



Cracked Concrete Anchors



KEY FEATURES/BENEFITS

- Proprietary design meets the strict acceptance criteria in the 2003 and 2006 International Building Code for post-installed anchoring applications
- Category 1 design criteria ICC Report Number ESR-2777
- Superior performance design works in cracked concrete for both seismic and wind load conditions
- Corrosion resistant stainless steel clip increases service life
- 4-Line marking around the length identification stamp allows for post-installation inspection of anchor for both length and code adherence
- 360° Segment contact equalizes the load distribution, providing greater load carrying capacity and a more forgiving design
- New contour design for ease of installation.
- The safe and reliable expansion mechanism of the anchor works in both normal and extreme load conditions
- Dog point section prevents damage during installation
- Through hole installation: The anchor can be passed through a pre-punched hole for ease of installation
- Unique safety shoulder supports the clip when the anchor is under strain

*Drill Bits on Page 11-13

SPECIFICATIONS & APPROVALS

ANKR-TITE CCAT WEDGE ANCHOR FOR CRACKED AND UNCRACKED CONCRETE

Compliance with the following codes:

- 2006 INTERNATIONAL BUILDING CODE® (2006 IBC)
- 2006 INTERNATIONAL RESIDENTIAL CODE® (2006 IRC)
- 2003 INTERNATIONAL BUILDING CODE® (2003 IBC)
- 2003 INTERNATIONAL RESIDENTIAL CODE® (2003 IRC)
- 2000 INTERNATIONAL BUILDING CODE® (2000 IBC)
- 2000 INTERNATIONAL RESIDENTIAL CODE® (2000 IRC)
- 1999 STANDARD BUILDING CODE© (SBC)
- 1997 UNIFORM BUILDING CODE™ (UBC)
- 2007 FLORIDA BUILDING CODE (BC & RC)

TYPE

Anchor Body	C1035
Anchor Clip	AISI Type 316
Washer	ASTM F844
Nut	ASTM A563 Grade A
Zinc Plated	ASTM B-633 With clear cromate added.
Federal Specifications	QQZ-325, Type II, Class 3
ICC Report Number	ESR-2777
	1/2, 5/8 and 3/4

ANKR-TITE CCAT WEDGE ANCHOR INSTALLATION INFORMATION¹

Characteristic	Symbol	Units	Nominal Anchor Diameter (inch)					
			1/2		5/8		3/4	
INSTALLATION INFORMATION								
Outside Diameter	d_0	in.	1/2		5/8		3/4	
Drill Bit Diameter	d	in.	1/2		5/8		3/4	
Installation Torque	T_{inst}	ft-lbf	75		125		225	
Minimum Nominal Embedment Depth	h_{nom}	in.	3 1/4	5 1/2	4	6 3/8	4 1/2	7 3/4
Effective Embedment Depth	h_{ef}	in.	2 3/4	5	3 3/8	5 3/4	3 3/4	7
Critical Edge Distance	c_{ac}	in.	4 1/8	7 1/2	5	8 5/8	7 1/2	10 1/2
Minimum Edge Distance	c_{min}	in.	5 1/2		5		5 5/8	
Minimum Spacing	s_{min}	in.	8 1/4		9 1/4		5 5/8	
Minimum Concrete Thickness	h_{min}	in.	6	10	6 3/4	11 1/2	7 1/2	14
ANCHOR DATA								
Specified Yield Strength of Anchor Steel	f_{ya}	psi	88,000		83,000		73,000	
Specified Tensile Strength of Anchor Steel	f_{uta}	psi	110,000		104,000		91,000	
Effective Tensile and Shear Stress Area	A_{se}	in ²	0.116		0.144		0.219	

NOTES:

■ For **SI**: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m, 1 psi = 6.89 Pa, 1 in² = 645 mm², 1 lb/in = 0.175 N/mm.

¹The information presented in this table is to be used in conjunction with the design criteria of ACI 318 Appendix D.

ANKR-TITE CCAT WEDGE ANCHOR CHARACTERISTIC TENSION STRENGTH DESIGN VALUES^{1,2,3}

Characteristic	Symbol	Units	Nominal Anchor Diameter (inch)					
			1/2		5/8		3/4	
Anchor Category	1, 2 or 3	—	1		1		1	
Effective Embedment Depth	h_{ef}	in.	2 3/4	5	3 3/8	5 3/4	3 3/4	7
Steel Strength in Tension (ACI 318 Section D.5.1)⁴								
Tension Resistance of Steel	N_{sa}	lbf	12,760		14,980		19,930	
Strength Reduction Factor–Steel Failure	ϕ_{sa}	—	0.65					
Concrete Breakout Strength in Tension (ACI 318 Section D.5.2)								
Effectiveness Factor–Uncracked Concrete	k_{uncr}	—	24					
Effectiveness Factor–Cracked Concrete	k_{cr}	—	17					
Ratio of k_{uncr}/k_{cr}	$\psi_c N$	—	1.41					
Strength Reduction Factor–Concrete Breakout Failure	ϕ_{pcb}	—	0.65					
Pull-Out Strength in Tension (ACI 318 Section D.5.3)								
Pull-Out Resistance Uncracked Concrete ($f'_c = 2,500$ psi)	$N_{pn,cr}$	lbf	4,737	5,115	7,082	12,734	N/A ⁵	16,607
Pull-Out Resistance Cracked Concrete ($f'_c = 2,500$ psi)	$N_{pn,uncr}$	lbf	2,616	3,584	5,144	6,645	N/A ⁵	11,849
Strength Reduction Factor–Pullout Failure	ϕ_p	—	0.65					
Tension Strength for Seismic Applications (ACI 318 Section D.3.3.3)								
Tension Resistance of Single Anchor for Seismic Loads ($f'_c = 2,500$ psi)	$N_{pn,eq}$	lbf	2,616	3,584	5,144	6,645	N/A ⁵	11,849
Strength Reduction Factor–Pullout Failure	ϕ_{eq}	—	0.65					
Axial Stiffness in Service Load range	β	lb/in	36,694		66,733		94,794	

■ For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

¹The information presented in this table must be used in conjunction with the design criteria of ACI 318 Appendix D; for anchors resisting seismic load combinations the additional requirements of ACI 318 Section D.3.3 must apply.

² Installation must comply with published instructions and details.

³ All values of ϕ apply to the load combinations of IBC Section 1605.2.1, UBC Section 1612.2.1, or ACI 318 Section 9.2. If the load combinations of UBC Section 1902.2 or ACI 318 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318 D.4.5. For reinforcement that complies with ACI 318 Appendix D requirements for Condition A, the appropriate ϕ factor must be determined in accordance with ACI 318 D.4.4.

⁴ The ANKR-Tite anchor is considered a brittle steel element as defined by ACI 318 D.1.

⁵ Pullout strength will not control design of indicated anchors.

ANKR-TITE CCAT WEDGE ANCHOR CHARACTERISTIC SHEAR STRENGTH DESIGN VALUES^{1,2,3}

Characteristic	Symbol	Units	Nominal Anchor Diameter (inch)					
			1/2		5/8		3/4	
Anchor Category	1, 2 or 3	—	1		1		1	
Effective Embedment Depth	h_{ef}	in.	2 3/4	5	3 3/8	5 3/4	3 3/4	7
l_e	-	In.	2 3/4	5	3 3/8	5 3/4	3 3/4	7
d_o	-	In.	1/2	1/2	5/8	5/8	3/4	3/4
Steel Strength in Shear (ACI 318 Section D.6.1)⁴								
Shear Resistance of Steel	V_{sa}	lbf	7,956		8,986		11,957	
Strength Reduction Factor–Steel Failure	ϕ_{sa}	—	0.60					
Concrete Breakout Strength in Shear (ACI 318 Section D.6.2)								
Effectiveness Factor–Uncracked Concrete	k_{uncr}	—	24					
Effectiveness Factor–Cracked Concrete	k_{cr}	—	17					
Ratio of k_{uncr}/k_{cr}	$\psi_c N$	—	1.41					
Strength Reduction Factor–Concrete Breakout Failure	ϕ_{cb}	—	0.70					
Shear Resistance								
Shear Resistance Uncracked Concrete ($f'_c = 2,500$ psi)	$V_{pn,cr}$	lbf	5,804	7,257	7,217	8,986	8,683	11,957
Shear Resistance Cracked Concrete ($f'_c = 2,500$ psi)	$V_{pn,uncr}$	lbf	3,599	7,195	7,217	8,986	8,683	11,957
Strength Reduction Factor–Pullout Failure	ϕ_p	—	0.70					
Shear Strength for Seismic Applications (ACI 318 Section D.3.3.3)								
Shear Resistance of Single Anchor for Seismic Loads ($f'_c = 2,500$ psi)	$N_{pn,eq}$	lbf	3,239	6,476	5,055	8,154	8,504	11,957
Strength Reduction Factor–Pullout Failure	ϕ_{eq}	—	0.70					

■ For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

¹The information presented in this table must be used in conjunction with the design criteria of ACI 318 Appendix D; for anchors resisting seismic load combinations the additional requirements of ACI 318 Section D.3.3 must apply.

² Installation must comply with published instructions and details.

³ All values of ϕ apply to the load combinations of IBC Section 1605.2.1, UBC Section 1612.2.1, or ACI 318 Section 9.2. If the load combinations of UBC Section 1902.2 or ACI 318 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318 D.4.5. For reinforcement that complies with ACI 318 Appendix D requirements for Condition A, the appropriate ϕ factor must be determined in accordance with ACI 318 D.4.4.

⁴ The CCAT anchor is considered a brittle steel element as defined by ACI 318 D.1.

Anchor Size (in)	Embedment (in)	Install Torque (ft-lb)	Drill Bit Size (in)	Allowable Loads lbs. ^{1,2}				Minimum Distances (in)		
				Minimum Concrete Strength, psi						
				2500		6500		Edge	Spacing	Thickness
				Tension	Shear	Tension	Shear			
3/8	2	20	3/8	905	920	1450	1005	3 3/4	4	4 1/2
3/8	4 1/4	20	3/8	1005	920	1702	1005	3 3/4	4	7
1/2	3 1/4	75	1/2	1440	1930	2550	1930	5 1/2	8 1/4	6
1/2	5 1/2	75	1/2	1710	2160	3550	2160	5 1/2	8 1/4	10
5/8	4	125	5/8	2180	3120	4170	3120	5	9 1/4	6 3/4
5/8	6 3/8	125	5/8	3810	3230	4510	3230	5	9 1/4	11 1/2
3/4	4 1/2	225	3/4	2530	3610	5450	3610	5 5/8	5 5/8	7 1/2
3/4	7 3/4	225	3/4	5350	5290	6680	5290	5 5/8	5 5/8	14

¹Based on average ultimate loads divided by a factor of safety of 4

²For allowable stress design in uncracked concrete only

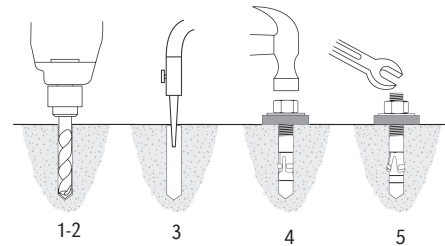
LENGTH IDENTIFICATION CODES

Code	Length of Anchor
A	1 1/2 < 2
B	2 < 2 1/2
C	2 1/2 < 3
D	3 < 3 1/2
E	3 1/2 < 4
F	4 < 4 1/2
G	4 1/2 < 5
H	5 < 5 1/2
I	5 1/2 < 6
J	6 < 6 1/2
K	6 1/2 < 7
L	7 < 7 1/2
M	7 1/2 < 8
N	8 < 8 1/2
O	8 1/2 < 9
P	9 < 9 1/2
Q	9 1/2 < 10
R	10 < 11
S	11 < 12
T	12 < 13
U	13 < 14
V	14 < 15

CGAT TORQUE VALUES

Anchor Diameter (in.)	Recommended Setting Torque (ft. lb.)
3/8	20
1/2	75
5/8	125
3/4	225
1	290

INSTALLATION INSTRUCTIONS



1. Drill the hole, whose diameter equals the anchor diameter perpendicular to the work surface. To assure full holding power, do not ream the hole or allow the drill to wobble.*
2. Drill the hole deeper than the intended embedment, but not closer than two diameters to the bottom (opposite) surface of the concrete.
3. A clean hole is necessary for proper performance. Clean the hole using a nylon brush and compressed air.
4. Assemble the nut and washer so that the top of the anchor extends above the nut slightly. Install the anchor through the material to be fastened.
5. Installing the "ANKR-TITE® Series" of anchors with a torque wrench is recommended for optimum performance. Refer to torque recommendations.

* **Always wear safety glasses.** Follow drill manufacturer's instructions. Use only solid carbide-tipped drill bits meeting ANSI B212.15 diameter standards.

CCAT ORDER INFORMATION

Zinc Plated Catalog Number	Anchor Diameter & Length	Maximum Thickness Fastened Material	Thread Length	Quantity Box/Carton
CCAT3830	3/8 x 3	0.525	1 3/4"	50/400
CCAT3833	3/8 X 3 3/4	1.275	2 1/2"	50/400
CCAT3850	3/8 X 5	2.525	3 1/4"	50/400
CCAT1223	1/2 X 2 3/4	0.125	1 1/8"	25/200
CCAT1233	1/2 X 3 3/4	0.375	2 5/8"	25/200
CCAT1241	1/2 X 4 1/4	0.875	2 5/8"	25/200
CCAT1252	1/2 X 5 1/2	2.125	3 3/4"	25/200
CCAT1270	1/2 X 7	3.625	4 1/2"	25/200
CCAT1282	1/2 X 8 1/2	5.125	5"	25/200
CCAT1210	1/2 X 10	6.625	5"	25/200
CCAT5832	5/8 X 3 1/2	0.245	1 1/2"	10/80
CCAT5841	5/8 X 4 1/4	0.245	2 3/8"	10/80
CCAT5850	5/8 X 5	0.87	3 1/8"	10/80
CCAT5860	5/8 X 6	1.87	4	10/80
CCAT5870	5/8 X 7	2.87	4 1/2"	10/80
CCAT5882	5/8 X 8 1/2	4.37	5"	10/80
CCAT5810	5/8 X 10	5.87	5"	10/80
CCAT3443	3/4 X 4 3/4	0.55	2 1/4"	10/60
CCAT3452	3/4 X 5 1/2	1	3 1/4"	10/60
CCAT3461	3/4 X 6 1/4	2.05	3 3/4"	10/60
CCAT3470	3/4 X 7	2.8	4 3/4"	10/60
CCAT3482	3/4 X 8 1/2	4.3	5"	10/60
CCAT3410	3/4 X 10	5 4/5	5"	10/60
CCAT3412	3/4 X 12	7.8	5"	5/20
CCAT1060	1 X 6	0.75	3"	5/20
CCAT1090	1 X 9	3.75	5"	5/20
CCAT1012	1 X12	6.75	5"	5/20

SIDE BY SIDE

ICC TEST DATA, 3/4"
Similar data available for 1/2" & 5/8"

Competitor	A		B		C		Wej-it CCAT "Ultimate Stud"	
Effective Embedment	4 1/8"	7 1/2"	3 3/4"	4 3/4"	4 1/2"	5 3/4"	3 3/4"	7"
Category	2	2	1	1	1	1	1	1
Yield Strength	108,000	108,000	84,800	84,800	70,000	70,000	111,500	111,500
Ultimate Strength	125,000	125,000	106,000	106,000	90,000	90,000	121,900	121,900
Tensile Stress Area		0.273	0.273	0.237	0.237	0.237	0.237	0.219
Pull out/Pull thru Resistance UNCRACKED	N/A	12,115	8,280	10,680	5,665	8,720	9,561	16,607
Pull out/Pull thru Resistance CRACKED	N/A	9,850	N/A	N/A	N/A	7,795	9,369	12,153
Min Edge	6"	6"	4 3/4"	4 1/8"	5"	4 1/2"	5 5/8"	5 5/8"
Min Spacing	6 1/4"	6 1/4"	5"	4"	6"	6"	5 5/8"	5 5/8"
Critical Edge	13 1/2"	10 1/8"	10"	9"	12"	12"	7 1/2"	10 1/2"
Min. Concrete Thickness	6 3/4"	10 1/8"	6"	8"	7"	10"	7 1/2"	14"