**A. General**

The work shall consist of furnishing, placing and bonding a pre-compressed, foam-supported silicone bridge expansion joint system with an epoxy gel adhesiveto adjacent structures in accordance with the details shown on the plans and the requirements of these specifications. Components of the pre-compressed, foam -supported silicone bridge expansion joint system shall not be substituted and shall be supplied from one expansion joint manufacturer.

Expansion Joint Manufacturer shall have a minimum ten (10) year’s experience specializing in the design and manufacture of silicone and foam technology expansion joint systems

**PRODUCT INFORMATION**

Manufacturer: **Watson Bowman Acme Corp.**

 95 Pineview Drive

 Amherst, NY 14228

 (P) 800-677- 4922

 (F) 716-691-9239

 www.Watsonbowmanacme.com

Product Name **Wabo®FS Bridge Joint**

Product

Description: Wabo®FS Bridge Seal is a pre-compressed, silicone coated, self-expanding foam bridge joint system installed with a field applied epoxy gel adhesive on the joint interfaces.

Intended Use: To seal expansion joints on

Bridges

1. **Quality Control**

Expansion Joint Manufacturer shall be ISO-9001 certified and shall provide written confirmation that a formal Quality Management System has been independently audited and approved to these standards. Alternate manufacturers will be considered provided they submit written proof that they are ISO 9001 certified prior to the project bid date.

# **C. Product**

Provide a pre-compressed, foam-supported silicone bridge expansion joint system that is capable of accommodating movements of +/-60% of joint opening and as shown in the contract plans. The pre-compressed, foam-supported silicone bridge seal shall comprised of a hydrophobic 100% acrylic impregnated polyurethane foam seal coated with a highway grade silicone

The pre-compressed, foam-supported silicone bridge seal shall be bonded to the joint interface with an epoxy adhesive.

# **D. Component and Materials**

The Contractor shall furnish the selected expansion joint manufacturer’s certificate of compliance that materials proposed will meet the requirements as set forth in these specifications.

1. Seal Profile

The pre-compressed, foam-supported silicone bridge seal shall be pre-compressed, hydro­phobic acrylic foam seal manufactured without any vertical laminations. Material composition shall be free of inert fillers any waxes or wax compounds; asphalts or asphalt compounds meeting the following physical requirements

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| --- | --- | --- |
| **PHYSICAL PROPERTY** | **TEST METHOD** | **REQUIRMENTS** |
| Foam Core | N/A | Cellular, high density, polyurethane foam |
| Impregnation | N/A | Proprietary, modified, water-based, acrylic |
| Tensile Strength | ASTM D3574 | 21 psi min |
| Elongation | ASTM D3574 | 125% +/-20% |
| UV / Light & Moisture Resistance | DIN 18542 | Pass |
| Compression Set | ASTM D3574 | 3% max |
| Density | ASTM D545 | 4-6 lb./cu. ft |
| Tear Resistance | ASTM D624 | 21.5 lbs/in |
| Vertical laminations |  | none |
| Water Absorption | ASTM D3574 | <.02 lbs/ft 2 |
| Temperature Service Range | ASTM C711 | -40o F to 185 o F |

1. Seal Profile Silicone Coating

The Highway Grade Silicone Coating surface seal provides a uniform bellows appearance that provides for water and fuel resistance and shall meet the following physical properties:

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| --- | --- | --- |
| **PHYSICAL PROPERTY** | **TEST METHOD** | **REQUIRMENTS** |
| Color | Visual | Gray |
| Durometer (Shore A)  | ASTM C 661 | 20 |
| Resilience | ASTM D5329 | ≥ 95% |
| Tensile Strength | ASTM D412 | 140 psi |
| Joint modulus at 50% 100% 150% | D3574 E | 7 psi max8 psi max9 psi max |
| Elongation @ break | D3574 E | >1400% |
| Weatherability |  | Unaffected by climate extremes |
| Flexibility |  | Cured sealant stable from -50 o F to 300 o F |

1. Silicone Sealant Finish Bead:

A one component, medium modulus neutral cure highway grade silicone sealant and adhesive shall be used as a finish bead to the top edge of the pre-compressed, foam-supported silicone seal profile as well as the substrate on both sides. Tool silicone at joint connections and joint interfaces to avoid any excess silicone.

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| --- | --- | --- |
| **PHYSICAL PROPERTIES** | **TEST METHODS** | **REQUIREMENTS** |
| Color | Visual | Gray |
| Durometer (Shore A)  | ASTM C661 | 25 +/-5 |
| Peel Strength | ASTM C 794 | 55 lbs/in min |
| Ozone and UV Resistance | ASTM C793 | Excellent |
| Tensile Strength | ASTM D412 | 250 psi |
| Joint Movement Capability | ASTM C719 | +/-50 % |
| Elongation | ASTM D412 | 700%  |

1. Epoxy Adhesive:

The epoxy adhesive shall be a rapid curing, epoxy based, gel adhesive used to bond the pre-compressed, foam-supported silicone seal profile to concrete, steel or elastomeric and visco elastic concrete substrates. The epoxy gel adhesive shall meet the following physical properties:

|  |  |  |
| --- | --- | --- |
| **PHYSICAL PROPERTIES** | **TEST METHODS** | **REQUIREMENTS** |
| Tensile Strength | ASTM D 638 | 7100 psi (40 Mpa) |
| Elongation @ break | ASTM D 638 | 2% |
| Shear Strength | ASTM D 732 | 5700 psi (39 Mpa) |
| Bond Strength | ASTM C 882 | 2600 psi (17.9 Mpa) |
| Compressive Strength | ASTM D 579 | 9100 psi (62.7 Mpa) |
| Set Time @70 F @90 F | ASTM C 881 | 70 min.40 min. |
| Gel Time @75 F | ASTM C 881 | 20 min. |

1. Splice Adhesive:

A high performance, low modulus, high movement, non-sag, fast curing, and ready-to-use hybrid sealant shall be used for joining the pre-compressed, foam-supported silicone seals and shall meet the following properties:

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| --- | --- | --- |
| **PHYSICAL PROPERTIES** | **TEST METHODS** | **REQUIREMENTS** |
| Joint Movement Capability | ASTM C719 | +/-50 % |
| Shore A Hardness  | ASTM C661 | 17-23 |
| Tensile Strength | ASTM D412 | 200 psi |
| Tear Strength | ASTM D 1004 | 22 lb/in |
| Ultimate Elongation @ break  | ASTM D412 | 700-900 % |
|  |  |  |

### **E. Cyclic Testing of Silicone Bridge Joint Systems**

The pre-compressed, foam-supported silicone bridge seal shall be pre-qualified through cyclic testing by an independent laboratory. The cyclic testing procedure shall determine the durability of the pre-compressed, foam-supported silicone bridge expansion joint system after two hundred cycles in compression and tension. Any defects, tears or bond failure will be cause for rejection.

A document signed by an independent, third party testing or inspection laboratory to verify testing will be basis of acceptance.

|  |  |
| --- | --- |
| **CYCLIC LOADING TEST PROPERTIES** | **REQUIREMENT** |
| Test sample Length | 2 foot sample |
| Number of Cycles | 200 cycles |
| Movement | +/- 1 ” (1“ compression , 1” tension) |
| Joint Opening | 2 inches |
| Joint Skew | 45 o  |
| Temperature | 68 oF (20 oC) and -20 o F (- 29 oC) |

### **F. Construction Requirements**

The Contractor shall submit product information and necessary details after the award of the contract. At the discretion of the Engineer, the manufacturer may be required to furnish a representative sample of material to be supplied in accordance with these specifications.

Store all materials per manufacturer’s recommendations

The contractor shall ensure and properly prepare all joint interfaces prior to installation and in accordance with the manufacturer’s installation guidelines. Repair joint interfaces where needed and with materials approved by the expansion joint manufacturer.

All joint interfaces must be completely dry prior to application of the pre-compressed, foam-supported silicone bridge seal. Install the pre-compressed, foam-supported silicone bridge seal using a two part epoxy gel adhesive. Apply the adhesive per manufacturer’s installation guidelines to insure complete contact with joint interface and pre-compressed, foam-supported silicone seal profile.

Position the pre-compressed, foam-supported silicone seal to the proper depth. Leave end of profile up to properly splice adjoining seal. Apply silicone bead along each side of seal along with profile seams. Tool per manufacturer’s installation guidelines.

Pre-compressed, foam-supported silicone bridge expansion joint system shall be sized in accordance with manufacturer’s recommendations, and installed at locations shown on the contract plans.

### **G. Payment**

The accepted quantity of Pre-compressed Foam-supported Silicone Bridge Expansion Joint System will be paid for at the contract unit price per lineal foot. Measurement of the Pre-compressed Foam-supported Silicone Bridge Expansion Joint System will be taken along the centerline of the joint system between the outer limits indicated on the contract plans.

Payment will be made under:

PAY ITEM PAY UNIT

Pre-compressed Foam-supported Silicone

Bridge Expansion Joint System Lineal Foot