SPECIFICATION Division 07900

CSS(2FRV) Series Foam Seal System

PART 1 – GENERAL

1.01 Summary

A. The work shall consist of furnishing and installing waterproof, fire rated expansion joints in accordance with the details shown on the plans and the requirements of the specifications. Preformed sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, tensionless, 2 hour fire rated sealant system with a factory smoke barrier integrated into the middle of the material that extends the entire joint width.

B. Related Work
- Division 3 – Cast in Place Concrete
- Division 7 - Thermal & Moisture Protection
- Division 7 - Sealants, Caulking and Waterproofing
- Division 7 - Joint Firestopping

1.02 Submittals

A. General – Submit the following according to Division 1 Specification Section.

B. Standard Submittal Package – Submit typical expansion joint drawing(s) indicating pertinent dimensions, general construction, expansion joint opening dimensions and product information.

C. Sample of material is required at time of submittal.

D. All products must be identified by a UL listing number and must be listed in the UL and ULC Online Certification Directories as proof that they have been tested according to UL 2079 and manufactured under UL's "Follow Up" service.

E. Submit UL-issued Certificate of Compliance as proof product has been tested by UL and passed ANSI/UL 2079.

F. All products must be certified by manufacturer that they are not comprised of un-bonded vertical laminations and do not rely on a water based intumescent surface coating as part of the UL listed fire rated sealant system. Manufacturer must have proof that the fire rated expansion joint will perform as UL listed even if the surface bellows are vandalized or damaged.

G. All products must be certified by independent laboratory test report to exceed the requirements of curtain wall performance tests ASTM E330, E283-04, E331 and TAS 202/203 (+/- 200mph).

H. All products shall be certified in writing to be: a) capable of being expanded from the mean joint size at 40°F to the stated maximum dimension without exerting any tension on the attached substrate; and b) capable of withstanding 150°F (65°C) for 3 hours while compressed down to the minimum of movement capability dimension of the basis of design product (-50% of nominal material size) then extended to the stated extension (+50%) without evidence of foam delamination or sealant face de-bonding from the material; and that the same material after the heat stability test and after first being cooled to room temperature will subsequently self-expand to the maximum of movement capability dimension of the basis-of-design product (+50% of nominal material size) within 24 hours at room temperature 68°F (20°C).

1.03 Product Delivery, Storage and Handling

A. Deliver products to site in Manufacturer's original, intact, labeled containers. Handle and protect as necessary to prevent damage or deterioration during shipment, handling and storage. Store in accordance with manufacturer's installation instructions.

1.04 Acceptable Manufacturer

A. All joints shall be as designed to meet the specified performance criteria of the project as manufactured by EMS, Inc.,13311 Main Road, Akron, New York 14001.

B. Alternate manufacturers must demonstrate that their products meet or exceed the design criteria and must submit certified performance test reports performed by nationally recognized independent laboratories as called for in section 1.02 Submittals. Submittal of alternates must be made three weeks prior to bid opening to allow proper evaluation time.

Any manufacturer wishing to submit for prior approval must provide the following:

1. A working 6" sample of the proposed system with a letter describing how system is considered superior to the specified system.

2. A project proposal drawing that illustrates the recommended alternate system installed in the construction that is specific to the project. Typical catalog cut sections will not be considered.

3. Any substitution products not adhering to all specification requirements within will not be considered.

1.05 Quality Assurance

A. The installing contractor will conduct a pre-construction meeting with all parties and trades involved in the treatment of work at and around expansion joints including, but not limited to, concrete, mechanical, electrical, HVAC, landscaping, masonry, curtain wall, waterproofing, fire-stopping, caulking, flooring and other finish trade subcontractors. All superintendents and foremen with responsibility for oversight and setting of the joint gap must attend this meeting. The installing contractor is responsible to coordinate and schedule all trades and ensure that all subcontractors understand their responsibilities in relation to expansion joints and that their work cannot impede anticipated structural movement at the expansion joints, or compromise the achievement of water-tightness or life safety at expansion joints in any way.

B. Warranty – Manufacturer's standard warranty shall apply.

C. LEED Building Performance Requirements:

1) The VOC of the silicone must not exceed 40 grams/liter.
2) Products must be proved to be certified by independent test report to exceed the requirements of curtain wall performance tests ASTM E330, E283-04, E331.
3) Products must be proved to have been certified by independent test report in accordance with ASTM C518-04 and demonstrate an R-Value per 1-inch (25mm) of depth of not less than 1.03 at as-installed nominal joint size compression.
4) Products must be proved to have been certified by independent test report to ASTM E90-09 and to meet or exceed the STC and OITC rating for the project.
5) Additional credits may be available for projects within 500 miles of Akron, NY.
6) Product must be proved by independent test report to have air permeability not to exceed 0.02 L/(s.m2) at 75 Pascals as required by the Air Barrier Association of America (ABAA) and in accordance with ASTM E283-04.

PART 2 – PRODUCT

2.01 General

A. Provide watertight, tensionless, energy-efficient, 2 hour fire rated, exterior and interior joints in vertical-plane walls (above-grade). Typical locations include applications for exterior wall joints and interior wall joints where a 2 hour fire rating is required or desired. System shall perform waterproofing, fire-rating, expansion control functions as well as contribute to thermal insulation and sound attenuation as the result of a single installation and without the addition of ancillary fire-blankets, mineral wool, coverplates, etc.

2.02 Materials

A. Provide CSS(2FRV) as manufactured by EMS, Inc. and as indicated on drawings expansion joint locations.

B. Sealant system shall be comprised of the following components: 1) fire-retardant-impregnated foam proven not to vertically delaminate and will fully extend without putting tension on the substrate, 2) material shall not be manufactured with “compression bonded vertical laminations”, 3.) pre-coated silicone shall be proven to not de-bond or separate if exposed to thermal shock cycling, 4) field-applied epoxy or UL listed adhesive, 5) silicone fillet beads may be used where appropriate to provide a uniform seal with the substrate; impregnated foam material must be proven not to take a compression set over time and the fire rated joint sealant must not rely on “injected sealant bands” along the substrate for its sealing properties, 6) material shall have a factory smoke barrier integrated into the middle of the fire rated material that extends the entire joint width.

C. Material shall be capable of movements of -25%, +25% (50% total) or -50%, +50% (100% total) of nominal material size depending on the anticipated movement of the joint design. Standard sizes from 1/2” (25mm) to 6” (112mm). Depth of seal is 4” (100 mm) depending on UL listing.

D. Silicone external color facings to be low-modulus, waterproof silicone factory-applied to the foam while it is partially pre-compressed to a width greater than maximum joint extension and cured before final compression. When compressed to final supplied dimension, a bellow(s) to handle movement must be created in the silicone coating. Silicone coatings to be available in a range of not less than 26 standard colors for coordination with typical building materials. Separate colors may be chosen for each coated surface.

E. The fire rated system must be field repairable to comply and to restore it to its associated UL listing while allowing for unrestricted joint movement.

F. When compressed to final supplied dimension, a bellow(s) to handle movement must be created in the silicone coating such that the joint is never under tension within its rated movement range.

G. CSS(2FRV) to be installed into manufacturer’s standard field-applied epoxy or UL approved adhesive. The CSS(2FRV) is to be installed slightly recessed from the surface, such that when the bead of silicone is installed between the substrates and the foam-and-silicone-bellow(s), the system will be essentially flush with the substrate surface.

H. Select the sealant system model appropriate to the movement (+/-25% or +/-50%) and design requirements at each joint location that meet the project specification or as defined by the structural engineer of record.

2.03 Fabrication

A. CSS(2FRV) by EMS, Inc. must be supplied pre-compressed to less than the joint size, packaged in shrink-wrapped lengths (sticks). If stick lengths are required in lengths other than 6.56LF (2M) add at least 10 working days to the lead time.

B. Directional changes and terminations into horizontal plane surfaces can be provided by factory supplied 90-degree angles containing minimum 12-inch long leg and 6-inch long leg, or custom leg on each side of the direction change, or through field fabrication in strict accordance with published installation instructions. In most cases field conditions are such that the restrictive nature of the factory supplied corners do not conform with as built conditions and may outweigh the benefits. Consult manufacturer for proven field transition methods.

2.04 Finishes

A. Seals - Standard color offering: As per Dow Corning 790 Silicone Building Sealant color chart (Precast White, Limestone, Natural Stone, Gray, Black, Bronze, Sandstone, Adobe Tan, Dusty Rose, Rustic Brick, Blue Spruce, Charcoal)

PART 3 – EXECUTION

3.01 Installation

A. Preparation of the Work Area

1. The contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on manufacturer's standard system drawings or as shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.

2. The contractor shall clean the joint opening of all contaminants immediately prior to installation of expansion joint system. Repair spalled, irregular or unsound joint surfaces using accepted industry practices for repair of the substrates in question. Remove protruding roughness to ensure joint sides are smooth. Ensure that there is sufficient depth to receive the full depth (typically 3-4") of the size of the EMS CSS(2FR) being installed. Refer to Manufacturer's Installation Guide for detailed step-by-step instructions.

3. No drilling, or screwing, or fasteners of any type are permitted to anchor the sealant system into the substrate.

4. System to be installed by qualified contractors only according to detailed published installation procedures and/or in accordance with job-specific installation instructions of manufacturer's field technician.

3.02 Clean and Protect

Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the installing contractor's expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION