ICC-ES Evaluation Report

ESR-2272

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Revised March 2020

This report is subject to renewal December 2020.

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:
DEWALT

ADDITIONAL LISTEE:
POWERS FASTENERS

EVALUATION SUBJECT:

SNAKE+™ ANCHORS IN CRACKED AND UNCRACKED CONCRETE (DEWALT / POWERS)

1.0 EVALUATION SCOPE

Compliance with the following codes:

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see ESR-2272 LABC and LARC Supplement.

Property evaluated:
Structural

2.0 USES

The Snake+ anchor is used as anchorage to resist static, wind and seismic tension and shear loads 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).

The \( \frac{3}{8} \)-inch-diameter (9.5 mm) anchors may be installed in the topside of cracked and uncracked normal-weight or sand-lightweight concrete-filled steel deck having a minimum specified compressive strength, \( f_{c} \), of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).

The \( \frac{3}{8} \)-inch- and \( \frac{1}{2} \)-inch-diameter (9.5 mm and 12.7 mm) anchors may be installed in the soffit of cracked and uncracked normal-weight or sand-lightweight concrete-filled steel deck having a minimum specified compressive strength, \( f_{c} \), of 3,000 psi (20.7 MPa).

The Snake+ anchors are an alternative to anchors described in Section 1901.3 of 2018 and 2015 IBC, Sections 1908 and 1909 of the 2012 IBC, and Sections 1911 and 1912 of the 2009 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 Snake+ Anchors:
Snake+ anchors are one-piece, internally threaded screw anchors which receive threaded steel inserts such as threaded rods and bolts in \( \frac{3}{8} \)-inch and \( \frac{1}{2} \)-inch diameters.

Product names for the report holder and the additional listee are presented in the following table.

<table>
<thead>
<tr>
<th>COMPANY NAME</th>
<th>PRODUCT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEWALT</td>
<td>Snake+</td>
</tr>
<tr>
<td>Powers Fasteners</td>
<td>Snake+</td>
</tr>
</tbody>
</table>

Available nominal sizes are \( \frac{3}{8} \)-inch and \( \frac{1}{2} \)-inch. The anchors are manufactured from carbon steel, which are case hardened and have a minimum 0.0002-inch (5 μm) zinc plating in accordance with ASTM B633. The Snake+ anchor is illustrated in Figure 1.

The anchors are installed in predrilled holes with a powered impact wrench. The threads on the anchor body tap into the sides of the predrilled hole and interlock with the base material during installation.

3.2 Steel Insert Elements:
Threaded steel insert elements must be threaded into the Snake+ Anchors to form a connection. The material properties of the steel insert elements must comply with the minimum specifications as given in Table 2 of this report, or an equivalent.

3.3 Concrete:
Normal-weight and lightweight concrete must comply with Sections 1903 and 1905 of the IBC.

3.4 Steel Deck Panels:
Steel deck panels must comply with the configuration in Figure 4 and 5 and have a minimum base-metal thickness of 0.035 inch (0.89 mm) [No. 20 gage]. Steel must comply with ASTM A653/A653M SS Grade 36, and it must have a minimum yield strength of 36 ksi (248 MPa).

4.0 DESIGN AND INSTALLATION

4.1 Strength Design:

4.1.1 General: Design strength of anchors complying with 2018 and 2015 IBC, as well as Section R301.1.3 of the 2018 and 2015 IRC must be determined in accordance with ACI 318-14 and this report.
Design strength of anchors complying with the 2012 IBC, as well as Section R301.1.3 of the 2012 IRC, must be determined in accordance with ACI 318-11 Appendix D and this report.

Design strength of anchors complying with the 2009 IBC, as well as Section R301.1.3 of the 2009 IRC, must be determined in accordance with ACI 318-08 Appendix D and this report.

A design example according to the 2018, 2015 and 2012 IBC is given in Figure 6 of this report.

Design parameters are based on the 2018 and 2015 IBC (ACI 318-14) and 2012 IBC (ACI 318-11) unless noted otherwise in Sections 4.1.1 through 4.1.12 of this report.

The strength design of anchors must comply with ACI 318-14 17.3.1 or ACI 318-11 D.4.1, as applicable, except as required in ACI 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable. Strength reduction factors, \( \phi \), as given in ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, and noted in Tables 2 and 3, must be used for load combinations calculated in accordance with Section 1605.2 of the IBC, Section 5.3 of ACI 318-14, or Section 9.2 of ACI 318-11, as applicable. Strength reduction factors, \( \phi \), described in ACI 318-11 D.4.4 must be used for load combinations calculated in accordance with Appendix C of ACI 318-11. Strength reduction factors, \( \phi \), corresponding to brittle steel elements must be used.

4.1.2 Requirements for Static Steel Strength in Tension, \( N_{ps} \): The nominal static steel strength of a single anchor in tension, \( N_{ps} \), calculated in accordance with ACI 318-14 17.4.1.2 or ACI 318-11 D.5.1.2, as applicable, is given in Table 2 of this report.

4.1.3 Requirements for Static Concrete Breakout Strength in Tension \( N_{p,e} \) or \( N_{cb} \) 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 318-14 17.4.2 or ACI 318-11 D.5.2.2, as applicable, with modifications as described in this section. The basic concrete breakout strength of a single anchor in tension, \( N_{cb} \), must be calculated in accordance with ACI 318-14 17.4.2.2 or ACI 318-11 D.5.2.2, as applicable, using the values of \( \mu_{cr} \) and \( K_{cr} \) as given in Table 2 of this report. The nominal concrete breakout strength in tension in regions where analysis indicates no cracking in accordance with ACI 318-14 17.4.2.6 or ACI 318-11 D.5.2.6, as applicable, must be calculated with the value of \( K_{uncr} \) as given in Table 2 and with \( \psi_{lc} = 1.0 \).

For anchors installed in the soffit of sand-lightweight or normal-weight concrete filled steel deck floor and roof assemblies, as shown in Figure 5, calculation of the concrete breakout strength in accordance with ACI 318-14 17.4.2 or ACI 318-11 D.5.2.2, as applicable, is not required.

4.1.4 Requirements for Static Pullout Strength in Tension, \( N_{p,d} \): The nominal pullout strength of a single anchor in cracked and uncracked concrete, \( N_{p,d} \), and \( N_{p,uncr} \), respectively, in accordance with ACI 318-14 17.4.3 or ACI 318-11 D.5.3, as applicable, is provided in Table 2.

The nominal pullout strength in tension of the anchors installed in the soffit of sand-lightweight or normal-weight concrete filled steel deck floor and roof assemblies, as shown in Figure 5, is provided in Table 2. In accordance with ACI 318-14 17.4.3.2 or ACI 318-11 D.5.3.2, as applicable, the nominal pullout strength in cracked concrete must be calculated according to Eq-1:

\[
N_{p,d} = N_{p,de,cr} \sqrt{\frac{f_c}{20.7}} \quad (N, \text{ MPa})
\]

where \( f_c \) is the specified concrete compressive strength.

\[
N_{p,d} = N_{p,de,uncr} \sqrt{\frac{f_c}{3,000}} \quad (\text{lb}, \text{ psi})
\]

(\text{Eq-2})

4.1.5 Requirements for Static Steel Shear Capacity, \( V_{ss} \): The nominal concrete breakout strength of a single anchor or group of anchors in shear, \( V_{ss} \), of a single anchor in accordance with ACI 318-14 17.5.1.2 ACI 318-11 D.6.1.2, as applicable, is given in Table 3 of this report and must be used in lieu of the values derived by calculation from ACI 318-14 Eq. 17.5.1.2b, ACI 318-11 or Eq. D-29, as applicable.

The shear strength, \( V_{ss,deck} \), of anchors installed in the soffit of sand-lightweight or normal-weight concrete filled steel deck floor and roof assemblies, as shown in Figure 5, is provided in Table 3.

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 318-14 17.5.2 or ACI 318-11 D.6.2, as applicable, with modifications as described in this section. The basic concrete breakout strength of a single anchor in shear, \( V_{cb} \), must be calculated in accordance with ACI 318-14 17.5.2.2 or ACI 318-11 D.6.2.2, as applicable, using the value of \( f_c \) in Table 3 of this report.

For anchors installed in the topside of concrete-filled steel deck assemblies, as shown in Figure 4, 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 318-14 17.5.2 or ACI 318-11 D.6.2, as applicable, using the actual member thickness, \( h_{min,deck} \), in the determination of \( V_{cb} \). Minimum member topping thickness for anchors in the topside of concrete-filled steel deck assemblies is given in Table 1 of this report.

For anchors installed in the soffit of sand-lightweight or normal-weight concrete filled steel deck floor and roof assemblies, as shown in Figure 5, calculation of the concrete breakout strength in accordance with ACI 318-14 17.5.2 or ACI 318-11 D.6.2 is not required.

4.1.7 Requirements for Static Concrete Pryout Strength in Shear, \( V_{pp} \) or \( V_{ppg} \): The nominal concrete pryout strength of a single anchor or group of anchors, \( V_{pp} \) or \( V_{ppg} \), respectively, must be calculated in accordance with ACI 318-14 17.5.3 or ACI 318-11 D.6.3, as applicable, modified by using the value of \( K_{pp} \) described in Table 3 of this report and the value of \( N_{cb} \) or \( N_{cbg} \) as calculated in Section 4.1.3 of this report.

For anchors installed in the soffit of sand-lightweight or normal-weight concrete filled steel deck floor and roof assemblies, as shown in Figure 5, calculation of the concrete pryout strength in accordance with ACI 318-14 17.5.3 or ACI 318-11 D.6.3, as applicable, is not required.

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 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable. Modifications to ACI 318-14 17.2.3 shall be applied under Section 1905.1.8 of the 2018 and 2015 IBC. For the 2012 IBC, Section 1905.1.9 shall be omitted. Modifications to ACI 318-08 D.3.3 shall be applied under Section 1908.1.9 of the 2009 IBC.

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 318-14 17.4 and 17.5 or ACI 318-11 D.5 and D.6, respectively, as applicable, taking into account the corresponding values given in Tables 2 and 3 of this report.

The anchors comply with ACI 318-14 2.3 or ACI 318-11 D.1, as applicable, as brittle steel elements and must be designed in accordance with ACI 318-14 17.2.3.4, 17.2.3.5, 17.2.3.6 or 17.2.3.7; ACI 318-11 D.3.3.4, D.3.3.5, D.3.3.6 or D.3.3.7; ACI 318-08 D.3.3.5 or D.3.3.6; or ACI 318-05 D.3.3.5, as applicable. Strength reduction factors, \( \phi \), are given in Table 2 and Table 3.

The \( \frac{3}{16} \)-inch and \( \frac{1}{2} \)-inch anchors may be installed in regions designated as 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 318-14 17.4.1 and 17.4.2 or ACI 318-11 D.5.1 and D.5.2, respectively, as applicable, as described in Sections 4.1.3 and 4.1.4 of this report. In accordance with ACI 318-14 17.4.3.2 or ACI 318-11 D.5.3.2, as applicable, the appropriate value for pullout strength in tension for seismic loads, \( N_{p,eq} \) or \( N_{p,deck,eq} \), described in Table 2 of this report, must be used in lieu of \( N_p \). \( N_{p,eq} \) or \( N_{p,deck,eq} \) 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 Table 2, the pullout strength in tension for seismic loads 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 318-14 17.5.2 and 17.5.3 or ACI 318-11 D.6.2 and D.6.3, respectively, as applicable, as described in Sections 4.1.6 and 4.1.7 of this report. In accordance with ACI 318-14 17.5.1.2 or ACI 318-11 D.6.1.2, as applicable, the appropriate value for nominal steel strength in shear for seismic loads, \( V_{s,a,eq} \) or \( V_{s,deck,eq} \), described in Table 3 of this report, must be used in lieu of \( V_s \).

4.1.9 Requirements for the Interaction of Tensile and Shear Forces: Anchors or groups of anchors that are subject to the effects of combined axial (tensile) and shear forces must be designed in accordance with ACI 318-14 17.6 or ACI 318-11 D.7, as applicable.

4.1.10 Requirements for Critical Edge Distance, \( c_{acc} \): In applications where \( c < c_{acc} \), 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 318-14 17.4.2 or ACI 318-11 D.5.2, as applicable, must be further multiplied by the factor \( \psi_{cp,N} \) given by Eq-3:

\[
\psi_{cp,N} = \frac{c}{c_{acc}} \quad \text{(Eq-3)}
\]

whereby the factor \( \psi_{cp,N} \) need not be taken less than \( \frac{5}{16} \) when \( c_{acc} \) is provided.

For all other cases, \( \psi_{cp,hf} = 1.0 \). In lieu of using ACI 318-14 17.7.6 or ACI 318-11 D.8.6, values of \( c_{acc} \) provided in Table 2 of this report must be used.

4.1.11 Requirements for Minimum Member Thickness, Minimum Anchor Spacing and Minimum Edge Distance: In lieu of ACI 318-14 17.7.1 and 17.7.3 or ACI 318-11 D.8.1 and D.8.3, respectively, as applicable, values of \( S_{min} \) and \( C_{min} \) must comply with Table 1 of this report. In lieu of ACI 318-14 17.7.5 or ACI 318-11 D.8.5, as applicable, the minimum member thicknesses, \( t_{min} \), as given in Table 1 must be used.

For anchors installed in the topside of concrete-filled steel deck assemblies, the anchors must be installed in accordance with Table 1 and Figure 4.

For anchors installed through the soffit of steel deck assemblies, the anchors must be installed in accordance with Figure 5 and must have an axial spacing along the flute equal to the greater of \( 3h_{ef} \) or 1.5 times the flute width.

4.1.12 Lightweight Concrete: For the use of anchors in lightweight concrete, the modification factor \( \lambda_s \) equal to 0.8 is applied to all values of \( \sqrt{\psi} \) affecting \( N_t \) and \( V_n \).

For ACI 318-14 (2018 and 2015 IBC), ACI 318-11 (2012 IBC) and ACI 318-08 (2009 IBC), \( \lambda_s \) shall be determined in accordance with the corresponding version of ACI 318.

For anchors installed in the soffit of sand-lightweight concrete-filled steel deck and floor and roof assemblies, further reduction of the pullout values provided in this report is not required.

4.2 Allowable Stress Design (ASD):

4.2.1 General: Where design values for use with allowable stress design load combinations in accordance with Section 1605.3 of the IBC are required, these are calculated using Eq-4 and Eq-5 as follows:

\[
T_{allowable,ASD} = \phi N_t / \alpha \quad \text{(Eq-4)}
\]

\[
V_{allowable,ASD} = \phi V_n / \alpha \quad \text{(Eq-5)}
\]

where:

\[
T_{allowable,ASD} = \text{Allowable tension load (lbf or kN)}
\]

\[
V_{allowable,ASD} = \text{Allowable shear load (lbf or kN)}
\]

\[
\phi N_t = \text{Lowest design strength of an anchor or anchor group in tension as determined in accordance with ACI 318-14 Chapter 17 and 2018 and 2015 IBC Section 1905.1.8, ACI 318-11 Appendix D, ACI 318-08 Appendix D and 2009 IBC Section 1908.1.9, as applicable (lbf or kN). For the 2012 IBC, Section 1905.1.9 shall be omitted.}
\]

\[
\phi V_n = \text{Lowest design strength of an anchor or anchor group in shear as determined in accordance with ACI 318-14 Chapter 17 and IBC 2018 and 2015 Section 1905.1.8, ACI 318-11 Appendix D, ACI 318-08 Appendix D and 2009 IBC Section 1908.1.9, as applicable (lbf or kN). For the 2012 IBC, Section 1905.1.9 shall be omitted.}
\]

\[
\alpha = \text{Conversion factor calculated as a weighted average of the load factors for the controlling load combination. In addition, } \alpha \text{ must include all applicable factors to account for nonductile failure modes and required over-strength.}
\]

The requirements for member thickness, edge distance and anchor spacing, described in this report, must apply. An example of allowable stress design tension values for illustrative purposes is shown in Table 4.
5.2 Conditions of Use

The蛇+锚杆在本报告中描述是适用于在什么情况下，包括那些代码在第 1.0 节中规定，适用于以下条件:

5.1 锚杆必须安装在与制造商的已发布安装说明和本报告。在冲突的情况下，本报告具有约束力。

5.2 锚杆尺寸、尺寸和最小嵌入深度均设定在本报告。

5.3 锚杆必须安装在开裂和未开裂的正常重量的混凝土和轻混凝土，以具有指定的压缩强度，$f'_c$，为 2,500 psi 至 8,500 psi (17.2 MPa 至 58.6 MPa)，以及开裂和未开裂的正常重量或轻混凝土钢壳钢。
5.17 Special inspection must be provided in accordance with Section 4.5 of this report.

5.18 Use of anchors is limited to dry, interior locations.

5.19 Anchors are manufactured under an approved quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Mechanical Anchors in Concrete Elements (AC193), dated October 2017 (editorially revised April 2018), which incorporates requirements in ACI 355.2-07 / ACI 355.2-04, for use in cracked and uncracked concrete; including optional suitability tests 12 and 13 (AC193, Table 4.2) for seismic tension and shear; and quality control documentation.

7.0 IDENTIFICATION

7.1 The Snake+ anchors are identified in the field by their dimensional characteristics and packaging. Packages are identified with the anchor name, part number, type, size, the company name as set forth in Section 3.1 of this report, and the evaluation report number (ESR-2272).

7.2 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

7.3 The Additional Listee’s contact information is the following:

POWERS FASTENERS
701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286
(800) 524-3244
www.powers.com
engineering@powers.com

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<table>
<thead>
<tr>
<th>Anchor Property / Setting Information</th>
<th>Symbol</th>
<th>Units</th>
<th>Nominal Anchor Size / Threaded Coupler Diameter (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal outside anchor diameter</td>
<td>(d_a)</td>
<td>in.</td>
<td>(\frac{3}{8})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(\frac{1}{2})</td>
</tr>
<tr>
<td>Internal thread diameter (UNC)</td>
<td>(d)</td>
<td>in.</td>
<td>0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.750</td>
</tr>
<tr>
<td>Minimum diameter of hole clearance in fixture for steel insert element (following anchor installation)</td>
<td>(d_h)</td>
<td>in.</td>
<td>(\frac{7}{16})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(\frac{9}{16})</td>
</tr>
<tr>
<td>Nominal drill bit diameter</td>
<td>(d_{bit})</td>
<td>in.</td>
<td>(\frac{1}{2}) ANSI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(\frac{3}{8}) ANSI</td>
</tr>
<tr>
<td>Minimum nominal embedment depth(^2)</td>
<td>(h_{nom})</td>
<td>in.</td>
<td>(2\frac{3}{16})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2\frac{7}{16})</td>
</tr>
<tr>
<td>Effective embedment</td>
<td>(h_d)</td>
<td>in.</td>
<td>1.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.54</td>
</tr>
<tr>
<td>Minimum hole depth</td>
<td>(h_{hole})</td>
<td>in.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2\frac{1}{2}</td>
</tr>
<tr>
<td>Overall anchor length</td>
<td>(l_{anch})</td>
<td>in.</td>
<td>1\frac{1}{4}</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1\frac{11}{16}</td>
</tr>
<tr>
<td>Maximum impact screwdriver power (torque)</td>
<td>(T_{screw})</td>
<td>ft.-lb.</td>
<td>345</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>345</td>
</tr>
<tr>
<td>Maximum tightening torque of steel insert element (threaded rod or bolt)</td>
<td>(T_{max})</td>
<td>ft.-lb.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>36</td>
</tr>
</tbody>
</table>

**Anchors Installed in Concrete Construction\(^2\)**

| Minimum member thickness\(^2\) | \(h_{min}\) | in. | 4 |
| Critical edge distance\(^2\) | \(c_{ac}\) | in. | 3 |
| Minimum edge distance\(^2\) | \(c_{min}\) | in. | 3 |
| Minimum spacing distance\(^2\) | \(s_{min}\) | in. | 3 |

**Anchors installed in the Topside of Concrete-filled Steel Deck Assemblies\(^3\)**

| Minimum member topping thickness | \(h_{min,deck}\) | in. | 3\frac{1}{4} |
| Critical edge distance | \(c_{ac,deck,top}\) | in. | 3 |
| Minimum edge distance | \(c_{min,deck,top}\) | in. | 3 |
| Minimum spacing distance | \(s_{min,deck,top}\) | in. | 3 |

For SI: 1 inch = 25.4 mm, 1 ft-lb = 1.356 N-m.

\(^1\) The information presented in this table is to be used in conjunction with the design criteria of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable.

\(^2\) For installations through the soffit of steel deck into concrete, see Figure 5. Anchors in the lower flute may be installed with a maximum 1-inch offset in either direction from center of the flute. In addition, anchors shall have an axial spacing along the flute a minimum 1.5 times the flute width.

\(^3\) For \(\frac{3}{8}\)-inch diameter anchors installed in the topside of concrete-filled steel deck assemblies, see Figure 4 of this report.
1. Using the proper drill bit size, drill a hole into the base material to the required depth (e.g., dust extractor, hollow bit). The tolerances of the carbide drill bit used should meet the requirements of ANSI Standard B212.15.

2. Select a powered impact wrench that does not exceed the maximum torque, $T_{\text{max}}$, for the selected anchor diameter. Attach the Snake+ setting tool supplied by to the impact wrench. Mount the anchor onto the setting tool.

3. Drive the anchor into the hole to the required embedment until the shoulder of the Snake+ setting tool comes into contact with the surface of the base material. Do not spin the setting tool off the anchor to disengage.

4. Insert threaded rod or a bolt into the Snake+, taking care not to exceed the maximum specified tightening torque of the steel insert element, $T_{\text{max}}$. Minimum thread engagement must be full anchor depth.

1 $\frac{3}{8}$-inch diameter anchors may be placed in the topside of floor or roof steel deck profiles provided the minimum topping thickness, minimum spacing distance and minimum edge distance are satisfied as given in Table 1 of this report.

1 Anchors may be placed in the upper or lower flute of floor or roof steel deck profiles provided the minimum hole clearance is satisfied. Anchors in the lower flute may be installed with a maximum 1-inch offset in either direction from the center of the flute. The offset distance may be increased proportionally for profiles with lower flute widths greater than those shown provided the minimum lower flute edge distance is also satisfied.
**TABLE 2—TENSION DESIGN INFORMATION FOR SNAKE+ ANCHORS IN CONCRETE**

(For use with load combinations taken from ACI 318-14, Section 5.3 or ACI 318-11, Section 9.2)¹ ²

<table>
<thead>
<tr>
<th>Design Characteristic</th>
<th>Notation</th>
<th>Units</th>
<th>Nominal Anchor Size / Threaded Coupler Diameter (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3/8 inch</td>
</tr>
<tr>
<td>Anchor category</td>
<td>1, 2 or 3</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Nominal embedment depth</td>
<td>h nom</td>
<td>in.</td>
<td>1 ²/₈</td>
</tr>
</tbody>
</table>

**STEEL STRENGTH IN TENSION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
<th>Units</th>
<th>Material</th>
<th>Minimum Specified Yield Strength</th>
<th>Minimum Specified Ultimate Strength</th>
<th>Effective Tensile Stress Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum specified yield strength of steel insert element (threaded rod or bolt)</td>
<td>f y</td>
<td>ksi</td>
<td>ASTM A36</td>
<td>36.0</td>
<td>ASTM A36, Gr. B7</td>
<td>105.0</td>
</tr>
<tr>
<td>Minimum specified ultimate strength of steel insert element (threaded rod or bolt)</td>
<td>f u</td>
<td>ksi</td>
<td>ASTM A36</td>
<td>58.0</td>
<td>ASTM A36, Gr. B7</td>
<td>125.0</td>
</tr>
<tr>
<td>Effective tensile stress area of steel insert element (threaded rod or bolt)</td>
<td>A se,N</td>
<td>in²</td>
<td>0.0318</td>
<td>0.1419</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Steel strength in tension**

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
<th>Units</th>
<th>Material</th>
<th>Nominal Embedment Depth</th>
<th>Characteristic Pullout Strength</th>
<th>Reduction Factor for Steel Strength</th>
<th>Effective Embedment</th>
<th>Effectiveness Factor for Cracked Concrete</th>
<th>Effectiveness Factor for Uncracked Concrete</th>
<th>Modification Factor for Cracked and Uncracked Concrete</th>
<th>Critical Edge Distance (uncracked concrete only)</th>
<th>Critical Edge Distance (cracked concrete only)</th>
<th>Pullout Strength Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel strength in tension</td>
<td>N p</td>
<td>lbf</td>
<td>ASTM A36</td>
<td>4,495</td>
<td>ASTM A36, Gr. B7</td>
<td>9,685</td>
<td>ASTM A36</td>
<td>8,230</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction factor for steel strength</td>
<td>ψ</td>
<td>-</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCRETE BREAKOUT STRENGTH IN TENSION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
<th>Units</th>
<th>Material</th>
<th>Minimum Specified Ultimate Strength of Steel Insert Element (threaded rod or bolt)</th>
<th>Critical Edge Distance (uncracked concrete only)</th>
<th>Critical Edge Distance (cracked concrete only)</th>
<th>Pullout Strength Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical edge distance (cracked concrete only)</td>
<td>c cr</td>
<td>in.</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical edge distance (uncracked concrete only)</td>
<td>c uncr</td>
<td>in.</td>
<td>0.65 (Condition B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective Embedment</td>
<td>n eff</td>
<td>in.</td>
<td>1.10</td>
<td>1.54</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PULLOUT STRENGTH IN TENSION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
<th>Units</th>
<th>Material</th>
<th>Nominal Embedment Depth</th>
<th>Characteristic Pullout Strength, uncracked concrete (2,500 psi)</th>
<th>Reduction Factor for Pullout Strength</th>
<th>Effective Embedment</th>
<th>Effectiveness Factor for Uncracked Concrete</th>
<th>Effectiveness Factor for Cracked Concrete</th>
<th>Modification Factor for Cracked and Uncracked Concrete</th>
<th>Critical Edge Distance (uncracked concrete only)</th>
<th>Critical Edge Distance (cracked concrete only)</th>
<th>Pullout Strength Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic pullout strength, uncracked concrete (2,500 psi)</td>
<td>N p,uncr</td>
<td>lbf</td>
<td>See note 7</td>
<td>See note 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic pullout strength, cracked concrete (2,500 psi)</td>
<td>N p,cr</td>
<td>lbf</td>
<td>See note 7</td>
<td>1,665</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction factor for pullout strength</td>
<td>ψ</td>
<td>-</td>
<td>0.65 (Condition B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PULLOUT STRENGTH IN TENSION FOR SEISMIC APPLICATIONS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
<th>Units</th>
<th>Material</th>
<th>Nominal Embedment Depth</th>
<th>Characteristic Pullout Strength, seismic (2,500 psi)</th>
<th>Reduction Factor for Pullout Strength, seismic</th>
<th>Effective Embedment</th>
<th>Effectiveness Factor for Uncracked Concrete</th>
<th>Effectiveness Factor for Cracked Concrete</th>
<th>Modification Factor for Cracked and Uncracked Concrete</th>
<th>Critical Edge Distance (uncracked concrete only)</th>
<th>Critical Edge Distance (cracked concrete only)</th>
<th>Pullout Strength Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic pullout strength, seismic (2,500 psi)</td>
<td>N p,eq</td>
<td>lbf</td>
<td>See note 7</td>
<td>1,665</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction factor for pullout strength, seismic</td>
<td>ψ</td>
<td>-</td>
<td>0.65 (Condition B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PULLOUT STRENGTH IN TENSION FOR SOFFIT OF SAND-LIGHTWEIGHT AND NORMAL WEIGHT CONCRETE OVER STEEL DECK**

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
<th>Units</th>
<th>Material</th>
<th>Nominal Embedment Depth</th>
<th>Characteristic Pullout Strength, uncracked concrete over steel deck</th>
<th>Characteristic Pullout Strength, cracked concrete over steel deck</th>
<th>Characteristic Pullout Strength, concrete over steel deck, seismic</th>
<th>Characteristic Pullout Strength, concrete over steel deck</th>
<th>Reduction Factor for Pullout Strength, concrete over steel deck</th>
<th>Mean Axial Stiffness Values, Service Load Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic pullout strength, uncracked concrete over steel deck</td>
<td>N p,deck,uncr</td>
<td>lbf</td>
<td>1,515</td>
<td>1,625</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic pullout strength, cracked concrete over steel deck</td>
<td>N p,deck,cr</td>
<td>lbf</td>
<td>1,075</td>
<td>1,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic pullout strength, concrete over steel deck, seismic</td>
<td>N p,deck,eq</td>
<td>lbf</td>
<td>1,075</td>
<td>1,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic pullout strength, concrete over steel deck</td>
<td>N p,deck</td>
<td>lbf</td>
<td>1,075</td>
<td>1,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction factor for pullout strength, concrete over steel deck</td>
<td>ψ</td>
<td>-</td>
<td>0.65 (Condition B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean axial stiffness values, service load range</td>
<td></td>
<td></td>
<td>Uncracked concrete</td>
<td>Cracked concrete</td>
<td>10³ lbf/ft²</td>
<td>10³ lbf/ft²</td>
<td>2800</td>
<td>545</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 ksi = 6.894 N/mm²; 1 lbf = 0.0044 kN.

¹The data in this table is intended to be used with the design provisions of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable, must apply.

²Installation must comply with published instructions and details.

³All values of ψ were determined from the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2. If the load combinations ACI 318-11 Appendix C are used, the appropriate value of ψ must be determined in accordance with ACI 318-11 D.4.4. For reinforcement that meets ACI 318-11 Chapter 17 or ACI 318-11 Appendix D, as applicable, requirements for Condition A, see ACI 318-14 17.3.3(c) or ACI 318-11 D.4.3(c), as applicable, for the appropriate ψ factor.

⁴It is assumed that the threaded rod or bolt used with the Snake+ anchor is a ductile steel element with minimum specified properties as listed in the table or an equivalent steel element. The Snake+ anchor is considered a brittle steel element in tension as defined by ACI 318-14 2.3 or ACI 318-11 D.1, as applicable. Tabulated values for steel strength in tension must be used for design.

⁵For all design cases use k y = 1.0. The appropriate effectiveness factor for cracked concrete (kcr) and uncracked concrete (k uncr) must be used.

⁶For all design cases use k y = 1.0. For calculation of N p, see Section 4.1.4 of this report.

⁷Pullout strength does not control design of indicated anchors. Do not calculate pullout strength for indicated anchor size and embedment.

⁸Anchors are permitted to be used in lightweight concrete in accordance with Section 4.1.12 of this report.

⁹Values for N p,deck are for sand-lightweight concrete (f c,min = 3,000 psi) and additional lightweight concrete reduction factors need not be applied. In addition, evaluation for the concrete breakout capacity in accordance with ACI 318-14 17.4.2 or ACI 318-11 D.5.2, as applicable, is not required for anchors installed in the deck soffit (flute).

¹⁰When concrete is not assumed to be cracked, the nominal load capacity of anchors shall be determined based on the assumed condition of the concrete and the geometry of the embedment.
TABLE 3—SHEAR DESIGN INFORMATION FOR SNAKE+ ANCHORS IN CONCRETE
(For use with load combinations taken from ACI 318-14, Section 5.3 or ACI 318-11, Section 9.2)1,2

<table>
<thead>
<tr>
<th>Design Characteristic</th>
<th>Nominal Anchor Size / Threaded Coupler Diameter (in.)</th>
<th>3/8 inch</th>
<th>1/2 inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchor category</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1, 2 or 3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nominal embedment depth</td>
<td></td>
<td>1 1/16</td>
<td>2 1/16</td>
</tr>
</tbody>
</table>

**STEEL STRENGTH IN SHEAR4**

<table>
<thead>
<tr>
<th>Steel strength in shear</th>
<th>Vsa,0</th>
<th>lbf</th>
<th>ASTM A36</th>
<th>770</th>
<th>ASTM A193, Gr. B7</th>
<th>1,655</th>
<th>ASTM A36</th>
<th>1,995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction factor for steel strength</td>
<td>φ</td>
<td>-</td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCRETE BREAKOUT IN SHEAR6**

<table>
<thead>
<tr>
<th>Load bearing length of anchor</th>
<th>r₀</th>
<th>in.</th>
<th>1.10</th>
<th>1.54</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal outside anchor diameter</td>
<td>d₂</td>
<td>in.</td>
<td>0.500</td>
<td>0.750</td>
</tr>
<tr>
<td>Reduction factor for concrete breakout strength</td>
<td>φ</td>
<td>-</td>
<td>0.70 (Condition B)</td>
<td></td>
</tr>
</tbody>
</table>

**PRYOUT STRENGTH IN SHEAR6**

| Coefficient for pryout strength | kₚφ | - | 1.0 | 1.0 |
| Effective embedment | hₑ | in. | 1.10 | 1.54 |
| Reduction factor for pryout strength | φ | - | 0.70 (Condition B) | |

**STEEL STRENGTH IN SHEAR FOR SEISMIC APPLICATIONS**

<table>
<thead>
<tr>
<th>Steel strength in shear, seismic</th>
<th>Vsa,eq</th>
<th>lbf</th>
<th>ASTM A36</th>
<th>770</th>
<th>ASTM A193, Gr. B7</th>
<th>1,655</th>
<th>ASTM A36</th>
<th>1,995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction factor for steel strength in shear, seismic</td>
<td>φ</td>
<td>-</td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STEEL STRENGTH IN SHEAR FOR SOFFIT OF SAND-LIGHTWEIGHT AND NORMAL WEIGHT CONCRETE OVER STEEL DECK5**

<table>
<thead>
<tr>
<th>Steel strength in shear, concrete over steel deck</th>
<th>Vsa,deck</th>
<th>lbf</th>
<th>ASTM A36</th>
<th>770</th>
<th>ASTM A193, Gr. B7</th>
<th>1,655</th>
<th>ASTM A36</th>
<th>1,995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel strength in shear, concrete over steel deck, seismic</td>
<td>Vsa,deck,eq</td>
<td>lbf</td>
<td>ASTM A36</td>
<td>770</td>
<td>ASTM A193, Gr. B7</td>
<td>1,655</td>
<td>ASTM A36</td>
<td>1,995</td>
</tr>
<tr>
<td>Reduction factor for steel strength in shear, concrete over steel deck</td>
<td>φ</td>
<td>-</td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 0.0044 kN.
1 The data in this table is intended to be used with the design provisions of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-14 17.2.3 or ACI 318-11 D.3.3 shall apply.
2 Installation must comply with published instructions and details.
3 All values of φ were determined from the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3, or ACI 318-11 Section 9.2, as applicable. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of φ must be determined in accordance with ACI 318-11 D.4.4. For reinforcement that meets ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable, requirements for Condition A, see ACI 318-14 17.3.3(c) or ACI 318-11 D.4.3(c), as applicable, for the appropriate φ factor.
4 It is assumed that the threaded rod or bolt used with the Snake+ anchor will be a ductile steel element as defined by ACI 318-14 2.3 or ACI 318-11 D.1, as applicable.
5 Tabulated values for steel strength in shear must be used for design. These tabulated values are lower than calculated results using equation 17.5.1.2b in ACI 318-14, D-29 in ACI 318-11, and ACI 318-14 17.5.1.2 or ACI 318-11 D.6.1.2, as applicable.
6 Anchors are permitted to be used in lightweight concrete in accordance with Section 4.1.12 of this report.
7 Tabulated values for steel strength in shear are for seismic applications and based on test results in accordance with ACI 355.2 Section 9.6.
8 Tabulated values for Vsa,deck are for sand-lightweight concrete (f𝑐,min = 3,000 psi) and additional lightweight concrete reduction factors need not be applied. In addition, evaluation for the concrete breakout capacity in accordance with ACI 318-14 17.5.2 or ACI 318-11 D.6.2, as applicable, and the pryout capacity in accordance with ACI 318-14 17.5.3 or ACI 318-11 D.6.3 are not required for anchors installed in the deck soffit (flute).
9 Shear loads for anchors installed through steel deck into concrete may be applied in any direction.

TABLE 4—EXAMPLE ALLOWABLE STRESS DESIGN VALUES FOR ILLUSTRATIVE PURPOSES1,2,3,4,5,6,7,8,9

<table>
<thead>
<tr>
<th>Nominal Anchor Size (inches)</th>
<th>Steel Insert Element (ASTM)10</th>
<th>Nominal Embedment Depth (inches)</th>
<th>Effective Embedment (inches)</th>
<th>Allowable Tension Load (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>A36</td>
<td>1 1/16</td>
<td>1.10</td>
<td>610</td>
</tr>
<tr>
<td></td>
<td>A193, Gr. B7</td>
<td>1 1/16</td>
<td>1.10</td>
<td>610</td>
</tr>
<tr>
<td>1/2</td>
<td>A 36</td>
<td>2 1/16</td>
<td>1.54</td>
<td>1,260</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 0.0044 kN.
1 Single anchor with static tension load only.
2 Concrete determined to remain uncracked for the life of the anchorage.
3 Load combinations are taken from ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2, as applicable (no seismic loading).
4 Assumes 30% dead load and 70% live load, controlling load combination 1.2D + 1.6L.
5 Calculation of weighted average for conversion factor α = 1.2(0.3) + 1.6(0.7) = 1.48.
6 fC = 2,500 psi (normal weight concrete).
7 Conc = Conc ≥ Conc.
8 h ≥ hic.
9 Values are for Condition B where supplementary reinforcement in accordance with ACI 318-14 17.3.3(c) or ACI 318-11 D.4.3(c), as applicable, is not provided.
10 The threaded rod or bolt used with the Snake+ anchor must have the minimum specified properties as listed in Table 2 or an equivalent steel element.
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Snake+ anchors in cracked and uncracked concrete, described in ICC-ES evaluation report ESR-2272, 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:

- 2020 City of Los Angeles Building Code (LABC)
- 2020 City of Los Angeles Residential Code (LARC)

2.0 CONCLUSIONS

The Snake+ anchors in cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-2272, 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 Snake+ 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-2272.
- The design, installation, conditions of use and identification of the anchors are in accordance with the 2018 International Building Code® (IBC) provisions noted in the evaluation report ESR-2272.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.
- The allowable and strength design 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 PIBC 2020-071.

This supplement expires concurrently with the evaluation report, reissued December 2019 and revised March 2020.
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Powers Snake+ Anchors in Cracked and Uncracked Concrete, recognized in ICC-ES evaluation report ESR-2272, have also been evaluated for compliance with the codes noted below.

Compliance with the following codes:
- 2017 Florida Building Code—Building
- 2017 Florida Building Code—Residential

2.0 PURPOSE OF THIS SUPPLEMENT

The Powers Snake+ Anchors in Cracked and Uncracked Concrete described in Sections 2.0 through 7.0 of the evaluation report ESR-2272 comply with the Florida Building Code—Building and the Florida Building Code—Residential, provided the design and installation are in accordance with the 2015 International Building Code® (IBC) provisions noted in the evaluation report.

Use of the Powers Snake+ Anchors in Cracked and Uncracked Concrete as described in the evaluation report for compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code—Building and the Florida Building Code—Residential, has not been evaluated, and is outside the scope of this supplement.

For products falling under Florida Rule 9N-3, verification that the report holder’s quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued December 2019 and revised March 2020.