

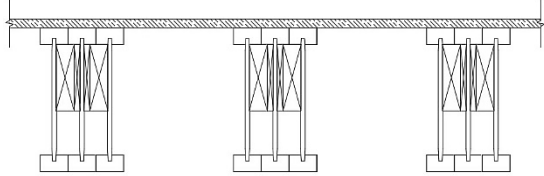
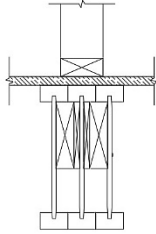
## Connection Details for 3-Ply TJI® Joists

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

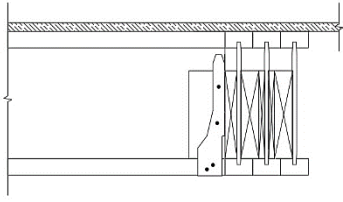
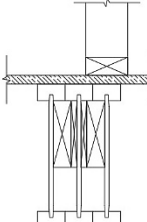
It is important to understand the load conditions in order to determine the required connection detail. The tables below depict load conditions for “top-loaded” and “side-loaded” members.

**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 or 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)**

**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.

**A**

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

**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.

| Side-Loaded 3-Ply TJI® Joist Assembly - Uniform Side Load |             |            |                    |                    |                    |                    |                     |
|-----------------------------------------------------------|-------------|------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| 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 <sup>[1]</sup>                               | 2x6         | 2x8        | 2x6 + ⅝" sheathing | 2x8 + ⅝" sheathing | 2x6 + ⅝" sheathing | 2x8 + ⅝" sheathing | 2x12 + ⅝" sheathing |
| Backer Block <sup>[1]</sup>                               | ⅝" or ⅞"    |            | ¾" or ⅞"           |                    | ⅞" or 1" net       |                    |                     |

[1] If necessary, increase filler and backer block height for face mount hangers and maintain ⅝" 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.*

**B**

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

**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.

| Side-Loaded 3-Ply TJI® Joist Assembly - Concentrated Side Load |             |            |                    |                    |                    |                    |                     |
|----------------------------------------------------------------|-------------|------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| TJI® Joist                                                     | 110         |            | 210                |                    | 230 / 360          |                    | 360                 |
| Depth                                                          | 9½" or 11¼" | 14" or 16" | 9½" OR 11¼"        | 14" or 16"         | 9½" OR 11¼"        | 14" or 16"         | 18" or 20"          |
| Filler Block <sup>[1]</sup>                                    | 2x6         | 2x8        | 2x6 + ⅝" sheathing | 2x8 + ⅝" sheathing | 2x6 + ½" sheathing | 2x8 + ½" sheathing | 2x12 + ½" sheathing |
| Backer Block <sup>[1]</sup>                                    | ⅝" or ¾"    |            | ¾" or 1"           |                    | ¾" or 1" net       |                    |                     |

<sup>[1]</sup> If necessary, increase filler and backer block height for face mount hangers and maintain ¼" 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 3½")           | 17    | (0.131" x 3½") | 15    |
| 2000                                                                                                                      | 2900                          | (0.131" x 3½")           | 22    |                |       |
| 2500                                                                                                                      | 3625                          | (0.131" x 3½")           | 27    |                |       |

<sup>[1]</sup> Use ASD (100%) for US designs. Use LSD (Factored; Standard Term) for Canadian designs.  
<sup>[2]</sup> 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:

C

TB-820 DETAIL C  
SIDE-LOADED 3-PLY TJI® JOIST  
CONCENTRATED SIDE LOAD

**Detail D (Rotational Restraint)**

