

Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1501-08



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FastenMaster® FlatLOK® Fasteners

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

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

1 Innovative Product Evaluated¹

1.1 FastenMaster FlatLOK Fasteners

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**.

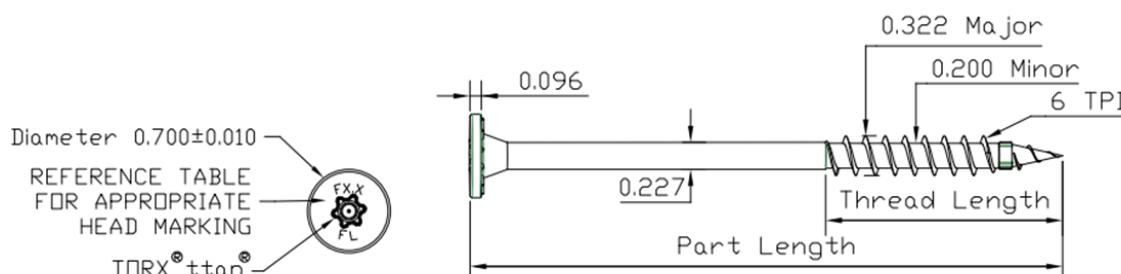


Figure 1. FastenMaster FlatLOK Fastener

- 2.2 FlatLOK Fasteners are manufactured using a standard cold-formed process followed by a heat-treating process.
- 2.3 FlatLOK Fasteners are coated with a proprietary coating that exceeds the protection provided by hot-dipped galvanized coatings conforming to ASTM A153.
- 2.4 FlatLOK Fasteners are approved for use in interior conditions and in chemically treated or untreated lumber where ASTM A153 coatings are approved for use in accordance with IBC Section 2304.10.6² and IRC Section R304.3.³

2.4.1 The proprietary coating has been tested and found to exceed the protection provided by code-approved hot dipped galvanized coatings meeting ASTM A153 as specified in c, allowing for its use in above ground contact pressure treated wood with waterborne alkaline copper quaternary (ACQ).

2.4.2 FlatLOK 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.

2.4.3 FlatLOK Fasteners evaluated in this report are set forth in **Table 1**.

Table 1. FlatLOK Fasteners Specifications

Fastener Name	Head (in)			Fastener Length ¹ (in)	Shank Diameter ² (in)	Thread Length ¹ (in)	Thread Diameter (in)		Nominal Bending Yield, ³ F_{yb} (psi)	Allowable Fastener Strength (lbf)						
	Marking	Diameter	Thickness				Minor	Major		Tensile	Shear					
FlatLOK	F2.9FL	0.700	0.095	2 ⁷ / ₈	0.227	1.75	0.200	0.322	171,600	1,940	1,230					
	F3.5FL			3 ¹ / ₂		2.000										
	F4.0FL			4												
	F4.5FL			4 ¹ / ₂												
	F5.0FL			5												
	F6.0FL			6												
	F6.75FL			6 ³ / ₄												

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 psi = 0.00689 MPa

1. Fastener length is measured from the topside of the head to the tip. Thread length includes tapered tip (see **Figure 1**).
2. Shank diameter based on manufactured thickness. Finished dimensions are larger due to the proprietary coatings added.
3. Bending yield determined at shank diameter.

2.5 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

3 Definitions⁴

3.1 New Materials⁵ are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.⁶ The design strength and permissible stresses shall be established by tests⁷ and/or engineering analysis.⁸

3.2 Duly authenticated reports⁹ and research reports¹⁰ are test reports and related engineering evaluations that are written by an approved agency¹¹ and/or an approved source.¹²

3.2.1 These reports utilize intellectual property and/or trade secrets to create public domain material properties for commercial end-use.

3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.U.S.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).¹³

3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.

3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.¹⁴

3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.

3.5.1 The Center for Building Innovation (CBI) is ANAB¹⁵ ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce¹⁶ the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing¹⁷ stating the nonconformance and the path to its cure.

3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.¹⁸

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.¹⁹ Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,²⁰ and can be used in any country that is an MLA signatory found at this link: <https://iaf.nu/en/recognised-abs/>

3.9 Approval equity is a fundamental commercial and legal principle.²¹

4 Applicable Local, State, and Federal Approvals; Standards; Regulations²²

4.1 Local, State, and Federal

4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes the following featured local jurisdictions and is not limited to: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, Texas Department of Insurance, and Wichita.²³

4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes the following featured states, and is not limited to: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.²⁴

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14²⁵ and Part 3280²⁶ pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 Standards

4.2.1 *AISI S904: Test Standard for Determining the Tensile and Shear Strengths of Steel Screws*

4.2.2 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

4.2.3 *ASTM A153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware*

4.2.4 *ASTM A510: Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel*

4.2.5 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood*

4.2.6 *ASTM F1575: Standard Test Method for Determining Bending Yield Moment of Nails, Spikes, and Dowel-Type Threaded Fasteners*

4.3 Regulations

4.3.1 *IBC – 15, 18, 21, 24: International Building Code®*

4.3.2 *IRC – 15, 18, 21, 24: International Residential Code®*

4.3.3 *IECC – 15, 18, 21, 24: International Energy Conservation Code®*

5 Listed²⁷

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), an approved agency (i.e., CBI and DrJ), and/or an approved source (i.e., DrJ), or other organization(s) concerned with product evaluation (i.e., DrJ), that maintains periodic inspection (i.e., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 General

6.1.1 FlatLOK Fasteners are used to attach wood structural framing members in conventional light-frame construction and to provide resistance to lateral and withdrawal loads applied parallel and/or perpendicular to the structural framing member.

6.1.1.1 Wood structural framing members may be solid sawn lumber or Structural Composite Lumber (SCL) conforming to all pertinent provisions of ASTM D5456.

6.1.1.1.1 Where connection property values for SCL are listed, SCL shall have a published equivalent specific gravity meeting the minimum specified value in the respective table. Refer to the SCL manufacturer for the details.

6.1.1.2 See **Section 9** for installation requirements.

6.1.2 FlatLOK Fasteners are installed without lead holes.

6.1.3 Design:

6.1.3.1 Design of FlatLOK Fasteners is governed by the applicable code and the provisions for dowel-type fasteners in NDS.

6.1.3.2 Unless otherwise noted, adjustment of the design stresses for duration of load shall be in accordance with the applicable code.

6.2 FlatLOK Fasteners Reference Lateral Design Values – Face Grain Applications

6.2.1 The reference lateral design values for shear load perpendicular and parallel to grain for FlatLOK Fasteners as depicted in **Figure 2**, are specified in **Table 2**, **Table 3**, **Table 4**, **Table 5** and **Table 6**.

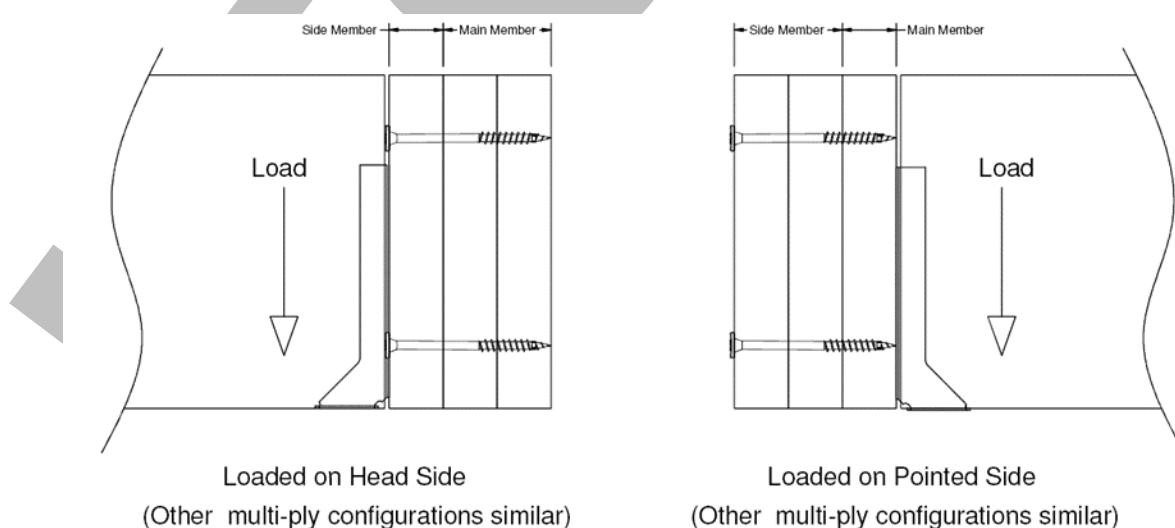


Figure 2. Loading Diagram for Shear Perpendicular to Grain

**Table 2.** FlatLOK Fasteners Reference Lateral Design Values – Dimensional Lumber with Head Side Loading^{1,2}

FlatLOK Fastener	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbf) by Species (Specific Gravity) and Load Orientation					
				SPF (0.42)		DF-L (0.50)		SP (0.55)	
				Z Perp	Z Para	Z Perp	Z Para	Z Perp	Z Para
FL278	2 ⁷ / ₈	1 ¹ / ₂	1 ³ / ₈	200	150	240	235	270	270
FL312	3 ¹ / ₂	1 ¹ / ₂	2	200	150	240	235	270	270
FL004	4	1 ¹ / ₂	2 ¹ / ₂	200	150	240	235	270	270
FL412	4 ¹ / ₂	1 ¹ / ₂	3	320	245	480	350	550	440
FL005	5	1 ¹ / ₂	3	320	245	480	350	550	440
FL006	6	1 ¹ / ₂	3	320	245	480	350	550	440
FL634	6 ³ / ₄	1 ¹ / ₂	3	320	245	480	350	550	440

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
- Values shall be adjusted by all applicable adjustment factors per NDS.

Table 3. FlatLOK Fasteners Reference Lateral Design Values – Dimensional Lumber with Point Side Loading^{1,2}

FlatLOK Fastener	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbf) by Species (Specific Gravity) and Load Orientation					
				SPF (0.42)		DF-L (0.50)		SP (0.55)	
				Z Perp	Z Para	Z Perp	Z Para	Z Perp	Z Para
FL412	4 ¹ / ₂	3	1 ¹ / ₂	200	–	260	–	290	–
FL006	6	4 ¹ / ₂	1 ¹ / ₂	200	–	260	–	290	–

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
- Values shall be adjusted by all applicable adjustment factors per NDS.

Table 4. FlatLOK Fasteners Reference Lateral Design Values – SCL in Face Grain Applications with Head Side Loading^{1,2}

FlatLOK Fastener	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbf) by Species (Specific Gravity) and Load Orientation			
				LVL (0.50)		LSL (0.50)	
				Z Perp	Z Para	Z Perp	Z Para
FL278	2 ⁷ / ₈	1 ¹ / ₄	1 ¹ / ₄	375	235	435	235
FL312	3 ¹ / ₂	1 ³ / ₄	1 ³ / ₄	375	235	435	235
FL005	5	1 ³ / ₄	3 ¹ / ₄	560	350	480	350
FL634	6 ³ / ₄	1 ³ / ₄	5	560	350	480	350
FL634	6 ³ / ₄	3 ¹ / ₂	3 ¹ / ₄	560	350	480	350

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
- Values shall be adjusted by all applicable adjustment factors per NDS.

Table 5. FlatLOK Fasteners Reference Lateral Design Values – SCL with Point Side Loading^{1,2}

FlatLOK Fastener	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbf) by Species (Specific Gravity) & Load Orientation			
				LVL (0.50)		LSL (0.50)	
				Z Perp	Z Para	Z Perp	Z Para
FL312	3 ¹ / ₂	1 ³ / ₄	1 ³ / ₄	330	235	260	235
FL005	5	3 ¹ / ₂	1 ¹ / ₂	330	235	260	235
FL634	6 ³ / ₄	5	1 ³ / ₄	330	235	260	235
FL634	6 ³ / ₄	3 ¹ / ₄	3 ¹ / ₂	330	235	260	235

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
- Values shall be adjusted by all applicable adjustment factors per NDS.

6.3 FlatLOK Fasteners Reference Withdrawal Design Values

Table 6. FlatLOK Fasteners Reference Lateral Design Values – Dimensional Lumber & SCL in Edge Grain Applications^{1,2}

FlatLOK Fastener	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Loading Direction	Lateral Design Values (lbf) by Species (Specific Gravity), lbf			
					SPF (0.42)	DF-L (0.50)	SP (0.55)	LSL ³ (0.50)
FL006	6	3 ¹ / ₂	2 ¹ / ₂	Parallel to Grain	285	395	410	425
				Perpendicular to Grain	290	350	410	350

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
2. Values shall be adjusted by all applicable adjustment factors per NDS.
3. Minimum thickness 1¹/₄ in.

6.4 FlatLOK Fasteners Reference Withdrawal Design Values

- 6.4.1 The design provisions for withdrawal noted in NDS Table 12.2B apply to FlatLOK Fasteners unless otherwise noted in this report.
- 6.4.2 Reference withdrawal design values for FlatLOK Fasteners in select lumber species, and SCL products are specified in **Table 7**, **Table 8** and **Table 9**.

Table 7. FlatLOK Fasteners Reference Withdrawal Design Values – Face Grain Applications^{1,2}

Thread Penetration into Main Member (in)	Reference Withdrawal Design Values (lbf) by Species (Specific Gravity)				
	SPF (0.42)	DF-L (0.50)	SP (0.55)	LVL (0.50)	LSL (0.50)
1	90	145	140	140	140
1 ¹ / ₄	125	190	210	210	220
1 ¹ / ₂	160	240	280	275	295
1 ³ / ₄	195	285	355	345	375
2	230	335	425	410	450

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Values shall be adjusted by all applicable adjustment factors per NDS Section 11.3 for wood screws.
2. Fastener penetration is the threaded length embedded in the main member, including the tip.

Table 8. FlatLOK Fasteners Reference Withdrawal Design Values – Edge Grain Applications^{1,2}

Thread Penetration into Main Member (in)	Reference Withdrawal Design Values (lbf) by Species (Specific Gravity)				
	SPF (0.42)	DF-L (0.50)	SP (0.55)	LVL (0.50)	LSL (0.50)
1	100	160	125	125	125
1 ¹ / ₄	145	215	190	185	195
1 ¹ / ₂	190	275	260	240	265
1 ³ / ₄	235	330	325	300	335
2	280	390	390	360	405

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Values shall be adjusted by all applicable adjustment factors per NDS Section 11.3 for wood screws.
2. Fastener penetration is the threaded length embedded in the main member, including the tip.

Table 9. FlatLOK Fasteners Reference Withdrawal Design Values – End Grain Applications^{1,2}

Thread Penetration into Main Member (in)	Reference Withdrawal Design Values (lbf) by Species (Specific Gravity)				
	SPF (0.42)	DF-L (0.50)	SP (0.55)	LVL (0.50)	LSL (0.50)
2	175	295	285	-	-

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Values shall be adjusted by all applicable adjustment factors per NDS Section 11.3 for wood screws.
2. Fastener penetration is the threaded length embedded in the main member, including the tip.

6.5 FlatLOK Fasteners Reference Head Pull-Through Design Values

6.5.1 The reference design values for head pull-through for FlatLOK Fasteners are specified in **Table 10**

Table 10. FlatLOK Fasteners Reference Head Pull-Through Design Values¹

Min. Side Member Thickness (in)	Head Pull-Through Design Values (lbf) by Species (Specific Gravity)					
	SPF (0.42)	DF-L (0.50)	SP (0.55)	LVL (0.50)	LSL (0.50)	7/16" OSB
1.5	395	530	595	650	750	100

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Values shall be adjusted by all applicable adjustment factors per NDS Section 11.3 for wood screws.

6.5.2 Edge and End Distance:

6.5.2.1 Fastener edge and end distances shall be as specified in **Figure 3** and **Table 11**.

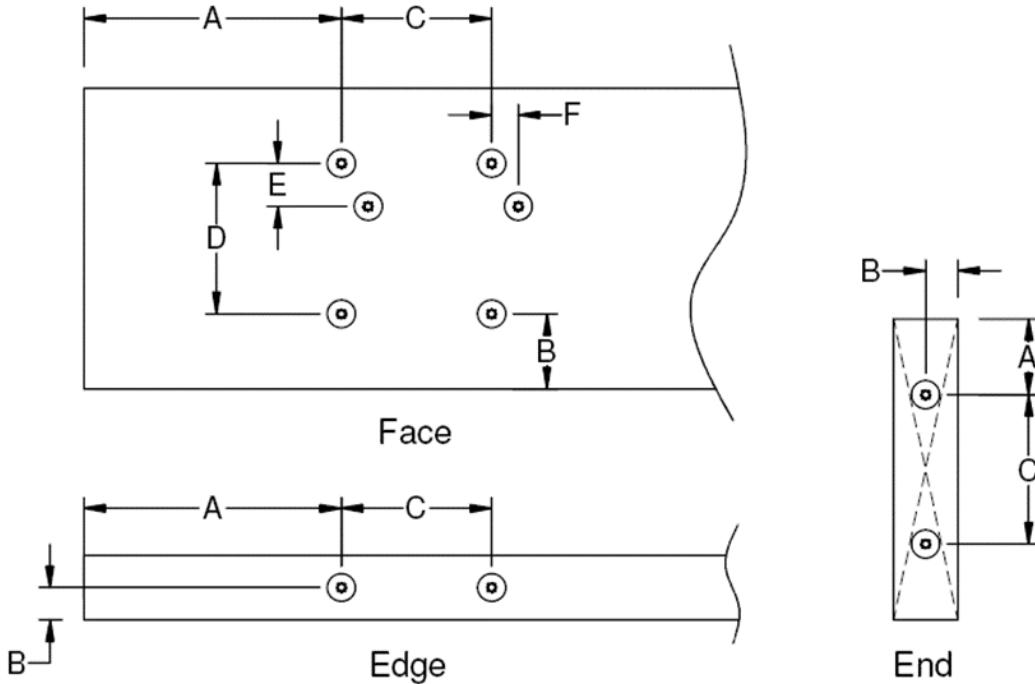


Figure 3. FlatLOK Fasteners Edge and End Distance Requirements

Table 11. FlatLOK Fasteners Edge and End Distance Requirements

Letter	Installed Condition	Minimum Distance or Spacing (in) ¹		
		Face	Edge	End
A	Min. End Distance	6	6	1 3/4
B	Min. Edge Distance	1 3/4	3/4	3/4
C	Min. Spacing Between Fasteners in a Row	3 1/2	3 1/2	3 1/2
D	Min. Spacing Between Non-Staggered Rows	3 1/2	N/A	N/A
E	Min. Spacing Between Staggered Rows	5/8	N/A	N/A
F	Min. Stagger Between Fasteners in Adjacent Rows	5/8	N/A	N/A

SI: 1 in = 25.4 mm

1. Edge distances, end distances and spacing of fasteners shall be sufficient to prevent splitting of the wood or as shown in this table, whichever is more restrictive.

6.6 Where the application falls outside of the performance evaluation, conditions of use, and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

7 Certified Performance²⁸

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.²⁹
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.³⁰

8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 FlatLOK Fasteners comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
 - 8.1.1 FlatLOK Fasteners were tested and evaluated to determine their structural resistance properties, which are used to develop reference design values for Allowable Stress Design (ASD).
 - 8.1.2 The following properties were evaluated:
 - 8.1.2.1 Withdrawal strength in accordance with ASTM D1761
 - 8.1.2.2 Head pull-through in accordance with ASTM D1761
 - 8.1.2.3 Lateral resistance for use as an alternative to metal straps, ties or fasteners in shear (lateral) loaded applications either parallel or perpendicular to wood grain in accordance with ASTM D1761
 - 8.1.3 Use of FlatLOK Fasteners in wet service conditions is outside the scope of this report.
- 8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified³¹ to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,³² respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.
- 8.4 Any regulation specific issues not addressed in this section are outside the scope of this report.

9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.
- 9.3 FlatLOK Fasteners shall be installed in accordance with the applicable code, the approved construction documents, this report, the manufacturer installation instructions, NDS and standard framing practice as applied to wood fasteners.
- 9.4 Use a 1/2" low RPM/high torque drill to drive the fastener head flush with the surface of the framing member using the driver bit included with the fasteners.
- 9.5 Screws shall not be overdriven.

10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
 - 10.1.1 Withdrawal, head pull-through and lateral resistance testing in accordance with ASTM D1761
 - 10.1.2 Tensile and shear strength data from approved sources tested in accordance with AISI S904
 - 10.1.3 Bending yield strength data from approved sources tested in accordance with ASTM F1575
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 *Testing and Engineering Analysis:*
 - 10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.³³
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for FlatLOK Fasteners on the DrJ Certification website.

11 Findings

- 11.1 As outlined in **Section 6**, FlatLOK Fasteners have performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, FlatLOK Fasteners shall be approved for the following applications:
 - 11.2.1 As an alternative to those fasteners prescribed by the applicable code for wood-to-wood connections.
- 11.3 Unless exempt by state statute, when FlatLOK Fasteners are to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from FastenMaster.
- 11.5 IBC Section 104.2.3 (IRC Section R104.2.2 and IFC Section 104.2.3³⁴ are similar) in pertinent part state:

104.2.3 Alternative Materials, Design and Methods of Construction and Equipment. The provisions of this code 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, provided that any such alternative is not specifically prohibited by this code and has been approved.

11.6 **Approved:**³⁵ Building regulations require that the building official shall accept duly authenticated reports.³⁶

- 11.6.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited.
- 11.6.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce.
- 11.6.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.³⁷

12 Conditions of Use

- 12.1 Material properties shall not fall outside the boundaries defined in **Section 6**.
- 12.2 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 12.3 Use of FlatLOK Fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this report.
- 12.4 For conditions not covered in this report, connections shall be designed in accordance with generally accepted engineering practice.
- 12.5 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
 - 12.5.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
 - 12.5.2 This report and the installation instructions shall be submitted at the time of permit application.
 - 12.5.3 This innovative product has an internal quality control program and a third-party quality assurance program.
 - 12.5.4 At a minimum, this innovative product shall be installed per **Section 9**.
 - 12.5.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.
 - 12.5.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.
 - 12.5.7 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 12.6 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, “the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3”, all of IBC Section 104, and IBC Section 105.3.



- 12.7 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.8 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

- 13.1 The innovative product listed in **Section 1.1** is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 13.2 Additional technical information can be found at www.fastenmaster.com.

14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.
- 14.2 For information on the status of this report, please contact DrJ Certification.



Notes

1 For more information, visit drjcertification.org or call us at 608-310-6748.

2 [2018 IBC Section 2304.10.5](https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1705)

3 [2021 IRC Section R317.3](https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1705.1)

4 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of [TPI 1](#), the [NDS](#), [AISI S202](#), [US professional engineering law](#), [Canadian building code](#), [Canada professional engineering law](#), [Qualtim External Appendix A: Definitions/Commentary](#), [Qualtim External Appendix B: Project/Deliverables](#), [Qualtim External Appendix C: Intellectual Property and Trade Secrets](#), definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

5 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702>

6 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review <https://www.justice.gov/atr/mission> and <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3>

7 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests>

8 The [design strengths and permissible stresses](#) of any structural material shall conform to the specifications and methods of design of accepted engineering practice. <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards>
<https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=The%20design%20strengths%20and%20permissible%20stresses.%20any%20structural>

9 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%20or%20cause%20to%20be%20made%20the%20necessary%20tests%20and%20investigations%20or%20the%20building%20official%20shall%20accept%20a%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3>

10 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2>

11 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

12 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source

13 <https://www.law.cornell.edu/uscode/text/18/1832> (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The [federal government](#) and each state have a [public records act](#). To follow DTSA and comply state public records and trade secret legislation requires approval through [ANAB ISO/IEC 17065 accredited certification bodies](#) or [approved sources](#). For more information, please review this website: [Intellectual Property and Trade Secrets](#).

14 <https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>

15 <https://www.cbitest.com/accreditation/>

16 <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1:~:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code>

17 <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3> AND <https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1>

18 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>

19 <https://iaf.nu/en/about-iaf.html#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope>

20 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

21 <https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>

22 Unless otherwise noted, the links referenced herein use un-amended versions of the [2024 International Code Council \(ICC\)](#) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the [IBC 2024](#) and the [IRC 2024](#) are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

23 See [Adoptions by Publisher](#) for the latest adoption of a non-amended or amended model code by the local jurisdiction. <https://up.codes/codes/general>

24 See [Adoptions by Publisher](#) for the latest adoption of a non-amended or amended model code by state. <https://up.codes/codes/general>

25 <https://www.ecfr.gov/current/title-24 subtitle-B chapter-XX part-3282 subpart-A section-3282.14>

26 <https://www.ecfr.gov/current/title-24 subtitle-B chapter-XX part-3280>

27 [https://www.ecfr.gov/current/title-24 subtitle-B chapter-XX part-3280#p-3280.2\(Listed%20or%20certified\); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed](https://www.ecfr.gov/current/title-24 subtitle-B chapter-XX part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed) AND <https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled>

28 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4>

29 <https://www.ecfr.gov/current/title-24 subtitle-B chapter-XX part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades>



30 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur>

31 Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

32 <https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=BILL%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH>

33 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

34 2018: <https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9> AND 2021: <https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11>

35 Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 (<https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4>) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

36 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>

37 Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.