

# SPECIFICATION

Division 07900  
CR-Series Polycrete 1600 [Ambient Cure] System

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## **PART 1 - GENERAL**

### **1.01 Summary**

A. Section Includes: Furnishing of all materials, labor, and equipment necessary for the surface preparation and the installation of the sealed expansion joints in accordance with the details shown on the plans and these specifications. The designs for the deck condition utilize an extruded compression seal type CR-Series membrane shape fusion bonded to the concrete deck with Polycrete 1600 elastomeric concrete. The design is arranged to flex in response to joint movement and to seal against the intrusion of deck drainage.

B. Related Sections:

1. Section 03300 - Cast-in-place concrete
2. Section 05800 - Joint Sealant
3. Section 09885 - Protective Coatings for Concrete Parking Decks

### **1.02 References**

A. American Society for Testing and Materials (ASTM):

1. ASTM D412
2. ASTM D2240
3. ASTM D395
4. ASTM D624
5. ASTM D792
6. ASTM D746

### **1.03 Quality Assurance**

A. Application Qualifications: The manufacturer of the expansion joint will provide a technically qualified representative who will train the installer on the proper techniques for installing the expansion joint. Each installation will be registered and approved by the manufacturer.

B. For the purpose of designating type and quality for work of this section, drawings and specifications are based on products manufactured or furnished by the manufacturer listed in Part 2 of this section. No other products will be considered for use.

C. Execute work of this section by skilled, trained applicators conforming to installation methods and procedures in accordance with the manufacturer's printed instructions. The applicator must be licensed by the manufacturer or approved by him. In the latter case, the manufacturer's technical representative must be present for the installation of three (3) joint lengths - equaling no less than 150 LF of joint.

D. Do not proceed with the work until surfaces to receive the expansion joints have been inspected by the engineer and approved by the manufacturer. Correct any deficiencies in the surfaces to receive the expansion joints, as recommended by the manufacturer and engineer.

E. Do not proceed with the work when temperatures are below 45°F, expected to fall below 45°F, or above 90°F, unless approved in writing by the manufacturer.

F. Manufacturer will have a minimum of five (5) years experience specializing with elastomeric concrete.

#### **1.04 Submittals**

A. Submit in accordance with this Specification, unless otherwise indicated.

B. Product Data: Manufacturer's specifications and technical data including the following:

1. Manufacturer's installation instructions, specially written for this project
2. Certified test reports indicating compliance with performance requirements specified herein

C. Shop Drawings: Indicate dimensioning, membrane size, model number, general construction, specific modifications, component connections, anchorage methods, and installation procedures, plus the following specific requirements:

1. Temperature/Adjustment Table, indicating joint width at various temperatures
2. Dimensions based on anticipated movement for the joint location, as supplied by the engineer

D. Quality Control Submittals:

1. Statement of Qualifications
2. Design Data
3. Test Reports
4. Manufacturer's Field Reports

E. Contract Close-out Submittals: In accordance with these Specifications, submit:

1. Operating and Maintenance Manuals
2. Special Warranties

#### **1.05 Delivery, Storage and Handling**

A. Packing and Shipping: Deliver products in original, unopened packaging with labels and seals unbroken.

B. Storage and Protection: Store materials in accordance with manufacturer's recommendations in area protected from weather, moisture, open flame, and sparks. Adhesive must be stored at temperatures between 40° F and 90° F.

## 1.06 Warranty

A. Warranty will state that the material and installation of the joint system complies with requirements of the contract documents and the manufacturer's printed instructions for installing the expansion joints.

B. Warranty will state the responsibility of the installer/manufacturer to stand behind the installed system for the warranty period indicated and for the conditions listed below:

1. Leakage of the parking deck system, including points in transition
2. Abrasion and wear of the materials resulting from normal traffic loading
3. Cracking of the elastomeric concrete material and de-bonding between it and the concrete

## **PART 2 - PRODUCTS**

### 2.01 Manufacturers

A. The winged compression seal type membrane shape will be the following:

1. CR-Series Membrane profile as supplied by EMS, Inc., 13311 Main Road, Akron, NY 14001 Phone: (716) 542-3991 Fax: (716) 542-3996

B. Elastomeric Concrete header material will be the following:

1. Polycrete 1600 Elastomeric Concrete by EMS, Inc., 13311 Main Road, Akron, NY 14001 Phone: (716) 542-3991 Fax: (716) 542-3996

### 2.02 Components and Materials

A. Elastomeric Membrane: The extruded configuration will be an EPDM-based, Thermoplastic Rubber material meeting the specifications prescribed in the manufacturer's product data sheet and ASTM D2000. The material meets the following physical requirements:

| <b>PHYSICAL PROPERTIES</b> | <b>TEST METHOD</b>  | <b>TYPICAL VALUES</b>            |
|----------------------------|---------------------|----------------------------------|
| Hardness, shore A duro.    | ASTM D-2240         | Thermoplastic Rubber             |
| Specific gravity           | ASTM D-792          | 67A                              |
| Tensile strength, psi      | ASTM D-412          | 1000 psi                         |
| Ultimate elongation, %     | ASTM D-412          | 410%                             |
| 100% Modulus, psi          | ASTM D-412          | 420 psi                          |
| Compression set, 168 hrs.  | ASTM D-395 method B | 24% @ 77°F<br>36% @ 212°F        |
| Tension set, %             | ASTM D-412          | 10%                              |
| Tear strength, pli         | ASTM D-624          | 140 pli @ 77°F<br>75 pli @ 212°F |
| Brittle point              | ASTM D-746          | <-81°F                           |

**IMPORTANT!** The thermoplastic rubber material can be heat-spliced to form transitions at the end conditions, around columns, etc. Any heat splicing to be done in the field will follow approved methods, as recommended by the manufacturer.

B. Aluminum Clamp: This miscellaneous device is an extruded section made from alloy 6063-T5 or 6061-T6 with mill finish. Rails are to be supplied in 5-foot lengths. Surfaces to come in contact with the elastomeric concrete will be treated with a bond-breaker material, as supplied by the manufacturer, to resist adhesion.

C. Elastomeric Concrete: Polycrete 1600 is a fast-setting, elastomeric, 100% solid, two-component urethane/epoxy system. The resins are mixed with a pre-measured sand and stone combination to form the mortar mix.

| <b>PHYSICAL PROPERTIES</b>                                  | <b>TEST METHOD</b>      | <b>REQUIREMENT</b>       |
|---|-------------------------|--------------------------|
| Tensile strength, min.                                      | ASTM D-412              | 2000 psi                 |
| Elongation @ break, min.                                    | ASTM D-412              | 50 %                     |
| Hardness, Type A duro.                                      | ASTM D-2240             | 85A                      |
| Solids content  |                         | 100%                     |
| Tear strength, die C, min.                                  | ASTM D-624              | 225pli                   |
| Abrasion resistance,<br>loss per 1,000 cycles               |                         | .00035 oz.               |
| Tensile adhesion,<br>samples cured 5 days at 90°F<br>50% RH | ASTM C-501 (CS17 wheel) | 400 psi (concrete fails) |
| Mixing ratio  |                         | 1:1 (part A & B)         |
| Pot life  |                         | 10 - 12 minutes          |
| Set time  |                         | 4 - 8 hours              |

### **PART 3 - EXECUTION**

#### **3.01 Inspection**

A. Prior to installation of the expansion joint profile, the installer will visit the site and notify the proper authority in writing of any conditions, (done under other sections) which might be detrimental to the installation or performance of the expansion joint. Coordinate the installation with related work.

#### **3.02 Preparation of Surfaces of Block-Out Recess in Deck**

A. Construct the block-out recess and joint opening to the dimensions shown in the manufacturer's literature. The width of the joint opening should comply with the dimension shown in the temperature/adjustment table on the contract plans. The anticipated movement should be within the movement limits of the CR-Series membrane size selected for use.

B. All surfaces to receive the elastomeric concrete will be dry, clean, and sound concrete, free of loose, delaminated and spalled sections. Repair any sections that do not meet these criteria. The surfaces to receive the CR-Series System will be sandblasted to exposed aggregate. Sandblasting increases surface area to increase bond capacity of the elastomeric concrete and removes all laitance and other bond-inhibiting contaminants. Tape off the edges of the concrete recess.

#### **3.03 Installation**

- A. Clean the CR-Series membrane with soap and water. Position the membrane over the open joint and press the bottom portion of the center section down between the concrete interfaces.
- B. Spray the aluminum clamps with Frekote mold release. Position the aluminum clamp lengths over top center of the membrane. Using wooden spacers between the rails, close the devices to compress the center shape to the prescribed width. This also acts to form a level to which the void should be filled with elastomeric concrete. The level should be such that the top of the membrane is recessed from traffic at all times throughout the movement of the joint system.
- C. Mix the Polycrete 2020 bedding material as per manufacturer's directions. Apply a 3/4" caulked bead of the Polycrete 2020 bedding mix to the area *under the wing of the seal* (Approximately 1/8" - 3/16" thick). Push the wing of the seal into the bedding, allowing material to "ooze" up through the holes in the seal. Spread the excess material to cover the surface of the recesses concrete.
- D. Using a Jiffy mixer, mix the two Polycrete 1600 resin components together. Assure that there is no sign of streaking and the color is consistent. Add the sand and stone mixture. Blend the ingredients until there are no signs of sand pockets in the mix.
- E. Immediately place the mortar mix over the flaps of the CR-Series membrane. Completely fill the recess area. Compact the material so that no signs of honeycombing can occur.
- F. Level off the Polycrete 1600 and trowel the finish smooth. For best results, keep the surface of the trowel wiped clean.
- G. Allow the Polycrete to air cure for 4 - 8 hours. Remove the aluminum clamp lengths. Clean up the work area, removing all containers, any extra materials, debris, etc.
- H. Prevent traffic from crossing the joints until the entire assembly is firmly cured.

### **3.04 Field Quality Control**

- A. Work, which does not conform to the specified requirements, will be corrected and/or replaced as directed by the manufacturer and engineer.
- B. Manufacturer/installer will supply guaranty/warranty to the owner authority, as required.

**END OF SECTION**