

SPECIFICATION

Division 07900

DD-Series Joint System with Polycrete 1600 [Header material]

PART 1 - GENERAL

1.01 Summary

A. Section Includes: Furnishing of all materials, labor, and equipment necessary to the surface preparation and the installation of the sealed expansion joints in accordance with the details shown on the plans and these specifications. This design is for parking deck and interior joint applications. Aluminum strip seal extrusions are used in conjunction with self-entering support bars and either aluminum or stainless steel center support cover plates. The system is then encapsulated in Polycrete 1600 elastomeric concrete. An optional moisture seal is fitted into additional retainer receiver locations under the metal plate. The design is arranged to flex in response to joint movement and to seal against the intrusion of moisture.

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 D2240
2. ASTM D412
3. ASTM D624
4. ASTM D395
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 Section 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 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
3. Cracking of the elastomeric concrete material and de-bonding between it and the concrete

PART 2 - PRODUCTS

2.01 Manufacturers

A. The Aluminum Strip Seal type membrane shape will be the following:

1. DD-Series 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. Moisture Barrier: The extruded configuration will be vinyl material meeting the specifications prescribed in the manufacturer’s product data sheet and ASTM D2000. The material meets the following physical requirements:

TABLE 1 – Physical Properties of the EPDM-Based Thermo-Rubber Seal Element		
Property Requirement	ASTM Test Method	
Tensile strength, min. psi	D412	1000
Elongation at break, min. 410%		D412
Hardness, Type A durometer	D2240 (modified)	67
Compression set	D395 (Method B)	
168h @ 77°F		24%
168h @ 212°F		36%
Tear strength	D624	
140 lb/in		
Tension set	D412	
10%		
100% modulus	D412	
420 psi		
Specific gravity	D792	
0.97		
Brittle point	D746	< -
81°F		

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

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. 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 seal 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 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. DD-Edge Rails -

1. The edge rails are made from ASTM 6061-T6-aluminum material, which enables the heat welding of various configurations at directional changes and transitions, as mentioned above. These changes in plane, irregularities around columns, wall-to-floor, or up-and-over conditions, such as stairs or curbs are a common occurrence. Thermo-plastic material lends itself very well to solving these difficult to seal conditions.
2. Factory-made directional changes and transitions may be made at EMS's fabrication plant, according to drawings and dimensions provided by the field contractor. However, with minimal training, field crewmen will adapt quickly to successful splices.

B. Side Flashing Sheet

1. The side flashing sheets are optional. If required for specific projects the sheets are provided in rolls of 12" wide 1/16" thick PVC sheeting. PVC material will allow heat welding at all joints for continuous waterproofing at all transitions, corners, upturns, etc. The flashing sheet may be inserted into the top channel or into the side extruded reglet located on the vertical leg of the aluminum edge rail.
2. If required, flashing sheets will be "sandwiched" between two layers of the deck waterproofing system. The flashing materials must be PVC-based material to ensure adhesion with deck waterproofing materials. Flashing sheets have a short-term temperature resistance (350°F - 400°F.) suitable for integration with the hot applied, deck waterproofing membrane systems.

C. Stainless Steel Cover Angles

1. The formed stainless steel cover angles comply with ASTM A167, Type 304 with mill finish. They are secured to extrusion with stainless steel machine screws, 6” on center, which are seated into the countersunk seats in the stainless steel angles. These formed angle covers are removable to allow for expansion joint gland replacement. At locations where cover plates are required over top of the DD-series gland, a specially fabricated stainless steel cover plate to can be made to extend across the sealing gland and rest on the top of the opposite side cover angle. Sizing of the plate is dependant on loading and width of the joint opening.

D. Factory Fabrication Of Transitions and Temperature Adjustment

1. In addition to factory heat welded splices, EMS’s fabrication plant we will also fabricate the aluminum edge rails to match the field conditions.
2. At the time of installation, the engineer of record will be consulted for the temperature adjustment table. This will determine the joint opening “setting” at that given deck temperature. Preset the distance between the aluminum rail extrusions prior to anchoring the rails into place with the use of spacers. Keep in mind that the opening may be wider or narrower by the next day. Adjustments must be made to keep in sync with the deck temperature.

E. Surface Condition

1. Joint surfaces to receive system will be sound, smooth, straight, parallel, and level from side to side.

F. Installation

1. Inspection: Manufacturer's technician will be on site at commencement of installation for inspection of substrate preparation and demonstration of installation procedures. Bids must include a specific line item for manufacturer’s technical service and will be considered incomplete and subject to disqualification if excluded. Technical service is defined as the paid, contracted service of a manufacturer’s representative or factory technician.
2. The following is a general summary of installation requirements. In all cases the manufacturer’s standard written instructions or specific instructions of the manufacturer’s technician are to be followed.

G. Anchorage

1. Use epoxy anchoring devices and fasteners for securing expansion joint cover assemblies or concrete expansion anchors. It is the contractor’s option to purchase fasteners from manufacturer. Fasteners will be 3/8” diameter x 4” long anchor, carbon-steel grade II, zinc-chromate yellow finish, UNC 16, threaded end- to-end, with nuts of the same material.

H. Size-up

1. Perform all cutting and fitting required for installation of expansion joint covers. Install joint cover assemblies in true alignment and proper relationship to expansion

joints and adjoining finished surfaces measured from established lines and levels. Take into consideration movement table from engineer.

2. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling. Securely attach in place with all required accessories. Locate anchors at recommended intervals, not less than three inches from each end.
3. Maintain continuity of expansion joint cover assemblies with end joints held to a minimum and metal members aligned with metal guide pins

I. Seal Placement

1. Integrate flashing sheets with deck waterproofing system materials according to waterproofing manufacturer's instructions. Install seals in continuous lengths to eliminate leakage opportunities. All transitions and terminations will be factory-welded wherever possible according to field measurements and drawings on centerline provided by the contractor. Site welding, when needed, will be carried out after suitable instruction by the expansion joint manufacturer and/or their representative.

J. Site Cleanup

1. Dispose of all waste materials from the site. Seal will be cleaned of all foreign matter as recommended by the seal manufacturer

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