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Evaluation reports are the opinion of the engineer who prepared the report, based on the findings, and in no way constitute or imply approval by a local building authority. The engineer, in review of the data submitted, finds that, in his opinion, the product, material, system, or method of construction specifically identified in this report conforms with or is a suitable alternate to that specified in the Florida Building Code, **SUBJECT TO THE LIMITATIONS IN THIS REPORT**

Jeffrey P. Arneson, P.E., a licensed Florida professional engineer and employee of Jax Apex Technology, Inc. (Apex Technology) has reviewed the data submitted for compliance with the Florida Building Code. Neither Jeffrey P. Arneson, nor Apex Technology, are responsible for any errors or omissions to any documents, calculations, drawings, specifications, tests, or summaries prepared and submitted by the design professional or preparer of record who are listed in the Substantiating Data section of this report.

REPORT NO: SIM202303

CATEGORY: Structural Components

SUBCATEGORY: Wood Connectors

SUBMITTED BY:

SIMPSON STRONG-TIE COMPANY, INC.
5956 W. LAS POSITAS BOULEVARD
PLEASANTON, CA 94588

1. CERTIFICATION OF INDEPENDENCE:

Jeffrey P. Arneson, the Florida engineer who prepared this report, and Apex Technology have no financial interest in the manufacturing, sales, or distribution of the products included in this report. Jeffrey P. Arneson and Apex Technology comply with all criteria as stated in Florida Administrative Code Chapter 61G20-3.

2. PRODUCT NAME:

Column Caps for CMU and Concrete Piers

CCQM, CCTQM, CCCQM, ECCLQM, ECCLLQMD, ECCLRQMD

Wood to Masonry/Concrete Hangers

LGUM26-2, LGUM28-2, LGUM210-2, LGUM26-3, LGUM28-3, LGUM210-3,
LGUM26-4, LGUM28-4, LGUM210-4, LGUM46, LGUM48, LGUM410, HGUM5.25,
HGUM5.50, HGUM7.00, HGUM7.25, HGUM9.00

Wood to Masonry/Concrete Hangers

MBHU3.56/9.25KT, MBHU3.56/11.25KT, MBHU3.56/11.88KT, MBHU3.56/14KT,
MBHU3.56/16KT, MBHU3.56/18KT, MBHU5.50/9.25KT, MBHU5.50/11.25KT,
MBHU5.50/11.88KT, MBHU5.50/14KT, MBHU5.50/16KT, MBHU5.50/18KT

Wood to Masonry/Concrete Hangers

MBHA3.12/9.25, MBHA3.12/11.25, MBHA3.56/7.25, MBHA3.56/9.25, MBHA3.56/11.25, MBHA3.56/11.88, MBHA3.56/14, MBHA3.56/16, MBHA3.56/18, MBHA5.50/7.25, MBHA5.50/9.25, MBHA5.50/11.25, MBHA5.50/11.88, MBHA5.50/14, MBHA5.50/16, MBHA5.50/18

3. SCOPE OF EVALUATION:

Load evaluation as a structural component using the requirements of the 8th Edition (2023) *Florida Building Code, Building* and 8th Edition (2023) *Florida Building Code, Residential*.

4. DESCRIPTION:

- 4.1 CCQM-SDSHDG, CCTQM-SDSG, CCCQM-SDSG, ECCLQM-KT and ECCLQMD-KT Column Caps for CMU and Concrete Piers.** The CCQM, CCTQM, CCCQM, and ECCLQM are used to connect wood beams to the top of CMU or concrete piers, primarily for raised pier foundations. The beams can be oriented in a “straight” configuration (CCQM), “T” configuration (CCTQM), “cross” configuration (CCCQM), or an “L” configuration (ECCLQM). The ECCLQMD has an extended main bucket to support a deck joist framing into the corner. The ECCLQMD is available in left (ECCLQMD) and right (ECCLRQMD) versions. The column caps fasten to the beams with ¼"×2½" long Strong-Drive® SDS Heavy-Duty Connector screws. Specially shaped anchor bolts are factory welded to the bottom of the buckets, and become embedded in the top of the pier. The ECCLQMG-KT and ECCLQMD-KT both include two MSTQM straps, which extend up to provide a holdown for corner framing above. The CCQM, CCTQM, CCCQM, ECCLQM and ECCLQMD are manufactured from 7 gauge steel meeting ASTM A1011 GRADE 33 with a hot-dipped galvanized finish in accordance with ASTM A153. The MSTQM strap is manufactured from 12 gauge steel meeting ASTM A653 SS GRADE 40 with a G90 galvanized finish. Column cap fastener schedule and allowable loads are shown in Table 1. Column cap dimensions are shown in Table 2. MSTQM strap fastener schedule and allowable loads are specified in Note 8 of Table 1. See Figures 1, 2, and 3 for additional details.
- 4.2 LGUM / HGUM Masonry Girder Hangers.** The LGUM and HGUM series of high capacity hangers are used to connect wood girders and beams to masonry or concrete walls. Both series use Simpson Strong-Tie Titen HD® Heavy-Duty Screw Anchors to attach to the masonry or concrete wall, and Strong-Drive® SDS Heavy-Duty Connector screws to attach the beam to the hanger. The LGUM is manufactured from 12 gauge steel meeting ASTM A653 SS Grade 40 with a G90 galvanized finish. The HGUM is manufactured from 7 gauge galvanized steel meeting ASTM A653 SS Grade 33 with a G90 galvanized finish. Girder hanger fastener schedule, dimensions, and allowable loads are shown in Table 3. See Figure 4 for additional details.
- 4.3 MBHU Masonry Beam Hangers.** The MBHU series of hangers are used to anchor wood beams, joists, trusses, or rafters to masonry or concrete walls. The MBHU fastens to the wood member with ¼"×2½" long Strong-Drive® SDS Heavy-Duty Connector screws, and fastens to the masonry or concrete wall with two ¾"×5" Titen HD® Heavy-Duty Screw Anchors. These connectors are manufactured from 10 gauge steel meeting ASTM A653 SS Grade 33 with a G90 galvanized finish. MBHU fastener schedules, dimensions, and allowable loads are shown in Table 4. See Figures 5 and 6 for additional details.

- 4.4 MBHA Masonry Hangers.** The MBHA series of hangers are used to anchor wood beams, joists, trusses, or rafters to masonry or concrete walls. The MBHA fastens to the wood member with 0.148"x3" nails and fastens to the masonry or concrete with two lengths of threaded rod embedded in the wall using either Simpson Strong-Tie ET-3G™ Epoxy Adhesive or Simpson Strong-Tie SET-3G™ Epoxy Adhesive. These connectors are manufactured from 10 gauge steel meeting ASTM A653 SS Grade 33 with a G90 galvanized finish. Hanger fastener schedules, dimensions, and allowable loads are shown in Table 5. See Figure 7 for additional details.

5. MATERIALS:

- 5.1 Steel.** Steel specifications for each product listed in this evaluation report shall be as indicated in the previous section. In addition to the standard G90 coating, some models (designated with a model number ending with Z) are available with a G185 zinc coating specification in accordance with ASTM A653. Some models (designated with a model number ending with HDG or G) are available with a hot-dip galvanization, also known as "batch" galvanization, in accordance with ASTM A123, with a minimum specified coating weight of 2.0 ounces of zinc per square foot of surface area, total for both sides. Some models (designated with a model number ending with SS) are available in Type 316L stainless material manufactured in accordance with ASTM A240 sheet, strip or plate and ASTM A480 (General Requirements) in the following designation: UNS designation S31603, AISI Type 316L. Model numbers in this report may not include the Z, HDG, or SS ending, but the information shown applies.
- 5.2 Wood.** Wood members to which these connectors are fastened shall be solid sawn lumber, glued-laminated lumber, or structural composite lumber having dimensions consistent with the connector dimensions shown in Tables 1 through 6. Unless otherwise noted, lumber shall be Southern Pine (SP) or Douglas Fir-Larch (DF) having a minimum specific gravity of 0.55 or 0.50, respectively. Where indicated by SPF, lumber shall be Spruce-Pine-Fir having a minimum specific gravity of 0.42.
- 5.3 Concrete/Masonry.** Concrete and Masonry design specifications shall be the stricter of the specifications by the engineer of record, the Florida Building Code minimum standards, the following, or as noted in the report:

Material	Specification	Minimum Compressive Strength
Concrete, f'_c	-	2,500 psi ¹
Masonry, f'_m	ASTM C1314	2,000 psi
Masonry Unit	ASTM C90	2,000 psi
Mortar	ASTM C270 Type S	1,800 psi (or by proportions)
Grout	ASTM C476	2,000 psi (or by proportions)

1. Where noted for CCQM models, 3,000 psi concrete is required.

- 5.4 Nails.** Unless noted otherwise, nails shall be common nails. Nails shall comply with ASTM F1667 and shall have the minimum bending yield strengths F_{yb} :

Nail Pennyweight	Nail Shank Diameter (inch)	Nail Length (inch)	F_{yb} (psi)
10d	0.148	3	90,000
16d×2½	0.162	2½	90,000

Fasteners for galvanized connectors in pressure-preservative treated wood shall be hot-dipped zinc coated galvanized steel with coating weights in accordance with

ASTM A153 or steel mechanically galvanized in accordance with ASTM B695, Class 55. Fasteners for stainless steel connectors shall be stainless steel except where otherwise permitted by the treatment manufacturer.

The allowable loads of stainless-steel connectors match those of carbon-steel connectors when installed with Simpson Strong-Tie stainless-steel, SCNR ring-shank nails, unless noted otherwise.

5.5 Strong-Drive® SDS Heavy-Duty Connector Screws. Fasteners used with the connectors described in Tables 1, 3, and 4 of the report must be Simpson Strong-Tie Strong-Drive® SDS Heavy-Duty Connector Screws as recognized in FL9589. SDS screws used in contact with preservative-treated or fire-retardant-treated lumber must, at a minimum, comply with FL9589. The lumber treater or Simpson Strong-Tie Company should be contacted for recommendations on minimum corrosion resistance and connection capacities of fasteners used with the specific proprietary preservative-treated or fire retardant-treated lumber.

5.6 Titen HD® Heavy-Duty Screw Anchors. Anchors shown in Tables 3 and 4 and Figures 4 and 6 shall be Simpson Strong-Tie Titen HD® Heavy-Duty Screw Anchors for masonry or concrete as recognized in FL15730 and FL16230. Installation shall be as specified in FL15730 and FL16230.

5.7 Epoxy Anchoring Adhesives. Anchors shown in Table 5 and Figure 7 shall be all-thread rod installed with either Simpson Strong-Tie ET-3G™ Epoxy Adhesive or Simpson Strong-Tie SET-3G™ High-Strength Epoxy Adhesive for masonry or concrete as recognized in FL15730. Installation shall be as specified in FL15730.

6. INSTALLATION:

Installation shall be in accordance with this report and the most recent edition of the Simpson Strong-Tie *Wood Construction Connectors* catalog. Information in this report supersedes any conflicting information between information provided in this report and the catalog.

7. SUBSTANTIATING DATA:

Test data submitted by Testing Engineers Inc. and Simpson Strong-Tie, and signed and sealed calculations performed by Bryan Wert, P.E., in accordance with the 8th Edition (2023) *Florida Building Code, Building and Residential* codes.

Model	Test Lab	Test Number
ECCLQM	Testing Engineers, Inc.	P002, P004, P005, Q375
ECCLQMD	Simpson Strong-Tie, Inc.	S944, S945
CCQM, CCTQM	Testing Engineers, Inc.	P006, P007, P008, P009
LGUM	Testing Engineers, Inc.	M202, M203, M204, M211, M212, M213, M221, M222, M224
HGUM	Testing Engineers, Inc.	M207, M209, M216, M217, Q690, Q691, R058, R059
MBHU	Testing Engineers, Inc.	N447, N448, N449, N450, O356, O357, O360, O361, P773, P774, Q848, Q849
MBHA	Testing Engineers, Inc.	F391, F392, F393, F394, F964, F965

8. FINDINGS:

The connectors listed in this evaluation report comply with the 8th Edition (2023) Florida Building Code, Building, and 8th Edition (2023) Florida Building Code, Residential when installed in accordance with this report.

9. LIMITATIONS:

1. Maximum allowable loads shall not exceed the allowable loads listed in this report. Allowable loads listed in this report are based on allowable stress design. The loads in this report are not applicable to Load and Resistance Factor Design.
2. Capacity of wood members is not covered by this report. Capacity of wood members must be checked by the building designer.
3. Connectors in this report having a galvanized coating thickness less than G185 shall not be installed in contact with preservative-treated wood products that are exposed to rainfall or ground moisture.
4. Allowable loads for more than one direction for a single connection cannot be added together. A design load that can be divided into components in the directions given must be evaluated as follows:

$$(\text{Design Uplift} / \text{Allowable Uplift}) + (\text{Design Lateral} / \text{Allowable Lateral}) < 1.0$$

10. ALLOWABLE LOADS:

The tables that follow reference the allowable loads for the aforementioned products.

TABLE 1: CCQM / CCCQM / CCTQM / ECCLQM Fasteners and Allowable Loads											
Model No.	No. of ¼"x2½" SDS Screws			16" Square Grout-Filled CMU Pier ^{3,6}				16" Square CMU Shell Filled with 3,000 psi Concrete ^{3,7}			
	Main Beam	Side Beam	Deck Beam	Uplift (160)			Lateral (160)	Uplift (160)			Lateral (160)
				Main Beam	Side Beam	Total		Main Beam	Side Beam	Total	
CCQM-SDSHDG	12	—	—	6,750	—	6,750	2,460	6,495	—	6,495	2,650
CCTQM-SDSG	12	8	—	6,750	5,375	6,750	2,460	6,495	5,375	6,495	2,650
CCCQM-SDSG	12	8	—	6,750	5,375	6,750	2,460	6,495	5,375	6,495	2,650
ECCLQM-KT ⁸	16	16	—	6,240	6,240	7,340	2,220	6,240	6,240	7,830	2,565
ECCLQMDG-KT ⁹	16	16	6	6,240	6,240	7,340	2,220	6,240	6,240	7,830	2,565

Notes:

1. Uplift loads have been increased 60% for wind loading as permitted by the code. No further increase permitted. Reduce where other loads govern.
2. Total uplift load and lateral load is based on tested anchor failure in the pier.
3. Allowable loads are based on either a 16" square grout-filled CMU pier with f'_m of 2,000 psi or a 16" square CMU shell filled with 3,000 psi concrete. A minimum of (4) #7 vertical rebars or equivalent steel area is required. The Designer shall design and detail the GFCMU/concrete pier to resist all forces including uplift, shear, and moment.
4. Pier height per Building Designer.
5. Side beam and main beam uplift loads assume DF or SP members and are not additive.
6. The allowable loads listed for grout-filled CMU apply to solid concrete piers of 2,500 psi concrete a minimum of 16" square.
7. The allowable loads listed for CMU shell filled with 3,000 psi concrete apply to solid concrete piers of 3,000 psi concrete a minimum of 14" square.
8. The ECCLQM-KT is a kit packaged with (2) MSTQM straps and (32) SDS ¼"x2½" screws. One strap may be installed on each face of the ECCLQM (as shown), using the SDS screws into the beams and (26) 0.162"x2½" nails (not provided) into the wall framing. The MSTQM strap's allowable tension load is 6,240 lbs. If straps are not installed, table uplift applies to beam only.
9. The ECCLQMD-KT is a kit packaged with (2) MSTQM straps and (32) SDS ¼"x2½" screws. The allowable download for the deck joist connection is 5,475 lb. (2-2X joist) or 5,240 lb. (2X joist) and the allowable uplift is 2,010 lb.
10. Any side stirrup not fully supported by grout- or concrete-filled CMU has an allowable download of 7,000 lb.

TABLE 2: CCQM / CCTQM / CCCQM / ECCLQM Dimensions				
Model No.	Main Channel Width, W_1 (in.)	Side Stirrup Width, W_3 and W_4 (in.)	Main Channel Length, L_1 (in.)	Side Stirrup Length, L_2 (in.)
CCQM3.62-SDSHDG	3 $\frac{5}{8}$	—	11	—
CCQM4.62-SDSHDG	4 $\frac{5}{8}$	—	11	—
CCQM5.50-SDSHDG	5 $\frac{1}{2}$	—	11	—
CCTQM3.62-SDSG	3 $\frac{5}{8}$	3 $\frac{5}{8}$	11 $\frac{1}{2}$	4
CCTQM4.62-SDSG	4 $\frac{5}{8}$	4 $\frac{5}{8}$	13 $\frac{1}{2}$	4
CCTQM5.50-SDSG	5 $\frac{1}{2}$	5 $\frac{1}{2}$	13 $\frac{1}{2}$	4
CCCQM3.62-SDSG	3 $\frac{5}{8}$	3 $\frac{5}{8}$	11 $\frac{1}{2}$	4
CCCQM4.62-SDSG	4 $\frac{5}{8}$	4 $\frac{5}{8}$	13 $\frac{1}{2}$	4
CCCQM5.50-SDSG	5 $\frac{1}{2}$	5 $\frac{1}{2}$	13 $\frac{1}{2}$	4
ECCLQM3.62G-KT ¹	3 $\frac{5}{8}$	3 $\frac{5}{8}$	11 $\frac{1}{2}$ ²	7 $\frac{3}{4}$
ECCLQM4.62G-KT ¹	4 $\frac{5}{8}$	4 $\frac{5}{8}$	11 $\frac{1}{2}$ ²	7 $\frac{3}{4}$
ECCLQM5.50G-KT ¹	5 $\frac{1}{2}$	5 $\frac{1}{2}$	11 $\frac{1}{2}$ ²	7 $\frac{3}{4}$

Notes:

1. The MSTQM strap is a component of the ECCLQMD kits. It is 12 ga.; 3" wide and 48" long.
2. The ECCLL/RQMDG-KT has the same dimensions as ECCLQMG-KT, except $L_1 = 16\frac{1}{2}$ ".

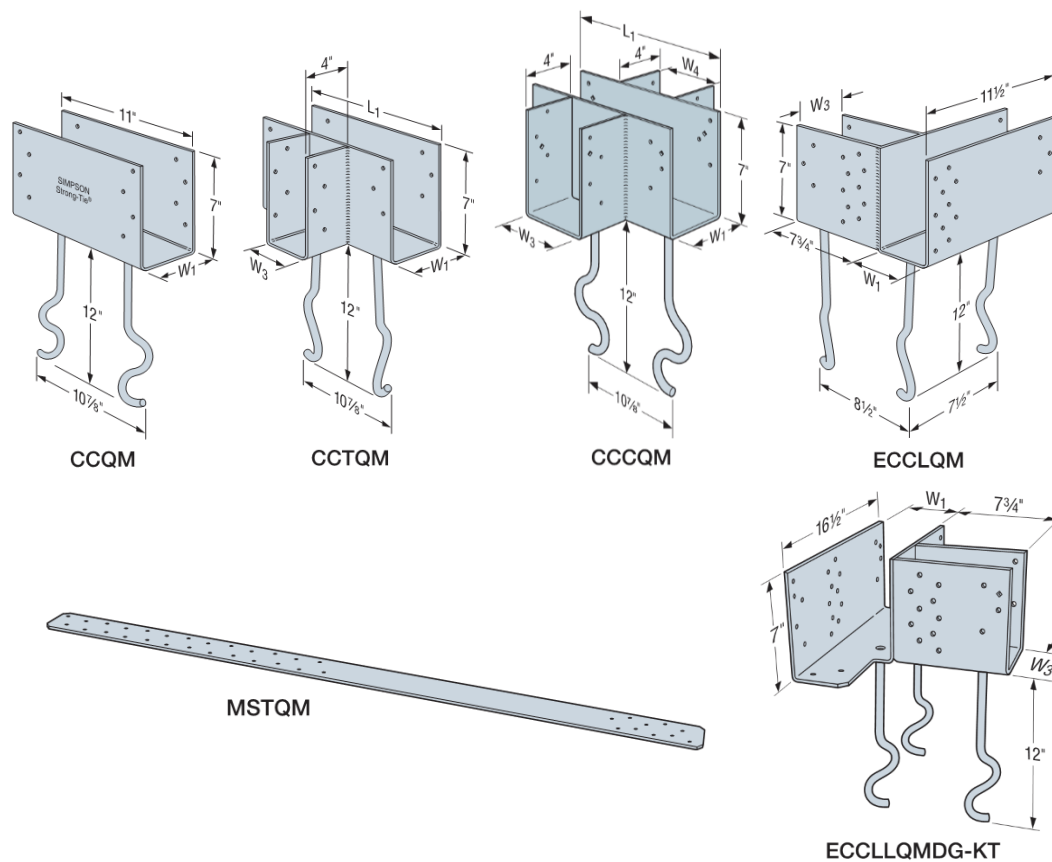


FIGURE 1: CCQM / CCTQM / CCCQM / ECCLQM / ECCLQMD / MSTQM Dimensions

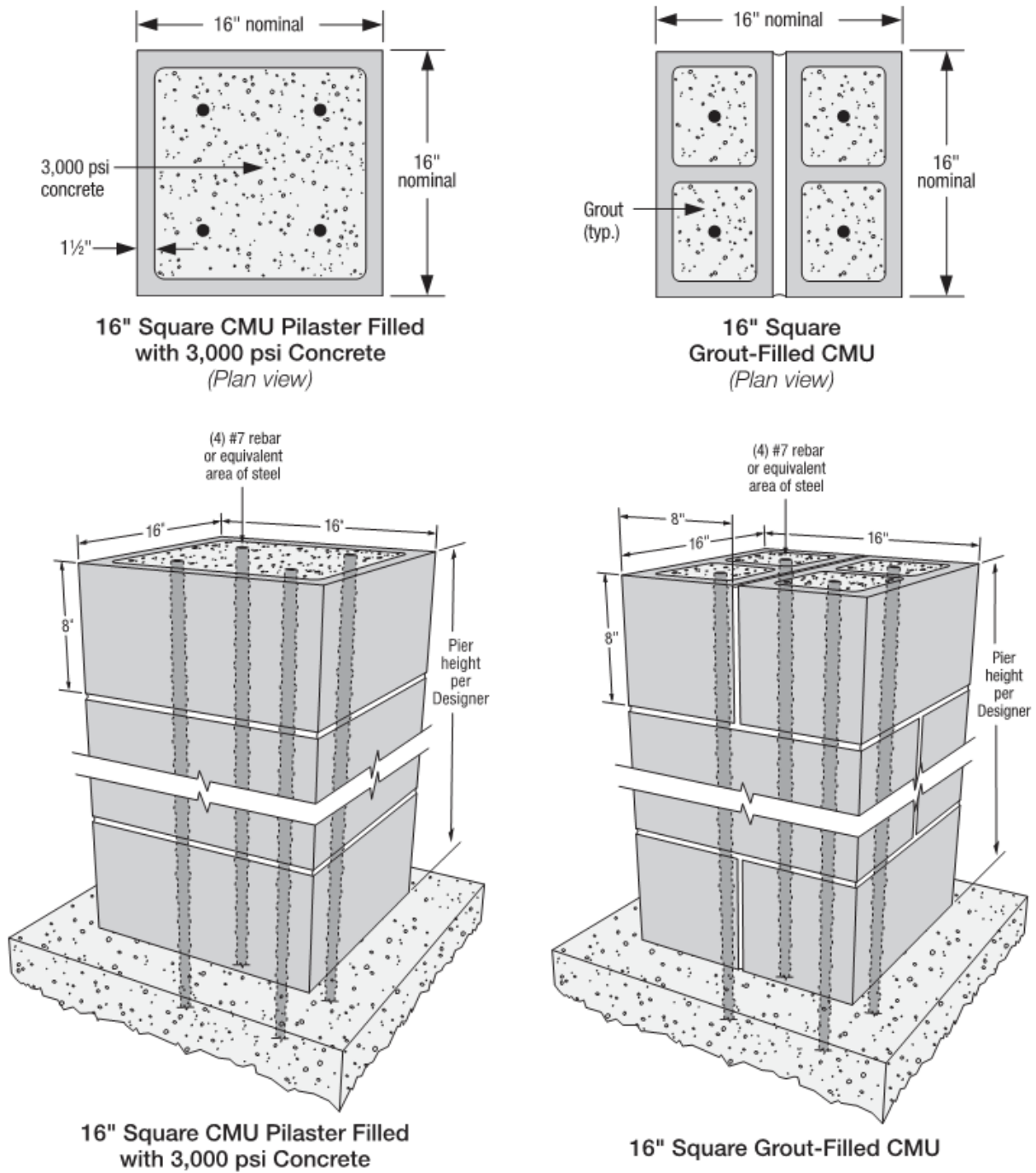
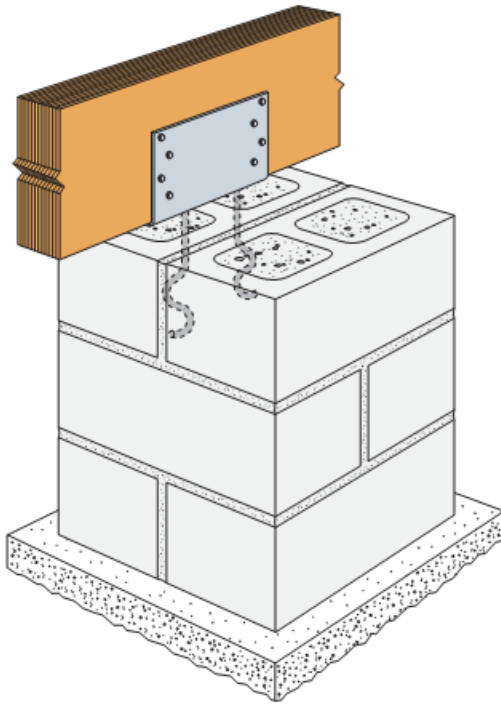
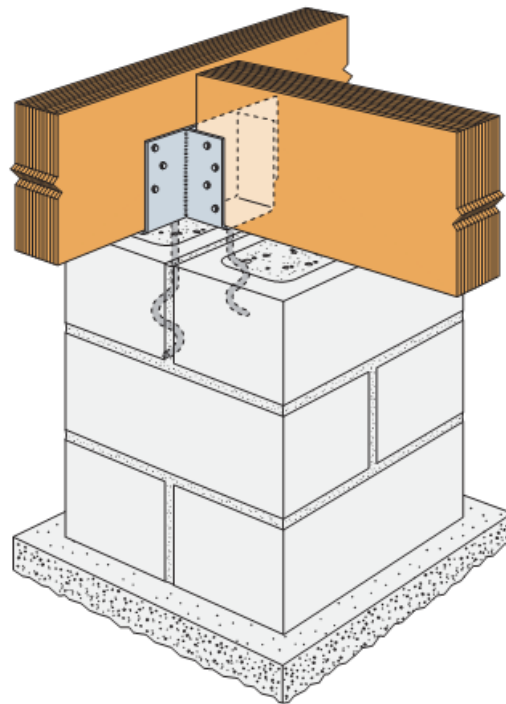


FIGURE 2: Pier Typical Dimensions and Minimum Requirements

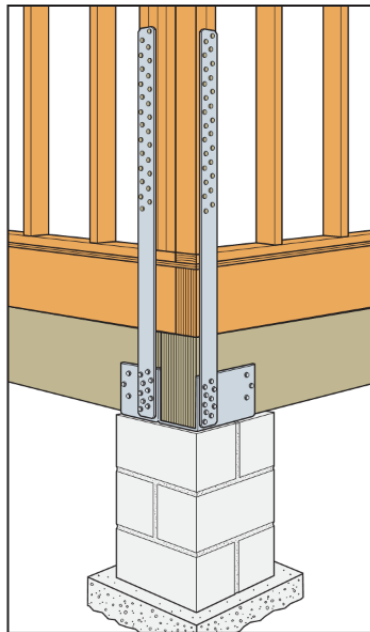
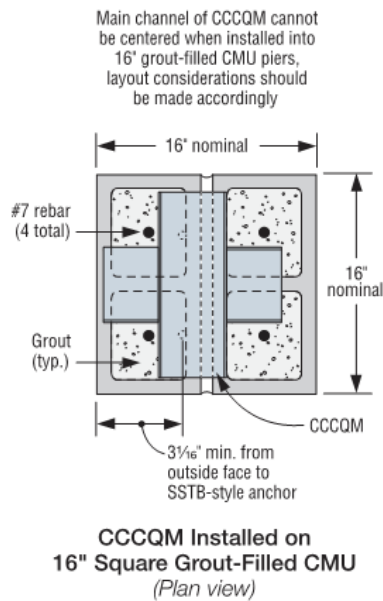


Typical CCQM Installation

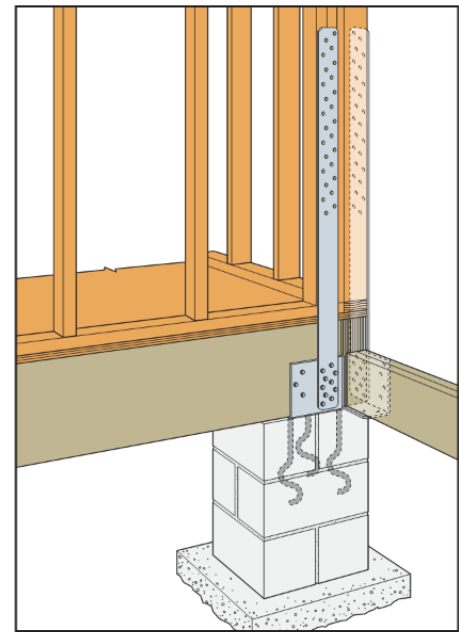


Typical CCTQM Installation

NOTE: Vertical reinforcement bars are not shown for clarity.



Typical ECCLQM Installation



Typical ECCLQMD-KT Installation

FIGURE 3: CCQM / CCTQM / CCCQM / ECCLQM / ECCLQMD / MSTQM Installation Details

TABLE 3 – LGUM and HGUM Dimensions, Fasteners and Allowable Loads

Model No.	Ga.	Dimensions (in.)			Fasteners		DF/SP Allowable Loads (lb.)			
		W	H	B	GFCMU and Concrete	Joist	Uplift ² (160)		Download (100/115/125)	
					Titen HD® Anchors ⁷	Strong-Drive® SDS Screws	GFCMU	Concrete	GFCMU	Concrete
Double 2x Sizes										
LGUM26-2	12	3 5/16	5 7/16	4	(4) 3/8"x4"	(4) 1/4"x2 1/2"	1,430		5,595	
LGUM28-2	12	3 5/16	7 3/16	4	(6) 3/8"x4"	(6) 1/4"x2 1/2"	2,435		8,250	
LGUM210-2	12	3 5/16	9 3/16	4	(8) 3/8"x4"	(8) 1/4"x2 1/2"	3,575		9,575	
Triple 2x Sizes										
LGUM26-3	12	4 15/16	5 1/2	4	(4) 3/8"x4"	(4) 1/4"x2 1/2"	1,430		5,610	
LGUM28-3	12	4 15/16	7 1/4	4	(6) 3/8"x4"	(6) 1/4"x2 1/2"	2,435		8,290	
LGUM210-3	12	4 15/16	9 1/4	4	(8) 3/8"x4"	(8) 1/4"x2 1/2"	3,575		9,715	
Quadruple 2x Sizes										
LGUM26-4	12	6 9/16	5 7/16	4	(4) 3/8"x4"	(4) 1/4"x2 1/2"	1,430		5,625	
LGUM28-4	12	6 9/16	7 3/16	4	(6) 3/8"x4"	(6) 1/4"x2 1/2"	2,435		8,335	
LGUM210-4	12	6 9/16	9 3/16	4	(8) 3/8"x4"	(8) 1/4"x2 1/2"	3,575		9,860	
4x Sizes										
LGUM46	12	3 5/8	4 7/8	4	(4) 3/8"x4"	(4) 1/4"x2 1/2"	1,430		5,600	
LGUM48	12	3 5/8	6 7/8	4	(6) 3/8"x4"	(6) 1/4"x2 1/2"	2,435		8,260	
LGUM410	12	3 5/8	8 7/8	4	(8) 3/8"x4"	(8) 1/4"x2 1/2"	3,575		9,620	
Engineered Wood & Structural Composite Lumber Sizes (Heavy Duty)										
HGUM5.25	7	5 1/4	11 to 30	5 1/4	(8) 5/8"x5"	(24) 1/4"x2 1/2"	4,105 ²	5,075 ²	14,025	14,770
HGUM5.50	7	5 1/2		5 1/4	(8) 5/8"x5"	(24) 1/4"x2 1/2"			14,000	14,915
HGUM7.00	7	7		5 1/4	(8) 5/8"x5"	(24) 1/4"x2 1/2"			13,840	14,915
HGUM7.25	7	7 1/4		5 1/4	(8) 5/8"x5"	(24) 1/4"x2 1/2"			13,810	14,915
HGUM9.00	7	9		5 1/4	(8) 5/8"x5"	(24) 1/4"x2 1/2"			13,625	14,915

Notes:

- Uplift loads have been increased 60% for wind loading as permitted by the code. No further increase permitted. Reduce where other loads govern.
- Tabulated uplift loads are based on a 4" min. distance to top of wall. For HGUM installations with a 15" min. distance to top of wall, uplift loads may be increased to 6,180 lb. for GFCMU and 6,585 lb. for concrete.
- Minimum $f_m = -2,000$ psi and $f_c = 2,500$ psi.
- LGUM must be installed on minimum 6" thick wall and HGUM on minimum 8" thick wall (nominal values for GFCMU).
- Titen HD® anchors may be installed into the head or bed joints.
- Structural composite lumber (SCL) shall have a minimum specific gravity of 0.50.
- For stainless steel LGUM and HGUM models, use 3/8"x5" and 5/8"x6" Stainless-Steel Titen HD® anchors, respectively, to achieve tabulated loads.
- SDS screws may be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Sections 7.5.3.4 & 8.9.2 are met (predrilling required through the plate using a 5/32" bit maximum).

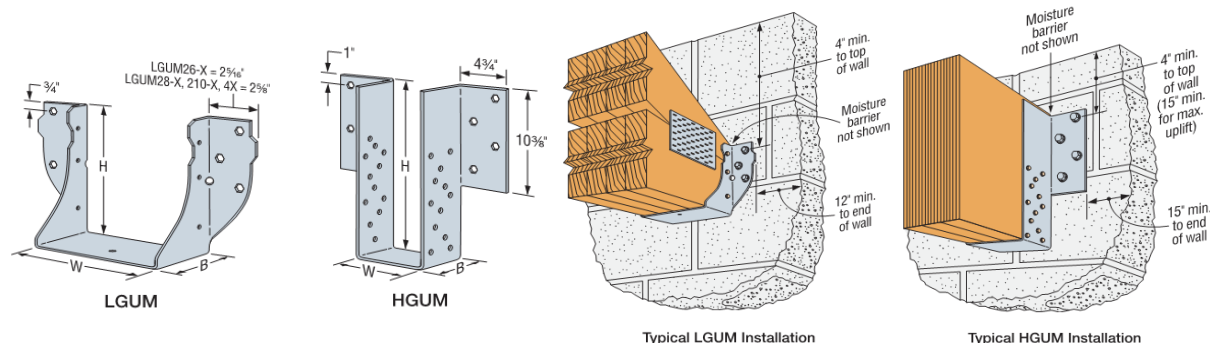


FIGURE 4: LGUM / HGUM Dimensions and Installation

TABLE 4: MBHU Dimensions, Fasteners, and Allowable Loads

Model No.	Dimensions (in.)			Fasteners		DF/SP Allowable Loads (lb.)					
				GFCMU and Concrete	Joist	End of Wall / Outside Corner				Away From Edge	
				Titen HD® Anchors ⁶	SDS Screws	GFCMU ⁵		Concrete		GFCMU ⁵ /Concrete	
	W	H	B			Uplift (160)	Download (100)	Uplift (160)	Download (100)	Uplift (160)	Download (100)
MBHU3.56/9.25	3 9/16	9 1/4	3 1/2	(2) 3/4"x5"	(12) 1/4"x2 1/2"	1,610	2,440	2,715	4,190	2,210	4,005
MBHU3.56/11.25		11 1/4									
MBHU3.56/11.88		11 7/8									
MBHU3.56/14		14				1,610	2,440	2,715	4,190	3,345	6,065
MBHU3.56/16		16									
MBHU3.56/18		18									
MBHU5.50/9.25	5 1/2	9 1/4	3 1/2	(2) 3/4"x5"	(12) 1/4"x2 1/2"	1,610	2,440	2,715	4,190	2,210	4,005
MBHU5.50/11.25		11 1/4									
MBHU5.50/11.88		11 7/8									
MBHU5.50/14		14				2,240	3,260 ⁴	3,485	6,970	3,345	6,065
MBHU5.50/16		16									
MBHU5.50/18		18									

Notes:

1. Uplift loads have been increased 60% for wind loading as permitted by the code. No further increase permitted. Reduce where other loads govern.
2. Minimum $f'_m = 2,000$ psi and $f'_c = 2,500$ psi.
3. Structural composite lumber (SCL) shall have a minimum specific gravity of 0.50.
4. Where noted in the table, download is for End of Wall condition. Download for Outside Corner is 3,640 lb.
5. Allowable loads only apply to installation on 8" nominal grouted CMU walls, with a minimum of one horizontal #5 rebar located in the top course.
6. For stainless steel MBHU models, use 3/4"x6" Stainless-Steel Titen HD® anchors to achieve tabulated loads.

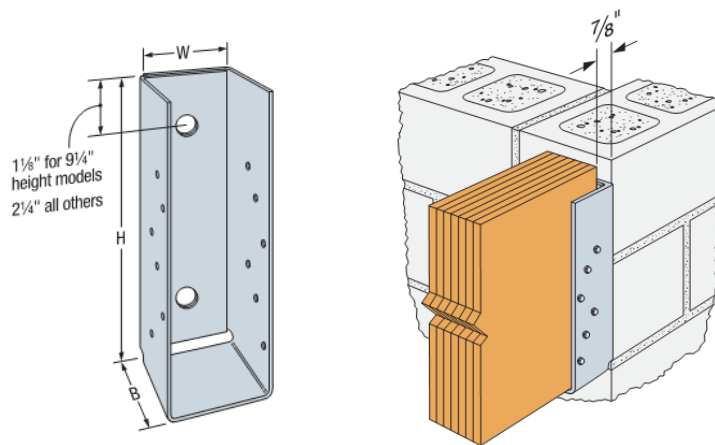


FIGURE 5: MBHU Dimensions and Installation Detail

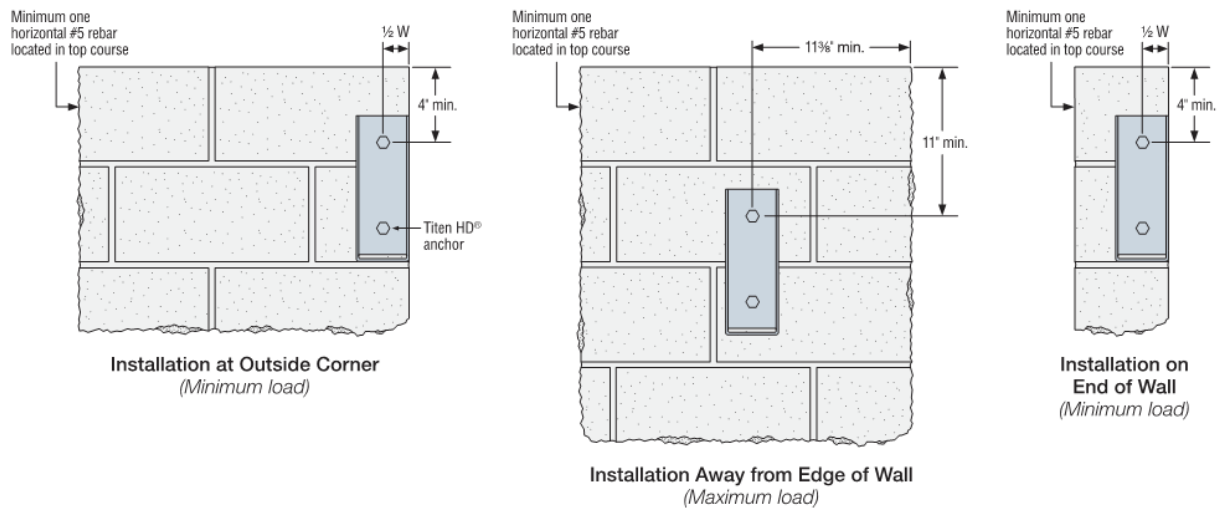


FIGURE 6: MBHU Installation Location Options

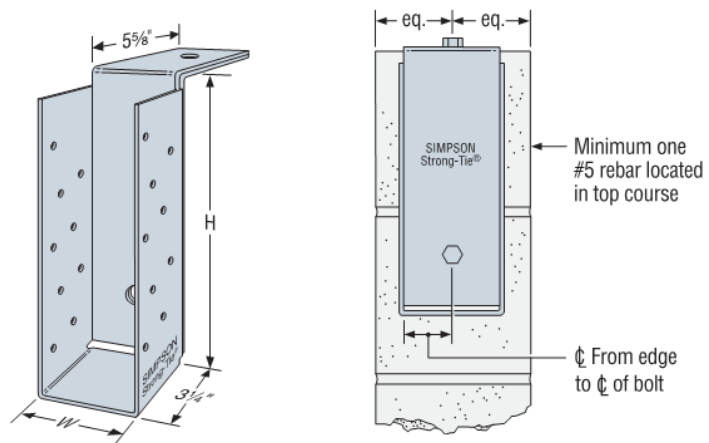


FIGURE 7: MBHA Dimensions and Installation Detail

TABLE 5: MBHA Dimensions, Fasteners, and Allowable Loads								
Model No.	Dimensions (in.)			Fasteners			DF/SP Allowable Loads (lb.)	
				GFCMU / Concrete ^{2,3}		Joist	GFCMU / Concrete ^{6,7}	
	W	H	B	Top	Face		Uplift (160)	Download (100)
MBHA3.56/7.25	3 ⁹ / ₁₆	7 ¹ / ₄	3 ¹ / ₄	(1) ATR ³ / ₄ ⁴	(1) ATR ³ / ₄ ⁵	(18) 0.148"×3"	1,885	4,380
MBHA5.50/7.25	5 ¹ / ₂	7 ¹ / ₄	3 ¹ / ₄					
MBHA3.12/9.25	3 ¹ / ₈	9 ¹ / ₄	3 ¹ / ₄	(1) ATR ³ / ₄ ⁴	(1) ATR ³ / ₄ ⁴	(18) 0.148"×3"	3,475 ⁷	6,275 ⁷
MBHA3.12/11.25	3 ¹ / ₈	11 ¹ / ₄	3 ¹ / ₄					
MBHA3.56/9.25	3 ⁹ / ₁₆	9 ¹ / ₄	3 ¹ / ₄					
MBHA3.56/11.25	3 ⁹ / ₁₆	11 ¹ / ₄	3 ¹ / ₄					
MBHA3.56/11.88	3 ⁹ / ₁₆	11 ⁷ / ₈	3 ¹ / ₄					
MBHA3.56/14	3 ⁹ / ₁₆	14	3 ¹ / ₄					
MBHA3.56/16	3 ⁹ / ₁₆	16	3 ¹ / ₄					
MBHA3.56/18	3 ⁹ / ₁₆	18	3 ¹ / ₄					
MBHA5.50/9.25	5 ¹ / ₂	9 ¹ / ₄	3 ¹ / ₄					
MBHA5.50/11.25	5 ¹ / ₂	11 ¹ / ₄	3 ¹ / ₄					
MBHA5.50/11.88	5 ¹ / ₂	11 ⁷ / ₈	3 ¹ / ₄					
MBHA5.50/14	5 ¹ / ₂	14	3 ¹ / ₄					
MBHA5.50/16	5 ¹ / ₂	16	3 ¹ / ₄					
MBHA5.50/18	5 ¹ / ₂	18	3 ¹ / ₄					

Notes:

1. Uplift loads have been increased 60% for wind loading as permitted by the code. No further increase permitted. Reduce where other loads govern.
2. Minimum $f_m = 2,000$ psi and $f_c = 2,500$ psi.
3. ATR is all-thread rod, ³/₄" diameter, grade A307 or better.
4. Loads for MBHA are based on installation using Simpson Strong-Tie® ET-3G™ Epoxy Adhesive or Simpson Strong-Tie SET-3G™ High-Strength Epoxy Adhesive with 6³/₄" minimum embedment required.
5. MBHA hangers with height of 7¹/₄" require a 3¹/₂" minimum embedment of the face bolt using ET-3G Epoxy Adhesive or Simpson Strong-Tie SET-3G High-Strength Epoxy Adhesive.
6. Alternate anchorage permitted when designed by others to have equivalent or better capacity.
7. MBHA hangers with height of 9¹/₄" and greater installed into concrete achieve 3,980 lb. uplift (160) and 6,790 lb. download (100).

11. REFERENCES:

Florida Building Code, Building 8th Edition (2023)

Section 104.11	Alternative materials, design, and methods of construction and equipment
Chapter 19	Concrete
Chapter 21	Masonry
Chapter 22	Steel
Chapter 23	Wood

Florida Building Code, Residential 8th Edition (2023)

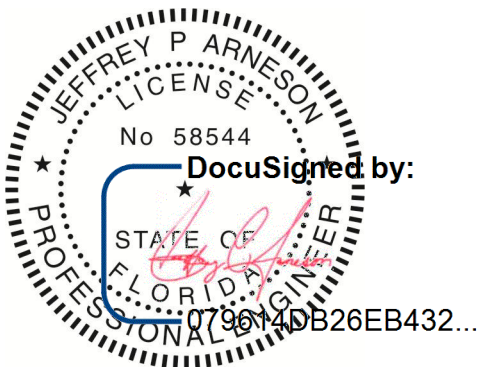
R101.2	Scope
R4405	HVHZ Concrete
R4407	HVHZ Masonry
R4408	HVHZ Steel
R4409	HVHZ Wood

Standards

AISI S100 (w/ S2)	2016 (2020)
ANSI/AWC NDS	2018
ASTM D7147	2011R18

12. IDENTIFICATION:

Each connector covered by this report shall be stamped with the manufacturer's name and/or trademark and the product name.



Jax Apex Technology, Inc.
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August 9, 2023