ICC-ES Evaluation Report

ESR-3332

Reissued September 2025

Subject to renewal September 2026

This report also contains:

- City of LA Supplement
- FL Supplement w/HVHZ

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.

DIVISION: 05 00 00—METALS **Section: 05 05 23—Metal Fastenings**	**REPORT HOLDER:** **DEWALT** **ADDITIONAL LISTEE:** **HILTI, INC.**	**EVALUATION SUBJECT:** **DRIL-FLEX® SELF-DRILLING STRUCTURAL SCREWS (DEWALT)**	

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)

Section number references in this report are for the 2024 IBC and IRC and the standards referenced therein. Corresponding section numbers for earlier code editions are shown in Table 7 at the end of this report.

Property evaluated:

- Structural

2.0 USES

Dril-Flex® Self-Drilling Structural Screws are used to connect cold-formed steel members together, to connect cold-formed steel to hot-rolled steel plates and to connect sheet steel to cold-formed steel. The screws are used to resist shear and tension loads in engineered connections. The screws may be used under the IRC when an engineered design is submitted for review in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 General:

Dril-Flex® Self-Drilling Structural Screws are proprietary, fully-threaded, self-drilling tapping screws that have a dual heat treatment. Product names for the report holder and the additional listee are presented in the following table:

Company Name	Product Name
DEWALT	Dril-Flex®
Hilti	Kwik-Flex

Hex washer head parts are coated with a corrosion-preventive coating identified as Stalgard® SUB, which is silver in color. All other head styles are coated with a corrosion-preventive coating identified as Stalgard®,

which is silver in color. The drill point and lead threads of the screws are heat-treated to a relatively high hardness to facilitate drilling and thread forming. The balance of the screw is treated to a lower hardness complying with the hardness limits for SAE J429 Grade 5 screws and the hardness limits for ASTM A449-10 Type 1 screws. Table 1 provides screw descriptions (size, tpi, length), nominal diameters, head styles, drive type / size, head diameters, point styles, drilling capacities and minimum required protrusion lengths.

3.1.1 Type 1: These #10 screws have coarse threads and a phillips pan head. See Figure 1.

3.1.2 Types 2A and 2B: These #10 screws have coarse threads and a hex washer head. See Figure 2.

3.1.3 Type 3: These #10 screws have fine threads and a phillips wafer head. See Figure 3.

3.1.4 Type 4: These #12 screws have coarse threads and a hex washer head. See Figure 4.

3.1.5 Type 5: These #12 screws have coarse threads and a hex washer head. See Figure 5.

3.1.6 Type 6: These #12 screws have coarse threads and a phillips undercut flat head. See Figure 6.

3.1.7 Type 7: These #12 screws have fine threads and a hex washer head. See Figure 7.

3.1.8 Type 8: These $^1/_4$-inch screws have coarse threads and a hex washer head. See Figure 8.

3.1.9 Type 9: These $^1/_4$-inch screws have fine threads and a hex washer head. See Figure 9.

3.1.10 Type 10: These $^1/_4$-inch screws have fine threads and a hex washer head. See Figure 10.

3.1.11 Type 11: These $^5/_{16}$-inch screws have coarse threads and a hex washer head. See Figure 11.

3.1.12 Types 12A and 12B: These $^5/_{16}$-inch screws have fine threads and a hex washer head. At the end of the screw, the shank of type 12A screws are notched to form a shank slot. See Figures 12 and 13.

3.2 Screw Material:

The screws are formed from alloy steel wire complying with the manufacturer's specifications. The screws are heat-treated to a through-hardness of 28 to 34 HRC. The drilling point and lead threads are heat-treated to a minimum of 52 HRC.

3.3 Connected Material:

The connected steel materials must comply with one of the standards listed in Section A3.1 of AISI S100 and must have the minimum thickness, yield strength and tensile strength shown in the tables in this report.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Dril-Flex® Self-Drilling Structural Screws have been evaluated for use in engineered connections of cold-formed steel construction. Design of the connections must comply with Section J4 of AISI S100. Nominal and available screw tension and shear strengths for the screws are shown in Table 2. Available connection shear, pull-over and pull-out capacities are given in Tables 3, 4 and 5, respectively. For tension connections, the lowest of the available screw tension strength, pull-over strength and pull-out strength, in accordance with Tables 2, 4 and 5, respectively, must be used for design. For shear connections, the lower of the available screw shear strength and the shear (bearing) strength, in accordance with Tables 2 and 3, respectively, must be used for design. Design provisions for tapping screw connections subjected to combined shear and tension loading are outside the scope of the report. The connection shear strength is for connections where the connected steel elements are in direct contact with one another.

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 screws and the minimum edge distance must be 3 times the nominal diameter of the screws; except when the edge is parallel to the direction of the applied force, the minimum edge distance may be 1.5 times the nominal screw diameter. When the spacing between screws is less than 3 times the nominal screws diameter, but at least 2 times the screw diameter, the connection shear strength values in Table 3 must be reduced by 20 percent (refer to Section B1.5.1.3 of AISI S240). See Table 6 for applicable spacing and edge distance dimensions for each screw size.

For screws used in applications other than framing connections, the minimum spacing between screws must be 3 times the nominal screws 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.

When tested for corrosion resistance in accordance with ASTM B117, the screws meet the minimum requirement listed in ASTM F1941, as required by ASTM C1513, with no white corrosion after three hours and no red rust after twelve hours.

4.2 Installation:

Installation of Dril-Flex® Self-Drilling Structural 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.

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

The screws must be installed without predrilling holes in the receiving member of the connection. The drilling function of the fastener must be completed prior to the lead threads of the fastener engaging the metal. When the total connection thickness exceeds the maximum drilling capacity shown in Table 1, clearance holes must be provided in the attached material to reduce the thickness to be drilled by the screw. Clearance holes must be $^{13}/_{64}$, $^{15}/_{64}$, $^{17}/_{64}$ and $^{21}/_{64}$ inch (5.2, 5.9, 6.7 and 8.3 mm) in diameter for #10, #12, $^{1}/_{4}$-inch-diameter and $^{5}/_{16}$-inch-diameter (4.7, 5.5, 6.4 and 7.9 mm) screws, respectively. The screws must be installed perpendicular to the work surface using a screw driving tool incorporating a depth-sensitive or torque-limiting nose piece. The installation speed for $^{5}/_{16}$-inch diameter screws should not exceed 1,200 rpm. The installation speed for all $^{1}/_{4}$-inch diameter screws and #12 screws with a #5 point type should not exceed 1,800 rpm. The installation speed for all other screws should not exceed 2,500 rpm. The screws must penetrate through the supporting steel so that the minimum required protrusion length requirements listed in Table 1 are met. This ensures that the higher hardness portion of the screws or a minimum of three threads will protrude past the back side of the supporting steel.

5.0 CONDITIONS OF USE:

The Dril-Flex® Self-Drilling Structural 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 The screws must be installed in accordance with the manufacturer's published installation instructions and this report. If there is a conflict between the manufacturer's published installation instructions and this report, the more severe requirements govern.

5.2 The allowable connection capacities specified in Section 4.1 are not to be increased when the screws are used to resist short-duration loads, such as wind or seismic forces.

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

5.4 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 are to be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

5.5 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-3332) along with the name, registered trademark, or registered logo of the report holder and/or listee must be included in the product label.

7.2 In addition, the self-drilling tapping screws are marked with a "" on the top surface of the screw heads, as shown in Figures 1 through 13. Packages of self-drilling tapping screws are labeled with the product brand name, product number or item number, size and length, and point type.

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

DEWALT
701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286
(800) 524-3244
www.DEWALT.com
anchors@DEWALT.com

7.4 The Additional Listee's contact information is the following:

HILTI, INC.
7250 DALLAS PARKWAY, SUITE 1000
PLANO, TEXAS 75024
(800) 879-8000
www.us.hilti.com

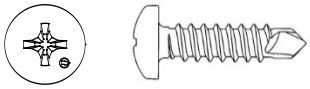

FIGURE 1—#10-16 PHILLIPS PAN HEAD (TYPE 1 SCREW)

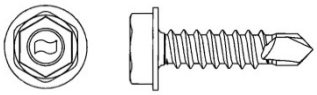

FIGURE 2—#10-16 HEX WASHER HEAD (TYPE 2A and 2B SCREW)

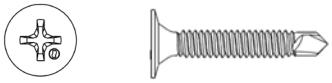

FIGURE 3 - #10-24 PHILLIPS WAFER HEAD (TYPE 3 SCREW)

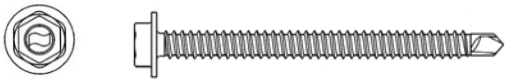

FIGURE 4—#12-14 HEX WASHER HEAD (TYPE 4 SCREW)

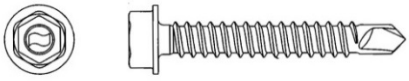

FIGURE 5—#12-14HEX WASHER HEAD (TYPE 5 SCREW)

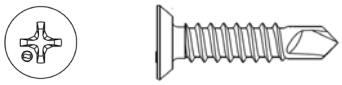

FIGURE 6 - #12-14 PHILLIPS UNDERCUT FLAT HEAD (TYPE 6 SCREW)

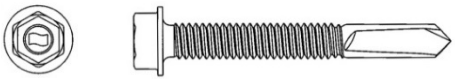

FIGURE 7—#12-24 HEX WASHER HEAD (TYPE 7 SCREW)

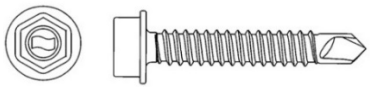

FIGURE 8—$^{1}/_{4}$-14 HEX WASHER HEAD (TYPE 8 SCREW)

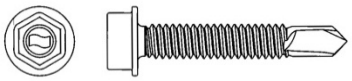

FIGURE 9—$^{1}/_{4}$-20 HEX WASHER HEAD (TYPE 9) SCREW

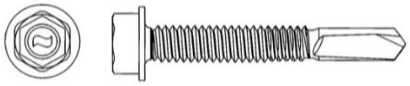

FIGURE 10—$^{1}/_{4}$-20 HEX WASHER (TYPE 10 SCREW)

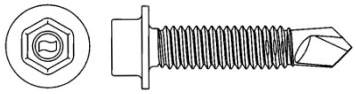

FIGURE 11—$^{5}/_{16}$-18 HEX WASHER HEAD (TYPE 11 SCREW)

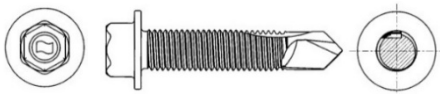

FIGURE 12—$^{5}/_{16}$-24 HEX WASHER HEAD WITH SHANK SLOT (TYPE 12A SCREW)

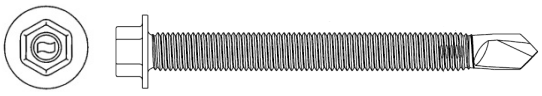

FIGURE 13—$^{5}/_{16}$-24 HEX WASHER HEAD (TYPE 12B SCREW)

TABLE 1—DRIL-FLEX SELF-DRILLING STRUCTURAL SCREWS

SCREW TYPE	DESCRIPTION (nominal size and tpi)	NOMINAL DIAMETER (inch)	HEAD STYLE[1]	HEX DRIVE SIZE (INCH) / PHILLIPS SIZE (No.)	NOMINAL HEAD DIAMETER (inch)	POINT TYPE	DRILLING CAPACITY[2] (inch)		MINIMUM REQUIRED PROTRUSION[3] (inch)
							Min.	Max.	
1	#10-16	0.190	PPH	2	0.365	#2	0.048	0.110	0.406
2A	#10-16	0.190	HWH	5/16	0.400	#3	0.048	0.150	0.500
2B	#10-16	0.190	HWH	5/16	0.415	#3	0.048	0.150	0.500
3	#10-24	0.190	PWH	2	0.470	#3	0.048	0.150	0.468
4	#12-14	0.216	HWH	5/16	0.500	#2	0.048	0.110	0.625
5	#12-14	0.216	HWH	5/16	0.415	#3	0.048	0.187	0.500
6	#12-14	0.216	PUFH	3	0.415	#3	0.048	0.187	0.500
7	#12-24	0.216	HWH	5/16	0.415	#5	0.048	0.500	1.000
8	1/4-14	0.250	HWH	3/8	0.500	#3	0.048	0.210	0.563
9	1/4-20	0.250	HWH	3/8	0.500	#4	0.060	0.312	0.813
10	1/4-20	0.250	HWH	3/8	0.500	#5	0.060	0.500	1.000
11	5/16-18	0.313	HWH	3/8	0.600	#3	0.096	0.210	0.750
12A	5/16-24	0.313	HWH	3/8	0.600	#4	0.105	0.312	0.813
12B	5/16-24	0.313	HWH	3/8	0.600	#4	0.105	0.312	0.813

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

[1]Head styles: HWH = Hex Washer Head; PPH = Phillips Pan Head; PWH = Phillips Wafer Head; PUFH = Phillips Undercut Flat Head.
[2] The drilling capacity of a screw refers to minimum and maximum thickness of the steel that the screw is designed to drill through.
[3]Maximum load bearing length can be calculated by subtracting the minimum required protrusion from the nominal length of the screw.

TABLE 2—SCREW SHEAR AND TENSION STRENGTH, pounds-force[1,2,3]

SCREW TYPE	SCREW SIZE	HEAD STYLE[4]	NOMINAL STRENGTH (TESTED)		ALLOWABLE STRENGTH (ASD) Ω=3		DESIGN STRENGTH (LRFD) Φ=0.5	
			Shear, P_{ss}	Tension, P_{ts}	Shear, P_{ss}/Ω	Tension, P_{ts}/Ω	Shear, ΦP_{ss}	Tension, ΦP_{ts}
1	#10-16	PPH	1526	2273	509	758	763	1136
2A, 2B	#10-16	HWH	1463	2276	488	759	732	1138
3	#10-24	PWH	1080	2613	360	871	540	1307
4, 5	#12-14	HWH	1992	3216	664	1072	996	1608
6	#12-14	PUFH	1980	2149	660	716	990	1075
7	#12-24	HWH	1904	3254	644	1085	967	1627
8	1/4-14	HWH	2692	4363	897	1454	1346	2182
9, 10	1/4-20	HWH	2617	4359	872	1453	1308	2179
11	5/16-18	HWH	4568	7222	1523	2407	2284	3611
12A, 12B	5/16-24	HWH	4960	8757	1653	2919	2480	4379

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

[1]For tension connections, the lower of the available screw tension strength, pullover strength, and pull-out strength found in Tables 2, 4 and 5, respectively, must be used for design.
[2]For shear connections, the lower of the available screw shear strength and the allowable shear (bearing) capacity found in Tables 2 and 3, respectively, must be used for design.
[3]Nominal strengths are based on laboratory tests.
[4]Head styles: HWH = Hex Washer Head; PPH = Phillips Pan Head; PWH = Phillips Wafer Head; PUFH = Phillips Undercut Flat Head.

TABLE 3—SHEAR (BEARING) CAPACITY OF SCREW CONNECTIONS, pounds-force[1,2,3,4,5]

SCREW TYPE	SCREW SIZE	HEAD STYLE[11]	DESIGN THICKNESS (in.)[6]						
			0.048-0.048	0.048-0.075	0.060-0.060	0.075-0.075	1/8"-3/16"	3/16"-1/4"	1/4"-0.105"
ALLOWABLE STRENGTH (ASD)									
1	#10-16	PPH	289	289	404	-	-	-	-
2A, 2B	#10-16	HWH	369	395	453	-	-	-	-
3	#10-24	PWH	322[10]	571[10]	534[7,8,9]	-	-	-	-
4, 5	#12-14	HWH	356	573	513	497	-	-	-
6	#12-14	PUFH	325[10]	609[10]	481[7,8,9]	624[7,8]	-	-	-
7	#12-24	HWH	291[10]	610[10]	476[7,8,9]	647[7,8]	630[7,8,9]	734[7,8,9]	600[7,8,9]
8	1/4-14	HWH	377	626	520	661	638	-	-
9, 10	1/4-20	HWH	386[7,8]	526[7,8]	533[8]	670[8]	595[9]	624[9]	554[9]
11	5/16-18	HWH	408	622	561	891	-	-	-
12A, 12B	5/16-24	HWH	-	-	-	-	1347	-	887
DESIGN STRENGTH (LRFD)									
1	#10-16	PPH	433	433	605	-	-	-	-
2A, 2B	#10-16	HWH	590	631	724	-	-	-	-
3	#10-24	PWH	515[10]	854[10]	913[7,8,9]	-	-	-	-
4, 5	#12-14	HWH	569	917	820	795	-	-	-
6	#12-14	PUFH	520[10]	975[10]	770[7,8,9]	999[7,8]	-	-	-
7	#12-24	HWH	466[10]	976[10]	761[7,8,9]	1035[7,8]	1009[7,8,9]	1174[7,8,9]	960[7,8,9]
8	1/4-14	HWH	603	1001	833	1058	1021	-	-
9, 10	1/4-20	HWH	617[7,8]	842[7,8]	852[8]	1072[8]	952[9]	999[9]	886[9]
11	5/16-18	HWH	653	996	897	1425	-	-	-
12A, 12B	5/16-24	HWH	-	-	-	-	2155	-	1419

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

[1]Available strengths are based on laboratory tests, with safety factors/resistance factors calculated in accordance with AISI S100.
[2]For shear connections, the lower of the available screw shear strength and the available shear (bearing) capacity must be used for design.
[3]Values are based on steel members with a minimum yield strength of F_y = 33 ksi and a minimum tensile strength of F_u = 45 ksi.
[4]Available capacity for other member thickness may be determined by interpolating within the table.
[5]Unless otherwise noted, when both steel sheets have a minimum specified tensile strength $F_u \geq 58$ ksi, multiply tabulated values by 1.29 and when both steel sheets have a minimum tensile strength $F_u \geq 65$ ksi steel, multiply tabulated values by 1.44.
[6]The first number is the thickness of the steel sheet in in contact with the screw head (top sheet). The second number is the thickness of the steel sheet not in contact with the screw head (bottom sheet).
[7]When both steel sheets have a minimum specified tensile strength of $F_u \geq 55$ ksi (e.g. ASTM A653 SS Grade 40), multiply tabulated values by 1.22.
[8]When both steel sheets have a minimum specified tensile strength of $F_u \geq 52$ ksi (e.g. ASTM A653 SS Grade 37), multiply tabulated values by 1.15.
[9]When both steel sheets have a minimum specified tensile strength of $F_u \geq 58$ ksi (e.g. ASTM A36), multiply tabulated values by 1.29.
[10]Increasing values for higher steel tensile strength per Note 5 is not allowed.
[11]Head styles: HWH = Hex Washer Head; PPH = Phillips Pan Head; PWH = Phillips Wafer Head; PUFH = Phillips Undercut Flat Head.

TABLE 4—TENSILE PULL-OVER CAPACITY OF SCREW CONNECTIONS, pounds-force[1,3,4,5,6]

SCREW TYPE	SCREW SIZE	HEAD STYLE[7]	MINIMUM EFFECTIVE PULL-OVER DIAMETER (in.)	DESIGN THICKNESS OF MEMBER IN CONTACT WITH SCREW HEAD (in.)							
				0.048	0.060	0.075	0.105	1/8"	3/16"	1/4"	5/16"
ALLOWABLE STRENGTH (ASD)											
1	#10-16	PPH	0.357	386	481[2]	481[2]	481[2]	481[2]	-	-	-
2A, 2B	#10-16	HWH	0.400	415	481[2]	481[2]	481[2]	481[2]	-	-	-
3	#10-24	PWH	0.470	610[2]	597[2]	715[2]	715[2]	715[2]	-	-	-
4, 5	#12-14	HWH	0.415	430	537	672	734[2]	734[2]	734[2]	-	-
6	#12-14	PUFH	0.415	391[2]	537[2]	683[2]	798[2]	798[2]	798[2]	-	-
7	#12-24	HWH	0.415	430	537	672	734[2]	734[2]	734[2]	734[2]	734[2]
8	1/4-14	HWH	0.500	518	648	810	1126[2]	1126[2]	1126[2]	-	-
9, 10	1/4-20	HWH	0.500	-	648	810	1126[2]	1126[2]	1126[2]	1126[2]	1126[2]
11	5/16-18	HWH	0.600	-	-	-	1169[2]	1169[2]	-	-	-
12A, 12B	5/16-24	HWH	0.600	-	-	-	1326[2]	1326[2]	1326[2]	1326[2]	1326[2]
DESIGN STRENGTH (LRFD)											
1	#10-16	PPH	0.357	578	723	781[2]	781[2]	781[2]	-	-	-
2A, 2B	#10-16	HWH	0.400	622	778	781[2]	781[2]	781[2]	-	-	-
3	#10-24	PWH	0.470	976[2]	955[2]	1143[2]	1143[2]	1143[2]	-	-	-
4, 5	#12-14	HWH	0.415	645	806	1007	1192[2]	1192[2]	1192[2]	-	-
6	#12-14	PUFH	0.415	626[2]	860[2]	1092[2]	1276[2]	1276[2]	1276[2]	-	-
7	#12-24	HWH	0.415	645	806	1007	1192[2]	1192[2]	1192[2]	1192[2]	1192[2]
8	1/4-14	HWH	0.500	778	972	1215	1701	1830[2]	1830[2]	-	-
9, 10	1/4-20	HWH	0.500	-	972	1215	1701	1830[2]	1830[2]	1830[2]	1830[2]
11	5/16-18	HWH	0.600	-	-	-	1871[2]	1871[2]	-	-	-
12A, 12B	5/16-24	HWH	0.600	-	-	-	2121[2]	2121[2]	2121[2]	2121[2]	2121[2]

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

[1]Available strengths are based on calculations in accordance with AISI S100, unless otherwise noted.
[2]Available strengths are based on laboratory tests, with safety factors/resistance factors calculated in accordance with AISI S100, or on the shear strength of the integral washer. Increasing values for higher steel tensile strength per Note 6 is not allowed.
[3]For tension connections, the lowest of the available pull-out, pull-over, and screw tension strength must be used for design.
[4]Values are based on steel members with a minimum yield strength of F_y = 33 ksi and a minimum tensile strength of F_u = 45 ksi.
[5]Available capacity for other member thickness may be determined by interpolating within the table.
[6]For steel with a minimum tensile strength $F_u \geq 58$ ksi, multiply tabulated values by 1.29 and for steel with a minimum tensile strength $F_u \geq 65$ ksi steel, multiply tabulated values by 1.44.
[7]Head styles: HWH = Hex Washer Head; PPH = Phillips Pan Head; PWH = Phillips Wafer Head; PUFH = Phillips Undercut Flat Head.

TABLE 5—TENSILE PULL-OUT CAPACITY OF SCREW CONNECTIONS, pounds-force[1,2,3,4,5]

SCREW TYPE	SCREW SIZE	HEAD STYLE[9]	DESIGN THICKNESS OF MEMBER NOT IN CONTACT WITH SCREW HEAD (in.)							
			0.048	0.060	0.075	0.105	1/8"	3/16"	1/4"	5/16"
ALLOWABLE STRENGTH (ASD)										
1	#10-16	PPH	136	193	236	307	297	-	-	-
2A, 2B	#10-16	HWH	136	193	236	307	297	-	-	-
3	#10-24	PWH	122[8]	186[7]	250[6]	415[6]	546[7]	-	-	-
4, 5	#12-14	HWH	132	205	264	328	510	665	-	-
6	#12-14	PUFH	132	205	264	328	510	665	-	-
7	#12-24	HWH	96[8]	165[7]	224[6]	381[6]	507[7]	891[7]	1020	1020
8	1/4-14	HWH	131	207	255	342	561	899	-	-
9, 10	1/4-20	HWH	-	204[6]	260[6]	423[6]	524[7]	914[7]	1044	1206
11	5/16-18	HWH	-	-	-	520	707	-	-	-
12A, 12B	5/16-24	HWH	-	-	-	459	637	724	1189	1424
DESIGN STRENGTH (LRFD)										
1	#10-16	PPH	217	309	378	492	476	-	-	-
2A, 2B	#10-16	HWH	217	309	378	492	476	-	-	-
3	#10-24	PWH	194[8]	298[7]	400[6]	664[6]	874[7]	-	-	-
4, 5	#12-14	HWH	211	328	423	525	816	1064	-	-
6	#12-14	PUFH	211	328	423	525	816	1064	-	-
7	#12-24	HWH	154[8]	264[7]	359[6]	609[6]	811[7]	1426[7]	1632	1632
8	1/4-14	HWH	210	331	409	548	897	1439	-	-
9, 10	1/4-20	HWH	-	326[6]	416[6]	677[6]	838[7]	1462[7]	1670	1930
11	5/16-18	HWH	-	-	-	832	1131	-	-	-
12A, 12B	5/16-24	HWH	-	-	-	735	1019	1159	1903	2279

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

[1]Available strengths are based on laboratory tests, with safety factors/resistance factors calculated in accordance with AISI S100.
[2]For tension connections, the lowest of the available pull-out, pull-over, and screw tension strength must be used for design.
[3]Values are based on steel members with a minimum yield strength of F_y = 33 ksi and a minimum tensile strength of F_u = 45 ksi.
[4]Available capacity for other member thickness may be determined by interpolating within the table.
[5]Unless otherwise noted, for steel with a minimum tensile strength $F_u \geq 58$ ksi, multiply tabulated values by 1.29 and for steel with a minimum tensile strength $F_u \geq 65$ ksi steel, multiply tabulated values by 1.44.
[6]When both steel sheets have a minimum specified tensile strength of $F_u \geq 52$ ksi (e.g. ASTM A653 SS Grade 37), multiply tabulated values by 1.15.
[7]When both steel sheets have a minimum specified tensile strength of $F_u \geq 58$ ksi (e.g. ASTM A36), multiply tabulated values by 1.29.
[8]Increasing values for higher steel tensile strength per Note 5 is not allowed.
[9]Head styles: HWH = Hex Washer Head; PPH = Phillips Pan Head; PWH = Phillips Wafer Head; PUFH = Phillips Undercut Flat Head.

TABLE 6—MINIMUM SCREW SPACING AND EDGE DISTANCE

BASIC SCREW DIAMETER (inch)	FASTENED MATERIAL	MINIMUM SPACING[1] (inch) (3d)	MINIMUM EDGE DISTANCE (inch) (1.5d)	MINIMUM EDGE DISTANCE FOR FRAMING MEMBERS UNDER THE 2018, 2015 AND 2012 IBC[2] (inch) (3d)
0.190 (#10)	Steel	9/16	5/16	9/16
0.216 (#12)	Steel	11/16	3/8	11/16
0.250 (1/4)	Steel	3/4	3/8	3/4
0.3125 (5/16)	Steel	15/16	1/2	15/16

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

[1]For screws used in framing connections, when the spacing between screws is less than 3 times the nominal screws diameter, but at least 2 times the screw diameter, the connection shear strength values in Table 3 must be reduced by 20 percent (refer to Section B1.5.1.3 of AISI S240).
[2]For screws used in framing connections, when the edge is parallel to the direction of the applied force, the minimum edge distance may be 1.5 times the nominal screw diameter (refer to Section B1.5.1.3 of AISI S240).

TABLE 7—CODE SECTION NUMBER REFERENCE MATRIX

2024 IBC	2021 IBC	2018 IBC	2015 IBC
AISI S100-16(2020) w/S2-20 A3.1	AISI S100-16(2020) w/S2-20 A3.1	AISI S100-16 A3.1	AISI S100-12 A2.1
AISI S100-16(2020) w/S2-20 J4	AISI S100-16(2020) w/S2-20 J4	AISI S100-16 J4	AISI S100-12 E4
AISI S100-16(2020) w/S2-20 J6	AISI S100-16(2020) w/S2-20 J6	AISI S100-16 J6	AISI S100-12 E6
AISI S240-20 B1.5.1.3	AISI S240-20 B1.5.1.3	AISI S240-20 B1.5.1.3	AISI S200-12 D1.5

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

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

DRIL-FLEX® SELF-DRILLING STRUCTURAL SCREWS (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Dril-Flex® Self-Drilling Structural Screws(DEWALT), described in ICC-ES evaluation report ESR-3332, 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 Dril-Flex® Self-Drilling Structural Screws(DEWALT), described in Sections 2.0 through 7.0 of the evaluation report ESR-3332, comply with the LABC Chapter 22 and the LARC, and are subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Dril-Flex® Self-Drilling Structural Screws (DEWALT) described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-3332.
- The design, installation, conditions of use and identification of the Dril-Flex® Self-Drilling Structural Screws(DEWALT) are in accordance with the 2021 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-3332.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Steel members shall have a minimum ultimate tensile strength of 58-ksi.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued September 2025.

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

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

DRIL-FLEX® SELF-DRILLING STRUCTURAL SCREWS (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the fasteners, described in ICC-ES evaluation report ESR-3332, have 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 fasteners, described in Sections 2.0 through 7.0 of the ICC-ES evaluation report, ESR-3332, comply 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-3332 for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the fasteners have also been found to be in compliance with the High-Velocity Hurricane Zone provisions on the *Florida Building Code—Building* and the *Florida Building Code—Residential* with the following condition.

a) For connections subject to uplift, the connection must be designed for no less than 700 pounds (3114 N).

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.

This supplement expires concurrently with the evaluation report, reissued September 2025.