TECHNICAL BULLETIN

HOLLOW COLUMN UPLIFT CONNECTIONS

SIMPSON Strong-Tie®

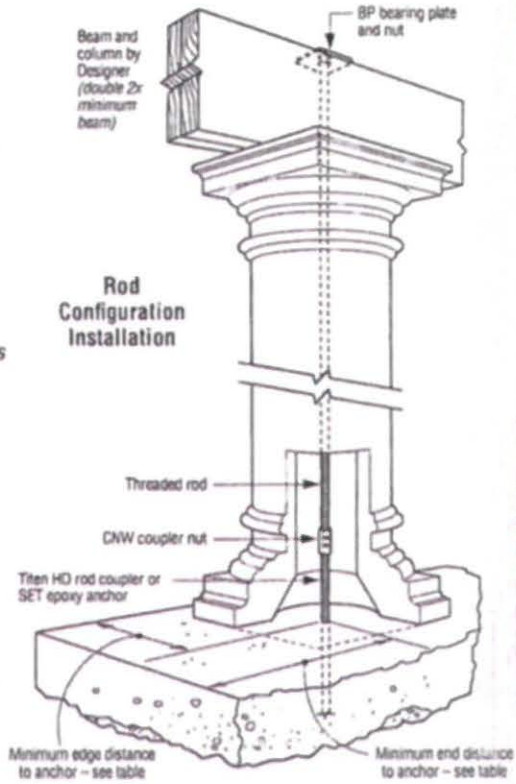
Install hollow column anchorage after the concrete pour, eliminating the need to determine the precise placement of the column during layout. Uplift loads are achieved with a concealed connection using a combination of Simpson Strong-Tie mechanical or adhesive anchors and threaded rod or coil strap.

Rod Configuration

This connection utilizes the Simpson Strong-Tie® Titen HD® Rod Coupler or SET® epoxy anchoring adhesive 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 adhesive solution based upon desired performance characteristics.
3) Mark the slab for the center location of the column.
   Note: Refer to table below for minimum edge and end distance. Slab must have minimum concrete cover of 2x anchor embedment opposite the edge and end slab terminus used for anchor location.
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 (refer to the Simpson Strong-Tie® *Anchoring and Fastening Systems for Concrete and Masonry* catalog or ***www.strongtie.com*** for additional installation information).
   Note: For SET epoxy solutions, after the adhesive has fully cured, fully install the CNW coupler nut onto the epoxy-anchored threaded rod prior to installing the hollow column. Confirm that the anchored rod is visible in the Witness® holes of the CNW coupler nut prior to column installation.
6) Drop the appropriate length of 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 threaded rod into the CNW coupler nut or the threaded head of the Titen HD rod coupler.
9) Attach the rod to the top of the beam with a nut and the appropriate bearing plate chosen from the table.



Allowable Uplift Loads: Rod Configuration

Threaded Rod Diameter (in.)	Anchor	Anchor Drill Bit Diameter (in.)	Minimum Embedment Depth (in.)	Minimum End Distance (in.)	Minimum Edge Distance (in.)	Bearing Plate Model No.	Coupler Nut Model No.	Uplift Capacity[9] (lbs.) SPF	SP	DF
TITEN HD ROD COUPLER[5] ANCHORAGE										
½"	THD50934RC	½	8	16	1¾	BP½-3	—[5]	3720	3885	3885
SET EPOXY ANCHORAGE[1,4,8]										
½"	½" ATR	⅝	4¼	3	3	BP½-3	CNW½	2445	2445	2445
⅝"	⅝" ATR	¾	5	5	4	BP⅝-3	CNW⅝	3670	3675	3675
¾"	¾" ATR	⅞	6¾	7	3	BP¾	CNW¾	2990	3980	4400
⅞"	⅞" ATR	1	7⅞	8	4	BP⅞	CNW⅞	3530	4695	5195
1"	1" ATR	1⅛	9	9	4	BP1	CNW1	4830	6420	7100

USE ↓ * → S.R.H.

1. See current Simpson Strong-Tie *Anchoring and Fastening Systems for Concrete and Masonry* catalog for complete SET epoxy and Titen HD 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. Titen HD rod coupler includes coupler nut for ½" 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 F1554 Grade 36, A36, or A307 (F_u = 58ksi).

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-2713; City of L.A. RR 25741; FL 11506.7

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

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.

SET22

For more information about Simpson Strong-Tie® products, see the *Anchoring and Fastening Systems for Concrete and Masonry* catalog or visit ***www.strongtie.com***.

This technical bulletin provides allowable load values and solutions for anchors in connections between light-frame construction and concrete. The allowable load values for the post-installed anchor products are based on testing and/ or finite element analysis (FEA) into uncracked concrete and the application of a safety factor of 4.0.

This guide is limited to the determination of potential connection solutions between light-frame construction and uncracked concrete in wind and low-seismic regions (any structure in seismic design categories A and B, and detached one- and two-family dwellings in seismic design category C.) The use and determination of the applicability of the information presented in this guide to specific projects is the responsibility of the Designer and is subject to approval by the authority having jurisdiction.

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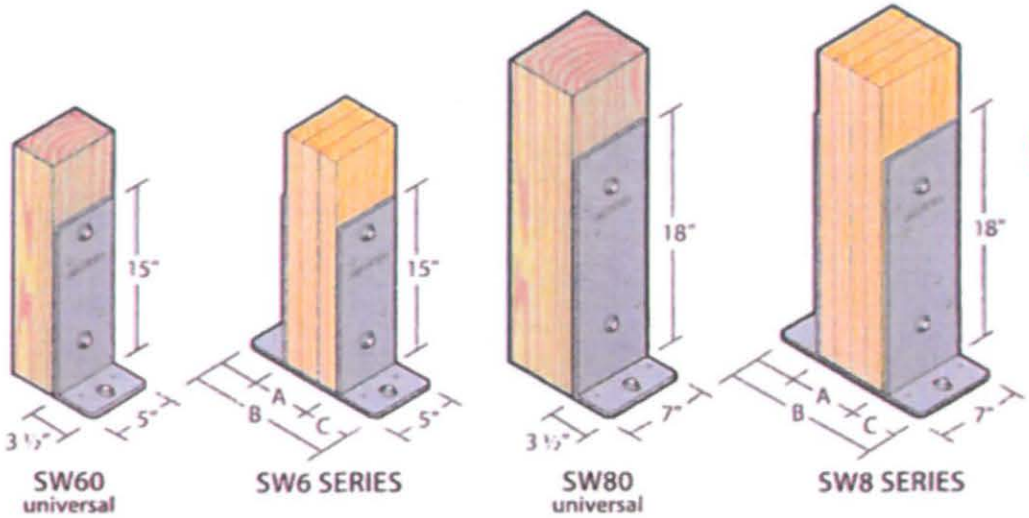
column. Glued laminated columns are acceptable; however, appropriately sized wood shims need to be added on both sides of the pocket to provide a snug fit as shown in Figure 2.2 (⅛" total tolerance is acceptable). **The shim should be APA B-C Exterior plywood (or equivalent), no more than ¼" thick, and have the same dimensions as the vertical leg of the bracket. The shim should be fastened to the column with 2 beads of Builders Choice 490 construction adhesive by Liquid Nails (or equal) and (6) 0.113"x2.375" nails.** The single brackets (SW60, SW80) shall be used as pairs and fastened using the same connectors as the fully assembled brackets.



	Type	Dim A I.D.	Dim B O.D.	Dim C	Anchor Center
SW46	4" X 6" Post	3 5/8"	12 1/8"	4"	9 3/8"
SW66	6" X 6" Post	5 5/8"	13 5/8"	3 3/4"	10 7/8"
SW63	3 PLY 6" Lam Col	4 5/8"	12 1/8"	3 1/2"	9 3/8"
SW64	4 PLY 6" Lam Col	6 1/8"	13 5/8"	3 1/2"	10 7/8"
SW83	3 PLY 8" Lam Col	4 5/8"	12 1/8"	3 1/2"	9 3/8"
SW84	4 PLY 8" Lam Col	6 1/8"	13 5/8"	3 1/2"	10 7/8"
SW85	5 PLY 8" Lam Col	7 5/8"	15 1/8"	3 1/2"	12 3/8"

Figure 2.1: Sturdi-Wall Descriptions

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