

Nordic Joist Repair Detail for Non-Conforming Web Holes

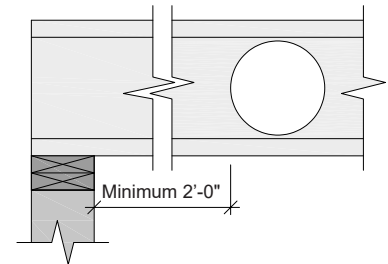
This technical note provides a repair detail for web holes in Nordic I-joists, where the residual factored shear resistance is insufficient when calculated as follows:

$$V_n = \text{Published Joist Factored Shear Resistance} \times \left[\frac{\text{Joist Depth} - \text{Hole Diameter}}{\text{Joist Depth}} \right]$$

This repair shall be used for an occasional damaged I-joist in a floor or roof system. Where multiple adjacent I-joists are damaged, suitability of this detail must be validated by a professional.

This technical note only applies if the following assumptions are met:

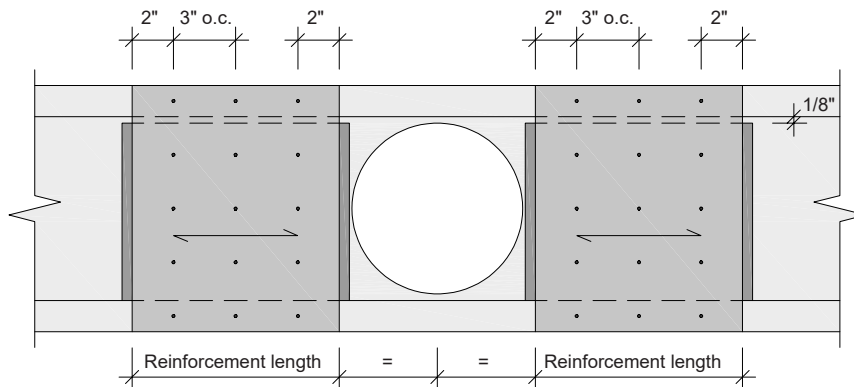
1. The I-joist supports uniform loads only.
2. The I-joist top and bottom flanges are not damaged.
3. The web hole diameter does not exceed the maximum permitted for the I-joist depth, considered as the clear distance between the flanges of the I-joist minus 1/4 inch. In the case of square or rectangular web holes, the largest dimension does not exceed 3/4 of the maximum diameter permitted for a round hole.
4. The minimum clear distance between the web hole and the closest inside face of a support is 2 feet.



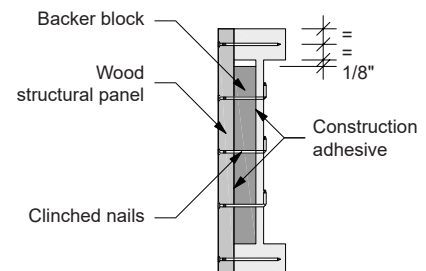
Repair detail requirements:

- Reinforcements:
 - Reinforcement shall be installed on both sides of the web hole, adjacent to the hole edges, on one side of the joist. Install with face grain horizontal, matching the joist depth.
 - Use wood structural panels with a minimum thickness of 23/32 inch (for OSB, panel mark 48/24).
 - The following reinforcement lengths apply:
 - For 9-1/2-inch I-joists, minimum length of 7 inches with 2 vertical rows of nails.
 - For 11-7/8-inch to 14-inch I-joists, minimum length of 10 inches with 3 vertical rows of nails.
 - For 16-inch I-joists, minimum length of 13 inches with 4 vertical rows of nails.
- Backer block:
 - Install leaving a 1/8-inch gap between the top of the backer block and the bottom of the top flange.
 - Use wood structural panels or solid sawn lumber S-P-F No. 2 or better.
- Fasteners:
 - For 2x3 flanges, use 5 rows of 3-inch common nails at 3 inches o.c. (clinched when possible).
 - For 2x4 flanges, use 5 rows of 3-1/2-inch common nails at 3 inches o.c. (clinched when possible).
 - One horizontal row of nails shall be centred on each flange; evenly space the remaining horizontal rows.
- Construction adhesive must be applied to all surfaces in contact.

For configurations beyond the scope of this technical note, refer to Construction Details ([NS-DC3](#)) or contact our technical support (tech@nordic.ca).



Elevation view of a repaired I-joist



Section view of a repaired I-joist