

Connection Details for 3-Ply TJI® Joists

Current versions of Weyerhaeuser Forte® single-member sizing 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.

TOP-LOADED MEMBER (CONNECTION DETAIL A)

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

[1] Nails not shown for purpose of clarity

SIDE-LOADED MEMBER (CONNECTION DETAIL B OR C)

Application	Application Detail ^[1]
Side-Loaded Flush Beam	
Joist supporting an <i>off-centered</i> partition wall or column	<p><i>This is a side-loaded member because the bottom plate of the wall is not bearing on all three members.</i></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 or not additional detail is required.

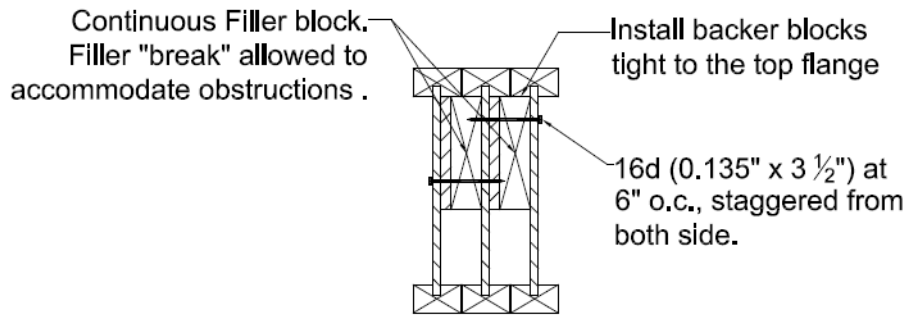
ROTATIONAL RESTRAINT (CONNECTION DETAIL D)

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

If you have any questions, or require additional information, please contact your Weyerhaeuser representative.

Connection Details

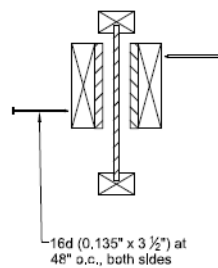
Detail A (Top-Loaded Member)



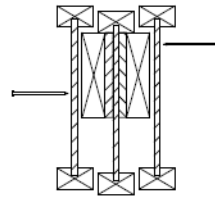
Note: Each joist in the 3-Ply TJI joist assembly must be properly attached to the floor sheathing

TJI	110	Filler Blocks 210	230 and 360
Filler Block	2x6	2x6 + 1/2" sheathing	2x6 + 1/2" sheathing

Installation Instructions:

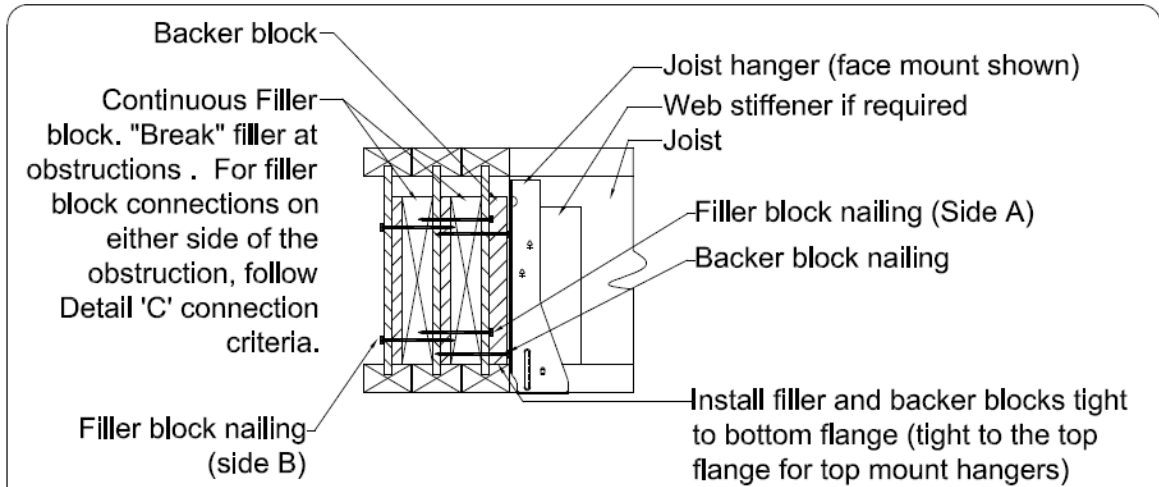


Step 1: Locate backer blocks on center ply of the 3-ply TJI Joist assembly. Attach tight to top flange.



Step 2: Attach outer plies to the center ply. Refer to the figure above for nailing requirements.

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



Note: Each joist in the 3-Ply TJI joist assembly must be properly attached to the floor sheathing

TJI	Filler and Backer Blocks						
	110		210		230 and 360		
Depth	9 1/2" or 11 7/8"	14" or 16"	9 1/2" or 11 7/8"	14" or 16"	9 1/2" or 11 7/8"	14" or 16"	18" or 20"
Filler Block*	2x6	2x8	2x6 + 3/8" sheathing	2x8 + 3/8" sheathing	2x6 + 1/2" sheathing	2x8 + 1/2" sheathing	2x12 + 1/2" sheathing
Backer Block*	3/4" or 1"		3/4" or 1"		3/4" or 1" net		

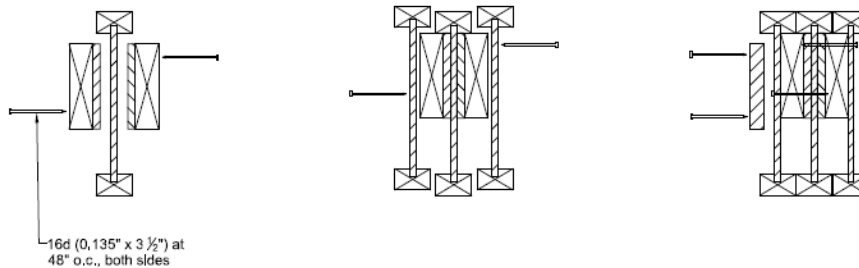
* If necessary, increase filler and backer block height for face mount hangers and maintain 1/8" gap at top of joist. Backer block should accommodate required nailing without splitting. The suggested minimum length is 12" for backer blocks.

Side Load (plf)**	LSD Factored*** - (Standard Term)	Filler and Backer Block Nailing						
		Filler Block Side A			Filler Block Side B			Backer Block
ASD*** (100%)		Nail	Rows	Spacing (in)	Nail	Rows	Spacing (in)	Nail
370	535	16d (0.135" x 3 1/2")	2	6	16d (0.135" x 3 1/2")	2	6	Fifteen 16d (0.135" x 3 1/2")
560	810	16d (0.135" x 3 1/2")	2	4	16d (0.135" x 3 1/2")	2	4	
560	810	16d (0.135" x 3 1/2")	3	6	16d (0.135" x 3 1/2")	3	6	
835	1210	16d (0.135" x 3 1/2")	3	4	16d (0.135" x 3 1/2")	3	4	

** Use ASD (100%) for US designs and LSD Factored - (Standard Term) for Canadian Designs

*** Loads apply to the 3-ply TJI Joist connection capacity only. Additional verification of the 3-ply TJI Joist capacity is required.

Installation Instructions:

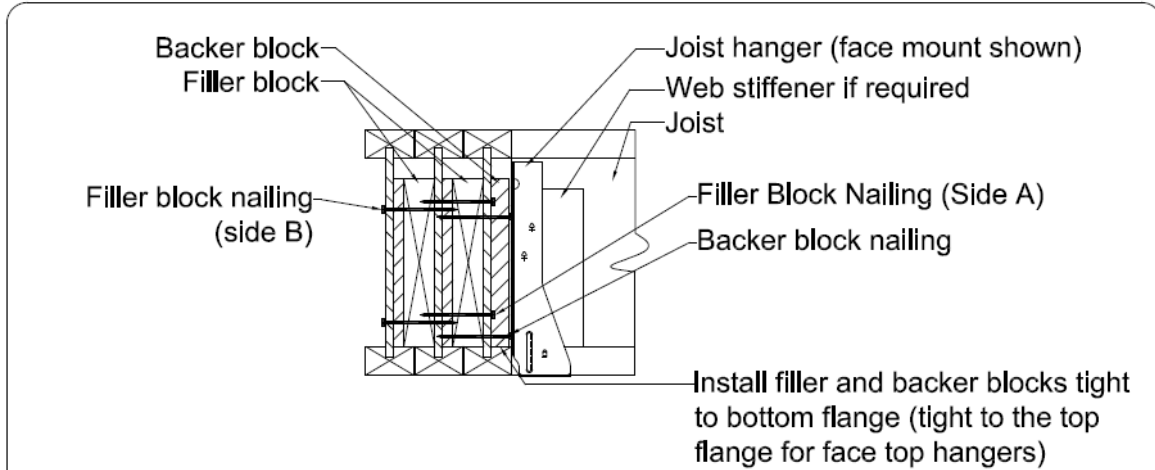


Step 1: Locate backer blocks on center ply of the 3-ply TJI Joist assembly. Attach tight to bottom flange for face mount hangers.

Step 2: Attach outer plies to the center ply. Refer to the table above for nailing requirements (Filler block side A and B)

Step 3: Attach the backer block to the outer ply. Refer to the table above for nailing requirements. Attach tight to bottom flange for face mount hangers.

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



Note: Each joist in the 3-Ply TJI joist assembly must be properly attached to the floor sheathing

TJI	Filler and Backer Blocks					
	110		210		230 and 360	
Depth	9 1/2" or 11 1/8"	14" or 16"	9 1/2" or 11 1/8"	14" or 16"	9 1/2" or 11 1/8"	14" or 16" 18" or 20"
Filler Block*	2x6	2x8	2x6 + 3/8" sheathing	2x8 + 3/8" sheathing	2x6 + 1/2" sheathing	2x8 + 1/2" sheathing 2x12 + 1/2" sheathing
Backer Block*	3/4" or 1" net		3/4" or 1" net		3/4" or 1" net	

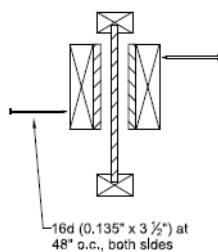
* If necessary, increase filler and backer block height for face mount hangers and maintain 1/8" gap at top of joist. Filler and backer block dimensions should accommodate required nailing without splitting. The suggested minimum length is 24" for filler and 12" for backer blocks.

Side Load (lbs)**	LSD Factored*** - (Standard Term)	Filler and Backer Block Nailing				
		Filler Block Side A		Filler Block Side B		Backer Block
ASD*** (100%)		Nail	Quantity	Nail	Quantity	Nail
1500	2175	16d (0.135" x 3 1/2")	17	16d (0.135" x 3 1/2")	17	Fifteen 16d (0.135" x 3 1/2")
2000	2900	16d (0.135" x 3 1/2")	22	16d (0.135" x 3 1/2")	22	
2500	3625	16d (0.135" x 3 1/2")	27	16d (0.135" x 3 1/2")	27	

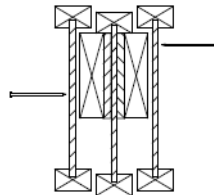
**Use ASD (100%) for US designs and LSD Factored - (Standard Term) for Canadian Designs

*** Loads apply to the 3-ply TJI Joist connection capacity only. Additional verification of the 3-ply TJI Joist capacity is required.

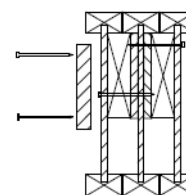
Installation Instructions:



Step 1: Locate backer blocks on center ply of the 3-ply TJI Joist assembly. Attach tight to bottom flange for face mount hangers.



Step 2: Attach outer plies to the center ply. Refer to the table above for nailing requirements (Filler block side A and B).



Step 3: Attach the backer block to the outer ply. Refer to the table above for nailing requirements. Attach tight to bottom flange for face mount hangers.

Detail D (Rotational Restraint)

