ICC-ES Evaluation Report

ESR-4229

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This report also contains:

- City of LA Supplement
- CA Supplement w/ DSA and OSHPD
- FL Supplement w/ HVHZ

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DIVISION: 05 00 00—METALS Section: 05 05 23—Metal Fastenings	REPORT HOLDER: INTERNATIONAL FASTENERS, INC.	EVALUATION SUBJECT: DAGGERZ™ BRAND CONSTRUCTION FASTENERS	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018 and 2015 *International Building Code*® (IBC)
- 2024, 2021, 2018 and 2015 *International Residential Code*® (IRC)

Property evaluated:

- Structural

2.0 USES

International Fasteners, Inc. Daggerz™ Brand Construction Fasteners are used to connect cold-formed steel members together. The screws are used in engineered connections of cold-formed steel and connections prescribed by the code for cold-formed steel framing.

3.0 DESCRIPTION

3.1 General:

International Fasteners, Inc. Daggerz™ Brand Construction Fasteners are fully-threaded, self-drilling tapping screws which have a hex washer head or a modified truss head. The screws are manufactured from carbon steel wire conforming to ASTM A510 Grade 1022 and are heat treated and case hardened. The screws have an electroplated zinc coating, phosphate coating or proprietary corrosion resistant coating identified as Dagger Guard. Table 1 provides screw descriptions, including sizes, head styles, point styles, drilling capacities and finishes for the screws. See Figure 1 for depictions of the screws described in Sections 3.1.1 and 3.1.2. Daggerz™ Brand Construction Fasteners are available with a bonded sealing washer, as indicated in Table 1 and as shown in Figure 2.

3.1.1 HWH Screws: The #8, #10, #12 and $^1/_4$ HWH screws comply with ASTM C1513 and have a hex washer head (HWH) style.

3.1.2 PMTH Screws: The #8, #10 and #12 PMTH screws comply with ASTM C1513 and have a Phillips modified truss head (PMTH) style.

3.2 Cold-formed Steel:

Connected steel must comply with one of the specifications listed in Section A3.1 of AISI S100 (Section A2.1 of AISI S100 for the 2015 IBC) and must have the minimum base-metal thickness and tensile strength (F_u) shown in the tables of this report.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: Selection of screw length must be based on the thickness of the fastened steel members, plus the minimum required protrusion past the back of the supporting steel. Point selection must be based on the drilling capacity of the screw. See Table 1 for the minimum required protrusion lengths and the drilling capacities.

When tested for corrosion resistance in accordance with ASTM B117, screws with coatings described in Table 1 met the minimum requirements listed in ASTM F1941, as required by ASTM C1513, with no white corrosion after three hours and no red dust after 12 hours.

4.1.2 Prescriptive Design: The HWH and PMTH screws described in Sections 3.1.1 and 3.1.2 may be used where ASTM C1513 screws of the same size, head type and type (self-drilling) are prescribed in the IRC and in the AISI standards referenced in IBC Chapter 22 for steel-to-steel connections.

4.1.3 Engineered Design of Steel-to-Steel Connections: The HWH and PMTH screws described in Sections 3.1.1 and 3.1.2 have been evaluated for use in engineered connections of cold-formed steel, light-framed construction. Design of connections must comply with Section J4 of AISI S100 (Section E4 of AISI S100 for the 2015 IBC), using the fastener tension and shear strengths shown in Table 5. Available strengths for select screw/steel material combinations subjected to pull-out, pull-over, and shear (bearing) capacity, are provided in Tables 2, 3, and 4, respectively. These connection values are applicable to connections where the connected steel elements are in direct contact with one another. Design provisions for tapping screw connections subjected to combined shear and tension loading are outside the scope of this report.

For connections subject to tension, the least of the tensile strength of the screw, the connection pull-over strength, and the connection pull-out strength found, respectively, in Tables 2, 3 and 5 of this report must be used for design. For connections subject to shear, the lesser of the fastener shear strength and the connection shear capacity found, respectively, in Tables 4 and 5 of this report must be used for design.

Under the 2024 and 2021 IBC, for screws used in framing connections, in order for the screws to be considered fully effective, the minimum spacing between the fasteners must be 3 times the nominal screws diameter and the minimum edge distance must be 1.5 times the nominal screw diameter. Under the 2018 and 2015 IBC, for screws used in framing connections, in order for the screws to be considered fully effective, the minimum spacing between the fasteners and the minimum edge distance must be three times the nominal diameter of the screws, except when the edge is parallel to the direction of the applied force, in which case the minimum edge distance must be 1.5 times the nominal screw diameter. When the spacing between screws is less than 3 times the nominal screw diameter, but at least 2 times the nominal screw diameter, the connection shear strength values in Table 4 must be reduced by 20 percent [Refer to Section B1.5.1.3 of AISI S240 (Section D1.5 of AISI S200 for the 2015 IBC)].

For screws used in applications other than framing connections, the minimum spacing between the fasteners must be three times the nominal screw diameter, and the minimum edge and end distance must be 1.5 times the nominal screw diameter.

Connected members must be checked for rupture in accordance with Section J6 of AISI S100 (Section E6 of AISI S100 for the 2015 IBC).

4.2 Installation:

Installation of the screws must be in accordance with the manufacturer's published installation instructions and this report. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

The screws must be installed perpendicular to the work surface, using a variable screw driving tool. The screw must penetrate through the supporting steel with a minimum of three threads protruding past the back side of the supporting steel.

5.0 CONDITIONS OF USE:

The Daggerz™ Brand Construction Fasteners 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 Screws must be installed in accordance with the manufacturer's published installation instructions and this report. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.2 The screw strength values specified in Section 4.1.3 and Tables 2 through 5 must not be increased for short-duration loads, such as wind or earthquake loads.

5.3 Evaluation of screws subjected to cyclic or fatigue loading is outside the scope of this report. Applicable Seismic Design Categories shall be determined in accordance with the code for the entire assembly constructed with the screws.

5.4 The utilization of the nominal screw strength values contained in this evaluation report, for the design of cold-formed steel diaphragms, is outside the scope of this report. Diaphragms constructed using the screws must be addressed in a current ICC-ES evaluation report based upon the ICC-ES Acceptance Criteria for Steel Deck Roof and Floor Systems (AC43).

5.5 Drawings and calculations verifying compliance with this report and the applicable code must be submitted to the code official for approval. The drawings and calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

5.6 The screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Tapping Screw Fasteners Used in Steel-to-Steel Connections (AC118), dated January 2018 (editorially revised February 2024).

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4229) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the Daggerz™ screws are marked with a D and a Z on the top surface of the screw heads, as shown in Figure 1, and each box of Daggerz™ screws is labeled with the part number, nominal screw size, nominal screw length, point type and finish.

7.3 The report holder's contact information is the following:

INTERNATIONAL FASTENERS, INC.
1341 MASSARO BOULEVARD
TAMPA, FLORIDA 33619
(888) 241-0203
www.daggerz.com

TABLE 1—INTERNATIONAL FASTENERS, INC. DAGGERZ™ SELF DRILLING SCREWS

PART NUMBER[3]	DESCRIPTION (Nominal Size - TPI, Head Style)[1]	NOMINAL HEAD DIAMETER (in.)	NOMINAL SCREW DIAMETER (in.)	POINT NUMBER	DRILLING CAPACITY (in.)		MINIMUM REQUIRED PROTRUSION (in.)	COATING[2]
					Min.	Max.		
NEOSDCT08###[4]	8-18 x L HWH	0.473	0.164	2	0.033	0.112	0.488	DG
NEOSDCT10###[4]	10-16 x L HWH	0.473	0.190	3	0.110	0.175	0.584	DG
NEOSDCT12###[4]	12-14 x L HWH	0.551	0.216	3	0.110	0.210	0.657	DG
NEOSDCT14034[4]	1/4-14 X 3/4 HWH	0.591	0.250	3	0.110	0.220	0.665	DG
NEOSDCT14###[4]	1/4-14 x L HWH	0.591	0.250	3	0.110	0.220	0.703	DG
NEOSDZ08###[4]	8-18 x L HWH	0.473	0.164	2	0.033	0.112	0.488	ZINC3
NEOSDZ10###[4]	10-16 x L HWH	0.473	0.190	3	0.110	0.175	0.584	ZINC3
NEOSDZ12###[4]	12-14 x L HWH	0.551	0.216	3	0.110	0.210	0.657	ZINC3
NEOSDZ14034[4]	1/4-14 X 3/4 HWH	0.591	0.250	3	0.110	0.220	0.665	ZINC3
NEOSDZ14###[4]	1/4-14 x L HWH	0.591	0.250	3	0.110	0.220	0.703	ZINC3
SD4CT1278	12-24 X 7/8 HWH	0.407	0.216	4	0.175	0.290	0.568	DG
NEOSD4CT1278[4]	12-24 X 7/8 HWH	0.551	0.216	4	0.175	0.290	0.684	DG
SD5CT12###	12-24 x L HWH	0.407	0.216	5	0.175	0.500	0.737	DG
SD5Z12###	12-24 x L HWH	0.407	0.216	5	0.175	0.500	0.737	ZINC3
NEOSD5CT12###[4]	12-24 x L HWH	0.551	0.216	5	0.175	0.500	0.865	DG
NEOSD5Z12###[4]	12-24 x L HWH	0.551	0.216	5	0.175	0.500	0.865	ZINC3
SD5CT14###	1/4-20 x L HWH	0.489	0.250	5	0.175	0.500	0.783	DG
SD5Z14###	1/4-20 x L HWH	0.489	0.250	5	0.175	0.500	0.783	ZINC3
NEOSD5CT14###[4]	1/4-20 x L HWH	0.591	0.250	5	0.175	0.500	0.909	DG
NEOSD5Z14###[4]	1/4-20 x L HWH	0.591	0.250	5	0.175	0.500	0.909	ZINC3
SDCTSLV08###	8-18 x L HWH	0.330	0.164	2	0.033	0.112	0.388	DG
SDCTSLV10###	10-16 x L HWH	0.395	0.190	3	0.110	0.175	0.469	DG
SDCTSLV12###	12-14 x L HWH	0.407	0.216	3	0.110	0.210	0.540	DG
SDCTSLV14034	1/4-14 X 3/4 HWH	0.489	0.250	3	0.110	0.220	0.530	DG
SDCTSLV14###	1/4-14 x L HWH	0.489	0.250	3	0.110	0.220	0.568	DG
SDZ08###	8-18 x L HWH	0.330	0.164	2	0.033	0.112	0.388	ZINC3
SDZ100012	10-16 X 1/2 HWH	0.395	0.190	2	0.033	0.175	0.388	ZINC3
SDZ10###	10-16 x L HWH	0.395	0.190	3	0.110	0.175	0.450	ZINC3
SDZ12###	12-14 x L HWH	0.407	0.216	3	0.110	0.210	0.510	ZINC3
SDZ14###	1/4-14 x L HWH	0.489	0.250	3	0.110	0.220	0.528	ZINC3
MTSDB08###	8-18 x L PMTH	0.437	0.164	2	0.033	0.112	0.362	PHOS
MTSDZ08###	8-18 x L PMTH	0.437	0.164	2	0.033	0.112	0.364	ZINC3
MTSDZ10###	10-16 x L PMTH	0.437	0.190	3	0.110	0.175	0.455	ZINC3
MTSDZ12034	12-14 X 3/4 PMTH	0.437	0.216	3	0.110	0.210	0.519	ZINC3

For **SI:** 1 inch = 25.4 mm.

[1]Head style abbreviations: PMTH = Phillips Modified Truss Head; HWH = Hex Washer Head; TPI denotes thread per inch.
[2]Coating abbreviations: ZINC3 = Zinc-RoHS compliant; DG = Dagger-Guard; PHOS= phosphate coating (gray to black).
[3]### in the product designation denotes digits representing screw length.
[4]Screw has a bonded sealing washer, as shown in Figure 2. Nominal head diameter refers to the nominal diameter of the bonded sealing washer. Minimum required protrusion length includes bonded washer thickness after installation.

TABLE 2—TENSILE PULL-OUT CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,3,4]

Screw Designation	Nominal Diameter (in.)	POINT #	Steel F_u = 45 ksi					Steel F_u = 58 ksi		
			Nominal thickness of member not in contact with the fastener head (inch)							
			0.036 (20 gage)	0.048 (18 gage)	0.060 (16 gage)	0.075 (14 gage)	0.105 (12 gage)	0.125	0.188	0.250
HWH Allowable Strength (ASD)										
#8-18	0.164	2	92	127	172	222	275	-	-	-
#10-16	0.190	3	92	127	178	227	334	-	-	-
#12-14	0.216	3	98	133	178	247	334	616	908	-
#12-24	0.216	4	-	-	-	-	-	616	1028	1154
#12-24	0.216	5	-	-	-	-	-	616	1028	1154
1/4"-14	0.250	3	106	151	199	252	323	630	938	-
1/4"-20	0.250	5	-	-	-	-	-	633	948	1410
HWH Design Strength (LRFD)										
#8-18	0.164	2	147	203	275	355	439	-	-	-
#10-16	0.190	3	147	203	285	363	535	-	-	-
#12-14	0.216	3	157	213	285	395	535	985	1452	-
#12-24	0.216	4	-	-	-	-		985	1645	1847
#12-24	0.216	5	-	-	-	-	-	985	1645	1847
1/4 "-14	0.250	3	170	241	318	404	516	1009	1500	-
1/4"-20	0.250	5	-	-	-	-	-	1013	1421	2256
PMTH Allowable Strength (ASD)										
#8-18	0.164	2	91	127	175	227	305	-	-	-
#10-16	0.190	3	92	127	178	227	334	-	-	-
#12-14	0.216	3	98	133	178	247	334	616	908	-
PMTH Design Strength (LRFD)										
#8-18	0.164	2	146	203	280	363	487	-	-	-
#10-16	0.190	3	147	203	285	363	535	-	-	-
#12-14	0.216	3	157	213	285	395	535	985	1452	-

For **SI:** 1 inch = 25.4 mm, 1lbf = 4.4N, 1 ksi =6.89 MPa.

[1]For tension connections, the least of the screw pull-out, pullover, and tension strength found in Tables 2, 3 and 5 respectively must be used for design.
[2]Strength values determined for steel with F_u = 45 ksi are based on laboratory tests.
[3]Strength values determined for steel with F_u = 58 ksi are based on laboratory tests.
[4]"-" Indicates the that pull-out capacity for the given steel thickness was not tested or calculated.

TABLE 3—TENSILE PULL-OVER CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,4]

Screw Designation	Head Diameter (in.)	Steel F_u = 45 ksi					Steel F_u = 58 ksi		
		Nominal thickness of member not in contact with the fastener head (inch)							
		0.036 (20 gage)	0.048 (18 gage)	0.060 (16 gage)	0.075 (14 gage)	0.105 (12 gage)	0.125	0.188	0.250
HWH									
Allowable Strength (ASD)									
#8-18	0.330	285	348	415	682	605	-	-	-
#10-16	0.395	342	506	775	809	792	-	-	-
#12-14	0.407	342	506	832	819	990	1222	1161	-
#12-24	0.407	-	-	-	-	-	1506	1334	1193
#12-24	0.407	-	-	-	-	-	1506	1334	1193
1/4"-14	0.489	385	603	636	778	1253	1949	1131	2965[3]
1/4"-20	0.489	-	-	-	-	-	1813[3]	2712[3]	3625[3]
Design Strength (LRFD)									
#8-18	0.330	428	522	623	1091	908	-	-	-
#10-16	0.395	513	759	1240	1294	1267	-	-	-
#12-14	0.407	513	759	1332	1311	1584	1873	1858	-
#12-24	0.407	-	-	-	-	-	2409	2135	1909

TABLE 3—TENSILE PULL-OVER CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,4] (Continued)									
#12-24	0.407	-	-	-	-	-	2409	2135	1909
1/4"-14	0.489	578	905	954	1167	1879	3118	1810	4448[3]
1/4"-20	0.489	-	-	-	-	-	2719[3]	4067[3]	5438[3]
PMTH									
Allowable Strength (ASD)									
#8-18	0.437	387	441	475	682	605	-	-	-
#10-16	0.437	387	441	775	809	792	-	-	-
#12-14	0.437	387	441	832	819	990	1222	1161	-
Design Strength (LRFD)									
#8-18	0.437	581	662	760	1091	908	-	-	-
#10-16	0.437	581	662	1240	1294	1267	-	-	-
#12-14	0.437	581	662	1332	1311	1584	1873	1858	-

For **SI:** 1 inch = 25.4 mm, 1lbf = 4.4N, 1 ksi =6.89 MPa.

[1]For tension connections, the least of the screw pull-out, pullover, and tension strength found in Tables 2, 3 and 5 respectively must be used for design.
[2]Strength values determined for steel with F_u = 45 ksi and 58 ksi are based on laboratory tests.
[3]Strength values determined for steel with F_u = 58 ksi are based on calculations in accordance with Section J4.4.2 of AISI S100.
[4]"-" Indicates that pull-over capacity for the given steel thickness was not tested or calculated..

TABLE 4—SHEAR (BEARING) CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,3,4]

Screw Designation	Nominal Diameter (in.), d	Point Style	Steel in contact with Screw Head		Thickness of member not in contact with Screw Head (in), t_2							
			F_{u1} (ksi)	Thickness (in), t_1	0.036	0.048	0.060	0.075	0.105	0.125	0.187	0.250
Tensile strength of steel under screw head (ksi), F_{u2}					**45**	**45**	**45**	**45**	**45**	**58**	**58**	**58**
HWH Allowable Strength (ASD)												
#8-18	0.164	2	**45**	**0.036**	194*	239	239	239	-	-	-	-
			45	**0.048**	174	292*	319	-	-	-	-	-
			45	**0.060**	174	268	-	-	-	-	-	-
			45	**0.075**	174	-	-	-	-	-	-	-
			45	**0.105**	-	-	-	-	-	-	-	-
#10-16	0.190	3	**45**	**0.036**	205*	277	277	277	277	277	-	-
			45	**0.048**	188	306*	369	369	369	369	-	-
			45	**0.060**	188	289	442*	462	462	-	-	-
			45	**0.075**	188	289	404	533*	-	-	-	-
			45	**0.105**	188	289	404	-	-	-	-	-
			58	**0.125**	188	289	-	-	-	-	-	-
#12-14	0.216	3	**45**	**0.036**	205*	309	315	315	315	315	-	-
			45	**0.048**	200	306*	420	420	420	420	-	-
			45	**0.060**	200	308	473*	525	525	525	-	-
			45	**0.075**	200	308	430	618*	656	656	-	-
			45	**0.105**	200	308	430	601	810*	-	-	-
			58	**0.125**	200	308	430	601	-	-	-	-
#1/4-14	0.250	3	**45**	**0.036**	215*	339	365	365	365	365	-	-
			45	**0.048**	215	332*	467	486	486	486	-	-
			45	**0.060**	215	331	510*	608	608	608	-	-
			45	**0.075**	215	331	463	628*	759	759	-	-
			45	**0.105**	215	331	463	647	848*	-	-	-
			58	**0.125**	215	331	463	647	-	-	-	-

TABLE 4—SHEAR (BEARING) CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,3,4] (Continued)

Screw Designation	Nominal Diameter (in.), d	Point Style	Steel in contact with Screw Head		Thickness of member not in contact with Screw head (in), t_2							
			F_{u1} (ksi)	Thickness (in), t_1	0.036	0.048	0.060	0.075	0.105	0.125	0.187	0.250
Tensile strength of steel under screw head (ksi), F_{u2}					45	45	45	45	45	58	58	58
HWH - Allowable Strength (ASD)												
#12-24	0.216	4	45	0.036	200	309	315	315	315	276*	315	315
			45	0.048	200	308	420	420	420	440*	420	-
			45	0.060	200	308	430	525	525	666*	525	-
			45	0.075	200	308	430	601	656	656	656	-
			45	0.105	200	308	430	601	919	919	-	-
			58	0.125	200	308	430	601	919	1409	-	-
			58	0.187	200	308	430	601	-	-	-	-
			58	0.250	200	-	-	-	-	-	-	-
#12-24	0.216	5	45	0.036	200	309	315	315	315	315	315	315
			45	0.048	200	308	420	420	420	420	420	420
			45	0.060	200	308	430	525	525	525	525	525
			45	0.075	200	308	430	601	656	656	656	656
			45	0.105	200	308	430	601	919	919	919	919
			58	0.125	200	308	430	601	919	1409	1409	1409
			58	0.187	200	308	430	601	919	1409	2108	2108
			58	0.250	200	308	430	601	919	1409	2108	2819
#1/4-20	0.250	5	45	0.036	215	339	365	365	365	365	365	365
			45	0.048	215	331	467	486	486	486	486	486
			45	0.060	215	331	463	608	608	608	608	608
			45	0.075	215	331	463	647	759	759	759	759
			45	0.105	215	331	463	647	1063	1063	1063	1063
			58	0.125	215	331	463	647	1063	1631	1631	1631
			58	0.187	215	331	463	647	1063	1631	2440	2440
			58	0.250	215	331	463	647	1063	1631	2440	3263
HWH - Design Strength (LRFD)												
#8-18	0.164	2	45	0.036	291*	359	359	359	-	-	-	-
			45	0.048	261	438*	478	-	-	-	-	-
			45	0.060	261	402	-	-	-	-	-	-
			45	0.075	261	-	-	-	-	-	-	-
			45	0.105	-	-	-	-	-	-	-	-
#10-16	0.190	3	45	0.036	308*	416	416	416	416	416	-	-
			45	0.048	281	459*	554	554	554	554	-	-
			45	0.060	281	433	707*	693	693	-	-	-
			45	0.075	281	433	605	853*	-	-	-	-
			45	0.105	281	433	605	-	-	-	-	-
			58	0.125	281	433	-	-	-	-	-	-

TABLE 4—SHEAR (BEARING) CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,3,4] (Continued)

Screw Designation	Nominal Diameter (in.), d	Point Style	Steel in contact with Screw Head		Thickness of member not in contact with Screw head (in), t_2							
			F_{u1} (ksi)	Thickness (in), t_1	0.036	0.048	0.060	0.075	0.105	0.125	0.187	0.250
Tensile strength of steel under screw head (ksi), F_{u2}					45	45	45	45	45	58	58	58
Design Strength (LRFD)												
#12-14	0.216	3	45	0.036	308*	464	472	472	472	472	-	-
			45	0.048	300	459*	630	630	630	630	-	-
			45	0.060	300	462	757*	787	787	787	-	-
			45	0.075	300	462	645	989*	984	984	-	-
			45	0.105	300	462	645	902	1296*	-	-	-
			58	0.125	300	462	645	902	-	-	-	-
#1/4-14	0.250	3	45	0.036	323*	508	547	547	547	547	-	-
			45	0.048	323	498*	700	729	729	729	-	-
			45	0.060	323	497	817*	911	911	911	-	-
			45	0.075	323	497	694	1004*	1139	1139	-	-
			45	0.105	323	497	694	970	1357*	-	-	-
			58	0.125	323	497	694	970	-	-	-	-
#12-24	0.216	4	45	0.036	300	464	472	472	472	442*	472	472
			45	0.048	300	462	630	630	630	705*	630	-
			45	0.060	300	462	645	787	787	1066*	787	-
			45	0.075	300	462	645	902	984	984	984	-
			45	0.105	300	462	645	902	1378	1378	-	-
			58	0.125	300	462	645	902	1378	2114	-	-
			58	0.187	300	462	645	902	-	-	-	-
			58	0.250	300	-	-	-	-	-	-	-
#12-24	0.216	5	45	0.036	300	464	472	472	472	472	472	472
			45	0.048	300	462	630	630	630	630	630	630
			45	0.060	300	462	645	787	787	787	787	787
			45	0.075	300	462	645	902	984	984	984	984
			45	0.105	300	462	645	902	1378	1378	1378	1378
			58	0.125	300	462	645	902	1378	2114	2114	2114
			58	0.187	300	462	645	902	1378	2114	3163	3163
			58	0.250	300	462	645	902	1378	2114	3163	4228
#1/4-20	0.250	5	45	0.036	323	508	547	547	547	547	547	547
			45	0.048	323	497	700	729	729	729	729	729
			45	0.060	323	497	694	911	911	911	911	911
			45	0.075	323	497	694	970	1139	1139	1139	1139
			45	0.105	323	497	694	970	1595	1595	1595	1595
			58	0.125	323	497	694	970	1595	2447	2447	2447
			58	0.187	323	497	694	970	1595	2447	3661	3661
			58	0.250	323	497	694	970	1595	2447	3661	4894

TABLE 4—SHEAR (BEARING) CAPACITIES FOR CONNECTION SCREWS (pounds-force)[1,2,3,4] (Continued)

Screw Designation	Nominal Diameter (in.), d	Point Style	Steel in contact with Screw Head		Thickness of member not in contact with Screw head (in), t_2							
			F_{u1} (ksi)	Thickness (in), t_1	0.036	0.048	0.060	0.075	0.105	0.125	0.187	0.250
Tensile strength of steel under screw head (ksi), F_{u2}					45	45	45	45	45	58	58	58
PMTH - Allowable Strength (ASD)												
#8-18	0.164	2	45	0.036	194*	239	239	239	-	-	-	-
			45	0.048	174	292*	319	-	-	-	-	-
			45	0.060	174	268	-	-	-	-	-	-
			45	0.075	174	-	-	-	-	-	-	-
			45	0.105	-	-	-	-	-	-	-	-
#10-16	0.190	3	45	0.036	205*	277	277	277	277	277	-	-
			45	0.048	188	306*	369	369	369	369	-	-
			45	0.060	188	289	442*	462	462	-	-	-
			45	0.075	188	289	404	533*	-	-	-	-
			45	0.105	188	289	404	-	-	-	-	-
			58	0.125	188	289	-	-	-	-	-	-
#12-14	0.216	3	45	0.036	205*	309	315	315	315	315	-	-
			45	0.048	200	306*	420	420	420	420	-	-
			45	0.060	200	308	473*	525	525	525	-	-
			45	0.075	200	308	430	618*	656	656	-	-
			45	0.105	200	308	430	601	810*	-	-	-
			58	0.125	200	308	430	601	-	-	-	-
PMTH - Design Strength (LRFD)												
#8-18	0.164	2	45	0.036	291*	359	359	359	-	-	-	-
			45	0.048	261	438*	478	-	-	-	-	-
			45	0.060	261	402	-	-	-	-	-	-
			45	0.075	261	-	-	-		-	-	-
			45	0.105	-	-	-	-	-	-	-	-
#10-16	0.190	3	45	0.036	308*	416	416	416	416	416	-	-
			45	0.048	281	459*	554	554	554	554	-	-
			45	0.060	281	433	707*	693	693	-	-	-
			45	0.075	281	433	605	853*	-	-	-	-
			45	0.105	281	433	605	-	-	-	-	-
			58	0.125	281	433	-	-	-	-	-	-
#12-14	0.216	3	45	0.036	308*	464	472	472	472	472	-	-
			45	0.048	300	459*	630	630	630	630	-	-
			45	0.060	300	462	757*	787	787	787	-	-
			45	0.075	300	462	645	989*	984	984	-	-
			45	0.105	300	462	645	902	1296*	-	-	-
			58	0.125	300	462	645	902	-	-	-	-

For **SI:** 1 inch = 25.4 mm, 1lbf = 4.4 N, 1 ksi = 6.89 Mpa.

[1]For shear connections, the lesser of the screw shear (bearing) capacity and shear strength found in Tables 4 and 5, respectively, must be used for design.
[2]Unless otherwise noted, strength values are based on calculations in accordance with Section J.4.3.1 of AISI S100.
[3]"-" Indicates that shear (bearing) capacity for the given steel thickness was not calculated.
[4] "Shading with asterisk" represents strength values based on laboratory tests.

TABLE 5—SCREW STRENGTH (pounds-force)[1,2,3]

SCREW DESIGNATION	NOMINAL SCREW DIAMETER (in.)	NOMINAL SCREW STRENGTH		ALLOWABLE SCREW STRENGTH (ASD)		DESIGN SCREW STRENGTH (LRFD)	
		Tension, P_{ts}	Shear, P_{ss}	Tension, P_{ts}/Ω	Shear, P_{ss}/Ω	Tension, ϕP_{ts}	Shear, ϕP_{ss}
HWH							
#8-18	0.164	2001	1309	667	460	1000	737
#10-16	0.190	2616	1605	967	535	1547	803
#12-14	0.216	3938	1979	1313	659	1969	989
#12-24	0.216	4249	2284	1416	761	2124	1142
1/4"-14	0.250	5632	3221	2081	1191	3330	1905
1/4"-20	0.250	5922	3338	1974	1112	2961	1669
PMTH							
#8-18	0.164	2268	1014	756	363	1134	581
#10-16	0.190	2616	1605	967	535	1547	803
#12-14	0.216	3938	1979	1313	659	1969	989

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.4 N.

[1]For tension connections, the least of the screw pull-out, pullover, and tension strength found in Tables 2, 3 and 5, respectively must be used for design.
[2]For shear connections, the lesser of the screw shear (bearing) capacity and the shear strength found in Tables 4 and 5, respectively must be used for design.
[3]Strength values are based on laboratory tests.

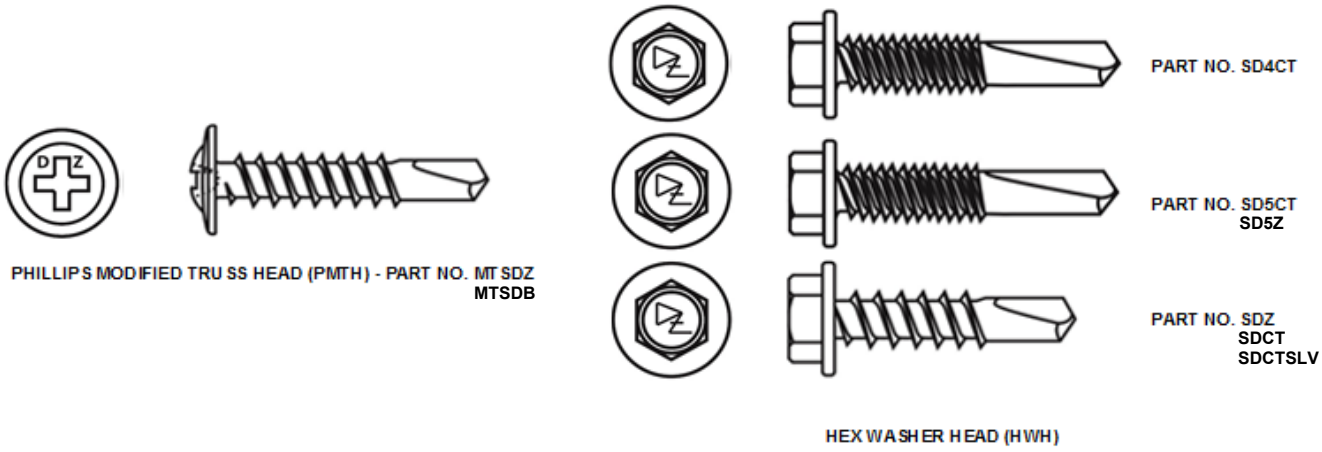


FIGURE 1—DAGGERZ™ SELF DRILLING FASTENERS

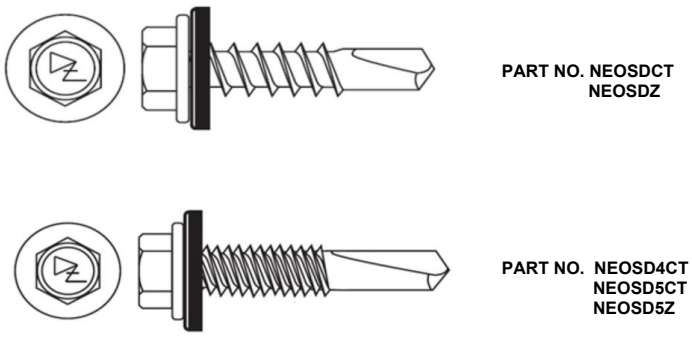


FIGURE 2—DAGGERZ™ SELF DRILLING FASTENERS WITH BONDED WASHERS

ICC-ES Evaluation Report

ESR-4229 City of LA Supplement

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

REPORT HOLDER:

INTERNATIONAL FASTENERS, INC.

EVALUATION SUBJECT:

DAGGERZ™ BRAND CONSTRUCTION FASTENERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that DAGGERZ™ Brand Construction Fasteners, described in ICC-ES evaluation report ESR-4229, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The DAGGERZ™ Brand Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4229, comply with the LABC Chapter 22, and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Daggerz™ screws described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-4229.
- The design, installation, conditions of use and identification of the Daggerz™ screws are in accordance with the 2021 *International Building Code®* (IBC) and the 2021 *International Residential Code®* (IRC) provisions noted in the evaluation report ESR-4229.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.

This supplement expires concurrently with the evaluation report, reissued February 2026.

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

REPORT HOLDER:

INTERNATIONAL FASTENERS, INC.

EVALUATION SUBJECT:

DAGGERZ™ BRAND CONSTRUCTION FASTENERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that DAGGERZ™ Brand Construction Fasteners, described in ICC-ES evaluation report ESR-4229, have also been evaluated for compliance with the code*(s)* noted below.

Applicable code editions:

- 2022 *California Building Code* (CBC)

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.

- 2022 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The DAGGERZ™ Brand Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4229, comply with CBC Chapter 22, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16 and 17, as applicable.

2.1.1 OSHPD:

The DAGGERZ™ Brand Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4229, comply with CBC Chapters 16, 16A, 17,17A, 22 and 22A, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapter 16 and amendments [OSHPD 1R, 2, 3 and 5], Chapter 16A [OSHPD 1 and 4], amended Chapter 17 [OSHPD 1R, 2 and 5] and Chapter 17A [OSHPD 1 and 4], as applicable.

2.1.2 DSA:

The DAGGERZ™ Brand Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4229, comply with CBC Chapters 16, 16A, 17A, 22 and 22A, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC amended Chapter 16 [DSA-SS/CC], Chapter 16A [DSA/SS] and Chapter 17A [DSA-SS and DSA-SS/CC].

2.2 CRC:

The DAGGERZ™ Brand Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4229, comply with the CRC, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report.

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

REPORT HOLDER:

INTERNATIONAL FASTENERS, INC.

EVALUATION SUBJECT:

DAGGERZ™ BRAND CONSTRUCTION FASTENERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that DAGGERZ™ Brand Construction Fasteners, described in ICC-ES evaluation report ESR-4229, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The DAGGERZ™ Brand Construction Fasteners, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4229, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential*. The design requirements mustl 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-4229 for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* and the *Florida Building Code—Residential,* as applicable.

Use of the DAGGERZ™ Brand Construction Fasteners has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential*.

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). Florida Rule 61G20-3 is applicable to products and/or systems which comprise the building envelope and structural frame for compliance with the structural requirements of the Florida Building Code.

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