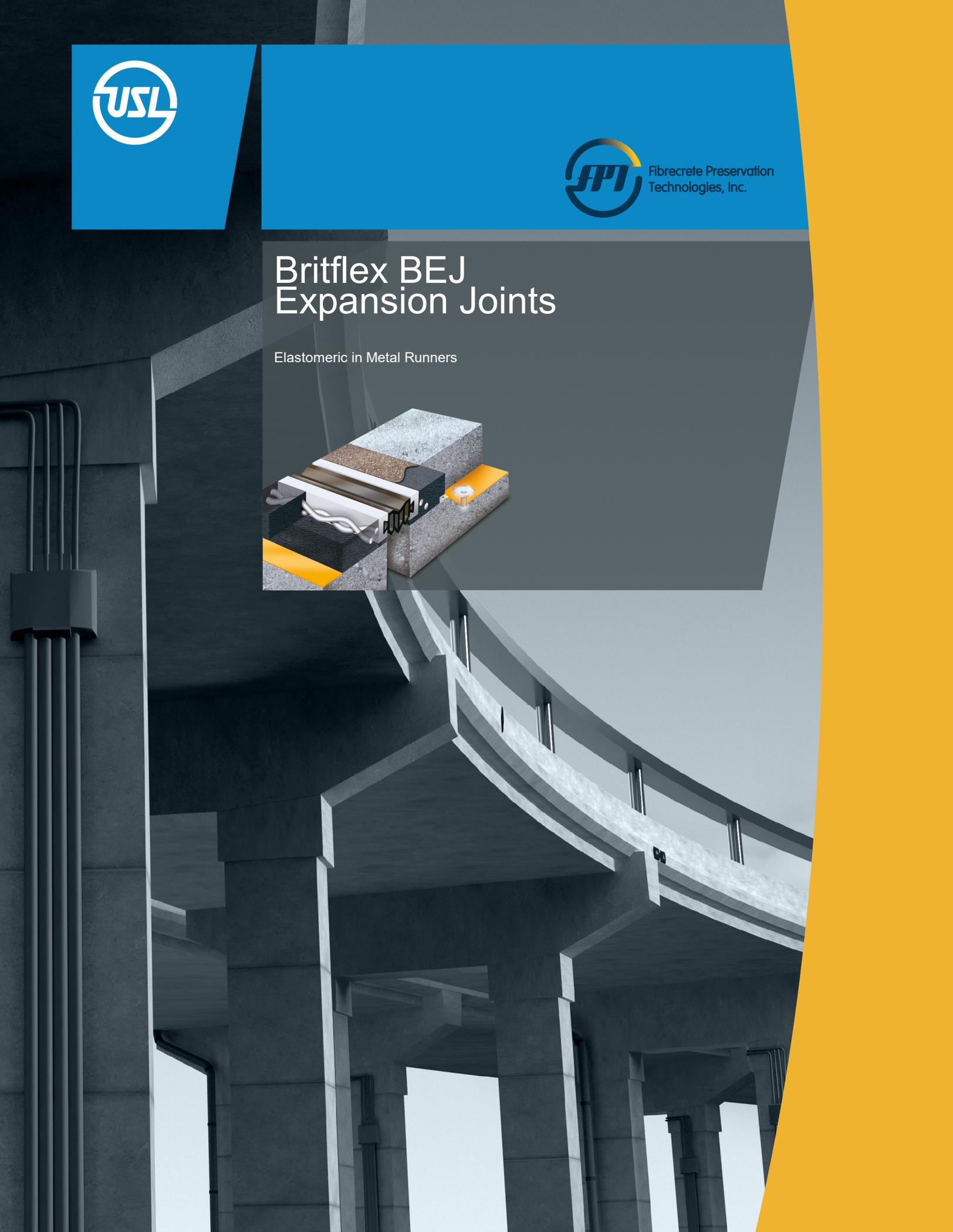
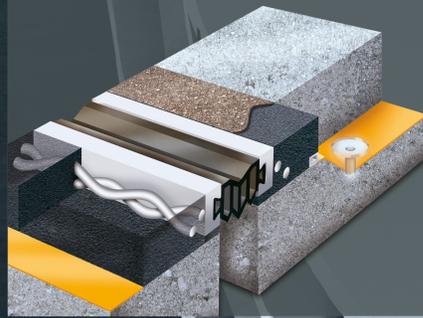




Fibrecrete Preservation
Technologies, Inc.

Britflex BEJ Expansion Joints

Elastomeric in Metal Runners





Fibrecrete Preservation Technologies, Inc.

Market Leaders in Expansion Joint Technology

Fibrecrete Preservation Technologies promotes the market-leading line of bridge expansion joint products in the United States from parent company USL Group: **The Britflex BEJ Expansion Joint System.**

USL's bridge expansion joint line of products caters for movements from 3/4 inch through 13 inches, including the Britflex BEJ, which alone has more than 350,000 linear feet currently in use worldwide.

FPT offer either a product supply service to approved installers or a full turn-key manufacture and install service for the Britflex BEJ from its base here in the USA.

Through its technical department, FPT is able to offer a complete package of services to clients. They will review a particular application from initial design to final installation to ensure the selection of the most appropriate and cost effective solution to protect the client's vulnerable bridge deck movement joints.

HAPAS
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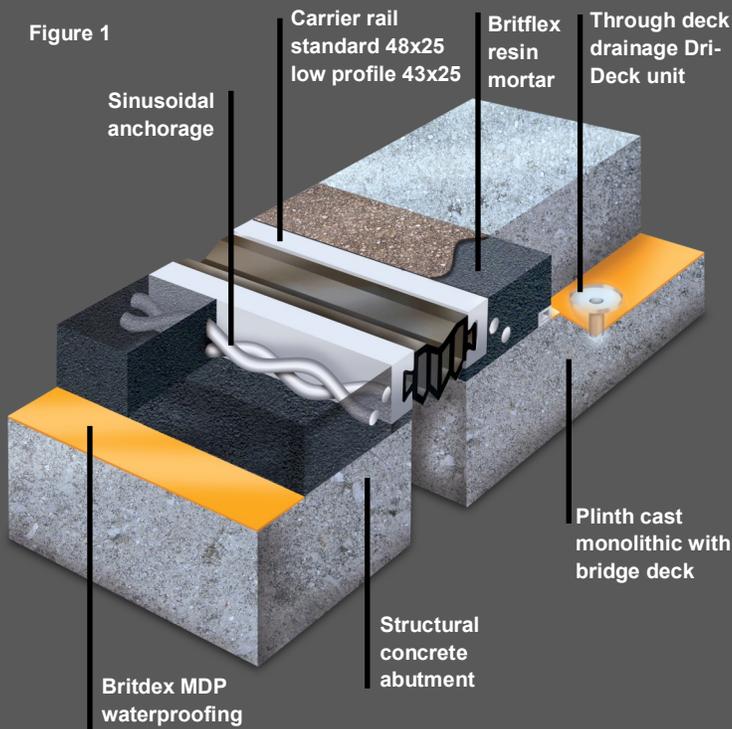


SOUTHEAST
BRIDGE PRESERVATION PARTNERSHIP



A USL Group Company

Figure 1



The product in brief

The Britflex BEJ is a surface mounted mechanical joint system with an elastomeric insert between two metal runners or carrier rails. It is unique in that the rails that house the insert are set into Britflex Resin Mortar, a rapid-curing elastomeric compound.

The joint is anchored to the deck through the excellent bonding properties of the resin without the need for vulnerable mechanical fittings. The system has an unrivalled worldwide track record of over 30 years.

Britflex BEJs incorporate load-bearing cellular elastomeric inserts, accommodating a range of movement up to six inches.

The Britflex BEJ for Maintenance

The Britflex BEJ is ideally suited to replace other failed joint systems. The benefits of rapid on-site assembly allow phased work outside peak traffic hours to minimize traffic disruption. This means significant savings in associated traffic management costs.

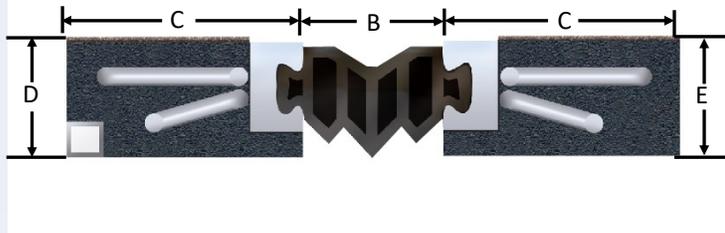
The long, successful track record of the system provides an actual illustration of minimal future maintenance costs.



| BEJ | Movement ⁴ Capacity | | Minimum Nosing Sizes | | Nominal ¹ Nosing Gap | Minimum Nosing Gap | Maximum Nosing Gap | Cover to ² Services | Curb Upstand ⁵ Clearance | Optional Curb Detail |
|-----|--------------------------------|----------|----------------------|------------------|---------------------------------|--------------------|--------------------|--------------------------------|---|----------------------|
| | Horizontal | Vertical | C | D | B | B Min | B Max | | | |
| 3 | 1 ^{3/8} | ±1/2 | 4 | 2 ^{1/4} | 1 ^{3/4} | 1 | 2 ^{1/4} | 2 ^{3/4} | 5 + 5 tan α | 9 |
| 5 | 2 | ±3/5 | 4 ^{3/4} | 2 ^{1/4} | 2 | 1 ^{1/4} | 3 | 2 ^{3/4} | 5 + 6 tan α | 10 ^{1/2} |
| 8 | 3 | ±3/5 | 5 ^{1/2} | 2 ^{3/4} | 2 ^{3/4} | 1 ^{1/4} | 4 ^{1/4} | 3 ^{1/4} | 5 + 5 ^{7/8} tan α | 12 |
| 10 | 4 | ±3/5 | 6 ^{1/3} | 2 ^{3/4} | 2 ^{1/4} | 1 ^{1/2} | 5 ^{1/2} | 4 | 4 ^{7/8} + 6 ^{1/8} tan α | 14 ^{1/2} |
| 13 | 5 | ±3/5 | 7 | 2 ^{3/4} | 4 ^{1/2} | 1 ^{3/4} | 7 | 6 ^{1/2} | 5 + 6 ^{7/8} tan α | 16 |
| 15 | 6 | ±3/5 | 8 | 2 ^{3/4} | 5 | 2 | 8 | 7 | 5 + 7 tan α | 17 ^{1/2} |

Note: Elastomeric insert changes according to joint size

All dimensions in inches



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 contact FPT if a special design is required.
3. For optional curb detail based on minimum nosing widths – see figure 8 and specification paragraph xi.
4. For skew movements, greater than ±1/2 inch, please contact FPT.
5. For clarification of curb upstand clearance (x) see figure 2 and 3.



Figure 2 Plan on skewed joint

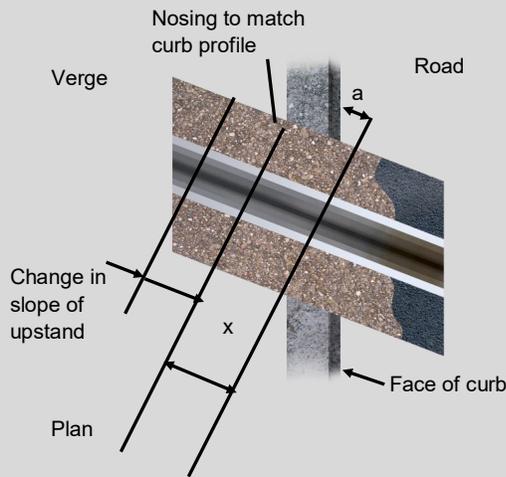
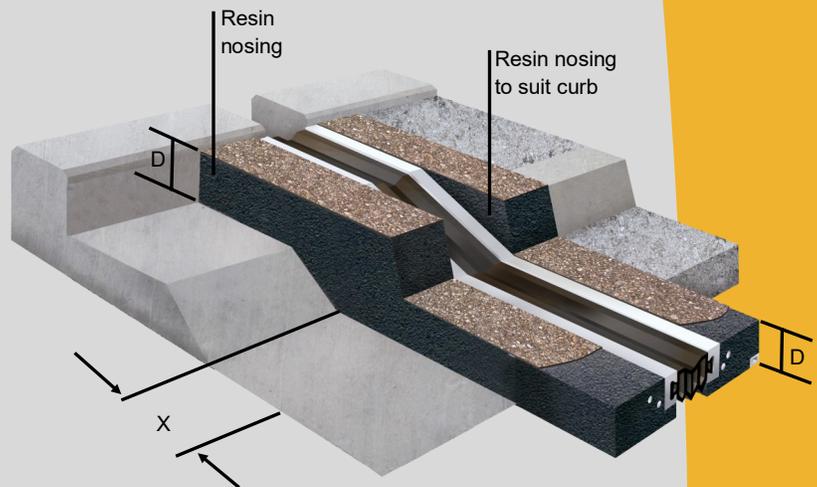


Figure 3 Curb detail

Note: Upstand plinth reinforced and formed as part of bridge deck



Design guidelines

The Britflex BEJ is a high performance expansion joint system that is easy to detail at design stage. FPT is able to assist and advise on all detailing matters, from the most simple to the most complex installations.

Simplicity

Based on three component materials, the Britflex BEJ system is flexible and can be adapted in many configurations.

The standard method of installation for new works is to cast the resin nosings directly into a rebate in the structural concrete that forms the bridge deck or in the asphalt overlay cast over the concrete deck. If the deck end and/or abutment require alteration to suit the joint system, the elevation or plinth must be cast monolithically with both.

At the curbline, the deck and ballast wall should be ramped to deal with the change in level. Details are indicated in Figure 3.

Alternatively, the nosing depth may be increased to match the depth of the bridge deck surfacing, both in the road and the verges. However, if doing so, pay attention to the aspect ratio of the nosing, the passage of any service ducts through the resin mortar, and the

drainage of the surfacing upstream of the joint.

Flexibility

Britflex Resin Mortar exhibits excellent bond strength to steel as well as concrete. Therefore, the Britflex BEJ system may also be placed onto metal deck plates or into a recess provided by metal shelf angle supports. Alternatively, the steel carrier rails of the Britflex BEJ system may be welded directly to the lower steel substrate. (See figure 6.) Steelwork should be clean and free from rust. Get advice prior to undertaking this application.

Standard nosings for new works have an aspect ratio of nominally 2:1 in width to depth. When using nosings of the same depth as surfacing, the appropriate width will depend on the joint type, class of highway, and volume of traffic, but never less than an aspect ratio of 1.25:1 width to depth. If in doubt, please contact our Technical and Advisory Service.

When placing Britflex Resin Mortar around services, the designer should consider the spacing around them.

A minimum clearance of 1 inch is required beneath services / sleeves, and the top clearance (E) is given in

Table 1. This accommodates the insert that dips between the nosings at maximum compression. A spacing of 5 inches between each duct is required to enable proper construction of the joint. It is normally sufficient to provide a debonding / sleeving arrangement on the abutment side.

Hydraulic Relief

A hydraulic relief may be used to relieve hydrostatic pressure that may occur at the surfacing / nosing interface.

The channel is attached to a flexible tube – that is routed either down the expansion gap or into pipework – cast into the deck within the area of the joint.

The channel is not usually required when the expansion joint is at the high end of the bridge deck.

We recommend a more positive and larger capacity Dri-Deck or similar drainage system, either in conjunction with or in place of the in-joint relief. If this is adopted and the expansion joint is built onto a structural concrete upstand as per figure 1, in-joint hydraulic relief may not be necessary.

In order to provide a satisfactory junction to the bridge deck waterproofing system, the membrane should be brought 2 inches into the joint zone on each side of the joint as a temporary measure.

This is subsequently removed during the installation of the Britflex BEJ and the free edge of the waterproofing sealed with resin at the priming stage.

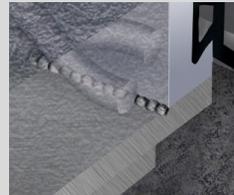
Movement

Table 1 indicates the basic movement capacity of each joint in the Britflex BEJ product line.

Figure 4 Alternative at curb or into parapet recess



Figure 5 Alternative at change on plan



Stitch welding
(intermittent)

Figure 6



Design detail

a) Highway

In new or rehabilitation projects, temporarily cover the expansion gap to prevent spillage of debris into the opening.

Temporary saw-cuts into the newly laid surfacing above the deck expansion gap may be required if significant deck movement is predicted after surfacing and before joint installation. This may not be necessary when the joint is installed soon after the surfacing is laid.

b) Verges

Granular verge and central reserve construction immediately adjacent to the joint is not recommended.

A concrete verge infill is recommended adjacent to the joint & a trench should be formed to accommodate the joint width. If surfacing is required over any verge, the General Contractor should temporarily backfill the verge and mark the rebate's location on the upstand.

Any newly placed concrete should be at least C30, be minimum 7 days old, and cured in accordance with good working standards.

c) Service Ducts

Any service ducts passing through the joint should be properly sleeved to prevent leakage and articulated to the engineer's details.

Ducts and sleeves may be in uPVC or other similar materials provided they do not appreciably soften at less than 176°F if the hot applied version of the Britflex Resin is used. Cables should not be drawn until after the joint is installed, if at all possible.

Ducts/sleeves through the Britflex BEJ require a minimum of 2 inches clearance above the deck and spaced 5 inches between each other to allow continuity of the Britflex Resin Mortar. Where there are four or more ducts present in any one verge/sidewalk, get further advice from FPT.

d) Curbs

Curbs should be laid starting flush with and working away from the expansion gap. The curbs are saw cut to the appropriate rebate width and removed during the joint installation.

Proprietary continuous curbline side entry gully systems may be used in conjunction with the Britflex BEJ. Expansion units are available that are compatible with the Britflex BEJ system. Seek advice from FPT or the manufacturer of the side entry drain outlets at the design stage.

e) Sidewalk Areas

Curb cover plates or sidewalk cover plates are available as an optional addition. Consult FPT regarding their inclusion.

Other applications

i) As an improvement over asphaltic plug joints for low movement joints in heavily trafficked areas.

ii) On building structures, parking decks, service decks and elevated ramps with a need for heavy duty expansion systems.

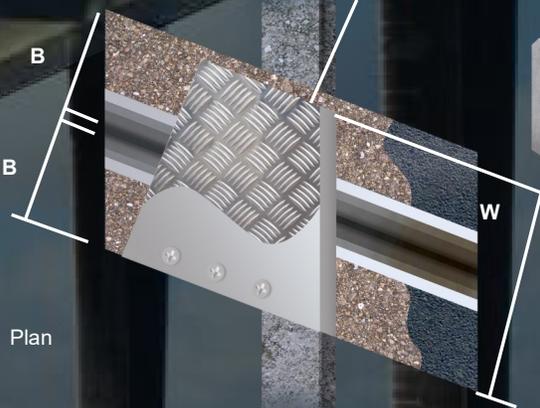
iii) On marine and railroad structures

iv) Britflex Resin Mortar may be used for new and replacement transition strips to elastomeric joints and general road metalwork. It may also be used as a transition to the metalwork of existing proprietary expansion joints where the adjacent surfacing is distressed.



Figure 7

Nosing recessed to match curb face



Plan

Figure 8

Aluminum five bar tread pattern curb cover plate



Resin nosing

Specification for the Britflex BEJ

i) Elastomeric Resin

Britflex Resin Mortar is a two-part liquid system. It is available as a hot applied or cold applied version.

ii) Aggregate

The aggregate is a graded mix supplied in moisture-proof plastic bags or containers

iii) Carrier Rails

The metal rails are mild steel with factory applied corrosion protection. Stainless steel rails are available at an additional cost. Nominal size 1" wide x 2" deep with welded sinusoids to provide anchorage into the Britflex Resin.

iv) Curb Units

The metal carrier rails are cut, mitered and welded on site, to suit the curb detail.

v) Elastomeric Insert

The extruded EPDM insert is available in various sizes, each capable of accommodating a different range of movement.

vi) Hydraulic Relief

Relief channel is 3/4" square aluminum with 0.4" (11mm) diameter holes drilled on one face at 3 1/2" (90mm) centers.

If specified, the channel is installed to the deck or high side of the joint along the roadway length.

vii) Discharge Tube

When an in-joint hydraulic relief channel is specified, this is terminated with a braided PVC flexible tube with a 1-inch internal diameter (1 1/4" external diameter), discharging to a suitable collection point.

viii) Polystyrene

1" and 2" sheets of expanded polystyrene are cut to size to form a temporary shutter in the gap between the nosings and also in the curb area.

ix) Spacer Plates

The spacer plates set the rails at the appropriate gap setting during installation.

x) Strongbacks/Hangers

The spacer plates are connected to the hangers that suspend the rails over the expansion gap at carriageway level.

xi) Curb/Sidewalk Cover Plates (Optional Additions)

These may be supplied in aluminum plate with five bar tread pattern.





Additional Information



Fibrecrete Preservation
Technologies, Inc.

Bridge Deck Waterproofing Range

Notes

The colors used in the illustrations may not be indicative of the finished product.

FPT reserves the right to update and improve the Britflex BEJ and its specification without notice and engineers and contractors should satisfy themselves that they have full and up-to-date information.

Technical & Advisory Service

Further technical information may be obtained on request. Consultation is encouraged to ensure optimal choice of materials selected and detailing to suit in-service performance requirements and economic solutions.

Health & Safety

Fibrecrete Preservation Technologies operates a strict policy on health and safety; details are available on request.

Other Expansion Joints

- **Uniflex Expansion Joint**
(BD33/94: Type 1: Buried Joint Under Continuous Surfacing)
- **FEBA HM**
(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)
- **LJ**
Longitudinal Joint System
- **UCP**
Pedestrian Bridge Joint
Parking Garage Joint

Bridge Deck Waterproofing

- **Pitchmastic PmB**
Polyurethane bridge deck waterproofing membrane system.





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