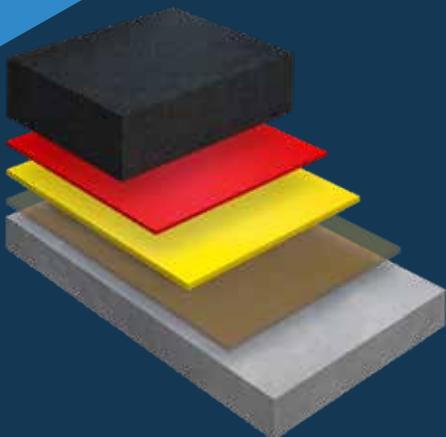




STRUCTURAL WATERPROOFING

BRITDEX MDP & CPM TREDSEAL

SPRAY APPLIED
WATERPROOFING



Introduction

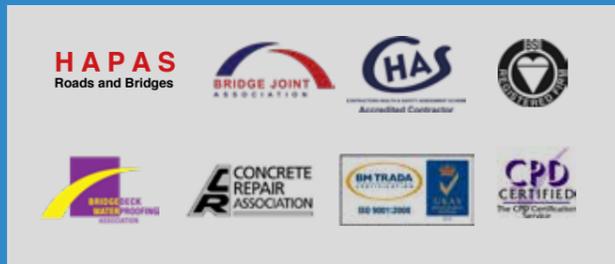
The Need For Effective Waterproofing Solutions.

Bridges are under constant 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.

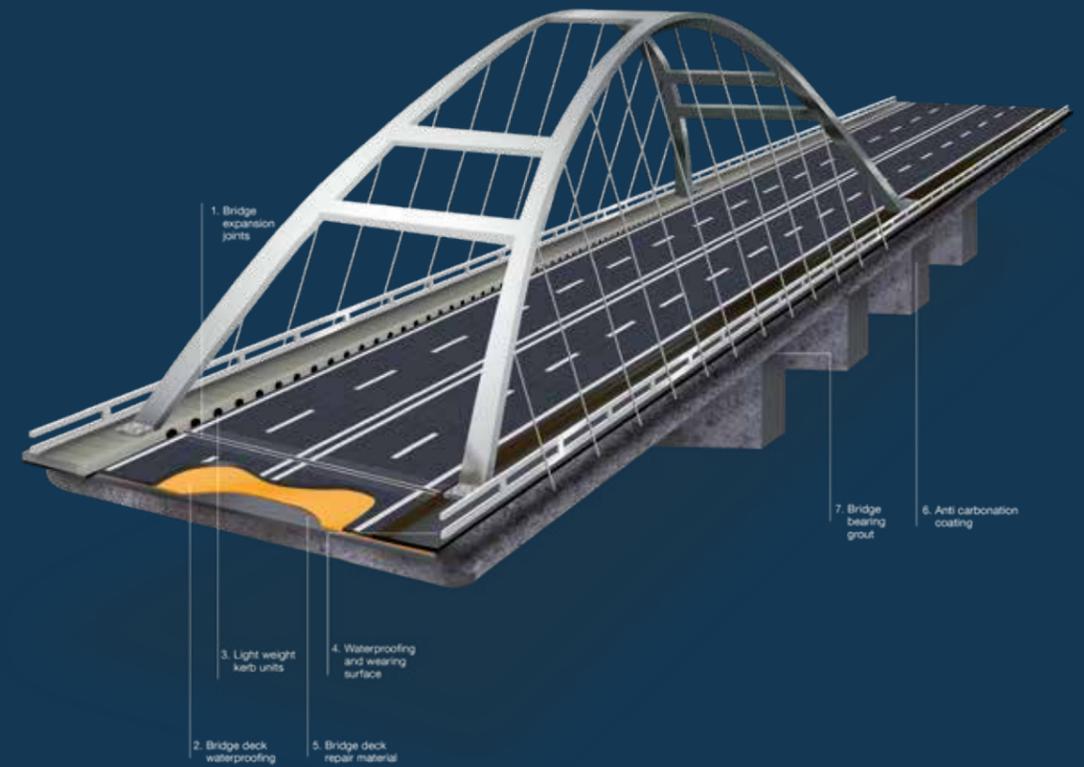
Bridge repairs can often amount to 10-30% of the updated construction cost, and large repairs may even exceed this and still be the preferred option when compared to the cost of traffic interruption and demolition. As moisture is the most significant factor in concrete deterioration, incorporating sufficient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

Prevention methods

- Bridge expansion joints
- Bridge deck waterproofing systems



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PRODUCT IN BRIEF

Britdex MDP is a 100% effective seamless bridge deck waterproofing membrane, flexible and robust enough to outlast the design life of many structures.

A rapid cure, cold liquid spray applied system based on methacrylate resins, Britdex MDP is a tough, seamless membrane with no vulnerable joints and is resistant to chemical attack by oils, fuel and other harmful substances.

Britdex MDP was specifically developed to produce the ideal physical properties required of a bridge deck waterproofing system. Due to its unique formulation Britdex MDP cures rapidly whatever the weather, is far more tolerant of difficult conditions than other membranes, and can be readily applied in low temperatures.

SYSTEMS BENEFITS

- 100% effective waterproofing
- Highways England approved product to CD358
- Excellent track record spanning over 20 years
- 7,000,000m² applied worldwide
- Tough and durable
- Applied in the widest of climatic conditions
- Accommodates vertical, overhead and complex details
- Rapid installation
- Excellent adhesion to substrate



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BRITDEX MDP IN DETAIL – TECHNICAL

Britdex MDP Waterproofing is suitable for use on concrete bridge decks as part of new and maintenance applications with APL or HRA surfacing. The deck surface should have a Class U4, formed or tamped surface finish and be at least 7 days old with a maximum surface moisture content of 6%.

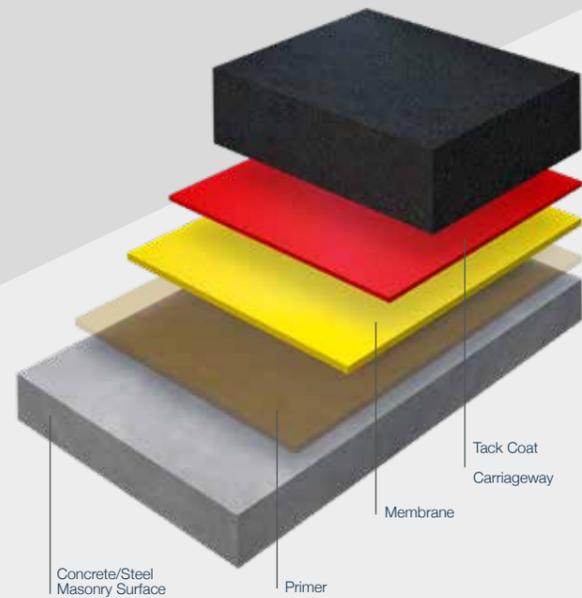
Britdex F.E. Tack Coat — a polymer-modified, bituminous-based hot-melt adhesive.

Britdex DSP Primer — a two-part, solvent-free, epoxy resin, comprising base and hardener.

Britdex MDP Primer — a two-part, solvent-free, highly-reactive methacrylate resin, comprising Part A and Part B.

Britdex MDP Waterproofing — a two-part, solvent-free, methacrylate resin, comprising Part A and Part B pigmented yellow or grey.

Britdex MDP Tack Coat — a single component, solvent-based, acrylic resin solution, orange pigmented tack coat, for use with additional protective layer (APL) of sand asphalt.



Britdex MDP Spray Application at A52 Clifton Boulevard, UK

SYSTEM APPLICATIONS & ADVANTAGES

Britdex MDP offer distinct advantages to clients, engineers and contractors alike:

Applications	Client	Engineer	Contractor
<ul style="list-style-type: none"> Highway bridges Railway bridges Viaducts Culverts Service ducts Edge beams 	<ul style="list-style-type: none"> Rapid installation – fast turnaround High chemical and abrasion resistance High resistance to impact and mechanical wear Rot proof Long service life 	<ul style="list-style-type: none"> 100% adhesion to substrate Can be applied in a wide range of temperatures Fully flexible system Can be applied both horizontally and vertically 	<ul style="list-style-type: none"> Rapid installation – 400m² per day (per crew) Applied in the widest of climatic conditions (-30°C - +35°C) Rapid cure means reduced construction time Hand applied kit available for localised repairs

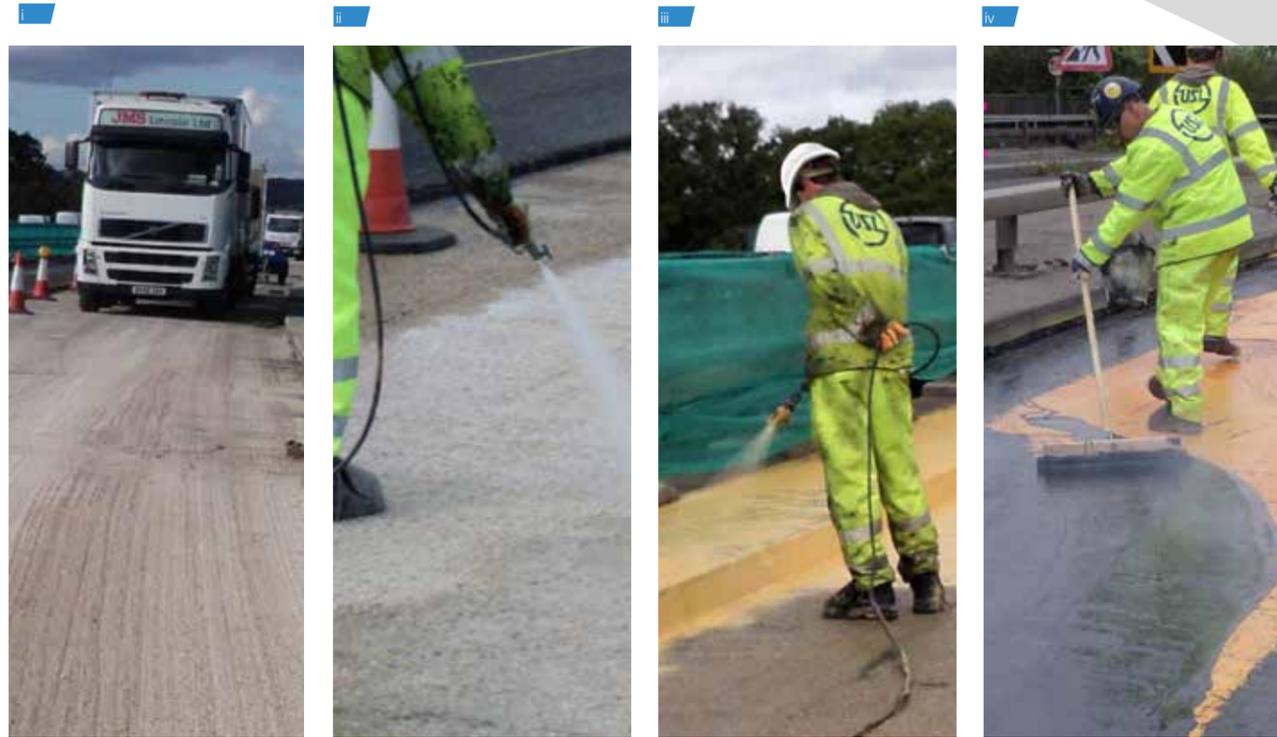


Table 1 - Test results

Tensile Strength:	12 Mpas, BS EN ISO 527-3, BS 2782-3, Method 326E
Elongation:	180-200%, BS EN ISO 527-3, BS 2782-3, Method 326E
Dielectric Strength:	1310 volt/mm, ASTM G62, Method B
Tear Resistance:	22.6 Mpas, BS903, Part A3, Method C
Shore Hardness:	A2 = 96, D2 = 49, Shore Durometer
Surface Resistivity:	7.3 x 10 ¹³ Ohm.cm, ASTM D257, @ 500 volts
Volume Resistivity:	9.8 x 10 ¹³ Ohms, ASTM D257, @ 500 volts
Dynamic Cracking:	No cracking after 10 cycles @ -26°C, ASTM C957, Para 4.4
Abrasion Loss:	304mm ³ , DIN 53516
Low Temperature Flexibility:	No cracking @ -20°C and -40°C, after 2 million cycles
Water Vapour Transmission:	1.03 grams/m ² /24 hours, ASTM D1653, Method A, Condition A, Dry Cup
UV Resistance:	1000 hours UV + Condensation: Tensile Strength = 10.97 Mpas, Elongation = 200.6%
Unexposed:	Tensile Strength = 10.98 Mpas, Elongation = 200.2%
Rebound Resistance:	9.9%, DIN 53512
Compression Set:	13.5 %, 70 hours @ 23°C: 16.9%, 24 hours @ 70°C: DIN 53517

APPLICATION GUIDELINES

i. General

Installation of the Britdex MDP waterproofing system must be carried out by contractors authorised and trained by USL Ekspan.

ii. Preparation

Imperfections in the concrete deck should be reinstated by others with a material agreed in consultation with the authorised contractor.

The concrete deck must be clean, dry and free from laitance and other debris, and where the adhesion to the concrete would be impaired, free from curing liquids, compounds and membranes.

The air and substrate temperature together with relative humidity should be recorded and the installation of the waterproofing system only carried out on concrete decks when either:

The minimum air and substrate temperature is at 0°C and rising with the bridgedeck temperature above the dew point for decks which are a minimum of 7 days old when using Britdex MDP Primer.

iii. Primer

Britdex MDP Primer or Britdex DSP Primer is applied by spray, roller or brush, at a coverage rate of 0.2 kg/m² to 0.4 kg/m² for MDP Primer and 0.3kg/m² to 0.5kg/m² for DSP Primer dependent on the porosity of the concrete deck.

The primer used will depend upon site conditions and the application must be carried out in accordance with the BBA agreed method statement.

The Britdex MDP Primer can be over sprayed with the Britdex MDP waterproofing provided the primer surface is fully cured and the surface is clean and dry. The DSP Primer should be over-sprayed while it is still tacky.

iv. Waterproofing membrane:

MDP waterproofing can be applied by spray, roller or brush at a coverage rate of 2.4kg/m² on a U4 surface. The coverage rate will increase with surface irregularity.

Britdex MDP waterproofing is supplied as Part A and B. Immediately before use; the hardener powder is stirred into Part B and mixed thoroughly. Part B is either pigmented yellow or grey.

For spray application, the quantity of hardener powder in Part B can be varied to the ambient temperature (see table 1). The two components Part A and Part B of the Britdex MDP Waterproofing are metered and mixed in an airless spray unit of 1:1 by volume during application.

For roller or brush application, the quantity of hardener powder in part B can be varied according to the ambient temperature (see table 1). The Part B component is stirred into Part A of the Britdex MDP Waterproofing at a ratio of 1:1 by volume or weight and mixed thoroughly prior to application.

APPLICATION GUIDELINES CONTINUED

Britdex MDP waterproofing membrane pigmented yellow or grey is applied in one coat, at a minimum wet film thickness of 2.2mm to ensure a minimum dry film thickness of 2.0mm overall, including peaks, arrises and irregularities in the concrete deck.

Lapping:

Where a new waterproofing membrane is to be joined to an existing Britdex MDP Waterproofing membrane and at day joints, the new application must be lapped onto the existing joint by a minimum of 50mm. Where the existing membrane is clean and less than 24 hours old, no additional preparation is necessary. Where the existing membrane is clean but over 24 hours old, Britdex MDP Primer must be applied to give a minimum margin of 20mm greater than the lap and allowed to dry. Where the existing membrane is dirty or contaminated, the surface must be cleaned using a suitable solvent e.g. acetone.

Sealing into parapet chase :

The Britdex MDP waterproofing membrane should be terminated into a primer chase when provided.

Tack coat:

The appropriate tack coat should be applied to the fully cured waterproofing membrane only in areas due to receive the APL or HRA surfacing.

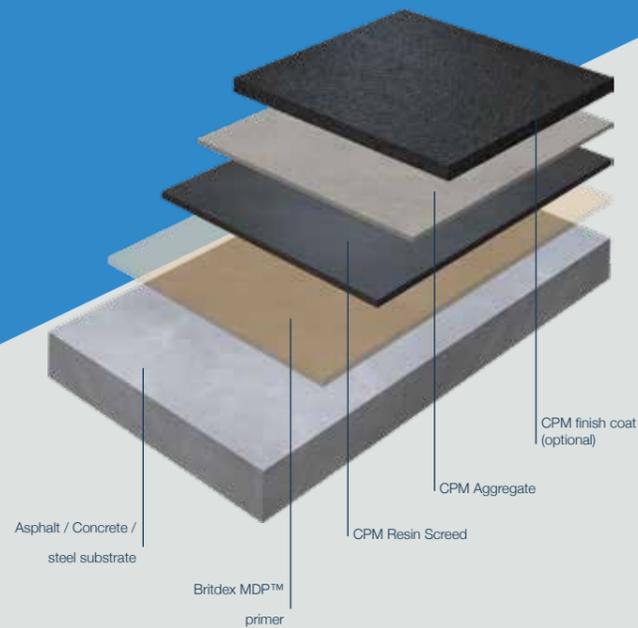
When APL surfacing is to be applied directly onto the system, the Britdex MDP Tack Coat is applied by spray, roller or brush at a coverage rate of 0.3kg/m² to 0.4 kgm².

When HRA surfacing is to be applied directly onto the system, the Britdex MDP Tack Coat must first be applied as described above. The Britdex FE Tack Coat is preheated to between 160°C and 190°C, and applied by squeegee at a coverage rate of 1.25kg/m² to 2.5kg/m².

In both cases, the applied tack coat must be dry prior to the application of the APL or HRA surfacing. Drying time of the tack coat will depend upon site conditions. Typical drying time for the Britdex MDP Tack Coat is 30 minutes at 20°C.

The Britdex F.E. Tack Coat must be allowed to cool for a minimum of 30 minutes. 12.18 The APL or HRA surfacing should be applied without undue delay and preferably no more than seven days after the tack coat application.

Should this period be exceeded or the tack coated areas become contaminated or damaged, the Certificate holder should be contacted for advice.



BRITDEX CPM TREDSEAL

Combined Waterproofing and Wearing System

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 aluminium 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.

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
- Versatile surfacing, suitable for application on a number of different surfaces
- This system can be applied even at low temperatures
- Waterproof

BRITDEX MDP REPAIR MORTAR HD

Britdex MDP Repair Mortar HD - Acrylic Based Heavy Duty Repair Mortar

A versatile repair mortar which exhibits a fast set and rapid strength gain. Ideal for all applications from small repairs to large areas such as concrete decks and floors.

- Rapid curing, high early compressive, flexural and tensile strength
- Excellent chemical and water resistance
- Simple to use
- No primer required
- Complies with EN1504 Part 3 Class R2

Applications

- Footbridges
- Rail platforms and walkways

Colours



QUALITY AND TESTING SERVICES

Quality Management Procedure

USL Ekspan is committed to ensuring the successful conclusion of waterproofing and structural protection applications on every project. Our products are manufactured to the highest standards using cutting edge production systems.

USL Ekspan operates a Quality Management System which complies with the requirements of BS EN ISO9001:2000 and is regularly audited by BM Trada.

Maintaining Quality on any site can be challenging. Our unique approach to ensuring the highest on-site QA means ONLY 'trained operatives' within these companies are authorised to apply products and systems, having undergone intensive theoretical and practical training and on-going site auditing to maintain their skill base.

Rapid curing application

Due to its unique formulation Britdex MDP cures rapidly whatever the weather, is far more tolerant to difficult conditions than other membranes and can be readily applied in sub zero temperatures. Even in the depths of winter, Britdex MDP will cure and be ready for the next element of the system or the surfacing process within a few hours. Simple to use, specifically developed spray units give high daily application rates. No heated lines are necessary and spraying can take place up to several metres from the fixing head including vertically.

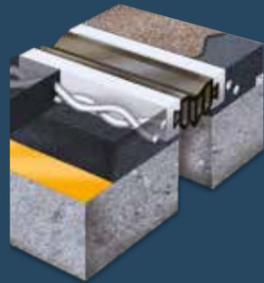
Outstanding Durability

As well as being resistant to damage during the surfacing operation, a key to the performance of the Britdex MDP is its unsurpassed cohesive strength and its adhesive bond strength to the deck and surfacing.

Up to ten times greater than those of sheet systems, Britdex MDP's excellent bond prolongs service life aids composite action on steel decks ensures it is the ideal membrane where design criteria allows for only a thin layer surfacing.



USL EKSPAN PRODUCT RANGE



EXPANSION JOINTS - CD 357

Uniflex - Buried

BP1 - Buried

FEBA - Flexible Plug

Britflex NJ - Nosing

EC & EW - Joint Seal

Transflex & Transflex HM - Mat

T-MAT - Mat

Britflex BEJ - Modular

Britflex MEJS - Modular

LJ - Longitudinal Joint

ES - Joint Seal

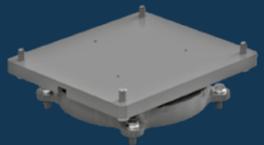
Aqueduct/Immersed Joint

Open Type Joint - Rail Joint

Britflex UCP - Footbridge Joint

Finger Joint

Roller Shutter Joint



STRUCTURAL BEARINGS

EKE - Elastomeric (EN1337-3)

KE - Pot (EN1337-5)

DE - Line Rocker (EN1337-6)

GE - Spherical (EN1337-7)

FE - Restraint & Guide (EN1337-8)

D - Line Rocker (BS5400-9)

F - Restraint & Guide (BS5400-9)

G - Spherical (BS5400-9)

J - Roller (BS5400-9)

K - Pot (BS5400-9)

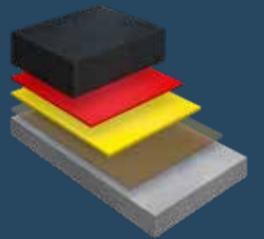
Link Bearing (BS5400-9)

EA - Sliding Bearing

EKR - Rubber Pad & Strip

EQF - Sliding Bearing

Bespoke Bearings



STRUCTURAL WATERPROOFING - CD 358

Pitchmastic PmB

Polyurethane (Pu) Waterproofing System

Britdex MDP

Methyl Methacrylate (MMA) Waterproofing System

Britdex CPM Tredseal

Combined Waterproofing and Anti Skid Surfacing (MMA)

Uradeck BC

Combined Waterproofing and Anti Skid Surfacing (Pu)



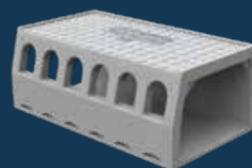
SUB-SURFACE BRIDGE DRAINAGE

Ekspan 325 Channel

Ekspan 302 System

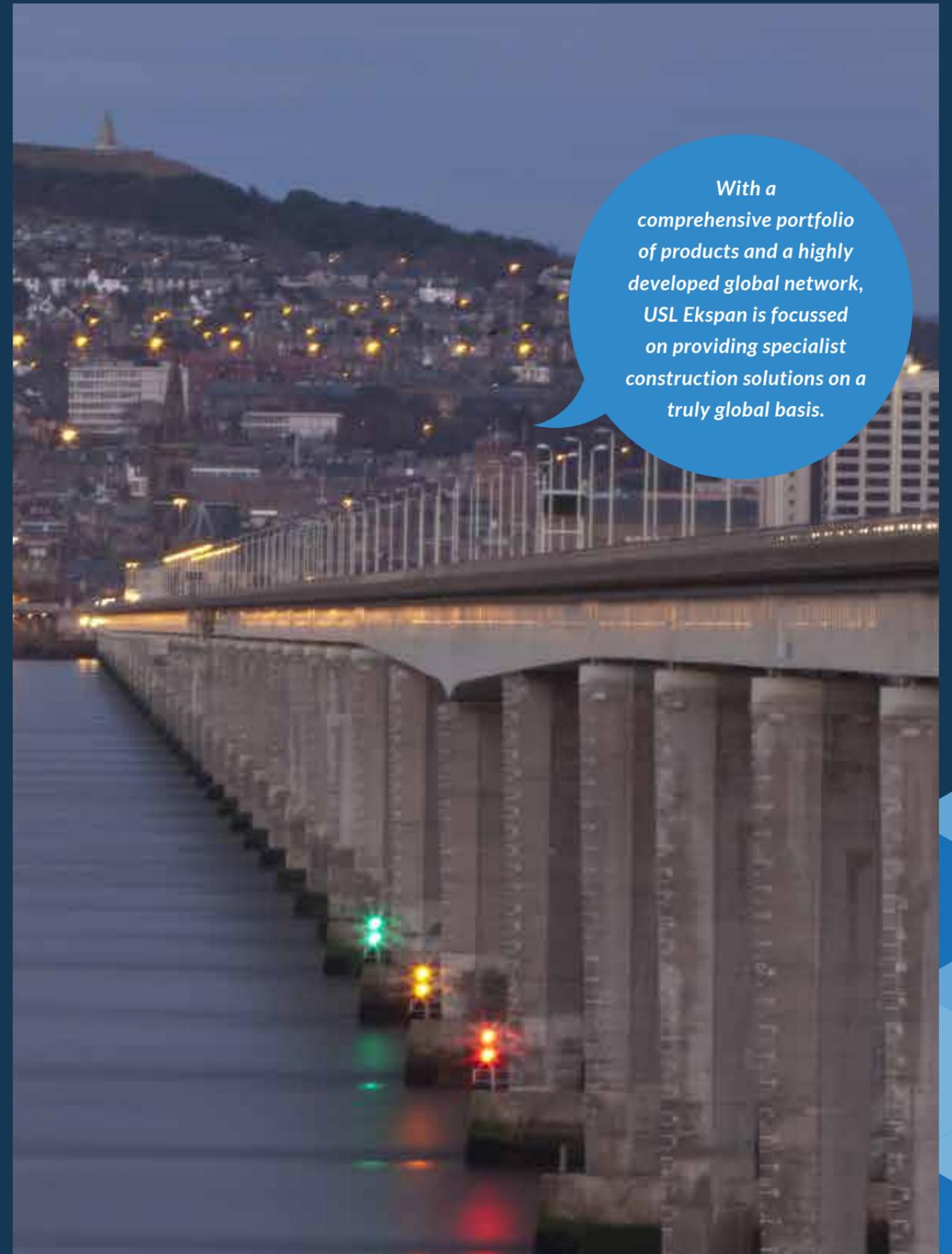
ES Seal System

DriDeck



SURFACE BRIDGE DRAINAGE

Envirodeck



With a comprehensive portfolio of products and a highly developed global network, USL Ekspan is focussed on providing specialist construction solutions on a truly global basis.



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