



# Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2404-11



Issue Date: April 2, 2025

Revision Date: May 21, 2025

Subject to Renewal: July 1, 2026

## Drillcrete® Concrete Screws for Use in Concrete

Trade Secret Report Holder:  
**Robertson, Inc.**

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### CSI Designations:

DIVISION: 03 00 00 - CONCRETE

Section: 03 16 00 - Concrete Anchors

DIVISION: 05 00 00 - METALS

Section: 05 05 19 - Post-Installed Concrete Anchors

## 1 Innovative Products Evaluated<sup>1</sup>

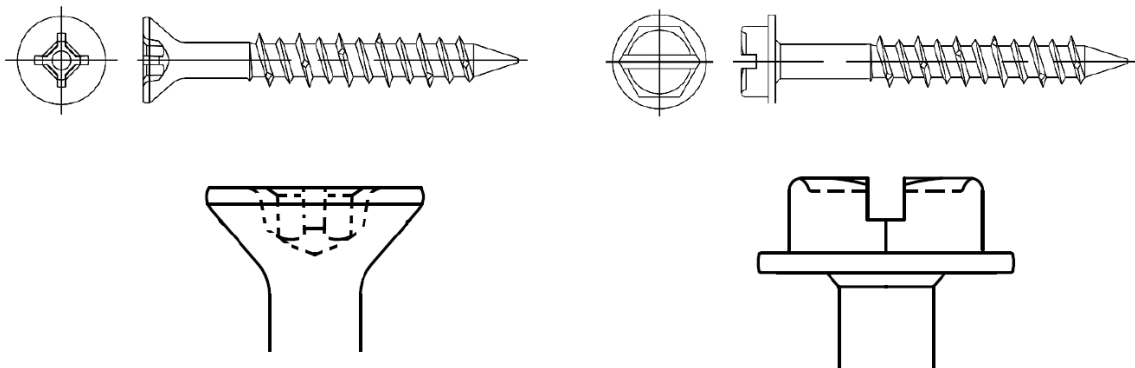
### 1.1 Drillcrete Concrete Screws:

1.1.1  $\frac{3}{16}$ " Drillcrete Concrete Screw

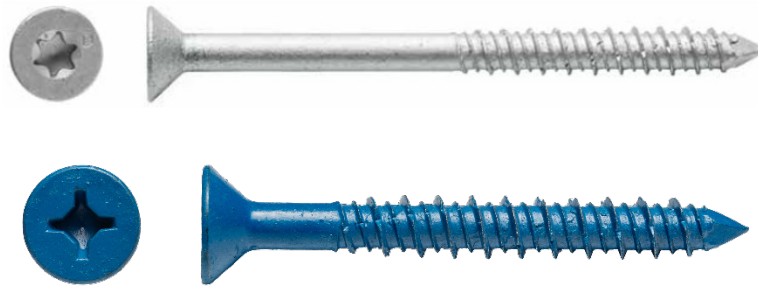
1.1.2  $\frac{1}{4}$ " Drillcrete Concrete Screw

## 2 Product Description and Materials

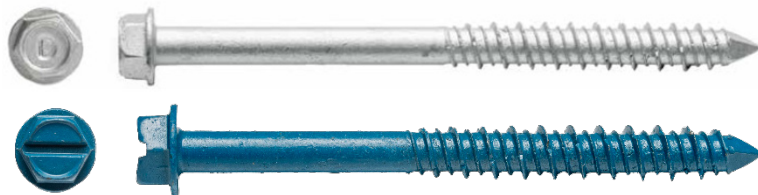
2.1 The innovative products evaluated in this report are shown in **Figure 1** through **Figure 3**.



**Figure 1.** Drillcrete Concrete Screws – Flat Head and Hex Head



**Figure 2.** Drillcrete Concrete Screws Flat Head – Brushed Nickel Finish and Blue Fluorocarbon Finish



**Figure 3.** Drillcrete Concrete Screws Hex Head – Brushed Nickel Finish and Blue Fluorocarbon Finish

- 2.2 Drillcrete Concrete Screws are post-installed screw anchors for use as anchorage in concrete (wood-to-concrete and steel-to-concrete applications) in accordance with [IBC Section 1901.3](#). Drillcrete Concrete Screws are used to resist static, wind, seismic tension, and shear loads in uncracked normal weight or lightweight concrete having a specified compressive strength,  $f_c$ , of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).
- 2.2.1 Drillcrete Concrete Screws are manufactured from heat-treated, carbon steel and are subsequently coated with a corrosion-resistant brushed nickel finish or a blue fluorocarbon coating.
- 2.2.2 Drillcrete Concrete Screws are available with a flat countersinking (bugle) head with a Philips or Star-drive recess or a hex-washer head. Drillcrete Concrete Screws are available in lengths ranging from 1 $\frac{1}{4}$ " to 3 $\frac{1}{4}$ ".
- 2.2.3 The threaded region of Drillcrete Concrete Screws have high-low alternating threads.
- 2.2.3.1 The length of the anchor is identified with a marking on the head in accordance with ACI 355.2, Table 6.3.4. The length identification codes are provided in **Table 1**.

**Table 1.** Length Identification Codes

Marking on Head	#	A	B	C	D	E
Anchor Length (in.)	$1 < L < 1\frac{1}{2}$	$1\frac{1}{2} < L < 2$	$2 < L < 2\frac{1}{2}$	$2\frac{1}{2} < L < 3$	$3 < L < 3\frac{1}{2}$	$3\frac{1}{2} < L < 4$

SI: 1 in. = 25.4 mm

- 2.3 Drillcrete Concrete Screws are an alternative to cast-in-place anchors described in [IBC Section 1901.3](#) and may be used where an engineered design is submitted as specified in [IRC Section R301.1.3](#).
- 2.4 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.



### 3 Definitions

- 3.1 New Materials<sup>2</sup> are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.<sup>3</sup> The design strengths and permissible stresses shall be established by tests<sup>4</sup> and/or engineering analysis.<sup>5</sup>
- 3.2 Duly authenticated reports<sup>6</sup> and research reports<sup>7</sup> are test reports and related engineering evaluations, which are written by an approved agency<sup>8</sup> and/or an approved source.<sup>9</sup>
- 3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).<sup>10</sup>
- 3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.
- 3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional or RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.<sup>11</sup>
- 3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.
- 3.5.1 The Center for Building Innovation (CBI) is ANAB<sup>12</sup> ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce<sup>13</sup> the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing<sup>14</sup> stating the nonconformance and the path to its cure.
- 3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.<sup>15</sup>
- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.<sup>16</sup> Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.<sup>17</sup>
- 3.9 Approval equity is a fundamental commercial and legal principle.<sup>18</sup>

### 4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation<sup>19</sup>

- 4.1 *Standards*
- 4.1.1 *ACI 318: Building Code Requirements for Structural Concrete*
- 4.1.2 *ACI 355.2: Qualification of Post-Installed Mechanical Anchors in Concrete*
- 4.2 *Regulations*
- 4.2.1 *IBC – 15, 18, 21: International Building Code®*
- 4.2.2 *IRC – 15, 18, 21: International Residential Code®*

### 5 Listed<sup>20</sup>

- 5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), an approved agency (i.e., CBI and DrJ), and/or an approved source (i.e., DrJ), or other organization(s) concerned with product evaluation (i.e., DrJ), that maintains periodic inspection (i.e., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.



## 6 Tabulated Properties Generated from Nationally Recognized Standards

### 6.1 General

- 6.1.1 Drillcrete Concrete Screws installed with a 1<sup>1/2</sup>" effective embedment, may be permitted to be used in single anchor applications or group anchorages when designed in accordance with Chapter 17 of ACI 318 and the applicable sections of **Section 6**.
- 6.1.2 Design strength of Drillcrete Concrete Screws complying with [IBC Section 1604.2](#) and [IRC Section R301.1.3](#) shall be determined in accordance with Chapter 17 of ACI 318 and this report.
- 6.1.3 Strength design shall comply with Section 17.5.1.2 of ACI 318 where applicable.
- 6.1.4 Strength reduction factors,  $\Phi$ , as provided in Section 17.5.3 of ACI 318 shall be used for load combinations calculated in accordance with [IBC Section 1605.1](#) and Section 5.3 of ACI 318, where applicable.
- 6.1.5 The value of  $f'_c$  used in the calculations shall be limited to a maximum of 8,000 psi (55.2 MPa) in accordance with Section 17.3.1 of ACI 318.

### 6.2 Tension Strength Design

#### 6.2.1 Requirements for Static Steel Strength in Tension, $N_{sa}$ :

- 6.2.1.1 Nominal state steel strength of a single anchor in tension is calculated in accordance with Section 17.6.1.2 of ACI 318, and is provided in **Table 2**.
- 6.2.1.2 Strength reduction factors,  $\Phi$ , corresponding to brittle steel elements as defined in ACI 318 and provided in **Table 2** shall be applied.

#### 6.2.2 Requirements for Static Concrete Breakout Strength in Tension $N_{cb}$ or $N_{cbg}$ :

- 6.2.2.1 Nominal concrete breakout strengths of a single anchor or group of anchors in tension,  $N_{cb}$  or  $N_{cbg}$ , shall be calculated in accordance with Section 17.6.2 of ACI 318, with modifications as described in this section.
- 6.2.2.2 Nominal concrete breakout strength in tension in regions of concrete where analysis indicates no cracking at service loads in accordance with Section 17.6.2.5.1 of ACI 318, shall be calculated using values of  $k_{uncr}$  as provided in **Table 2** with  $\Psi_{c,N} = 1.0$ .

#### 6.2.3 Requirements for Static Pullout Strength in Tension, $N_{pn}$ :

- 6.2.3.1 Nominal pullout strength of a single anchor in accordance with Section 17.6.3.1 of ACI 318 and Section 17.6.3.2.1 of ACI 318 in uncracked concrete,  $N_{p,uncr}$  is provided in **Table 2**.
- 6.2.3.2 In lieu of Section 17.6.3.3 of ACI 318,  $\Psi_{c,P} = 1.0$  for all design cases.
- 6.2.3.3 Nominal pullout strength can be adjusted by calculation in accordance with **Equation 1**:

#### Equation 1.

$$N_{p,f'_c} = N_{p,uncr} \left( \frac{f'_c}{2,500} \right)^n \quad [\text{lb, psi}]$$

$$N_{p,f'_c} = N_{p,uncr} \left( \frac{f'_c}{17.2} \right)^n \quad [\text{N, MPa}]$$

where:

$f'_c$  is the specified compressive strength, and

$n$  is the factor defining the influence of concrete strength on the pullout strength.

For all diameters,  $n$  shall be 0.5.

**Table 2. Tension Strength Design Information for Drillcrete Concrete Screws<sup>1</sup>**

Parameter			Nominal Anchor Diameter	
			<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>
Anchor Category		-	1	1
Nominal Embedment Depth	$h_{nom}$	in (mm)	1.97 (50)	2.03 (52)
Critical Edge Distance	$c_{ac}$	in (mm)	2.25 (57)	2.50 (64)
Minimum Edge Distance	$c_{min}$	in (mm)	2.00 (51)	2.50 (64)
Minimum Spacing	$s_{min}$	in (mm)	3.00 (76)	4.00 (102)
Steel Strength in Tension per Section 17.6.1 of ACI 318				
Minimum Specified Yield Strength	$f_{ya}$	psi (N/mm <sup>2</sup> )	100,000 (689)	
Minimum Specified Tensile Strength	$f_{uta}$	psi (N/mm <sup>2</sup> )	125,000 (862)	
Effective Tensile Stress Area	$A_{se}$	in <sup>2</sup> (mm <sup>2</sup> )	0.0138 (9)	0.0238 (15)
Steel Strength in Tension	$N_{sa}$	lb (kN)	1,725 (7.68)	2,975 (13.24)
Strength Reduction Factor – Steel Failure <sup>2</sup>	$\Phi_{sa}$	-	0.65	
Concrete Breakout Strength in Tension 17.6.2 of ACI 318				
Effective Embedment Depth	$h_{ef}$	in (mm)	1.50 (38)	
Effectives Factor – Uncracked Concrete	$k_{uncr}$	-	24	
Strength Reduction Factor – Concrete Breakout Failure <sup>2</sup>	$\Phi_{cb}$	-	0.65	
Modification Factor for Concrete <sup>3</sup>	$\Psi_{c,N}$	-	1.00	
Pull-out Strength in Tension 17.6.3 of ACI 318				
Pull-out Resistance Uncracked Concrete ( $f'_c$ '=2,500 psi)	$N_{p,uncr}$	lb (kN)	500 (2.22)	N/A
Strength Reduction Factor – Pullout Failure <sup>2</sup>	$\Phi_p$	-	0.65	
Axial Stiffness				
Axial Stiffness in Service Load Range in Uncracked Concrete	$\beta$	lb/in (N/mm)	70,256 (12,295)	106,696 (18,672)
1. The information presented in this table shall be used in conjunction with the design requirements in Chapter 17 of ACI 318.				
2. The strength reduction factor applies when the load combinations from IBC or ACI 318 are used and the requirements of Section 17.5.3 of ACI 318 are met.				
3. For all design cases use $\Psi_{c,N} = 1.0$ . The effectiveness factor for uncracked concrete ( $k_{uncr}$ ) shall be used.				
4. N/A denotes that pullout resistance does not govern and does not need to be considered.				

### 6.3 Shear Strength Design

#### 6.3.1 Requirements for Static Steel Shear Strength, $V_{sa}$ :

- 6.3.1.1 Nominal steel shear strength,  $V_{sa}$ , of a single anchor in accordance with Section 17.7.1.2 of ACI 318 is provided in **Table 3** and shall be used in lieu of the values derived by calculation from Equation 17.7.1.2b of ACI 318.
- 6.3.1.2 The strength reduction factor,  $\phi$ , corresponding to brittle steel elements as defined in ACI 318, and provided in **Table 3**, shall be applied.

#### 6.3.2 Requirements for Static Concrete Breakout Strength in Shear, $V_{cb}$ or $V_{cbg}$ :

- 6.3.2.1 Nominal concrete breakout strength of a single anchor or group of anchors in shear,  $V_{cb}$  and  $V_{cbg}$ , shall be calculated in accordance with Section 17.7.2 of ACI 318.
- 6.3.2.2 The basic concrete breakout strength of a single anchor in shear,  $V_b$ , shall be calculated in accordance with Section 17.7.2.2.1 of ACI 318 using the value of  $l_e$  and  $d_a$  given in **Table 3**. The value of  $l_e$  used in Section 17.7.2.2.1a of ACI 318 shall be taken as no greater than the lesser of  $h_{ef}$  or  $8d_a$ .



### 6.3.3 Requirements for Static Concrete Pryout Strength in Shear, $V_{cp}$ or $V_{cpg}$ :

- 6.3.3.1 Static nominal concrete pryout strength of a single anchor or group of anchors,  $V_{cp}$  and  $V_{cpg}$ , shall be calculated in accordance with Section 17.7.3 of ACI 318, modified by using the value of  $k_{cp}$  provided in **Table 3**, and the value of  $N_{cb}$  or  $N_{cbg}$  as calculated in **Section 6.2.2**.

**Table 3.** Shear Strength Design Information for Drillcrete Concrete Screws<sup>1</sup>

Parameter			Nominal Anchor Diameter	
			3/16	1/4
Anchor Category		-	1	1
Nominal Embedment Depth	$h_{nom}$	in (mm)	1.97 (50)	2.03 (52)
Critical Edge Distance	$c_{ac}$	in (mm)	2.25 (57)	2.50 (64)
Minimum Edge Distance	$c_{min}$	in (mm)	2.00 (51)	2.50 (64)
Minimum Spacing	$s_{min}$	in (mm)	3.00 (76)	4.00 (102)
Steel Strength in Shear per Section 17.7.1 of ACI 318				
Minimum Specified Yield Strength	$f_{ya}$	psi (N/mm <sup>2</sup> )	100,000 (689)	
Minimum Specified Tensile Strength	$f_{uta}$	psi (N/mm <sup>2</sup> )	125,000 (862)	
Effective Shear Stress Area	$A_{se}$	in <sup>2</sup> (mm <sup>2</sup> )	0.0138 (9)	0.0238 (15)
Steel Strength in Shear - Static	$V_{sa}$	lb (kN)	775 (3.4)	1,405 (6.3)
Strength Reduction Factor – Steel Failure <sup>2</sup>	$\Phi_{sa}$	-	0.60	
Concrete Breakout Strength in Shear 17.7.2 of ACI 318				
Nominal Diameter	$d_a$	in (mm)	3/16 (4.8)	1/4 (6.4)
Load Bearing Length of Anchor in Shear ( $h_{ef}$ or $8d_o$ , whichever is less)	$l_e$	-	1.50 (38)	
Strength Reduction Factor – Concrete Breakout Failure <sup>2</sup>	$\Phi_{cb}$	-	0.70	
Concrete Pryout Strength in Shear 17.7.3 of ACI 318				
Coefficient for Pryout Strength	$k_{cp}$	lb (kN)	1.00	
Strength Reduction Factor – Concrete Pryout Failure <sup>2</sup>	$\Phi_{cp}$	-	0.70	
1. The information presented in this table shall be used in conjunction with the design requirements in Chapter 17 of ACI 318.				
2. The strength reduction factor applies when the load combinations from IBC or ACI 318 are used and the requirements of Section 17.5.3 ACI 318 be met.				

### 6.4 Requirements for Interaction of Tensile and Shear Forces:

- 6.4.1 For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with Section 17.8 of ACI 318, as applicable.



## 6.5 Requirements for Critical Edge Distance, $C_{ac}$ :

- 6.5.1 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 Section 17.6.2 of ACI 318, shall be further multiplied by the factor  $\Psi_{cp,N}$  given in **Equation 2**:

### Equation 2.

$$\Psi_{cp,N} = \frac{c}{C_{ac}}$$

where:

$\Psi_{cp,N}$  need not to be taken as less than 1.5  $h_{ef}/C_{ac}$

- 6.5.2 For all other cases,  $\Psi_{cp,N} = 1.0$ .
- 6.5.3 In lieu of Section 17.9.5 of ACI 318, the values for the critical edge distance,  $C_{ac}$ , shall be taken from **Table 2**.
- ## 6.6 Requirements for Minimum Member Thickness, Minimum Anchor Spacing, and Minimum Edge Distance:
- 6.6.1 In lieu of Section 17.9.2 of ACI 318, minimum spacing,  $s_{min}$ , and minimum edge distance,  $c_{min}$ , shall comply with **Table 2** and **Table 3**.
- 6.6.2 In lieu of Section 17.9.4 of ACI 318, minimum member thickness,  $h_{min}$ , shall comply with **Table 5**.
- ## 6.7 Lightweight Concrete:
- 6.7.1 For use of anchors in lightweight concrete, the modification factor,  $\lambda_a$  equal to 0.8 $\lambda$  is applied to all values of  $\sqrt{f'_c}$  affecting  $N_n$ , and  $V_n$ .
- 6.7.2 Determination of  $\lambda$  is provided in **Table 4**:

**Table 4.** Values of  $\lambda$  for Lightweight Concrete Based on Equilibrium Density or Composition of Aggregates

Concrete		$\lambda$
Equilibrium Density, $w_c$ (lb/ft <sup>3</sup> )	$\leq 100$	0.75
	$100 < w_c \leq 135$	$0.0075w_c \leq 1.0$
	$> 135$	1.0
All-lightweight	Fine: ASTM C330 Coarse: ASTM C330	0.75
Lightweight, fine blend	Fine: Combination of ASTM C330 and C33 Coarse: ASTM C330	0.75 to 0.85 <sup>1</sup>
Sand-lightweight	Fine: ASTM C33 Coarse: ASTM C330	0.85
Sand-lightweight, coarse blend	Fine: ASTM C330 Coarse: Combination of ASTM C330 and C33	0.85 to 1.0 <sup>2</sup>
<p>1. Linear interpolation from 0.75 to 0.85 is permitted based on the absolute volume of normal weight fine aggregate as a fraction of the total absolute volume of fine aggregate.</p> <p>2. Linear interpolation from 0.85 to 1.0 is permitted based on the absolute volume of normal weight coarse aggregate as a fraction of the total absolute volume of aggregate.</p>		





## 6.8 Allowable Stress Design (ASD, Structural):

- 6.8.1 Design values for use with allowable stress design (working stress design) load combinations in accordance with IBC Section 1605.1 shall be determined using **Equation 3** and **Equation 4** as follows:

### Equation 3.

$$T_{allowable,ASD} = \frac{\phi N_n}{\alpha}$$

### Equation 4.

$$V_{allowable,ASD} = \frac{\phi V_n}{\alpha}$$

where:

$T_{allowable,ASD}$  is the allowable tension load [lb or N]

$V_{allowable,ASD}$  is the allowable shear load [lb or N]

$\phi N_n$  is the lowest design strength of an anchor or anchor group in tension as determined in accordance with Chapter 17 of ACI 318 and IBC Section 1905.1.8 and the applicable sections in **Section 6**.

$\phi V_n$  is the lowest design strength of an anchor or anchor group in shear as determined in accordance with Chapter 17 of ACI 318 and IBC Section 1905.1.8 and the applicable sections in **Section 6**.

$\alpha$  is the conversion factor calculated as a weighted average of the load factors for the controlling load combination. In addition,  $\alpha$  shall include all applicable factors to account for non-ductile failure modes and required overstrength.

- 6.8.2 Limits on edge distance, anchor spacing, and member thickness, as provided in **Section 6.6**, shall be applied.

## 6.9 Interaction of Tensile and Shear Forces:

- 6.9.1 Interaction shall be calculated and consistent with Section 17.8 of ACI 318 as follows:

- 6.9.1.1 If  $T_{applied} \leq 0.2 T_{allowable}$ , then the full allowable strength in shear,  $V_{allowable}$ , shall be permitted.
- 6.9.1.2 If  $V_{applied} \leq 0.2 V_{allowable}$ , then the full allowable strength in tension,  $T_{allowable}$  shall be permitted.
- 6.9.1.3 For all other cases, see **Equation 5**:

### Equation 5.

$$\frac{T_{applied}}{T_{allowable,ASD}} + \frac{V_{applied}}{V_{allowable,ASD}} \leq 1.2$$

## 6.10 Corrosion Resistance

- 6.10.1 Drillcrete Concrete Screws, coated with the blue fluorocarbon coating or the corrosion-resistant brushed nickel finish, may be used where screws are required to exhibit corrosion resistance when exposed to adverse environmental conditions, which are subject to the limitations of this report.
- 6.10.1.1 Drillcrete Concrete Screws have been evaluated for use in wood treated with ACQ-D preservatives and may be used as an alternative to hot-dip galvanized fasteners in wood treated with preservatives or less corrosive effects meeting ASTM A153, Class D (IBC Section 2304.10.6 and IRC Section R317.3).





- 6.11 Where the application falls outside of the performance evaluation, conditions of use, and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

## 7 Certified Performance<sup>21</sup>

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.<sup>22</sup>
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.<sup>23</sup>

## 8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 Drillcrete Concrete Screws comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
- 8.1.1 Drillcrete Concrete Screws were evaluated in accordance with ACI 355.2 as specified in Section 17.1.2 (f) of ACI 318, per IBC Section 1901.3.
- 8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP/approved sources. DrJ is qualified<sup>24</sup> to practice product and regulatory compliance services within its scope of accreditation and engineering expertise, respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.
- 8.4 Any regulation specific issues not addressed in this section are outside the scope of this report.

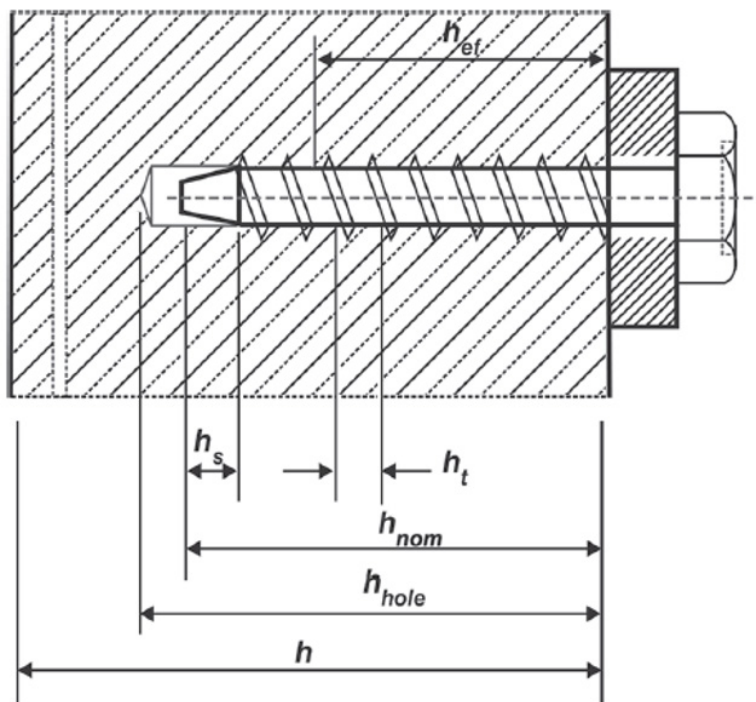
## 9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.
- 9.3 *Installation Procedure*
- 9.3.1 The parameters listed in **Table 5** shall be used in conjunction with the design methodology in Chapter 17 of ACI 318.

**Table 5.** Installation Parameters for Drillcrete Concrete Screws

Anchor Parameter		Nominal Anchor Diameter	
		$\frac{3}{16}$	$\frac{1}{4}$
Nominal Outside Diameter (in)	$d_a$	$\frac{3}{16}$	$\frac{1}{4}$
Drill Bit Specification (in)	$d_{bit}$	$\frac{5}{32}$	$\frac{3}{16}$
Philips- or Torx-driven		#2 Philips or T-25	#3 Philips or T-30
Hex-driven		$\frac{1}{4}$ " Hex	$\frac{5}{16}$ " Hex
Maximum Installation Torque	$T_{inst,max}$	Not Applicable	
Nominal Embedment Depth (in) <sup>1</sup>	$h_{nom}$	1.97	2.03
Effective Embedment Depth (in) <sup>1</sup>	$h_{ef}$	1.50	
Minimum Hole Depth (in) <sup>1</sup>	$h_{hole}$	2.22	2.28
Minimum Concrete Thickness <sup>1</sup> (in)	$h_{min}$	4.00	
Critical Edge Distance (in)	$c_{ac}$	2.25	2.50
Minimum Edge Distance (in)	$c_{min}$	2.00	2.50
Minimum Spacing (in)	$s_{min}$	3.00	4.00

SI: 1 in. = 25.4 mm  
 1. See **Figure 4** for Diagram of Anchor Parameters.



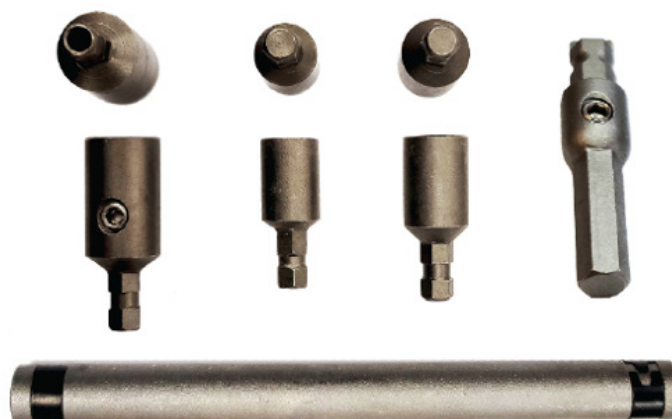
**Figure 4.** Diagram of Installation Parameters for Drillcrete Concrete Screws

- 9.3.2 Select the drill bit according to the size of the Drillcrete Concrete Screws being used, detailed drill bit size is provided in **Table 2**.
- 9.3.3 Drill hole a minimum of 1/4" deeper than the anchor's engagement (penetration) with a hammer drill with the hammering function on.
- 9.3.4 Clear the bored hole from dust or debris generated from the drilling process.
  - 9.3.4.1 A blow out bulb or compressed air may be used to perform this function.
- 9.3.5 Drive the anchor using a drill with the appropriate attachment (nut driver, Star Drive, Phillips bit) until the concrete screw is fully seated.
  - 9.3.5.1 Do not overdrive or over torque.
    - 9.3.5.1.1 Overdriving may result in anchor failure.
    - 9.3.5.1.2 Driving at high speeds may also result in anchor failure.
  - 9.3.5.2 Being fully seated is achieved when the anchor's bearing surface is flush with the substrate being attached.
  - 9.3.5.3 If a hammer drill is used to perform this task, the hammering function shall be off.
  - 9.3.5.4 For faster and easier installation, use Robertson Installation Concrete Drill and Drive Tool Kit. See **Figure 5**.



**ROBERTSON® INSTALLATION  
CONCRETE DRILL & DRIVE TOOL KIT**

Drive Tube  
Drill Adapter  
1/4" Drive Nutsetter  
5/16" Drive Nutsetter  
Holder for Phillips Bits



**Figure 5.** Contents of Robertson Drillcrete Tool Kit for Drillcrete Concrete Screws



## 10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 10.1.1 Testing in accordance with ACI 355.2
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 *Testing and Engineering Analysis:*
- 10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.<sup>25</sup>
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for Drillcrete Concrete Screws on the DrJ Certification website.

## 11 Findings

- 11.1 As outlined in **Section 6**, Drillcrete Concrete Screws have performance characteristics that were tested and/or meet applicable regulations and are suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Drillcrete Concrete Screws shall be approved for the following applications:
- 11.2.1 Use in single or group anchorage when designed in accordance with ACI 318 to resist static, wind, seismic tension, and shear loads in uncracked, normal weight or lightweight concrete having a specified compressive strength between 2,500 psi to 8,500 psi.
- 11.2.2 Use as anchorage to concrete in accordance with IBC Section 1901.3.
- 11.2.3 Use where an engineered design is submitted in accordance with IRC Section R301.1.3.
- 11.2.4 Drillcrete Concrete Screws have been evaluated for reliability against brittle failure and found to be not significantly sensitive to stress-induced hydrogen embrittlement.
- 11.3 Unless exempt by state statute, when Drillcrete Concrete Screws are to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Robertson, Inc.



11.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10<sup>26</sup> are similar) in pertinent part state:

**104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

11.6 **Approved:**<sup>27</sup> Building regulations require that the building official shall accept duly authenticated reports.<sup>28</sup>

11.6.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited.

11.6.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce.

11.6.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.<sup>29</sup>

## 12 Conditions of Use

12.1 Material properties shall not fall outside the boundaries defined in **Section 6**.

12.2 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

12.3 As listed herein, Drillcrete Concrete Screws shall be subjected to the following conditions:

12.3.1 Concrete shall be normal weight or lightweight and shall comply with IBC Section 1903 and IBC Section 1905.

12.3.1.1 Drillcrete Concrete Screws shall be installed in uncracked concrete that has achieved its minimum design strength.

12.3.1.2 Concrete shall be normal weight or lightweight with a specified compressive strength of 2,500 psi to 8,500 psi.

12.3.1.2.1 For calculation purposes, the compressive strength used shall not exceed 8,000 psi per Section 17.3.1 of ACI 318.

12.3.2 Strength design shall comply with Section 17.5.1.2 of ACI 318, except as required in Section 17.10 of ACI 318.

12.3.2.1 Strength reduction factors as given in Section 17.5.3 of ACI 318, and noted in **Table 2** and **Table 3**, shall be used for load combinations calculated in accordance with IBC Section 1605.1 and Section 5.3 of ACI 318, as applicable.

12.3.3 Strength design values shall be established in accordance with **Section 6.2** through **Section 6.7**.

12.3.4 Allowable stress design values shall be established in accordance with **Section 6.8** and **Section 6.9**.

12.3.5 Anchor spacing, edge distance, and minimum member thickness shall comply with **Table 2**, **Table 3**, and **Table 5**.



- 12.3.6 Use of Drillcrete Concrete Screws to resist seismic forces in structures assigned Seismic Design Category C, D, E, or F, is outside of the scope of this report.
- 12.3.6.1 Drillcrete Concrete Screws may be used to resist short-term loading due to wind or seismic forces (Seismic Design Category A or B).
- 12.3.7 Where not otherwise prohibited in the code, Drillcrete Concrete Screws may be use in fire-resistance construction provided that at least one of the following conditions is satisfied:
- 12.3.7.1 Drillcrete Concrete Screws are used to resist wind or seismic forces only.
- 12.3.7.2 Drillcrete Concrete Screws supporting 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.
- 12.3.7.3 Drillcrete Concrete Screws are used to support non-structural elements.
- 12.3.8 Use of Drillcrete Concrete Screws shall be limited to dry, interior locations.
- 12.3.9 Use of Drillcrete Concrete Screws is not permitted to support fire-resistance rated construction.
- 12.3.10 Where not prohibited by the applicable building code, Drillcrete Concrete Screws are permitted for use with fire-resistance rated construction, provided that at least one of the following conditions is satisfied:
- 12.3.10.1 Anchors are used to resist wind or seismic forces only.
- 12.3.10.2 Anchors that support gravity load-bearing structural elements are:
- 12.3.10.2.1 Within a fire-resistance rated envelope or a fire-resistance-rated membrane
- 12.3.10.2.2 Protected by an approved fire-resistance-rated materials
- 12.3.10.2.3 Evaluated for resistance to fire exposure in accordance with recognized standards
- 12.3.11 Performance of anchors subjected to fatigue or shock loading is out of the scope of this report.
- 12.4 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
- 12.4.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
- 12.4.2 This report and the installation instructions shall be submitted at the time of permit application.
- 12.4.3 These innovative products have an internal quality control program and a third-party quality assurance program.
- 12.4.4 At a minimum, these innovative products shall be installed per **Section 9** of this report.
- 12.4.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.
- 12.4.6 These innovative products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.
- 12.4.7 The application of these innovative products in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 12.5 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11", all of IBC Section 104, and IBC Section 105.4.*





- 12.6 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.7 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

### 13 Identification

- 13.1 The innovative products listed in **Section 1.1** are identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 13.2 Additional technical information can be found at [www.robertsonsscrew.com](http://www.robertsonsscrew.com).

### 14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit [www.drjcertification.org](http://www.drjcertification.org).
- 14.2 For information on the status of this report, please contact [DrJ Certification](#).

### 15 Approved for Use Pursuant to United States and International Legislation Defined in Appendix A

- 15.1 Drillcrete Concrete Screws ( $3/16$ " Drillcrete Concrete Screw and  $1/4$ " Drillcrete Concrete Screw) are included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This report states either that the material, product, or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.





## Appendix A

### 1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies, and/or methods of construction that:
  - 1.1.1 Advance innovation.
  - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints.
  - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize products to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
  - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies, and/or methods of construction. The goal is to “*protect economic freedom and opportunity by promoting free and fair competition in the marketplace*”.
  - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses, to freely and fairly have new products, materials, designs, services, assemblies, and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
  - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),<sup>30</sup> where providing test reports, engineering analysis, and/or other related IP/TS is subject to prison of not more than ten years<sup>31</sup> and/or a \$5,000,000 fine or three (3) times the value of<sup>32</sup> the Intellectual Property (IP) and Trade Secrets (TS).
    - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, duly authenticated reports, and/or research reports prepared by approved agencies and/or approved sources.
  - 1.2.4 For new materials<sup>33</sup> that are not specifically provided for in any regulation, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
  - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.<sup>34</sup>
  - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence provided in writing, that specific legislation have been violated by an individual registered PE.
  - 1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.<sup>35</sup>



- 1.3 **Approved<sup>36</sup> by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction, not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards that apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.<sup>37</sup> The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, the Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code, CBC Section 1707.1.<sup>38</sup>
- 1.4 **Approved by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an approved agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly, and/or method of construction, not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined approved agencies).
- 1.5 **Approved by New York City:** The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed<sup>39</sup> an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement<sup>40</sup> (i.e., ANAB, International Accreditation Forum also known as IAF, etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods, or systems of construction, shall be approved without further evaluation by:
- 1.6.1 A certification mark or listing of an approved certification agency
  - 1.6.2 A test report from an approved testing laboratory
  - 1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity
  - 1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed, and sealed by a professional engineer or architect, licensed in Florida.
  - 1.6.5 For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods:
    - 1.6.5.1 A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code.
    - 1.6.5.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code.
    - 1.6.5.3 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity, which indicates that the product evaluated complies with the code.



- 1.6.5.4 A product evaluation report or certification based upon testing, comparative, or rational analysis, or a combination thereof, developed, signed, and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code.
- 1.6.5.5 A statewide product approval issued by the Florida Building Commission.
- 1.6.6 The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).
- 1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation 553.842 and 553.8425.
- 1.8 **Approved by New Jersey:** Pursuant to the 2018 Building Code of New Jersey in IBC Section 1707.1 General,<sup>41</sup> it states: *"In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)".*<sup>42</sup> Furthermore N.J.A.C 5:23-3.7 states: *"Municipal approvals of alternative materials, equipment, or methods of construction"*.
- 1.8.1 **Approvals:** Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official, provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability, and safety of those conforming with the requirements of the regulations.
- 1.8.1.1 A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of the above.
- 1.8.1.2 Reports of engineering findings issued by nationally recognized evaluation service programs such as, but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of the above.
- 1.8.2 The New Jersey Department of Community Affairs has confirmed that technical evaluation reports, from any accredited entity listed by ANAB, meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide *"reports of engineering findings"*.
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14<sup>43</sup> and Part 3280,<sup>44</sup> the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:
- 1.9.1 *"All construction methods shall be in conformance with accepted engineering practices."*
- 1.9.2 *"The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur."*
- 1.9.3 *"The design stresses of all materials shall conform to accepted engineering practice."*



- 1.10 Approval by US, Local, and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.<sup>45</sup>
  - 1.10.2 For innovative alternatives and/or methods of construction, the building official shall accept duly authenticated reports from approved agencies with respect to the quality and manner of use of new materials or assemblies.<sup>46</sup>
    - 1.10.2.1 An approved agency is “*approved*” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is in the ANAB directory.
    - 1.10.2.2 An approved source is “*approved*” when an RDP is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.<sup>47</sup>
  - 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.<sup>48</sup>
- 1.11 Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, designs, services, and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.11.1 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
  - 1.11.2 **Approved:** The purpose of the MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA and subsequently, acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, designs, services, and/or methods of construction.
  - 1.11.3 ANAB is an IAF MLA signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope, shall be approved.<sup>49</sup>
  - 1.11.4 Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.<sup>50</sup>
- 1.12 Approval equity is a fundamental commercial and legal principle.<sup>51</sup>



## Notes

For more information, visit [drjcertification.org](http://drjcertification.org) or call us at 608-310-6748.

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1702>

Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review <https://www.justice.gov/atr/mission> and <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests%20as

The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice.

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:~:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>:~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

[https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved\\_agency](https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency)

[https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved\\_source](https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_source)

<https://www.law.cornell.edu/uscode/text/18/1832> (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: [Intellectual Property and Trade Secrets](https://www.intellectualpropertyandtradesecrets.gov/)

<https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>

<https://www.cbiteest.com/accreditation/>

<https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104>:~:text=to%20enforce%20the%20provisions%20of%20this%20code

<https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>:~:text=Where%20the%20alternative%20material%2C%20design%20or%20method%20of%20construction%20is%20not%20approved%2C%20the%20building%20official%20shall%20respond%20in%20writing%2C%20stating%20the%20reasons%20why%20the%20alternative%20was%20not%20approved AND

<https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#105.3.1>:~:text=If%20the%20application%20or%20the%20construction%20documents%20do%20not%20conform%20to%20the%20requirements%20of%20pertinent%20laws%2C%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%2C%20stating%20the%20reasons%20therefore

<https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>:~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.11

<https://iaf.nu/en/about-iaf-mia/#>:~:text=it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

<https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>

Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service, and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2> (Listed%20or%20certified); <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#listed> AND <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled>

<https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1703.4>

<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#>:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#>:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur

Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

2018 IFC Section 104.9

Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

<http://www.drjengineering.org/AppendixC> AND <https://www.drjcertification.org/cornell-2016-protection-trade-secrets>





<https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years>  
<https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>  
<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>  
IBC 2021, Section 1706.1 Conformance to Standards  
IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General  
**See Section 11 for the distilled building code definition of Approved.**  
Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES  
<https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1>  
New York City, The Rules of the City of New York, § 101-07 Approved Agencies  
New York City, The Rules of the City of New York, § 101-07 Approved Agencies  
<https://up.codes/viewer/new-jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1>  
<https://www.nj.gov/dca/divisions/codes/codreg/ucc.html>  
<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>  
<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>  
IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.  
IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.  
<https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional-boards-in-each-state-archive/> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>  
IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.  
<https://iaf.nu/en/about-iaf-mla/#:~:text=it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope>  
True for all ANAB accredited product evaluation agencies and all International Trade Agreements.  
<https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>