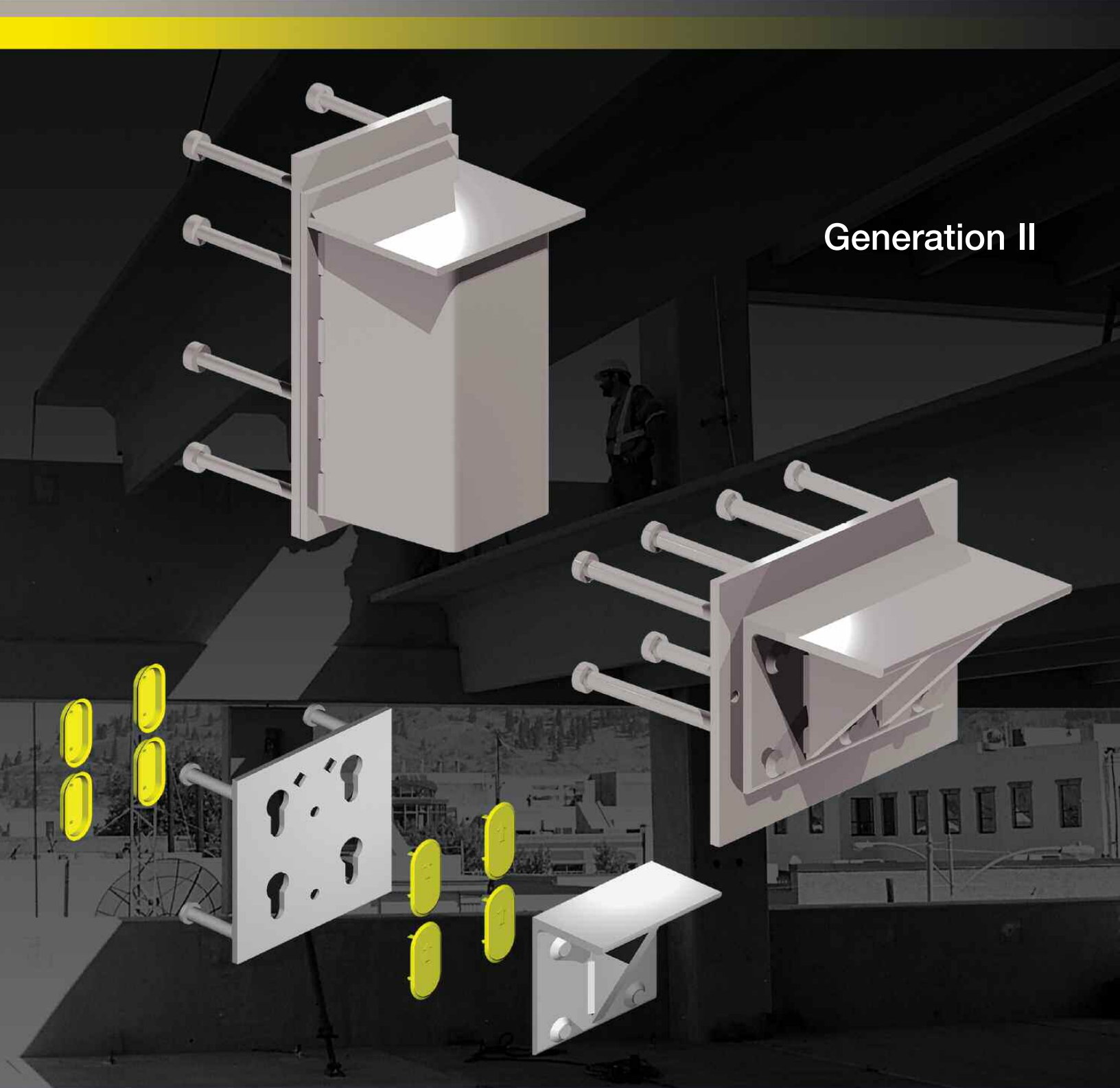
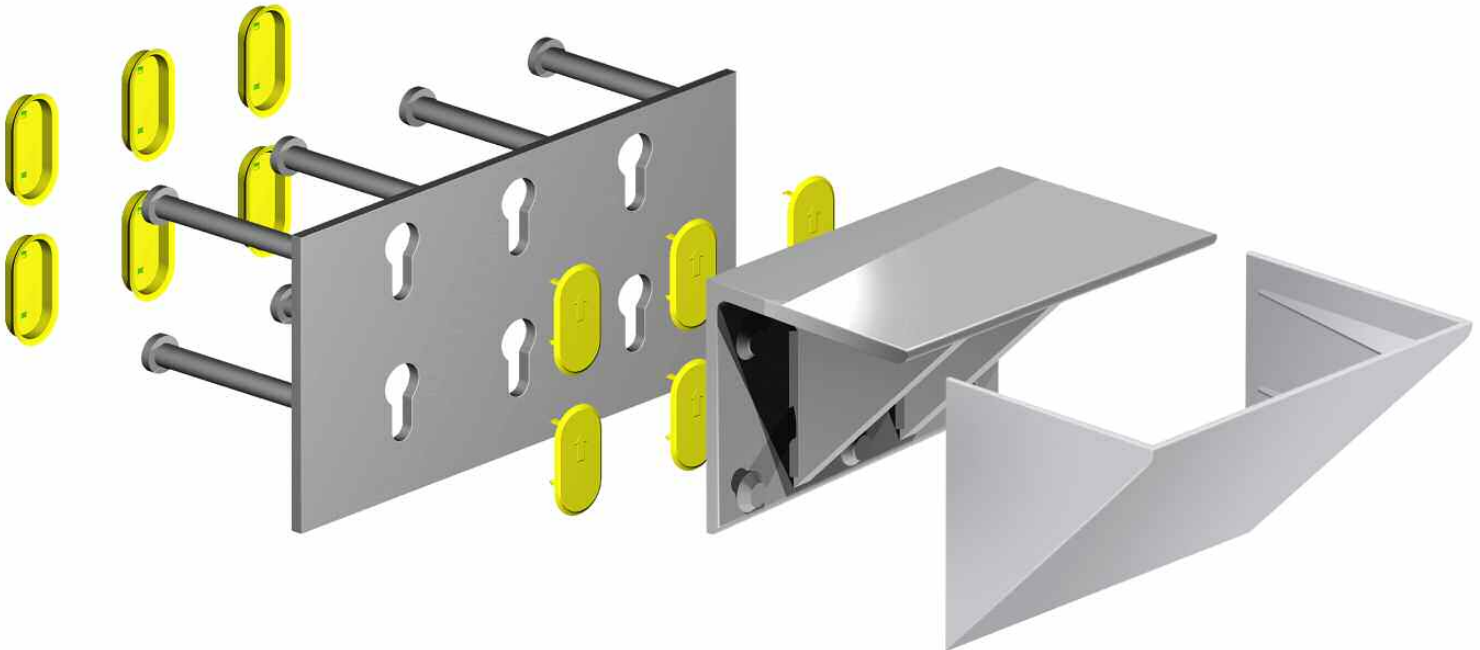


# The Rapid-Lok® Connection Plate System

Generation II



## RAPID-LOK® Connection Plate System



### What is Rapid-Lok?

Rapid-Lok is a system that creates a steel projection in a structural wall, which acts as shelf, able to carry a weight such as a Double Tee.

A Bearing Angle, Concrete Replicated Bearing Corbel or Steel Corbel lock onto the face of an embed plate cast into the structural wall. This system is widely used to eliminate the conventional concrete cast corbel method.

### How It Works:

The Embed Plate is cast into the structural wall at the Precast plant, with the faceplate flush to the wall face. Once the precast structure is on site, the void formers attached to the face of the Embed Plate that create recesses, are removed by the Erector to reveal 'keyholes.'

Replicated Bearing Corbel or Steel Corbel's interlocking studs are then engaged into the keyholes of the Embedded Plate, securely locking them in place without requiring a weld. Selection of a Bearing Angle, Concrete Replicated Bearing Corbel's or Steel Corbel is based upon load requirements, fire rating and ascetic finish desired for the project.

### Why is it better?

#### Saves time and money:

- Reduces the risk of accidents in the Precast plant by not having to position and place the heavy concrete precast corbels in the precast process of producing a precast panel or column
- Forming and casting corbels in a precast panel is both time consuming and requires additional material costs. This is eliminated by using the Rapid-Lok embed plate at the Precast plant and then engaging the Bearing Angle or Bearing Corbel onsite during erection
- Eliminates the need for onsite welding and weld inspections as the connection to the face plate and angle are secured by interlocking studs

#### Improves aesthetics:

- Less obtrusive than a larger concrete corbel to be more compact
- Offers an 'urban industrial' look to the structure if the steel of the Bearing Angle is left exposed
- The steel Bearing Angle can be covered with a concrete colored plastic cover (Rapid Lok Cover) to blend into the structure

- When encased in concrete the Bearing Angle recreate the finish and look of a traditional concrete corbel

### Design the Rapid Lok into a project

- Identify the live and dead loads of the weight (DT) the Rapid-Lok must hold
- Select either the Bearing Angle or Corbel system based on hours of fire rating required
- Select either the Bearing Angle or Corbel system based on aesthetics (Exposed vs. encased finish)

## RAPID-LOK® Connection Plate System

### Primary Assembly Components:

#### Embed Plate

Selection of the Embed plate size and configuration is determined by the selection of either Bearing Angle, Concrete Replicated Bearing Corbel or Steel Corbel.

- Manufactured from ASTM A36 steel, it is a durable long-term solution over using a concrete corbel
- Available in various size configurations to provide a performance range from 6kip – 40kip in service load
- Available in either plain or hot dipped galvanized if corrosion protection is required

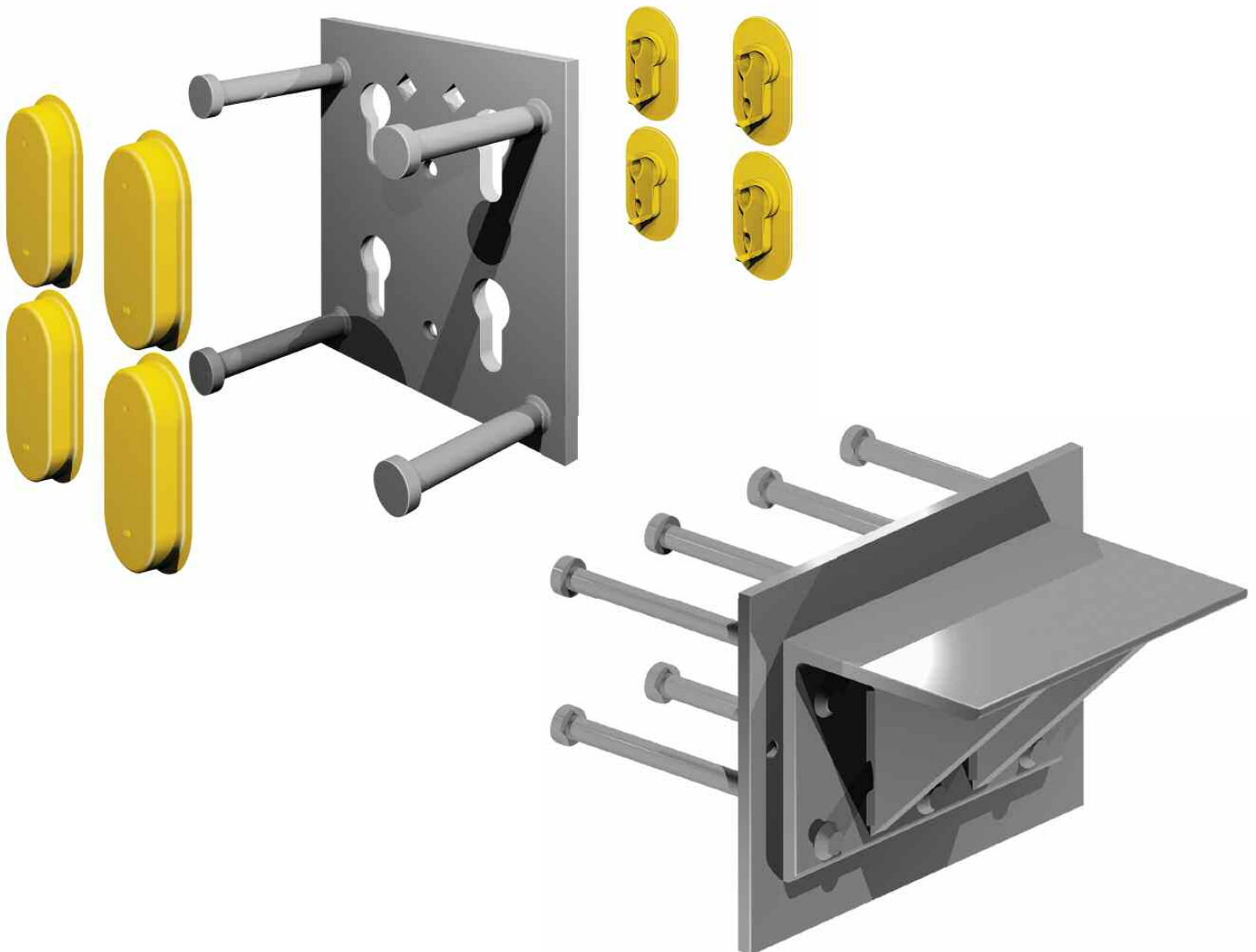
- Diamond holes are pre-punched to locate the bearing point to achieve the correct elevation to the corners, making it easier to position to the bearing point for increased accuracy of installation

#### The Bearing Angle

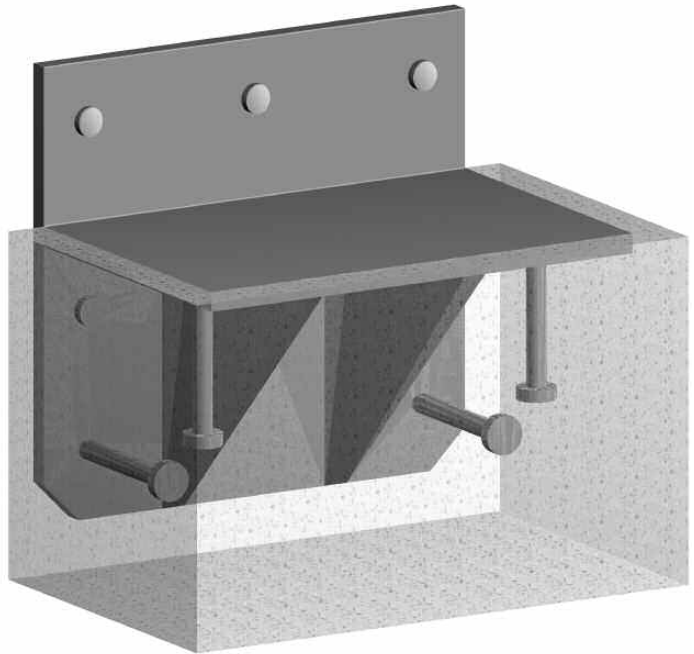
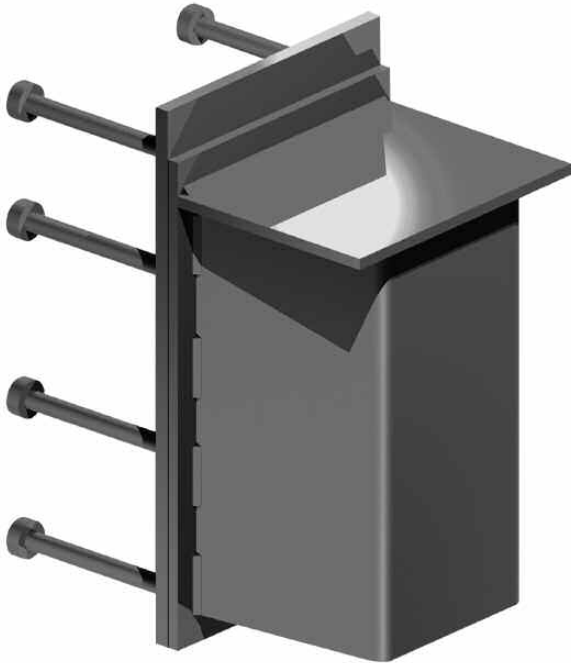
The Bearing Angle is used to create a shelf which acts as a traditional corbel replacement. The underside of the angle is left exposed to the structure once the weight is placed upon it.

- Available to provide a performance range from 6kip – 40kip in load bearing strength

- All sizes of Bearing Angle's provide up to a 1-hour fire rating. The 6kip provides up to 3 hours fire rating and the 30kip up to a two-hour fire rating
- The Rapid Lok Cover is available for the 20 kip and 30-kip Bearing Angle models. It fits securely under the gusset of the Bearing Angle units to completely conceal all three of its open sides. Due to it replicating the color of concrete, it blends into the surrounding structure
- Super studs attached to the Bearing Angle have been "cold tested," configured and sized for optimum performance in all weather conditions, ensuring the load bearing capacities are met



## RAPID-LOK® Connection Plate System Primary Assembly Components:



### Steel Corbel

The Steel Box Corbel is a steel formed unit used to create a shelf which acts as a traditional concrete corbel replacement.

- A bottom plate is added to the unit which improves its appearance when viewed from below
- All sizes of the Bearing Corbel achieve a minimum 1-hour Fire rating. This can be increased to 2 hrs. with the addition of 6-pcf of mineral wool

### Concrete Replicated Bearing Corbel

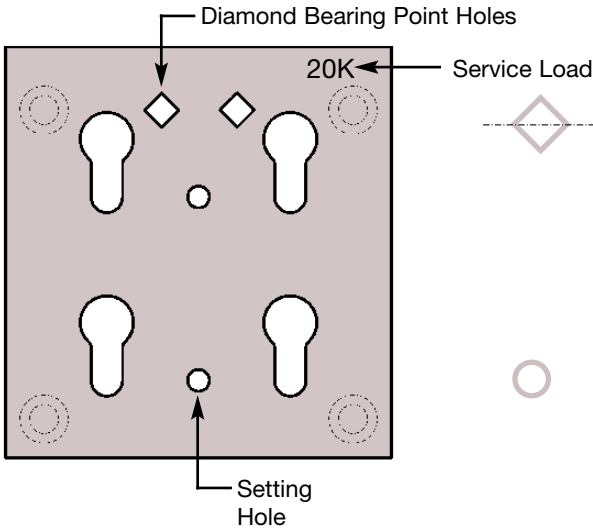
Concrete Replicated Bearing Corbel is used to create a shelf which acts as a traditional corbel replacement. Similar in its make up as the Bearing Angle but with the addition of studs to form a frame, to allow the casting of concrete around it. The underside angle is then encased in concrete to create a traditional concrete corbel finish.

- Available to provide a service load range from 20kip – 40kip in load bearing strength

All sizes of Concrete Replicated Bearing Corbel provide up to a 2-hour fire rating. The 20-kip unit provides up to three hours.

## 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.

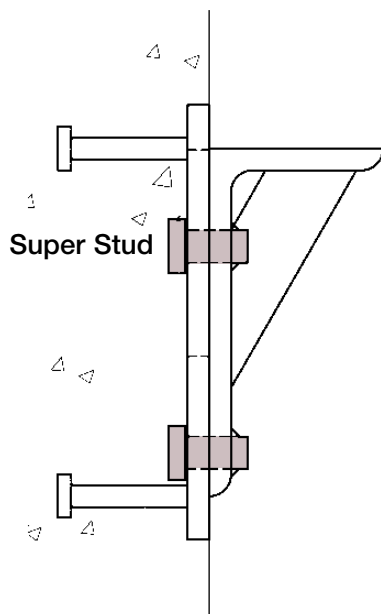
### Setting Holes

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

### 20K

### Service Load Stamp

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



### Super Stud

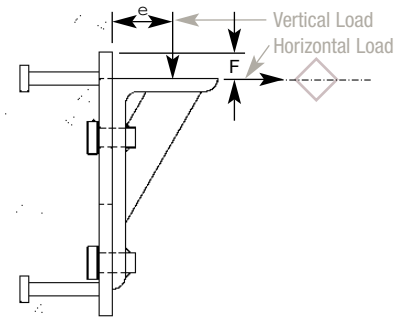
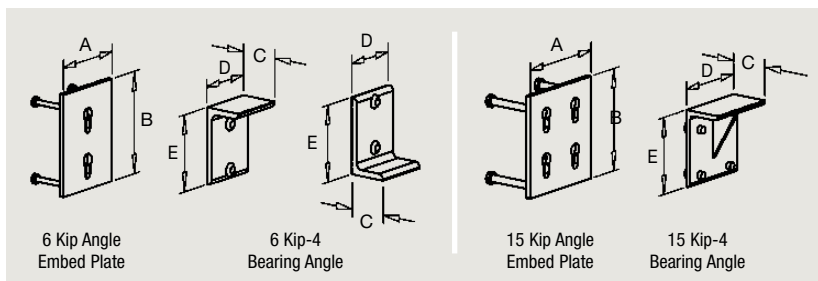
The Bearing Angle and Bearing Corbel have a specially treated "stud" to increase their strength and durability during the shipping, handling and the installation processes, even in cold weather.

## 6 & 15 KIP Service Load

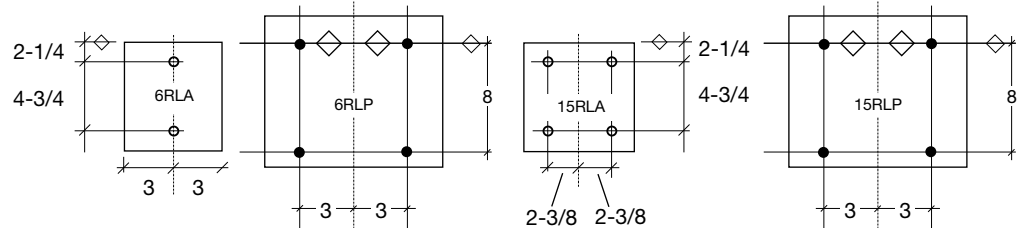
Rapid-Lok Model	Finish		Description	Vertical Service Load (KIPS)	Horizontal Service Load (KIPS)	Fire Rating Hours	Embed Plate Dim.		Bearing Angle & Corbel Dim.			Bearing Point		Embed Plate Stud Qty & Size
	Plain Finish	Hot Dipped Galvanized					A (inches)	B (inches)	C (inches)	D (inches)	E (inches)	F (inches)	e (inches)	
6 KIP 4"	6RLA	6RLAG	6K-4" Bearing Angle	6 KIP	3 KIP	3 Hour	8"	10.625"	4"	6"	8"	1.625"	2.5"	4
	6RLP	6RLPG	6K-Embed Plate											
15 KIP 4"	15RLA	15RLAG	15K-4" Bearing Angle	15 KIP	9 KIP	1 Hour	10"	10.625"	4"	7.75"	8"	1.625"	2.5"	4
	15RLP	15RLPG	15K-Embed Plate											

1) Full vertical and horizontal service loads cannot be applied simultaneously. The following interaction equation should be used for load combination:

$$\left( \frac{N_u}{\text{Published Horizontal Service Load}} \right)^{5/3} + \left( \frac{V_u}{\text{Published Vertical Service Load}} \right)^{5/3} \leq 1$$

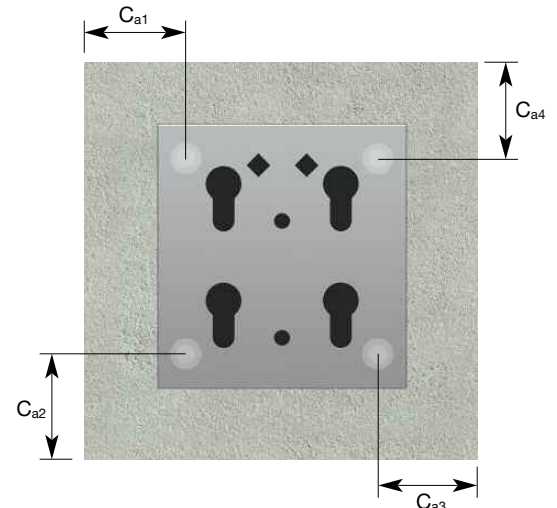


## Stud Location



## Minimum Edge Distance

6 & 15 KIP Service Load					
Rapid Lok Model	Item Number	Edge Distances (Inches)			
		C <sub>a1</sub>	C <sub>a2</sub>	C <sub>a3</sub>	C <sub>a4</sub>
6 KIP 4"	6RLP	8	3	8	11
15 KIP 4"	15RLP	5	6	5	14

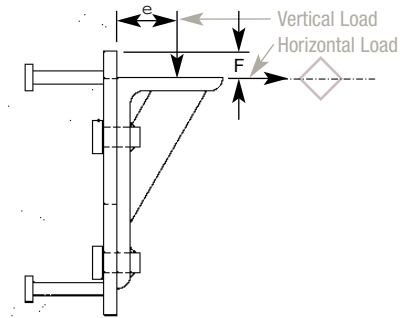
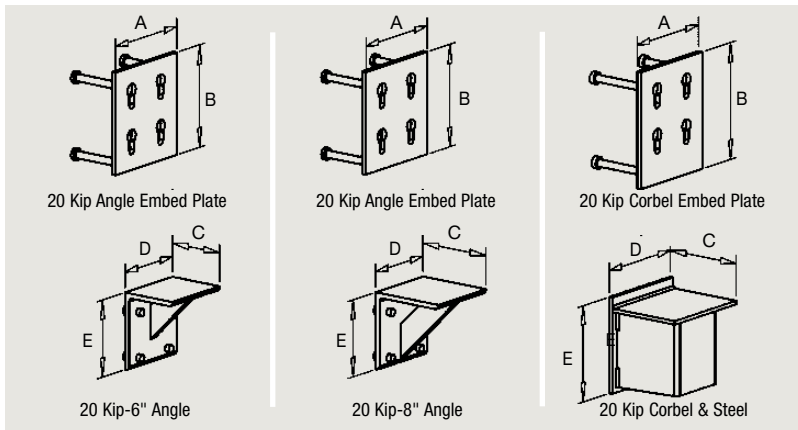


## 20 KIP Service Load

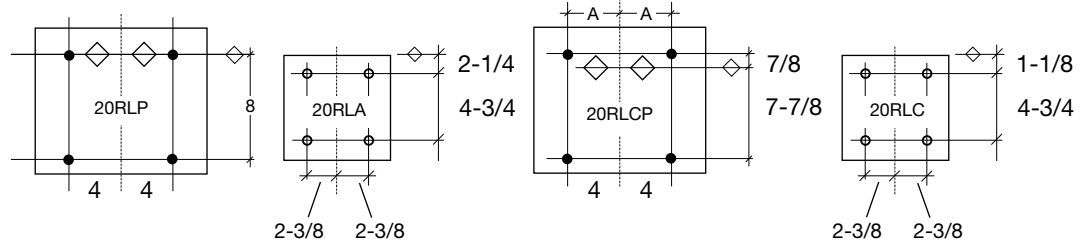
Rapid-Lok Model	Finish		Description	Vertical Service Load (KIPS)	Horizontal Service Load (KIPS)	Fire Rating Hours	Embed Plate Dim.		Bearing Angle & Corbel Dim.			Bearing Point		Embed Plate Stud Qty & Size	
	Plain Finish	Hot Dipped Galvanized					A (inches)	B (inches)	C (inches)	D (inches)	E (inches)	F (inches)	e (inches)	# of Studs/Embed Plate	Stud Size (inches)
20 KIP 6"	20RLA	20RLAG	20K-6" Bearing Angle	20 KIP	11 KIP	1 Hour	10"	10.625"	6"	7.75"	8"	1.625"	4"	4	3/4" x 5"
	20RLP	20RLPG	20K-Embed Plate						8"	7.75"	8"	1.625"	4"		
20 KIP 8"	20RLA8	20RLA8G	20K-8" Bearing Angle	20 KIP	11 KIP	1 Hour	10"	10.625"	8"	7.75"	8"	1.625"	4"	4	3/4" x 6"
	20RLP8	20RLP8G	20K-Embed Plate						8"	7.75"	8"	1.625"	4"		
20 KIP 6" Concrete Corbel	20RLAS	20RLASG	20K-6" Bearing Angle w/studs	20 KIP	11 KIP	2 Hour	10"	10.625"	6"	7.75"	8"	1.625"	4"	4	3/4" x 5"
	20RLP	20RLPG	20K-Embed Plate						8"	7.75"	8"	1.625"	4"		
20 KIP 8" Concrete Corbel	20RLA8S	20RLA8SG	20K-8" Bearing Angle w/studs	20 KIP	11 KIP	3 Hour	10"	10.625"	8"	7.75"	8"	1.625"	4"	4	3/4" x 6"
	20RLP8	20RLP8G	20K-Embed Plate						8"	7.75"	8"	1.625"	4"		
20 KIP 7-7/8" Steel Corbel	20RLC1*, 20RLC2**	20RLC1G*, 20RLC2G**	20K-7-7/8" Bearing Corbel	20 KIP	11 KIP	1 Hour	10"	12.13"	7.875"	10"	10"	2.75"	6"	4	3/4"x6-1/2"
	20RLCP	20RLCPG	20K-Corbel Embed Plate			2 Hour**			7.875"	10"	10"	2.75"	6"		

1) Full vertical and horizontal service loads cannot be applied simultaneously. The following interaction equation should be used for load combination:

$$\left( \frac{N_u}{\text{Published Horizontal Service Load}} \right)^{5/3} + \left( \frac{V_u}{\text{Published Vertical Service Load}} \right)^{5/3} \leq 1$$

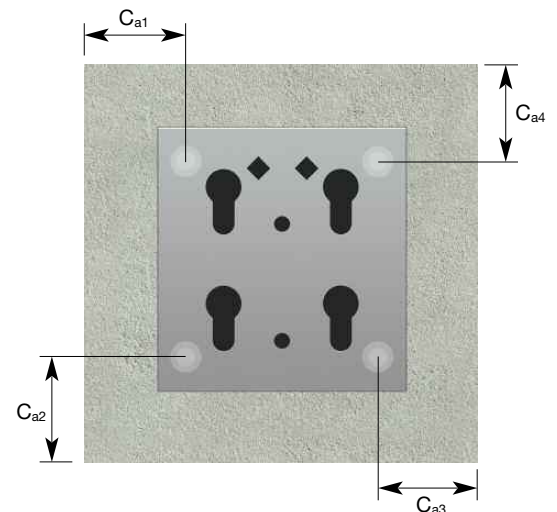


## Stud Location



## Minimum Edge Distance

20 KIP Service Load					
Rapid Lok Model	Item Number	Edge Distances (Inches)			
		C <sub>a1</sub>	C <sub>a2</sub>	C <sub>a3</sub>	C <sub>a4</sub>
20 KIP 6"	20RLP	10	6	10	14
20 KIP 8"	20RLP8	10	6	10	14
20 KIP 6" Concrete Corbel	20RLP	10	6	10	14
20 KIP 7-7/8" Steel Corbel	20RLCP	10	10	10	14
20 KIP 8" Steel Corbel	20RLCP8	10	10	10	14

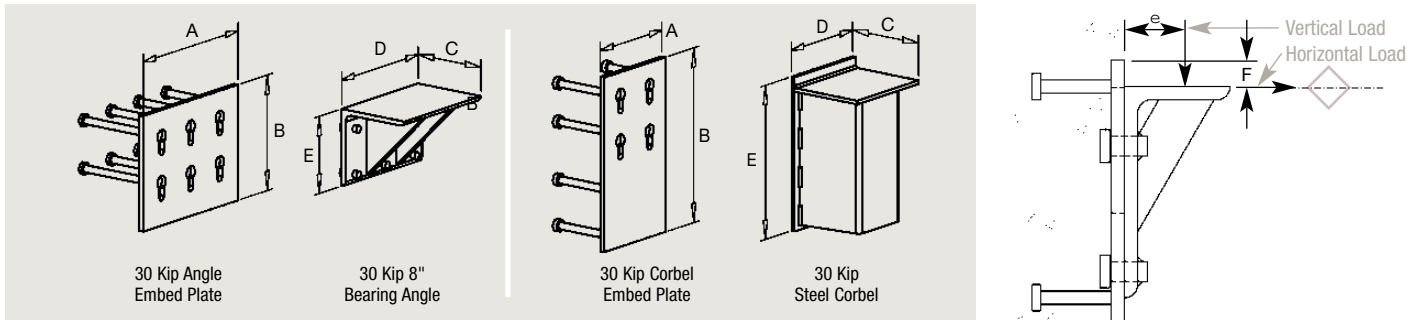


## 30 KIP Service Load

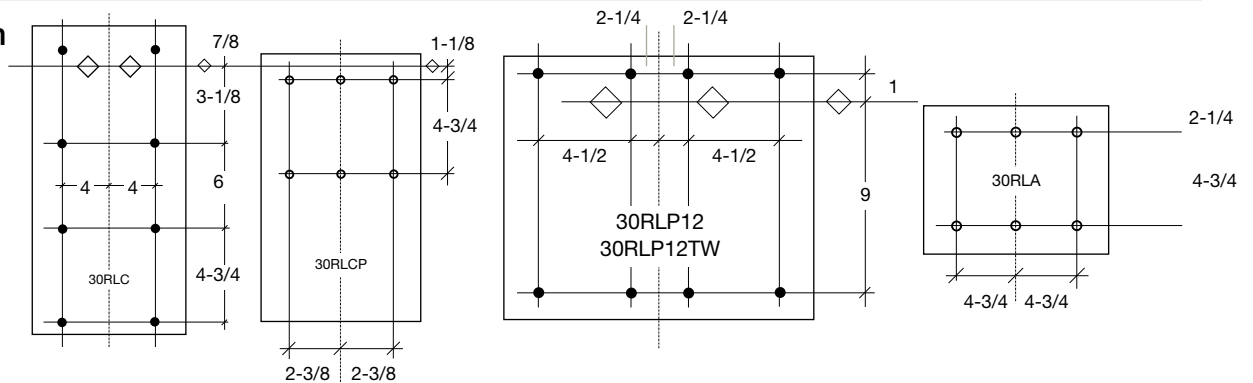
Rapid-Lok Model	Finish		Description	Vertical Service Load (KIPS)	Horizontal Service Load (KIPS)	Fire Rating Hours	Embed Plate Dim.		Bearing Angle & Corbel Dim.					Bearing Point		Embed Plate Stud Qty & Size
	Plain Finish	Hot Dipped Galvanized					A (inches)	B (inches)	C (inches)	D (inches)	E (inches)	F (inches)	e (inches)	# of Studs/Embed Plate		
30 KIP 8"	30RLA	30RLAG	30K-8" Bearing Angle	30 KIP	18 KIP	2 Hour	15.5"	12"	8"	7.75"	8"	2"	5"	8		
	30RLP12	30RLP12G	30K-Embed Plate													
30 KIP Thin Wall	30RLA	30RLAG	30K-8" Bearing Angle	30 KIP	18 KIP	2 Hour	15.5"	12"	8"	7.75"	8"	2"	5"	8		
	30RLP12TW	30RLP12TWG	30K-Thin Wall Embed Plate													
30 KIP 8" Concrete Corbel	30RLAS	30RLASG	30K-8" Bearing Angle w/studs	30 KIP	18 KIP	2 Hour	15.5"	12"	6"	7.75"	8"	2"	5"	8		
	30RLP12	30RLP12G	30K-Embed Plate													
30 KIP 8" Thin Wall Concrete Corbel	30RLAS	30RLASG	30K-8" Bearing Angle w/studs	30 KIP	18 KIP	2 Hour	15.5"	12"	8"	7.75"	8"	2"	5"	8		
	30RLP12TW	30RLP12TWG	30K-Thin Wall Embed Plate													
30 KIP 7-7/8" Steel Corbel	30RLC1*, 30RLC2**	30RLC1G*, 30RLC2G**	30K-7-7/8" Bearing Corbel	30 KIP	18 KIP	1 Hour*	10"	18.13"	7.875"	10"	10"	2.75"	6"	8		
	30RLCP	30RLCPG	30K-Corbel Embed Plate			2 Hour**										

1) Full vertical and horizontal service loads cannot be applied simultaneously. The following interaction equation should be used for load combination:

$$\left( \frac{N_u}{\text{Published Horizontal Service Load}} \right)^{5/3} + \left( \frac{V_u}{\text{Published Vertical Service Load}} \right)^{5/3} \leq 1$$

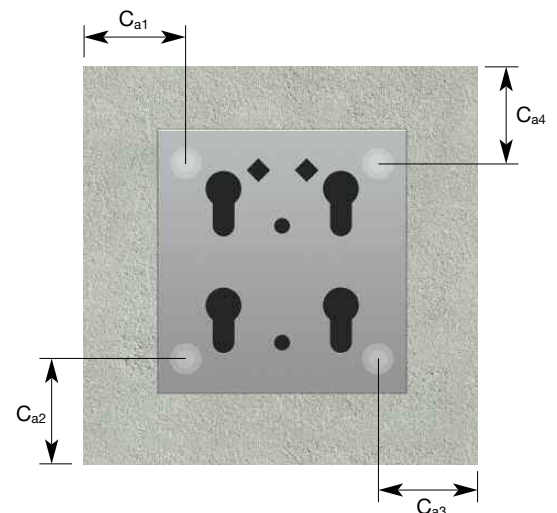


## Stud Location



## Minimum Edge Distance

30 KIP Service Load					
Rapid Lok Model	Item Number	Edge Distances (Inches)			
		C <sub>a1</sub>	C <sub>a2</sub>	C <sub>a3</sub>	C <sub>a4</sub>
30 KIP 8"	30RLP12	12.25	10	12.25	18
30 KIP Thin Wall	30RLP12TW	12.25	10	12.25	18
30 KIP 8" Concrete Corbel	30RLP12	12.25	10	12.25	18
30 KIP 8" Thin Wall Concrete Corbel	30RLP12	12.25	10	12.25	18
30 KIP 7-7/8 Steel Corbel	30RLCP	8	19	8	19



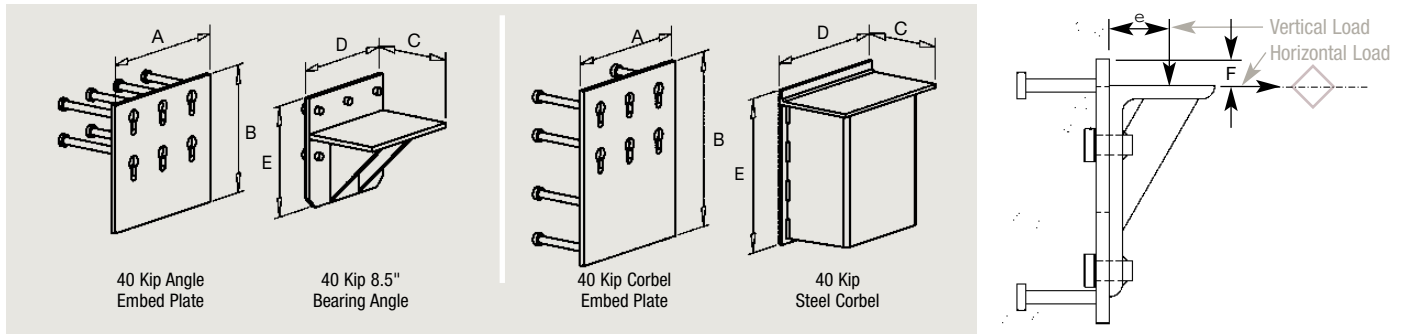


## 40 KIP Service Load

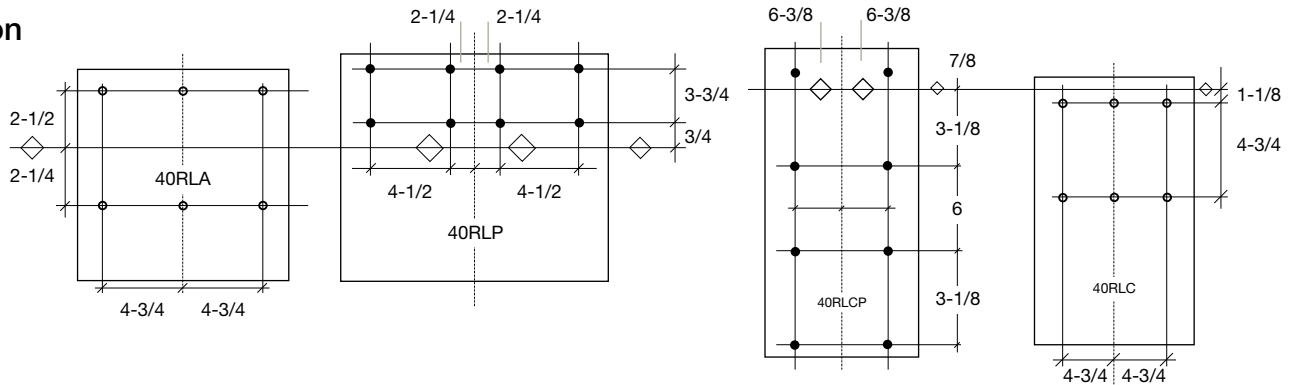
Rapid-Lok Model	Finish		Description	Vertical Service Load (KIPS)	Horizontal Service Load (KIPS)	Fire Rating Hours	Embed Plate Dim.		Bearing Angle & Corbel Dim.			Bearing Point		Embed Plate Stud Qty & Size	
	Plain Finish	Hot Dipped Galvanized					A (inches)	B (inches)	C (inches)	D (inches)	E (inches)	F (inches)	e (inches)	# of Studs/Embed Plate	Stud Size (inches)
40 KIP 8-1/2"	40RLA	40RLAG	40K-8-1/2" Bearing Angle	40 KIP	26 KIP	1 Hour	15.5"	13.25"	8.5"	12"	11.5"	5.75"	5"	8	3/4" x 8"
	40RLP	40RLPG	40K-Embed Plate												
40 KIP 8-1/2" Concrete Corbel	40RLAS	40RLASG	40K-8-1/2" Bearing Angle w/studs	40 KIP	26 KIP	2 Hour	15.5"	13.25"	8.5"	12"	11.5"	5.75"	5"	8	3/4" x 7"
	40RLP	40RLPG	40K-Embed Plate												
40 KIP 7-7/8" Steel Corbel	40RLC1*, 40RLC2**	40RLC1G*, 40RLC2G**	40K-7-7/8" Bearing Corbel	40 KIP	26 KIP	1 Hour	14.75"	18.13"	7.875"	14.75"	16"	2.75"	6"	8	3/4" x 8"
	40RLCP	40RLCPG	40K-Corbel Embed Plate												

1) Full vertical and horizontal service loads cannot be applied simultaneously. The following interaction equation should be used for load combination:

$$\left( \frac{N_u}{\text{Published Horizontal Service Load}} \right)^{5/3} + \left( \frac{V_u}{\text{Published Vertical Service Load}} \right)^{5/3} \leq 1$$

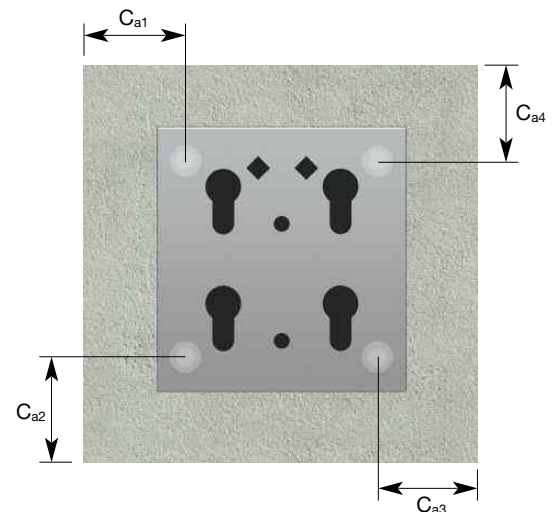


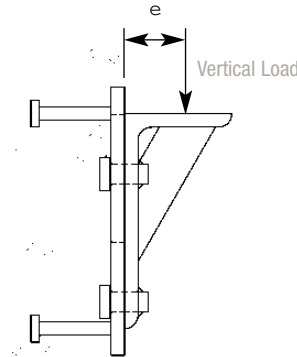
## Stud Location



## Minimum Edge Distance

40 KIP Service Load					
Rapid Lok Model	Item Number	Edge Distances (Inches)			
		C <sub>a1</sub>	C <sub>a2</sub>	C <sub>a3</sub>	C <sub>a4</sub>
40 KIP 8-1/2"	40RLP	15.25	17.75	15.25	12.25
40 KIP 8-1/2" Concrete Corbel	40RLP	15.25	17.75	15.25	12.25
40 KIP 7-7/8 Steel Corbel	40RLCP	8.63	15	8.63	19





## Ultimate Assembly Capacities as Tested in Concrete

### Raw Material Information

U-stiffeners, Embedment Plates and Angles  $F_y=36,000$  psi

Triangular Stiffeners  $F_y=50,000$  psi

Concrete Embedment Studs  $f_{ut}=65,000$  psi

Interconnecting Studs  $f_{ut}=70,000$  psi

MB Item Number	Rapid-Lok Assembly Type	Vertical Load Eccentricity "e"	Ultimate Load
6RLA 6RLP	6 KIP - 4"	2.5"	18 KIP
15RLA 15RLP	15 KIP - 4"	2.5"	45 KIP
20RLA 20RLP	20 KIP - 6"	4"	60 KIP
20RLA8 20RLP8	20 KIP - 8"	4"	60 KIP
20RLC1 & 2 20RLCP	20 KIP 7-7/8" Corbel	6"	60 KIP
30RLA 30RLP12	30 Kip - 8"	5"	90 KIP
30RLA 30RLP12TW	30 Kip Thin Wall	5"	90 KIP
30RLC1 & 2 30RLCP	30 Kip 7-7/8" Corbel	6"	90 KIP
40RLA 40RLP	40 KIP 8-1/2"	5"	120 KIP
40RLC1 & 2 40RLCP	40 KIP 7-7/8" Corbel	6"	120 KIP

This data is for designers using ultimate strength design per PCI, 8th edition or ACI 318. Meadow Burke does not recommend using or accept liability for Service Loads applied in excess of those listed as Service 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.

## Accessories and Options

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

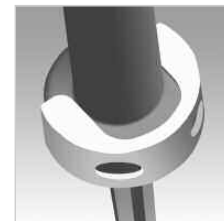
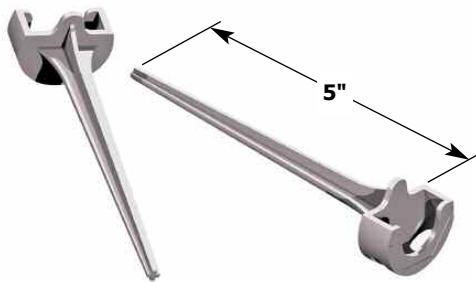
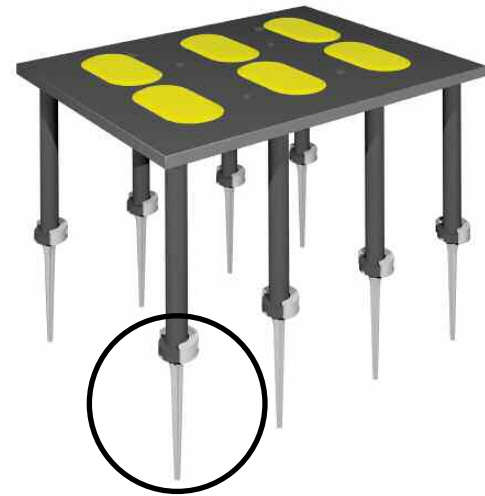
The MB Stud Extender is designed as an adjustable height support chair for embed/weld plates.

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.

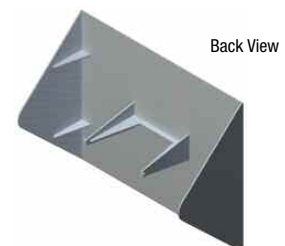


### PLASTIC COVER FOR 20 KIP-8" AND 30 KIP RAPID-LOK

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

## SERVICE & DISTRIBUTION CENTERS

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(800) 282-7213  
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FAX: (503) 266-8934

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