The following excerpt are pages from the North American Masonry Anchor Design Guide 2023.

Please refer to the publication in its entirety for complete details on this product including data development, product specifications, general suitability, installation, and spacing and edge distance guidelines.
US&CA: Hilti North American Product Technical Guides

To consult directly with a team member regarding our anchor fastening products, contact Hilti's team of technical support specialists between the hours of 7:00am – 5:00pm CST.
US: 877-749-6337 or HNATechnicalServices@hilti.com
CA: 1-800-363-4458 or CATechnicalServices@hilti.com

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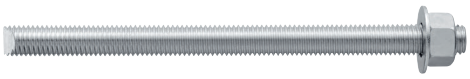
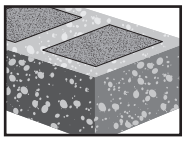
7.2 HIT-HY 100 ADHESIVE ANCHOR

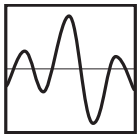
PRODUCT DESCRIPTION

HIT-HY 100 with Threaded Rod, Rebar, and HIS-N/RN Inserts

Mortar system	Features and Benefits
 Hilti HIT-HY 100 Cartridge  Hilti HAS Threaded Rods	• IAPMO approved for grout-filled concrete masonry • Anchoring light structural steel connections (e.g. steel columns, beams) • Anchoring secondary steel elements • Easier and more accurate dispensing with battery dispenser



Grout-filled concrete masonry



Seismic Design Categories A-F

PROFIS Engineering

Approvals/Listings	
IAPMO-UES (International Association of Plumbing and Mechanical Officials Uniform Evaluation Service)	ER-547 (for grout-filled CMU per ICC-ES AC58)
NSF/ANSI Std 61	Certification for use in potable water
City of Los Angeles	2020 LABC Supplement in ER-547
Florida Building Code	2020 FBC Supplement in ER-547 w/ HVHZ
U.S. Green Building Council	LEED® Credit 4.1-Low Emitting Materials

DESIGN DATA IN MASONRY

Hilti HIT-HY 100 adhesive in grout-filled CMU with Hilti HAS threaded rod

HAS

Permissible Base Materials		Permissible drilling method	
	Grout-filled concrete masonry		Rotary only drilling with carbide tipped drill bit

Table 1— Hilti HIT-HY 100 Installation Information for Threaded Rod Anchors — Fully Grouted CMU Construction, Face and Top of Wall

Installation 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
Effective Embedment	Minimum	$h_{ef,min}$	in. (mm)	2-3/8 (60)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)
	Maximum	$h_{ef,max}$	in. (mm)	7-1/2 (191)	10 (254)	10 (254)	10 (254)
Diameter of Fixture Hole	Through-set		in.	1/2	5/8	13/16[1]	15/16[1]
	Preset		in.	7/16	9/16	11/16	13/16
Maximum Installation Torque		T_{inst}	ft-lb	6	7.5	7.5	10
Minimum Masonry Thickness[2]		h_{min}	in. (mm)	7-5/8 (194)			
Face of Wall	Minimum Edge Distance[3]	$c_{min,face}$	in. (mm)	4 (102)	4 (102)	4 (102)	4 (102)
	Minimum Anchor Spacing	$s_{min,face}$	in. (mm)	4 (102)	4 (102)	4 (102)	4 (102)
Top of Wall	Minimum Edge Distance[3]	$c_{min,top}$	in. (mm)	N/A	1-3/4 (44)	1-3/4 (44)	2-3/4 (70)
	Minimum Anchor Spacing	$s_{min,top}$	in. (mm)	N/A	3 (76)	3 (76)	3 (76)

1 Install using (2) washers. See Figure 2.
2 Maximum embedment for installation into the face of 7-5/8" CMU wall is 6-3/4". Maximum embedment for installation into the face of 9-5/8" CMU wall is 8".
3 The minimum distance from the center of an anchor to the centerline of a head joint (vertical mortar joint) is 2".

Figure 1 —
Hilti HIT-HY 100 with HAS threaded rod in grout-filled concrete masonry walls

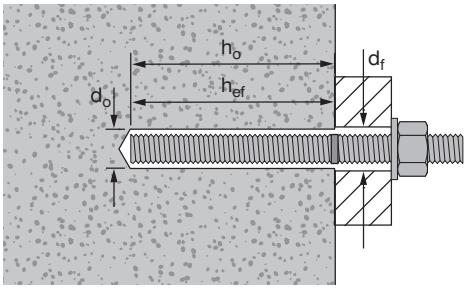


Figure 2 —
Installation with (2) washers

Table 2 — Hilti HIT-HY 100 adhesive design strength with masonry / bond failure for threaded rod in the face of uncracked fully grouted CMU walls [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or bond) — ΦN_n				Shear (lesser of pryout or crushing) — ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
3/8	2-3/8 (60)	1,045 (4.6)	1,045 (4.6)	1,045 (4.6)	1,045 (4.6)	1,125 (5.0)	1,125 (5.0)	1,125 (5.0)	1,125 (5.0)
	4-1/2 (114)	1,980 (8.8)	1,980 (8.8)	1,980 (8.8)	1,980 (8.8)	2,875 (12.8)	3,085 (13.7)	3,265 (14.5)	3,415 (15.2)
	6-3/4 (171)	2,970 (13.2)	2,970 (13.2)	2,970 (13.2)	2,970 (13.2)	2,875 (12.8)	3,085 (13.7)	3,265 (14.5)	3,415 (15.2)
	7-1/2 (191)	3,300 (14.7)	3,300 (14.7)	3,300 (14.7)	3,300 (14.7)	2,875 (12.8)	3,085 (13.7)	3,265 (14.5)	3,415 (15.2)
1/2	2-3/4 (70)	1,390 (6.2)	1,390 (6.2)	1,390 (6.2)	1,390 (6.2)	3,340 (14.9)	3,540 (15.7)	3,540 (15.7)	3,540 (15.7)
	4-1/2 (114)	2,275 (10.1)	2,275 (10.1)	2,275 (10.1)	2,275 (10.1)	3,340 (14.9)	3,590 (16.0)	3,795 (16.9)	3,975 (17.7)
	6-3/4 (171)	3,410 (15.2)	3,410 (15.2)	3,410 (15.2)	3,410 (15.2)	3,340 (14.9)	3,590 (16.0)	3,795 (16.9)	3,975 (17.7)
	10 (254)	5,055 (22.5)	5,055 (22.5)	5,055 (22.5)	5,055 (22.5)	3,340 (14.9)	3,590 (16.0)	3,795 (16.9)	3,975 (17.7)
5/8	3-1/8 (79)	1,570 (7.0)	1,570 (7.0)	1,570 (7.0)	1,570 (7.0)	3,755 (16.7)	3,995 (17.8)	3,995 (17.8)	3,995 (17.8)
	4-1/2 (114)	2,260 (10.1)	2,260 (10.1)	2,260 (10.1)	2,260 (10.1)	3,755 (16.7)	4,035 (17.9)	4,265 (19.0)	4,465 (19.9)
	6-3/4 (171)	3,390 (15.1)	3,390 (15.1)	3,390 (15.1)	3,390 (15.1)	3,755 (16.7)	4,035 (17.9)	4,265 (19.0)	4,465 (19.9)
	10 (254)	5,020 (22.3)	5,020 (22.3)	5,020 (22.3)	5,020 (22.3)	3,755 (16.7)	4,035 (17.9)	4,265 (19.0)	4,465 (19.9)
3/4	3-1/2 (89)	1,815 (8.1)	1,815 (8.1)	1,815 (8.1)	1,815 (8.1)	4,140 (18.4)	4,450 (19.8)	4,620 (20.6)	4,620 (20.6)
	4-1/2 (114)	2,335 (10.4)	2,335 (10.4)	2,335 (10.4)	2,335 (10.4)	4,140 (18.4)	4,450 (19.8)	4,705 (20.9)	4,925 (21.9)
	6-3/4 (171)	3,500 (15.6)	3,500 (15.6)	3,500 (15.6)	3,500 (15.6)	4,140 (18.4)	4,450 (19.8)	4,705 (20.9)	4,925 (21.9)
	10 (254)	5,185 (23.1)	5,185 (23.1)	5,185 (23.1)	5,185 (23.1)	4,140 (18.4)	4,450 (19.8)	4,705 (20.9)	4,925 (21.9)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor with no influence from nearby edges, hollow head joints, or additional anchors. For designs with the influence of nearby edges, hollow head joints, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC58.
3 Compare masonry tabular values to the steel values in the Appendix. The lesser of the values is to be used for the design.
4 The maximum embedment for a 8-in CMU block is 6-3/4-in. The maximum embedment for a 10-in CMU block is 8-in. The maximum embedment for a 12-in CMU block is 10-in.
5 Data is for Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).
For Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C), multiply design strength values values by 0.91.
6 Tabular values are for dry masonry conditions. For water saturated masonry conditions, multiply design strength values by:
3/8-in, 5/8-in, and 3/4-in diameter - α_{sat} = 1.00
1/2-in diameter - α_{sat} = 0.84
7 Tabular values are for static loads only. Seismic design is not permitted for uncracked masonry.
8 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.0.

Table 3 — Hilti HIT-HY 100 adhesive design strength with masonry / bond failure for threaded rod in the face of cracked fully grouted CMU walls [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or bond) — ΦN_n				Shear (lesser of pryout or crushing) — ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
3/8	2-3/8 (60)	590 (2.6)	590 (2.6)	590 (2.6)	590 (2.6)	635 (2.8)	635 (2.8)	635 (2.8)	635 (2.8)
	4-1/2 (114)	1,120 (5.0)	1,120 (5.0)	1,120 (5.0)	1,120 (5.0)	2,410 (10.7)	2,410 (10.7)	2,410 (10.7)	2,410 (10.7)
	6-3/4 (171)	1,680 (7.5)	1,680 (7.5)	1,680 (7.5)	1,680 (7.5)	2,875 (12.8)	3,085 (13.7)	3,265 (14.5)	3,415 (15.2)
	7-1/2 (191)	1,865 (8.3)	1,865 (8.3)	1,865 (8.3)	1,865 (8.3)	2,875 (12.8)	3,085 (13.7)	3,265 (14.5)	3,415 (15.2)
1/2	2-3/4 (70)	595 (2.6)	595 (2.6)	595 (2.6)	595 (2.6)	1,510 (6.7)	1,510 (6.7)	1,510 (6.7)	1,510 (6.7)
	4-1/2 (114)	970 (4.3)	970 (4.3)	970 (4.3)	970 (4.3)	2,475 (11.0)	2,475 (11.0)	2,475 (11.0)	2,475 (11.0)
	6-3/4 (171)	1,460 (6.5)	1,460 (6.5)	1,460 (6.5)	1,460 (6.5)	3,340 (14.9)	3,590 (16.0)	3,710 (16.5)	3,710 (16.5)
	10 (254)	2,160 (9.6)	2,160 (9.6)	2,160 (9.6)	2,160 (9.6)	3,340 (14.9)	3,590 (16.0)	3,795 (16.9)	3,975 (17.7)
5/8	3-1/8 (79)	605 (2.7)	605 (2.7)	605 (2.7)	605 (2.7)	1,545 (6.9)	1,545 (6.9)	1,545 (6.9)	1,545 (6.9)
	4-1/2 (114)	875 (3.9)	875 (3.9)	875 (3.9)	875 (3.9)	2,225 (9.9)	2,225 (9.9)	2,225 (9.9)	2,225 (9.9)
	6-3/4 (171)	1,310 (5.8)	1,310 (5.8)	1,310 (5.8)	1,310 (5.8)	3,340 (14.9)	3,340 (14.9)	3,340 (14.9)	3,340 (14.9)
	10 (254)	1,945 (8.7)	1,945 (8.7)	1,945 (8.7)	1,945 (8.7)	3,755 (16.7)	4,035 (17.9)	4,265 (19.0)	4,465 (19.9)
3/4	3-1/2 (89)	815 (3.6)	815 (3.6)	815 (3.6)	815 (3.6)	2,080 (9.3)	2,080 (9.3)	2,080 (9.3)	2,080 (9.3)
	4-1/2 (114)	1,050 (4.7)	1,050 (4.7)	1,050 (4.7)	1,050 (4.7)	2,670 (11.9)	2,670 (11.9)	2,670 (11.9)	2,670 (11.9)
	6-3/4 (171)	1,575 (7.0)	1,575 (7.0)	1,575 (7.0)	1,575 (7.0)	4,010 (17.8)	4,010 (17.8)	4,010 (17.8)	4,010 (17.8)
	10 (254)	2,335 (10.4)	2,335 (10.4)	2,335 (10.4)	2,335 (10.4)	4,140 (18.4)	4,450 (19.8)	4,705 (20.9)	4,925 (21.9)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor with no influence from nearby edges, hollow head joints, or additional anchors. For designs with the influence of nearby edges, hollow head joints, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC58.
3 Compare masonry tabular values to the steel values in the Appendix. The lesser of the values is to be used for the design.
4 The maximum embedment for a 8-in CMU block is 6-3/4-in. The maximum embedment for a 10-in CMU block is 8-in. The maximum embedment for a 12-in CMU block is 10-in.
5 Data is for Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).
For Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C), multiply design strength values values by 0.91.
6 Tabular values are for dry masonry conditions. For water saturated masonry conditions, multiply design strength values by:
3/8-in, 5/8-in, and 3/4-in diameter - α_{sat} = 1.00
1/2-in diameter - α_{sat} = 0.84
7 Tabular values are for static loads only. For seismic loads, multiply design strength values in tension and shear by the following reduction factors:
3/8-in diameter = 0.60
1/2-in diameter = 0.75
5/8-in diameter = 0.75
3/4-in diameter = 0.64
8 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.0.

Table 4 — Hilti HIT-HY 100 adhesive design strength with masonry / bond failure for threaded rod in the face of uncracked fully grouted CMU walls and installed 2-in from centerline of hollow head joint [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or bond) — ΦN_n				Shear (lesser of pryout or crushing) — ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
3/8	2-3/8 (60)	785 (3.5)	785 (3.5)	785 (3.5)	785 (3.5)	845 (3.8)	845 (3.8)	845 (3.8)	845 (3.8)
	4-1/2 (114)	1,490 (6.6)	1,490 (6.6)	1,490 (6.6)	1,490 (6.6)	1,205 (5.4)	1,390 (6.2)	1,555 (6.9)	1,700 (7.6)
	6-3/4 (171)	2,235 (9.9)	2,235 (9.9)	2,235 (9.9)	2,235 (9.9)	1,205 (5.4)	1,390 (6.2)	1,555 (6.9)	1,700 (7.6)
	7-1/2 (191)	2,480 (11.0)	2,480 (11.0)	2,480 (11.0)	2,480 (11.0)	1,205 (5.4)	1,390 (6.2)	1,555 (6.9)	1,700 (7.6)
1/2	2-3/4 (70)	885 (3.9)	885 (3.9)	885 (3.9)	885 (3.9)	1,290 (5.7)	1,490 (6.6)	1,665 (7.4)	1,825 (8.1)
	4-1/2 (114)	1,445 (6.4)	1,445 (6.4)	1,445 (6.4)	1,445 (6.4)	1,390 (6.2)	1,605 (7.1)	1,795 (8.0)	1,965 (8.7)
	6-3/4 (171)	2,170 (9.7)	2,170 (9.7)	2,170 (9.7)	2,170 (9.7)	1,390 (6.2)	1,605 (7.1)	1,795 (8.0)	1,965 (8.7)
	10 (254)	3,210 (14.3)	3,210 (14.3)	3,210 (14.3)	3,210 (14.3)	1,390 (6.2)	1,605 (7.1)	1,795 (8.0)	1,965 (8.7)
5/8	3-1/8 (79)	945 (4.2)	945 (4.2)	945 (4.2)	945 (4.2)	1,415 (6.3)	1,635 (7.3)	1,825 (8.1)	2,000 (8.9)
	4-1/2 (114)	1,360 (6.0)	1,360 (6.0)	1,360 (6.0)	1,360 (6.0)	1,520 (6.8)	1,755 (7.8)	1,965 (8.7)	2,150 (9.6)
	6-3/4 (171)	2,045 (9.1)	2,045 (9.1)	2,045 (9.1)	2,045 (9.1)	1,555 (6.9)	1,795 (8.0)	2,005 (8.9)	2,195 (9.8)
	10 (254)	3,025 (13.5)	3,025 (13.5)	3,025 (13.5)	3,025 (13.5)	1,555 (6.9)	1,795 (8.0)	2,005 (8.9)	2,195 (9.8)
3/4	3-1/2 (89)	1,040 (4.6)	1,040 (4.6)	1,040 (4.6)	1,040 (4.6)	1,530 (6.8)	1,765 (7.9)	1,975 (8.8)	2,160 (9.6)
	4-1/2 (114)	1,340 (6.0)	1,340 (6.0)	1,340 (6.0)	1,340 (6.0)	1,605 (7.1)	1,855 (8.3)	2,075 (9.2)	2,270 (10.1)
	6-3/4 (171)	2,010 (8.9)	2,010 (8.9)	2,010 (8.9)	2,010 (8.9)	1,665 (7.4)	1,925 (8.6)	2,150 (9.6)	2,360 (10.5)
	10 (254)	2,980 (13.3)	2,980 (13.3)	2,980 (13.3)	2,980 (13.3)	1,665 (7.4)	1,925 (8.6)	2,150 (9.6)	2,360 (10.5)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located 2-in from centerline of a hollow head joint with no additional influence from nearby edges or additional anchors. For designs with the influence of nearby edges, different distances to a hollow head joint, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC58.
3 Compare masonry tabular values to the steel values in the Appendix. The lesser of the values is to be used for the design.
4 The maximum embedment for a 8-in CMU block is 6-3/4-in. The maximum embedment for a 10-in CMU block is 8-in. The maximum embedment for a 12-in CMU block is 10-in.
5 Data is for Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).
For Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C), multiply design strength values values by 0.91.
6 Tabular values are for dry masonry conditions. For water saturated masonry conditions, multiply design strength values by:
3/8-in, 5/8-in, and 3/4-in diameter - α_{sat} = 1.00
1/2-in diameter - α_{sat} = 0.84
7 Tabular values are for static loads only. Seismic design is not permitted for uncracked masonry.
8 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.0.

Table 5 — Hilti HIT-HY 100 adhesive design strength with masonry / bond failure for threaded rod in the face of cracked fully grouted CMU walls and installed 2-in from centerline of hollow head joint [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or bond) — ΦN_n				Shear (lesser of pryout or crushing) — ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
3/8	2-3/8 (60)	445 (2.0)	445 (2.0)	445 (2.0)	445 (2.0)	480 (2.1)	480 (2.1)	480 (2.1)	480 (2.1)
	4-1/2 (114)	840 (3.7)	840 (3.7)	840 (3.7)	840 (3.7)	860 (3.8)	995 (4.4)	1,110 (4.9)	1,215 (5.4)
	6-3/4 (171)	1,260 (5.6)	1,260 (5.6)	1,260 (5.6)	1,260 (5.6)	860 (3.8)	995 (4.4)	1,110 (4.9)	1,215 (5.4)
	7-1/2 (191)	1,400 (6.2)	1,400 (6.2)	1,400 (6.2)	1,400 (6.2)	860 (3.8)	995 (4.4)	1,110 (4.9)	1,215 (5.4)
1/2	2-3/4 (70)	380 (1.7)	380 (1.7)	380 (1.7)	380 (1.7)	920 (4.1)	960 (4.3)	960 (4.3)	960 (4.3)
	4-1/2 (114)	620 (2.8)	620 (2.8)	620 (2.8)	620 (2.8)	995 (4.4)	1,145 (5.1)	1,280 (5.7)	1,405 (6.2)
	6-3/4 (171)	925 (4.1)	925 (4.1)	925 (4.1)	925 (4.1)	995 (4.4)	1,145 (5.1)	1,280 (5.7)	1,405 (6.2)
	10 (254)	1,375 (6.1)	1,375 (6.1)	1,375 (6.1)	1,375 (6.1)	995 (4.4)	1,145 (5.1)	1,280 (5.7)	1,405 (6.2)
5/8	3-1/8 (79)	365 (1.6)	365 (1.6)	365 (1.6)	365 (1.6)	930 (4.1)	930 (4.1)	930 (4.1)	930 (4.1)
	4-1/2 (114)	525 (2.3)	525 (2.3)	525 (2.3)	525 (2.3)	1,085 (4.8)	1,255 (5.6)	1,340 (6.0)	1,340 (6.0)
	6-3/4 (171)	790 (3.5)	790 (3.5)	790 (3.5)	790 (3.5)	1,110 (4.9)	1,280 (5.7)	1,435 (6.4)	1,570 (7.0)
	10 (254)	1,170 (5.2)	1,170 (5.2)	1,170 (5.2)	1,170 (5.2)	1,110 (4.9)	1,280 (5.7)	1,435 (6.4)	1,570 (7.0)
3/4	3-1/2 (89)	470 (2.1)	470 (2.1)	470 (2.1)	470 (2.1)	1,090 (4.8)	1,195 (5.3)	1,195 (5.3)	1,195 (5.3)
	4-1/2 (114)	605 (2.7)	605 (2.7)	605 (2.7)	605 (2.7)	1,150 (5.1)	1,325 (5.9)	1,480 (6.6)	1,535 (6.8)
	6-3/4 (171)	905 (4.0)	905 (4.0)	905 (4.0)	905 (4.0)	1,190 (5.3)	1,375 (6.1)	1,535 (6.8)	1,685 (7.5)
	10 (254)	1,340 (6.0)	1,340 (6.0)	1,340 (6.0)	1,340 (6.0)	1,190 (5.3)	1,375 (6.1)	1,535 (6.8)	1,685 (7.5)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located 2-in from centerline of a hollow head joint with no additional influence from nearby edges or additional anchors. For designs with the influence of nearby edges, different distances to a hollow head joint, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC58.
3 Compare masonry tabular values to the steel values in the Appendix. The lesser of the values is to be used for the design.
4 The maximum embedment for a 8-in CMU block is 6-3/4-in. The maximum embedment for a 10-in CMU block is 8-in. The maximum embedment for a 12-in CMU block is 10-in.
5 Data is for Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).
For Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C), multiply design strength values values by 0.91.
6 Tabular values are for dry masonry conditions. For water saturated masonry conditions, multiply design strength values by:
3/8-in, 5/8-in, and 3/4-in diameter - α_{sat} = 1.00
1/2-in diameter - α_{sat} = 0.84
7 Tabular values are for static loads only. For seismic loads, multiply design strength values in tension and shear by the following reduction factors:
3/8-in diameter = 0.60
1/2-in diameter = 0.75
5/8-in diameter = 0.75
3/4-in diameter = 0.64
8 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.0.

Table 6 — Hilti HIT-HY 100 adhesive design strength with masonry / bond failure for threaded rod in the top of uncracked fully grouted CMU walls and installed at minimum edge distance parallel with masonry course [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or bond) — ΦN_n				Shear (lesser of pryout or crushing) — ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/2	2-3/4 (70)	675 (3.0)	675 (3.0)	675 (3.0)	675 (3.0)	1,225 (5.4)	1,410 (6.3)	1,580 (7.0)	1,725 (7.7)
	4-1/2 (114)	1,110 (4.9)	1,110 (4.9)	1,110 (4.9)	1,110 (4.9)	1,320 (5.9)	1,520 (6.8)	1,700 (7.6)	1,865 (8.3)
	6-3/4 (171)	1,660 (7.4)	1,660 (7.4)	1,660 (7.4)	1,660 (7.4)	1,320 (5.9)	1,520 (6.8)	1,700 (7.6)	1,865 (8.3)
	10 (254)	2,460 (10.9)	2,460 (10.9)	2,460 (10.9)	2,460 (10.9)	1,320 (5.9)	1,520 (6.8)	1,700 (7.6)	1,865 (8.3)
5/8	3-1/8 (79)	365 (1.6)	365 (1.6)	365 (1.6)	365 (1.6)	925 (4.1)	925 (4.1)	925 (4.1)	925 (4.1)
	4-1/2 (114)	525 (2.3)	525 (2.3)	525 (2.3)	525 (2.3)	1,330 (5.9)	1,330 (5.9)	1,330 (5.9)	1,330 (5.9)
	6-3/4 (171)	785 (3.5)	785 (3.5)	785 (3.5)	785 (3.5)	1,475 (6.6)	1,700 (7.6)	1,905 (8.5)	1,995 (8.9)
	10 (254)	1,160 (5.2)	1,160 (5.2)	1,160 (5.2)	1,160 (5.2)	1,475 (6.6)	1,700 (7.6)	1,905 (8.5)	2,085 (9.3)
3/4	3-1/2 (89)	645 (2.9)	645 (2.9)	645 (2.9)	645 (2.9)	1,640 (7.3)	1,640 (7.3)	1,640 (7.3)	1,640 (7.3)
	4-1/2 (114)	825 (3.7)	825 (3.7)	825 (3.7)	825 (3.7)	2,105 (9.4)	2,105 (9.4)	2,105 (9.4)	2,105 (9.4)
	6-3/4 (171)	1,240 (5.5)	1,240 (5.5)	1,240 (5.5)	1,240 (5.5)	3,115 (13.9)	3,160 (14.1)	3,160 (14.1)	3,160 (14.1)
	10 (254)	1,840 (8.2)	1,840 (8.2)	1,840 (8.2)	1,840 (8.2)	3,115 (13.9)	3,600 (16.0)	4,020 (17.9)	4,405 (19.6)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located at minimum edge of 1-3/4-in (2-3/4-in for 3/4-in diameter) from edge parallel with masonry course with no additional influence from nearby edges or additional anchors. For designs with the additional influence of nearby edges, a different edge distance, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC58.
3 Compare masonry tabular values to the steel values in the Appendix. The lesser of the values is to be used for the design.
4 Data is for Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).
For Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C), multiply design strength values values by 0.91.
5 Tabular values are for dry masonry conditions. For water saturated masonry conditions, multiply design strength values by:
1/2-in diameter - α_{sat} = 0.84
5/8-in and 3/4-in diameter - α_{sat} = 1.00
6 Tabular values are for static loads only. Seismic design is not permitted for uncracked masonry.
7 Tabular shear values are for shear force parallel to the edge parallel with the masonry course. For shear force perpendicular to the edge parallel with the masonry course, multiply design strength values in shear by the following reduction factors:
1/2-in and 5/8-in. diameter = 0.50
3/4-in diameter = 0.46
8 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.0.

Table 7 — Hilti HIT-HY 100 adhesive design strength with masonry / bond failure for threaded rod in the top of cracked fully grouted CMU walls and installed at minimum edge distance parallel with masonry course [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or bond) — ΦN_n				Shear (lesser of pryout or crushing) — ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/2	2-3/4 (70)	290 (1.3)	290 (1.3)	290 (1.3)	290 (1.3)	735 (3.3)	735 (3.3)	735 (3.3)	735 (3.3)
	4-1/2 (114)	475 (2.1)	475 (2.1)	475 (2.1)	475 (2.1)	940 (4.2)	1,085 (4.8)	1,205 (5.4)	1,205 (5.4)
	6-3/4 (171)	710 (3.2)	710 (3.2)	710 (3.2)	710 (3.2)	940 (4.2)	1,085 (4.8)	1,215 (5.4)	1,330 (5.9)
	10 (254)	1,050 (4.7)	1,050 (4.7)	1,050 (4.7)	1,050 (4.7)	940 (4.2)	1,085 (4.8)	1,215 (5.4)	1,330 (5.9)
5/8	3-1/8 (79)	140 (0.6)	140 (0.6)	140 (0.6)	140 (0.6)	360 (1.6)	360 (1.6)	360 (1.6)	360 (1.6)
	4-1/2 (114)	200 (0.9)	200 (0.9)	200 (0.9)	200 (0.9)	515 (2.3)	515 (2.3)	515 (2.3)	515 (2.3)
	6-3/4 (171)	305 (1.4)	305 (1.4)	305 (1.4)	305 (1.4)	775 (3.4)	775 (3.4)	775 (3.4)	775 (3.4)
	10 (254)	450 (2.0)	450 (2.0)	450 (2.0)	450 (2.0)	1,055 (4.7)	1,145 (5.1)	1,145 (5.1)	1,145 (5.1)
3/4	3-1/2 (89)	290 (1.3)	290 (1.3)	290 (1.3)	290 (1.3)	735 (3.3)	735 (3.3)	735 (3.3)	735 (3.3)
	4-1/2 (114)	370 (1.6)	370 (1.6)	370 (1.6)	370 (1.6)	950 (4.2)	950 (4.2)	950 (4.2)	950 (4.2)
	6-3/4 (171)	560 (2.5)	560 (2.5)	560 (2.5)	560 (2.5)	1,420 (6.3)	1,420 (6.3)	1,420 (6.3)	1,420 (6.3)
	10 (254)	825 (3.7)	825 (3.7)	825 (3.7)	825 (3.7)	2,105 (9.4)	2,105 (9.4)	2,105 (9.4)	2,105 (9.4)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located at minimum edge of 1-3/4-in (2-3/4-in for 3/4-in diameter) from edge parallel with masonry course with no additional influence from nearby edges or additional anchors. For designs with the additional influence of nearby edges, a different edge distance, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC58.
3 Compare masonry tabular values to the steel values in the Appendix. The lesser of the values is to be used for the design.
4 Data is for Temperature Range A: Maximum short term temperature = 130°F (55°C) | Maximum long term temperature = 110°F (43°C).
For Temperature Range B: Maximum short term temperature = 176°F (80°C) | Maximum long term temperature = 110°F (43°C), multiply design strength values values by 0.91.
5 Tabular values are for dry masonry conditions. For water saturated masonry conditions, multiply design strength values by:
1/2-in diameter - α_{sat} = 0.84
5/8-in and 3/4-in diameter - α_{sat} = 1.00
6 Tabular values are for static loads only. For seismic loads, multiply design strength values in tension and shear by the following reduction factors:
1/2-in and 5/8-in diameter = 0.75
3/4-in diameter = 0.64
7 Tabular shear values are for shear force parallel to the edge parallel with the masonry course. For shear force perpendicular to the edge parallel with the masonry course, multiply design strength values in shear by the following reduction factors:
1/2-in and 5/8-in. diameter = 0.50
3/4-in diameter = 0.46
8 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.0.

MATERIAL SPECIFICATIONS

Material specifications for Hilti HAS threaded rods, Hilti HIT-Z anchor rods, and Hilti HIS-N inserts are listed in section 3.2.8 (PTG Vol 2 Ed. 17).

Table 8 — Material properties for cured HIT-HY 100 adhesive

Compressive Strength ASTM C579	> 50 MPa	> 7252 psi
Flexural Strength ASTM C 580	> 20 MPa	> 2900 psi
Modulus of Elasticity ASTM C 307	> 3500 MPa	> 5.07 x 10^5 psi
Water Asorption ASTM D 570	< 2%	
Electrical Resistance DIN/VDE 0303T3	~ 2 x 10^{11} OHM/cm	~ 5.1 x 10^{11} OHM/in.

For material specifications for anchor rods and inserts, please refer to section 3.2.8 of the Hilti North American Technical Guide Volume 2: Anchor Fastening Technical Guide

Table 9 — Gel Time [1,2]

Base material temperature		HIT-HY 100
°F	°C	
14	-10	3 h
23	-4	40 min
32	1	20 min
41	6	8 min
51	11	8 min
69	21	5 min
87	31	2 min

Table 10 — Full Cure Time [1,2]

Base material temperature		HIT-HY 100
°F	°C	
14	-10	12 h
23	-4	4 h
32	1	2 h
41	6	60 min
51	11	60 min
69	21	30 min
87	31	30 min

1 Product temperatures must be maintained above 41°F (5°C) prior to installation.
2 Gel times and full cure times are approximate.

Table 11 — Resistance of HIT- HY 100 to chemicals

Chemical		Behavior
Sulphuric acid	conc.	-
	30%	•
	10%	+
Hydrochloric acid	conc.	•
	10%	+
Nitric acid	conc.	-
	10%	•
Phosphoric acid	conc.	+
	10%	+
Acetic acid	conc.	•
	10%	+
Formic acid	conc.	-
	10%	•
Lactic acid	conc.	+
	10%	+
Citric acid	10%	+
Sodium Hydroxide (Caustic soda)	40%	•
	20%	+
	5%	+
Amonia	conc.	•
	5%	+
Soda solution	10%	+
Common salt solution	10%	+
Chlorinated lime solution	10%	+
Sodium hypochlorite	2%	+
Hydrogen peroxide	10%	+
Carbolic acid solution	10%	-
Ethanol		-
Sea water		+
Glycol		+
Acetone		-
Carbon tetrachloride		-
Tolune		+
Petrol/Gasoline		•
Machine Oil		•
Diesel oil		•

Key: - non resistant + resistant • limited resistance

7.3 STEEL DESIGN APPENDIX

Table 1 — Steel design strength for Hilti HAS threaded rods for use with ACI 318 Chapter 17

Nominal anchor diameter in.	HAS-V ASTM A307 Gr. A			HAS-V-36 / HAS-V-36 HDG ASTM F1554 Gr. 36[4,6]			HAS-E-55 / HAS-E-55 HDG ASTM F1554 Gr. 55[4,6]			HAS-B-105 / HAS-B-105 HDG ASTM A193 B7 and ASTM F1554 Gr. 105[4,6]			HAS-R stainless steel ASTM F593 (3/8-in to 1-in)[5]		
	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)
1/4	1,240 (5.5)	685 (3.0)	480 (2.1)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
5/16	1,995 (8.9)	1,105 (4.9)	775 (3.4)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
3/8	- -	- -	- -	3,370 (15.0)	1,750 (7.8)	1,050 (4.7)	4,360 (19.4)	2,270 (10.1)	1,590 (7.1)	7,270 (32.3)	3,780 (16.8)	2,645 (11.8)	5,040 (22.4)	2,790 (12.4)	1,955 (8.7)
1/2	- -	- -	- -	6,175 (27.5)	3,210 (14.3)	1,925 (8.6)	7,985 (35.5)	4,150 (18.5)	2,905 (12.9)	13,305 (59.2)	6,920 (30.8)	4,845 (21.6)	9,225 (41.0)	5,110 (22.7)	3,575 (15.9)
5/8	- -	- -	- -	9,835 (43.7)	5,110 (22.7)	3,065 (13.6)	12,715 (56.6)	6,610 (29.4)	4,625 (20.6)	21,190 (94.3)	11,020 (49.0)	7,715 (34.3)	14,690 (65.3)	8,135 (36.2)	5,695 (25.3)
3/4	- -	- -	- -	14,550 (64.7)	7,565 (33.7)	4,540 (20.2)	18,820 (83.7)	9,785 (43.5)	6,850 (30.5)	31,360 (139.5)	16,310 (72.6)	11,415 (50.8)	18,485 (82.2)	10,235 (45.5)	7,165 (31.9)

1 Tensile = $\Phi A_{se,N} f_{uta}$ as noted in ACI 318-19 17.6.1.2.
2 Shear = Φ 0.60 $A_{se,V} f_{uta}$ as noted in ACI 318-19 17.7.1.2b.
3 Seismic Shear = $\alpha_{V,seis} \Phi V_{sa}$: Reduction for seismic shear only. See ACI 318 for additional information on seismic applications.
4 HAS-V, HAS-E, and HAS-B threaded rods are considered ductile steel elements (including HDG rods).
5 HAS-R (CW1 and CW2; 3-8-in to 1-in) threaded rods are considered brittle steel elements.
6 3/8-inch dia. threaded rods are not included in the ASTM F1554 standard. Hilti 3/8-inch dia. HAS-V, HAS-E, and HAS-B (incl. HDG) threaded rods meet the chemical composition and mechanical property requirements of ASTM F1554.

Table 2 — Steel design strength for US rebar for use with ACI 318 Chapter 17

Rebar Size	ASTM A615 Grade 40[4]			ASTM A615 Grade 60[4]			ASTM A706 Grade 60[4]		
	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)	Tensile[1] ΦN_{sa} lb (kN)	Shear[2] ΦV_{sa} lb (kN)	Seismic Shear[3] $\Phi V_{sa,eq}$ lb (kN)
#3	4,290 (19.1)	2,375 (10.6)	1,665 (7.4)	5,720 (25.4)	3,170 (14.1)	2,220 (9.9)	6,600 (29.4)	3,430 (15.3)	2,400 (10.7)
#4	7,800 (34.7)	4,320 (19.2)	3,025 (13.5)	10,400 (46.3)	5,760 (25.6)	4,030 (17.9)	12,000 (53.4)	6,240 (27.8)	4,370 (19.4)
#5	12,090 (53.8)	6,695 (29.8)	4,685 (20.8)	16,120 (71.7)	8,930 (39.7)	6,250 (27.8)	18,600 (82.7)	9,670 (43.0)	6,770 (30.1)
#6	17,160 (76.3)	9,505 (42.3)	6,655 (29.6)	22,880 (101.8)	12,670 (56.4)	8,870 (39.5)	26,400 (117.4)	13,730 (61.1)	9,610 (42.7)

1 Tensile = $\Phi A_{se,N} f_{uta}$ as noted in ACI 318-19 17.6.1.2.
2 Shear = Φ 0.60 $A_{se,V} f_{uta}$ as noted in ACI 318-19 17.7.1.2b.
3 Seismic Shear = $\alpha_{V,seis} \Phi V_{sa}$: Reduction for seismic shear only. See ACI 318 for additional information on seismic applications.
4 ASTM A706 Grade 60 rebar are considered ductile steel elements. ASTM A615 Grade 40 and 60 rebar are considered brittle steel elements.

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