TABLE A—CROSS REFERENCE OF PRODUCT NAMES TO COMPANY NAMES

COMPANY NAME	PRODUCT NAME
CYW, Inc./Chun Yu Works (U.S.A.) Inc, dba Western States Fastening Systems	Power Bull Wedge Anchors
Midwest Fastener Corp. Torquemaster	Blue Wedge Anchor

TABLE 1—DATA FOR POWER BULL WEDGE ANCHORS FOR USE IN UNCRACKED CONCRETE[1,2]

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER			
			$3/8$ inch	$1/2$ inch	$5/8$ inch	$3/4$ inch
Installation Information						
Anchor diameter	$d_a\,(d_o)^3$	in.	$3/8$	$1/2$	$5/8$	$3/4$
Minimum diameter of hole clearance in fixture	d_h	in.	$1/2$	$5/8$	$3/4$	$7/8$
Nominal drill bit diameter	d_{bit}	in.	$3/8$	$1/2$	$5/8$	$3/4$
Minimum nominal embedment depth	h_{nom}	in.	$2\,5/16$	$2\,7/8$	3	$3\,15/16$
Minimum effective embedment depth	h_{ef}	in.	2	$2\,1/2$	$2\,1/2$	$3\,1/2$
Minimum hole depth	h_o	in.	$2\,1/2$	$3\,1/8$	$3\,1/2$	$4\,1/8$
Installation torque	T_{inst}	ft-lb	30	80	130	130
Minimum edge distance	c_{min}	in.	3	$3\,3/4$	$5\,1/4$	$5\,1/4$
Minimum spacing	s_{min}	in.	3	$3\,3/4$	$5\,1/4$	$5\,1/4$
Minimum concrete thickness[4]	h_{min}	in.	4	5	6	7
Critical edge distance	c_{ac}	in.	4	5	6	7
ANCHOR DATA						
Category number	1, 2 or 3	–	2	3	1	2
Yield strength of anchor steel	f_{ya}	lb/in^2	44,500	44,500	75,000	44,500
Ultimate strength of anchor steel	f_{uta}	lb/in^2	60,200	60,200	85,000	60,200
Effective tensile stress area	$A_{se,N}$	in^2	0.0597	0.112	0.192	0.285
Steel strength in tension	N_{sa}	lb	3,595	6,740	16,320	17,155
Steel strength in shear	V_{sa}	lb	2,800	5,125	8,370	12,065
Effectiveness factor for concrete breakout	k_{uncr}	–	24	24	24	24
Pull-out resistance	$N_{p,uncr}$	lb	3,021	4,232	N/A[5]	N/A[5]
Coefficient for pryout strength	k_{cp}	-	1.0	2.0	2.0	2.0
Axial stiffness in service load range	β	lb/in	97,589	539,500	741,700	1,413,876
Strength reduction factor, ϕ, for tension, steel failure modes[6]			0.75			
Strength reduction factor, ϕ, for shear, steel failure modes[6]			0.65			
Strength reduction factor, ϕ, for tension, concrete failure modes, Condition B[7]			0.55	0.45	0.65	0.55
Strength reduction factor, ϕ, for shear, concrete failure modes, Condition B[7]			0.70			

For **SI:** 1 in = 25.4 mm, 1 in^2 = 6.451×10^{-4} m, 1 ft-lb = 1.356 N.m, 1 lb/in^2 = 6.895 Pa.

[1]The information presented in this table must be used in conjunction with the design criteria of ACI 318 Appendix D.
[2]Installation must comply with the manufacturer's published installation instructions
[3]The notation in parentheses is for the 2006 IBC.
[4]Concrete thickness must be the greater of $2h_{ef}$ or the tabulated value.
[5]See Section 4.1.4 of this report. N/A (not applicable) denotes that this value does not govern for design.
[6]Anchors are considered to be manufactured using ductile steel in accordance with ACI 318 D.1. Strength reduction factors are for use with the load combinations of ACI 318 Section 9.2 or IBC Section 1605.2.
[7]Condition B applies where supplementary reinforcement in conformance with ACI 318-11 D.4.3 is not provided, or where pull-out or pry-out strength governs. For cases where supplementary reinforcement can be verified, the strength reduction factors associated with Condition A may be used. Strength reduction factors are for use with the load combinations of ACI 318 Section 9.2 or IBC Section 1605.2.

TABLE 2—POWER BULL WEDGE ANCHOR LENGTH CODE IDENTIFICATION SYSTEM

Length ID marking on threaded stud head		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Overall anchor length, ℓ_{anch}, (inches)	From	$1\,^1/_2$	2	$2\,^1/_2$	3	$3\,^1/_2$	4	$4\,^1/_2$	5	$5\,^1/_2$	6	$6\,^1/_2$	7	$7\,^1/_2$	8	$8\,^1/_2$	9	$9\,^1/_2$	10	11
	Up to but not including	2	$2\,^1/_2$	3	$3\,^1/_2$	4	$4\,^1/_2$	5	$5\,^1/_2$	6	$6\,^1/_2$	7	$7\,^1/_2$	8	$8\,^1/_2$	9	$9\,^1/_2$	10	11	12

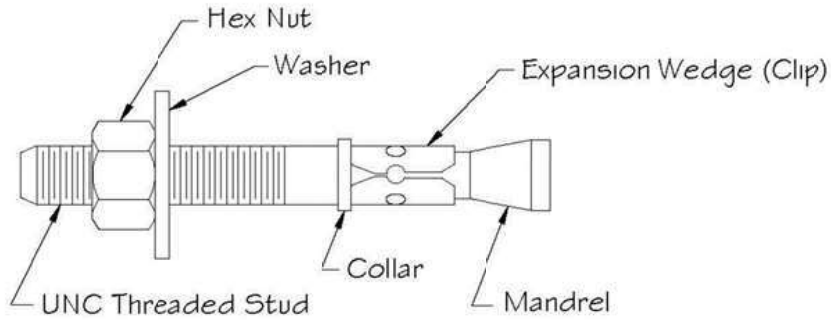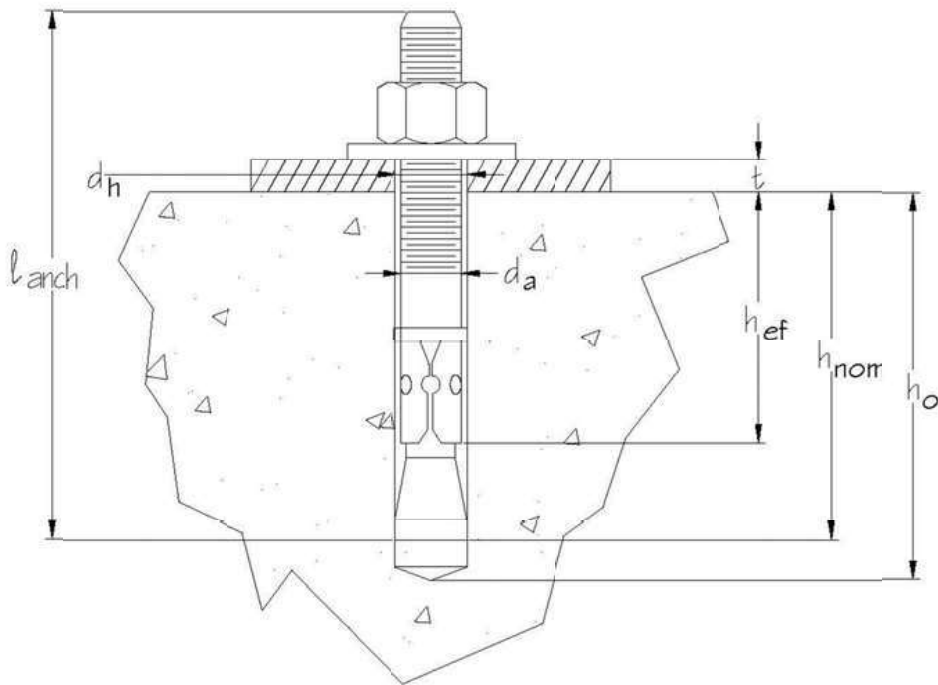For **SI**: 1 inch = 25.4 mm.

FIGURE 1—POWER BULL WEDGE ANCHOR

FIGURE 2—POWER BULL WEDGE ANCHOR INSTALLATION