

HOLLOW COLUMN UPLIFT CONNECTIONS

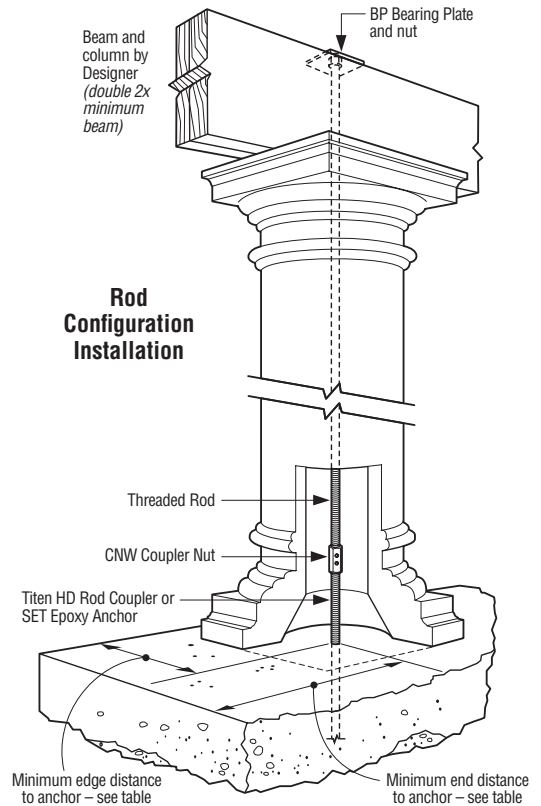
Install hollow column anchorage after the concrete pour, eliminating the need to determine the precise placement of the column during layout. Uplift loads are achieved with a concealed connection using a combination of Simpson Strong-Tie Anchor Systems® mechanical or adhesive anchors and threaded rod or coil strap.

Rod Configuration

This connection utilizes the Simpson Strong-Tie® Titen HD® Rod Coupler or Epoxy-Tie® SET anchoring epoxy for concrete anchorage. A coupler nut, threaded rod and a bearing plate and nut complete the connection to the beam at the top of the column.

INSTALLATION

- 1) Select the appropriate rod and bearing plate from the table for the required uplift load.
- 2) Choose either the Titen HD Rod Coupler or SET epoxy solution based upon desired performance characteristics.
- 3) Mark the slab for the center location of the column.
- 4) Drill the hole to the specified diameter and depth per requirements for the selected anchor (see table). Minimum concrete thickness shall be 1.5x embedment depth.
- 5) Install the selected anchor per the installation instructions on the product packaging. For additional installation information reference the Simpson Strong-Tie Anchor Systems *Anchoring and Fastening Systems for Concrete and Masonry* catalog or visit www.simpsonanchors.com.
- 6) Drop the appropriate length of A307 threaded rod down the hollow column.
- 7) Install the beam, drill the appropriate diameter hole in the beam, and run the rod up through the beam. The Designer should be consulted for approval to drill through the beam.
- 8) Install the CNW coupler nut onto the anchor and install the threaded rod into the coupler nut. Anchor and rod should be visible in the CNW coupler nut Witness® holes after installation.
- 9) Fasten the rod on top of the beam with a nut and the appropriate bearing plate chosen from the table.



Allowable Uplift Loads: Rod Configuration

Threaded Rod Diameter	Anchor	Anchor Drill Bit Diameter	Minimum Embedment Depth	Minimum End Distance	Minimum Edge Distance	Bearing Plate Model No.	Coupler Nut Model No.	Uplift Capacity ⁶		
								SPF	SP	DF
TITEN HD ROD COUPLER⁴ ANCHORAGE										
1/2" ATR	THD501038C	1/2"	8"	16"	1 3/4"	BP1/2-3	— ⁵	3720	3750	3750
SET EPOXY ANCHORAGE^{7,8}										
1/2" ATR	1/2" ATR	5/8"	4 1/4"	3"	3"	BP1/2-3	CNW1/2	2420	2420	2420
5/8" ATR	5/8" ATR	3/4"	5"	5"	4"	BP5/8-3	CNW5/8	3670	3675	3675
3/4" ATR	3/4" ATR	7/8"	6 3/4"	7"	3"	BP3/4	CNW3/4	2990	3980	4400
7/8" ATR	7/8" ATR	1"	7 3/4"	8"	4"	BP7/8	CNW7/8	3530	4695	5195
1" ATR	1" ATR	1 1/8"	9"	9"	4"	BP1	CNW1	4830	6420	7100

1. See current Simpson Strong-Tie *Anchoring and Fastening Systems for Concrete and Masonry* catalog for complete SET epoxy and THDC installation details.
2. Allowable loads have been increased for wind loading with no further increase allowed.
3. Minimum concrete compressive strength is 2500psi.
4. 5/8" Wrench size required.
5. Titen HD rod coupler includes coupler nut for 1/2" diameter threaded rod.
6. System capacity limited by perpendicular to grain wood bearing capacity (*SPF* = 425psi, *SP* = 565psi, *DF* = 625psi), rod tension capacity or anchorage capacity.
7. Anchor length must be at least 2" longer than embedment depth.
8. Designer may modify epoxy embedment depth and edge and end distances per the *Anchoring and Fastening Systems for Concrete and Masonry* catalog.
9. Threaded rod shall be ASTM A307.



TITEN HD® Heavy-Duty Screw Anchor

The Titen HD is a patented, high-strength screw anchor for concrete and masonry. The self-undercutting, non-expansion characteristics of the anchor make it ideal for structural applications, even at minimum edge distances and under reduced spacing conditions.

WARNING: Recommended for permanent dry, interior, non-corrosive environments or provide a moisture barrier. Contact Simpson Strong-Tie for more information.

CODES: ICC ESR-1056; City of L.A. RR 25560; FL 2304.2

Titen HD Anchor (for CMST Strap Configuration)

U.S. Patent 5,674,035 & 6,623,228



Titen HD Rod Coupler (for Rod Configuration)



SET High Strength Epoxy

Epoxy-Tie SET epoxy is a two-component, low odor, 1:1 ratio, 100% solids epoxy-based adhesive for use as a high strength, non-shrink anchor grouting material. Resin and hardener are dispensed and mixed simultaneously through the mixing nozzle.

CODES: ICC ESR-1772; City of L.A. RR 25279; FL 5550.3



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For more information on Simpson Strong-Tie Anchor Systems products see the *Anchoring and Fastening Systems for Concrete and Masonry* catalog or visit www.simpsonanchors.com.

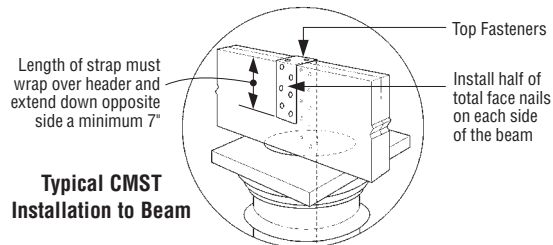
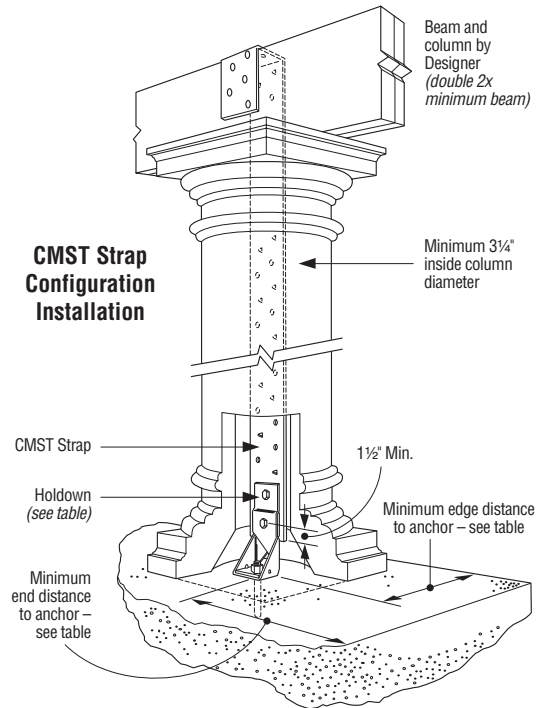
HOLLOW COLUMN UPLIFT CONNECTIONS

CMST Strap Configuration

This connection utilizes the Simpson Strong-Tie® Titen HD® or Epoxy-Tie® SET anchoring epoxy for concrete anchorage. A holddown, machine bolts and a field-cut CMST strap complete the connection to the beam at the top of the column. The minimum inside diameter of the column must be 3¼" for the CMST strap and a minimum base opening diameter of approximately 7" is required for the HDA holddown. Consult the column manufacturer for minimum column opening diameters.

INSTALLATION

- 1) Select the appropriate holddown/anchor/strap combination from the table for the required uplift load.
- 2) Mark the slab for the center location of the column.
- 3) Drill the hole to the specified diameter and depth per requirements for the selected anchor (*see table*). Minimum concrete thickness shall be 1.5x embedment depth.
- 4) Install the holddown using the selected anchor, installing the anchor per the installation instructions on the product packaging. For additional installation information reference the Simpson Strong-Tie Anchor Systems® *Anchoring and Fastening Systems for Concrete and Masonry* catalog or visit www.simpsonanchors.com.
- 5) Cut the CMST strap to length so that:
 - a) The strap can be installed over the top of the beam (*as shown in the drawing*) leaving an additional 1½" from the last face nail to the end of the strap.
 - b) The strap runs down the center of the column to connect with the holddown leaving an additional 1½" of the strap below the bottom hole in the holddown.
- 6) Overlap the CMST strap with the back side of the holddown and mark the locations for the holddown bolt holes (*maintaining the 1½" edge distance*).
- 7) Drill the holes in the strap and attach it to the holddown using the strap bolts called out in the table (*see table for drill bit and bolt size*).
- 8) Set the column in place and pull the CMST strap tight over the top of the beam, bending it so it sits snug. While the strap is held tight, fasten it to the beam using the fasteners shown in the table.



Allowable Uplift Loads: CMST Strap Configuration

Holddown Model No.	Anchor	Anchor Drill Bit Diameter	Minimum Embedment Depth	Minimum End Distance	Minimum Edge Distance	Strap Model No.	Strap Bolts		Drill Bit Diameter (Strap)	Fasteners		Uplift Capacity (lbs)
							Qty.	Dia.		Face (Total)	Top	
TITEN HD ANCHORAGE⁴												
HD2A	THD501200H ⁴	½"	10"	4½"	1¾"	CMST14	2	5/8"	1 1/16"	(8) 10d	(2) 10d	2820
	THD501200H ⁴	½"	10"	8"	1¾"	CMST14	2	5/8"	1 1/16"	(12) 10d	(2) 10d	3620
SET EPOXY ANCHORAGE^{5,7}												
HD2A	5/8" ATR	¾"	5"	7 1/2"	4"	CMST14	2	5/8"	1 1/16"	(8) 10d	(2) 10d	2820
	5/8" ATR	¾"	5"	7 1/2"	4"	CMST14	2	5/8"	1 1/16"	(12) 10d	(2) 10d	3620
HD6A	7/8" ATR	1"	7¾"	8"	4"	CMST14	2	7/8"	1 5/16"	(12) 10d	(2) 10d	4110
	7/8" ATR	1"	7¾"	8"	4"	CMST12	2	7/8"	1 5/16"	(20) 10d	(2) 10d	5845

1. See current Simpson Strong-Tie *Anchoring and Fastening Systems for Concrete and Masonry* catalog for complete SET epoxy and Titen HD anchor installation details.
2. Allowable loads have been increased for wind loading with no further increase allowed.
3. Minimum concrete compressive strength is 2500psi.
4. ¾" Wrench size required.
5. Anchor length must be at least 2" longer than embedment depth.
6. Threaded rod shall be ASTM A307.
7. Designer may modify epoxy embedment depth and edge and end distances per the *Anchoring and Fastening Systems for Concrete and Masonry* catalog.
8. **NAILS:** 10d = 0.148" dia. x 3" long.

This technical bulletin is effective until January 31, 2011, and reflects information available as of September 1, 2008. This information is updated periodically and should not be relied upon after January 31, 2011; contact Simpson Strong-Tie for current information and limited warranty or see www.strongtie.com.