



USL Group

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# Water Management Solutions

- Waterproofing Systems
- Expansion Joints
- Combined Kerb, Bridge & Sub-Surface Drainage
- Structural & Elastomeric Bearings
- Injection Resins
- Concrete Repairs

 BridgeCare

 PITCHMASTIC PmB

 NUFINS

 PDS

 PR PRIME RESINS

 EKSPAN

## Corporate Overview

The USL Group of companies are market leaders in the provision of specialist civil engineering and construction solutions for virtually any type of new build or refurbishment project.

For almost four decades, the business has been at the forefront of cutting edge resin and cementitious technology, combining high performing innovative products, first class operations, expert technical support and unrivalled customer service.

USL Group specialise in expansion joints, structural and liquid waterproofing, construction chemicals, concrete repair systems, injection resins and specialist safety and anti-slip products. With a comprehensive portfolio of products and a highly developed global network, the business is focussed on providing specialist construction solutions on a truly global basis.



Injection Resins

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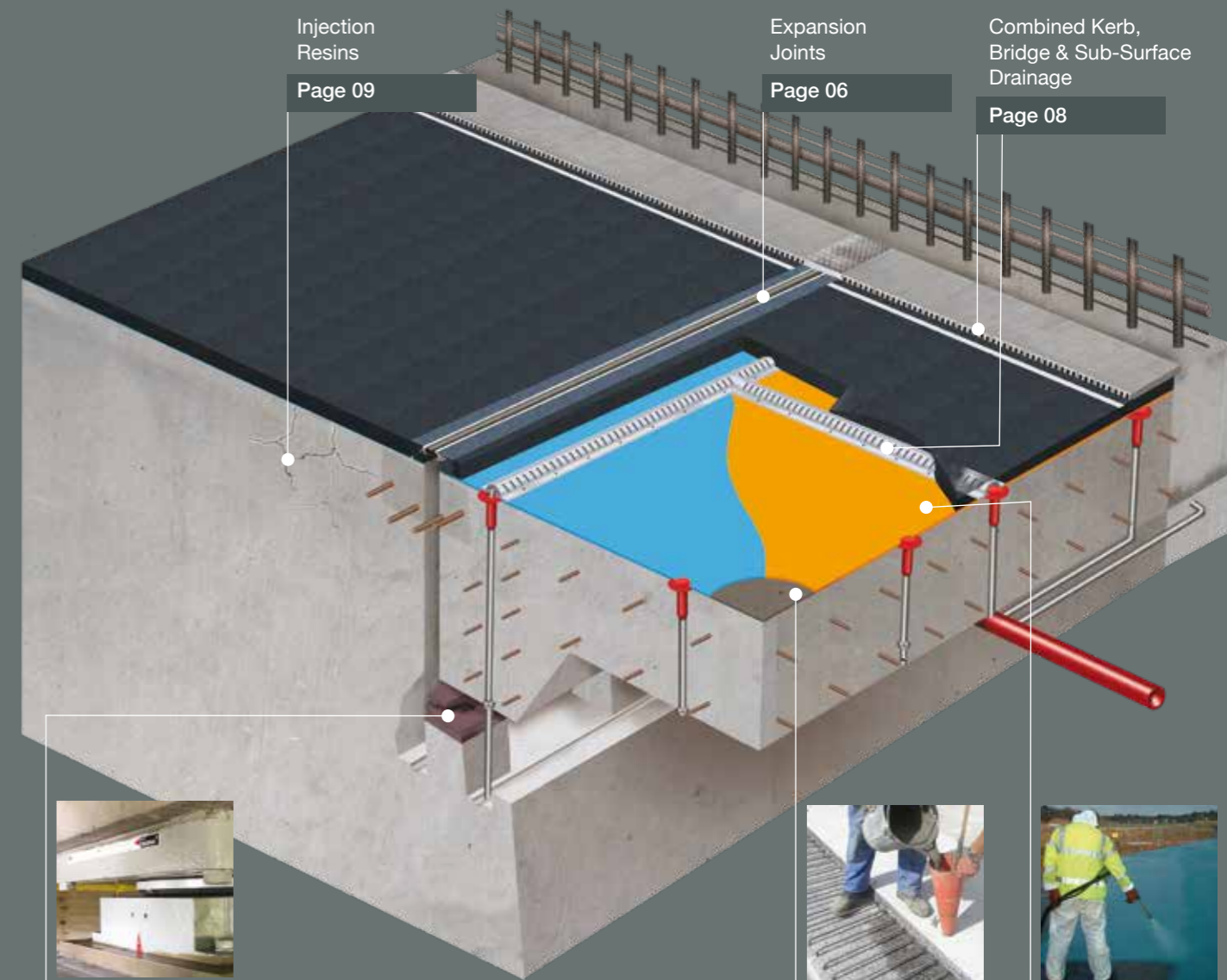
Expansion Joints

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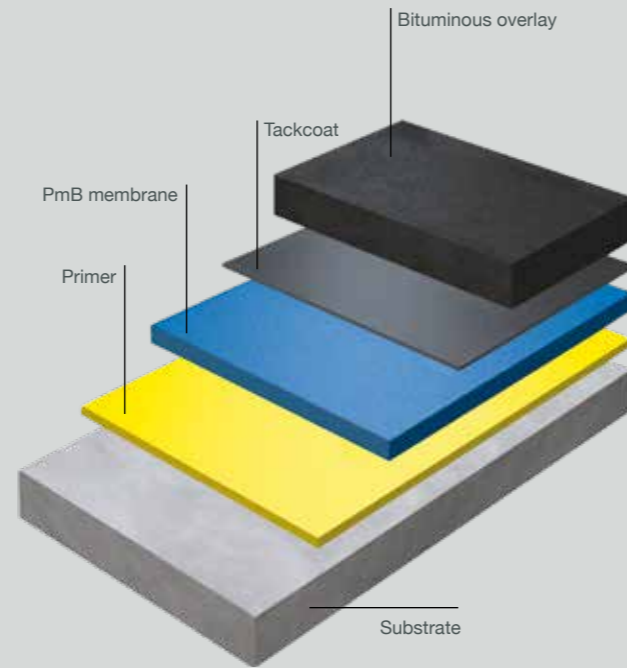
Waterproofing Systems

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## Water Management Solutions

Bridges are under constant attack and stress as water, chlorides, acid rain, de-icing salts and freeze-thaw cycles act on them. Extreme weather cycles, the impact of traffic and vibration place bridges under further stress. As steel reinforcing bars corrode and expand, concrete can crack and deteriorate. The costly disruption caused by resulting repair work impacts on both traffic and safety.

Bridge repairs can often amount to 10-30% of the updated construction cost, and large repairs may even exceed the updated construction cost and still be the preferred option when compared to the cost of traffic interruption and demolition. As moisture is the most significant factor in concrete deterioration, incorporating sufficient waterproofing at the design stage is by far the most cost-effective option.



## PmB

## Fast and Easy Installation

PmB is a two part, spray applied, durable corrosion protection and waterproofing material. The high performance system is 100% polyurethane containing no fillers or additives and is VOC free. Once applied, PmB has exceptional bond strength to all commonly used substrates, has excellent crack bridging capability, a life expectancy in excess of 30 years and holds British Board of Agrément approval.

The system has gained BBA approval for use as a damp proof and waterproofing membrane for internal and external tanking. The system holds approvals in many continents including Europe, North America, the Middle and Far East.

### Advantages

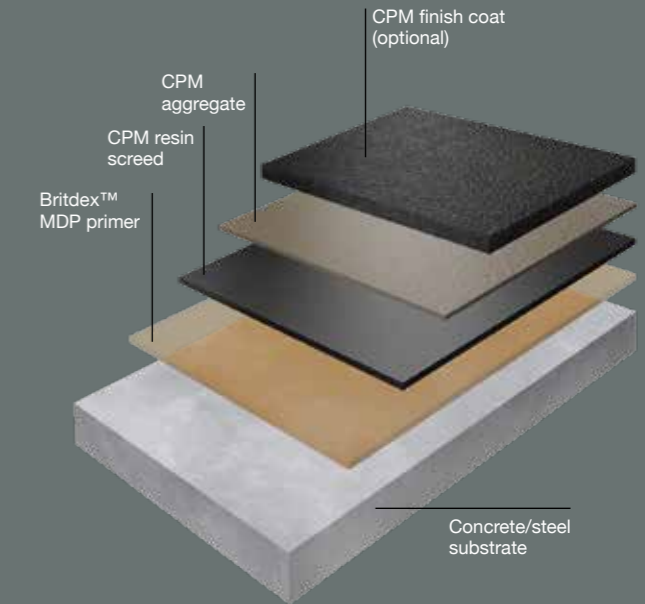
- Two component PUR spray system
- 100% solids reactive resin content
- Solvent free
- No fillers
- Rapid setting – 5-8 seconds gel time
- Tack free after approximately 1 minute
- Can be walked on after approximately 10 minutes
- Elastic after approximately 45 minutes

PmB membrane is fast and easy to install and is applied as a single coat or in multiple layers. The two component materials of the membrane system are mixed at the spray gun and applied to the substrate using compressed air.

The spray equipment allows complete mobility, spraying vertical surfaces, overhead, behind pipe bays or over corners and edges quickly and effectively. This is achieved due to the membranes ability to gel in seconds preventing curtaining and providing instant protection.

### Key material performance

- Class leading adhesion to substrates
- Weather resistance
- Crack bridging
- Tear resistance
- Abrasion resistance
- Water vapour and gas permeability
- Chemical resistance
- Resistant to root and microbial attack
- Sound insulation
- Homogenous watertight seal



## Britdex MDP

Britdex MDP is a 100% effective seamless bridge deck waterproofing membrane, flexible and tough enough to outlast the design life of many structures. Comprising of rapid cure, cold spray applied MMA resin material, the system for a tough, chemically resistant seamless membrane with no vulnerable joints.

### Advantages

- Seamless coating without vulnerable joints
- Quick and easy sprayable application with rapid cure
- Excellent crack bridging capability
- Durable effective protection against corrosion
- Excellent adhesion to steel
- Versatile system – accommodates all surface contours, horizontal and vertical
- Application by one or two coats

### Typical applications include:

- Concrete bridge decks
- Steel bridge decks
- Bridge piers
- Culverts
- Tunnels

The adaptability of the system allows Britdex MDP to be applied by the conventional spray method, brush or roller and as a one or two coat system.

The system can be applied across a wide range of climatic conditions allowing application virtually all year round.

When applied to dry surfaces Britdex MDP is unaffected by moisture, rain or high humidity.

The system is durable, resisting damage during surface operations and has excellent cohesive and bond strength to the bridge deck and surfacing.

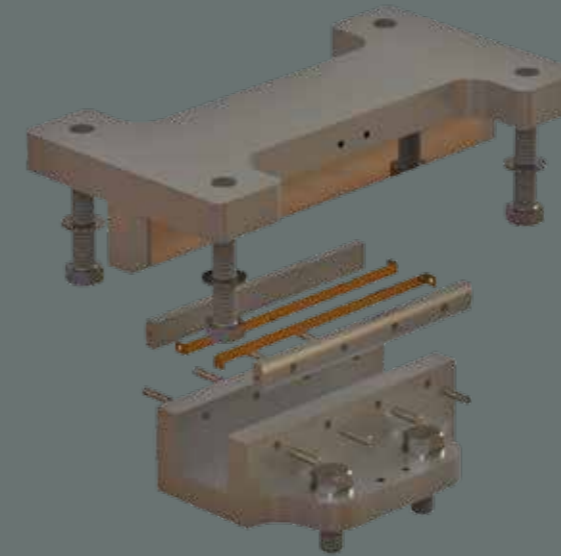
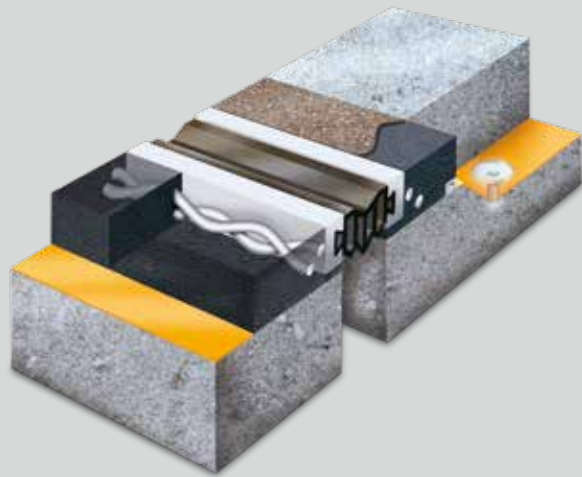
## Britdex CPM TredSeal

CPM TredSeal is a combined waterproof wearing system, offering 100% effective waterproofing, wearing course and skid-resistance in a single surfacing layer, many times lighter than mastic asphalt.

Ease and speed of application to concrete, asphalt, steel or aluminum substrates results in minimal possession times and a faster return to service. CPM TredSeal can be used on a wide range of structures subject to differing traffic conditions, allowing them to be lighter by design.

### Advantages

- Cost Effective
- Based on BBA approved technology
- Rapid set can be trafficked within two hours
- Easy and quick application
- Aesthetically pleasing finish
- Tough, flexible and hard wearing waterproof membrane
- Versatile surfacing, suitable for application on a number of different surfaces
- This system can be applied even at low temperatures
- Waterproof



## Expansion Joints

USL BridgeCare and Ekspan are market leaders in the manufacture, supply and installation of expansion joints which have been carefully developed to provide safe, efficient and economical methods of sealing construction gaps.

The bridge expansion joint range of products caters for movements up to 2000mm.

- Rapid on site assembly
- Minimal disruption to traffic
- Perfectly suited for lane by lane installation
- Minimised future maintenance costs
- Easy to install and detail at design stage
- Adaptable to numerous applications
- Excellent global track record
- Unparalleled bond to concrete and steel decks.

### Selection Guide

Movement up to (mm)

Uniflex (Type 1)	20mm
BP1 (Type 1)	20mm
Feba (Type 2)	40mm
Britflex NJ (Type 4)	40mm
Transflex (Type 5)	330 mm
Transflex HM (Type 5)	1600mm
Britflex BEJ (Type 6)	150mm
MEJS (Type 6)	2000mm
Finger/Comb (Type 7)	1000mm
LJ (Longitudinal Joint)	220mm
T-Mat	260mm
Roller Shutter ES	800mm
Open Type (Rail Joint)	260mm
UCP (Pedestrian Joint)	70mm

## Structural & Elastomeric Bearings

Ekspan is the UK's largest quality bearing supplier and installer to meet demands both in the UK and worldwide.

### Ekspan provide:

- A full range of mechanical and elastomeric bearings for many different articulation requirements
- An extensive range of standard structural bearings in sizes from 50 to 3000 tonne capacities
- Custom designed bearings for more challenging applications
- Structural bearings manufactured and marked in accordance with either EN1337 or BS5400
- Full bearing service support, including installation, maintenance and refurbishment
- Technical engineers / site team mobilised to not only service Ekspan bearings, but also any related structural defects including emergency works





## Combined Kerb, Bridge & Sub-Surface Drainage

Combined kerb drainage units are now widely used and specified on bridge decks whether they are new build or part of a refurbishment scheme. Drainage is an essential requirement on all bridges.

Deck mounted systems provide continuous surface & sub surface drainage and easily assessable maintenance.

Existing systems are traditionally metallic, which are heavy, raising Health and Safety issues for the installers. Metallic units place additional weight on the structure. In addition, metallic units are prone to oxidation which can spoil the appearance of a structure, particularly as the systems are a highly visible element of the completed project. This results in on-going expensive maintenance.

- Lightweight non metallic
- Precision manufacturing
- Colour coding options
- Half battered and 45 degree splayed
- New anti slip top surface
- Wide range of widths and depths available
- Fully compliant to BS EN1433
- Surface and subsurface drainage capability

### Features and Benefits

- Units comply with manual handling legislation
- Anti slip surface
- Aesthetically pleasing
- Hydraulics - Produces smooth high quality channel invert
- Chemical resistance
- Impact resistance
- High quality
- Compliant to EN 1433 specification



## Injection Resins

### Soil Stabilisation

Sound concrete relies upon a solid substrate. Well-compacted soils provide a foundation upon which concrete structures perform. Decomposing soils, erosion and freeze-thaw cycles can destroy this foundation. That is the root cause for damage to or failure of structures such as buildings, highways and airports.

Major excavation is not required for stabilising soil. Injecting polyurethane chemical grouts into loose or less dense soils, voids, pores and fissures strengthens the earthen substrate and provides watertight encapsulation.

Nufins can provide soil stabilisation solutions with its Prime Flex polyurethane and acrylate foams and gels.

### Leak Sealing

Nufins provide chemical grouts for sealing leaks in a variety of structures. Our combination of superior product performance and sound technical support ensure successful installation.

There are several factors to consider when choosing how to seal a leak, including:

- Volume of leak, weeping or gushing
- Size of crack or defect
- Accessibility of the site
- Environmental conditions
- Expansion rate, set time, and viscosity of the grout
- Physical properties of reacted grout

Nufins Injection Resins meet the requirements of BS 6920 for contact with drinking water, making them ideal for use in water treatment and storage structures. The eco-friendly designation also makes these products ideal for application on seawalls and near wetlands or other environmentally sensitive areas.



## Concrete Repairs

The performance of concrete as a construction material depends on a number of factors; its original quality, exposure conditions, design and the standard to which it has been applied, all have a bearing on its durability.

All concrete will be subject to chemical and physical change. However one of the main causes of concrete failure is due to reinforcement corrosion. The following CE labelled materials can be used for repairs to improve the alkalinity of the damaged areas.

### Nucem Primer

A cementitious epoxy blend, with long tack free time, designed to promote extremely high bond strengths. Recognised as one of the best available, the epoxy primer system can be used in wet or dry conditions. In addition, Nucem Primer protects reinforcement against further corrosion even under the most adverse conditions.

### Nucem HB Mortar/ Acropak HB40 Mortar

Polymer modified, shrinkage compensated, fibre reinforced, cementitious mortars with high build characteristics for vertical and inverted surfaces without the need for shuttering. Polymers reduce damage from CO<sub>2</sub>, ingress of water, chlorides and certain sulphates. Nylon fibres reduce shrinkage cracking, make the mortar easier to apply and greatly increases the flexural strength of the system. Complies with BD27/86 Clause 6.

### Nucem Concrete/ Nucem Mortar

Prepacked polymer modified systems which contain specially graded aggregates for high strength and abrasion resistance on decks. Excellent resistance to water, frost and salt permeability enabling these products to be used for heavy duty repairs under the most adverse conditions.

Suitable for next day waterproofing. Complies with BD27/86 Clause 6.

### Epibear

Epoxy bridge bearing mortar. Designed specifically for bridge bearing pad levelling plinths and other load bearing applications. Develops high strengths quickly even at low temperatures. Used in conjunction with Epicon Primer/ Tack Coat 'H'.

### Deck Repair Rapid

Deck Repair Rapid is characterised by its early high strength development, rapid moisture loss and shrinkage compensation. Designed for quick, easy installation and suitable for next day waterproofing of bridge decks and areas where rapid turnaround is important. Complies with BD27/86 Clause 6.



## Protective Coatings

### Nucem Skim Coat

A blend of high grade cements, fine aggregates and acrylic resin designed to produce a flexible levelling coat to cover areas repaired and existing concrete. Nucem Skim Coat gives an overall uniform appearance or a consistent surface to receive protective coatings. Polymer modified, capable of bridging hairline cracks and ideal for treating areas with low reinforcement cover. Tested by Taywood.

### Proflex 'A'

Flexible, anti-carbonation coating. A high build acrylic emulsion designed to protect concrete from the ingress of rain water and air-borne pollutants, while allowing substrates to breathe. Also suitable for protection and decoration of a wide range of wall and sheet roofing materials. Tested by Taywood.

### Covercrete

Highly durable weather-resistant anti-carbonation coating. This water-based acrylic emulsion is designed to significantly reduce the diffusion rate of Carbon Dioxide and protect from chloride attack. Available in a range of decorative colours. Tested by Taywood.

### Nucryl

An effective clear anti-carbonation coating. Solvent borne Acrylic treatment with excellent resistance properties that provides a long-lasting barrier to protect against Carbon Dioxide, for the protection of substrates from aggressive atmospheric contaminants.





Contracting Capability - Site, Fleet & Machinery



Manufacturing Capability Research & Development

Approvals

USL manufacture high quality products, and has the capability to supply and install all products, offering the comfort of client single source responsibility, whether it be undertaking simple or complex expansion & waterproofing installations requiring multiple crews.

**Fleet & Machinery (Contracts)**

Custom Built Installation Rigs	32
Specialist Application Equipment	20
Commercial Vehicles	68



USL has a wealth of experience in manufacturing specialist construction products. Enjoying an excellent reputation within the industry for quality products, excellent value and exemplary customer service. The company's manufacturing facility processes bitumen, epoxy, polyurethane and acrylic resins together with aggregate and powder blending. The resin facility operates to zone 1 for highly flammable materials.

USL is a quality assured manufacturer which is reflected in the quality of products the company supplies. Fully accredited to internationally recognised Quality Management System, we are able to provide full traceability of product and constantly monitor our processes to ensure that we offer all customers the highest levels of service. Free Certificates of Analysis and Certificates of Conformity are provided where requested and USL works closely with all customers to ensure that they receive exactly what they require.

USL takes innovation seriously and believes it is the only way a specialist construction company can stay ahead of the game. That is why USL invest resources into their laboratories and material testing facilities, concentrating on the development of ground breaking products to improve effectiveness and efficiency on construction sites across the world.

USL's Research and Development is stimulated by the relationships with their customers acting upon specific client requirements, providing timely solutions which provide the backbone of the company's ever expanding product portfolio.



Aberdeen Western Peripheral Route



Mersey Gateway Bridge



M74 Completion



A1 Blaydon Haugh Viaduct



## Project Snapshots

**Project:** Aberdeen Western Peripheral Route - Balmedie to Tippetry

**Product(s):** Britdex MDP, Uniflex, Surface Impregnation Britflex BEJ, Britflex NJ, FEBA, Transflex & MEJS & Envirodeck

**Client:** Transport Scotland

**Main Contractor:** AWPR Construction JV (Balfour Beatty, Morrison Construction and Carillion)

**Summary:** The Aberdeen Western Peripheral Route /Balmedie to Tippetry (AWPR/B-T) lies at the intersection of several major roads around the city of Aberdeen in Scotland. The project included the construction of 128km of new roads and access tracks, 2 river crossings at the River Dee and the River Don, 3 wildlife bridges and over 100 other structures.

**Project:** M74 Completion

**Product(s):** Britdex MDP, Britflex BEJ & Envirodeck

**Client:** Glasgow City Council

**Main Contractor:** Interlink JV ( Sir Robert McAlpine, Morgan Sindall, Balfour Beatty and Morrison Construction)

**Summary:** The M74 completes the 8km link between the M74 at the Fullarton Road junction near Carmyle to the M8 near Glasgow City Centre. The project included the construction of 14 bridges, the largest of these was the 30,000m<sup>2</sup> Port Eglinton Viaduct, which has 12 spans and stretches across several local roads and 12 sets of railway tracks, including the West Coast Main Line.

**Project:** Mersey Gateway Bridge

**Product(s):** Transflex HM, Envirodeck

**Client:** Halton Borough Council

**Main Contractor:** Mersey Link CCJV (FCC Construcción, Kier Infrastructure and Samsung C&T Corporation)

**Summary:** The structure is cable-stayed with three pylons and 2.3km long with a river span of 1km. The main bridge deck is made from reinforced concrete and the spans are supported by steel cable stays attached to pylons rising up to between 80 and 125m above the river bed. The sheer scale of the project required the two expansion joints to accommodate 1200mm and 1500mm of movement at each abutment respectively.

**Project:** A1 Blaydon Haugh Viaduct

**Product:** Modular Expansion Joint System (MEJS)

**Client:** Highways England

**Main Contractor:** A-one+

**Summary:** The A1 Blaydon Haugh Viaduct is located over the River Tyne, Newcastle. The crossing consists of 17 spans constructed of plate girders with a composite concrete deck. The viaduct is approximately 540m long. Works included removal of existing Modular Expansion Joint System during night time road closures and the installation of LG 6 MEJS expansion joint system.

**Project:** Second Severn River Crossing, UK

**Product:** PmB

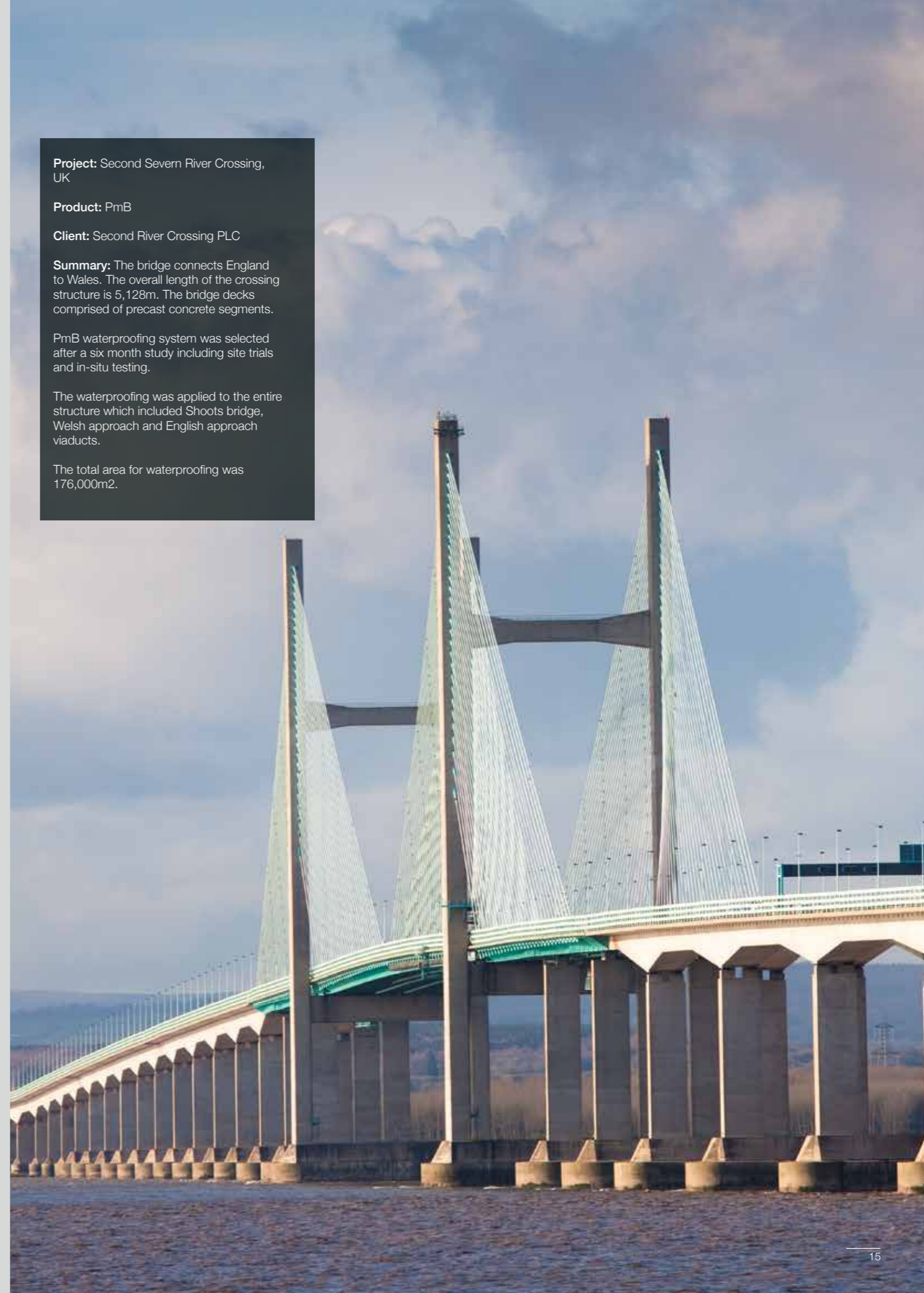
**Client:** Second River Crossing PLC

**Summary:** The bridge connects England to Wales. The overall length of the crossing structure is 5,128m. The bridge decks comprised of precast concrete segments.

PmB waterproofing system was selected after a six month study including site trials and in-situ testing.

The waterproofing was applied to the entire structure which included Shoots bridge, Welsh approach and English approach viaducts.

The total area for waterproofing was 176,000m<sup>2</sup>.







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