I-Joist Web Stiffeners

A web stiffener is a wood block that is used to reinforce the web of an I-joist at locations where:

- The webs of the I-joist are in jeopardy of buckling out of plane. This usually occurs in deeper I-joists.
- The webs of the I-joist are in jeopardy of "knifing" through the I-joist flanges. This can occur at any I-joist depth when the design reaction loads exceed a specific level.
- The I-joist is supported in a hanger and the sides of the hanger do not extend up to the top flange. With the top flange unsupported by the hanger sides, the joist may deflect laterally, putting a twist in the flange of the joist. The web stiffener supports the I-joist along a vertical axis as designed. (In this application, the web stiffener acts very much like a backer block.)

There are two kinds of web stiffeners: ***bearing stiffeners*** and ***load stiffeners.*** They are differentiated by the applied load and the location of the gap between the slightly undersized stiffener and the top or bottom flange.

Bearing stiffeners are located at the reactions, both interior and exterior, when required. I-joists ***do not*** need bearing stiffeners at any support when subjected to the normal residential uniform loads and installed in accordance with the allowable spans printed on the I-joist or in *APA Performance Rated I-Joists,* Form No. EWS Z725.

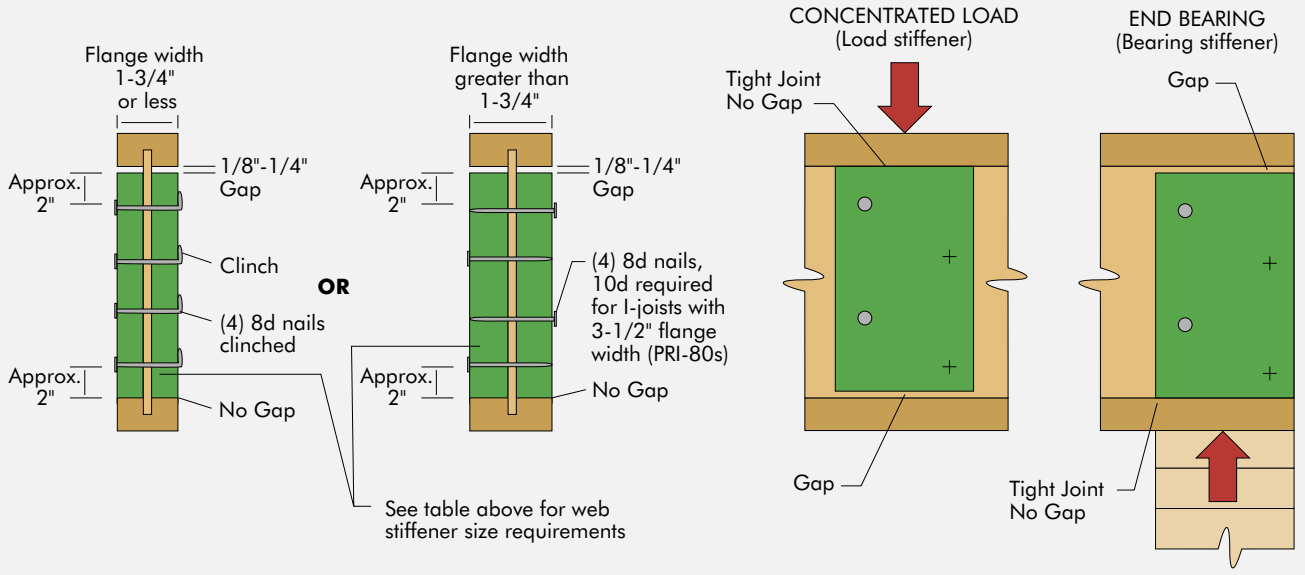
Load stiffeners are located between supports where significant point loads are applied to the top flange of an I-joist.

Physical description:

Web stiffener blocks may be comprised of lumber, rim board, or wood structural panels. The minimum grade of wood structural panels is Rated Sheathing; minimum lumber grade is Utility grade SPF (south) or better. Any rim board product would also work satisfactorily.

FIGURE 1

WEB STIFFENER INSTALLATION DETAILS



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Ideally, the depth of the web stiffener should equal the distance between the flanges of the joist minus 1/8 inch – 1/4 inch. For ***bearing stiffeners,*** this gap is placed between the stiffener and the bottom of the top flange. For ***load stiffeners,*** the gap is located at the bottom of the stiffener.

Recommendations for I-joists designed in accordance with APA Standard PRI-400:

1. A ***bearing stiffener*** is required in all engineered applications with design end reactions greater than 1550 lb. The gap between the stiffener and the flange is at the top.

2. A ***load stiffener*** is required at locations where a concentrated load greater than 1500 lb. (1120 lb. for 9-1/2 inch, and 1420 lb. for 11-7/8 inch-deep I-joists except PRI-90s) is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. The gap between the stiffener and the flange is at the bottom.

3. A ***bearing stiffener*** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.

TABLE 1

STIFFENER SIZE REQUIREMENTS

APA PRI Flange Width	Web Stiffener Size Each Side of Web
1-1/2"	15/32" x 2-5/16" minimum width
1-3/4"	19/32" x 2-5/16" minimum width
2-5/16"	1" x 2-5/16" minimum width
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

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APA – THE ENGINEERED WOOD ASSOCIATION
HEADQUARTERS
7011 So. 19th St. ▪ P.O. Box 11700
Tacoma, Washington 98411-0700
(253) 565-6600 ▪ Fax: (253) 565-7265

Web Address: @
www.apawood.org

PRODUCT SUPPORT HELP DESK
(253) 620-7400
E-mail Address: help@apawood.org

(Offices: Bournemouth, United Kingdom; Mexico City, Mexico; Tokyo, Japan.)

Form No. EWS A745A
Issued March 2002/0100

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