Structural Connections
Precast Connections

Leviat®
A CRH COMPANY

MB Rapid-Lok Ultimate Saddle

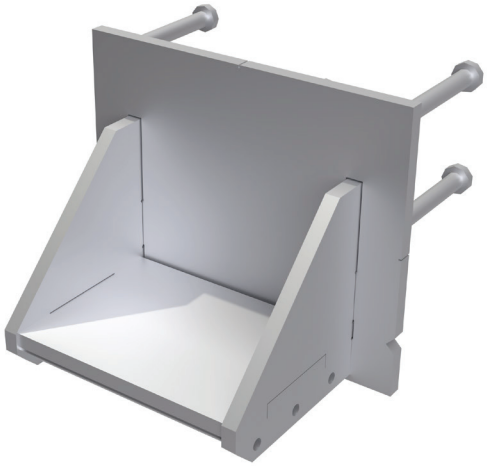
The ultimate alternative to ledges and dapped tee construction

Overview

Leviat's MB Rapid Lok Ultimate Saddle is an engineered steel saddle system that provides a permanent, durable, easy-to-install replacement to the traditional concrete ledge and dapped double tee construction method.

Rapid-Lok Ultimate Saddle is designed to support double tees in spandrels and walls without requiring dapping the double tee or forming ledges in the panel.

Installation is safe and simple. The Embed Plate is cast into the concrete panel at the precast plant with face flush to the wall surface. Once the unit is on-site, the attached void formers are removed from the face of the embed plate to reveal recesses. The Bearing Saddle ears are then engaged into the recesses of the Embed Plate., securely locking the entire assembly into place without requiring a weld.



Features

- **Benefit:** Eliminates need to dap tees: Permits use of standard double tee beams at spandrels and openings.
- **Benefit:** Reduces complex rebar detailing of panel and double tee: Casting traditional ledges and dapped double tees require costly specialized equipment, forms and additional reinforcement detailing
- **Benefit:** Permits use of standard panels with no irregular shapes: Simplifies production, storing and shipping walls and spandrels by removing protruding elements.
- **Benefit:** Eliminates obstacles when erecting: No protruding elements to maneuver double tees around, provides straight drop in path for beam placement.

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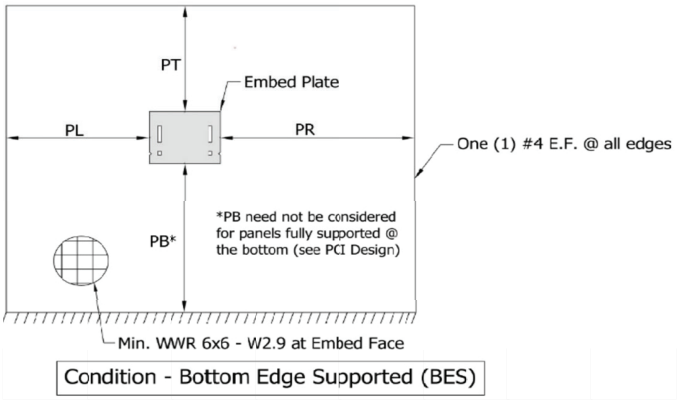
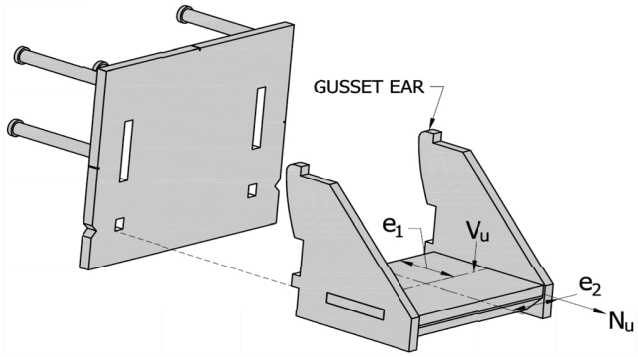
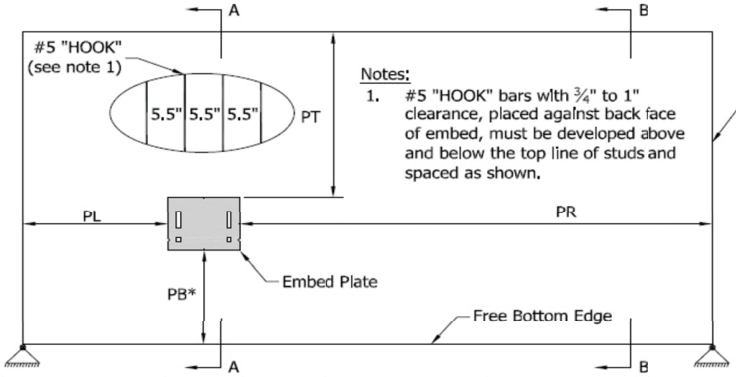
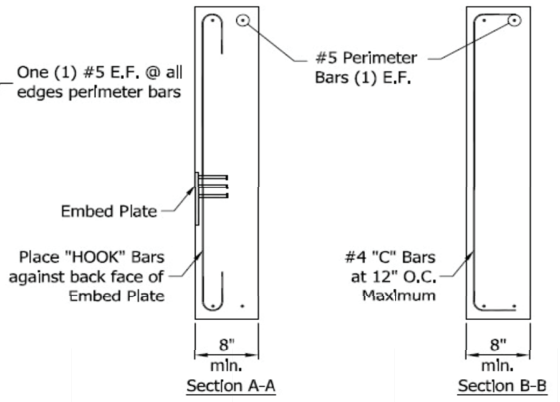


Condition - Bottom Edge Supported (BES)





Condition - Bottom Edge Free (BEF)



RLU-SA-10 Capacities

Table values are based on physical tests using ACI's 5% Fractile Analysis and ACI 318 calculations. Minimum member thickness = 8"

1. Tabulated capacities must be coordinated with applicable support conditions
2. ASTM E119 fire duration for all assemblies is 1 hrs with $V_{service}$ = 25 kips
3. Tables are only to be used by qualified structural engineers who understand and apply all applicable code
4. Table values apply to fully factored ultimate loads (V_u and N_u)

							RLU-SA-10 e1 ≤ 6" and e2 ≤ 2"		
Condition		**Description**	**PL**	**PR**	**PT**	**PB**	**ΦVnf[a,b,c,d]**	**ΦNnf[a,b,c,d,e]**	**Failure Mode**
Unreinforced	BES 1	Side Edge	≥ 7.25"	≥ 9"	≥ 9"	N/A	50.4 kips	6.3 Kips	Steel
Reinforced with (4) #4 "HOOK" Bars	BEF 2	Side Edge - Bottom Edge	≥ 10.5"	≥ 17"	> 16"	≥ 0"	44.1 Kips	5.5 Kips	Concrete

A. Capacity values for BES 1 use a Φ-factor = 0.70
If the structural engineer determines a Φ = 0.75 may be used, then the table values may be multiplied by a factor = (0.75/0.70) = 1.071, but ΦVn must not exceed the bearing angle's steel capacity of 50.4 kips. Typical ACI 318 Φ-factors are: (Reference ACI 318-14 Section 17.3.3)
Φ-factor = 0.70 for members without confinement reinforcing
Φ-factor = 0.75 for members with adequate confinement reinforcing

B. Capacity values for BEF 2 use a Φ-factor = 0.75 due to use of confinement reinforcement

C. All values apply to fc' = 6000 psi. Concrete capacity values may be modified by sqrt(f'c/6,000psi), but ΦVn must not exceed the bearing angle's steel capacity of 50.4 kips. Steel capacity includes Φ = 0.90

D. Capacity values for concrete failures may be increased by adding additional reinforcing, (Reference ACI 318-14 Section 17.4.2.9 and 17.5.2.9) but ΦVn must not exceed the bracket's steel capacity of 50.4 kips.

E. Tested values N_u are based on 12.5% of V_u. The test loads were applied simultaneously.

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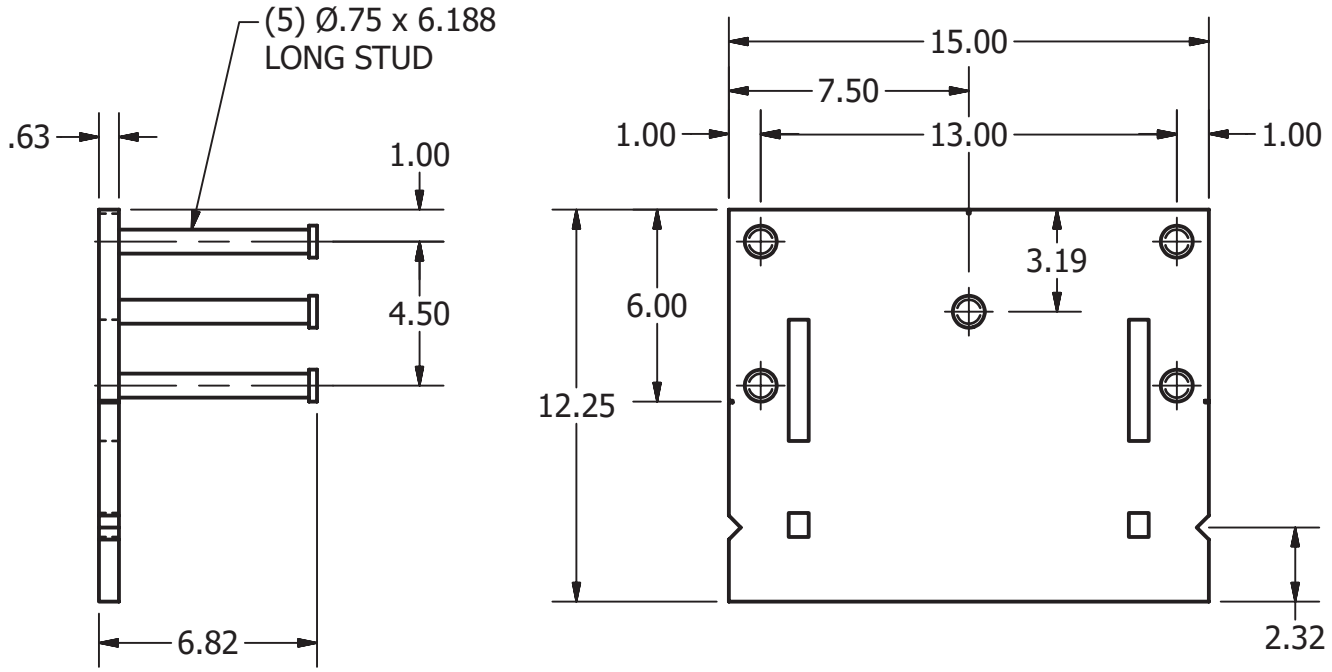

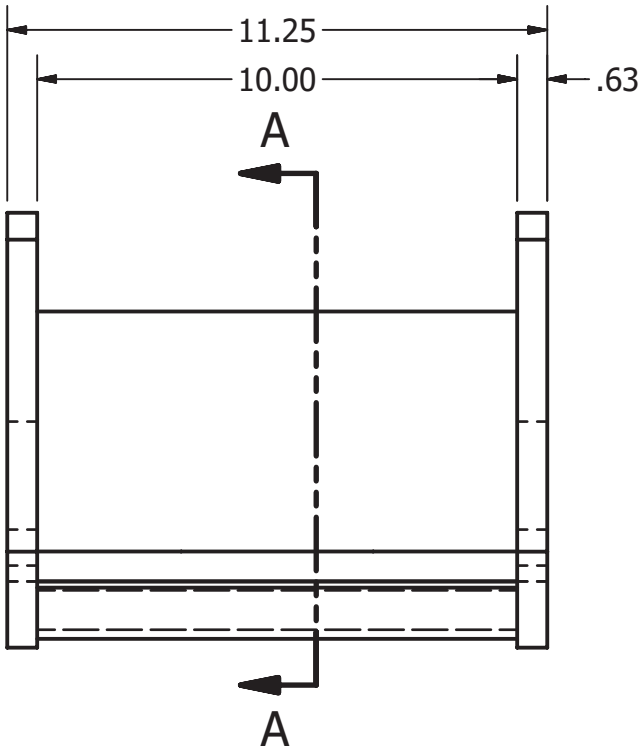

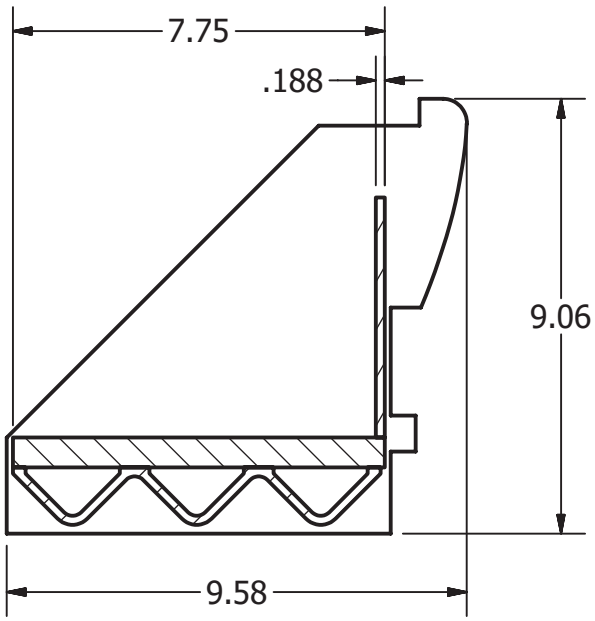

SECTION A-A

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