



# BEJS

*Bridge Expansion Joint System*

A SIKA COMPANY



*Traffic grade  
UV-resistant silicone*



*100% acrylic  
impregnated foam*

## Information **Guide**

# BEJS - Bridge Expansion Joint System

## System Durability

### How long will it last?

When sized, installed, maintained and inspected properly BEJS could be expected to last 10 to 15 years. In 2014 BEJS received an AASHTO Innovation Award nominated by MoDOT and was certified to APEL by NYSDOT.

*"This technology's excellent track record should be shared in order to more quickly put it in the hands of states so that they can use it with confidence knowing that other states have found it a successful tool for preserving critical bridge components. BEJS is one of the few technologies that are actually successfully keeping water on the bridge deck and away from the bearing pads and support components. We had such poor results with silicone joints we quit trying to repair leaks." MoDOT*

*"NYSDOT identified this item after using it to rehabilitate several structural joints. The Material Lab reviewed those sites and found the item to have excellent performance."*

### What if the silicone gets punctured or sliced?

We know the enemy of the expansion joint is the snow plow. The good news is how easy BEJS is to repair. Only the damaged section needs to be removed and reinstalled – not the entire length of the expansion joint like that of a continuous extruded seal such as a compression seal or V-shaped seal.

To prevent damage from occurring in the first place EMSEAL developed the "Depth Checker" tool. This tool gives the installer and the inspector a means to gauge whether the joint



is installed to the proper depth to help ensure better service life.



EMSEAL's Depth Checker tool.

## ... and what about those joints?

In 2016 NJDOT wrote:

*"New Jersey Department of Transportation has been utilizing Emseal BEJS widespread since 2012 on our structures. To date, NJDOT has not had a single failure of the Emseal BEJS product. With the product applied as per the manufacturer's instructions, **we have not experienced any leakage or failures at the joint splice locations.** It should also be noted that since the first application in 2012, New Jersey has experienced both prolonged record heat as well as record cold."*



Silicone inserted to the exposed faces of the silicone bellows provides a strong bond between the BEJS sticks.

## Can BEJS replace liquid sealant and backer rod?

BEJS sizes 1/4" to 1 1/4" are produced on 12 foot reels. The reels permit these sizes to be supplied economically and to be used in place of typical liquid sealant and backer rod applications such as at longitudinal joints and easily transitions from deck to parapet walls. Engineers have commented that BEJS-On-A-Reel *"is like caulk and backer rod on steroids!"*



**BEJS-On-A-Reel**

# BEJS - Bridge Expansion Joint System

## *Performance*

### **How does BEJS deal with changes when the joint gap varies from one end to the other or there is spalling?**

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By working closely with the installing contractor we can determine if one size will work or if additional sizes need to be shipped so that BEJS can gradually accommodate to these changes. BEJS conforms to minor spalling. Communication with the contractor about conditions on the deck permits us to ship the proper size to provide a custom solution.



### **How do you accommodate for installations during hot weather yet ensure that BEJS won't fail in cold weather?**

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BEJS is a precompressed joint material and uniquely designed to handle this type of condition. Again good communication with the installer will permit us to coordinate how the material should be sized and compressed for the day of install. If it will be a particularly hot day we can custom compress BEJS so that it will be easy to install when the joint is at its smallest size. With the ability to compress BEJS to the appropriate width for the conditions on the day of install it can be installed almost any time of year except during extreme cold. Precompressed joints install faster saving time and money.

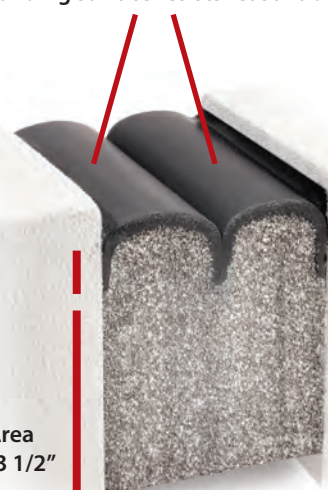
## Does debris accumulate on top of BEJS? Could BEJS be pushed out of the joint?

Yes, debris will collect over any expansion joint unless there is a bridge washing or sweeping program in place. Due to the large bond line surfaces on the sides of BEJS and the approximate 2 to 2 ½ lbs per square inch of backpressure it pushes out with against the substrate, BEJS has never fallen out of a bridge. Cast in place shoulders or “keepers” in substrates are no longer required. In addition the flat top surface of BEJS prevents material from compressing into a depression or trough.

MoDOT noted in their nomination form to AASHTO:

*“The preformed silicone V shape systems are the primary competitor of this system, but they collect more debris and can be more difficult to install in tight joints.”*

3/4" recess limits grit and debris buildup.  
Large bonding surface resists reasonable point loads.



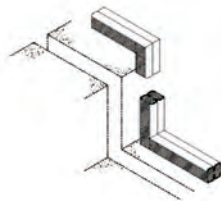
Expanded  
Bond Line Area  
of 1 3/4" to 3 1/2"

# BEJS - Bridge Expansion Joint System

## Features

### Expansion joints often leak when they transition to a curb or parapet wall, how does BEJS handle this?

Continuity of seal through changes in plane make BEJS an essential performance differentiator. EMSEAL is the first company to warrant curb and parapet wall corner transitions to be watertight with factory fabricated assemblies.



Watertight Transitions with Universal 90's



### What if there isn't a curb or wall and the joint terminates at the end of the deck?

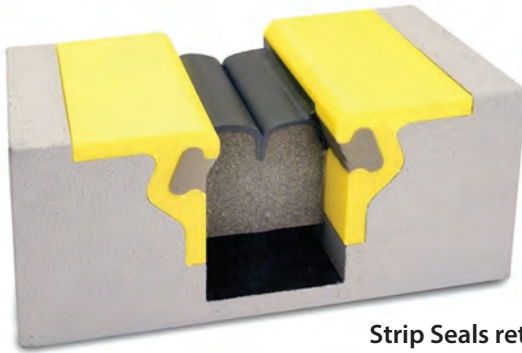
That is a concern and the reason why EMSEAL designed the BEJS Kickout termination which is intended to direct water off the end of the expansion joint and beyond the pier. It functions as a drip edge.



BEJS Kickout

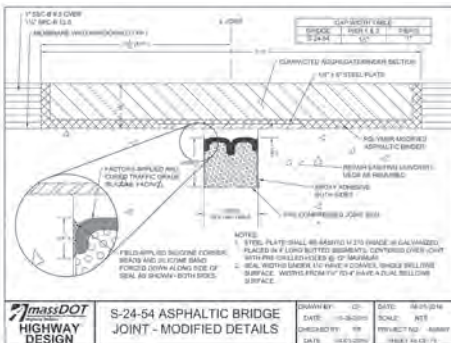
## Have you used BEJS in any other applications?

BEJS has successfully been used as a retrofit for failed membranes in strip seals that are no longer manufactured or there is damage to the knuckle area of the rail. We recommend that the knuckle be filled in with our epoxy and the installation proceeds as normal.



Strip Seals retrofit  
with BEJS

BEJS is used by an increasing number of DOTs as a secondary seal under asphaltic plug joints. BEJS with its factory fabricated transitions ensure watertightness, especially at the curb and wall under the asphaltic plug joint and acts as a belt and suspenders for these applications.



Making Asphaltic Plug  
Joints Watertight

# BEJS - Bridge Expansion Joint System

## Installation

### Is BEJS easy to install?

BEJS is shipped in sticks that measure about 6 ½ feet. For sizes ¼" - 1 ¼" it comes on 12 foot reels. Because the material is precompressed to fit for the day of install it is one of the easiest systems to install. The BEJS sticks permit easy staging for lane closures without having to deal with large rolls of material. BEJS arrives on site as a system that includes epoxy and silicone sausages for the injected side bands.

MoDOT wrote in their nomination for the AASHTO Innovation Award: *"It fills a maintenance gap for us. Most joints will need one or maybe two of these maintenance type glands in their life cycle before you completely replace the joint and armor. This system is the easiest to install of the options that are currently available in Missouri."*

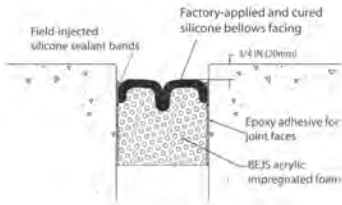


Installation video of BEJS available at [www.emseal.com/bejs-installvideo1](http://www.emseal.com/bejs-installvideo1)

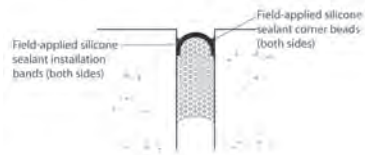


## Various Installations of BEJS

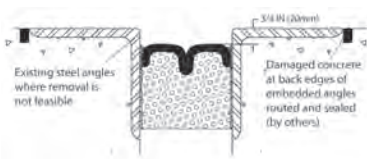
### Typical Stick new or retrofit



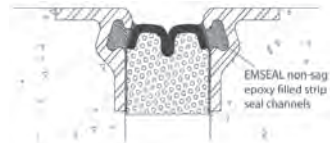
### Typical Reel New or Retrofit



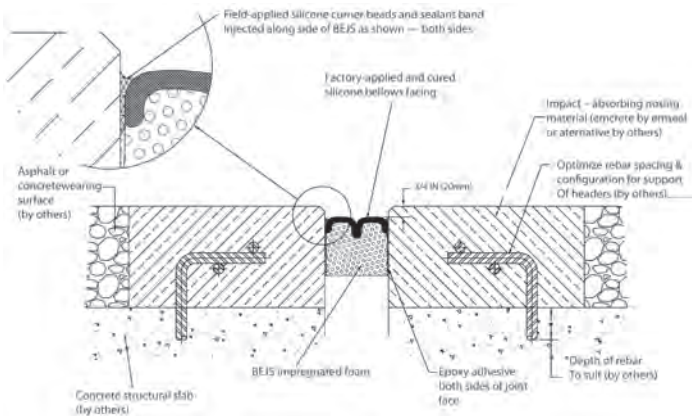
### Installed in Existing Steel Angles



### Installed in Existing Strip-Seal



### Installed in New or Rebuilt Joint Edges with Nosing Material



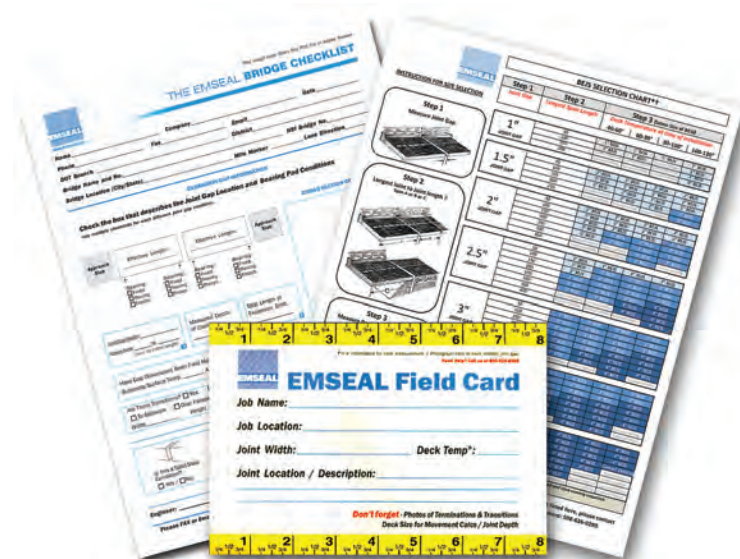
# BEJS - Bridge Expansion Joint System

## Sizing

### How do I choose the correct size of BEJS?

Sizing is a critical component of the process. We want to ensure that the material will be easy to install in the summer when the joint is closed down, but will have enough foam and silicone to handle the larger joint opening in winter. There are a few tools EMSEAL provides to assist with this:

1. An **EMSEAL Checklist** that you fill out, send in to EMSEAL, and we will advise you on the correct size to order.
2. An **EMSEAL Field Measurement Card**. This is a reusable dry erase card that can be filled out on the site, a photo taken, and emailed to EMSEAL for sizing recommendations.
3. An **EMSEAL Sizing Chart** so that you can go out on the day of install with a few sizes of BEJS on the truck and determine what size of BEJS to select based on bridge deck span length, joint opening, and current temperature.



To ensure the right method for your project  
call 508-836-0280 or email us at [bejs@emseal.com](mailto:bejs@emseal.com).



## BEJS Expansion Joint FAQ's

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**What are standard available sizes?** BEJS is supplied on a 12-LF (3.65m) reel for widths of 1/2" (12mm) to 1 1/4" (30mm). For widths of 1 1/2 (40mm) to 4" (100mm) it is supplied as a 6.56-LF (2m) stick.

**What are movement capabilities?** +50% and -50% (total 100%) of nominal size.

**What temperature is required for installation?** 40-degrees and rising ensures the epoxy and silicone cure properly.

**Can I install in wet conditions?** This depends...the substrate cannot be "visibly" wet. A slightly moist surface is okay. Wet conditions will jeopardize the ability of the silicone to cure and adhere properly.

**What are the lead times?** Lead times are dynamic. EMSEAL posts lead times on our website. EMSEAL has started a robust stocking program for peak seasons so most likely we can supply material that may arrive in a 3 to 5 day window from time of order.

**How long can the material be stored?** The foam will become "sleepy" after it has been in compression after 8-14 months. It will always expand, but may do so more slowly. We encourage using the material the same season that you order it, but if some is left over it can be heated before install and will function normally.

**How is the material joined at the seams?** A bead of silicone is applied to one end of the material on the silicone surface. The next stick is compressed firmly against it and then pressed down to its finished depth.

**How long does the foam take to expand?** This is temperature dependent, but in 70-degree ambient temperatures the foam will expand in a few minutes. In colder temperatures below 60-degrees the foam could need several minutes to expand. Production rates can easily be controlled by opening the packages a bit sooner.

**Can I field fabricate corners?** Yes, for outside corners you can make a field fabrication transition that is seamless. For inside corners you can field fabricate them but this takes more time and some skill. A majority of our customers order the factory fabricated inside corner transitions.

**Why do you require injected side bands of silicone?** Side bands ensure that BEJS is properly locked onto the substrate with no leaks. Substrates aren't always perfect and this helps ensure a successful seal.

**What about skew?** Skew puts forces on the material in unpredictable ways. Our foam at the microscopic level is just a sphere, so it doesn't matter what direction it gets pulled in, as long as the overall movement is within the material's capability. We can oversize BEJS to provide additional movement as needed. BEJS is one of the few materials that can handle skew with its +50% and -50% movement (100% total) capability.



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**TRANSOVATION  
AWARDS**  
The Quality Excellence and Innovation Organization



## EMSEAL's BEJS Award Winning Technology

The BEJS SYSTEM builds on a track record of over 30 years of sealing horizontal plane joints with pre-compressed foam sealants. The system is comprised of a precompressed, silicone-and-foam hybrid installed into field-applied epoxy adhesive on the joint faces; with the silicone bellows locked to the joint faces with a silicone sealant band.

The BEJS SYSTEM features an innovation in sealant technology in the form of a microsphere-modified, 100% acrylic impregnation infused into the cellular foam base material. It features low temperature flexibility not previously available in asphalt, wax, or isobutylene-based predecessors or competitors. BEJS is suitable for applications including joint-face adhered installations on bridge decks, wing wall, abutments, jersey barriers, precast panels, etc.

EMSEAL offers technical service via trained bridge technicians. What remains unique to EMSEAL today is our support and service. For field applications - EMSEAL has innovative 3-D technical support for difficult projects. EMSEAL is there before orders are placed and long after the material is installed.

*For more information including an installation video visit EMSEAL's website at [www.emseal.com/bridge](http://www.emseal.com/bridge)*



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