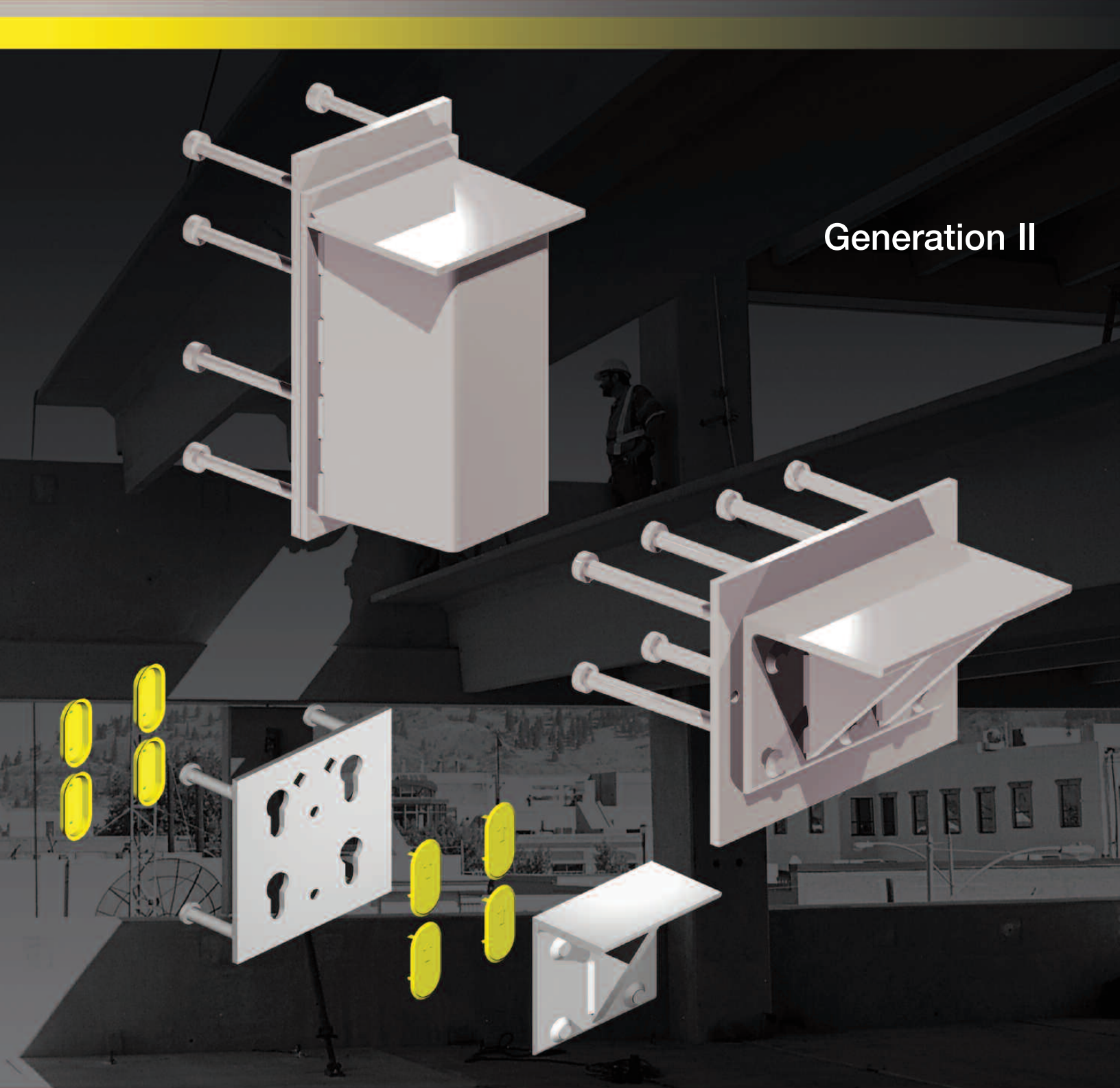


# The Rapid-Lok® Connection Plate System

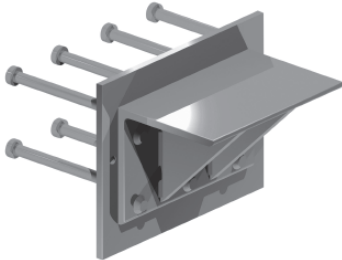
2017

Generation II



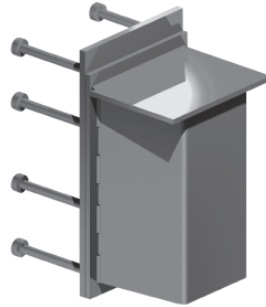
## Rapid-Lok® Connection Plate System

### Primary Types of Assembly



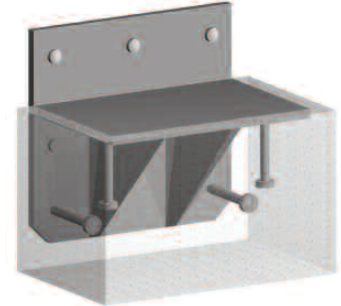
**The Bearing Angle Assembly:**

Rapid-Lok assembly, consisting of an Embed Plate and a Bearing Angle.



**The Bearing Corbel Assembly:**

This Rapid-Lok Assembly is used to improve the aesthetics, while being capable of reaching a 2-hour fire rating if required. The assembly consists of an Embed Plate and a Bearing Corbel.

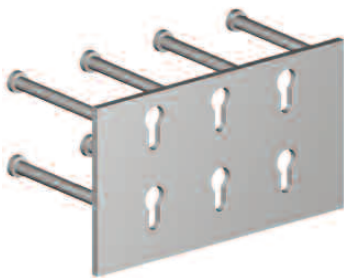


**Concrete Corbel "Cast-In-Place" Locking Stud Option**

Bearing Angles can be ordered with optional factory installed studs, attached to the outside face of the angle, as shown. To create the concrete corbel look, place the special Rapid-Lok in a mold and pour the desired concrete mix. This creates a concrete corbel that is hard to differentiate from one poured monolithically, with the attachment ease and efficiencies that the Rapid-Lok Connection System provides.

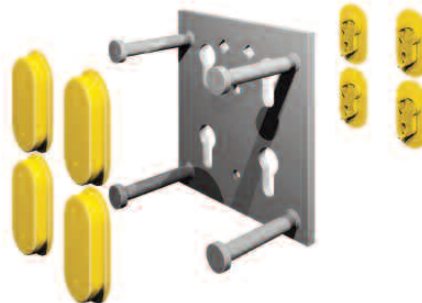
2

### The Primary Assembly Components:



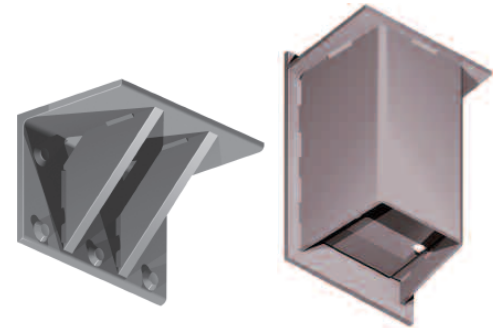
**Embed Plate**

The Embed Plate consists of a flat (ASTM A36) steel plate with headed studs welded to the back for embedment. Stud pattern and sizes have been engineered to optimize performance. The keyhole shaped slots are used to make a rapid connection of the Bearing Angle or Bearing Corbel to the Embed Plate. The "Bearing Point" locators have been improved to "Diamond Holes" that are visible from either side, even after galvanizing. The Safe Working Load (SWL) is applied to the front of all steel components for easy identification after installation.



**The Void Former**

Each Void Former is a plastic box which fits into the keyhole and is secured into place with new locking stems, eliminating any concrete leakage, even when Self Consolidating Concrete is used. This new former creates a voided area, free of concrete behind the Embed Plate and permits the attachment of the Bearing Angle or Bearing Corbel without interference.

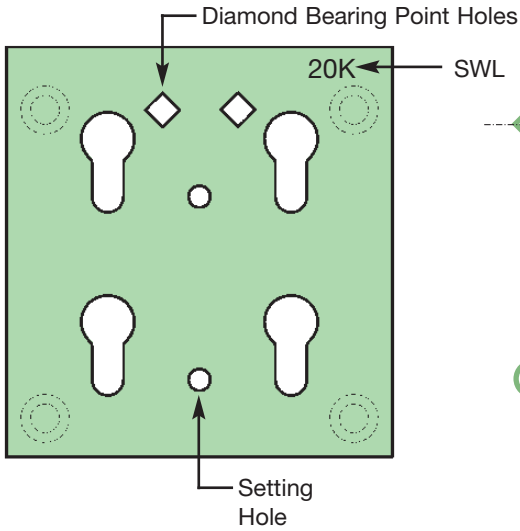


**The Bearing Angle and Bearing Corbel**

The Bearing Angle and Bearing Corbel are engineered with interlocking Super Studs, allowing them to be securely connected to the Embed Plate without bolts or welding. The studs are specially treated and have been "cold tested" to ensure strength, durability and cold weather performance. In addition, when using the Corbel unit, insulation and a bottom cover plate can be factory installed to increase the fire rating from 1-hour to 2-hour. All corbel units are delivered with bottom plate to improve overall appearance when viewed from below.

## Rapid-Lok® Connection Plate System

Increases the workability, strength, speed, accuracy of installation and performance.



### Diamond Holes

Knowing exactly where the “Bearing Point” is located has never been easier. Find the “Diamond Hole,” line up the correct elevation to the corners, and the Rapid-Lok is right on! Note that this is a through hole, visible from either side, even after galvanizing.



### Setting Holes

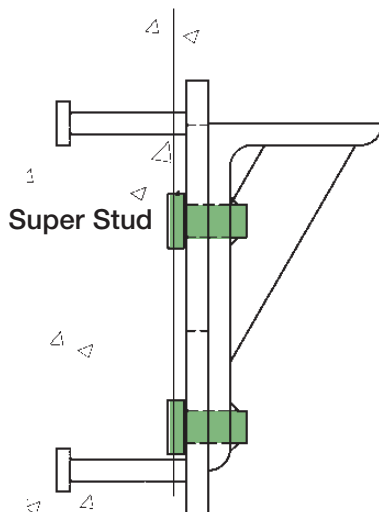
Setting Holes aid in the installation process, are 0.562” in diameter and are consistently located for use with templates during production.



### 20K

### SWL Stamp

The Safe Working Load of the device is located in the corner of each Rapid-Lok. This indicates the unit’s SWL; installation conditions and location may reduce the actual SWL. It is to be used only as a convenient indicator of the unit installed after the concrete has been placed.



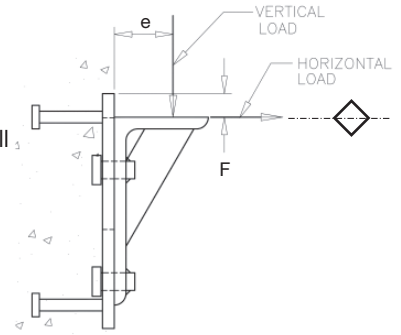
### Super Stud

The Bearing Angle and Bearing Corbel have a specially treated “stud” to increase their strength and durability during the shipping, handling and the installation processes, even in cold weather.

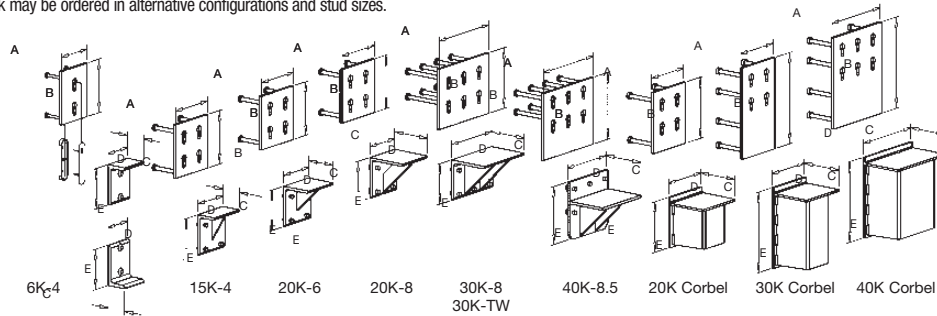
## Rapid-Lok® Connection Plate System

The Rapid-Lok Structural Connection System reduces the expensive welding process inherent on nearly all projects. Save thousands of dollars when you use Meadow Burke's Rapid-Lok Connection System.

- Install the Rapid-Lok Embed Plate as you would any other embedded weld plate.
- Prior to lifting the element, simply slide the Rapid-Lok Bearing Angle into the Rapid-Lok Embed Plate; no welding or bolting is required.



Rapid-Lok may be ordered in alternative configurations and stud sizes.



### Rapid-Lok Structural Connection Plate System Data

Rapid-Lok Model	Plain Finish		Hot Dipped Galvanized		Description	Vertical SWL (KIPS)	Horizontal SWL (KIPS)	Fire Rating Hours	Embed Plate Dim.		Bearing Angle & Corbel Dim.			Bearing Point (inches)	Embed Plate Stud Qty & Size
	Item Number	MB Product Number	Item Number	MB Product Number					A (inches)	B (inches)	C (inches)	D (inches)	E (inches)		
6 KIP 4"	6RLA	573000	6RLAG	573005	6K-4" Bearing Angle	6K	3K	3 Hour			4"	6"	8"	1.625"	
	6RLP	573010	6RLPG	573015	6K-Embed Plate				8"	10.625"					
15 KIP 4"	15RLA	573020	15RLAG	573025	15K-4" Bearing Angle	15K	9K	1 Hour			4"	7.75"	8"	1.625"	
	15RLP	573030	15RLPG	573035	15K-Embed Plate				10"	10.625"					
20 KIP 6"	20RLA	573040	20RLAG	573045	20K-6" Bearing Angle	20K	11K	1 Hour			6"	7.75"	8"	1.625"	
	20RLP	573080	20RLPG	573085	20K-Embed Plate				10"	10.625"					
20 KIP 8"	20RLA8	573060	20RLA8G	573065	20K-8" Bearing Angle	20K	11K	1 Hour			8"	7.75"	8"	1.625"	
	20RLP8	573090	20RLP8G	573095	20K-Embed Plate				10"	10.625"					
30 KIP 8"	30RLA	573150	30RLAG	573155	30K-8" Bearing Angle	30K	18K	2 Hour			8"	14"	8"	2"	
	30RLP12	573170	30RLP12G	573175	30K-Embed Plate				15.5"	12"					
30 KIP Thin Wall	30RLA	573150	30RLAG	573155	30K-8" Bearing Angle	30K	18K	2 Hour			8"	14"	8"	2"	
	30RLP12TW	573180	30RLP12TWG	573185	30K-Thin Wall Embed Plate				15.5"	12"					
40 KIP 8-1/2"	40RLA	573220	40RLAG	573225	40K-8-1/2" Bearing Angle	40K	26K	1 Hour			8.5"	12"	11.5"	5.75"	
	40RLP	573240	40RLPG	573245	40K-Embed Plate				15.5"	13.25"					
20 KIP 7-7/8" Steel Corbel	20RLC1*	573100*	20RLC1G*	573105*	20K-7-7/8" Bearing Corbel	20K	11K	1 Hour			7.875"	10"	10"	2.75"	
	20RLC2**	573110**	20RLC2G**	573115**	20K-Corbel Embed Plate				2 Hour**	10"	12.13"				
30 KIP 7-7/8" Steel Corbel	30RLC1*	573190*	30RLC1G*	573195*	30K-7-7/8" Bearing Corbel	30K	15K	1 Hour			7.875"	10"	16"	2.75"	
	30RLC2**	573200**	30RLC2G**	573205**	30K-Corbel Embed Plate				2 Hour**	10"	18.13"				
40 KIP 7-7/8" Steel Corbel	40RLC1*	573250*	40RLC1G*	573255*	40K-7-7/8" Bearing Corbel	40K	26K	1 Hour			7.875"	14.75"	16"	2.75"	
	40RLC2**	573260**	40RLC2G**	573265**	40K-Corbel Embed Plate				2 Hour**	14.75"	18.13"				
20 KIP 6" Concrete Corbel	20RLAS	573050	20RLASG	573055	20K-6" Bearing Angle w/studs	20K	11K	2 Hour			6"	7.75"	8"	1.625"	
	20RLP	573080	20RLPG	573085	20K-Embed Plate				10"	10.625"					
20 KIP 8" Concrete Corbel	20RLA8S	573070	20RLA8SG	573075	20K-8" Bearing Angle w/studs	20K	11K	3 Hour			8"	7.75"	8"	1.625"	
	20RLP8	573090	20RLP8G	573095	20K-Embed Plate				10"	10.625"					
30 KIP 8" Concrete Corbel	30RLAS	573160	30RLASG	573165	30K-8" Bearing Angle w/studs	30K	18K	2 Hour			8"	14"	8"	2"	
	30RLP12	573170	30RLP12G	573175	30K-Embed Plate				15.5"	12"					
30 KIP 8" Thin Wall Concrete Corbel	30RLAS	573160	30RLASG	573165	30K-8" Bearing Angle w/studs	30K	18K	2 Hour			8"	14"	8"	2"	
	30RLP12TW	573180	30RLP12TWG	573185	30K-Thin Wall Embed Plate				15.5"	12"					
40 KIP 8-1/2" Concrete Corbel	40RLAS	573230	40RLASG	573235	40K-8-1/2" Bearing Angle w/studs	40K	26K	2 Hour			8.5"	12"	11.5"	5.75"	
	40RLP	573240	40RLPG	573245	40K-Embed Plate				15.5"	13.25"					

\*One hour fire rating.

\*\*Two hour fire rating requires steel corbel to be factory filled with 6-pcf mineral wool and bottom cover installed.

\*\*\* Special 3 hour fire rated model available upon request.

RLA=Rapid-Lok Bearing Angle  
 RLP=Rapid-Lok Embed Plate  
 RLC=Rapid-Lok Bearing Corbel - Steel

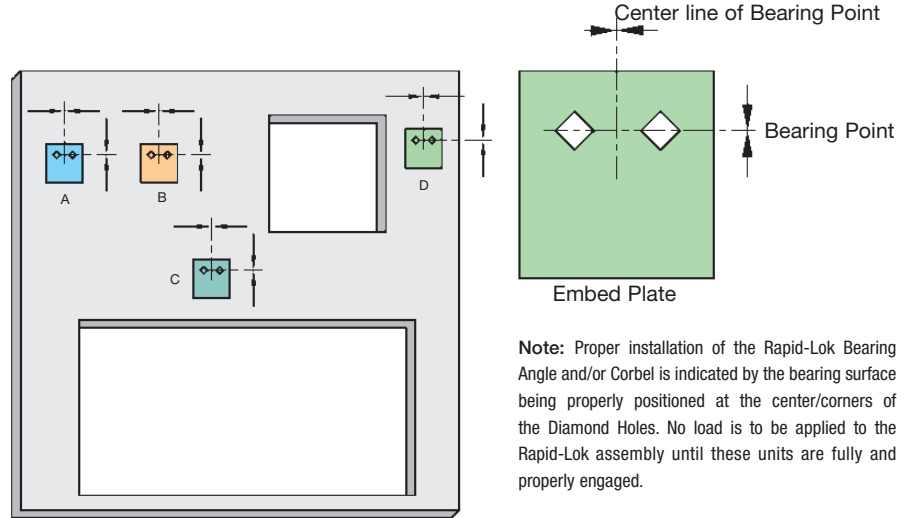
RLCP=Rapid-Lok Embed Plate Steel Corbel  
 RLAS=Rapid-Lok Bearing Angle w/CIP Studs - for customer installed concrete

## Rapid-Lok® Placement vs. Load Chart

### Position

- A: Edge (left or right)
- B: Field (no edge)
- C: Above Opening
- D: Between Opening and Edge

Figure 1



**Note:** Proper installation of the Rapid-Lok Bearing Angle and/or Corbel is indicated by the bearing surface being properly positioned at the center/corners of the Diamond Holes. No load is to be applied to the Rapid-Lok assembly until these units are fully and properly engaged.

## Minimum Edge Distance and Safe Work Loads

Rapid-Lok Model	MB Item Number	Rapid-Lok Assembly Type	Vertical Load Eccentricity "e"	Position A		Position B		Position C		Position D	
				Vertical SWL (KIPS)	Horizontal SWL (KIPS)	Vertical SWL (KIPS)	Horizontal SWL (KIPS)	Vertical SWL (KIPS)	Horizontal SWL (KIPS)	Vertical SWL (KIPS)	Horizontal SWL (KIPS)
573000 573010	6RLA 6RLP	6 KIP - 4"	2.5"	2.30K	1.44K	6.00K	3.00K	6.00K	3.00K	6.00K	3.00K
				Vertical Min. 11.00"	Horizontal Min. 6.00"	Vertical Min. 11.00"	Horizontal Min. 11.00"	Vertical Min. 11.00"	Horizontal Min. 11.00"	Vertical Min. 11.00"	Horizontal Min. 11.00"
573020 573030	15RLA 15RLP	15 KIP - 4"	2.5"	7.88K	6.10K	15.00K	8.91K	7.82K	8.91K	15.00K	8.91K
				Vertical Min. 10.00"	Horizontal Min. 7.00"	Vertical Min. 14.00"	Horizontal Min. 9.00"	Vertical Min. 10.00"	Horizontal Min. 9.00"	Vertical Min. 14.00"	Horizontal Min. 9.00"
573040 573080	20RLA 20RLP	20 KIP - 6"	4"	6.07K	9.95K	20.00K	11.39K	7.46K	11.39K	20.00K	11.39K
				Vertical Min. 14.00"	Horizontal Min. 9.00"	Vertical Min. 14.00"	Horizontal Min. 14.00"	Vertical Min. 10.00"	Horizontal Min. 14.00"	Vertical Min. 14.00"	Horizontal Min. 14.00"
573060 573090	20RLA8 20RLP8	20 KIP - 8"	4"	6.07K	9.95K	20.00K	11.39K	7.46K	11.39K	20.00K	11.39K
				Vertical Min. 14.00"	Horizontal Min. 9.00"	Vertical Min. 14.00"	Horizontal Min. 14.00"	Vertical Min. 10.00"	Horizontal Min. 14.00"	Vertical Min. 14.00"	Horizontal Min. 14.00"
573100 & 573110 573120	20RLC1 & 2 20RLCP	20 KIP 7-7/8" Corbel	6"	Vertical Min. 14.00"	Horizontal Min. 9.00"	Vertical Min. 14.00"	Horizontal Min. 14.00"	Vertical Min. 10.00"	Horizontal Min. 14.00"	Vertical Min. 14.00"	Horizontal Min. 14.00"
				22.62K	17.08	30.00	17.81K	9.72K	17.81K	30.00K	17.81K
573150 573170	30RLA 30RLP12	30 Kip - 8"	5"	Vertical Min. 19.00"	Horizontal Min. 13.00"	Vertical Min. 19.00"	Horizontal Min. 19.00"	Vertical Min. 13.00"	Horizontal Min. 19.00"	Vertical Min. 19.00"	Horizontal Min. 19.00"
				22.62K	17.08	30.00	17.81K	9.72K	17.81K	30.00K	17.81K
573150 573180	30RLA 30RLP12TW	30 Kip Thin Wall	5"	Vertical Min. 19.00"	Horizontal Min. 13.00"	Vertical Min. 19.00"	Horizontal Min. 19.00"	Vertical Min. 13.00"	Horizontal Min. 19.00"	Vertical Min. 19.00"	Horizontal Min. 19.00"
				30.00K	17.81K	30.00K	17.81K	30.00K	17.81K	30.00K	17.81K
573190 & 573200 573210	30RLC1 & 2 30RLCP	30 Kip 7-7/8" Corbel	6"	Vertical Min. 19.00"	Horizontal Min. 12.00"	Vertical Min. 19.00"	Horizontal Min. 12.00"	Vertical Min. 19.00"	Horizontal Min. 12.00"	Vertical Min. 19.00"	Horizontal Min. 12.00"
				27.49K	18.74K	40.00K	26.01K	21.28K	26.01K	40.00K	26.01K
573220 573240	40RLA 40RLP	40 KIP 8-1/2"	5"	Vertical Min. 17.00"	Horizontal Min. 12.00"	Vertical Min. 17.00"	Horizontal Min. 22.00"	Vertical Min. 10.00"	Horizontal Min. 22.00"	Vertical Min. 17.00"	Horizontal Min. 22.00"
				40.00K	24.00K	40.00K	24.00K	40.00K	24.00K	40.00K	24.00K
573250 & 573260 573270	40RLC1 & 2 40RLCP	40 KIP 7-7/8" Corbel	6"	Vertical Min. 19.00"	Horizontal Min. 15.00"	Vertical Min. 19.00"	Horizontal Min. 15.00"	Vertical Min. 19.00"	Horizontal Min. 15.00"	Vertical Min. 19.00"	Horizontal Min. 15.00"
				40.00K	24.00K	40.00K	24.00K	40.00K	24.00K	40.00K	24.00K

1) Safe Working Loads are based on actual tests for standard stud patterns and components and results in an approximate 3:1 safety factor. Free test reports available upon request.  
 2) Vertical Safe Work Load is based on the applied vertical load at eccentricity "e" shown with an incidental horizontal load due to eccentricity included, but no additional applied horizontal load.  
 3) The above load values are based on full or partial shear cone development in reinforced 5000 psi compressive strength concrete.  
 4) Full vertical and horizontal SWL limits cannot be used simultaneously. The following interaction equation should be used for load combinations.

$$\left( \frac{\text{Vert. Load}}{\text{Vert. SWL}} \right)^{5/3} + \left( \frac{\text{Horz. Load}}{\text{Horz. SWL}} \right)^{5/3} = 1$$

## Rapid-Lok® Stud Location with Bearing Point Reference

Ultimate Assembly Capacities					Ultimate Assembly Capacities			
U-stiffeners, Embedment Plates and Angles $F_y=36,000$ psi Triangular Stiffeners $F_y=50,000$ psi Concrete Embedment Studs $f_{ca}=65,000$ psi Interconnecting Studs $f_a=70,000$ psi	Rapid-Lok Model	MB Item Number	Rapid-Lok Assembly Type	Vertical Load Eccentricity "e"	Ultimate Assembly Capacities			
					Vertical		Horiz.	
					$\emptyset V_1$	$\emptyset V_2$	$\emptyset V_3$	$\emptyset N_4$
① $\emptyset V_1$ : Limited by design shear times number of connecting studs in shear = $n(65)A_w f_{ca}$ ② $\emptyset V_2$ : Limited by design tension times number of connecting studs in tension times vertical lever arm divided by the eccentricity (e) listed = $n(75)A_w f_{ca} Y/e$ ③ $\emptyset V_3$ : Limited on 6 kip unit by non-stiffened angle = $(.9)F_y b^2 / 4(e-1)$ $\emptyset V_4$ : Limited on Standard-Units by triangular stiffener = $(.85)F_y b z t$ $\emptyset V_5$ : Limited on corbel units by u-stiffener = $(.75)(1.8)F_y / 1/A + x'(e-x')/l$ ④ $\emptyset N_4$ : Limited by design tension times number of connecting studs in tension = $n(75)A_w f_{ca}$	573000 573010	6RLA 6RLP	6 KIP - 4"	2.5"	40 kips	43.9 kips	18.2 kips	23.1 kips
	573020 573030	15RLA 15RLP	15 KIP - 4"	2.5"	80 kips	63.7 kips	47.4 kips	46.2 kips
	573040 573080	20RLA 20RLP	20 KIP - 6"	4"	80 kips	60.6 kips	60.2 kips	46.2 kips
	573060 573090	20RLA8 20RLP8	20 KIP - 8"	4"	80 kips	60.6 kips	62.5 kips	46.2 kips
	573100 & 573110 573120	20RLC1 & 2 20RLCP	20 KIP 7-7/8" Corbel	6"	80 kips	55.8 kips	130 kips	46.2 kips
	573150 573170	30RLA 30RLP12	30 KIP - 8"	5"	120 kips	79.7 kips	93.7 kips	69.3 kips
	573150 573180	30RLA 30RLP12TW	30 KIP Thin Wall	5"	120 kips	79.7 kips	93.7 kips	46.2 kips
	573190 & 573200 573210	30RLC1 & 2 30RLCP	30 KIP 7-7/8" Corbel	6"	80 kips	102 kips	130 kips	46.2 kips
	573220 573240	40RLA 40RLP	40 KIP 8-1/2"	5"	120 kips	139 kips	125 kips	138 kips
	573250 & 573260 573270	40RLC1 & 2 40RLCP	40 KIP 7-7/8" Corbel	6"	120 kips	155 kips	200 kips	69.3 kips

This data is for designers using ultimate strength design per PCI, 7th edition or ACI 318. Meadow Burke does not recommend using or accept liability for unfactored loads in excess of those listed as Working Loads in this document.

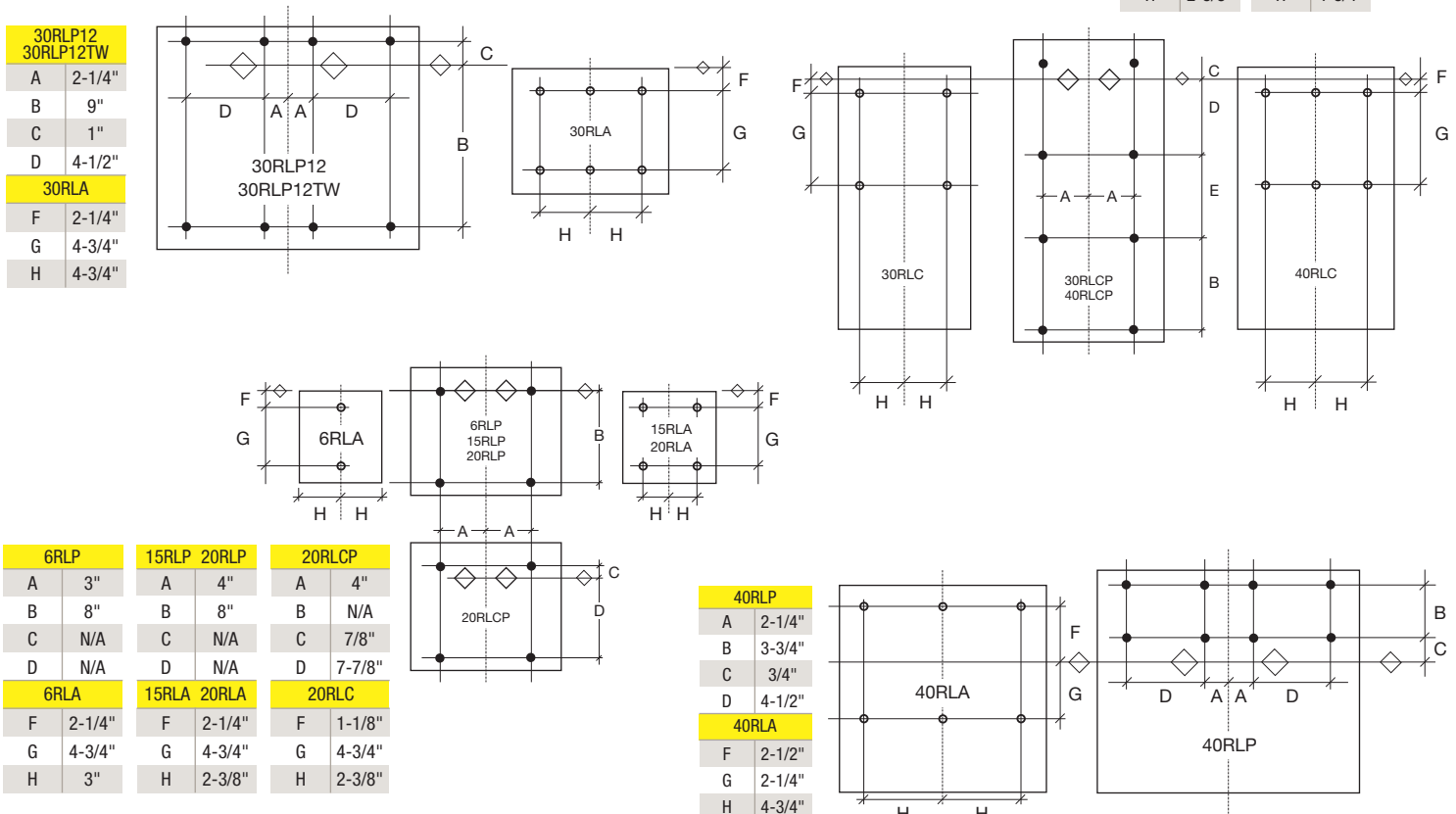
**Note:** Proper installation of the Rapid-Lok Bearing Angle and/or Corbel is indicated by the bearing surface being properly positioned at the center/corners of the Diamond Holes. No load is to be applied to the Rapid-Lok assembly until these units are fully and properly engaged.

30RLCP		40RLCP	
A	4"	A	6-3/8"
B	4-3/4"	B	4-3/4"
C	7/8"	C	7/8"
D	3-1/8"	D	3-1/8"
E	6"	E	6"

30RLC		40RLC	
F	1-1/8"	F	1-1/8"
G	4-3/4"	G	4-3/4"
H	2-3/8"	H	4-3/4"

6



## Accessories and Options

### RAPID-LOK STUD EXTENDER (US PATENT NO. 6,494,639 )

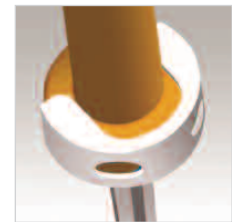
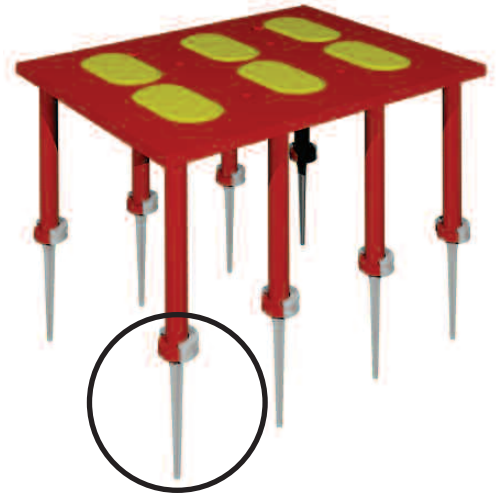
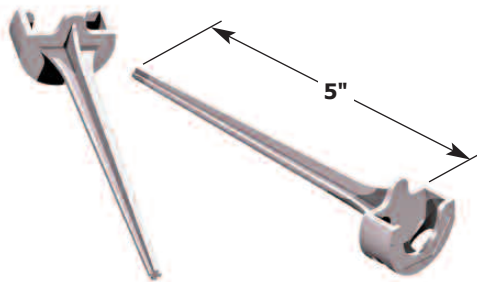
The MB Stud Extender is designed as an adjustable height support chair for embed/weld plates.

The Stud Extender eliminates the tedious, labor-intensive wood forming or risky "wet setting" of embed plates in the top-face of a concrete panel.

#### Stud Extender Advantages:

- easy to use
- eliminates wood framing
- saves time
- saves materials
- consistent accuracy
- screed and finish panels easily

The MB Stud Extender is a simple, easy to use solution for setting weld plates. This easy to use product is inexpensive, yet produces enormous savings of time and materials.

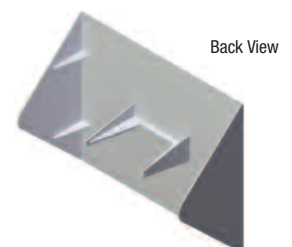
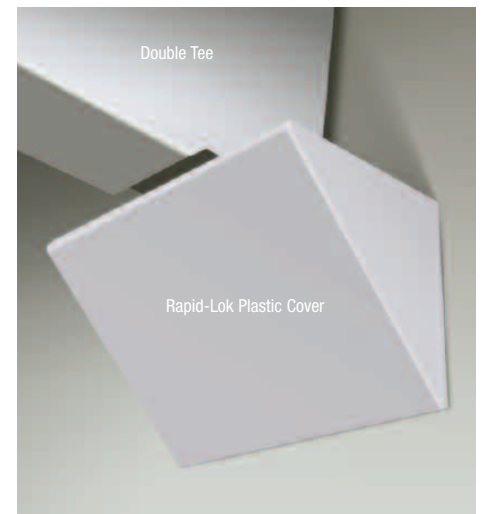


### PLASTIC COVER FOR 20 KIP-8" AND 30 KIP RAPID-LOK

Precasters often install concrete corbels at great expense to the Rapid-Lok Bearing Angle for improved aesthetics. The NEW Plastic Cover for the 20 kip-8" and 30 kip Rapid-Lok will completely conceal all three open sides of the Rapid-Lok Bearing Angle, similar to that of a concrete corbel or concrete ledge in a conventional precast, cast-in-place or tilt-up scenario. Just simply snap the cover into place fastening to the gussets of the existing Rapid-Lok Bearing Angle Assembly.

A simple but effective concrete colored plastic cover that attaches to the existing angles of the 20 (MBRLC20) and 30 kip (MBRLC30) Rapid-Lok Bearing Angle Assembly. The Plastic Cover for Rapid-Lok eliminates all the safety issues associated with installing a concrete corbel to a precast, cast-in-place or tilt-up panel by reducing the weight and ergonomic concerns of hanging a large piece of concrete.

The Plastic Cover for Rapid-Lok was thoroughly tested to ensure that it will perform exceptionally well, even in extreme conditions. It holds its shape and resists impact damage at temperatures approaching zero and exceeding 125°F. Although it normally remains in place once installed, the cover can be detached and reattached dozens of times if needed without deforming.



Item Number	Description
MBRLC20	Plastic Cover for 20-8" kip Rapid-Lok
MBRLC30	Plastic Cover for 30 kip Rapid-Lok

# Innovating Concrete Construction

www.MeadowBurke.com

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