

ICC-ES Evaluation Report

ESR-4214

 Reissued September 2024
 This report also contains:

 - CBC Supplement

Subject to renewal September 2026 - FBC Supplement

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2024 ICC Evaluation Service, LLC. All rights reserved.

DIVISION: 06 00 00— WOOD, PLASTICS AND COMPOSITES Section: 06 05 23— Wood, Plastic, and Composite Fastenings	REPORT HOLDER: MIDWEST FASTENER CORP.	EVALUATION SUBJECT: SABERDRIVE PLATINUM™ SCREWS	
Composite Fastenings			

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 International Building Code® (IBC)
- 2021, 2018, 2015, 2012 and 2009 International Residential Code® (IRC)

Properties evaluated:

- Structural
- Corrosion resistance

2.0 USES

The SaberDrive Platinum[™] screws described in this report are alternate dowel-type, multi-purpose screws used in engineered wood-to-wood connection applications. The screws may be used under the IRC when an engineered design is submitted in accordance with IRC Section R301.1. The carbon steel screws are intended for use in the Exposure Conditions shown in <u>Table 5</u>. The stainless steel Construction Lag Screws may be used where stainless steel fasteners are prescribed in the code.

3.0 DESCRIPTION

3.1 General:

The SaberDrive Platinum screws, described in Section 3.1.1 through 3.1.7, are proprietary, partially threaded dowel-type threaded fasteners with serrated lead threads. See <u>Table 1</u> for designations and dimensions and <u>Figure 1</u> for images of the screws.

3.1.1 Construction Lag Screws: These screws have a truss head with a star drive recess and a Type 17 point. The carbon steel versions of these screws have a proprietary coating which is either tan or green in color. These screws are also available in stainless steel material.

3.1.2 Construction Timber Screws: These screws have a hex washer head with a taper under the head and a Type 17 point. These carbon steel screws have a proprietary coating which is either tan or green in color.

3.1.3 Ledger Board Screws: These screws have a hex washer head with a taper under the head and a Type 17 point. These carbon steel screws have a proprietary coating which is tan in color.

3.1.4 Hex Head Construction Lag Screws: These screws have a hex washer head with a taper under the head and a Type 17 point. These carbon steel screws have a proprietary coating which is tan in color.



3.1.5 Structural Screws: These screws have a flat head with a proprietary star drive recess and a Type 17 point. These screws have a reamer knurl between the threaded portion of the screw and the smooth shank portion of the screw. These carbon steel screws have a proprietary coating which is black or tan in color.

3.1.6 Deck Screws: These screws have a countersunk head with milling pockets, a star drive recess, a twisted, non-circular shank cross section at the threads and a sharp point. Screws which are 2 inches (51 mm) or greater in length have a reamer knurl. These carbon steel screws have a proprietary coating which is tan in color.

3.1.7 Truss Head Wood Screws: These screws have a truss head with a star drive recess, a reamer knurl, and a Type 17 point. These screws have a proprietary coating which is tan in color.

3.2 Material:

3.2.1 SaberDrive Platinum Screws: The coated carbon steel screws are manufactured from carbon steel wire complying with grade 10B21, and are heat-treated to achieve case and core hardness in accordance with the manufacturer's specifications. The carbon steel screws described in Sections 3.1.1 through 3.1.5 and 3.1.7 have a proprietary coating consisting of multiple layers of protective materials, designated as XL1500. The carbon steel screws described in Section 3.1.6 have a proprietary coating of multiple layers of protective materials, designated as XL2500. The coating materials and thicknesses are described in the approved quality documentation. Stainless steel screws are manufactured from stainless steel wire complying with Type 305 or Type 316.

3.2.2 Wood Members: For purposes of connection design, sawn lumber members must have an assigned specific gravity of 0.42 or greater. Assigned specific gravity for sawn lumber must be determined in accordance with Table 12.3.3A of the ANSI/AWC National Design Specification (NDS) for Wood Construction (Table 11.3.3A of the NDS for the 2012 IBC; Table 11.3.2A of the NDS for the 2009 IBC). Unless otherwise noted, sawn lumber members must have a moisture content of 19 percent or less.

For the purposes of connection design, structural glued laminated timber (glulam) must have a Specific Gravity for Fastener Design (addressed in Tables 5A through 5D of the NDS Supplement), as indicated in the tables in this report. Unless otherwise noted, glulam must have a moisture content of less than 16 percent.

When designing connections with screws installed into the face of cross-laminated timber (CLT) panels, all of the laminations must have a minimum assigned specific gravity in accordance with the NDS as indicated in the tables in this report. Moisture content must be less than 16 percent.

Use of the screws in engineered wood products (EWP) other than those addressed above is outside the scope of this report.

For wood-to-wood connections, the tabulated side member thickness is an absolute value (not a minimum or maximum value). The thickness of the wood main member must be equal to or greater than the screw length less the thickness of the side member.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: The design values in this report are intended to aid the designer in meeting the requirements of IBC Section 1604.2. For connections not completely described in this report, determination of the suitability of the SaberDrive Platinum screws for the specific application is the responsibility of the designer and is outside the scope of this report. The designer is responsible for determining the available strengths for the connection, considering all applicable limit states, and for considering serviceability issues.

4.1.2 Screw Strength: Allowable screw shear and tension strengths (ASD) and average measured bending yield strengths for the screws based on testing are given in <u>Table 1</u>.

4.1.3 Reference Withdrawal and Pull-through Design Values: Reference withdrawal (W) design values in pounds per inch of thread penetration and reference head pull-through values (W_H) for screws installed perpendicular to the face of the wood member are shown in <u>Table 2</u>.

4.1.4 Reference Lateral Design Values: Reference lateral design values for two-member connections are shown in <u>Table 3</u> and are based on testing. When so indicated in <u>Table 3</u>, the values are based on the use of pilot holes in the main and side members with diameters of 70 percent of the root diameter of the screw.

4.1.5 Governing Design Values: The allowable load for a single-screw connection in which the screw is subject to tension is the least of: (a) the allowable screw tension strength given in <u>Table 1</u>; (b) the reference withdrawal design value given in <u>Table 2</u>, multiplied by the effective thread length in the main member and adjusted by all applicable adjustment factors; and (c) the reference head pull-through design value given in <u>Table 2</u>, adjusted by all applicable adjustment factors.

The allowable load for a single-screw connection subject to lateral load is the lesser of: (a) the allowable screw shear strength given in <u>Table 1</u>; and (b) the reference lateral design value given in <u>Table 3</u>, adjusted by all applicable adjustment factors.

4.1.6 Adjustments to Reference Design Values: Reference design values must be adjusted in accordance with the requirements for dowel-type fasteners in Section 11.3 of the NDS (Section 10.3 of the NDS for the 2012 and 2009 IBC) to determine allowable loads for use with ASD and/or design loads for use with LRFD. Use is limited to dry in-service conditions, such that the wet service factor, C_M , is 1.0 in accordance with the NDS. The reference design values must also be adjusted in accordance with the requirements in Section 12.5 of the NDS (Section 11.5 of the NDS for the 2012 and 2009 IBC) applicable to screws. When the capacity of a connection is controlled by the fastener strength, the allowable connection strength must not be increased by the adjustment factors specified in the NDS.

4.1.7 Connections with Multiple Screws: Connections made with multiple screws must be designed in accordance with Sections 11.2.2 and 12.6 of the NDS (Sections 10.2.2 and 11.6 of the NDS for the 2012 and 2009 IBC).

4.1.8 Combined Loading: When the screws are subjected to combined lateral and withdrawal loads, connections must be designed in accordance with Section 12.4.1 of the NDS (Section 11.4.1 of the NDS for the 2012 and 2009 IBC).

4.1.9 Capacity Requirements for Wood Members: When designing a connection, the structural members must be checked for load-carrying capacity in accordance with Section 11.1.2 of the NDS (Section 10.1.2 of the NDS for the 2012 and 2009 IBC), and local stresses within multiple-fastener connections must be checked against Appendix E of the NDS to ensure the capacity of the connection and fastener group.

4.2 Corrosion Resistance

The SaberDrive Platinum coated carbon steel screws have been evaluated for use in southern pine wood treated with MCA preservatives with a retention of 0.15 pcf (2.4 kg/m³), and may be used as alternates to hotdip galvanized fasteners prescribed in IBC Section 2304.10.6 (2018 and 2015 IBC Section 2304.10.5; 2012 and 2009 IBC Section 2304.9.5), when subject to the Exposure Conditions shown in Table 5.

The stainless steel Construction Lag Screws may be used in the applications described in IBC Section 2304.10.6 (2018 and 2015 IBC Section 2304.10.5, 2012 and 2009 IBC Section 2304.9.5) and IRC Section R317.3 where stainless steel fasteners are prescribed.

4.3 Installation:

Screws must be installed in accordance with the report holder's published installation instructions and this report. The screws must be installed perpendicular to the face of the wood member. Screws must be installed with the minimum spacing, end distances, and edge distances needed to prevent splitting of the wood or as noted in <u>Table 4</u>, whichever is more restrictive. The underside of the fastener head or integral washer must bear against the surface of the wood side member, except for Deck Screws, for which the head must be installed flush with the surface of the wood. Pilot holes must be used as indicated in Section 4.1.4. The screws must be installed by turning with the appropriate bit or socket, not by driving with a hammer. Screws must not be overdriven.

5.0 CONDITIONS OF USE:

The SaberDrive Platinum screws described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- **5.1** Installation must comply with this report, the report holder's published instructions and the applicable code. A copy of the report holder's published installation instructions must be available at the jobsite at all times during installation. In the event of a conflict between the report holder's published installation instructions and this report, this report governs.
- **5.2** Design loads for the screws must not exceed the available strengths described in Section 4.1.

- **5.3** Calculations and details demonstrating compliance with this report must be submitted to the code official. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.4 Use of the screws in wet-service conditions, as defined in the NDS, is outside the scope of this report.
- **5.5** Use of the carbon steel screws in locations exposed to saltwater or saltwater spray is outside the scope of this evaluation.
- 5.6 The screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- **6.1** Data in accordance with the ICC-ES Acceptance Criteria for Alternate Dowel-type Threaded Fasteners Used in Wood (AC233), dated February 2022.
- **6.2** Data in accordance with the ICC-ES Acceptance Criteria for Corrosion-resistant Fasteners and Evaluation of Corrosion Effects of Wood Treatments (AC257), dated March 2009 (editorially revised January 2021).

7.0 IDENTIFICATION

- **7.1** The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4214) along with the name, registered trademark, or registered logo of the report holder must be included in the product label. [Electronic labeling is the ICC-ES web address (<u>www.icc-es.org</u>); specific URL related to the report; or the ICC-ES machine-readable code placed on the aforementioned items.]
- **7.2** The screws are identified by the name "Saber" on the head of each screw. Packages of screws and screws sold individually are identified as indicated in Section 7.1 and are also identified with the brand name (SaberDrive Platinum), the screw type and size (diameter and length) and the coating/material designation (XL1500 or XL 2500 coating, "SS" for Type 305 SS, "316 SS").
- 7.3 The report holder's contact information is the following:

MIDWEST FASTENER CORPORATION 9031 SHAVER ROAD PORTAGE, MICHIGAN 49024 (269) 327-6917 www.fastenerconnection.com

NOMINAI		NOMINAL	OUTSIDE			HEAD	ACROSS FLATS	OVERALL		BENDING YIELD STRENGTH ³ F _{yb} (psi)	ALLOWABLE STEEL	
SC T\	REW (PE	DIAMETER (inch) OR SIZE	THREAD DIAMETER, D (inch)	SHANK DIAMETER, <i>D</i> s (inch)	D _s DIAMETER, DIAMETER (incl DIAMETER, DIAMETER (incl) D, (inch) DRIV SIZ		(inch) OR DRIVE SIZE	LENGTH ¹ (inches)	LENGTH ² (inches)		Tensile (lbf)	Shear (lbf)
		¹ / ₄	0.234	0.174	0.148	0.557	Т30	1 ¹ / ₂ 2	1 ³ / ₁₆ 1 ³ / ₁₆	Note 4	1,140	1,105
	rbon Steel	⁵ / ₁₆	0.276	0.197	0.167	0.620	Т30	$ \begin{array}{r} 2^{1} l_{2} \\ 3 \\ 3^{1} l_{2} \\ 4 \\ 5 \\ 6 \\ \end{array} $	$ \begin{array}{r} 1^{1}/_{2} \\ 2^{3}/_{8} \\ 2^{3}/_{8} \\ 2^{3}/_{8} \\ 2^{3}/_{4}$	231,100	1,275	1,285
n Lag	Ca	³ /8	0.315	0.227	0.203	0.827	T40	8 6 8 10 12 14	$ 3^{3}/_{4} \\ 3^{1}/_{8} \\ 3^{1}/_{8} \\ 3^{1}/_{8} \\ 3^{1}/_{8} \\ 3^{1}/_{8} \\ 3^{1}/_{8} $	210,700	1,910	1,550
ructio		¹ / ₄	0.234	0.174	0.148	0.557	Т30	1 ¹ / ₂	1 ³ / ₁₆ 1 ³ / ₁₆	112,000	670	-
Const	Type 305 Stainless Steel	⁵ / ₁₆	0.276	0.197	0.167	0.620	Т30	$ \begin{array}{r} 2^{1}/_{2} \\ 3 \\ 3^{1}/_{2} \\ 4 \\ 5 \\ 6 \\ 8 \end{array} $	$ \begin{array}{r} 1^{1}/_{2} \\ 2^{3}/_{8} \\ 2^{3}/_{8} \\ 2^{3}/_{4} \\ 2^{3}/_{4} \\ 3^{3}/_{4} \\ 3^{3}/_{4} \end{array} $	102,800	835	_
	e	¹ / ₄	0.234	0.174	0.148	0.557	T30	1 ¹ / ₂	1 ³ / ₁₆ 1 ³ / ₁₆	110,000	620	_
	Type 316 Stainless Ste	⁵ / ₁₆	0.276	0.197	0.167	0.620	Т30	$2^{1}/_{2}$ 3 4 5 6	$ \begin{array}{r} 1^{1}/_{2} \\ 2^{3}/_{8} \\ 2^{3}/_{8} \\ 2^{3}/_{4} \\ 2^{3}/_{4} \\ 2^{3}/_{4} \\ \end{array} $	106,300	785	_
nstruction	Timber	¹ / ₄	0.276	0.197	0.167	0.484	⁵ / ₁₆	$\frac{1^{1}/_{2}}{2}$ 4 6 8	$ \begin{array}{r} 1^{3}/_{16} \\ 1^{3}/_{16} \\ 2^{3}/_{8} \\ 2^{3}/_{4} \\ 3^{3}/_{4} \\ 2^{3}/_$	Note 4	1,275	1,285
6		⁵ / ₁₆	0.297	0.205	0.183	0.541	⁵ / ₁₆	10 12 14	$3^{3}/_{4}$ $3^{3}/_{4}$ $3^{3}/_{4}$	264,800	1,275	1,285
	Ledger Board	3/ ₈	0.315	0.228	0.203	0.618	⁵ / ₁₆	3 ⁵ / ₈ 4 5 6 8 10 12 14	$ \begin{array}{r} 2^{3}/_{8} \\ 2^{3}/_{8} \\ 3^{1}/_{8} \\ 3^{3}/_{4}$	210,700	1,910	1,550

TABLE 1—SABERDRIVE PLATINUM SCREW SPECIFICATIONS AND STRENGTHS

SCREW		NOMINAL IAMETER inch) OR SIZE DIAMETER, D (inch)	UNTRHEADED SHANK DIAMETER, <i>D</i> s (inch)	MINOR THREAD (ROOT) DIAMETER, <i>D</i> _r (inch)	HEAD DIAMETER (inch)	ACROSS FLATS DIM.	SS S OVERALL) LENGTH ¹ (inches) E	THREAD LENGTH ² (inches)	BENDING YIELD STRENGTH ³ F _{yb} (psi)	ALLOWABLE STEEL STRENGTH	
TYPE	(inch) OR SIZE					(inch) OR DRIVE SIZE				Tensile (lbf)	Shear (lbf)
ion	⁵ / ₁₆	0.276	0.197	0.167	0.523	⁵ / ₁₆	1 ¹ / ₂	1 ³ / ₁₆	Note 4	1,275	1,285
Hex Hea onstruct Lag	³ / ₈	0.315	0.228	0.203	0.618	⁵ / ₁₆	2 2 ¹ / ₂	1 ³ / ₁₆ 1 ¹ / ₂	210,700	1,910	1,550
- 55							3	2 ³ / ₈			
							2 ⁷ / ₈ 3 ³ / ₄	1 ¹ / ₂ 2 ³ / ₈			
	5/	0.276	0 107	0 167	0.749	nla	4 ¹ / ₂	2 ³ / ₈	277 200	1,275	1,285
	/16	0.270	0.197	0.107	0.746	11/4	5	2 ³ / ₄	211,200		
uctural							6	2 ³ / ₄			
							8	3 ³ / ₄			
	³ / ₈	0.315	0.227	0.203	0.906		2 ⁷ / ₈	1 ¹ / ₂	273,700		
Str							33/4	2 ³ / ₈		1,910	1,550
						MT0 40	41/2	2°/8			
						5 VV16-40	5	23/4			
							0	2°/4			
							0 10	3 ³ /4			
							10 1 ¹ /4	3/4			
		#9 0.181			0.360	T25	1 ¹ /2	1	-	740	_
							1 ³ /4	1 ¹ /8			
Z	#9		0.136	0.124(5)			2	1 ¹ / ₈			
Crev							2 ¹ / ₂	1 ¹ / ₂			
Ś							3	1 ¹ / ₂	Note 6		
eck							3	2			-
D	#10	0.201	0.152	0.140 ⁽⁵⁾	0.388	T25	3 ¹ / ₂	2		845	
							4	2 ³ / ₈			
	#12	0.238	0 171	0.159 ⁽⁵⁾	0 4 3 9	T25	3 ¹ / ₂	2		1.060	
	=						4	2 ³ / ₈		.,	
ad bod rew	#10	0.193	0.143	0.128	0.455	T25	2'/ ₂ 3	1'/ ₂ 2	274,700	740	-
Tri Sci Sci	#12	0.234	0.175	0.144	0.557	Т30	3 ¹ / ₂ 4	2 2 ³ / ₈	243,000	1,095	-

TABLE 1—SABERDRIVE PLATINUM SCREW SPECIFICATIONS AND STRENGTHS (continued)

For **SI:** 1 inch = 25.4 mm; 1 psi =6.9 kPa; 1 lbf = 4.4 N.

¹The length is measured from the underside of the head to bottom of the tip.

³Length of thread includes tip.
 ³Bending yield strength determined in accordance with ASTM F1575 using the minor thread diameter.
 ⁴Due to short screw length, bending yield strength has not been determined. Strength is controlled on the basis of tensile strength.
 ⁵Screw cross section at the threads is not circular. Dimension shown is at the widest point.
 ⁶Bending yield strength has not been determined in accordance with ASTM F1575, since there is not a uniform cross section.

TABLE 2—REFERENCE WITHDRAWAL (*W*) AND PULL-THROUGH (W_{H}) DESIGN VALUES FOR INSTALLATION INTO THE FACE OF THE WOOD MEMBERS^{1,2}

	NOMINAL DIAMETER (inch) OR SIZE	W (lbf/ in.) ³					W _H (lbf) ³	
		Minimum	For Specific Gravities of:		NOMINAL	Side	For Specific Gravities of:	
SCREW TYPE		Embedded Thread Length⁴ (inches)	0.42 ≤ G < 0.49	0.49 ≤ G	HEAD DIAMETER (inch)	Member Thickness (inches)	0.42 ≤ G < 0.49	0.49 ≤ G
	1/4	1 ³ / ₁₆	95	125	0.557	³ / ₄	145	145
Construction Lag	⁵ / ₁₆	1 ¹ / ₂	120	140	0.620	³ / ₄	165	165
_	³ / ₈	3 ¹ / ₈	75	140	0.827	³ / ₄	280	375
Construction	1/4	2 ³ / ₈	120	140	0.484	³ / ₄	190	255
Timber	⁵ / ₁₆	3 ³ / ₄	120	140	0.541	³ / ₄	190	255
Ledger Board	³ / ₈	2 ³ / ₈	140	185	0.618	³ / ₄	155	155
Hex Head	⁵ / ₁₆	1 ¹ / ₂	120	140	0.523	³ / ₄	190	255
Construction Lag	³ / ₈	1 ³ / ₁₆	120	140	0.618	³ / ₄	155	155
Structural	⁵ / ₁₆	1 ¹ / ₂	120	140	0.748	³ / ₄	190	190
Structural	³ / ₈	1 ¹ / ₂	120	140	0.906	1 ¹ / ₂	560	740
	#0	³ / ₄	107	111	0.260	3/	100	100
Dook Serew	#9	1 ¹ / ₂	153	158	0.300	-74	100	130
Deck Screw	#10	2	168	168	0.388	³ / ₄	110	155
	#12	2	176	190	0.439	³ / ₄	140	195
Truss Head Wood	#10	2	159	181	0.455	³ / ₄	135	220
Screw	#12	2	144	173	0.557	³ / ₄	205	270

For **SI:** 1 inch = 25.4 mm; 1 lbf = 4.45 N.

¹Values must be multiplied by all applicable adjustment factors included in the NDS for dowel-type fasteners to determine allowable loads for use with ASD and/or design loads for use with LRFD.

²Tabulated values are applicable to screws installed perpendicular to the faces of the wood members.

³Tabulated reference withdrawal design values are in pounds per inch of thread penetration into the main member, and must be multiplied by the

embedded thread length to determine the total withdrawal design value in pounds-force. Length of reamer knurs must not be included in the withdrawal value determination.

⁴Embedded thread length is that portion of the screw held in the main member including the screw tip.

TABLE 3—REFERENCE LATERAL DESIGN VALUES (Z) FOR TWO-MEMBER WOOD-TO-WOOD CONNECTIONS^{1,2,3,4}

		MINIMUM OVERALL		MINIMUM SCREW PENETRATION	REFERENCE LATERAL DESIGN VALUE, Z (lbf) FOR SPECIFIC GRAVITIES OF:		
JOREW TIPE	(inch) OR SIZE	LENGTH	(inches)	INTO MAIN	0.42 ≤ G < 0.49	0.49 ≤ G	
	(,	(inches)	(MEMBER (inches)	Parallel to Grain, Z_{\parallel}	Parallel to Grain, \mathbf{Z}_{\parallel}	
Construction Los	¹ / ₄	2	³ / ₄	1 ¹ / ₄	135 ⁽⁵⁾	160 ⁽⁵⁾	
(Carbon Steel)	⁵ / ₁₆	2 ¹ / ₂	3/4	1 ³ / ₄	195 ⁽⁵⁾	205 ⁽⁵⁾	
	³ / ₈	6	³ / ₄	5 ¹ / ₄	230(5)	230 ⁽⁵⁾	
Construction Lag	¹ / ₄	2	³ / ₄	1 ¹ / ₄	115	145	
(305 Stainless Steel)	⁵ / ₁₆	2 ¹ / ₂	3/4	1 ³ / ₄	115	145	
Construction Lag	¹ / ₄	2	³ / ₄	1 ¹ / ₄	140	170	
(316 Stainless Steel)	⁵ / ₁₆	2 ¹ / ₂	³ / ₄	1 ³ / ₄	140	170	
Construction Timber	¹ / ₄	4	³ / ₄	31/4	165 ⁽⁵⁾	185 ⁽⁵⁾	
	⁵ / ₁₆	12	³ / ₄	11 ¹ / ₄	165 ⁽⁵⁾	185 ⁽⁵⁾	
Ledger Board	³ / ₈	3 ⁵ /8	³ / ₄	2 ⁷ / ₈	150 ⁽⁵⁾	160 ⁽⁵⁾	
Hex Head Construction Lag	³ / ₈	2	³ / ₄	1 ³ / ₄	150 ⁽⁵⁾	160 ⁽⁵⁾	
Structural	⁵ / ₁₆	2 ⁷ / ₈	³ / ₄	2 ¹ / ₈	225 ⁽⁵⁾	260 ⁽⁵⁾	
Structural	³ / ₈	2 ⁷ / ₈	1 ¹ / ₂	1 ³ / ₈	175	175	
Daak Garaw	#0	2	³ / ₄	1 ¹ / ₄	105	120	
	#9	3	1 ¹ / ₂	1 ¹ / ₂	125	190	
Deck Sciew	#10	3	1 ¹ / ₂	1 ¹ / ₂	110	205	
	#12	3 ¹ / ₂	1 ¹ / ₂	2	160	160	
Truss Head Wood	#10	3	1 ¹ / ₂	1 ¹ / ₂	135	220	
Screw	#12	3 ¹ / ₂	1 ¹ / ₂	2	180	225	

For **SI:** 1 inch = 25.4 mm ; 1 lbf = 4.45 N.

¹Values must be multiplied by all adjustment factors included in the NDS for dowel-type fasteners to determine allowable loads for use with ASD and/or design loads for use with LRFD.

² Tabulated values are applicable to screws installed perpendicular to the faces of the wood members.

³ The wood main member thickness must be equal to or greater than the screw length less the thickness of the wood side member.

⁴ The tabulated lateral design values are based on both wood members having the same specific gravity.

⁵Pilot holes were used in testing.

	REQUIRED DIMENSION			
	CONDITI	G < 0.50	0.50 ≤ G	
	Tensio (faste	n loading parallel to grain ner bearing toward end)	15D	20D
End distance	Compres (fasten	sion loading parallel to grain er bearing away from end)	10D	15D
	Loadi	ng perpendicular to grain	10D	15D
	(fastener	Axial loading withdrawal or pull-through)	10D	10D
	Lo	ading parallel to grain	5D	7D
- 1	Loading	Load toward edge	10D	12D
Edge distance	to grain	Load away from edge	5D	7D
		Axial Loading	4D	4D
Spacing between	Lo	ading parallel to grain	15D	15D
fasteners in a row (parallel to grain of main member)	Loadi	ng perpendicular to grain	12D	15D
		Axial loading	7D	7D
Spacing between rows	Lateral	In-line rows	5D	7D
(perpendicular to grain	loading	Staggered rows ⁴	2.5D	3D
of main member)		Axial loading	4D	4D

TABLE 4—CONNECTION GEOMETRY REQUIREMENTS^{1,2,3}

For SI: 1 inch = 25.4 mm

¹End distances, edge distances and fastener spacing must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive.

²Wood member stresses must be checked in accordance with Section 11.1.2 and Appendix E of the NDS, and end distances,

edge distances and fastener spacing may need to be increased accordingly. ³D refers to the outside thread diameter.⁴Values for spacing between staggered rows apply where fasteners in adjacent rows are offset by half of the spacing between fasteners in a row.

TABLE 5—APPLICABLE EXPOSURE CONDITIONS

EXPOSURE CONDITION	TYPICAL APPLICATIONS	LIMITATIONS
1	Treated wood in dry use applications	Limited to use where equilibrium moisture content of the chemically treated wood meets the dry service conditions as described in the NDS.
3	General construction	Limited to freshwater and chemically treated wood exposure, i.e., no saltwater exposure.

ESR-4	ICC-ES Most Widely Act	cepted and Trusted	Page 9 of 12
0	0	3	
	Construction Lag Screw (Carbon Steel)		Construction Lag Screw (Stainless Steel)
		0	
	Construction Timber Screw		Ledger Board Screw
0		0	
	Hex Head Construction Lag Screw		Structural Screw
		0	
	Deck Screw		Truss Head Wood Screw

FIGURE 1—SABERDRIVE PLATINUM SCREWS



ICC-ES Evaluation Report

ESR-4214 CBC and CRC Supplement

Reissued September 2024 This report is subject to renewal September 2026.

www.icc-es.org | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

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

REPORT HOLDER:

MIDWEST FASTENER CORP.

EVALUATION SUBJECT:

SABERDRIVE PLATINUM[™] SCREWS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that SaberDrive Platinum[™] screws, addressed in ICC-ES evaluation report ESR-4214, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 California Building Code (CBC)
- 2019 California Residential Code (CRC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

2.0 CONCLUSIONS

2.1 CBC:

The SaberDrive Platinum screws, described in Sections 2.0 through 7.0 of the evaluation report ESR-4214, comply with CBC Chapter 23, provided the design and installation are in accordance with the 2018 *International Building Code*[®] (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapter 16, as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections of the CBC are beyond the scope of this supplement.

2.2 CRC:

The SaberDrive Platinum screws, described in Sections 2.0 through 7.0 of the evaluation report ESR-4214, comply with CRC Chapters 3, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued September 2024.





ICC-ES Evaluation Report

ESR-4214 FBC Supplement

Reissued September 2024 This report is subject to renewal September 2026.

www.icc-es.org | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

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

REPORT HOLDER:

MIDWEST FASTENER CORP.

EVALUATION SUBJECT:

SABERDRIVE PLATINUM[™] SCREWS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that SaberDrive Platinum[™] screws, addressed in ICC-ES evaluation report ESR-4214, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2020 Florida Building Code—Building
- 2020 Florida Building Code—Residential

2.0 CONCLUSIONS

The SaberDrive Platinum screws, described in ICC-ES evaluation report ESR-4214, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4214 for the 2018 *International Building Code®* meet the requirements of the *Florida Building Code—Building and* the *Florida Building Code—Residential*.

Use of the SaberDrive Platinum screws for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building Code—Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued September 2024.

