

## Connection Details for 3-Ply TJI® Joists

Current versions of Weyerhaeuser [ForteWEB®](#) software and [Javelin®](#) design software enable users to design 3-ply TJI® joists. Special attention must be taken to properly detail 3-ply TJI® joists to account for vertical load transfer between plies and member rotation. This technical bulletin provides connection details for 3-ply TJI® joists subject to various load conditions.

### Load Conditions

It is important to understand the load conditions in order to determine the required connection detail. The tables below depict load conditions for “top-loaded” and “side-loaded” members.

**TABLE 1: TOP-LOADED MEMBER (CONNECTION DETAIL A)**

Application	Application Detail <sup>[1]</sup>
Floor Joist	
Joist supporting a centered partition wall or column	<p>This is a top-loaded member because the bottom plate of the wall is bearing on all three (3) plies.</p>

[1] Nails not shown for purpose of clarity.

**TABLE 2: SIDE-LOADED MEMBER (CONNECTION DETAIL B OR C)**

Application	Application Detail <sup>[1]</sup>
Side-Loaded Flush Beam	
Joist supporting an off-centered partition wall of column	<p>This is a side-loaded member because the bottom plate of the wall is not bearing on all three (3) plies.</p>

[1] Nails not shown for purpose of clarity.

## Member Rotation

There are certain load conditions involving 3-ply TJI® joists that require additional detailing to prevent member rotation. The table below offers examples of different applications and whether additional detail is required.

**TABLE 3: ROTATIONAL RESTRAINT (CONNECTION DETAIL D)**

Required	Not Required
Side-loaded members with loading on one side only	Member with a direct-applied ceiling
	Top-loaded members
	Side-loaded members with perpendicular framing on both sides

*If you have any questions, please contact your Weyerhaeuser representative.*

TB-820

May 2023 (Expires 5/2025)

## Connection Details

### Detail A (Top-Loaded Member)

[TYP] INSTALL FILLER BLOCK TIGHT TO THE TOP FLANGE

[TYP] CENTER-PLY FILLER BLOCK NAIL CONNECTION PER INSTALLATION INSTRUCTIONS

[TYP] CONTINUOUS FILLER BLOCK \*FILLER 'BREAK' ALLOWED TO ACCOMMODATE OBSTRUCTIONS

[TYP] OUTER-PLY FILLER BLOCK NAIL CONNECTION PER INSTALLATION INSTRUCTIONS

**NOTE:** EACH JOIST IN THE 3-PLY TJI® JOIST ASSEMBLY MUST BE PROPERLY ATTACHED TO THE FLOOR SHEATHING.

Top-Loaded 3-Ply TJI® Joist Assembly							
TJI® Joist	110		210		230 / 360		360
Depth	9½" or 11⅞"	14" or 16"	9½" or 11⅞"	14" or 16"	9½" or 11⅞"	14" or 16"	18" or 20"
Filler Block	2x6		2x6 + ⅝" sheathing		2x6 + ⅝" sheathing		

**Installation Instructions:**

**Step 1:**  
Connect filler block(s) to both sides of center-ply with nails as shown. Install tight to the top flange.

**Step 2:**  
Connect outer plies to center-ply and filler block(s) with nails as shown.

[TYP] 2x6

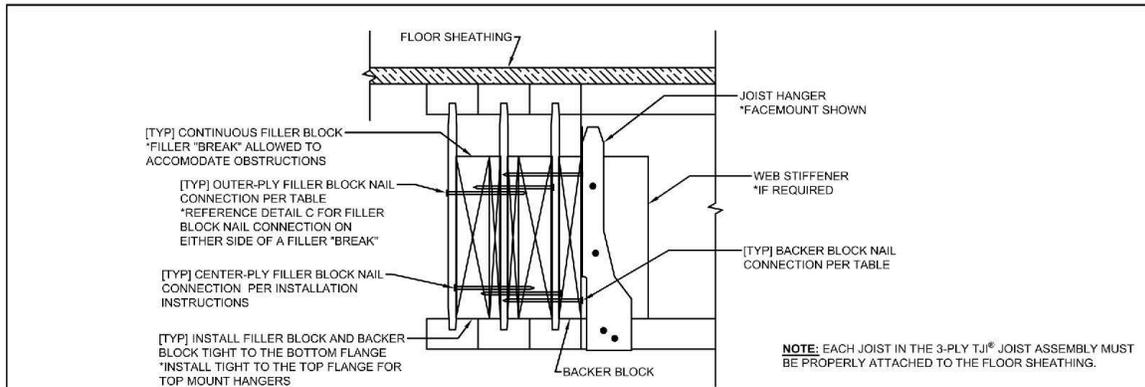
[TYP] CENTER-PLY FILLER BLOCK NAIL CONNECTION (0.131" x 3½") @ 48" o.c.

[TYP] FILLER BLOCK SHEATHING SHALL BE POSITIONED NEAREST TO CENTER-PLY (IF APPLICABLE)

[TYP] OUTER-PLY FILLER BLOCK NAIL CONNECTION (0.131" x 3½") @ 8" o.c. STAGGERED

SHEET: **A** TB-820 DETAIL A TOP-LOADED 3-PLY TJI® JOIST

## Detail B (Side-Loaded Member-Uniform Side Load)



Side-Loaded 3-Ply TJI® Joist Assembly - Uniform Side Load							
TJI® Joist	110		210		230 / 360		360
Depth	9½" or 11¾"	14" or 16"	9½" or 11¾"	14" or 16"	9½" or 11¾"	14" or 16"	18" or 20"
Filler Block <sup>[1]</sup>	2x6	2x8	2x6 + ⅝" sheathing	2x8 + ⅝" sheathing	2x6 + ⅝" sheathing	2x8 + ⅝" sheathing	2x12 + ½" sheathing
Backer Block <sup>[1]</sup>	¾" or ⅞"		¾" or ⅞"		¾" or 1" net		

[1] If necessary, increase filler and backer block height for face mount hangers and maintain ⅜" gap at top of joist. Filler and backer block dimensions should accommodate required nailing without splitting. The suggested minimum length is 12" for backer block.

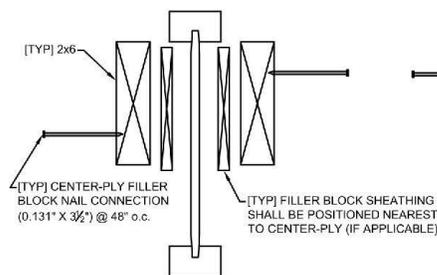
Filler and Backer Block Nail Connection (Maximum Uniform Side Load Applied to Either Outer-Ply of 3-Ply TJI® Joists) <sup>[1]</sup>						
Side Load [lb/ft]		Filler Block (each side)			Backer Block	
ASD (100%)	LSD (Factored; Standard Term)	Nail	Rows	Spacing [in.]	Nail	Count
370	535	(0.131" x 3½")	2	6	(0.131" x 3½")	15
560	810	(0.131" x 3½")	2	4		
560	810	(0.131" x 3½")	3	6		
835	1210	(0.131" x 3½")	3	4		

[1] Use ASD (100%) for US designs. Use LSD (Factored; Standard Term) for Canadian designs.  
 [2] Loads apply to the 3-ply filler block connection capacity only. Additional verification of the 3-ply TJI® joist capacity is required.

### Installation Instructions:

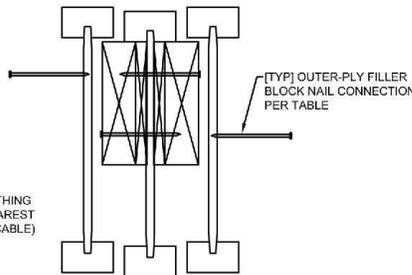
#### Step 1:

Connect filler block(s) to both sides of center-ply with nails as shown. *Install tight to the bottom flange for face mount hangers.*



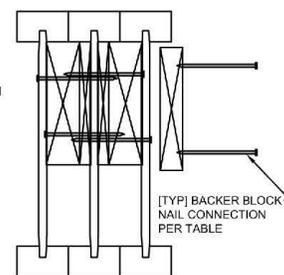
#### Step 2:

Connect outer plies to center-ply and filler block(s) with nails as shown.



#### Step 3:

Connect backer block to outer-ply with nails as shown. *Install tight to the bottom flange for face mount hangers.*



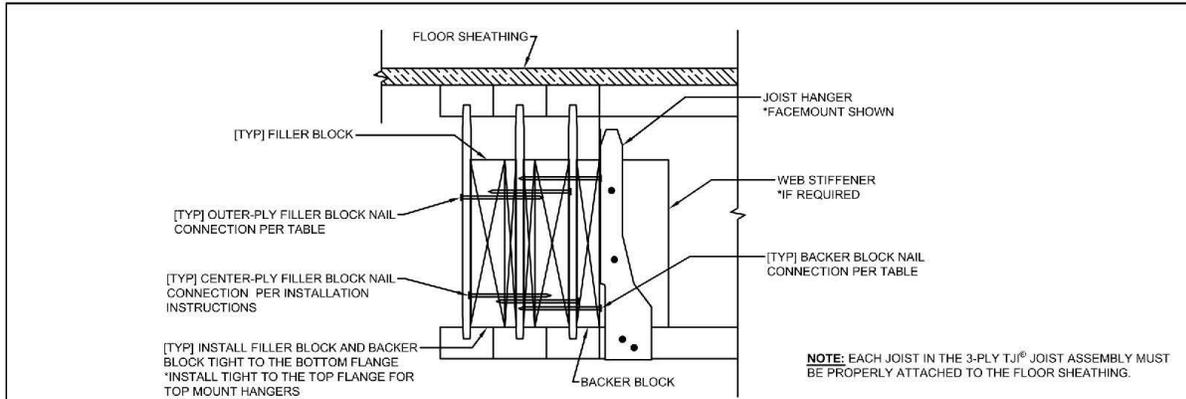
SHEET:

**B**

TB-820 DETAIL B  
 SIDE-LOADED 3-PLY TJI® JOIST  
 UNIFORM SIDE LOAD



## Detail C (Side-Loaded Member-Concentrated Side Load)



Side-Loaded 3-Ply TJI® Joist Assembly - Concentrated Side Load							
TJI® Joist	110		210		230 / 360		360
Depth	9 1/2" or 11 1/4"	14" or 16"	9 1/2" OR 11 1/4"	14" or 16"	9 1/2" OR 11 1/4"	14" or 16"	18" or 20"
Filler Block <sup>[1]</sup>	2x6	2x8	2x6 + 3/8" sheathing	2x8 + 3/8" sheathing	2x6 + 1/2" sheathing	2x8 + 1/2" sheathing	2x12 + 1/2" sheathing
Backer Block <sup>[1]</sup>	3/4" or 1" net		3/4" or 1" net		3/4" or 1" net		

[1] If necessary, increase filler and backer block height for face mount hangers and maintain 1/8" gap at top of joist. Filler and backer block dimensions should accommodate required nailing without splitting. The suggested minimum length is 24" for filler block and 12" for backer block.

Filler and Backer Block Nail Connection (Maximum Concentrated Side Load Applied to Either Outer-Ply of 3-Ply TJI® Joists)					
Side Load <sup>[1][2]</sup> [lb]		Filler Block (each side)		Backer Block	
ASD (100%)	LSD (Factored; Standard Term)	Nail	Count	Nail	Count
1500	2175	(0.131" x 3 1/2")	17	(0.131" X 3 1/2")	15
2000	2900	(0.131" X 3 1/2")	22		
2500	3625	(0.131" X 3 1/2")	27		

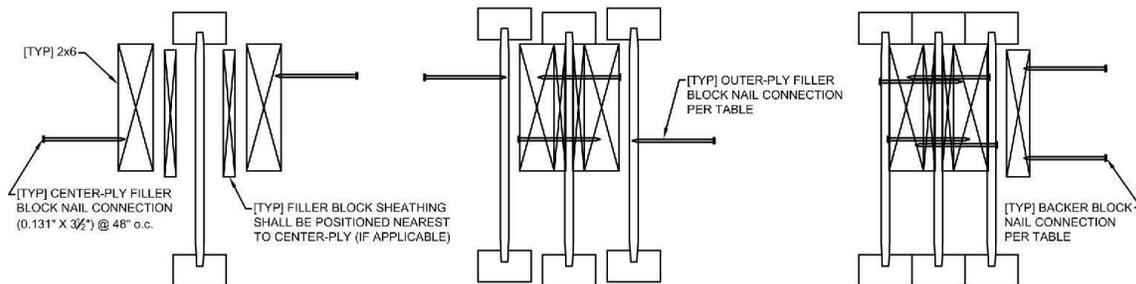
[1] Use ASD (100%) for US designs. Use LSD (Factored; Standard Term) for Canadian designs.  
 [2] Loads apply to the 3-ply filler block connection capacity only. Additional verification of the 3-ply TJI® joist capacity is required.

### Installation Instructions:

**Step 1:**  
 Connect filler block(s) to both sides of center-ply with nails as shown. *Install tight to the bottom flange for face mount hangers.*

**Step 2:**  
 Connect outer plies to center-ply and filler block(s) with nails as shown.

**Step 3:**  
 Connect backer block to outer-ply with nails as shown. *Install tight to the bottom flange for face mount hangers.*



SHEET:  <b>C</b>	TB-820 DETAIL C SIDE-LOADED 3-PLY TJI® JOIST CONCENTRATED SIDE LOAD	
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**Detail D (Rotational Restraint)**

