



BEJS

Bridge Expansion Joint System

One Install Does It All



**Watertight, Traffic Durable,
Joint-Face-Adhered,
Primary Seal for Retrofit
and New Expansion Joints**

The **BEJS System** is a traffic-durable bridge and roadway expansion joint which provides a primary watertight seal. It is designed to handle harsh environmental conditions and features greater movement capability, better low temperature flexibility and higher temperature stability than previously available. EMSEAL's successful watertight approach to structures is now applied to bridges. The single installation non-invasive anchoring system provides for quick turnaround and repairs. The **BEJS System** will help prevent and/or decrease maintenance costs to bridge bearing pads and support structures.

Uses

Manufactured for the D.O.T./Infrastructure market, it is ideal for new construction and retrofit of old or failed bridge expansion joint systems in:

- Concrete-to-concrete substrates
- Rebuilt joint faces
- Where demolition and removal of existing embedded metal angles is not feasible or affordable
- As a lasting replacement for all failed liquid-sealant joints in parapets, sidewalks, jersey-barriers, etc.

Product Description

BEJS is a 100% acrylic, preformed, precompressed, factory cured and silicone coated impregnated cellular foam. The hybrid material is installed into field applied epoxy adhesive and a silicone band is inserted along the sides. Traffic-grade Pecora 301 silicone is used for its superb fuel resistant properties (see Figure 1).

The **BEJS System** features a patent-pending acrylic adhesive which is infused into the cellular foam base material incorporating hydrophobic microspheres. This outperforms the sealing performance of all other acrylic impregnated products. It is odorless, clean handling, UV stable, non-staining, and features low temperature flexibility.

The **BEJS System** functions well in thermal shock conditions on top decks (rapid opening and closing of joints during large temperature swings) where asphalt and wax-based products are not recommended. EMSEAL can compress BEJS "to fit" at high temperature ranges in order to ensure watertight success at cold temperature points.

RESIZE, REBUILD, RESEAL - The EMSEAL Approach to Bridge Expansion Joint Retrofit.

RESIZE:

Joint failure is frequently the result of not matching the movement capability of the expansion joint to the movement expectations of the structure as a product of its length and temperature range for its geographical location. Recalculating these factors may be necessary to ensure the correct size is used on the retrofit.

REBUILD:

Traffic, freeze-thaw cycles and rebar corrosion can crack or deteriorate the concrete or asphalt at joint edges. By removing the failed concrete or asphalt and replacing it with EMSEAL's impact-resistant, fast curing, nosing material, the joint edge will be repaired and reformed to accept the expected movement handled by the **BEJS SYSTEM**.

RESEAL:

Installation of the **BEJS SYSTEM** is fast, can be staged while preserving partial traffic flow, can be done day or night, and can be installed in a wide temperature range.

Continuity of seal is critical. Not only the joint in traffic surfaces must be watertight but also the joints through all changes in plane and direction. To achieve this, the joints in the parapets and sidewalks must be sized the same as the roadway joint and the system sealing the roadway must transition through all the elevation changes ensuring watertightness across the entire bridge.

Expansion joints are not drains. A major cause of structural deterioration of piers, columns and beams on bridges is the leaking of joints that are used as drains. Water laced with de-icing salts and atmospheric contaminants directed through expansion joints shed directly onto the most critical structural elements of bridges. Corrosion and expansion of rebar and subsequent spalling require the expensive reconstruction of beams, piers, columns and wing walls. Unless the joint system above these structural elements is watertight, and the pitch of the bridge drains water away from the joints to a less critical discharge point or to purposely-designed drains, structural deterioration will continue and accelerate.



Fig. 1: BEJS SYSTEM in Typical Installation--New or Retrofit

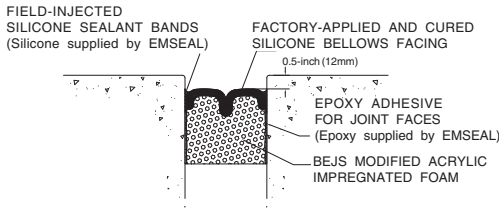


Fig. 2: BEJS SYSTEM in Existing Steel Angles--Retrofit

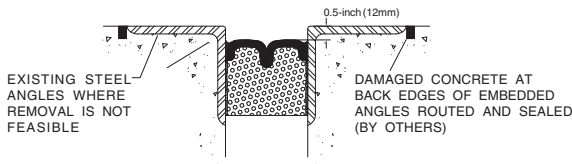
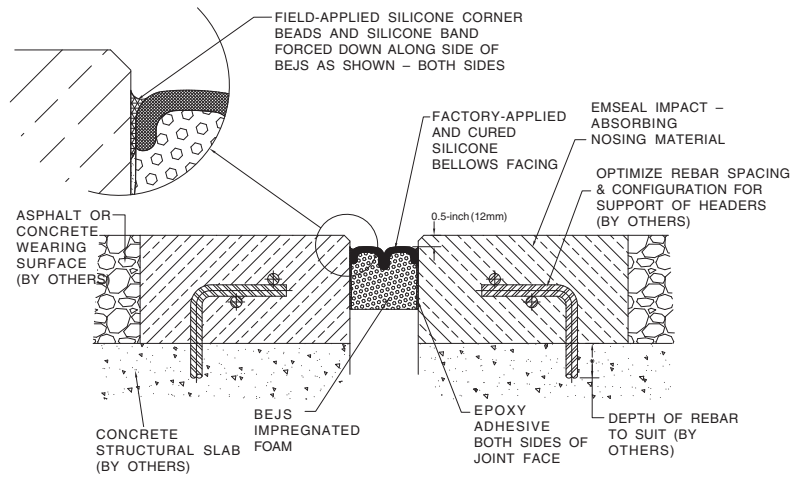


Fig.3: BEJS SYSTEM in New or Rebuilt Joint Edges with EMSEAL Nosing Material



Note: For joint sizes less than 1" (25mm) a smooth, convex, single bellows is supplied.

Features

Watertight – the tensionless silicone bellows is installed just below the deck surface. This ensures watertightness is achieved at the deck surface. Unlike liquid-applied sealants, compression seals, and inflated seals, the **BEJS SYSTEM** does not rely on adhesion in tension. Instead the material is precompressed in the factory ensuring that the spring energy of compression is always pushing back on the substrate.

Non-Invasive Anchoring – there are no hard metal-to-concrete connections in the system. This includes embedded pins, anchors, screws, bolts or tracks, trays or rails. The system is locked to the joint faces by means of the 1) backpressure of the foam; 2) the epoxy adhesive, and 3) the injected silicone sealant band at the joint face to foam and silicone bellows interface.

Joint-Size Variation – Uniform bellows appearance, and the ability to handle variations in joint size through size-switching, are among other system features.

Factory-Fabricated Transitions – as in all EMSEAL expansion joint systems, continuity of seal through changes in plane and direction is an essential performance differentiator. EMSEAL offers "Universal-90" factory-fabricated transitions and terminations. These **BEJS** single-unit pieces can be turned and joined horizontally or vertically to complete a run or transition to straight sticks of **BEJS**. These eliminate the need for cutting/creating corners in the field as well as ensuring continuity of seal through their monolithic design.

Performance

Capable of movements of +50%, -50% (100% total) of nominal material size.

Standard sizes from 1/2" (12mm) to 4" (100mm). Other sizes available on review of application - consult EMSEAL.

Fuel Resistance: Silicone sealant is not degraded by contact with fuel. Some swelling may normally occur, but it will return to its original shape upon evaporation of the fuel.

Composition

BEJS is produced by coating an impregnated cellular foam with Pecora 301 highway-grade silicone.

The expanding foam is cellular polyurethane foam impregnated with a water-based acrylic containing a high performance micro-cellular additive.

The silicone external facing is factory applied to the foam at a width greater than maximum joint extension and is cured before final compression.

Silicone application and curing takes place in a factory-controlled environment. In contrast to field applied liquid sealant and backer rod installations, no movement takes place during curing that can cause deformation or stresses in the material.

Then compressed, a bellows is created in the coating*. As joint movement occurs the bellows simply folds and unfolds free of tension on the bond line, and virtually free of tensile stresses in the silicone material.

The foam provides a resilient backing to the silicone coating, allowing the system to resist reasonable transient point loads

BEJS SYSTEM is supplied in shrink-wrapped lengths of precompressed sticks manufactured to less than the joint size for easy insertion. After removal from the shrink-wrap and hard board restraining packaging, it expands gradually.

*BEJS is manufactured with a dual-bellows surface for nominal gap widths of 1" (25mm) to 4" (100mm). Widths of 1/2" (12mm), 5/8" (15mm) and 3/4" (20mm) are manufactured with a convex single-bellows surface.