



# Technical Evaluation Report

TO ASSIST WITH CODE COMPLIANCE

## Use of FastenMaster HeadLOK™ Fasteners to Attach Cladding and/or Furring to Wood Framing through Foam Sheathing

TER No. 1009-01

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

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

Section: 06 02 00 – Design Information  
Section: 06 05 23 – Wood, Plastic, and Composite Fastenings  
Section: 06 11 00 – Wood Framing  
Section: 06 12 00 – Structural Panels  
Section: 06 12 19 – Shear Wall Panels  
Section: 06 16 00 – Sheathing  
Section: 06 17 00 – Shop-Fabricated Structural Wood

#### 1. Product Evaluated:

1.1. FastenMaster HeadLOK™ Heavy Duty Flathead Fasteners

#### 2. Applicable Codes and Standards:<sup>1</sup>

- 2.1.1. 2003, 2006 and 2009 International Building Code (IBC)
- 2.1.2. 2003, 2006 and 2009 International Residential Code (IRC)

<sup>1</sup> 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.”

## Technical Evaluation Report (TER)

### 3. Performance Evaluation:

- 3.1. The HeadLOK fasteners were evaluated, using their tested allowable design values described below, as an alternate means of attaching cladding systems over exterior mounted rigid foam insulation. The following properties were evaluated:
  - 3.1.1. Dowel bearing strength of HeadLOK fasteners for use as an alternative to wood screws or lag screws in shear, where the fasteners are applied horizontally and the load is applied vertically.
  - 3.1.2. Withdrawal strength of HeadLOK fasteners for use as an alternative to wood screws or lag screws in tension where the fasteners are applied horizontally and the load is applied vertically causing the fastener to pull out.
  - 3.1.3. Head pull through strength of HeadLOK fasteners for use as an alternative to wood screws or lag screws in tension where the fasteners are applied horizontally and the load is applied vertically causing the fastener head to pull through.
  - 3.1.4. Shear strength of the HeadLOK fasteners for use as an alternative to wood screws or lag screws in shear where the fasteners are applied horizontally and the load is applied vertically either parallel or perpendicular to wood grain.

### 4. Product Description and Materials:

- 4.1. HeadLOK fasteners are manufactured with carbon steel wire conforming to ASTM A510 with a minimum ultimate tensile strength of 60 ksi.
- 4.2. HeadLOK fasteners are manufactured using a standard cold-formed process followed by a heat-treating process.
- 4.3. Fasteners are approved for use in exterior conditions and in pressure-treated wood. The proprietary coating has been tested and found to exceed the protection provided by code approved hot-dipped galvanized coatings meeting ASTM A153 (IBC2304.9.5<sup>2</sup> and IRC317.3<sup>3</sup>).
- 4.4. Fasteners are approved for use in interior conditions.
- 4.5. 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.
- 4.6. In-plant quality control procedures under which the HeadLOK fasteners are manufactured are audited through an inspection process performed by an approved agency<sup>4</sup>.

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<sup>2</sup> 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...

<sup>3</sup> 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.

<sup>4</sup> 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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4.7. HeadLOK fasteners are available in the styles and sizes<sup>5</sup> shown in [Table 1](#),

Product Availability		
Length	Product SKU	Quantity
2 <sup>7</sup> / <sub>8</sub> "	FMHLGM278 -250	500
3 <sup>3</sup> / <sub>4</sub> "	FMHLGM334 -250	250
4 <sup>1</sup> / <sub>2</sub> "	FMHLGM412 -250	250
5"	FMHLGM005 -250	250
5 <sup>1</sup> / <sub>2</sub> "	FMHLGM512 -250	250
6"	FMHLGM006 -250	250
6 <sup>1</sup> / <sub>2</sub> "	FMHLGM612 -250	250
7"	FMHLGM007 -250	250
7 <sup>1</sup> / <sub>2</sub> "	FMHLGM712 -250	250
8"	FMHLGM008 -250	250
8 <sup>1</sup> / <sub>2</sub> "	FMHLGM812 -250	250
9"	FMHLGM009 -250	250
9 <sup>1</sup> / <sub>2</sub> "	FMHLGM912 -250	250
10"	FMHLGM010 -250	250
11"	FMHLGM011 -250	250
12"	FMHLGM012 -250	250
13"	FMHLGM013 -250	250
14"	FMHLGM014 -250	250
15"	FMHLGM015 -250	250
16"	FMHLGM016 -250	250
18"	FMHLGM018 -250	250

**Table 1:** HeadLOK™ Fastener Availability

### 5. Applications:

5.1. HeadLOK fasteners are used to attach wall sheathing, furring and/or cladding to the wall framing through an intermediate layer of foam sheathing to provide resistance to transverse loads in conventional light-frame wood construction.

5.1.1. See [Table 2](#) for a prescriptive solution to fastener spacing requirements for various installation conditions.

5.2. HeadLOK fasteners are used to support the dead load of wall sheathing, furring and/or cladding when connected to the wall framing through an intermediate layer of foam sheathing.

5.2.1. See [Table 2](#) for fastening requirements for various siding weight and framing conditions.

<sup>5</sup> This TER only evaluates the use of HeadLOK™ Fasteners when connecting through up to 4" of foam sheathing into wood framing. Connections through greater than 4" of foam sheathing require design. When connecting to steel framing members, contact FastenMaster for installation instructions.

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### 5.3. Design Procedure:

#### 5.3.1. Calculate the fastener spacing.

Step 1: Determine the spacing between studs or framing members, either 16" or 24" on-center.

Step 2: Calculate the correct thickness of rigid foam, up to 4", needed to obtain the required insulation effect or R-value.

Step 3: Choose the furring or sheathing (substrate) material that the cladding will be affixed to:

1. Minimum  $\frac{3}{4}$ " x 3- $\frac{1}{2}$ " wood or Wood Structural Panel (WSP) furring
2. Minimum  $\frac{3}{8}$ " WSP sheathing

Ensure that the substrate allows for cladding connections that are compliant with the cladding manufacturer's installation and connection instructions and meet applicable building code.

Step 4: Determine the actual weight for the cladding materials being installed, per square foot, as given by the cladding manufacturer's specifications. Note:

1. Typical cladding weights are 1.3 psf for vinyl siding, 2.5 psf for cement board siding, 11 psf for Portland cement stucco and 25 psf for adhered masonry veneer; use actual weights for materials installed.
2. Wood furring may add up to 1 psf of additional weight; wood sheathing may add up to 1.5 psf depending on thickness.

Step 5: Using these four values together, find the proper fastening pattern of between 6" and 24" on-center using [Table 2](#).

Recommended Fastener Spacing											
		Maximum Allowable Cladding Weight (psf) to be Supported									
		10	15	20	25	30	10	15	20	25	30
Stud Spacing	Foam Thickness	Fastener Spacing When Using $\frac{3}{4}$ " x 3- $\frac{1}{2}$ " Wood or WSP Furring					Fastener Spacing When Using $\frac{3}{8}$ " WSP Sheathing				
		16	1								
1.5	24 o.c.					16 o.c.					
2						12 o.c.					
3	16 o.c.					12 o.c.					
4	12 o.c.					8 o.c.					
24	1										
	1.5	24 o.c.					12 o.c.				
	2						8 o.c.				
	3	16 o.c.					8 o.c.				
	4	12 o.c.					6 o.c.				

1. Wood framing (studs) shall be a minimum of 2" nominal thickness.
2. Wood framing and furring shall be minimum Spruce-Pine-Fir or any species with specific gravity, G, of 0.42 or greater.
3. Wood framing, furring, and sheathing shall be of adequate size, species, and grade to resist design loads and requirements in accordance with the applicable building code.
4. Furring may be installed vertically or horizontally and shall be installed at the same on center spacing as the studs. All fasteners shall be installed through the furring and into the studs with a minimum 2" of penetration. Alternately, where the furring is installed horizontally, and where the required fastener spacing is 8" o.c. or 12" o.c., the furring may be installed at 16" o.c. or 24" o.c., respectively, provided two fasteners are installed at stud location. Likewise, where the fastener spacing is 6" o.c., the furring may be installed horizontally at 12" o.c. and two fasteners used at each stud.
5. Maximum allowable cladding weight shall include weight of furring, sheathing, cladding and other supported materials.
6. Furring type and thickness shall be selected based on the cladding manufacturer's installation requirements (e.g. required fastener penetration into furring).
7. When using horizontal furring or where durability of the furring is a concern due to moisture between the cladding and the sheathing, consideration should be given to using preservative treated furring.

**Table 2: Recommended Fastener Spacing for Various Thicknesses of Foam Sheathing,**

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Stud Spacing and Cladding Weight when Connected to Wood Studs Using HeadLOK Fasteners<sup>6,7</sup>

### 5.3.2. Check for wind resistance.

Step 1: Using the information derived from Steps 1-5 in [Section 5.3](#), determine the allowable design wind pressure using HeadLOK fasteners from [Table 3](#) below.

Allowable Design Wind Pressure														
Furring or WSP Installation Condition	Min. 1x4 Wood Furring at 16" o.c.				Min. 1x4 Wood Furring at 24" o.c.				Min. 3/8" WSP and 16" o.c. studs			Min. 3/8" WSP and 24" o.c. studs		
HeadLOK Fastener Spacing in Furring or Sheathing (in)	24	16	12	8	24	16	12	8	12	8	6	12	8	6
Connection Allowable Design Wind Pressure (PSF)	49	73	98	147	33	49	65	98	49	73	98	33	49	65

1) Wood framing and furring shall be minimum Spruce-Pine-Fir or any species with specific gravity, G, of 0.42 or greater.  
 2) Connection allowable design wind pressure applies to connection resistance only and shall meet or exceed design wind pressure.  
 3) Wood framing, furring, and sheathing shall be of adequate size, species, and grade to resist design loads and requirements in accordance with the applicable building code.  
 4) Where required by applicable building code, adequate resistance of connections and materials to seismic forces shall be provided based on local seismic ground motion hazard and the weight of the supported cladding system.

**Table 3:** Allowable Design Wind Pressure for Connections Using HeadLOK Fasteners

Step 2: Based on the design wind speed (85-140mph) and wind exposure category (A-D) specific to your region, determine the design wind pressure to be resisted for your application from [Table 4](#) below.

Example Design Wind Loads							
Design Wind Speed (mph) & Exposure	85/B	90/B	100/B	110/B	120/B	130/B	140/B
	-	-	85/C	90/C	100/C	110/C	120/C
	-	-	-	85/D	90/D	100/D	110/D
Design Negative Wind Pressure Load to be Resisted (psf)	17.4	19.5	24.4	29.1	34.7	40.7	48.3

1) Mean roof height shall not exceed 30' (measured vertically from grade plane to middle of roof slope).  
 2) Refer to applicable building code for wind exposure descriptions (B = typical suburban/wooded terrain; C = open flat terrain; D = ocean/lake exposure).  
 3) Where topographic effects occur (e.g., wind speed up due to hill-top exposure), refer to building code for wind load.  
 4) Tabulated wind pressures are from ASCE 7-05, for wall corner zones. For lesser values away from wall corners, refer to the building code.  
 5) Tabulated wind pressures assume 100% of wind load is resisted by the cladding/foam sheathing or furring/foam sheathing layer and not otherwise distributed or shared with other wall assembly layers.

**Table 4:** Example of Components and Cladding Design Wind Loads

Step 3: Verify that the allowable design wind pressure using HeadLOK fasteners ([Table 3](#)) meets or exceeds the design wind pressure for your project ([Table 4](#)).

### 5.3.3. Design Example:

#### **Given**

Foam Sheathing Thickness: 4"  
 Cladding Material: Fiber cement lap siding  
 Cladding Weight from Manufacturer Data: 3 psf  
 Design Wind Speed/Exposure: 100/B  
 Seismic Design Category: B (exempt)  
 Wood Framing: 2x6 at 24" o.c.

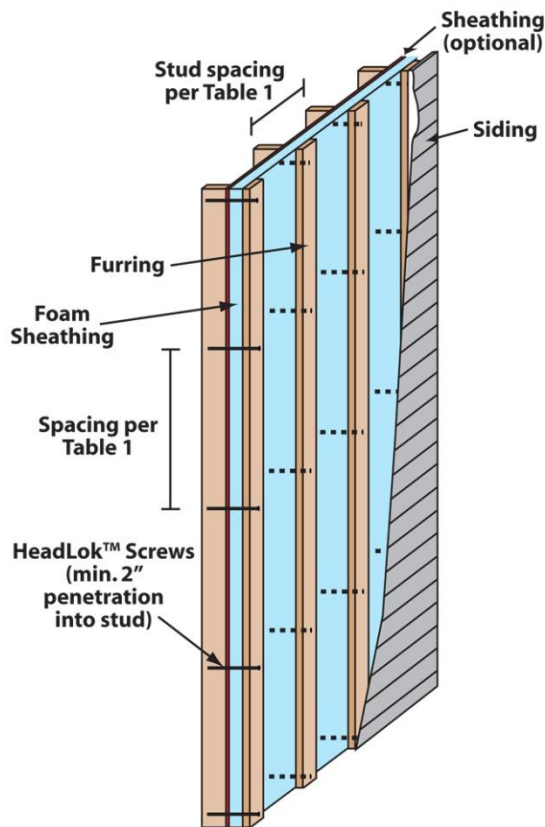
<sup>6</sup> For cladding system weights exceeding 25 psf with any thickness of foam sheathing, a design professional should be consulted.

<sup>7</sup> [Table 2](#) solutions are limited to 4" maximum thickness of foam sheathing. Design required for thicknesses of foam sheathing greater than 4". For cladding attachment over foam sheathing exceeding a 4" thickness, a design professional should be consulted.

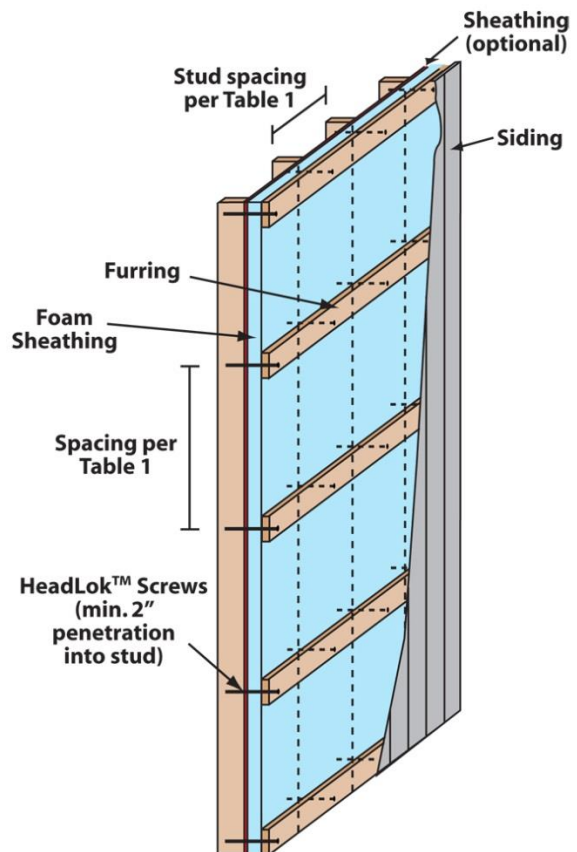
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### Solution

- Step 1: Choose the furring type and orientation that will be used. We'll use 1x4 (min.) wood furring in a vertical orientation over studs in this example ([Figure 1a](#)).
- Step 2: Consult siding manufacturer data for siding weight (3 psf) and add 1 psf for furring. Total = 4 psf.
- Step 3: Using [Table 2](#), min. 1x4 wood furring at 24" o.c. attached to studs at 24" o.c. supporting up to 5 psf requires maximum 24" o.c. fastener spacing.
- Step 4: From [Table 3](#), the connection allowable design wind pressure resistance is 33 psf.
- Step 5: Check the applicable building code to verify the wind pressure resistance required. [Table 4](#) gives an example of the 2009 IRC wind pressures, and this example's connection resistance of 33 psf exceeds the required resistance for wind speeds up to 90 mph in Exposure C and 110 mph, Exp. B of 29.1 psf.
- Step 6: The minimum length of HeadLOK fastener required is 0.75" (furring) + 4" (foam) + 2.0" (penetration) = 6.75". Select a 7" HeadLOK (GM point) fastener. Note:
1. Add length for thickness of additional sheathing material layer behind foam, if included.
  2. Verify furring provides adequate thickness for siding fastener per code or siding manufacturer's installation instructions, or specify an appropriate siding fastener for use in 3/4"-thick furring.



**Figure 1a:** Illustration of Exterior Wall Covering Assembly with Vertically-Oriented Furring



**Figure 1b:** Illustration of Exterior Wall Covering Assembly with Horizontally-Oriented Furring

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### 6. Installation:

- 6.1. Add up the total thickness of furring, rigid insulation and sheathing then select the appropriate length of HeadLOK fastener (see [Table 1](#)) that will attach these combined materials and provide a minimum 2" penetration into the wood framing.
- 6.2. Using a high torque ½" drill, drive the HeadLOK through the center of the furring strip and into the insulation and wall framing.
- 6.3. Fasteners should be aligned so that the point engages the center of the wall stud and at a minimum distance of 3" from the end of the stud or furring material.
- 6.4. Fasteners must be installed in a manner to avoid over-driving yet snug enough to remove any gaps between the layers of materials being fastened
- 6.5. [Figure 1a](#) and [1b](#) provide example graphics of two types of furring installations as a guide.

### 7. Test and Engineering Substantiating Data:

- 7.1. *National Design Specification for Wood Construction* – 2005 Edition, American Forest & Paper Association (NDS).
- 7.2. General Dowel Equations for Calculating Lateral Connection Values (1999), *TR-12*, American Forest & Paper Association.
- 7.3. Testing conducted for the Foam Sheathing Coalition, the Steel Framing Alliance and the New York State Energy Research and Development Authority (NYSERDA) ([Test Report](#)).
- 7.4. Testing conducted for the Foam Sheathing Coalition by Progressive Engineering, Inc., Evaluation of Siding Attachment Methods Using Various Materials, [Test Report #2010-128](#), dated 3/9/2010.
- 7.5. HeadLOK fastener design property calculations for HeadLOK Screws based on *TR-12*, *NDS* and NYSERDA reports, Crandell, 2010.
- 7.6. HeadLOK fastener performance from the FastenMaster Technical Bulletin for HeadLOK fasteners.
- 7.7. FastenMaster Installation instructions for HeadLOK fasteners.
- 7.8. 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.
  - 7.8.1. 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.
- 7.9. 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.
  - 7.9.1. DrJ does not assume responsibility for the accuracy of any code-adopted design values but relies upon their accuracy for engineering evaluation.
  - 7.9.2. 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.
  - 7.9.3. DrJ evaluates all equivalency testing and related analysis using this code-defined engineering foundation.

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### 8. Findings:

- 8.1. When used and installed in accordance with this TER and the manufacturer's installation instructions, HeadLOK fasteners are acceptable for use as an alternative material, design and method of construction for the attachment of furring, sheathing or cladding over foam sheathing and into wood framing.
- 8.2. HeadLOK fasteners evaluated herein and installed in accordance with this TER meet the requirements of the 2003, 2006 and 2009 IRC for positive and negative wind pressure resistance.
- 8.3. HeadLOK fasteners evaluated herein and installed in accordance with this TER meet the requirements of the 2003, 2006 and 2009 IRC for lateral shear strength to support cladding materials installed over foam sheathing.
- 8.4. HeadLOK fasteners evaluated herein and installed in accordance with this TER meet the requirements of the 2003, 2006 and 2009 IBC for positive and negative wind pressure resistance.
- 8.5. HeadLOK fasteners evaluated herein and installed in accordance with this TER meet the requirements of the 2003, 2006 and 2009 IBC for lateral shear strength to support cladding materials installed over foam sheathing.
- 8.6. Use of HeadLOK fasteners to connect bracing materials in braced wall panels or shear walls is outside the scope of this TER.

### 9. Conditions of Use:

- 9.1. HeadLOK fasteners covered by this TER shall be installed in accordance with this report and the manufacturer's installation instructions.
- 9.2. HeadLOK fastener spacing shall not exceed [Table 2](#) for the installation conditions considered.
- 9.3. For conditions not covered in this TER, connections shall be designed in accordance with accepted engineering practice.
- 9.4. Manufacturer's installation instructions shall be followed as provided in [Section 6](#) and at [www.fastenmaster.com/details/product/HeadLOK-heavy-duty-flathead-fastener.html](http://www.fastenmaster.com/details/product/HeadLOK-heavy-duty-flathead-fastener.html).
- 9.5. HeadLOK fasteners are produced by OMG, Inc. at their facility located in Agawam, Massachusetts.
- 9.6. HeadLOK fasteners are produced under a quality control program subject to periodic inspections in accordance with IBC Section 1703.5.2.
- 9.7. Install fasteners prior to utility installations in exterior walls to avoid accidental penetration of utilities (e.g. electrical wiring, plumbing, etc.).
- 9.8. Foam sheathing shall be minimum Type II (expanded polystyrene) or Type X (extruded polystyrene) per ASTM C578 or Type 1 (polyiso) per ASTM C1289.
  - 9.8.1. Types with greater compressive strength are acceptable.
- 9.9. Ensure furring or sheathing material provides adequate substrate and thickness for the application of the siding fastener per code requirements for siding application and siding manufacturer's installation instructions.
  - 9.9.1. For example, if the siding manufacturer requires the fastener for the siding to penetrate more than ¾" into the furring, a 1" x 4" furring strip (actual dimension of ¾" x 3 ½") would not be adequate and a thicker furring strip, such as a 2" x 4", would be required.

### 10. Identification:

- 10.1. The fasteners are identified by the designation, "HeadLOK™" 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 and TER number.
- 10.3. Additional technical information can be found at the [fastenmaster.com](http://fastenmaster.com).



## Technical Evaluation Report (TER)

### 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](http://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.

## Technical Evaluation Report (TER)

### Appendix A:

## 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).<sup>8</sup>
  - 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 follows<sup>9</sup>:



### 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 Disclaimer<sup>10</sup>:

*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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<sup>9</sup> See the “ICC-ES Rules of Procedure” at [www.icc-es.org/pdf/rules\\_evalrpts.pdf](http://www.icc-es.org/pdf/rules_evalrpts.pdf).

<sup>10</sup> Page 1 footer of each ICC-ES report that can be found at [www.icc-es.org/reports/index.cfm](http://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.

## Technical Evaluation Report (TER)

### **Appendix B:** **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.<sup>11</sup>

#### **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.

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<sup>11</sup> [http://www.ftc.gov/bc/antitrust/antitrust\\_laws.shtm](http://www.ftc.gov/bc/antitrust/antitrust_laws.shtm)