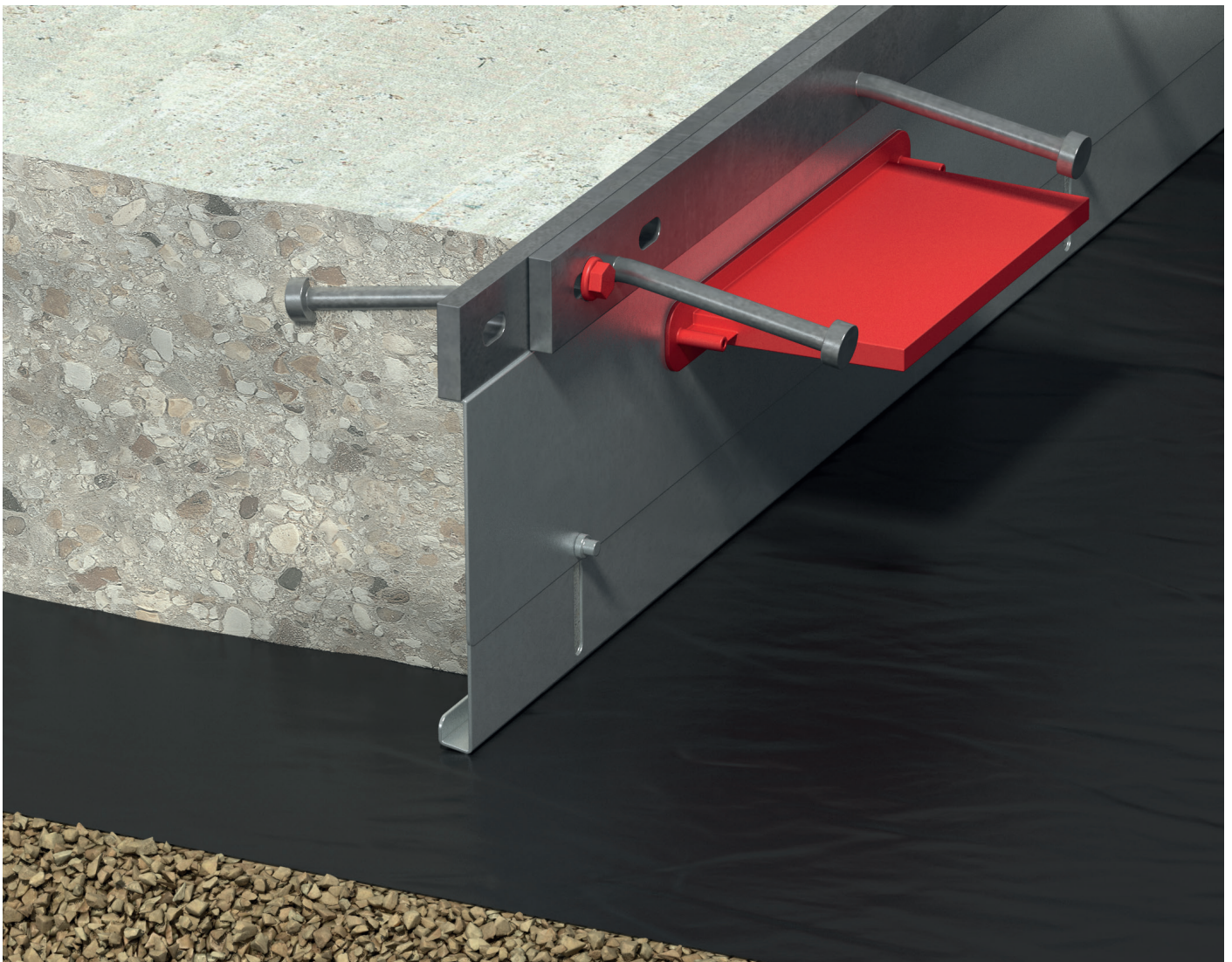


Structural Connections
Floor Joint Systems

Leviat[®]
A CRH COMPANY

Isedio ArmourJoint Adjustable



Imagine. Model. Make.

Leviat®

A CRH COMPANY

We imagine, model and make engineered products and innovative construction solutions that help turn architectural visions into reality and enable our construction partners to build better, safer, stronger and faster.

Leviat is a world leader in connecting, fixing, lifting and anchoring technology.

From the build of new schools, hospitals, homes and infrastructure, to the repair and maintenance of heritage structures, our engineering skills are making a difference around the world.

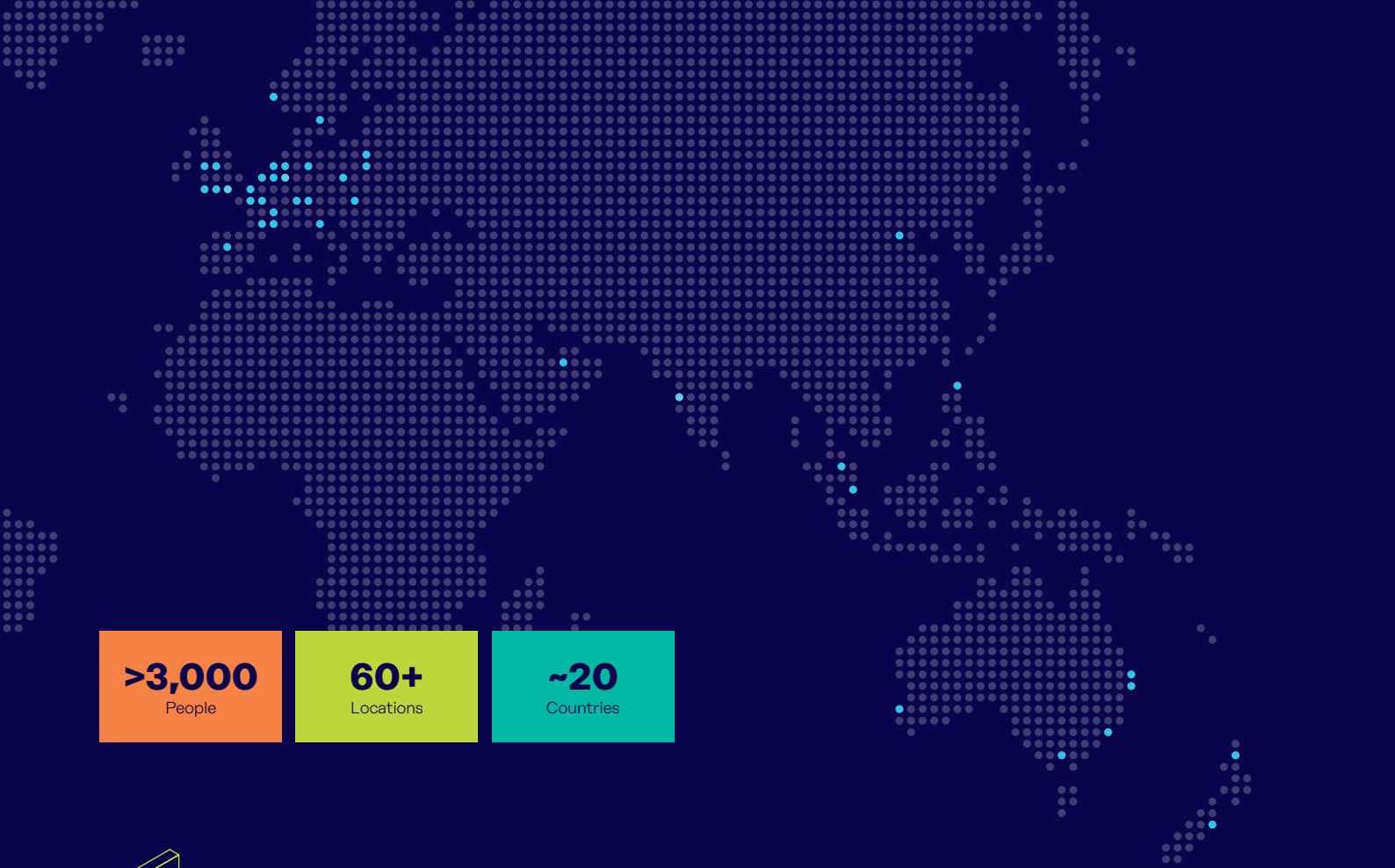
We provide technical design assistance at every stage of a project, from initial planning to installation and beyond.

Our technical support services range from simple product selection through to the development of a fully customised project-specific design solution.

Every promise we make locally, has the commitment and dedication of our global team behind it. We employ almost 3,000 people at 60 locations across North America, Europe and Asia-Pacific, providing an agile and responsive service worldwide.

Leviat, a CRH company, is part of the world's leading building materials business.

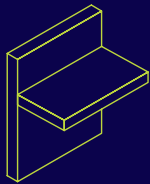




>3,000
People

60+
Locations

~20
Countries

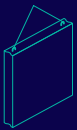


Structural Connections

Systems to form robust, efficient connections, and continuity of concrete reinforcement as necessary, between walls, slabs, columns, beams and balconies, providing structural integrity as well as enhanced thermal and acoustic performance.

- Insulated balcony connectors
- Reinforcing bar couplers
- Concrete Connections
- Reinforcement continuity systems
- Punching shear reinforcement
- Shear load connectors
- Floor Joint Systems
- Precast / Reinforced Columns
- Infrastructure Products
- Precast Connections
- Acoustic dowels and bearings
- Prestress

Other areas of expertise:



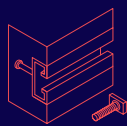
Lifting & Bracing

Systems for the safe and efficient transportation, lifting and temporary bracing of cast concrete elements and tilt-up panels before permanent structural connections are made.



Façade Support & Restraint

Systems for the safe and thermally-efficient fixing of the external building envelope, including brick and natural stone, insulated sandwich panels, curtain walling and suspended concrete façades, and also the repair and strengthening of existing masonry installations.



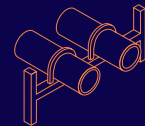
Anchoring & Fixing

Systems for fixing secondary fixtures to concrete, including anchor channels, bolts and inserts; also tension rod systems for roofs and canopies.



Formwork & Site Accessories

Non-structural accessories that complement our engineered solutions and help keep your construction environment operating safely and efficiently, including moulds for casting standard and special concrete elements and construction essentials such as reinforcing bar spacers.



Industrial Technology

Mounting channels, pipe clamps and other versatile framing systems that provide safe fixing in a wide range of industrial applications.

Leviat product ranges:

Ancon | Aschwanden | Connolly | Halfen | Helifix | Isedio | Meadow Burke | Modersohn | Moment | Plaka | Scaldex | Thermomass

Isedio ArmourJoint Adjustable

Contents

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ArmourJoint Adjustable	4-5
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Load Transfer Capacities	8
Design Capacity Tables	9
Installation	10-14
Prefabricated Intersections	15
Isedio Product Range	16

Isedio ArmourJoint Adjustable is an arris protection, load transfer and leave-in-place formwork joint system suitable for heavy duty industrial concrete floors.

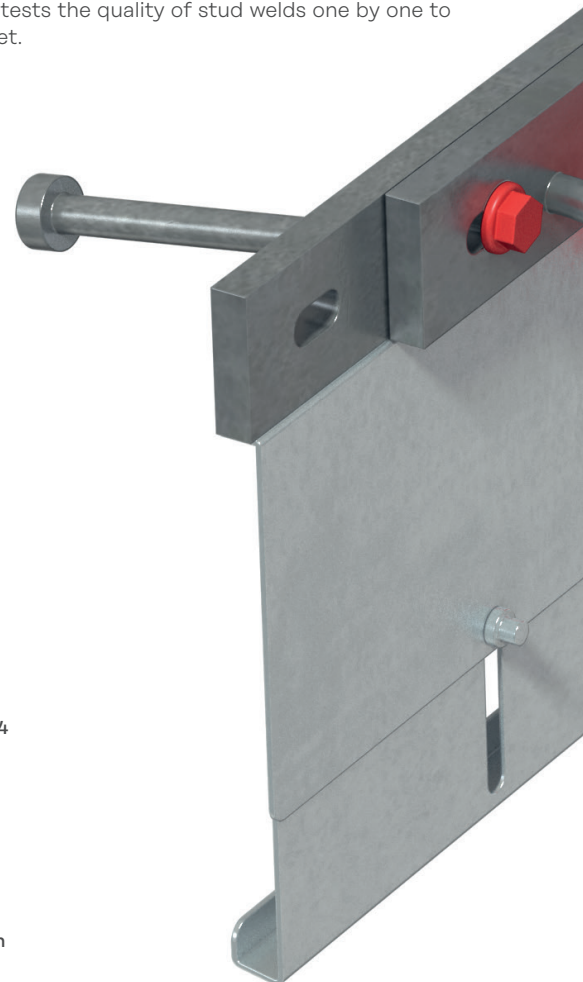
The joint system comprises two top strips, an upper divider plate, a lower divider plate, load transfer plate dowels and sleeves. The lower divider plate is attached to the upper divider plate by a special fastener that requires no tools for adjustment. This innovation is protected by a patent.

The joint is designed such that, once cast, the two slab panels either side of the joint begin to shrink independently. One panel includes the dowel sleeve and one of the top strips. The other top strip, the divider plate and the dowel are included in the other part of the slab. The dowel bridges the joint and is embedded in both slab panels.

Formwork for casting a concrete slab is achieved by the vertical divider plates, which supports the top strip edge protection and load transfer plate dowels.

Slab arris protection is provided by way of cold drawn steel top strips with shear studs that anchor the top strips in the concrete.

The special Isedio stud welding machine tests the quality of stud welds one by one to ensure the relevant specifications are met.



Easy Installation



Based on TR34.4



Engineering Support



Safe Installation



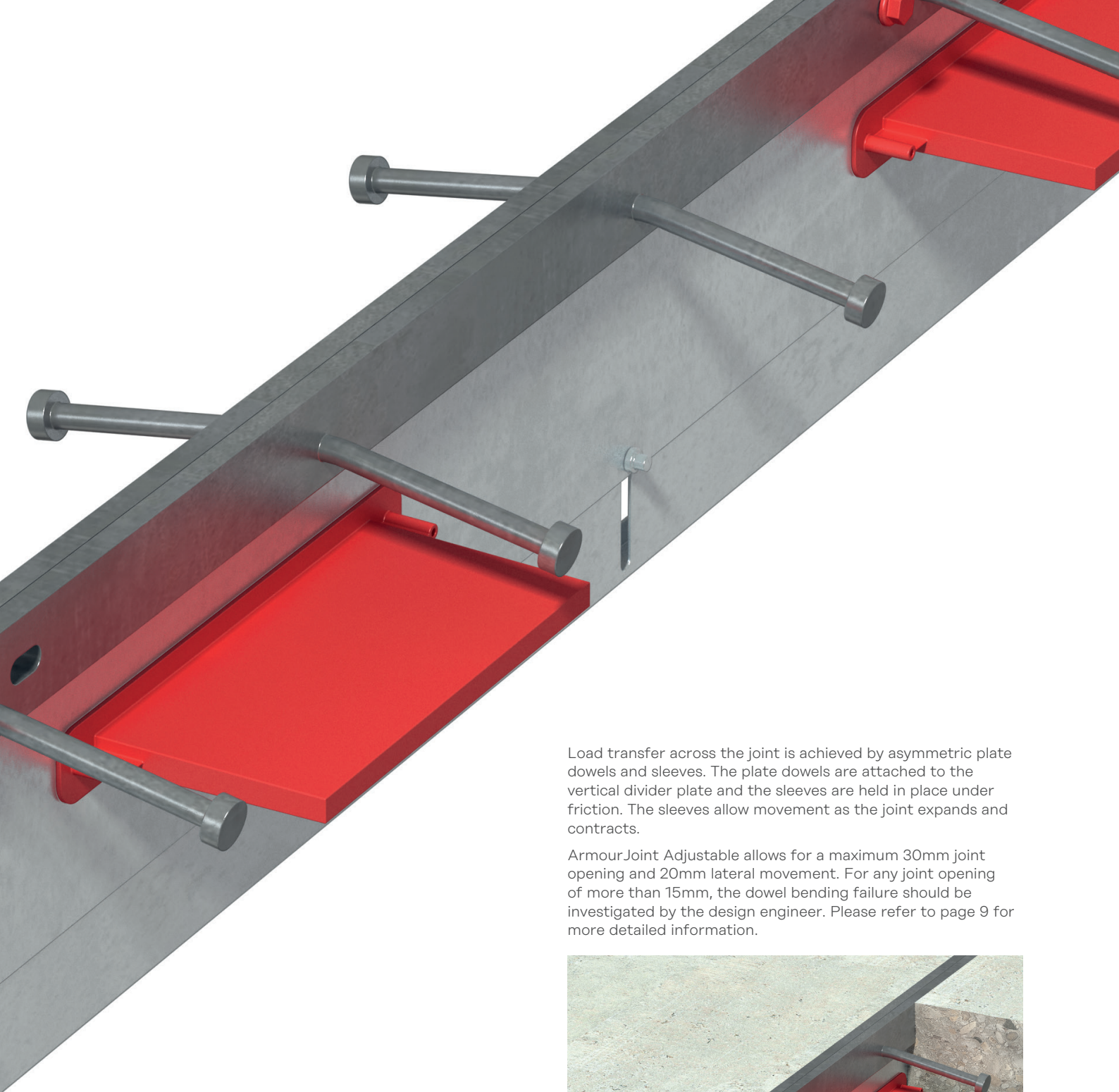
Arris Protection



Minimise Joint Maintenance Costs

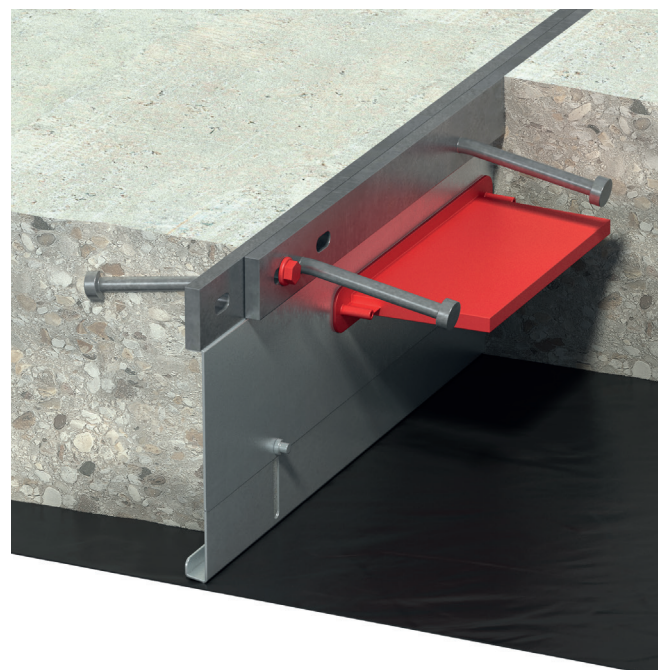


Load Transfer Through Plate Dowels



Load transfer across the joint is achieved by asymmetric plate dowels and sleeves. The plate dowels are attached to the vertical divider plate and the sleeves are held in place under friction. The sleeves allow movement as the joint expands and contracts.

ArmourJoint Adjustable allows for a maximum 30mm joint opening and 20mm lateral movement. For any joint opening of more than 15mm, the dowel bending failure should be investigated by the design engineer. Please refer to page 9 for more detailed information.



Isedio ArmourJoint Adjustable

Material Specification

Component	Material
Top Strips	Cold drawn steel to BS EN 10277-2:2008 (can be supplied in stainless steel or hot-dip galvanised)
Frangible Fastener	Nylon
Load Transfer Plate Dowel	6mm, 8mm & 12mm - S275 & S355 Steel to BS EN 10025-2:2004
Sleeve (colour, material)	6mm (black, PP), 8mm & 12mm (red, PP)
Lateral Movement Allowance	20mm in each direction

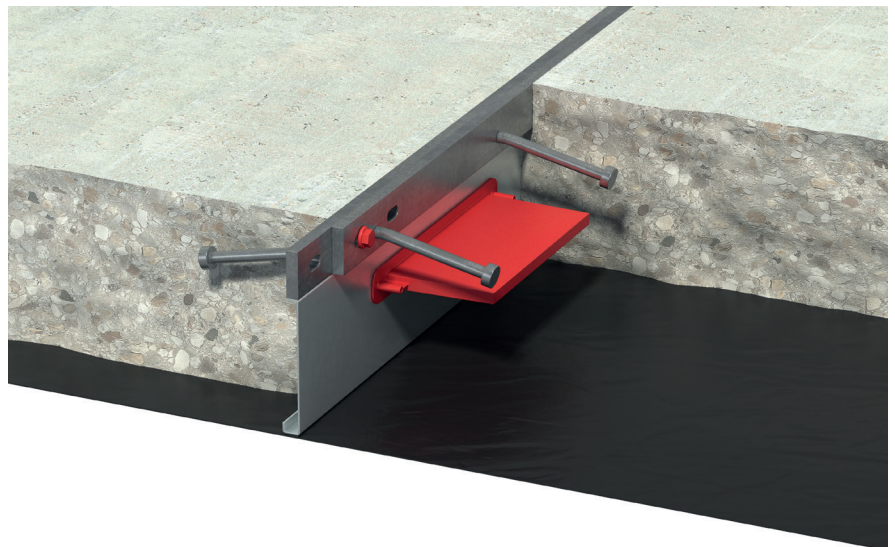
Dimensions

Description	Dimension & Tolerance
Joint Length	3000mm, +/-2.0mm
Straightness	+/-1mm in 1000mm
General Dimensional Tolerance	Dimensions < 12mm +/- 0.5mm Dimensions > 12mm +/- 2.0mm

ArmourJoint Fixed

ArmourJoint Fixed utilises a fixed height divider plate to suit the required slab thickness. Standard ArmourJoint Fixed is available in joint heights from 130mm to 190mm with 10mm increments. Alternatively, it can be manufactured to order in other heights to meet individual project specifications.

Contact the Leviat technical team for more information.



Packaging Information

5 x 6mm Dowels (600mm centres)			
Joint (mm)	Quantity and metres of joint per bundle	Approx. bundle weight inc. packaging (kg)	Max. no. of bundles approx., weight and metres per truck
100 - 130mm	50 off - 150m	1,673kg	14 Bundles - 23,417kg - 2,100m
130 - 150mm	49 off - 147m	1,723kg	13 Bundles - 22,404kg - 1,911m
150 - 200mm	49 off - 147m	1,758kg	13 Bundles - 22,854kg - 1,911m
200 - 250mm	35 off - 105m	1,359kg	16 Bundles - 21,739kg - 1,680m
250 - 300mm	28 off - 84m	1,243kg	15 Bundles - 18,650kg - 1,260m
300 - 350mm	21 off - 63m	1,018kg	16 Bundles - 16,287kg - 1,008m

5 x 8mm Dowels (600mm centres)			
Joint (mm)	Quantity and metres of joint per bundle	Approx. bundle weight inc. packaging (kg)	Max. no. of bundles approx., weight and metres per truck
100 - 130mm	50 off - 150m	1,760kg	13 Bundles - 22,877kg - 1,950m
130 - 150mm	49 off - 147m	1,809kg	13 Bundles - 23,515kg - 1,911m
150 - 200mm	49 off - 147m	1,843kg	13 Bundles - 23,965kg - 1,911m
200 - 250mm	35 off - 105m	1,420kg	16 Bundles - 22,715kg - 1,680m
250 - 300mm	28 off - 84m	1,292kg	15 Bundles - 19,238kg - 1,260m
300 - 350mm	21 off - 63m	1,055kg	16 Bundles - 16,873kg - 1,008m

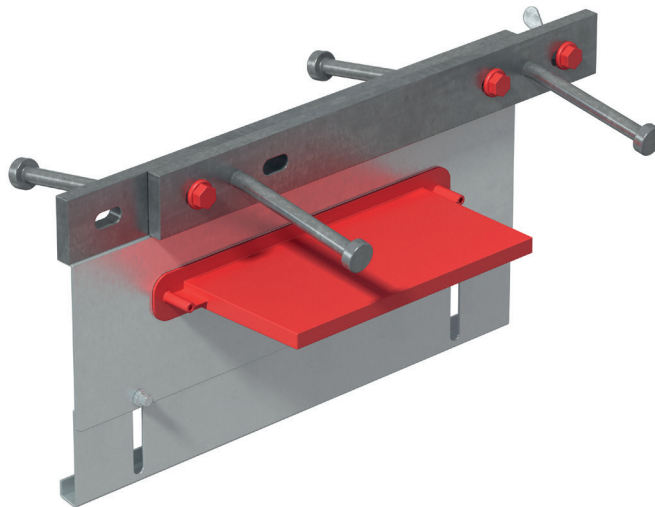
5 x 12mm Dowels (600mm centres)			
Joint (mm)	Quantity and metres of joint per bundle	Approx. bundle weight inc. packaging (kg)	Max. no. of bundles approx., weight and metres per truck
100 - 130mm	40 off - 120m	1,555kg	15 Bundles - 23,326kg - 1,800m
130 - 150mm	42 off - 126m	1,702kg	14 Bundles - 23,833kg - 1,764m
150 - 200mm	42 off - 126m	1,747kg	13 Bundles - 22,712kg - 1,638m
200 - 250mm	35 off - 105m	1,542kg	15 Bundles - 23,125kg - 1,575m
250 - 300mm	28 off - 84m	1,390kg	14 Bundles - 19,456kg - 1,176m
300 - 350mm	21 off - 63m	1,128kg	16 Bundles - 18,044kg - 1,008m

Isedio ArmourJoint Adjustable

Load Transfer Capacities

The use of Isedio ArmourJoint ensures that shear loads are safely transferred across the joint through dowels. We recommend referring to TR34 – Fourth Edition – Concrete Industrial Ground Floors to determine the dowel capacity.

Section 6.5 of TR34 provides guidance on the calculation of dowel capacities for the following failure modes.



Dowel Shear Capacity

The shear capacities for the plate dowels provided in the table below have been calculated using equation 18 of TR34.

Dowel Type	Width (mm)	Length (mm)	Thickness (t) (mm)	Finish*	Shear Area (0.9xA) (mm ²)	Capacity (P _{sh plate}) (kN)
135 x 150 x 6	135	150	6	Black	810	104.6
150 x 150 x 8	150	150	8	Black	1080	200.0
150 x 150 x 12	150	150	12	Black	1620	300.1

* Dowels are available in HDG and stainless steel upon request.

In most situations, at the point of ultimate load, the concrete would typically fail before the dowel.

Dowel Bearing/Bending Capacity

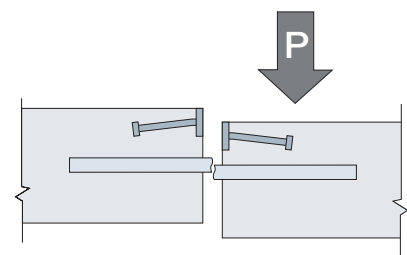
Bearing/Bending is a combined failure mode that checks the bending capacity of the dowel as well as the bearing capacity of the surrounding concrete. Equation 19 of TR34 defines the bearing/bending capacity of a dowel.

Please find the dowel bearing/bending capacities for different conditions in the combined capacity tables on page 9. For any other configurations, please contact Leviat.

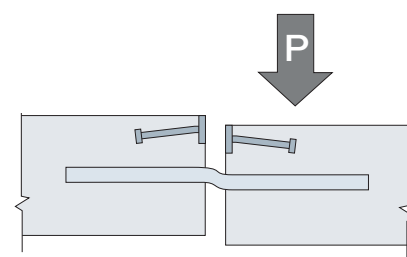
Punching Shear (Bursting Forces)

Section 6.5.3 of TR34 recommends calculating the bursting load of the concrete by adapting the EC2 approach for punching failure using an effective depth of 0.75 times the depth between the dowel and the surface of the concrete slab.

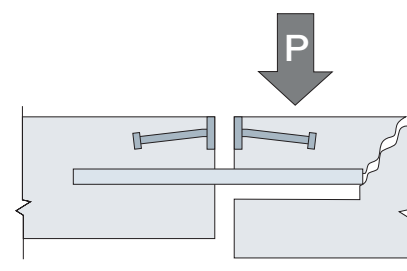
Please find the punching shear capacities for different conditions in the combined capacity tables on page 9.



Dowel Shear Capacity

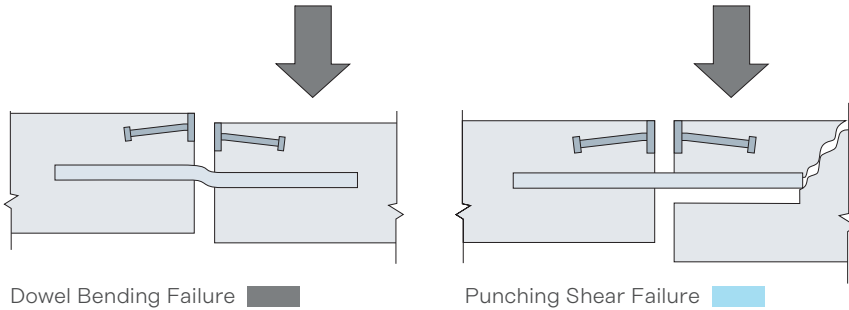


Dowel Bearing/Bending Capacity



Punching Shear (Bursting Forces)

Design Capacity Tables



Design shear capacity of Isedio ArmourJoint Adjustable in C32/40 concrete with a dowel spacing of 600mm (kN/m)

Dowel Size mm	Joint Opening mm	Joint Size 100 - 130 Slab Depth (mm)			Joint Size 130 - 150 Slab Depth (mm)		
		100	110	120 - 130	130	140	150
135 x 150 x 6	10	12.5	17.3	19.1	20.0	25.7	27.9
	20	12.5	17.3	19.1	20.0	25.7	27.9
	30	12.4	17.2	19.0	19.9	26.6	27.8
150 x 150 x 8	10	12.5	17.3	19.1	19.9	25.8	27.9
	20	12.5	17.3	19.1	19.9	25.8	27.9
	30	12.4	17.2	19.1	19.9	25.6	27.7

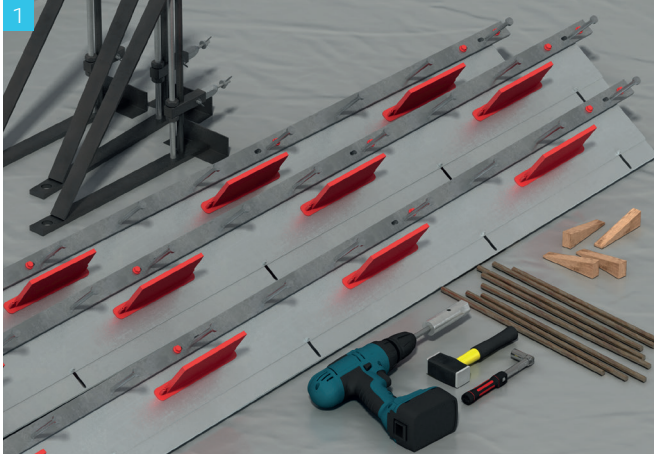
Dowel Size mm	Joint Opening mm	Joint Size 150 - 200 Slab Depth (mm)			Joint Size 200 - 250 Slab Depth (mm)			
		150	160	170 - 200	200	210	220	230 - 250
135 x 150 x 6	10	25.7	32.1	34.5	38.4	46.1	54.5	59.3
	20	25.7	32.1	34.5	38.4	42.2	42.2	42.2
	30	25.6	32.0	30.1	30.1	30.1	30.1	30.1
150 x 150 x 8	10	25.8	32.2	34.6	38.5	46.3	54.6	59.6
	20	25.8	32.2	34.6	38.5	46.3	54.6	59.6
	30	25.6	32.0	34.4	38.4	46.1	54.5	59.3
150 x 150 x 12	10	24.5	30.9	33.2	37.1	44.7	53.0	57.8
	20	24.5	30.9	33.2	37.1	44.7	53.0	57.8
	30	24.4	30.7	33.1	36.9	44.5	52.8	57.5

Dowel Size mm	Joint Opening mm	Joint Size 250 - 300 Slab Depth (mm)				Joint Size 300 - 350 Slab Depth (mm)			
		250	260	270	280 - 300	300	310	320	330 - 350
135x 150 x 6	10	58.8	66.3	66.3	66.3	66.3	66.3	66.3	66.3
	20	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2
	30	30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1
150 x 150 x 8	10	59.0	68.5	78.5	84.3	83.7	94.7	106.4	113.1
	20	59.0	68.5	78.5	84.3	83.7	94.7	95.2	95.2
	30	58.9	68.2	71.6	71.6	71.6	71.6	71.6	71.6
150 x 150 x 12	10	57.3	66.5	76.5	82.2	81.7	92.5	104.0	110.6
	20	57.3	66.5	76.5	82.2	81.7	92.5	104.0	110.6
	30	57.1	66.3	76.2	81.8	81.3	92.1	103.8	110.3

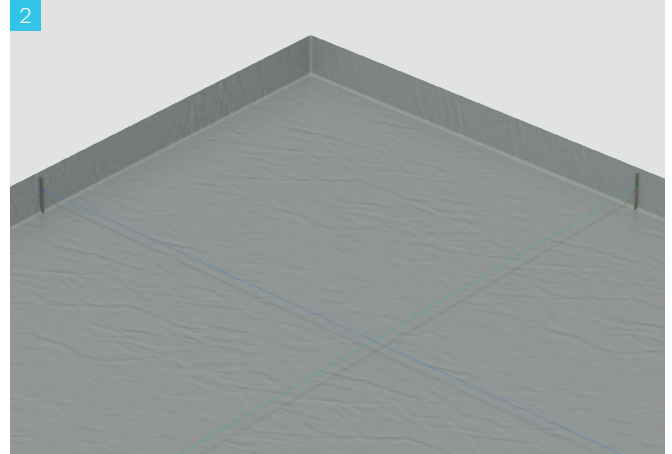
Note: For any other configurations and for Isedio ArmourJoint Fixed capacities, please contact the Leviat technical team on 0114 275 5224 or email info.isedio.uk@leviat.com.

Isedio ArmourJoint Adjustable

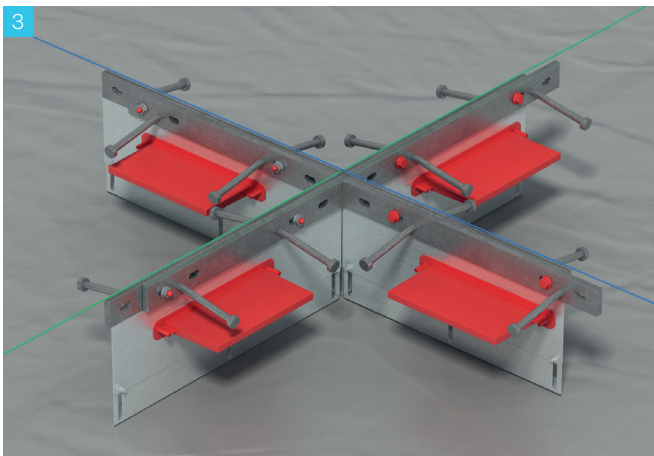
Installation



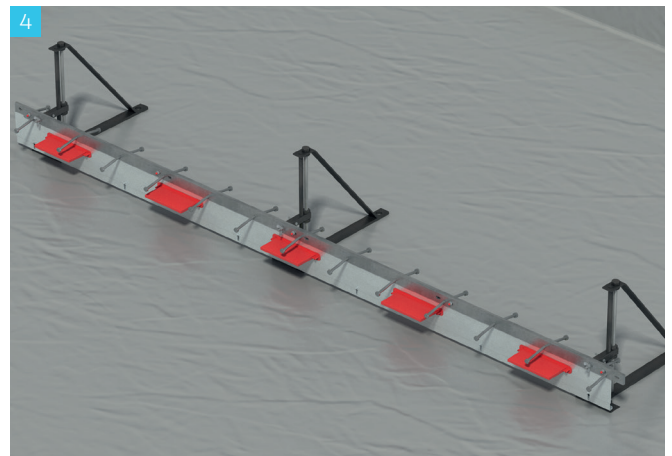
1 Set up the site. Laser dumpy level set up, finished floor level datum taken, membrane laid, hand tools available.



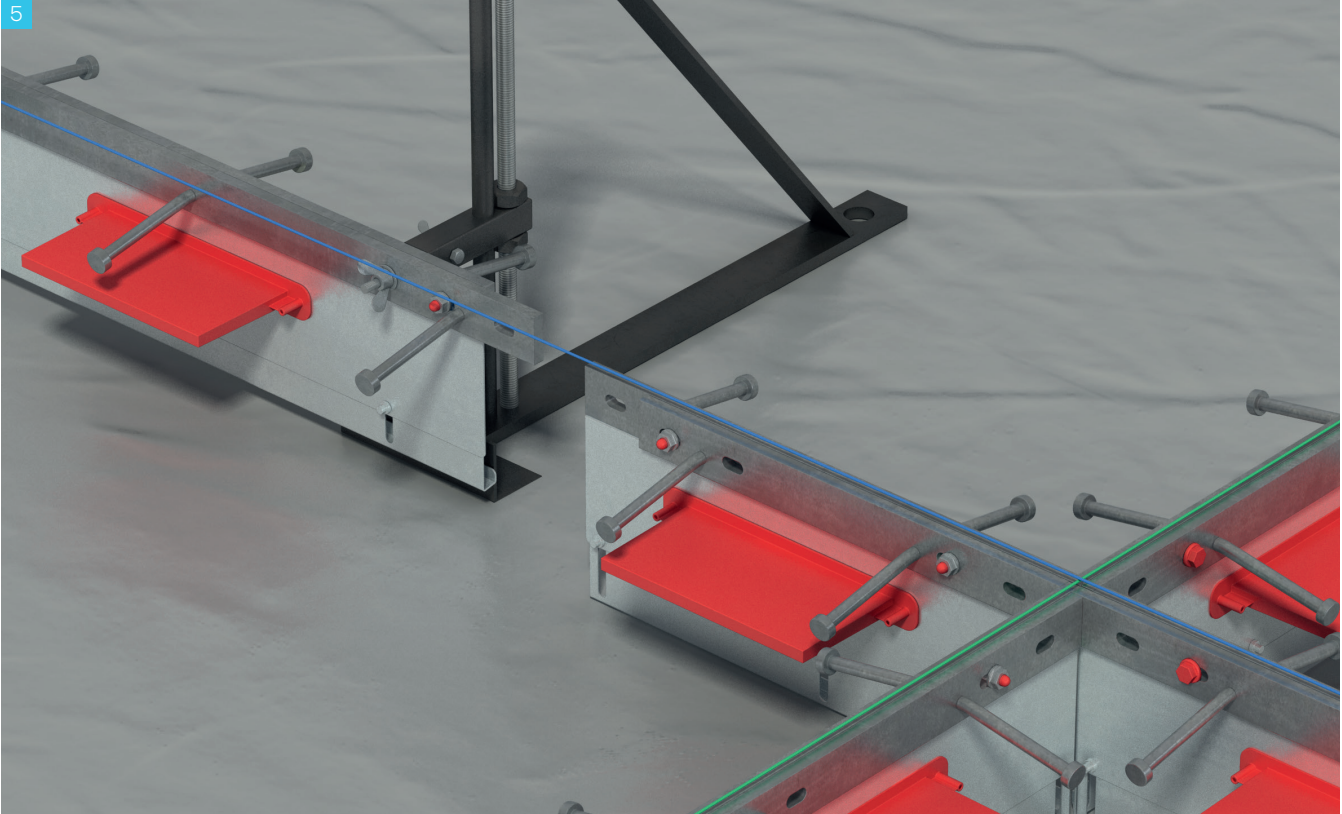
2 Measure the distances to the walls and edges. Set up the string line following the joint location.



3 If required, place the intersection (4-way, 3-way or corner).



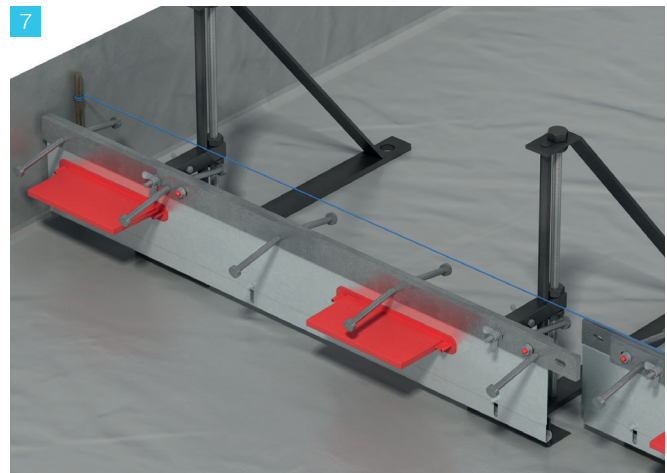
4 Fit ArmourJacks to the ArmourJoint top strips.



5 Position the ArmourJoints (with the jacks fitted) and attach them to the intersection.

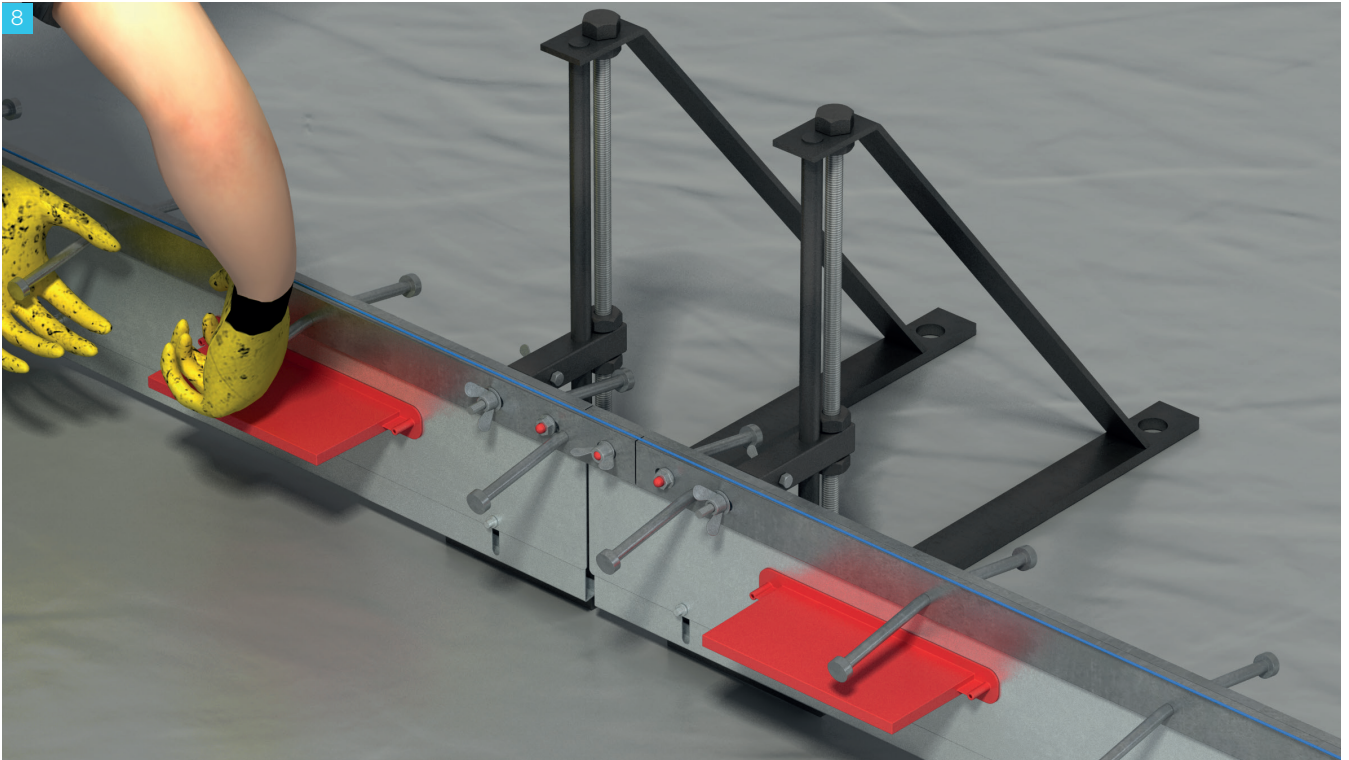


6 Continue to fit the ArmourJoints. Ensure the lapped joints are butted end to end tightly. Fit the plastic bolt and wing nut at the lapped joint.

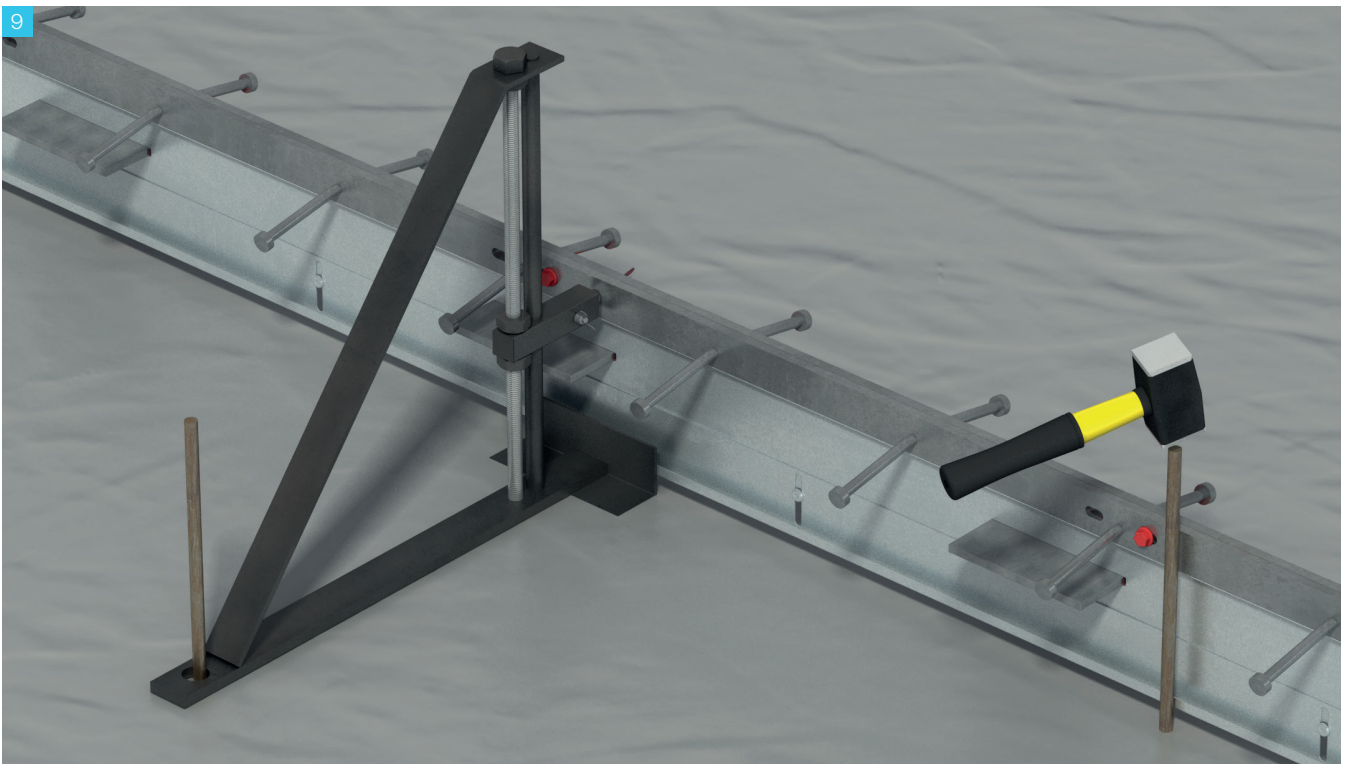


7 Measure final distance and cut ArmourJoint to suit, allow space for miothene between end joint and wall.

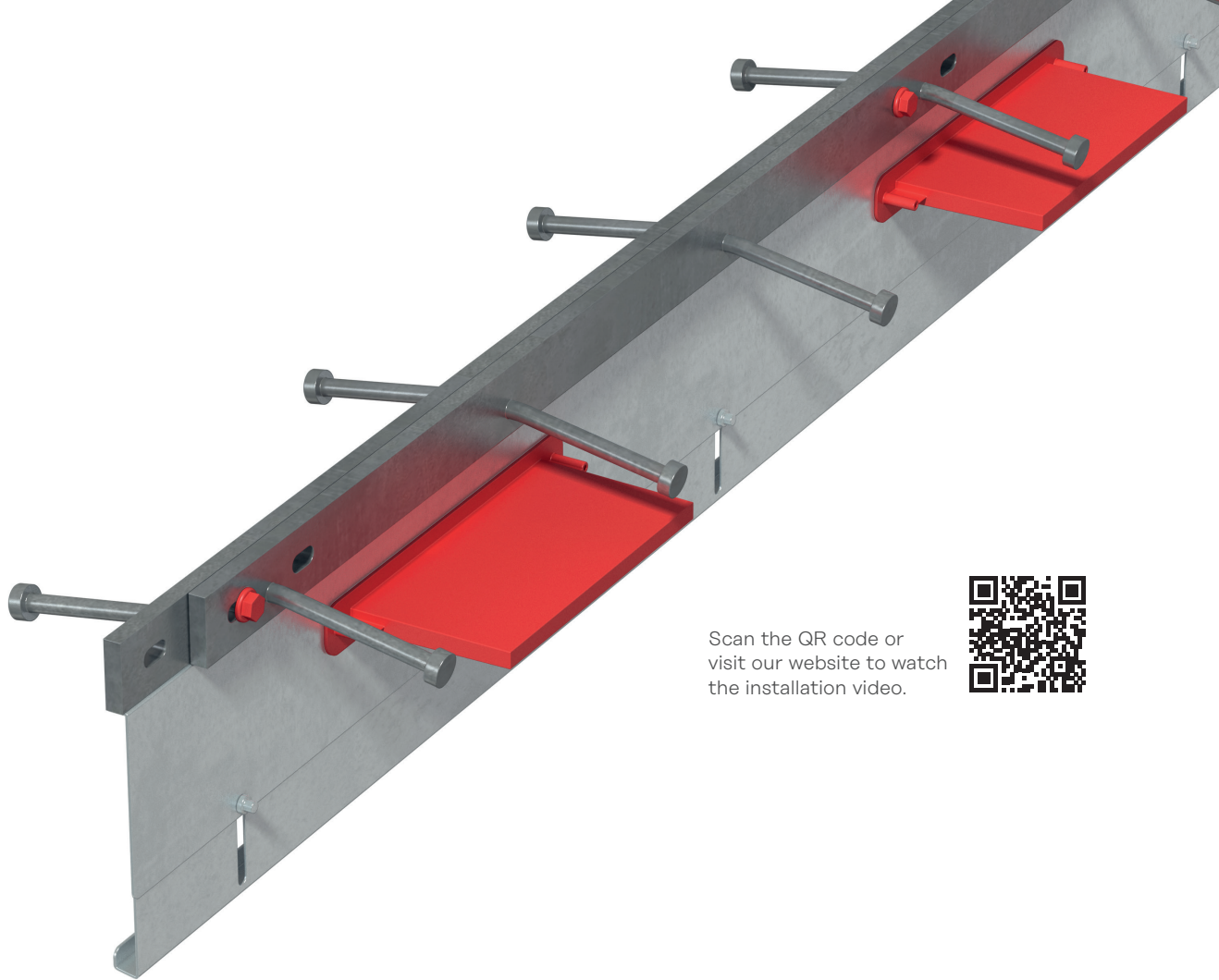
Isedio ArmourJoint Adjustable



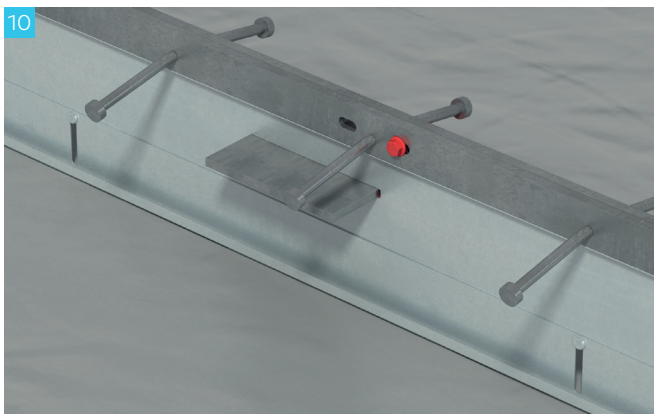
Manually position ArmourJoints in line with string lines.



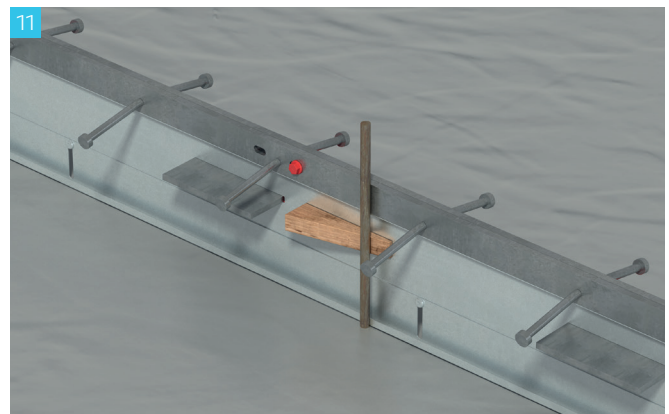
Pin the ArmourJacks into place and drive the pins behind the ArmourJoint in between the jacks.



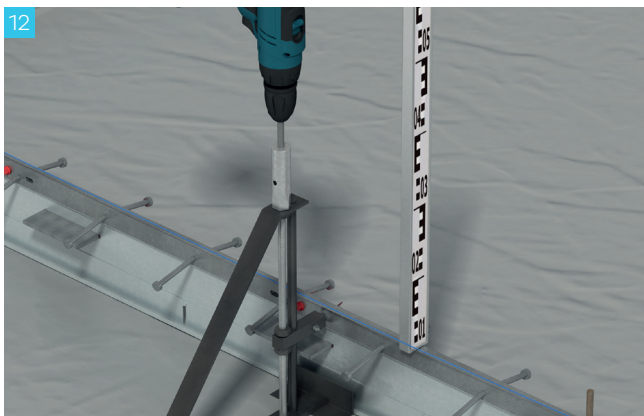
Scan the QR code or visit our website to watch the installation video.



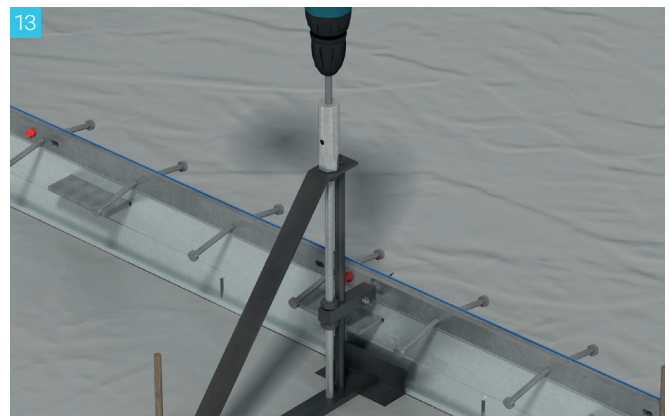
10 Ensure the lower divider plate is pushed fully down to sub-base.



11 Fit the wooden wedges behind the pin to lock the joint in place.

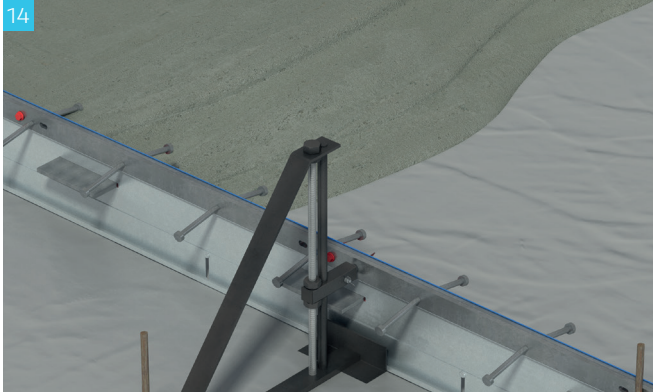


12 Check the height and adjust where necessary using the nut on the jack.

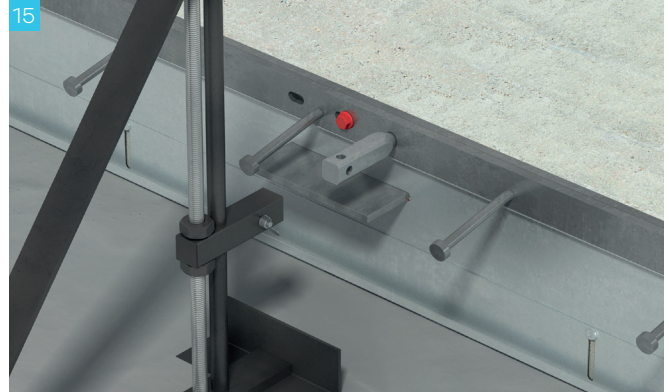


13 Final visual inspection, adjust the position and height of the joint if required.

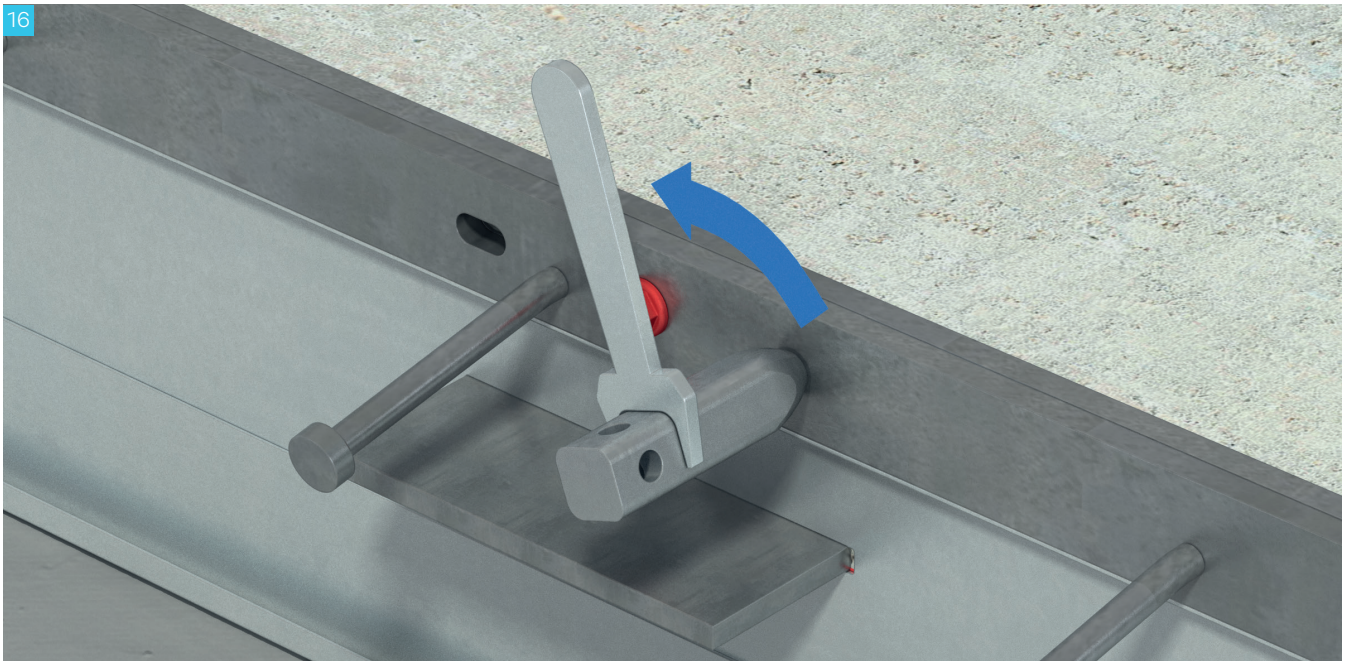
Isedio ArmourJoint Adjustable



14 Pour the concrete while checking the height and position of the joint.



15 Remove the steel pin, disconnect the bolt and wingnut through the box section and pull the ArmourFix Jack away from the joint.



To remove the ArmourFix ends, unscrew in a counter clockwise direction.

If for any reason the ArmourFix end will not undo, do not force it as this may damage the concrete.

Never strike the ArmourFix end with a hammer or such like as the force will transmit to the new concrete which has not reached its full compressive strength.

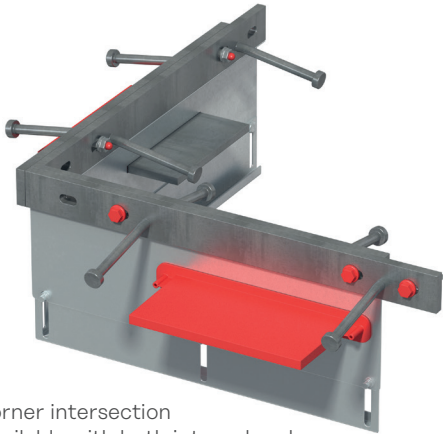
If the concrete has gripped to the ArmourFix end (which can happen as the ArmourFix end becomes dirty with old concrete or as it becomes rusty with use), then cut the ArmourFix end off, flush with the side of the top strip of the joint. Ensure the cut is close enough to the top strip to allow the joint to open but do not damage the arris or top surface of the top strip.

Never leave an ArmourFix end in place and cast the adjacent concrete slab. Leaving the ArmourFix end in the concrete will cause the joint to remain locked up. As the two slab panels cure/dry, the contraction of the slab panels will pull the joint top strips apart. Any ArmourFix end left in the concrete will prevent the joint from opening and cause cracking. If this error is made, then as soon as it is noticed, carefully run a small hand held grinder with slitting disc between the top strips to cut through the threaded end of the ArmourFix end.

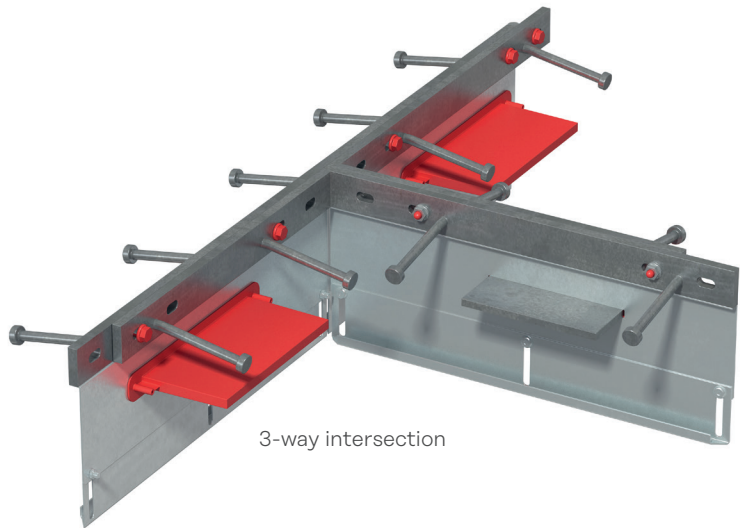
An alternative installation method with leave-in-place feet is available at [Isedio.com](https://www.isedio.com).

Prefabricated Intersections

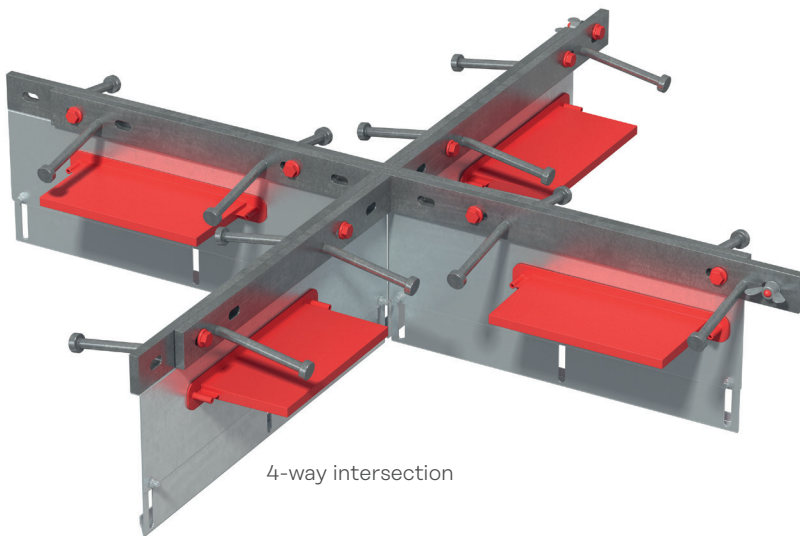
Corner, 3-way and 4-way intersections are available to simplify installation. These components will be manufactured with the same height and plate/dowel specifications to suit ArmourJoint Adjustable and ArmourJoint Fixed.



Corner intersection
(available with both internal and external sleeve orientation)



3-way intersection



4-way intersection

Installation Jacks

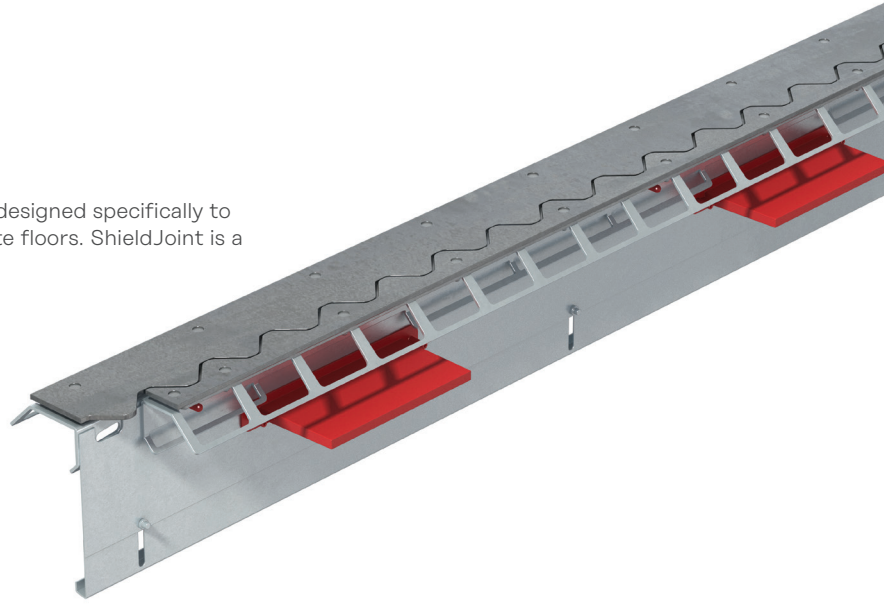
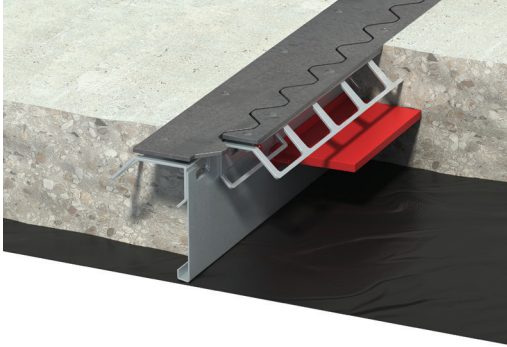
Installation Jacks are reusable items that facilitate speedy and accurate installation of ArmourJoint. Use of installation jacks eliminates the risks associated with the conventional 'pin and weld' method, in particular the risk of cracking posed by the pins restraining movement at the joint opening.



Isedio Product Range

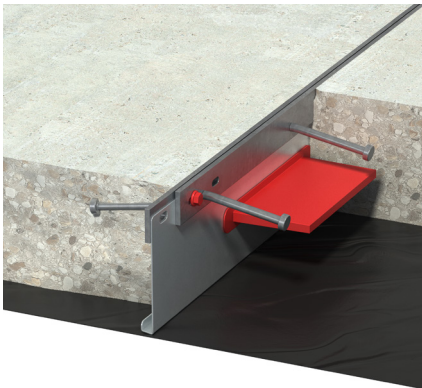
ShieldJoint

ShieldJoint is an innovative, leave-in-place joint system designed specifically to meet the demanding needs of today's industrial concrete floors. ShieldJoint is a zero impact, sealant-free joint system.



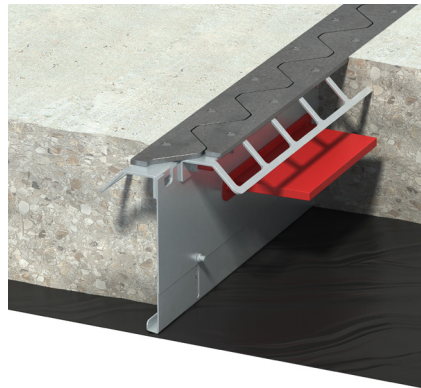
ArmourJoint-Lite

ArmourJoint-Lite is another variation of the ArmourJoint family suitable for light duty industrial concrete floors that are traversed by pneumatic wheeled equipment.



GuardJoint Adjustable

GuardJoint Adjustable eliminates impact across the joint from Mechanical Handling Equipment (MHE). The shape of the wave is engineered such that even the smallest pallet wheeled trucks do not cause an impact.



SteelDeckJoint

SteelDeckJoint is a revolutionary floor joint solution, which solves many of the complexities and time consuming elements of more traditional methods of forming a construction joint using timber formwork.



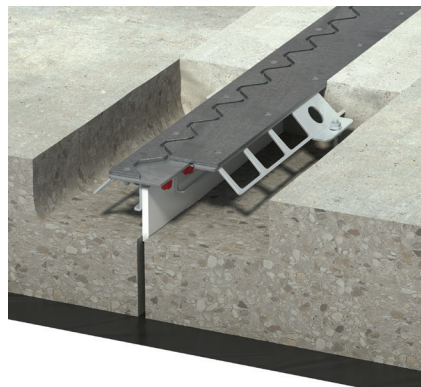
ExpaJoint

ExpaJoint is a leave-in-place formwork, load transfer and edge protection joint system suitable for external concrete pavements and yards.



ShieldJoint Arris Repair

ShieldJoint Arris Repair is specifically designed for the repair of construction joints where the concrete either side of the joint has become damaged through traffic impact.



ArmourStrip Double

ArmourStrip Double is an edge protection system suitable for heavy duty industrial concrete floors and is compatible with timber formwork.





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