

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

Functionally replacing a damaged I-Joist by installing another I-Joist, of the same depth and series, next to the damaged one is the preferred "repair." A qualified design professional must verify that the joist adjacent to damaged joist and on the opposite side of the replacement can support the additional load.

Specifically:

- 1) The joist designs are the same for the damaged joist and both adjacent joists (including but not limited to the spans, bearings, and loads), and
- 2) Verify that the "Critical Joist for Design" can support the additional loads, and
- 3) Adequate connectors must be used to transfer all loads to the replacement joist and both adjacent joists.

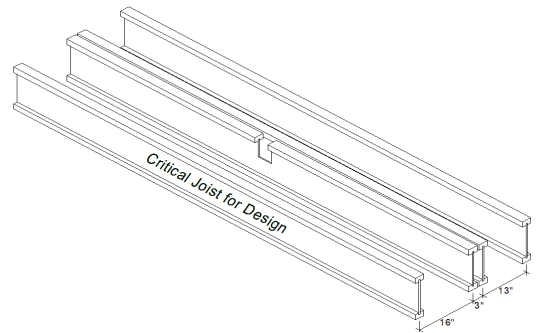
Applications that require special attention and should be sent to PWT for review:

- a) Functionally replacing one span in a multi-span application.
- b) I-Joists with side loads and or non-uniform loading.
- c) Any application that the design professional is not confident of the design.

How to Use

- a) Design the "critical joist" based on the distance between the damaged and replacement joists
- b) Use the table below to find the Maximum Capacity or Stress Indices. Select the row based on the distance in step a) and the column based on the on-center spacing.

| Max Capacity or Stress Indices Allowed by Distance between Damaged and Replacement Joist and On-Center Spacing | | | | |
|--|-------------------|-----|-------|-----|
| Distance between Joists | On-Center Spacing | | | |
| | 12" | 16" | 19.2" | 24" |
| 3" | 88% | 91% | 92% | 94% |
| 4" | 85% | 88% | 90% | 92% |
| 5" | 82% | 86% | 88% | 90% |
| 6" | 80% | 84% | 86% | 88% |



Examples based on 3" distance between damaged and replacement joist

11-7/8" PWI 20S at 24" oc Designed to LL/480, TL/240

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|---------------|-------------|---------------|-------------|-------|------|
| Moment | 3498 ft-lb | 8' 6" | 3755 ft-lb | 0.932 (93%) | D+L | L |
| Shear | 836 | 16' 10-3/8" | 1485 lb | 0.563 (56%) | D+L | L |
| LL Defl inch | 0.391 (L/513) | 8' 6-1/16" | 0.418 (L/480) | 0.940 (94%) | L | L |
| TL Defl inch | 0.489 (L/411) | 8' 6-1/16" | 0.836 (L/240) | 0.580 (58%) | D+L | L |

The damaged joist can be replaced with a new joist 3" away


11-7/8" PWI 20S at 12" oc Designed to LL/480, TL/240

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|---------------|-------------|---------------|-------------|-------|------|
| Moment | 3380 ft-lb | 10' 9" | 3755 ft-lb | 0.900 (90%) | D+L | L |
| Shear | 637 | 1-5/8" | 1485 lb | 0.429 (43%) | D+L | L |
| LL Defl inch | 0.524 (L/486) | 10' 9-1/16" | 0.531 (L/480) | 0.990 (99%) | L | L |
| TL Defl inch | 0.786 (L/324) | 10' 9-1/16" | 1.061 (L/240) | 0.740 (74%) | D+L | L |

The damaged joist cannot be replaced with a new joist 3" away

Cal. Prop 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.

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

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