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### **HILTI HIT-HY 100 ADHESIVE ANCHOR SYSTEM FOR CRACKED AND UNCRACKED GROUTED CONCRETE MASONRY UNIT WALLS**

**CSI Section: 04 05 19.16 Masonry Anchors**

#### **1.0 RECOGNITION**

The Hilti HIT-HY 100 Adhesive Anchor System is used as anchorage in cracked and uncracked concrete masonry unit (CMU) walls to anchor building components to grouted lightweight, mediumweight, or normalweight 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 alternatives to cast-in-place anchors described in Section 8.1.3 (2016 or 2013 editions), or Section 2.1.4 (2011 edition) of [TMS 402](#) as referenced in Section [2107.1](#) of the IBC.

The adhesive anchors are permitted to be used in structures regulated by the IRC provided an engineered design is submitted in accordance with IRC Section [R301.1.3](#).

The structural performance properties of the Hilti HIT-HY 100 comply with the intent of the provisions of the following codes and regulations:

- 2024, 2021, 2018, and 2015 International Building Code® (IBC)
- 2024, 2021, 2018, and 2015 International Residential Code® (IRC)
- 2024, 2021, 2018, and 2015 International Existing Building Code® (IEBC)
- 2023 Florida Building Code, Building (FBC, Building) – Attached Supplement
- 2023 Florida Building Code, Residential (FBC, Residential) – Attached Supplement
- 2023 City of Los Angeles Building Code (LABC) – Attached Supplement
- 2023 City of Los Angeles Residential Code (LARC) – Attached Supplement

#### **2.0 LIMITATIONS**

Use of the Hilti HIT-HY 100 Adhesive Anchor System recognized in this report is subject to the following limitations:

**2.1** Anchors shall be identified and installed in accordance with this report and the manufacturer's published installation instructions (MPII). In case of conflict, this report governs.

**2.2** Anchors have been evaluated for use in cracked and uncracked grouted concrete masonry unit (CMU) construction with a minimum compressive strength of 1,500 psi (10.3 MPa) at the time of anchor installation.

**2.3** Anchors installed in the face or the top of fully grouted 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 shall be adjusted in accordance with Section [1605.1](#) (2024 and 2021 IBC) or Section [1605.2](#) (2018 and 2015 IBC) for strength design and in accordance with Section [1605.1](#) or [1605.2](#) (2024 and 2021 IBC) or Section [1605.3](#) (2018 and 2015) for allowable stress design.

**2.4** Strength design values shall be established in accordance with Sections 3.1, 3.2, and 3.3 of this report.

**2.5** Allowable design values shall be established in accordance with Section 3.4 of this report.

**2.6** The design of anchors in fully grouted CMU construction shall avoid locating anchors in hollow head joints.

**2.7** Since an IAPMO Uniform ES Evaluation 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 these conditions is outside the scope of this report.

**2.8** 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.

**2.9** Anchors are not permitted to support fire-resistive construction. Where not otherwise prohibited in 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

*The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with Section 104.2.3 of the 2024 IBC and Section 104.11 of previous editions. This document shall only be reproduced in its entirety.*

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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.

**2.10** The design of anchors shall 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.

**2.11** Anchors shall be installed in masonry base materials in holes predrilled with carbide-tipped drill bits complying with [ANSI B212.15-1994](#) in accordance with the MPII provided in [Figure 2](#) of this report.

**2.12** Prior to installation, calculations and details demonstrating compliance with this report shall be submitted to the building official. The calculations and details shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

**2.13** Special inspection, when required, shall be provided in accordance with Section 3.6 of this report. Continuous special inspection shall be provided for anchors designed to resist sustained tension loads.

**2.14** Steel anchoring materials in contact with preservative-treated and 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](#) or [ASTM B695](#) with a Class 55 min. coating.

**2.15** Anchors are not permitted for tightening torque installations until the adhesive cure time indicated in the MPII is fully reached.

**2.16** Anchors are not permitted for upwardly inclined and overhead installations.

**2.17** Use of carbon steel anchors is limited to dry, interior locations.

**2.18** Hot-dipped galvanized carbon steel threaded rods with coating weights in accordance with [ASTM A153](#) Class C and D, or stainless steel threaded rods are permitted for exterior exposure or damp environments.

**2.19** The Hilti HIT-HY 100 adhesive is manufactured and packaged into cartridges by Hilti GmbH, in Kaufering, Germany.

### 3.0 PRODUCT USE

#### 3.1 Strength Design in Fully Grouted Concrete Masonry Unit Construction

**3.1.1 General:** This section and Section 3.2 of this report 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.

The 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* or *ACI 318-14 Chapter 17* and [TMS 402-16](#) as modified by the sections that follow. Design in accordance with this report shall not be conducted without reference to *ACI 318 (-19 or -14)* with the deletions and modifications summarized in [Table 1A and TMS 402-16 Eq. 9-7](#).

**3.1.2** This report references sections, tables, and figures in both this report and ACI 318. The following method is used to distinguish between the two document references:

- References to sections, tables, and figures originating from ACI 318 are *italicized* with the leading reference corresponding to 318-19 and the parenthetical reference corresponding to 318-14. For example, Section 2.2 in ACI 318-19, which is analogous to Section 2.2 in ACI 318-14, will be displayed as *ACI 318-19 Section 2.2 (ACI 318-14 Section 2.2)*.
- References to sections, tables, and figures originating from this report do not have any special font treatment, for example, Section 3.2.1 of this report.

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,  $\lambda_a$ , shall be taken as 1.0.

The following terms shall be replaced wherever they occur:

<i>ACI 318 (-19 or -14) Term</i>	Replacement Term
$f'_c$	$f'_m$
$N_{cb}, N_{cbg}$	$N_{mb}, N_{mbg}$
$N_a, N_{ag}$	$N_{ma}, N_{mag}$
$V_{cb}, V_{cbg}$	$V_{mb}, V_{mbg}$
$V_{cp}, V_{cpg}$	$V_{mp}, V_{mpg}$



**3.1.3** Edge assumptions for design purposes and restrictions for anchor placement are illustrated in [Figure 1](#) of this report. 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, the provisions in Section 3.2.20 of this report shall apply.

**3.2 ACI Modifications Required for Design:** [Table 1A](#) of this report provides a summary of all applicable *ACI 318-19* and *ACI 318-14* sections for the design of adhesive anchors in fully grouted CMU masonry. Where applicable, modifying sections contained within this report are also provided.

**3.2.1** *ACI 318-19 Sections 17.1.1 & 17.1.5 (ACI 318-14 Sections 17.1.1-17.1.2)* apply with the general changes prescribed in Section 3.1.2.

**3.2.2** In lieu of *ACI 318-19 Section 17.1.2 (ACI 318-14 Section 17.1.3)*: Design provisions are included for adhesive anchors that meet the assessment criteria of ICC-ES AC58.

**3.2.3** *ACI 318-19 Sections 17.1.4, 17.2.1, 17.4.1, & 17.5.1.3.1 (ACI 318-14 Sections 17.1.4-17.2.2)* apply with the general changes prescribed in Section 3.1.2.

**3.2.4** In lieu of *ACI 318-19 Section 17.10 (ACI 318-14 Section 17.2.3)*: The design of anchors in structures assigned to Seismic Design Category (SDC) C, D, E, or F shall satisfy the requirements of this section.

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

**3.2.4.2** 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  $\Omega_o$ . The anchor design tensile strength shall satisfy the tensile strength requirements of Section 3.2.4.3 of this report.

**3.2.4.3** 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](#) of this report assuming the masonry is cracked unless it can be demonstrated that the masonry remains uncracked.

- (a)  $\phi N_{sa}$  for a single anchor or the most highly stressed individual anchor in a group of anchors.

- (b)  $0.75 \phi N_{mb}$  or  $0.75 \phi N_{mbg}$ .

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

- (d) where  $\phi$  is in accordance with Section 3.2.9 of this report.

**3.2.5** In lieu of *ACI 318-19 Sections 17.5.1.3 & 17.5.2.2 (ACI 318-14 Section 17.2.5)*: For anchors designed for sustained tension loading, *ACI 318-19 Section 17.5.2.2 (ACI 318-14 Section 17.3.1.2)* shall be satisfied. For groups of anchors, *ACI 318-19 Eq. 17.5.2.2 (ACI 318-14 Eq. 17.3.1.2)* 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 26.13.1.6 (ACI 318-14 Section 17.8.2.4)*. Installers of such anchors shall be qualified for the installation of the anchor type used.

**3.2.6** In lieu of *ACI 318-19 Section 17.5.2 (ACI 318-14 Section 17.3.1.1)*: The design of anchors shall be in accordance with [Table 1B](#) of this report. In addition, the design of anchors shall satisfy Section 3.2.4 of this report for earthquake loading and *ACI 318-19 Section 17.5.2.2 (ACI 318-14 Section 17.3.1.2)* for anchors designed for sustained tensile loading.

**3.2.7** *ACI 318-19 Sections 17.5.2.2-17.5.2.3 (ACI 318-14 Sections 17.3.1.2-17.3.1.3)* apply with the general changes prescribed in Section 3.1.2 of this report.

**3.2.8** *ACI 318-19 Section 17.5.1.2 (ACI 318-14 Section 17.3.2 excluding Section 17.3.2.1)* applies with the general changes prescribed in Section 3.1.2 of this report.

**3.2.9** In lieu of *ACI 318 318-19 Section 17.5.3 (ACI 318-14 Section 17.3.3)*: The strength reduction factor,  $\phi$ , for anchors in masonry shall be as follows when the LRFD load combinations of ASCE/SEI 7 are used:

- (a) For the steel capacity of ductile steel elements as defined in *ACI 318-19 Section 2.3 (ACI 318-14 Section 2.3)*,  $\phi$  shall be taken as 0.75 in tension and 0.65 in shear. Where the ductility requirements of *ACI 318* are not met,  $\phi$  shall be taken as 0.65 in tension and 0.60 in shear.
- (b) For shear crushing capacity,  $\phi$  shall be taken as 0.50.
- (c) For cases where the nominal strength of anchors in masonry is controlled by masonry breakout in tension,  $\phi$  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,  $\phi$  shall be taken as 0.70.
- (e) For cases where the nominal strength of anchors in masonry is controlled by bond failure,  $\phi$  shall be taken as 0.65 for anchors qualifying for Category 1 and 0.55 for anchors qualifying for Category 2 in *ACI 318-19 Section 17.5.3 (ACI 318-14 Section 17.3.3)*.



**3.2.10** *ACI 318-19 Section 17.6.1 (ACI 318-14 Section 17.4.1)* applies along with the general changes prescribed in Section 3.1.2 of this report.

**3.2.11** In lieu of *ACI 318-19 Section 17.6.2.1 (ACI 318-14 Section 17.4.2.1)*: 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:

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

(b) For a group of anchors:

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

Factors  $\psi_{ec,N,m}$ ,  $\psi_{ed,N,m}$ ,  $\psi_{c,N,m}$  are defined in *ACI 318-19 Sections 17.6.2.3-17.6.2.5 (ACI 318-14 Sections 17.4.2.4-17.4.2.6)*.  $A_{Nm}$  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  $1.5h_{ef}$ , calculated in accordance with Eq. 17.6.2.1.4:

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

**3.2.12** In lieu of *ACI 318-19 Section 17.6.2.2 (ACI 318-14 Section 17.4.2.2)*: The basic masonry breakout strength of a single anchor in tension in cracked masonry,  $N_{b,m}$ , shall not exceed:

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

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

$\alpha_{masonry}$  = reduction factor for the inhomogeneity of masonry materials in breakout and bond strength determination.  
= 0.7

**3.2.13** *ACI 318-19 Sections 17.6.2.1.2 & 17.6.2.3-17.6.2.4 (ACI 318-14 Sections 17.4.2.3-17.4.2.5)* apply along with the general changes prescribed in Section 3.1.2 of this report.

**3.2.14** In lieu of *ACI 318-19 Section 17.6.2.5 (ACI 318-14 Section 17.4.2.6)*: The basic masonry breakout strength of a single anchor in tension,  $N_{b,m}$ , shall be calculated using the values of  $k_{m,cr}$  and  $k_{m,uncr}$  as described in [Table 4](#) of this report. Where analysis indicates no cracking is anticipated,  $N_{b,m}$  shall be calculated using  $k_{m,uncr}$  and  $\psi_{c,N,m} = 1.0$ .

**3.2.15** *ACI 318-19 Section 17.6.2.6 (ACI 318-14 Section 17.4.2.7)* 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.

**3.2.16** In lieu of *ACI 318-19 Section 17.6.5.1 (ACI 318-14 Section 17.4.5.1)*: The nominal bond strength in tension,  $N_{ma}$  of a single anchor or  $N_{mag}$  of a group of anchors, shall not exceed:

(a) For a single anchor:

$$N_{ma} = \frac{A_{Na}}{A_{Na0}} \psi_{ed,Na} \cdot N_{ba,m} \quad (17.6.5.1a)$$

(b) For a group of anchors:

$$N_{mag} = \frac{A_{Na}}{A_{Na0}} \psi_{ec,Na} \cdot \psi_{ed,Na} \cdot N_{ba,m} \quad (17.6.5.1b)$$

Factors  $\psi_{ec,Na}$  and  $\psi_{ed,Na}$  are defined in *ACI 318-19 Sections 17.6.5.3-17.6.5.4 (ACI 318-14 Sections 17.4.5.3-17.4.5.4)*.  $A_{Na}$  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  $nA_{Na0}$ , 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  $c_{Na}$ , computed in accordance with Eq. 17.6.5.1.2a:

$$A_{Na0} = (2c_{Na})^2 \quad (17.6.5.1.2a)$$

where

$$c_{Na} = 10d_a \sqrt{\frac{\tau_{uncr}}{1,100}} \quad (17.6.5.1.2b)$$

and the constant 1,100 has the units of lb./in.<sup>2</sup>

**3.2.17** In lieu of *ACI 318-19 Section 17.6.5.2 (ACI 318-14 Section 17.4.5.2)*: The basic bond strength of a single adhesive anchor in cracked masonry,  $N_{ba,m}$ , shall not exceed:

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

The characteristic bond stresses  $\tau_{cr,m}$  shall be taken from [Table 5](#). Where analysis indicates cracking at service load



levels, adhesive anchors shall be qualified for use in cracked masonry in accordance with AC58. 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 (ACI 318-14 Eq. 17.4.5.2) and shall be taken as the value of  $\tau_{k,uncr}$  as determined from Table 5 of this report.

**3.2.18** The following apply along with the general changes prescribed in Section 3.1.2 of this report:

1. ACI 318-19 Sections 17.6.5.3-17.6.5.4 (ACI 318-14 Sections 17.4.5.3-17.4.5.4).
2. ACI 318-19 Section 17.7.1 excluding Sections 17.7.1.2a & 17.7.1.2c (ACI 318-14 Section 17.5.1 excluding Sections 17.5.1.2a & 17.5.1.2c).
3. ACI 318-19 Sections 17.7.2.1-17.7.2.2 (ACI 318-14 Sections 17.5.2.1-17.5.2.2 or).
4. ACI 318-19 Sections 17.7.2.1.2 & 17.7.2.3-17.7.2.4 (ACI 318-14 Sections 17.5.2.4-17.5.2.6).
5. ACI 318-19 Section 17.7.2.6 (ACI 318-14 Section 17.5.2.8).
6. ACI 318-19 Section 17.7.3 (ACI 318-14 Section 17.5.3).
7. ACI 318-19 Section 26.7.1 (ACI 318-14 Section 17.8.1).

**3.2.19** In lieu of ACI 318-19 Section 17.7.2.5 (ACI 318-14 Section 17.5.2.7): For anchors located in a region of masonry construction where cracking is anticipated,  $\psi_{c,v,m}$  shall be taken as 1.0. For cases where analysis indicates no cracking at service levels, it shall be permitted to take  $\psi_{c,v,m}$  as 1.4.

[In addition to the ACI 318 provisions] Masonry crushing strength for anchors in shear shall be calculated in accordance with TMS 402-16 Eq. 9-7 – The nominal strength of an anchor in shear as governed by masonry crushing,  $V_{mc}$ , shall be calculated in accordance with Eq. (3-1).

$$V_{mc} = 1750^4 \sqrt[4]{f'_m A_{se,v}} \quad (3-1)$$

**3.2.20** 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 (40.6 cm), standard and where anchors are not spaced at a multiple of 8 inches (20.3 cm):

Where six or more anchors are placed at a uniformly 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 is permitted to be calculated in accordance with Eq. (3-1.1) and Eq. (3-1.2), respectively, in lieu of Section 3.1.3 of this report.

$$V_{mb,horiz} = 0.75 \cdot V_{gov,horiz} \cdot \frac{12}{S_{horiz}} \quad (3-1.1)$$

$$V_{mb,vert} = 0.75 \cdot V_{gov,vert} \cdot \frac{12}{S_{horiz}} \quad (3-1.2)$$

where:

$S_{horiz}$  = horizontal anchor spacing in the ledger, (in). For anchor spacings that are multiples of 8 inches (20.3 cm), locate the first anchor in the ledger at least 2 inches (50.8 mm) 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.

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

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

$V_{sa}$  = shear capacity for a single anchor calculated in accordance with ACI 318-19 Section 17.7.1.2 (ACI 318-14 Section 17.5.1.2) (lb).

$V_{mb,4}$  = breakout capacity for a single anchor with edge distance of 4 inches (20.3 cm), (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 (20.3 mm), (lb).

Where anchors are spaced at 8 inches (40.6 cm) on center or another multiple of 8 inches (40.6 cm) on center, the calculated values of  $V_{mb,horiz}$  and  $V_{mb,vert}$  shall be multiplied by  $^{4}/_3$ .

**3.2.21** In lieu of ACI 318-19 Section 26.7.1(i) (ACI 318-14 Section 17.8.2.1): The construction documents shall specify all parameters associated with the characteristic bond stress used for design in accordance with Section 3.2.16 and Section 3.2.17 of this report, including minimum age of masonry; masonry temperature range; moisture condition of masonry at time of installation; type of lightweight masonry, if applicable; and requirements for hole drilling and preparation.

**3.2.22** ACI 318-19 Section 26.7.2(e) (ACI 318-14 Section 17.8.2.4) apply along with the general changes prescribed in Section 3.1.2 of this report.

**3.2.23** Interaction of tension and shear shall be calculated in compliance with ACI 318-19 Section 17.8 (ACI 318-14 Section 17.6) as follows:



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

For tensile loads  $N_{ua} \leq 0.2\phi N_n$ , the full allowable load in shear shall be permitted.

For all other cases:

$$\frac{N_{ua}}{\phi N_n} + \frac{V_{ua}}{\phi V_n} \leq 1.2 \quad (17.8.3)$$

**3.2.23.1** Satisfying the parabolic equation complying with *ACI 318-19 Section R17.8 (ACI 318-14 Section R17.6)* may be used in lieu of satisfying Section 3.2.23 of this report. The parabolic equation is given as:

$$\left(\frac{N_{ua}}{\phi N_n}\right)^{5/3} + \left(\frac{V_{ua}}{\phi V_n}\right)^{5/3} \leq 1.0$$

### 3.3 Strength Design in Partially Grouted Concrete Masonry Unit Construction

**3.3.1** The HIT-HY 100 adhesive anchor is not permitted to be installed in ungrouted cells.

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

Anchors located in grouted cells shall be designed in accordance with Sections 3.1 and 3.2 of this report, whereby the distance to the extent of the ungrouted cell shall be taken as a free edge.

The minimum distance from hollow head joints shall be 2 inches (50.8 mm) as measured from the centerline of the head joint.

### 3.4 Conversion of Strength Design to Allowable Stress Design

**3.4.1** For adhesive anchors designed using load combinations in accordance with 2024 and 2021 IBC Sections 1605.1 or 1605.2, or 2018 and 2015 IBC Section [1605.3](#) (Allowable Stress Design) allowable loads shall be established using Eq. 3-2 and Eq. 3-3:

$$T_{allowable,ASD} = \frac{\phi N_n}{\alpha} \quad (3-2)$$

and

$$V_{allowable,ASD} = \frac{\phi V_n}{\alpha} \quad (3-3)$$

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, as applicable, and 2024 IBC Section 1905.7, and 2021, 2018, and 2015 IBC Section [1905.1.8](#) (lb. or kN)

$V_n$  = Lowest design strength of an anchor or anchor group in shear as determined in accordance with this report, as applicable, and 2024 IBC Section 1905.7, and 2021, 2018, and 2015 IBC Section [1905.1.8](#) (lb. or kN)

$\alpha$  = 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

$\phi$  = Relevant strength reduction factor for load case and Anchor Category

**3.5 Installation:** Installation parameters are illustrated in [Figure 1](#) and noted in [Table 3](#) of this report. Installation of the Hilti HIT-HY 100 Adhesive Anchor System shall conform to the manufacturer's printed installation instruction (MPII) included in each unit package as provided in [Figure 2](#) of this report. Anchor locations shall comply with this report and the plans and specifications approved by the building official.

**3.6 Special Inspection:** At a minimum, periodic special inspection shall be provided for all anchors. Continuous special inspection shall be provided for anchors designed to resist sustained tension loads. Installation in head joints shall only be permitted in fully grouted walls constructed with open-ended units, fully grouted bond beams, or any other type of construction where the head joint void is filled.

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

The special inspector shall verify the initial installations of each type and size of the adhesive anchor by construction personnel on site. For periodic inspections, 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 the correct handling and installation of the product.

The special inspector shall inspect and verify that the anchor installation complies with this evaluation report and Hilti's published installation instructions.



### 4.0 PRODUCT DESCRIPTION

**4.1 Product Information:** The Hilti HIT-HY 100 Adhesive Anchor System is comprised of the following components:

- Hilti HIT-HY 100 adhesive
- All-threaded steel rods
- Adhesive mixing and dispensing equipment
- Equipment for hole cleaning and adhesive injection

The MPII is included with each adhesive unit package as shown in [Figure 2](#) of this report.

### 4.2 Material Information

**4.2.1 Hilti HIT-HY 100 Adhesive:** The Hilti HIT-HY 100 adhesive is an injectable hybrid adhesive combining resin, hardener, cement, and water. The resin and cement are separated from the hardener and water by means of a dual-cylinder foil pack attached to a manifold. An injection nozzle with an internal mixing element is attached to the manifold, and the adhesive components are dispensed through the injection nozzle to ensure their proper mixing. The injection nozzle may be replaced to permit interruptions in the use of the cartridges. Hilti HIT-HY 100 is available in 11.1-ounce (330 mL) and 16.9-ounce (500 mL) foil packs.

The adhesive expiration date is printed on the manifold of each foil pack (month/year). The shelf life, as indicated by the expiration date, is for an unopened foil pack stored in a cool, dry, dark environment at temperatures between 41°F and 77°F (5°C and 25°C). Gel and curing times for the Hilti HY-100 adhesive and the respective masonry temperature during installation and cure are shown in [Figure 2](#) of this report.

**4.2.2 Dispensing Equipment:** The Hilti HIT-HY 100 adhesive shall be dispensed with manual or electric dispensers provided by Hilti.

**4.2.3 Hole Cleaning Equipment:** Hole cleaning equipment consists of hole-cleaning brushes and air nozzles. Brushes shall be Hilti HIT-RB hole cleaning brushes. Air nozzles shall be equipped with an extension capable of reaching the bottom of the drilled hole.

**4.2.4 Threaded Steel Rods:** Threaded rods, having diameters from 3/8 inch to 3/4 inch (9.5 mm to 19.1 mm), shall be carbon steel or stainless steel with steel design information for common grades of threaded rods provided in [Table 2](#) of this report. Threaded rods shall be clean, continuously threaded (all-thread), straight, and free of indentations or other defects along their lengths. The ends may be stamped with identifying marks and the embedded end may be blunt cut or cut on the bias (chisel point).

**4.2.5 Fully Grouted CMU Construction:** The specified compressive strength of masonry at the time of installation,  $f'_m$ , at 28 days shall be a minimum of 1,500 psi (10.3 MPa). Fully grouted CMU walls shall be constructed from the following materials:

**4.2.5.1 Concrete Masonry Units (CMU):** CMUs shall be minimum Grade N, Type II, lightweight, mediumweight, or normalweight, closed-end or open-end, conforming to [ASTM C90](#). The minimum allowable nominal size of the CMU shall be 8 inches (20.3 cm) wide by 8 inches (203.2 mm) high by 16 inches (40.6 cm) long.

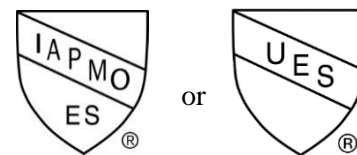
**4.2.5.2 Grout:** Grout shall comply with IBC Section [2103.3](#) (2024, 2021, 2018, and 2015 IBC), IRC Section [R606.2.12](#) (2024, 2021, and 2018 IRC) or IRC Section [R606.2.11](#) (2015 IRC), as applicable. Alternatively, the grout shall have a minimum compressive strength when tested in accordance with [ASTM C1019](#) equal to its specified strength but not less than 2,000 psi (13.8 MPa).

**4.2.5.3 Mortar:** Mortar shall be Type N (minimum) in compliance with IBC Section [2103.2.1](#) (2024, 2021, 2018, and 2015 IBC), or IRC Section [R606.2.8](#) (2024, 2021, and 2018 IRC), or IRC Section [R606.2.7](#) (2015 IRC), as applicable.

### 5.0 IDENTIFICATION

The Hilti HIT-HY 100 adhesive cartridges are identified by packaging bearing the manufacturer name (Hilti, Inc.), the product name (HIT-HY 100), the description of the product, the batch number, the expiration date, and the evaluation report number (ER-547). Threaded rods, nuts, and washers are standard elements and shall conform to applicable national or international specifications and this report.

Either IAPMO UES Mark of Conformity also may be used as shown below:



IAPMO UES ER-547

### 6.0 SUBSTANTIATING DATA

Data in accordance with the ICC-ES Acceptance Criteria for Adhesive Anchors in Cracked and Uncracked Masonry (AC58), dated January 2024.

### 7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by the IAPMO Uniform Evaluation Service (UES) on the Hilti HIT-HY 100 Adhesive Anchor System to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at locations noted in Section 2.19 of this report under a quality control program with periodic inspection under the supervision of IAPMO UES.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)



**TABLE 1A – ACI 318-19 and 318-14 SECTIONS APPLICABLE OR MODIFIED BY THIS REPORT**

<i>ACI 318-19 Section</i>	<i>(ACI 318-14 Section)</i>	<b>Modified by this Report Section:</b>
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 3.2.2
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 3.2.4
17.5.1.3 & 17.5.2.2	17.2.5	Section 3.2.5
17.5.2	17.3.1.1	Section 3.2.6
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 3.2.9
17.6.1	17.4.1	Unchanged*
17.6.2.1	17.4.2.1	Section 3.2.11
17.6.2.2	17.4.2.2	Section 3.2.12
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 3.2.14
17.6.2.6	17.4.2.7	Section 3.2.15
17.6.2.1.3 & 17.5.2.1	17.4.2.8 – 17.4.2.9	Unchanged*
17.6.5.1	17.4.5.1	Section 3.2.16
17.6.5.2	17.4.5.2	Section 3.2.17
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	
17.7.2.5	(17.5.2.7)	Section 3.2.19
17.7.2.6	17.5.2.8	Unchanged*
17.7.3	17.5.3	
17.8	17.6	
26.7.1	17.8.1	
26.7.1(i)	17.8.2.1	Section 3.2.21
26.7.2(e)	17.8.2.4	Section 3.2.22
17.8	(17.6)	Unchanged*
R17.8	(R17.6)	

\*Sections marked as “unchanged” adopt the general changes prescribed in Section 3.1.2.

**TABLE 1B – REQUIRED STRENGTH OF ANCHORS**

Failure Mode	Single Anchor	Anchor Group <sup>1</sup>	
		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	$\phi V_{mp} \geq V_{ua}$		$\phi V_{mpg} \geq V_{ua,g}$

<sup>1</sup> Required strengths for steel and crushing failure modes shall be calculated for the most highly stressed anchor in the group.





**TABLE 2 – STEEL DESIGN INFORMATION FOR FRACTIONAL THREADED ROD**

Design Information		Symbol	Units	Nominal Rod Diameter (in.) <sup>1</sup>			
				<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>2</sub>	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>4</sub>
Rod Outside Diameter		<i>d</i>	in. (mm)	0.375 (9.5)	0.5 (12.7)	0.625 (15.9)	0.75 (19.1)
Rod effective cross-sectional area		<i>A<sub>se</sub></i>	in. <sup>2</sup> (mm <sup>2</sup> )	0.0775 (50)	0.1419 (92)	0.2260 (146)	0.3345 (216)
ISO 898-1 Class 5.8	Nominal strength as governed by steel strength	<i>N<sub>sa</sub></i>	lb (kN)	5,620 (25.0)	10,290 (45.8)	16,385 (72.9)	24,250 (107.9)
		<i>V<sub>sa</sub></i>	lb (kN)	3,370 (15.0)	6,175 (27.5)	9,830 (43.7)	14,550 (64.7)
	Reduction for seismic shear	<i>α<sub>V,seis</sub></i>	-	0.70			
	Strength reduction factor <i>φ</i> for tension <sup>2</sup>	<i>φ</i>	-	0.65			
				Strength reduction factor <i>φ</i> for shear <sup>2</sup>			
				0.60			
ASTM A193 B7	Nominal strength as governed by steel strength	<i>N<sub>sa</sub></i>	lb (kN)	9,685 (43.1)	17,735 (78.9)	28,250 (125.7)	41,810 (186.0)
		<i>V<sub>sa</sub></i>	lb (kN)	5,810 (25.9)	10,640 (47.3)	16,950 (75.4)	25,085 (111.6)
	Reduction for seismic shear	<i>α<sub>V,seis</sub></i>	-	0.70			
	Strength reduction factor <i>φ</i> for tension <sup>2</sup>	<i>φ</i>	-	0.75			
				Strength reduction factor <i>φ</i> for shear <sup>2</sup>			
				0.65			
ASTM F1554 Gr. 36	Nominal strength as governed by steel strength	<i>N<sub>sa</sub></i>	lb (kN)	- -	8,230 (36.6)	13,110 (58.3)	19,400 (86.3)
		<i>V<sub>sa</sub></i>	lb (kN)	- -	4,940 (22.0)	7,865 (35.0)	11,640 (51.8)
	Reduction for seismic shear	<i>α<sub>V,seis</sub></i>	-	0.60			
	Strength reduction factor <i>φ</i> for tension <sup>2</sup>	<i>φ</i>	-	0.75			
				Strength reduction factor <i>φ</i> for shear <sup>2</sup>			
				0.65			
ASTM F1554 Gr. 55	Nominal strength as governed by steel strength	<i>N<sub>sa</sub></i>	lb (kN)	- -	10,645 (47.4)	16,950 (75.4)	25,090 (111.6)
		<i>V<sub>sa</sub></i>	lb (kN)	- -	6,385 (28.4)	10,170 (45.2)	15,055 (67.0)
	Reduction for seismic shear	<i>α<sub>V,seis</sub></i>	-	0.70			
	Strength reduction factor <i>φ</i> for tension <sup>2</sup>	<i>φ</i>	-	0.75			
				Strength reduction factor <i>φ</i> for shear <sup>2</sup>			
				0.65			
ASTM F1554 Gr. 105	Nominal strength as governed by steel strength	<i>N<sub>sa</sub></i>	lb (kN)	- -	17,740 (78.9)	28,250 (125.7)	41,815 (186.0)
		<i>V<sub>sa</sub></i>	lb (kN)	- -	10,645 (47.4)	16,950 (75.4)	25,090 (111.6)
	Reduction for seismic shear	<i>α<sub>V,seis</sub></i>	-	0.70			
	Strength reduction factor <i>φ</i> for tension <sup>2</sup>	<i>φ</i>	-	0.75			
				Strength reduction factor <i>φ</i> for shear <sup>2</sup>			
				0.65			
ASTM F593, CW Stainless	Nominal strength as governed by steel strength	<i>N<sub>sa</sub></i>	lb (kN)	7,750 (34.5)	14,190 (63.1)	22,600 (100.5)	28,435 (126.5)
		<i>V<sub>sa</sub></i>	lb (kN)	4,650 (20.7)	8,515 (37.9)	13,560 (60.3)	17,060 (75.9)
	Reduction for seismic shear	<i>α<sub>V,seis</sub></i>	-	0.70			
	Strength reduction factor <i>φ</i> for tension <sup>2</sup>	<i>φ</i>	-	0.65			
				Strength reduction factor <i>φ</i> for shear <sup>2</sup>			
				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

<sup>1</sup> Values provided for common rod material types are based on specified strengths and calculated in accordance with ACI 318-19 Eq. (17.6.1.2) and Eq. (17.7.1.2b) or ACI 318-14 Eq. (17.4.1.2) and Eq. (17.5.1.2b). Nuts and washers shall be appropriate for the rod.

<sup>2</sup> The tabulated value of *φ* applies when the LRFD load combinations of ASCE/SEI 7 are used.

HAS, HIT-V

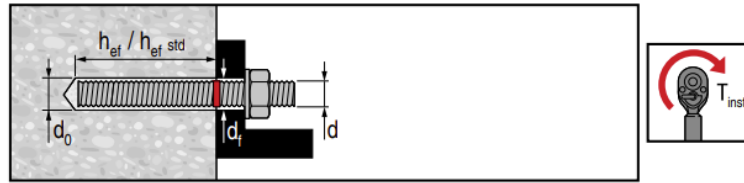


TABLE 3 – HILTI HIT-HY 100 INSTALLATION INFORMATION FOR THREADED ROD

Design Information	Symbol	Units	Nominal Rod Diameter (in.)			
			3/8	1/2	5/8	3/4
Nominal Drill Bit Diameter	$d_o$	in.	7/16	9/16	3/4	7/8
Minimum Embedment	$h_{ef,min}$	in. (mm)	2-3/8 (60)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)
Maximum Embedment	$h_{ef,max}$	in. (mm)	7-1/2 (191)	10 (254)	10 (254)	10 (254)
Minimum Masonry Thickness <sup>1</sup>	$h_{min}$	in. (mm)	7-5/8 (194)			
Face of Wall	Minimum Edge Distance <sup>2</sup>	$c_{min,face}$	6 $d_a$			
	Minimum Anchor Spacing	$s_{min,face}$	6 $d_a$			
Top of Wall	Minimum Edge Distance <sup>2</sup>	$c_{min,top}$	N/A	1-3/4 (44)	1-3/4 (44)	2-3/4 (70)
	Minimum Anchor Spacing	$s_{min,top}$	N/A	8 (203)	8 (203)	8 (203)
Maximum Installation Torque	$T_{inst}$	ft-lb	6	7.5	7.5	10

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

<sup>1</sup> Maximum embedment for installation into the face of a 7<sup>5</sup>/<sub>8</sub> inches (19.4 cm) thick CMU wall is 6<sup>1</sup>/<sub>8</sub> inches (15.6 cm). Maximum embedment for installation into the face of a 9<sup>5</sup>/<sub>8</sub> inches (24.4 cm) thick CMU wall is 8 inches (20.3 cm).

<sup>2</sup> The minimum distance from the center of an anchor to the centerline of a hollow head joint (a vertical mortar joint) is 2 inches, as shown in Figure 1 of this report.

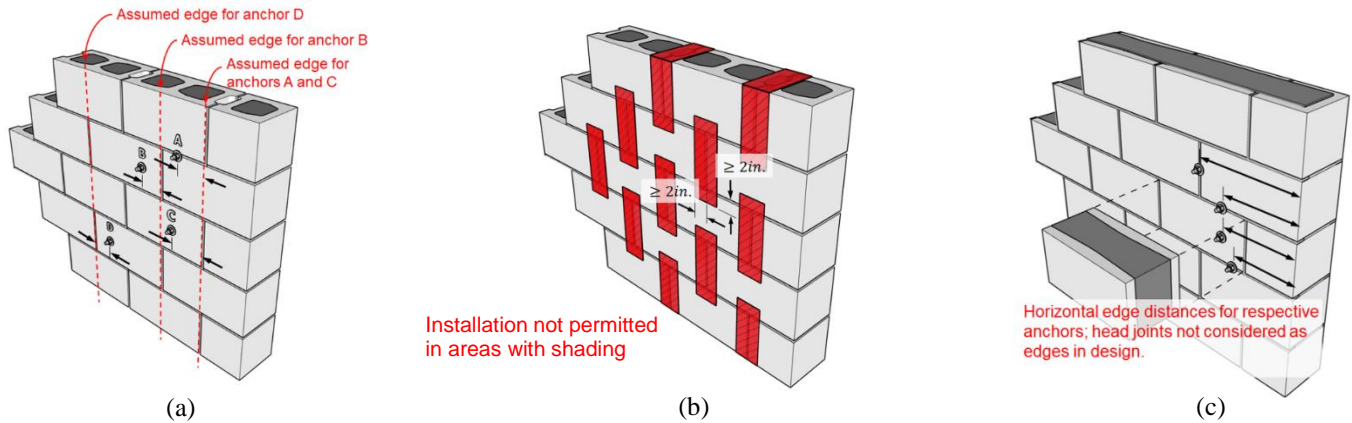
TABLE 4 – MASONRY BREAKOUT/CRUSHING DESIGN INFORMATION FOR FRACTIONAL THREADED ROD IN FULLY GROUTED CMU WALLS<sup>1</sup>

Design Information	Symbol	Units	Nominal Rod Diameter (in.)			
			3/8	1/2	5/8	3/4
Effectiveness Factor for Cracked Masonry	$k_{m,cr}$	-	12			
Effectiveness Factor for Uncracked Masonry	$k_{m,uncr}$	-	17			
Minimum Embedment	$h_{ef,min}$	in. (mm)	2-3/8 (60)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)
Maximum Embedment	$h_{ef,max}$	in. (mm)	7-1/2 (191)	10 (254)	10 (254)	10 (254)
Strength Reduction Factor - Masonry Breakout Failure in Tension, Condition B <sup>1</sup>	$\phi$	-	0.65			
Strength Reduction Factor - Masonry Breakout Failure in Shear, Condition B <sup>1</sup>	$\phi$	-	0.70			
Strength Reduction Factor - Masonry Crushing Failure in Shear <sup>1</sup>	$\phi$	-	0.50			

For SI: 1 inch = 25.4 mm | 1 lbf = 4.448 N

For Pound-inch Units: 1 mm = 0.03937 inches | 1 N = .2248 lbf

<sup>1</sup> The tabulated value of  $\phi$  applies when the LRFD load combinations of ASCE/SEI 7 are used.



**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 5 – BOND STRENGTH DESIGN INFORMATION FOR FRACTIONAL THREADED ROD IN FULLY GROUTED CMU WALLS IN HOLES DRILLED WITH A HAMMER DRILL AND CARBIDE BIT<sup>1</sup>**

Design Information		Symbol	Units	Nominal Rod Diameter (in.)			
				3/8	1/2	5/8	3/4
Minimum Embedment		$h_{ef,min}$	in. (mm)	2-3/8 (60)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)
Maximum Embedment		$h_{ef,max}$	in. (mm)	7-1/2 (191)	10 (254)	10 (254)	10 (254)
Temperature Range A <sup>2</sup>	Characteristic Bond Strength in Cracked Masonry	$\tau_{k,cr}$	psi (MPa)	325 (2.2)	250 (1.7)	180 (1.2)	180 (1.2)
	Characteristic Bond Strength in Uncracked Masonry	$\tau_{k,uncr}$	psi (MPa)	575 (4.0)	585 (4.0)	465 (3.2)	400 (2.8)
Temperature Range B <sup>2</sup>	Characteristic Bond Strength in Cracked Masonry	$\tau_{k,cr}$	psi (MPa)	300 (2.1)	230 (1.6)	165 (1.1)	165 (1.1)
	Characteristic Bond Strength in Uncracked Masonry	$\tau_{k,uncr}$	psi (MPa)	530 (3.7)	535 (3.7)	430 (3.0)	370 (2.6)
Dry Concrete and Water-Saturated Concrete Conditions		Anchor Category	-	1	2	2	2
		$\phi_{db}$ $\phi_{ws}$	-	0.65	0.55	0.55	0.55
Reduction for Top of Wall Installation <sup>3</sup>		$\alpha_{top}$	-	N/A	0.78	0.39	0.50
Reduction for Saturated Masonry <sup>4</sup>		$\alpha_{sat}$	-	1.00	0.84	1.00	1.00
Reduction for Seismic Tension <sup>5</sup>		$\alpha_{N,seis}$	-	0.80	1.00	1.00	0.86
Reduction for Sustained Tension		$\alpha_{N,sust}$	-	1.00	1.00	1.00	1.00

For SI: 1 inch = 25.4 mm | 1 lbf = 4.448 N | 1 psi = 0.006897 MPa

For Pound-inch Units: 1 mm = 0.03937 inches | 1 N = .2248 lbf | 1 MPa = 145.0 psi

<sup>1</sup> Bond strength values shown are for fully grouted CMU construction with lightweight, mediumweight, and normalweight masonry units, having a net compressive strength of  $f_m = 1,500$  psi.

<sup>2</sup> Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).

Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C).

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.

<sup>3</sup> For anchors installed in top-of-wall applications, the bond strength values shall be multiplied by  $\alpha_{top}$ .

<sup>4</sup> For anchors installed in water-saturated masonry conditions, the bond strength values shall be multiplied by  $\alpha_{sat}$ .

<sup>5</sup> For anchors installed in regions assigned to Seismic Design Category C, D, E, or F, the bond strength values shall be multiplied by  $\alpha_{N,seis}$ .

# HILTI

## HILTI HIT-HY 100

Instruction for use en  
 Mode d'emploi fr  
 Manual de instrucciones es  
 Instruções de utilização pt  
 Инструкция по применению ru

**Danger**

(A, B) (A) (B)

ICC ESR 3574

TM  
IAPMO-UES ER 547

**Contains:** hydroxypropyl methacrylate(A), boric acid (A), dibenzoyl peroxide(B)

May cause an allergic skin reaction. (A,B)  
 Causes serious eye irritation (A). May damage fertility or the unborn child. (A) Very toxic to aquatic life. (B)

<b>2</b>	<p>HIT-V HAS Rebar</p>		$d_0$ : 7/16" ... 1 1/2" 10 ... 40 mm	$h_{ef}$ : 2 3/8" ... 25" 60 ... 640 mm
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**1**

**2**

**3**

**4**

	A	B	C
$h_{ef}$	2 3/8" ... 9 7/8" 60 ... 250 mm	2 3/8" ... 25" 60 ... 640 mm	2 3/8" ... 25" 60 ... 640 mm
	16	17	18   19

<b>A</b>	$h_{ef}$ : 2 3/8" ... 9 7/8" 60 ... 250 mm	<p>HAS/HIT-V HIS-N Rebar</p>	<p>HIT-RE-M → 11...12</p>
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**1**

HDM 330  
HDM 500  
HDE 500-A18

**2**

330 ml / 11.1 fl.oz.: 2x | 12 ml  
 500 ml / 16.9 fl.oz.: 3x | 18 ml  
 T < 5°C / 41°F: 4x | 124 ml

**3**

**4**

**5**

**5.A**

**5.B**

**6**

$t_{work}$  13

**6**

$t_{work}$  13

**7**

$t_{cure}$  13

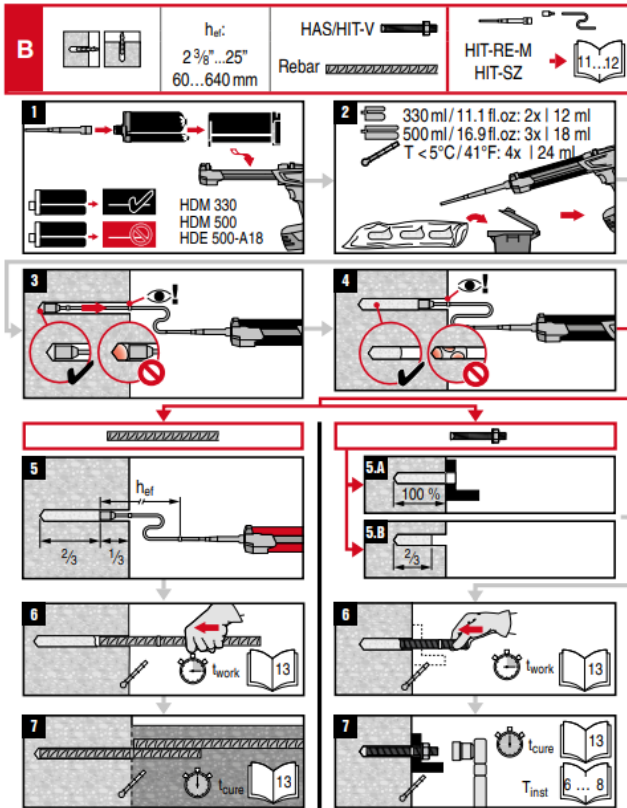
**7**

$t_{cure}$  13  
 $T_{inst}$  8 ... 8

**HILTI HIT-HY 100**

		 HIT-V HAS Rebar	
		$t_{work}$	$t_{cure}$
-10...-5	14...22	3 h	12 h
-4...0	23...31	40 min	4 h
1...5	32...40	20 min	2 h
6...10	41...50	8 min	60 min
11...20	51...68	8 min	60 min
21...30	69...86	5 min	30 min
31...40	87...104	2 min	30 min

FIGURE 2 – MANUFACTURER’S PRINTED INSTALLATION INSTRUCTIONS



Hilti HIT-HY 100

**Product Information**

- Always keep these instructions together with the product even when given to other persons.
- Review the MSDS before use.
- **Check expiration date:** See imprint on foil pack manifold (month/year). Do not use expired product.
- **Foil pack temperature during usage:** 0 °C to 40 °C / 32 °F to 104 °F.
- **Base material temperature at time of installation:** between -10 °C and 40 °C / 14 °F and 104 °F.
- **Conditions for transport and storage:** Keep in a cool, dry and dark place between 5 °C and 25 °C / 41 °F and 77 °F.
- For any application not covered by this document / beyond values specified, please contact Hilti.
- **Partly used foil packs must remain in the cassette** and has to be used within **4 weeks**. Leave the mixer attached on the foil pack manifold and store within the cassette under the recommended storage conditions. If reused, attach a new mixer and discard the initial quantity of anchor adhesive.

**NOTICE**

- Improper handling may cause mortar splashes.**
  - Always wear eye protection, gloves and protective clothes during installation.
  - Never start dispensing without a mixer properly screwed on.
  - Attach a new mixer prior to dispensing a new foil pack (ensure snug fit).
  - Use only the type of mixer (HIT-RE-M) supplied with the adhesive. Do not modify the mixer in any way.
  - Never use damaged foil packs and/or damaged or unclean foil pack holders (cassettes).
- Poor load values / potential failure of fastening points due to inadequate borehole cleaning.**
  - Hilti hollow drill bits TE-CD, TE-YD must be used in conjunction with a properly maintained Hilti vacuum cleaner with model and suction capacity (volumetric flow rate) as specified in the accessory table.
  - Holes should be drilled with a rotary hammer drill, using drill bits that comply with ANSI B212.15-1984.
  - The boreholes must be free of debris, dust, water, ice, oil, grease and other contaminants prior to adhesive injection.
  - For blowing out the borehole – blow out with oil free air until return air stream is free of noticeable dust.
  - For brushing the borehole – only use specified wire brush. The brush must resist insertion into the borehole – if not the brush is too small and must be replaced.
  - Before inserting anchor/rebar into borehole, mark and set anchor/rebar to the required embedment depth.
  - Anchor rods/rebar shall be free of dirt, grease, oil, and other contaminants.
- Ensure that boreholes are filled from the back of the borehole without forming air voids.**
  - The annular gap between the anchor/rebar and the borehole shall be filled completely with no gaps.
  - If necessary use the accessories / extensions to reach the back of the borehole.
  - For overhead applications use the overhead accessories HIT-SZ and take special care when inserting the fastening element. Excess adhesive may be forced out of the borehole. Make sure that no mortar drips onto the installer.
- Not adhering to these setting instructions can result in failure of fastening points!**

Hilti HIT-HY 100

Adhesive anchoring system for rebar and anchor fastenings in concrete.

**Safety Instructions:**

Contains: Hydroxypropyl methacrylate(A), boric acid (A), dibenzoyl peroxide(B)



**Danger**

- |                |  |
|----------------|--|
| H317           | May cause an allergic skin reaction. (A,B)   |
| H319           | Causes serious eye irritation (A)  |
| H360           | May damage fertility or the unborn child. (A)  |
| H400           | Very toxic to aquatic life. (B)  |
| P262           | Do not get in eyes, on skin, or on clothing.   |
| P280           | Wear protective gloves/protective clothing/eye protection/face protection.   |
| P302+P352      | IF ON SKIN: Wash with plenty of soap and water.  |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P333+P313      | If skin irritation or rash occurs: Get medical advice/attention.   |
| P337+P313      | If eye irritation persists: Get medical advice/attention.  |

**Disposal considerations**

**Empty packs:**

- Leave the mixer attached and dispose of via the local Green Dot recovery system
- or EAK waste material code: 150102 plastic packaging

**Full or partially emptied packs:**

- Must be disposed of as special waste in accordance with official regulations.
- EAK waste material code: 08 04 09\* waste adhesives and sealants containing organic solvents or other dangerous substances.
- or EAK waste material code: 20 01 27\* paint, inks, adhesives and resins containing dangerous substances.

**Content:** 330 ml / 11.1 fl.oz. 500 ml / 16.9 fl. oz **Weight:** 575g / 20.3oz 880g / 31.0oz

**Warranty:** Refer to standard Hilti terms and conditions of sale for warranty information.

Failure to observe these installation instructions, use of non-Hilti anchors, poor or questionable base material conditions, or unique applications may affect the reliability or performance of the fastenings.

FIGURE 2 – MANUFACTURER’S PRINTED INSTALLATION INSTRUCTIONS (continued)



## FLORIDA SUPPLEMENT

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### HILTI HIT-HY 100 ADHESIVE ANCHOR SYSTEM FOR CRACKED AND UNCRACKED GROUTED CONCRETE MASONRY UNIT WALLS

CSI Section: 04 05 19.16 Masonry Anchors

#### 1.0 RECOGNITION

Hilti HIT-HY 100 adhesive anchors recognized in ER-547 have been evaluated for use to resist dead, live, wind, and seismic tension and shear loads. The structural performance properties of the Hilti HIT-HY 100 comply with the intent of the provisions of the following codes and regulations:

- 2023 Florida Building Code, Building (FBC, Building)
- 2023 Florida Building Code, Residential (FBC, Residential)

#### 2.0 LIMITATIONS

Hilti HIT-HY 100 adhesive anchors described in IAPMO UES ER-547 and this report supplement comply with the FBC, Building and the FBC, Residential, subject to the following limitations:

**2.1** The design and installation of the Hilti HIT-HY 100 adhesive anchors shall be in accordance with the 2021 International Building Code and the 2021 International Residential Code as noted in ER-547.

**2.2** Load combinations shall be in accordance with Sections 1605.2 or 1605.3 of the FBC, Building, as applicable.

**2.3** Design wind loads shall be in accordance with Section 1609.5 of the FBC, Building or Section R301.2.1.1 of the FBC, Residential, as applicable, and Section 1620 of the FBC, Building where used in High-velocity Hurricane Zones (HVHZ).

**2.4** The use of Hilti HIT-HY 100 adhesive anchors in High-velocity Hurricane Zones (HVHZ) as set forth in Section 2321.5.2 of the FBC, Building, and Section 4409 of the FBC, Residential to resist wind uplift is permitted. The anchors shall be designed to resist the uplift forces as required in

Section 1620 (HVHZ) of the FBC, Building, or 700 pounds (3114 N), whichever is greater, per FBC, Building Section 2321.7.

**2.5** Use of Hilti HIT-HY 100 adhesive anchors in High-velocity Hurricane Zones (HVHZ) as set forth in Section 2122.7 of the FBC, Building and Section 4407 of the FBC, Residential to resist wind forces is permitted. The anchors shall be designed to resist the horizontal forces as required in Section 1620 (HVHZ) of the FBC, Building or 200 pounds per lineal foot (2919 N/m) of the wall, whichever is greater, per FBC, Building Section 2122.7.3.

**2.6** The use of Hilti HIT-HY 100 adhesive anchors with stainless steel threaded rod complies with the High-Velocity Hurricane Zone (HVHZ) provisions set forth in Section 2324.2 of the FBC, Building.

**2.7** The use of Hilti HIT-HY 100 adhesive anchors with carbon steel threaded rods in applications exposed to the weather within High-velocity Hurricane Zones (HVHZ) set forth in the FBC, Building and the FBC, Residential is beyond the scope of this supplemental report

**2.8** For products falling under Subsection 5 (d) of Florida Rule 61G20-2.008 verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission (or the building official when the report holder does not possess an approval by the Commission), to provide oversight and determine that the products are being manufactured as described in this evaluation report to establish continual product performance is required.

**2.9** This supplement expires concurrently with ER-547.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)



## CITY OF LOS ANGELES SUPPLEMENT

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### HILTI HIT-HY 100 ADHESIVE ANCHOR SYSTEM FOR CRACKED AND UNCRAKED GROUTED CONCRETE MASONRY UNIT WALLS

CSI Section: 04 05 19.16 Masonry Anchors

#### 1.0 RECOGNITION

Hilti HIT-HY 100 adhesive anchors recognized in ER-547 have been evaluated for use to resist dead, live, wind, and seismic tension and shear loads. The structural performance properties of the Hilti HIT-HY 100 comply with the intent of the provisions of the following codes and regulations:

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

#### 2.0 LIMITATIONS

Hilti HIT-HY 100 adhesive anchors described in IAPMO UES ER-547 and this report supplement comply with the 2023 LABC Chapter 21 and 2023 LARC subject to the following limitations:

**2.1** The design, installation, conditions of use, and identification of Hilti HIT-HY 100 adhesive anchors shall be in accordance with the 2021 International Building Code or the 2021 International Residential Code as noted in ER-547.

**2.2** Prior to installation, calculations and details demonstrating compliance with this approval report and the Los Angeles Building Code or Los Angeles Residential Code, as applicable, shall be submitted to the structural plan check section for review and approval. The calculations and details shall be prepared, stamped, and signed by a California registered design professional.

**2.3** The design, installation, and inspection of the Hilti HIT-HY 100 adhesive anchors shall be in accordance with LABC Chapters 16 and 17 or Section 2114, as applicable, due to local amendments to these chapters.

**2.4** Hilti HIT-HY 100 adhesive anchors are not approved for use with unreinforced masonry walls.

**2.5** Periodic special inspection shall be provided by the Registered Deputy Inspector in accordance with Section 1705 of the 2023 LABC, as applicable, during installations of the Hilti HIT-HY 100 adhesive anchors.

**2.6** Under the LARC, a design in accordance with Section R301.1.3 shall be submitted.

**2.7** This supplement expires concurrently with ER-547.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)