

SPECIFICATION

Division 07900
Two-Part Epoxy Sealing System AR-Series Seals

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 profile bonded in place with a strong, two-component, structural epoxy adhesive. 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 07900 - Waterproofing, including sealants and coatings

1.02 References

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

1. ASTM D412
2. ASTM D471
3. ASTM D573
4. ASTM D1149
5. ASTM D2240

1.03 Quality Assurance

A. Application Qualifications: The manufacturer of the expansion joint seal will provide a technically qualified representative who will train the installer on the proper techniques for installing the seal. 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 100 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 or expected to fall below 45° F. Do not proceed with the work when temperatures are above 90° F, unless approved in writing by the manufacturer.

F. Manufacturer will have a minimum of five (5) years experience specializing in expansion joint systems for similar applications.

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, installation procedures (specifically the mixing and application of the structural adhesive) 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

E. Contract Close-out Submittals: In accordance with this Specification, 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

PART 2 - PRODUCTS

2.01 Manufacturers

A. Two-Part Epoxy Compression Seal System components will be designated as the following:

1. AR-Series seal profiles as supplied by EMS, Inc., 13311 Main Road, Akron, NY 14001
Phone: (716) 542-3991 Fax: (716) 542-3996
2. Structural adhesive as supplied by EMS, Inc., 13311 Main Road, NY 14001
Phone: (716) 542-3991 Fax: (716) 542-3996

2.02 Components and Materials

A. Compression Seal Profile: The extruded profile will be one of two materials: Polychloroprene (neoprene) or EPDM (ethylene propylene diene monomer)

1. Neoprene material will have a minimum 2,000-psi tensile strength requirement and 250% elongation at break.
2. EPDM materials will have a minimum 1,700 psi tensile strength Requirement and 225% elongation at break.
3. [See manufacturer's data sheet entitled "Two-Part Epoxy Sealing System - AR-Series Seals" for more information.] The profile will be structured so that its cross-section features a multi-celled web design that exerts a constant pressure on the joint wall interfaces.

B. Structural Adhesive: The adhesive is a high strength, 2-part, modified epoxy-based material. It is 100% reactive and will develop a strong bond in approximately 8-10 hours at room temperature. It will have the following properties:

Typical Physical Property	Resin Part A	Hardener Part B
Appearance	Gray	Black Paste
Viscosity (cps)*	300,000-700,000	300,000-700,000
Non-Volatile Content**	100% Reactive	100% Reactive
Weight/gallon	2.2 lb. +/-	2.2 lb. +/-
Flash Point	>200°F	no flash point
Shelf Life (from date of shipment, unopened container @ 40°F to 80°F)	1 Year	1 Year

Note the following:

(*) The resin part is measured using a Brookfield HBF Viscometer at 77+/- 2°F with a T-bar “D” spindle at 5rpm with Heliopath stand (undisturbed sample).

(**) This is not routinely measured. Test results may vary with temperature. Consult EMS for details.

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) that 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. All surfaces to receive the AR-series compression seal profile will be dry, clean, and sound concrete free of loose, cracked, delaminated, and spalled sections. Repair any sections that do not meet these criteria. The surfaces to receive the AR-series profile will be sandblasted to exposed aggregate. Sandblasting increases surface area to increase bond capacity of the adhesive and removes all laitance and other bond-inhibiting contaminants.

3.03 Preparation of Joint Interfaces

A. Form or saw cut the groove/joint opening into the concrete to the recommended depth shown. Assure that the interfaces, whether concrete or steel, run parallel to each other for the length of the run. Walls should be plumb to the top surface of the concrete and should be spaced at a consistent width across the joint. Unsound concrete must be removed and repaired.

B. Clean dirt, stones and standing water from the joint opening. Use a stiff bristled brush and compressed air to remove all dust. Sandblast the vertical walls of the groove to remove laitance and contaminants, and increase bond area for the adhesive.

3.04 Installation of the Compression Seal

- A. Immediately prior to installation, the interface walls should be blown out again.
- B. Uncoil the seal and allow it to relax. Wire-brush the sidewalls of the seal to abrade the surfaces to receive the adhesive. When done properly, the shine of the surfaces will be removed. A roughened, dull finish will be obtained. Apply the conditioner, scrubbing vigorously into the ribs using a stiff nylon brush. Do this in two separate passes, and then rinse the profile with conditioner.
- C. Mix the adhesive to the manufacturer's specifications. Apply the adhesive to the joint interfaces and into the ribs of the profile using a 2" trowel. The ribs must be completely filled.
- D. Insert the profile in the gap to the proper depth. Check the ribs for proper adhesive coverage. Fill any voids. A small amount of excess adhesive should be visible above the ribbed area. Remove any additional adhesive using organic solvents.
- E. Allow the adhesive to cure eight to ten hours (at room temperature). Maximum bond strength (at room temperature) is usually achieved within twenty-four hours.

3.05 Field Quality Control

- A. Work that 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