Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2204-02

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Multi-Ply Beam Connections with GripRite® Structural Screws

Trade Secret Report Holder:

PrimeSource Building Products, Inc.

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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 Products Evaluated[1]

1.1 $^{1}/_{4}$", $^{5}/_{16}$", and $^{3}/_{8}$" GripRite Structural Screws

2 Product Description and Materials

2.1 Examples of the innovative products evaluated in this report are shown in **Figure 1**.

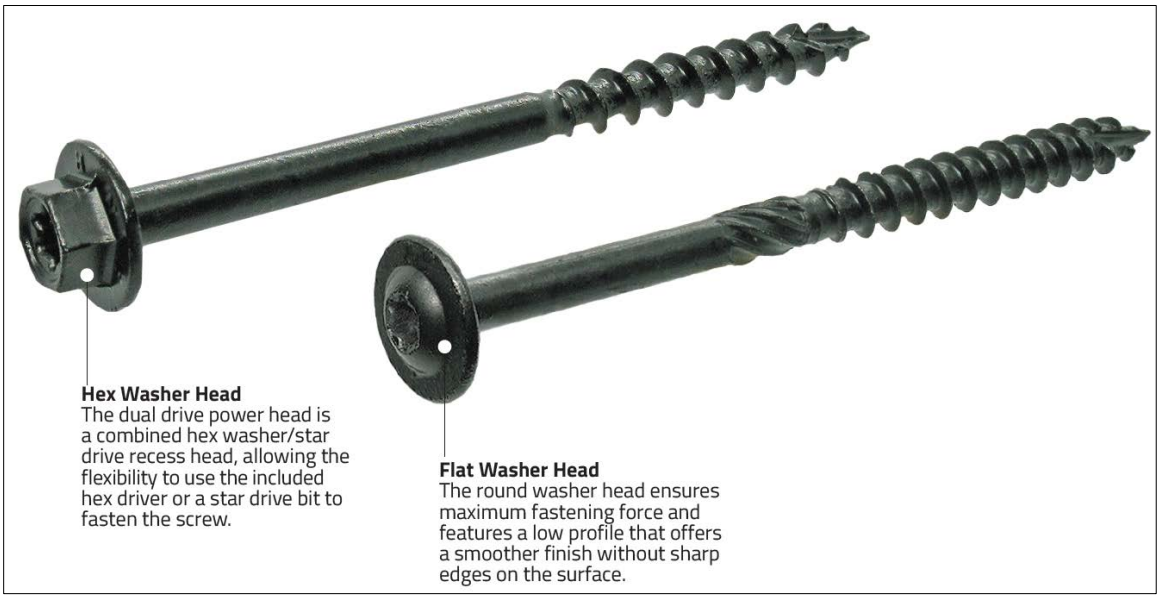


Figure 1. GripRite Structural Screws with Hex Head (Left) and Flat Head (Right)

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2.2 GripRite Structural Screws are partially threaded, self-drilling screws with flat heads and a star shaped driving recess or hex-washer heads. The screws have a Type 17 point. The screws have a reamer knurl between the screw thread and the smooth portion of the shank.

2.3 GripRite Structural Screws are formed from carbon steel wire, hardened after forming and then coated with a proprietary coating. The coating consists of a layer of zinc and a proprietary black outer coating.

2.4 *Treated Wood Applications*

2.4.1 GripRite Structural Screws may be used in preservative-treated and fire-resistant treated lumber as alternatives to hot-dip galvanized fasteners prescribed in IBC Section 2304.10.6.[2] GripRite Structural Screws have been evaluated for use in wood, treated with ACQ-D preservatives, with a maximum retention of 0.40-pcf.

2.4.2 Corrosion resistance applications are limited to the following:

2.4.2.1 Where equilibrium moisture content of the chemically treated wood meets the dry service conditions as described in the NDS.

2.4.2.2 Exposure to freshwater and chemically treated wood (saltwater exposure is not covered by this report).

2.4.3 Fastener design values for preservative-treated and fire-resistant treated lumber must be reduced as stated by the manufacturer of the lumber treatment.

2.5 *Wood Material*

2.5.1 Wood main and side members must be solid-sawn lumber or boards having an assigned specific gravity as given in the respective tables of this report.

2.6 GripRite Structural Screws are specified in **Table 1**.

Table 1. GripRite Structural Screws Properties

Fastener Designation	Head			Length (in)		Diameter (in)			Bending Yield Strength,[3] f_{yb}, (psi)	Allowable Steel Strength (lbs)	
	Style	Drive System	Diameter (in)	Fastener[1]	Thread[2]	Shank	Minor	Major		Tensile	Shear
1/4" x 2 1/2"	Flat	T-25	0.533	2 1/2	1 1/2	0.166	0.148	0.234	220,000	1,155	645
1/4" x 3"	Hex Washer	T-20	0.415	3	1 1/2						
1/4" x 4"				4	2						
1/4" x 4 1/2"				4 1/2	2 1/4						
1/4" x 5"				5	2 1/4						
1/4" x 6"				6	3 1/4						
1/4" x 3"	Flat	T-25	0.533	3	1 1/2	0.166	0.148	0.234	220,000	1,155	645
1/4" x 4"				4	2						
1/4" x 4 1/2"				4 1/2	2 1/4						
1/4" x 5"				5	2 1/4						
1/4" x 6"				6	3 1/4						

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	Style	Drive System	Diameter (in)	Fastener[1]	Thread[2]	Shank	Minor	Major		Tensile	Shear
5/16" x 3"	Hex Washer	T-25	0.571	3	1 1/2	0.202	0.179	0.281	230,000	1,970	1,070
5/16" x 3 1/8"				3 1/8	1 1/2						
5/16" x 4"				4	2						
5/16" x 5"				5	2 1/4						
5/16" x 6"				6	3 1/4						
5/16" x 3"	Flat	T-30	0.610	3	1 1/2	0.202	0.179	0.281	230,000	1,970	1,070
5/16" x 3 1/8"				3 1/8	1 1/2						
5/16" x 4"				4	2						
5/16" x 5"				5	2 1/4						
5/16" x 6"				6	3 1/4						
3/8" x 3"	Hex	T-25	0.571	3	1 1/2	0.220	0.196	0.311	230,000	2,105	1,085
3/8" x 3 1/2"				3 1/2	2						
3/8" x 4"				4	2						
3/8" x 6"				4 1/2	3 1/4						
3/8" x 3"	Flat	T-40	0.728	3	1 1/2	0.220	0.196	0.311	230,000	2,105	1,085
3/8" x 3 1/2"				3 1/2	2						
3/8" x 4"				4	2						
3/8" x 6"				4 1/2	3 1/4						

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.
2. Thread length includes tapered tip.
3. Bending yield strength, F_{yb}, is determined in accordance with ASTM F1575-21 using minor thread diameter.

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

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3 Definitions[3]

3.1 New Materials[4] 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.[5] The design strength and permissible stresses shall be established by tests[6] and/or engineering analysis.[7]

3.2 Duly authenticated reports[8] and research reports[9] are test reports and related engineering evaluations that are written by an approved agency[10] and/or an approved source.[11]

3.2.1 This report utilizes 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).[12]

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.[13]

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[14] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[15] 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[16] 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.[17]

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.[18] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[19] 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.[20]

4 Applicable Local, State, and Federal Approvals; Standards; Regulations[21]

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.[22]

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.[23]

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4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[24] and Part 3280[25] 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 *AISI S904: Standard Test Methods for Determining the Tensile and Shear of Screws*

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

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

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

4.3.5 *ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus*

4.3.6 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials*

4.3.7 *ASTM F1575-21: Standard Test Method for Determining Bending Yield Moment of Nails, Spikes, and Dowel-type Threaded Fasteners ASTM G85: Standard Practice for Modified Salt Spray (Fog) Testing*

5 Listed[26]

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 an 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 *General*

6.1.1 GripRite Structural Screws are used for attaching multi-ply wood members including trusses, sawn lumber, and Structural Composite Lumber (SCL) products.

6.2 *Design*

6.2.1 GripRite Structural Screws are governed by the applicable code and the provisions for dowel type fasteners in the NDS.

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

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6.3 *Multi-Ply Connection Design Values*

6.3.1 Sawn lumber design values are provided for assemblies with two, three, or four plies. Sawn lumber assemblies are detailed in **Figure 2**.

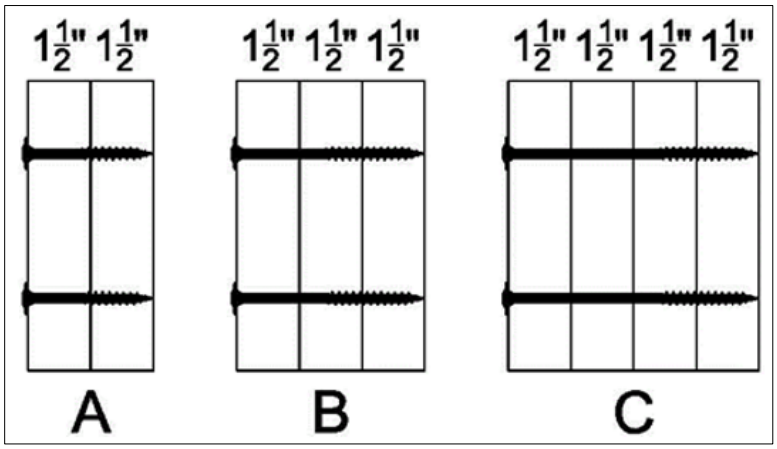


Figure 2. Sawn Lumber Assembly Configuration

6.3.2 SCL design values are provided for assemblies with two, three, or four plies. SCL assemblies are detailed in **Figure 3**.

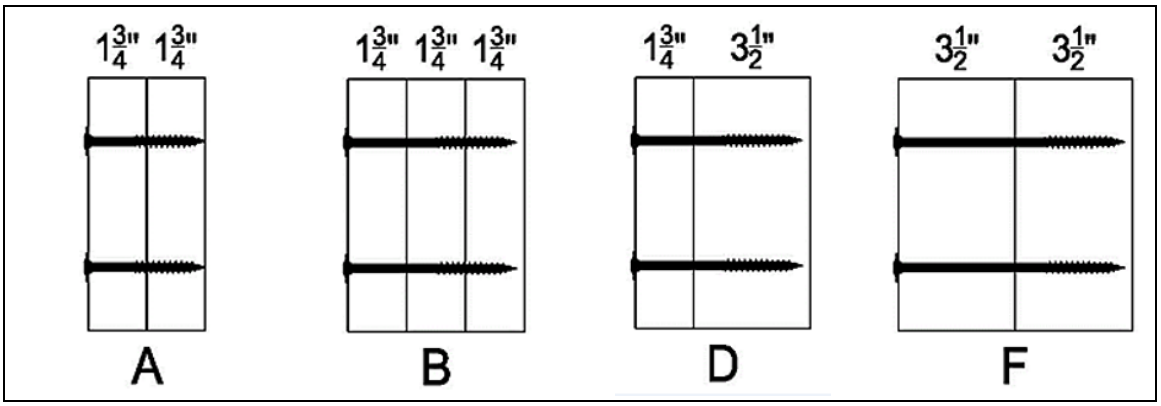


Figure 3. SCL Assembly Configurations

6.3.3 GripRite Structural Screws used in sawn lumber assemblies, with the tabulated fastener spacing along the length of the beam, have the lateral design values set forth in **Table 2**.

6.3.3.1 See **Figure 2** for sawn lumber assemblies A through C.

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Table 2. Allowable Lateral Design Values (plf) in Sawn Lumber Assemblies[1,2,3,4]

Fastener	Assembly	Members	Fastener Length(s)[5] (in)	SPF/HF (0.42)						SP (0.55)					
				12" o.c.		16" o.c.		24" o.c.		12" o.c.		16" o.c.		24" o.c.	
				Number of Fasteners Per Row											
				2	3	2	3	2	3	2	3	2	3	2	3
1/4" GripRite	A	2-ply 1 1/2"	2 1/2	460	690	345	520	230	345	625	940	470	705	315	475
	A	2-ply 1 1/2"	3	520	780	390	585	260	390	790	1185	595	895	395	595
	B	3-ply 1 1/2"	4 or 4 1/2	420	630	315	475	210	315	600	900	450	675	300	450
	C	4-ply 1 1/2"	6	375	565	280	420	190	285	535	805	400	600	270	405
5/16" GripRite	A	2-ply 1 1/2"	3	480	720	360	540	240	360	785	1180	590	885	395	595
	C	4-ply 1 1/2"	6	350	525	265	400	175	265	570	855	430	645	285	430
3/8" GripRite	A	2-ply 1 1/2"	3	690	1035	520	780	345	520	880	1320	660	990	440	660
	C	4-ply 1 1/2"	6	460	690	345	520	230	345	585	880	440	660	295	445

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. Wood framing shall be any species with specific gravity of 0.42 or greater. For wood species with an assigned specific gravity between 0.42 and 0.55, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity greater than 0.55, use the tabulated values for specific gravity of 0.55.
2. Allowable design values are based on a load duration factor C_D = 1.0 and shall be multiplied by all applicable adjustment factors per the NDS.
3. The tabulated allowable design loads may be applied to either side of the beam (head or point side of the fastener). Where loads are applied to both sides of the beam simultaneously, the total load applied to the beam shall not exceed the tabulated load.
4. For top-loaded members with even loading across the width of the entire assembly, fasteners shall be installed in two (2) rows with a maximum distance of 32" o.c. (on-center) between fasteners in the same row.
5. Fastener length is measured from the underside of the head to the tip.

6.3.4 GripRite Structural Screws used for SCL assemblies with the tabulated fastener spacing along the length of the beam, have the design values set forth in **Table 3**.

6.3.4.1 See **Figure 3** for SCL assemblies.

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Table 3. Allowable Lateral Design Values (plf) in SCL Assemblies[1,2,3,4,5]

Fastener	Assembly	Members	Fastener Length(s)[6] (in)	12" o.c.		16" o.c.		24" o.c.	
				Number of Fasteners Per Row					
				2	3	2	3	2	3
1/4" GripRite	A	2-ply 1 3/4"	3	615	925	460	690	310	465
	B	3-ply 1 3/4"	4 1/2 or 5	550	825	415	625	275	415
	D	2-ply 1 3/4" and 3 1/2"	3	460	690	345	520	230	345
			4, 4 1/2 or 5	550	825	415	625	275	415
	F	2-ply 3 1/2"	4 1/2	555	835	415	625	280	420
			5	685	1030	515	775	345	520
			6	735	1105	555	835	370	555
5/16" GripRite	A	2-ply 1 3/4"	3	645	970	485	730	325	490
		2-ply 1 3/4"	3 1/8	670	1005	505	760	335	505
	B	3-ply 1 3/4"	5	630	945	475	715	315	475
	D	2-ply 1 3/4" and 3 1/2"	3	485	730	365	550	245	370
		2-ply 1 3/4" and 3 1/2"	3 1/8	500	750	375	565	250	375
		2-ply 1 3/4" and 3 1/2"	4 or 5	630	945	475	715	315	475
	F	2-ply 3 1/2"	5	695	1045	525	790	350	525
		2-ply 3 1/2"	6	845	1270	635	955	425	640
3/8" GripRite	A	2-ply 1 3/4"	3	695	1045	525	790	350	525
		2-ply 1 3/4" and 3 1/2"	3 1/2	785	1180	590	885	395	595
	D	2-ply 1 3/4" and 3 1/2"	3	525	790	395	595	265	400
		2-ply 1 3/4" and 3 1/2"	3 1/2	590	885	445	670	295	445
		2-ply 1 3/4" and 3 1/2"	4	665	1000	500	750	335	505
	F	2-ply 3 1/2"	6	940	1410	705	1060	470	705

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. SCL shall have an equivalent specific gravity of 0.50 or greater. Thicknesses listed in **Figure 3** are a minimum.
2. In Assembly D, the fastener shall be installed with the head in contact with the 1.75" thick member, in order to achieve required penetration, as shown in **Figure 3**.
3. Allowable design values are based on a load duration factor of C_D = 1.0 and shall be multiplied by all applicable adjustment factors per the NDS.
4. The tabulated allowable design loads may be applied to either side of the beam (head or point side of the fastener). Where loads are applied to both sides of the beam simultaneously, the total load applied to the beam shall not exceed the tabulated load.
5. For top-loaded members with even loading across the width of the entire assembly, and a depth of 18" or less, fasteners shall be installed in two (2) rows with a maximum distance of 24" o.c. between fasteners in the same row. Use three (3) rows for members deeper than 18".
6. Fastener length is measured from the underside of the head to the tip.

6.4 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.

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7 Certified Performance[27]

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.[28]

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.[29]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 $^{1}/_{4}$", $^{5}/_{16}$", and $^{3}/_{8}$" GripRite Structural Screws comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 GripRite Structural Screws were evaluated for their ability to provide multi-ply attachment in trusses, sawn lumber, and SCL applications.

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

8.2 Any building code, regulation and/or accepted engineering evaluations (e.g., 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[30] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[31] 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 *Installation Procedure*

9.3.1 Install fasteners with the underside of the head flush to the surface of the wood member. Do not overdrive.

9.3.2 Lead holes are not required but may be used where lumber is prone to splitting.

9.3.3 GripRite Structural Screws shall be installed with the appropriate rotating powered driver.

9.3.4 GripRite Structural Screws shall not be struck with a hammer during installation.

9.3.5 Minimum requirements for screw spacing edge distance and end distance shall be in accordance with **Table 4**.

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Table 4. Screw Spacing, Edge Distance, and End Distance Requirements[1,2,3]

Connection Geometry			Minimum Spacing (in)					
			3/8"		5/16"		1/4"	
			0.42	0.50	0.42	0.50	0.42	0.50
End Distance	Tension loading parallel to grain (bearing toward member end)		4 3/4	6 1/4	4 1/4	5 5/8	3 5/8	4 3/4
	Compression loading parallel to grain (bearing away from member end)		3 1/8	4 3/4	2 7/8	4 1/4	2 3/8	3 5/8
	Loading perpendicular to grain		3 1/8	4 3/4	2 7/8	4 1/4	2 3/8	3 5/8
	Axial Loading (withdrawal or pull-through)		3 1/8	3 1/8	2 7/8	2 7/8	2 3/8	2 3/8
Edge Distance	Loading Parallel to Grain		1 5/8	2 1/4	1 1/2	2	1 1/4	1 3/4
	Loading Perpendicular to Grain	Load toward edge	3 1/8	3 3/4	2 7/8	3 3/8	2 3/8	2 7/8
		Load away from edge	1 5/8	2 1/4	1 1/2	2	1 1/4	1 3/4
	Axial Loading		1 1/4	1 1/4	1 1/8	1 1/8	1	1
Spacing Between Fasteners in a Row (Parallel to Grain Spacing)	Loading Parallel to Grain		4 3/4	4 3/4	4 1/4	4 1/4	3 5/8	3 5/8
	Loading Perpendicular to Grain		3 3/4	4 3/4	3 3/8	4 1/4	2 7/8	3 5/8
	Axial Loading		2 1/4	2 1/4	2	2	1 3/4	1 3/4
Spacing Between Rows (Perpendicular to Grain Spacing)	Lateral Loading	In-line rows	1 5/8	2 1/4	1 1/2	2	1 1/4	1 3/4
		Staggered rows[4]	7/8	1	3/4	7/8	5/8	3/4
	Axial Loading		1 1/4	1 1/4	1 1/8	1 1/8	1	1

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 the more restrictive.
2. Wood member stresses must be checked in accordance with NDS Section 11.1.2 and NDS Appendix E. End distances, edge distances, and fastener spacing may need to be increased accordingly.
3. Values for *"Spacing between Rows or Fasteners-Staggered"* apply where the screws in adjacent rows are offset by one-half of the *"Spacing between Fasteners in a Row"*.

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 Connection design value calculations by DrJ Engineering, LLC in accordance with the NDS and accepted engineering practice.

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.

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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.[32]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for GripRite Structural Screws on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, GripRite Structural Screws 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, GripRite Structural Screws shall be approved for the following applications:

11.2.1 To provide multi-ply attachment in trusses, sawn lumber, and SCL assemblies.

11.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from PrimeSource Building Products, Inc.

11.4 IBC Section 104.2.3[33] (IRC Section R104.2.2[34] and IFC Section 104.2.3[35] 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.

11.5 **Approved:**[36] Building regulations require that the building official shall accept duly authenticated reports.[37]

11.5.1 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited.

11.5.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce.

11.5.3 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.

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

11.7 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.[38]

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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 Moisture content shall be less than or equal to nineteen percent (19%) for sawn lumber and less than sixteen percent (16%) for SCL products.

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

12.4 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:

12.4.1 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.

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

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

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

12.4.5 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.

12.4.6 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.

12.5 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.

12.6 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).

12.7 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 1/4", 5/16", and 3/8" GripRite Structural Screws, 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:

grip-rite.com/product/fasteners/hand-drive/screws/?_application=structural

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.

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Notes

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

2 2018 IBC Section 2304.10.5

3 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.

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

5 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

6 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

7 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

8 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.

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

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

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

12 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.

13 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/

14 https://www.cbitest.com/accreditation/

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

16 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

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

18 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

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

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

21 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.

22 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

23 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by state. https://up.codes/codes/general

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

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

26 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

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

28 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

29 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

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[30] 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.

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

[32] 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

[33] 2021 IBC Section 104.11

[34] 2021 IRC Section R104.11

[35] 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

[36] 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.

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

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

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