



CB-1-B Anchor



APPLICATIONS:

Permanent or temporary attachment to concrete, steel or wood. If using as a permanent attachment, anchor must be flashed.

Wood Decking 3/4" CDX Plywood or better

Metal Decking 20ga. and thicker

Concrete (2000p.s.i. min.)

*fasteners not included

FEATURES:

Powder coated finish

Can facilitate horizontal lifeline systems for up to four workers in restraint

Weighs only 4 lbs

Swivel D-ring

6"x6"x1/2" base plate

SUBSTRATE SPECIFIC ANCHOR INSTALLATION:

For Wood and Metal Substrates meeting min. requirements:

It is required that the user purchase 1/2" diameter bolts with a pullout strength of 6,000 lbs each to fill all four of the pre-punched holes to meet the anchor pullout requirements. Bolts can be purchased at local fastener dealer.

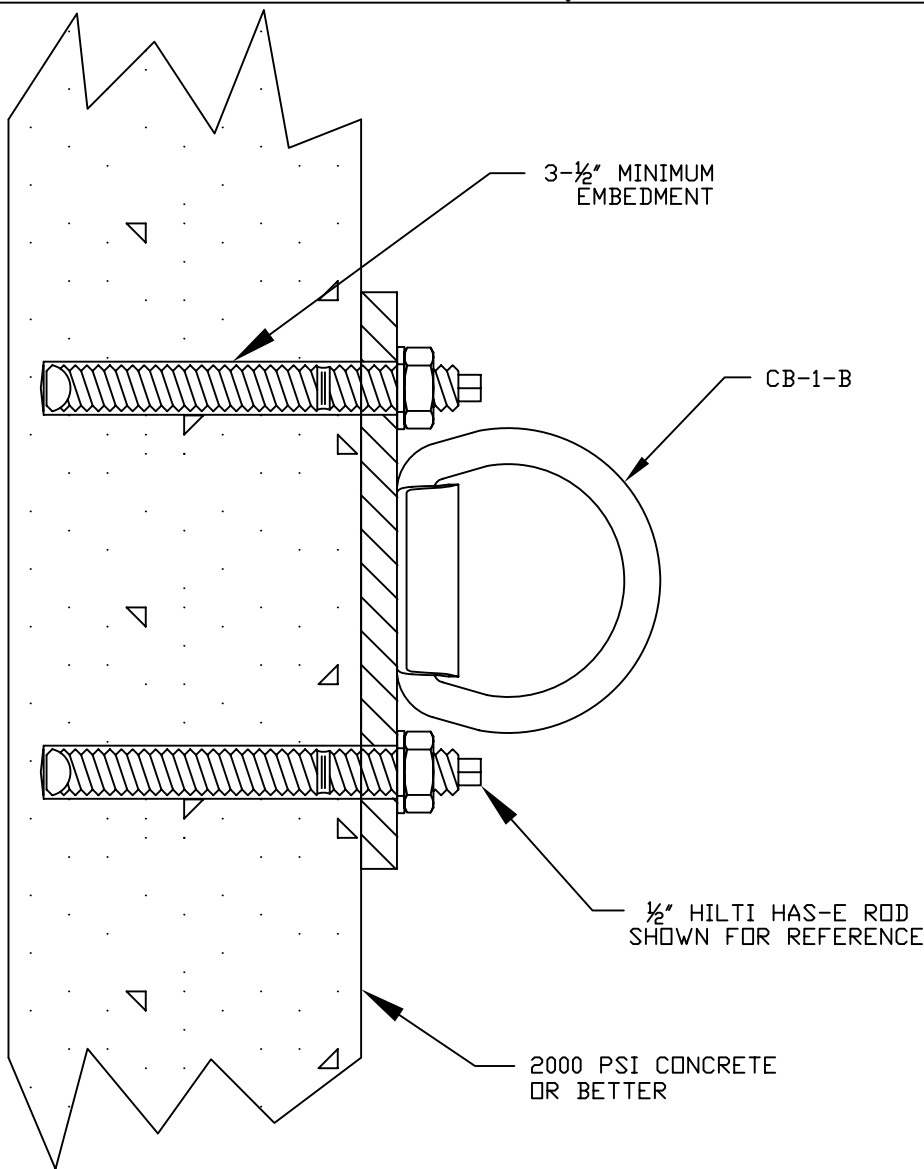
For Concrete Applications:

Guardian recommends epoxy or expansion anchors that are 1/2" diameter and have a min. embedment of 3" after installation. The epoxy anchors shall sustain a minimum pull-out of at least 6,000 pounds. Consult your local fastener distributor or Rawl book for more information.

CB-1-B is tested to meet all applicable ANSI Z359.1 standards and comply with OSHA standards. Use only with compatible equipment.



26513 79th Ave. S.
 Kent, WA
 800-466-6385
www.guardianfall.com



NOTES:

1. Secure the CB-1-B anchor to 2000 psi concrete or better.
2. Use all 4 of the $\frac{9}{16}$ " diameter holes provided.
3. Use $\frac{1}{2}$ " diameter anchor bolts with an ultimate tensile strength of 6000 lbs. or higher. All anchor bolts must be embedded a minimum of $3-\frac{1}{2}$ ".
4. Hilti HIT HY-150/HIT-ICE adhesive using HAS-E rods are shown for reference. Use an equivalent or superior system when substituting.
5. Considerations for weather must be taken into consideration when selecting anchor bolts for installing CB-1-B anchors.
6. Always follow the anchor bolt manufacturer's installation instructions for minimum concrete thickness and torque requirements.

INSTALLATION INSTRUCTIONS			TITLE CB SERIES WALL ANCHOR			
DESIGNED BY:	B. WOODYARD	1992	DWG NO. CB-1-B			
DRAWN BY:	PHIL GOMES	08/19/2004	CHECKED DATE		SHEET: 1	
CHECKED BY:	M. VOLLMER		APPROVED DATE			
APPD BY:	M. VOLLMER		SCALE: NONE			



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24322 180th S.E.
Kent, WA 98042

ATTN: Mr. Bud Woodyard

RE: CB SERIES Fall PROTECTION SYSTEM
Model CB-1 SERIES

Gentlemen;

As per your request, SETS has prepared the design data and reviewed it for the above referenced fall protection system. The calculations and drawings are attached on the following pages.

The following items were used as minimum values for the design process.

- ☛ A certified welder using E-70xx electrodes shall perform all welding.
- ☛ Anchor bolts (CB-1B) shall have a minimum ultimate pullout load of at least 6,000 pounds.

If you have any questions concerning the above items, the procedures used, or if SETS can be of any further assistance please call on us at (206) 833-7967.

Respectfully Submitted,

SPEARS ENGINEERING & TECHNICAL SERVICES

J. Frank Spears, P.E.
Principal



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Model CB-1 SERIES STRUCTURAL CALCULATIONS

Outer Plate Diameter = 2.500	Load, P = 5,000 pounds	
Inner Plate Diameter = 2.000	Moment Length = 1/2 inches	
	Moment, M = 2,500 in-lbs	
Weld Size: 1/4 in	Electrode Designation, F _{xx} : 70,000 lbs/in ²	
Effective Weld Length, L _w : 7.85 in	Yield Strength, F _y : 35,000 lbs/in ²	
Effective Throat, t _w : 0.177 in	Tensile Strength, F _u : 60,000 lbs/in ²	
Effective Weld Area, A _w : 1.39 in ²	Effective Sec. Modulus, S _c : 4.91 in ²	
1996 UBC Sec 27.903 E Connections & Joints		
Shear Loads		
L/t = 44.44	Longitudinal Loading	Transverse Loading
$P_n = (1 - (0.01 \times L/t)) \times t \times L \times F_u$	$0.75 \times t \times L \times F_u$	$t \times L \times F_u$
P _n = 46,280	62,469	83,291
P _a = P _n / 2.5 = lbs	24,987 lbs	33,317 lbs
P _a = 24,987 lbs		
Moment Loads		
M _n = S _c x F _y = 171,806		t > 0.150 inch
M _a = M _n / 1.67 = 102,878		$0.75 \times t_w \times L \times F_{xx}$
Combined Shear & Moments		
M/M _a = 0.0243007	Should Be Less than or Equal to 1.0	72,880
P/P _a = 0.2001005	Total = 0.2244	29,152 lbs
	Weld is OK	
AISC Method		
Allwable Shear Stress, F _v : 0.30 x F _{xx} = 21,000 lbs/in ²	$P / (L_w \times t_w) = P / A_w$	$(f_v^2 + f_b^2)^{0.5}$
0.40 x F _y = 14,000 lbs/in ²	3,602 lbs	3,638 lbs
0.60 x F _y = 21,000 lbs/in ²		Weld is OK
	$M \times c / I = M / S = P \times e / S$	
	509 lbs	
Factor of Safety Against Pull-out		
	Load, P = 5,000 pounds	
	Ultimate Pullout for Epoxied Anchor Bolts = 6,000 pounds	
	# of bolts holding each edge of the baseplate = 2	
	Factor of Safety = 2.40	