SureBuilT
Concrete Forms & Accessories

Tilt-Up Forming and Accessories

Safety Information

Read, understand and follow the information in this publication before using any SureBuilt tilt-up products and accessories. When in doubt about the proper use or installation of any SureBuilt product, immediately contact the nearest SureBuilt branch for clarification.

SureBuilt products are intended for use by trained, qualified and experienced users only. Misuse or lack of supervision and/or inspection can contribute to serious accidents or deaths. Any application other than those shown in this publication should be carefully tested and supervised before use.

The user of SureBuilt products must evaluate the application, determine the safe working load and control all field conditions to prevent load in excess of product(s) capacity. Safety factors shown in this publication are approximate minimum values. The data used to develop safe working loads for products is a combination of actual testing and/or other industry sources. Do not exceed the recommended safe working loads.

Worn Parts
For safety, tilt-up products and accessories must be properly used and maintained. Products may be subject to wear, overloading, corrosion, deformation, alteration and other factors that may affect performance. It is the responsibility of the user to schedule regular inspections and remove worn and damaged parts from service.

Field Modification
Field welding can compromise product performance, alter load capacities, and create hazardous situations. Consult with a local welding supply dealer to determine appropriate welding procedures. Do not weld any casting unless approved by a licensed metallurgical engineer. Since SureBuilt can not control workmanship or site conditions, SureBuilt can not be responsible for any product alterations or field modifications.

Interchangeability
Tilt-up products manufactured and supplied by SureBuilt are designed as a system. When used properly, SureBuilt products have proven to be among the best designed and safest in the industry. SureBuilt strongly discourages efforts to interchange products supplied by other manufacturers because it may diminish performance and safety of the system.

Design Changes
SureBuilt reserves the right to change product designs, specifications, capacities and/or dimensions at any time and without prior notice.

Safety Factors
Safety factors established by the Occupational Safety and Health Administration (OSHA), Act Part 1910 and American National Standards Institute (ANSI 10.9) are recommended. Contact SureBuilt Engineering for questions or concerns regarding unforeseen site conditions. Safety factors should be adjusted when different or unusual conditions are known to exist.

Industry Recommendation	
Safety Factor*	**Intended Application**
1.67 to 1 **	Wall Braces
2 to 1	Brace Inserts
2 to 1	Lifting Inserts (single use)
3 to 1	Permanent panel connections
4 to 1	Panel handling (multiple lifts)
5 to 1	Lifting/Reusable Hardware

** Minimum requirement.*
*** Assumes ASD loads.*

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Product specifications subject to change without notice.

Ring-Lift System

SureBuilt has combined the best in design and manufacturing, with extensive industry experience, to create an effective, efficient and safe tilt-up system.

The Ring-Lift System is designed for tilt-up loads up to 22,000 lbs. System components are routinely sampled and tested for specification conformance and product performance.

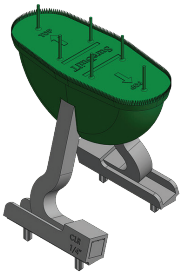
Lifter
The Lifter connects the tilt-up insert to crane rigging and lift the concrete panel from the casting surface. The “ring” shape hooks securely onto the loop of the insert for lifting and handling.

The design of the Lifter discharges the lateral forces of angular lifting directly into the tilt-up panel. Once lifted and braced in position, the Lifter can be safely released from the ground.

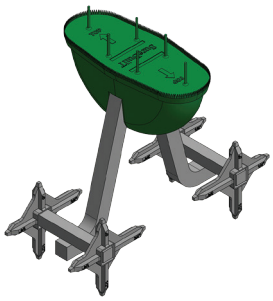
Lifter

Inserts
The SureLift (SL) Insert has double bend legs, non-rusting plastic feet and a disposable void former with locator antenna. The insert and rebar design determine the lifting requirements.

The ProLift (PRO) Insert is another type of insert with higher capacity. The non-rusting, star-shaped feet can be removed and rotated to provide 1/4” height adjustment.



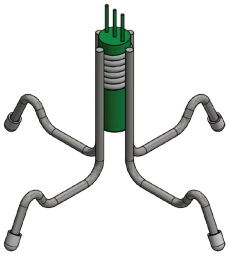
SureLift (SL) Insert



ProLift (PRO) Insert

Brace Insert
The Brace Insert provides an attachment point for the Strongbacks and Pipe Braces used during tilt-up lifting, handling and bracing.

A Double Brace Insert is also available to accurately position inserts for larger size panels, with greater loads, requiring multiple Pipe Braces.

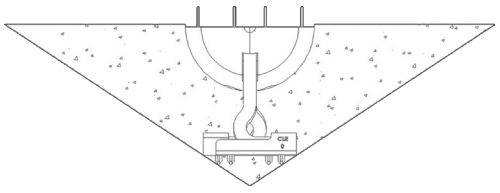


Brace Insert

Inverted Brace Insert

Insert Placement
The insert is designed and manufactured to create an effective, efficient and safe tilt-up system. These inserts are routinely sampled and tested for product performance. Tests confirm these inserts meet or exceed industry safety specifications.

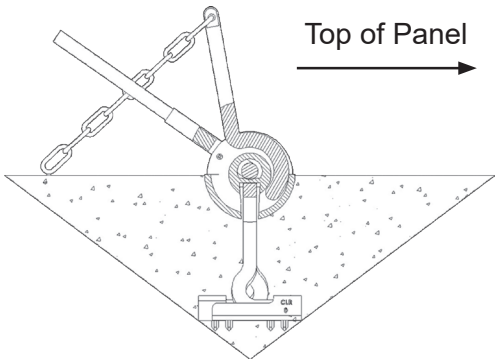
The insert legs and rebar design form the tilt-up panel shear cone. This is an angle of approximately 35° in relation to the longitudinal axis of the insert.



Insert Placement (rebar not shown)

Attaching the Lifter
The user must conduct a visual inspection to detect any possible damage or defects in the Lifter before use. The ring-shape of the Lifter hooks onto the loop of the insert for lifting.

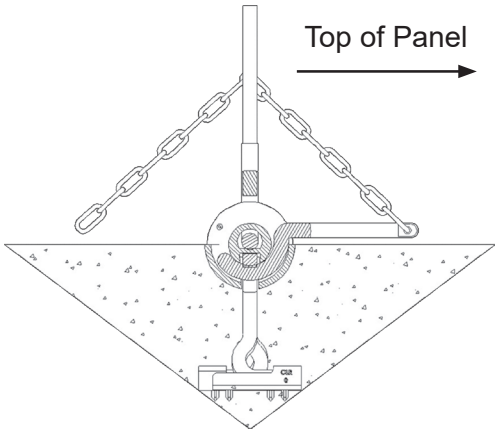
Move the handle to “open” the Lifter ring, position the Lifter over the insert and move the handle to “close”the ring.



Attaching the Lifter

Engaging the Lifting Clutch
Position the handle of the Lifter between the rigging and the top of the panel. The handle should be positioned against the concrete surface during lifting and handling.

The chain attachment should pass through the bail opening, then be connected to a line for a safe ground release.

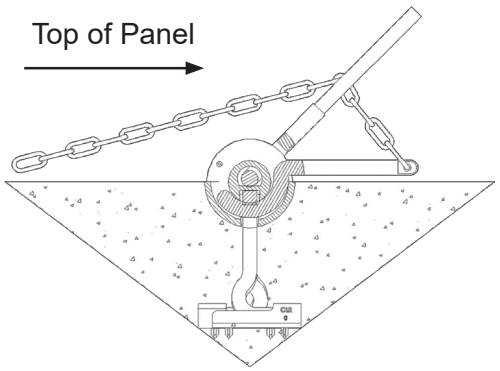


Engaging the Lifter

Preparing for Panel Lift
The user must conduct a visual inspection to detect any possible damage or defects in the Lifter.

The user must verify the crane rigging, capacity and positioning are adequate for the lifting sequence. Angular lifting increase the forces must be taken into account.

The handle should remain against the concrete surface during lifting and handling. All nonessential personnel should remain at a distance as a safety precaution.



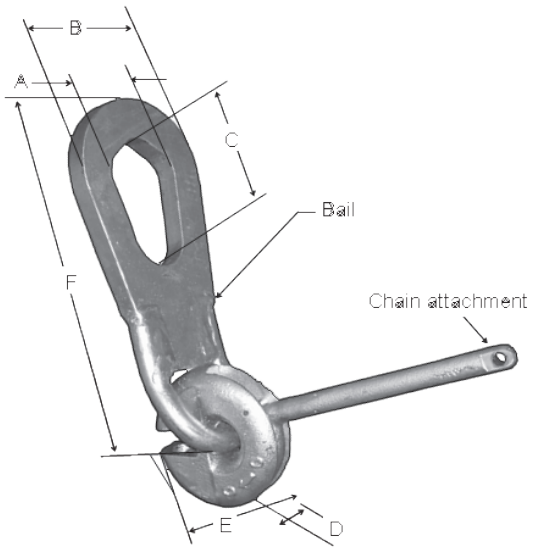
Preparing for Panel Lift

Lifter

The Lifter connects the tilt-up insert to crane rigging and lift the concrete panel from the casting surface. The “ring” shape hooks securely onto the loop of the insert for lifting and handling.

The design of the Lifter discharges the lateral forces of angular lifting directly into the tilt-up panel. Once lifted and braced in position, the Lifter can be safely released from the ground.

All erection calculations should be performed under the direct supervision of and reviewed by a Professional Engineer.



Ring-Lift Lifter								
Part No.	**Description**	**SWL***	**A (in.)**	**B (in.)**	**C (in.)**	**D (in.)**	**E (in.)**	**F (in.)**
SBRL22KP10T	Ring-Lift Lifter	22,000 lbs	2.50	4.75	3.38	2.38	5.00	10.25

** Safe Working Load (SWL) based on 5:1 safety factor.*

Panel weight - The inserts must be positioned as instructed to obtain equal load.

Angle Factor - The length of the sling and position of the inserts affect the load.

Angle in relation to concrete	90˚	75˚	60˚	45˚	30˚
Angle in relation to longitudinal axis	0˚	15˚	30˚	45˚	60˚
Increase of force in sling	1	1.04	1.16	1.43	2.00

Impact Factor - The lifting and handling of tilt-up panels affect the load.

Mobile crane at site	Force multiple of 1.5 to 1.7
Handling over uneven terrain	Force multiple of 1.6 to 2.0
Extreme circumstances	Force multiple of > 2.0

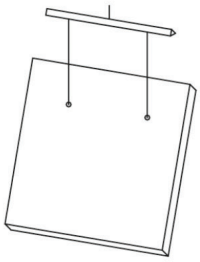
Adhesion Factor - The strength of adhesive forces depends on the shape and texture of the panel face, the surface on which the panel was placed, and/or the presence of water on the surface. The proper application of bondbreaker and the removal of any excess water is assumed in all cases.

Special considerations - For panels with complicated shapes, especially panels which may create suction during erection, higher factors must be considered. The resulting forces can be may times higher than the panel weight as represented by the following formula:

$$\text{Force} = \frac{\text{Panel Weight x Angle Factor x Impact Factor x Adhesion Factor*}}{\text{Number of Anchors}}$$

** The 2.5:1 safety factor already assumes 1.25 adhesion factor.*

Rigging



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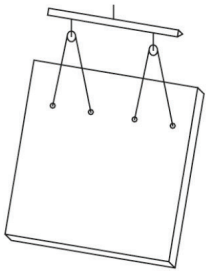

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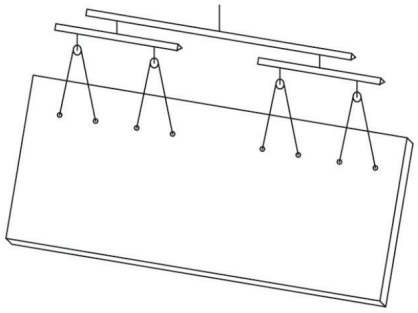

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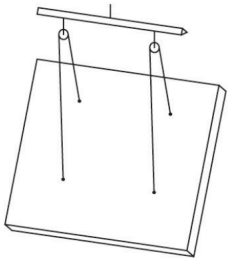
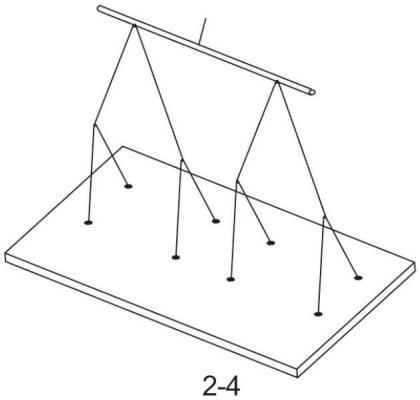


2-2



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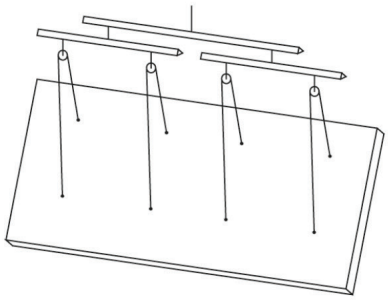

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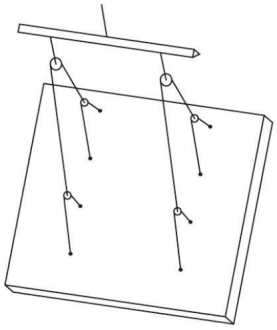

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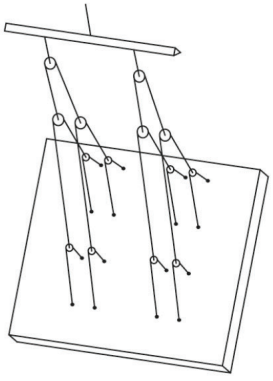

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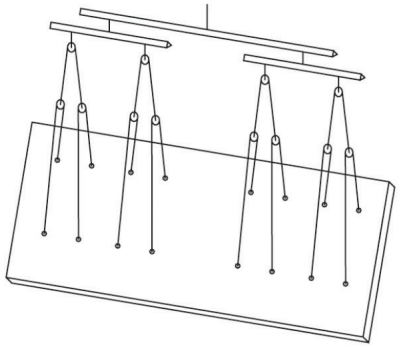


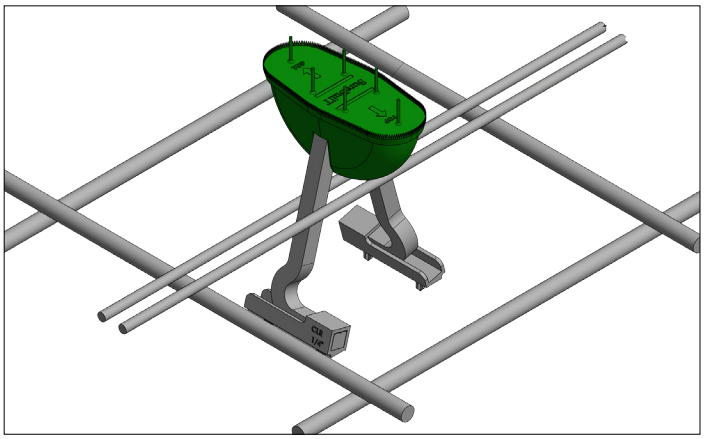
2-8

Insert positions and rigging must be provided by an experienced tilt-up professional.

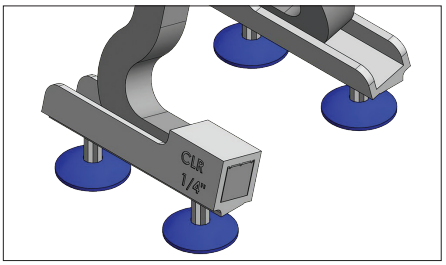
SureLift (SL) Insert

The SureLift Insert is designed for lifting tilt-up panels. The insert develops high pull-out strength for every panel thickness up to 12” (see table).

The integrated plastic former has antennae to identify the insert location and lid to keep concrete out of the lifting recess. The slide-on plastic feet, available for +1/4”, +1/2” or +3/4” adjustment, keep the steel insert feet away from the panel face to prevent corrosion.



Typical placement to prevent SL Insert from moving. Tie all rebar so installation is secure.



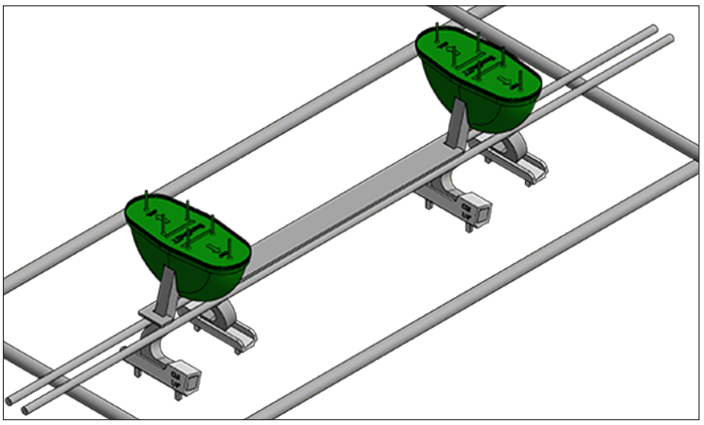
Optional plastic feet are used for positioning the SL insert on rigid foam for insulated panels.

SureLift (SL) Insert				
Part No.	**Description**	**Structural Thickness**	**2.5:1 SWL* (Tension lbs)**	**2:1 SWL* (Shear lbs)**
SBRL22SL6	SL Insert 6”	6”	10,450	14,800
SBRL22SL634	SL Insert 6-3/4”	6-3/4”	10,450	14,800
SBRL22SL7	SL Insert 7”	7”	13,500	19,000
SBRL22SL714	SL Insert 7-1/4”	7-1/4”	13,500	19,000
SBRL22SL712	SL Insert 7-1/2”	7-1/2”	13,500	19,000
SBRL22SL734	SL Insert 7-3/4”	7-3/4”	13,500	19,000
SBRL22SL8	SL Insert 8”	8”	15,500	21,900
SBRL22SL812	SL Insert 8-1/2”	8-1/2”	15,500	21,900
SBRL22SL9	SL Insert 9”	9”	18,350	22,000
SBRL22SL914	SL Insert 9-1/4”	9-1/4”	18,350	22,000
SBRL22SL934	SL Insert 9-3/4”	9-3/4”	18,350	22,000
SBRL22SL10	SL Insert 10”	10”	20,550	22,000
SBRL22SL11	SL Insert 11”	11”	22,000	22,000
SBRL22SL12	SL Insert 12”	12”	22,000	22,000
SBIF	Insulation Foot	--	--	--

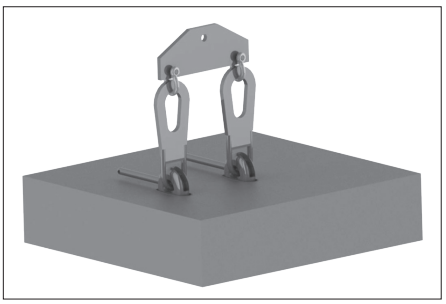
* *Safe Working Load (SWL) based on testing in 3,000 psi concrete.*

Double SureLift (SL) Insert

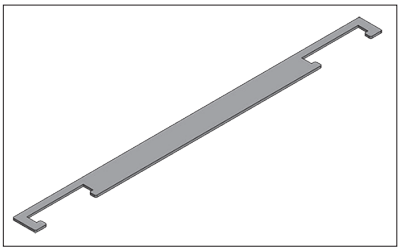
The capacity of the SureLift Insert is increased by using two inserts in combination. The two inserts, joined with a steel Spacer Strap, develop an even higher pull-out strength for every panel thickness up to 12” (see table).



The Double Insert is properly positioned at 18” OC with a Spacer Strap, then tied into the panel rebar.



Spreader Beam is used with double inserts and two Lifting Clutches for heavier panels.



Spacer Strap (18” OC)

Double SureLift (SL) Insert* (18” OC) with Spacer Strap				
Part No.	**Description**	**Structural Thickness**	**2.5:1 SWL** (Tension lbs)**	**2:1 SWL** (Shear lbs)**
SBRL22SL6D	Double SL Insert 6”	6”	20,900	29,550
SBRL22SL634D	Double SL Insert 6-3/4”	6-3/4”	20,900	29,550
SBRL22SL7D	Double SL Insert 7”	7”	26,900	32,000
SBRL22SL714D	Double SL Insert 7-1/4”	7-1/4”	26,900	32,000
SBRL22SL712D	Double SL Insert 7-1/2”	7-1/2”	26,900	32,000
SBRL22SL734D	Double SL Insert 7-3/4”	7-3/4”	26,900	32,000
SBRL22SL8D	Double SL Insert 8”	8”	30,950	32,000
SBRL22SL812D	Double SL Insert 8-1/2”	8-1/2”	30,950	32,000
SBRL22SL9D	Double SL Insert 9”	9”	32,000	32,000
SBRL22SL914D	Double SL Insert 9-1/4”	9-1/4”	32,000	32,000
SBRL22SL934D	Double SL Insert 9-3/4”	9-3/4”	32,000	32,000
SBRL22SL10D	Double SL Insert 10”	10”	32,000	32,000
SBRL22SL11D	Double SL Insert 11”	11”	32,000	32,000
SBRL22SL12D	Double SL Insert 12”	12”	32,000	32,000
SBRL22SS18	Spacer Strap 18” OC	--	--	--

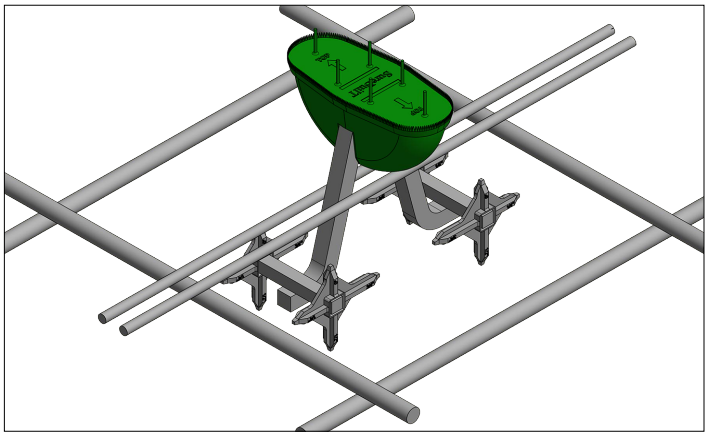
** Double SureLift Insert is two inserts (18” OC) connected with Spacer Strap.*

*** Safe Working Load (SWL) based on testing in 3,000 psi concrete.*

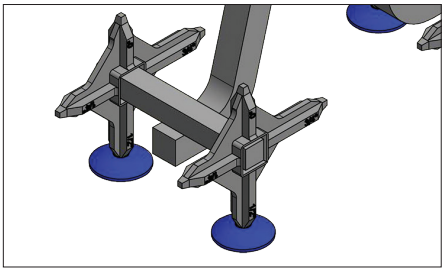
ProLift (PRO) Insert

The ProLift Insert is designed for lifting tilt-up panels. The insert develops high pull-out strength with the additional base crossbars.

The integrated plastic former has antennae to identify the insert location and lid to keep concrete out of the lifting recess. The star-shaped plastic feet, rotated for +1/4", +1/2" or +3/4" adjustment, keep the steel insert feet away from the panel face to prevent corrosion.



Typical placement to prevent PRO Insert from moving. Tie all rebar so installation is secure.



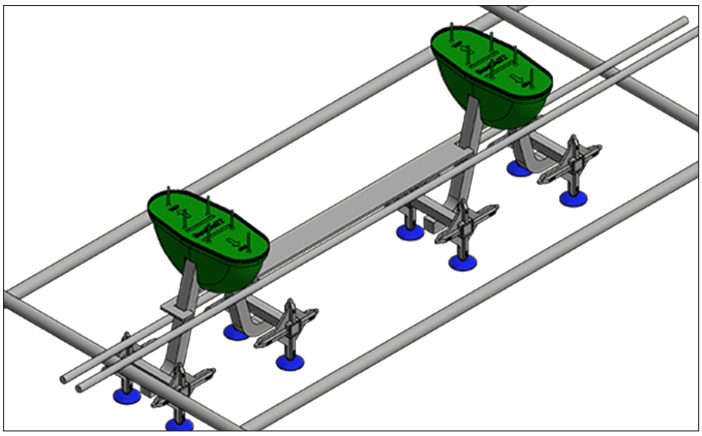
Optional plastic feet are used for positioning the PRO insert on rigid foam for insulated panels.

ProLift (PRO) Insert				
Part No.	**Description**	**Structural Thickness**	**2.5:1 SWL* (Tension lbs)**	**2:1 SWL* (Shear lbs)**
SBRL22PRO6	PRO Insert 6"	6"	14,300	19,500
SBRL22PRO634	PRO Insert 6-3/4"	6-3/4"	14,300	19,500
SBRL22PRO7	PRO Insert 7"	7"	17,350	22,000
SBRL22PRO714	PRO Insert 7-1/4"	7-1/4"	17,350	22,000
SBRL22PRO712	PRO Insert 7-1/2"	7-1/2"	17,350	22,000
SBRL22PRO734	PRO Insert 7-3/4"	7-3/4"	17,350	22,000
SBRL22PRO8	PRO Insert 8"	8"	19,000	22,000
SBRL22PRO812	PRO Insert 8-1/2"	8-1/2"	19,000	22,000
SBRL22PRO9	PRO Insert 9"	9"	22,000	22,000
SBRL22PRO914	PRO Insert 9-1/4"	9-1/4"	22,000	22,000
SBRL22PRO934	PRO Insert 9-3/4"	9-3/4"	22,000	22,000
SBRL22PRO10	PRO Insert 10"	10"	22,000	22,000
SBRL22PRO11	PRO Insert 11"	11"	22,000	22,000
SBRL22PRO12	PRO Insert 12"	12"	22,000	22,000
SBIF	Insulation Foot	--	--	--

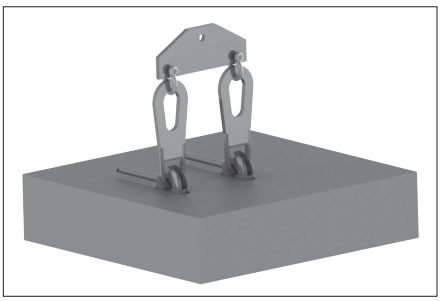
* *Safe Working Load (SWL) based on testing in 3,000 psi concrete.*

Double ProLift (PRO) Insert

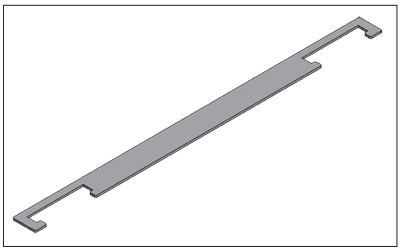
The capacity of the ProLift Insert is increased by using two inserts in combination. The two inserts, joined with a steel Spacer Strap, develop an even higher pull-out strength for every panel thickness up to 12” (see table).



The Double Insert is properly positioned at 18” OC with a Spacer Strap, then tied into the panel rebar.



Spreader Beam is used with double inserts and two Lifting Clutches for heavier panels.



Spacer Strap (18” OC)

Double ProLift (PRO) Insert* (18” OC) with Spacer Strap				
Part No.	**Description**	**Structural Thickness**	**2.5:1 SWL** (Tension lbs)**	**2:1 SWL** (Shear lbs)**
SBRL22PRO6D	Double PRO Insert 6”	6”	22,000	30,000
SBRL22PRO634D	Double PRO Insert 6-3/4”	6-3/4”	22,000	30,000
SBRL22PRO7D	Double PRO Insert 7”	7”	27,000	33,000
SBRL22PRO714D	Double PRO Insert 7-1/4”	7-1/4”	28,000	33,000
SBRL22PRO712D	Double PRO Insert 7-1/2”	7-1/2”	28,000	33,000
SBRL22PRO734D	Double PRO Insert 7-3/4”	7-3/4”	28,000	33,000
SBRL22PRO8D	Double PRO Insert 8”	8”	32,000	33,000
SBRL22PRO812D	Double PRO Insert 8-1/2”	8-1/2”	32,000	33,000
SBRL22PRO9D	Double PRO Insert 9”	9”	33,000	33,000
SBRL22PRO914D	Double PRO Insert 9-1/4”	9-1/4”	33,000	33,000
SBRL22PRO934D	Double PRO Insert 9-3/4”	9-3/4”	33,000	33,000
SBRL22PRO10D	Double PRO Insert 10”	10”	33,000	33,000
SBRL22PRO11D	Double PRO Insert 11”	11”	33,000	33,000
SBRL22PRO12D	Double PRO Insert 12”	12”	33,000	33,000
SBRL22SS18	Spacer Strap 18” OC	--	--	--

** Double SureLift Insert is two inserts (18” OC) connected with Spacer Strap.*

*** Safe Working Load (SWL) based on testing in 3,000 psi concrete.*

Straight Leg Erection Anchor

Lifting tilt-up panels from the edge is simple and safe with the Straight Leg Erection Anchor. This anchor is ideal for horizontal-to-vertical edge lifts and shear rotation of thin-wall panels.

The body of the Straight Erection Anchor is shaped to integrate with the panel reinforcement. The addition of a shear plate to the anchor design eliminates the need for a shear bar, making it easier to install.

Two steel “ears” at the top of the anchor “hug” either side of the Ring-Lift Clutch, restricting rotation during lateral pulls. Any lateral forces are directed into the anchor to prevent edge spalling.

A Disposable Void Former snaps over the top of the Straight Leg Erection Anchor. This removable and disposable plastic former keeps the lifting point identifiable and accessible after concrete placement is complete.

Though the anchor has an integrated shear plate to simplify installation, there are times when a Tension Bar might be added to maximize load capacity.

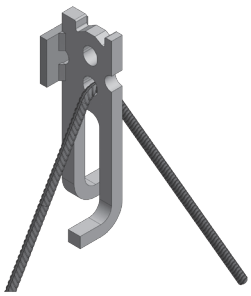
Straight Leg Erection Anchor*					
Part No.	**Description/Capacity**	**Clutch ID**	**Width**	**Length**	**Thickness**
SBSLE4TSPG	Straight Leg Erection Anchor 4T	4-5T	3-1/16”	10-1/2”	5/8”
SBSLE8TSPGN	Straight Leg Anchor 8T - Narrow	8-10T	3-1/2”	13”	3/4”
SBSLE8TSPG	Straight Leg Erection Anchor 8T	8-10T	4”	13”	3/4”

** Panels less than 6” thick require 4T Straight Leg Erection Anchor.*

Disposable Former		
Part No.	**Description**	**Clutch ID**
SBRLDF5T	Disposable Former 5T (Orange)	4-5T
SBRLDF8T	SB Disposable Former 8T (Blue)	8-10T

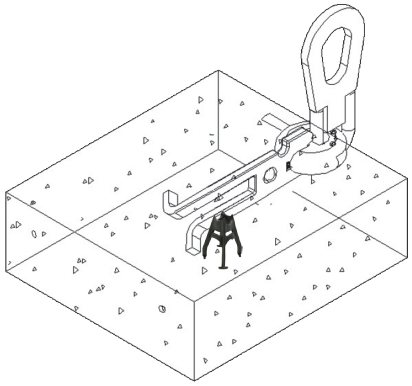
Tension Bar (shown with anchor)			
Part No.	**Description**	**Rebar**	**Length***
SBTB4T	Tension Bar 4-5T	#5	54”
SBTB8T	Tension Bar 8-10T	#6	66”

** Minimum total length, including bend, to develop full strength of anchor.*

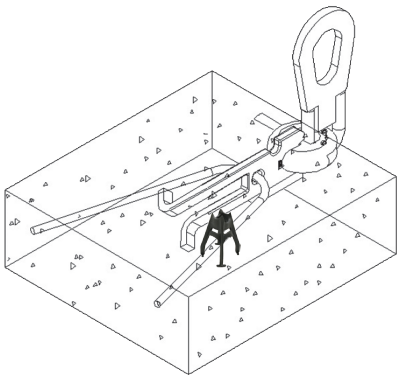


Straight Leg Erection Anchor* (with no Shear Bar)					
Capacity (tons)	**Clutch ID marking**	**Panel Thickness****	**Shear*****	**Tension w/o Tension Bar********	**Tension with Tension Bar*********
4T	4-5T	5”	3,450 lbs	3,600 lbs	8,000 lbs
4T	4-5T	5-1/2”	4,200 lbs	4,800 lbs	8,000 lbs
8T	8-10T	6”	4,600 lbs	8,500 lbs	22,000 lbs
8T	8-10T	6-1/2”	5,000 lbs	11,000 lbs	22,000 lbs
8T	8-10T	7”	5,400 lbs	16,500 lbs	22,000 lbs
8T	8-10T	7-1/2”	5,684 lbs	20,000 lbs	22,000 lbs
8T	8-10T	8”	5,958 lbs	22,000 lbs	22,000 lbs
8T	8-10T	9”	6,589 lbs	22,000 lbs	22,000 lbs
8T	8-10T	10”	7,041 lbs	22,000 lbs	22,000 lbs
8T	8-10T	11”	7,448 lbs	22,000 lbs	22,000 lbs
8T	8-10T	12”	7,853 lbs	22,000 lbs	22,000 lbs

** Minimum distance to panel corners is 24”, minimum distance between inserts is 24”.*
*** Anchor must be centered within panel thickness, panels less than 6” thick require 4T anchor.*
**** 2.5:1 safety factor in 3,000 psi concrete.*
***** 2:1 safety factor in 3,000 psi concrete.*
****** The 4T requires minimum 54” #5 Tension Bar, 8T requires minimum 66” #6 Tension Bar.*



Straight Leg Erection Anchor with chair support and no Tension Bar



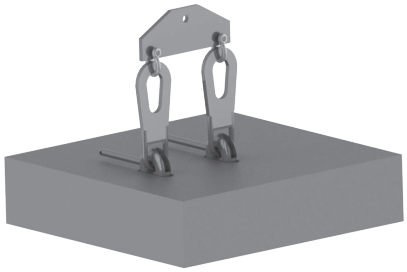
Straight Leg Erection Anchor with chair support and Tension Bar at 30° spread

Lifting System

The lifting system consists of two inserts, two Ring-Lift Clutches and a Spreader Beam with two 10 ton shackles.

To develop the safe working load, inserts must be properly positioned within the panel dimension. Single inserts must be accurately spaced 18” on-center or a double insert must be the used. Improper positioning or inaccurate spacing will affect and reduce the lifting capacity.

The Double Insert (SL or PRO) is a fixed position assembly that simplifies the panel installation and matches the Spreader Beam spacing.



Spreader Beam is used with double inserts and two Ring-Lift Clutches for heavier panels.

Spreader Beam with Twin Shackles
The Spreader Beam is designed with two 10 ton shackles and must be used with two ground release Ring-Lift Clutches. This will eliminate many of the rigging challenges for very large or heavy tilt-up panels.

The large center hole in the Spreader Beam will accept the many different sizes of shackles used by tilt-up panel erectors.

Double Insert Spreader Beam

Double Insert Spreader Beam		
Part No.	**Description**	**SWL***
SBDISB18	Double Insert Spreader Beam	35,000 lbs

** Safe Working Load (SWL) based on 5:1 safety factor.*

Emergency Lifting Plate

The Emergency Lift Plate is designed for situations when the original insert is improperly located or unusable. The plate is attached to the tilt-up panel using Titen HD Anchors 3/4”x6” (recommended) or equivalent. Refer to manufacturer instructions and load chart for proper anchor installation and capacity.

The Emergency Lift Plate should be installed over the original insert location or in alternate position designated by an experienced tilt-up professional. If uncertain about the location, contact the lift/brace engineer for further recommendations. Always be certain the Emergency Lift Plate is aligned with crane rigging cables.

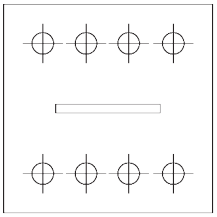
The Emergency Lift Plate has a maximum safe working load (SWL) of 22,000 lbs. (at 5:1 safety factor) and should never be used in excess of that capacity.

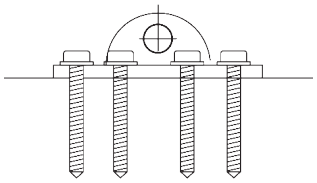
When drilling holes for anchors, be careful not to inadvertently damage structural rebar in the tilt-up panel. Only the Engineer of Record (EOR) can approve deviations in the rebar design or integrity. Contact the lift/brace engineer if additional reinforcing or another configuration is needed for lifting purposes.

Emergency Lifting Plate		
Part No.	**Description**	**SWL***
SBELP	Emergency Lifting Plate 12”x12”	22,000 lbs

** Safe Working Load (SWL) based on 5:1 safety factor.*

Emergency Lifting Plate





Emergency Lift Plate

with recommended
Titen HD Anchor 3/4” X 6”
Safe working load is 6,845 lbs
(2:1 safety factor)

Warning:
1. Concrete must have a minimum of 3,000 psi compressive strength.
2. Do not use the Titen HD Anchor in tilt-up panels thinner than 7”.
3. Edge distance should be a minimum of 12” to center of holes.
4. Do not reuse Titen HD Anchor bolts.

Installation:
1. Drill holes at 90 degree angle to the panel surface using a 3/4” diameter carbide-tipped drill bit.
2. Drill a minimum of 5-3/4” deep for 6” anchor into the panel. Use the Emergency Lift Plate as a template.
3. Clean the drilled holes with compressed air or blow-out bulb.
4. Only use new Anchors with clean and undamaged threads.
5. Place Emergency Lift Plate over the holes and position Anchors.
6. Securely tighten the anchor using a 3/4” impact wrench to a minimum of 100 ft-lbs torque.
7. Use 3/4” F436 Structural Washer where needed.

Strongback

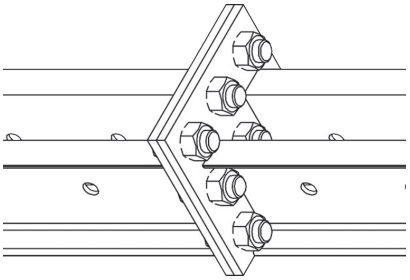
Strongbacks consist of back-to-back steel channels that are spliced together with butt plates and 3/4" bolts to create the required length.

Strongbacks are used to reinforce critical areas of panels during erection. Assembled strongbacks provide an open channel over the entire length for bolting to panel inserts.

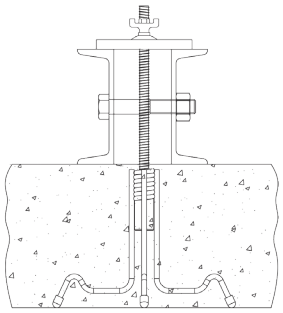
Panels with door and window openings may require strongbacks for temporary support during erection. As a guideline, when any concrete dimension is less than 2 feet wide or any panel thickness is less than 7", strongbacks are recommended.

Strongbacks can be placed near or over panel openings to prevent “hinge” cracking during lifting. The panel engineering company must advise on inserts, spacing and waler length.

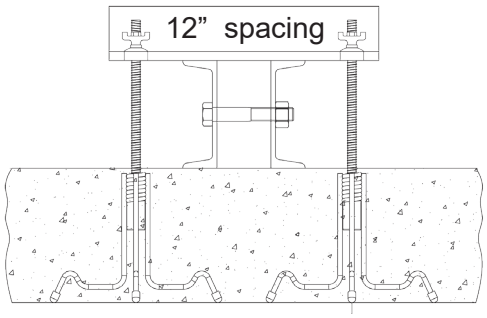
Strongbacks are temporarily bolted to each insert with a coil rod, washer and nut. The coil rod is placed between the back-to-back channels with the washer bearing on the waler. When bolted the strongback reinforces the panel for handling.



Strongbacks can be bolted to create different lengths.



Butt Plate Waler used as strongback with Single Insert, Flat Washer and Strongback Bolt/Nut.



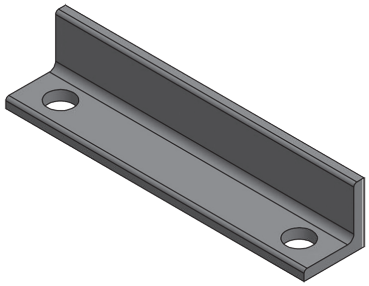
Butt Plate Waler used as strongback with Double Insert, Strongback Angle and Strongback Bolts/Nuts.

Butt Plate Waler/Strongback		
Part No.	**Description**	**Weight**
SBBPW64	Butt Plate Waler 6” x 4'	66 lbs
SBBPW68	Butt Plate Waler 6” x 8’	132 lbs
SBBPW610	Butt Plate Waler 6” x 10’	164 lbs
SBBPW84	Butt Plate Waler 8” x 4’	92 lbs
SBBPW88	Butt Plate Waler 8” x 8’	184 lbs
SBBPW810	Butt Plate Waler 8” x 10’	230 lbs
SBSBB	Strongback Bolt 3/4”x16”	---
SBFW3435	Flat Washer 3/4”x3”x5”	---
SBSBA112	Strongback Angle 12” OC	---
SBSWN34	Wing Nut 3/4”	---

Moment capacity for 6” = 18.75 kip-ft @ 1.67:1 safety factor.
Moment capacity for 8” = 34.6 kip-ft @ 1.67:1 safety factor.

Strongback Inserts

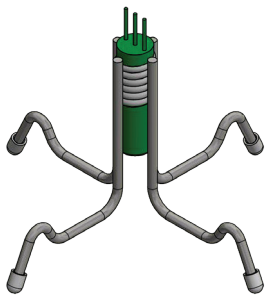
The Strongback Angle is used to fasten the Butt Plate Strongback to the Double Insert and support the panel during lifting.



Strongback Angle

Strongback Insert with Plug* (Bolt sold separately)		
Part No.	**Description**	**SWL****
SBSBI345	Strongback Insert 3/4”x5” wPlug	7,200 lbs
SBSBI346	Strongback Insert 3/4”x6” wPlug	9,600 lbs
SBSBI34612	Strongback Insert 3/4”x6-1/2” wPlug	9,900 lbs
SBSBI34714	Strongback Insert 3/4”x7-1/4” wPlug	10,200 lbs
SBSBI348	Strongback Insert 3/4”x8” wPlug	11,600 lbs
SBSBI34812	Strongback Insert 3/4”x8-1/2” wPlug	11,600 lbs
SBSBI34914	Strongback Insert 3/4”x9-1/4” wPlug	11,600 lbs
SBSBI3410	Strongback Insert 3/4”x10” wPlug	11,600 lbs
SBSBI341114	Strongback Insert 3/4”x11-1/4” wPlug	11,600 lbs
SBSBI3412	Strongback Insert 3/4”x12” wPlug	11,600 lbs

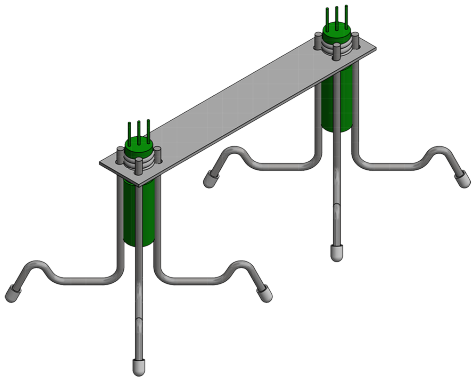
** Distance from edge is minimum 12” or loads must be reduced.*
*** Safe Working Load (SWL) based on 2:1 safety factor.*



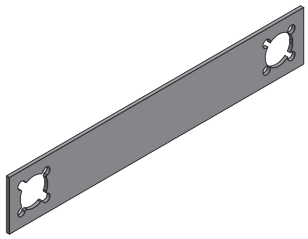
Strongback Insert

Double Strongback Insert (12” OC) with Spacer Strap		
Part No.	**Description**	**SWL****
SBDSBI345	Double Insert 3/4”x5” wSpacer	12,960 lbs
SBDSBI346	Double Insert 3/4”x6” wSpacer	17,280 lbs
SBDSBI34612	Double Insert 3/4”x6-1/2” wSpacer	17,820 lbs
SBDSBI34714	Double Insert 3/4”x7-1/4” wPlug	18,360 lbs
SBDSBI348	Double Insert 3/4”x8” wSpacer	20,880 lbs
SBDSBI34812	Double Insert 3/4”x8-1/2” wSpacer	20,880 lbs
SBDSBI34914	Double Insert 3/4”x9-1/4” wSpacer	20,880 lbs
SBDSBI3410	Double Insert 3/4”x10” wSpacer	20,880 lbs
SBDSBI341114	Double Insert 3/4”x11-1/4” wSpacer	20,880 lbs
SBDSBII3412	Double Insert 3/4”x12” wSpacer	20,880 lbs
SBDSBISS12	Spacer Strap 12” OC	--

** Distance from edge must be a minimum 12” or load is reduced.*
*** Safe Working Load (SWL) based on 2:1 safety factor.*



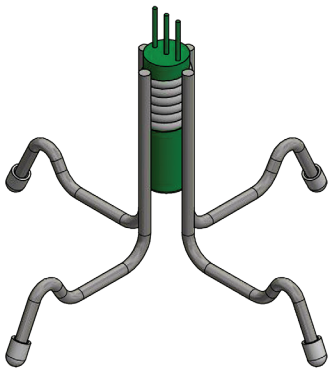
Double Strongback Insert (12” OC) with Spacer Strap



Spacer Strap (12” OC)

Brace Insert

The Brace Insert has wire legs, welded to a coil insert, with a disposable plastic plug. The wire legs have plastic feet to prevent corrosion at the concrete face. The plastic plug has antennae to locate the insert after concrete placement. The number and location of Brace Inserts will vary based on the dimensions of each tilt-up panel. Other sizes are available on request.



When the disposable plastic plug is removed from the tilt-up panel the coil insert is exposed, providing the anchor point for subsequent bracing.

Brace Insert with Plug* (Bolt sold separately)		
Part No.	**Description**	**SWL****
SBBI345	Brace Insert 3/4”x5” wPlug	7,200 lbs
SBBI346	Brace Insert 3/4”x6” wPlug	9,600 lbs
SBBI34612	Brace Insert 3/4”x6-1/2” wPlug	9,900 lbs
SBBI34714	Brace Insert 3/4”x7-1/4” wPlug	10,200 lbs
SBBI348	Brace Insert 3/4”x8” wPlug	11,600 lbs
SBBI34812	Brace Insert 3/4”x8-1/2” wPlug	11,600 lbs
SBBI34914	Brace Insert 3/4”x9-1/4” wPlug	11,600 lbs
SBBI3410	Brace Insert 3/4”x10” wPlug	11,600 lbs
SBBI341114	Brace Insert 3/4”x11-1/4” wPlug	11,600 lbs
SBBI3412	Brace Insert 3/4”x12” wPlug	11,600 lbs
SBCB344	Coil Bolt 3/4”x4”	---

** Distance from edge must be minimum 12” or load is reduced.*
*** Safe Working Load (SWL) based on 2:1 safety factor @ 3,000 psi.*

Inverted Brace Insert

The Inverted Brace Insert is designed for tilt-up panels where the anchor point for bracing is located on the bottom side of the concrete placement. Other sizes are available on request.

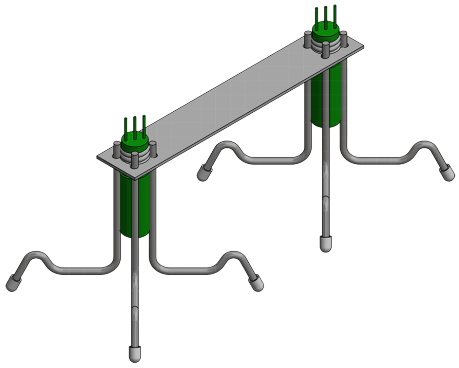
Inverted Brace Insert with Plug* (Bolt sold separately)		
Part No.	**Description**	**SWL****
SBIBI346	Inverted Brace Insert 3/4”x6” wPlug	9,000 lbs
SBCB344	Coil Bolt 3/4”x4”	---

** Distance from edge must be minimum 12” or load is reduced.*
*** Safe Working Load (SWL) based on 2:1 safety factor @ 3,000 psi.*

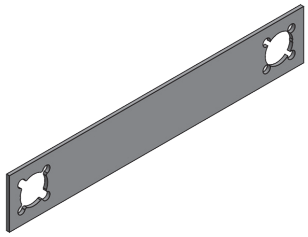
Double Brace Insert

The Double Brace Insert (10” OC) has wire legs, welded to a coil insert with disposable plastic plugs, and Spacer Strap. The wire legs have plastic feet to prevent corrosion at the concrete face. The plastic plugs have antennae to locate the inserts after concrete placement. The Spacer Strap keeps the inserts properly positioned. The number and location will vary based on the dimensions of each panel.

When the disposable plugs are removed from the panel, the coil inserts are exposed, providing the bolt locations for subsequent bracing.



Double Brace Insert (10” OC) with Spacer Strap



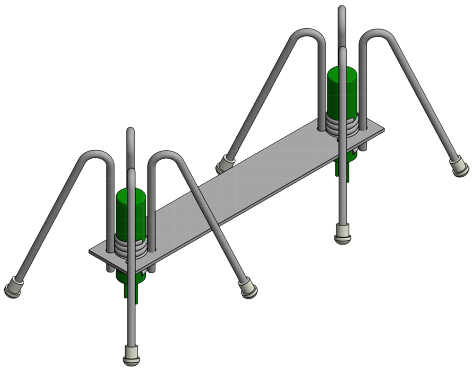
Spacer Strap (10” OC)

Double Brace Insert with Spacer Strap		
Part No.	**Description**	**SWL****
SBDBI345	Double Brace Insert 3/4”x5”	12,960 lbs
SBDBI346	Double Brace Insert 3/4”x6”	17,280 lbs
SBDBI34612	Double Brace Insert 3/4”x6-1/2”	17,820 lbs
SBDBI34714	Double Brace Insert 3/4”x7-1/4”	18,360 lbs
SBDBI348	Double Brace Insert 3/4”x8”	20,880 lbs
SBDBI34812	Double Brace Insert 3/4”x8-1/2”	20,880 lbs
SBDBI34914	Double Brace Insert 3/4”x9-1/4”	20,880 lbs
SBDBI3410	Double Brace Insert 3/4”x10”	20,880 lbs
SBDBI341114	Double Brace Insert 3/4”x11-1/4”	20,880 lbs
SBDBI3412	Double Brace Insert 3/4”x12”	20,880 lbs
SBDBISS10	Spacer Strap 10” OC	--
SBCB344	Coil Bolt 3/4”x4”	---

** Distance from edge must be minimum 12” or load is reduced.*
*** Safe Working Load (SWL) based on 2:1 safety factor @ 3,000 psi.*

Double Inverted Brace Insert

The Double Inverted Brace Insert (10” OC) is designed for panels where the anchor points for bracing are located on the bottom side of the concrete placement. Other sizes are available on request.



Double Inverted Brace Insert (10” OC) with Spacer Strap

Double Inverted Brace Insert with Spacer Strap		
Part No.	**Description**	**SWL****
SBDIBI346	Double Inv Brace Insert 3/4”x6”	17,280 lbs
SBCB344	Coil Bolt 3/4”x4”	---

** Distance from edge must be minimum 12” or load is reduced.*
*** Safe Working Load (SWL) based on 2:1 safety factor @ 3,000 psi.*

Pipe Braces

Adjustable Pipe Braces have a telescoping pipe for rough dimension, 6” threaded rod for adjustment and connecting shoes for anchoring. There are three sizes of Adjustable Pipe Brace, ranging from 7’-6” to 40’-0” (refer to the table for additional information).

Pipe Braces have a fixed length, 18” threaded rod for adjustment and connecting shoes for anchoring. There are four sizes, including optional extension lengths, ranging from 16’-6” to 32’-3” (refer to the table for additional information).

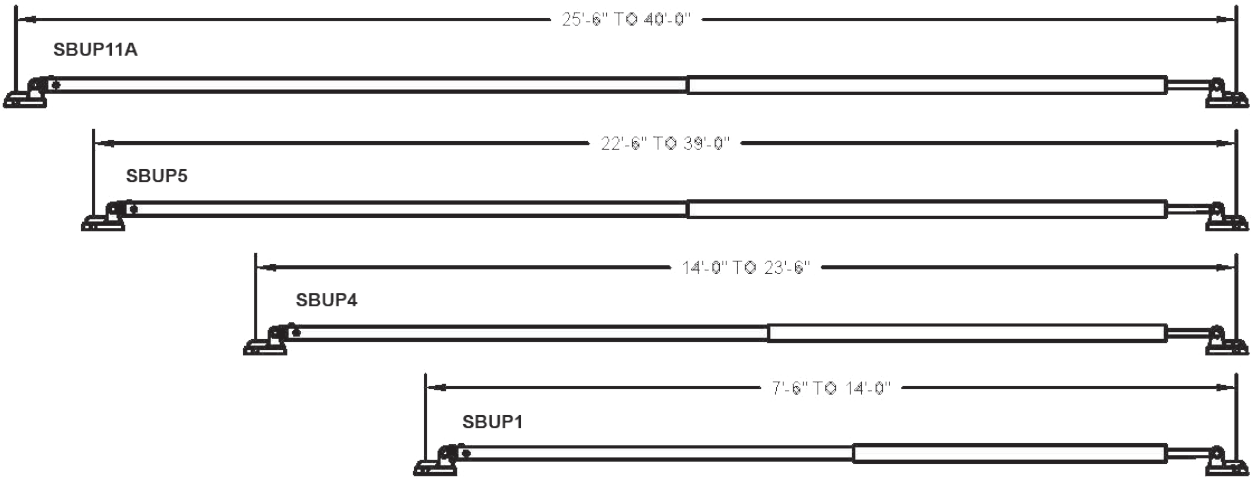
Heavy-Duty Pipe Braces have a larger diameter pipe for greater capacity, 18” threaded rod for adjustment and connecting shoes anchoring. There are six sizes, including extensions, ranging from 31’-9” to 53’-3” (refer to the table for additional information).

Pipe Braces					
Part No.	Description	Length		Ultimate Brace Load* w/o Knee Bracing	Weight (lbs)
		Min	Max	Maximum	
Adjustable Pipe Brace					
SBUP1	Adjustable Pipe Brace	7’-6”	14’-0”	9,750 / 6,600 lbs	95.0
SBUP4	Adjustable Pipe Brace	14’-0”	23’-6”	9,750 / 3,200 lbs	130.0
SBUP5	Adjustable Pipe Brace	22’-6”	39’-0”	9,750 / not recommended	208.0
SBUP11A	Adjustable Pipe Brace	25’-6”	40’-0”	13,500 / 8,250 lbs	295.0
Pipe Brace (4” diameter)					
SBPB417	Pipe Brace	16’-6”	17’-6”	9,750 lbs	105.0
SBPB422	Pipe Brace	21’-0”	22’-2”	9,750 lbs	136.0
SBPB427	Pipe Brace w/ 5’ Ext	26’-1”	27’-3”	7,200 lbs	188.0
SBPB432	Pipe Brace w/ 10’ Ext	31’-1”	32’-3”	5,400 lbs	224.0
SBPBE45	Pipe Brace Ext Only 5’	5’-0”	-	-	23.0
SBPBE410	Pipe Brace Ext Only 10’	10’-0”	-	-	46.0
SBPBE415	Pipe Brace Ext Only 15’	15’-0”	-	-	69.0
Heavy-Duty Pipe Brace (5-1/2” diameter)					
SBPB51232	HD Pipe Brace	31’-9”	33’-3”	13,500 lbs	295.0
SBPB51237	HD Pipe Brace w/ 5’ Ext	36’-9”	38’-3”	12,000 lbs	360.0
SBPB51242	HD Pipe Brace w/ 10’ Ext	41’-9”	43’-3”	8,040 lbs	400.0
SBPB51252	HD Pipe Brace w/ 20’ Ext	51’-9”	53’-3”	5,775 lbs	520.0
SBPBE5125	HD Pipe Brace Ext Only 5’	5’-0”	-	-	
SBPBE51210	HD Pipe Brace Ext Only 10’	10’-0”	-	-	
SBPBE51220	HD Pipe Brace Ext Only 20’	20’-0”	-	-	

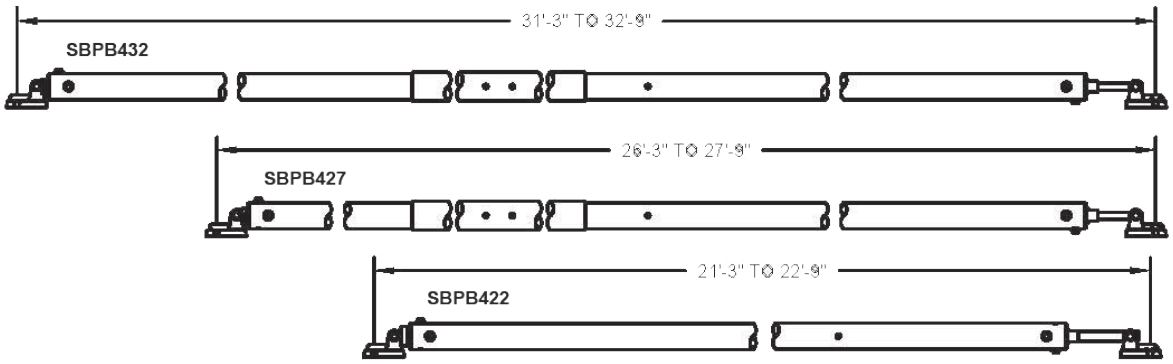
** Ultimate Brace Load based on test reports and calculations.*

See Brace Spacing table on pages 40-41.

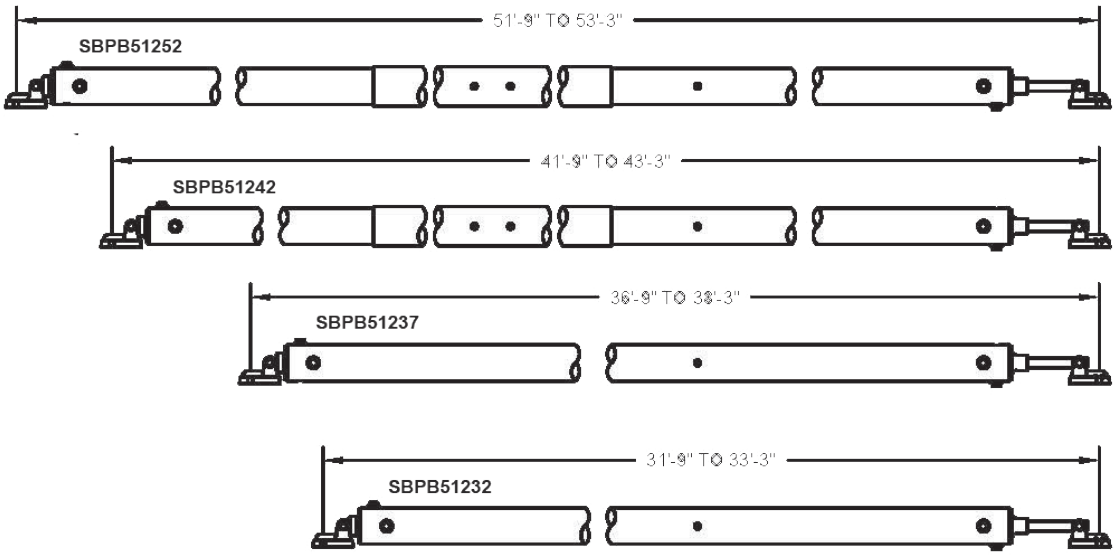
Adjustable Pipe Braces



Fixed Pipe Braces (4” diameter)



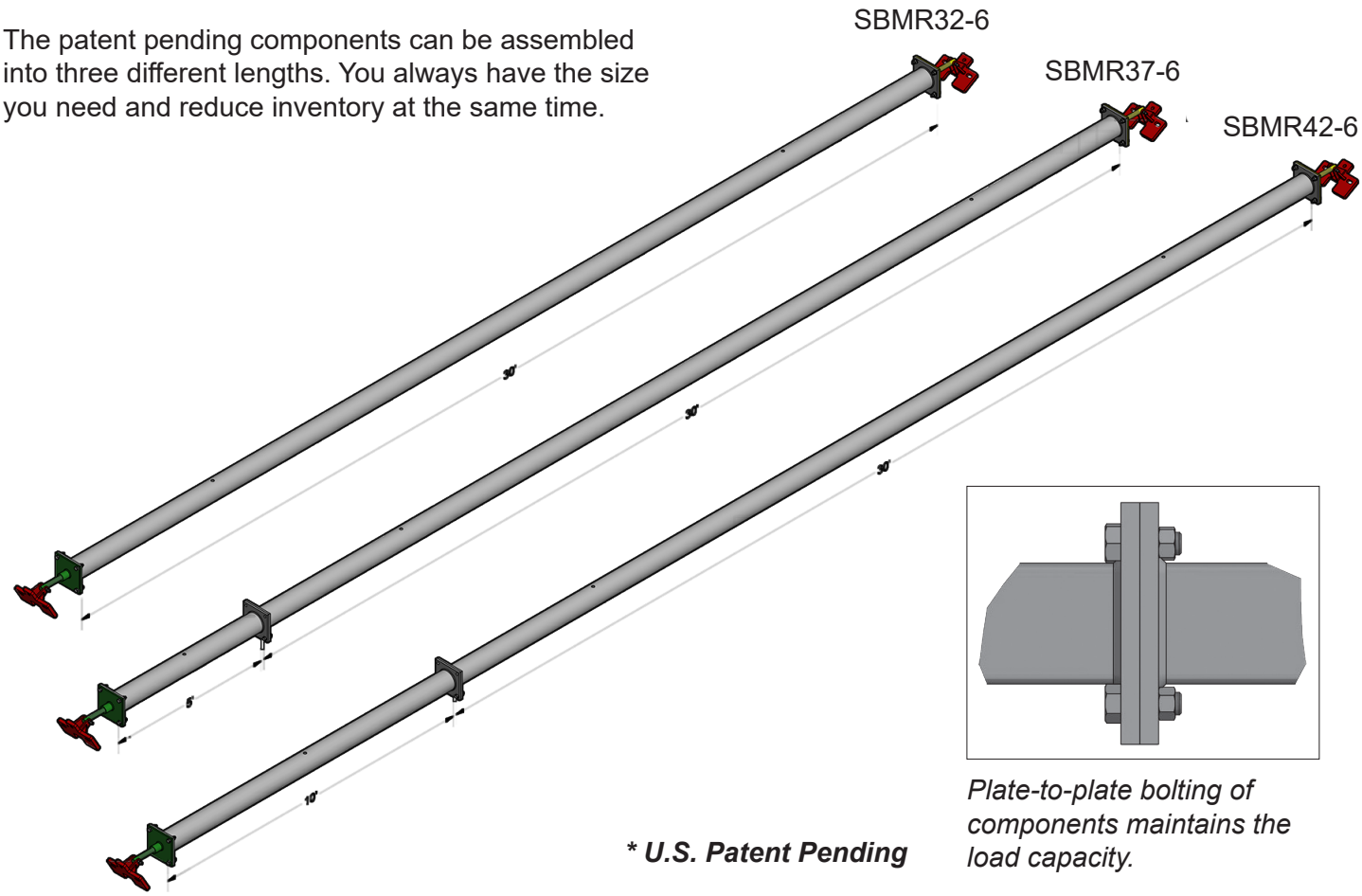
Heavy-Duty Fixed Pipe Braces (5-1/2” diameter)



Modular Brace* - 6-5/8” Pipe

There’s no need to stock every possible brace size when you can simply reconfigure the components using a handful of nuts and bolts.

The patent pending components can be assembled into three different lengths. You always have the size you need and reduce inventory at the same time.



**** U.S. Patent Pending***

Plate-to-plate bolting of components maintains the load capacity.

End Connector hardware has right- and left-hand threaded rods for a combined 24” total adjustment. The End Connectors are attached to a Brace Shoe with slots for anchoring. The type and number of bolts used with the shoe may limit brace loading.

Modular Brace - 6-5/8” Pipe						
Part No.	**Description**	**Min**	**Max**	**Weight**	**Double-Bolt Ultimate Load**	**Single-Bolt Ultimate Load**
SBMR326	Modular Brace 32’ Complete	31’-7”	33’-7”	382.3 lbs	25,250 lbs	15,000 lbs
SBMR376	Modular Brace 37’ Complete	36’-8”	38’-8”	455.7 lbs	22,000 lbs	15,000 lbs
SBMR426	Modular Brace 42’ Complete	41’-9”	43’-9”	499.1 lbs	14,440 lbs	14,440 lbs

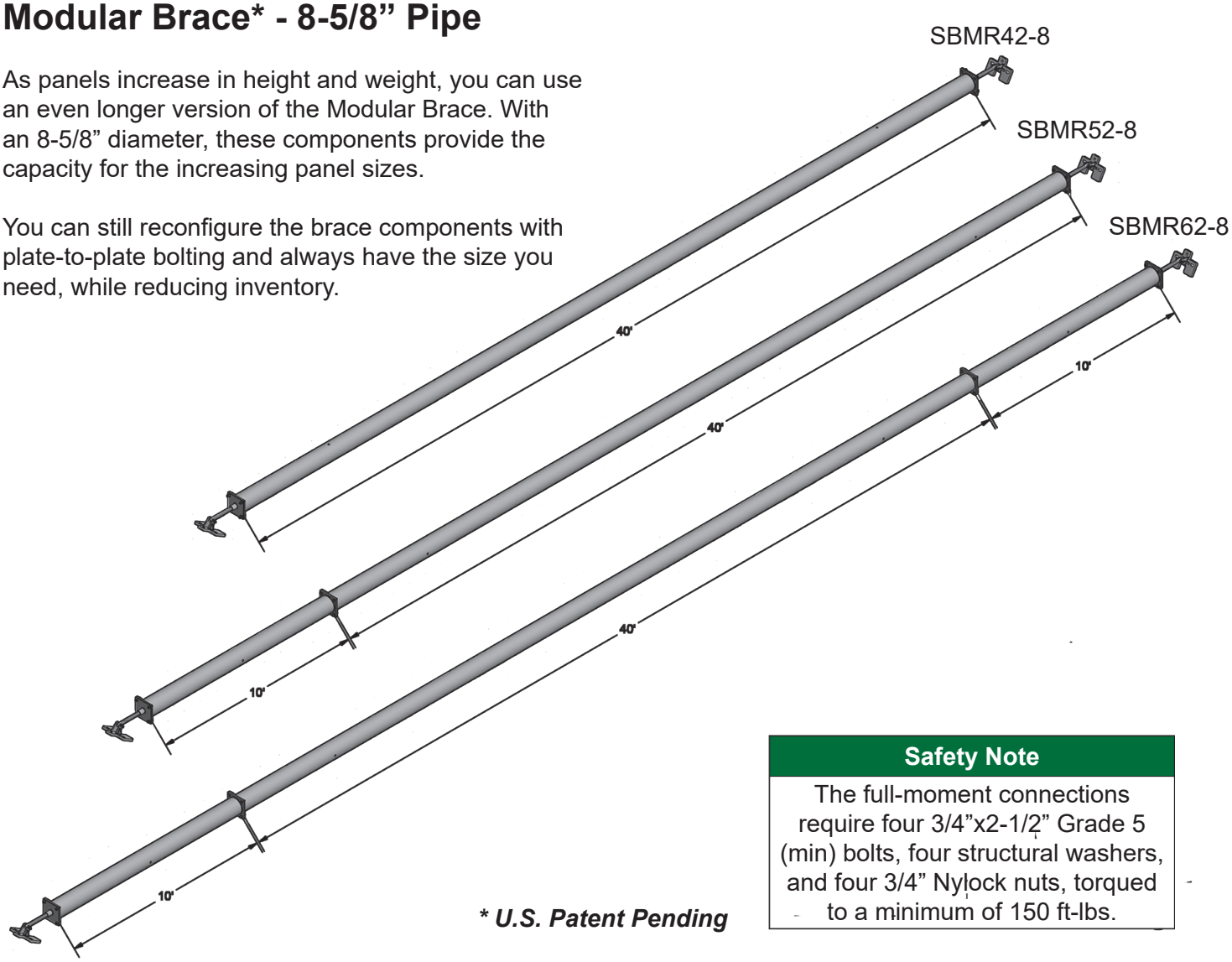
Each Modular Brace assembly has a right-hand and left-hand End Connector for a combined 24” adjustment. Loads based on actual test results. The full-moment connections require four 3/4”x2-1/2” Grade 5 (min) bolts, four structural washers, and four 3/4” Nylock nuts, torqued to a minimum of 150 ft-lbs.

See Brace Spacing table on pages 40-41.

Modular Brace* - 8-5/8” Pipe

As panels increase in height and weight, you can use an even longer version of the Modular Brace. With an 8-5/8” diameter, these components provide the capacity for the increasing panel sizes.

You can still reconfigure the brace components with plate-to-plate bolting and always have the size you need, while reducing inventory.



**** U.S. Patent Pending***

Safety Note

The full-moment connections require four 3/4”x2-1/2” Grade 5 (min) bolts, four structural washers, and four 3/4” Nylock nuts, torqued to a minimum of 150 ft-lbs.

End Connector hardware has right- and left-hand threaded rods for a combined 24” total adjustment. The End Connectors are attached to a Triple-Slot Brace Shoe for anchoring. The type and number of bolts used with the shoe may limit brace loading.

Modular Brace - 8-5/8” Pipe						
Part No.	**Description**	**Min**	**Max**	**Weight**	**Double-Bolt Ultimate Load**	**Single-Bolt Ultimate Load**
SBMR428	Modular Brace 42’ Complete	41’-7”	43’-7”	587.3 lbs	25,250 lbs	15,000 lbs
SBMR528	Modular Brace 52’ Complete	51’-8”	53’-8”	733.6 lbs	19,850 lbs	15,000 lbs
SBMR628	Modular Brace 62’ Complete	61’-9”	63’-9”	879.9 lbs	14,440 lbs	14,440 lbs

Each Modular Brace assembly has a right-hand and left-hand End Connector for a combined 24” adjustment. Loads based on test results. The full-moment connections require four 3/4”x2-1/2” Grade 5 (min) bolts, four structural washers, and four 3/4” Nylock nuts, torqued to a minimum of 150 ft-lbs.

See Brace Spacing table on pages 40-41.

Modular Brace* Components

Each Modular Brace assembly has a right-hand (RH) and left-hand (LH) End Connector. In combination, the threaded rods provide 24” of adjustment, 6” more than conventional braces.

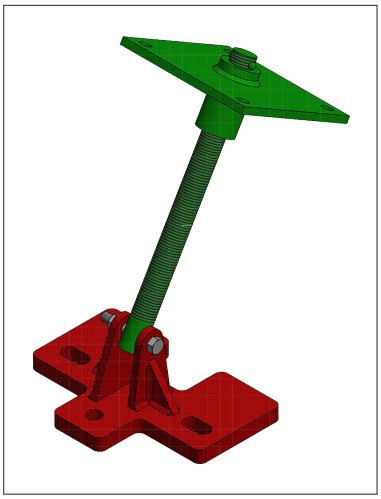
Each End Connector is attached to a Brace Shoe with Triple-Slots for anchoring. The type and number of bolts used with the shoe may limit the brace capacity.

End Connectors and Brace Shoes, including the Nuts and Bolts used for plate-to-plate connections, are interchangeable. The components can be used to assemble a Modular Brace, then reconfigured for another size.

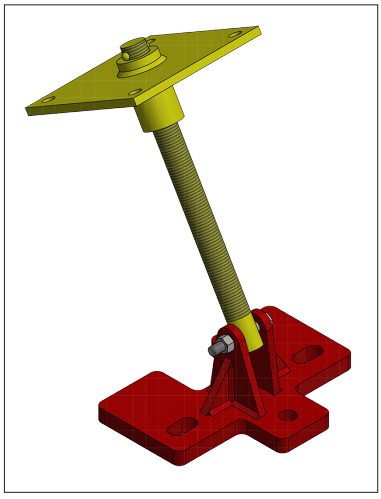
Modular Brace* Components - 6-5/8” Pipe		
Part No.	**Description**	**Weight**
SBMR306	Modular Pipe 30’ Only	290.3 lbs
SBMR106	Modular Pipe 10’ Only	116.8 lbs
SBMR56	Modular Pipe 5’ Only	73.4 lbs

Modular Brace* Components - 8-5/8” Pipe		
Part No.	**Description**	**Weight**
SBMR408	Modular Pipe 40’ Only	495.3 lbs
SBMR108	Modular Pipe 10’ Only	146.3 lbs

Modular Brace* Hardware		
Part No.	**Description**	**Weight**
SBMECRH	End Connector RH Green	46.0 lbs
SBMECLH	End Connector LH Yellow	46.0 lbs
SBBS3B	Brace Shoe 3-Bolt	19.2 lbs
SBMRB34212	Bolt 3/4”x2-1/2” Grade 5	---
SBMRW	Washer 3/4” Structural	---
SBMRN34	Nylock Nut 3/4”	---



End Connector RH (green) with Brace Shoe 3-Bolt



End Connector LH (yellow) with Brace Shoe 3-Bolt

**** U.S. Patent Pending***

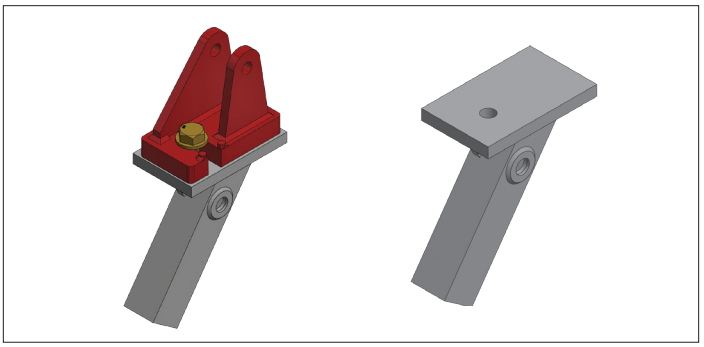
HGA Bracket*

The HGA Bracket provides a simple connection point between helical ground anchors and tilt-up braces. The design eliminates the need to remove, then reattach, pipe brace shoes. The pipe brace shoe bolts directly to the bracket.

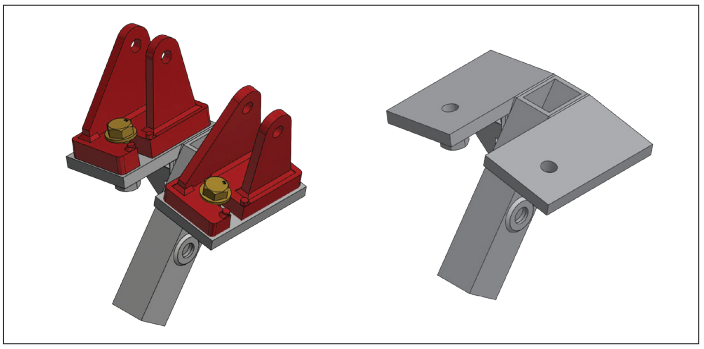
The HGA Bracket is available in a 1-Bolt, 2-Bolt or 3-Bolt configuration. Of course, the tilt-up panel engineering, bracing and anchoring requirements will determine which HGA Bracket is the most effective.

HGA Brackets		
Part No.	**Description**	**SWL***
SBHGA1PB	HGA Bracket 1-Bolt	10,000 lbs
SBHGA2PB	HGA Bracket 2-Bolt	20,000 lbs
SBHGA3PB	HGA Bracket 3-Bolt	20,000 lbs

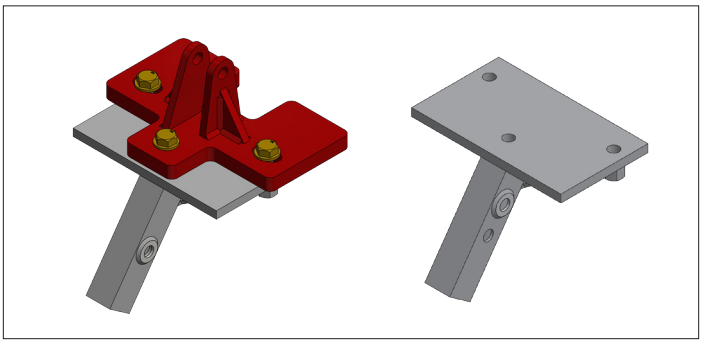
** Safe Working Load based on 1.67:1 safety factor.*



HGA Bracket 1-Bolt with and without brace shoe.



HGA Bracket 2-Bolt with and without brace shoe.



HGA Bracket 3-Bolt with and without brace shoe.

***Note:** The load-ratings of the helical ground anchor, tilt-up brace and HGA Bracket must be considered simultaneously for maximum allowable capacity and spacing.*

***Note:** Helical Ground Anchor, Pipe Brace, and/or soil conditions may be the controlling factor. Capacities for all components must be considered when engineering a bracing configuration.*

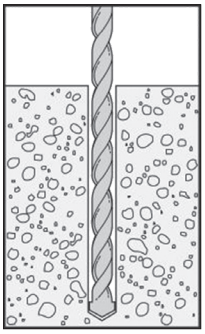
**** U.S. Patent Pending***

Titan HD Screw Anchor

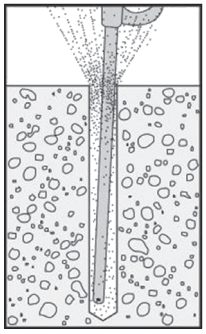
A screw anchor is used to with the Brace Shoe to secure each Pipe Brace to the concrete floor. The load-rated, Titen-brand screw anchor has a flanged head and unthreaded shaft, allowing for the thickness of the shoe.

Titen HD Screw Anchor			
Part No.	**Description**	**Slab**	**SWL***
SBTHD346G	Titen HD Anchor 3/4”x6” Galv	6”	7,500 lbs
SBTHD347G	Titen HD Anchor 3/4”x7” Galv	7”	9,000 lbs

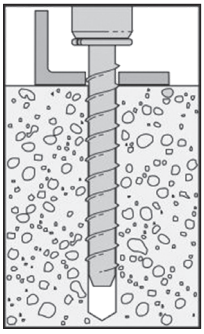
** Safe Working Load (SWL) using 2:1 safety factor in 3,000 psi concrete.*



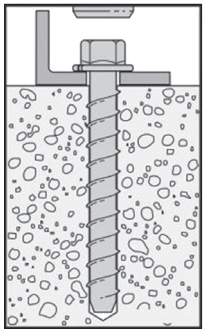
Drill hole



Clean hole



Torque bolt



Check fit

Warning:
1. Concrete must have a minimum of 3,000 psi compressive strength.
2. Do not use the Titen HD Anchor in concrete floors thinner than 6”.
3. Edge distance should be a minimum of 12” to center of holes.
4. Do not reuse Titen HD Anchor bolts.

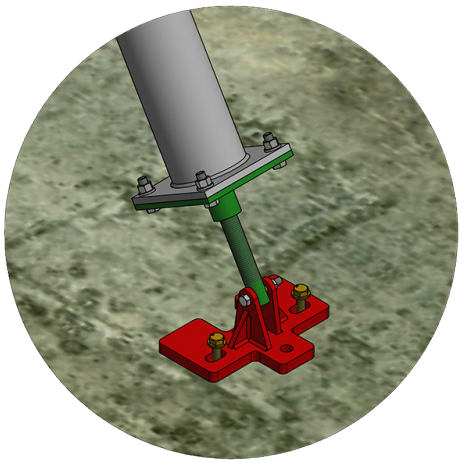
Installation:
1. Drill holes at 90^{O} angle to the surface with a 3/4” carbide-tipped bit.
2. Drill a minimum of 5-3/4” deep for 6” anchor.
3. Clean the drilled holes with compressed air or blow-out bulb.
4. Only use new Anchors with clean and undamaged threads.
5. Place Brace Shoe over the hole and position anchor.
6. Securely tighten anchor using a 3/4” impact wrench to 100 ft-lbs.
7. Use 3/4” F436 Structural Washer where needed.

Other bolts and brands are acceptable. Bolts must be 3/4” diameter and capacities confirmed with the manufacturer before installation.

Taper Bolt

A reusable bolt and disposable expander nut for temporary brace installations.

- Removable bolt for temporary anchoring.
- Required hole diameter equals bolt dimension.
- Expander nut adjusts for variation in hole size.
- Taper Bolt assembly will work in “bottomless” hole.
- Torqued to obtain high-strength shear load value.
- Withstands static and vibratory loads.
- Bolt can be removed, cleaned and reused.

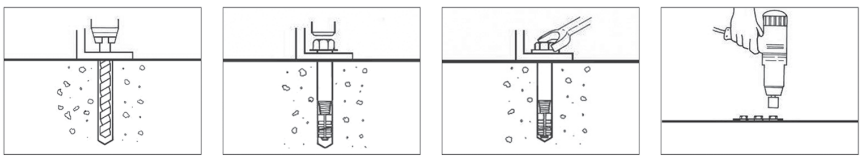


The Taper Bolt and Nut are ideal for anchoring and then removing tilt-up braces.

Taper Bolt and Nut*								
Part No.	Bolt Size**	Min Slab	Min Torque (ft/lbs)	Min Embed	Ultimate***			
					Single Bolt		Double Bolt (10” OC)	
					Tension (lbs)	Shear (lbs)	Tension (lbs)	Shear (lbs)
SBTB34418	3/4”x4-1/8”	5”	250	3-3/8”	7,200	14,440	14,800	29,700
SBTB34512	3/4”x5-1/2”	6”	250	4-1/2”	11,900	24,800	21,600	43,000
SBTB347	3/4”x7”	7”	250	6”	11,900	27,916	23,800	55,800
SBTB1558	1”x5-5/8”	6”	550	4-5/8”	12,900	25,900	22,300	44,600
SBTB1634	1”x6-3/4”	7”	550	5-3/4”	17,900	35,950	28,300	56,700
SBTB1714	1”x7-1/4”	8”	550	6-1/4”	20,300	36,257	31,200	62,400
SBTBN34	3/4” Nut							
SBTBN1	1” Nut							

* *Standard Grade 5, zinc-plated finish. Other metals and finishes available on request.*
** *Required hole diameter equals bolt dimensions.*
*** *Ultimate load in 3,000 psi concrete. Tested by Pittsburgh Testing Laboratory PG-2170.*

1. Drill a hole the same diameter as the Taper Bolt using the Brace Shoe as a template.
2. Clean hole and surrounding area with compressed air.
3. Drive Taper Bolt and Expander Nut into place leaving clearance for subsequent tightening.
4. Tighten Taper Bolt to recommended torque setting to expand nut.
5. For multiple Taper Bolt installation use an Impact Wrench for productivity.
6. Unscrew the Taper Bolt for removal. Expander Nut remains in hole.
7. Clean, lubricate and save the Taper Bolt for the next installation.



Slant Anchor*

The Slant Anchor assembly connects tilt-up or precast panels to the foundation. The assembly includes a load-rated Slant Anchor, foam Void Former, high-strength Ductile Bar and pre-packaged Flowable Grout.

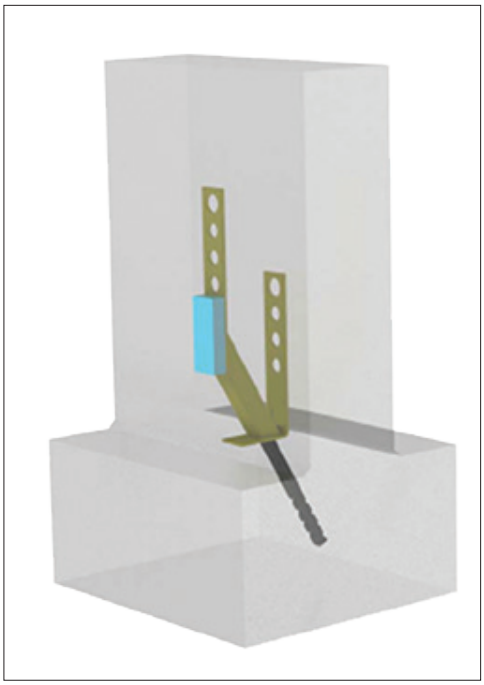
The Slant Anchor is integral to panel design and planning. The anchors are positioned and reinforced in each panel during concrete forming operations. The foam Void Former covers the connection sleeve during concrete placement.

Once a completed concrete panel is ready for installation, the foam Void Former is removed. The connection sleeve is now visible and accessible for subsequent anchoring.

Each concrete panel is positioned on the foundation and braced. A hole is drilled into the foundation footing using the connection sleeve as a guide.

The hole is then partially grouted, the Ductile Bar inserted, and the remaining grout used to fill the sleeve. This grouted connection anchors the panel without welding or bolting.

The working load of the Slant Anchor is 9,000 lbs for uplift, horizontal and shear forces, at a 3:1 safety factor. This meets the tensile strength requirements of ACI-318-14 section 16.2.4.3 (b).



The Slant Anchor assembly provides a load-rated panel connection and a 37% savings compared to typical embed welding or bolting.

Slant Anchor Assembly*			
Part No.	**Type**	**Panel Width**	**Finish****
SBTSAC	Standard	7” minimum	Painted
SBPSAC	Slim	5-1/2” to 7”	Painted

** Assembly includes anchor, void former, ductile bar and grout.*
*** Optional galvanized finish on request.*

The Slant Anchor is simply positioned and nailed to the form.

Standard

Slim

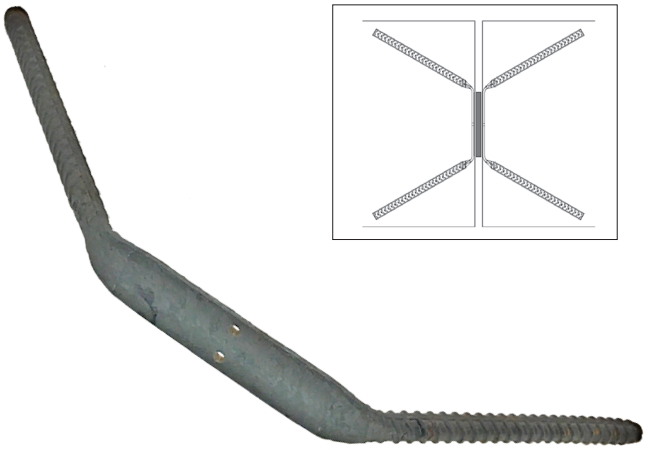
**** U.S. Patent Pending***

Edge Connector

The Edge Connector is a rebar-winged embed designed for tilt-up concrete applications. The “wing” is tied into the panel reinforcing steel, with the “flat” positioned at the panel edge for later welding.

The rectangular “flat” on the Edge Connector provides for a thicker, more reliable, field welding surface between adjoining panels. The rectangular shape exhibits greater weld strength, with less variability, compared to typical round slugs.

The Edge Connector exhibits excellent performance in Horizontal Shear, Tension and Vertical Shear, making it suitable for tilt-up concrete applications, such as panel-to-panel connections,roof slabs and industrial walls.



Edge Connectors are used to join adjacent precast or tilt-up concrete elements.

Edge Connector					
Part No.	**Description**	**Type**	**Horizontal Shear***	**Tension***	**Vertical Shear***
SBEC4R	Edge Connector #4 w/1” Flange	A706	3,020 lbs	7,210 lbs	16,250 lbs
SBEC4RSS	Edge Connector #4 w/1” Flange	2304SS	3,020 lbs	9,340 lbs	18,960 lbs
SBEC5R	Edge Connector #5 w/1-1/2” Flange	A706	6,390 lbs	11,740 lbs	27,680 lbs
SBEC5RSS	Edge Connector #5 w/1-1/2” Flange	2304SS	6,390 lbs	12,590 lbs	32,670 lbs

** Ultimate load capacities.*

Edge Connector Former*	
Part No.	**Description**
SBEC4F	Edge Connector Former #4 1” (Red)
SBEC5F	Edge Connector Former #5 1-1/2” (Blue)

** Plastic Former accurately positions Edge Connector in form.*

Former for Edge Connector positioning.

Edge Form Bracket 6x7

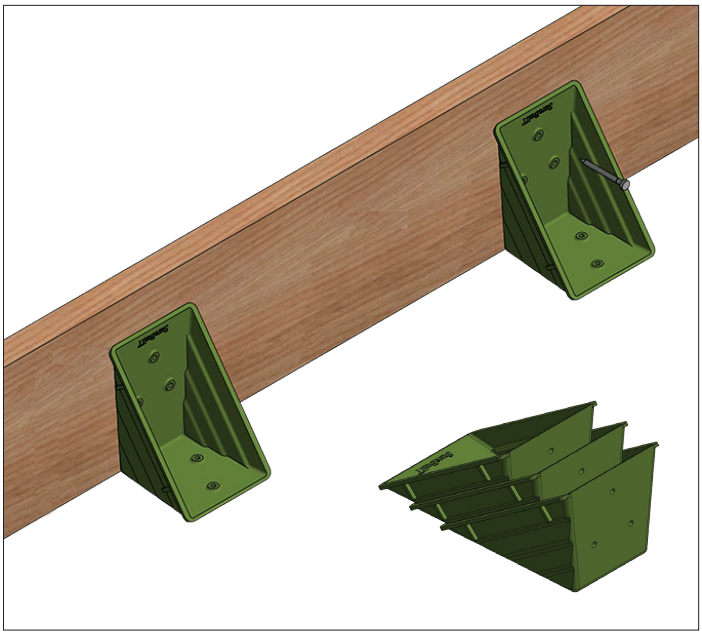
Stop cutting lumber blocks for bracing and start forming faster with the reusable Edge Form Bracket.

The one-piece plastic design is a wedge-shape that braces tilt-up edge forms. The Edge Form Bracket has a 6” side for thinner slabs (6” to 7”) and a 7” side for thicker slabs (7” to 8-1/2”).

Both sides of the Edge Form Bracket have a flat surface with holes for attachment.

The top of the Edge Form Brackets should always be positioned below the overall form height so they do not interfere with concrete screeding or finishing.

Edge Form Bracket 6x7	
Part No.	**Description**
SBEFB6X7	Edge Form Bracket 6”x7”



The 6x7 Edge Form Bracket can be nailed, screwed or glued to lumber and concrete. The brackets can be stripped, stacked, saved and reused.

Edge Form Bracket 9x11

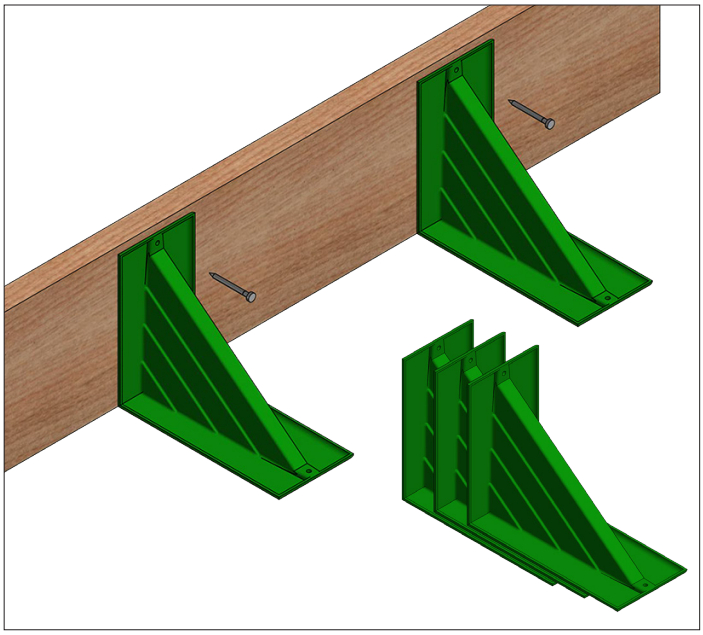
Stop cutting lumber blocks for bracing and start forming faster with the reusable Edge Form Bracket.

The one-piece plastic design is a wedge-shape that braces tilt-up edge forms. The Edge Form Bracket has a 9” side for thinner slabs (9” to 11”) and a 11” side for thicker slabs (11” to 13”).

Both sides of the Edge Form Bracket have a flat surface with holes for attachment .

The top of the Edge Form Brackets should always be positioned below the overall form height so they do not interfere with concrete screeding or finishing.

Edge Form Bracket 9x11	
Part No.	**Description**
SBEFX9X11	Edge Form Bracket 9”x11”



The 9x11 Edge Form Bracket can be nailed, screwed or glued to lumber and concrete. The brackets can be stripped, stacked, saved and reused.

Edge Form Bracket

Edge Form Brackets are available in 5” and 7” heights to brace standard lumber dimensions. The top of the bracket sits just below the overall form height so they do not interfere with concrete screeding or finishing.

Both sizes of the Edge Form Bracket have a 5”x6” base for slab attachment and three holes in the upright for form attachment. Once positioned, the base can be glued or anchored to the concrete floor.

Once forming is complete, all the Edge Form Brackets are removed and saved for reuse on the next project.

Edge Form Bracket	
Part No.	**Description**
SBFB5	Edge Form Bracket 5”
SBFB7	Edge Form Bracket 7”

Edge Form Brackets are available in 5” and 7” heights to brace the standard lumber dimensions typically used for tilt-up panel forms.

Bracket Accessories

Using the specially-designed Sticky Pad or Spray Adhesive for attachment eliminates holes in the concrete slab. The brackets are scraped free and saved, once forming is complete.

Accessories	
Part No.	**Description**
SBGD2111	Sticky Pad 5-1/4”x6-1/4”
SBGD1111	Spray Adhesive - 14oz
SBGD1121	Spray Adhesive - 14oz Inverted
SBLHSCR	Long Handle Scraper
SBGRXYL	Glue Remover - 1 gallon
SBFBNP45	Nail Pinch 0.095x4-1/2” Nylon

All the Edge Form Brackets can be attached with a Sticky Pad or Spray Adhesive. The brackets are scraped free when forming is complete.

Bar Support

H Chair

Lightweight plastic supports for reinforcing steel within concrete.

H Chair	
Part No.	**Description**
SBSH100	H Chair 1”
SBSH150	H Chair 1-1/2”
SBSH200	H Chair 2”
SBSH250	H Chair 2-1/2”
SBSH300	H Chair 3”
SBSH350	H Chair 3-1/2”
SBSH400	H Chair 4”
SBSH450	H Chair 4-1/2”
SBSH500	H Chair 5”
SBSH550	H Chair 5-1/2”
SBSH600	H Chair 6”

H Chair

Uni Chair with Ring

Straddle lower level rebar and support upper mats in tilt-up panels.

Uni Chair wRing	
Part No.	**Description**
SBUC6-6.5R	Uni Chair 6:6-1/2” wRing
SBUC7-7.5R	Uni Chair 7:7-1/2” wRing
SBUC8-8.5R	Uni Chair 8:8-1/2” wRing
SBUC9-9.5R	Uni Chair 9:9-1/2” wRing

Uni Chair

Slab-On-Grade Chair

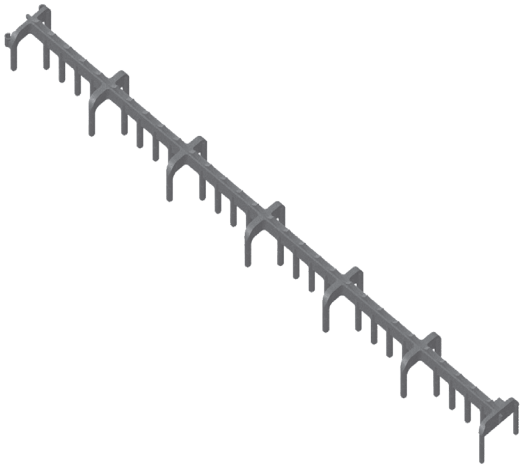
Integrated sand plate for support and stability on soft surfaces.

Slab-On-Grade Chair	
Part No.	**Description**
SBPCC1112	Slab-On-Grade Chair 1:1-1/2”
SBPCC2212	Slab-On-Grade Chair 2:2-1/2”
SBPCC3312	Slab-On-Grade Chair 3:3-1/2”
SBPCC4412	Slab-On-Grade Chair 4:4-1/2”

Slab-On-Grade Chair

Slab Bolster

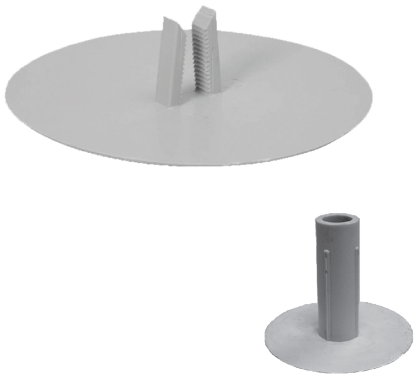
Plastic slab bolster with end lock for connecting longer lengths and secure fit.



Plastic Slab Bolster (5’ length)	
Part No.	**Description**
SBSB34AP	Slab Bolster 3/4” Plastic
SBSB1AP	Slab Bolster 1” Plastic
SBSB112AP	Slab Bolster 1-1/2” Plastic
SBSB2AP	Slab Bolster 2” Plastic

Patch Caps

Patch caps are used to cover the lifting and bracing insert holes.



Patch Caps	
Part No.	**Description**
SBRLPC22KP	Patch Cap (5/8” Square Insert)
SBPATCHCAPBI	Patch Cap (3/4” Brace Insert)

Shims

Shims provide quick adjustment when installing panels on slightly uneven footings. The shims are formed with a corrugated face that prevents them from sliding across each other when stacked.

Each pack contains six 4”x6” shims with an overall thickness of 1-1/16". The pack contains three 1/4" black shims, two 1/8" blue shims and one 1/16" white shim made with HIPS material (8,000 psi minimum).

Patch Caps	
Part No.	**Description**
SBSHIMPK	Shim Pack Set (6 pcs)

Construction Adhesive

Adhesive
A high-strength, fast-drying, pressure-sensitive adhesive used for positioning chamfers, reveals and rustications in tilt-up casting beds. Suitable for concrete, metal, plastic and wood surfaces.

Spray Adhesive		
Part No.	**Description**	**Package**
SBGD1111	Spray Adhesive Low VOC - Standard Nozzle 14oz aerosol can	12/case
SBGD1121	Spray Adhesive Low VOC - Inverted Nozzle 14oz aerosol can	12/case
SBGD9100	Long-Handled Wand for Spray Adhesive SBGD1121	---
SBGD1130	Spray Adhesive Canister Tank - 36 lbs	---

Spray Adhesive Aerosol Can

Spray Adhesive Canister

Sticky Sheet 5-1/4”x6-1/4” size

Sticky Sheet
A closed-cell polyethylene foam coated with an integrated adhesive. Suitable for concrete, metal, plastic and wood surfaces.

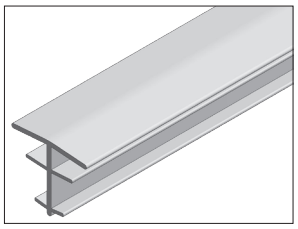
Sticky Sheet		
Part No.	**Description**	**Package**
SBGD2111	Sticky Sheet 5-1/4” x 6-1/4”	300/box
SBLHSCR	Long Handle Scraper	
SBGRXYL	Glue Remover/Cleaner - 1 gal	

Tilt-Up Profiles

Detailed lines, chamfered edges and smooth reveals for a better concrete panel appearance.

Saw Cut Cover

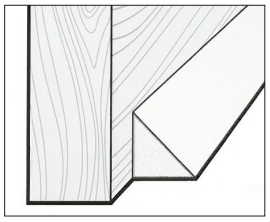
A semi-rigid, plastic t-strip used to seal concrete saw cut joints before pouring tilt-up panels.



Saw Cut Cover		
Part No.	**Description**	**lf/bundle**
SBSCC2	3/8” Top x 5/8” Deep x 8’ Cover Strip	1000

Single Chamfer

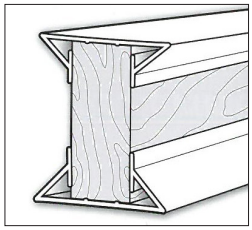
A plastic or wood profile to make smooth concrete panel edges.



Single Chamfer		
Part No.	**Description**	**lf/bundle**
SBSCW	3/4” x 8’ Wood Chamfer	400

Double-Chamfer

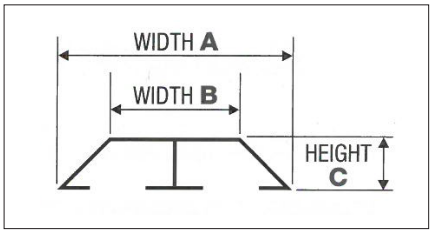
A double-chamfer plastic profile used on both the top and bottom of lumber forms to create smooth concrete panel edges.



Double Chamfer		
Part No.	**Description**	**lf/box**
SBDC1534	1-1/2” x 3/4” x 10’ Double Chamfer	200

Rustication

An easy-to-install rustication profile for tilt-up panels.



Rustication		
Part No.	**Description (AxBxC)**	**lf/bundle**
SBSTIX1	2-1/4” x 3/4” x 3/4” x 8’ Trapezoid	400
SBSTIX3	2” x 1/2” x 3/4” x 8’ Trapezoid	400
SBSTIX6	2-3/4” x 2” x 3/4” x 8’ Trapezoid	400
SBSTIX9	1-1/2” x 3/4” x 8’ Triangle	560

Slab Edge Protector

Slab Edge Protectors are a great way to protect concrete floors when installing tilt-up panels. Slab Edge Protectors are made from rigid, durable PVC and prevent damage to new floors.

Eliminates Repair - Slab Edge Protector saves your floors from damage. Crews won't spend valuable time and money repairing scratched or damaged floors.

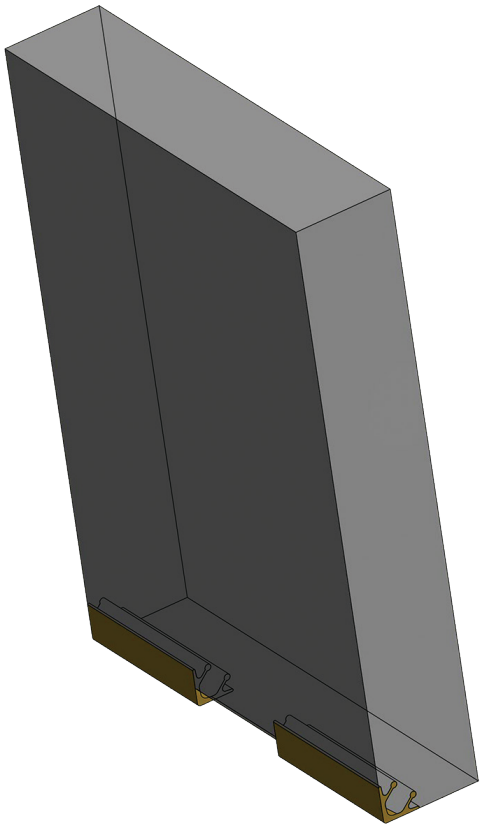
Improves Quality - Crews using Slab Edge Protector can walk away from completed concrete floors with pride.

Protects Floor - Slab Edge Protector remains in place along the edge of the panel to protect concrete floors from damage during handling.

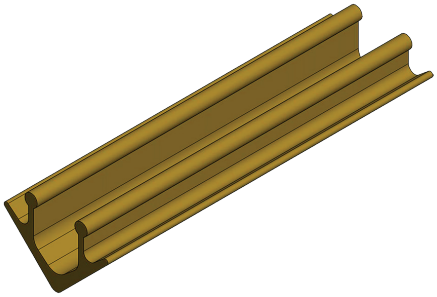
Slab Edge Protector	
Part No.	**Description**
SBSEP24	Slab Edge Protector 24"

Installation:

1. Fasten two Slab Edge Protectors, one in each corner, along the bottom edge of the form.
2. If the width is greater than 20 feet, then fasten another Slab Edge Protector at the center.
3. Place and vibrate concrete, making the Slab Edge Protector an integral part of the panel.
4. Strip the forms to expose the plastic edges of the Slab Edge Protector.
5. Use the plastic edges to protect the concrete when handling and moving panels.



The integral plastic edge protects the concrete when handling and moving tilt-up panels.



Wire Truss

A “sandwich” panel consists of a bottom layer of concrete, a middle layer of insulation, and a top layer of concrete. The Wire Truss connects these layers into a single, composite unit that is far more energy-efficient than a solid, concrete-only panel.

Wire Truss has the resiliency to expand and contract with the independent thermal-induced movements of the inner and outer concrete layers. This maintains the integrity of the panel and minimizes any thermal transfer between layers. The design of the concrete and insulation layers establishes the overall panel thickness and truss spacing.

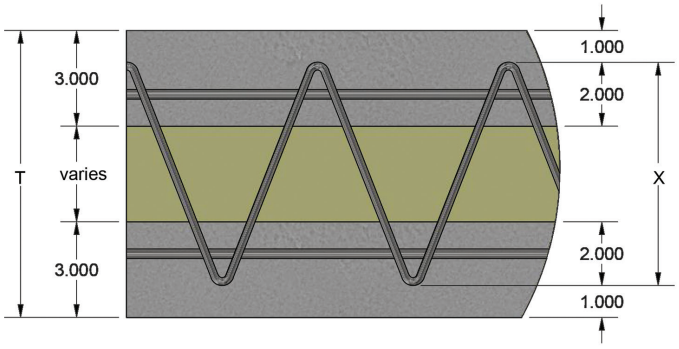
Wire Truss	
Part No.	**Description**
SBWT610M	Wire Truss 6”x10’
SBWT710M	Wire Truss 7”x10’
SBWT810M	Wire Truss 8”x10’
SBWT910M	Wire Truss 9”x10’

Basalt Truss

The truss develops strength and rigidity from a fiber-reinforced design. Two parallel rods are attached top and bottom to a zigzag rod with plastic connectors at every intersection. Foam insulation is placed between lengths of truss, connecting the top and bottom concrete.

The fiber-reinforced material improves the thermal efficiency of “sandwich” panels and reduces cold bridging. The truss shape provides composite action between the top and bottom concrete, supporting all working loads, including stripping, handling and installing tilt-up panels.

Basalt Truss			
Part No.	**Description**	**X**	**Y**
SBBT710	Basalt Truss 7”x10’	7”	9”
SBBT810	Basalt Truss 8”x10’	8”	10”
SBBT910	Basalt Truss 9”x10’	9”	11”



Contact SureBuilt Engineering for assistance.

Brace Specifications* (see notes)										
	SBPB417	SBPB422	SBPB427	SBPB432	SBPB51232	SBMR326	SBMR326	SBPB51237	SBMR376	SBMR376
	17'-0" Fixed	22'-0" Fixed	22'-0" Fixed w/5' Ext	22'-0" Fixed w/10' Ext	32'-0" Fixed	32'-0" Modular w/SBI	32'-0" Modular w/DBI	32'-0" Fixed w/5' Ext	37'-0" Modular w/SBI	37'-0" Modular w/DBI
Pipe diameter	4 in	4 in	4 in	4 in	5-1/2 in	6-5/8 in	6-5/8 in	5-1/2 in	6-5/8 in	6-5/8 in
Total length	17 ft	22 ft	27 ft	32 ft	32 ft	32 ft	32 ft	37 ft	37 ft	37 ft
Ultimate load*	9,750 lbs	9,750 lbs	7,200 lbs	5,400 lbs	13,500 lbs	15,000 lbs	25,250 lbs	12,000 lbs	15,000 lbs	22,000 lbs
B/Panel	15.93	20.02	24.12	28.21	28.21	28.21	28.21	32.31	32.31	32.31
Max height	26.54	33.37	40.20	47.02	47.02	47.02	47.02	53.85	53.85	53.85
Brace @ 50	15.02	18.85	22.68	26.51	26.51	26.51	26.51	30.34	30.34	30.34
Min height	17.023	20.85	24.68	28.51	28.51	28.51	28.51	32.34	32.34	32.34

** Ultimate load based on shoe and brace only.*

Brace Spacing* in Feet (see notes)										
	SBPB417	SBPB422	SBPB427	SBPB432	SBPB51232	SBMR326	SBMR326	SBPB51237	SBMR376	SBMR376
	17'-0" Fixed	22'-0" Fixed	22'-0" Fixed w/5' Ext	22'-0" Fixed w/10' Ext	32'-0" Fixed	32'-0" Modular w/SBI	32'-0" Modular w/DBI	32'-0" Fixed w/5' Ext	37'-0" Modular w/SBI	37'-0" Modular w/DBI
85' height										
80' height										
75' height										
70' height										
65' height										
60' height										
55' height										
50' height								7.09	8.87	13.01
45' height				3.55	8.88	9.87	16.61	9.04	11.30	16.57
40' height			5.30	4.65	11.63	12.93	21.76	11.84	14.80	21.71
35' height			7.20	6.32	15.79	17.55	29.53	16.07	20.09	29.47
30' height		11.49	10.22	8.97	22.43	24.92	41.95			
25' height	13.97	17.56	15.62							
20' height	23.42									

** Calculations based on solid panels with 80 mph wind speed in worst condition.*

Notes:

1. Minimum 20 foot wide panel. Minimum of two braces per panel. Round up to next integer.
2. Assumes two feet below finished floor. Different floor dimension may change spacing and height limits.
3. Brace bolt or concrete slab may be limiting factor for spacing and capacity.

Brace Specifications* (see notes)									
SBPB51242	SBMR426	SBMR426	SBMR428	SBMR428	SBPB51252	SBMR528	SBMR528	SBMR628	SBMR628
32'-0" Fixed w/10' Ext	42'-0" Modular w/SBI	42'-0" Modular w/DBI	42'-0" Modular w/SBI	42'-0" Modular w/DBI	32'-0" Fixed w/20' Ext	52'-0" Modular w/SBI	52'-0" Modular w/DBI	62'-0" Modular w/SBI	62'-0" Modular w/DBI
5-1/2 in	6-5/8 in	6-5/8 in	8-5/8 in	8-5/8 in	5-1/2 in	8-5/8 in	8-5/8 in	8-5/8 in	8-5/8 in
42 ft	42 ft	42 ft	42 ft	42 ft	52 ft	52 ft	52 ft	62 ft	62 ft
8,040 lbs	14,440 lbs	14,440 lbs	15,000 lbs	25,250 lbs	5,775 lbs	15,000 lbs	19,850 lbs	14,440 lbs	14,440 lbs
36.40	36.40	36.40	36.40	36.40	44.60	44.60	44.60	52.79	52.79
60.67	60.67	60.67	60.67	60.67	74.33	74.33	74.33	87.98	87.98
34.17	34.17	34.17	34.17	34.17	41.83	41.83	41.83	49.49	49.49
36.17	36.17	36.17	36.17	36.17	43.83	43.83	43.83	51.49	51.49

Brace Spacing* in Feet (see notes)									
SBPB51242	SBMR426	SBMR426	SBMR428	SBMR428	SBPB51252	SBMR528	SBMR528	SBMR628	SBMR628
32'-0" Fixed w/10' Ext	42'-0" Modular w/SBI	42'-0" Modular w/DBI	42'-0" Modular w/SBI	42'-0" Modular w/DBI	32'-0" Fixed w/20' Ext	52'-0" Modular w/SBI	52'-0" Modular w/DBI	62'-0" Modular w/SBI	62'-0" Modular w/DBI
								4.17	4.17
								4.77	4.77
								5.54	5.54
					2.19	5.70	7.54	6.49	6.49
					2.60	6.75	8.93	7.69	7.69
3.54	6.36	6.36	6.61	11.13	3.12	8.10	10.72	9.23	9.23
4.32	7.75	7.75	8.05	13.56	3.80	9.87	13.06	11.24	11.24
5.36	9.62	9.62	9.99	16.82	4.71	12.24	16.20		
6.83	12.26	12.26	12.73	21.43	6.01	15.60	20.64		
8.94	16.06	16.06	16.68	28.08					

Coatings and Finishes

Products manufactured by SureBuilt Concrete Forms & Accessories can be supplied in several different coatings or finishes to meet specific corrosion requirements. Whenever the coating or finish is not specified, the standard Plain product will be supplied.

Plain
Uncoated steel, commonly referred to as Plain, Black, Basic or Raw, will corrode when exposed to the environment on project sites.

Mechanical Plating
An effective means of applying zinc, tin, or other ductile metals or mixtures of ductile metals to metal substrates - usually steel. In the mechanical plating process, impact energy is transferred from a rotating open - ended oblique barrel through glass beads, resulting in the cold-welding of fine metal dust particles to the substrate. The resulting deposit is slightly porous, matte in finish, and provides corrosion protection to the articles so plated without introducing hydrogen embrittlement into the part. It is used widely to provide corrosion protection.

Electroplating
Can be a bright shiny or sometimes dull zinc finish, generally .0002 to .001 inches thick. Degree of corrosion protection will vary and is often dependent on the severity of the particular environment.

Hot-Dip Galvanizing
Semi-bright to a very dull finish, much heavier coating than the Electroplating process. HDG provides a higher degree of corrosion protection than the Electroplate, but is not suitable for threaded products or any tight fitting items. High carbon steels are not suitable for HDG.

Epoxy Coating
A slick, shiny epoxy coating applied to a finished product by means of the electrostatic or fluidized bed method. Coating thickness will vary from .005 inches to .012 inches. Epoxy coatings provide very effective corrosion protection in hostile environments such as around or over salt water, or high chemical contaminated areas.

Guarding Against Embrittlement

Carbon steels, cold-worked steels, heat-treated steels are susceptible to embrittlement in electroplating operations, from either or both the cleaning/pickling or coating process. Any steel having been severely cold-worked must be stress-relieved before baking and prior to either electroplating or HDG.

Any steel of significant high-strength or high-carbon susceptible to hydrogen embrittlement during the electroplating or HDG process must be baked before the coating process is started to drive out excess hydrogen. Some items are not suitable for HDG because of the material properties. Contact SureBuilt Technical Service for further information.

Warnings

Warning **Always follow instructions of product manufacturers.**
Various construction products are specified within these drawings. These products shall be used in complete accordance with the product manufacturer's instructions. Failure to do so may resort in property damage, injury or death.

Warning **Do not substitute products or interchange components from different manufacturers.**
Substituted products may not have the same load carrying capacity or functionality as those specified. Product components from different manufacturers may not be compatible, causing product malfunction and/or a reduction in the products load carrying capacity. Either case may result in an unexpected failure of the product, resulting in possible property damage, injury or death.

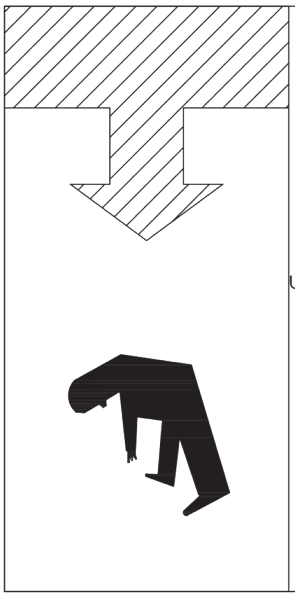
Warning **Do not use damaged or worn products and equipment.**
All construction products, equipment, hardware and braces shall be inspected for damage and wear prior to use. Damaged or worn items shall not be used as malfunction and/or reduced load carrying capacity could result in unexpected failure causing possible property damage, injury, or death.

Warning **Stay clear of tilt-up panels during erection.**
Do not get beneath panels. Do not ride or climb on panels. Stay clear of panel fall zones. Failure to do so may result in property damage, injury, or death.

Warning **Do not alter rigging, reinforcing steel or strongbacks.**
Altering the rigging can change the applied lift insert loads, panel stresses and overall behavior of the panel during erection. Altering or omitting reinforcing steel or strongbacks can cause cracking or complete panel collapse during erection. Both can lead to property damage, severe injury or death.

Warning **Follow all OSHA Standards and other applicable safety standards.**
Pay particular attention to OSHA 1926(b)(1) through (2), 1926.21(b)(2) and 1926.704; and PCI Erection Safety Manual (MNL 132). Failure to do so may result in property damage. Injury, or death.

Warning **Do not deviate from the information shown on the drawings without notifying and obtaining approval from Surebuilt Engineering Services.**

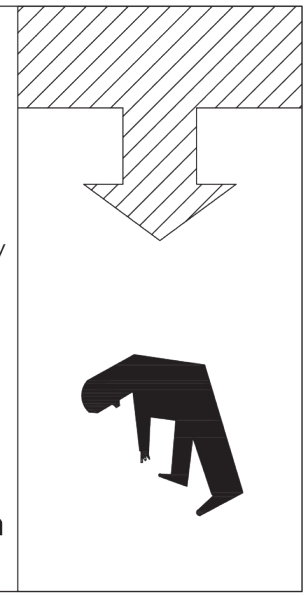


DANGER

Falling Panels, bracing or hardware can cause property damage, severe injury or death.

Read all instructions and notes contained within this tilt-up construction drawings booklet. All information should be clearly understood by all job site personnel involved in the construction and erection process prior to proceeding with construction. If anyone is unclear as to the intent of the drawings or notes, contact Surebuilt Engineering Services for clarification.

Failure to follow all instructions and warnings contained herein, may result in exposure of workers and other personnel in the area of the job site to unsafe conditions or hazards that can cause property damage, severe injury or death.



Bar Support – Wire slab bolsters and high chairs, with optional epoxy-coat, plastic-dip, plastic-tip or plate, to meet almost any slab requirement.

Bridge Deck – Overhang brackets and hangers provide an efficient deck forming solution for precast concrete or steel I-beam bridge structures.

Coil Ties – 2-Strut and 4-Strut designs, in standard and heavy-duty capacities, with optional cones, waterseals or custom combination, for job-built forming.

Dowels – Plates, sleeves, baskets and joint nosings for high-performance concrete floors.

Euro Rod – 15mm and 20mm taper ties, she-bolts, inner ties, washers and wing nuts compatible with European-brand forming systems.

Metal Rib – Leave-in-place, expanded galvanized mesh to form footings, bulkheads, grade beams, pier caps and blindside walls.

Pipe Braces – Contractor-preferred braces, with rated capacities and lengths ranging from 7'6" to 62'6", for almost any forming application.

Precast – Inserts, anchors, connectors and lifting systems for efficient precast concrete production.

Self-Riser – Integrated hydraulic system for multi-story building cores that virtually eliminates crane time.

Shoring – A conventional 12K load/leg system, with base plates, cross braces, screw jacks and U-heads, for productive deck support.

Snap Ties – Ties and brackets, with ¾" plywood and 2x4 lumber, create a simple and effective plywood forming system.

Staybox – A pre-engineered and pre-assembled rebar keyway that simplifies forming at wall and deck intersections.

Stud Rail – A reinforced column-to-deck connection that reduces shearing, transfers load further into the slab and eliminates column capitals.

SurePly™ – An industry-recognized handset system, with more than 80 standard panel and filler sizes, for almost any forming application.

Tilt-Up – A start-to-finish system of lifting inserts, plates and hardware for tilt-up panel construction.

Walers – Double channel walers align panels, carry taper tie loads and maximize the surface area of almost any gang.

SureBuilT
Concrete Forms & Accessories

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