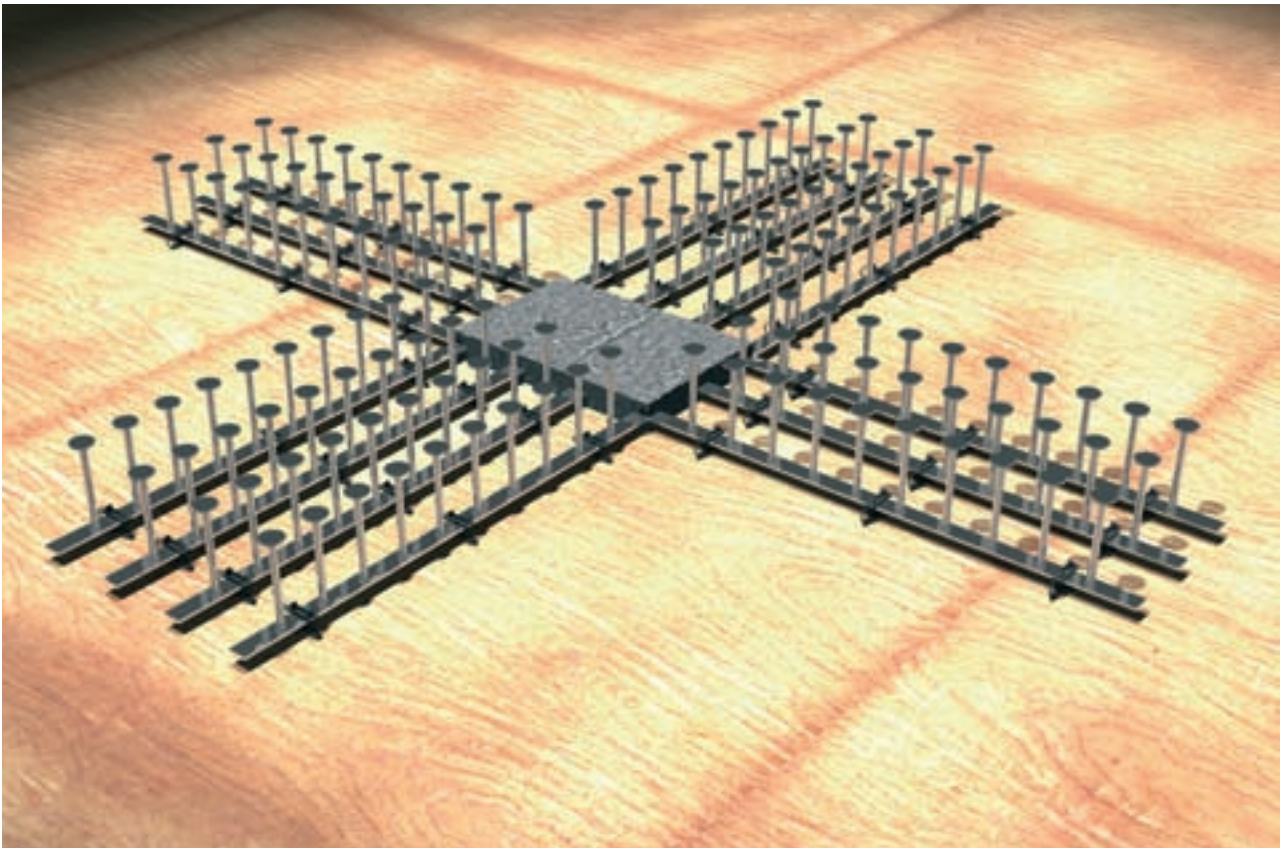


DYWIDAG Shear System (DSS)





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DYWIDAG Shear System (DSS)



Typical Installation of DSS rails

As a worldwide leader in the development, production and supply of products for the construction industry, DYWIDAG-Systems International (DSI) offers the DYWIDAG Shear System (DSS) as part of its line of products.

The DYWIDAG Shear System (DSS) is a system used to provide punching shear reinforcement to flat concrete slabs and provides an effective and cost efficient alternative to the use of ties, drop panels or column capitals. The DSS is comprised of specially engineered studs welded to a flat rectangular steel base plate placed on DSS support chairs.

In post-tensioned flat plate construction, thinner slabs are able to span further distances. This results in greater punching shear stresses in the slab. The shear strength in the slab may not provide enough strength to resist the shear forces produced by the design loads. When this occurs, supplemental punching shear reinforcement in the form of DSS rails is used to reinforce the slab.

DSI's technical expertise ensures that customers receive high-quality technical support during planning, design and construction. DSI stands for total quality at all levels of activity.

Advantages of the DYWIDAG Shear System (DSS)

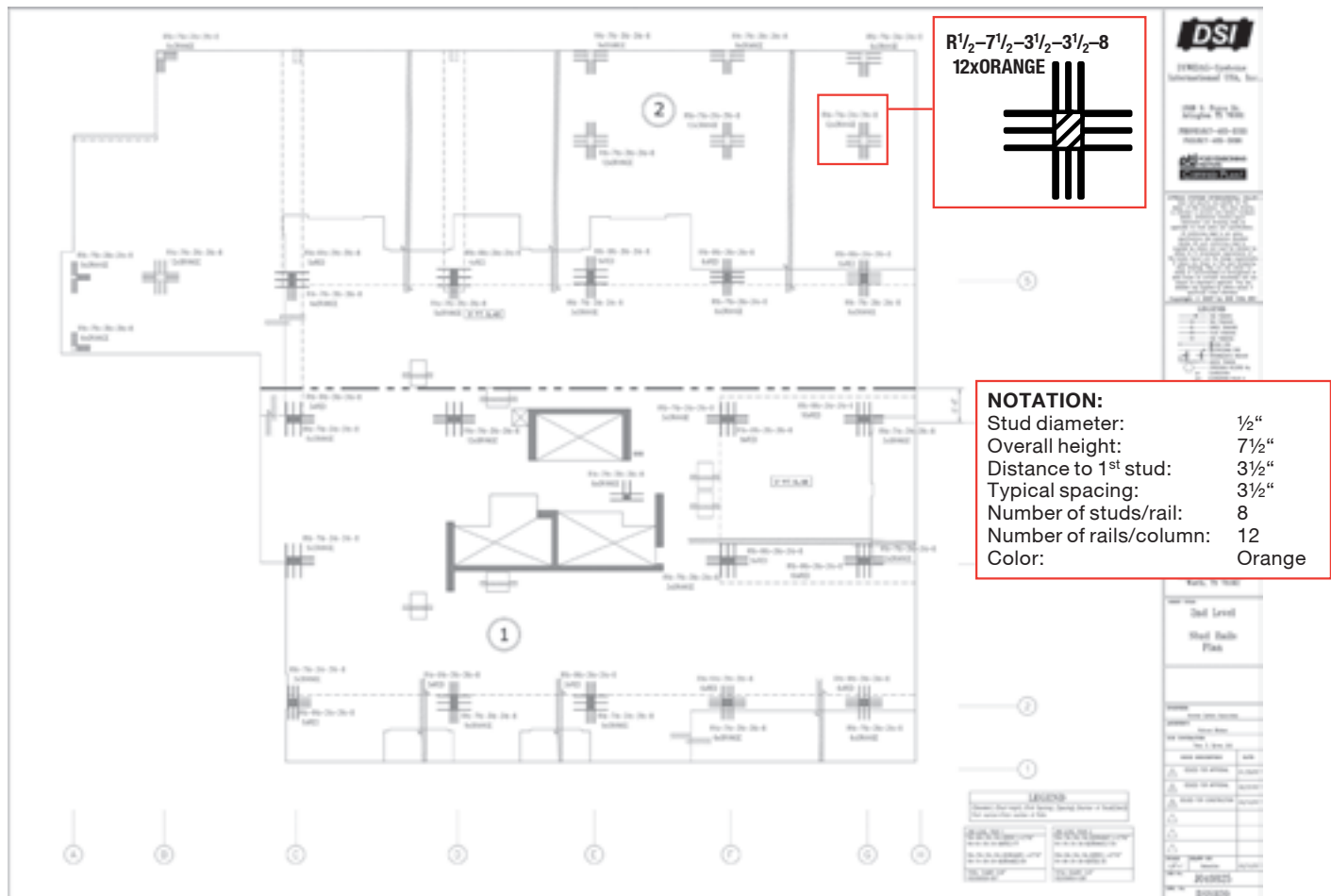
- Eliminates the need of drop panels or column capitals
- Reduces congestion in the slab/column connection
- Easy and fast installation using the DSS support chairs
- Minimum interference with main longitudinal reinforcement
- Improves structural behavior of the connection
- High quality and dimension conformance by being prefabricated in a production facility under our strict Quality Control Plan.
- Cost-efficient solution

Detailing

DSI detailers review the structural drawings and produce installation drawings showing the location of the DSS rail layout at each pour and level of

the structure. These drawings include quantities of rails at each column as well as specific dimensions (overall rail height, stud diameter, stud spacing, etc.).

Our experienced detailers make sure that high-quality drawings are produced to assure they are easy to understand and make the installation process as simple as possible.



Typical Installation Drawings and Notation

Fabrication

The fabrication of the DSS rails consists of welding a specifically engineered shear stud to a rectangular steel base plate at a certain spacing as determined by the Engineer of Record.

The studs are made from ASTM-A108 Grades 1010 through 1020 steel while the steel plates to which the studs are welded comply with the AWS D1.1 Structural Welding Code. All welding complies with AWS D1.1 requirements.

High quality of the final product is assured by our strict Quality Control Plan per ICC requirements, which are monitored and inspected four times a year by an independent testing lab.



DSS Rail Fabrication Process

Labeling and Shipping

Each DSS rail is identified by a color, which is shown in the installation drawings, making the process of identifying their specific location in the structure simple.

In order to streamline the handling of the DSS rails at the jobsite, they are typically shipped in bundles, separated for each pour and/or level.

Installation

The DSS rails are installed around the columns or walls according to the layout shown in the installation drawings, and set on DSS support chairs which can be attached to the deck by nails. The DSS support chair allows for a quick installation. The chair snaps onto the rectangular steel base plate and has holes which allow for the DSS rail to be nailed down to the deck. The chairs ensure that the adequate cover and position of the DSS rails are maintained according to the installation and structural drawings.



The DSS Support Chair

DSS Stud Dimensions

Stud Shank Diameter (Ds)	Head Diameter (Dh)	Dh / Ds	Shank Area (Sa)	Head Area (Ha)	Ha / Sa	Head Thickness (T)
[inch]	[inch]		[inch ²]	[inch ²]	[inch]	[inch]
3/8	1.19	3.17	0.110	1.112	10.1	0.26
1/2	1.58	3.16	0.196	1.961	10.0	0.33
5/8	1.98	3.17	0.307	3.079	10.0	0.40
3/4	2.37	3.16	0.442	4.412	10.0	0.47

DSS Flat Rectangular Steel Base Plate Dimensions

Stud Diameter (Ds)	Width (W)	Thickness (T)	Length (L)
[inch]	[inch]	[inch]	[inch]
3/8	1	3/16	Determined by design
1/2	1 1/4	1/4	Determined by design
5/8	1 3/4	5/16	Determined by design
3/4	2	3/8	Determined by design

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