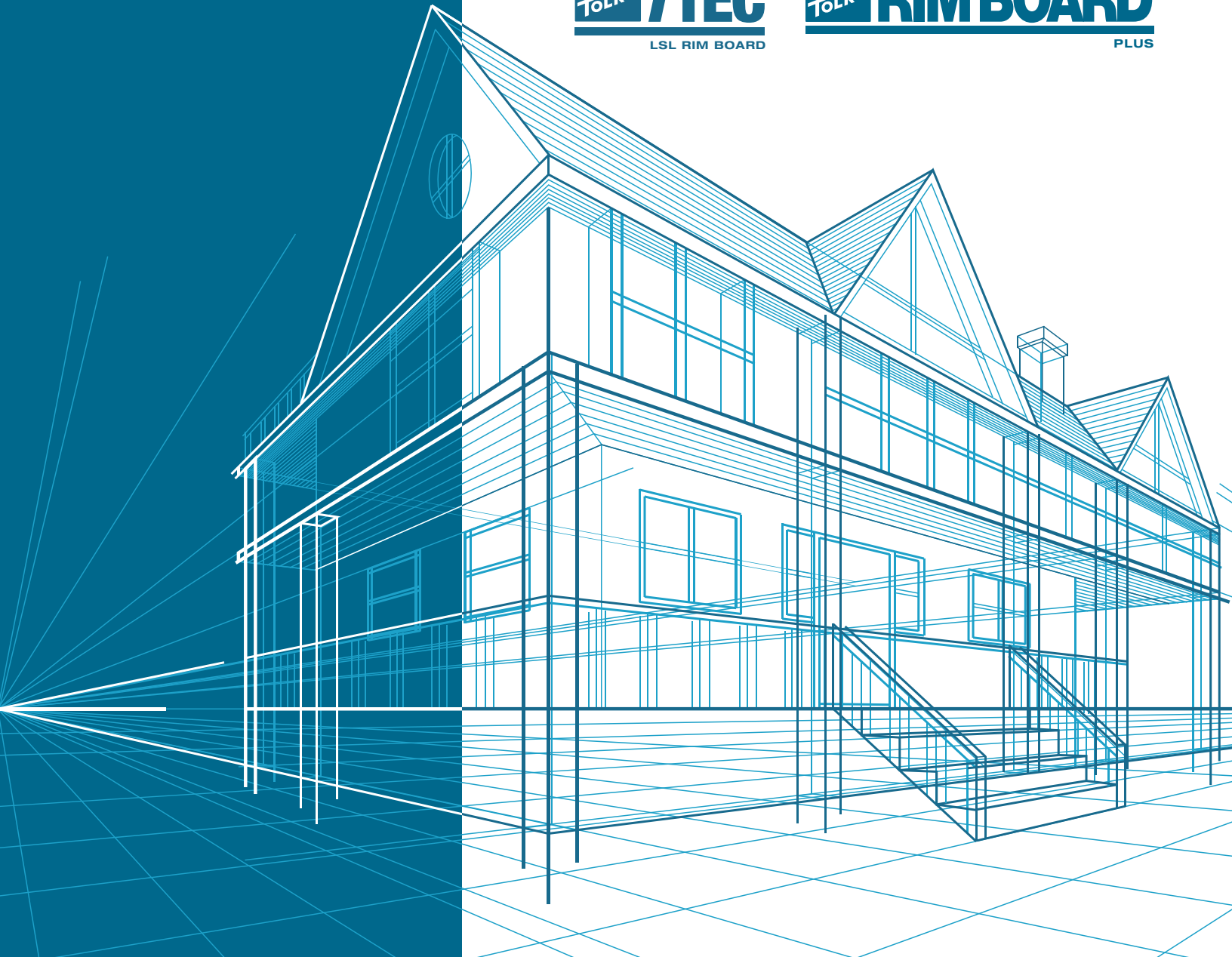


# TOLKO

## TECHNICAL GUIDE (LSD - CANADA)

### T-TEC 1.35E & 1.55E LSL RIM BOARD & TOLKO OSB RIM BOARD PLUS



**TRUE.  
TRUSTED.  
TOLKO.**

Tolko Marketing and Sales  
3000 - 28th Street  
Vernon, BC V1T 9W9  
Tel 250.545.4411 - Fax 250.550.2550



LIMIT STATES DESIGN

Updated: Jun 22, 2023

[WWW.TOLKO.COM](http://WWW.TOLKO.COM)



## TOLKO RIM BOARD OFFERINGS

Tolko produces T-TEC LSL Rim Board from laminated strand lumber (LSL) and Tolko OSB Rim Board Plus from oriented strand board (OSB). Tolko’s rim board offerings are manufactured from highly predictable and uniform engineered wood that is sawn to consistent sizes and resists warping and splitting making them the preferred rim board for builders.



## RIM BOARD APPLICATIONS

Tolko OSB Rim Board Plus fills the space between the sill plate and the bottom wall plate, or between the top plate and the bottom plate in multi-floor construction. In addition, to filling the void, rim board is an integral structural component that transfers both lateral and vertical forces. To function properly, the rim board must match the depth of framing members.

## BUILDING WITH CONFIDENCE

T-TEC LSL Rim Board and Tolko OSB Rim Board Plus are structural-use products that are manufactured in accordance with the Performance Standard for APA EWS Rim Boards PRR-401 ANSI PRR-410, CCMC 13238-L (for OSB Rim Board) and meet or exceed the requirements given in the ICC-ES Acceptance Criteria for Wood-based Rim Board Products, AC124.

	T-TEC LSL Rim Board	Tolko OSB Rim Board Plus
<b>Thickness<sup>1</sup></b>	1-1/8", 1-1/4", 1-1/2", 1-3/4"	1-1/8", 1-1/4"
<b>Depths<sup>1</sup></b>	9-1/2", 11-7/8", 14", 16", 18", 20", 22", 24"	9-1/2", 11-7/8", 14", 16", 18", 20", 22", 24"
<b>Lengths<sup>1</sup></b>	12', 16', 24'	12', 16', 24'
<b>E-Rating</b>	1.35E, 1.55E	0.55E
<b>Zinc Borate Protection</b>	Optional	Optional

<sup>1</sup> For promotional purposes, lengths and widths are the actual sizes.

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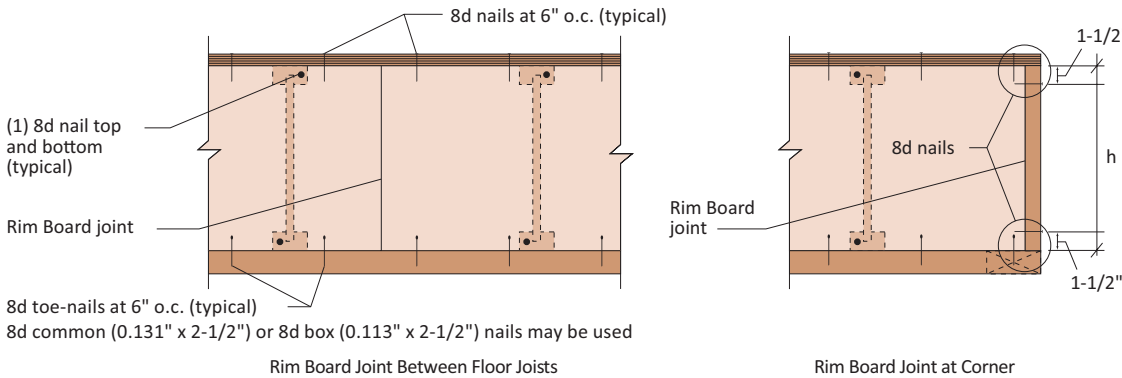
# RIM BOARD INSTALLATION

TABLE 1: NAILING SCHEDULE FOR TOLKO OSB RIM BOARD PLUS AND 1.35E & 1.55E T-TEC LSL

Sheathing to Rim Board	Rim Board to Sill Plate (Toe Nail)	Rim Board to I-Joist/LSL Joist	Sheathing to Rim Board to Bottom Plate
8d common (0.131" x 2-1/2") at 6" o.c. (typical)	8d box (0.113" x 2-1/2") at 6" o.c. (typical)	8d box (0.113" x 2-1/2") top and bottom. This is typical for a Rim Board of 1-1/8". A larger nail size (10d: 0.131" x 2-1/2") may be required for thicker Rim Board or as indicated by the I-Joist/LSL Joist manufacturer.	16d box (0.135" x 3-1/2") or 16d common (0.162" x 3-1/2") - in accordance with the prescriptive requirements of the applicable code.

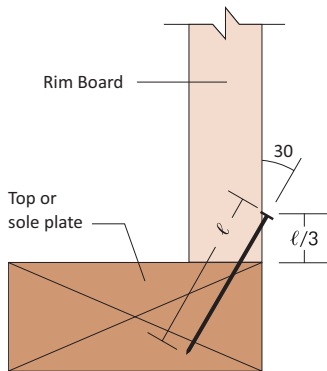
- Notes:
- 1) The first and last nail between sheathing and rim board (edge nails) shall be 3 inches from each rim board end.
  - 2) The first and last toe nails between rim board and sill plate shall be 3 inches from each rim board end.
  - 3) The lateral load capacity (Table 3) shall not be increased for nail spacings less than 6". The 16d (box or common) nails used to connect the bottom plate to the Rim Board through the sheathing do not reduce the lateral load capacity of the Rim Board provided that the 8d nail spacing (sheathing-Rim Board) is 6" o.c. and the 16d nail spacing (bottom plate-sheathing-Rim Board) is in accordance with the prescriptive requirements of the applicable code.

FIGURE 1: ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



Source: APA Performance Rated Rim Boards® – Form No.345K

FIGURE 2: TOE-NAIL CONNECTION AT RIM BOARD



Source: APA Performance Rated Rim Boards® – Form No.345K

**PROPOSITION 65 WARNING**

**WARNING**

Drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to [www.P65Warnings.ca.gov/wood](http://www.P65Warnings.ca.gov/wood).

**WARNING**

This product can expose you to chemicals including methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

TABLE 2: FASTENERS DESIGN FOR TOLKO OSB RIM BOARD PLUS AND 1.35E & 1.55E T-TEC LSL <sup>(a, b)</sup>

Equivalent Specific Gravity (S.G.)					
Nails		Nails and Wood Screws <sup>(c)</sup>		Bolts and Lag Screws <sup>(c, d)</sup>	
Withdrawal Load		Lateral Load		Lateral Load	
Installed in Edge	Installed in Face	Installed in Edge	Installed in Face	Installed in Face	
				Parallel to Grain	Perpendicular to Grain
0.42	0.44	0.47	0.50	0.50	0.50

- (a) Fastener design values calculated using the tabulated equivalent specific gravities given above must be adjusted by the applicable adjustment factors specified in the CSA086 for connections.
- (b) Fasteners spacing, and end and edge distances must be as specified in the CSA086.
- (c) Bolts and lag screws shall only be installed into the face (plank orientation) of the LSL or Rim Board.
- (d) The capacities for the 1/2-inch diameter lag screws/bolts installed into Tolko LSL or Rim Board for ledger attachment shall be in accordance with Table 3.
- (e) For Tolko OSB Rim Board Plus, a specific gravity of 0.5 could be used for generating the factored lateral resistances of nails or screws fastened on the face.



# DESIGN PROPERTIES RIM BOARD APPLICATION

TABLE 3: FACTORED RESISTANCES FOR TOLKO OSB RIM BOARD PLUS AND 1.35E & 1.55E T-TEC LSL<sup>(a)</sup>

Grade	Thickness (in.)	Factored Horizontal Shear Load, $\phi H^{(b,c)}$ (lb/ft)	Factored Uniform Vertical Load, $\phi V^{(d)}$ (lb/ft)					Factored Concentrated Vertical Load, $\phi P^{(e)}$ (lb)	Factored Lateral Resistance for 1/2-inch dia. Lag Screws/Bolts, $\phi Z$ (lb)
			Depth						
			$\leq 16''$	18''	20''	22''	24''	Depth $\leq 24''$	
Tolko OSB Rim Board Plus	1-1/8	243	7,033	6,743	6,018	5,293	4,640	5,075	584
	1-1/4								
1.35E T-TEC LSL	1-1/4	304	7,830	6,308	6,308	6,308	6,308	5,510	934
	1-1/2	274	9,353	7,975	7,975	7,975	7,975		
	1-3/4	243	10,948	10,948	10,948	10,948	10,948		
1.55E T-TEC LSL	1-1/8	286	7,033	4,930	4,930	4,930	4,930	6,670	734
	1-1/4	280	7,830	7,468	7,468	7,468	7,468	6,670	1,001
	1-1/2	243	9,353	8,700	8,700	8,700	8,700	6,670	1,001

- (a) The tabulated lateral load factored resistance is based on the short-term load duration. The vertical uniform and vertical concentrated load are not permitted to be increased for any load duration. The tabulated values are limited to dry service conditions.
- (b) The horizontal lateral load transfer resistance is for shear forces parallel to the rim joist under short-term and dry service conditions only. For compliance with the NBC 2020, the value shall be multiplied by 0.93. The fastening of the floor shall meet or exceed Part 9 of the NBC 2020.
- (c) The nailing schedule for sheathing to rim is based on 8d box nails (0.113" x 2-1/2") at 6" on center, and for the rim board to the sill plate with 8d box nails (0.113" x 2-1/2" toe-nailed) at 6" on center. Values assume the floor joists or blocking are fastened to the rim board and the sill plate at max. 24" on center in accordance with Part 9 of the NBC 2020. Commercial framing connectors may be used to achieve lateral load capacities exceeding the values shown in this table. Calculations shall be based on the equivalent relative density values listed in Table 2 subjected to the nailing spacing provided in Table 4.
- (d) The factored uniform vertical load capacity is based on the strength of the rim board and may need to be reduced based on the bearing capacity of the supporting wall plate.
- (e) Factored concentrated vertical load capacity is based on a 4-1/2" bearing length. The bearing load must be simultaneously satisfied along with the concentrated load capacity.

**Rim Boards subjected to a combination of uniform and concentrated vertical loads** - First, the factored applied concentrated load shall not exceed the factored concentrated vertical load capacity of the rim board, based on a 4-1/2" bearing length over the floor sheathing attached to the top of the rim board. Second, the factored applied concentrated load shall be calculated as an equivalent uniform load based on the applied loading length increased by a 45° load distribution through decking and plate on both sides of the concentrated load, as applicable. The equivalent factored uniform load shall be added to the factored applied uniform load to determine the total factored applied uniform load, which shall not exceed the factored vertical uniform load of the Rim Board. If the total factored applied uniform load exceeds the factored vertical uniform load, use appropriate squash blocks, double Rim Boards, or a higher grade Performance Rated Rim Board to carry the concentrated vertical load.

**Example:**

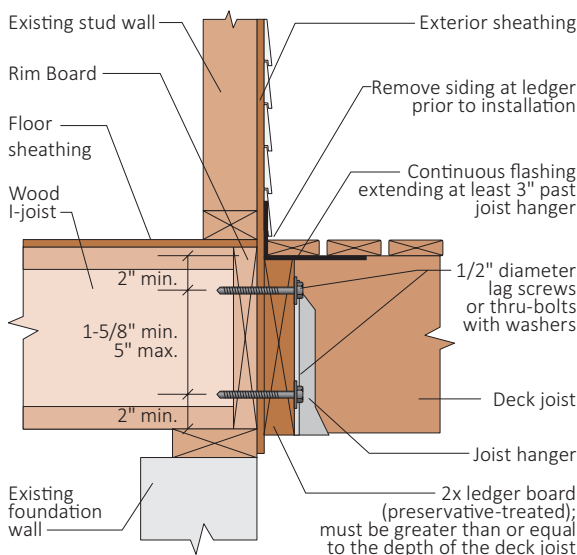
A mechanical device distributes a weight of 1,000 lbf for a distance of 12 inches along the top of a 1-1/8-inch x 16-inch Tolko OSB Rim Board Plus through 23/32-inch floor sheathing. In addition to the mechanical device, the Rim Board carries a uniform live load of 2,000 lbf/ft and a concentrated live load of 2,000 lbf.

**Check:**

- (1) Factored concentrated vertical load =  $1.25 \times 1,000 \text{ lbf} + 1.5 \times 2,000 = 4,250 \text{ lbf} < 1.0 \times 5,075 = 5,075 \text{ lbf}$  (for a KD = 1.0). OK.
- (2) Equivalent factored uniform load =  $(1.25 \times 1,000 + 1.5 \times 2,000) / [(12 + 2 \times 23/32) / 12] = 3,795 \text{ lbf/ft}$ . Total equivalent factored uniform bearing load =  $3,795 + 1.5 \times 2,000 = 6,795 \text{ lbf/ft}$ . Use Tolko OSB Rim Board Plus that has an allowable bearing (vertical) load capacity of 7,033 lbf/ft.

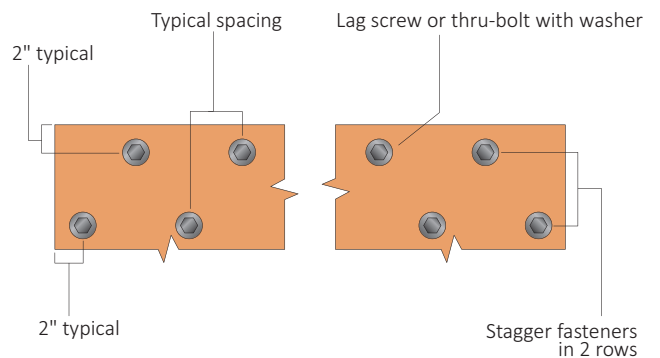
Source: Form No. W345K • © 2009 APA - The Engineered Wood Association • www.apawood.org

FIGURE 3: 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



Source: APA Performance Rated Rim Boards® – Form No.345K

FIGURE 4: FASTENER SPACING FOR DECK LEDGER



Source: APA Performance Rated Rim Boards® – Form No.345K

# NAILING DISTANCES ON THE EDGE AND FACE

TABLE 4: MINIMUM NAIL SPACING <sup>(a)</sup>

Product	Thickness (in.)	Orientation <sup>(d)</sup>	Pennyweight/Type <sup>(e, f)</sup>	Max. Diameter (in.)	Max. Length (in.)	Minimum End Distance (in.)	Minimum Nail Spacing per Row (in)		
							Single Row	Multiple Rows <sup>(b,c,i)</sup>	
Tolko OSB Rim Board Plus	1-1/8	Face <sup>(h)</sup>	8d; 10d; 12d	0.148	3-1/4	2-1/2	2		
	1-1/4	Edge <sup>(g)</sup>	8d; 10d; 12d	0.148	3-1/4	2-1/2	6		
1.35E T-TEC LSL Rim Board	1-1/4 ≤ thickness < 1-1/2	Edge <sup>(g)</sup>	8d and smaller	0.131	2-1/2	2	4	Not recommended	
			10d; 12d	0.148	3-1/4	2	4		
			16d	0.162	3-1/2	2-1/2	5		
		Face <sup>(h)</sup>	8d and smaller	0.131	2-1/2	7/8	1		1
			10d; 12d	0.148	3-1/4	7/8	1		1
			16d	0.162	3-1/2	7/8	1-1/2		1-1/2
	1-1/2 ≤ thickness < 3-1/2	Edge <sup>(g)</sup>	8d and smaller	0.131	2-1/2	1	2	3	
			10d; 12d	0.148	3-1/4	2	3	4	
			16d	0.162	3-1/2	2-1/2	3	6	
		Face <sup>(h)</sup>	8d and smaller	0.131	2-1/2	1/2	1	1	
			10d; 12d	0.148	3-1/4	1/2	1	1	
			16d	0.162	3-1/2	7/8	1-1/2	1-1/2	
1.55E T-TEC LSL	1-1/8	Edge <sup>(g)</sup>	8d and smaller	0.131	2-1/2	2	4	Not recommended	
			10d; 12d	0.148	3-1/4	2-1/2	5		
			16d	0.162	3-1/2	3	6		
		Face <sup>(h)</sup>	8d and smaller	0.131	2-1/2	7/8	1		1
			10d; 12d	0.148	3-1/4	7/8	1		1
			16d	0.162	3-1/2	7/8	1-1/2		1-1/2
	1-1/4	Edge <sup>(g)</sup>	8d and smaller	0.131	2-1/2	2	4	Not recommended	
			10d; 12d	0.148	3-1/4	2	4		
			16d	0.162	3-1/2	2-1/2	5		
		Face <sup>(h)</sup>	8d and smaller	0.131	2-1/2	7/8	1		1
			10d; 12d	10d; 12d	3-1/4	7/8	1		1
			16d	16d	3-1/2	7/8	1-1/2		1-1/2
	1-1/2	Edge <sup>(g)</sup>	8d and smaller	0.131	2-1/2	1	2	3	
			10d; 12d	10d; 12d	3-1/4	2	3	4	
			16d	16d	3-1/2	2-1/2	3	6	
		Face <sup>(h)</sup>	8d and smaller	0.131	2-1/2	1/2	1	1	
			10d; 12d	10d; 12d	3-1/4	1/2	1	1	
			16d	16d	3-1/2	7/8	1-1/2	1-1/2	

- Notes:
- (a) Edge distance shall be sufficient to prevent splitting, but not less than permitted in CSAO86.
  - (b) Multiple rows must be spaced 1/2 inch or more from each other and offset one-half of the tabulated minimum nailing spacing, as shown in APA PR-284C Figure 1.
  - (c) Multiple rows must be equally spaced about the centerline of the edge of face (whichever applies).
  - (d) Face orientation applies to nails driven into the face of the member, such that the long axis of the nail is perpendicular to the wide face of the strands. Edge orientation applies to nails driven into the edge of the member.
  - (e) 16d sinker nails (0.148" x 3-1/4") may be spaced the same as the 12d common wire nails (0.14" x 3-1/4").
  - (f) Nails listed are common wire nails. For box nails, the spacing and end distance requirements of the next lower penny weight common nail may be used: e.g. a 16d box nail may be spaced the same as a 10d or 12d common nail.
  - (g) Nail penetration for edge nailing shall not exceed 2 inches for 16d common wire nails (0.162" x 3-1/2") and 2-1/2" for 10d and 12d nails (common or box).
  - (h) Tabulated closest on-center spacing for face orientation is applicable to nails that are installed in rows parallel to the grain (length) of the member. For nails installed in rows perpendicular to the direction of the grain (width/depth) of the member, the closest on-center spacing for face orientation shall be sufficient to prevent splitting of the member.
  - (i) The multiple row end spacing is 1-1/2 inches.

## DESIGN PROPERTIES EDGEWISE BENDING

TABLE 5A: SPECIFIED EDGEWISE BENDING STRENGTHS AND MODULUS OF ELASTICITY<sup>(a)</sup>

Product/Grade	Modulus of Elasticity, E <sup>(d)</sup> (psi)	Specified flexural strength, fb <sup>(b)</sup> (psi)	Specified compression perpendicular to grain, fc <sub>c</sub> <sup>(e)</sup> (psi)	Specified shear parallel to grain, fv (psi)
1.35E T-TEC LSL	1.35 X 10 <sup>6</sup>	3420 <sup>(c)</sup>	1370	580
1.55E T-TEC LSL - 1 1/8"	1.55 X 10 <sup>6</sup>	4360 <sup>(c)</sup>	1640	845
1.55E T-TEC LSL - 1 1/4" & 1 1/2"	1.55 X 10 <sup>6</sup>	4360 <sup>(c)</sup>	1640	975

- (a) The tabulated values are specified strengths and modulus of elasticity for normal load duration. All values, except E, are permitted to be adjusted for other load durations as permitted by the code. The tabulated values are limited to the dry service conditions.
- (b) Tabulated flexural stress (fb) may be increased by 4 percent when the member qualifies as a repetitive member as defined in CSA086.
- (c) Tabulated value is based on a reference depth of 12 inches. For other depths, when loaded edgewise, fb shall be modified by (12/d)0.125, where d = depth in inches. For depths less than 2-1/2 inches, the factor for the 2-1/2-inch depth shall be used.
- (d) Edgewise apparent modulus of elasticity. For a simple span member, deflection for a uniform load could be calculated as follows:

$$\delta_T = \frac{270wL^4}{Ebh^3}$$

where:

- $\delta_T$  = total deflection (in)  
 w = applied uniform loads (lbf/ft)  
 L = design span (ft)  
 E = modulus of elasticity (lbf/in<sup>2</sup>)  
 b = beam width (in)  
 h = beam depth (in)

- (e) The size factor for bearing, KZcp, shall be equal to 1.0.

TABLE 5B: FACTORED EDGEWISE BENDING STRENGTHS AND MODULUS OF ELASTICITY<sup>(a)</sup>

Product/Grade	Modulus of Elasticity, E <sup>(c)</sup> (psi)	Specified flexural strength, fb <sup>(b)</sup> (psi)	Specified compression perpendicular to grain, fc <sub>c</sub> <sup>(e)</sup> (psi)	Specified shear parallel to grain, fv <sup>(d)</sup> (psi)
Tolko Rim Board Plus	0.55 X 10 <sup>6</sup>	1,100	910	260

Rim Board Properties - APA Form W345 CA - 2021

- (a) All tabulated values are applicable to the standard-term load duration and permitted to be adjusted for other load durations in accordance with the applicable building code except for E.
- (b) Specified edgewise bending strength shall be permitted for engineered design of spans of 4 ft. or less. For longer spans over openings, use glulam, I-Joists or SCL headers.
- (c) Edgewise apparent modulus of elasticity. For a simple span member, deflection for a uniform load could be calculated as follows:

$$\delta_T = \frac{270wL^4}{Ebh^3}$$

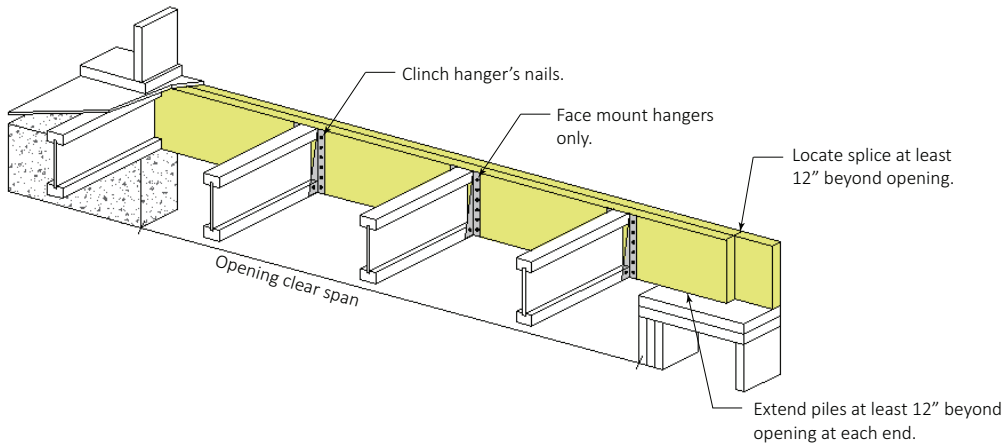
where:

- $\delta_T$  = total deflection (in)  
 w = applied uniform loads (lbf/ft)  
 L = design span (ft)  
 E = modulus of elasticity (lbf/in<sup>2</sup>)  
 b = beam width (in)  
 h = beam depth (in)

- (d) Specified edgewise shear strength is permitted to be increased to 502 psi for mat-formed panels such as OSB.
- (e) Specified edwise compressive strength perpendicular to grain at 0.04-in. deformation, which is permitted to be increased to 1,000 psi for mat-formed panel such as OSB.

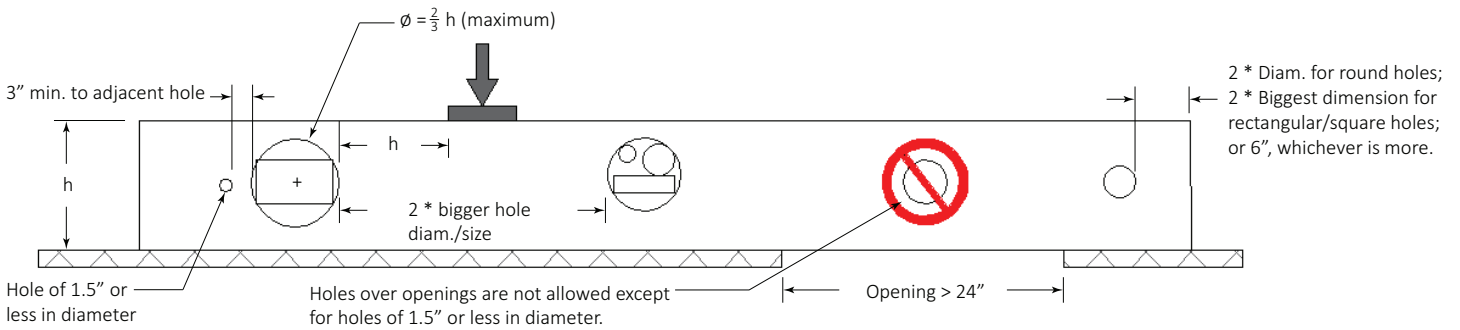
## RIM BOARD HEADER APPLICATION

FIGURE 5: HEADER APPLICATION



## ALLOWABLE HOLES

FIGURE 6: RIM BOARD HOLES SPECIFICATION



**Notes:**

- 1) The maximum allowable round hole size for rim boards is limited to 2/3 of the rim board depth. Rectangular/square holes shall be circumscribed in the maximum allowable round holes, and the corners shall not be over-cut. Pre-drilling corners with a 1-inch diameter bit is recommended.
- 2) Holes should not occur in rim board installed over openings, such as doors or windows, where the rim board is not fully supported, except that holes of 1-1/2 inches or less in size are permitted provided they are positioned at the mid-depth and in the middle 1/3 of the span.
- 3) When concentrated loads are present on the rim board (loads not supported by other vertical-load-carrying members such as squash blocks), holes should not be placed in the rim board within a distance equal to the depth of the rim board from the area of loading.
- 4) For multiple holes, the clear spacing between holes should be at least two times the diameter of the larger hole, or twice the length of the longest side of the longest rectangular hole. This minimum hole spacing does not apply to holes of 1-1/2" or less in diameter, which can be placed anywhere in the rim board except that the clear distance to the adjacent hole should be 3 inches minimum.
- 5) Closely grouped holes are permitted if the group perimeter meets the requirements for the round hole.













## MULTIPLE MEMBER CONNECTIONS: TOP LOADED MEMBERS

TABLE 14: MULTIPLE MEMBER CONNECTIONS: TOP LOADED MEMBERS (1.35E &amp; 1.55E LSL)

Ply Thickness (in.)	# of Plies	Fastener Type	Depth (in.)	# Rows	On-Center Spacing (in.)	Location	Min. Edge Distance (in.)	Min. End Distance (in.)	Min. Distance Between Rows of Fasteners (in.)
1 1/8, 1 1/4	2	8d box nail (0.113" x 2.5")	7 1/4	2	12	One side (front or back)	1.5	3	3
			9 1/4, 9 1/2, 11 1/4, 11 7/8	3					
			14, 16	4					
	3		7 1/4	2	12	Both side (front and back) - stagger nails on the opposite side by 6"	1.5	3	3
			9 1/4, 9 1/2, 11 1/4, 11 7/8	3					
			14, 16	4					
1 1/8	4	SDW22438	7 1/4, 9 1/4, 9 1/2	2	12	One side (front or back)	1.5	6	4
			11 1/4, 11 7/8, 14	3					
			16	4					
1 1/4		SDW22500, WS5, WSWH5	7 1/4, 9 1/4, 9 1/2	2	12	One side (front or back)	1.5	6	4
			11 1/4, 11 7/8, 14	3					
			16	4					
1 1/2	2	10d box nail (0.128" x 3")	7 1/4	2	12	One side (front or back)	1.5	3	3
			9 1/4, 9 1/2, 11 1/4, 11 7/8	3					
			14, 16	4					
	3		7 1/4	2	12	Both side (front and back) - stagger nails on the opposite side by 6"	1.5	3	3
			9 1/4, 9 1/2, 11 1/4, 11 7/8	3					
			14, 16	4					
4	SDW22600, WS6, WSWH6	7 1/4, 9 1/4, 9 1/2	2	12	One side (front or back)	1.5	6	4	
		11 1/4, 11 7/8, 14	3						
		16	4						
1 3/4	2	16d box nail (0.135" x 3.5")	7 1/4	2	12	One side (front or back)	1.5	3	3
			9 1/4, 9 1/2, 11 1/4, 11 7/8	3					
			14, 16	4					
	3		7 1/4	2	12	Both side (front and back) - stagger nails on the opposite side by 6"	1.5	3	3
			9 1/4, 9 1/2, 11 1/4, 11 7/8	3					
			14, 16	4					
4	SDW22634, WSWH634	7 1/4, 9 1/4, 9 1/2	2	12	One side (front or back)	1.5	6	4	
		11 1/4, 11 7/8, 14	3						
		16	4						

**Note:**

- 1) Top Loads (uniform or concentrated) must be applied evenly across the entire total width. Otherwise, the side-loaded connections (uniform or concentrated) shall be used.



# MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED UNIFORM SIDE LOADS

TABLE 15: MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED UNIFORM SIDE LOADS - NAILS

			Assembly A		Assembly B		Assembly A		Assembly B		Assembly A		Assembly B	
<b>Fastener type</b>			8d Box Nail (0.113" x 2.5")				10d Box Nail (0.128" x 3")				16d Box Nail (0.135" x 3.5")			
<b>Side member thickness</b>			1-1/8" or 1-1/4"		1-1/8" or 1-1/4"		1-1/2"		1-1/2"		1 3/4"		1 3/4"	
<b>Main member thickness</b>			1-1/8" or 1-1/4"		1-1/8" or 1-1/4"		1-1/2"		1-1/2"		1 3/4"		1 3/4"	
<b>Min. depth (in.)</b>	<b># of Rows</b>	<b>Fastener o.c. spacing (in.)</b>	<b>Max. Allowable Uniform Side Loads (PLF)</b>											
7.25	2	12	400		300		500		375		560		420	
9.25	3	12	600		450		750		565		840		630	
14	4	12	800		600		1000		750		1120		840	

Tabulated values shall not be increased for a load duration  $K_D > 1.0$

**Min. nails distances:**

- 1) Min. nail edge distance = 1.5"
- 2) Min. nail end distance = 3"
- 3) Min. distance between rows of nails = 3"
- 4) Min. distance between nails in a row = 6"
- 5) Nails staggering distance = o.c. spacing/2
- 6) For other nails o.c. spacings, multiply the tabulated PLF load by 12/o.c. spacing (max. fasteners o.c. spacing = 24")
- 7) For three-ply members (Assembly B), min. o.c. spacing = 12"

TABLE 16: MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED UNIFORM SIDE LOADS - SIMPSON STRONG-DRIVE® SDW SCREWS

			Assembly A	Assembly B	Assembly F	Assembly A	Assembly B	Assembly F	Assembly F	Assembly F
<b>Fastener type</b>			SDW22338	SDW22500	SDW22634	SDW22300	SDW22458	SDW22600	SDW22500	SDW22438
<b>Fastener nominal length (in.)</b>			3 3/8	5	6 3/4	3	4 5/8	6	5	4.375
<b>Side member thickness</b>			1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"	1 1/8"
<b>Main member thickness</b>			1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"	1 1/8"
<b>Min. depth (in.)</b>	<b># of Rows</b>	<b>Fastener o.c. spacing (in.)</b>	<b>Max. Allowable Uniform Side Loads (PLF)</b>							
7.25	2	12	1265	1070	950	1220	1200	1095	795	730
11.25	3	12	1895	1605	1425	1830	1800	1640	1190	1095
16	4	12	2530	2135	1900	2440	2395	2190	1585	1460

Tabulated values shall not be increased for a load duration  $K_D > 1.0$

**Min. screws distances:**

- 1) Min. fastener edge distance = 1.5"
- 2) Min. fastener end distance = 6"
- 3) Min. distance between rows of fasteners = 4"
- 4) Fasteners staggering distance = o.c. spacing/2
- 5) For other fasteners o.c. spacings, multiply the tabulated PLF load by 12/o.c. spacing (max. fasteners o.c. spacing = 24")
- 6) Fasteners installed on one side only

TABLE 17: MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED UNIFORM SIDE LOADS - MITEK MIFLK SCREWS

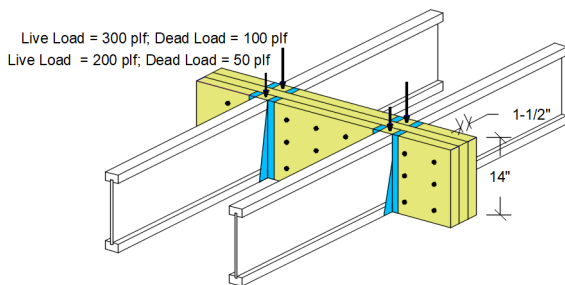
			Assembly A	Assembly B	Assembly F	Assembly A	Assembly B	Assembly F	Assembly F
Fastener type			MIFLK312	MIFLK005	MIFLK634	MIFLK278	MIFLK412	MIFLK22600	MIFLK005
Fastener nominal length (in.)			3 1/2	5	6 3/4	3	4 5/8	6	5
Side member thickness			1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"
Main member thickness			1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"
Min. depth (in.)	# of Rows	Fastener o.c. spacing (in.)	Max. Allowable Uniform Side Loads (PLF)						
7.25	2	12	1540	1200	1060	1180	1005	895	690
11.25	3	12	2310	1800	1590	1770	1505	1340	1030
16	4	12	3080	2400	2120	2360	2005	1785	1375

Tabulated values shall not be increased for a load duration KD > 1.0

Min. screws distances:

- 1) Min. fastener edge distance = 1.5"
- 2) Min. fastener end distance = 6"
- 3) Min. distance between rows of fasteners = 4"
- 4) Fasteners staggering distance = o.c. spacing/2
- 5) For other fasteners o.c. spacings, multiply the tabulated PLF load by 12/o.c. spacing (max. fasteners o.c. spacing = 24")
- 6) Fasteners installed on one side only

FIGURE 7: UNIFORM SIDE LOAD DESIGN EXAMPLE



Note:

- 1) Verify that a 3-ply, 1-1/2" x 14" header can support the total factored load of  $1.5 \times 300 + 1.25 \times 100 = 575$  PLF with proper live and total deflection criteria.
- 2) The actual factored uniform load applied to the outer ply member is 575 PLF.
- 3) Three 1-1/2" plies (Assembly B), 3 rows of 10d Box nails (0.128" x 3") at 12" o.c. spacing fastened on both sides (face and back) are good for 750 PLF factored uniform side load. Therefore, use 3 rows of 10d Box nails (0.128" x 3") at 12" o.c. spacing.
- 4) Since nails are required on both sides (face and back) for 3-ply members, stagger fasteners on the back side by half the distance between the fasteners on the face side.
- 5) Verify hanger capacity. Capacity reduction may be required for the selected header thickness. Refer to hanger manufacturer for appropriate reductions.

# MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED CONCENTRATED SIDE LOADS

TABLE 18: MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED CONCENTRATED SIDE LOADS - NAILS

		Assembly A	Assembly A	Assembly A	Assembly B
Fastener type		8d Box Nail (0.113" x 2.5")	10d Box Nail (0.128" x 3")	16d Box Nail (0.135" x 3.5")	
Side member thickness		1 1/8" or 1 1/4"	1 1/2"	1 3/4"	1 3/4"
Main member thickness		1 1/8" or 1 1/4"	1 1/2"	1 3/4"	1 3/4"
Min. depth (in.)	Total # of Fasteners	Max. Allowable Uniform Side Loads (PLF)			
7.25	6	1200	1500	1680	1260
9.25	8	1600	2000	2240	1680
9.5	12	2400	3000	3360	2520
11.25	16	3200	4000	4480	3360
14	18	3600	4500	5040	3780
16	24	4800	6000	6720	5040

Tabulated values shall not be increased for a load duration KD > 1.0

FIGURE 8: 6 NAILS

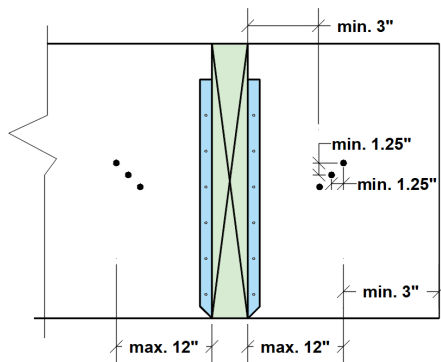


FIGURE 9: 8 NAILS

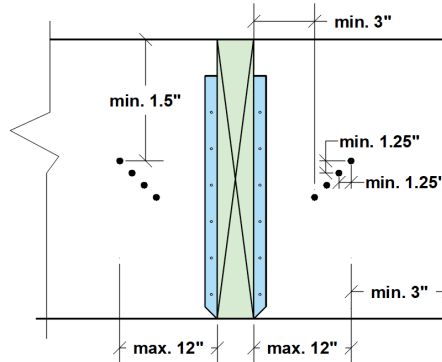


FIGURE 10: 12 NAILS

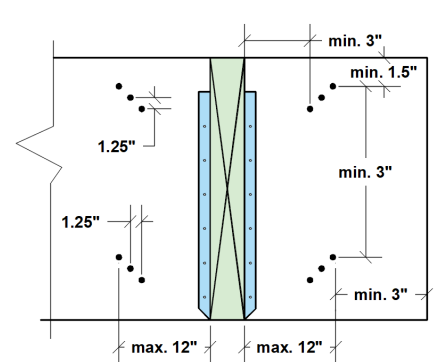


FIGURE 11: 16 NAILS

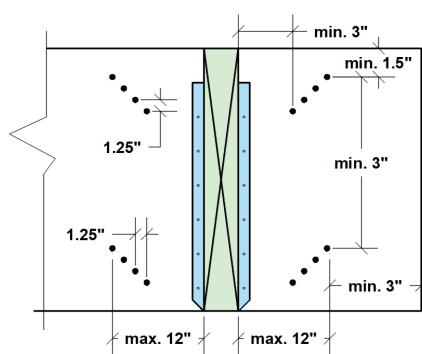


FIGURE 12: 18 NAILS

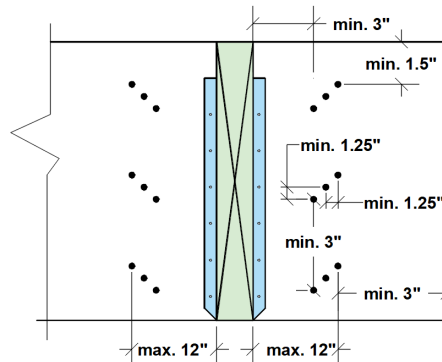


FIGURE 13: 24 NAILS

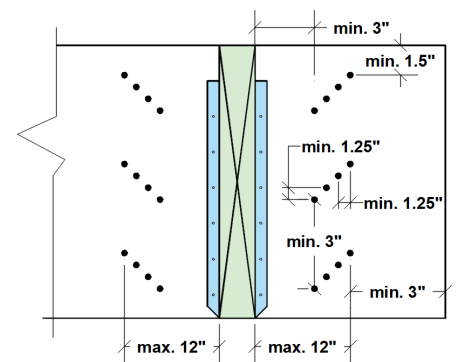
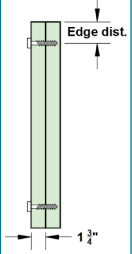
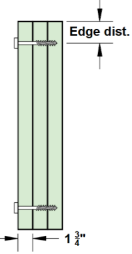
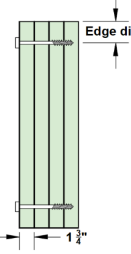
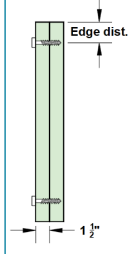
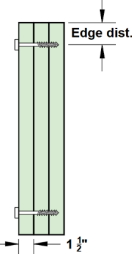
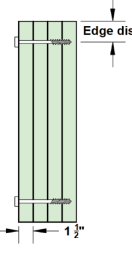
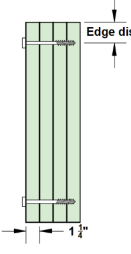
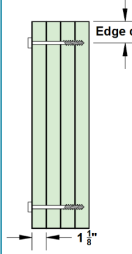


TABLE 19: MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED CONCENTRATED SIDE LOADS - SIMPSON SDW SCREWS

		Assembly A	Assembly B	Assembly F	Assembly A	Assembly B	Assembly F	Assembly F	Assembly F
									
Fastener type		SDW22338	SDW22500	SDW22634	SDW22300	SDW22458	SDW22600	SDW22500	SDW22438
Fastener nominal length (in)		3 3/8	5	6 3/4	3	4 5/8	6	5	4.375
Side Member Thickness		1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"	1 1/8"
Main Member Thickness		1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"	1 1/8"
Min. depth (in.)	Total # of Fasteners	Max. Allowable Uniform Side Loads (PLF)							
7.25	6	3790	3205	2850	3660	3595	3280	2375	2190
9.25	8	5055	4270	3795	4880	4790	4375	3165	2920
9.5	12	7580	6405	5695	7320	7185	6560	4745	4375
11.25	16	10105	8540	7590	9760	9575	8750	6325	5835
14	18	11370	9605	8540	10980	10775	9840	7115	6560

Tabulated values shall not be increased for a load duration KD > 1.0

FIGURE 14: 6 SDW SCREWS

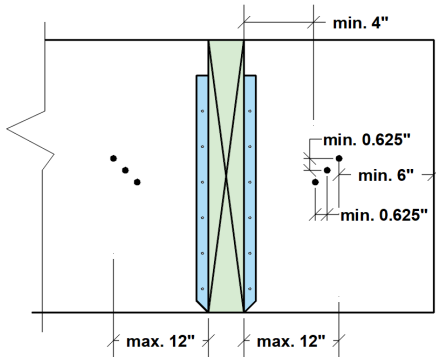


FIGURE 15: 8 SDW SCREWS

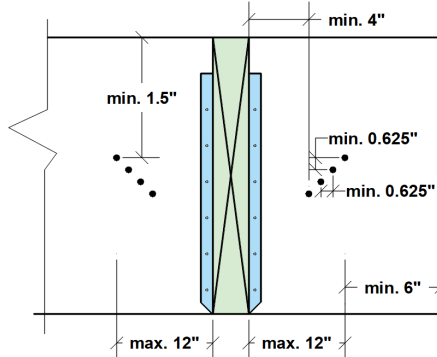


FIGURE 16: 12 SDW SCREWS

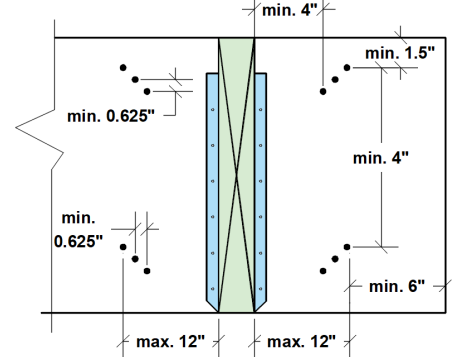


FIGURE 17: 16 SDW SCREWS

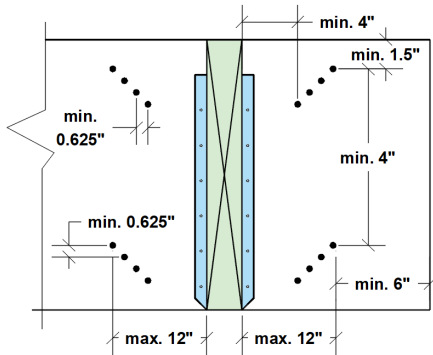


FIGURE 18: 18 SDW SCREWS

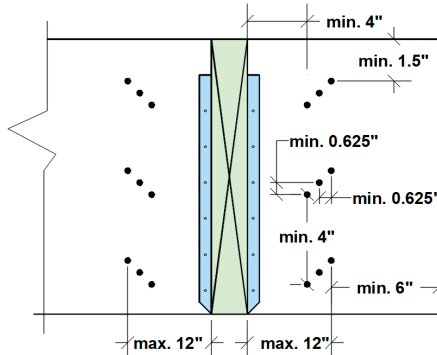


TABLE 20: MULTIPLE MEMBER CONNECTIONS: MAX. FACTORED CONCENTRATED SIDE LOADS - MITEK MIFLK SCREWS

		Assembly A	Assembly B	Assembly F	Assembly A	Assembly B	Assembly F	Assembly F
Fastener type		MIFLK312	MIFLK005	MIFLK634	MIFLK278	MIFLK412	MIFLK22600	MIFLK005
Fastener nominal length (in)		3 1/2	5	6 3/4	3	4 5/8	6	5
Side Member Thickness		1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"
Main Member Thickness		1 3/4"	1 3/4"	1 3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/4"
Min. depth (in.)	Total # of Fasteners	Max. Allowable Uniform Side Loads (PLF)						
7.25	6	4620	3600	3180	3540	3010	2675	2060
9.25	8	6160	4800	4240	4720	4010	3565	2745
9.5	12	9240	7200	6360	7080	6015	5345	4115
11.25	16	12320	9600	8480	9440	8020	7130	5490
14	18	13860	10800	9540	10620	9020	8020	6175

Tabulated values shall not be increased for a load duration KD > 1.0

FIGURE 19: 6 MIFLK SCREWS

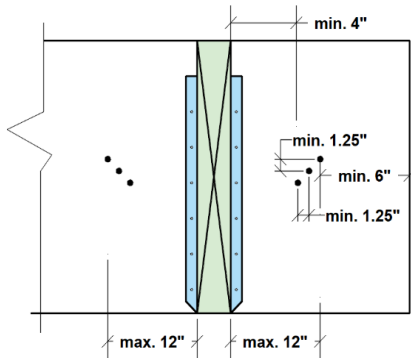


FIGURE 20: 8 MIFLK SCREWS

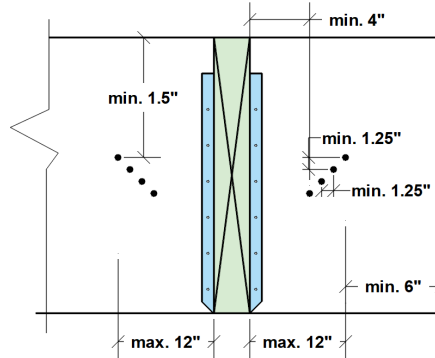


FIGURE 21: 12 MIFLK SCREWS

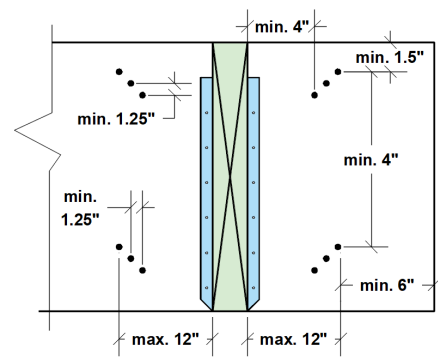


FIGURE 22: 16 MIFLK SCREWS

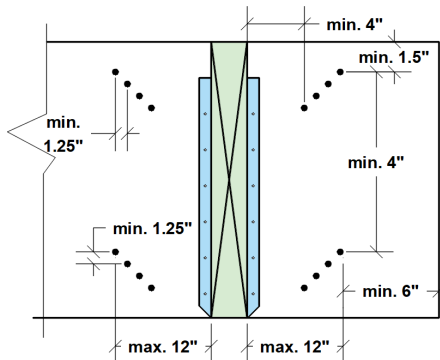


FIGURE 23: 18 MIFLK SCREWS

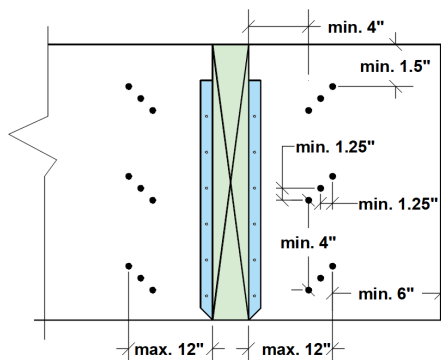
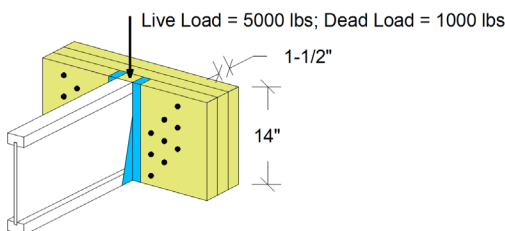


FIGURE 24: CONCENTRATED SIDE LOAD EXAMPLE



Note:

- 1) Verify that a 3-ply, 1-1/2" x 14" header can support a factored concentrated side load of  $1.5 \times 5000 + 1.25 \times 1000 = 8750$  lbs and all other loads applied.
- 2) The concentrated factored side load of 8750 lbs is transferred to the header with a face mount hanger.
- 3) For an assembly of three 1-1/2" plies (Assembly B), 18 - MIFLK005 screws are good for 10800 lbs.
- 4) Verify hanger capacity. Capacity reduction may be required for the selected header thickness. Refer to hanger manufacturer for appropriate reductions.



## STORAGE AND HANDLING

### INTRODUCTION

Proper storage and handling of engineered wood products (EWP) including T-TEC LSL and Tolko LSL Industrials is required to protect the products during distribution and at the jobsite. APA – The Engineered Wood Association recommends the following storage and handling practices for EWP products. For full details on proper storage and handling, refer to *APA Technical Note: Proper Storage and Handling of I-Joists and LVL, Form E705* available at [www.apawood.org](http://www.apawood.org).

### SAFE HANDLING DURING DISTRIBUTION

1. Bundle wrap can be slippery. Avoid walking on wrapped bundles. Stacks of product may be unstable or slippery, especially when wet. Avoid walking on the material.
2. Follow good forklift safety procedures when handling T-TEC LSL and Tolko LSL Industrials at the yard.
3. Store longest material lowest to the ground.
4. When handling with a crane, pick up the load using a spreader if necessary to minimize handling stresses.
5. Post and follow load limits on storage racks.

### STORAGE DURING DISTRIBUTION

1. Keep wrapped to protect from weather.
2. Use stickers to separate bundles.
3. Use stickers every 8 feet and maintain vertical alignment of the stickers.
4. Do not store T-TEC LSL and Tolko LSL Industrials in direct contact with the ground.
5. For optimal moisture protection, keep at least 12 inches up from the ground.
6. To protect from dirt and weather, delay unwrapping the bundles until the time of the installation or cut-up for delivery.
7. Take care to avoid forklift damage. If the ground is unlevel in the storage area, reduce forklift speed to avoid “bouncing” the load.
8. When handling with a crane, pick up the load using a spreader if necessary to minimize handling stresses.
9. Maintain stack height within safe limits.
10. Do not stack other material on top of T-TEC LSL and Tolko LSL Industrials.

### PROPER HANDLING AT THE JOBSITE

1. Do not drop the product off the delivery truck. Best practice is to use a forklift or boom.
2. Store on level, well-drained area.
3. Keep on stickers spaced every 8’ and at least every 6” off the ground at the jobsite.
4. Keep material covered to protect from weather.
5. Do not stack other material on top of the product.
6. Never use or try to repair damaged products. If defective material is discovered prior to or during installation, cease installation and contact the supplier.

### MOISTURE EFFECTS

T-TEC LSL and Tolko LSL Industrials products are manufactured under carefully controlled conditions that assure they are dry. Moisture content can be affected by humidity, exposure to wetting and drying conditions. While T-TEC LSL and Tolko LSL Industrials products are engineered to withstand normal exposure, excessive exposure to moisture may lead to dimensional change.

If moisture is present, mold, mildew and wood decay fungi may grow on any engineered wood products, thus it is important to properly store T-TEC LSL and Tolko LSL Industrials to control exposure to moisture. Moisture increase is expected under normal construction situations and does not adversely affect the performance of the products if good building practices are followed to minimize exposure and to provide proper conditions for the products to re-equilibrate to dry conditions.

Reference: *APA Technical Note: Proper Storage and Handling of I-Joists and LVL, Form E705* available at [www.apawood.org](http://www.apawood.org).

## CSD SOFTWARE

Calculated Structured Designs Inc. (CSD®) is a software development company providing solutions for the engineered wood, engineering, design, and building industries for all of North America and Australia.

Building with the most recent cutting edge development tools, CSD® offers solutions for our industry leading designers, drafters, engineers, and builders.

Website: [csdsoftware.com/csd/software/](http://csdsoftware.com/csd/software/)

### DRAW

- Multiple input styles for quick and easy drawing
- Real Time 3D feedback
- Create realistic model the way it will be built
- Draw the way you want. iStruct® will follow
- Robust graphics tools allow custom detailing in the model

### DESIGN

- Analyze anytime for quick results and guidance
- Precision load development for accurate designs
- Solution Seeker finds the optimum product solution
- Easily create required engineering reports
- Automatic load distribution analyzes all components at once

### BUILD

- Create Flexible and detailed plot layouts
- Add any type of data to your plot
- Integrate customer details and information
- Create dynamic quotes with exports to point of sale systems
- Send materials to automated saw files or create manual cut lists

## ACCESS THE CSD SOFTWARE

Tolko offers authorized customers access to engineered wood design software by CSD. This software includes:



#### isPlan®

A 3D layout and design solution that allows users to model an entire structure with 2D and 3D views. isPlan® develops and transfers gravity loads through the structure and designs the structural members.



#### isDesign®

A single member sizing solution that allows users to size floor and roof joists, beams and posts by inputting span and load information. Innovative tools allow selection of the most cost effective solution.



#### isWall®

The first stand alone wall design application that allows users to model a tall wall and run gravity and wind analysis for all the components of the wall.

To become a Tolko authorized user, please contact your Tolko EWP sales representative at:

Phone: 250-549-5311

Email: [EWPSales@tolko.com](mailto:EWPSales@tolko.com)

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Calculated  
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[WWW.TOLKO.COM](http://WWW.TOLKO.COM)

Tolko Marketing and Sales  
3000 – 28th Street  
Vernon, BC V1T 9W9

Tel 250.545.4411 – Fax 250.550.2550