ICC-ES Evaluation Report

ESR-4376

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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: 03 00 00—CONCRETE **Section: 03 16 00—Concrete Anchors** **DIVISION: 05 00 00—METALS** **Section: 05 05 19—Post-Installed Concrete Anchors**	**REPORT HOLDER:** **SHEH KAI PRECISION CORP. LTD.**	**EVALUATION SUBJECT:** **TOPP BOLT CONCRETE SCREW ANCHORS IN CRACKED AND UNCRACKED CONCRETE**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018, 2015, and 2012 *International Building Code®* (IBC)
- 2024, 2021, 2018, 2015, and 2012 *International Residential Code®* (IRC)

Main references of this report are for the 2024 IBC and IRC. See Table 6 and Table 7 for applicable sections of the code for previous IBC and IRC editions.

Property evaluated:

Structural

2.0 USES

The Topp Bolt concrete screw anchors are used as anchorage to resist static, wind and seismic (Seismic Design Categories A through F) tension and shear loads in cracked and uncracked normal weight and lightweight concrete having a specified compressive strength, f'_c, of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).

The anchors comply with anchors as described in Section 1901.3 of the 2024 IBC. The anchors are an alternative to cast-in-place anchors described in Section 1901.3 of the 2024 IBC. The anchors may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

3.0 DESCRIPTION

3.1 Topp Bolt Anchors:

Topp Bolt screw anchors are comprised of an anchor body with hex washer head or a hex coupler head style, in various lengths. Available diameters are $^1/_4$-inch, $^3/_8$-inch, $^1/_2$-inch, $^5/_8$-inch and $^3/_4$-inch (6.4 mm, 9.5 mm, 12.7 mm, 15.9 mm and 19.1 mm). The anchor body and hex washer head or coupler head are manufactured from carbon steel, are heat treated, and have minimum 0.0002-inch (5 µm) zinc plating or minimum 0.0024-inch (60 µm) mechanical zinc plating. The typical Topp Bolt anchor is illustrated in Figure 1.

The hex washer head and hex coupler head diameter is larger than the diameter of the anchor and is formed with serrations on the underside. The anchor body is formed with threads running most of the length of the anchor body. The hex coupler head anchors are available in $^1/_4$-inch nominal anchor body diameter with an

internally threaded coupler head that accepts ¼-20 or 3/8-16 (UNC coarse) threaded rod or bolt, and 3/8-inch nominal anchor body diameter with an internally threaded coupler head that accepts 3/8-16 or ½-13 (UNC coarse) threaded rod or bolt. The anchor is installed in a predrilled hole with a powered impact wrench (all diameters) or torque wrench (1/4-inch and ¾-inch diameters only). The anchor threads cut into the concrete on the sides of the hole and interlock with the base material during the installation.

3.2 Threaded Steel Insert Elements for hex coupler head anchors:

Threaded steel insert elements must be threaded into the coupler head anchors to form a connection. The material properties of the steel inserts must comply national or international specifications (e.g., ASTM A36; ASTM A307, ASTM F1554, Grade 36; ASTM A307, SAE J429, Grade 2, ASTM A193, Grade B7), or equivalent.

3.3 Concrete:

Normal-weight and lightweight concrete must conform to Sections 1903 and 1905 of the 2024 IBC.

4.0 DESIGN AND INSTALLATION

4.1 Strength Design:

4.1.1 General: Design strength of anchors complying with the 2024 IBC, as well as Section R301.1.3 of the 2024 IRC must be determined in accordance with ACI 318-19 Chapter 17 and this report.

Design parameters are based on the 2024 IBC (ACI 318-19) unless noted otherwise in Section 4.1.1 through 4.1.12 of this report.

The strength design of anchors must comply with ACI 318-19 Section 17.5.1.2, except as required in ACI 318-19 Section 17.10.

Strength reduction factors, ϕ, as given in ACI 318-19 Section 17.5.3, and noted in Tables 3 and 4 of this report, must be used for load combinations calculated in accordance with Section 1605.1 of the 2024 IBC and Section 5.3 of ACI 318-19.

The value of f'_c used in the calculation must be limited to a maximum of 8,000 psi (55.2 MPa), in accordance with ACI 318-19 Section 17.3.1.

4.1.2 Requirements for Static Steel Strength in Tension, N_{sa}: The nominal static steel strength of a single anchor in tension, N_{sa}, calculated in accordance with ACI 318-19 Section 17.6.1.2, is given in Tables 3 and 4 of this report. Strength reduction factors, ϕ, corresponding to brittle steel elements must be used.

4.1.3 Requirements for Static Concrete Breakout Strength in Tension, N_{cb} or N_{cbg}: The nominal concrete breakout strength of a single anchor or a group of anchors in tension, N_{cb} or N_{cbg}, respectively, must be calculated in accordance with ACI 318-19 Section 17.6.2 with modifications as described in this section. The basic concrete breakout strength of a single anchor in tension in cracked concrete, N_b, must be calculated according to ACI 318-19 Section 17.6.2.2, using the values of h_{ef} and k_{cr} as given in Tables 3 and 4 of this report. The nominal concrete breakout strength in tension in regions where analysis indicates no cracking in accordance with ACI 318-19 Section 17.6.2.5.1(a) must be calculated with the value of k_{uncr} as given in Tables 3 and 4 of this report and with $\psi_{c,N}$ = 1.0.

4.1.4 Requirements for Static Pullout Strength in Tension, N_{pn}: The nominal pullout strength of a single anchor or a group of anchors, in accordance with ACI 318-19 Sections 17.6.3.1 and 17.6.3.2.1 in cracked and uncracked concrete, $N_{p,cr}$ and $N_{p,uncr}$, respectively, is given in Tables 3 and 4. In lieu of ACI 318-19 Section 17.6.3.3, $\Psi_{c,P}$ = 1.0 for all design cases. The nominal pullout strength in cracked concrete may be adjusted by calculation according to Eq-1:

$$N_{pn,f'_c} = N_{p,cr}\left(\frac{f'_c}{2{,}500}\right)^n \qquad \text{(lb, psi)} \quad \text{(Eq-1)}$$

$$N_{pn,f'_c} = N_{p,cr}\left(\frac{f'_c}{17.2}\right)^n \qquad \text{(N, MPa)}$$

where f'_c is the specified concrete compressive strength and n is the factor defining the influence of concrete compressive strength on pullout strength. For the nominal 1/4-inch and 5/8-inch diameter anchors, n is 0.4. For all other cases, n is 0.5.

In regions where analysis indicates no cracking in accordance with ACI 318-19 Section 17.6.3.3, the nominal pullout strength in tension of the anchors can be adjusted by calculation according to Eq-2:

$$N_{pn,f'_c} = N_{p,uncr}\left(\frac{f'_c}{2{,}500}\right)^{0.5} \qquad \text{(lb, psi)} \qquad \text{(Eq-2)}$$

$$N_{pn,f'_c} = N_{p,uncr}\left(\frac{f'_c}{17.2}\right)^{0.5} \qquad \text{(N,MPa)}$$

where f'_c is the specified concrete compressive strength.

Where values for $N_{p,cr}$ or $N_{p,uncr}$ are not provided in Tables 3 and 4 of this report, the pullout strength in tension need not be considered or evaluated.

4.1.5 Requirements for Static Steel Strength in Shear, V_{sa}: The nominal steel strength in shear, V_{sa}, of a single anchor in accordance with ACI 318-19 Section 17.7.1.2, is given in Tables 3 and 4 of this report and must be used in lieu of the values derived by calculation from ACI 318-19 Eq. 17.7.1.2b. Strength reduction factors, ϕ, corresponding to brittle steel elements must be used.

4.1.6 Requirements for Static Concrete Breakout Strength in Shear, V_{cb} or V_{cbg}: The nominal concrete breakout strength of a single anchor or group of anchors in shear, V_{cb} or V_{cbg}, respectively, must be calculated in accordance with ACI 318-19 Section 17.7.2, with modifications as described in this section. The basic concrete breakout strength of a single anchor in shear, V_b, must be calculated in accordance with ACI 318-19 Section 17.7.2.2.1, using the value of ℓ_e and d_a given in Tables 3 and 4 of this report.

4.1.7 Requirements for Static Concrete Pryout Strength in Shear, V_{cp} or V_{cpg}: The nominal concrete pryout strength of a single anchor or group of anchors, V_{cp} or V_{cpg}, respectively, must be calculated in accordance with ACI 318-19 Section 17.7.3, using the value of k_{cp} provided in Tables 3 and 4, and the value of N_{cb} or N_{cbg} as calculated in Section 4.1.3 of this report.

4.1.8 Requirements for Seismic Design:

4.1.8.1 General: For load combinations including seismic loads, the design must be performed in accordance with ACI 318-19 Section 17.10. Modifications to ACI 318-19 Section 17.10 shall be applied under 2024 IBC Section 1905.7.

The nominal steel strength and nominal concrete breakout strength for anchors in tension, and the nominal concrete breakout strength and pryout strength for anchors in shear, must be calculated according to ACI 318-19 Sections 17.6 and 17.7, respectively, taking into account the corresponding values in Tables 3 and 4 of this report.

The anchors comply with ACI 318-19 Section 2.3 as brittle steel elements and must be designed in accordance with ACI 318-19 Sections 17.10.4, 17.10.5, 17.10.6, and 17.10.7.

The anchors may be installed in regions designated as 2024 IBC Seismic Design Categories A through F.

4.1.8.2 Seismic Tension: The nominal steel strength and nominal concrete breakout strength for anchors in tension must be calculated according to ACI 318-19 Sections 17.6.1 and 17.6.2, respectively, as described in Sections 4.1.2 and 4.1.3 of this report. In accordance with ACI 318-19 Section 17.6.3.2.1, the appropriate value for nominal pullout strength in tension for seismic loads, $N_{p,eq}$ described in Tables 3 and 4 of this report, must be used in lieu of N_p. $N_{p,eq}$ may be adjusted by calculations for concrete compressive strength in accordance with Eq-1 of this report.

Where values for $N_{p,eq}$ are not provided in Tables 3 and 4, the pullout strength in tension for seismic forces need not be evaluated.

4.1.8.3 Seismic Shear: The nominal concrete breakout strength and pryout strength for anchors in shear must be calculated according to ACI 318-19 Sections 17.7.2 and 17.7.3, respectively, as described in Sections 4.1.6 and 4.1.7 of this report. In accordance with ACI 318-19 Section 17.7.1.2, the appropriate value for nominal steel strength in shear for seismic loads, $V_{sa,eq}$, described in Tables 3 and 4 of this report, must be used in lieu of V_{sa}.

4.1.9 Requirements for Interaction of Tensile and Shear Forces: For anchors or groups of anchors that are subject to the effects of combined tensile and shear forces, the design must be performed in accordance withACI 318-19 Section 17.8.

4.1.10 Requirements for Critical Edge Distance, c_{ac}: In applications where $c < c_{ac}$ and supplemental reinforcement to control splitting of the concrete is not present, the concrete breakout strength in tension for uncracked concrete, calculated according to ACI 318-19 Section 17.6.2, must be further multiplied by the factor $\psi_{cp,N}$ given by Eq-3:

$$\psi_{cp,N} = \frac{c}{c_{ac}} \qquad \text{(Eq-3)}$$

whereby the factor $\psi_{cp,N}$ need not be taken less than $\frac{1.5h_{ef}}{c_{ac}}$. For all other cases, $\psi_{cp,N}$ = 1.0. In lieu of using ACI 318-19 Section 17.9.5, values for the critical edge distance c_{ac} must be taken from Tables 1 and 2 of this report.

4.1.11 Requirements for Minimum Member Thickness, Minimum Anchor Spacing and Minimum Edge Distance: In lieu of ACI 318-19 Section 17.9.2, the values of s_{min} and c_{min} as given in Tables 1 and 2 of this report must be used. In lieu of ACI 318-19 Section 17.9.4, minimum member thicknesses, h_{min}, as given in Tables 1 and 2 of this report must be used.

4.1.12 Requirements for Lightweight Concrete: For the use of anchors in lightweight concrete, the modification factor λ_a equal to 0.8λ is applied to all values of $\sqrt{f'_c}$ affecting N_n and V_n.

The value of λ shall be determined in accordance with ACI 318-19.

4.2 Allowable Stress Design (ASD):

4.2.1 General: Design values for use with allowable stress design load combinations calculated in accordance with Section 1605.1 of the 2024 IBC must be established using Eq-4 and Eq-5 as follows:

$$T_{allowable,ASD} = \frac{\phi N_n}{\alpha} \quad \text{(Eq-4)}$$

$$V_{allowable,ASD} = \frac{\phi V_n}{\alpha} \quad \text{(Eq-5)}$$

where:

$T_{allowable,ASD}$ = Allowable tension load (lb or kN)

$V_{allowable,ASD}$ = Allowable shear load (lb or kN)

ϕN_n = Lowest design strength of an anchor or anchor group in tension as determined in accordance with ACI 318-19 Chapter 17, 2024 IBC Section 1905.7 and Section 4.1 of this report, as applicable (lb or kN).

ϕV_n = Lowest design strength of an anchor or anchor group in shear as determined in accordance with ACI 318-19 Chapter 17, 2024 IBC Section 1905.7 and Section 4.1 of this report, as applicable (lb or kN).

α = Conversion factor calculated as a weighted average of the load factors for the controlling load combination. In addition, α must include all applicable factors to account for non-ductile failure modes and required over-strength.

The requirements for member thickness, edge distance and spacing, described in this report, must apply. An example of Allowable Stress Design values for illustrative purposes is shown in Table 5 and Figure 3.

4.2.2 Requirement for Interaction of Tensile and Shear Forces: The interaction must be calculated and consistent with ACI 318-19 Section 17.8, as follows:

For shear loads $V \le 0.2V_{allowable,ASD}$, the full allowable load in tension $T_{allowable,ASD}$ must be permitted.

For tension loads $T \le 0.2T_{allowable,ASD}$, the full allowable load in shear $V_{allowable,ASD}$ must be permitted.

For all other cases: $\frac{T}{T_{allowable}} + \frac{V}{V_{allowable}} \le 1.2$ (Eq-6)

4.3 Installation:

Installation parameters are provided in Tables 1 and 2, and Figures 1 and 2 of this report. Anchors must be installed per the manufacturer's published instructions and this report. In case of conflict, this report governs. Anchor locations must comply with this report and the plans and specifications approved by the code official. Anchors must be installed in holes drilled into concrete using carbide-tipped drill bits complying with ANSI B212.15-1994. The nominal drill diameter must be equal to the nominal diameter of the anchor. Prior to anchor installation, the hole must be cleaned in accordance with the manufacturer's published installation instructions. The anchor must be installed into the predrilled hole using a powered impact wrench (all diameters) or installed with a torque wrench (1/4-inch and 3/4-inch diameters only) until the proper nominal embedment depth is obtained. The maximum installation impact wrench torque, $T_{impact,max}$, and maximum installation torque, $T_{inst,max}$ for the manual torque wrench must be in accordance with Tables 1 and 2.

4.4 Special Inspection:

Periodic special inspection is required, in accordance with Section 1705.1.1 and Table 1705.3 of the 2024 IBC. The special inspector must make periodic inspections during anchor installation to verify anchor type, anchor dimensions, concrete type, concrete compressive strength, hole dimensions, drill bit size and type, anchor spacing, edge distances, concrete thickness, anchor embedment, maximum impact wrench power and adherence to the manufacturer's published installation instructions. The special inspector must be present as often as required in accordance with the "statement of special inspection." Under the IBC, additional requirements as set forth in Sections 1705, 1706 and 1707 must be observed, where applicable.

5.0 CONDITIONS OF USE:

The Topp Bolt concrete screw anchors described in this report comply with, or are a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The anchors must be installed in accordance with the manufacturer's published installation instructions and this report. In case of conflict, this report governs.

5.2 Anchor sizes, dimensions, and minimum embedment depths are as set forth in this report.

5.3 The $^1/_4$-inch to $^3/_4$-inch (6.4 mm to 19.1 mm) Topp Bolt anchors must be installed in cracked and uncracked normal-weight concrete and lightweight concrete having a specified compressive strength, f'_c, of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).

5.4 The values of f'_c used for calculation purposes must not exceed 8,000 psi (55.2 MPa).

5.5 The concrete must have attained its minimum design strength prior to installation of the anchors.

5.6 Strength design values must be established in accordance with Section 4.1 of this report.

5.7 Allowable design values must be established in accordance with Section 4.2 of this report.

5.8 Anchor spacing(s) and edge distance(s), and minimum member thickness, must comply with Tables 1 and 2 of this report.

5.9 Reported values for the Topp Bolt screw anchors with an internally threaded hex head do not consider the steel insert element which must be verified by the design professional.

5.10 Prior to installation, 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.

5.11 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of anchors subjected to fatigue or shock loading is unavailable at this time, the use of these anchors under such conditions is beyond the scope of this report.

5.12 The anchors may be installed in regions of concrete where cracking has occurred or where analysis indicates cracking may occur ($f_t > f_r$), subject to the conditions of this report.

5.13 The anchors may be used to resist short-term loading due to wind or seismic forces (Seismic Design Categories A through F under the IBC), subject to the conditions of this report.

5.14 Anchors are not permitted to support fire-resistance-rated construction. Where not otherwise prohibited by code, Topp Bolt anchors are permitted for installation in fire-resistance-rated construction provided that at least one of the following conditions is fulfilled:

- Anchors are used to resist wind or seismic forces only.
- Anchors that support a fire-resistance-rated envelope or a fire-resistance-rated membrane, are protected by approved fire-resistance-rated materials, or have been evaluated for resistance to fire exposure in accordance with recognized standards.
- Anchors are used to support nonstructural elements.

5.15 Anchors have been evaluated for reliability against brittle failure and found to be not significantly sensitive to stress-induced hydrogen embrittlement.

5.16 Use of carbon steel anchors with 0.0002-inch (5 µm) zinc plating as described in Section 3.1 of this report is limited to dry, interior locations.

5.17 Special inspection must be provided in accordance with Section 4.4.

5.18 Topp Bolt concrete screw anchors are manufactured under an approved quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Mechanical Anchors in Concrete Elements AC193 (24), published April 2025, which incorporates requirements in ACI 355.2 (-19 and -07), for use in cracked and uncracked concrete.

6.2 Quality control documentation.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ESR-4376) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 The Topp Bolt concrete screw anchors are identified in the field by dimensional characteristics and packaging. A diameter and length marking is stamped on the head of each Topp Bolt anchor; these are visible after installation for verification. Packages are identified with the company name and address, anchor name, anchor size, and the evaluation report number (ESR-4376).

7.3 The report holder's contact information is as follows:

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1 BANG KONG 1ST ROAD
KANGSANG DISTRICT
KAOHSIUNG, 82059 TAIWAN R.O.C.
www.shehkai.com.tw

TABLE 1—TOPP BOLT HEX WASHER HEAD ANCHOR INSTALLATION PARAMETERS[1]

Characteristic	Symbol	Unit	Nominal Anchor Diameter														
			¼"		⅜"			½"			⅝"				¾"		
Drill Bit Diameter	d_o	in (mm)	1/4 (6.4)		3/8 (9.5)			1/2 (12.7)			5/8 (15.9)				3/4 (19.1)		
Nominal Embedment Depth	h_{nom}	in (mm)	1 5/8 (41)	2 ½ (64)	1 5/8 (41)	2 ½ (64)	3 ¼ (83)	2 ¼ (57)	3 (76)	4 ¼ (108)	3 ¼ (83)	4 (102)	5 (127)	5 ½ (140)	4 (102)	5 ½ (140)	6 ¼ (159)
Effective Embedment Depth	h_{ef}	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)	2.62 (66.5)	1.66 (42.1)	2.30 (58.3)	3.37 (85.5)	2.54 (64.6)	3.19 (80.9)	3.99 (101.3)	4.42 (112.3)	3.14 (79.8)	4.41 (112.1)	5.05 (128.3)
Minimum Hole Depth	h_{hole}	in (mm)	2 (51)	2 7/8 (73)	2 (51)	2 7/8 (73)	3 5/8 (92)	2 5/8 (67)	3 3/8 (86)	4 5/8 (117)	3 5/8 (92)	4 ½ (114)	5 3/8 (137)	6 (152)	4 ½ (114)	6 (152)	6 ¾ (171)
Fixture Hole Diameter	d_f	in (mm)	3/8 (9.5)		½ (12.7)			5/8 (15.9)			¾ (19.1)				7/8 (22.2)		
Maximum Installation Torque[2]	$T_{inst,max}$	ft lb (Nm)	21 (29)		N/A			N/A			N/A				103 (140)		
Maximum impact wrench torque rating	$T_{impact,max}$	ft lb (Nm)	135 (185)		135 (185)			260 (350)			260 (350)				440 (600)		
Minimum Concrete Thickness	h_{min}	in (mm)	3 5/8 (91)	4 ½ (114)	3 5/8 (91)	4 ½ (114)	5 ¼ (133)	4 ¼ (107)	5 (126)	6 ¼ (158)	5 ¼ (133)	6 (152)	7 (177)	7 ½ (190)	6 (152)	7 ½ (190)	8 ¼ (209)
Critical Edge Distance	c_{ac}	in (mm)	$1.5 \cdot h_{ef}$														
Minimum Edge Distance (c_{min})	c_{min}	in (mm)	1 3/4 (44)														
Minimum Spacing (s_{min})	s_{min}	in (mm)	3 (76)														
Wrench Socket Size	-	in	7/16		9/16			3/4			15/16				1 1/8		

1. The tabulated data is to be used in conjunction with the design criteria given in ACI 318-19 Chapter 17.
2. N/A – Manual torque wrench installation not evaluated.

TABLE 2—TOPP BOLT HEX COUPLER HEAD ANCHOR INSTALLATION PARAMETERS[1]

Characteristic	Symbol	Unit	Nominal Anchor Diameter			
			¼"		⅜"	
Drill Bit Diameter	d_o	in (mm)	1/4 (6.4)		3/8 (9.5)	
Nominal Embedment Depth	h_{nom}	in (mm)	1 5/8 (41)	2 ½ (64)	1 5/8 (41)	2 ½ (64)
Effective Embedment Depth	h_{ef}	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)
Minimum Hole Depth	h_{hole}	in (mm)	2 (51)	2 7/8 (73)	2 (51)	2 7/8 (73)
Fixture Hole Diameter	d_f	in (mm)	3/8 (9.5)		½ (12.7)	
Maximum Installation Torque[2]	$T_{inst,max}$	ft lb (Nm)	21 (29)		N/A	
Maximum impact wrench torque rating	$T_{impact,max}$	ft lb (Nm)	135 (185)		135 (185)	
Minimum Concrete Thickness	h_{min}	in (mm)	4 (102)	4 3/8 (110)	4 (102)	4 3/8 (110)
Critical Edge Distance	c_{ac}	in (mm)	$1.5 \cdot h_{ef}$			
Minimum Edge Distance (c_{min})	c_{min}	in (mm)	1 3/4 (44)			
Minimum Spacing (s_{min})	s_{min}	in (mm)	3 (76)			
Internal Thread Size	-	-	¼-20 or 3/8-16 (UNC coarse)		3/8-16 or ½-13 (UNC coarse)	

1. The tabulated data is to be used in conjunction with the design criteria given in ACI 318-19 Chapter 17.
2. N/A – Manual torque wrench installation not evaluated.

TABLE 3—TOPP BOLT HEX WASHER HEAD ANCHOR DESIGN INFORMATION[1,2]

Characteristic	Symbol	Unit	Nominal Anchor Diameter														
			¼"		⅜"			½"			⅝"				¾"		
Nominal Embedment Depth	h_{nom}	in (mm)	1 5/8 (41)	2 ½ (64)	1 5/8 (41)	2 ½ (64)	3 ¼ (83)	2 ¼ (57)	3 (76)	4 ¼ (108)	3 ¼ (83)	4 (102)	5 (127)	5 ½ (140)	4 (102)	5 ½ (140)	6 ¼ (159)
Effective Embedment Depth	h_{ef}	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)	2.62 (66.5)	1.66 (42.1)	2.30 (58.3)	3.37 (85.5)	2.54 (64.6)	3.19 (80.9)	3.99 (101.3)	4.42 (112.3)	3.14 (79.8)	4.41 (112.1)	5.05 (128.3)
Anchor Category	1, 2 or 3	-	3	2	1	1	1	2	2	2	1	1	1	1	2	2	2
Steel Strength in Tension and Shear																	
Minimum specified ultimate strength	f_{uta}	psi (N/mm²)	101,525 (700)		113,130 (780)			113,130 (780)			113,130 (780)				113,130 (780)		
Minimum specified yield strength	f_y	psi (N/mm²)	81,220 (560)		90,505 (624)			90,505 (624)			90,505 (624)				90,505 (624)		
Effective stress area (screw anchor body)	A_{se}	in² (mm²)	0.0453 (29.2)		0.1020 (65.8)			0.1827 (117.9)			0.2888 (186.3)				0.4145 (267.4)		
Steel Strength in Tension	N_{sa}	lb (kN)	4,585 (20.4)		11,535 (51.3)			20,680 (92.0)			32,665 (145.3)				46,895 (208.6)		
Strength Reduction Factor for Steel Failure in Tension	ϕ_{sa}	-	0.65														
Steel Strength in Shear	V_{sa}	lb (kN)	1,350 (6.0)		3,150 (14.0)			6,745 (30.0)			10,115 (45.0)				15,060 (67.0)		
Steel Strength in Shear, Seismic	$V_{sa,eq}$	lb (kN)	1,125 (5.0)		1,800 (8.0)			3,730 (16.6)			6,880 (30.6)				13,240 (58.9)		
Strength Reduction Factor for Steel Failure in Shear	ϕ_{sa}	-	0.60														
Pullout Strength in Tension[3]																	
Pullout Strength in Uncracked Concrete	$N_{p,uncr}$	lb (kN)	N/A	4,025 (17.9)	1,395 (6.2)	2,990 (13.3)	N/A	N/A	4,115 (18.3)	7,485 (33.3)	N/A	6,585 (29.3)	8,320 (37.0)	N/A	N/A	N/A	N/A
Pullout Strength in Cracked Concrete	$N_{p,cr}$	lb (kN)	605 (2.7)	1,080 (4.8)	720 (3.2)	1,755 (7.8)	2,630 (11.7)	1,350 (6.0)	2,790 (12.4)	5,195 (23.1)	3,125 (13.9)	4,045 (18.0)	5,195 (23.1)	5,825 (25.9)	4,405 (19.6)	7,330 (32.6)	8,790 (39.1)
Pullout Strength in Cracked Concrete, Seismic	$N_{p,eq}$	lb (kN)	605 (2.7)	1,080 (4.8)	720 (3.2)	1,755 (7.8)	2,630 (11.7)	1,350 (6.0)	2,790 (12.4)	4,720 (21.0)	2,920 (13.0)	4,045 (18.0)	5,015 (22.3)	5,825 (25.9)	4,405 (19.6)	7,330 (32.6)	8,790 (39.1)
Normalization Exponent, Uncracked Concrete	n	-	0.50		0.50			0.50			0.50				0.50		
Normalization Exponent, Cracked Concrete	n	-	0.40		0.50			0.50			0.40				0.50		
Strength Reduction Factor for Pullout Strength in Tension	ϕ_p	-	0.45	0.55	0.65	0.65	0.65	0.55	0.55	0.55	0.65	0.65	0.65	0.65	0.55	0.55	0.55
Concrete Breakout Strength in Tension																	
Effective embedment	h_{ef}	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)	2.62 (66.5)	1.66 (42.1)	2.30 (58.3)	3.37 (85.5)	2.54 (64.6)	3.19 (80.9)	3.99 (101.3)	4.42 (112.3)	3.14 (79.8)	4.41 (112.1)	5.05 (128.3)
Effectiveness Factor for Uncracked Concrete	k_{uncr}	in-lb (SI)	24 (10.0)	24 (10.0)	24 (10.0).	24 (10.0)	24 (10.0)	24 (10.0).	24 (10.0)	24 (10.0)	24 (10.0)	24 (10.0)	24 (10.0)	24 (10.0)	27 (11.3)	24 (10.0)	24 (10.0)
Effectiveness Factor for Cracked Concrete	k_{cr}	in-lb (SI)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)	24 (10.0)	21 (8.8)	21 (8.8)
Strength Reduction Factor for Concrete Breakout Strength in Tension	ϕ_{cb}	-	0.45	0.55	0.65	0.65	0.65	0.55	0.55	0.55	0.65	0.65	0.65	0.65	0.55	0.55	0.55
Axial stiffness in service load range in uncracked concrete	β_{uncr}	lb/inch x10⁵ (N/mm)	2.719 (48)	1.928 (34)	6.240 (109)	4.502 (79)	3.670 (64)	8.809 (154)	7.079 (124)	5.649 (99)	10.377 (182)	9.099 (159)	8.080 (141)	7.684 (135)	13.204 (231)	11.075 (194)	10.410 (182)
COV for β_{uncr}	ν	%	38														
Axial stiffness in service load range in cracked concrete	β_{cr}	lb/inch x10⁵ (N/mm)	1.451 (25)	1.100 (19)	3.318 (58)	2.563 (45)	2.179 (38)	4.887 (86)	4.120 (72)	3.487 (61)	6.134 (107)	5.568 (98)	5.117 (90)	4.941 (86.5)	8.063 (141)	7.119 (125)	6.825 (120)
COV for β_{cr}	ν	%	48														
Concrete Breakout Strength in Shear																	
Nominal Diameter	d_o[2]	in (mm)	0.250 (6.4)		0.375 (9.5)			0.500 (12.7)			0.625 (15.9)				0.750 (19.1)		
Load Bearing Length of Anchor	l_e	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)	2.62 (66.5)	1.66 (42.1)	2.30 (58.3)	3.37 (85.5)	2.54 (64.6)	3.19 (80.9)	3.99 (101.3)	4.42 (112.3)	3.14 (79.8)	4.41 (112.1)	5.05 (128.3)
Reduction Factor for Concrete Breakout Strength in Shear	ϕ_{cb}	-	0.70														
Concrete Pryout Strength in Shear																	
Coefficient for Pryout Strength	k_{cp}	-	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Reduction Factor for Pryout Strength in Shear	ϕ_{cp}	-	0.70														

[1]The tabulated data is to be used in conjunction with the design criteria given in ACI 318-19 Chapter 17.
[2]The strength reduction factor applies when the load combinations from the IBC or ACI 318 are used and the requirements of ACI 318-19 Section 17.5.3 are met.

TABLE 4—TOPP BOLT HEX COUPLER HEAD ANCHOR DESIGN INFORMATION[1,2]

Characteristic	Symbol	Unit	Nominal Anchor Diameter			
			¼"		3/8"	
Drill Bit Diameter	d_o	in (mm)	1/4 (6.4)		3/8 (9.5)	
Nominal Embedment Depth	h_{nom}	in (mm)	1 5/8 (41)	2 ½ (64)	1 5/8 (41)	2 ½ (64)
Effective Embedment Depth	h_{ef}	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)
Anchor Category	1, 2 or 3	-	3	2	1	1
Steel Strength in Tension and Shear						
Minimum specified ultimate strength	f_{uta}	psi (N/mm²)	101,525 (700)		101,525 (700)	
Minimum specified yield strength	f_y	psi (N/mm²)	81,220 (560)		81,220 (560)	
Effective stress area (screw anchor body)	A_{se}	in² (mm²)	0.0453 (29.2)		0.1020 (65.8)	
Steel Strength in Tension	N_{sa}	lb (kN)	4,585 (20.4)		10,355 (46.1)	
Strength Reduction Factor for Steel Failure in Tension	ϕ_{sa}	-	0.65			
Steel Strength in Shear	V_{sa}	lb (kN)	1,350 (6.0)		3,150 (14.0)	
Steel Strength in Shear, Seismic	$V_{sa,eq}$	lb (kN)	1,125 (5.0)		1,800 (8.0)	
Strength Reduction Factor for Steel Failure in Shear	ϕ_{sa}	-	0.60			
Pullout Strength in Tension[3]						
Pullout Strength in Uncracked Concrete	$N_{p,uncr}$	lb (kN)	N/A	4,025 (17.9)	1,395 (6.2)	2,990 (13.3)
Pullout Strength in Cracked Concrete	$N_{p,cr}$	lb (kN)	605 (2.7)	1,080 (4.8)	720 (3.2)	1,755 (7.8)
Pullout Strength in Cracked Concrete, Seismic	$N_{p,eq}$	lb (kN)	605 (2.7)	1,080 (4.8)	720 (3.2)	1,755 (7.8)
Normalization Exponent, Uncracked Concrete	n	-	0.50		0.50	
Normalization Exponent, Cracked Concrete	n	-	0.40		0.50	
Strength Reduction Factor for Pullout Strength in Tension	ϕ_p	-	0.45	0.55	0.65	0.65
Concrete Breakout Strength in Tension						
Effective embedment	h_{ef}	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)
Effectiveness Factor for Uncracked Concrete	k_{uncr}	in-lb (SI)	24 (10.0)	24 (10.0)	24 (10.0).	24 (10.0)
Effectiveness Factor for Cracked Concrete	k_{cr}	in-lb (SI)	17 (7.1)	17 (7.1)	17 (7.1)	17 (7.1)
Strength Reduction Factor for Concrete Breakout Strength in Tension	ϕ_{cb}	-	0.45	0.55	0.65	0.65
Axial stiffness in service load range in uncracked concrete	β_{uncr}	lb/inch x10⁵ (N/mm)	2.719 (48)	1.928 (34)	6.240 (109)	4.502 (79)
COV for β_{uncr}	ν	%	38			
Axial stiffness in service load range in cracked concrete	β_{cr}	lb/inch x10⁵ (N/mm)	1.451 (25)	1.100 (19)	3.318 (58)	2.563 (45)
COV for β_{cr}	ν	%	48			
Concrete Breakout Strength in Shear						
Nominal Diameter	d_o[2]	in (mm)	0.250 (6.4)		0.375 (9.5)	
Load Bearing Length of Anchor	l_e	in (mm)	1.24 (31.6)	2.01 (51.1)	1.21 (30.8)	1.98 (50.3)
Reduction Factor for Concrete Breakout Strength in Shear	ϕ_{cb}	-	0.70			
Concrete Pryout Strength in Shear						
Coefficient for Pryout Strength	k_{cp}	-	1.0	1.0	1.0	1.0
Reduction Factor for Pryout Strength in Shear	ϕ_{cp}	-	0.70			

[1]The tabulated data is to be used in conjunction with the design criteria given in ACI 318-19 Chapter 17.
[2]The strength reduction factor applies when the load combinations from the IBC or ACI 318 are used and the requirements of ACI 318-19 Section 17.5.3 are met.

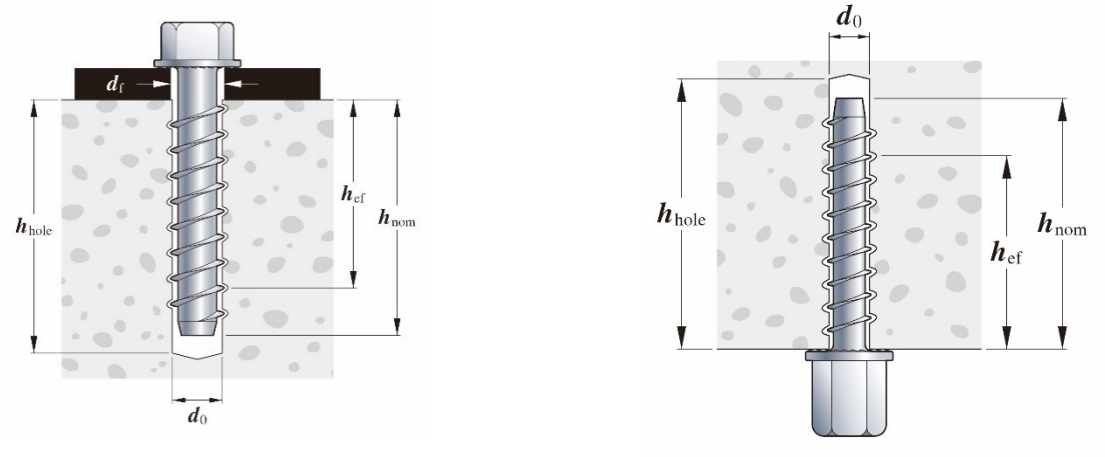
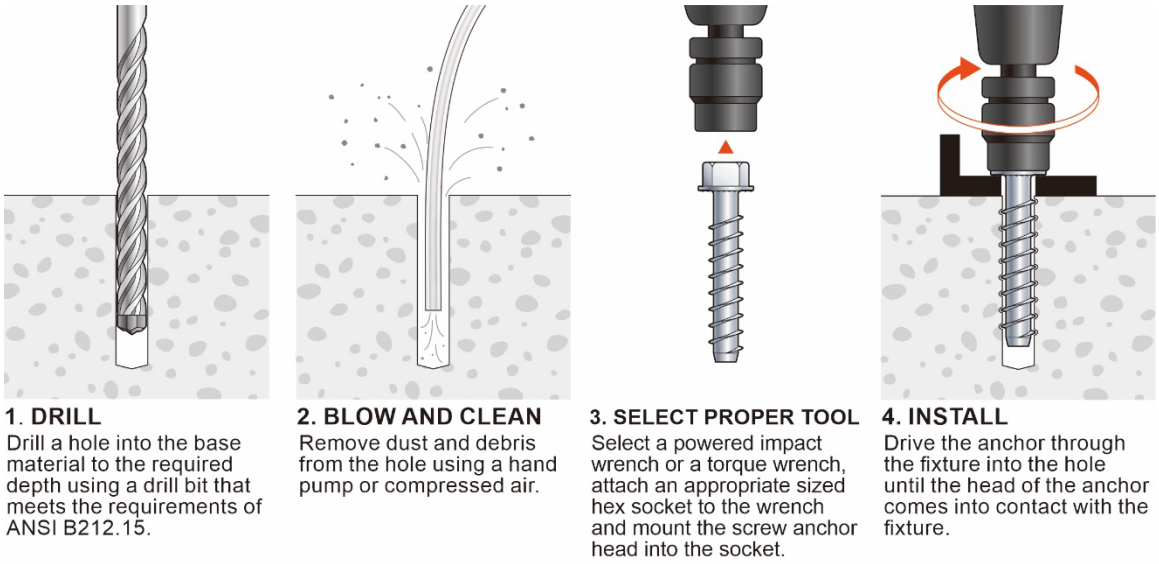


**FIGURE 1—TOPP BOLT HEX WASHER HEAD DETAIL (Left Picture)
AND TOPP BOLT HEX COUPLER HEAD INTERNALLY THREADED ANCHOR DETAIL (Right Picture)**



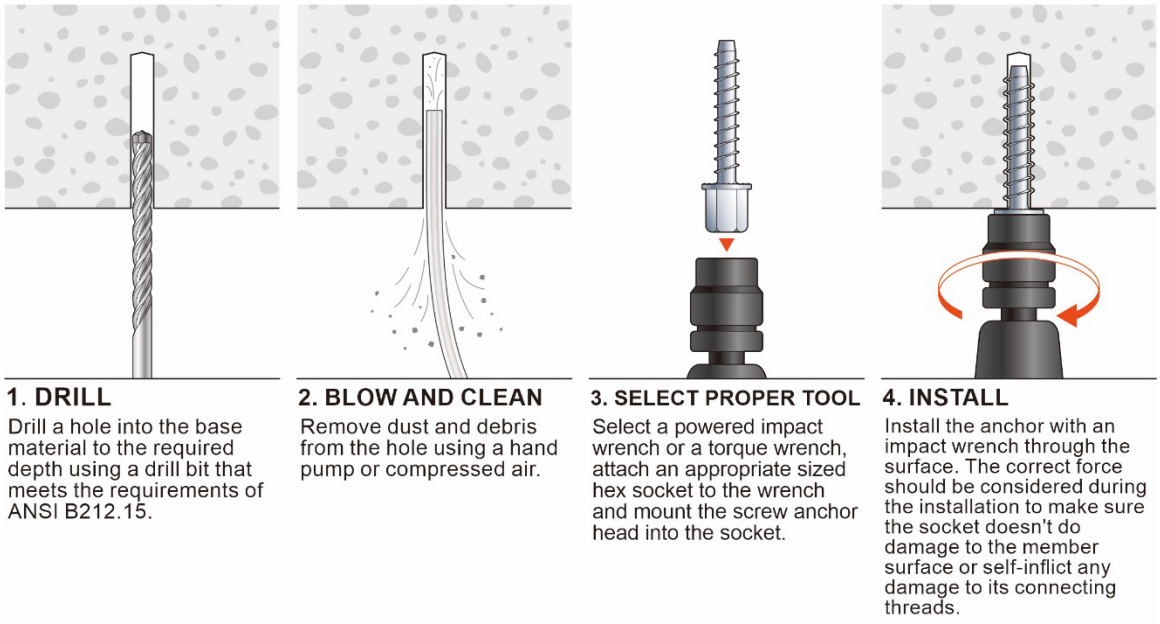


FIGURE 2—MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS

TABLE 5—EXAMPLE HEX WASHER HEAD ALLOWABLE STRESS DESIGN VALUES FOR ILLUSTRATIVE PURPOSES[1,2,3,4,5,6,7,8,9,10]

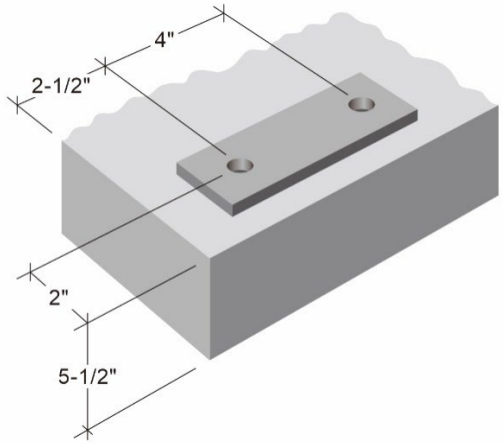
Nominal Anchor Diameter d_o (inch)	Nominal Embedment Depth h_{nom} (inch)	Allowable Tension Load $T_{allowable,ASD}$ (lb)
1/4	1 5/8	504
1/4	2 1/2	1271
3/8	1 5/8	613
3/8	2 1/2	1313
3/8	3 1/4	2235
1/2	2 1/4	954
1/2	3	1529
1/2	4 1/4	2759
5/8	3 1/4	2133
5/8	4	2892
5/8	5	3654
5/8	5 1/2	4897
3/4	4	2791
3/4	5 1/2	4130
3/4	6 1/4	5061

1. Single anchor.
2. Static tension loading only.
3. Concrete determined to remain uncracked for the life of the anchorage.
4. Load combinations taken from ACI 318-19 Section 5.3 with no seismic loading.
5. 30% Dead Load (D) and 70% Live Load (L), controlling load combination 1.2D + 1.6L.
6. Calculation of the weighted average for $\alpha = 1.2 \times 0.3 + 1.6 \times 0.7 = 1.48$
7. Normal weight concrete, $f'_c = 2{,}500$ psi.
8. $c_{a1} = c_{a2} \geq c_{ac}$
9. Concrete thickness $h \geq h_{min}$.
10. Values are for Condition B (supplementary reinforcement in accordance with ACI 318-19 Section 17.5.3 is not provided).

Illustrative procedure of Allowable Stress Design calculation. Method ACI 318-19 Chapter 17

Per the figure below and the following information:

- 2 anchors Topp Bolt 1/2"x 3" anchor length
- Concrete: strength 2,500 psi, uncracked, 5 1/2 inches thick
- h_{ef} = 2.30 in
- Anchor Layout: as per sketch
- Static or quasi-static loads



Step	ACI 318-19 Section Reference	ESR Section Reference	CALCULATIONS
1	17.9	Section 4.1.11 Table 1	Verify spacing / edge distance / member thickness s = 4 in > 3 in → verifed c_{a1} = 2-1/2 in > 1-3/4 in → verified c_{a2} = 2 in > 1-3/4 in → verified h = 5 1/2 in > 5 in → verified
2	17.6.1.2	Section 4.1.2 Table 3	Calculate steel capacity on a single fastener loaded in tension ϕN_{sa}= (0.65) (20,680) = 13,442 lb Group of fasteners ϕN_s= n ϕN_{sa}= (2) (13,442) = **26,884** lb
3 3.1 3.2 3.3 3.4 3.5 3.6 3.7	17.6.2.1 17.6.2.1 17.6.2.3 17.6.2.4 17.6.2.5 17.6.2.6 17.6.2.2 17.6.2.1	4.1.3 Table 3 Table 3 4.1.3 4.1.10 4.1.3 4.1.3	Calculation concrete strength capacity on the group of fasteners loaded in tension $\phi N_{cbg} = \phi \frac{A_{Nc}}{A_{Nco}} \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$ A_{Nc} = (c_{a1}+1.5 h_{ef}) (c_{a2}+s+1.5 h_{ef}) = (2+3.45) (2.5+4+3.45) = 54.23 A_{Nco} = 9 (h_{ef})^2 = 9 (2.30)^2 = 47.61 No load eccentricity → e_v = 0 → $\psi_{ec,N} = 1.00$ $C_{a,min}$ < 1.5 h_{ef} → $\psi_{ed,N} = 0.7 + 0.3 \frac{c_{a,min}}{1.5\, h_{ef}} = 0.7 + 0.3 \frac{2}{3.45} = 0.87$ Unracked concrete → $\psi_{c,N}$ = 1.00 (use k_{uncr}) Unracked concrete → $\psi_{cp,N} = c_{a2} / c_{ac}$ = 2 / 3.45 = 0.59 $N_b = k_{uncr} \lambda_a \sqrt{f'_c}\, h_{ef}^{1.5} = (24)\,(1.0)\sqrt{2500}\,(2.30)^{1.5} = 4{,}185$ lb thus $\phi N_{cbg} = (0.55) \frac{54.23}{47.61} (1.0)(0.87)(0.59)(4{,}185) =$ **1,346** lb
4	17.6.3.1	Section 4.1.4 Table 3	Calculate pull out strength on single fastener loaded in tension $\phi N_{p,f} = \phi \psi_{c,P} N_{p,2500} \left(\frac{f'_c}{2{,}500}\right)^n = (0.55)(1.0)\,(4{,}115) \left(\frac{2{,}500}{2{,}500}\right)^{0.50} = 2{,}263$ lb Group of fasteners ϕN_p= n ϕN_p= (2) (2,263) = **4,526** lb
5	17.5.1.2	-	Governing tension strength: Minimum value of steel, concrete breakout, pull out: ϕN_n= min [ϕN_s; ϕN_c; ϕN_p] = **1,346** lb
6	5.3	Section 4.2.1	Calculation of conversion factor, α, for allowable stress design α = (1.2) D +(1.6) L = (1.2) (0.30) + (1.6) (0.70) = **1.48**
7	-	Section 4.2.1	Calculation of allowable stress design in tension $T_{allowable,ASD} = \frac{\phi N_n}{\alpha} = \frac{1{,}346}{1.48} =$ **909** lb

FIGURE 3—EXAMPLE STRENGTH DESIGN CALCULATION INCLUDING ASD CONVERSION, FOR ILLUSTRATIVE PURPOSES

TABLE 6— APPLICABLE SECTIONS OF THE IBC UNDER EACH EDITION OF THE IBC

2024 IBC	2021 IBC	2018 IBC	2015 IBC	2012 IBC
Section 1605.1		Section 1605.2 or 1605.3		
Sections 1705, 1706 and 1707				
Section 1705.1.1 and Table 1705.3				
Section 1901.3				Sections 1908 and 1909
Sections 1903 and 1905				
Section 1905.7	Section 1905.1.8			Section 1905.1.9

TABLE 7— APPLICABLE SECTIONS OF ACI 318 UNDER EACH EDITION OF THE IBC

2024 IBC	2021 IBC	2018 IBC	2015 IBC	2012 IBC
ACI 318-19		**ACI 318-14**		**ACI 318-11**
2.3		2.3		D.1
5.3		5.3		9.2
Chapter 17		Chapter 17		Appendix D
17.3.1		17.2.7		D.3.7
17.5.1.2		17.3.1		D.4.1
17.5.3		17.3.3		D.4.3
17.6		17.4		D.5
17.6.1		17.4.1		D.5.1
17.6.1.2		17.4.1.2		D.5.1.2
17.6.2		17.4.2		D.5.2
17.6.2.2		17.4.2.2		D.5.2.2
17.6.2.5.1(a)		17.4.2.6		D.5.2.6
17.6.3.1		17.4.3.1		D.5.3.1
17.6.3.2.1		17.4.3.2		D.5.3.2
17.6.3.3		17.4.3.6		D.5.3.6
17.7		17.5		D.6
17.7.1.2		17.5.1.2		D.6.1.2
Eq. 17.7.1.2b		Eq. 17.5.1.2b		Eq. D-29
17.7.2		17.5.2		D.6.2
17.7.2.2.1		17.5.2.2		D.6.2.2
17.7.3		17.5.3		D.6.3
17.8		17.6		D.7
17.9.2		17.7.1 and 17.7.3		D.8.1 and D.8.3
17.9.4		17.7.5		D.8.5
17.9.5		17.7.6		D.8.6
17.10		17.2.3		D.3.3
17.10.4, 17.10.5, 17.10.6, 17.10.7		17.2.3.4, 17.2.3.5, 17.2.3.6, 17.2.3.7		D.3.3.4, D.3.3.5, D.3.3.6, D.3.3.7

DIVISION: 03 00 00—CONCRETE
Section: 03 16 00—Concrete Anchors

DIVISION: 05 00 00—METALS
Section: 05 05 19—Post-Installed Concrete Anchors

REPORT HOLDER:

SHEH KAI PRECISION CORP. LTD.

EVALUATION SUBJECT:

TOPP BOLT CONCRETE SCREW ANCHORS IN CRACKED AND UNCRACKED CONCRETE

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete, described in ICC-ES evaluation report ESR-4376, 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:

- 2026* *City of Los Angeles Building Code* (LABC)
- 2026* *City of Los Angeles Residential Code* (LARC)

*For evaluation for compliance with the anticipated requirements of the 2026 LABC and LARC

2.0 CONCLUSIONS

The Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-4376, comply with the LABC Chapter 19, and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-4376.
- The design, installation, conditions of use and identification of the anchors are in accordance with the 2024 *International Building Code*® (IBC) and 2024 *International Residential Code*® (IRC) provisions, as applicable, noted in the evaluation report ESR-4376.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17, and the City of Los Angeles Information Bulletin P/BC 2023-092, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.
- The allowable strength and design strength values listed in the evaluation report and tables are for the connection of the anchors to the concrete. The connection between the anchors and the connected members shall be checked for capacity (which may govern).
- For use in wall anchorage assemblies to flexible diaphragm applications, anchors shall be designed per the requirements of City of Los Angeles Information Bulletin P/BC 2026-071.

This supplement expires concurrently with the evaluation report, reissued December 2025 and revised May 2026.

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DIVISION: 03 00 00—CONCRETE
Section: 03 16 00—Concrete Anchors

DIVISION: 05 00 00—METALS
Section: 05 05 19—Post-Installed Concrete Anchors

REPORT HOLDER:

SHEH KAI PRECISION CORP. LTD.

EVALUATION SUBJECT:

TOPP BOLT CONCRETE SCREW ANCHORS IN CRACKED AND UNCRACKED CONCRETE

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete, described in ICC-ES evaluation report ESR-4376, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2025 *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 Architects (DSA) see Sections 2.1.1 and 2.1.2 below.

- 2025 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-4376, comply with CBC Chapter 19, provided the design and installation are in accordance with the 2024 *International Building Code*® (IBC) provisions, as applicable, noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 19, as applicable.

2.1.1 OSHPD:

The Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-4376, comply with the CBC amended Sections in Chapters 16, 17 and 19, and Chapters 16A, 17A and 19A, provided the design and installation are in accordance with the 2024 *International Building Code*® (IBC) provisions noted in the evaluation report, and the additional requirements in Sections 2.1.1.1 to 2.1.1.3 of this supplement:

2.1.1.1 Verification Test Requirements: The installation verification test loads, frequency, and acceptance criteria shall be in accordance with Section 1901.3.4 [OSHPD 1R, 2 and 5] and Section 1910A.5 [OSHPD 1 and 4] of the CBC, as applicable.

2.1.1.2 Special Inspection Requirements: Periodic special inspection is required, in accordance with Section 1705.1.1 and Table 1705.3 [OSHPD 1R, 2, 3, 5 and 6] or Section 1705A.1.1, and Table 1705A.3 [OSHPD 1 and 4] of the CBC, as applicable. In addition, special inspection is required for special seismic certification for designated seismic system in accordance with Section 1705.13.4 [OSHPD 3 and 6] and Section 1705A.13.4 [OSHPD 1 & 4] of the CBC, as applicable.

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2.1.1.3 Conditions of Use: Where moment resistance is assumed at the base of the superstructure elements, deformation of the superstructure to foundation connection shall be considered in accordance with Section 1617A.1.15 [OSHPD 1, 4 and 6] of the CBC.

2.1.2 DSA:

The Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-4376, comply with the CBC amended Sections in Chapters 16 and 19, and Chapters 16A, 17A and 19A, provided the design and installation are in accordance with the 2024 *International Building Code*® (IBC) provisions noted in the evaluation report, and the additional requirements in Sections 2.1.2.1 to 2.1.2.3 of this supplement:

2.1.2.1 Verification Test Requirements: The installation verification test loads, frequency, and acceptance criteria shall be in accordance with Section 1909.2.6 [DSA-SS/CC], and Section 1910A.5 [DSA-SS] of the CBC, as applicable.

2.1.2.2 Special Inspection Requirements: Periodic special inspection is required, in accordance with Section 1705A.1.1 and Table 1705A.3 [DSA-SS, DSA-SS/CC] of the CBC. In addition, special inspection is required for special seismic certification for designated seismic system in accordance with amended Section 1705A.13.4 [DSA-SS, DSA-SS/CC] of the CBC, as applicable.

2.1.2.3 Conditions of Use: Where moment resistance is assumed at the base of the superstructure elements, deformation of the superstructure to foundation connection shall be considered in accordance with Section 1617A.1.15 [DSA-SS] of the CBC, as applicable.

2.2 CRC:

The Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-4376, comply with the CRC Section R301.1.3, provided the design and installation are in accordance with the 2024 *International Residential Code*® (IRC) provisions noted in the evaluation report, and the additional requirements of CBC Chapters 16 and 17.

This supplement expires concurrently with the evaluation report, reissued December 2025 and revised May 2026.

ICC-ES Evaluation Report

ESR-4376 FL Supplement w/ HVHZ

Reissued December 2025

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This report is subject to renewal November 2027.

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DIVISION: 03 00 00—CONCRETE
Section: 03 16 00—Concrete Anchors

DIVISION: 05 00 00—METALS
Section: 05 05 19—Post-Installed Concrete Anchors

REPORT HOLDER:

SHEH KAI PRECISION CORP. LTD.

EVALUATION SUBJECT:

TOPP BOLT CONCRETE SCREW ANCHORS IN CRACKED AND UNCRACKED CONCRETE

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete, described in ICC-ES evaluation report ESR-4376, 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 Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4376, comply with the *Florida Building Code-Building* or 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-4376 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 Sheh Kai Precision Corp. Ltd. Topp Bolt concrete screw anchors in cracked and uncracked concrete, have also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code-Building* and the *Florida Building Code-Residential* with the following condition:

a) For anchorage to wood members, the connection subject to uplift must be designed for no less than 700 pounds (3114 N) in accordance with Item 3 of Section 2321.7 of the *Florida Building Code-Building*.

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 December 2025 and revised May 2026.

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