Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

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TRUFAST® Structural Insulated Panel (SIP) Fasteners

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 03 00 00 - CONCRETE
Section: 03 15 00 Concrete Accessories

DIVISION: 04 00 00 - MASONRY
Section: 04 05 23 - Masonry Accesories

DIVISION: 05 00 00 - METALS
Section: 05 05 23 - Metal Fastenings

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23 - Wood, Plastic, and Composite Fastenings

1 Innovative Products Evaluated[1]

1.1 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners

2 Product Description and Materials

2.1 The innovative products evaluated in this report are shown in **Figure 1** through **Figure 3**.

2.2 *Fasteners*

2.2.1 SIP TP (Thread Point) Fasteners are size No. 14 fasteners with a pancake head and a T-30 drive. The point is a threaded drill point. The SIP TP Fastener is shown in **Figure 1**.

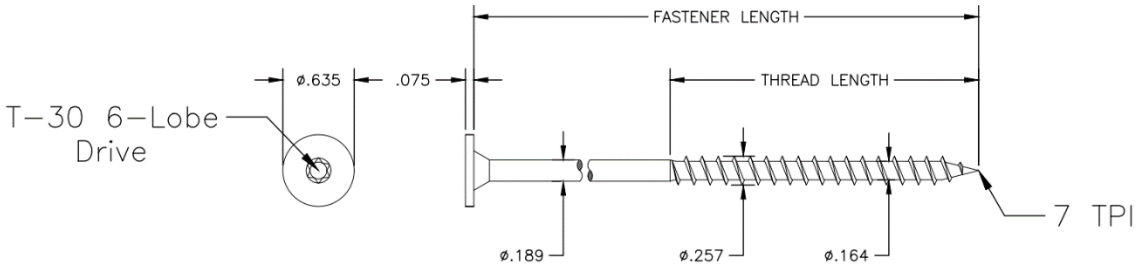

Figure 1. SIP TP Fastener

2.2.2 SIP LD (Light-Duty) Fasteners are size No. 14 fasteners with a pancake head and a T-30 drive. The point is a two-flute formed drill tip. The SIP LD Fastener is shown in **Figure 2**.

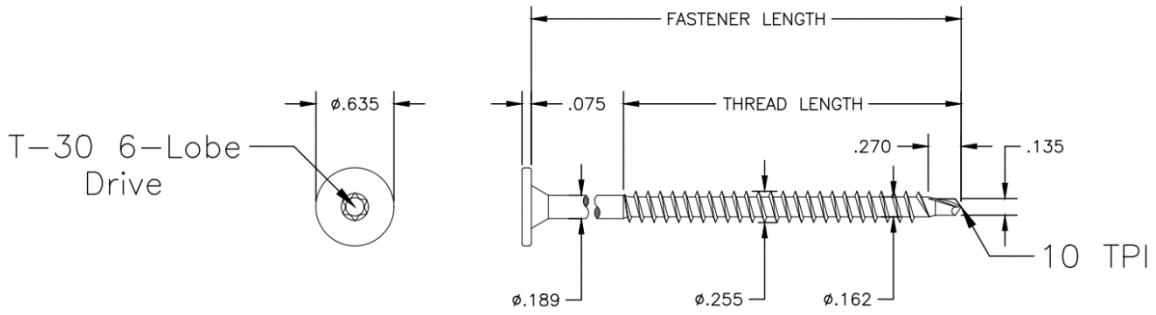

Figure 2. SIP LD Fastener

2.2.3 SIP HD (Heavy-Duty) Fasteners are size No. 14 fasteners with a pancake head and a T-30 drive. The point is a two-flute formed drill tip. The SIP HD Fastener is shown in **Figure 3**.

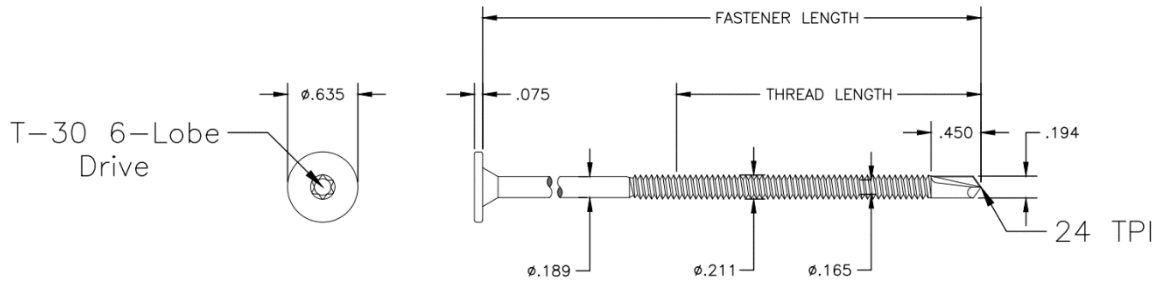

Figure 3. SIP HD Fastener

2.2.4 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners are coated with TRUFAST® Tru-Kote™ coating.

2.2.4.1 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners, coated with TRUFAST Tru-Kote coating, were tested in accordance with ASTM D6294 with less than fifteen percent (15%) red rust after 15 cycles, which met the conditions of acceptance specified in Section 4.7.1 of FM 4470.

2.2.5 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners evaluated in this report are set forth in **Table 1** through **Table 3**.

Table 1. SIP TP Fastener Specifications

Fastener Name	Fastener Part Number	Head (in)		Nominal Length[1] (in)	Thread Length[1] (in)	Shank Diameter[2] (in)	Thread Diameter (in)		Nominal Bending Yield,[3] F_{yb} (psi)	Allowable Fastener Strength (lb)		
		Diameter	Drive Type				Minor	Major		Tensile	Shear at Shank Diameter	Shear at Minor Diameter
SIP TP	SIPTP-2000	0.635	T-30	2.00	1.75	0.189	0.164	0.257	185,000	1,185	975	860
	SIPTP-2500			2.50								
	SIPTP-3000			3.00	2.00							
	SIPTP-3500			3.50								
	SIPTP-4000			4.00	2.75							
	SIPTP-4500			4.50								
	SIPTP-5000			5.00								
	SIPTP-5500			5.50								
	SIPTP-6000			6.00								
	SIPTP-6500			6.50								
	SIPTP-7000			7.00								
	SIPTP-7500			7.50								
	SIPTP-8000			8.00								
	SIPTP-8500			8.50								
	SIPTP-9000			9.00								
	SIPTP-10000			10.00								
	SIPTP-11000			11.00								
	SIPTP-12000			12.00								
	SIPTP-13000			13.00								
	SIPTP-14000			14.00								
	SIPTP-15000			15.00								
	SIPTP-16000			16.00								
	SIPTP-18000			18.00								

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

1. Fastener length is measured from the underside 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. Nominal bending yield, F_{yb}, is measured along the threaded portion of the fastener. For the nominal bending yield of the fastener along the shank, take a ten percent (10%) reduction.

Table 2. SIP LD Fastener Specifications

Fastener Name	Fastener Part Number	Head (in)		Nominal Length[1] (in)	Thread Length[1] (in)	Point Length (in)	Shank Diameter[2] (in)	Thread Diameter (in)		Nominal Bending Yield,[3] F_{yb} (psi)	Allowable Fastener Strength (lb)		
		Diameter	Drive Type					Minor	Major		Tensile	Shear at Shank Diameter	Shear at Minor Diameter
SIP LD	SIPLD-2250	0.635	T-30	2.25	1.00	0.125	0.189	0.162	0.255	185,000	1,130	945	830
	SIPLD-3000			3.00	2.75	0.275							
	SIPLD-3250			3.25	1.50	0.125							
	SIPLD-3500			3.50	2.75	0.275							
	SIPLD-4000			4.00									
	SIPLD-4250			4.25	2.00	0.125							
	SIPLD-4500			4.50	2.75	0.275							
	SIPLD-5000			5.00									
	SIPLD-5250			5.25	2.5	0.125							
	SIPLD-5500			5.50	2.75	0.275							
	SIPLD-6000			6.00									
	SIPLD-6500			6.50									
	SIPLD-7000			7.00									
	SIPLD-7500			7.50									
	SIPLD-8000			8.00									
	SIPLD-8500			8.50									
	SIPLD-9000			9.00									
	SIPLD-9500			9.50									
	SIPLD-10000			10.00									
	SIPLD-11000			11.00									
	SIPLD-12000			12.00									
	SIPLD-13000			13.00									
	SIPLD-14000			14.00									
	SIPLD-15000			15.00									
	SIPLD-16000			16.00									
	SIPLD-18000			18.00									

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

1. Fastener length is measured from the underside of the head to the tip. Thread length includes tapered tip (see **Figure 2**).
2. Shank diameter based on manufactured thickness. Finished dimensions are larger due to the proprietary coatings added.
3. Nominal bending yield, F_{yb}, is measured along the threaded portion of the fastener. For the nominal bending yield of the fastener along the shank, take a ten percent (10%) reduction.

Table 3. SIP HD Fastener Specifications

Fastener Name	Fastener Part Number	Head (in)		Nominal Length[1] (in)	Thread Length[1] (in)	Point Length (in)	Shank Diameter[2] (in)	Thread Diameter (in)		Nominal Bending Yield,[3] F_{yb} (psi)	Allowable Fastener Strength (lb)		
		Diameter	Drive Type					Minor	Major		Tensile	Shear at Shank Diameter	Shear at Minor Diameter
SIP HD	SIPHD-2250	0.635	T-30	2.25	1.00	0.450	0.189	0.165	0.211	185,000	1,285	1,015	875
	SIPHD-3250			3.25	1.50								
	SIPHD-4250			4.25	2.00								
	SIPHD-4500			4.50	3.19								
	SIPHD-5250			5.25	2.50								
	SIPHD-6000			6.00	3.88								
	SIPHD-8000			8.00									
	SIPHD-9000			9.00									
	SIPHD-9750			9.75									
	SIPHD-11750			11.75									
	SIPHD-13750			13.75									

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

1. Fastener length is measured from the underside of the head to the tip. Thread length includes tapered tip (see **Figure 3**).
2. Shank diameter based on manufactured thickness. Finished dimensions are larger, due to the proprietary coatings added.
3. Nominal bending yield, F_{yb}, is measured along the threaded portion of the fastener. For the nominal bending yield of the fastener along the shank, take a ten percent (10%) reduction.

2.3 *Substrate Materials*

2.3.1 *Wood:*

2.3.1.1 Solid sawn wood members connected with TRUFAST SIP TP, SIP LD, and SIP HD Fasteners shall consist of lumber species or species combinations having a specific gravity of at least 0.42.

2.3.1.2 Wood structural panels, plywood, and Oriented Strand Board (OSB) connected with TRUFAST SIP TP, SIP LD, and SIP HD Fasteners shall have a specific gravity of at least 0.50. Wood structural panels shall comply with DOC PS 1 or DOC PS 2 in accordance with IBC Section 2303.1.5, IRC Section R503.2.1, IRC Section R604.1, and IRC Section R803.2.1.

2.3.1.3 Structural Composite Lumber (SCL) (e.g., LVL, LSL, PSL) connected with TRUFAST SIP TP, SIP LD, and SIP HD Fasteners shall be qualified under ASTM D5456 and shall have an equivalent specific gravity of at least 0.50.

2.3.2 *Steel:*

2.3.2.1 Cold-Formed Steel (CFS) shall comply with IBC Section 2204[2] and IBC Section 2206,[3] and one of the material standards provided in Section A3.1 of AISI S100.

2.3.2.2 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners are approved for use with steel decking designed and constructed in accordance with ANSI/SDI-SD.

2.3.3 *Concrete:*

2.3.3.1 Normal weight and lightweight structural concrete shall comply with IBC Section 1901.2.

2.3.3.2 Concrete shall be uncracked for the service life of the fastener.

2.3.4 *Masonry:*

2.3.4.1 Load-bearing Concrete Masonry Units (CMU) shall comply with IBC Section 2114.3 and IRC Section R606.2.1.

2.3.4.2 CMU shall be normal weight and conform to ASTM C90.

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

3 Definitions[4]

3.1 New Materials[5] 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 tests[7] and/or engineering analysis.[8]

3.2 Duly authenticated reports[9] and research reports[10] are test reports and related engineering evaluations that are written by an approved agency[11] 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.US.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 ANAB[15] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[16] 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 writing[17] 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; Regulations[22]

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, but is not limited to, the following featured local jurisdictions: 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, St. Louis County, 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, but is not limited to, the following featured states: 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 3282.14[25] and Part 3280[26] 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 *Regulations*

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

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

4.3 *Standards*

4.3.1 *ACI 318: Building Code Requirements for Structural Concrete*

4.3.2 *AISI S100: North American Specification for the Design of Cold-formed Steel Structural Members*

4.3.3 *AISI S904: Standard Test Methods for Determining the Tensile and Shear Strength of Screws*

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

4.3.5 *ANSI/SDI-SD: Standard for Steel Deck*

4.3.6 *ASTM C90: Standard Specification for Loadbearing Concrete Masonry Units*

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

4.3.8 *ASTM D6294: Standard Test Method for Corrosion Resistance of Ferrous Metal Fastener Assemblies Used in Roofing and Waterproofing*

4.3.9 *ASTM F1575: Standard Test Method for Determining Bending Yield Moment of Nails*

4.3.10 *DOC PS 1: Structural Plywood*

4.3.11 *DOC PS 2: Performance Standard for Wood-based Structural-use Panels*

4.3.12 *FM 4470: Approval Standard for Single-Ply Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR), and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction*

4.3.13 *TMS 402: Building Code for Masonry Structures*

5 Listed[27]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or and approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., 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 SIP TP Fasteners are used for attaching SIP and Composite Insulation Board (nail base) to wood framing, concrete, and masonry block.

6.2 SIP LD Fasteners are used for attaching SIP and Composite Insulation Board (nail base) to wood framing, light gauge steel framing, concrete, and masonry block.

6.3 SIP HD Fasteners are used for attaching SIP and Composite Insulation Board (nail base) to Cold-Formed Steel (CFS) framing.

6.4 *Design*

6.4.1 *Connections in Wood:*

6.4.1.1 Design of SIP TP and SIP LD Fasteners in wood connections is governed by the applicable code and the provisions for dowel-type fasteners in the ANSI/AWC NDS. Unless otherwise noted, adjustment of the design stresses for the duration of load shall be in accordance with the applicable code.

6.4.1.1.1 Head pull-through design values are provided in **Table 4**.

6.4.1.1.2 Withdrawal design values are provided in **Table 5**, **Table 6**, **Table 9**, and **Table 10**.

6.4.1.2 Fasteners in wood shall follow in the minimum spacing, end distance, and edge distance requirements provided in **Table 15**.

6.4.2 *Connections in Steel:*

6.4.2.1 Design of SIP LD and SIP HD Fasteners in steel connections is governed by IBC Section 2204,[28] IBC Section 2206,[29] and the provisions for screw-type fasteners in Section J4 of AISI S100.

6.4.2.1.1 Allowable Strength Design (ASD) pullout values are provided in **Table 13** and **Table 14**.

6.4.2.1.2 Instructions for calculating Load Resistance Factored Design (LRFD) pullout values are provided in the footnotes of **Table 13** and **Table 14**.

6.4.2.2 Fasteners in steel shall follow the minimum edge distance, end distance, and spacing requirements provided in **Table 16**.

6.4.3 *Connections in Concrete:*

6.4.3.1 Design of SIP TP and SIP LD Fasteners in concrete connections is governed by IBC Section 1901.3 and the provisions for anchoring to concrete in ACI 318-19 Chapter 17.

6.4.3.1.1 Allowable pullout values for resisting static tension loads are provided in **Table 7** and **Table 11**.

6.4.3.1.2 The concrete shall remain uncracked for its service life and have a 28-day compressive strength as specified in **Table 7** and **Table 11**.

6.4.3.2 For use in lightweight structural concrete, adjustments shall be made per ACI 318-19 Section 17.2.4.

6.4.3.3 Fasteners in concrete shall follow the installation requirements of **Table 17**.

6.4.4 *Connections in Masonry (CMU Block):*

6.4.4.1 Design of SIP TP and SIP LD Fasteners in masonry connections is governed by IBC Section 2107 and the provisions for anchoring to masonry in TMS 402.

6.4.4.1.1 Allowable design values for resisting static tension loads are provided in **Table 8** and **Table 12**.

6.4.4.1.2 Allowable tension loads apply when fastener is installed in grouted or ungrouted CMU block.

6.4.4.2 Fasteners in CMU block shall follow the installation requirements of **Table 18**.

6.5 *SIP Fastener Reference Head Pull-Through Design Values*

6.5.1 Reference design values for head pull-through for SIP TP and SIP LD Fasteners are provided in **Table 4**.

Table 4. SIP TP and SIP LD Fastener Head Pull-Through Design Values

Main Member Type (Specific Gravity)	Main Member Description	Head Pull-Through Design Value[1] (lb)
SPF[2] (0.42)	Dry Service Condition[3,4]	380
	Wet Service Condition[3,4]	265
DF-L[2] (0.50)	Dry Service Condition[3,4]	555
	Wet Service Condition[3,4]	390
OSB[5] (0.50)	$^{23}/_{32}$" thick	345
	$^{19}/_{32}$" thick	145
	$^{1}/_{2}$" thick	100
	$^{7}/_{16}$" thick	85
Plywood[5] (0.50)	$^{23}/_{32}$" thick	380
	$^{19}/_{32}$" thick	265
	$^{15}/_{32}$" thick	175

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

1. Tabulated pull-through values shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.
2. For wood species with a specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with a specific gravity greater than 0.50, use the tabulated values for specific gravity of 0.50.
3. Minimum 1.5" thickness.
4. The dry service condition is defined as lumber with an in-service moisture content of less than or equal to nineteen percent (19%). The wet service condition is defined as lumber with an in-service moisture content of greater than nineteen percent (19%).
5. Plywood and OSB shall comply with DOC PS 1 or DOC PS 2, respectively (i.e., APA Rated).

6.6 *SIP TP Fastener Withdrawal and Pullout Values*

6.6.1 Withdrawal design values for SIP TP Fasteners in OSB and plywood are provided in **Table 5**.

Table 5. SIP TP Withdrawal Values in OSB and Plywood

Main Member Type (Specific Gravity)[3]	Main Member Nominal Thickness[1] (in)	Withdrawal Value[2] (lb)
OSB (0.50)	$^{23}/_{32}$	110
	$^{19}/_{32}$	60
	$^{1}/_{2}$	40
	$^{7}/_{16}$	45
Plywood (0.50)	$^{23}/_{32}$	155
	$^{19}/_{32}$	130
	$^{15}/_{32}$	85

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

1. Fastener penetrates through the full thickness of the board.
2. Tabulated withdrawal values shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.
3. Plywood and OSB shall comply with DOC PS 1 or DOC PS 2, respectively (i.e., APA Rated).

6.6.2 Reference withdrawal values for SIP TP Fasteners in dimensional lumber and engineered wood are provided in **Table 6**.

Table 6. SIP TP Reference Withdrawal Values in Lumber and Engineered Wood (lb/in)

Main Member Type (Specific Gravity)[1]	Main Member Service Condition[2]	Fastener Installed in Face or Edge Grain	Penetration into Main Member[3] (in)	Reference Withdrawal Value[4,5] (lb/in)
SPF (0.42)	Dry	Face	1	175
			2	190
		Edge	1	120
	Wet	Face	1	120
DF-L (0.50)	Dry	Face	1	195
		Edge	1	140
	Wet	Face	1	135
LVL (0.50)	Dry	Face	1	140
		Edge		125
LSL (0.50)	Dry	Face	1	135

SI: 1 in = 25.4 mm, 1 lb/in = 0.175 N/mm

1. For wood species with a specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with a specific gravity greater than 0.50, use the tabulated values for specific gravity of 0.50. SCL products (e.g., LVL, LSL, etc.) shall have a published equivalent specific gravity of 0.50 or greater.
2. For Sawn Lumber, the dry service condition is defined as lumber with an in-service moisture content of less than or equal to nineteen percent (19%). The wet service condition is defined as lumber with an in-service moisture content of greater than nineteen percent (19%). For SCL, the dry service condition is defined as lumber with an in-service moisture content of less than or equal to sixteen percent (16%).
3. Fastener penetration is the threaded length embedded in the main member, including the tip.
4. Where applicable, the total allowable withdrawal design value as a function of penetration is determined as follows:

   For penetration ≤1":

   $$W_{total}\ (lb) = W_{1''}(p)$$

   For penetration >1":

   $$W_{total}\ (lb) = W_{1''}(1) + (2W_{2''} - W_{1''})(p - 1)$$

   where:

   $W_{1''}$ = value for withdrawal resistance at 1" penetration from this table [lb/in]

   $W_{2''}$ = value for withdrawal resistance at 2" penetration from this table [lb/in]

   p = penetration [in], value shall be limited to the threaded length if penetration into substrate exceeds fastener thread length
5. Tabulated withdrawal values shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.

6.6.3 Allowable pullout loads for SIP TP Fasteners in concrete and concrete masonry units are provided in **Table 7** and **Table 8**, respectively.

Table 7. SIP TP Allowable Pullout Loads in Concrete (lb)

Main Member	Minimum 28 Day Concrete Compressive Strength (psi)	Effective Embedment Depth[5] (in)	Allowable Pullout Load[6,7] (lb)
Concrete[1,2,3,4]	2,500	1	100
	4,000		165

SI: 1 in = 25.4 mm, 1 psi = 6.89 kPa, 1lb = 4.45 N

1. Concrete remains uncracked for service life of fastener.
2. For use in lightweight structural concrete, adjustments shall be made per ACI 318-19 Section 17.2.4.
3. Critical edge distance is 3".
4. Concrete thickness shall be a minimum of 1.5 times the embedment.
5. Fastener embedment is the threaded length embedded in the main member, including the tip.
6. Single fastener with static tension load only.
7. Allowable pullout is determined by dividing the strength design value by a conversion factor of 1.48. The conversion factor is based on the load combination:
   12.D + 1.6L
   where:
   Dead Load (D) = 30% and Live Load (L) = 70%.
   Adjustments shall be made where other load combinations control.

Table 8. SIP TP Allowable Tension Load CMU Block (lb)

Main Member	Embedment Depth[1] (in)	Allowable Tension Load[2,3] (lb)
CMU Block[4]	1	175

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

1. Fastener embedment is the threaded length embedded in the CMU block wall or web, including the tip.
2. Minimum edge distance is 2.5".
3. Allowable unit tension is determined by dividing the strength design value by a conversion factor of 1.48. The conversion factor is based on the load combination:
   1.2D + 1.6L
   Where:
   Dead Load (D) = 30% and Live Load (L) = 70%.
   Adjustments shall be made where other load combinations control.

6.7 *SIP LD Fastener Withdrawal and Pullout Values*

6.7.1 Withdrawal design values for SIP LD Fasteners in OSB and plywood are provided in **Table 9**.

Table 9. SIP LD Withdrawal Values in OSB and Plywood (lb)

Main Member Type (Specific Gravity)[3]	Main Member Nominal Thickness[1] (in)	Withdrawal Value[2] (lb)
OSB (0.50)	$^{23}/_{32}$	155
	$^{19}/_{32}$	70
	$^{1}/_{2}$	45
	$^{7}/_{16}$	50
Plywood (0.50)	$^{23}/_{32}$	180
	$^{19}/_{32}$	120
	$^{15}/_{32}$	80

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

1. Fastener penetrates through the full thickness of the board.
2. Tabulated withdrawal values shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.
3. Plywood and OSB shall comply with DOC PS 1 or DOC PS 2, respectively (i.e., APA Rated).

6.7.2 Reference withdrawal values for SIP LD Fasteners in dimensional lumber and engineered wood are provided in **Table 10**.

Table 10. SIP LD Reference Withdrawal Values in Lumber and Engineered Wood (lb/in)

Main Member Type (Specific Gravity)[1]	Main Member Service Condition[2]	Fastener Installed in Face or Edge Grain	Penetration into Main Member[3] (in)	Reference Withdrawal Value[4,5] (lb/in)
SPF (0.42)	Dry	Face	1	140
			2	180
		Edge	1	100
	Wet	Face	1	100
			2	125
DF-L (0.50)	Dry	Face	1	150
			2	205
		Edge	1	155
	Wet	Face	1	105
			2	145
LVL (0.50)	Dry	Face	1	135
		Edge		115
LSL (0.50)	Dry	Face	1	140

SI: 1 in = 25.4 mm, 1 lb/in = 0.175 N/mm

1. For wood species with a specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with a specific gravity greater than 0.50, use the tabulated values for specific gravity of 0.50. SCL products (e.g., LVL, LSL, etc.) shall have a published equivalent specific gravity of 0.50 or greater.
2. For Sawn Lumber, the dry service condition is defined as lumber with an in-service moisture content of less than or equal to nineteen percent (19%). The wet service condition is defined as lumber with an in-service moisture content of greater than nineteen percent (19%). For SCL, the dry service condition is defined as lumber with an in-service moisture content of less than or equal to sixteen percent (16%).
3. Fastener penetration is the threaded length embedded in the main member, including the tip.
4. Where applicable, the total allowable withdrawal design value as a function of penetration is determined as follows:

   For penetration ≤1":

   $$W_{total}(lb) = W_{1''}(p)$$

   For penetration >1":

   $$W_{total}(lb) = W_{1''}(1) + (2W_{2''} - W_{1''})(p - 1)$$

   where:

   $W_{1''}$ = value for withdrawal resistance at 1" penetration from this table (lb/in)

   $W_{2''}$ = value for withdrawal resistance at 2" penetration from this table (lb/in)

   p = penetration (in), value shall be limited to the threaded length if penetration to substrate exceed fastener thread length
5. Tabulated withdrawal values shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.

6.7.3 Allowable pullout loads for SIP LD Fasteners in concrete and concrete masonry units are provided in **Table 11** and **Table 12**, respectively.

Table 11. SIP LD Allowable Pullout Loads in Concrete (lb)

Main Member	Minimum 28 Day Concrete Compressive Strength (psi)	Effective Embedment Depth[5] (in)	Allowable Pullout Load[6,7] (lb)
Concrete[1,2,3,4]	2,500	1	70
	4,000		155
	5,000		160

SI: 1 in = 25.4 mm, 1 psi = 6.89 kPa, 1 lb = 4.45 N

1. Concrete remains uncracked for service life of fastener.
2. For use in lightweight structural concrete, adjustments shall be made per ACI 318-19 Section 17.2.4.
3. Critical edge distance is 3".
4. Concrete thickness shall be a minimum of 1.5 times the embedment.
5. Fastener embedment is the threaded length embedded in the main member, including the tip.
6. Single fastener with static tension load only.
7. Allowable pullout is determined by dividing the strength design value by a conversion factor of 1.48. The conversion factor is based on the load combination:
   1.2D + 1.6L
   Where:
   Dead Load (D) = 30% and Live Load (L) = 70%
   Adjustments shall be made where other load combinations control.

Table 12. SIP LD Allowable Tension Loads CMU Block (lb)

Main Member	Embedment Depth[1] (in)	Allowable Tension Load[2,3] (lb)
CMU Block[4]	1	80

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

1. Fastener embedment is the threaded length embedded in the CMU block wall or web, including the tip.
2. Minimum edge distance is 2.5".
3. Allowable tension is determined by dividing the strength design value by a conversion factor of 1.48. The conversion factor is based on the load combination:
   1.2D + 1.6L
   Where:
   Dead Load (D) = 30% and Live Load (L) = 70%
   Adjustments shall be made where other load combinations control.
4. Standard Concrete Masonry Unit (CMU) block conforming to ASTM C90.

6.7.4 Allowable pullout strength values for SIP LD Fasteners in steel are provided in **Table 13**.

Table 13. SIP LD Allowable Pullout Strength Design Values (lb)

Minimum Tensile Strength of Steel[1]	Steel Designation[4]	Design Steel Thickness[2,3]				
		0.024" (24-gauge)	0.030" (22-gauge)	0.036" (20-gauge)	0.048" (18-gauge)	0.060" (16-gauge)
42 ksi	ASTM A1008 Gr. 25	60	90	110	170	215
45 ksi	ASTM A653 Gr. 33, ASTM A1063 Gr. 33, ASTM A1008 Gr. 30	65	95	115	180	230
52 ksi	ASTM A653 Gr. 37, ASTM A1063 Gr. 37	75	115	135	210	270
55 ksi	ASTM A653 Gr. 40, ASTM A1063 Gr. 40	80	120	140	220	285
58 ksi	ASTM A36	85	125	150	230	300
65 ksi	ASTM A653 Gr. 50 Class 1, ASTM A1063 Gr. 50, ASTM A992	90	130	160	240	315
70 ksi	ASTM A653 Gr. 50 Class 3, ASTM A653 Gr. 55, ASTM A653 Gr. 60, ASTM A588	95	135	165	250	330
80 ksi	ASTM A653 Gr. 70, ASTM A1063 Gr. 70	105	140	180	270	350
90 ksi	ASTM A1063 Gr. 80	115	145	190	285	375
110 ksi	ASTM A1063 Gr. 100	140	175	225	320	415

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

1. Steel shall comply with AISI S100.
2. To calculate LRFD values, multiply the tabulated allowable values by 1.5.
3. Linear interpolation or extrapolation between steel tensile strengths or design steel thicknesses is permitted.
4. The steel designation is provided as an aid to designers and specifiers and is not necessarily inclusive of all possible steel types. The tabulated pullout strength design values are applicable for any steel with the given minimum tensile strengths in the leftmost column.

6.8 *SIP HD Fastener Pullout Strength Design Values*

6.8.1 Allowable pullout strength values for SIP HD Fasteners in steel are provided in **Table 14**.

Table 14. SIP HD Allowable Pullout Strength Design Values (lb)

Minimum Tensile Strength of Steel[1]	Steel Designation	Design Steel Thickness[2,3]					
		0.060" (16-gauge)	0.075" (14-gauge)	0.100" (12-gauge)	0.125"	0.188"	0.250"
42 ksi	ASTM A1008 Gr. 25	135	185	270	350	560	765
45 ksi	ASTM A653 Gr. 33, ASTM A1063 Gr. 33, ASTM A1008 Gr. 30	145	200	290	375	610	820
52 ksi	ASTM A653 Gr. 37, ASTM A1063 Gr. 37	165	230	335	435	735	945
55 ksi	ASTM A653 Gr. 40, ASTM A1063 Gr. 40	175	245	355	460	785	1000
58 ksi	ASTM A36	185	255	375	485	840	1055
65 ksi	ASTM A653 Gr. 50 Class 1, ASTM A1063 Gr. 50, ASTM A992	210	290	420	545	960	1180
70 ksi	ASTM A653 Gr. 50 Class 3, ASTM A653 Gr. 55, ASTM A653 Gr. 60, ASTM A588	225	310	450	585	1030	1270
80 ksi	ASTM A653 Gr. 70, ASTM A1063 Gr. 70	255	355	515	670	1140	1455
90 ksi	ASTM A1063 Gr. 80	290	395	575	755	1245	1635
110 ksi	ASTM A1063 Gr. 100	355	485	700	920	1460	2000

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

1. Steel shall comply with AISI S100.
2. To calculate LRFD values, multiply the tabulated allowable values by 1.5.
3. Linear interpolation or extrapolation between steel tensile strengths or design steel thicknesses is permitted.
4. The steel designation is provided as an aid to designers and specifiers and is not necessarily inclusive of all possible steel types. The tabulated pullout strength design values are applicable for any steel with the given minimum tensile strengths in the leftmost column.

6.9 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

7 Certified Performance[30]

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.[31]

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.[32]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners were tested and evaluated to determine their structural resistance properties, which were used to develop reference design values for ASD. The following properties were evaluated:

8.1.1.1 Bending yield in accordance with ASTM F1575

8.1.1.2 Tensile strength in accordance with AISI S904

8.1.1.3 Shear strength in accordance with AISI S904

8.1.1.4 Head pull-through in accordance with ASTM D1761

8.1.1.5 Withdrawal strength in accordance with ASTM D1761

8.1.1.6 Corrosion resistance of fasteners used in roof assemblies in accordance with ASTM D6294 as specified in FM 4470

8.1.2 Use of fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this report.

8.1.3 Use of fasteners in cracked concrete 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 qualified[33] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[34] 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.

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 Per the manufacturer instructions, fasteners shall be installed with the appropriate rotating powered driver.

9.4 Fasteners shall not be struck with a hammer during installation.

9.5 *Installation in Wood*

9.5.1 Minimum penetration is 1", unless otherwise stated in this report.

9.5.2 Lead holes are not required.

9.5.3 The underside of the fastener head shall be installed flush to the surface of the wood member being connected. Fasteners shall not be overdriven.

9.5.4 Minimum requirements for fastener spacing, edge distance, and end distance shall be in accordance with **Table 15**.

Table 15. SIP TP and SIP LD Minimum Fastener Distance Requirements in Wood (in)

Connection Geometry[1,2]	SIP TP and SIP LD
Edge Distance – Load in any direction	5/8
End Distance – Load parallel to grain, towards end	3 7/8
End Distance – Load parallel to grain, away from end	2 5/8
End Distance – Load perpendicular to grain	2 5/8
Spacing between Fasteners in a Row – Parallel to grain	3 7/8
Spacing between Fasteners in a Row – Perpendicular to grain	2 5/8
Spacing between Rows of Fasteners – In-line	1 1/4
Spacing between Rows of Fasteners – Staggered	5/8

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.
2. Values for *"Spacing between Rows of Fasteners-Staggered"* apply where the fasteners in adjacent rows are offset by one-half of the *"Spacing between Fasteners in a Row"*.

9.6 *Installation in Cold-Formed Steel*

9.6.1 For installation of SIP HD fasteners in steel over 3/8" thickness, predrill with a #8 bit (0.199").

9.6.2 Install using a maximum 2,000-rpm screw gun.

9.6.3 Minimum requirements for fastener spacing, edge distance, and end distance shall be in accordance with **Table 16**.

9.6.4 The fastener shall penetrate a minimum of three threads past the backside of the steel.

Table 16. SIP LD and SIP HD Minimum Fastener Spacing Requirements in CFS (in)

Connection Geometry	SIP LD and SIP HD
Spacing Between Fastener	3/4
Edge Distance	3/8
End Distance	5/8

SI: 1 in = 25.4 mm

9.7 *Installation in Concrete and Masonry (CMU Block)*

9.7.1 For SIP TP fasteners, predrill with a 3/16" masonry bit. Install using a low rpm/high torque screw gun.

9.7.2 For SIP LD fasteners, predrill with a 3/16" masonry bit. Install using a maximum 2,500-rpm screw gun.

9.7.3 SIP TP and SIP LD shall be installed in the web of the CMU block.

9.7.4 Installation requirements for SIP TP and SIP LD Fasteners in concrete and masonry are provided in **Table 17** and **Table 18**.

Table 17. SIP TP and SIP LD Installation Requirements in Concrete (in)

Connection Geometry	SIP TP and SIP LD
Minimum Spacing Between Fasteners	3
Critical Edge Distances (c_{ac})	3
Minimum Edge Distance (c_{min})	$2^1/_2$
Effective Embedment (h_e)	1
Minimum Concrete Thickness	$1^1/_2$
SI: 1 in = 25.4 mm 1. This information shall be used in conjunction with the requirements of Chapter 17 of ACI 318-19.	

Table 18. SIP TP and SIP LD Installation Requirements in CMU Block (in)

Connection Geometry	SIP TP and SIP LD
Embedment Depth	1
Minimum Spacing	3
Minimum Edge Distance	$2^1/_2$
SI: 1 in = 25.4 mm	

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 Bending yield in accordance with ASTM F1575

10.1.2 Tensile strength in accordance with AISI S904

10.1.3 Shear strength in accordance with AISI S904

10.1.4 Head pull-through strength in accordance with ASTM D1761

10.1.5 Withdrawal strength in accordance with ASTM D1761

10.1.6 Corrosion resistance of fasteners used in roof assemblies in accordance with ASTM D6294

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.[35]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for TRUFAST SIP TP, SIP LD, and SIP HD Fasteners on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, TRUFAST SIP TP, SIP LD, and SIP HD 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, TRUFAST SIP TP, SIP LD, and SIP HD Fasteners shall be approved for the following applications:

11.2.1 Use as fasteners as specified in this report

11.3 Unless exempt by state statute, when TRUFAST SIP TP, SIP LD, and SIP HD 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 Altenloh, Brinck & Company U.S., Inc.

11.5 IBC Section 104.2.3[36] (IRC Section R104.2.2[37] and IFC Section 104.2.3[38] 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:**[39] Building regulations require that the building official shall accept duly authenticated reports.[40]

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.[41]

12 Conditions of Use

12.1 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.

12.2 For SIP TP and SIP LD Fasteners installed in dry lumber, the dimensional lumber shall have a moisture content of equal to or less than nineteen percent (19%), and SCL products shall have a moisture content of equal to or less than sixteen (16%).

12.3 Use of TRUFAST SIP TP, SIP LD, and SIP HD Fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this evaluation report.

12.4 SIP TP and SIP LD fasteners installed in concrete are limited to use in uncracked, normal-weight and lightweight structural concrete having a minimum specified 28-day compressive strength of 2,500-psi.

12.5 SIP TP and SIP LD fasteners installed in concrete or masonry are permitted to resist static tension forces.

12.6 SIP TP and SIP LD fasteners installed in concrete or masonry are limited to dry use applications.

12.7 Periodic special inspections shall be performed in accordance with IBC Section 1705.1.1.

12.8 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:

12.8.1 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.

12.8.2 This report and the installation instructions shall be submitted at the time of permit application.

12.8.3 These innovative products have an internal quality control program and a third-party quality assurance program.

12.8.4 At a minimum, these innovative products shall be installed per **Section 9**.

12.8.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.

12.8.6 These innovative products have 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.

12.8.7 The application of these innovative products 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.

12.9 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.

12.10 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).

12.11 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 TRUFAST SIP TP, SIP LD, and SIP HD Fasteners, as listed in **Section 1.1**, are 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.trufast.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 2021 IBC Section 2210

3 2021 IBC Section 2211

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-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%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-mla/#:~: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 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

28 2021 IBC Section 2210

29 2021 IBC Section 2211

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

31 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

[32] 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

[33] 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.

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

[35] 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

[36] 2021 IBC Section 104.11

[37] 2021 IRC Section R104.11

[38] 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

[39] 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.

[40] https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

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