DIVISION: 04 00 00—MASONRY
SECTION: 04 05 19.16—MASONRY ANCHORS

REPORT HOLDER:

HILTI, INC.

7250 DALLAS PARKWAY, SUITE 1000
PLANO, TEXAS 75024

EVALUATION SUBJECT:

HILTI HIT-HY 270 ADHESIVE ANCHOR SYSTEM

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3.0 DESCRIPTION

3.1 General:
The Hilti HIT-HY 270 Adhesive Anchor System is comprised of the following components:
- Hilti HIT-HY 270 adhesive
- All-threaded steel rods, steel reinforcing bars, or Hilti HIS steel internally threaded inserts (grout-filled concrete masonry)
- All-threaded rods, bolts, cap screws, studs, Hilti HIT-IC internally threaded inserts, and Hilti HIT-SC plastic-mesh screen tubes (hollow concrete masonry and hollow brick masonry)

3.2 Materials:
3.2.1 Hilti HIT-HY 270 Adhesive: The Hilti HIT-HY 270 is an injectable hybrid adhesive mortar consisting of urethane methacrylate 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. Available cartridge sizes include total mixed volumes of 11.1 ounces (330 mL) and 16.9 ounces (500 mL).

The adhesive expiration date is printed on the manifold of each foil pack (monthly). 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 HIT-HY 270 adhesive, and the respective masonry temperature during installation and cure, are shown in Tables 1A and 1B.

3.2.2 Hole Cleaning Equipment:
3.2.2.1 Standard Equipment: Standard hole cleaning equipment, comprised of steel wire brushes and air nozzles is described in Figure 5 of this report.

3.2.2.2 Hilti Safe-Set™ System: The Hilti Safe-Set™ System for use with the Hilti HIT-HY 270 consists of one of the Hilti TE-CD or TE-YD hollow carbide drill with a carbide drilling head conforming to ANSI B212.15 used in conjunction with a Hilti VC 20/40 vacuum. The Hilti TE-CD or TE-YD drill bit will remove drilling dust, automatically cleaning the hole.

3.2.3 Threaded Steel Rods (For Use in Fully Grouted Concrete Masonry and with Plastic Mesh Screen Tubes in Hollow Masonry): Threaded rods, having diameters described in Tables 3A through 10 of this report, must be clean, continuously threaded rods (all-thread). Carbon steel threaded rods must be in accordance with ASTM A36, ASTM A307, ASTM A193 Grade B7, ISO 898 Class 5.8. Stainless steel threaded rods must conform to ASTM F593 (AISI 304 or 316), Condition CW. Threaded steel rods must be straight and free of indentations or other defects along their lengths. The ends may be stamped with 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).

3.2.4 Steel Reinforcing Bars (For Use in Fully Grouted Concrete Masonry): Steel reinforcing bars are deformed reinforcing bars (rebar) having diameters described in Tables 3A, 3B, 5B, 5D, and 11 of this report, and must comply with ASTM A615, Grade 60. The embedded portions of reinforcing bars must be straight, and free of mill scale, rust, mud, oil, and other coatings that impair the bond with the adhesive.

3.2.5 HIT-SC Screen Tubes: The Hilti HIT-SC plastic-mesh screen tubes are used in hollow masonry as described in Sections 3.4, 3.5, and 5.6 of this report. The screens consist of a removable cap, a collar, and a plastic mesh tube.

3.2.6 HIT-IC Inserts (For Use With Plastic Mesh Screens in Hollow Masonry): Hilti HIT-IC are steel internally threaded inserts conforming to DIN 10277-3 and are available in 3/16-, 5/32-, and 1/16-inch (7.9, 9.5, and 12.7 mm) internal thread diameters. Common threaded rods as per Section 3.2.3, or bolts, cap screws, and studs conforming to SAE J995, ASTM A563 C, C3, D, DH, DH3 Heavy Hex, and ASTM F594, can be used with internally threaded inserts.

3.2.7 HIS-N and HIS-RN Inserts (For Use in Fully Grouted Concrete Masonry): Hilti HIS-(R)N steel inserts have a profile on the external surface and are internally threaded. Inserts are available in 3/8- and 1/2-inch (9.5 and 12.7 mm) internal thread diameters. HIS-(R)N inserts are produced from carbon steel and furnished either with a 0.005-millimeter-thick (5 mm) zinc electroplated coating complying with ASTM B633 SC 1 or a hot-dipped galvanized coating complying with ASTM A153, Class C or D. The stainless steel HIS-RN inserts conform to DIN 10088-3. Common threaded rods as per Section 3.2.3, or bolts, cap screws, and studs conforming to SAE J995, ASTM A563 C, C3, D, DH, DH3 Heavy Hex, and ASTM F594 can be used with internally threaded inserts.

3.3 Fully Grouted Concrete Masonry: Fully grouted concrete masonry must comply with Chapter 21 of the IBC. The compressive strength of masonry, \( f_{m,28} \), at 28 days must be a minimum of 1,500 psi (10.3 MPa). Fully grouted masonry systems must be constructed from the following materials:

3.3.1 Concrete Masonry Units (CMUs): CMUs must be minimum Grade N, Type 1, light-, medium-, or normal-weight conforming to ASTM C90. The minimum nominal size of the CMUs must be 8 inches wide by 8 inches high by 16 inches long.

3.3.2 Grout: Grout must comply with 2015 IBC Section 2103.3, 2012 IBC Section 2103.13, 2009 and 2006 IBC Section 2103.12, or 2015 IRC Section R606.2.11, 2012, 2009 and 2006 IRC Section R609.1.1, as applicable. 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).

3.3.3 Mortar: Mortar must be Type N (minimum) in accordance with IBC Section 2103, or 2015 IRC Section R606.2.7, or 2012, 2009 and 2006 IRC Section R607, as applicable.

3.4 Hollow (Ungrouted) Concrete Masonry: Hollow concrete masonry must comply with Chapter 21 of the IBC. The compressive strength of masonry, \( f_{m,28} \), at 28 days must be a minimum of 1,500 psi (10.3 MPa). Hollow concrete masonry walls must be constructed from the following materials:

3.4.1 Concrete Masonry Units (CMUs): CMUs must be minimum Grade N, Type 1, light-, medium-, or normal-weight conforming to ASTM C90. The minimum nominal size of the CMUs must be 8 inches wide by 8 inches high by 16 inches long.

3.4.2 Mortar: Mortar must be Type N (minimum) in accordance with IBC Section 2103, or 2015 IRC Section R606.2.7 or 2012, 2009 and 2006 IRC Section R607, as applicable.

3.5 Hollow Brick Masonry: Hollow brick masonry must comply with Chapter 21 of the IBC. The compressive strength of masonry, \( f_{m,28} \), at 28 days must be a minimum of 3,000 psi (20.7 MPa). Hollow brick masonry walls must be a minimum of two-wythes in thickness, and constructed from the following materials:

3.5.1 Brick Masonry Units: Hollow brick masonry must be constructed using hollow bricks conforming to ASTM C652, Grade SW. The minimum nominal size of the brick masonry units must be 3\( \frac{3}{8} \) inches (92 mm) wide by 2\( \frac{1}{4} \) inches (57 mm) high by 7\( \frac{3}{8} \) inches (194 mm) long.

3.5.2 Mortar: Mortar must be Type N (minimum) in accordance with IBC Section 2103, or 2015 Section R606.2.7 or 2012, 2009 and 2006 IRC Section R607, as applicable.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: Anchors described in this report are assigned allowable tension and shear load values based on allowable stress design (ASD), as an alternative to TMS 402/ACI 530/ASCE 5 Section 2.1.4. For use under the IRC, an engineered design in accordance with Section R301.1.3 must be submitted to the code official. The allowable tension and shear values reported herein must be adjusted in accordance with Figure 1 for in-service base-material temperatures in excess of 70°F (21°C). Anchors installed or cured at temperatures below 23°F (-5°C) are outside the scope of this report. Allowable tension and shear loads based on steel strength for threaded rods are described in Table 10, and for reinforcing bars are described in Table 11.

4.1.2 Combined Loading: Allowable loads for anchors installed in masonry and subjected to combined tension and shear forces must be determined by the following formula:

\[
\left( \frac{P_s}{P_t} \right)^n + \left( \frac{V_s}{V_t} \right)^n \leq 1.0
\]

where:

- \( P_s \) = Applied service tension load (lbf or kN).
- \( P_t \) = Allowable service tension load (lbf or kN).
- \( V_s \) = Applied service shear load (lbf or kN).
- \( V_t \) = Allowable service shear load (lbf or kN).

\( n \) = \( \frac{2}{3} \) for the 3\( \frac{3}{8} \)- and 1\( \frac{1}{2} \)-inch-diameter steel threaded rods, No. 3 and No. 4 reinforcing bars, and 3\( \frac{3}{8} \)- and 1\( \frac{1}{2} \)-inch-diameter Hilti HIS steel internally threaded inserts installed in the face of grout filled concrete masonry.
4.1.3 Design of Threaded Rods and Reinforcing Bars Installed in the Face of Fully Grouted CMU Walls: Allowable tension and shear load values for 1/8-, 5/32-, 1/16-, and 3/32-inch-diameter (9.5, 12.7, 15.9, and 19.1 mm) steel threaded rods and No. 4, 5, 6 reinforcing bars installed in the top or side of grout-filled CMU walls are reported in Tables 5A through Table 5D. Minimum edge and end distances are noted in Table 5A through Table 5D and shown in Figures 3 and 4.

4.1.4 Design of Threaded Rods and Reinforcing Bars Installed in the Top or Side of Fully Grouted CMU Walls: Allowable tension and shear load values for 1/8-, 5/32-, 1/16-, and 3/32-inch-diameter (12.7 mm, 15.9 mm, and 19.1 mm) steel threaded rods and No. 4 and No. 5 reinforcing bars installed in the top or side of grout-filled CMU walls and resisting static, wind, or earthquake loads are reported in Table 5A through Table 5D. Minimum edge and end distances are noted in Table 5A through Table 5D and shown in Figures 3 and 4.

4.1.5 Design of HIS-N and HIS-RN Inserts Installed in the Face of Fully Grouted CMU Walls: Allowable tension and shear load values for 1/4-, 1/8-, 5/32-, and 3/32-inch-diameter (6.4, 7.9, 9.5, and 12.7 mm) steel threaded rods and No. 4 and No. 5 reinforcing bars installed in the top or side of grout-filled CMU walls and resisting static, wind, or earthquake loads are outside the scope of this report. Critical and minimum spacing and edge distances, with appropriate reduction factors, are also given in Tables 4A and 4B.

4.1.6 Design of Anchors in Hollow Concrete Masonry Walls: Allowable tension and shear load values for 1/4-, 1/8-, 5/32-, and 3/32-inch-diameter (6.4, 7.9, 9.5, 12.7 mm) steel threaded rods and No. 4 and No. 5 reinforcing bars installed in the face of hollow grout-filled CMU walls and resisting static, wind, or earthquake loads are reported in Tables 6 and 7. The allowable tension and shear loads are for anchors installed in any location in the face of the hollow grout-filled CMU walls (cell, web, joints), and resisting static and wind load applications only. Use of these anchors to resist earthquake loads is outside the scope of this report. Critical and minimum spacing and edge distances are also given in Tables 6 and 7.

4.1.7 Design of Anchors in Hollow Brick Masonry Walls: Allowable tension and shear load values for 1/4-, 1/8-, 5/32-, and 3/32-inch-diameter (6.4, 7.9, 9.5, 12.7 mm) steel threaded rods and No. 4 and No. 5 reinforcing bars installed in the face of hollow brick masonry walls are reported in Tables 8A, 8B, 8C, and 8D. The allowable tension and shear loads are for anchors resisting static and wind load applications only. Use of these anchors to resist earthquake loads is outside the scope of this report. Critical and minimum spacing and edge distances are also given in Tables 8A, 8B, and 8C.

4.2 Installation: Installation parameters are illustrated in Figure 5. Installation of the Hilti HIT-HY 270 Adhesive Anchor System must conform to the manufacturer's printed installation instruction (MPII) included in each unit package as provided in Figure 5 of this report. Anchor locations must comply with this report and the plans and specifications approved by the code official.

4.3 Special Inspection

Periodic special inspections are required in accordance with IBC Sections 1704 and 1705, and are also applicable for installations under the IRC.

The approved special inspector must be on the jobsite initially during anchor installation to verify anchor type, anchor dimensions, adhesive identification and expiration date, masonry type, masonry compressive strength, hole dimensions, hole cleaning procedures, anchor spacing, edge distances, masonry wall thickness, anchor embedment, tightening torque, base-material temperature, and adherence to the manufacturer's printed installation instructions (MPII).

The special inspector must verify the initial installations of each type and size of adhesive anchor by construction personnel on the site.

Subsequent installations of the same anchor type and size by the same construction personnel are 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 requires an initial inspection. For ongoing installations over an extended period, the special inspector must make regular inspections to confirm correct handling and installation of the product.

5.0 CONDITIONS OF USE

The Hilti HIT-HY 270 Adhesive Anchor System described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The Hilti HIT-HY 270 Adhesive Anchor System must be installed in accordance with the manufacturer's printed installation instructions (MPII) and this report. In case of conflict, this report governs.

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

5.3 Prior to installation, calculations and details demonstrating compliance with this report must be submitted to the code official for approval. The calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

5.4 Anchors resisting static, seismic or wind loads in masonry must be designed in accordance with Section 4.0 of this report.

5.5 Grout-filled concrete masonry under the IBC or the IRC (Tables 3A, 3B, 5A, 5B, 5C, and 5D): The adhesive anchors described in Sections 4.1.3 and 4.1.4 of this evaluation report are capable of resisting seismic and wind loads. When using the basic load combinations in accordance with IBC Section 1605.3.1, allowable loads must not be increased for seismic or wind loading. When using the alternative basic load combinations in 2009 and 2006 IBC (Sections 1605.3.2 that include seismic or wind loads, the allowable loads may be increased in accordance with Table 2, or the alternative basic load combinations may be decreased by the factors in Table 2, as applicable. For the 2015 and 2012 IBC, the allowable loads or load combinations must not be adjusted.

5.6 HIS-N and HIS-RN inserts (Tables 4A and 4B), hollow
concrete masonry (Tables 6 and 7), and hollow brick masonry (Tables 8A, 8B, and 9) under the IBC or the IRC. Use of the adhesive anchors described in Sections 4.1.5, 4.1.6, and 4.1.7 for resistance to seismic loads is beyond the scope of this report. The allowable loads or load combinations for these anchors must not be adjusted for applications subjected to wind loads.

5.7 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 these conditions is beyond the scope of this report.

5.8 The Hilti HIT-HY 270 Adhesive Anchor Systems may be used to resist tension and shear forces in wall installations only if consideration is given to the effects of elevated temperature conditions on anchor performance. Figure 1 describes load reduction factors for elevated temperatures.

5.9 Anchors are not permitted to support fire-resistive construction. Where not otherwise prohibited by the code, anchors are permitted for installation in fire-resistive 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 gravity load-bearing structural elements are within a fire-resistant envelope or a fire-resistant membrane, are protected by approved fire-resistant materials, or have been evaluated for resistance to fire exposure in accordance with recognized standards.
- Anchors are used to support nonstructural elements.

5.10 Since an ICC-ES acceptance criteria for evaluating the performance of adhesive anchors in cracked masonry is unavailable at this time, the use of anchors is limited to installation in uncracked masonry. Cracking occurs when $f_f > f_r$ due to service loads or deformations.

5.11 Use of Hilti HIT-HY 270 Adhesive Anchor System in conjunction with uncoated or zinc electroplated carbon steel threaded rods or steel reinforcing bars must be limited to interior exposure. Use of stainless steel (AISI 304 or 316) anchors or hot dipped galvanized anchors with a zinc coating conforming to ASTM A153, Class C or D, is permitted for exterior or damp environments.

5.12 The Hilti HIT-HY 270 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. Installation of HIT-HY 270 adhesive in base materials having temperatures beyond this range is outside the scope of this report.

5.13 When anchors are located where the base-material temperature may exceed 70°F (21°C), allowable tension and shear loads indicated in this report must be adjusted for in-service temperatures in accordance with Figure 1. The use of HIT-HY 270 adhesive in base materials having interior temperatures exceeding 180°F (82°C) during their service life is outside the scope of this report.

5.14 Steel anchoring materials in contact with preservative-treated wood or fire-retardant-treated wood must be stainless steel or hot-dipped galvanized in accordance with ASTM A153 Class C or D.

5.15 Special inspection in accordance with Section 4.3 of this report must be provided for all anchor installations.

5.16 The Hilti HIT-HY 270 Adhesive Anchor Systems 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.

5.17 The Hilti HIT-HY 270 adhesive is manufactured by Hilti GmbH at their facilities in Kaufering, Germany, under a quality control program with inspections by ICC-ES.

5.18 The Hilti HIT-SC plastic screens are manufactured by Hilti Kunststofftechnik GmbH, Nersingen, Germany, with quality control inspections by ICC-ES.

5.19 The Hilti HIT-IC inserts are manufactured by Hilti (China) Ltd., Guangdong, China, with quality control inspections by ICC-ES.

5.20 The Hilti HIS-N and HIS-RN inserts are manufactured by Hilti (China) Ltd., Guangdong, China, with quality control inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Adhesive Anchors in Masonry Elements (AC58), dated November 2015, including tests on the effects of edge distance on tension performance (Test Series 4 and 5); the effects of spacing on tension performance (Test Series 8 and 9), the effects of spacing on shear performance; the effects of edge distance on shear performance (Test Series 13 and 14) for installations in grout-filled CMU, hollow concrete, and hollow brick masonry walls; the effects of oblique tension loading (Test Series 15); and suitability tests (Test Series 17 through 21) for installations in grout-filled CMU walls.

6.2 A quality-control manual.

7.0 IDENTIFICATION

7.1 The Hilti HIT-HY 270 adhesive cartridges are identified by a label displaying the product name, name of the manufacturer (Hilti, Inc.), lot number, expiration date, description of the product, evaluation report number (ICC-ES ESR-4143).

7.2 The Hilti HIT-SC plastic screens are identified by a packaging label displaying the product name, name of the manufacturer (Hilti Inc.), description of the product, evaluation report number (ICC-ES ESR-4143).

7.3 The Hilti HIS-N and HIS-RN inserts are identified by a packaging label displaying the product name, name of the manufacturer (Hilti Inc.), description of the product, evaluation report number (ICC-ES ESR-4143).

7.4 The Hilti HIT-IC inserts are identified by a packaging label displaying the product name, name of the manufacturer (Hilti Inc.), description of the product, evaluation report number (ICC-ES ESR-4143).

7.5 Threaded rods, reinforcing bars, nuts, washers, bolts, cap screws, and studs are standard elements and must conform to applicable national or international specifications and this report.
### TABLE 1A—HILTI, INC., GEL AND CURE TIMES FOR HIT-HY 270 ADHESIVE IN CONCRETE MASONRY

<table>
<thead>
<tr>
<th>Base-Material Temperature</th>
<th>Approximate Gel Time</th>
<th>Approximate Curing Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>23 – 32</td>
<td>-5 – 0</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>33 – 41</td>
<td>1 – 5</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>42 – 50</td>
<td>6 – 10</td>
<td>7 Minutes</td>
</tr>
<tr>
<td>51 – 68</td>
<td>11 – 20</td>
<td>4 Minutes</td>
</tr>
<tr>
<td>69 – 86</td>
<td>21 – 30</td>
<td>2 Minutes</td>
</tr>
<tr>
<td>87 – 104</td>
<td>31 – 40</td>
<td>1 Minutes</td>
</tr>
</tbody>
</table>

For SI: \( t °C = \frac{5}{9} \cdot (t °F – 32 °F) \)

### TABLE 1B—HILTI, INC., GEL AND CURE TIMES FOR HIT-HY 270 ADHESIVE IN CLAY MASONRY

<table>
<thead>
<tr>
<th>Base-Material Temperature</th>
<th>Approximate Gel Time</th>
<th>Approximate Curing Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>5</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>42 – 50</td>
<td>6 – 10</td>
<td>7 Minutes</td>
</tr>
<tr>
<td>51 – 68</td>
<td>11 – 20</td>
<td>4 Minutes</td>
</tr>
<tr>
<td>69 – 86</td>
<td>21 – 30</td>
<td>2 Minutes</td>
</tr>
<tr>
<td>87 – 104</td>
<td>31 – 40</td>
<td>1 Minutes</td>
</tr>
</tbody>
</table>

For SI: \( t °C = \frac{5}{9} \cdot (t °F – 32 °F) \)

### TABLE 2—ALTERNATIVE BASIC LOAD COMBINATION ADJUSTMENT FACTORS

<table>
<thead>
<tr>
<th>Steel Type</th>
<th>Modification Factors</th>
<th>Reductions for Alternate Basic Load Combinations</th>
<th>Increase Factor for Allowable Loads for Short-term Loading Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tension</td>
<td>Shear</td>
</tr>
<tr>
<td>Standard threaded rods and inserts</td>
<td>0.75</td>
<td>0.75</td>
<td>1.33</td>
</tr>
<tr>
<td>High-strength rods</td>
<td>0.75</td>
<td>1</td>
<td>1.33</td>
</tr>
<tr>
<td>Stainless rods and inserts</td>
<td>0.75</td>
<td>0.87</td>
<td>1.33</td>
</tr>
<tr>
<td>Steel reinforcing bars</td>
<td>0.75</td>
<td>0.75</td>
<td>1.33</td>
</tr>
</tbody>
</table>

1. When using the basic load combinations in accordance with IBC Section 1605.3.1, allowable loads must not be increased for wind or seismic loading.
2. When using the alternative basic load combinations in the 2009 or 2006 IBC Section 1605.3.2 that include wind or seismic loads, the allowable loads for anchors may be increased by the tabulated factors found in the right half of the table. Alternatively, the alternate basic load combinations may be reduced by multiplying them by the reduction factors found in the left half of the table. For example, for stainless steel rods in shear, the alternate basic loads for wind or seismic may be multiplied by 0.87 for shear loading or divided by 1.14 \((1/1.14 = 0.87\)) as applicable. For the 2015, 2012 IBC, the allowable loads or load combinations must not be adjusted.
3. The above modification factors are applicable under the 2009 or 2006 IBC only, for Tables 3A, 3B, 5A, 5B, 5C, and 5D of this report for seismic loads, and Tables 3A, 3B, 4A, 4B, 5A, 5B, 5C, 5D, 6, 7, 8A, 8B, 9, 10, and 11 of this report for wind loads.
### TABLE 3A—ALLOWABLE ADHESIVE BOND TENSION LOADS FOR THREADED RODS AND REINFORCING BARS IN THE FACE OF GROUT-FILLED CONCRETE MASONRY UNITS (POUNDS)\(^1,2,7,8,11,12,13\)

<table>
<thead>
<tr>
<th>Anchor Diameter (inches), or Rebar Size</th>
<th>Embedment (inches)(^3)</th>
<th>Load @ (c_{cr}) and (s_{cr})</th>
<th>Spacing(^4)</th>
<th>Edge Distance(^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{3}{8}) or No. 3</td>
<td>3(\frac{3}{8})</td>
<td>1240</td>
<td>13.5, 4</td>
<td>0.70, 12, 4, 0.80</td>
</tr>
<tr>
<td>(\frac{1}{2}) or No. 4</td>
<td>4(\frac{1}{2})</td>
<td>2035</td>
<td>18, 4</td>
<td>0.70, 20, 4, 0.76</td>
</tr>
<tr>
<td>(\frac{5}{8}) or No. 5</td>
<td>5(\frac{5}{8})</td>
<td>2840</td>
<td>22.5, 4</td>
<td>0.50, 20, 4, 0.71</td>
</tr>
<tr>
<td>(\frac{3}{4}) or No. 6</td>
<td>6(\frac{3}{4})</td>
<td>3810</td>
<td>27, 4</td>
<td>0.50, 20, 4, 0.66</td>
</tr>
</tbody>
</table>

### TABLE 3B—ALLOWABLE ADHESIVE BOND SHEAR LOADS FOR THREADED RODS AND REINFORCING BARS IN THE FACE OF GROUT-FILLED CONCRETE MASONRY UNITS (POUNDS)\(^1,2,8,9,10,11,12,13\)

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches)(^3)</th>
<th>Load @ (c_{cr}) and (s_{cr})</th>
<th>Spacing(^4)</th>
<th>Edge Distance(^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{3}{8}) or No. 3</td>
<td>3(\frac{3}{8})</td>
<td>850</td>
<td>13.5, 4</td>
<td>1.00, 12, 4, 1.00</td>
</tr>
<tr>
<td>(\frac{1}{2}) or No. 4</td>
<td>4(\frac{1}{2})</td>
<td>1495</td>
<td>18, 4</td>
<td>1.00, 12, 4, 1.00</td>
</tr>
<tr>
<td>(\frac{5}{8}) or No. 5</td>
<td>5(\frac{5}{8})</td>
<td>2615</td>
<td>22.5, 4</td>
<td>0.50, 20, 4, 0.78</td>
</tr>
<tr>
<td>(\frac{3}{4}) or No. 6</td>
<td>6(\frac{3}{4})</td>
<td>4090</td>
<td>27, 4</td>
<td>0.50, 20, 4, 0.60</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa.

The following footnotes apply to both Tables 3A and 3B:

1. All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi. Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C90. Allowable loads have been calculated using a safety factor of 5.
2. Anchors may be installed in any location in the face of the masonry wall (cell, web, joints). Anchors are limited to one per masonry cell.
3. Embedment depth is measured from the outside face of the concrete masonry unit.
4. The critical spacing, \(s_{cr}\), is the anchor spacing where full load values in the table may be used. The minimum spacing, \(s_{min}\), is the minimum anchor spacing for which values are available and installation is recommended. Spacing is measured from the center of one anchor to the center of an adjacent anchor.
5. The critical edge distance, \(c_{cr}\), is the edge distance where full load values in the table may be used. The minimum edge distance, \(c_{min}\), is the minimum edge distance for which values are available and installation is permitted. Edge distance is measured from the center of the anchor to the closest edge (See Figure 2).
6. Load reduction factors are multiplicative; both spacing and edge distance load reduction factors must be considered.
7. Load values for anchors installed at less than \(s_{cr}\) and \(c_{cr}\) must be multiplied by the appropriate load reduction factor based on actual edge distance (c) or spacing (s).
8. Linear interpolation of load values between minimum spacing (\(s_{min}\)) and critical spacing (\(s_{cr}\)) and between minimum edge distance (\(c_{min}\)) and critical edge distance (\(c_{cr}\)) is permitted.
9. Concrete masonry thickness must be equal to or greater than 1.5 times the anchor embedment depth. EXCEPTION: the \(\frac{3}{8}\)-inch- and the \(\frac{3}{4}\)-inch-diameter anchors and No.5 and No. 6 reinforcing bars may be installed in minimum nominally 8-inch-thick concrete masonry.
10. When using the basic load combinations in accordance with IBC Section 1605.3.1, tabulated allowable loads must not be increased for seismic or wind loading. When using the alternative basic load combinations in the 2009 or 2006 IBC Section 1605.3.2 that include seismic or wind loads, tabulated allowable loads may be increased, or the alternative basic load combinations may be reduced according to Table 2. For the 2015 and 2012 IBC, the allowable loads or load combinations must not be adjusted.
11. Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel values given in Table 10.
12. Tabulated allowable bond loads must be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.
13. For combined loading, see Section 4.1.2.
TABLE 4A—ALLOWABLE ADHESIVE BOND TENSION LOADS FOR HIS-N AND HIS-RN INSERTS IN THE FACE OF GROUT-FILLED CONCRETE MASONRY UNITS (POUNDS)¹,²,⁷,⁸,⁹,¹⁰,¹¹,¹²,¹³

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches)³</th>
<th>Load @ Critical, ccr and s cr (inches)</th>
<th>Minimum, s min (inches)</th>
<th>Load Reduction Factor @ s min ⁶</th>
<th>Critical, c cr (inches)</th>
<th>Minimum, c min (inches)</th>
<th>Load Reduction Factor @ c min ⁶</th>
</tr>
</thead>
<tbody>
<tr>
<td>³/₈</td>
<td>⁴/₄</td>
<td>2075</td>
<td>17</td>
<td>4</td>
<td>0.55</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>¹/₂</td>
<td>5</td>
<td>2710</td>
<td>20</td>
<td>4</td>
<td>0.55</td>
<td>20</td>
<td>4</td>
</tr>
</tbody>
</table>

TABLE 4B—ALLOWABLE ADHESIVE BOND SHEAR LOADS FOR HIS-N AND HIS-RN INSERTS IN THE FACE OF GROUT-FILLED CONCRETE MASONRY UNITS (POUNDS)¹,²,⁷,⁸,⁹,¹⁰,¹¹,¹²,¹³

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches)³</th>
<th>Load @ Critical, ccr and s cr (inches)</th>
<th>Minimum, s min (inches)</th>
<th>Load Reduction Factor @ s min ⁶</th>
<th>Critical, c cr (inches)</th>
<th>Minimum, c min (inches)</th>
<th>Load Reduction Factor @ c min ⁶</th>
<th>Load Perpendicular to Edge</th>
<th>Load Parallel to Edge</th>
</tr>
</thead>
<tbody>
<tr>
<td>³/₈</td>
<td>⁴/₄</td>
<td>1100</td>
<td>17</td>
<td>4</td>
<td>0.74</td>
<td>12</td>
<td>4</td>
<td>0.72</td>
<td>1.00</td>
</tr>
<tr>
<td>¹/₂</td>
<td>5</td>
<td>2065</td>
<td>20</td>
<td>4</td>
<td>0.71</td>
<td>20</td>
<td>4</td>
<td>0.40</td>
<td>0.87</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa.

The following footnotes apply to both Tables 4A and 4B:

¹ All values are for anchors installed in fully grouted concrete masonry walls with minimum masonry strength of 1500 psi. Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C90. Allowable loads have been calculated using a safety factor of 5.
² Anchors may be installed in any location in the face of the masonry wall (cell, web, joints). Anchors are limited to one per masonry cell.
³ Embedment depth is measured from the outside face of the concrete masonry unit.
⁴ The critical spacing, s cr, is the anchor spacing where full load values in the table may be used. The minimum spacing, s min, is the minimum anchor spacing for which values are available and installation is recommended. Spacing is measured from the center of one anchor to the center of an adjacent anchor.
⁵ The critical edge distance, c cr, is the edge distance where full load values in the table may be used. The minimum edge distance, c min, is the minimum edge distance for which values are available and installation is permitted. Edge distance is measured from the center of the anchor to the closest edge (See Figure 2).
⁶ Load reduction factors are multiplicative; both spacing and edge distance load reduction factors must be considered.
⁷ Load values for anchors installed at less than s cr and c cr must be multiplied by the appropriate load reduction factor based on actual edge distance (c) or spacing (s).
⁸ Linear interpolation of load values between minimum spacing (s min) and critical spacing (s cr) and between minimum edge distance (c min) and critical edge distance (c cr) is permitted.
⁹ Concrete masonry thickness must be equal to or greater than 1.5 times the anchor embedment depth.
¹⁰ Anchors are not recognized for resisting earthquake forces. When using the basic load combinations in accordance with IBC Section 1605.3.1, or the alternative basic load combinations in IBC Section 1605.3.2, tabulated allowable loads must not be increased for wind loading.
¹¹ Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel values given in Table 10.
¹² Tabulated allowable bond loads must be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.
¹³ For combined loading, see Section 4.1.2.
### Table 5A—Allowable Adhesive Bond Tension and Shear Loads for Threaded Rods in the Top of Grout-Filled Masonry Units (Pounds)\(^1,2,3,4,8\)

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches)</th>
<th>Edge Distance (inches)</th>
<th>Minimum End Distance (inches)</th>
<th>Spacing</th>
<th>Tension Load(^7)</th>
<th>Reduction Factor @ (s_{cr})</th>
<th>Reduction Factor @ (s_{min})</th>
<th>Load Parallel to Edge of Masonry Wall</th>
<th>Load Perpendicular to Edge of Masonry Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>4(^1/2)</td>
<td>1 3/4</td>
<td>8</td>
<td>16</td>
<td>3</td>
<td>1,165</td>
<td>0.57</td>
<td>815</td>
<td>345</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,625</td>
<td>0.50</td>
<td>1,445</td>
<td>505</td>
</tr>
<tr>
<td>5/8</td>
<td>5(^5/8)</td>
<td>1 3/4</td>
<td>8</td>
<td>16</td>
<td>3</td>
<td>1,165</td>
<td>0.58</td>
<td>1,190</td>
<td>385</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,590</td>
<td>0.50</td>
<td>1,825</td>
<td>655</td>
</tr>
<tr>
<td>3/4</td>
<td>6(^3/4)</td>
<td>2 3/4</td>
<td>8</td>
<td>16</td>
<td>3</td>
<td>1,020</td>
<td>0.74</td>
<td>1,405</td>
<td>425</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa.

The following footnotes apply to both Tables 5A and 5B:
1. All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi. Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C90. Allowable loads have been calculated using a safety factor of 5.
2. When using the basic load combinations in accordance with IBC Section 1605.3.1, tabulated allowable loads must not be increased for seismic or wind loading. When using the alternative basic load combinations in the 2009 or 2006 IBC Section 1605.3.2 that include seismic or wind loads, tabulated allowable loads may be increased, or the alternative basic load combinations may be reduced according to Table 2. For the 2015 and 2012 IBC, the allowable loads or load combinations must not be adjusted.
3. One anchor must be permitted to be installed in each CMU block. Refer to Figure 3 for an illustration of the anchor location for which the tabulated values are applicable.
4. The tabulated edge distance is measured from the anchor centerline to the edge of the CMU block as depicted in Figure 3.
5. Anchors must be installed into the grouted cell. Anchors are not permitted to be installed in a head joint, flange or web of the concrete masonry unit.
6. Linear interpolation of load values between the two tabulated edge distances is permitted, as applicable.
7. Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel values given in Tables 10 and 11.
8. Tabulated allowable bond loads must be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.
### TABLE 5C—ALLOWABLE ADHESIVE BOND TENSION AND SHEAR LOADS FOR THREADED RODS IN THE SIDE OF GROUT-FILLED MASONRY UNITS (POUNDS)\(^{1,2,3,4,7}\)

<table>
<thead>
<tr>
<th>Anchor Diameter</th>
<th>Embedment (inches)</th>
<th>Edge Distance(^5) (inches)</th>
<th>Minimum End Distance (inches)</th>
<th>Tension Load(^6)</th>
<th>Shear Load(^6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>4 1/2</td>
<td>1 3/4</td>
<td>8</td>
<td>990</td>
<td>885</td>
</tr>
<tr>
<td>5/8</td>
<td>5 3/8</td>
<td>1 3/4</td>
<td>1,200</td>
<td>1,220</td>
<td>330</td>
</tr>
<tr>
<td>3/4</td>
<td>5 3/8</td>
<td>2 3/4</td>
<td>1,200</td>
<td>1,770</td>
<td>530</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa.

The following footnotes apply to both Tables 5C and 5D:

1 All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi. Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C90. Allowable loads have been calculated using a safety factor of 5.

2 When using the basic load combinations in accordance with IBC Section 1605.3.1, tabulated allowable loads must not be increased for seismic or wind loading. When using the alternative basic load combinations in the 2009 or 2006 IBC Section 1605.3.2 that include seismic or wind loads, tabulated allowable loads may be increased, or the alternative basic load combinations may be reduced according to Table 2. For the 2015 and 2012 IBC, the allowable loads or load combinations must not be adjusted.

3 Refer to Figure 4 for an illustration of the anchor location for which the tabulated values are applicable.

4 The tabulated edge distance is measured from the anchor centerline to the edge of the CMU block as depicted in Figure 4.

5 Anchors must be installed into the grouted cell. Anchors are not permitted to be installed in a flange, web, or bed joint of the concrete masonry unit.

6 Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel values given in Tables 10 and 11.

7 Tabulated allowable bond loads must be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.

---

### TABLE 5D—ALLOWABLE ADHESIVE BOND TENSION AND SHEAR LOADS FOR REINFORCING BARS IN THE SIDE OF GROUT-FILLED MASONRY UNITS (POUNDS)\(^{1,2,3,4,7}\)

<table>
<thead>
<tr>
<th>Reinforcing Bar Size</th>
<th>Embedment (inches)</th>
<th>Edge Distance(^5) (inches)</th>
<th>Minimum End Distance (inches)</th>
<th>Tension Load(^6)</th>
<th>Shear Load(^6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4</td>
<td>4 1/2</td>
<td>1 3/4</td>
<td>8</td>
<td>1,055</td>
<td>835</td>
</tr>
<tr>
<td>No. 5</td>
<td>5 3/8</td>
<td>1 3/4</td>
<td>1,160</td>
<td>990</td>
<td>275</td>
</tr>
</tbody>
</table>
### TABLE 6—ALLOWABLE ADHESIVE BOND TENSION AND SHEAR LOADS FOR THREADED RODS IN THE FACE OF HOLLOW CONCRETE MASONRY UNITS (POUNDS)\(^{1,3,7,9}\)

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches)(^2)</th>
<th>Tension Load(^{4,5,8})</th>
<th>Critical and Minimum Edge Distance for Tension, (c_{cr}) and (c_{min}) (inches)</th>
<th>Shear Load at (c_{cr})</th>
<th>Edge Distances for Shear(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{1}{4})</td>
<td>2</td>
<td>220</td>
<td>4</td>
<td>355</td>
<td>385</td>
</tr>
<tr>
<td>(\frac{5}{16})</td>
<td>2</td>
<td>390</td>
<td>4</td>
<td>630</td>
<td>435</td>
</tr>
<tr>
<td>(\frac{3}{8})</td>
<td>2</td>
<td>390</td>
<td>4</td>
<td>645</td>
<td>550</td>
</tr>
<tr>
<td>(\frac{1}{2})</td>
<td>2</td>
<td>390</td>
<td>4</td>
<td>670</td>
<td>755</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa.

The following footnotes apply to both Tables 6 and 7:

1. All values are for anchors installed in hollow concrete masonry with minimum masonry strength of 1500 psi. Concrete masonry units must be light-, medium, normal-weight conforming to ASTM C90. Allowable loads have been calculated using a safety factor of 5.
2. Tabulated embedment depth is limited by the length of the plastic HIT-SC screens.
3. Anchors must be installed in the face of the hollow CMU masonry wall. A maximum of two anchors may be installed in a single cell of the hollow CMU block.
4. Tabulated values are for one anchor installed in the cell of the hollow CMU. Installation in other locations of the hollow CMU (mortar joints, flange, or cell web) is not permitted.
5. The minimum spacing, \(s_{min}\), for which values are available and installation is permitted is 4 inches. Two anchors installed in adjacent cells may be spaced as close as 4 inches apart with no reduction in tension or shear capacity. Two anchors installed in the same cell can be spaced as close as 4 inches apart with no reduction in shear capacity. For two anchors installed in the same cell spaced as close as 4 inches apart, the \(\frac{3}{8}\)-inch and \(\frac{1}{2}\)-inch diameter HIT-IC inserts require a 20% reduction in the tension capacity, and the \(\frac{5}{16}\)-inch diameter HIT-IC insert requires no reduction in tension capacity.
6. The critical edge distance, \(c_{cr}\), is the edge distance where full load values in the table may be used. The minimum edge distance, \(c_{min}\), is the minimum edge distance for which values are available and installation is permitted. Edge distance is measured from the center of the anchor to the closest edge.
7. Anchors are not recognized for resisting earthquake forces. When using the basic load combinations in accordance with IBC Section 1605.3.1, or the alternative basic load combinations in IBC Section 1605.3.2, tabulated allowable loads must not be increased for wind loading.
8. Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel values given in Table 10.
9. Tabulated allowable bond loads must be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.
TABLE 8A—ALLOWABLE ADHESIVE BOND TENSION LOADS FOR THREADED RODS IN THE FACE OF HOLLOW BRICK MASONRY (POUNDS)1,3,4,7,8

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches) 2</th>
<th>Load @ c cr and s cr (inches)</th>
<th>Spacing 5</th>
<th>Critical, s cr (inches)</th>
<th>Minimum, s min (inches)</th>
<th>Load Reduction Factor at s min 6</th>
<th>Critical, c cr (inches)</th>
<th>Minimum, c min (inches)</th>
<th>Load Reduction Factor at c min 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>3/8</td>
<td>530</td>
<td>8</td>
<td>4</td>
<td>0.88</td>
<td>6 7/8</td>
<td>4</td>
<td>4</td>
<td>0.93</td>
</tr>
<tr>
<td>5/16</td>
<td>3/8</td>
<td>735</td>
<td>8</td>
<td>4</td>
<td>0.82</td>
<td>6 7/8</td>
<td>4</td>
<td>4</td>
<td>0.80</td>
</tr>
<tr>
<td>3/8</td>
<td>3/8</td>
<td>905</td>
<td>8</td>
<td>4</td>
<td>0.54</td>
<td>6 7/8</td>
<td>4</td>
<td>4</td>
<td>0.83</td>
</tr>
<tr>
<td>1/2</td>
<td>3/8</td>
<td>905</td>
<td>8</td>
<td>4</td>
<td>0.50</td>
<td>6 7/8</td>
<td>4</td>
<td>4</td>
<td>1.0</td>
</tr>
</tbody>
</table>

TABLE 8B—ALLOWABLE ADHESIVE BOND SHEAR LOADS FOR THREADED RODS IN THE FACE OF HOLLOW BRICK MASONRY (POUNDS)1,3,4,8,9

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches) 2</th>
<th>Load @ c cr and s cr (inches)</th>
<th>Spacing 5</th>
<th>Critical, s cr (inches)</th>
<th>Minimum, s min (inches)</th>
<th>Load Reduction Factor at s min 6</th>
<th>Critical, c cr (inches)</th>
<th>Minimum, c min (inches)</th>
<th>Load Reduction Factor at c min 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>3/8</td>
<td>370</td>
<td>8</td>
<td>4</td>
<td>0.84</td>
<td>8</td>
<td>4</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>5/16</td>
<td>3/8</td>
<td>595</td>
<td>8</td>
<td>4</td>
<td>0.81</td>
<td>8</td>
<td>4</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td>3/8</td>
<td>3/8</td>
<td>1045</td>
<td>8</td>
<td>4</td>
<td>0.59</td>
<td>12</td>
<td>4</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>1/2</td>
<td>3/8</td>
<td>1685</td>
<td>8</td>
<td>4</td>
<td>0.50</td>
<td>12</td>
<td>4</td>
<td>0.36</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 9—ALLOWABLE ADHESIVE BOND TENSION AND SHEAR LOADS FOR HIT-IC INSERTS IN THE FACE OF HOLLOW BRICK MASONRY (POUNDS)1,3,4,7,9

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Embedment (inches) 2</th>
<th>Tension Load 8</th>
<th>Critical and Minimum Edge Distance for Tension, c cr and c min (inches)</th>
<th>Shear Load 5,8</th>
<th>Edge Distance for Shear 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16</td>
<td>3/8</td>
<td>880</td>
<td>6 7/8</td>
<td>655</td>
<td>1.00</td>
</tr>
<tr>
<td>3/8</td>
<td>3/8</td>
<td>880</td>
<td>6 7/8</td>
<td>1235</td>
<td>0.66</td>
</tr>
<tr>
<td>1/2</td>
<td>3/8</td>
<td>990</td>
<td>6 7/8</td>
<td>1895</td>
<td>0.44</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa

1 All values are for anchors installed in hollow brick masonry with minimum masonry strength of 3000 psi. Hollow brick units must be in conformance with ASTM C652. Allowable loads have been calculated using a safety factor of 5.
2 Tabulated embedment depth is limited by the length of the plastic HIT-SC screens.
3 Anchors must be installed in the face of the hollow brick masonry wall.
4 Tabulated values are for the anchor installed in the center of the hollow brick, mortar joints, flanges, or cell web (all wall face locations permitted).
5 The critical spacing, s cr, is the anchor spacing where full load values in the table may be used. The minimum spacing, s min, is the minimum anchor spacing for which values are available and installation is recommended. Spacing is measured from the center of one anchor to the center of an adjacent anchor.
6 The critical edge distance, c cr, is the edge distance where full load values in the table may be used. The minimum edge distance, c min, is the minimum edge distance for which values are available and installation is permitted. Edge distance is measured from the center of the anchor to the closest edge.
7 Load values for anchors installed at less than s cr and c cr must be multiplied by the appropriate load reduction factor based on actual edge distance (c) or spacing (s).
8 Anchors are not recognized for resisting earthquake forces. When using the basic load combinations in accordance with IBC Section 1605.3.1, or the alternative basic load combinations in IBC Section 1605.3.2, tabulated allowable loads must not be increased for wind loading.
9 Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel values given in Table 10.
10 Tabulated allowable bond loads must be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.
## TABLE 10—ALLOWABLE TENSION AND SHEAR LOADS BASED ON STEEL STRENGTH FOR THREADED RODS (pounds)\(^{1,2,3}\)

<table>
<thead>
<tr>
<th>Anchor Diameter (inches)</th>
<th>Tension</th>
<th>Shear</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>1,175</td>
<td>940</td>
</tr>
<tr>
<td>5/16</td>
<td>1,835</td>
<td>1,470</td>
</tr>
<tr>
<td>3/8</td>
<td>2,640</td>
<td>2,115</td>
</tr>
<tr>
<td>1/2</td>
<td>4,700</td>
<td>3,755</td>
</tr>
<tr>
<td>5/8</td>
<td>7,340</td>
<td>5,870</td>
</tr>
<tr>
<td>3/4</td>
<td>10,570</td>
<td>8,455</td>
</tr>
</tbody>
</table>

(The following footnotes apply to both Tables 10 and 11)

1. Allowable load used in the design must be the lesser of bond values and tabulated steel values.
2. Allowable tension and shear loads for threaded rods to resist short term loads, such as wind or seismic, must be calculated in accordance with Section 4.1 as applicable.
3. Allowable steel loads are based on allowable tension and shear stresses equal to 0.33 x $F_u$ and 0.17 x $F_u$, respectively.

## TABLE 11—ALLOWABLE TENSION AND SHEAR LOADS BASED ON STEEL STRENGTH FOR REINFORCING BARS (pounds)\(^{1,2,3}\)

<table>
<thead>
<tr>
<th>Rebar Size</th>
<th>Tension</th>
<th>Shear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASTM A615, Grade 60</td>
<td>ASTM A615, Grade 60</td>
</tr>
<tr>
<td>No. 3</td>
<td>3,270</td>
<td>1,685</td>
</tr>
<tr>
<td>No. 4</td>
<td>5,940</td>
<td>3,060</td>
</tr>
<tr>
<td>No. 5</td>
<td>9,205</td>
<td>4,745</td>
</tr>
<tr>
<td>No. 6</td>
<td>13,070</td>
<td>6,730</td>
</tr>
</tbody>
</table>

(For the design of reinforcing bars, the following values are based on...
FIGURE 1—INFLUENCE OF BASE MATERIAL TEMPERATURE ON ALLOWABLE TENSION AND SHEAR LOADS FOR HILTI HIT-HY 270 ADHESIVE

FIGURE 2—ALLOWABLE ANCHOR INSTALLATION LOCATIONS IN THE FACE OF GROUT-FILLED CONCRETE MASONRY (ASTM C90)

FIGURE 3—EDGE AND END DISTANCES FOR THREADED RODS INSTALLED IN THE TOP OF GROUT-FILLED CONCRETE MASONRY
FIGURE 4—EDGE AND END DISTANCES FOR THREADED RODS INSTALLED IN THE SIDE OF GROUT-FILLED CONCRETE MASONRY
FIGURE 5—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS
FIGURE 5—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (CONTINUED)
FIGURE 5—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (CONTINUED)
FIGURE 5—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (CONTINUED)
DIVISION: 04 00 00—MASONRY  
Section: 04 05 19.16—Masonry Anchors  

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EVALUATION SUBJECT:  
HILTI HIT-HY 270 ADHESIVE ANCHOR SYSTEM

1.0 REPORT PURPOSE AND SCOPE

Purpose:  
The purpose of this evaluation report supplement is to indicate that the Hilti HIT-HY 270 Adhesive Anchor System, described in ICC-ES master evaluation report ESR-4143, 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:  
- 2017 City of Los Angeles Building Code (LABC)  
- 2017 City of Los Angeles Residential Code (LARC)

2.0 CONCLUSIONS

The Hilti HIT-HY 270 Adhesive Anchor System, described in Sections 2.0 through 7.0 of the master evaluation report ESR-4143, complies with the LABC Chapter 21, and the LARC, and is subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Hilti HIT-HY 270 Adhesive Anchor System described in this evaluation report must comply with all of the following conditions:

- All applicable sections in the master evaluation report ESR-4143.
- The design, installation, conditions of use and identification of the anchors are in accordance with the 2015 International Building Code® (2015 IBC) provisions noted in the master evaluation report ESR-4143.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, and Section 2114, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.
- The allowable strength and design strength values listed in the master evaluation report and tables are for the connection of the anchors to the masonry. The connection between the anchors and the connected members shall be checked for capacity (which may govern).

This supplement expires concurrently with the master report, issued January 2018.
DIVISION: 04 00 00—MASONRY
Section: 04 05 19.16—Masonry Anchors

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The purpose of this evaluation report supplement is to indicate that the Hilti HIT-HY 270 Adhesive Anchor System, recognized in ICC-ES master evaluation report ESR-4143, has also been evaluated for compliance with the codes noted below.

Applicable code editions:
- 2017 Florida Building Code—Building
- 2017 Florida Building Code—Residential

2.0 CONCLUSIONS

The Hilti HIT-HY 270 Adhesive Anchor System, described in Sections 2.0 through 7.0 of the master evaluation report ESR-4143, complies with the Florida Building Code—Building and the Florida Building Code—Residential, provided the design and installation are in accordance with the 2015 International Building Code® provisions noted in the master report.

Use of the Hilti HIT-HY 270 Adhesive Anchor System for compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code—Building has not been evaluated, and is outside the scope of this supplemental report.

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

This supplement expires concurrently with the master report, issued January 2018.