USL
BridgeCare

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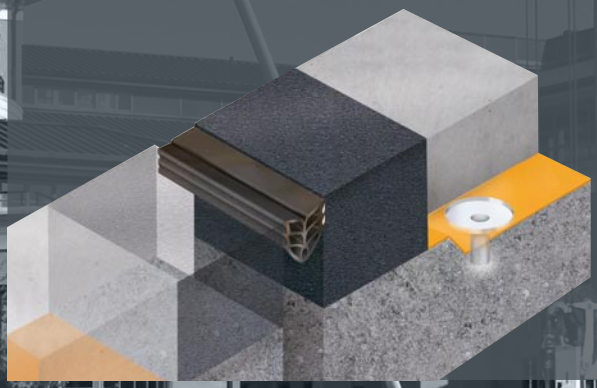
Britflex NJ Expansion Joints

Nosing with preformed compression seal



Market leaders in Expansion Joint Technology

USL BridgeCare provides a complete service to the civil engineering industry for bridge deck protection which includes the supply and installation of expansion joints and spray applied bridge deck waterproofing membranes.

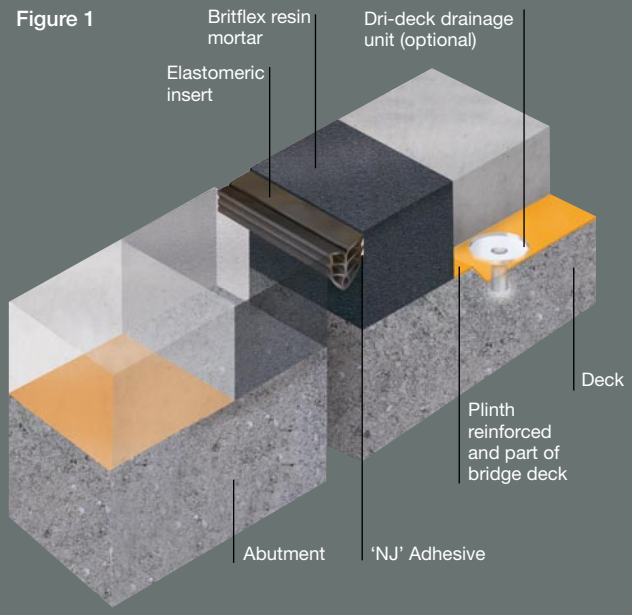
The bridge expansion joint range of products caters for movements from 20mm through to 330mm and includes the NJ system which is one of the most popular expansion joints used on highway bridges, footbridges and car parks.

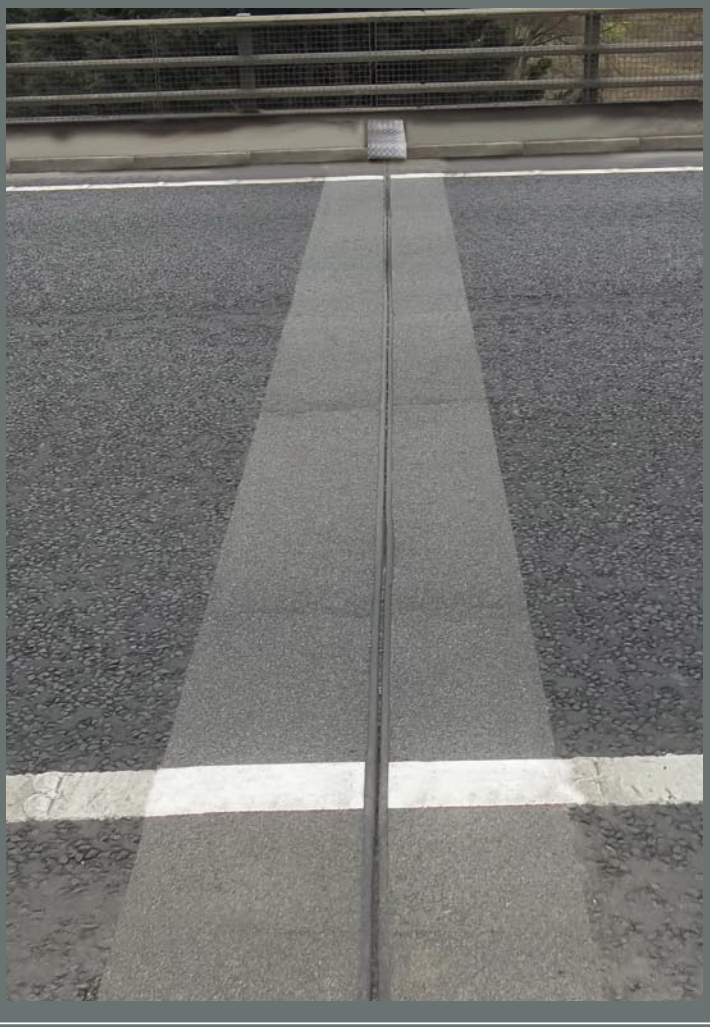
The division also manufacturers and applies Britdex MDP waterproofing which is a rapid curing, spray applied methyl methacrylate system. All of USL's products have a proven track record and comply with the latest UK Highways Agency requirements.

Through their technical department USL BridgeCare is able to offer a complete package of services to clients and will review particular application from initial design to final installation to ensure the selection of the most appropriate and cost effective solution.

For more information on USL BridgeCare's products and services please visit www.usluk.com.

Figure 1





The Product In Brief

The NJ expansion joint is a surface mounted nosing joint with an elastomeric compound known as Britdex Resin Mortar.

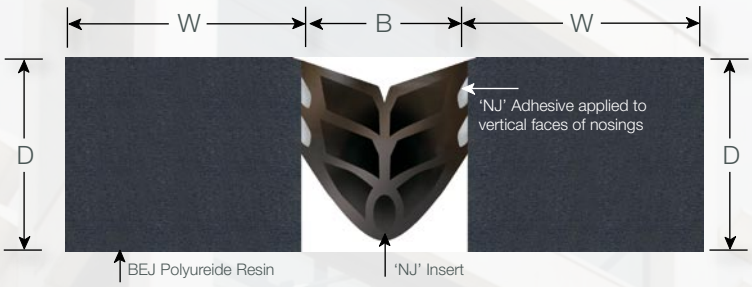
The NJ system is registered with Highways Agency, Transport Scotland and the Welsh Assembly Office. The Highways Agency BD 33/94 Joint Type 4 refers.

The Britflex polyureide resin is included in the Highways Agency list of approved and registered products SA1/98. Unlike the BEJ system, the NJ system can only be used in the situation where the open gap at carriageway level does not exceed 65mm (N.B for U.K. only).

System benefits

- Rapid installation
- Minimised installation periods and future maintenance costs
- No mechanical fixings
- Resists deformation from traffic load
- Installed to the 'as build' geometry of the structure
- Accepts horizontal and vertical movement
- Excellent track record

Table 1 - Design detail



	Total Movement Capacity		Minimum Noisng Size		Optimum' Nosing Gap 'B	Nosing' Gap 'B	
	Horizontal	Vertical	W	D		Min	Max
NJ 1	15	±3	100	60	30	20	35
NJ 2	20	±5	100	60	30	20	40
NJ 4	40	±10	100	60	50	30	70

All dimensions in mm

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.

Applications

- Highway bridges
- Footbridges
- Car parks
- Buildings

The NJ joint is ideally suited for maintenance schemes and has been developed to provide a whole life economic solution for applications where previously asphaltic plug joints have always been considered and can be installed to the full depth of the surfacing as per Figure 2.

Specification

Materials

(i) Polyureide Resin – The patented Britflex Polyureide Resin is a two part liquid system comprising one clear component (base) and one black (hardener), packed in colour coded drums.

(ii) Elastomeric Insert – The extruded EPDM insert is capable of accommodating a range of movement. The insert is supplied in 30-60 metre lengths.

(iii) NJ Adhesive – A solvent free fast setting epoxy gap filling adhesive with excellent bond strength and non-slump characteristics making it ideally suited for application in vertical situations. The material has been specifically developed to bond the EPDM inserts to the Britflex resin mortar.

(iv) Aggregate – The aggregate is a graded mix supplied in 20kg sealed plastic bags.

Typical Designs

Figure 2

Figure 3

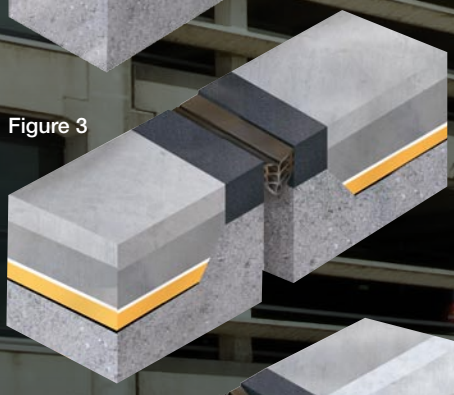
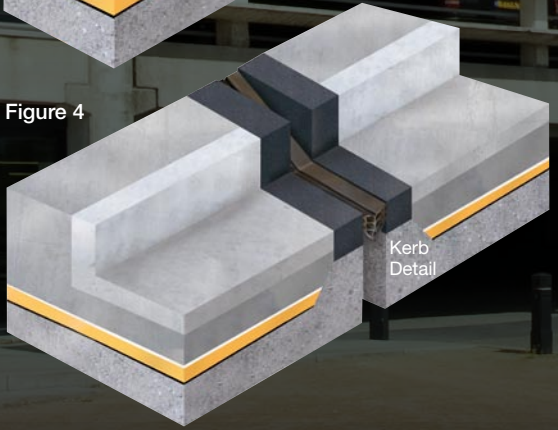


Figure 4



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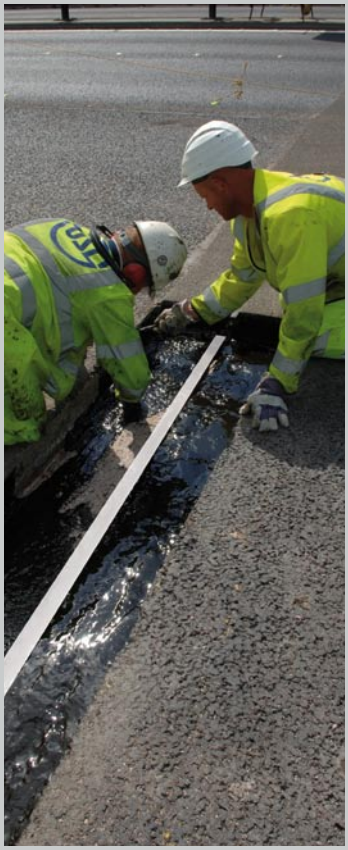

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Installation

(a) General steps in the installation of the 'NJ' Expansion Joint.

(i) The two resin components are warmed in oil jacketed gas fired heaters and maintained at 65º-85ºC.

(ii) The joint width is marked out on the asphalt surfacing and saw cut to provide a trench in the carriageway. The trench width will depend on the selected nosing width, type of joint and the required gap setting.

(iii) The surfacing or the existing failed joint is broken out.

(iv) The concrete deck and any previously formed recess in the verge/central reserve is lightly scabbled and/or wire brushed and substandard asphalt/concrete removed.

(v) All loose arisings and any standing water are removed with compressed air.

(vi) All exposed surfaces should be dried before priming, by using compressed air and/or hot air depending upon the weather conditions.

(vii) The polystyrene shutter is cut to size and placed in the expansion gap between the nosing formers. The complete trench is then primed with the resin mix.

(viii) The nosing formers are suspended on the spacer plates of the selected size movement gap and set for line and level.

(ix) The resin mortar is mixed and then placed into the prepared trench in the carriageway and trowelled flush with the surfacing.

(x) The resin mortar will cure after two to three hours at approximately 70°C. It is then allowed to cool before the spacer plates and nosing formers are removed.

(xi) Bonding adhesive is applied to the nosings either side of the expansion gap.

(xii) The elastomeric insert is installed using compression tongs and can now accept traffic.

(b) Weather and Temperature Criteria

The polyureide resin may be installed in ambient air temperatures of up to 50°C. It is not affected by freezing, but care must be taken to ensure the substrate is frost free and sufficiently dry before the priming stage.

Britflex Polyureide Resin does not emulsify in water and is also more dense than water. Consequently the resin mortar may be placed with care in periods of light rain, provided the resin is placed in such a way as to prevent water from being trapped in the trench. The preliminary operations of sawcutting and breaking out can be undertaken during inclement weather.

(c) Time lag after completion and before opening to traffic

Shortly after the resin mortar has cured the elastomeric element can be inserted and the joint opened to traffic. During phased working the joint can be opened to traffic shortly after the cure with or without the elastomeric element in place to suit the sequence of installation and minimise traffic disruption.

(d) Other Notes

When the 'NJ' system is bonded to steel, this should be prepared by gritblasting or other suitable means just prior to priming. The 'NJ' insert should be protected from white-lining materials e.g. sand.

Britdex MDP waterproofing system

Additional Information

Technical & Advisory Service
Further technical information may be obtained on request and consultation is encouraged to ensure choice of materials selected and detailing are optimised to suit inservice performance requirements and economic solutions. A recommended inspection and maintenance statement is available and will also be issued at the time of installation.

Health & Safety
Universal Sealants (U.K.) Ltd. operate a strict policy on health and safety and details are available on request.

Note:
The colours used in the illustrations may not be indicative of the finished product. Universal Sealants (U.K.) Ltd. reserve the right to update and improve the 'NJ' Expansion Joint and its specification without notice and Engineers and Contracton should satisv themselves that they have full and up to date information.

USL Product Range

Expansion Joints

- **Uniflex Expansion Joint**
  (BD33/94: Type 1 – Buried Joint under Continuous Surfacing)
- **FEBA**
  (BD33/94: Type 2 – Asphaltic Plug Joint)
- **NJ Expansion Joint**
  (BD33/94: Type 4: Nosing joint with Preformed Compression Seal)
- **Transflex, Waboflex & Euroflex**
  (BD33/94: Type 5 – Reinforced Elastomeric)
- **Britflex BEJ Expansion Joint**
  (BD 33/94: Type 6: Elastomeric in metal runners)
- **LJ**
  Longitudinal Joint System
- **UCP**
  Footbridge / car park joint system

Bridge Deck Waterproofing

- **Britdex MDP**
  Methyl Methacrylate (MMA) Waterproofing System
- **Britdex CPM**
  Combined Waterproofing and Anti-Skid Surfacing
- **Britdex CPM Tredseal**
  Combined Waterproofing and Wearing Course

www.usluk.com

USL BridgeCare
Kingston House
3 Walton Road
Pattinson North
Washington
Tyne & Wear
NE38 8QA
United Kingdom

t: +44(0)191 416 1530
f: +44(0)191 415 4377
e: info@usluk.com

Asia Office
USL Asia Pacific PTE
50 Tuas Crescent
Singapore
638730

t: +65(0) 68636363
f: +65(0) 68619566
e: info@usluk.com