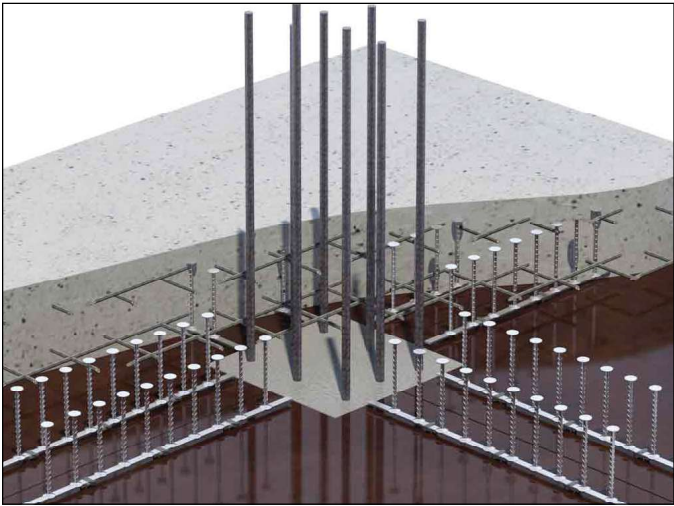


## Stud Rail Reinforcement



IAPMO UES ER-614

## Double Stud Anchor DSA Reinforcement

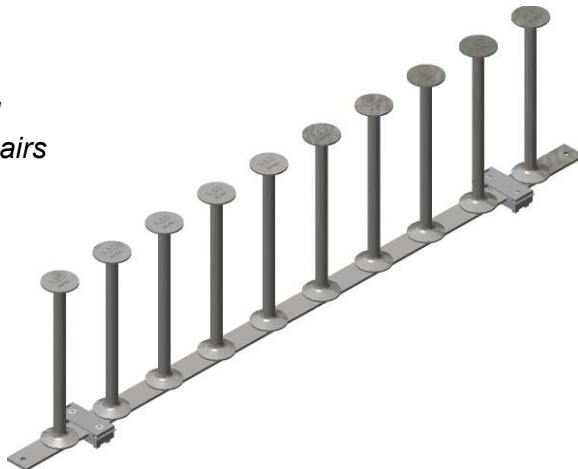
Stud Rail is a double-headed stud anchor (DSA) reinforcement system, typically used for concrete deck-to-column connections. The system is designed to transfer the load further into the concrete deck, create a larger shear area around the column, and resist punching shear forces.

Using the Stud Rail system can also eliminate the need for forming column capitals or drop heads. This provides significant savings, since these column details are difficult to form and place.

Each stud is double-headed so the load transfer is equal at the top and bottom of the Stud Rail assembly. Each stud is available in different sizes to match the engineered loads for each project.

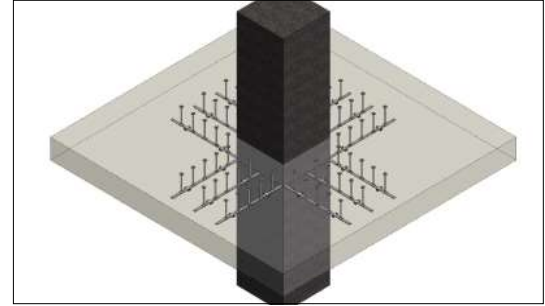
The Stud Rail assembly is available with a bottom strap or optional top wire, allowing the contractor to determine the installation sequence. The assembly can be positioned before or after structural reinforcement and/or post-tension tendons are placed.

*Stud Rail  
with DSA Chairs*

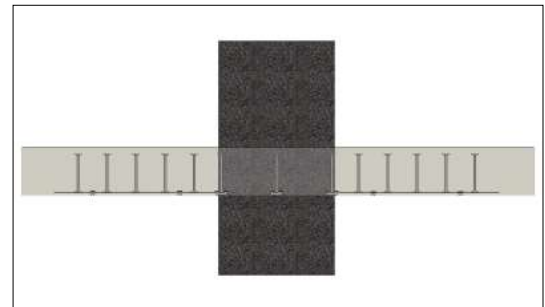


The Stud Rail assembly is engineered for every connection, on every floor, on every project. During production, each assembly is color-coded to correspond with the shop drawings for site installation.

This detailed planning eliminates field welding and reduces installation time, providing significant labor-savings and better shear load transfer.



*Without Stud Rail, the deck-to-column connections are prone to punching shear failure.*



*With Stud Rail in place, the shear stress is transferred to a larger area around the column.*

### DSA Shear Reinforcement Specification A-1044-16 Type 2

The specification covers steel stud assemblies for shear reinforcement in concrete. The stud assembly consists of double-headed stud anchors attached to a steel shape (strap or wire). The steel shape is sufficiently rigid to position the studs in the appropriate reinforcement location, direction and spacing.

### Steel Bars, Carbon and Alloy Specification A-29

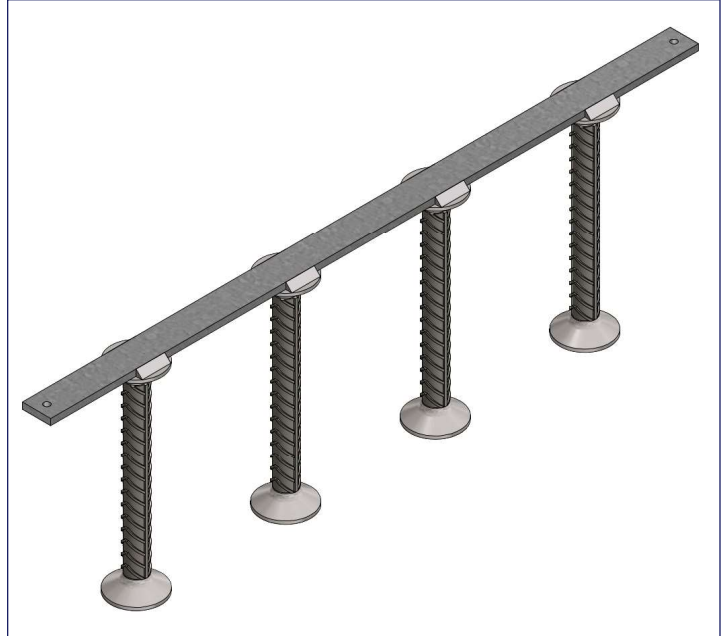
The specification covers steel stud properties for shear reinforcement in concrete. The minimum yield is 51 KSI, minimum tensile is 65 ksi, elongation in 2" equals 20%, and reduction area equals 50%.

## Double Stud Anchor Rebar DSAR Reinforcement

Double Stud Anchor Rebar is primarily used to increase the punching shear resistance of cast-in-place concrete slabs without increasing the slab's thickness.

DSAR rails consist of double-headed ribbed studs attached to a steel flat bar for spacing during concrete pour.

DSAR can be used in slab-on-grade foundations and in elevated slabs, such as reinforced concrete slabs or post tensioned slabs. When used in elevated slabs, DSAR can eliminate the need for drop panels or column caps, thus reducing the costs associated with formwork.



*DSAR Stud Rail Reinforcement*

**Designing with 60 KSI yield  
DSAR reduces total number of  
studs by 14%  
80 KSI yield DSAR available**

**Compared to traditional reinforcement  
systems, DSAR has the following added  
benefits:**

Meets requirements of ASTM 1044-16 type 2.

Meets ACI 318-19 for all slab thicknesses.

Reduces Congestion of reinforcement system.

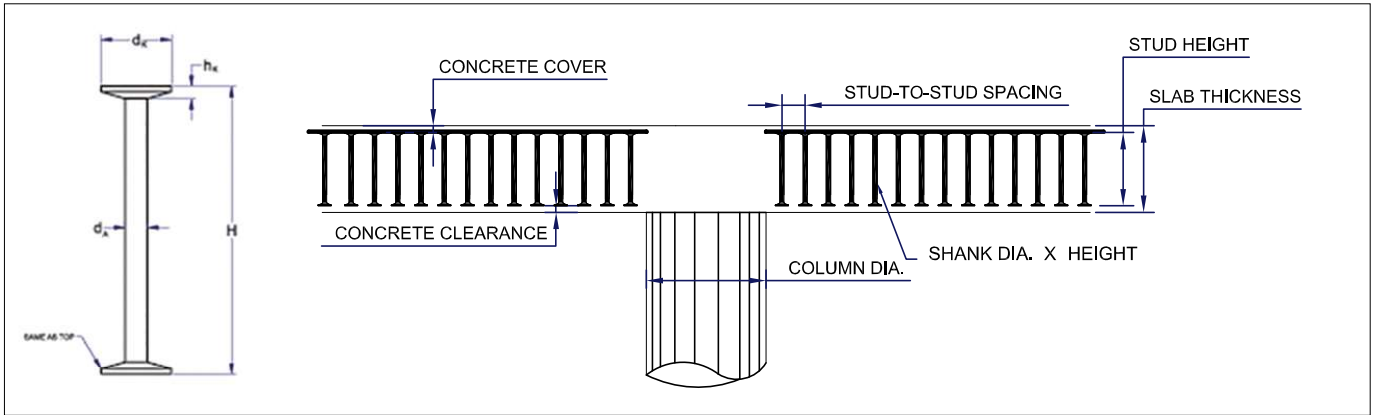
Quick installation times leading to reduced labor cost.

Thinner slab will allow for a lower floor-to-floor height.

Improves the ductility of slabs.

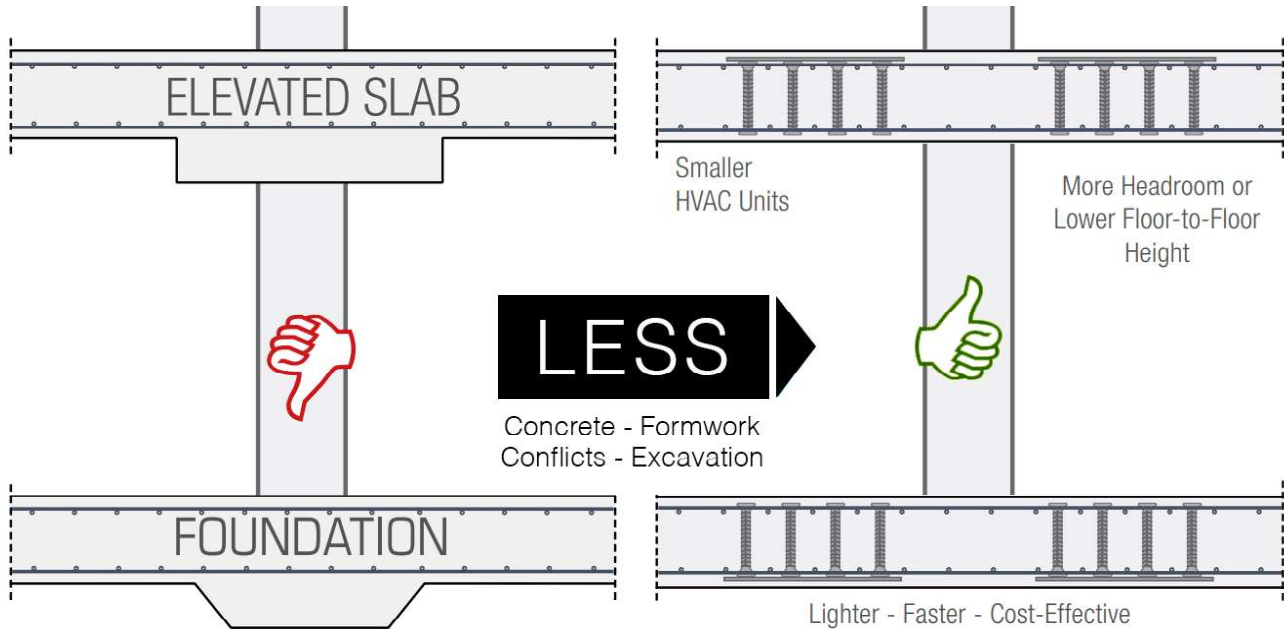


*DSAR Stud Reinforcement*



*Anchor Size (H) + Concrete Cover + Concrete Clearance = Slab Thickness*

DSA Dimensions					
Type	Description	dA	dK	hK	H
SBDSA38	DSA 3/8"	3/8"	1.190	0.210	Standard heights 5-1/2" to 12-1/2" (Custom on request)
SBDSA12	DSA 1/2"	1/2"	1.580	0.280	
SBDSA58	DSA 5/8"	5/8"	1.980	0.350	
SBDSA34	DSA 3/4"	3/4"	2.370	0.420	

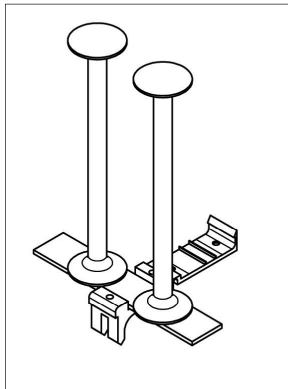


DSAR Dimensions					
Type	Description	dA	dK	hK	H
SBDSAR38	DSAR 3/8"	#3	1.190	0.210	Standard heights 5-1/2" to 12-1/2" (Custom on request)
SBDSAR12	DSAR 1/2"	#4	1.580	0.280	
SBDSAR58	DSAR 5/8"	#5	1.980	0.350	
SBDSAR34	DSAR 3/4"	#6	2.370	0.420	

## Stud Rail DSA Plastic Chairs

On most Stud Rail projects, DSA Plastic Chairs are necessary to maintain proper positioning and concrete cover. Plastic chairs are available in four sizes to meet these project dimensions and specifications.

When installed on the project, the DSA Plastic Chairs are simply snapped closed over the Stud Rail strap and fastened to the deck through the preformed holes with nails or screws.



DSA Plastic Chair Height			
Type	Description	Overall	to Strap
SBDSAPC34	DSA 3/4" Plastic Chair	7/8"	3/4"
SBDSAPC1	DSA 1" Plastic Chair	1-1/4"	1"
SBDSAPC112	DSA 1-1/2" Plastic Chair	1-3/4"	1-1/2"
SBDSAPC2	DSA 2" Plastic Chair	2-1/8"	2"

## DSAR Plastic Chairs

On most Rebar Stud Rail projects, DSAR Plastic Chairs are necessary to maintain proper positioning and concrete cover. Plastic chairs are available in four sizes to meet these project dimensions and specifications.

When installed on the project, the DSAR Plastic Chairs are simply snapped closed over 1-1/4" or 2" Rebar Stud Rail straps and fastened to the deck through the preformed holes with nails or screws.



DSAR Plastic Chair Height			
Type	Description	Overall	to Strap
SBDSARPC34	DSAR 3/4" Plastic Chair	7/8"	3/4"
SBDSARPC1	DSAR 1" Plastic Chair	1-1/4"	1"
SBDSARPC112	DSAR 1-1/2" Plastic Chair	1-3/4"	1-1/2"
SBDSARPC2	DSAR 2" Plastic Chair	2-1/8"	2"

# Line Card



## Bar Support \*

- Slab Bolster
- Slab Bolster Upper
- Individual High Chair
- Continuous High Chair
- Continuous High Chair Upper
- Beam Bolster

## Bridge Deck Forming

- Bridge Overhang Bracket \*
- Curing Blankets
- Exterior Hangers \*
- Exterior Half Hangers \*
- Interior Hangers \*
- Interior Half Hanger \*
- Adjustable Joist Hanger

## Coil Rod \*

- 1/2", 3/4", 1" Coil Rod
- 1-1/4" Coil Rod
- 15mm, 20mm Coil Rod

## Coil Ties \*

- 1/2", 3/4", 1" Coil Ties
- 1-1/4" Coil Ties

## Concrete Hoppers

- Hoppers
- Elephant Trunk
- Tremie Pipe
- Steel Collar

## Floor Systems \*

- Dowel Basket
- Taper Dowel
- Steel Edge Nosing
- VaporStop & Tape

## Form Liners \*

- HIPS - Single Use
- ABS - Up to 10 Uses
- PE - Up to 40 - 50 Uses
- PPE - Up to 100+ Uses

## Form Ties \*

- HD Loop Ties
- HD Gang Loop Ties

## Form Ties \*

- X-Flat Ties
- Base Ties
- Aluminum Form Ties

## Heavy Forming \*

- SOLO Clamp Form 1500PSF
- SureCurve Radius Form
- Sure Beam
- Articulated Waler
- Steel Circular Column Form
- Taper Ties
- She-Bolts
- Inner Units
- Euro Taper Ties
- Euro She-Bolts
- Flat Washers

## GFRP Reinforcement Bar \*

- #2-#11 Reinforcement Bar

## Metal Rib \*

- Expanded Metal Mesh

## Modular Braces \*

- Type 6-5/8"
- Type 8-5/8"

## Pipe Braces \*

## Plywood Forming \*

- Coil Ties
- Pencil Rod and Clamps
- Self-Centering Ties
- Snap Ties

## Precast

- Anchor Rail HD
- Coil Inserts \*
- Column Wall Edge Connector \*
- Ferrule Inserts \*
- Helical Ground Anchors \*
- Ring and Cable Lifters
- Slant Anchor \*
- Straight Leg Anchor \*
- Wall Base Connector \*
- Wire / FRP Truss \*

## Rebar Safety Caps

## Rebar Splicing \*

- Grouotec
- Unitec

## Self-Riser System \*

## Shoring \*

- Cross Braces
- Frames
- Post Shores
- Screw Jacks

## Snap Ties \*

## SPAN-X Beams \*

## Staybox Rebar Splicing \*

## Steel Stakes \*

- 3/4" Stakes
- 7/8" Stakes

## Stud Rail DSA & DSAR \*

- Thermal Break

## SurePly™ Handset Forming \*

- Panels and Fillers
- Hardware
- HD Loop Ties
- X-Flat Ties
- Birch Plywood

## Tilt-Up

- Brace Inserts \*
- Helical Ground Anchors \*
- Lifting Hardware
- ProLift Inserts \*
- Slant Anchor \*
- SureLift (SL) Inserts \*
- Edge Form Brackets
- Construction Adhesive \*
- FRP Truss / Connectors \*
- XL Lift Inserts \*

## Walers \*

- Butt Plate
- Double Channel

\* Products are Made in the USA or available to be made in the USA

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