

STRUCTURAL MATERIALS TESTING BRANCH  
OFFICE OF STRUCTURAL MATERIALS TESTING  
CALIFORNIA DEPARTMENT OF TRANSPORTATION

**AUTHORIZED STUD MECHANICAL EXPANSION ANCHORS**

Type	Manufacturer	Name	Stud Diameter	Model	Min. Hole Depth	Drill Bit Diameter	Drill Bit Tip Tolerance	Installation Torque
Wedge	Powers Fastners (Rawplug)	Power Stud	1/4 inch	7400 1/4" $\phi$ x 1-3/4"	1-1/8"	1/4"	0.260"/0.268" (min/max)	8 ft-lbs
Wedge	Powers Fastners (Rawplug)	Power Stud	1/2 inch	7422 1/2" $\phi$ x 3-3/4"	2-1/4"	1/2"	0.520"/0.530" (min/max)	60 ft-lbs
Wedge	Powers Fastners (Rawplug)	Power Stud	3/4 inch	7440 3/4" $\phi$ x 4-1/4"	3-3/8"	3/4"	0.775"/0.787" (min/max)	175 ft-lbs
External Plug	Powers Fastners (Rawplug)	Set-Bolt	1/2 inch	7145 1/2" $\phi$ x 2-3/4"	1-7/8"	1/2"	0.520"/0.530" (min/max)	50 ft-lbs
External Plug	Powers Fastners (Rawplug)	Set-Bolt	3/4 inch	7189 3/4" $\phi$ x 4-1/4"	2-7/8"	3/4"	0.775"/0.787" (min/max)	125 ft-lbs

Notes: (No changes have been made to the content of this list since April 26, 2013)

1. Installation Tool: 3835-0700 is required for installing 1/2-inch diameter external-plug stud-bolt anchor.
2. Authorized anchors have been creep tested per CT 681. Washers and nuts should accompany the anchors.
3. This table lists basic installation details for authorized anchors, see Caltrans Standard Specifications if manufacturer installation torque is not provided.
4. Anchor lengths shown are minimum acceptable lengths - the use of longer anchors is permitted without further testing.
5. Stud anchor is typically electroplated with Zinc and is not suitable in a corrosive environment.

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Wedge	Star	Wedge-Type Stud Bolt	1/2 inch	3535-36000 1/2" $\phi$ x 3-3/4"	2-1/4"	1/2"	0.520"/0.530" (min/max)	50 ft-lbs
Wedge	Star	Wedge-Type Stud Bolt	3/4 inch	3555-42000 3/4" $\phi$ x 4-1/4"	3-1/4"	3/4"	0.775"/0.787" (min/max)	175 ft-lbs
External Plug	Star	Stud-Bolt Anchor <sup>1</sup>	1/2 inch	3835-26000 1/2" $\phi$ x 2-3/4"	1-3/4"	1/2"	0.520"/ 0.530" (min/max)	50 ft-lbs

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Type	Manufacturer	Name	Stud Diameter	Model	Min. Hole Depth	Drill Bit Diameter	Drill Bit Tip Tolerance	Installation Torque
Wedge	ITW Ramset/Red Head	Trubolt	1/4 inch	WS 1432 1/4"φ x 3- 1/4"	2"	1/4"	0.260"/0.268" (min/max)	8 ft-lbs
Wedge	ITW Ramset/Red Head	Trubolt	3/8 inch	WS 3850 3/8" φ x 5"	3"	3/8"	0.390"/0.398" (min/max)	25 ft-lbs
Wedge	ITW Ramset/Red Head	Trubolt	5/8 inch	WS 5870 5/6" φ x 7"	5"	5/8"	0.650"/0.660" (min/max)	90 ft-lbs
Wedge	ITW Ramset/Red Head	Trubolt	3/4 inch	WS 3470 3/4" φ x 7"	5"	3/4"	0.775"/0.787" (min/max)	175 ft-lbs
External Plug	ITW Ramset/Red Head	Stud Anchor	1/2 inch	JS-12C 1/2"φ x 2- 3/4"	1-7/8"	1/2"	0.520"/0.530" (min/max)	50 ft-lbs

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Type	Manufacturer	Name	Stud Diameter	Model	Min. Hole Depth	Drill Bit Diameter	Drill Bit Tip Tolerance	Installation Torque
Wedge	Simpson Strong Tie	Strong Bolt 2	3/8 inch	CS STB2 & SS STB2 3/8" $\phi$ x 5"	2-7/8"	3/8"	0.390"/0.398" (min/max)	30 ft-lbs
Wedge	Simpson Strong Tie	Strong Bolt 2	1/2 inch	CS STB2 & SS STB2 1/2" $\phi$ x 5-1/2"	2-3/4"	1/2"	0.520"/0.530" (min/max)	60 ft-lbs
Wedge	Simpson Strong Tie	Strong Bolt 2	5/8 inch	CS STB2 & SS STB2 5/8" $\phi$ x 7"	3-3/8"	5/8"	0.650"/0.660" (min/max)	90 ft-lbs

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