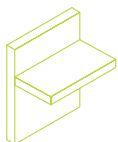




## Isedio ShieldJoint

Floor jointing solutions for industrial floors



Structural Connections  
Floor Joint Systems



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.

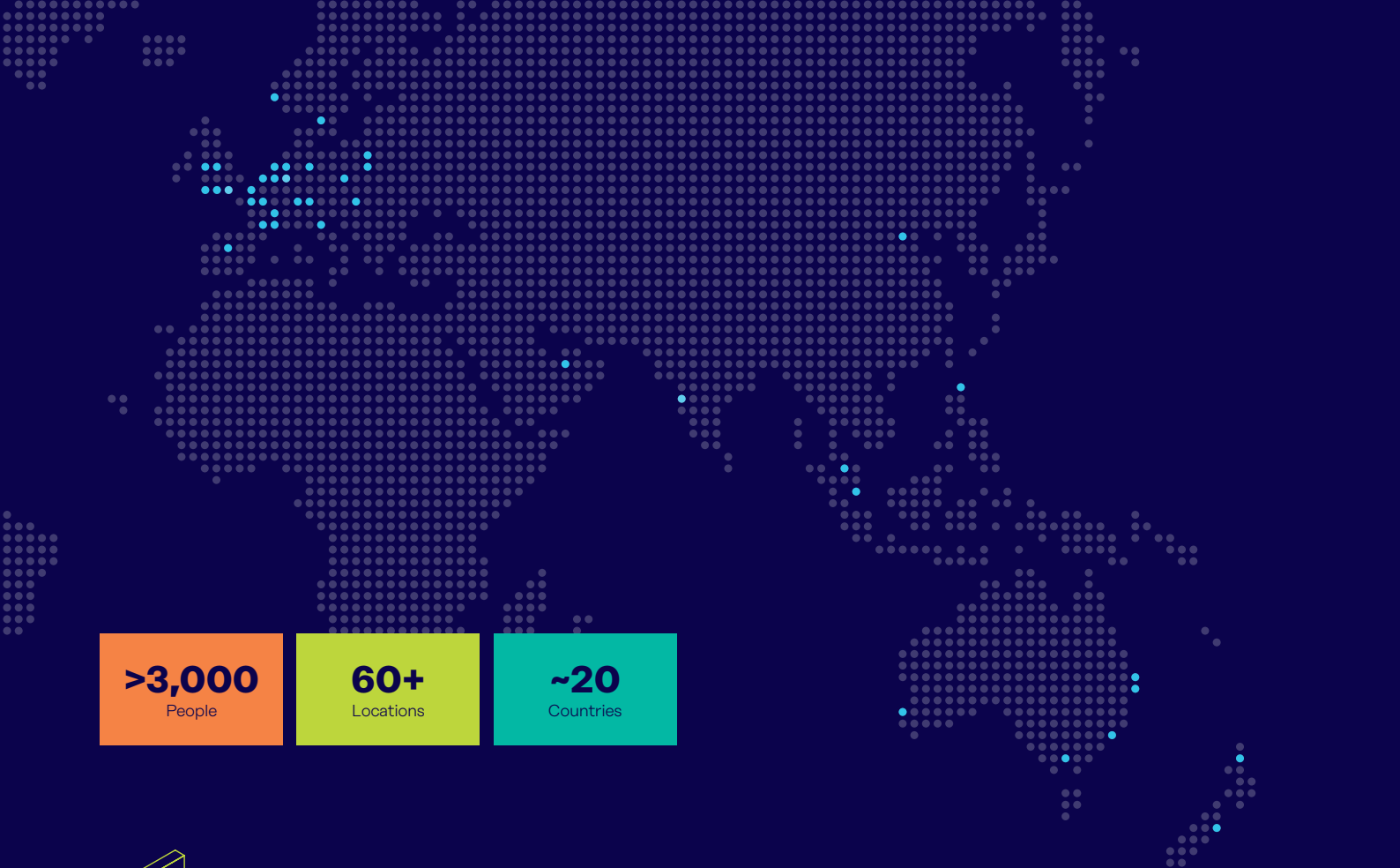
Our technical support services range from simple product selection through to the development of a fully customised project-specific design solution.

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.**



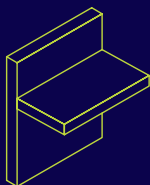




**>3,000**  
People

**60+**  
Locations

**~20**  
Countries

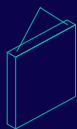


### Structural Connections

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:



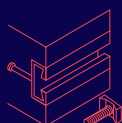
#### Lifting & Bracing

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.



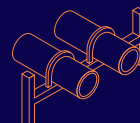
#### Anchoring & Fixing

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 ShieldJoint

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ShieldJoint Adjustable	6
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Load Transfer Capacities	8
Design Capacity Tables	9
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Isedio ShieldJoint is an innovative zero impact, sealant-free load transfer system.

Isedio ShieldJoint is unique since it eliminates impact caused by Mechanical Handling Equipment (MHE) such as forklift trucks crossing the joint, but additionally does not require any joint sealing. Its clever design ensures that no debris can enter into the vertical gap between the two slabs. This design feature is particularly useful in cold storage facilities, foodstuff warehouses or food preparation areas where pest control is paramount.

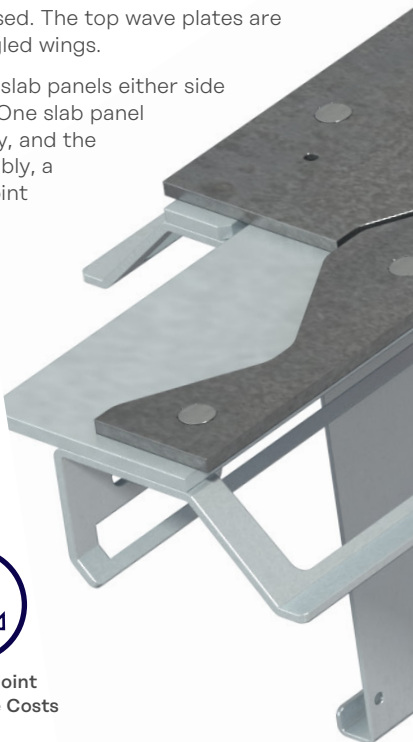
Part of the Isedio range of leave-in-place arris protection systems, ShieldJoint is an excellent solution for high traffic areas such as loading docks, doorways or VNA aisles where a seamless floor is required. The unique trapezoidal split line is engineered so that even the smallest wheeled pallet trucks do not cause an impact. A floor can be future-proofed for other uses by installing ShieldJoint.

A consistent 3mm initial gap between the top plates allows immediate lateral movement. This feature eliminates any risk of cracking especially with asymmetrical concrete panel sizes. Isedio ShieldJoint utilises bleeding holes on the top plates ensuring no air traps under the top plates. The joint system comprises two top wave plates, a divider plate, load transfer plate dowels and sleeves. The divider plate height fits the slab depth and, to ensure the plate dowel is always located at the mid-height of the slab, is manufactured to order.

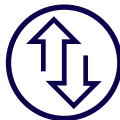
Slab arris protection is provided by way of the top wave plates which create a seamless floor thus eliminating impact loads when traversed. The top wave plates are continuously anchored to the concrete by perforated angled wings.

The joint is designed so that once cast in-situ, as the two slab panels either side of the joint begin to cure and shrink, the joint separates. One slab panel contains the sleeve and one half of the top wave assembly, and the other slab panel has the other half of the top wave assembly, a divider plate and a dowel. The dowel bridges across the joint and is embedded in both slab panels.

The vertical divider plate creates the formwork and also supports the top wave plate edge protection and load transfer plate dowels.



Easy Installation



Load Transfer  
Through Plate  
Dowels



Minimise Joint  
Maintenance Costs



Engineering Support



Safe Installation



Based on TR34.4



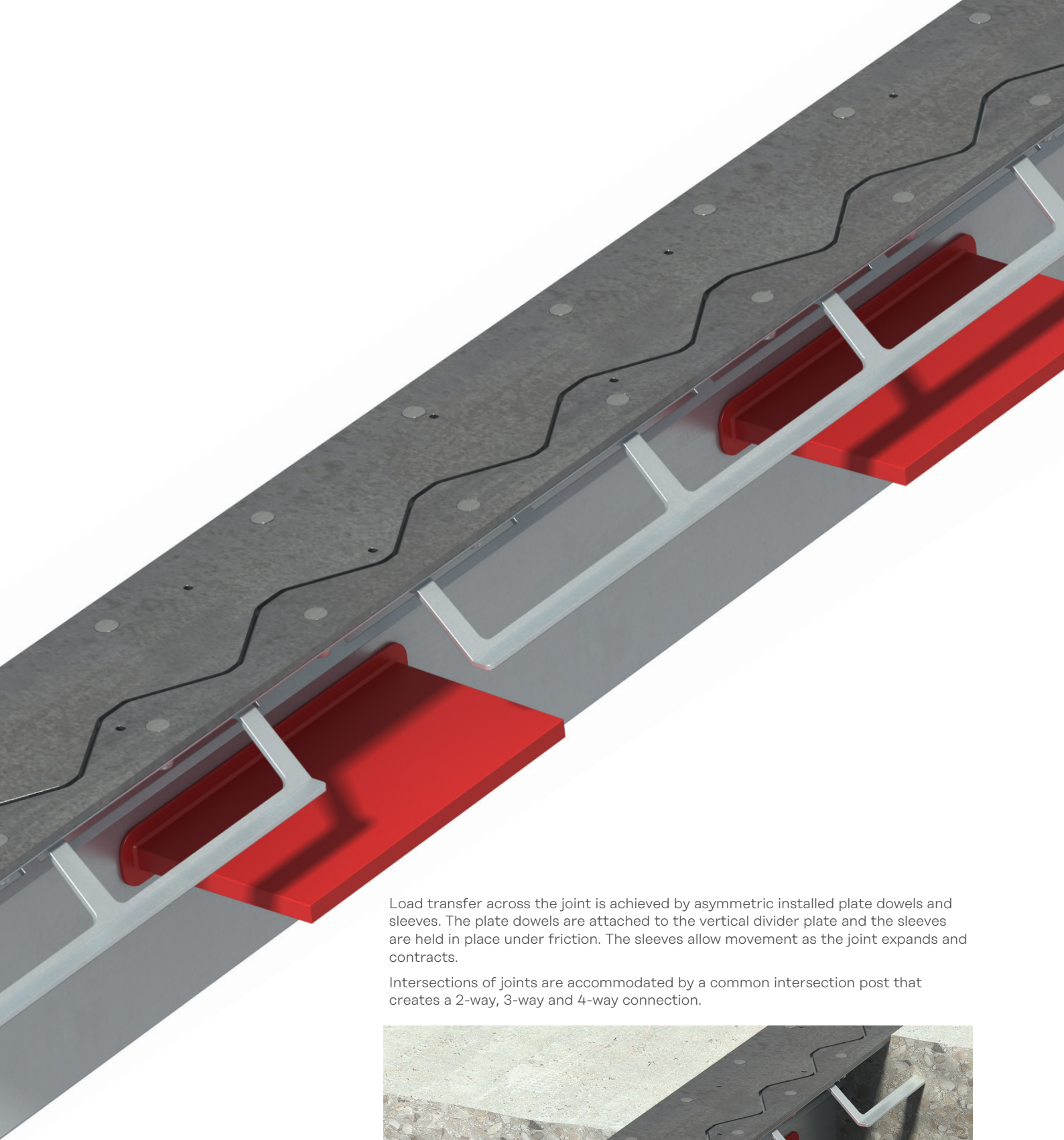
Arris Protection



Sealant-Free

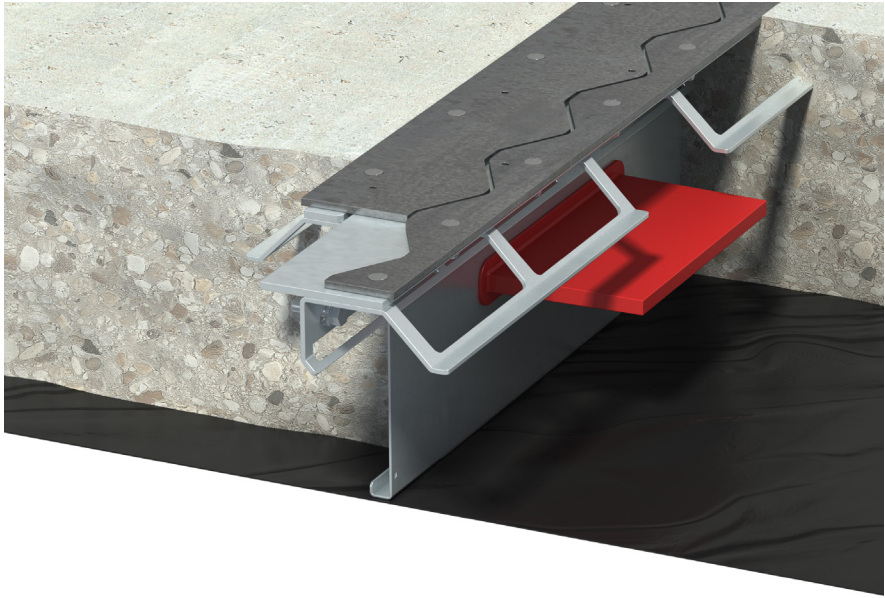


Zero Impact



Load transfer across the joint is achieved by asymmetric installed 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.

Intersections of joints are accommodated by a common intersection post that creates a 2-way, 3-way and 4-way connection.



# Isedio ShieldJoint

## Material Specification

Component	Material
Top Strips	Hot rolled plate - AS/NZS 1594 (can be supplied in stainless steel)
Hot-dip Galvanised	55µm – AS/NZS 4680:2006
Frangible Fastener	Nylon
Load Transfer Plate Dowel	6mm, 8mm & 12mm - AS/NZS 1594-Grade 350 (can be supplied in stainless steel)
Sleeve	6mm, 8mm & 12mm - PP
Lateral Movement Allowance	20mm in each direction

## Dimensions

Description	Dimension & Tolerance
Joint Length	2300mm, +/-2.0mm
Straightness	+/-1mm in 1000mm
General Dimensional Tolerance	Dimensions < 12mm +/- 0.5mm Dimensions > 12mm +/- 2.0mm
Dowel Spacing	500mm and 460mm

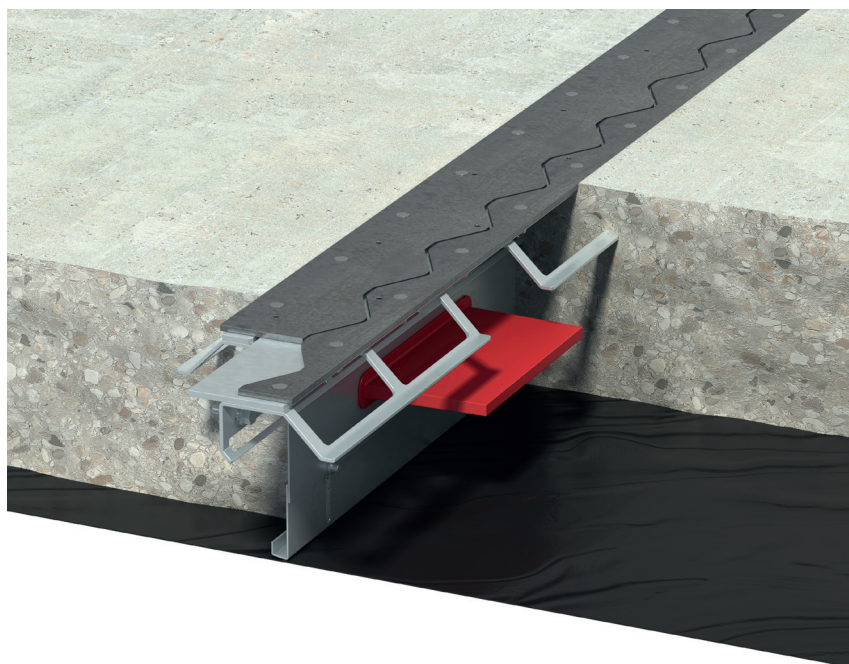
## ShieldJoint Adjustable

ShieldJoint Adjustable utilises an adjustable divider plate to suit different slab heights.

The lower divider plate is attached to the upper divider plate using a bespoke, patented fixing that requires no tools for adjustment.

The adjustable divider plate enables contractors to keep one system size on site to suit various slab heights.

Contact the Leviat technical team for more information.

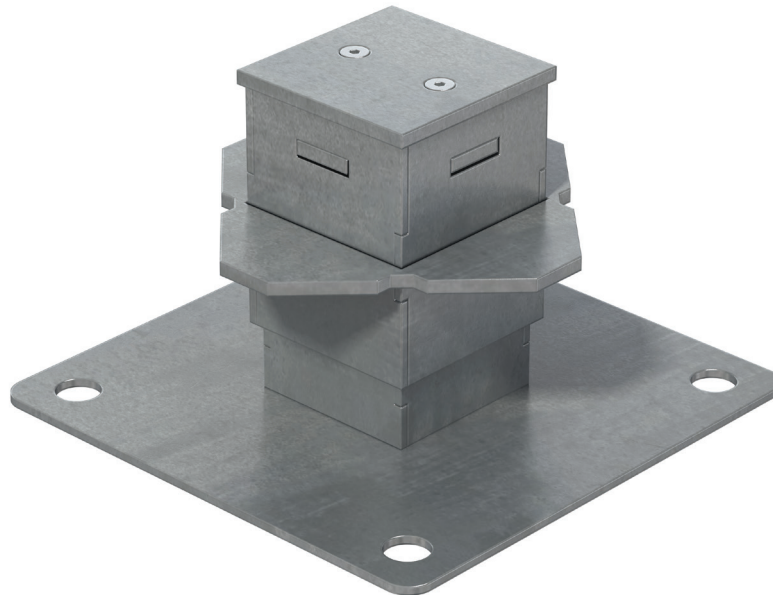




# Isedio Accessories

## Prefabricated Intersection Post

The ShieldJoint intersection post is available in different heights with 50mm adjustability to suit various ShieldJoint profile heights.



## Installation Jacks

Installation Jacks are reusable items that facilitate speedy and accurate installation of Isedio ShieldJoint. 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.

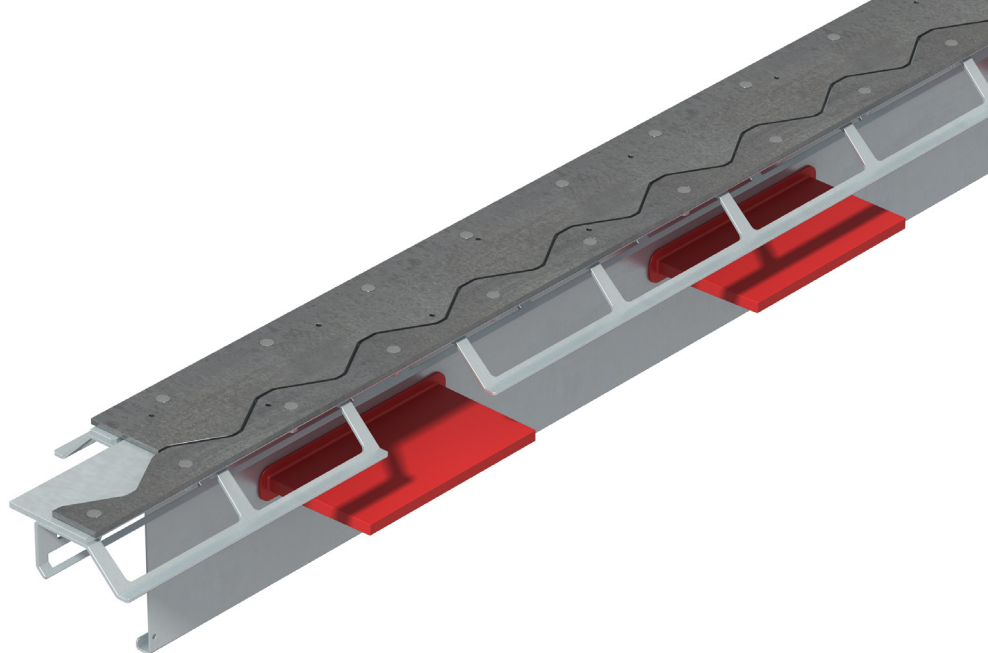


# Isedio ShieldJoint

## Load Transfer Capacities

The use of Isedio ShieldJoint 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.

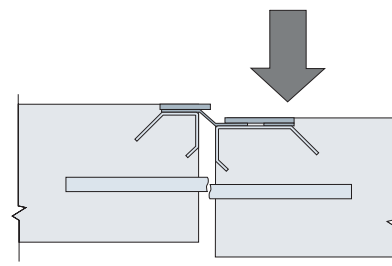
Section 6.5 of TR34 provides guidance on the calculation of dowel capacities for the following failure modes.



## Dowel Shear Capacity

The shear capacities for the plate dowels provided in the table below have been calculated using equation 18 of TR34. In most situations, at the point of ultimate load, the concrete would typically fail before the dowel.

Dowel Size	Thickness (t) (mm)	Finish	Shear Area (0.9xA) (mm <sup>2</sup> )	Capacity (P <sub>sh</sub> ) (kN)
150 x 150 x 6	6	Mild Steel	810	150.0
150 x 170 x 8	8	Mild Steel	1080	200.0
150 x 150 x 12	12	Mild Steel	1620	300.1

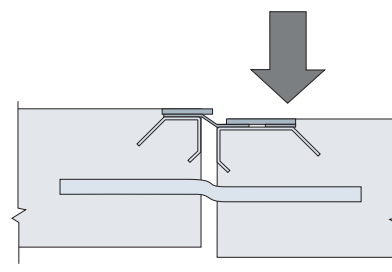


Dowel Shear Capacity

## 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.

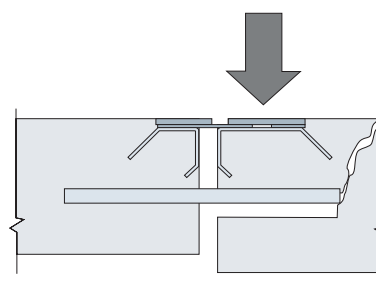


Dowel Bearing/Bending Capacity

## 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.

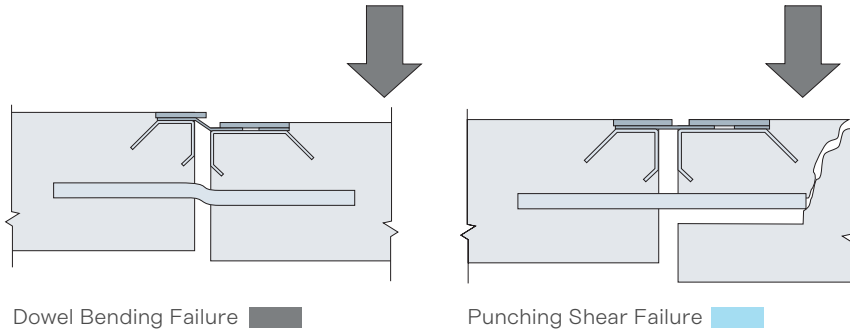


Punching Shear (Bursting Forces)

Deformation of the intermediate plate in the drawings above has been exaggerated for clarity.



## Design Capacity Tables



Shear capacity of Isedio ShieldJoint in 32 MPa concrete with a dowel spacing of 460mm (kN/m)

Dowel Type	Joint Opening	Slab Depth (mm)										
	mm	150	160	170	180	190	200	210	220	250	300	350
150 x 150 x 6	10	40.05	44.49	49.15	54.01	59.10	64.40	69.91	73.87	83.90	100.57	116.34
150 x 150 x 6	20	40.05	44.49	49.15	54.01	59.10	64.40	69.91	73.87	76.55	76.55	76.55
150 x 170 x 8	20	40.28	44.75	49.44	54.34	59.46	64.79	70.34	74.80	84.90	101.66	118.36
150 x 170 x 8	25	39.63	44.06	48.70	53.56	58.63	63.92	69.42	73.85	83.91	100.62	106.93
150 x 150 x 12	20	37.49	41.80	46.33	51.07	56.02	61.19	66.58	71.86	81.90	98.57	115.21
150 x 150 x 12	25	37.49	41.80	46.33	51.07	56.02	61.19	66.58	71.86	81.90	98.57	115.21

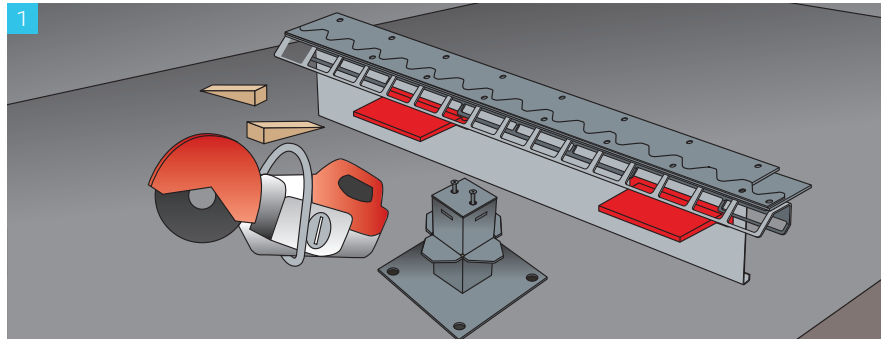
Shear capacity of Isedio ShieldJoint in 40 MPa concrete with a dowel spacing of 460mm (kN/m)

Dowel Type	Joint Opening	Slab Depth (mm)										
	mm	150	160	170	180	190	200	210	220	250	300	350
150 x 150 x 6	10	44.78	49.74	54.95	60.39	66.07	72.00	78.16	82.59	93.80	112.44	123.10
150 x 150 x 6	20	44.78	49.74	54.95	60.39	66.07	72.00	78.16	78.72	78.72	78.72	78.72
150 x 170 x 8	20	45.04	50.04	55.28	60.76	66.48	72.44	78.64	83.63	94.92	113.66	129.11
150 x 170 x 8	25	44.31	49.26	54.45	59.88	65.55	71.46	77.61	82.57	93.81	110.22	110.22
150 x 150 x 12	20	41.92	46.74	51.80	57.09	62.63	68.41	74.43	80.35	91.56	110.21	128.81
150 x 150 x 12	25	41.92	46.74	51.80	57.09	62.63	68.41	74.43	80.35	91.56	110.21	128.81

**Note:** For any other configurations and for Isedio ShieldJoint Adjustable capacities, please contact the Leviat technical team on 1300 304 320 or email [technical.au@leviat.com](mailto:technical.au@leviat.com).

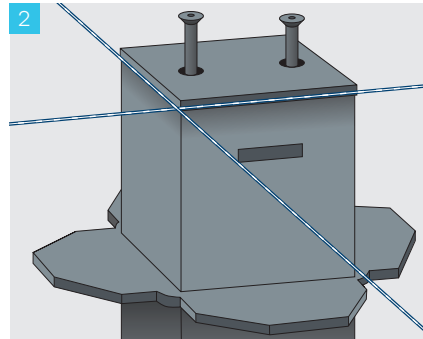
# Isedio ShieldJoint

## Installation

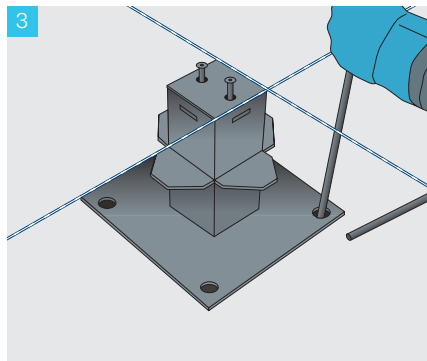


Set up laser dumpy level on-site, ensuring you have finished floor level (FFL) datum and relevant hand tools available. Ensure sub-base has been correctly prepared and relevant membranes placed.

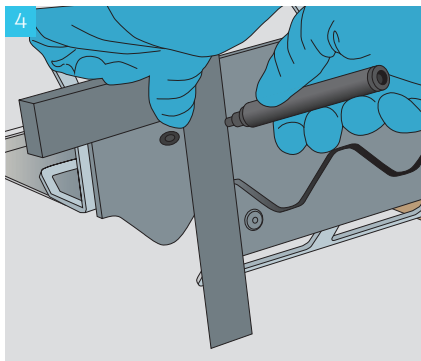
Handle parts with care, ensuring not to drop or damage them while unloading from transport and moving to site for installation.



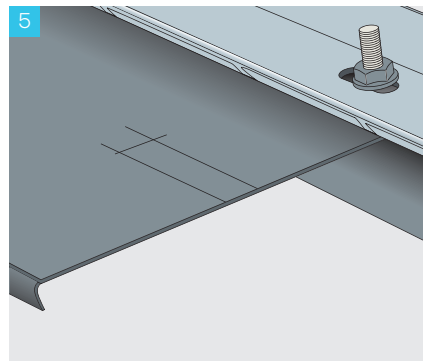
Set up string lines along the joint lines at the finished floor level.



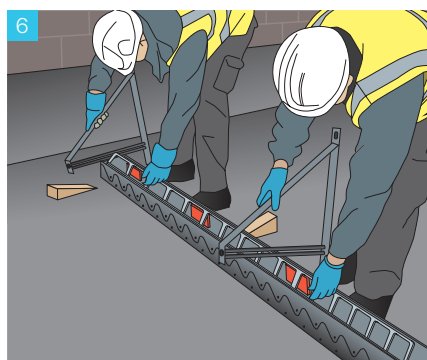
Position the intersection post and pin in place. Remove the cap and use the internal adjustment bolt for height adjustment. Adjust height ensuring cap surface is level with the finished floor level.



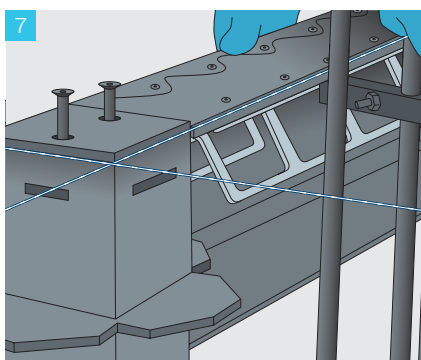
Cut the end of the first ShieldJoint, ensuring it is square, to butt up against the intersection post.



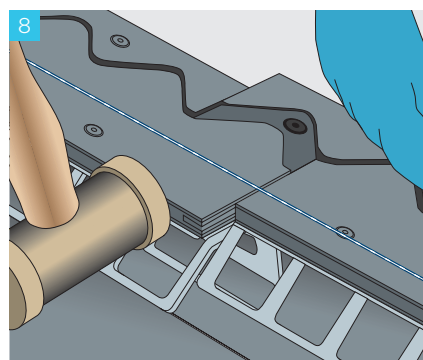
Cut away a slot for the load transfer plate on the intersection post and fold back to the fixed side of the joint (non sleeve side) or remove completely.



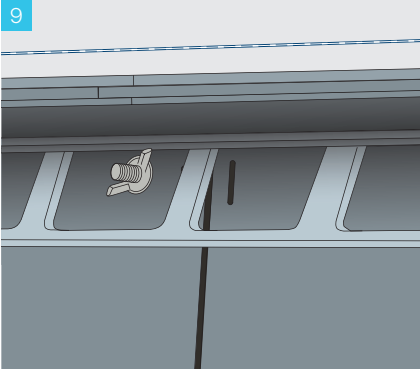
Fit ArmourFix jacks to the ShieldJoint with ShieldJoint jack fittings (these can be ordered separately).



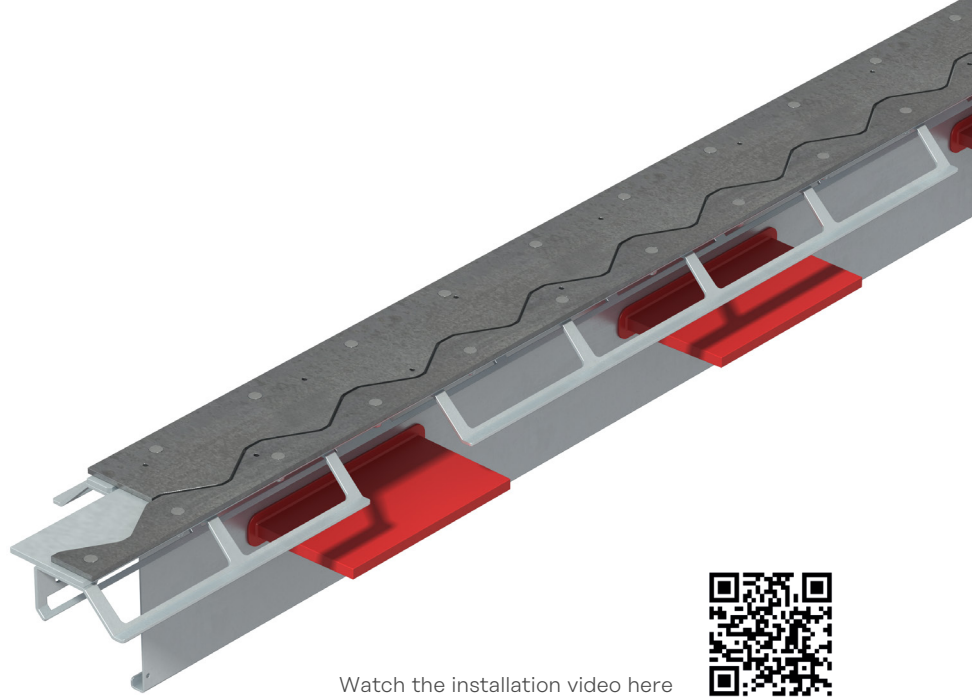
Position ShieldJoint with jacks fitted up against the intersection post. Ensure the cut end is fitted up against the intersection post.



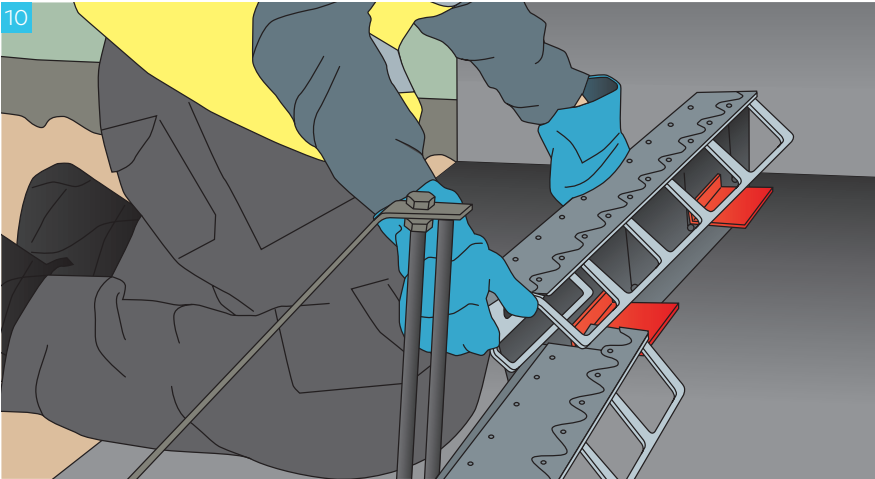
Continue to fit ShieldJoint with jacks along the joint line using a soft face mallet to secure the top plates together.



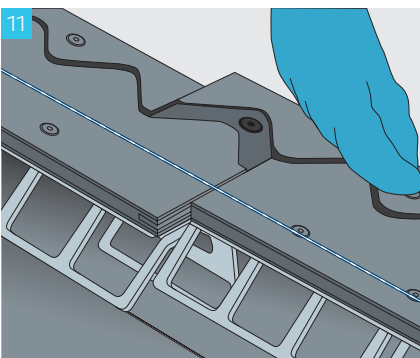
Join the lengths using the nylon bolts and wingnuts supplied.



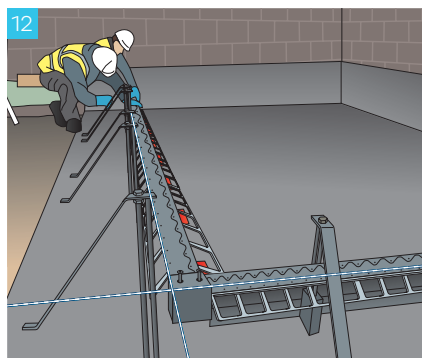
Watch the installation video here



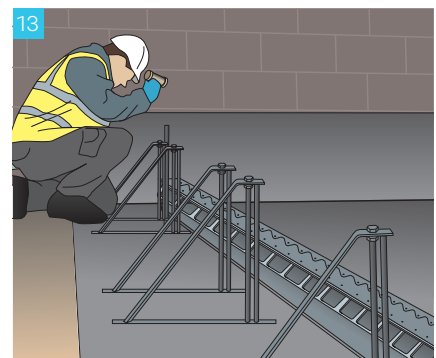
Measure the distance for the final piece along the joint line, and cut the ShieldJoint piece to length, ensuring it is square at the wall end. Also ensure an allowance is made for any isolation material required between the slab and the wall / fixture.



Continue in other directions where required.



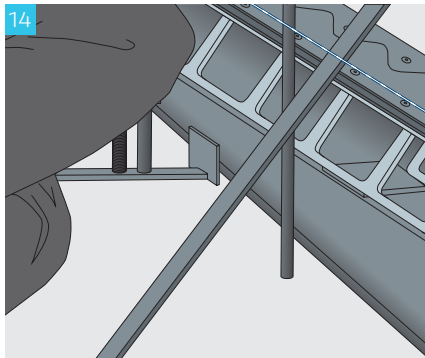
Manually position ShieldJoint sections in line with the string line.



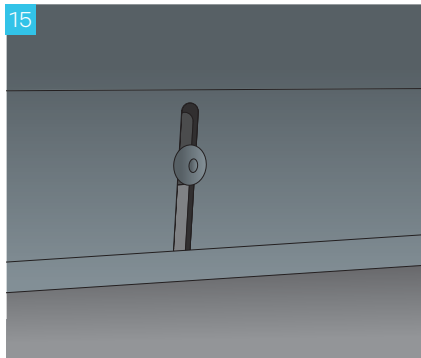
Pin ArmourFix jacks into place. Do not use pin and welding installation method as it may result in misalignment of the joint.



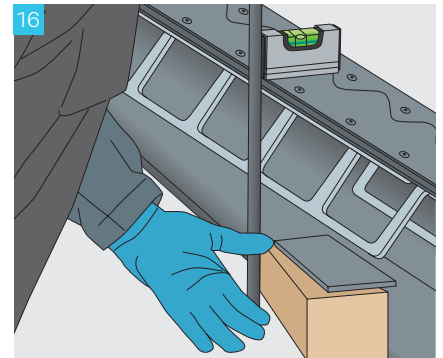
# Isedio ShieldJoint



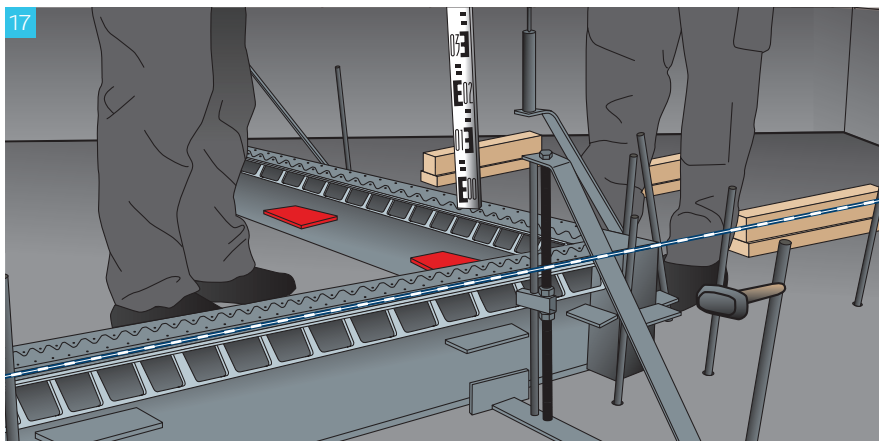
Drive pins in near to ShieldJoint sections, between the ArmourFix jacks.



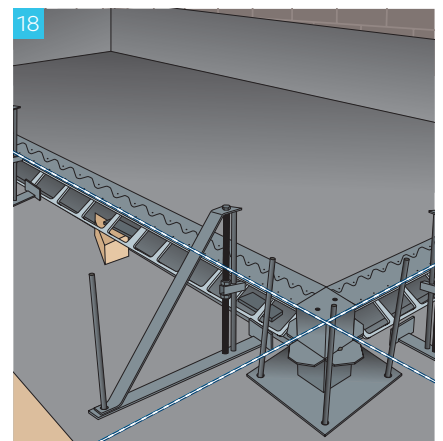
If using adjustable divider plates, ensure the divider plate is dropped to the sub-base level.



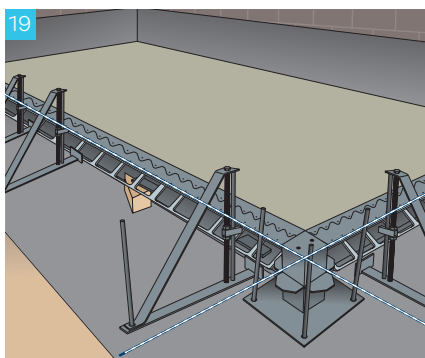
Place a small spirit level across the width of the ShieldJoint top plate and use wooden wedges between the pins and the ShieldJoint to adjust the top plate ensuring it is level. This is a critical point as the top surface of the installed joint must be level.



Check and adjust ShieldJoint height to the finished floor level using a staff and laser level.



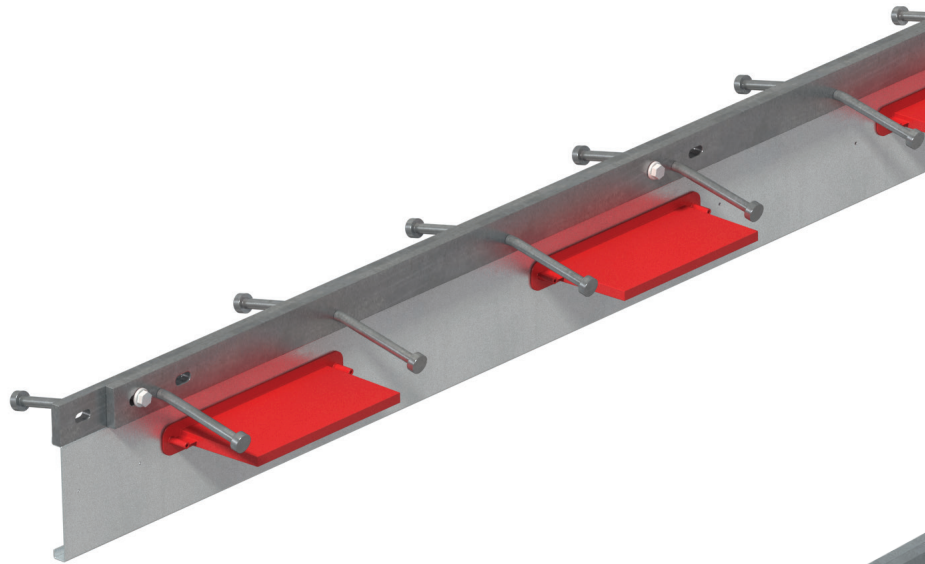
Double check that the joints are in line with the string line and adjust if necessary. Care should be taken to not step on or place reinforcing bar mesh on the plate dowels to prevent misalignment of the joints.



Cast concrete, checking and adjusting for height and level as necessary. Before the next pour, ensure all installation jacks and pins have been removed.

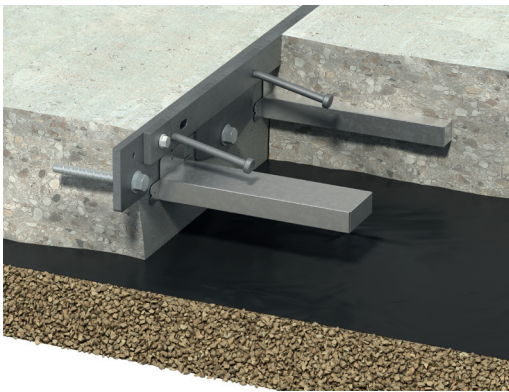
### ArmourJoint

ArmourJoint is a leave-in-place formwork, load transfer and edge protection joint system suitable for heavy duty industrial concrete floors.



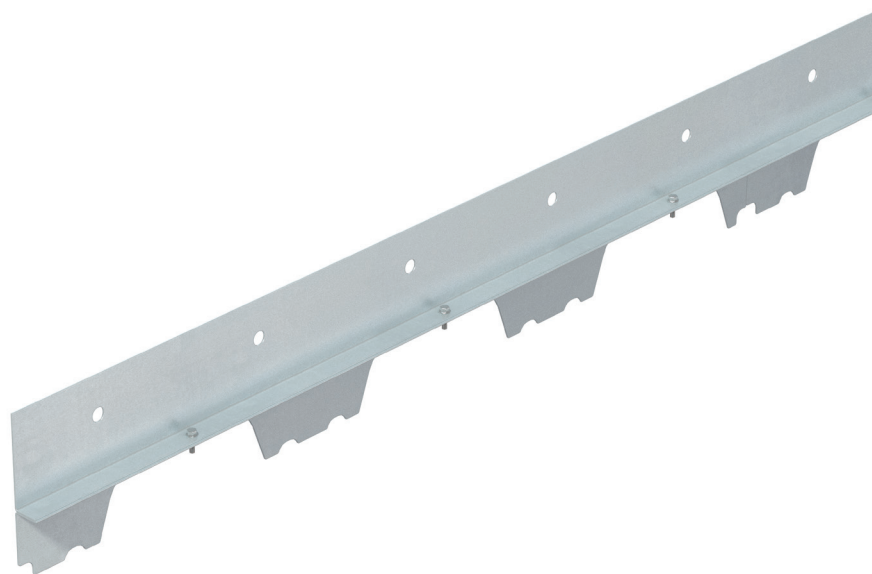
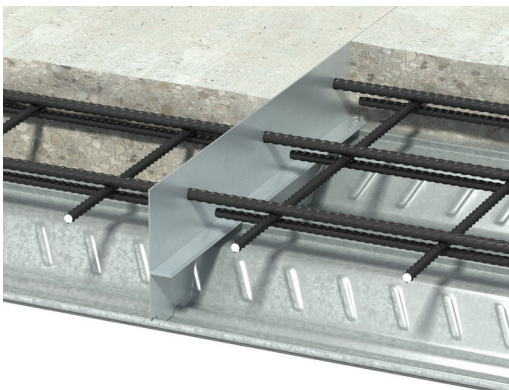
### Dynamic Extend

Dynamic Extend is a durable edge protection system designed for industrial concrete floors that require a connection between an existing slab and a new one.



### SteelDeckJoint®

SteelDeckJoint® is a revolutionary floor joint solution, which solves many of the complexities and time consuming elements of forming a construction joint on a steel deck floor using timber formwork.



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