Leviat
A CRH COMPANY

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

MeadowBurke®

Double Shear Dowel

Revolutionizing Structural Movement Joints

Leviat®
A CRH COMPANY

We are one team.
We are Leviat.

Leviat is the new name of CRH's construction accessories companies worldwide.

Under the Leviat brand, we have united the expertise, skills and resources of Meadow Burke and its sister companies to create a world leader in fixing, connecting and anchoring technology.

The products you know and trust, including Meadow Burke, will remain an integral part of Leviat's comprehensive brand and product portfolio. As Leviat, we can offer you an extended range of specialist products and services, greater technical expertise, a larger and more agile supply chain and better, faster innovation.

By bringing together CRH's construction accessories family as one global organisation, we are better equipped to meet the needs of our customers, and the demands of construction projects, of any scale, anywhere in the world.

This is an exciting change. Join us on our journey.

Read more about Leviat at Leviat.com

Our product brands include:

MeadowBurke

HALFEN

thermomass®

3,000	60	25	4
employees	locations	countries	continents

Imagine. Model. Make.

Leviat.com

Double Shear Dowel

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 formwork penetration or concrete protrusions. The easy accurate placement process ensures proper dowel alignment, which is essential for effective movement.

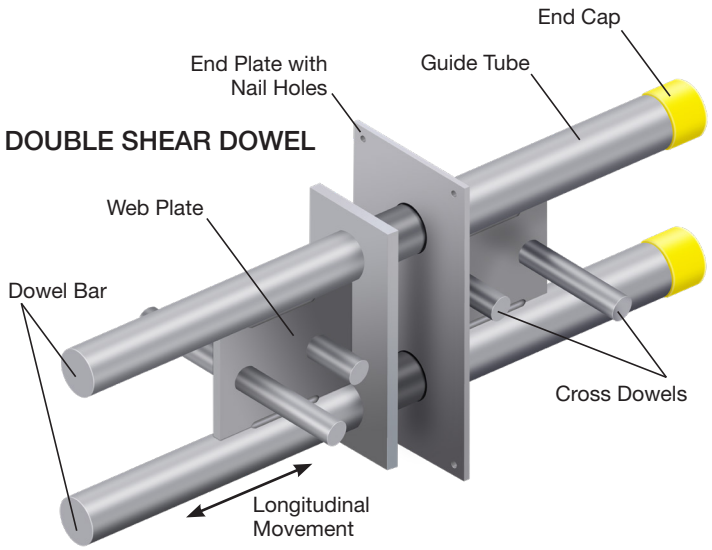
Our shear connectors are manufactured from duplex stainless steel to ensure a high degree of corrosion resistance with no requirement for additional protection.

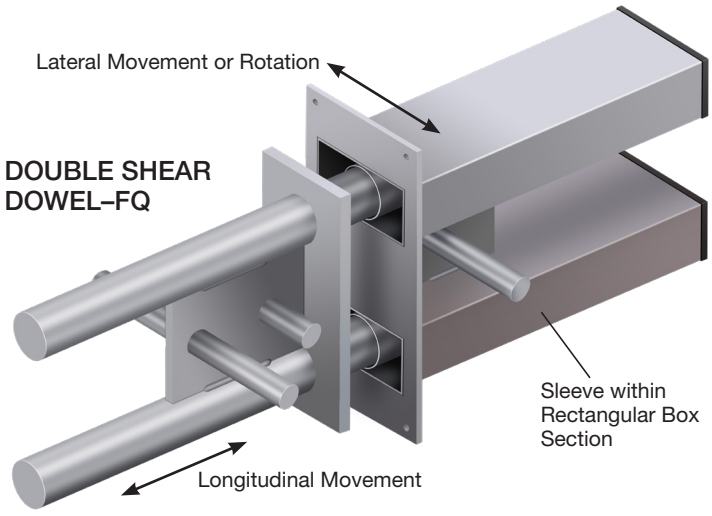
BURKE DOUBLE SHEAR DOWEL ASSEMBLY

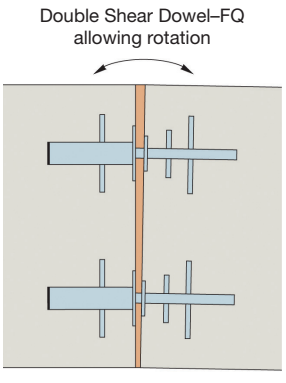
The Burke Double Shear Dowel is the original two-part, double dowel, shear load connector. The dowel component allows longitudinal movement within the sleeve. The connector is available in 10 standard sizes with design capacities from approximately 4.500 kips to more than 213 kips. The Burke Double Shear Dowel easily accommodates joint widths up to 2 ⅜". Larger joints can be accommodated using special dowels.

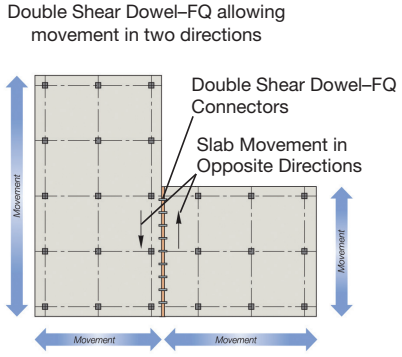
BURKE DOUBLE SHEAR DOWEL ASSEMBLY

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.



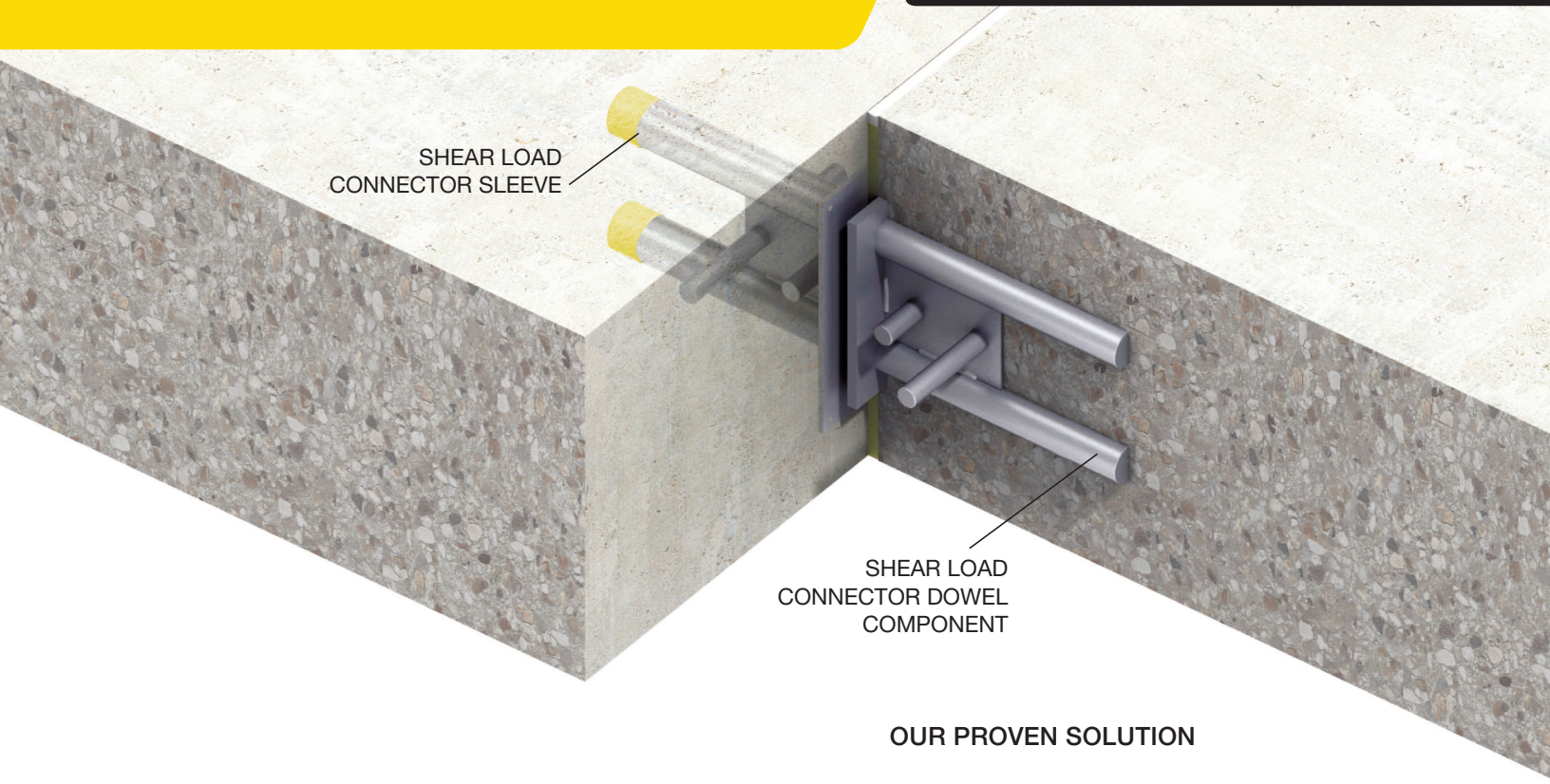




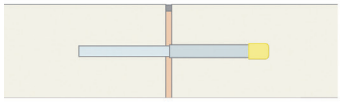


Double Shear Dowel

MeadowBurke

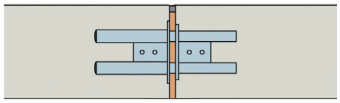


Conventional Joints - Floor Slab



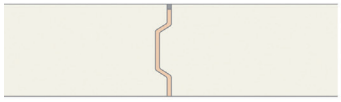
Smooth Dowel

Floor Slab / Elevated Floor Slab

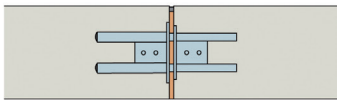


Double Shear Dowel and
Double Shear Dowel – FQ

Wall

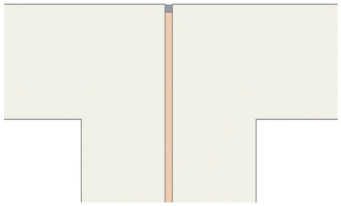


Keyed Joint

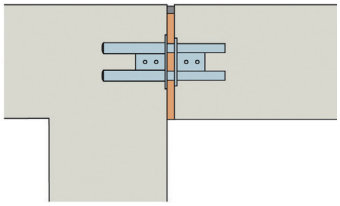


Double Shear Dowel and
Double Shear Dowel – FQ

Structural Movement Joint

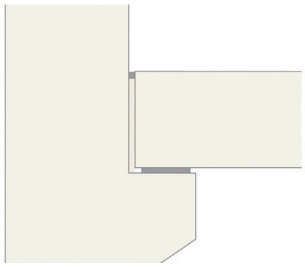


Double Columns

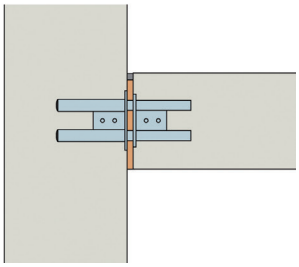


Double Shear Dowel and
Double Shear Dowel – FQ

Floor to Wall Connection



Corbel Support



Double Shear Dowel and
Double Shear Dowel – FQ

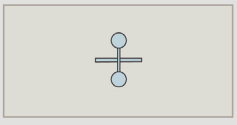
OUR PROVEN SOLUTION

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.

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

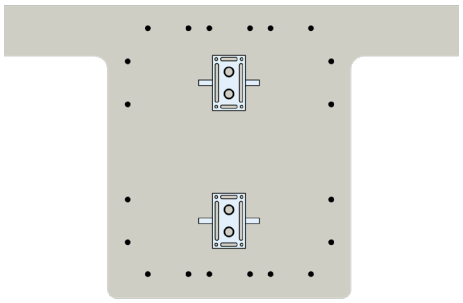


Six Dowel Bars 1.25" Dia Design Capacity 44.4 kips

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

POST TENSIONED CONCRETE

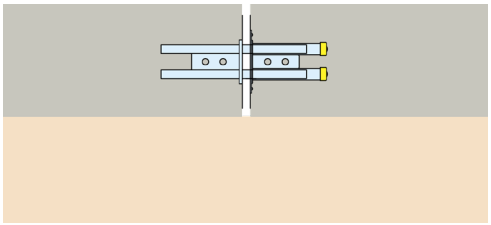
Burke Double Shear Dowels provide unparalleled performance when used in conjunction with the Burke Lockable Dowel. The Burke Lockable Dowel will eliminate most pour strips. The Burke Double Shear Dowel will provide a construction joint in beams that would normally transit through the pour strip area.



CIVIL ENGINEERING

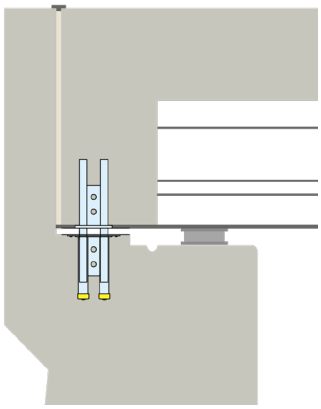
BURKE DOUBLE SHEAR DOWELS PROVIDE A PROVEN SOLUTION FOR JOINTS IN CONCRETE PAVEMENT

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



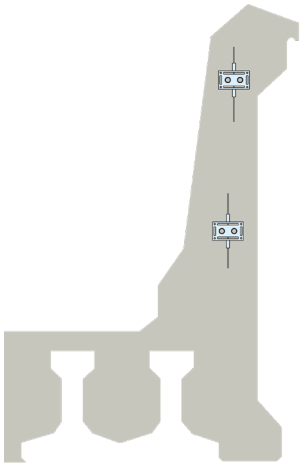
BRIDGE ABUTMENTS

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.

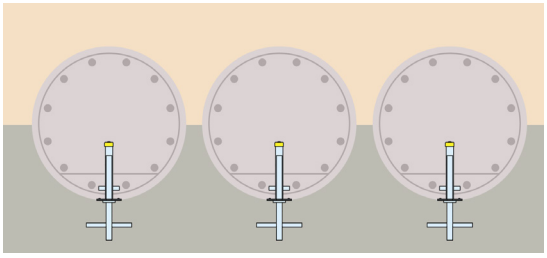


Double Shear Dowel

MeadowBurke

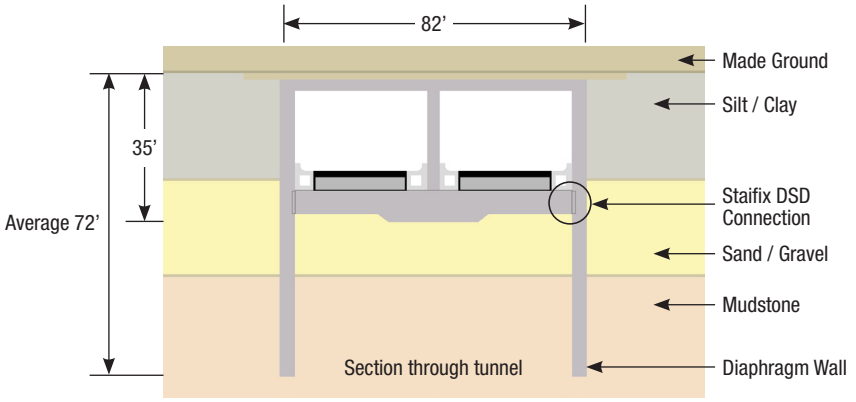
CONTIGUOUS PILED WALL / SLAB CONNECTIONS

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)						
	Overall Length	Dowel Diameter	Dowel Centers	Dowel Projections	Anchor Bar Position	Anchor Bar Lengths	
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

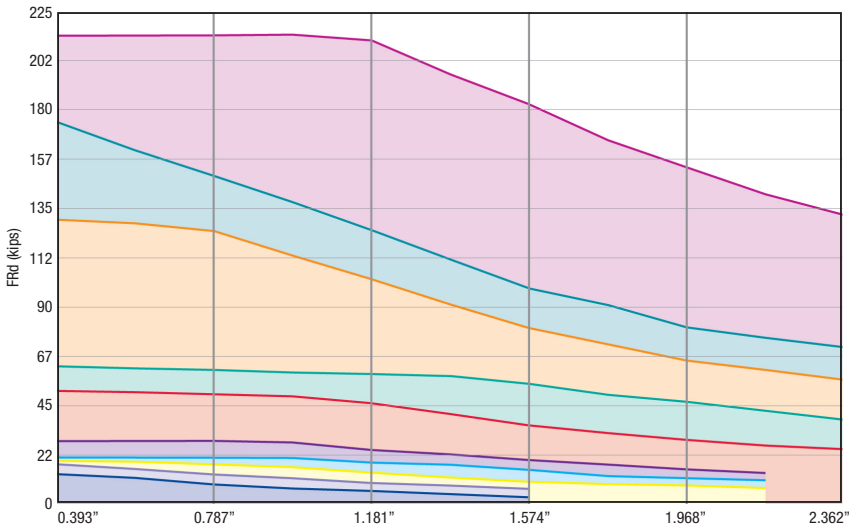
DSD-FQ Dowel Dimensions

DSD DSD-FQ	Dowel Component (inch)						
	Overall Length	Dowel Diameter	Dowel Centers	Dowel Projections	Anchor Bar Position	Anchor Bar Lengths	
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



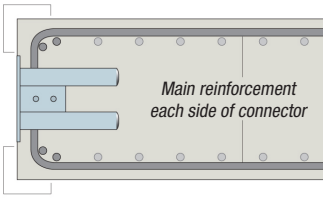
DSD 450
DSD 400
DSD 150
DSD 130
DSD 100
DSD 75
DSD 65
DSD 50
DSD 30
DSD 25

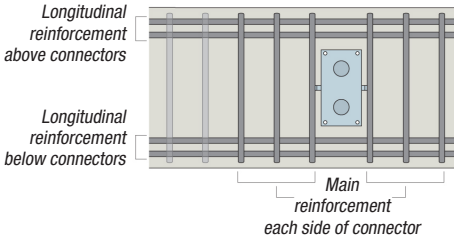
Burke Double Shear Dowel FRd design capabilities (kips) for various joint widths (mm) at the maximum slab thickness (inch) in 4000 psi concrete

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.





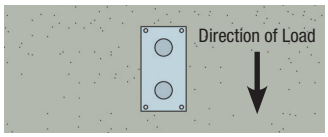
Based on 3000 concrete, max slab depth & 0.787" joint Based on 3000 psi, maximum slab depth, .787" joint width Number of U Bars each side				
DSD/DSDFQ	#3	#4	#5	#6
25	2	-	-	-
30	3	2	-	-
50	3	3	-	-
65	4	3	-	-
75	5	4	-	-
100	-	5	3	-
130	-	-	4	3
150	-	-	6	4
400	-	-	7	5
450	-	-	9	7

Number of U Bars Top and Bottom				
DSD/DSDFQ	#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

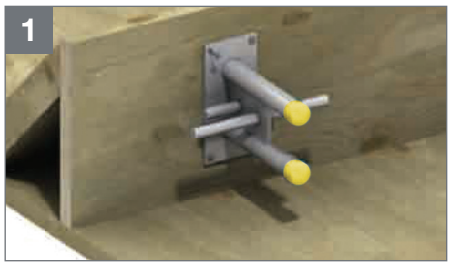
Based on 4000 psi, maximum slab depth, .787" joint width Number of U Bars each side				
DSD/DSDFQ	#3	#4	#5	#6
25	3	2	-	-
30	-	3	2	-
50	-	3	3	-
65	-	4	3	-
75	-	5	4	3
100	-	-	5	4
130	-	-	-	5
150	-	-	-	-
400	-	-	-	-
450	-	-	-	-

Number of U Bars Top and Bottom				
DSD/DSDFQ	#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	-	-	-	-

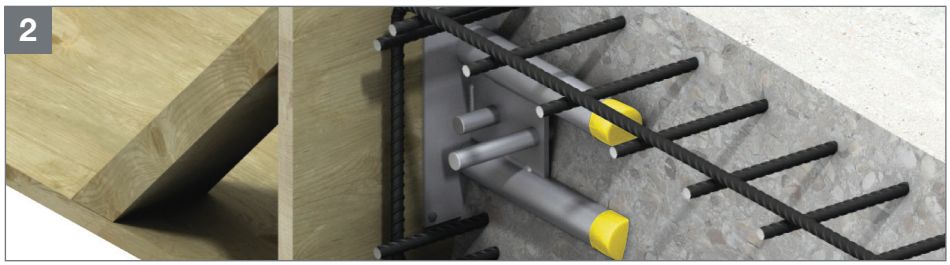
INSTALLATION PROCEDURE



The two-part assembly of all Burke 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.

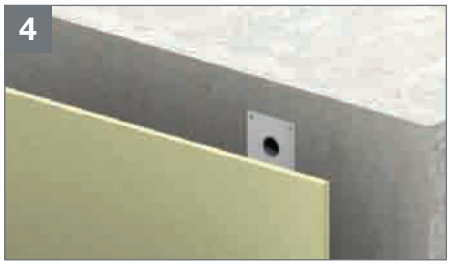


Nail the sleeve component to the shuttering ensuring that the sleeve is correctly orientated for the direction of the load. Check that the minimum spacing and edge distances are not exceeded. The label prevents debris from entering into the sleeve aperture and should not be removed at this stage.



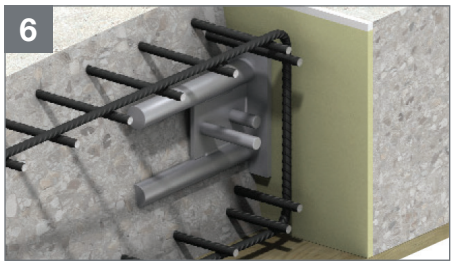
Fix the local reinforcement in position around the dowel component together with any other reinforcement that is required, ensuring that the correct cover to the reinforcement is maintained. Pour the concrete to complete the installation of the shear connector.

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

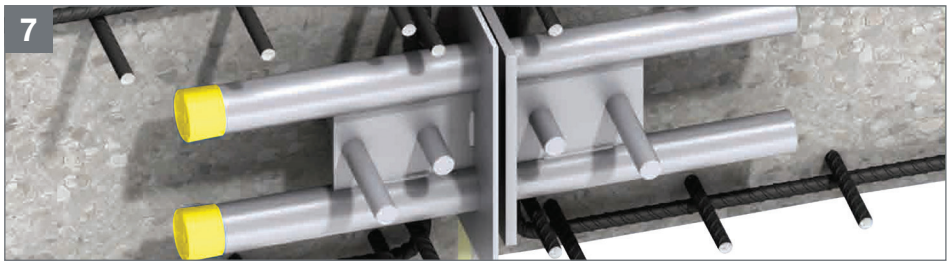


Position compressible joint filler of the appropriate width, for applications where movement is expected between the two sections of concrete.

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.



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.

Notes

North American Locations

California
3611 E La Palma Ave
Anaheim CA 92806
(800) 804-6565

Florida Corporate
6467 S Falkenburg Road
Riverview FL 33578
(800) 282-7213

Georgia
3080 N Lanier Parkway
Decatur GA 30034
(800) 241-5662

Iowa
1000 Technology Drive
Boone IA 50036
(800) 232-1748

New Jersey
526 US Route 46
Teterboro NJ 07608
(800) 207-7778

Oregon
155 SE Hazel Dell Way
Canby OR 97013
(888) 232-9991

Pennsylvania
565 Oak Ridge Road
Hazle Township PA 18202
(800) 550-0060

Texas
7000 Will Rogers Blvd
Fort Worth TX 76140
(800) 993-9641

Texas
8521 FM 1976
Converse TX 78109
(800) 323-6896

Contact Information

Customer Service
(800) 518-7665

Engineering Support
(813) 280-8900

Corporate
(800) 282-7213

Email
info@leviat.us

Web
www.leviat.com

Leviat.com

For information on certified management systems and standards see www.meadowburke.com | www.halfen.com | www.thermomass.com

Notes regarding this catalogue
© Protected by copyright. The construction applications and details provided in this publication are indicative only. In every case, project working details should be entrusted to appropriately qualified and experienced persons. Whilst every care has been exercised in the preparation of this publication to ensure that any advice, recommendations or information is accurate, no liability or responsibility of any kind is accepted by Leviat for inaccuracies or printing errors. Technical and design changes are reserved. With a policy of continuous product development, Leviat reserves the right to modify product design and specification at any time.

Leviat®

A CRH COMPANY

01051LV-B001-2110FC

Imagine. Model. Make.

Leviat.com