Connecting Double (2-ply) PWI™ I-Joists

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This Tech Note must be used in conjunction with the appropriate Pacific Woodtech Technical Guide.

Connecting Double, 2-ply, Pacific Woodtech (PWT) I-Joists

Double I-Joists are specified for only one reason - because a single ply does not meet the application's requirements. Key issues:

- Applications that require double I-Joists include, but are not limited to, single I-Joists that are over stressed or have excessive deflection when exposed to design loads.
- Double I-Joists require that all loads be applied equally to each piece, or ply. Double I-Joists must perform as a single unit or element.

Techniques for making sure that a double I-Joist acts as a single element vary depending on the application, the only requirement is that all loads be equally applied to both plies.

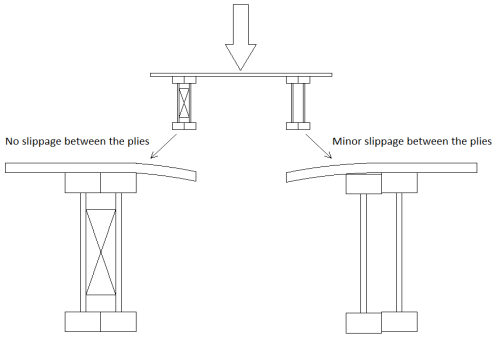
It is the design professional's responsibility to clearly define when mechanical fasteners are required to ensure that all loads are equally applied to both plies.

Applications requiring double I-Joists that are mechanically connected include:

- All Side-Loaded Members.
- All Top-Loaded I-Joists where the loads are not applied equally to both plies.

The challenge is knowing when top-loads will be applied equally to both plies without mechanical fasteners!

A common misconception is that floor decking applies the standard uniform Live loads (including people) equally to both plies.



While technically not side loads, loads on the decking can get applied to a double I-Joist unevenly (see graphic to the right). Loads, such as people, that are between the joists are distributed to the adjacent joists by the decking. When this happens to double I-Joists that are not correctly connected, the ply nearest the load will take more of the load. The ply taking more load will deflect more, causing movement between the plies, which may result in a floor squeak.

WHEN TWO MEMBERS ARE NOT TIED TOGETHER, ANY DIFFERENTIAL MOVEMENT THAT MAY OCCUR CAN CAUSE SQUEAKING OR OTHER TYPES OF NOISES. PACIFIC WOODTECH WILL NOT BE RESPONSIBLE FOR ANY FUTURE FLOOR PERFORMANCE ISSUES RELATED TO THIS ISSUE.

I-Joist Filler Thickness & Height

Series	Minimum Thickness*	Loading	Filler Height by I-Joist Depth				
			9-1/2"	11-7/8"	14"	16"	18"
PWI-18S, PWI-20S, PWI-32S	2-1/8" (2x? + 5/8")	Top	5-1/2" (2x6)	5-1/2" (2x6)	7-1/4" (2x8)	7-1/4" (2x8)	7-1/4" (2x8)
		Side**	5-1/2" (2x6)	7-7/8"-8-3/4"	10"-10-7/8"	12"-12-7/8"	14-1/2" (2-2x8 stacked)
PWI-53L	1-3/4" (2x? + 7/16")	Top	5-1/2" (2x6)	5-1/2" (2x6)	7-1/4" (2x8)	7-1/4" (2x8)	7-1/4" (2x8)
		Side**	5-1/2" (2x6)	7-7/8"-8-3/4"	10"-10-7/8"	12"-12-7/8"	14-1/2" (2-2x8 stacked)
PWI-36L	1-7/8" (2x? + 7/16")	Top	5-1/2" (2x6)	5-1/2" (2x6)	7-1/4" (2x8)	7-1/4" (2x8)	7-1/4" (2x8)
		Side**	5-1/2" (2x6)	7-7/8"-8-3/4"	10"-10-7/8"	12"-12-7/8"	14-1/2" (2-2x8 stacked)
PWI-42S, PWI-52S, PWI-56L	3" (2- 2x?)	Top	5-1/2" (2x6)	5-1/2" (2x6)	7-1/4" (2x8)	7-1/4" (2x8)	7-1/4" (2x8)
		Side**	5-1/2" (2x6)	7-7/8"-8-3/4"	10"-10-7/8"	12"-12-7/8"	14-1/2" (2-2x8 stacked)

*Filler must not be less than the minimum thickness and may be up to 1/4" thicker.

** Filler blocks shall fit the clear distance between flanges with a gap of at least 1/8," but not more than 1," and shall be of sufficient depth to allow for all hanger nailing into the web. Do not force into place. Top-mount hangers that do not require nailing into the web may be treated as Top Loaded.

Filler blocks must be:

- Long enough not to split when nailed (12" min.)
- Located at each support
- Under all concentrated loads that are not equally applied to each ply
- Centered behind each hanger
- At 24" oc max. under all uniform loads that are not equally applied to each ply
- Installed tight to top flange at top-mount hangers and top concentrated loads.
- Installed tight to bottom flange at supports and face mount hangers

Floor sheathing to be glued and nailed to flanges of both plies

Attach using ten (10) 0.131" x 3-1/4" nails (min.):

- Joists ≤ 2-1/2" thick: from either side, total of 10 nails
- Joists > 2-1/2" thick: from each side, total of 20 nails

Stagger rows, clinch where possible, and spaced to avoid splitting.

Our literature is updated frequently, so please visit www.pacificwoodtech.com for the most current version of our specifications.

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⚠ 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.