



# I-Joist Web Stiffeners

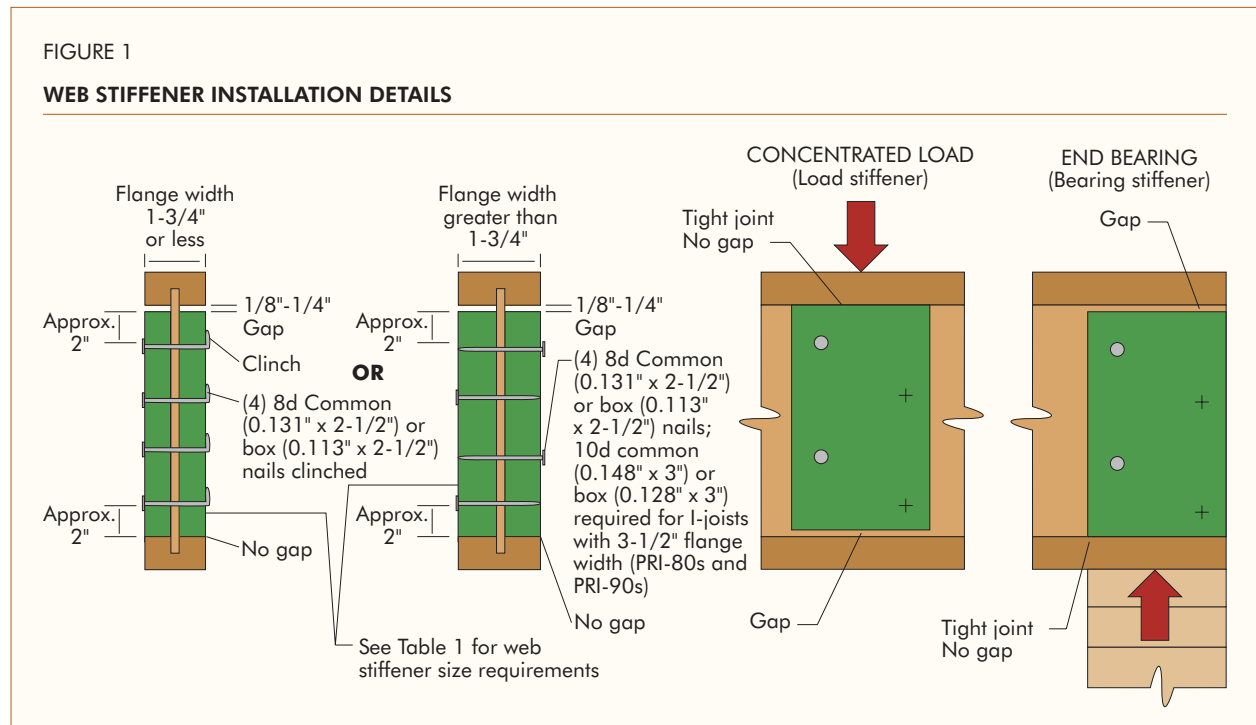
A web stiffener is a wood block that is used to reinforce the web of an I-joist at locations where:

- 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.

FIGURE 1

## WEB STIFFENER INSTALLATION DETAILS



**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 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.

Ideally, the depth of the web stiffener should equal the distance between the flanges of the joist minus 1/8 to 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 except for PRI-90, which requires bearing stiffeners when end reaction values exceed 1885 lb. The gap between the bearing stiffener and the flange is at the top.
2. A **load stiffener** is required at locations where a concentrated load greater than 1500 lb is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. The minimum bearing length for concentrated loads is 3-1/2 inches. The gap between the load 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 bearing stiffener and flange is at the top.
4. **Concentrated load near web hole.** Except for factory knock-outs, concentrated loads shall be at least 6 inches away from the near edge of web holes (measured horizontally along the I-joist).

TABLE 1

**STIFFENER SIZE REQUIREMENTS**

APA PRI Flange Width (in.)	Web Stiffener Size Each Side of Web (in.)
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

We have field representatives in many major U.S. cities and in Canada who can help answer questions involving APA trademarked products. For additional assistance in specifying engineered wood products, contact us:

**APA HEADQUARTERS:** 7011 So. 19th St. • Tacoma, Washington 98466 • (253) 565-6600 • Fax: (253) 565-7265

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

[www.apawood.org](http://www.apawood.org)

Form Number A745B

Revised August 2007

**DISCLAIMER:** The information contained herein is based on APA – The Engineered Wood Association’s continuing programs of laboratory testing, product research, and comprehensive field experience. Neither APA, nor its members make any warranty, expressed or implied, or assume any legal liability or responsibility for the use, application of, and/or reference to opinions, findings, conclusions, or recommendations included in this publication. Consult your local jurisdiction or design professional to assure compliance with code, construction, and performance requirements. Because APA has no control over quality of workmanship or the conditions under which engineered wood products are used, it cannot accept responsibility for product performance or designs as actually constructed.

