Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2311-01

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SaberDrive™ Platinum Truss Screws Used in Beam and Wall Connections

Trade Secret Report Holder:

Midwest Fastener Corporation

Phone: 800-444-7313 Website: www.fastenerconnection.com

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 00 90 - Wood and Plastic Fastenings Section: 06 05 23 - Wood, Plastic, and Composite Fastenings Section: 06 11 00 - Wood Framing

1 Innovative Products Evaluated[1]

1.1 SaberDrive Platinum Truss Screws:

1.1.1 $4^1/_2$" Truss Screw

1.1.2 6" Truss Screw

2 Product Description and Materials

2.1 An example of the innovative products evaluated in this report is shown in **Figure 1**.

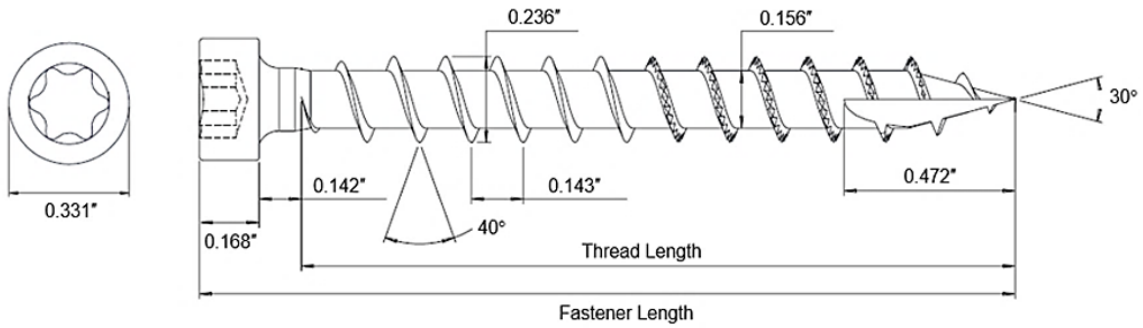

Figure 1. SaberDrive Platinum Truss Screws (Length Not to Scale)

2.2 *Product Description*

2.2.1 SaberDrive Platinum Truss Screws are a fully threaded (7 TPI) dowel-type fastener with a cylindrical, Torx-driven head, and a Type 17 self-drilling point.

2.2.1.1 Lead threads are serrated.

2.2.1.2 SaberDrive Platinum Truss Screws are available in tan color.

2.2.2 SaberDrive Platinum Truss Screws are available with a proprietary coating system designated as XL1500, meeting the requirements of ASTM G198.

2.3 *Fastener Material*

2.3.1 SaberDrive Platinum Truss Screws are made of hardened carbon steel grade 10B21 wire conforming to ASTM A510.

2.3.2 SaberDrive Platinum Truss Screws are subsequently heat-treated and then coated with XL1500.

2.4 *Corrosion Resistance*

2.4.1 SaberDrive Platinum Truss Screws may be used where screws are required to exhibit corrosion resistance when exposed to adverse environmental conditions and/or in chemically treated wood, which are subject to the limitations of this report.

2.4.1.1 SaberDrive Platinum Truss Screws have a proprietary XL1500 coating which is equivalent to the protection provided by code-approved hot-dipped galvanized coatings meeting ASTM A153, Class D (IBC Section 2304.10.6[2] and IRC Section R304.3[3]) when recognized for use by the American Wood Protection Association (AWPA) in untreated wood and Ground Contact – General Use pressure treated wood for exterior, freshwater, general construction applications (i.e., Ground Contact – General Use AWPA UC1 through UC4A).

2.4.2 *Pressure-Preservative Treated (PPT) Wood Applications:*

2.4.2.1 SaberDrive Platinum Truss Screws having the proprietary XL1500 coating are recognized for use in PPT lumber provided the conditions set forth by the PPT lumber manufacturer be met, including appropriate strength reductions.

2.4.3 *Fire-Retardant Treated (FRT) Wood Applications:*

2.4.3.1 SaberDrive Platinum Truss Screws, with the proprietary XL1500 coating, are recognized for use in FRT lumber provided the conditions set forth by the FRT lumber manufacturer be met, including appropriate strength reductions.

2.5 *Wood Members*

2.5.1 Solid sawn wood members connected with SaberDrive Platinum Truss Screws shall consist of lumber species or species combinations having a specific gravity of 0.42 to 0.55.

2.5.2 Structural composite lumber (i.e., LVL, LSL, PSL, etc.) connected with SaberDrive Platinum Truss Screws shall be recognized in evaluation reports having published equivalent specific gravities for dowel-bearing strength and withdrawal resistance. Equivalent specific gravities for structural composite lumber may be used in the design of connections using the specific gravities of the sawn lumber shown in their respective tables in **Section 6** of this report.

2.6 *Fastener Specifications*

2.6.1 SaberDrive Platinum Truss Screws are set forth in **Table 1**.

Table 1. SaberDrive Platinum Truss Screws Specifications

Fastener Designation	Head				Length[1] (in)		Diameter (in)		Bending Yield Strength,[3] F_{yb} (psi)	Allowable Steel Strength (lb)	
	Style	Drive System	Diameter (in)	Height (in)	Fastener	Thread[2]	Minor	Major		Tensile	Shear[4]
4 1/2" Truss Screw	Cylinder Head	Torx	0.331	0.168	4.5	4.156	0.156	0.236	177,000	1,115	795
6" Truss Screw					6.0	5.651					

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 psi = 0.0069 MPa

1. Fastener length is measured from the topside of the head to the tip.
2. Fastener is fully threaded. Thread length includes tapered tip.
3. Bending yield strength, F_{yb}, is determined in accordance with ASTM F1575 using minor thread diameter when fastener is tested in the threaded section.
4. Shear strength is determined in accordance with AISI S904 using minor thread diameter when fastener is tested in the threaded section.

2.7 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 secretes 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 Standards for the Listing; Regulations for the Regulatory Evaluation[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 the following featured local jurisdictions and is not limited to: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, Texas Department of Insurance, and Wichita.[23]

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

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[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 *Standards*

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

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

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

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

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

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

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

4.2.8 *ASTM G85: Standard Practice for Modified Salt Spray (Fog) Testing*

4.2.9 *ASTM G198: Standard Test Method for Determining the Relative Corrosion Performance of Driven Fasteners in Contact with Treated Wood*

4.3 *Regulations*

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

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

4.3.3 *FBC-B—20, 23: Florida Building Code – Building*[27]

4.3.4 *FBC-R—20, 23: Florida Building Code – Residential*[27]

5 Listed[28]

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

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 SaberDrive Platinum Truss Screws are fully threaded, dowel-type, self-drilling screws used for wood-to-wood connections.

6.2 *Design*

6.2.1 Design of SaberDrive Platinum Truss Screws is governed by the applicable code and the provisions for dowel-type fasteners in the NDS.

6.2.1.1 Tabulated reference design values herein shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.

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

6.3 *Reference Lateral Design Values (Z)*

6.3.1 Reference lateral design values (lb) for shear load perpendicular to grain and parallel to grain for SaberDrive Platinum Truss Screws are specified in **Table 2**.

Table 2. Reference Lateral Design Values (Z) for Connections in Lumber, lb[1,3,4]

Fastener Designation	Minimum Side Member Thickness (in)	Minimum Main Member Penetration[5] (in)	Wood Species[2] (Specific Gravity)			
			SPF/HF (0.42)		SP/DF-L (0.50)	
			$Z_\perp$	$Z_\parallel$	$Z_\perp$	$Z_\parallel$
4 1/2" Truss Screw	1.5	3.0	180	185	185	185
6" Truss Screw	3.0	3.0	195	350	195	350

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

1. Reference lateral values apply to two-member single shear connection where both members are of the same specific gravity, and the fastener is oriented perpendicular to grain.
2. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity greater than or equal to 0.50, use the tabulated values for specific gravity of 0.50. Tabulated values may also be used for engineered wood products with a corresponding assigned specific gravity.
3. Tabulated lateral design values (Z) shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.
4. $Z_\perp$ = Lateral Design Values Perpendicular to Grain (lb), $Z_\parallel$ = Lateral Design Values Parallel to Grain (lb)
5. Fastener main member penetration is the length embedded in the main member, including the tip.

6.4 *Reference Withdrawal Design Values (W) and Head Pull-Through Design Values (P)*

6.4.1 Reference withdrawal design values (lb/in) for SaberDrive Platinum Truss Screws are specified in **Table 3**.

Table 3. Reference Withdrawal Values (W) – Side Grain Applications, lb/in

Fastener Designation	Penetration[2] (in)	Withdrawal Design Value,[1,3] W (lb/in)	
		Wood Species[4] (Specific Gravity)	
		SPF/HF (0.42)	SP/DF-L (0.50)
4 1/2" and 6" Truss Screw	< 2	215	325
	≥ 2	250	365

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 lb/in = 0.175 kN/m

1. Tabulated withdrawal values (W) shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.
2. Minimum fastener penetration into main member of 1" is required. Fastener penetration is the threaded length embedded in the main member, including the tip.
3. The design withdrawal value in pounds is equal to w1 + (LT – 1)*$_{w2}$; where $_{w1}$ = the reference withdrawal value corresponding to 1" penetration, L_T = embedded thread length (minimum of 1" and maximum of thread length corresponding selected screw's thread length, as listed in **Table 1**), and $_{w2}$ = reference withdrawal value corresponding to > 1" penetration.
4. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity greater than or equal to 0.50, use the tabulated values for specific gravity of 0.50. Tabulated values may also be used for engineered wood products with a corresponding assigned specific gravity.

6.4.2 Reference head pull-through design values (lb) for SaberDrive Platinum Truss Screws are specified in **Table 4**.

Table 4. Reference Pull-Through Design Values (P), lb

Fastener Designation	Wood Side Member Thickness (in)	Pull-Through Design Value,[1] P (lb)	
		Wood Species[2] (Specific Gravity)	
		SPF/HF (0.42)	DF-L (0.50)
4 1/2" and 6" Truss Screw	1.5	445	625

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 lb/in = 0.175 kN/m

1. Tabulated head pull-through values (P) shall be adjusted by all applicable adjustment factors per NDS Table 11.3.1 for ASD only.
2. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity greater than or equal to 0.50, use the tabulated values for specific gravity of 0.50. Tabulated values may also be used for engineered wood products with a corresponding assigned specific gravity.

6.5 *Structural Connections*

6.5.1 SaberDrive Platinum Truss Screws are used in the construction of walls that meet the requirements of IBC Section 2308 or IRC Section R602 for the following applications:

6.5.1.1 To attach minimum 1 1/2" thick wood trusses, rafters, floor joists, or floor trusses to wood walls, see **Section 6.6** for allowable design loads for top plate to roof truss/rafter/joist connections.

6.5.1.2 To attach minimum 1 1/2" thick wood gable end trusses to wood walls, see **Section 6.7** for allowable design loads.

6.5.1.3 To attach bottom plates to rim boards in the construction of walls, see **Section 6.8** for allowable design loads.

6.5.2 Allowable design loads are applicable to fasteners installed in accordance with **Section 9**.

6.5.3 Walls shall be constructed in accordance with IBC Section 2308.9.3.2,[29] IRC Section R602.3.2, or an engineered design shall be provided.

6.5.4 SaberDrive Platinum Truss Screws are used in buildings requiring structural design for wind loads in accordance with IBC Section 1609, or wind design in accordance with IRC Section R301.2.1.

6.5.5 SaberDrive Platinum Truss Screws are used in buildings requiring structural design for earthquake loads in accordance with IBC Section 1613, or seismic design in accordance with IRC Section R301.2.2.

6.5.6 To maintain a continuous uplift load path, connections in the same area must be stacked on the same side of the wall (i.e., rafter to top plate connection and top plate to stud connection).

6.5.7 Where these tabulated ASD values are based upon NDS concepts and calculations, the ASD value is based on and dependent upon the specific gravity value specified and certified by the NDS Supplement.

6.6 *Allowable Design Loads – Roof Truss/Rafter/Joist to Top Plate Connection*

6.6.1 Allowable design loads for uplift and lateral resistance for truss, rafter and joist to top plate connections are provided in **Table 5** using a load duration factor, C_D, of 1.6.

6.6.1.1 Per NDS Section 11.3.2, connection design properties may be adjusted by a load duration factor listed in NDS Table 2.3.2.

6.6.1.1.1 These loads are generally not combined with other loads (i.e., dead, live, etc.).

6.6.1.2 When a load duration factor, C_D, is applied to the ASD values for uplift, the resulting ASD value shall not exceed the allowable screw tension design value of 1,115 lbs., per **Table 1**.

6.6.2 Loads parallel to the wall are labeled F1 and loads perpendicular to the wall are labeled F2. See **Figure 2** for load directions.

6.6.3 Allowable design loads are applicable to fasteners installed in accordance with **Section 9** in single and double top plate applications.

Table 5. Allowable Uplift and Lateral Loads for Fasteners in Truss/Rafter/Joist to Top Plate Connections

Fastener	Minimum Penetration into Truss/Rafter/Joint[1] (in)	Top Plate(s)	Fastener Angle to Vertical	Allowable Loads per Fastener[2,3,4,5,6] (lb)								
				SPF/HF (0.42)			DF-L/SCL (0.50)			SP (0.55)		
				Uplift	F1	F2	Uplift	F1	F2	Uplift	F1	F2
4 1/2" Truss Screw	3	Single	0°	670	295	290	750	275	275	750	320	320
6" Truss Screw	3	Double	0°	1,115	560	310	1,055	305	305	1,055	330	330
	2 15/16		22.5°[7]	465	160	255	555	190	305	610	210	330

SI: 1 in = 25.4 mm, 1 lb = 4.448 N

1. Wood truss, rafter, or floor joist members shall be a minimum of 2" nominal thickness. Design of truss, rafter, or floor joist is by others.
2. Equivalent specific gravity of Structural Composite Lumber (SCL) shall be equal to or greater than the specific gravities provided in this table. Refer to product information from the SCL manufacturer.
3. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for a specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for a specific gravity of 0.50. For wood species with an assigned specific gravity greater than 0.55, use the tabulated values for a specific gravity of 0.55.
4. For applications involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity.
5. Includes 1.6 factor for Load Duration increase for wind and seismic. No further increases permitted. Reduce design values for other conditions as applicable.
6. See **Figure 2** for load directions. See **Figure 3** and **Figure 4** for installation details.
7. Install fastener at an upward angle from the vertical of 20° to 30° (22.5° is optimal) or 0° (See **Figure 3** and **Figure 4**). For installation between 20° and 30°, design values for 22.5° may be used.

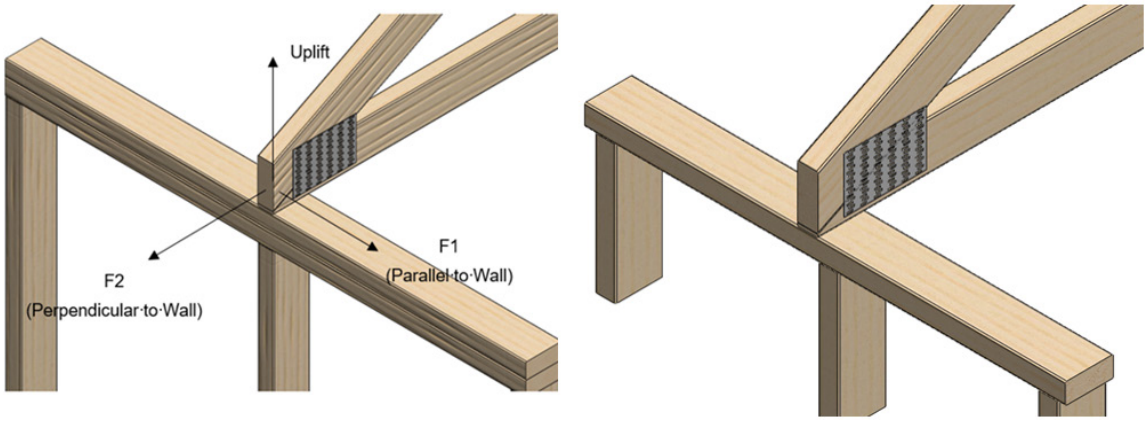

Figure 2. Uplift and Lateral Load Orientations

6.6.4 Install fastener at an upward angle from the vertical of 20° to 30° (22.5° is optimal). For installation between 20° and 30°, design values for 22.5° may be used. See **Figure 3**.

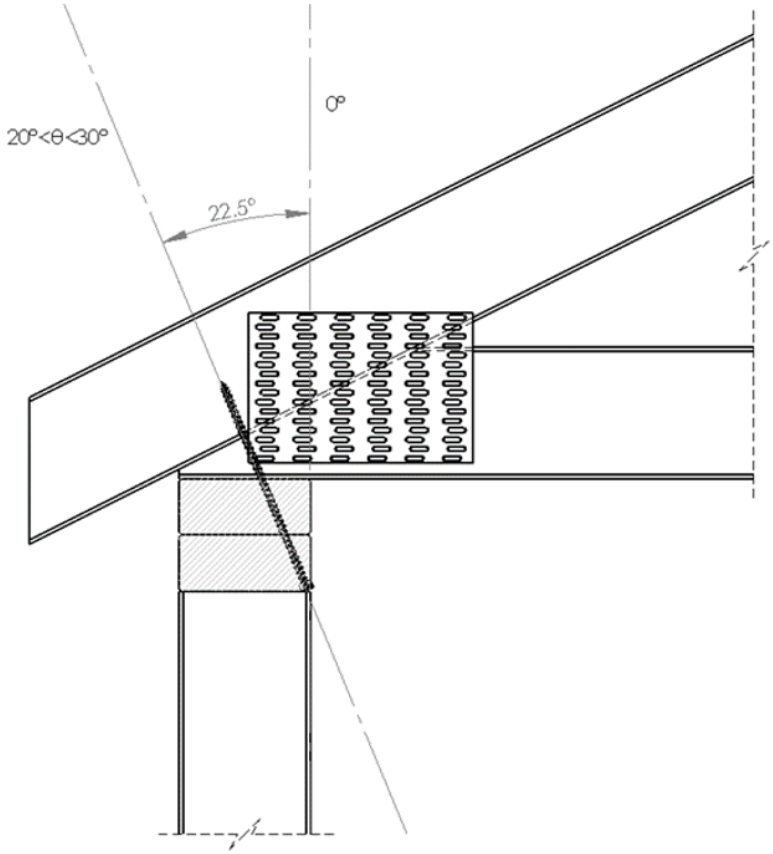

Figure 3. Installation of Fasteners at an Angle in Double Top Plate to Truss/Rafter/Joist Applications

6.6.5 Install fastener at an upward angle from the vertical of 0°. See **Figure 4**.

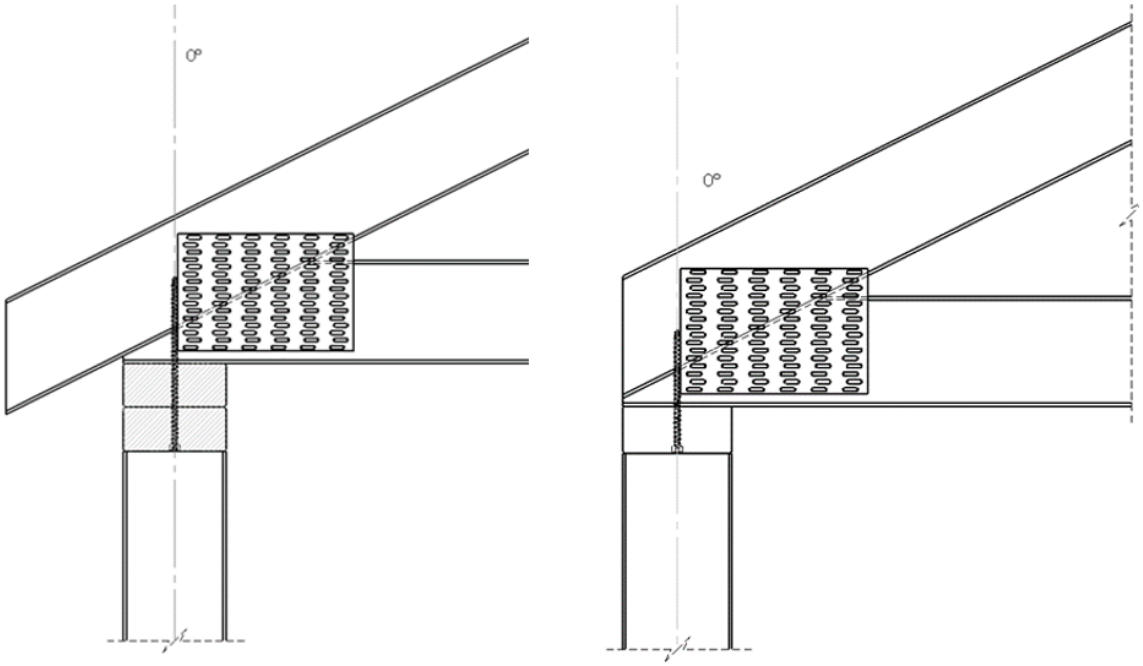

Figure 4. Installation of Fasteners in Double Top Plate Perpendicular to Truss/Rafter/Joist Applications

6.7 *Allowable Design Loads – Gable End Truss to Top Plate Connection*

6.7.1 Allowable design loads for uplift and lateral resistance for gable end truss to top plate connections are provided in **Table 6** using a load duration factor, C_D, of 1.6.

6.7.1.1 Per NDS Section 11.3.2, connection design properties may be adjusted by a load duration factor listed in NDS Table 2.3.2.

6.7.1.1.1 These loads are generally not combined with other loads (i.e., dead, live, etc.).

6.7.1.2 When a load duration factor, C_D, is applied to the ASD values for uplift, the resulting ASD value shall not exceed the allowable screw tension design value of 1,115 lbs. per **Table 1**.

6.7.2 Loads parallel to the wall are labeled F1 and loads perpendicular to the wall are labeled F2. See **Figure 5** for load directions.

6.7.3 Allowable design loads are applicable to fasteners installed in accordance with **Section 9** in single and double top plate applications.

Table 6. Allowable Uplift and Lateral Loads for Fasteners in Gable End Truss to Top Plate Connections

Fastener	Minimum Penetration into Gable End Truss[1] (in)	Top Plate(s)	Fastener Angle to Vertical	Allowable Loads per Fastener[2,3,4,5,6] (lb)								
				SPF/HF (0.42)			DF-L/SCL (0.50)			SP (0.55)		
				Uplift	F1	F2	Uplift	F1	F2	Uplift	F1	F2
4½" Truss Screw	3.0	Single	0°	670	295	290	750	275	275	750	320	320
6" Truss Screw	3.0	Double	0°	1,115	560	310	1,055	305	305	1,055	330	330

SI: 1 in = 25.4 mm, 1 lb = 4.448 N

1. Gable truss, rafter, or floor joist members shall be a minimum of 2" nominal thickness. Design of gable truss, rafter, or floor joist is by others.
2. Equivalent specific gravity of Structural Composite Lumber (SCL) shall be equal to or greater than the specific gravities provided in this table. Refer to product information from the SCL manufacturer.
3. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for a specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for a specific gravity of 0.50. For wood species with an assigned specific gravity greater than 0.55, use the tabulated values for a specific gravity of 0.55.
4. For applications involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity.
5. Includes 1.6 factor for Load Duration increase for wind and seismic. No further increases permitted. Reduce design values for other conditions as applicable.
6. See **Figure 5** for load directions. See **Figure 6** for installation details.

6.7.4 Loads parallel to the wall are labeled F1 and loads perpendicular to the wall are labeled F2. See **Figure 5** for load directions.

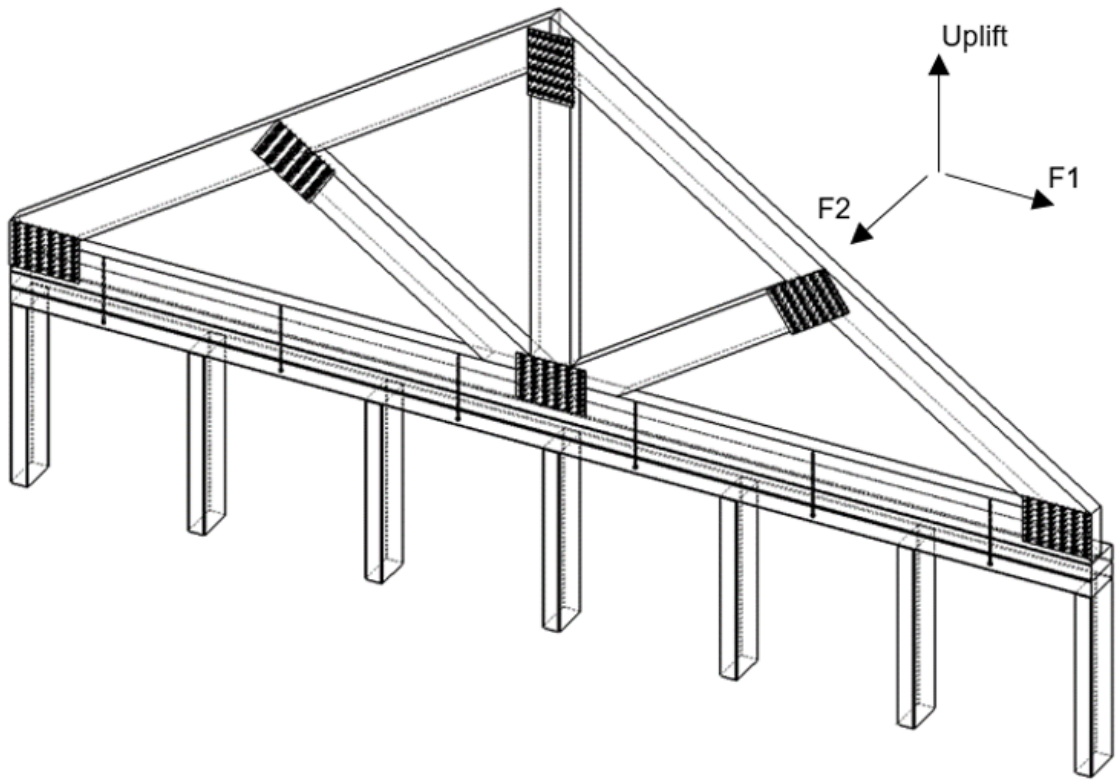

Figure 5. Gable End Truss to Top Plate - Uplift and Lateral Load (F1 and F2) Directions

6.7.5 Allowable design loads are applicable to fasteners installed in accordance with **Section 9** in single and double top plate applications. See **Figure 6** for installation details.

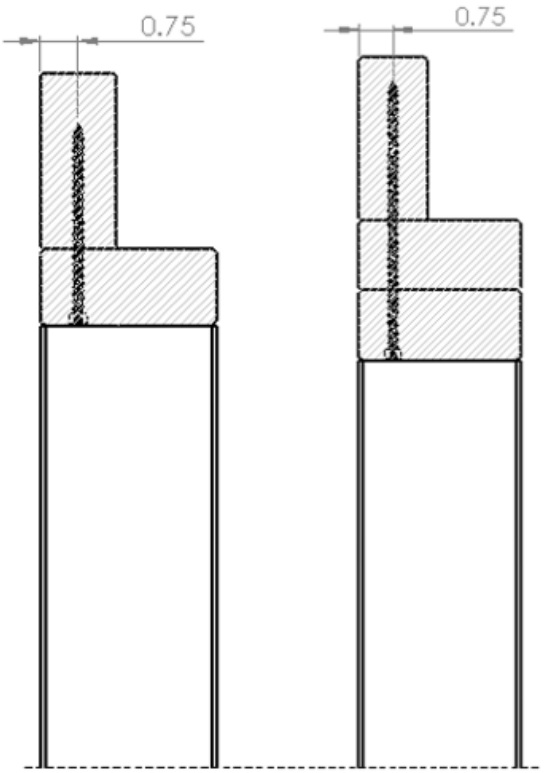

Figure 6. Gable End Truss to Top Plate Installation Configuration

6.8 *Allowable Design Loads – Bottom Plate to Rim Board/Ribbon Board Connection*

6.8.1 Allowable design loads for lateral resistance parallel to grain in bottom plate to rim board connections are provided in **Table 7** using a load duration factor, C_D, of 1.6.

6.8.1.1 Per NDS Section 11.3.2, connection design properties may be adjusted by a load duration factor listed in NDS Table 2.3.2.

6.8.1.1.1 These loads are generally not combined with other loads (i.e., dead, live, etc.)

6.8.2 When a load duration factor, C_D, is applied to the ASD values for uplift, the resulting ASD value shall not exceed the allowable screw tension design value of 1,115 lbs. per **Table 1**.

6.8.3 The connection configuration is shown in **Figure 7**.

6.8.3.1 A Wood Structural Panel (WSP) up to $1^1/_8$" thick is permitted between the rim board and the bottom plate, so long as it is independently fastened to the rim board per the building code and the minimum 2" screw penetration has been met.

6.8.3.2 Double bottom plates are permitted so long as they are independently fastened per the building code and the minimum 2" screw penetration has been met.

6.8.4 Allowable design loads are applicable to fasteners installed in accordance with **Section 9**.

Table 7. Allowable Shear Loads Parallel to Grain for Bottom Plate to Rim Board Connections[1,2,3]

Fastener	Configuration	Minimum Penetration into Rim Board (in)	Rim Board Species (Specific Gravity)								
			2x HF/SPF (0.42)			2x DF-L or 1¼" SCL (0.50)			2x SP (0.55)		
			Bottom Plate Species (Specific Gravity)								
			HF/SPF (0.42)	DF-L (0.50)	SP (0.55)	HF/SPF (0.42)	DF-L (0.50)	SP (0.55)	HF/SPF (0.42)	DF-L (0.50)	SP (0.55)
Allowable Shear Loads per Fastener, Parallel to Grain (lb)											
4½" Truss Screw	Single Bottom Plate to Rim Board	2.0	150	165	175	160	180	190	165	190	200
6" Truss Screw		3.0	150	165	175	160	180	190	165	190	200
Allowable Uplift Loads per Fastener, Parallel to Grain (lb)											
4½" Truss Screw	Single Bottom Plate to Rim Board	2.0	335	350	350	335	470	470	335	470	470
6" Truss Screw		3.0	335	470	470	335	470	470	335	470	470

SI: 1 in = 25.4 mm, 1 lb = 4.448 N

1. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for a specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for a specific gravity of 0.50. For wood species with an assigned specific gravity greater than 0.55, use the tabulated values for a specific gravity of 0.55.
2. For applications involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity.
3. See **Figure 4** for load directions. See **Figure 5** and **Figure 6** for installation details.
4. Tabulated loads are based on a load duration factor of C_D = 1.0. Loads may be increased for load duration per NDS.

6.8.5 Installation details of bottom plate to rim board connection using SaberDrive Platinum Truss Screws is shown in **Figure 7**.

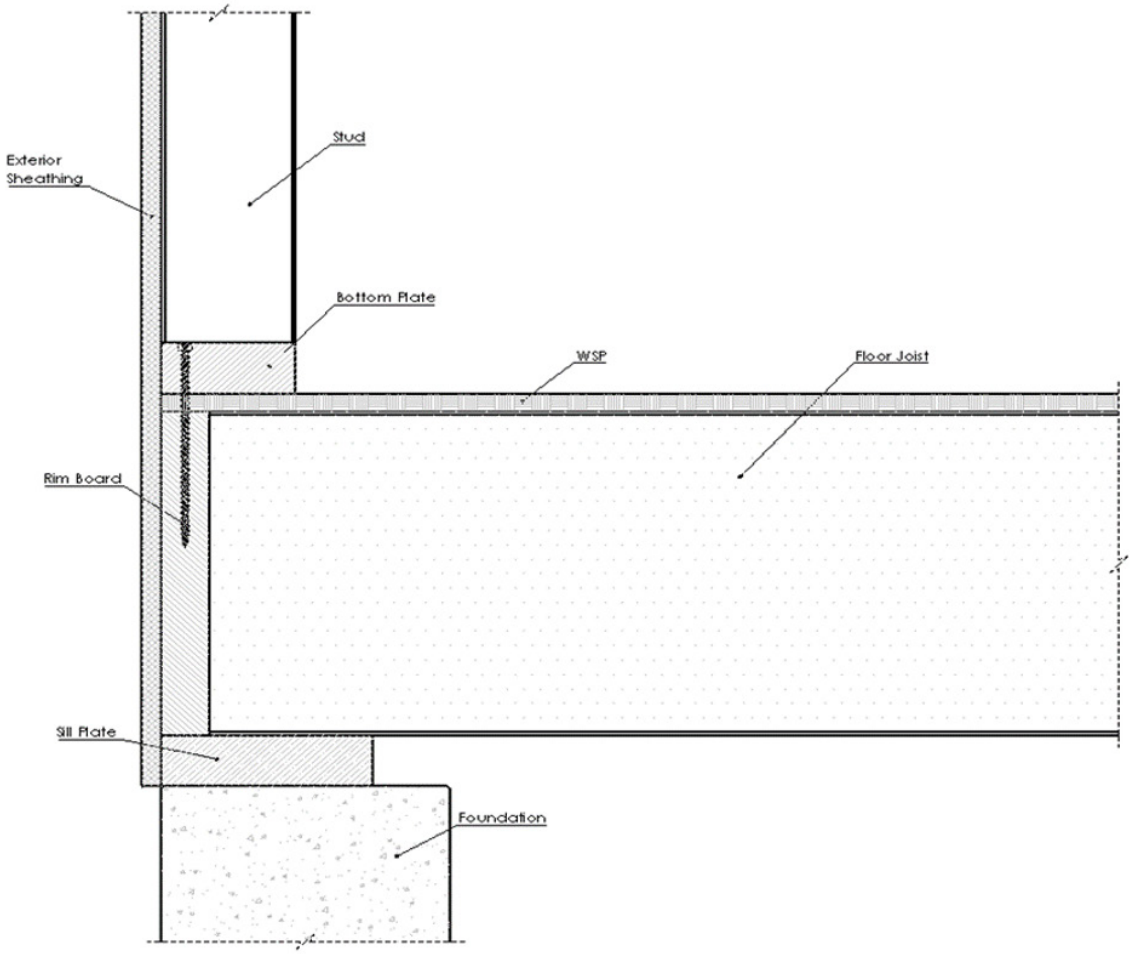

Figure 7. Fastener in Bottom Plate to Rim Board Connection

6.9 Where it is anticipated that loads will be applied to a single fastener simultaneously in more than one direction, additional evaluation is required to account for the combined effect of these loads using accepted engineering practice.

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

7 Certified 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 SaberDrive Platinum Truss Screws comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 SaberDrive Platinum Truss Screws were tested and evaluated to determine their structural resistance properties, which were used to develop reference design values for Allowable Stress Design (ASD). The following properties were evaluated:

8.1.1.1 Bending yield in accordance with ASTM F1575

8.1.1.2 Shear strength in accordance with AISI S904

8.1.1.3 Tensile strength in accordance with AISI S904

8.1.1.4 Lateral resistance in accordance with ASTM D1761 and NDS

8.1.1.5 Withdrawal resistance in accordance with ASTM D1761

8.1.1.6 Head pull-through in accordance with ASTM D1761

8.1.2 SaberDrive Platinum Truss Screws were evaluated as an alternative means of attaching:

8.1.2.1 Metal plate connected wood trusses, rafters, or floor joists to the tops of walls to provide uplift and lateral load resistance.

8.1.2.2 Gable end to top plates to provide uplift and lateral load resistance.

8.1.2.3 Wall bottom plates to the rim board/ribbon board to provide uplift and lateral load resistance.

8.1.3 Evaluation consisted of the following (where applicable):

8.1.3.1 Withdrawal and head pull-through strength for use as an alternative to toenail connections, metal hurricane and seismic clip/straps or nails in tension (uplift) load applications.

8.1.3.2 Shear strength to resist shear (lateral) loads applied parallel or perpendicular to the wood grain.

8.1.3.3 Shear strength for use as an alternative to toenail connections, hurricane and seismic clip/straps or nails in shear (lateral) load applications either parallel or perpendicular to wood grain.

8.1.4 SaberDrive Platinum Truss Screws connections other than those addressed in this section are outside the scope of this report.

8.1.5 Corrosion resistance was evaluated in accordance with ASTM B117, ASTM G85, and ASTM G198.

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

8.2 Any code compliance issues not specifically addressed in this section are outside the scope of this report.

8.3 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.

8.4 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

8.5 Any regulation specific issues not addressed in this section are outside the scope of this report.

9 Installation

9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.

9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

9.3 *General Installation Procedure*

9.3.1 SaberDrive Platinum Truss Screws shall be installed with a low rpm/high torque electric drill (450 rpm).

9.3.2 SaberDrive Platinum Truss Screws shall be installed with the bottom side of the flat region of the head flush to the surface of the wood member. Fasteners shall not be overdriven.

9.3.3 SaberDrive Platinum Truss Screws shall not be struck with a hammer during installation.

9.3.4 Lead holes are not required but may be used where lumber is prone to splitting in accordance with NDS Section 12.1.

9.4 *Minimum Fastener Spacing, Edge Distance, and End Distance*

9.4.1 Minimum requirements for screw spacing edge distance, and end distance shall be in accordance with **Table 8**.

Table 8. Screw Spacing, Edge Distance, and End Distance Requirements1,2

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

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. 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"*.

9.5 *Truss/Rafter to Top Plate Connection*

9.5.1 Install fasteners upward through the wall top plates or wood structural framing member at the bottom corner of the top plate(s) and into the center of the wood truss or rafter. The fastener should be installed at an upward angle from the vertical of 20° to 30° (see **Figure 3**) and shall penetrate the wood truss, rafter, or joist within 1/4" of the centerline.

9.5.2 Trusses/rafters located between studs may be installed at a 0° angle (see **Figure 4**).

9.5.2.1 Bearing distances between trusses/rafters and studs shall be within the provisions specified in IBC Section 2308.9.3.2[35] and IRC Section R602.3.2.

9.5.2.2 If the wood truss, rafter, or floor joist is located directly over a top plate splice, offset the fastener 1/4" to one side of the splice. Note that the splice may be in either top plate.

9.6 *Gable End Truss to Top Plate Connection*

9.6.1 Install fasteners upward into the center of the gable end truss through the wall top plates or wood structural framing member. The fastener should be installed perpendicular to the face of the top plate between studs (see **Figure 6**) and should penetrate the gable end truss within 1/4" of the centerline.

9.6.1.1 If the screw location for the gable end truss is located directly over a top plate splice or at a bottom chord splice joint, offset the fastener 1 3/4" to one side of the splice.

9.6.1.2 Minimum requirements for fastener spacing, edge distance, and end distance shall be in accordance with **Table 8**.

9.7 *Bottom Plate to Rim Board Connection*

9.7.1 Fastener must be able to be fully embedded at least 2" into the rim board.

9.7.2 Install fasteners downward and perpendicular to the face of the wall bottom plate, a minimum of 1/2" from the outside face of the wall, through the plate and into the rim board (see **Figure 7**).

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 NDS and accepted engineering practice

10.1.2 Bending yield testing in accordance with ASTM F1575

10.1.3 Shear strength testing in accordance with AISI S904

10.1.4 Tensile strength testing in accordance with AISI S904

10.1.5 Lateral connection testing in accordance with ASTM D1761

10.1.6 Withdrawal testing in accordance with ASTM D1761

10.1.7 Head pull-through testing in accordance with ASTM D1761

10.1.8 Corrosion resistance testing in accordance with ASTM B117, ASTM G85, and ASTM G198

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.[36]

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

11 Findings

11.1 As outlined in **Section 6**, SaberDrive Platinum Truss 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, SaberDrive Platinum Truss Screws shall be approved for the following applications:

11.2.1 To provide resistance to lateral loads applied to the fastener in a wood-to-wood connection as shown in **Table 2**.

11.2.2 To provide resistance to reference withdrawal loads as shown in **Table 3**.

11.2.3 To provide resistance to head pull-through loads as shown in **Table 4**.

11.2.4 An acceptable means of attaching metal plate connected wood trusses or floor joists to the top of walls to provide uplift and lateral load resistance due to wind and seismic forces as provided in **Table 5**.

11.2.5 An acceptable means of attaching gable end trusses to the top of walls to provide uplift and lateral load resistance due to wind in accordance with **Table 6**.

11.2.6 An acceptable means of attaching wall bottom plate to rim board/ribbon board to provide lateral load resistance parallel to the bottom plate as provided in **Table 7**.

11.3 Unless exempt by state statute, when SaberDrive Platinum Truss Screws 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 Midwest Fastener Corporation.

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

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.[40]

12 Conditions of Use

12.1 Material properties shall not fall outside the boundaries defined in **Section 6**.

12.2 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

12.3 Allowable loads reflect dry service conditions.

12.3.1 Sawn lumber members shall have a moisture content no greater than nineteen percent (19%) as specified in NDS Section 4.1.4.

12.3.2 SCL members shall have a moisture content no greater than sixteen percent (16%) as specified in NDS Section 8.1.4.

12.3.2.1 Where SCL is specified in this report, the designated SCL product shall have a published equivalent specific gravity that meets or exceeds the specific gravity in the applicable tables in **Section 6**.

12.3.3 When connections are exposed to wet service conditions in-use, i.e., moisture content of sawn lumber members greater than 19% and moisture content of SCL members greater than 16%, reference design values in **Section 6** shall be multiplied by the wet service factors, C_M, specified in NDS Table 11.3.3.

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

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

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

12.4.6 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.

12.4.7 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.

12.5 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 The innovative products 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.fastenerconnection.com.

14 Review Schedule

14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.

14.2 For information on the status of this report, please contact DrJ Certification.

Notes

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

2 2018 IBC Section 2304.10.5

3 2021 IRC Section R317.3

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 All references to the FBC-B and FBC-R are the same as the 2024 IBC and 2024 IRC unless otherwise noted in the Florida Supplement at the end of this report.

28 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

29 2021 IBC Section 2308.5.3.2 and 2018 IBC Section 2308.5.3.2

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] 2021 IBC Section 2308.5.3.2 and 2018 IBC Section 2308.5.3.2

[36] 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

[37] 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

[38] 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.

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

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