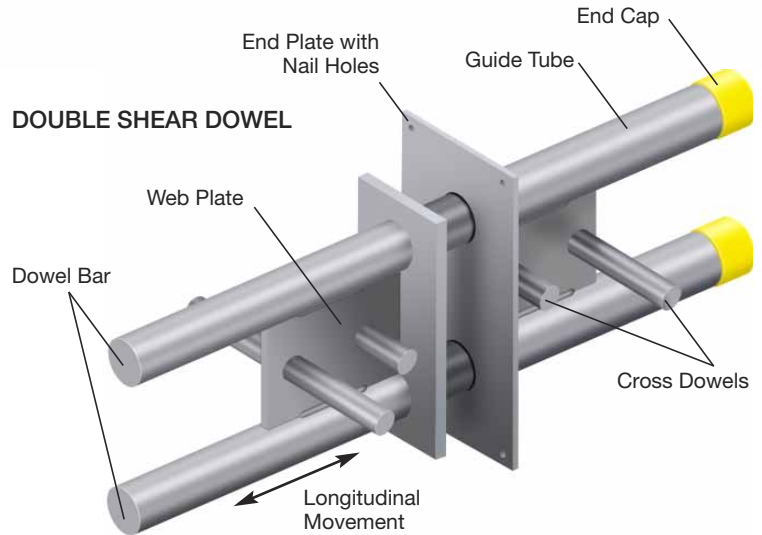


Burke Double Shear Dowel

Revolutionizing Structural
Movement Joints

The Burke Double Shear Dowels are extremely effective at transferring load while accommodating movement.



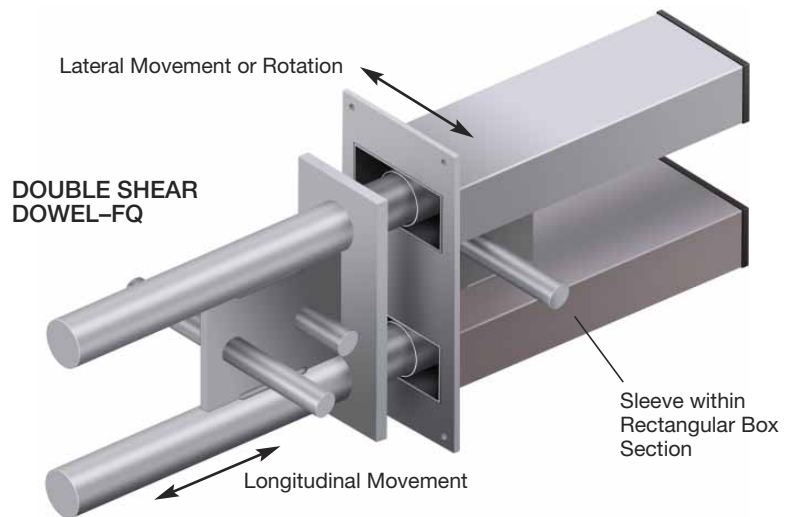
The Burke Double Shear Dowel System offers significant advantages over conventional structural movement methods. The two part assembly is a simple solution that allows longitudinal and/or Lateral movement in building joints. The Burke Double Shear Dowel consists of a sleeve and dowel component.

Installation is a fast process that eliminates the need for form-work penetration or concrete protrusions. The easy accurate placement process ensures proper dowel alignment, which is essential for effective movement.

Our shear connectors are manufactured from duplex stainless steel to ensure a high degree of corrosion resistance with no requirement for additional protection.

BURKE DOUBLE SHEAR DOWEL ASSEMBLY

The Burke Double Shear Dowel is the original two-part, double dowel, shear load connector. The dowel component allows longitudinal movement within the sleeve. The connector is available in 10 standard sizes with design capacities from approximately 4,500 kips to more than 213 kips. The Burke Double Shear Dowel easily accommodates joint widths up to 2-3/8". Larger joints can be accommodated using special dowels.

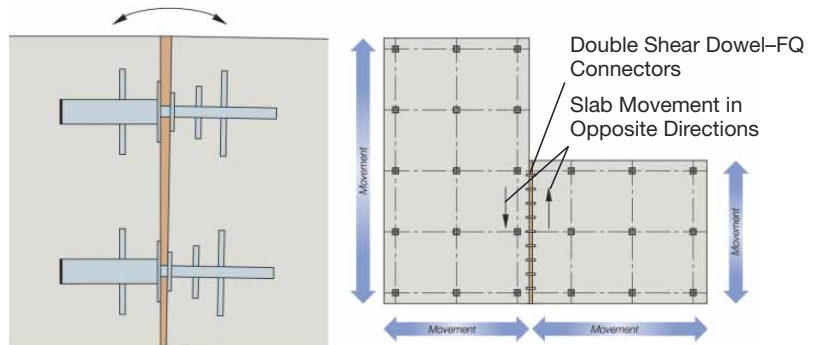


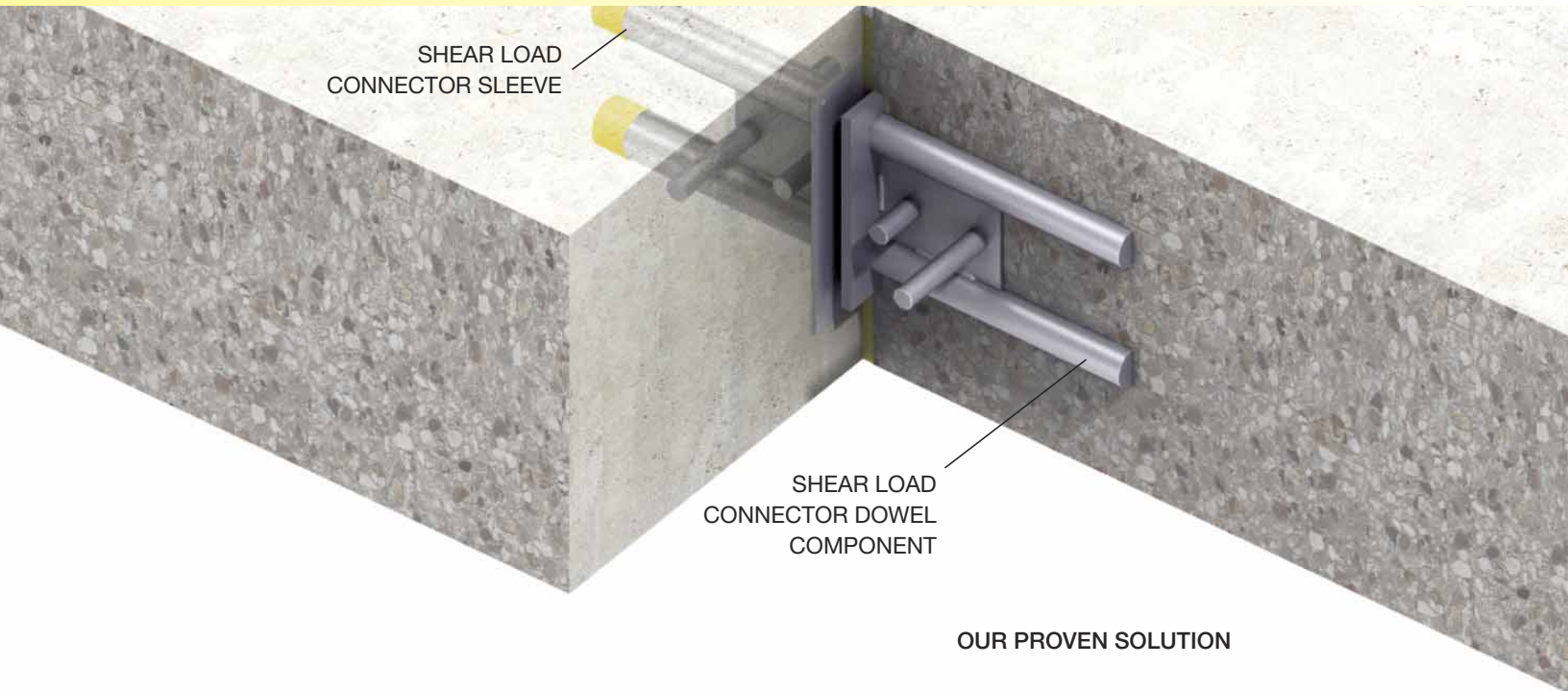
Double Shear Dowel-FQ allowing rotation

Double Shear Dowel-FQ allowing movement in two directions

BURKE DOUBLE SHEAR DOWEL - FQ

The Burke Double Shear Dowel-FQ shear load connector utilizes the same dowel (male) component as the Burke Double Shear Dowel in conjunction with a sleeve comprising a rectangular box sleeve to allow lateral movement in addition to the longitudinal movement. There are nine standard sizes with design capacities from approximately 7.8 kips to more than 213 kips.





OUR PROVEN SOLUTION

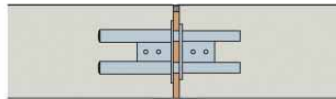
Accommodating movement during transmission of transverse forces may be accommodated in many ways. Double Shear Dowels provide a proven method to replace dowelled or keyed joints in most cases. The Double Shear Dowel connectors can be used for movement joints in floor slabs, suspended slabs, and keyed joints in walls. They are also ideal for eliminating the need for double columns while opening up a valuable space. They are also an effective solution for costly cast-in-place corbel systems. Corbel support can be eliminated totally while maintaining structural movement. The unique design of the Double Shear Dowel provides significant load improvement over smooth dowels. The example below shows the comparison between one DSD/DSDFQ 130 and six traditional smooth round dowels.

Conventional Joints - Floor Slab



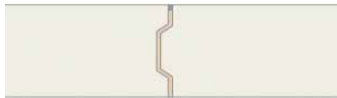
Smooth Dowel

Floor Slab / Elevated Floor Slab

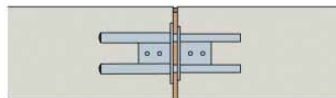


Double Shear Dowel and
Double Shear Dowel – FQ

Wall

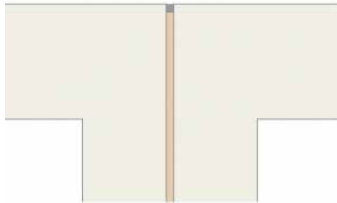


Keyed Joint

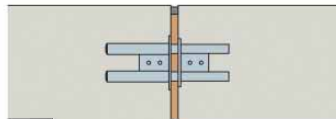


Double Shear Dowel and
Double Shear Dowel – FQ

Structural Movement Joint

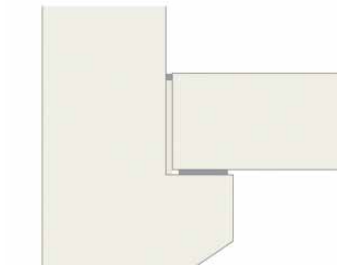


Double Columns

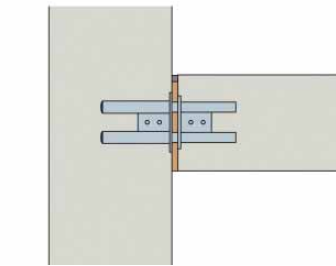


Double Shear Dowel and
Double Shear Dowel – FQ

Floor to Wall Connection



Corbel Support



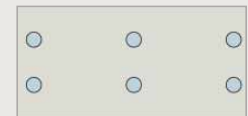
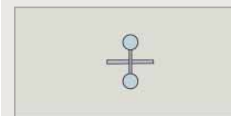
Double Shear Dowel and
Double Shear Dowel – FQ

COMPARISON OF PERFORMANCE with Plain Dowels @ 5,000 psi

15.75" Thick Slab with Joint Width of 0.75"	One MB DSD 130	Six 1.25" Dia Dowel Bars
Dowel Dia inches ²	2 x 1.375	6 x 1.25
Area of Dowels inches ²	2.969	7.5
Design Capacity(kip)	55.31	52.14

**One Shear
Load Connector
130 Design
Capacity 45.5 kips**

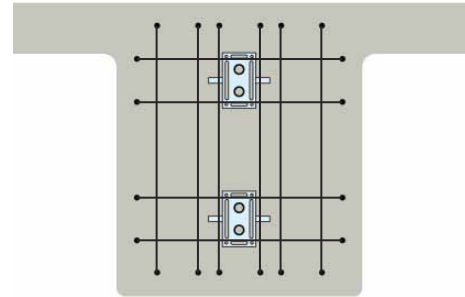
**Six Dowel Bars 1.25" Dia
Design Capacity 44.4 kips**



ADDITIONAL APPLICATIONS THAT BENEFIT BY USING DOUBLE SHEAR DOWELS ARE WIDE AND VARIED.

POST TENSIONED CONCRETE

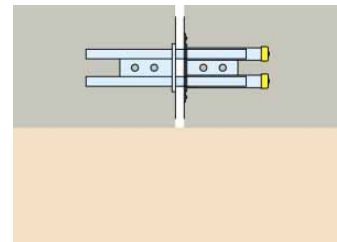
Burke Double Shear Dowels provide unparalleled performance when used in conjunction with the Burke Lockable Dowel. The Burke Lockable Dowel will eliminate most pour strips. The Burke Double Shear Dowel will provide a construction joint in beams that would normally transit through the pour strip area.



CIVIL ENGINEERING

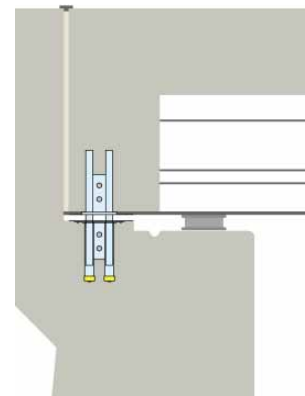
BURKE DOUBLE SHEAR DOWELS PROVIDE A PROVEN SOLUTION FOR JOINTS IN CONCRETE PAVEMENT

Burke Double Shear Dowels are utilized in paving joints to transfer high shear loads caused by traffic loading and for eliminating differential settlement.



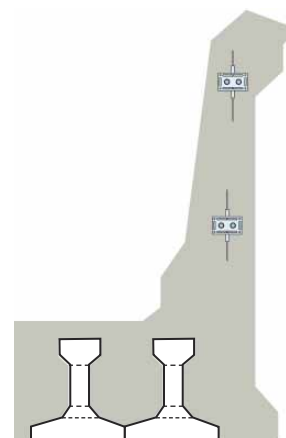
BRIDGE ABUTMENTS

Burke Double Shear Dowels are used vertically at bridge abutments to connect the bridge deck to the abutment. In addition to ease of installation, the use Burke Double Shear Dowel shear connectors provide easier access for the bridge deck to be jacked up for bearings to be replaced.



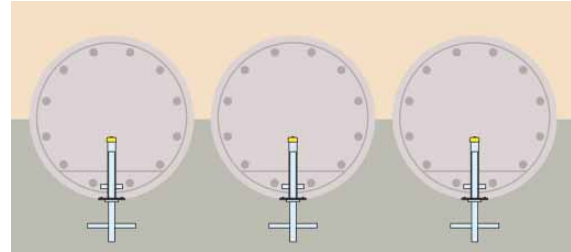
JOINTS IN BRIDGE RAILINGS

The use of shear connectors in the vertical joints in parapets is a simple and cost effective way of connecting the sections. The Burke Double Shear Dowel – FQ facilitates significant rotation at the joint without reducing the horizontal shear capacity.



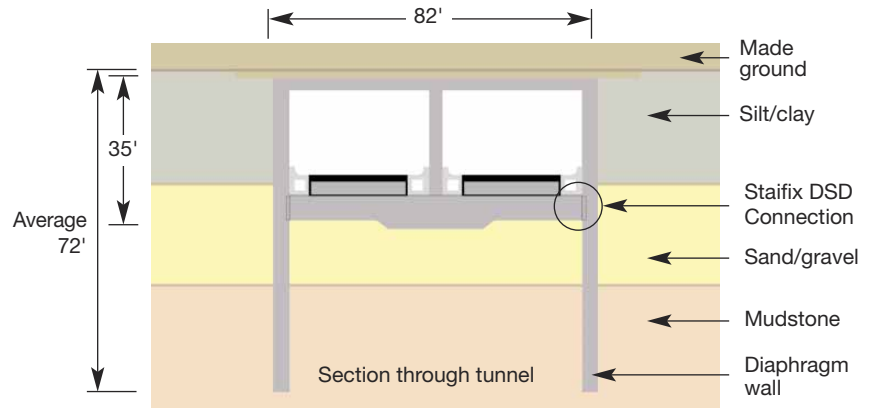
CONTIGUOUS PILED WALL / SLAB CONNECTIONS

Similar in application to diaphragm wall construction, Burke Double Shear Dowel shear connectors are used to transfer shear load from slab to pile



TUNNEL APPLICATIONS

Burke Double Shear Dowels are commonly used to as the most cost effective way of transferring the very high shear loads encountered in diaphragm walls. In the following example DSD150 Dowels were used to connect a base slab to the diaphragm wall in a cut and cover tunnel application



DSD Dowel Dimensions

DSD DSD-FQ	Dowel Component (inch)						Anchor Bar Lengths	
	Overall Length	Dowel Diameter	Dowel Centers	Dowel Projections	Anchor Bar Position			
25	9 7/8	1/2	1 5/8	4 3/4	1 1/4	2	4 3/8	
30	10 1/4	5/8	1 7/8	4 3/4	1 1/4	2	4 3/8	
50	11	3/4	2	5 1/8	1 1/4	2	5 1/8	
65	11 3/4	3/4	2 1/2	5 7/8	1 1/4	2	5 1/8	
75	13 3/8	7/8	3	5 7/8	1 1/4	2	5 7/8	
100	15 3/4	1 1/8	3 7/8	8 1/4	1 1/2	3 1/8	6 3/4	
130	18 1/2	1 3/8	4 1/8	10 1/4	1 1/2	3 1/8	6 3/4	
150	21 5/8	1 5/8	4 3/4	10 5/8	2 1/8	3 1/8	8 1/4	
400	26	2	6 1/4	13	2 3/4	5 1/8	11 3/4	
450	27 1/8	2 1/2	7 1/8	14 1/8	3 1/8	5 1/8	11 3/4	

DSD Sleeve Dimensions

DSD	Burke Double Shear Dowel Sleeve (inch)			
	Overall Length	Anchor Bar Position	Anchor Bar Lengths	
25	4 3/4	1 1/8	2	4 3/8
30	4 3/4	1 1/8	2	4 3/8
50	5 3/8	1 1/8	2	5 1/8
65	6 1/8	1 1/8	2	5 1/8
75	6 1/8	1 1/4	2	5 7/8
100	8 1/4	1 3/8	3 1/8	6 3/4
130	10 3/8	1 3/8	3 1/8	6 3/4
150	10 7/8	1 5/8	3 1/8	8 1/4
400	13 1/4	2 3/4	5 1/8	11 3/4
450	14 5/8	3 1/8	5 1/8	11 3/4

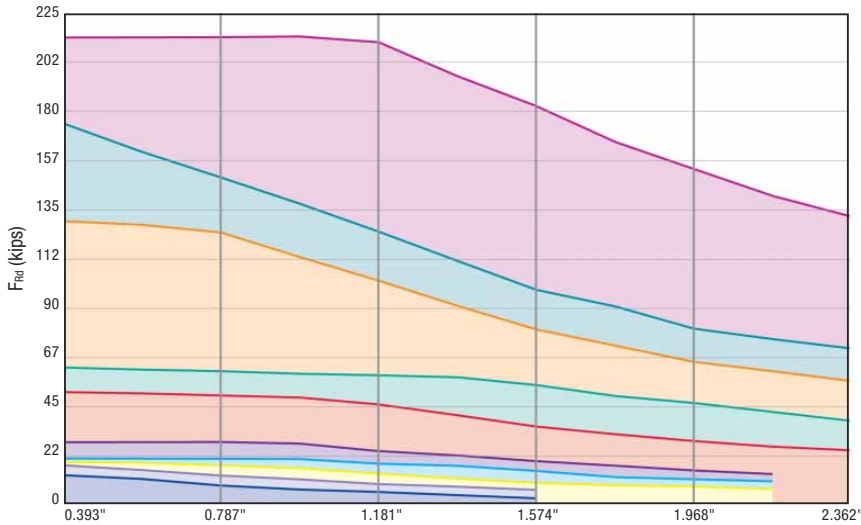
DSD-FQ Dowel Dimensions

DSD DSD-FQ	Dowel Component (inch)						Anchor Bar Lengths	
	Overall Length	Dowel Diameter	Dowel Centers	Dowel Projections	Anchor Bar Position			
25	9 7/8	1/2	1 5/8	4 3/4	1 1/4	2	4 3/8	
30	10 1/4	5/8	1 7/8	4 3/4	1 1/4	2	4 3/8	
50	11	3/4	2	5 1/8	1 1/4	2	5 1/8	
65	11 3/4	3/4	2 1/2	5 7/8	1 1/4	2	5 1/8	
75	13 3/8	7/8	3	5 7/8	1 1/4	2	5 7/8	
100	15 3/4	1 1/8	3 7/8	8 1/4	1 1/2	3 1/8	6 3/4	
130	18 1/2	1 3/8	4 1/8	10 1/4	1 1/2	3 1/8	6 3/4	
150	21 5/8	1 5/8	4 3/4	10 5/8	2 1/8	3 1/8	8 1/4	
400	26	2	6 1/4	13	2 3/4	5 1/8	11 3/4	
450	27 1/8	2 1/2	7 1/8	14 1/8	3 1/8	5 1/8	11 3/4	

DSD-FQ Sleeve Dimensions

DSD-FQ	Burke Double Shear Dowel Sleeve (inch)			
	Overall Length	Anchor Bar Position	Anchor Bar Lengths	
25	-	-	-	-
30	5 1/2	1 1/4	2 3/4	1
50	6 1/4	1 1/4	2 3/4	1
65	6 7/8	1 1/4	2 3/4	7/8
75	6 7/8	1 1/4	4 3/4	3/4
100	9 1/4	2 1/8	6 3/4	1 5/8
130	10 7/8	2 3/8	6 3/4	1 3/8
150	12	2 1/8	6 3/4	7/8
400	13 3/4	2 1/2	11 3/4	1 1/8
450	15 3/4	3 1/2	11 3/4	2 1/8

DESIGN CAPABILITIES



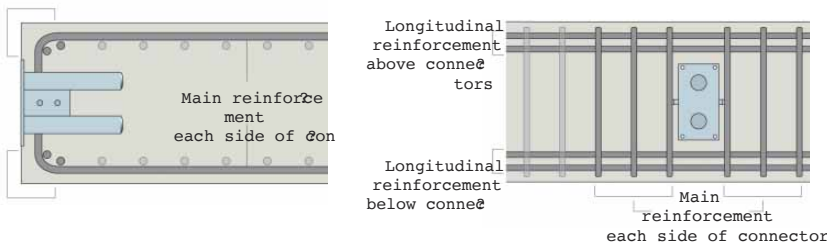
- DSD 450
- DSD 400
- DSD 150
- DSD 130
- DSD 100
- DSD 75
- DSD 65
- DSD 50
- DSD 30
- DSD 25

Burke Double Shear Dowel F_{Rd} design capabilities (kips) for various joint widths (mm) at the maximum slab thickness (inch) in 4000 psi concrete

REINFORCEMENT DETAILS

Local reinforcement is required around each connector to guarantee that the forces are transferred between the connectors and the concrete. Correct detailing in accordance with appropriate design codes and the recommendations provided here will ensure Burke Double Shear Dowels attain their full capacity.

The tables show proposals for the type and spacing of the main reinforcement, together with details of reinforcement above and below the connectors.



Based on 3000 concrete, max slab depth & 0.787" joint

Based on 3000 psi, maximum slab depth, .787" joint width
Number of U Bars each side

DSD/DSEDFQ	#3	#4	#5	#6
25	2	-	-	-
30	3	2	-	-
50	3	3	-	-
65	4	3	-	-
75	5	4	-	-
100	-	5	3	-
130	-	-	4	3
150	-	-	6	4
400	-	-	7	5
450	-	-	9	7

Number of U Bars Top and Bottom

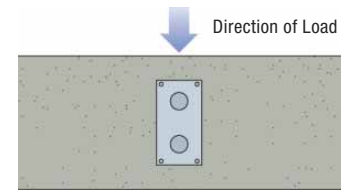
DSD/DSEDFQ	#3	#4	#5	#6
25	2	-	-	-
30	3	2	-	-
50	3	3	-	-
65	4	3	-	-
75	5	4	-	-
100	-	5	3	-
130	-	-	4	3
150	-	-	6	4
400	-	-	7	5
450	-	-	9	7

Based on 4000 psi, maximum slab depth, .787" joint width
Number of U Bars each side

DSD/DSEDFQ	#3	#4	#5	#6
25	3	2	-	-
30	-	3	2	-
50	-	3	3	-
65	-	4	3	-
75	-	5	4	3
100	-	-	5	4
130	-	-	-	5
150	-	-	-	-
400	-	-	-	-
450	-	-	-	-

Number of U Bars Top and Bottom

DSD/DSEDFQ	#3	#4	#5	#6
25	3	2	-	-
30	-	3	2	-
50	-	3	3	-
65	-	4	3	-
75	-	5	4	3
100	-	-	5	4
130	-	-	-	5
150	-	-	-	-
400	-	-	-	-
450	-	-	-	-



INSTALLATION PROCEDURE

The two-part assembly of all shear connectors removes the need for drilling formwork on site, supporting dowel bars and fitting debonding sleeves and end caps, making the installation process both fast and accurate.



1 Nail the sleeve component to the shuttering ensuring that the sleeve is correctly orientated for the direction of the load. Check that the minimum spacing and edge distances are not exceeded. The label prevents debris from entering into the sleeve aperture and should not be removed at this stage.



2 Fix the local reinforcement in position around the dowel component together with any other reinforcement that is required, ensuring that the correct cover to the reinforcement is maintained. Pour the concrete to complete the installation of the shear connector.



3 When the concrete has achieved sufficient strength, strike the shuttering.



4 Position compressible joint filler of the appropriate width, for applications where movement is expected between the two sections of concrete.



5 Push the dowel component through the joint filler (if applicable) until it is fully located in the sleeve component. It may be necessary to tap the dowel component to overcome the dimple, which pinch holds the dowel in the sleeve and prevents dislocation when the concrete is vibrated.



6 Fix the local reinforcement in position around the sleeve component together with any other reinforcement that is required, ensuring that the correct cover to the reinforcement is maintained.



Notes:

- (i) Where deep concrete pours are proposed, the installation will require further consideration. More robust fixing of the sleeve and dowel components will be necessary to avoid displacement during placing of the concrete.

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