



Technical Evaluation Report

TO ASSIST WITH CODE COMPLIANCE

**FastenMaster LedgerLok™ Ledger Board Fasteners
for Use in Deck Ledger Applications**

TER No. 1203-03

**OMG, Inc.
d/b/a/ FastenMaster**

**Issue Date: March 30, 2012
Updated: December 18, 2013**

153 Bowles Road
Agawam, Massachusetts, 01001
413/789-0252
fastenmaster.com
mguthrie@olyfast.com

DIVISION: 06 00 00 – WOOD, PLASTICS, AND COMPOSITES

Section: 06 05 23 – Wood, Plastic, and Composite Fastenings

Section: 06 15 00 – Wood Decking

Section: 06 11 00 – Wood Framing

1. Products Evaluated:

- 1.1. LedgerLok™ Ledger Board Fastener.
- 1.2. 1/2" galvanized lag screw for comparative, equivalency and code compliance purposes¹

2. Applicable Codes and Standards:²

- 2.1. 2006, 2009 and 2012 *International Residential Code (IRC)*
- 2.2. 2006, 2009 and 2012 *International Building Code (IBC)*

¹ See *IRC* Section R104.11 and *IBC* Section 104.11.

² Unless otherwise noted, code references are from the 2012 versions of the codes. This product is also approved for use with the 2000 and 2003 versions of the *IBC* and *IRC* and the standards referenced therein.

DrJ is a Professional Engineering Approved Source

Applying for ISO/IEC 17065 Accreditation

The *IBC* defines:

- **APPROVED SOURCE** – “An independent person, firm or corporation, *approved* by the *building official*, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.”

DrJ's building construction professionals meet the competency requirements as defined in the *IBC* and can seal their work. DrJ is regularly engaged in conducting and providing engineering evaluations of single-element and full-scale building systems tests. This TER is developed from test reports complying with *IBC* Section 104.11.1 Research reports, which states, “Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from *approved sources*.”

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3. Performance Evaluation:

- 3.1. LedgerLok Ledger Board Fasteners were evaluated to determine their ability to provide code complying attachment of deck ledger boards to the building structure.
- 3.2. For conventionally framed buildings, the ledger is required to be attached to the band joist³ in accordance with *IRC* Section R502.2.2⁴ or *IBC* Section 1604.8.3 as applicable. [IRC Table R502.2.2.1](#) is included on the next page for reference.

JOIST SPAN	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection details	On-center spacing of fasteners^{d, e}						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing ^a	30	23	18	15	13	11	10
1/2 inch diameter bolt with 15/32 inch maximum sheathing	36	36	34	29	24	21	19
1/2 inch diameter bolt with 15/32 inch maximum sheathing and 1/2 inch stacked washers ^{b, h}	36	36	29	24	21	18	16

1. Deck Live Load= 40 psf, deck dead load = 10 psf.

IRC Table R502.2.2.1: Fastener Spacing for a Southern Pine or Hem-fir Deck Ledger & a 2" Nominal Solid-Sawn Spruce-Pine-Fir Band Joist⁵

- 3.2.1. Where a band joist is not used, as in some truss installations, an engineered design is required. See [Appendix A](#) for additional code requirements for ledger attachments.

- 3.3. Ultimate connection capacities and deflections of typical ledger board connections were match tested and evaluated pursuant to the provisions of the *IRC* and *IBC*. See [Appendix B](#) for a description of testing methods.

4. Product Description and Materials:

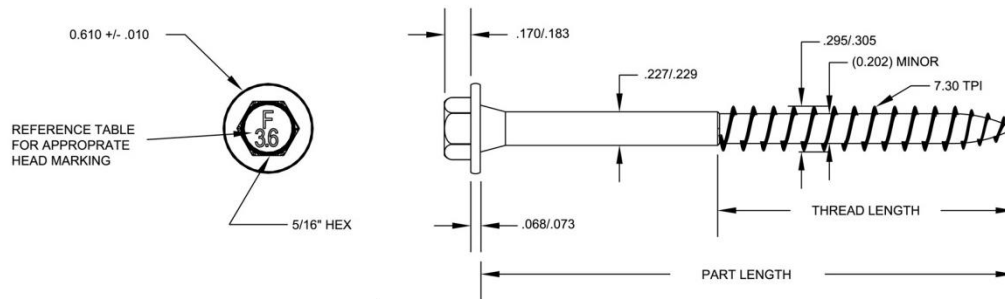


Figure 1: LedgerLok Ledger Board Fasteners

- 4.1. LedgerLok fasteners are manufactured with carbon steel grade 1022 or 10B21 wire conforming to ASTM A510 with a minimum ultimate tensile strength of 60 ksi.

³ The term "band joist" is used throughout this report. Other regionally used terms that are synonymous with band joist include: rim board, band board, header board and header joist.

⁴ All code references in this report are to the 2009 versions of the *IBC* and *IRC*. The 2012 *IRC* section for the ledger application is R507.2.

⁵ See [Appendix A](#) for full details and Table footnotes.

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4.2. LedgerLok fasteners are manufactured using a standard cold-formed process followed by a heat-treating process. [Allowable bending yield and critical dimensions are found in [Figure 1](#) and [Table 1](#).]

4.2.1. LedgerLok fastener heads are a $\frac{5}{16}$ " hex drive with a built-in oversized washer.

4.2.2. LedgerLok fasteners have a gimlet point.

4.2.3. The following LedgerLok fasteners were evaluated for this Technical Evaluation Report (TER).

Fastener Name	Fastener Designation	Head Marking	Length ¹	Length of Thread ²	Unthreaded Shank Diameter	Minor Thread (Root) Diameter	Allowable Bending Yield (psi) ³
LedgerLok	FMLL358	F3.6	3- $\frac{5}{8}$ "	2"	0.228"	0.202"	200,700
LedgerLok	FMLL005	F 5.0	5"	3"			

1. Measured from the underside of the head to the bottom of the tip.
 2. Includes tip; see [Figure 1](#).
 3. Determined in accordance with methods specified in ASTM D 1575, based on minor thread diameter using a 5% offset of the load displacement curves developed from bending tests.

Table 1: Fastener Designation for the LedgerLok Fasteners Evaluated in this TER

4.3. The fasteners have a proprietary galvanized and epoxy coating, which provides corrosion protection that exceeds that provided by code approved hot-dipped galvanized coatings meeting ASTM A153 (*IBC Section 2304.9.5⁶* and *IRC Section 317.3⁷*).

4.3.1. Fasteners are approved for use in exterior conditions and in pressure-treated wood, including ground contact ACQ. The proprietary coating has been tested and found to exceed the corrosion protection provided by code approved hot-dipped galvanized coatings meeting ASTM A153 (*IBC Section 2304.9.5⁸* and *IRC Section 317.3⁹*).

4.4. Fasteners are approved for use in fire-retardant-treated lumber, provided the conditions set forth by the fire-retardant-treated lumber manufacturer are met, including appropriate strength reductions.

4.5. In-plant quality control procedures, under which the LedgerLok fasteners are manufactured, are audited through an inspection process performed by an approved agency¹⁰.

5. Applications:

5.1. LedgerLok Ledger Board Fasteners are designed specifically for attaching the deck ledger to the rim joist of a building in accordance with *IRC Section R502.2.2* and *IBC Section 1604.8.3*.

5.2. The *2009 IRC* provides prescriptive fastener spacing for the attachment of a deck ledger to a rim joist with $\frac{1}{2}$ " diameter lag screws or through bolts as shown in [IRC Table R502.2.2.1](#).

5.3. [Table 2](#) provides the LedgerLok fastener spacing required to provide performance at least equivalent to the lag screws found in [IRC Table R502.2.2.1](#) in accordance with *IRC Sections R104.11* and *R502.2*, *IBC Sections 104.11* and *1604.8.3*, and in accordance with generally accepted engineering practice.

5.3.1. [Table 2](#) provides LedgerLok fastener spacing for items found in *IRC Table 502.2.2.1*, as well as a wider range of materials commonly used for rim joists.

5.3.1.1. In addition, an alternate loading condition (i.e., deck live load = 60 psf, deck dead load = 10 psf) required by some jurisdictions is shown.

⁶ *IBC Section 2304.9.5 Fasteners in preservative-treated and fire-retardant-treated wood.* Fasteners for preservative treated and fire-retardant-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153...

⁷ *R317.3 Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood.* Fasteners and connectors in contact with preservative-treated wood and fire-retardant-treated wood shall be in accordance with this section. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153.

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¹⁰ *IBC Section 1702 APPROVED AGENCY.* An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.

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Loading Condition (Live Load, psf)	2x Nominal Ledger Species	Rim Joist Material	Maximum Deck Joist Spans						
			Up to 6'	Up to 8'	Up to 10'	Up to 12'	Up to 14'	Up to 16'	Up to 18'
			Maximum On-Center Spacing of LedgerLok Ledger Board Fasteners (Inches)						
40	HF/SPF	2x Nominal Sawn Lumber	20	15	12	10	8	7	6
		1" min EWP	25	19	15	12	10	9	8
	DF/SP	Nominal Sawn Lumber	24	18	14	12	10	9	8
		1" min EWP	25	19	15	12	10	9	8
60	HF/SPF	2x Nominal Sawn Lumber	14	11	8	7	6	5	4
		1" min EWP	18	13	10	9	7	6	6
	DF/SP	Nominal Sawn Lumber	17	13	10	8	7	6	5
		1" min EWP	18	13	10	9	7	6	6

1. Based on load duration of 1.0. Spacing may be adjusted by the applicable load duration as specified in *NDS 2005*.
2. Fasteners are required to have full thread penetration into the main member. Excess fastener length extending beyond the main member is not reflected in the table above.
3. Solid sawn band joists shall be HF, SPF, DF-L or SP species.
4. Fastener spacing is based on tested loads. The design values use the lesser of a 1/8" deflection or a factor of safety equivalent to or greater than that of the code compliant lag screw application as defined in [Figure 2](#).
5. A maximum 1/2" structural sheathing may be installed between the ledger and the band joist.
6. Table values assume 10 psf dead load.

Table 2: LedgerLok Fastener Spacing for Items in *IRC* Table 502.2.2.1 & Other Materials & Loading Conditions

5.4. When installed in accordance with the spacing requirements of [Table 2](#), LedgerLok Ledger Board Fasteners provide equivalent performance to 2009 *IRC* Table R502.2.2.1.

6. Installation:

- 6.1.** Choose a 3-3/8" or 5" LedgerLok Ledger Board Fastener so that the threads fully engage the rim material and the fastener tip extends beyond the back face of the rim material when fully seated against the installed ledger.
- 6.2.** Using a high-torque, 1/2" variable-speed drill (18V if cordless), drive the fasteners through the ledger and sheathing. Continue into the rim joist until the built-in washer head is drawn firm and flush to the ledger board. Do not overdrive.
- 6.3.** [Figure 2](#) shows a detail of the LedgerLok Ledger Board Fastener deck connection, including minimum edge and end distances.

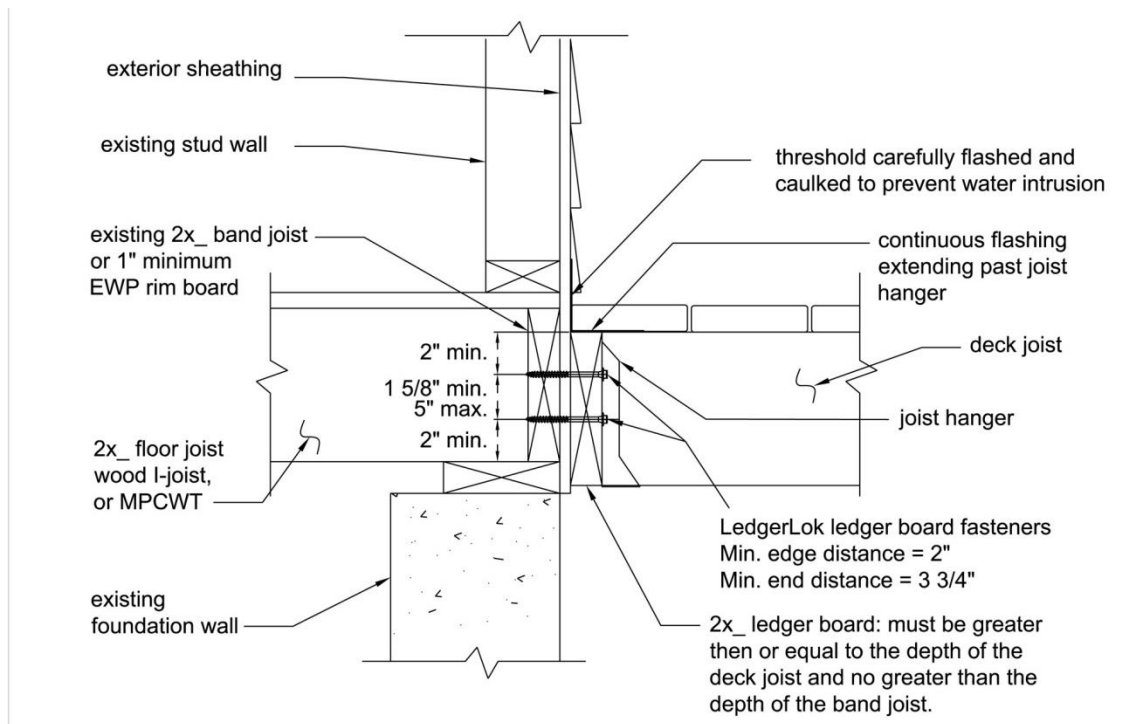


Figure 2: LedgerLok Ledger Board Fastener Deck Connection

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6.4. For applications outside the scope of this TER, an engineered design is required.

7. Test and Engineering Substantiating Data:

- 7.1. Testing conducted by SBCRI for OMG; *SBCRI-12-0101*; Final report date: March 23, 2012.
- 7.2. *DCA 6, Prescriptive Residential Wood Deck Construction Guide*; AF&PA; 2010.
- 7.3. Proprietary testing conducted by Washington State University for OMG; Final report date: August 4, 2005.
- 7.4. FastenMaster Technical Bulletin; *LedgerLok Ledger Board Fastener*, 2011.
- 7.5. ICC-ES, *ESR-1078*; Reissued: January 1, 2012.
- 7.6. Some information contained herein is the result of testing and/or data analysis by other sources, which DrJ relies on to be accurate as it undertakes its engineering analysis.
 - 7.6.1. DrJ does not assume responsibility for the accuracy of data provided by testing facilities, but relies on each testing agency's accuracy and accepted engineering procedures, experience, and good technical judgment.
- 7.7. Where appropriate, DrJ relies on the derivation of design values, which have been codified into law through the codes and standards (e.g., *IRC, WFCM, IBC, SDPWS*, etc.), to undertake the review of test data that is comparative or shows equivalency to an intended end-use application.
 - 7.7.1. DrJ does not assume responsibility for the accuracy of any code-adopted design values but relies upon their accuracy for engineering evaluation.
 - 7.7.2. DrJ also relies on the fact that manufacturers of code-adopted products stand behind the legally established design values that have been created by the associations that publish code-defined design values for a given commodity product.
 - 7.7.3. DrJ evaluates all equivalency testing and related analysis using this code-defined engineering foundation.

8. Findings:

- 8.1. When used in accordance with this TER and the manufacturer's installation instructions, FastenMaster LedgerLok Ledger Board Fasteners are a suitable alternative to the requirements of the *IRC* Section R502.2.2 and *IBC* Section 1604.8.3.

9. Conditions of Use:

- 9.1. LedgerLok fasteners covered by this TER shall be installed in accordance with this report and the manufacturer's installation instructions.
- 9.2. LedgerLok fastener spacing shall not exceed [Table 2](#) for code compliance and the installation conditions considered.
- 9.3. For conditions not covered in this TER, connections shall be designed in accordance with generally accepted engineering practice.
- 9.4. Manufacturer's installation instructions shall be followed as provided in [Section 6](#) and at fastenmaster.com/details/product/ledgerlok-ledger-board-fastener.html.
- 9.5. LedgerLok fasteners are produced by OMG, Inc.'s facility located in Agawam, Massachusetts.
- 9.6. LedgerLok fasteners are produced under a quality control program subject to periodic inspections in accordance with *IBC* Section 1703.5.2.

10. Identification:

- 10.1. The fasteners are identified by the designation "LedgerLok™" on the packaging. The head of each fastener is marked with an "F" followed by a number corresponding to the length of the fastener.
- 10.2. The packaging shall include OMG's name and address, fastener size, third-party inspection agency, ICC-ES Report number and TER number.
- 10.3. Additional technical information can be found at fastenmaster.com.

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11. Review Schedule:

- 11.1. This TER is subject to periodic review and revision.
- 11.2. For information on the current status of this report, contact [DrJ](#).



Responsibility Statement

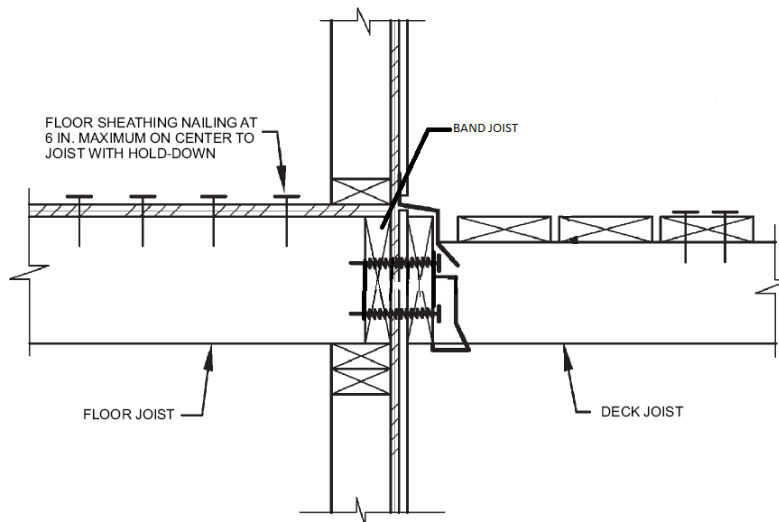
The information contained herein is a product, engineering or building code compliance research report performed in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering procedures, experience and good technical judgment. Product, design and code compliance quality control is the responsibility of the referenced company. Consult the referenced company for the proper detailing and application for the intended purpose. Consult your local jurisdiction or design professional to assure compliance with the local building code. DrJ (drjengineering.org) research reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by DrJ, express or implied, as to any finding or other matter in this report or as to any product covered by this report.

Appendix A:
Code Requirements for Ledger Attachments

For guidance on designing the connection of the deck ledger to trusses where a band joist is not used, see SBCA's Tech Note, [Attachment of Residential Deck Ledger to Metal Plate Connected Wood Truss Floor System](#).

1. IRC Section 502.2.2 contains the following code requirements (*IBC* Section 1604.8.3 similar):
 - 1.1. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads.
 - 1.1.1. Attachment shall not be accomplished by the use of toenails or nails subject to withdrawal.
 - 1.2. R502.2.2.1 outlines the requirements for a deck ledger connection to band joist:

For decks supporting a total design load of 50 pounds per square foot (2394 Pa) [40 pounds per square foot (1915 Pa) live load plus 10 pounds per square foot (479 Pa) dead load] the connection between a deck ledger of pressure preservative-treated Southern Pine, incised pressure-preservative-treated Hem-Fir or *approved* decay-resistant species, and a 2-inch (51 mm) nominal lumber band joist bearing on a sill plate or wall plate shall be constructed with 1/2-inch (12.7 mm) lag screws or bolts with washers in accordance with Table R507.2.2.1. Lag screws, bolts and washers shall be hot-dipped galvanized or stainless steel.



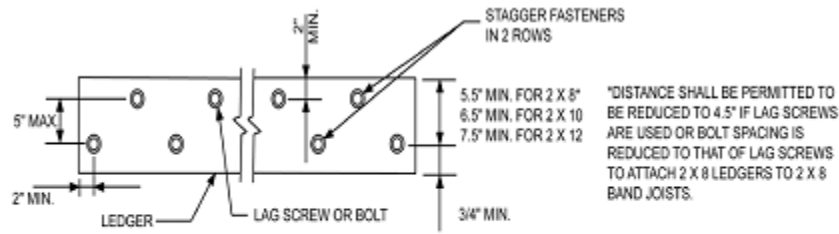
IRC Figure 502.2.2.3: Deck Ledger Attachment (modified)

- 1.3. R502.2.2.1.1 covers the placement of lag screws or bolts in deck ledgers:

The lag screws or bolts shall be placed 2 inches (51 mm) in from the bottom or top of the deck ledger and between 2 and 5 inches (51 and 127 mm) in from the ends.

The lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger
- 1.3.1. The 2012 IRC provides further clarification of lag screw and bolt location requirements as shown in [IRC Figure R507.2.1\(1\)](#). Note that these have been modified from the 2009 version.

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For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

IRC Figure R507.2.1(1): Placement of Lag Screws & Bolts in Ledgers

- 1.3.2.** IRC Table R502.2.2.1 applies to 2" nominal solid-sawn lumber or minimum 1x9 1/2" DF LVL band joist material, and 40 psf live load / 10 psf dead load applications as shown in [IRC Table R502.2.2.1](#).

**FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER
AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST^{c, f, g}**
(Deck live load = 40 psf, deck dead load = 10 psf)

JOIST SPAN	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection details	On-center spacing of fasteners^{d, e}						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing ^a	30	23	18	15	13	11	10
1/2 inch diameter bolt with 15/32 inch maximum sheathing	36	36	34	29	24	21	19
1/2 inch diameter bolt with 15/32 inch maximum sheathing and 1/2 inch stacked washers ^{b, h}	36	36	29	24	21	18	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. 1 pound per square foot = 0.0479kPa.

- a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- b. The maximum gap between the face of the ledger board and face of the wall sheathing shall be 1/2".
- c. Ledgers shall be flashed to prevent water from contacting the house band joist.
- d. Lag screws and bolts shall be staggered in accordance with Section R502.2.2.1.1.
- e. Deck ledger shall be minimum 2x8 pressure-preservative-treated No.2 grade lumber, or other approved materials as established by standard engineering practice.
- f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1 inch thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
- g. A minimum 1 x 9 1/2 Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch.

IRC Table R502.2.2.1: Fastener Spacing for SP or HF Deck Ledger & 2" Nominal Solid-Sawn SPF Band Joist

- 1.3.3.** The 2012 IRC further specifies the required edge and end distances for lag screws and bolts connecting the ledger to the band joist.

- 1.4.** R502.2.2.2 outlines alternate deck ledger connections:

Deck ledger connections not conforming to Table R502.2.2.1 shall be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer.

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Appendix B: Testing Procedure and Methodology

1. To determine the strength and load-deflection performance of the fasteners in a ledger connection, a two-joint assembly with connection of a ledger to a rim board was created. Load was applied to the joists, which transferred load to the ledger via hangers. String potentiometers were placed along the bottom of the ledger to measure vertical deflection during the test, while a load cell attached to an actuator measured load applied. The rim board was fixed to prevent deflection and rotation during the test. To limit the variability, the comparison product was tested simultaneously with the FastenMaster LedgerLok with ledgers and rim boards cut congruently from the same piece of lumber. Immediately after testing, a section was cut near each fastener location to determine the moisture content and oven-dry specific gravity of each piece of lumber.
2. The performance of the code defined lag screw connection was then compared to the performance of the LedgerLok Ledger Board Fasteners in the ledger application built per the code requirements.
 - 2.1. Testing was undertaken to directly compare fastener performance using matched lumber specimen testing where the FastenMaster LedgerLok Ledger Board Fastener was tested side by side with ½" diameter lag screws (see [Figure 3](#) and [Photo 1](#)).

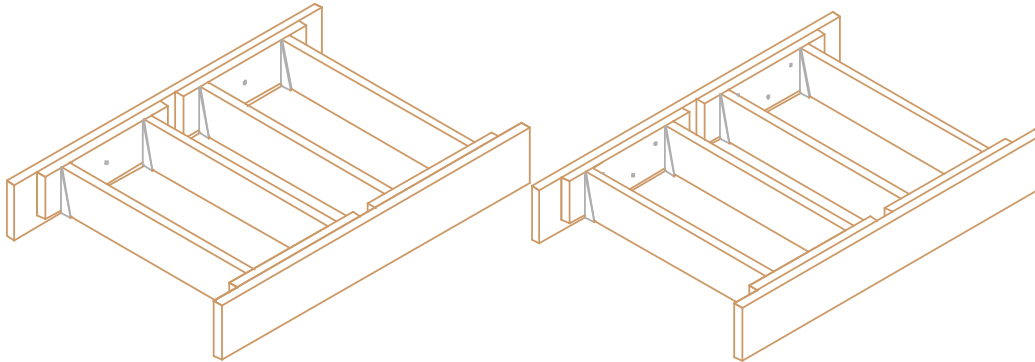


Figure 3: Single & Three-Fastener Setups

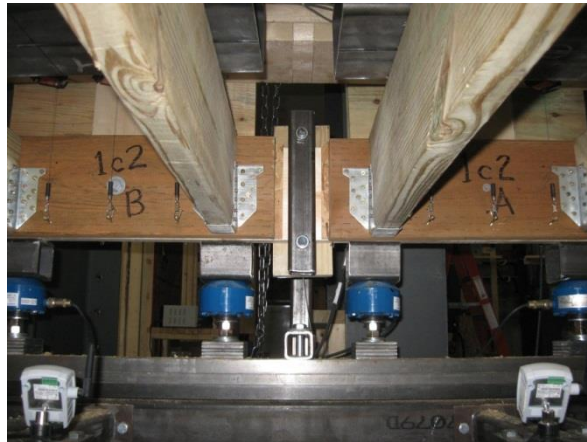


Photo 1: Matched Lumber Specimen Testing of LedgerLok Ledger Board Fastener and ½" Lag Screw

- 2.1.2. The testing and resulting analysis define comparative performance and the design parameters required for the LedgerLok to be considered an equivalent alternative to the specified fasteners required by the building code in accordance with the provisions of *IRC* Section R104.11 and *IBC* Section 104.11.

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Appendix C:

TERs Are Comparable to, Compatible with, and Equivalent to the Purpose of an ICC-ES ESR

1. Technical Evaluation Reports (TERs), drafted and maintained by DrJ (professional engineering firm and ISO/IEC 17065 applicant through ANSI/ACLASS), assess how specific products comply with the provisions of the building code. DrJ is a code-defined “approved source,” and DrJ employs professional engineers and follows state professional engineering rules and regulations.
2. TERs are comparable to, compatible with, and equivalent to the purpose of an ICC Evaluation Service (ICC-ES) Evaluation Service Reports (ESRs).¹¹
 - 2.1. ICC Evaluation Service does not provide an engineer’s seal on any of its ESRs.
 - 2.2. Furthermore, the ICC-ES Evaluation Report Purpose is defined as follows¹²:



ICC EVALUATION SERVICE, LLC, RULES OF PROCEDURE FOR EVALUATION REPORTS

1.0 PURPOSE

These rules set forth procedures governing ICC Evaluation Service, LLC (ICC-ES), issuance and maintenance of evaluation reports on building materials and products, methods of construction, prefabricated building components, and prefabricated buildings.

ICC-ES evaluation reports assist those enforcing model codes in determining whether a given subject complies with those codes. An evaluation report is not to be construed as representing a judgment about aesthetics or any other attributes not specifically addressed in the report, nor as an endorsement or recommendation for use of the subject of the report. Approval for use is the prerogative and responsibility of the Code Official; ICC-ES does not intend to assume, nor can ICC-ES assume, that prerogative and responsibility.

2.3. ICC ESR Disclaimer¹³:

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



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¹² See the “ICC-ES Rules of Procedure” at www.icc-es.org/pdf/rules_evalrpts.pdf.

¹³ Page 1 footer of each ICC-ES report that can be found at www.icc-es.org/reports/index.cfm.

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3. DrJ Sealed Engineering

- 3.1. DrJ engineers have undertaken the rigorous engineering and analysis work to determine the subject of this report's compliance with the codes and standards referenced in [Section 2](#).
- 3.2. DrJ work:
 - 3.2.1. Complies with accepted engineering procedures, experience and good technical judgment.
 - 3.2.2. Is the work of an independent person, firm or corporation who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.
- 3.3. A Technical Evaluation Report generated by DrJ is in all "code-compliance-evaluation-processing" respects equivalent to an ICC-ES ESR, as ICC-ES defines its approach, with one material difference.
 - 3.3.1. DrJ will seal all TERs, as needed, so that responsibility for the work is well-defined.
 - 3.3.2. The DrJ responsibility statement is identical to that provided in ICC-ES ESRs.

DrJ (drjengineering.org) research reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by DrJ express or implied as to any finding or other matter in this report or as to any product covered by this report.

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Appendix D: Legal Aspects of Product Approval

1. Product Approval

- 1.1. In general, the model and local codes provide for the use of alternative materials, designs and methods of construction by having a legal provision that states something similar to:

The provisions of this code/law are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code/law, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the compliance official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code/law, and that the material, design, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code/law.

- 1.2. In concert with preserving "free and unfettered competition as the rule of trade", should this alternative material, design or method of construction not be approved, the building official shall respond in writing, stating the specific reasons for non-code-compliance and/or for non-professional engineering regulation compliance.

Congress passed the first antitrust law, the Sherman Act, in 1890 as a "comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade." In 1914, Congress passed two additional antitrust laws: the Federal Trade Commission Act, which created the FTC, and the Clayton Act. With some revisions, these are the three core federal antitrust laws still in effect today.

...Yet for over 100 years, the antitrust laws have had the same basic objective: to protect the process of competition for the benefit of consumers, making sure there are strong incentives for businesses to operate efficiently, keep prices down, and keep quality up....

The Sherman Act outlaws "every contract, combination, or conspiracy in restraint of trade," and any "monopolization, attempted monopolization, or conspiracy or combination to monopolize." For instance, in some sense, an agreement between two individuals to form a partnership restrains trade, but may not do so unreasonably, and thus may be lawful under the antitrust laws. On the other hand, certain acts are considered so harmful to competition that they are almost always illegal.

The penalties for violating the Sherman Act can be severe. Although most enforcement actions are civil, the Sherman Act is also a criminal law, and individuals and businesses that violate it may be prosecuted by the Department of Justice.¹⁴

2. Legal Validity of this TER

- 2.1. This TER is a code-defined (e.g., 2009 IBC and [IRC Section 104.11.1](#) and 2009 [IBC Section 1703.4.2](#)) "research report" that provides supporting data to assist in the approval of materials, designs or assemblies not specifically provided for in this code.
- 2.2. Therefore, this TER is a valid research report from a professional engineering company that complies with the code definition of "approved source." If required by the authority having jurisdiction, this TER can also be sealed to comply with professional engineering laws and regulations.

¹⁴ http://www.ftc.gov/bc/antitrust/antitrust_laws.shtm