Consulting, Resource, Education, Training, and Support Services for Home Inspectors
"A candle loses no light when it lights another candle."

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Exterior Deck Ledger Board Attachment and Inspection©

The standards of home inspector trade associations and organizations as well as the requirements of most, if not all, states which regulate the field of home inspection include inspection of exterior decks and their associated support systems, stair systems, and railing systems. The primary purpose of this article is provide ***ProSpex*** subscribers with information regarding specific issues that pertain to the attachment of exterior decks, in particular on homes with interior floor framing systems which are not constructed of solid two (2) inch wide (nominal) or larger dimensional milled lumber. These include Wood I Beam™ joists, Trus Joists® (TJI®s), and wood and wood/metal truss floor joists and Laminated Strand Lumber (LSL), oriented strand board (OSB), and plywood rim/band joists.

In the past, residential wood floor framing systems were typically constructed of 2"x10" dimensional milled lumber floor joists and rim joists. Today, it is common to find floor framing systems constructed of engineered lumber products. These newer products have the advantage of being lighter in weight as well as having greater strength and dimensional stability than 2"x10" (nominal) dimensional milled lumber under many conditions and applications. They are also "quieter" floor systems because their dimensional stability reduces the potential for gaps between the tops of the floor joists and the underside of the subfloor material. However, the design characteristics that provide these benefits also present some specific challenges with regard to the attachment of deck support ledger boards.

Unlike 2" x 4" (nominal) lumber, the ends of TJI®s, Wood I Beam™ joists, and similar products have very little surface area for the attachment of rim joists. Therefore, if a deck ledger board is to be secured to the exterior of the house at the level of and directly opposite of the rim joist, it is necessary to install backer blocks against the interior side of the rim joist and between the floor joists. These backer boards create a system capable of both supporting the deck ledger board and providing a sufficiently strong and dense enough material to hold the lag bolt or through bolt fasteners used to secure the ledger board to the house. Without these backer boards, the deck ledger board may be lagged or through bolted to ½" or ⅜" OSB – a material that is not designed to carry the typical and anticipated dead and live loads of a deck.

While a visual inspection of the **READILY ACCESSIBLE** portions of deck ledger boards for **ADVERSE CONDITIONS** such as damage, attachment, and flashing are important, it is also important inspect the **READILY ACCESSIBLE** portions of the floor framing system. A deck ledger board may not show any evidence of separation from the house at the time of the inspection. However, if inspection of the floor framing system indicates that the attachment of the deck ledger board is not consistent with **GENNERALLY ESTABLISHED PRACTICES** with regard to the floor framing system materials of construction, this information should be stated in the written inspection report with a recommendation for further evaluation by a **QUALIFIED** professional engineer.

Because there are both engineered wood building products which are designed and intended for use as rim joists and others which are not, if the rim joist is visible and is a material other than 2" (nominal) dimensional milled lumber, be careful not to assume that it is or is not designed to support the deck ledger board.

Inspection of a deck ledger board may reveal no **ADVERSE CONDITIONS** at the time of the inspection. However, if a visual inspection of the interior side of the rim joist indicates that it is an engineered wood building product and if the manufacturer's specific designed and intended use for the product is not known or cannot be determined, then the written report should state that no **ADVERSE CONDITIONS** affecting the deck ledger board were observed at the time of the inspection. However, because the rim joist to which the deck ledger board is attached is an engineered wood building product and its applicability for support of an exterior deck ledger board cannot be definitively determined in the course of the inspection, it is recommended that additional information regarding the applicability of the rim joist material for such attachment be obtained from the material manufacturer, distributor, or a **QUALIFIED** professional engineer.

If the floor framing system is not visible and if no **ADVERSE CONDITIONS** affecting the deck ledger board are observed, then there is nothing else to be stated. Based on the age of the house, the inspector's knowledge of construction methods and materials in use in that area at the time of original construction, and the appearance of the deck, an inspector may have reason to believe that the deck is consistent with having been constructed subsequent to completion of the original construction of the house. Under such circumstances it may be appropriate to consider informing the customer and recommending that measures be taken to determine when the deck was constructed and, if it was constructed subsequent to completion of the original construction of the house, whether or not all appropriate and applicable permits were obtained and completed.

Inspection of exterior decks involves much more than inspection of deck ledger boards and their attachment. Where visible and **SAFELY ACCESSIBLE** and **READILY ACCESSIBLE**, joists, beams, posts, trim, foundations, bracing, flashings, connectors, fasteners, decking, railing systems, stair systems, all should be inspected. All of these will be covered in a future ***ProSpex*** article on general inspection of exterior decks.

Additional information on wood I joists can be found on the website for APA The Engineered Wood Association at: www.apawood.org and on deck inspections at the website for the North American Deck and Railing Association (NADRA) at: www.nadra.org

The photographs on the following pages illustrate some of the engineered floor framing products used in the construction of residential floors.

Wood I Beams
Photo Courtesy of Georgia Pacific

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Laminated Strand Lumber Rim Joists
Photo Courtesy of Weyerhaeuser

Trus Joists® (TJIs)
Photo Courtesy of Weyerhaeuser

Trus Joists® (TJIs)
Photo Courtesy of "This Old House"

Engineered lumber products
Photo Courtesy of Weyerhaeuser

Trus Joist® and engineered lumber rim joist floor framing
Photo Courtesy of Weyerhaeuser

Truss Joist Floor System with
Photo Courtesy of Ron Horsting, Builder – Holland, Michigan and Zeeland Lumber – Holland, Grand Rapids, and Zeeland, Michigan

Wood top and bottom chord/open metal web truss floor joists
Photo Courtesy Earthen Concepts & Developing

EzyTrim parallel flat chord floor truss joists with trimmable ends
Photo Courtesy Kent Trusses Limited

OPEN WEB, PARALLEL FLAT CHORD FLOOR TRUSS SYSTEM WITH AN OSB RIM JOIST

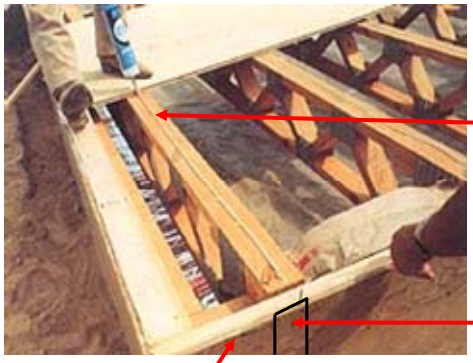

Photo Courtesy A & R Truss Company, Inc.
New Buffalo, Michigan

For more information regarding these engineered floor framing products, visit the websites of companies whose photographs appear in this article at:

www.thisoldhouse.com
www.weyerhaeuser.com
www.gp.com
www.zeelandlumber.com
www.kenttruss.com
www.artruss.com
www.earthenconcepts.com