Universal Sealants (UK) Limited was formed in 1981. Since its inception the business has grown steadily, expanding its portfolio of specialist construction solutions, products and services to meet demand in the UK and overseas.

The business unit was re-branded to USL Group in 2009 following an acquisition by RPM Inc., a multinational coatings conglomerate. USL Group is a multi-disciplinary construction and civil engineering company with a turnover approaching £100,000,000 and a directly employed work force in excess of 250. RPM Inc. provides USL Group with enviable financial solidity and the ability to cross pollinate with a vast network of intercompany business units, each having their own unrivalled pool of experience and expertise.

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 focused on providing specialist construction solutions on a truly global basis.
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.

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.

Fleet & Machinery (Contracts)

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

Manufacturing Capability  
Research & Development  
Approvals
Bridges are at constant attack and under 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.
Expansion Joints

Expansion joint selection guide

<table>
<thead>
<tr>
<th>Joint Type</th>
<th>Movement (mm)</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniflex (Type 1)</td>
<td>20m</td>
<td>09</td>
</tr>
<tr>
<td>BP1 (Type 1)</td>
<td>10mm</td>
<td>10</td>
</tr>
<tr>
<td>Feba (Type 2)</td>
<td>40mm</td>
<td>11</td>
</tr>
<tr>
<td>Britflex NJ (Type 4)</td>
<td>40mm</td>
<td>12</td>
</tr>
<tr>
<td>Transflex (Type 5)</td>
<td>330m</td>
<td>13</td>
</tr>
<tr>
<td>Transflex HM (Type 5)</td>
<td>1600mm</td>
<td>14 &amp; 15</td>
</tr>
<tr>
<td>Britflex BEJ (Type 6)</td>
<td>150mm</td>
<td>16</td>
</tr>
<tr>
<td>MEJS (Type 6)</td>
<td>2000mm</td>
<td>17</td>
</tr>
<tr>
<td>Finger/Comb (Type 7)</td>
<td>1000mm</td>
<td>18</td>
</tr>
<tr>
<td>LJ (Longitudinal Joint)</td>
<td>220mm</td>
<td>19</td>
</tr>
<tr>
<td>T-Mat (type 8)</td>
<td>260mm</td>
<td>20</td>
</tr>
<tr>
<td>Roller Shutter ES</td>
<td>800mm</td>
<td>21</td>
</tr>
<tr>
<td>Open Type (Rail Joint)</td>
<td>260mm</td>
<td>22</td>
</tr>
<tr>
<td>UCP (Footbridge Joint)</td>
<td>70mm</td>
<td>23</td>
</tr>
</tbody>
</table>

USL 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.

This system uses a butyl rubber membrane, bonded to the substrate with Uniflex epoxy. Adhesive to provide an efficient and permanent expansion joint that is easily installed. The system will accommodate a variety of conditions from those experienced on an asphalt-covered traffic-free roof, to bridge decks with sheet membrane, spray on coating or asphalt waterproofing, also it can be used with two layer mastic asphalt or brick paving systems.

The Uniflex membrane is prepared from specially developed butyl rubber compound that is tough, weatherproof, flexible and can withstand up to 300% elongation. The Uniflex epoxy adhesive has been designed specifically for bonding Uniflex to concrete, asphalt and other surfaces to make the system effective. The Uniflex membrane is normally supplied in 20 metre rolls of any required width up to 1300mm, adhesive, closed cell foam and steel plates if required are all part of this different systems we can provide.

The Uniflex system is chemically inert and completely impervious to water and water vapour. In buried joints the membrane is completely protected by the wearing surface. Uniflex membrane will not rock or crack in service and the combination of a simple design and proven components makes the system naturally long-lasting and well up to the requirements of modern building and civil engineering practice.

Uniflex Type 1 Buried Joint Under Continuous Surfacing

Solutions for Bridges, Highways & Infrastructure
www.usluk.com
BP1 Buried Joints For Use Under Continuous Surfacing

BP1 is a buried joint, incorporating polyethylene, which is placed into the air gap flush with the concrete surface. The deck is then primed using PMCS/01 and over the joint area. The whole area is then sprayed with PmB 2mm nominal thickness waterproofing layer.

Within 4 hours the 300mm overlay is sprayed on top of the existing 2mm waterproofing layer finally installing a saw cut to surface.

System Benefits:
- Movement Range ± 10mm
- Highways England Approved Product

Applications:
- Bridges
- Roads

USL offers three grades of asphaltic plug joint systems, all in accordance with BD33/94 standard for use on all classes of highway bridges.

The binder is selected depending largely upon climatic conditions, bridge movement factors, cross-falls and the nature of traffic also are considered.

FEBA JOINT - is a standard asphaltic plug joint which provides a flexible, waterproof joint with excellent ride quality for users and noiseless characteristics for minimal impact on the environment. Asphaltic plug joints are recognised as being suitable for a maximum design movement of a 20mm horizontally and ± 1.5mm vertically and are ideal for use on bridges with low traffic volumes such as B roads.

FEBA HM - is a high modulus asphaltic plug joint suitable for low to medium movement of ± 20mm on heavily trafficked highway bridges. FEBA HM is a special blend of bitumen, polymers, fillers and a surface active agent, formulated to combine good fluidity at process temperatures with low temperature flexibility and ambient temperature slump control. The use of basalt aggregates (BS EN 13043) ensures excellent load bearing capacity and high resistance to wheel tracking. This amalgamation of a highly interlocking aggregate allows the system to provide excellent antirutting characteristics.

FEBA HC - A bituminous asphaltic plug joint which has been developed for use in hot climates.

NOTE: Design, construction and installation criteria remain the same for all joint types.
Elastomeric insert
Britflex resin
mortar
'NJ' Adhesive
Plinth reinforced and part of bridge deck
Dri-deck drainage unit (optional)

**Advantages**
- Versatile
- Substantially waterproof
- Rapid installation
- No drilling of deck
- No mechanical flanges
- Quiet comfortable riding characteristics

**Table 1 - Design detail**

<table>
<thead>
<tr>
<th>Total Movement Capacity</th>
<th>Minimum Nosing Size</th>
<th>Maximum Nosing Gap</th>
<th>Nosing 'W'</th>
<th>Optimum Nosing Gap 'B'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td>Vertical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NJ 1</td>
<td>15 ±3</td>
<td>100 ±3</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>NJ 2</td>
<td>20 ±5</td>
<td>100 ±5</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>NJ 4</td>
<td>40 ±10</td>
<td>100 ±10</td>
<td>50</td>
<td>30</td>
</tr>
</tbody>
</table>

Notes:
The 'W' and 'D' dimensions are the minimum for new works contracts. For refurbishment contracts, nosing width and depth can be varied, however the 'W' and 'D' dimensions should always be based upon a minimum aspect ratio of 1.25:1, width to depth.

**USL Transflex bridge joint models**

<table>
<thead>
<tr>
<th>Models</th>
<th>Movement accommodation</th>
<th>Module length</th>
<th>Module width</th>
<th>Module depth</th>
<th>Stud module</th>
<th>Module weight</th>
<th>Max joint width at mid-deck temperature</th>
<th>Max joint width</th>
<th>Recess depth</th>
<th>Transition strip width</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>38mm</td>
<td>1765mm</td>
<td>240mm</td>
<td>330mm</td>
<td>12mm</td>
<td>30kg</td>
<td>54mm</td>
<td>41mm</td>
<td>100mm</td>
<td>100mm</td>
</tr>
<tr>
<td>200</td>
<td>50mm</td>
<td>1830mm</td>
<td>274mm</td>
<td>430mm</td>
<td>12mm</td>
<td>48kg</td>
<td>61mm</td>
<td>51mm</td>
<td>100mm</td>
<td>100mm</td>
</tr>
<tr>
<td>250</td>
<td>65mm</td>
<td>1830mm</td>
<td>356mm</td>
<td>480mm</td>
<td>16mm</td>
<td>68kg</td>
<td>67mm</td>
<td>67mm</td>
<td>100mm</td>
<td>100mm</td>
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<tr>
<td>300</td>
<td>76mm</td>
<td>1830mm</td>
<td>432mm</td>
<td>520mm</td>
<td>20mm</td>
<td>86kg</td>
<td>83mm</td>
<td>83mm</td>
<td>100mm</td>
<td>100mm</td>
</tr>
<tr>
<td>400</td>
<td>102mm</td>
<td>1830mm</td>
<td>590mm</td>
<td>540mm</td>
<td>20mm</td>
<td>150kg</td>
<td>100mm</td>
<td>100mm</td>
<td>100mm</td>
<td>100mm</td>
</tr>
<tr>
<td>650</td>
<td>165mm</td>
<td>1830mm</td>
<td>724mm</td>
<td>750mm</td>
<td>24mm</td>
<td>272kg</td>
<td>121mm</td>
<td>203mm</td>
<td>125mm</td>
<td>125mm</td>
</tr>
<tr>
<td>900</td>
<td>230mm</td>
<td>1830mm</td>
<td>860mm</td>
<td>930mm</td>
<td>24mm</td>
<td>373kg</td>
<td>158mm</td>
<td>273mm</td>
<td>150mm</td>
<td>150mm</td>
</tr>
<tr>
<td>1300</td>
<td>330mm</td>
<td>1220mm</td>
<td>1204mm</td>
<td>127mm</td>
<td>30mm</td>
<td>451kg</td>
<td>216mm</td>
<td>381mm</td>
<td>175mm</td>
<td>175mm</td>
</tr>
</tbody>
</table>

Note: Add 3mm to the recess depth 'R' when using the Uniflex secondary membrane.

**Advantages**
- Movement accommodation up to 330mm
- Corrosive resistant elastomer casing
- Accommodates skew movement
- Factory vulcanised kerb and skew kerb units to special order
- Membrane system included for maximum waterproofing

**Applications**
- Highway bridge decks
- Service Ramps
- Multi-storey car parks

The Transflex expansion joint system is registered with Highways England, for use on highway bridge decks on all classes of roads and motorways. (BD 33/94: Joint Type 5 refers).

Britflex Resin Mortar is included in SA1 as an approved material for transition strips to all types of expansion joint. Transflex bridge joints comprise of steel angles and a steel bridging plate system encased in a flexible elastomer.

The Transflex reinforced elastomeric Type 5 joint is an ideal system for all movement situations and has been developed to provide a whole life economic solution for applications where asphalt plug joints are unsuitable.

A surface mounted nosing joint with an elastomeric insert bonded to the leak curing elastomeric compound known as Britflex® Resin Mortar.

In the UK the Britflex® NJ system can only be used in the situation where the gap at carriageway level does not exceed 65mm for gaps above 65mm the ‘BEJ’ system would be used.

The Britflex® NJ joint is an ideal system for maintenance situations and has been developed to provide a whole life economic solution for applications where asphalt plug joints are unsuitable.

**Design detail**

- The 'W' and 'D' dimensions are the minimum for new works contracts.
- For refurbishment contracts, nosing width and depth can be varied, however the 'W' and 'D' dimensions should always be based upon a minimum aspect ratio of 1.25:1, width to depth.

**All dimensions in mm**

**Advantages**
- Versatile
- Substantially waterproof
- Rapid installation
- No drilling of deck
- No mechanical fixings
- Quiet comfortable riding characteristics
The High Movement Transflex expansion joints have been designed to cover large movements. They consist of up to three modules, two movement modules and the bridging module. The movement modules are the "mobile" section of the joint, made of rubber and steel, to accommodate the expected movements. The bridging module is the "fixed" section of the joint, to bridge the structural opening.

Transflex High Movement Expansion Joint Type 5

- Corrosion resistant elastomer casing
- Movement accommodation up to 1600mm
- Seismic movement capability
- Accommodates skew movement
- Factory vulcanised kerb units to suit changes in levels
- Easy replacement

### Models

<table>
<thead>
<tr>
<th>Models</th>
<th>Movement (mm)</th>
<th>L (mm)</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>W1 (mm)</th>
<th>W2 (mm)</th>
<th>Wgt (kg)</th>
<th>CL (mm)</th>
<th>G (mm)</th>
<th>T (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600</td>
<td>400 (+200)</td>
<td>1600</td>
<td>85</td>
<td>1280</td>
<td>675</td>
<td>675</td>
<td>460</td>
<td>200</td>
<td>220</td>
<td>170</td>
</tr>
<tr>
<td>2000</td>
<td>500 (+250)</td>
<td>1600</td>
<td>85</td>
<td>1520</td>
<td>775</td>
<td>815</td>
<td>585</td>
<td>200</td>
<td>270</td>
<td>170</td>
</tr>
<tr>
<td>2400</td>
<td>600 (+300)</td>
<td>1600</td>
<td>85</td>
<td>1760</td>
<td>875</td>
<td>965</td>
<td>710</td>
<td>200</td>
<td>320</td>
<td>170</td>
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<tr>
<td>2800</td>
<td>700 (+350)</td>
<td>1600</td>
<td>85</td>
<td>2000</td>
<td>975</td>
<td>1085</td>
<td>765</td>
<td>200</td>
<td>370</td>
<td>170</td>
</tr>
<tr>
<td>3200</td>
<td>800 (+400)</td>
<td>1600</td>
<td>85</td>
<td>2240</td>
<td>1075</td>
<td>1235</td>
<td>930</td>
<td>200</td>
<td>420</td>
<td>170</td>
</tr>
</tbody>
</table>
types of expansion joints.

...material for transition strips to all classes of roads. The Britflex® modular expansion joint system has worldwide approvals for use on bridge decks on all classes of roads and motorways. The Britflex® BEJ Expansion Joint System is also an approved material for transition strips to all types of expansion joints.

A surface mounted mechanical system, with an elastomeric insert between two metal runners / carrier rails. Set into a, rapid curing resin compound known as Britflex® Resin Mortar. The polyureide resin provides unrivalled anchorage to the deck due to its remarkable bonding qualities, meaning that no mechanical fixings are required.

**BEJ** expansion joints incorporate cellular elastomeric inserts which are load bearing, enabling a range of movement to be accommodated up to 150mm.

The Britflex® BEJ Expansion Joint System has worldwide approvals for use on bridge decks on all classes of roads and motorways. The Britflex® Mortar is also an approved material for transition strips to all types of expansion joints.

This system is ideal for maintenance projects where there is a need to replace aging or failed systems. The major benefit this system will bring to any project is the speed in which it can be assembled on site allowing phased work outside of peak traffic hours.

**Advantages**

- Rapid on site assembly
- Minimal disruption to traffic
- Minimised future maintenance costs
- Adaptable to numerous applications
- Britflex® Mortar provides excellent bonding versatility, offering equally strong bonds to both concrete and steel bridge decks allowing phased work outside of peak traffic hours.

A close up of the BEJ expansion joint system not normally seen by the travelling public.

---

**Table 1 - Design detail**

<table>
<thead>
<tr>
<th>Type</th>
<th>B1</th>
<th>B2</th>
<th>H</th>
<th>F1(m)</th>
<th>F60</th>
<th>F70</th>
<th>F80</th>
<th>G(WT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(µg/m)</td>
</tr>
<tr>
<td>LG2</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>140</td>
<td>260</td>
<td>280</td>
<td>300</td>
<td>150</td>
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<td>LG3</td>
<td>480</td>
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<td>400</td>
<td>220</td>
<td>400</td>
<td>430</td>
<td>460</td>
<td>210</td>
</tr>
<tr>
<td>LG4</td>
<td>560</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>540</td>
<td>580</td>
<td>620</td>
<td>250</td>
</tr>
<tr>
<td>LG5</td>
<td>640</td>
<td>300</td>
<td>400</td>
<td>390</td>
<td>680</td>
<td>730</td>
<td>780</td>
<td>290</td>
</tr>
<tr>
<td>LG6</td>
<td>720</td>
<td>300</td>
<td>400</td>
<td>460</td>
<td>820</td>
<td>880</td>
<td>940</td>
<td>330</td>
</tr>
<tr>
<td>LG7</td>
<td>800</td>
<td>420</td>
<td>540</td>
<td>960</td>
<td>1030</td>
<td>1100</td>
<td>500</td>
<td>370</td>
</tr>
<tr>
<td>LG8</td>
<td>880</td>
<td>440</td>
<td>620</td>
<td>1100</td>
<td>1180</td>
<td>1280</td>
<td>590</td>
<td>410</td>
</tr>
<tr>
<td>LG9</td>
<td>960</td>
<td>450</td>
<td>700</td>
<td>1240</td>
<td>1330</td>
<td>1420</td>
<td>745</td>
<td>460</td>
</tr>
<tr>
<td>LG10</td>
<td>1040</td>
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<td>780</td>
<td>1380</td>
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<td>1550</td>
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<td>LG11</td>
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<td>500</td>
<td>940</td>
<td>1690</td>
<td>1780</td>
<td>1900</td>
<td>1340</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

1. Nominal nosing gap is that selected at average design effective bridge deck temperatures and does not take movement into account other than temperature movements.
2. This is the standard design. Please refer to USL Technical and Advisory Service.
3. For special cases, please refer to our technical brochure.
4. For clarification of kerb upstand clearance (x) refer to the technical brochure.
5. For skew movements, greater than ±15mm, please refer to USL Technical and Advisory Service.
6. For optional kerb detail based on minimum nosing widths – refer to the technical brochure.
7. 1. Nominal nosing gap is that selected at average design effective bridge deck temperatures and does not take movement into account other than temperature movements.
8. This is the standard design. Please refer to USL Technical and Advisory Service.
Finger/Comb Joint Type 7

Finger type expansion joints are made up of fabricated or cast steel fingers and can be fitted mechanically as either continuous or modular sections in order to provide different options for clients needs. They are very robust joints recommended for high performance requirements imposed by heavy traffic flows and movements on highways, accommodating both horizontal, vertical, and rotational movements.

Key Features:
- For movements up to 1000mm
- Long durability and good grip surfaces
- High performance and smooth riding comfort
- Lifespan of 40+ years

Applications:
- Motorways
- Road bridges
- Designed to suit applications - examples available

Expansions Joints
Finger/Comb (Type 7)
Solutions for Bridges, Highways & Infrastructure
www.usluk.com

Table 1 - Movement Capacity

<table>
<thead>
<tr>
<th>LJ</th>
<th>Horizontal</th>
<th>Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>± 50mm</td>
<td>± 40mm</td>
</tr>
<tr>
<td>B</td>
<td>± 100mm</td>
<td>± 75mm</td>
</tr>
</tbody>
</table>

LJ Longitudinal Joint System

This system has been developed to provide an effective method of sealing longitudinal expansion gaps and soffits. The joint can accommodate both longitudinal and vertical movement, the ‘LJ’ Joint also provides a substantially watertight seal to non-trafficked gaps between structures and is available in two sizes depending on the requirements of the individual project.

The ‘LJ’ Expansion Joint System has the flexibility to be used as a waterproof cover joint or alternatively as a drainage channel under joint with the facility to install drainage outlets into the system where required.

Advantages
- Rapid installation
- Low maintenance
- Cost effective
- Installed by USL’s experienced and fully trained workforce.
T-Mat Expansion Joint

The T-Mat expansion joint consists of a solid armoured expansion mat made of a high quality chloroprene with metal reinforcements (T-bars).

The internal design of the expansion joint is such that due to the discontinuous steel reinforcement combined with the elasticity of the material (chloroprene), the expansion joint will not only allow for horizontal movement on either side of the joint but will also allow for transverse and vertical relative movements of adjacent bridge decks.

Structural safety during train and vehicle operation is guaranteed by the fact that the design of the expansion joint allows to carry and absorb the combined forces of load and traffic.

Key Features:
- For longitudinal movements from ± 15 (T30) up to ± 130 (T260)
- Impervious to deep standing water
- Low noise - ideal near residential properties

Applications:
- Motorways
- Rail & road bridges
- Primary/secondary roads
- Pedestrian walkways

Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Movement “X” Range</th>
<th>Movement “Y” Range</th>
<th>Movement “Z” Range</th>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Anchor Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30mm (±15mm)</td>
<td>80mm (±40mm)</td>
<td>60mm (±30mm)</td>
<td>55</td>
<td>290</td>
<td>12</td>
</tr>
<tr>
<td>80</td>
<td>80mm (±40mm)</td>
<td>120mm (±60mm)</td>
<td>80mm (±40mm)</td>
<td>55</td>
<td>318</td>
<td>12</td>
</tr>
<tr>
<td>130</td>
<td>130mm (±65mm)</td>
<td>200mm (±100mm)</td>
<td>140mm (±70mm)</td>
<td>65</td>
<td>414</td>
<td>12</td>
</tr>
<tr>
<td>160</td>
<td>160mm (±80mm)</td>
<td>240mm (±120mm)</td>
<td>80mm (±40mm)</td>
<td>55</td>
<td>760</td>
<td>12</td>
</tr>
<tr>
<td>260</td>
<td>260mm (±130mm)</td>
<td>400mm (±200mm)</td>
<td>140mm (±70mm)</td>
<td>65</td>
<td>930</td>
<td>12</td>
</tr>
</tbody>
</table>

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Roller Shutter Expansion Joints

Roller shutter joints are manufactured for dynamic structures with large longitudinal movements. They are designed to take high vehicle volumes and loads whilst providing a long operation service life.

Key Features:
- For movements greater than 800mm
- Durable and shown to resist seismic events
- High lifespan of the structure with low maintenance

Applications:
- Motorways
- Road bridges with large movements

Bridges using this type of joint for example are:
- Forth Road Bridge, Severn Bridge, Humber Bridge, Avonmouth Viaduct.

Solutions for Bridges, Highways & Infrastructure

www.usluk.com
Open Type Rail Expansion Joints

These joints are specifically used for railway bridges for movements greater than 260mm. They should be positioned in the vicinity of the expansion devices for continuously welded rails.

Applications:
- Rail Bridges

Britflex UCP Footbridge/Pedestrian Joint System

The system utilises the proven design of the ‘BEJ’ system, which have been extensively used throughout Britain’s motorway network, and the advantages of the ‘BEJ’ system have been adapted for use on footbridges and heavily pedestrianised structures.

There are two ‘UCP’ expansion joints; ‘UCP’ 50 and 70, capable of accommodating up to 50mm and 70mm of movement respectively. The system consists of heavy gauge aluminium rails, a resilient waterproof EPDM seal and an additional secondary waterproof membrane. This joint is totally sealed and will provide an impermeable seal to most liquids, salt and other abrasives, thus preventing premature damage to the structure.

There is a vast range of applications for this type of expansion joint, including:
- Multi Storey Car Parks
- Pedestrian Footbridges
- Podiums

Advantages
- Versatile
- Substantially waterproof
- Rapid installation
- No drilling of deck required
- No mechanical fixings
- EPDM Seal easily removed if required
- Provides quiet comfortable riding characteristics

UCP design detail

<table>
<thead>
<tr>
<th>UCP</th>
<th>Movement Capacity</th>
<th>Minimum Nosing Sizes</th>
<th>Nominal Nosing Gap</th>
<th>Minimum Nosing Gap</th>
<th>Maximum Nosing Gap</th>
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<tr>
<td></td>
<td>Horizontal Vertical</td>
<td>C</td>
<td>D</td>
<td>B</td>
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<td>70</td>
<td>±15</td>
<td>120</td>
<td>60</td>
<td>70</td>
</tr>
</tbody>
</table>

All dimensions in mm

Britflex resin mortar
EPDM extruded seal
Extruded aluminium rails (top & bottom sections)
Secondary seal integrated into Britflex nosing during installation
Secondary seal Britflex double laminate butyl rubber membrane
Britflex nosing 120mm wide x 60mm deep

Solutions for Bridges, Highways & Infrastructure
www.usluk.com
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, Pitchmastic PmB has exceptional bond strength to all commonly used substrates, has excellent crack bridging capability and 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.

Fast and Easy Installation
Pitchmastic 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 membrane’s ability to gel in seconds preventing curling and providing instant protection.

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
Britdex MDP - (MMA) Waterproofing System

A Methyl Methacrylate (MMA) waterproofing system comprises of up to three separate environmentally friendly layers each offering different properties to the system. The system offers a 100% effective seamless bridge deck waterproofing membrane and the design of the system means that it is extremely durable and flexible, resulting in its suitability for application to a variety of surfaces and structures.

Applications:
• Bridges
• Tunnels (Cut and Cover, Immersed Tube)

Advantages
• Seamless coating leaving no vulnerable joints
• Quick and easy application with rapid curing properties
• Excellent crack-bridging properties
• Environmentally friendly
• Durable effective protection against corrosion
• Versatile system - accommodates all surface contours, horizontal and vertical
• Application of the waterproof membrane can be one or two coats
• Highways England approved - BD47/99

Solutions for Bridges, Highways & Infrastructure
www.usluk.com
Uradeck System - Fast Setting Anti-Slip Surfacing & Waterproof Coating

A two component polyurethane body coat characterised by its inbuilt flexibility, even at low temperatures. Uradeck BC provides excellent adhesion to a variety of substrates. By broadcasting slip resistant aggregate into the surface of the wet resin a highly durable anti-slip system can be produced.

The application of a decorative sealer coat is achieved with Uradeck finish.

System Benefits
- Excellent adhesion
- Inbuilt flexibility
- Good chemical and abrasion resistance
- Excellent weathering characteristics
- Fast setting for early trafficking
- Decorative finish
- Formulated to comply with the requirements of EN 1504 Part 2
- Manufactured in accordance with ISO 9001

Applications
- Waterproofing for silos, tanks & bunds
- Footbridges & stair treads
- Car parks
- Rail, air & marine ports
- Ramps & pedestrian footways
- Structures & warehouses
- Industrial storage yards

Bridge Deck Waterproofing Uradeck

Uradeck Body Coat
Aggregates

Structural Bearings

EKE - Elastomeric (EN1337-3:2005) 30
KE - Fixed & Sliding (EN1337-5) 31
DE - Line Rocker (EN1337-6) 32
GE - Spherical (EN1337-7) 33
FE - Restrayment & Guide (EN1337-8) 34
EKR - Rubber Pad & Strip (EN1337-3:2005) 35
Ekspan laminated elastomeric bearings are produced to the latest Eurocode EN1337-3:2005. Although standard sizes are shown within the literature bespoke bearings can be produced upon request.

Laminated elastomeric bearings consist of natural rubber layers separated by steel plates. Around this makeup a rubber cover encapsulates the bearing (Fig. 1). These items are then vulcanised to create a compact maintenance free bearing. Elastomeric bearings can absorb horizontal movements in every direction and rotational movements around every axis through elastic layers deformation. They are used for short to medium span structures. Once correctly installed these bearings require very little maintenance.

Natural rubber is not too sensitive to changes in temperature and shows only slight growth in deformation, over the period of deformation at a constant load (low creep). Natural rubber is highly resistant against ozone, ageing, UV and chemical effects. The vulcanized steel reinforcement plates meet the requirements of BS1449.

Advantages:
- Easy to install
- Maintenance free
- Continuous functionality for providing long service life
- Operate well at very high or very low temperatures

Ekspan KE range of pot bearings are designed to allow the correct transfer of load whilst allowing rotation about all axis. The bearings are also designed to either allow or restrain translations depending on your requirements. The rotation is accommodated by a moulded 60IRHD rubber pad contained within the pot, restrained by a pair or trio of brass piston rings.

Load Capacities:
- Vertical load capacity up to 46,287kN ULS
- Horizontal load capacity up to 3,900kN ULS
- Rotational capacity up to 0.015 radians

Advantages:
- Fully welded sliding surfaces
- Fully certified EN compliant materials
- Integrated guides to allow for accurate positioning

Designed in accordance with EN1337-5
Ekspan DE range of rocker bearings are designed to allow the correct transfer of load whilst allowing rotation about a single axis. The bearings are also designed to either allow or restrain translations depending on your requirements. The standard load capacities are shown, however larger bearings can be manufactured upon request.

Designed in accordance with EN1337-6

Load Capacities:
- Vertical load capacity up to 6,000kN
- Horizontal load capacity up to 593kN
- Rotational capacity up to 0.02 Radians

Advantages:
- Fully welded sliding surfaces
- Fully certified EN compliant materials
- Drim vertical deflection
- Ideal for long span rail structures

Structural Bearings - EN1337
DE - Line Rocker
(EN1337-6)

Solutions for Bridges, Highways & Infrastructure
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Ekspan GE range of spherical bearings are designed to allow the correct transfer of load whilst allowing rotation about all axes. The bearings are also designed to either allow or restrain translations depending on your requirements. The rotation is accommodated by a convex stainless steel piston mating against a PTFE sheet, which sits within the concave bearing base.

Designed in accordance with EN1337-7

Load Capacities:
- Vertical load capacity up to 39,000kN ULS
- Horizontal load capacity up to 6,825kN ULS
- Rotational capacity up to 0.049 Radians

Advantages:
- Fully welded sliding surfaces
- Fully certified EN compliant materials
- Integrated guides to allow for accurate positioning
- Ideal for highly skewed structures
- Stainless steel spherical piston for added corrosion protection (dependant on size and material availability)

GE - Spherical (EN1337-7)

Structural Bearings - EN1337
GE - Spherical
(EN1337-7)

Solutions for Bridges, Highways & Infrastructure
www.usluk.com
Ekspan FE range of restraint and guide bearings are designed to resist only horizontal forces induced into the structure. These bearings are commonly used in conjunction with laminated elastomeric bearings to resist the horizontal forces. The bearings can be designed to allow for rotation about all axes whilst having a capacity of +15mm – 10mm vertical translation, which is very useful for future bearing replacement. This allows the structure to remain restrained during jacking and replacement of the laminated elastomeric bearings, reducing the need for significant temporary works.

Designed in accordance with EN1337-8.

**Load Capacities:**
- Vertical load capacity 0kN
- Horizontal load capacity up to 2,300kN
- Rotational capacity up to 0.01 radians (21FE and 10FE)
- Rotational capacity up to 0.01 radians longitudinally and 0.04 radians transversely (31FE)
- Vertical translation of +15mm – 10mm

**Advantages:**
- Fully welded sliding surfaces
- Fully certified EN compliant materials
- Vertical translation allows bearing replacement without the need for significant temporary works.

**Natural Rubber strip can be utilised to support a concrete diaphragm and natural rubber pads are used to support individual beams. These products are commonly used where the vertical loads/translations are relatively low.**

Where increased vertical load capacity/translations and rotations are required than the preferred option would be to utilise a laminated elastomeric bearing.
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.

Prime Flex 910 & 920
Permeation grouting, void filling, curtain grouting, sealing high flow gushing leaks.

AR 800 & 870
Permeation grouting of sandy or silty soils. Long variable set time allows for thorough penetration.

There are many benefits of using chemical grouts vs substrate replacement or excavation repair:
- Less disruptive
- Faster
- Less expensive
- Less environmental impact
- Safer
- Permanent

Typical structures requiring soil stabilisation:
- Roads/highways
- Bridges
- Railway sleepers
- Airport runways, taxiways
- Tunnels
- Seawalls
- Storm water pipes
- Tanks
- Foundations
- Pools
Leak Sealing

All leaks are not the same. There are many types of leaks and Nufins offers different solutions to address each size and type. Whether your issue is hairline cracks or high flow gushing leaks, we’ve got a solution.

Factors to consider when choosing how to seal a leak include:
• Volume of leak
• 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: foam versus gel, rigid versus flexible

Examples of typical structures requiring leak sealing include:
• Manholes
• Dams
• Tunnels
• Underground parking decks
• Storm sewers
• Water treatment tanks
• Pipe joints
• Elevator pits

Prime Flex 900 MV & XLV
Injecting cracks, expansion joints, wide cracks, pipe joints or pipe penetrations, sealing active leaks in above- or below-ground concrete structures.

Prime Flex Hydro Gel SX
Sealing underground structures; ideal for manholes

AR 800 & 870
Leak sealing and soil consolidation; ideal for geotechnical applications

Examples of typical structures requiring leak sealing include:
• Manholes
• Dams
• Tunnels
• Underground parking decks
• Storm sewers
• Water treatment tanks
• Pipe joints
• Elevator pits
• Retaining walls
• Box culverts
• Seawalls
• Potable water tanks
• Underground vaults, walls, pits and floors
• Nuclear plant cooling tanks
Concrete Repair

Repair Mortars

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 CO2 ingress of water, chlorides and certain sulphates. Nylon fibres reduce shrinkage cracking, make the mortar easier to apply and greatly increase the flexural strength of the system. Complies with BD27/86 Clause 6.

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.

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’.

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.

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 airborne 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.
Since its introduction in 2002, Envirokerb has become recognized as the lightest, strongest and greenest kerb drainage solution on the market. Over half a million units of Envirokerb have been installed in hundreds of schemes spanning a growing number of countries from the UK to Germany, the Czech Republic, Ireland, Italy, Slovakia and more. Envirokerb is the ideal solution for kerb drainage on motorways, trunk roads, car parks and other urban areas.

Features and Benefits
Envirokerb combines innovation in design with unique materials to create a product that is strong, lightweight and durable. Read more about how our products can help you to meet the demands of health and safety, project efficiency and component quality.

Green Benefits
PDS take our environmental responsibility very seriously and recognise this is also important to our customers. Unlike traditional systems - which rely heavily on natural resources - Envirokerb drainage is made entirely from recycled materials that would otherwise be destined for landfill within the UK and overseas. Read more about how the green benefits of Envirokerb continue through manufacture, installation and usage.

Quality Assurance
PDS have worked hard to ensure all of our products meet - or exceed - all the legal and regulatory requirements under both UK and European law. Both the Envirokerb range and PDS as a company are certified under the internationally recognized Quality Management Standard ISO14001 allowing our products to carry the CE mark of conformity.

Complete Product Range
Envirokerb is available in a variety of widths and depths in both half-battered or 45 degree splayed styles, with a wide range of components including gully chambers, rodding access units and numerous outlet possibilities. Envirokerb is also available in a more compact version, Envirokerb Shallow. The shallower depth makes it ideal for linear drainage in projects where construction depths are limited. It can provide continuity with Envirokerb drainage systems from carriageways over structures. It can also be used for roads and bridges where low flows are anticipated.

What our Customers say...
"Because it’s a one part system rather than a two part system, and it’s lightweight, the rate you can lay at is probably twice as much, if not more than two-piece concrete products."
Adam Fowell, Birse Civils, Darlington Eastern Transport Corridor

"The product has proven to be very strong, and we have experienced no breakages. Once in situ the product has the appearance of concrete and blends exactly with existing kerb lines. We would have no hesitation in recommending the product"
Nottinghamshire County Council

"We find using Envirokerb gives us up to 400% more production per day over conventional two-piece units."
Jonny Edwards and Son, Kerb-laying contractors

"The Envirokerb offers the perfect solution. At 15kg it is lightweight enough for manual installation. We have not had a single breakage or chipping to kerbs and the product has proven to be stronger in all aspects than the traditional concrete kerbs."
Birmingham City Council Highways Dept
Due to the huge success of the Envirokerb Road Drainage product, PDS have developed the NEW EnviroBridge System for structural and restricted depth construction.

**NEW EnviroBridge System for product, PDS have developed the Envirokerb Road Drainage**

Due to the huge success of Envirokerb, including superb impact resistance, lightweight for manual handling, aesthetically very similar to concrete and of course the benefit of a non-metallic material gives a one-piece unit that is lighter and stronger than traditional systems.

**Envirobridge brochure or contact us to discuss your requirements.**

For the full range please view the Envirobridge brochure or contact us to discuss your requirements.

**What our Customers say...**

“The advantages with Envirodeck is that it is a single colour product of high durability, eliminating the need for any maintenance. Each individual unit can be handled by one man, and it’s fully compliant with the manual handling regulations. Any other product would require a two-man lift or mechanical plant to help lift it into place.”

**Features and Benefits**

Envirodeck shares the benefits common to the other products in our Enviro-range in terms of strength, durability, appearance, and finish. In addition the following benefits are specific to bridge drainage.

**Superior Appearance**

Envirodeck is made from a composite material that does not rust. The units can be supplied in a range of colours to complement the bridge design or to delineate road edges.

**Quality Assurance**

PDS have worked hard to ensure all of our products meet - or exceed - all the legal and regulatory requirements under both UK and European law. Both the Envirokerb range and PDS as a company are certified under the internationally recognised Quality Management Standard ISO14001 allowing our products to carry the CE mark of conformity.

**Complete Product Range**

Envirodeck is available in a wide range of widths and depths, as well as half-battered or 45 degree splayed styles, to meet project requirements.

For the full range please view the Envirodeck brochure or contact us to discuss your requirements.

While Envirodeck provides both surface and sub-surface drainage you may also want to consider installing our Drideck system to ensure the bridge deck remains completely free from sub-surface water.

**Why choose Envirodeck?**

- **Durability** - Envirodeck is made from a composite material that lasts indefinitely.
- **Aesthetics** - The units can be supplied in a range of colours to complement the bridge design or to delineate road edges.
- **Safety and Security** - The units are rust-free and non-oxidising.
- **Easy to Install** - The products are lightweight, allowing them to be lifted into place by one man with a two-man lift or mechanical plant.
- **Environmentally Friendly** - The products are manufactured from recycled material.
- **Legal and Regulatory Compliance** - Both the Envirokerb range and PDS as a company are certified under the internationally recognised Quality Management Standard ISO14001 allowing our products to carry the CE mark of conformity.

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Dri-deck is a complete solution for the collection of water at the sub-surface level that can be used in conjunction with our Envirodeck & EnviroBridge combined kerb drainage systems. Why use Dri-Deck?

Highways England has highlighted the need for effective sub-surface drainage to prevent serious damage to the waterproof membrane and pavement. Such damage can require costly and disruptive repairs. Combined kerb drainage systems can be effective in draining sub-surface water. However, the base thickness of the unit, the mortar bed, and any regulating course can raise the sub-surface collection holes above the deck level. Dri-deck provides the ideal system to capture any remaining water at this level.

Wide Range of Beneath Deck Pipes

A compatible system of pipework is available including a full range of pipe hangers, supports, and fittings to allow various pipes to cross expansion joints. Ekspan 325 is a long lasting galvanised steel fabricated section designed to remove surface water seepage from the waterproof membrane level of bridge decks, most especially at low points adjacent to expansion joints and kerb lines. This system is unique in that it utilises the flushing box which allows cleaning and maintenance vital to system integrity and lifetime performance. It is designed in accordance with Highways England BA26/94 and fully compatible with the Ekspan 322 Through Deck System.

Health & Safety

Dri-deck unit weights are up to 50% lighter than other products on the market and fall within the new manual handling guidelines, avoiding workplace injuries and saving dead weight on both new and refurbishment structures.

Drain Section

Each section of drainage channel is 2m long. End stoppers can be used at all open ends to prevent ingress of blacktop.

Outlets

Designed to suit Ekspan 302 through deck tube. Available as straight or 90 degree cranked, 4-way junctions and T-Pieces.

Joints

Inter-connect drain section on the deck surface. Available as T-cranked joints left hand and right hand Y pieces.

Transition Piece

Enables convenient access to the 325 system for periodic cleaning.

Flushing Unit Verge Box

Allowing access to system with water jetting equipment for cleaning, removing any silt and evaporative deposits. The flushing verge box is not designed to take any wheel loading therefore must not be installed on the carriageway.

Special arrangements can be made to order if required, for example joints to suit skew angled decks.
Project Snapshots

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

**Product(s):** Britdex MDP, Uniflex, Surface Impregnation Britflex BET, 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 Tipperty (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:** Intarlink 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 30,000m² 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 Construccion, 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 840m 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 5.5km. 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 170,000m².