

Precast Bracing Hardware



153

Precast Products Manual

Brace Load Table

Brace Type	Brace Length [ft.] Min. / Max.	Ultimate Brace Buckling Load [kips]	Ultimate Brace Shoe Load [kips]
B / C / D	14.50 / 20.93	3,470 / L 2.439	9.60
B / C / D [w/single knee brace & cross lace]	14.50 / 29.59	6,940 / L 2.439	9.60
Little "G"	14.50 / 20.21	26,300 / L 2.963	7.80
Standard "G"	22.50 / 28.87	1,540,000 / L 4.118	7.80
STD. "G" [w/single knee brace & cross lace]	22.50 / 28.87	2,350 / L 1.759	7.80
Big "G"	24.00 / 38.25	27,700,000 / L 4.81	7.80
Big "G" [w/single knee brace & cross lace]	24.00 / 38.25	8,250 / L 1.944	7.80
Big "G" [w/double knee brace & cross lace]	24.00 / 38.25	4,290 / L 1.659	7.80
MB Precast Brace - (45218HD)	8.00 / 14.00	518.54 / L 1.74	9.5
MB Precast Brace - HD (45218EHD)	8.00 / 14.00	48.75 – 3L	13.5
Super 17	17.00	13.00	13.00
Super 22	22.00	11.00	11.00
Super 22 + 5' Extension	27.00	8.85	11.00
Super 22 + 10' Extension	32.00	5.80	11.00
Super 32	32.00	13.50	13.50
Super 32 + 5' Extension	37.00	10.36	13.50
Super 32 + 10' Extension	42.00	8.042	13.50
Super 32 + 10' & 5' Extensions	47.00	7.037	13.50
Super 32 + 2-10' Extension	52.00	5.778	13.50
Super 42	42.00	16.05	16.05
Super 52	52.00	16.05	16.05

Notes:

- "L" is the total brace length in feet.
- The equations above for ultimate buckling loads are based on test results performed on the braces when they were placed at an angle of 60 degrees to horizontal. For brace angles between 45 and 60 degrees to horizontal, multiply the buckling load derived from the equations above by the factor "K".

$$K = \frac{(1390 + 47 \theta)}{4210}$$

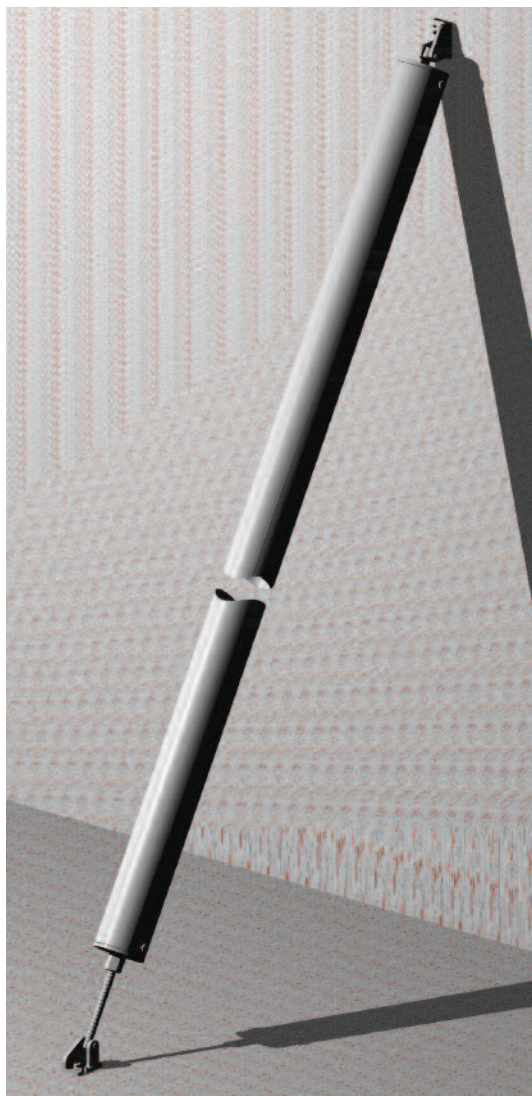
Where θ = Brace angle to horizontal in degrees.

Exception: K = 1 may be used for all "Super Braces" except for the Super 22 + 10' Extension.

- Do not use brace loads greater than the ultimate brace shoe loads above. Always use the smaller of the two loads.
- To determine the concentric brace working load, divide the governing load (brace shoe or buckling load) by the desired safety factor. A 1.5 minimum safety factor is recommended for temporary wind bracing of concrete wall panels. Braces when used for other purposes or different types of applied loads may require higher safety factors. Safety factor shall be determined by the user.

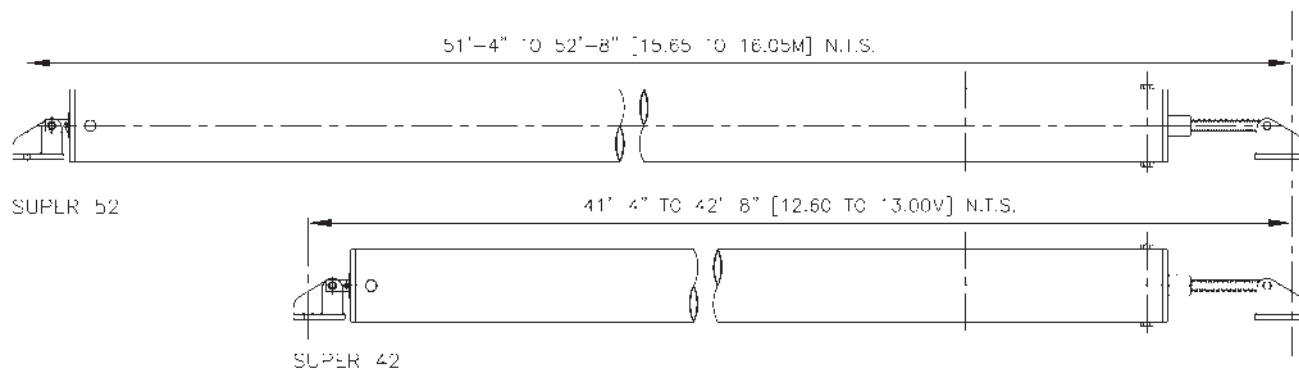
MEADOW BURKE BRACES

(7150) Super 52 and 42 Brace



Meadow Burke's new Super 52 and Super 42 braces are 52 feet and 42 feet long, fixed-length braces with 18" of adjustment for final plumbing. These braces have an ultimate strength of 16,050 lbs which is nearly 2 times as strong as Super 32's with extensions attached. They are used to brace panels from 39 to 79 feet high without the need for secondary bracing. The Super 52 weighs 680 lbs and the Super 42 weighs 550 lbs.

155



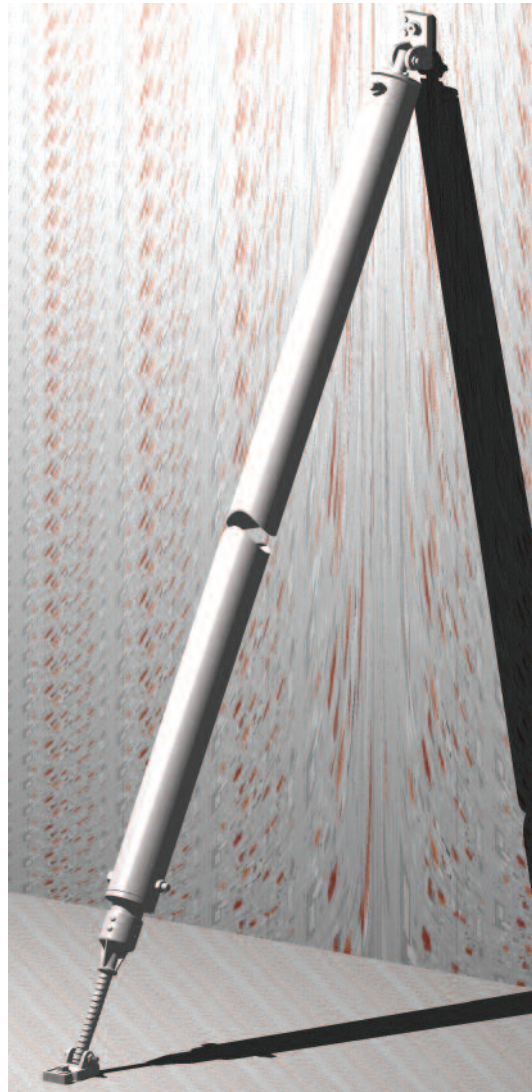
Meadow Burke Braces

(7150) Super 32 Brace

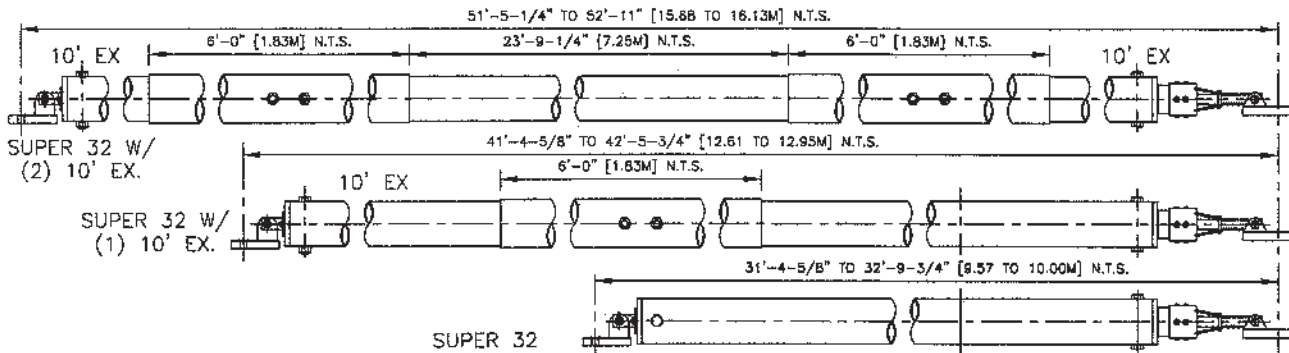
The Super 32 Brace is a 32-foot long fixed-length brace with 18 inches of adjustment for final plumbing. The brace has an ultimate strength of 13,500 pounds, making it 2.24 times stronger as a Super 22 Brace with 10 foot extension. It is used to brace panels from 30 to 50 feet high without the need for secondary bracing or Bi-pods. Brace weight: 275 lbs.

There is a 10 foot extension available for the Super 32, which makes it 42 feet long and then weighs 400 pounds. At this length, the brace has an ultimate strength of 8,042 pounds and is used to brace panels up to 64 feet.

By placing a 10 foot long extension at each end of the Super 32 brace, it is possible to obtain a 52 foot long brace. In this configuration the brace weighs 520 pounds and has an ultimate strength of 5,778 pounds. It is used to brace panels up to 75 feet high. 5' extensions are also available to obtain 37' and 47' long braces.

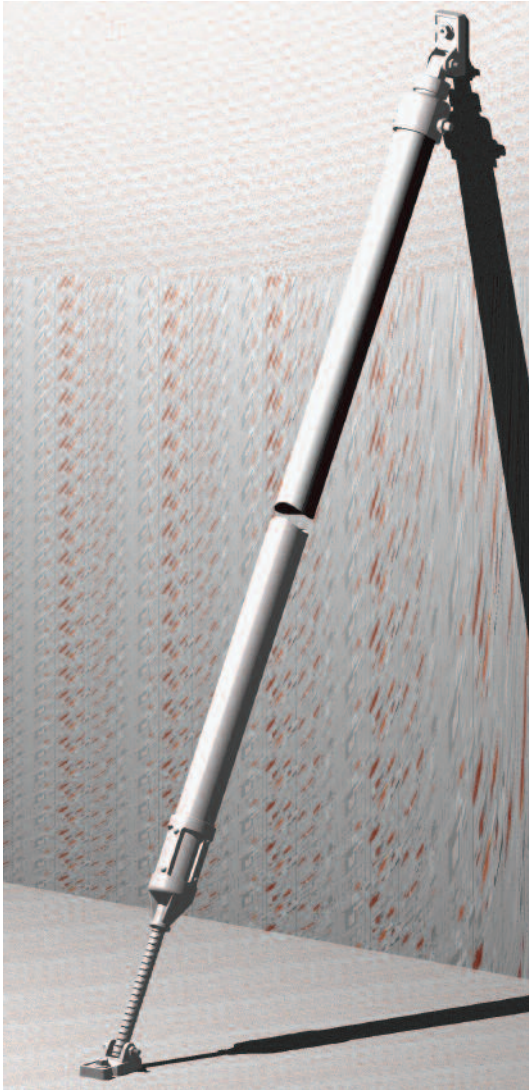


156



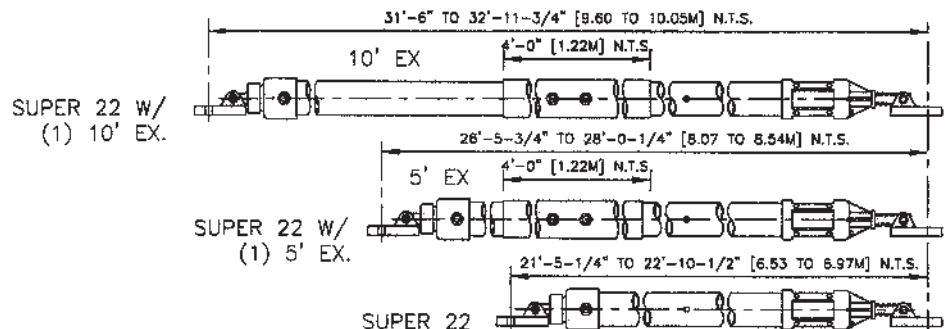
MEADOW BURKE BRACES

(7150) Super 22 Brace



Meadow Burke Super Brace combines lightweight with high strength for easy handling and solid support of precast panels. Because of its tested strength, fewer braces and inserts per panel are required. Super Brace comes in 22 ft. (6.71 m) lengths. 5 and 10 ft. extensions are available that quickly and easily bolt onto the brace at the jobsite. Simply remove the swivel head from the Super Brace, slip the sleeved end of the extension onto the brace and bolt together. Then reattach the swivel head to the free end of the extension. Super Brace is easily adjusted for final plumbing of the panel. A predrilled hole near the foot of the brace accepts a scrap piece of rebar as a fine adjustment handle. Braces are normally set to provide 9" (229 mm) of adjustment in either direction for a total of 18" (457 mm) Brace weight: 136 lbs. (61.7 kg). 10' Extension weight: 88 lbs. (40 kg). 5' Extension weight: 52 lbs. (24 kg).

157



Precast Products Manual

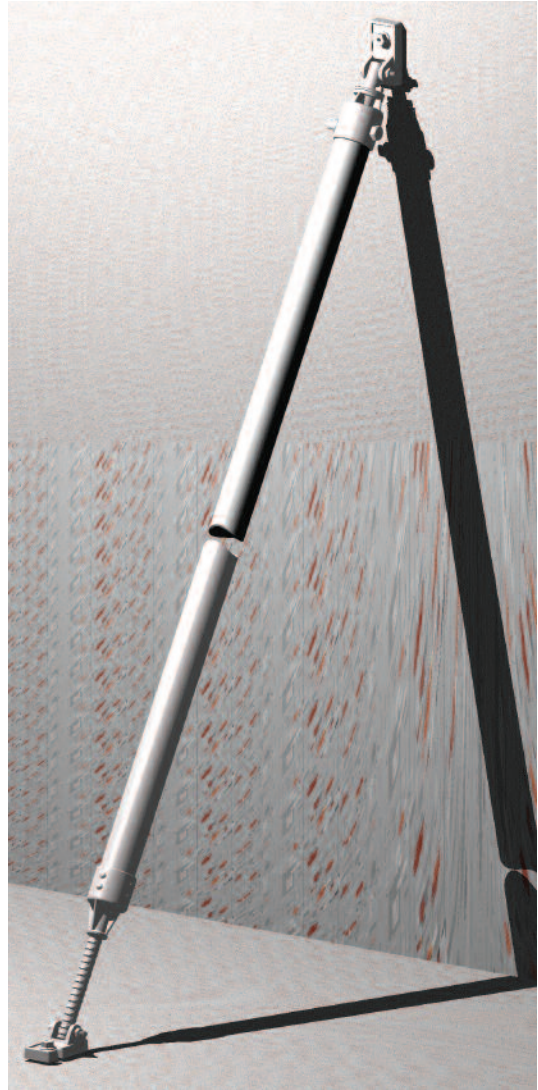
Meadow Burke Braces

(7150) Super 17 Brace

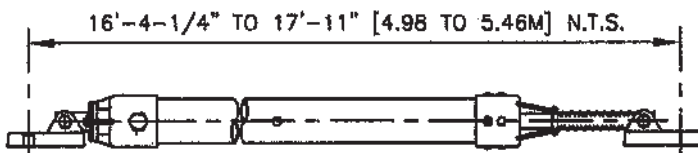
The Super 17 Brace is a 17' long fixed length brace with 18 inches of adjustment for final plumbing. The brace has an ultimate strength of 13,000 lbs. The Super 17 can brace panels from 9' to 25' tall. Brace weight is 105 lbs.

(7150) MB 8-14 Brace

This versatile, telescoping brace is adjustable from 8' to 14' lengths. It is best utilized in situations where a very short brace is required. Brace weight is 58 lbs.



158



Coil Inserts

WORKING LOADS IN LBS. IN 2500 PSI CONCRETE, 2.0:1 SAFETY FACTOR			
Item Number	Conc. Thick. in inches	Face Tension	Face Shear
B75050	5"	7,800	8,200
B75055	5-1/2"	9,625	10,150
B75060	6"	10,150	10,150
B75062	6-1/4"	10,150	10,150
B75065	6-1/2"	10,150	10,150
B75070	7"	10,150	10,150
B75072	7-1/4"	10,150	10,150
B75075	7-1/2"	10,150	10,150
B75080	8"	10,150	10,150
B75082	8-1/4"	10,150	10,150
B75085	8-1/2"	10,150	10,150
B75090	9"	10,150	10,150
B75092	9-1/4"	10,150	10,150
B75095	9-1/2"	10,150	10,150
B75100	10"	10,150	10,150
B75105	10-1/2"	10,150	10,150
B75110	11"	10,150	10,150
B75112	11-1/4"	10,150	10,150
B75115	11-1/2"	10,150	10,150
B75120	12"	10,150	10,150

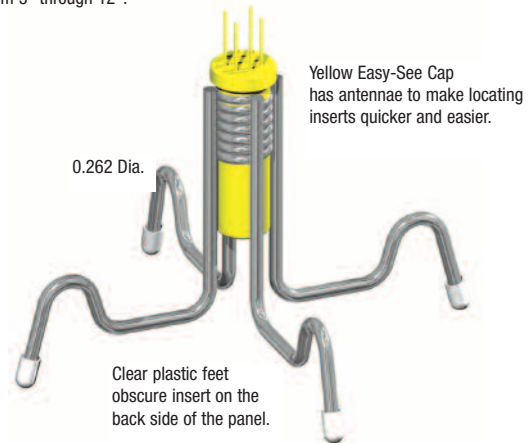
WORKING LOADS IN LBS. IN 2500 PSI CONCRETE, 2.0:1 SAFETY FACTOR			
Item Number	Conc. Thick. in inches	Face Tension	Face Shear
BII75	Inverted	9,625	10,150

Meadow Burke's Brace Inserts have been an industry standard for the past three decades. These solid bolted connections have proven the strength and security of this system on thousands of job sites around the country.

For unshakable reliability the Meadow Burke Coil System is an excellent choice.

B-75 Wall Brace Insert

3/4" diameter coil insert height is 1/2" less than panel thickness. Available in 1/2" increments from 5" through 12".

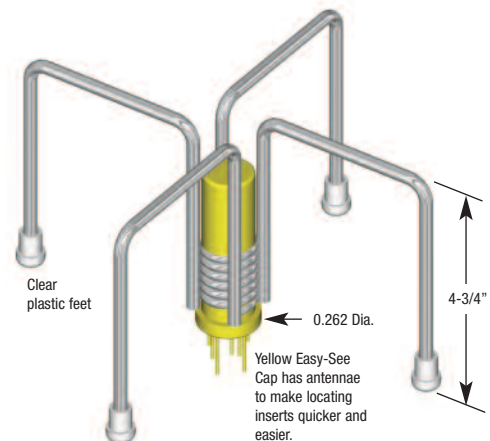


159

The minimum edge distance required to obtain the rated loads for face applications is 12 inches.

BII-75 Inverted Wall Brace Insert

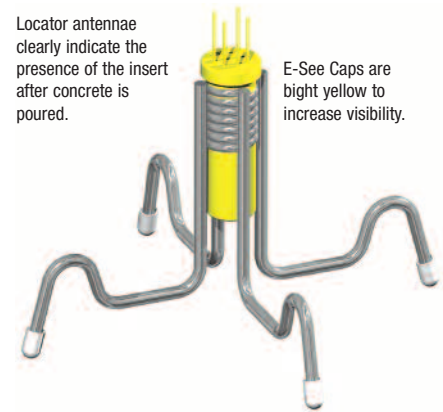
3/4" diameter coil insert - Available in size shown only.



Insert Placement

E-See Caps Help Workmen Protect, Inspect, and Detect Inserts

Meadow Burke Inserts come equipped with distinctive, bright yellow E-See Caps. The shape of the cap will differ with the type of insert, but all of them have the easy-to-see yellow antennae. These locator antennae serve two purposes, 1.) they clearly signal the presence of the insert after concrete is poured, 2.) because the antennae are arranged in a circle or ellipse around the perimeter of the insert, they form a separate concrete plane which can be easily cracked and removed with minimum spalling of the surrounding concrete. Patching work is minimized. E-See cap antennae will not interfere with screeding, bull floating, or troweling. These highly flexible, polyethylene antennae merely flatten out during finishing work only to spring back up once finishing equipment has passed. Meadow Burke's resilient caps also protect the insert from seepage while creating a void for the easy entry of lifting equipment or bolts. Once their work is done, Meadow Burke's E-See Caps can be easily removed with a screw driver or other similar instrument.



Locator antennae clearly indicate the presence of the insert after concrete is poured.

E-See Caps are bright yellow to increase visibility.

160

Specially Designed Burke Inserts Facilitate Placement

Meadow Burke Inserts are designed for stability and economy. The inserts should be tied securely to the rebar mesh. Location of the inserts in the panel should correspond exactly to their position on the engineering drawing. If for some reason they cannot be placed in their exact location, contact your Meadow Burke representative or the Meadow Burke Engineering Center. Bracing inserts should not be placed in a position where the attachment of braces prior to lifting would interfere with erection hardware or rigging. They should be placed no closer than 1 ft. (305 mm) away from all edges or openings. It is important that concrete around the anchors be properly consolidated. Care should be taken to assure that the vibrator's head does not hit the surface of the floor. This may cause chipping, mechanical bonding, and surface imperfection. Once the concrete has begun to stiffen, the vibrators should avoid striking the reinforcing rods. Vibration of the rods at this stage may break the existing bond between the concrete and the rods.

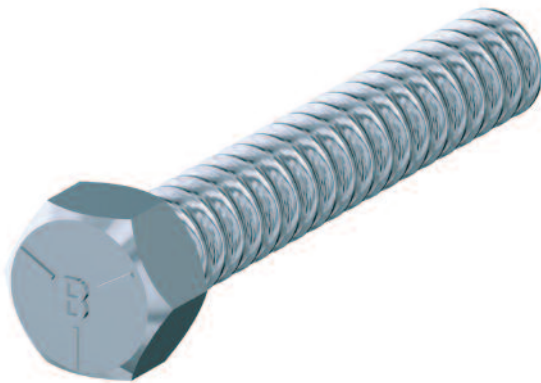
B-75 Patch Data

Item Number	Description	Unit Weight [lbs.]
45611	B-75 Patch	0.05 lbs.

C2 Coil Grade 5 Coil Bolt

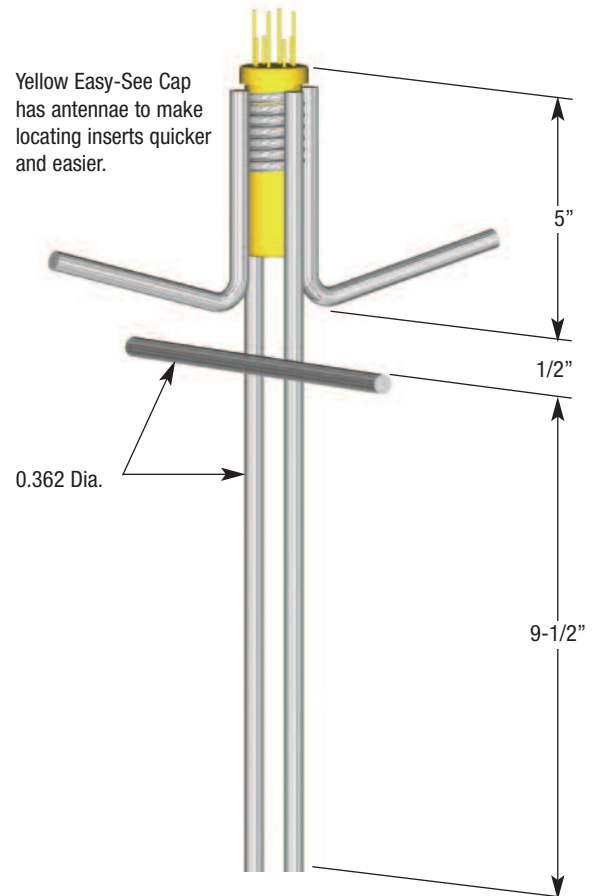
Product Code # 291247

*Use of coil bolts other than the MB C2 Coil Bolt may result in loss of brace stability.



BIG-75 FLOOR SLAB INSERT

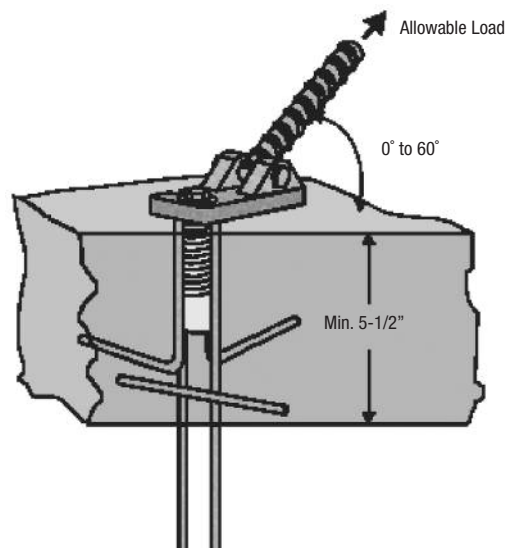
3/4" diameter coil insert - Available in size shown only.



161

Grounded Wall Brace Inserts [BIG-75]

WORKING LOADS IN LBS. IN 2500 PSI CONCRETE, 2.0:1 SAFETY FACTOR			
Item Number	Min Conc. Thick. in inches	Allowable Angle	Allowable Load
BIG75	5-1/2"	0 to 60	9,470



Precast Products Manual

MB Slam Anchor

Built for Strength, Safety, Speed...

The Precast construction industry has long awaited the arrival of the most heralded brace-to-floor connection solution in recent years. The MB Slam Anchor was designed to address the shortcomings of existing brace-to-floor connectors.

Strength: The objective was simply to create a brace-to-floor connection that will handle the maximum applied brace loads with a single bolt. The MB Slam Anchor carries a 9,000 lbs. load with a 2 to 1 safety factor.

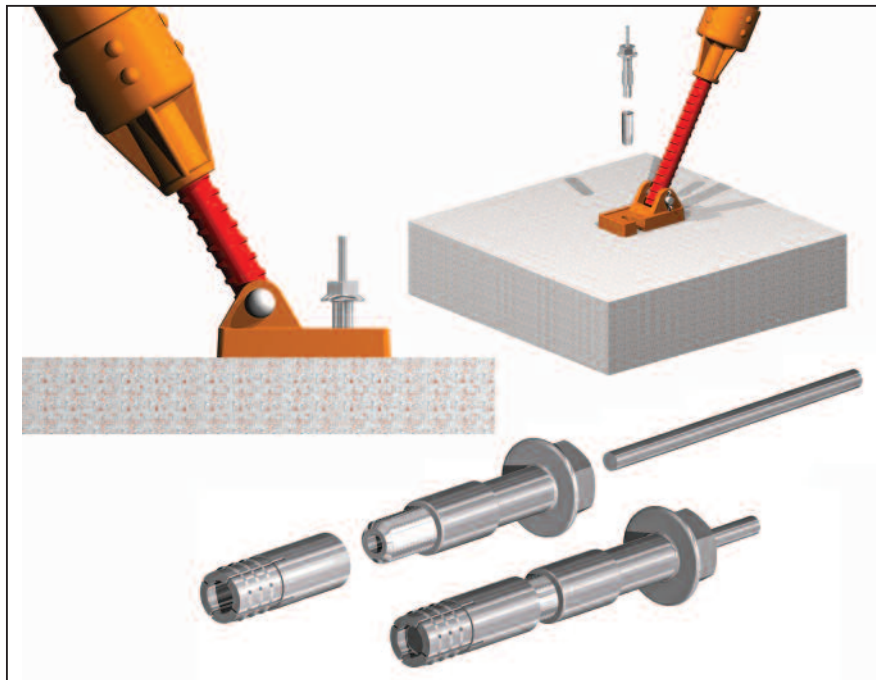
Simplicity and Safety: We recognize that current brace-to-floor connections used in the field today can easily be improperly installed, resulting in serious safety hazards. Another objective with the Slam Anchor was to insure a virtually foolproof installation.

Speed: We know time is money. And with crane and crew waiting, we know that speed of installation is paramount.

No Torque or Retightening Required: The unique expansion mechanism is not a threaded connection, and therefore does not have a torque requirement and does not need to be retightened.

162

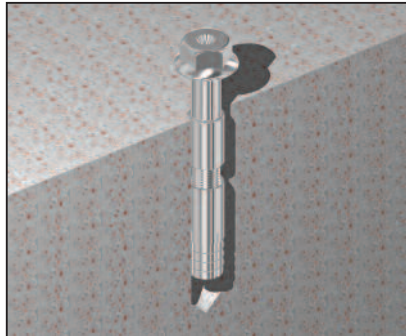
Economical: In addition to the savings in labor, the Slam Anchor is designed to be reusable. Only a small drop-in is expended at each use. We are confident that the Slam Anchor will be the brace-to-floor connection solution.





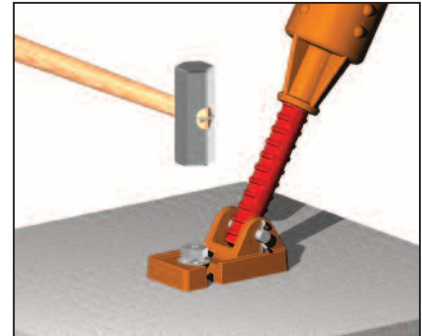
DRILL HOLE

- Determine the location of the brace shoe on the slab.
- Using a roto hammer, drill a 7/8" hole in the slab.
- Make sure that the hole is at least 6" deep or through the slab.
- If the hole does not completely penetrate the slab, make sure to clean it out completely.
- Screw "Drop-in" onto the end of the bolt, making sure to hand-tighten only. Do not over-tighten.



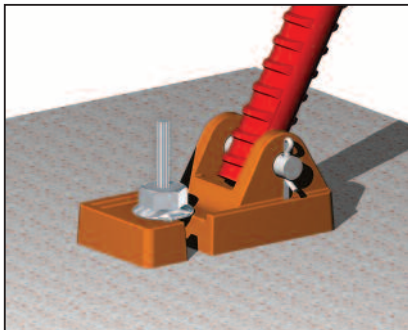
DROP MB SLAM ANCHOR IN HOLE

- Place bolt in the 7/8" hole and hammer until only the narrow (3/4") portion beneath the bolt head is visible.



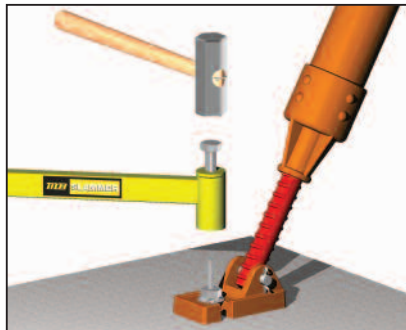
- Slide the brace shoe over the bolt.
- Drive the bolt the rest of the way down.

163

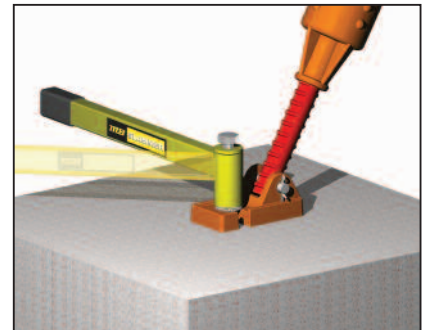


INSTALL SETTING PIN

- Insert pin into the hole in the center of the bolt.



- Place the specially designed MB SLAMMER setting tool over the pin and bolt, and pound the ram on the setting tool all the way down. A flush setting pin is assurance of a properly set anchor.



TIGHTEN BOLT

- Once the ram is driven all the way down, use the MB Slammer setting tool to check that the Slam Anchor is tightened down.
- This should be anywhere from an 1/8th to 1/4th of a turn. Remove the setting tool.

**Eye protection should be worn during the installation of this product.
Setting pin should only be set using the MB Slammer setting tool.**

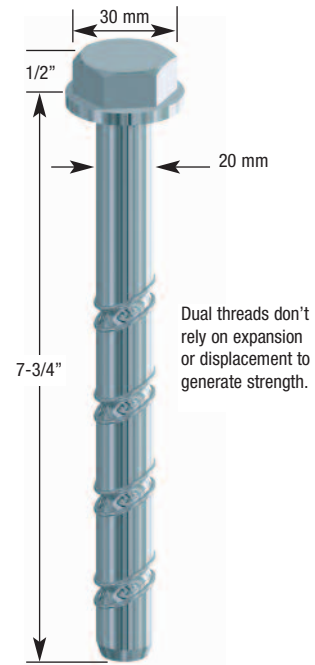
Precast Products Manual

(7205) MB Brace Bolt

MB Brace Bolt safely and economically secures precast braces to the slab without the inconvenience or uncertainty of cast-in-place inserts or expansion bolts. Pullout strength is equivalent to a cast-in-place insert without the problems of locating inserts and adjusting braces while the crane and crew wait. Convenience combines with economy in this reusable system. Nothing is left in the slab or wasted. When bracing is no longer needed, simply disengage the brace and remove bolt. The MB Brace Bolt can be used multiple times as long as the bolt continues to tighten up to the brace shoe but never more than 5 uses. Quality materials guarantee strength and durability.

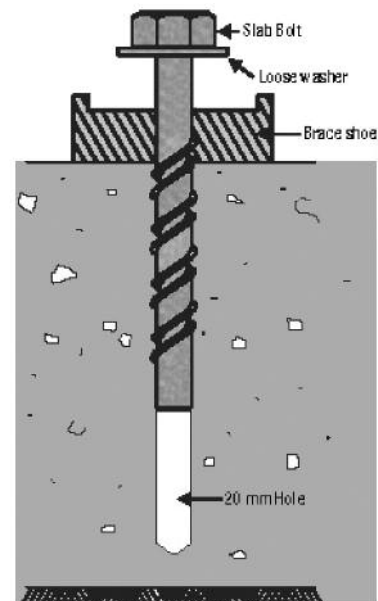
INSTALLATION INSTRUCTIONS

1. Mark anchor location and drill a 20mm diameter straight hole at least 10" deep. Clean as much from the hole as possible by periodically lifting bit while drilling. The added depth is required to accommodate dust from drilling and thread cutting.
2. Turn bolt into the concrete to within 1" of the surface using a large 3/4" impact wrench with a 30mm socket.
3. Slide the Brace Shoe onto the bolt and continue tightening.



NOTES

1. If it is necessary to remove the bolt and re-install it, hand thread the bolt to start it in the original threads. This way new threads will not be cut through the original ones.
2. The Brace Bolt does not rely on expansion or displacement to generate its strength and is, therefore, not dependent on torque applied during installation to set it. Once it is tight, it is set.
3. It is not necessary to re-tighten the bolt after high winds unless it is visibly loose.
4. The use of excessively worn or undersized drill bits may prevent the bolt from threading.
5. The use of oversized drill bits may result in incomplete threading and premature failure.
6. The use of under-powered drills +/- or impact wrenches may slow or prevent proper installation.

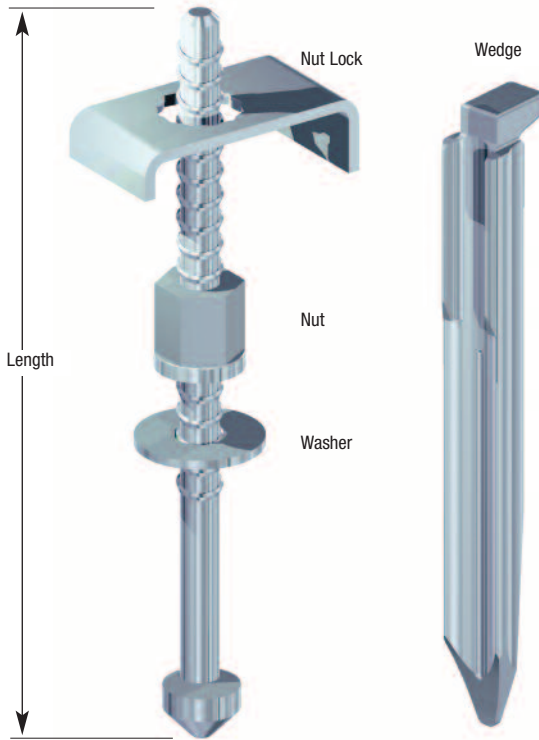


Slab Brace Bolt Data

Item Number	Description	Shear Safety Factor 2:1*	Tension Safety Factor 2:1*	Unit Weight [lbs.]
45474	MB Slab Brace Bolt	14,435 lbs.	8,950 lbs.	1.15 lbs.

*Values for shear and tension in 3,000 psi standard weight concrete at 6" thick.

(7200) Super Bolt



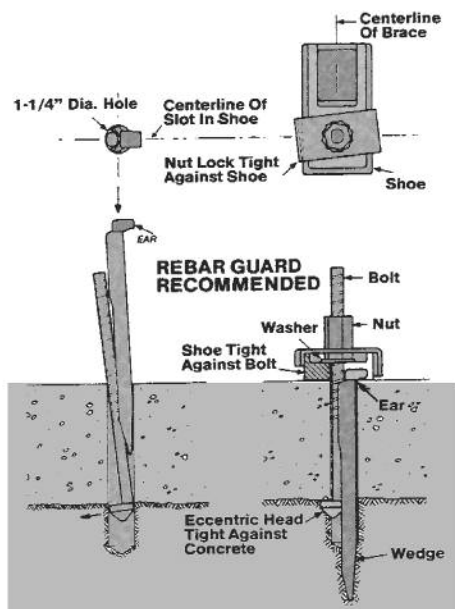
Super Bolt safely and economically secures precast braces to the slab without the inconvenience or uncertainty of cast-in-place inserts or expansion bolts. Super Bolt penetrates through the slab to engage the concrete at top and bottom in a vise like grip. Pullout strength is equivalent to a cast-in-place insert without the problems of locating inserts and adjusting braces while the crane and crew wait. Convenience combines with economy in this reusable system.

Nothing is left in the slab or wasted. When bracing is no longer needed, simply disengage the brace, pry up the wedge and lift out. The entire system can be used over and over again. Quality materials guarantee strength and durability. The bolt section is a high tensile strength steel forging. The wedge is high strength cast ductile iron. Together they provide consistent safety and dependability.

Installation Instructions

165

1. Mark anchor location on floor and drill a 1-1/4" diameter straight hole through concrete floor slab.
2. Insert bolt through hole until eccentric head is below bottom of slab. Rotate until head is opposite brace shoe slot.
3. Insert wedge into hole adjacent to bolt on side of bolt that is stamped "WEDGE." Align ear on wedge to slot in brace shoe.
4. Drive wedge through hole so ear contacts concrete, causing the eccentric head of the bolt to shift under bottom of slab.
5. Slide brace shoe tight against the bolt, assemble the washer and hand tighten the nut.
6. Using an electric impact wrench and Burke deep well socket, fully torque tighten the nut eliminating all slack in the assembly. This ensures proper engagement of the eccentric head on the bolt with the underside of the concrete floor slab.



Super Bolt Data

Item Number	Description Minimum/Maximum Floor Thickness	Length	Unit Weight [lbs.]
45SBS	3-1/2" to 7-1/2" Thick	11-5/8"	3.2 lbs.
45SBL	5-1/2" to 11-1/2" Thick	15-1/2"	3.3 lbs.

Precast Products Manual

(7150) MB Brace Badger Helical Anchor System

There are times in precast construction when conventional bracing to floor slabs is not desired. Until now your option has been to construct expensive and time consuming concrete deadmen. The Meadow Burke Brace Badger™ is revolutionizing precast construction by providing contractors with an economical and efficient alternative.

MB Badger Advantages include:

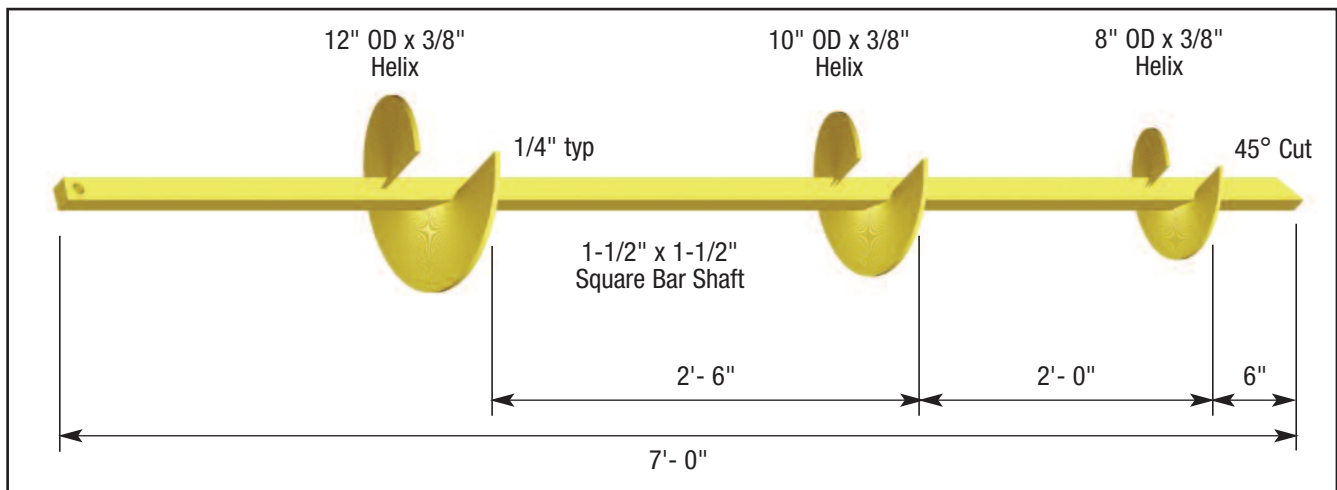
- eliminates concrete deadmen
- environmentally friendly
- offers quick installation and removal
- the strongest brace anchor available
- verifiable load capacity in all soil conditions
- works with **ALL** Meadow Burke braces
- reusable



166

Product Specifications:

The MB Brace Badger is pre-engineered for superior results in precast applications. It consists of three helix plates welded to a 1 1/2" square bar shaft. Each helix plate is specially formed from 3/8" x 44 ksi new steel plate. Our shaft steel has a typical yield strength of 95 ksi, and a typical tensile strength of 130 ksi, making it the strongest helical anchor available in the industry!



Capacity to Torque Ratio

Helical anchor installation involves screwing the anchor into the ground and applying a constant downward force. The holding capacity of the anchor is proportionate to the final installation torque. The following equation can be used to determine holding capacity.

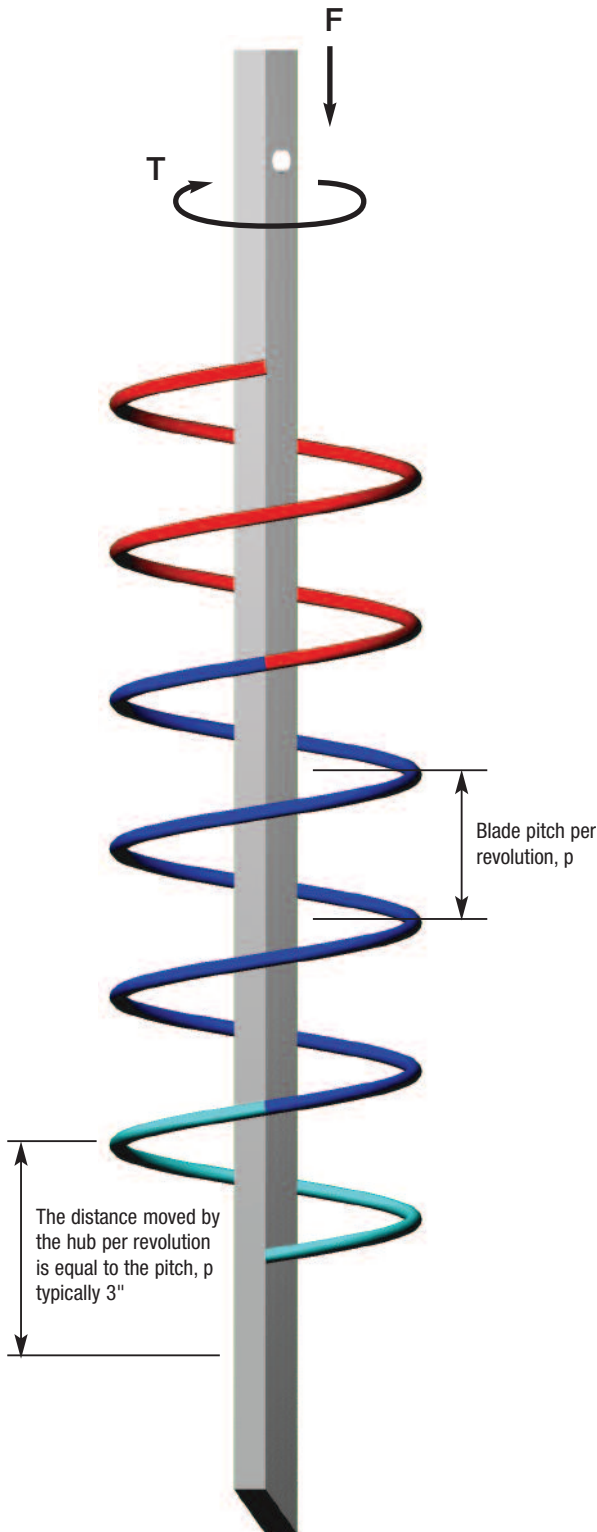
$$\text{Badger Capacity} = K \times T$$

Where K = Torque constant

T = Final installation torque

The K value is reliant on the geometry of the helix pier. For helical anchors with square shaft dimensions less than 2", a value of 10 is suggested by Hoyt and Clemence (1989). MB uses a value of 7 for an added safety factor. This K value is applicable for all 1.50" square shaft anchors.

167



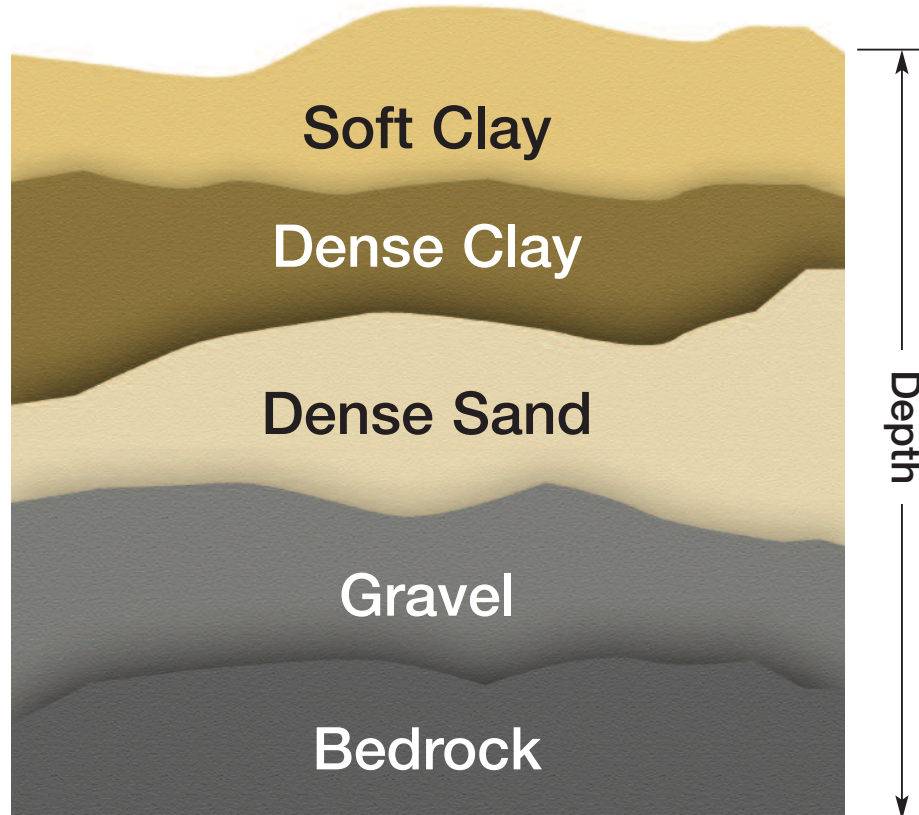
Typical MB Brace Badger Installation

Soil Mechanics

The capacity of the MB Brace Badger is the result of the strength of the surrounding soil because the loading force is transferred to the soil. There are typically two types of soils: cohesive and cohesionless. Cohesive soils are defined as soils whose internal angle of friction is approximately zero ($\phi = 0$) while cohesionless soils are those whose internal angle of friction is greater than zero ($\phi > 0$).

Soil naturally tends to develop in layers or strata, each with individual strength characteristics, and the figure above illustrates this stratification. As the Badger is drilled into the ground, it will pass through different layers. Because each layer has different characteristics, different torque values will be observed as the anchor passes through each layer. During an ideal installation, the torque values will be constantly increasing, indicating the anchor is being inserted into more dense soil. If a drop in torque is recorded, it is most likely that a soft layer (such as soft clay) was found. The Badger must then be installed through the soft layer until a more dense soil (i.e. higher torque) is found.

168



Installation



A variety of rotary hydraulic equipment can be used to install the MB Brace Badger including but not limited to: skidsteers, excavators, and boom mounted utility trucks.

The installer should maintain a continuous downward pressure on the MB Brace Badger to avoid auguring during installation.

Throughout the installation of each MB Brace Badger the torque is continuously monitored and recorded. There is a direct relationship between installation torque and Badger capacity. Continuous monitoring and recording of torque throughout installation gives a profile of the soil conditions. Please see inside back page for field installation log.

A 5' extension can be added to install the Badger deeper to reach the stronger soils and the required load capacity. After the Badger is installed, Badger Connector is bolted to the top of the Badger. The Super Brace shoe is removed and the Doka rod of the Super Brace is bolted between the ears of the connector. To remove the Badger, simply reverse the hydraulic motor and back it out of the ground. It is ready for immediate reuse.

169

Installation Requirements

- 1) Installation is performed by a MB Brace Badger Systems trained installer.
- 2) Using a hydraulic drive head, Brace Badgers (Item #580002) are installed to a torque of 2,400 ft-lbs. If the minimum required torque is not achieved with a single anchor, please contact Meadow Burke engineering for assistance. A 5' extensions (Item #580006) may be added until the torque minimum requirement is achieved. It is recommended that preliminary soil logs at the site be obtained to help predict project requirements. In softer soils with Standard Penetration Test (SPT) blow counts (N) less than 10, an extension may be required. Installation in rocky soils with blow counts (N) greater than 30 is not recommended. Also, frozen soils may require pre-auguring so that the anchor can reach below the frost line.
- 3) Maximum allowable installation torque is 7,000 ft-lbs.
- 4) Records of required installation torque for each Badger is required. Please see page 11 for field installation log.
- 5) Badgers to be installed in-line with the axis of the brace (+/- 5°).
- 6) Welding, cutting, or any modification of the Badger or its components is prohibited.
- 7) MB Badger Connector (item #580004) must be used for brace connection. To connect to brace, remove brace shoe and reuse 5/8" bolt for connector. Connector to Badger requires one 3/4"Ø x 3 1/2" grade 5 bolt.

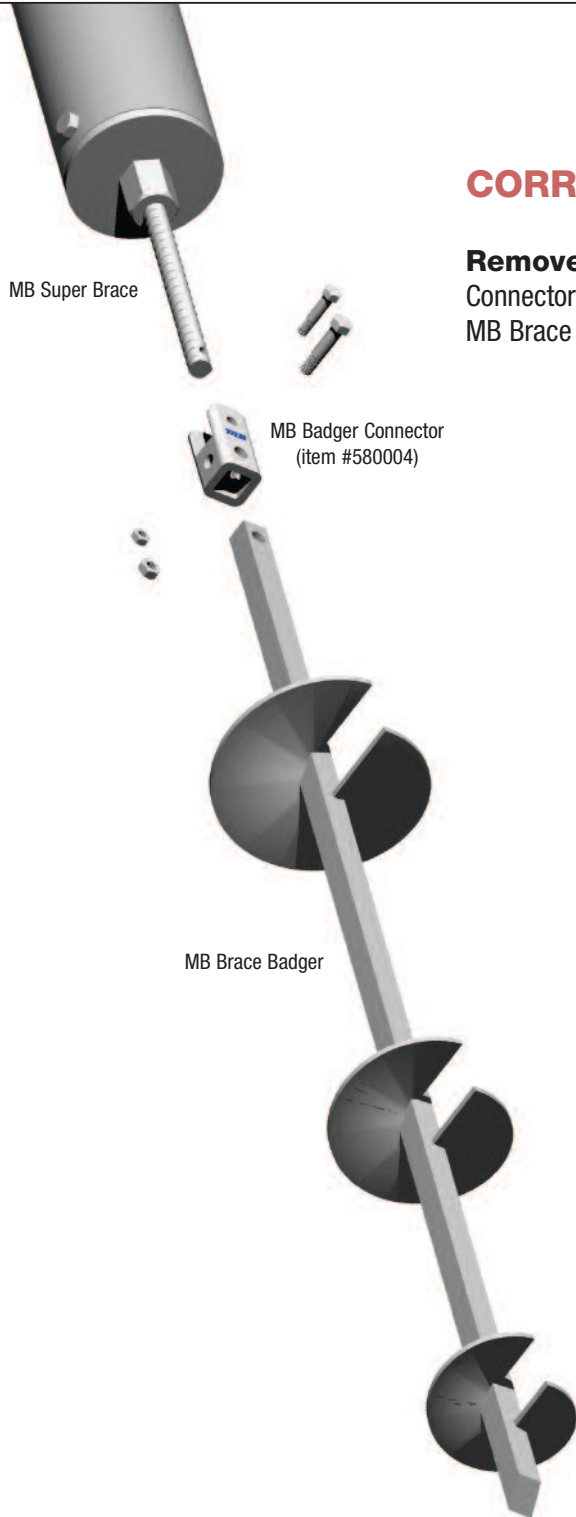
SAFETY NOTES

- 1) The contractor shall locate all the subsurface structures and utilities. Any subsurface structure or utility in the vicinity of the Badger locations shall be clearly marked. Horizontal Clearance of anchor from any subsurface structure or utility shall be no less than 5'-0" at the depth of the utility. Installation of Badgers underneath utilities or subsurface structures is strictly prohibited.
- 2) Do not use damaged or worn Brace Badgers. Failure to inspect and replace damaged anchors may result in anchor failure.
- 3) The contractor is to undergo preventive measures to mitigate soil erosion adjacent to installed anchors.
- 4) Any changes resulting from actual installation conditions of the Badger requires that the contractor contact Meadow Burke Engineering for further assistance to determine adequacy of anchor system.

(7150) MB Brace Badger Connector

CORRECT CONNECTION

Remove the brace shoe. Use the approved MB Badger Connector (item #580004) to attach bracing to the MB Brace Badger.



WRONG!

DO NOT attach bracing to the MB Badger using the brace shoe. This connection is not approved by Meadow Burke.

