

SPECIFICATION
Section 07900

Wabo[®] Crete Membrane System
MM/MX/ME Series
Expansion Joint System

PART 1 - GENERAL

1.01 Work Included

- A. The work shall consist of furnishing and installing expansion joints in accordance with the details shown on the plans and the requirements of the specifications. The joints are proprietary designs utilizing extruded elastomeric seals, elastomeric headers and mounting plates. In the event of any discrepancy between the contract drawings and specifications, the specifications shall govern.

- B. Related Work
 - Cast-in-place concrete
 - Miscellaneous and ornamental metals
 - Flashing and sheet metal
 - Sealants and caulking

1.02 Submittals

- A. Standard Drawings - Submit typical expansion joint cross-section(s) indicating pertinent dimensioning, general construction, blockout dimensions and product data information. Approved Installers shall prepare and submit details of all special conditions to the manufacturer for review and approval prior to installation.

1.03 Product Delivery, Storage and Handling

- A. Deliver products in each manufacturer's original, intact, labeled containers, pallets or bundles and store under shelter in a dry location with temperatures above 40°F until installed. Store off the ground, protect from freezing, direct sun exposure in elevated temperatures and construction activities.

1.04 Acceptable Manufacturers

- A. All joints shall be as designed and manufactured by Watson Bowman Acme Corp., a Degussa affiliate, 95 Pineview Drive, Amherst, NY 14228

- B. Alternate manufacturers and their products will be considered, provided they meet the design concept and are produced of materials that are equal to or superior to those called for in the base product specification.

- C. Any proposed alternate systems must be submitted and receive approval 21 days prior to the bid. All post bid submissions will not be considered. This submission shall be in accordance with MATERIALS AND SUBSTITUTIONS.
- Any manufacturer wishing to submit for prior approval must provide the following:
 1. A working 6 inch sample of the proposed system with a letter describing how the system is considered superior to the specified system.
 2. A project proposal drawing illustrating the recommended alternate system installed in the application, specific to the project.
 3. Verifiable list of prior installations showing prior and successful experience with the proposed system.
 4. Any substitution products not adhering to all specification requirements within, will not be considered.

1.05 Quality Assurance

- A. Manufacturer: Shall be ISO-9001:2000 certified and shall provide written confirmation that a formal Quality Management System and Quality Processes have been adopted in the areas of, (but not limited to) engineering, manufacturing, quality control and customer service for all processes, products and their components. Alternate manufacturers will be considered provided they submit written proof that they are ISO 9001:2000 certified prior to the project bid date. Manufacturers in the process of obtaining certification will not be considered.
- B. Warranty: The expansion control system shall be warranted when installed by the manufacturer's factory trained installer. Installation shall be in strict accordance with manufacturer's technical specifications, details, installation instructions and general procedures in effect for normal intended usage and suitable applications under specific design movements and loading conditions.
- C. Manufacturer: Shall have a minimum ten (10) years experience specializing in the design and manufacture of expansion control systems.
- D. Products: Expansion control systems shall be installed with manufacturer's blackout repair and infill materials.
- E. Application: The specified expansion control system(s) shall be installed by the manufacturer's factory trained installer.

PART 2 - PRODUCT

2.01 General

- A. Provide watertight expansion control system that is capable of accommodating multi-directional movement. System shall consist of preformed thermoplastic rubber profiles with integral side flanges typically cast into a preformed blackout by means of utilizing manufacturer's ambient cure elastomeric header.

The thermoplastic rubber seal element shall be sized to accommodate the total range of movement as dictated by the specifier at each joint location. Sizing shall be made in such a way as to ensure that the elastomeric membrane seal will remain under a degree of compression throughout the full movement cycle. Where required, provide seal that accepts pedestrian traffic. The contractor will provide evidence utilizing manufacturer's product data that the membrane seal will comply with this requirement.

Furnish Wabo[®]Crete Membrane - ME, MX or MM Series seal element at locations requiring watertightness as manufactured by Watson Bowman Acme Corp. and as indicated on drawings.

2.02 Components and Materials

A. Thermoplastic Rubber Joint Seals (Elastomeric Seal)

Provide seal profile as specified and indicated in the contract drawings. Profile design shall incorporate integral side flanges exhibiting a pronounced serrated profile and factory punched holes that interlocks the profile into the elastomeric header material. Material shall meet the physical and performance properties indicated below:

| <u>PHYSICAL PROPERTIES</u> | <u>ASTM TEST METHOD</u> | <u>REQUIREMENT</u> |
|-------------------------------------|--------------------------------|----------------------------------|
| Shore A Hardness | D-2240 | 67 ± 3 |
| Tensile Strength, min | D-412 | 850 psi |
| Ultimate Elongation, min | D-412 | 300% |
| 100% Modulus | D-412 | 385 ± 95 psi |
| Tension set, average | D-412 | 10% |
| Tear strength, average | D-624 | 140 pli @ 73°F 58 pli @ 212°F |
| Compression Set, average, 168 hours | D-395 | 23% @ 73°F |
| Brittle point, average | D-746 | < -76°F |

| <u>PERFORMANCE PROPERTIES</u> | <u>TEST METHOD</u> | <u>REQUIREMENT</u> |
|--------------------------------------|---------------------------|---------------------------|
| Ozone Resistance | ASTM D-1171 | No Cracks |
| UV Resistance | SAE J1960 | Pass |
| Staining Resistance | ASTM D-925 | No Staining |
| Fatigue Resistance | ASTM D-1052 | 2 Million Cycles |

B. Elastomeric Header

Material shall be an ambient cure, 100% solids, two component polyurethane with pregraded aggregate mix exhibiting the physical properties listed in the tables below.

When properly mixed and poured, the elastomeric concrete cures rapidly, flows and fills any voids, spalls or irregularities forming a monolithic unit.

1. Elastomeric cured binder shall meet the following physical properties:

| <u>PHYSICAL PROPERTIES</u> | <u>ASTM TEST METHOD</u> | <u>REQUIREMENT</u> |
|---|-------------------------|--------------------|
| Tensile Strength, min | D-638 | 750 psi |
| Ultimate Elongation, min | D-638 | 200% |
| Hardness, Shore D | D-2240 | 40 +/- 10 |
| Compression Set, 22 hr at 158°F, max | D-395, Method B | 50% |
| Tear Resistance, min | D-624 | 80 pli |
| Water Absorption, max | D-570 | 3% |
| Heat Shrinkage | D-1299 | 1.6% |

2. Elastomeric cured binder and aggregate shall meet the following physical properties:

| <u>PHYSICAL PROPERTIES</u> | <u>ASTM TEST METHOD</u> | <u>REQUIREMENT</u> |
|----------------------------------|-------------------------|--------------------|
| Compressive Strength, min | D-695 | 2,200 psi |
| Resilience at 5% deflection, min | D-695 | 90% |
| Slant Shear Bond Strength, min | N/A | 250 psi |
| Impact Resistance | | |
| at 32°F (0°C) | N/A | No Cracks |
| at -20°F (-29°C) | | No Cracks |
| at 158°F (70°C) | | No Cracks |

C. Bonding Agent

Provide manufacturer's two component, 100 percent solids bonding agent and apply to the sides and base of the preformed blockouts prior to placement of Wabo® Crete II elastomeric header. Store, mix and apply in accordance with manufacturer's system data sheet.

Liquid components shall be identified by the following information:

- Part A - Resin; Color: Clear
- Part B - Activator; Color: Tan

D. Accessories - Provide necessary and related parts including preformed or fabricated Wall Mount Plates with appropriate anchors and sealants where required for complete installation.

2.03 Fabrication

A. Thermoplastic Rubber Membrane Seal - Ship in the longest practical continuous length in manufacturer's standard shipping carton or on wooden pallets shrink wrapped.

- B. Joint Seal Directional Changes - At all horizontal changes in direction provide seals with factory heat welded splices such as 90° corners, tees and crosses. The seal shall extend a minimum of 2'-0" in each direction from the factory splice.

Only straight, butt splice connections shall be allowed on the jobsite following manufacturers written instructions utilizing specialty heat fusing equipment or the manufacturer specialty-splicing adhesive.

All factory and field fused connections shall incorporate bonding of the complete seal profile. This includes fusing of all internal and external web configurations.

- C. Elastomeric Header - Activator packaged in one-half gallon containers (Part A), resin packaged in gallon containers (Part B) and 60 pound containers of aggregate (Part C) on shipped wooden pallets, shrink wrapped.
- D. Wall Mount Plate (corner condition) - Fabricated or preformed metal profiles shall be shipped in standard 10 ft. lengths and shall be cut to length on jobsite where required. Plates shall be miter cut in the field to conform to directional changes unless otherwise contracted with expansion joint manufacturer.

2.04 Finishes

- A. Thermoplastic Rubber Membrane Seal shall be supplied in standard color: Black.
- B. Elastomeric Header material shall be supplied in standard color: Black. It is also available in custom colors. Contact manufacturer for custom colors.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Preparation of the Work Area
 1. The contractor shall provide a properly formed, solid concrete blockout per the manufacturer and project requirements. Any edge or area in need of repair shall utilize one of the Watson Bowman Acme concrete repair materials to provide a solid and square blockout. Call Technical Support Services at (800) 677-4WBA (4922).
 2. The contractor shall clean the concrete blockout of all contaminants and impurities by sandblasting immediately prior to Wabo®Crete Membrane installation. Concrete form release agents, water repellents, laitance, surface dirt and rust, all old sealants and other surface treatments and protective coatings are examples of materials which must be removed from the blockout substrate surface in order to obtain the proper Wabo®Crete II elastomeric headerbond.
 3. Areas adjacent to the joint must be masked with tape to assure neat, clean joint lines.

4. The blockout area must be completely dry for the application of Wabo®Crete II. Concrete must be cured a minimum of 14 days prior to placement of Wabo®Crete II. Wabo®Bonding Agent must be applied to blockout just prior to placement of Wabo®Crete II. When the use of patching compounds is required for blockout repair, follow manufacturer's guidelines for the recommended cure times prior to placement of Wabo®Crete II.
5. The blockouts must be made to the dimensions and elevations shown on the standard system drawings. Deviations from these dimensions will not be allowed without the written consent of Watson Bowman Acme.
6. The membrane seal element shall be unpacked and laid in a relaxed position to relieve any temporary coiling from shipment packaging prior to placement, the winged flaps of the gland element shall be wiped with an acceptable non-petroleum solvent cleaner such as Xylol (Xylene).
7. Mix all Wabo®Crete II components and install membrane system in strict accordance with current "Wabo®Crete II Approved Installer Handbook." Installing contractor shall confirm that they are in possession of the latest handbook prior to beginning work.

3.02 CLEAN AND PROTECT

Protect Wabo®Crete Membrane System during construction. Heavy construction vehicles will not be permitted to cross the joint without specific and written permission by the Engineer. Subsequential damage to the Membrane System shall be repaired at the contractor's expense.