ICC-ES Evaluation Report

ESR-3200

Reissued October 2025

Subject to renewal October 2026

This report also contains:

- **City of LA Supplement**
- **FL Supplement w/ HVHZ**

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DIVISION: 04 00 00—MASONRY Section: 04 05 19.16—Masonry Anchors	REPORT HOLDER: DEWALT	EVALUATION SUBJECT: AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED, GROUTED AND UNGROUTED CONCRETE MASONRY UNIT WALLS (DEWALT)	

1.0 EVALUATION SCOPE

Compliance with the following codes:

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

Main references of this report are for the 2024 IBC and IRC. See Table 10 and Table 11 for applicable sections of the code for previous IBC and IRC editions.

Property evaluated:

Structural

2.0 USES

The AC100+ Gold Adhesive Anchor System is used as anchorage in cracked and uncracked concrete masonry unit (CMU) walls to anchor building components to grouted and ungrouted lightweight, medium-weight, or normal-weight concrete masonry wall construction. The adhesive anchors are designed to resist static, wind, and earthquake (Seismic Design Categories A through F) tension and shear loads.

The adhesive anchors are an alternative to cast-in-place anchors described in Section 9.1.6 of TMS 402 as referenced in Section 2108.1 of the IBC. The anchor systems may also be used where an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 General:

The AC100+ Gold Adhesive Anchor System is comprised of AC100+ Gold Adhesive two-component adhesive filled in cartridges, static mixing nozzles, dispensing tools, hole cleaning equipment and stainless steel mesh screen tubes (screen tubes are for use in ungrouted masonry / hollow CMU). The adhesive is used with continuously threaded steel rods and reinforcing bars installed in pre-drilled holes into concrete masonry walls.

Product names for the report holder are presented in the following table of this report:

Company Name	Adhesive Product Name
DEWALT	AC100+ Gold®
	AC100-PRO (outside the Americas)

Manufacturer's printed installation instructions (MPII) and parameters, included with each unit package, are shown in Figures 2 and 3 of this report.

3.2 Materials:

3.2.1 AC100+ Gold Adhesive: AC100+ Gold is an injectable, two-component adhesive. The two components are separated by means of a labeled dual-cylinder cartridge. The two components combine and react when dispensed through a static mixing nozzle, supplied by DEWALT, which is attached to the cartridge. The AC100+ Gold adhesive is available in 9.5-ounce (280 mL), 14-ounce (410 mL) and 28-ounce (825 mL) cartridges. Each cartridge label is marked with the adhesive expiration date. The shelf life, as indicated by the expiration date, applies to an unopened cartridge when stored in accordance with the manufacturer's recommendations.

3.2.2 Hole Cleaning Equipment:

3.2.2.1 Standard Equipment: Hole cleaning equipment is comprised of steel wire brushes supplied by DEWALT, and a compressed air nozzle or hand pump.

3.2.2.2 DEWALT Hollow Drill Bit System (DustX+™): The DEWALT hollow drill bit system shown in Figure A is comprised of DEWALT hollow drill bits with carbide tips conforming to ANSI B212.15 attached to a HEPA vacuum that has a minimum air flow rating of 90 cfm (150 m^3/h, 42 l/s), e.g. DWV015, DWV905M, DWV905H or equivalent approved by DEWALT. The vacuum dust extractor system removes the drilling dust during the drilling operation, eliminating the need for additional hole cleaning. DEWALT hollow drill bits may be used for 5/8- and 3/4-inch-diameter threaded rods and No. 5 and No. 6 steel reinforcing bars only in concrete masonry.

3.2.3 Dispensers: AC100+ Gold adhesive must be dispensed with manual, pneumatic dispensers, or electric powered dispensers supplied by DEWALT.

3.2.4 Steel Anchor Elements:

3.2.4.1 Threaded Steel Rods (For Use in Grouted Concrete Masonry and with Stainless Steel Mesh Screen Tubes in Hollow Masonry): Threaded steel rods must be clean and continually threaded (all-thread) in diameters described in Table 4 of this report. Carbon steel threaded rods may be furnished with a minimum of 0.0002-inch-thick (0.005 mm) zinc electroplated coating complying with ASTM B633, SC1; or a minimum 0.0021-inch-thick (0.053 mm) mechanically deposited zinc coating complying with ASTM B695, Class 55; or a hot dip galvanized zinc coating complying with ASTM A153, Class C or D. The stainless steel threaded rods must comply with Table 4 of this report. Steel grades and material types (carbon, stainless) of the washers and nuts must be matched to the threaded rods. Threaded steel rods must be straight and free of indentations or other defects along their length. The embedded end may be either flat cut or cut on the bias to a chisel point.

3.2.4.2 Steel Reinforcing Bars (For use in Grouted Concrete Masonry): Steel reinforcing bars must be deformed reinforcing bars (rebar) in sizes as described in Table 5 of this report. The embedded portions of reinforcing bars must be clean, straight, and free of mill scale, rust and other coatings (other than zinc) that may impair the bond with adhesive. Reinforcing bars must not be bent after installation except as set forth in ACI 318-19 Section 26.6.3.2 (b), with the additional condition that the bars must be bent cold, and heating of reinforcing bars to facilitate field bending is not permitted.

3.2.5 Screen Tubes: Stainless steel mesh screen tubes are used in hollow (ungrouted) CMU with the adhesive and threaded steel rods. The screen tubes hold the adhesive in position in the masonry wall face during the installation of the steel threaded rods and curing of the adhesive.

3.3 Masonry:

3.3.1 Grout-filled Concrete Masonry: The compressive strength of masonry, f'_m, at 28 days must be a minimum of 1,500 psi (10.3 MPa). Fully grouted masonry walls must comply with Chapter 21 of the IBC and must be constructed from the following materials:

3.3.1.1 Concrete Masonry Units (CMUs): Concrete masonry walls must be constructed from minimum lightweight, medium-weight, or normal-weight, closed-end or open-end, concrete masonry units (CMUs) conforming to ASTM C90. The minimum nominal size of the CMU must be 8 inches (203.2 mm) wide by 8 inches (203.2 mm) high by 16 inches (406.4 mm) long.

3.3.1.2 Grout (for Grout-filled Concrete Masonry): Grout-filled concrete masonry units must be fully grouted with grout complying with IBC Section 2103.3, or IRC Section R606.2.12. Alternatively, the grout must have a minimum compressive strength when tested in accordance with ASTM C1019 equal to its specified strength, but not less than 2,000 psi (13.8 MPa).

3.3.1.3 Mortar: Mortar must be Type M, S, or N prepared in accordance with IBC Section 2103.2.1 or IRC Section R606.2.8.

3.3.2 Hollow (Ungrouted) Concrete Masonry: The compressive strength of masonry, f'_m, at 28 days must be a minimum of 1,500 psi (10.3 MPa). Ungrouted concrete masonry must comply with Chapter 21 of the IBC and must be constructed from the following materials:

3.3.2.1 Concrete Masonry Units (CMUs): Concrete masonry walls must be constructed from minimum lightweight, medium-weight, or normal-weight, closed-end, concrete masonry units (CMUs) conforming to ASTM C90. The minimum nominal size of the CMU must be 8 inches (203.2 mm) wide by 8 inches (203.2 mm) high by 16 inches (406.4 mm) long.

3.3.2.2 Mortar: Mortar must be Type M, S, or N prepared in accordance with IBC Section 2103.2.1 or IRC Section R606.2.8.

4.0 DESIGN AND INSTALLATION

4.1 Strength Design of Anchors in Fully Grouted Concrete Masonry Unit Construction:

4.1.1 General: Sections 4.1 and 4.2 provide strength design requirements for anchors used in fully grouted concrete masonry unit construction, where anchors are used to transmit structural loads by means of tension, shear or a combination of tension and shear.

Strength design of adhesive anchors in fully grouted concrete masonry unit construction shall be conducted in accordance with the provisions for the design of adhesive anchors in concrete in *ACI 318-19 Chapter 17,* and TMS 402-22 as modified by the sections that follow. Design in accordance with this report cannot be conducted without reference to *ACI 318-19* with the deletions and modifications summarized in Table 1A and TMS 402-22 Eq. 9-5.

This report references sections, tables, and figures in both this report and ACI 318, with the following method used to distinguish between the two document references:

- References to sections, tables, and figures originating from ACI 318-19 are *italicized*. For example, Section 2.2 in ACI 318-19, will be displayed as *ACI 318-19 Section 2.2*.
- References to sections, tables, and figures originating from this report do not have any special font treatment, for example Section 4.1.2.

Where language from ACI 318 is directly referenced, the following modifications generally apply:

- The term “masonry” shall be substituted for the term “concrete” wherever it occurs.
- The modification factor to reflect the reduced mechanical properties for mixtures with lightweight aggregate and lightweight units, λ_a, shall be taken as 1.0.

The following terms shall be replaced wherever they occur:

***ACI 318-19* term**	**Replacement term**
f_c'	f_m'
N_{cb}, N_{cbg}	N_{mb}, N_{mbg}
N_a, N_{ag}	N_{ma}, N_{mag}
V_{cb}, V_{cbg}	V_{mb}, V_{mbg}
V_{cp}, V_{cpg}	V_{mp}, V_{mpg}

4.1.2 Restrictions for anchor placement are noted in Tables 2A and 2B and shown in Figure 1. For CMU construction with closed end blocks and hollow head joints, in addition to the ends and edges of walls, the nearest head joint on a horizontal projection from the anchor shall be treated as an edge for design purposes. The minimum distance from the nearest adjacent head joint shall be 2 inches (50.8 mm) as measured from the centerline of the head joint in CMU construction with hollow head joints. For anchor groups installed in CMU construction with solid head joints, the nearest head joint outside of the group on a horizontal projection to the group shall be treated as an edge. If open-ended units are employed, only the ends and edges of walls shall be considered for edge distance determination. For horizontal ledgers in fully-grouted CMU walls with hollow head joint applications, see Section 4.2.20.

4.2 ACI modifications required for design: Table 1A provides a summary of all applicable *ACI 318-19* and *ACI 318-14* sections for the design of adhesive anchors in masonry. Where applicable, modifying sections contained within this report are also provided.

4.2.1 *ACI 318-19 Section 17.1.1, 17.1.6 & 17.2.2* apply with the general changes prescribed in Section 4.1.1.

4.2.2 In lieu of *ACI 318-19 Section 17.1.2:* Design provisions are included for adhesive anchors that meet the assessment criteria of ICC-ES AC58.

4.2.3 *ACI 318-19 Section 17.1.4, 17.2.1, 17.4.1 & 17.5.1.3.1* apply with the general changes prescribed in Section 4.1.1.

4.2.4 In lieu of *ACI 318-19 Section 17.2.10:* The design of anchors in structures assigned to Seismic Design Category (SDC) C, D, E, or F shall satisfy the requirements of this section.

4.2.4.1 The design of anchors in the plastic hinge zones of masonry structures under earthquake forces is beyond the scope of this report.

4.2.4.2 The anchor or group of anchors shall be designed for the maximum tension and shear obtained from the design load combinations that include E, with E_h increased by Ω_o. The anchor design tensile strength shall satisfy the tensile strength requirements of Section 4.2.4.3.

4.2.4.3 The anchor design tensile force for resisting earthquake forces shall be determined from consideration of (a) through (c) for the failure modes given in Table 1B assuming the masonry is cracked unless it can be demonstrated that the masonry remains uncracked.

(a) ϕN_{sa} for a single anchor, or for the most highly stressed individual anchor in a group of anchors.

(b) (b) 0. 75 ϕN_{mb} or 0.75 $\phi N_{mbg.}$

(c) (c) 0.75 ϕN_{ma} or 0.75 $\phi N_{mag.}$

(d) (d) where ϕ is in accordance with Section 4.2.9.

4.2.4.4 Tables 4 and 5 contain the steel seismic reduction factors for grouted masonry for shear $\alpha_{V,seis}$ and Tables 7 and 8 contain the grouted masonry bond strength seismic reduction factors for tension $\alpha_{N,seis}$ (=1.0).

4.2.5 In lieu of *ACI 318-19 Section 17.5.1.3 & 17.5.2.2.1:* For anchors designed for sustained tension loading, *ACI 318-19 Section 17.5.2.2* shall be satisfied. For groups of anchors, *ACI 318-19 Eq. 17.5.2.2* shall be satisfied for the anchor that resists the highest sustained tension load. Inspection requirements for horizontal anchors designed for sustained tension loading shall be in accordance with *ACI 318-19 Section 26.13.3.2(e).* Installers of such anchors shall be qualified for the installation of the anchor type used.

4.2.6 *In lieu of ACI 318-19 Section 17.5.2*: The design of anchors shall be in accordance with Table 1B. In addition, the design of anchors shall satisfy Section 4.2.4 for earthquake loading and *ACI 318-19 Section 17.5.2.2* for anchors designed for sustained tensile loading.

4.2.7 *ACI 318-19 Section 17.5.2.2-17.5.2.3* applies with the general changes prescribed in Section 4.1.1.

4.2.8 ACI 318-19 Section 17.5.1.2 applies with the general changes prescribed in Section 4.1.1.

4.2.9 In lieu of *ACI 318-19 Section 17.5.3:* Strength reduction factor ϕ for anchors in masonry shall be as follows when the LRFD load combinations of ASCE 7 are used:

(a) For steel capacity of ductile steel elements as defined in *ACI 318-19 Section 2.3*, ϕ shall be taken as 0.75 in tension and 0.65 in shear. Where the ductility requirements of Section 3.2.4.3 are not met, ϕ shall be taken as 0.65 in tension and 0.60 in shear.

(b) For shear crushing capacity, ϕ shall be taken as 0.50.

(c) For cases where the nominal strength of anchors in masonry is controlled by masonry breakout in tension, ϕ shall be taken as 0.65.

(d) For cases where the nominal strength of anchors in masonry is controlled by masonry failure modes in shear, ϕ shall be taken as 0.70.

(e) For cases where the nominal strength of anchors in masonry is controlled by bond failure or pullout failure, ϕ shall be taken as 0.65 for anchors qualifying for Category 1 and 0.55 for anchors qualifying for Category 2.

4.2.10 *ACI 318-19 Section 17.6.1* applies with the general changes prescribed in Section 4.1.1.

4.2.11 In lieu of *ACI 318-19 Section 17.6.2.1*: The nominal breakout strength in tension, N_{mb} of a single anchor or N_{mbg} of a group of anchors, shall not exceed:

a. For a single anchor:

$$N_{mb} = \frac{A_{Nm}}{A_{Nmo}} \psi_{ed,N,m} \cdot \psi_{c,N,m} \cdot N_{b,m} \qquad (17.6.2.1a)$$

b. For a group of anchors:

$$N_{mbg} = \frac{A_{Nm}}{A_{Nmo}} \psi_{ec,N,m} \cdot \psi_{ed,N,m} \cdot \psi_{c,N,m} \cdot N_{b,m} \qquad (17.6.2.1b)$$

Factors $\psi_{ec,N,m}$,$\psi_{ed,N,m}$,$\psi_{c,N,m}$ are defined in *ACI 318-19 Section 17.6.2.3-17.6.2.5*. A_{Nm} is the projected masonry failure area of a single anchor or group of anchors that shall be approximated as the base of the rectilinear geometrical figure that results from projecting the failure surface outward $1.5h_{ef}$ from the centerlines of the anchor, or, in the case of a group of anchors, from a line through a row of adjacent anchors. A_{Nm} shall not exceed $n \cdot A_{Nmo}$, where n is the number of anchors in the group that resist tension. A_{Nmo} is the projected masonry failure area of a single anchor with an edge distance equal to or greater than $1.5h_{ef}$.

$$A_{Nmo} = 9h_{ef}^2 \qquad (17.6.2.1.4)$$

4.2.12 In lieu of ACI 318-19 Section 17.6.2.2: The basic masonry breakout strength of a single anchor in tension in cracked masonry, $N_{b,m}$, shall not exceed:

$$N_{b,m} = k_m\sqrt{f'_m}\ h_{ef}^{1.5} \qquad (17.6.2.2.1)$$

where

k_m = effectiveness factor for breakout strength in masonry

= $\alpha_{masonry} \cdot k_c$

k_c = *effectiveness factor for breakout strength in concrete*

= 17; and

$\alpha_{masonry}$ = reduction factor for the inhomogeneity of masonry materials in breakout and bond strength determination.

= 0.7

4.2.13 *ACI 318-19 Section 17.6.2.1.2 & 17.6.2.3-17.6.2.4* apply with the general changes prescribed in Section 4.1.1.

4.2.14 In lieu of *ACI 318-19 Section 17.6.2.5*: The basic masonry breakout strength of a single anchor in tension, $N_{b,m}$, must be calculated using the values of $k_{m,cr}$ and $k_{m,uncr}$ as described in Table 6. Where analysis indicates no cracking is anticipated, $N_{b,m}$ must be calculated using $k_{m,uncr}$ and $\Psi_{c,N,m}$ = 1.0.

4.2.15 *ACI 318-19 Section 17.6.2.6* need not be considered since the modification factor for post installed anchors, $\psi_{cp,N}$ is not included in Eq. 17.6.2.1a & b.

4.2.16 In lieu of *ACI 318-19 Section 17.6.5.1*: The nominal bond strength in tension, N_{ma} , of a single anchor or N_{mag} of a group of anchors, shall not exceed:

4.2.16.1 For a single anchor:

$$N_{ma} = \frac{A_{Na}}{A_{Nao}}\psi_{ed,Na} \cdot N_{ba,m} \qquad (17.6.5.1a)$$

4.2.16.2 For a group of anchors:

$$N_{mag} = \frac{A_{Na}}{A_{Nao}}\psi_{ec,Na} \cdot \psi_{ed,Na} \cdot N_{ba,m} \qquad (17.6.5.1b)$$

Factors $\psi_{ec,Na}$ and $\psi_{ed,Na}$ are defined in *ACI 318-19 Sections 17.6.5.3-17.6.5.4*. A_{Na} is the projected influence area of a single anchor or group of anchors that shall be approximated as a rectilinear area that projects outward a distance c_{Na} from the centerlines of the anchor, or in the case of a group of anchors, from a line through a row of adjacent anchors. A_{Na} shall not exceed nA_{Nao}, where $n$is the number of anchors in the group that resist tension. $A_{Nmo}$is the projected masonry failure area of a single anchor with an edge distance equal to or greater than c_{Na}.

$$A_{Nao} = (2c_{Na})^2 \qquad (17.6.5.1.2a)$$

where

$$c_{Na} = 10d_a\sqrt{\frac{\tau_{uncr}}{1100}} \qquad (17.6.5.1.2b)$$

and constant 1100 carries the unit of lb./in.^{2}

4.2.17 *In lieu of ACI 318-19 Section 17.6.5.2*: The basic bond strength of a single adhesive anchor in cracked masonry, $N_{ba,m}$, shall not exceed:

$$N_{ba,m} = \tau_{cr,m} \cdot \pi \cdot d_a \cdot h_{ef} \qquad (17.6.5.2.1)$$

The characteristic bond stresses $\tau_{cr,m}$ shall be taken from Tables 7 and 8. For adhesive anchors located in a region of a masonry member where analysis indicates no cracking at service load levels, $\tau_{uncr,m}$ shall be permitted to be used in place of $\tau_{cr,m}$ in *ACI 318-19 Eq. 17.6.5.2.1* and shall be taken as the value of $\tau_{k,uncr}$determined from Tables 7 and 8.

4.2.18 The following apply with the general changes prescribed in Section 4.1.1:

1. *ACI 318-19 Section 17.6.5.3-17.6.5.4.*
2. *ACI 318-19 Section 17.7.1 excluding Sections 17.7.1.2a & 17.7.1.2c.*
3. *ACI 318-19 Sections 17.7.2.1-17.7.2.2.1*.
4. *ACI 318-19 Section 17.7.2.1.2 & 17.7.2.3-17.7.2.4.*
5. *ACI 318-19 Section 17.7.2.6.*
6. *ACI 318-19 Section 17.7.3.*
7. *ACI 318-19 Section 17.2.5.*

4.2.19 In lieu of *ACI 318-19 Section 17.7.2.5:* For anchors located in a region of masonry construction where cracking is anticipated, $\psi_{m,V}$ shall be taken as 1.0. for cases where analysis indicates no cracking at service levels, it shall be permitted to take $\psi_{m,V}$ as 1.4.

[In addition to the ACI 318 provisions] Masonry crushing strength for anchors in shear shall be calculated in accordance with TMS 402-22 Eq. 9-5. The nominal strength of an anchor in shear as governed by masonry crushing, V_{mc}, shall be calculated using Eq. (4-1).

$$V_{mc} = 1750\sqrt[4]{f'_m A_{se,V}} \qquad (4\text{-}1)$$

4.2.20 Determination of shear capacity for anchors in horizontal ledgers in fully-grouted CMU walls with hollow head joint applications with an assumed masonry unit length of 16 inches, standard:

Where six or more anchors are placed at uniform horizontal spacing in continuous wood or steel ledgers connecting floor and roof diaphragms to fully grouted CMU walls constructed with hollow head joints (using closed-end block), the horizontal and vertical shear capacity of the anchors may be permitted to be calculated in accordance with Eq. (4-1.1) and Eq. (4-1.2), respectively, in lieu of ACI 318-19 Section 17.7.2.

$$V_{mb,horiz} = 0.75 \cdot V_{gov,horiz} \cdot \frac{12}{s_{horiz}} \qquad (4\text{-}1.1)$$

$$V_{mb,vert} = 0.75 \cdot V_{gov,vert} \cdot \frac{12}{s_{horiz}} \qquad (4\text{-}1.2)$$

where:

s_{horiz} = horizontal anchor spacing in the ledger, (in). For anchor spacings that are multiples of 8 inches, locate the first anchor in the ledger at least 2 inches from the head joint and the center of the block. For other anchor spacings, minimum edge distance as specified in the evaluation report shall apply.

$V_{gov,horiz}$ = min(V_{sa}, $V_{mb,4}$, V_{mc}, $V_{mp,4}$), (lb).

$V_{gov,vert}$ = min(V_{sa}, $2 \cdot V_{mb,4}$, V_{mc}, $V_{mp,4}$), (lb).

V_{sa} = shear capacity for a single anchor calculated in accordance with *ACI 318-19 Section 17.7.1.2,* (lb).

$V_{mb,4}$ = breakout capacity for a single anchor with edge distance of 4 inches, (lb).

V_{mc} = crushing capacity for a single anchor calculated in accordance with Eq. (3-1), (lb).

$V_{mp,4}$ = pryout capacity for a single anchor with edge distance of 4 inches, (lb).

4.2.21 In lieu of *ACI 318-19 Section 26.7.1(i):* The construction documents shall specify all parameters associated with the characteristic bond stress used for design in accordance with Section 4.2.16 and Section 4.2.17, including minimum age of masonry; masonry temperature range; moisture condition of masonry at time of installation; type of masonry, if applicable; and requirements for hole drilling and preparation.

4.2.22 *ACI 318-19 Section 26.7.2(e)* apply with the general changes prescribed in Section 4.1.1.

4.2.23 Interaction shall be calculated in compliance with *ACI 318-19 17.8* as follows:

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

For tensile loads $T \leq 0.2T_{allowable,ASD}$, the full allowable load in shear shall be permitted.

For all other cases:

$$\frac{T}{T_{allowable}} + \frac{V}{V_{allowable}} \leq 1.2$$

4.2.24 Satisfying the parabolic equation complying with *ACI 318-19 Section R17.8* may be used in lieu of satisfying Section 4.2.23. The parabolic equation is given as:

$$\left(\frac{N_{ua}}{\phi N_n}\right)^{5/3} + \left(\frac{V_{ua}}{\phi V_n}\right)^{5/3} = 1$$

4.3 Strength Design in Hollow (Ungrouted) Concrete Masonry Unit Construction:

4.3.1 General: This section provides strength design requirements for anchors used in ungrouted concrete masonry unit construction, where anchors are used to transmit structural loads by means of tension, shear or a combination of tension and shear.

4.3.2 The use of a DEWALT screen tube to prevent unrestricted flow of adhesive is required.

4.3.3 Anchors shall be designed for critical effects of factored loads as determined by elastic analysis. Plastic analysis shall not be permitted.

4.3.4 Group effects shall not be considered. Dimensional requirements specified in Table 2B shall be observed for the design of individual anchors as follows:

4.3.4.1 The critical edge distance, c_{cr}, is the smallest edge distance to consider full capacity of an individual anchor and the minimum edge distance, c_{min}, shall be the smallest distance an anchor may be installed with a reduced capacity per the multiplier listed in Table 2B. For anchors installed with edge distances between c_{cr} and c_{min}, capacities shall be linearly interpolated.

4.3.4.2 For anchor spacings less than the minimum spacing, s_{min}, the strength of the group shall equal the strength of a single anchor.

4.3.5 Seismic design requirements: Anchors designed in ungrouted CMU shall be in accordance with Section 4.2.4, as applicable. Table 9 contains the seismic tension and seismic shear reduction factors for ungrouted masonry $\alpha_{V,seis}$ and $\alpha_{N,seis}$ (=1.0), respectively.

4.3.6 Anchors designed for sustained tensile loading shall be in accordance with Section 4.2.5.

4.3.7 Strength design checks shall be in accordance with Table 1C. In addition, the design of anchors shall satisfy Section 4.2.4 for earthquake loading and Section 4.2.5 for anchors designed for sustained tensile loading.

4.3.8 The strength reduction factors, ϕ, shall be in accordance with Section 4.2.9, as applicable.

4.3.9 The nominal steel strength of anchors in tension shall be calculated in accordance with Section 4.2.10.

4.3.10 The nominal pullout strength of anchors in tension, $N_{k,ug}$, shall be taken from Table 9.

4.3.11 The nominal strength of anchors in shear, $V_{s,ug}$, shall be taken from Table 9.

4.3.12 The nominal steel strength of an anchor in shear, V_{sa}, shall be calculated in accordance with Section 4.2.18 (2).

4.3.13 The nominal strength of an anchor in shear as governed by crushing, V_{mc}, shall be calculated in accordance with Section 4.2.19.

4.3.14 Anchors designed for combinations of tension and shear shall satisfy the provisions of Section 4.3.23.

4.3.15 The provisions of Sections 4.2.18.7, 4.2.21, and 4.2.22 shall apply.

4.4 Strength Design in Partially Grouted Concrete Masonry Unit Construction:

4.4.1 In all cases, the minimum distance from hollow head joints shall be 2 inches as measured from the centerline of the head joint.

4.4.2 For cases where the location of grouted cells is known, the following provisions shall apply:

4.4.2.1 Group effects shall not be considered between anchors in grouted masonry and anchors in ungrouted masonry.

4.4.2.2 Anchors located in grouted cells shall be designed in accordance with Sections 4.1 and 4.2, whereby the distance to the extent of the ungrouted cell shall be taken as a free edge.

4.4.2.3 Anchors in ungrouted cells shall be designed in accordance with Section 4.3, whereby the use of a screen tube to prevent unrestricted flow of adhesive is required.

4.4.3 For cases where the location of grouted cells is unknown, the design of anchors shall be in accordance with Section 4.3.

4.4.4 Seismic design requirements: Anchors shall be designed accordance with Sections 4.2.4, 4.3.5, and 4.4, as applicable.

4.5 Conversion of Strength Design to Allowable Stress Design:

For adhesive anchors designed using load combinations in accordance with IBC Section 1605.1 (Allowable Stress Design) allowable loads shall be established using the equations below:

$$T_{allowable,ASD} = \frac{\phi N_n}{\alpha} \quad (4\text{-}2) \quad \text{and} \quad V_{allowable,ASD} = \frac{\phi V_n}{\alpha} \quad (4\text{-}3)$$

where

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

N_n = Lowest design strength of an anchor or anchor group in tension as determined in accordance with this report (lb. or kN);

V_n = Lowest design strength of an anchor or anchor group in shear as determined in accordance with this report (lb. or kN);

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

ϕ = Relevant strength reduction factor for load case and Anchor Category

4.6 Installation:

Installation parameters are provided in Tables 2A, 2B, 3, and in Figures A, 1, 2, and 3. Installation must be in accordance with ACI 318-19 26.7.2. Anchor locations must comply with this report and the plans and specifications approved by the building official. Installation must conform to the manufacturer's printed installation instructions as described in Figures 2 and 3. The nozzles, brushes, screen tubes, and dispensing tools supplied by the manufacturer must be used for anchor installation. The anchors must not be installed until the base material has reached its minimum designated compressive strength.

Anchors installed in the face of fully grouted CMU construction must be limited to the face shell of the CMU unit (center web and grouted cores) and the horizontal mortared bed joints, as indicated in Figure 1. Anchors installed in a T-joint, the hollow head joint, or the end webs of a CMU unit, as indicated in Figure 1, are outside the scope of this report.

For anchors installed in the top of fully grouted concrete masonry (CMU grouted cores and CMU webs), anchor location must comply with the minimum edge and end distances noted in Table 2A. Anchors installed in hollow head joints of fully grouted masonry are outside the scope of this report.

Anchors installed in the face of ungrouted CMU construction must use a DEWALT screen tube and are permitted in the face shell of the CMU unit (center web and ungrouted cores), the horizontal mortared bed joints, the T-joint, the hollow head joint, or the end webs of a CMU unit (no restrictions on installation location) as noted in Table 2B.

4.7 Special Inspection:

Anchors must be installed with special inspection. For the IBC and IRC, special inspection must conform to Sections 1704 and 1705 of the IBC.

At a minimum, periodic special inspection shall be provided for all anchors. Continuous special inspection shall be provided for anchors installed in horizontally inclined orientations and designed to resist sustained tension loads. In fully grouted walls, installation in head joints shall only be permitted in walls constructed with open-ended units, fully grouted bond beams or other types of construction where the head joint void is filled. In ungrouted walls, installation in head is permitted when installed with screen tubes.

The special inspector must be on the jobsite initially during anchor installation to verify anchor type, anchor dimensions, masonry type, masonry compressive strength, adhesive identification and expiration date, drill bit size and compliance with ANSI B212.15-1994, hole dimensions, hole cleaning procedures, installation outside of hollow head joints (in fully grouted masonry), anchor spacing, edge distances, masonry thickness, anchor embedment, tightening torque and adherence to the manufacturer's printed installation instructions.

The special inspector must verify the initial installations of each type and size of adhesive anchor by construction personnel on site. For periodic inspection, subsequent installations of the same anchor type and size by the same construction personnel shall be permitted to be performed in the absence of the special inspector. Any change in the anchor product being installed or the personnel performing the installation shall require an initial inspection. For ongoing installations over an extended period, the special inspector shall make regular inspections to confirm correct handling and installation of the product.

The special inspector must inspect and verify that anchor installation complies with this evaluation report and the manufacturers printed installation instructions.

5.0 CONDITIONS OF USE:

The AC100+ Gold® Adhesive Anchor System described in this report are suitable alternatives to what is specified in the codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 AC100+ Gold® adhesive anchors are identified and installed in accordance with this report and the manufacturer's printed installation instructions (MPII). In case of conflict, this report governs.

5.2 Anchors have been evaluated for use in cracked and uncracked grouted and ungrouted concrete masonry unit (CMU) construction with a minimum compressive strength of 1,500 psi (13.8 MPa) at the time of anchor installation.

5.3 Anchor sizes, dimensions, and minimum embedment depths must be as set forth in this report.

5.4 Construction documents prepared or reviewed by a registered design professional, where required by the statutes of the jurisdiction in which the project is to be constructed, specifying the AC100+ Gold® Adhesive anchors must indicate compliance with this evaluation report, applicable codes, and must be submitted to the code official for approval.

5.5 Anchors installed in the face or the top of fully grouted CMU masonry and the face of ungrouted CMU masonry may be used to resist short-term loading due to wind or seismic forces in structures assigned to Seismic Design Categories A through F under the IBC.

Loads applied to the anchors must be adjusted in accordance with Section 1605.1 of the 2024 IBC for strength design or allowable stress design.

5.6 Strength design values shall be established in accordance with Sections 4.1, 4.2, 4.3 and 4.4 of this report.

5.7 Allowable design values shall be established in accordance with Section 4.5 of this report.

5.8 Design of anchors in fully grouted CMU construction must avoid location of anchors in hollow head joints. For the design of anchors with screen tubes in ungrouted CMU construction, hollow head joint locations are permitted.

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

5.10 Adhesive anchors are permitted to be used to resist tension and shear forces in the face of wall installations only if consideration is given to the effects of elevated temperature conditions on anchor performance.

5.11 Anchors are not permitted to support fire-resistive construction. Where not otherwise prohibited by the applicable code, anchors are permitted for use with fire-resistance-rated construction provided that at least one of the following conditions is fulfilled:

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

5.12 The design of anchors must be in accordance with the provisions for cracked masonry where analysis indicates that cracking may occur ($f_t > f_r$) in the vicinity of the anchor due to service loads or deformations over the anchor service life.

5.13 The AC100+ Gold® Adhesive Anchor System must be installed in holes created using a carbide-tipped masonry drill bit manufactured within the range of the maximum and minimum dimensions of ANSI B212.15-1994 in accordance with the instructions provided in Figures 2 and 3 of this report. A hammer-drill may be used to drill holes in ungrouted (hollow) masonry walls provided the maximum tool impact power is not exceeded as given in Table 2B.

5.14 The AC100+ Gold® Adhesive Anchor System may be installed in base materials having interior temperatures between 23°F (-5°C) and 104°F (40°C) at the time of installation. For installation of anchors in masonry where the temperature is below 41°F (21°C), the adhesive must be conditioned to a minimum temperature of 41°F (5°C). Installation of anchors in base materials having temperatures beyond this range is outside the scope of this report.

5.15 Special inspection, when required, must be provided in accordance with Section 4.7. Continuous special inspection must be provided for anchors designed to resist sustained tension loads.

5.16 Steel anchoring materials in contact with preservative-treated or fire-retardant-treated wood shall be of zinc-coated steel or stainless steel. The coating weights for zinc-coated steel shall be in accordance with ASTM A153 class C or D or ASTM B695 with a Class 55 min. coating.

5.17 Anchors shall not be torqued until adhesive cure time indicated in the MPII is fully reached.

5.18 Anchors are not permitted for overhead installations.

5.19 Use of uncoated or zinc electroplated carbon steel threaded rods is limited to dry, interior locations.

5.20 Hot-dipped galvanized carbon steel threaded rods with coating weights in accordance with ASTM A153 Class C and D, or stainless steel (AISI Type 304 or 316) threaded rods, are permitted for exterior exposure or damp environments.

5.21 The AC100+ Gold adhesive is manufactured under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Adhesive Anchors in Cracked and Uncracked Masonry Elements AC58 (24) 2nd Edition, Published April 2025.

6.2 Quality-control documentation.

7.0 IDENTIFICATION

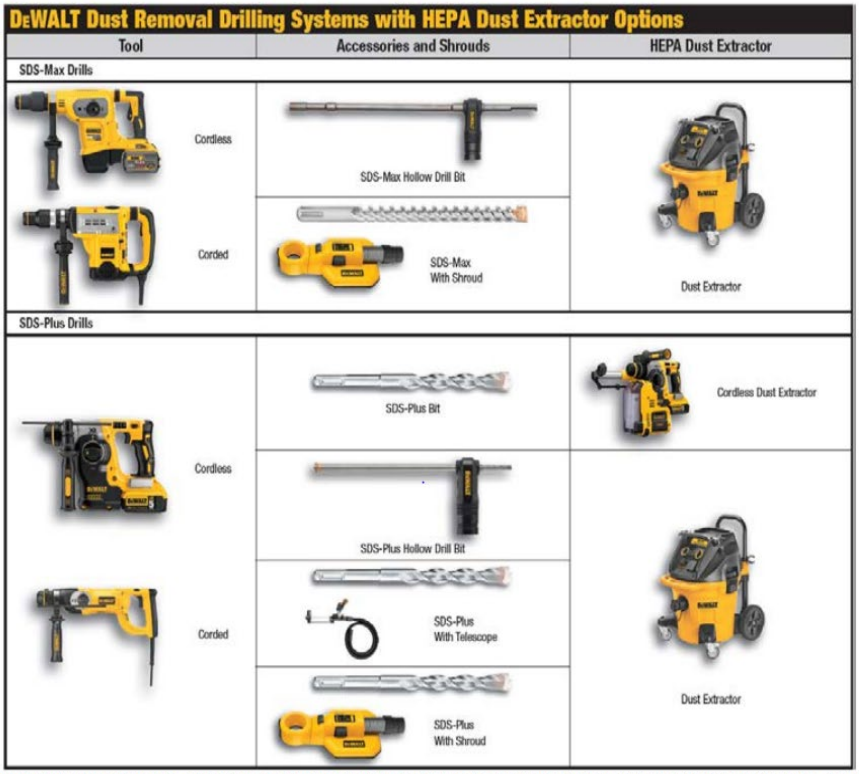
7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-3200) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the AC100+ Gold® is identified in the field by labels on the cartridge or packaging, bearing the company name (DEWALT), product name (AC100+ Gold®), the lot number, and the adhesive expiration date. The static mixing nozzles, dispensing tools, hole cleaning equipment, stainless steel screen tubes are identified by packaging label displaying the company name and the product name.

7.3 Threaded rods, nuts, washers and deformed reinforcing bars are standard elements and must conform to applicable national or international specifications.

7.4 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



The DEWALT drilling systems shown below collect and remove dust with a HEPA dust extractor during the hole drilling operation in dry base materials using hammer-drills (see step 1 of the manufacturer's published installation instructions).

FIGURE A—EXAMPLES OF DEWALT DUST REMOVAL DRILLING SYSTEMS WITH HEPA DUST EXTRACTORS FOR ILLUSTRATION

TABLE 1A—ACI 318-19 AND ACI 318-14 SECTIONS APPLICABLE OR MODIFIED BY THIS REPORT FOR MASONRY DESIGN

ACI 318-19 Section	*ACI 318-14 Section*	Modified by this report Section:
2.2	*(2.2)*	unchanged*
2.3	*(2.3)*	
17.1.1 & 17.1.5	*(17.1.1 – 17.1.2)*	
17.1.2	*(17.1.3)*	Section 4.2.2
17.1.4, 17.2.1, 17.4.1, & 17.5.1.3.1	*(17.1.4 – 17.2.2)*	unchanged*
17.10	*(17.2.3)*	Section 4.2.4
17.5.1.3 & 17.5.2.2	*(17.2.5)*	Section 4.2.5
17.5.2	*(17.3.1.1)*	Section 4.2.6
17.5.2.2 – 17.5.2.3	*(17.3.1.2 – 17.3.1.3)*	unchanged*
17.5.1.2	*(17.3.2 excluding 17.3.2.1)*	
17.5.3	*(17.3.3)*	Section 4.2.9
17.6.1	*(17.4.1)*	unchanged*
17.6.2.1	*(17.4.2.1)*	Section 4.2.11
17.6.2.2	*(17.4.2.2)*	Section 4.2.12
17.6.2.1.2 & 17.6.2.3 – 17.6.2.4	*(17.4.2.3 – 17.4.2.5)*	unchanged*
17.6.2.5	*(17.4.2.6)*	Section 4.2.14
17.6.2.6	*(17.4.2.7)*	Section 4.2.15
17.5.2.1	*(17.4.2.9)*	unchanged*
17.6.5.1	*(17.4.5.1)*	Section 4.2.16
17.6.5.2	*(17.4.5.2)*	Section 4.2.17
17.6.5.3 – 17.6.5.4	*(17.4.5.3 – 17.4.5.4)*	unchanged*
17.7.1.1 – 17.7.2.2	*(17.5.1.1 – 17.5.2.2)*	
17.7.2.1.2 & 17.7.2.3 – 17.7.2.4	*(17.5.2.4 – 17.5.2.6)*	
17.7.2.6	*(17.5.2.8)*	
17.7.3	*(17.5.3)*	
17.8	*(17.6)*	
26.7.1	*(17.8.1)*	
17.7.2.5	(17.5.2.7)	Section 4.2.19
26.7.1(i)	*(17.8.2.1)*	Section 4.2.21
26.7.2(e)	*(17.8.2.4)*	unchanged*
R17.8	(R17.6)	

*Sections marked as unchanged adopt the general changes prescribed in Section 4.1.1.

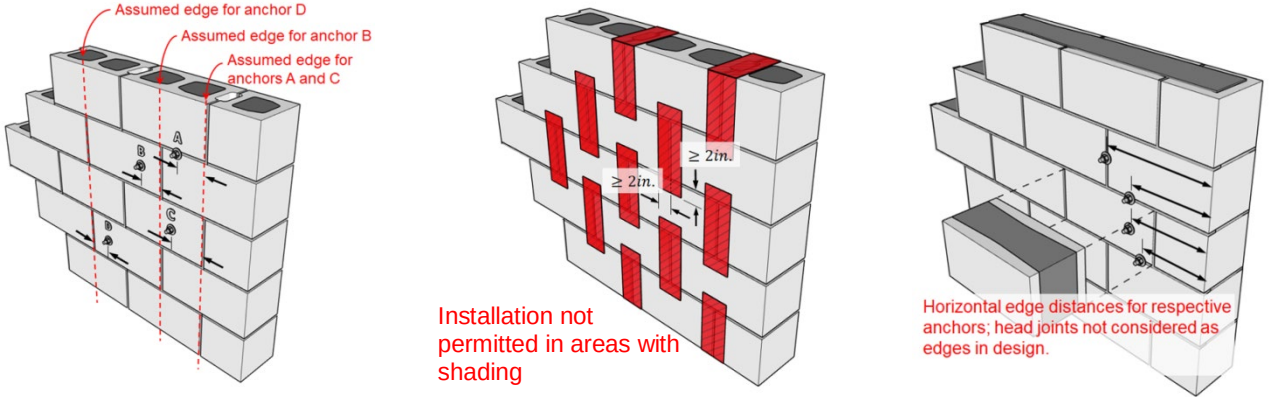
TABLE 1B—REQUIRED DESIGN STRENGTH OF ANCHORS IN GROUTED CMU

Failure mode	Single anchor	Anchor group[1]	
		Individual anchor in a group	Anchors as a group
Steel strength in tension	$\phi N_{sa} \geq N_{ua}$	$\phi N_{sa} \geq N_{ua,i}$	-
Masonry breakout strength in tension	$\phi N_{mb} \geq N_{ua}$	-	$\phi N_{mbg} \geq N_{ua,g}$
Bond strength in tension	$\phi N_{ma} \geq N_{ua}$	-	$\phi N_{mag} \geq N_{ua,g}$
Steel strength in shear	$\phi V_{sa} \geq V_{ua}$	$\phi V_{sa} \geq V_{ua,i}$	-
Masonry breakout strength in shear	$\phi V_{mb} \geq V_{ua}$	-	$\phi V_{mbg} \geq V_{ua,g}$
Masonry crushing strength in shear	$\phi V_{mc} \geq V_{ua}$	$\phi V_{mc} \geq V_{ua,i}$	-
Masonry pryout strength in shear	$\phi V_{mp} \geq V_{ua}$	-	$\phi V_{mpg} \geq V_{ua,g}$

[1]Required strengths for steel, pullout, and crushing failure modes shall be calculated for the most highly stressed anchor in the group.

TABLE 1C—REQUIRED DESIGN STRENGTH OF ANCHORS IN UNGROUTED CMU

Failure mode	Single anchor
Steel strength in tension	$\phi N_{sa} \geq N_{ua}$
Anchorage strength in tension	$\phi N_{k,ug} \geq N_{ua}$
Steel strength in shear	$\phi V_{sa} \geq V_{ua}$
Masonry anchor strength in shear	$\phi V_{s,ug} \geq V_{ua}$
Masonry crushing strength in shear	$\phi V_{mc,ug} \geq V_{ua}$



Hollow head joints

(a) *(b)*

Solid head joints

(c)

FIGURE 1—(a) Edge distance considerations in fully grouted CMU construction with hollow head joints, (b) exclusion zones in fully grouted construction with hollow head joints, and (c) edge distance considerations in fully grouted CMU construction with solid head joints . Note: dimensions to upper and lower edges omitted for clarity.

TABLE 2A — AC100+ GOLD ADHESIVE ANCHOR INSTALLATION SPECIFICATIONS FOR THREADED RODS AND REINFORCING BARS IN GROUTED MASONRY[2]

INSTALLATION INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REBAR SIZE (No.)							
				3/8	#3	1/2	#4	5/8	#5	3/4	#6
Drill Bit Diameter (ANSI)		d_o	inch	7/16		9/16	5/8	11/16	3/4	7/8	
Minimum Embedment Depth		$h_{ef,min}$	in. (mm)	2-3/8 (60)		2-3/4 (70)		3-1/8 (79)		3-1/2 (89)	
Maximum Embedment Depth[1]		$h_{ef,max}$	in. (mm)	7-1/2 (191)		10 (254)		10-3/8 (264)		10-3/8 (264)	
Minimum Masonry Thickness[1]		h_{min}	in. (mm)	7-5/8 (194)							
Minimum Edge Distance	Face of Wall	c_{min}	in. (mm)	2-1/4 (57)		3 (76)		3-3/4 (95)		4-1/2 (114)	
Minimum Anchor Spacing	Face of Wall	s_{min}	in. (mm)	2-1/4 (57)		3 (76)		3-3/4 (95)		4-1/2 (114)	
Minimum Edge Distance	Top of Wall	$c_{min,tow}$	in. (mm)	Not applicable		1-3/4 (45)	1-3/4 (45)	2 (51)	2-1/4 (57)	2-1/4 (57)	2-3/4 (70)
Minimum Anchor Spacing	Top of Wall	$s_{min,tow}$	in. (mm)	Not applicable		8 (203)		8 (203)		8 (203)	
Minimum End Distance	Top of Wall	$c_{min,tow,end}$	in. (mm)	Not applicable		3 (76)		3-3/4 (95)		4-1/2 (114)	
Maximum Tightening Torque		T_{max} (T_{inst})	ft-lbs. (N-m)	10 (14)		25 (34)		50 (68)		90 (122)	
Maximum Tightening Torque, Class 1 SS Rod[3]		T_{max} (T_{inst})	ft-lbs. (N-m)	5 (7)		20 (27)		40 (54)		60 (81)	

For **SI:** 1 inch = 25.4 mm, 1 ft-lb = 1.356 N-m.
[1]Maximum embedment for installation into the face of 7-5/8" CMU wall (8-inch nominal) is 6-1/8"; maximum embedment for installation into the face of 9-5/8" CMU wall (10-inch nominal) is 8-1/8"; maximum embedment for installation into the face of 11-5/8" CMU wall (12-inch nominal) is 10-1/8".
[2]The minimum distance from the center of an anchor to the centerline of a hollow head joint (vertical mortar joint) is 2" unless solid head joints are present; see Figure 1.
[3]These torque values apply to ASTM A193 Grade B8/B8M (Class 1) stainless steel threaded rods.

TABLE 2B — AC100+ GOLD ADHESIVE ANCHOR INSTALLATION SPECIFICATIONS FOR THREADED RODS WITH STAINLESS STEEL SCREEN TUBES IN UNGROUTED (HOLLOW) MASONRY

INSTALLATION INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REBAR SIZE (No.)				
				1/4	3/8	1/2	5/8	3/4
Drill Bit Diameter (ANSI)		d_o	in.	3/8	1/2	5/8	3/4	7/8
Minimum Embedment Depth		$h_{ef,min}$	in. (mm)	2 (51)	2 (51)	2 (51)	2 (51)	2 (51)
Minimum Masonry Thickness		h_{min}	in. (mm)	7-5/8 (194)				
Critical Edge Distance, Tension	Face of Wall	$c_{cr,N}$	in. (mm)	4 (102)				
Minimum Edge Distance, Tension	Face of Wall	$c_{min,N}$	in. (mm)	2 (51)				
Load Multiplier at Minimum Edge Distance[1]	Face of Wall	-	-	0.80				
Critical Edge Distance, Shear	Face of Wall	$c_{cr,V}$	in. (mm)	3 (76)	4-1/2 (114)	6 (152)	7-1/2 (191)	9 (229)
Minimum Edge Distance, Shear	Face of Wall	$c_{min,V}$	in. (mm)	1-1/2 (38)	2-1/4 (57)	3 (76)	3-3/4 (95)	4-1/2 (114)
Load Multiplier at Minimum Edge Distance[1]	Face of Wall	-	-	0.50				
Minimum Anchor Spacing[2]	Face of Wall	s_{min}	in. (mm)	8 (203)				
Maximum Tightening Torque		T_{max} (T_{inst})	ft-lbs. (N-m)	2 (3)	5 (7)	12 (16)	12 (16)	12 (16)
Maximum Tool Impact Power (Hammer-Drill)[3]		-	J	3.0		3.5		

For **SI:** 1 inch = 25.4 mm, 1 ft-lb = 1.356 N-m.
[1]The load multiplier at critical edge distance is 1.0. Load multiplier for edge distances between critical edge distance and minimum edge distance may be determined by linear interpolation.
[2]Minimum anchor spacing is equal to critical anchor spacing; load multiplier at minimum spacing distance is 1.0.
[3]A hammer-drill may be used to drill holes in ungrouted (hollow) masonry walls provided the maximum tool impact power is not exceeded.

TABLE 3 —GEL AND CURING TIMES FOR AC100+ GOLD ADHESIVE[1]

TEMPERATURE OF BASE MATERIAL		APPROXIMATE GEL (WORKING) TIME	FULL CURING TIME
14°F**	-10°C	90 minutes	24 hours
23°F	-5°C	90 minutes	14 hours
32°F	0°C	45 minutes	7 hours
41°F	5°C	25 minutes	2 hours
68°F	20°C	6 minutes	45 minutes
86°F	30°C	4 minutes	25 minutes
104°F	40°C	1.5 minutes	15 minutes

**Minimum temperature of base material is 14°F (-10°C) for concrete and 23°F (-5°C) for concrete masonry base materials. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry.
[1]Linear interpolation to determine approximate gel and full curing times for intermediate base material temperatures is allowed.

TABLE 4 —STEEL DESIGN INFORMATION FOR COMMON FRACTIONAL THREADED RODS

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)[1]				
				1/4	3/8	1/2	5/8	3/4
Threaded rod nominal outside diameter		d_a (d)	inch (mm)	0.250 (6.4)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Threaded rod effective cross-sectional area		A_{se}	inch² (mm²)	0.031 (20)	0.0775 (50)	0.1419 (92)	0.2260 (146)	0.3345 (216)
ASTM A36 and F1554, Grade 36	Nominal strength as governed by steel strength (for a single anchor)[4]	N_{sa}	lbf (kN)	1,800 (8.0)	4,495 (20.0)	8,230 (36.6)	13,110 (58.3)	19,400 (86.3)
		V_{sa}	lbf (kN)	1,080 (4.8)	2,695 (12.0)	4,940 (22.0)	7,860 (35.0)	11,640 (51.8)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM F1554, Grade 55	Nominal strength as governed by steel strength (for a single anchor)[4]	N_{sa}	lbf (kN)	-	-	10,640 (47.3)	16,950 (75.4)	25,085 (111.6)
		V_{sa}	lbf (kN)	-	-	6,385 (28.4)	10,170 (45.2)	15,050 (67.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	-	-	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM A193 Grade B7 and F1554, Grade 105	Nominal strength as governed by steel strength (for a single anchor)[4]	N_{sa}	lbf (kN)	3,875 (17.2)	9,685 (43.1)	17,735 (78.9)	28,250 (125.7)	41,810 (186.0)
		V_{sa}	lbf (kN)	2,325 (10.3)	5,815 (25.9)	10,640 (7.3)	16,950 (75.4)	25,085 (111.6)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM A449	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	3,720 (16.5)	9,300 (41.4)	17,025 (75.7)	27,120 (120.6)	40,140 (178.5)
		V_{sa}	lbf (kN)	2,230 (9.9)	5,580 (24.8)	10,215 (45.4)	16,270 (72.4)	24,085 (107.1)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM F593 CW Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	3,100 (13.8)	7,750 (34.5)	14,190 (63.1)	22,600 (100.5)	28,430 (126.5)
		V_{sa}	lbf (kN)	1,860 (9.0)	4,650 (20.7)	8,515 (37.9)	13,560 (60.3)	17,060 (75.9)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.65				
	Strength reduction factor for shear[2]	ϕ	-	0.60				
ASTM A193 Grade B8/B8M, Class 1 Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)[3]	N_{sa}	lbf (kN)	1,765 (7.9)	4,420 (19.7)	8,090 (36.0)	12,880 (57.3)	19,065 (84.8)
		V_{sa}	lbf (kN)	1,060 (4.7)	2,650 (11.8)	4,855 (21.6)	7,730 (34.4)	11,440 (50.9)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM A193 Grade B8/B8M2, Class 2B Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	2,945 (13.1)	7,365 (32.8)	13,480 (60.0)	21,470 (95.5)	31,775 (141.3)
		V_{sa}	lbf (kN)	1,765 (7.9)	4,470 (19.7)	8,085 (36.0)	12,880 (57.3)	19,065 (84.8)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inches, 1 N = 0.2248 lbf.

[1]Values provided for steel element material types based on minimum specified strengths and calculated in accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b). Nuts must be appropriate for the threaded rod.

[2]The strength reduction factors, ϕ, apply when the LRFD load combinations from IBC Section 1605.1 are used.

[3]The calculated values for nominal tension and shear strength for ASTM A193 Grade B8/B8M Class 1 stainless steel threaded rods are based on limiting the specified tensile strength of the anchor steel to $1.9f_y$ or 57,000 psi (393 MPa).

[4]ASTM F1554 is not inclusive of threaded rods (anchor bolts) with diameters less than 1/2-inch.

TABLE 5—STEEL DESIGN INFORMATION FOR COMMON REINFORCING BARS (REBARS)

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL REINFORCING BAR SIZE (No.)[1]			
				#3	#4	#5	#6
Rebar nominal outside diameter		d_a (d)	inch (mm)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Rebar effective cross-sectional area		A_{se}	inch^2 (mm^2)	0.110 (71)	0.200 (129)	0.310 (200)	0.440 (284)
ASTM A615, Grade 75 or Grade 80	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	11,000 (48.9)	20,000 (89.0)	31,000 (137.9)	44,000 (195.7)
		V_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65			
	Strength reduction factor for shear[2]	ϕ	-	0.60			
ASTM A615, Grade 60	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	8,800 (39.1)	16,000 (71.2)	24,800 (110.3)	35,200 (156.6)
		V_{sa}	lbf (kN)	5,280 (23.5)	9,600 (42.7)	14,880 (66.2)	21,120 (94.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65			
	Strength reduction factor for shear[2]	ϕ	-	0.60			
ASTM A706, Grade 60	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	8,800 (39.1)	16,000 (71.2)	24,800 (110.3)	35,200 (156.6)
		V_{sa}	lbf (kN)	5,280 (23.5)	9,600 (42.7)	14,880 (66.2)	21,120 (94.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.75			
	Strength reduction factor for shear[2]	ϕ	-	0.65			
ASTM A615, Grade 40	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)
		V_{sa}	lbf (kN)	3,960 (17.6)	7,200 (32.0)	11,160 (49.6)	15,840 (70.5)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65			
	Strength reduction factor for shear[2]	ϕ	-	0.60			

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inches, 1 N = 0.2248 lbf.

[1]Values provided for reinforcing bar material types based on minimum specified strengths and calculated in accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b).

[2]The strength reduction factors, ϕ, apply when the LRFD load combinations from IBC Section 1605.1 are used.

TABLE 6 — AC100+ GOLD MASONRY BREAKOUT AND SHEAR CRUSHING DESIGN INFORMATION FOR THREADED RODS AND REINFORCING BARS IN FULLY GROUTED CMU

DESIGN INFORMATION	SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REBAR SIZE (No.)			
			3/8" or #3	1/2" or #4	5/8" or #5	3/4" or #6
Nominal Diameter	d_a	inch	0.375	0.500	0.625	0.750
Minimum Embedment Depth	$h_{ef,min}$	inch (mm)	$2^3/_8$ (60)	$2^3/_4$ (70)	$3^1/_8$ (79)	$3^1/_2$ (89)
Effectiveness Factor for Cracked Masonry	$k_{m,cr}$	-	12			
Effectiveness Factor for Uncracked Masonry	$k_{m,uncr}$	-	17			
Strength Reduction Factor, Masonry Breakout Failure in Tension[1]	ϕ	-	0.65			
Strength Reduction Factor, Masonry Breakout Failure in Shear[1]	ϕ	-	0.70			
Strength Reduction Factor, Shear Crushing[1]	ϕ	-	0.50			

For **SI:** 1 inch = 25.4 mm, 1 ft-lb = 1.356 Nm.

[1]The strength reduction factors, ϕ, apply when the LRFD load combinations of IBC Section 1605.1 are used.

TABLE 7—BOND STRENGTH DESIGN INFORMATION FOR FRACTIONAL THREADED RODS IN FULLY GROUTED CMU[1]

DESIGN INFORMATION			SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)			
					3/8	1/2	5/8	3/4
Minimum embedment			$h_{ef,min}$	inch (mm)	2 3/8 (60)	2 3/4 (70)	3 1/8 (79)	3 1/2 (89)
Maximum embedment			$h_{ef,max}$	inch (mm)	7 1/2 (191)	10 (254)	10 3/8 (264)	10 3/8 (264)
ANCHORS INSTALLED IN FACE OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm²)	125 (0.9)	150 (1.0)	155 (1.1)	120 (0.8)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]				190 (1.3)	225 (1.6)	235 (1.6)	180 (1.2)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm²)	350 (2.4)	325 (2.2)	295 (2.0)	265 (1.8)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]				530 (3.7)	495 (3.4)	450 (3.1)	405 (2.8)
ANCHORS INSTALLED IN THE TOP OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm²)	Not applicable	60 (0.4)	70 (0.5)	80 (0.6)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]				Not applicable	90 (0.6)	105 (0.7)	120 (0.8)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm²)	Not applicable	130 (0.9)	135 (0.9)	175 (1.2)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]				Not applicable	195 (1.3)	205 (1.4)	265 (1.8)
Permissible installation conditions[5]	Dry masonry	Anchor Category	-	-	1			
		Strength reduction factor[4]	ϕ_d	-	0.65			
	Water-saturated masonry	Anchor Category	-	-	2			
		Strength reduction factor[4]	ϕ_{ws}	-	0.55	0.55	0.55	0.55
		Modification factor for water-saturated masonry	κ_{ws}	-	0.50	0.65	0.90	1.0
Reduction factor for seismic tension[7]			$\alpha_{N,seis}$	-	1.0			

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

See Table 8 Notes.

TABLE 8—BOND STRENGTH DESIGN INFORMATION FOR COMMON REINFORCING BARS IN FULLY GROUTED CMU[1]

DESIGN INFORMATION			SYMBOL	UNITS	NOMINAL REBAR SIZE (No.)			
					#3	#4	#5	#6
Minimum embedment			$h_{ef,min}$	inch (mm)	2 3/8 (60)	2 3/4 (70)	3 1/8 (79)	3 1/2 (89)
Maximum embedment			$h_{ef,max}$	inch (mm)	7 1/2 (191)	10 (254)	10 3/8 (264)	10 3/8 (264)
ANCHORS INSTALLED IN FACE OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm²)	120 (0.8)	135 (0.9)	170 (1.2)	140 (1.0)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]				185 (1.3)	205 (1.4)	255 (1.8)	215 (1.5)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm²)	345 (2.4)	315 (2.2)	290 (2.0)	260 (1.8)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]				520 (3.6)	480 (3.3)	440 (3.0)	395 (2.7)
ANCHORS INSTALLED IN THE TOP OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm²)	Not applicable	55 (0.4)	100 (0.7)	95 (0.7)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]					85 (0.6)	150 (1.0)	145 (1.0)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm²)	Not applicable	130 (0.9)	170 (1.2)	175 (1.2)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]					195 (1.3)	255 (1.8)	265 (1.8)
Permissible installation conditions[5]	Dry masonry	Anchor Category	-	-	1			
		Strength reduction factor[4]	ϕ_d	-	0.65			
	Water-saturated masonry	Anchor Category	-	-	2			
		Strength reduction factor[4]	ϕ_{ws}	-	0.55	0.55	0.55	0.55
		Modification factor for water-saturated masonry	κ_{ws}	-	0.50	0.65	0.90	1.0
Reduction factor for seismic tension[7]			$\alpha_{N,seis}$	-	1.0			

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Bond strength values correspond to a minimum masonry concrete compressive strength f'_m = 1,500 psi.
[2]Short-term elevated masonry temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Long-term masonry temperatures are roughly constant over significant periods of time. The maximum short-term service temperature may be increased to 176°F (80°C) provided characteristic bond strengths are reduced by 4 percent.
[3]Characterstic bond strength values are for sustained loads, including dead and live loads.
[4]The strength reduction factors, ϕ, apply when the LRFD load combinations of IBC Section 1605.1 are used.
[5]Permissible installation conditions include dry masonry and water-saturated masonry.
[6]Bond strength values for uncracked masonry are applicable for structures assigned to Seismic Design Categories A and B only.
[7]For structures assigned to Seismic Design Categories C, D, E or F, bond strength values for cracked masonry do not require an additional reduction factor applied for seismic tension ($\alpha_{N,seis}$ = 1.0), where seismic design is applicable.

TABLE 9—ANCHORAGE STRENGTH DESIGN INFORMATION FOR FRACTIONAL THREADED RODS IN UNGROUTED CMU[1]

DESIGN INFORMATION			SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)				
					$^1/_4$	$^3/_8$	$^1/_2$	$^5/_8$	$^3/_4$
Minimum embedment			$h_{ef,min}$	inch (mm)	2 (51)	2 (51)	2 (51)	2 (51)	2 (51)
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic anchor strength in tension cracked masonry[3,7]		$N_{k,cr}$	lbf (kN)	70 (0.3)	115 (0.5)	110 (0.5)	85 (0.4)	85 (0.4)
	Characteristic anchor strength in tension cracked masonry, short-term loads only[7]				180 (0.8)	295 (1.3)	280 (1.2)	220 (1.0)	220 (1.0)
	Characteristic anchor strength in tension uncracked masonry[3,6]		$N_{k,uncr}$	lbf (kN)	140 (0.6)	230 (1.0)	215 (1.0)	175 (0.8)	175 (0.8)
	Characteristic anchor strength in tension uncracked masonry, short-term loads only[6]				360 (1.6)	590 (2.6)	555 (2.5)	445 (2.0)	445 (2.0)
	Characteristic anchor strength in shear cracked masonry[3,7]		$V_{k,cr}$	lbf (kN)	180 (0.8)	295 (1.3)	280 (1.2)	220 (1.0)	220 (1.0)
	Characteristic anchor strength in shear uncracked masonry[3,6]		$V_{k,uncr}$	lbf (kN)	360 (1.6)	590 (2.6)	555 (2.5)	445 (2.0)	445 (2.0)
Permissible installation conditions[5]	Dry masonry	Anchor Category	-	-	1				
		Strength reduction factor[4]	ϕ_d	-	0.65				
	Water-saturated masonry	Anchor Category	-	-	1	2	2	2	2
		Strength reduction factor[4]	ϕ_{ws}	-	0.65	0.55	0.55	0.55	0.55
		Modification factor for water-saturated masonry	κ_{ws}	-	1.0	0.50	0.65	0.90	1.0
Reduction factor for seismic tension[7]			$\alpha_{N,seis}$	-	1.0				
Reduction factor for seismic shear[7]			$\alpha_{V,seis}$	-	0.75				

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Strength values correspond to ungrouted units with a minimum net masonry concrete compressive strength f'_m = 1,500 psi.
[2]Short-term elevated masonry temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Long-term masonry temperatures are roughly constant over significant periods of time. The maximum short-term service temperature may be increased to 176°F (80°C) provided characteristic bond strengths are reduced by 37 percent.
[3]Characterstic strength values are for sustained loads, including dead and live loads.
[4]The strength reduction factors, ϕ, apply when the LRFD load combinations of IBC Section 1605.1 are used.
[5]Permissible installation conditions include dry masonry and water-saturated masonry.
[6]Strength values for uncracked masonry are applicable for structures assigned to Seismic Design Categories A and B only.
[7]For structures assigned to Seismic Design Categories C, D, E or F, strength values for cracked masonry do not require a reduction factor applied for seismic tension ($\alpha_{N,seis}$ = 1.0); For seismic shear a reduction factor $\alpha_{V,seis}$ = 0.75 must be applied to the characteristic anchor strength in cracked masonry $V_{k,cr}$ where seismic design is applicable.

TABLE 10— APPLICABLE SECTIONS OF THE IBC CODE UNDER EACH EDITION OF THE IBC AND IRC

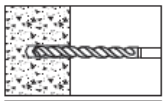
IBC			
2024 IBC	**2021 IBC**	**2018 IBC**	**2015 IBC**
Section 1605.1		Section 1605.2 or 1605.3	
Section 1704			
Section 1705			
Section 1705.1.1			
Chapter 21			
Section 2103.2.1			
Section 2103.3			
Section 2108.1			
IRC			
2024 IRC	**2021 IRC**	**2018 IRC**	**2015 IRC**
Section R301.1.3			
Section R606.2.8			Section R606.2.7
Section R606.2.12			Section R606.2.11

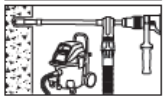
TABLE 11— APPLICABLE SECTIONS OF TMS 402 UNDER EACH EDITION OF THE IBC

2024 IBC	2021 IBC	2018 IBC	2015 IBC
TMS 402-22	TMS 402-16		TMS 402-13
Section 8.1.4	Section 8.1.3		Section 8.1.4
Section 9.1.6			
Eq. 9-5	Eq. 9-7		

INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

DRILLING



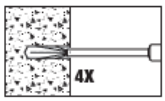


1- Drill a hole into the base material with rotary hammer drill (i.e. percussion drill) and a carbide drill bit to the size and embedment required by the selected steel hardware element (reference installation specifications for threaded rod and reinforcing bar). The tolerances of the carbide drill bits, including hollow bits, must meet ANSI Standard B212.15.

- Precaution: Use suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see optional dust extraction equipment supplied by DEWALT to minimize dust emission).
- Note! In case of standing water in the drilled hole (flooded hole condition), all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.
- Drilling in dry base material is necessary when using hollow drill bits (vacuum must be on); not for use in wet concrete or masonry.

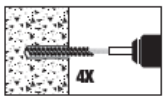
GO TO STEP 3 FOR HOLES DRILLED WITH DUSTX+™ DRILLING AND CLEANING SYSTEM; OTHERWISE GO TO STEP 2A.

HOLE CLEANING



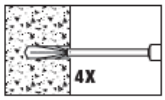
2a- Starting from the bottom or back of the anchor hole, blow the hole clean using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) supplied by DEWALT) a minimum of four times (4x).

- Use a compressed air nozzle or a hand pump for anchor rod diameters 3/8" to 3/4" or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle for anchor rod diameter 7/8" to 1-1/4" and rebar sizes #7 to #10. Do not use a hand pump for these sizes.



2b- Determine wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screwgun. Brush the hole with the selected wire brush a minimum of four times (4x). A brush extension (supplied by DEWALT) should be used for holes drilled deeper than the listed brush length.

- Note! The wire brush diameter should be checked periodically during use. The brush should resist insertion into the drilled hole and come into contact with the sides of the drilled hole. If not the brush is too small and must be replaced.



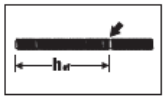
2c- Finally, blow the hole clean again using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl.oz.) supplied by DEWALT a minimum of four times (4x).

- Use a compressed air nozzle or a hand pump for anchor rod diameters 3/8" to 3/4" or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle for anchor rod diameters 7/8" to 1-1/4" and rebar sizes #7 to #10. Do not use a hand pump for these sizes. When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

PREPARING

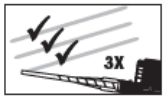
3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete unless otherwise noted. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry. Review gel (working) and cure time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Remove cap from cartridge.
- Attach a supplied mixing nozzle to the cartridge. Unless otherwise noted do not modify the mixer in any way. Make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note! Use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.



4- Prior to inserting the anchor rod or rebar into the drilled hole, the position of the embedment depth has to be marked on the anchor.

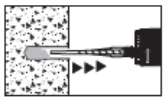
- Verify anchor element is straight and free of surface damage.



5- Adhesive must be properly mixed to achieve published properties. For new cartridges and nozzles, prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.

- Unless otherwise noted, do not attach a used nozzle when changing to a new cartridge.
- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

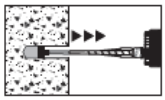
INSTALLATION

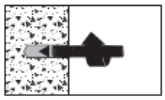


6- Fill the cleaned hole approximately two-thirds full with mixed adhesive starting from the bottom or back of the anchor hole. Slowly withdraw the mixing nozzle as the hole fills to avoid creating air pockets or voids. If the bottom or back of the anchor hole is not reached with the mixing nozzle only, a plastic extension tube supplied by DEWALT must be used with the mixing nozzle (see reference tables for installation).

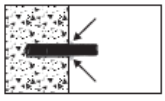
- Piston plugs must be used with and attached to mixing nozzle and extension tube for overhead (i.e. upwardly inclined) installations and horizontal installations with anchor sizes as indicated in the piston plug selection table. Insert piston plug to the back of the drilled hole and inject as described in the method above. During installation the piston plug will be naturally extruded from the drilled hole by the adhesive pressure.
- Attention! Do not install anchors overhead without proper training and installation hardware provided by DEWALT. Contact DEWALT for details.

WITH PISTON PLUG:



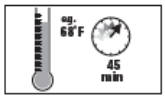


7- The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Observe the gel (working) time.



8- Be sure the rod or rebar is fully seated at the bottom of the hole to the specified embedment. Adhesive must completely fill the annular gap between the anchor and the base material. Protect exposed anchor threads from fouling with adhesive. For all installations the anchor must be restrained from movement throughout the specified curing period (as necessary) where necessary through the use of temporary wedges, external supports, or other methods. Minor adjustments to the position of the anchor element may be performed during the gel (working) time only.

CURING AND LOADING



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load (reference gel time and curing time table).

- Do not disturb, torque or load the anchor until it is fully cured.

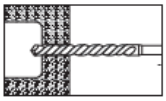
10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (reference gel time and curing table) by using a calibrated torque wrench.

- Note! Take care not to exceed the maximum torque for the selected anchor.

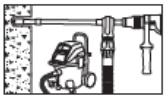
FIGURE 2—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII), SOLID BASE MATERIALS

INSTALLATION INSTRUCTIONS (UNREINFORCED MASONRY [URM WALLS] AND HOLLOW BASE MATERIALS)

DRILLING



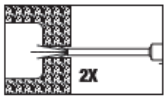
1- Drill a hole into the base material with a rotary drill tool to the size and embedment required by the selected screen tube size and steel anchor element (see installation specifications for threaded rod in hollow base material with screen tube supplied by DEWALT). Holes drilled in hollow concrete masonry units may be drilled with a rotary hammer-drill. The tolerances of the drill bit, including hollow drill bits, must meet the requirements of ANSI B212.15.



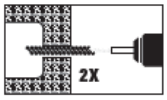
- Precaution: Wear suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see dust extraction by DEWALT to minimize dust emission).
- Drilling in dry base materials is necessary when using hollow drill bits (vacuum must be on); not for use in wet concrete or masonry.

GO TO STEP 3 FOR HOLES DRILLED WITH DUSTX+™ DRILLING AND CLEANING SYSTEM; OTHERWISE GO TO STEP 2.

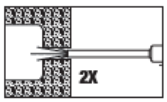
HOLE CLEANING (BLOW 2X, BRUSH 2X, BLOW 2X)



2- Starting from the bottom or back of the anchor hole, blow the hole clean with a hand pump with min. volume 25 fl.oz. supplied by DEWALT (Cat #08280-PWR) or compressed air nozzle a minimum of two times (2x).



- Determine the wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of two times (2x). A brush extension supplied by DEWALT (Cat. #08282-PWR) should be used for holes drilled deeper than the listed brush length.
- Note! The wire brush should be checked periodically during use. The brush should resist insertion into the drilled hole and come into contact with the sides of the drilled hole. If not the brush is too small and must be replaced.



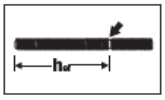
- Finally, blow the hole clean again a minimum of two times (2x)

When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

PREPARING

3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete unless otherwise noted. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry. Review gel (working) and cure time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

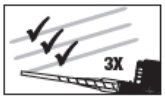
- Remove cap from cartridge.
- Attach a supplied mixing nozzle to the cartridge. Unless otherwise noted do not modify the mixer in any way. Make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note! Use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.



4- Prior to inserting the anchor rod or rebar into the drilled hole, the position of the embedment depth has to be marked on the anchor.

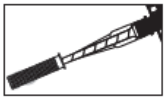
- Verify anchor element is straight and free of surface damage.

5- Adhesive must be properly mixed to achieve published properties. For new cartridges and nozzles, prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.

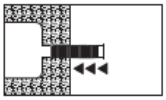


- Unless otherwise noted, do not attach a used nozzle when changing to a new cartridge.
- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

INSTALLATION

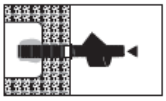


6- Select a screen tube of suitable length supplied by DEWALT. Fill the screen tube full with adhesive starting from the bottom or back of the tube. Slowly withdraw the mixing nozzle as the screen fills to avoid creating air pockets or voids. A plastic extension tube must be used with the mixing nozzle if the back of the screen tube cannot be reached (see reference tables for installation).



7- Insert the screen tube filled with adhesive into the cleaned anchor hole. Inject additional adhesive into the screen tube as necessary to ensure the screen tube is completely filled.

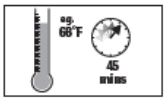
- Note! Overfilling the screen tube is acceptable but not required.



8- Prior to inserting the anchor rod into the screen tube inspect it to ensure that it is free of dirt, grease, oil or other foreign material.

- Push the threaded rod into the screen tube while turning slightly to ensure positive distribution of the adhesive until back of the tube is reached.
- Note: In cases where the drilled hole size is larger than specified due to rotary drilling (e.g. an elongated opening), the annular space between the screen tube and the hole at the base material surface must be filled with adhesive.

CURING AND FIXTURE



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load.

- Do not disturb, torque or load the anchor until it is fully cured (see gel time and curing time table).

10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (see installation specifications for threaded rod in hollow base material) by using a calibrated torque wrench.

- Note! Take care not to exceed the maximum torque for the selected anchor.

FIGURE 3—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII), HOLLOW BASE MATERIALS

DIVISION: 04 00 00—MASONRY
Section: 04 05 19.16—Masonry Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED, GROUTED AND UNGROUTED CONCRETE MASONRY UNIT WALLS (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that AC100+ Gold adhesive anchor system in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in ICC-ES evaluation report ESR-3200, has also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

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

2.0 CONCLUSIONS

The AC100+ Gold adhesive anchor system in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in Sections 2.0 through 7.0 of the evaluation report ESR-3200, complies with LABC Chapter 21 and the LARC, and is subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The AC100+ Gold adhesive anchor system described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-3200.
- The design, installation, conditions of use and labeling of the anchor system are in accordance with the 2021 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-3200.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17, and the City of Los Angeles Information Bulletin P/BC 2023-092, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.
- The allowable and strength design values listed in the evaluation report and tables are for the connection of the anchor system to masonry substrate. The connection between the anchor system and the connected members shall be checked for capacity (which may govern).
- For use in wall anchorage assemblies to flexible diaphragm applications, anchors shall be designed per the requirements of City of Los Angeles Information Bulletin P/BC 2023-071.

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

DIVISION: 04 00 00—MASONRY
Section: 04 05 19.16—Masonry Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the AC100+ Gold® Adhesive Anchor System in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in ICC-ES evaluation report ESR-3200, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

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

2.0 CONCLUSIONS

The AC100+ Gold® Adhesive Anchor System in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in Sections 2.0 through 7.0 of the evaluation report ESR-3200, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential.* The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable. The installation requirements noted in ICC-ES evaluation report ESR-3200 for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable.

Use of the AC100+ Gold® Adhesive Anchor System has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* with the following conditions:

a) Design and installation must meet the requirements in Section 2122.7 of the *Florida Building Code—Building*.

b) For anchorage of wood members, the connections subject to uplift must be designed for no less than 700 pounds (3114 N).

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission). Florida Rule 61G20-3 is applicable to products and/or systems which comprise the building envelope and structural frame for compliance with the structural requirements of the Florida Building Code.

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