SPECIFICATION
Section 05810

SM SmidCreteÒ C (Ambient Cured) Nosing/Membrane System
Heavy Duty Vehicular Series
Expansion Control Systems

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 concrete headers and mounting plates.

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

1.02 Submittals

A. General – The submittals will follow the dictates of the project documents, which take precedence over information presented herewith.

B. Template Drawings – Submit typical seismic joint cross-section(s) indicating pertinent dimensions, general construction, component connections and anchorage methods.

1.03 Product Delivery, Storage and Handling

A. Deliver products to site in Manufacturer's original, intact, labeled containers and store under cover in a dry location until installed. Store off the ground, protect from weather and construction activities.

1.04 Acceptable Manufacturer

A. All joints shall be designed to meet the specified performance criteria of the project and be manufactured by Mercedes International, LLC, 3570 Financial Center Way, Suite 3, Buford, GA 30519. Tel. (678) 546-3550.

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.

1.05 Quality Assurance

A. Warranty – The expansion joint system when installed by the Manufacturer's licensed applicator shall be warranted for a period of 5 years for normal traffic usage under specified movements and design conditions.

The provided five (5) year warranty shall be a joint and several performance warranty. It is intending that each party, licensed applicator and manufacturer, will jointly warrant and provide at no charge, all materials and labor needed to properly repair or replace defective or damaged product within the term of the provided warranty.

In the event of either party's non-performance, the full burden and responsibility for any warranty shall fall upon the remaining party.

B. Manufacturer – Shall have a minimum ten (10) years experience specializing in the manufacturing of Elastomeric Concrete materials utilizing membrane style glands.

C. Maintenance – The Manufacturer shall provide the owner-operator a preventive maintenance guideline for parking structure control systems. This document will be made part of the Warranty package.

PART 2 – PRODUCT

2.01 General

A. Provide watertight deck joint cover expansion control system that is capable of accommodating multi-directional seismic movement without stress to its components. System shall consist of elastomeric seal profiles that are secured to the deck using a proprietary nosing material. The system is designed to accommodate various project conditions and deck treatments. The system shall be designed of width and thickness required to ***satisfy project movements and loading requirements.***

Furnish MI's "SM SmidCrete® C Nosing/Membrane" Joint type meeting project details for exterior joint locations as manufactured by Mercedes International, and as indicated on drawings. Select the Model based on the design requirements. It 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 gland will remain under a degree of compression throughout the full movement cycle. The contractor will provide evidence utilizing Manufacturer's product data that the membrane gland will comply with this requirement.

2.02 Components and Materials

A. Elastomeric Membrane Gland – Material shall typically be a flexible, extruded thermoplastic (TPE) compound exhibiting the physical properties listed in the table below. Utilize manufacturer's alternate materials and seal profiles selected to meet performance criteria and specific conditions for this project. All membranes shall factory-drilled holes in the flaps through which the nosing material bonds the item to the deck to ensure watertightness and proper joint performance.

PHYSICAL PROPERTIES OF ELASTOMERIC MEMBRANE GLAND

Property	***Requirement***	***ASTM Method***
Material: Thermoplastic rubber		
Tensile strength, min.	1230 psi	D412
Ultimate elongation, min.	460%	D412
Hardness, Type A Duro.	73 +/- 3 pts.	D2240 (Mod.)
Compression set	23% @ 77°F	D395,Meth. B
168 hrs.	36% @ 212°F	(Modified)
100% modulus	520 psi	D412
Tear strength	158 lbs/inch	D624
Tension set	14%	D412
Brittle point	-76°F	D746

B. Elastomeric Concrete – provide Manufacturer's SmidCrete® C [Ambient Cured] elastomeric header material consisting of polyurethane liquid components "A" and "B" (mixed to 2:1 ratio) and a proprietary aggregate system. SmidCrete® C cures exothermically.

PHYSICAL REQUIREMENTS FOR ELASTOMERIC CONCRETE

Requirements of the binder after seven-day cure at room temperature.

Property	***Requirement***	***ASTM Method***
Tensile strength, psi	1,500 psi	D638
Elongation at break	200% min.	D638
Durometer hardness, Type A	90 +/- 3	D2240
Tensile stress, psi	500 psi min.	D638
Pot life, min.	5 minutes after mixing	
Oven aging @ 158°F for 7 days:		
Tensile strength, psi	1,500 psi min.	D638
Elongation @ break	200% min.	D638
Durometer hardness	90 +/- 3 A	D2240

The elastomeric concrete cured binder aggregate mixture shall meet the following physical properties:

Physical Property	*Requirements*	*ASTM Method*
Resilience @ 5% deflection	95 min.	D695
Compressive strength, psi	1,600 psi min.	D695
Compressive stress, psi	800 psi min.	D695
Dry bond strength to concrete	400 psi min.	C307 Mod.
Wet bond strength to concrete	250 psi min.	C307 Mod.
Impact resistance, ft-lb, @ -20°F	>10 (no cracks)	Ball drop
Hardness, Durometer D	50D max.	D2240

C. Accessories – Provide all of the necessary parts and devices required for installation.

D. Fire Barrier – Supply a product equal to Balco's *"Metalflex® F2H"* and *"Metalflex 2WFB"* 2-hour rated systems for locations as manufactured by Balco Inc. and as indicated on drawings. Fire Barrier Assembly as governed by joint opening and fire rating. *Balco offers 1-hr., 2-hr. and 3-hr. and rated systems.*

Prefabricated fire-resistive joint systems shall have ratings not less than the rating of adjacent construction when tested in accordance with ASTM E 1966 and ASTM E119. This includes the hose-stream test portion for wall applications.

System shall be capable of anticipated movement while maintaining fire rating including precondition cycling prior to fire performance testing in accordance with ASTM E1966.

System shall have factory and field splices tested in accordance with ASTM E1966. Manufacturer shall provide field-splicing instructions.

System shall have been tested in accordance with ASTM E1966 at a maximum joint opening as defined by ASTM E1399 which meets or exceeds the maximum joint opening required by the project design requirements.

Manufacturer shall supply installation instructions and transition details as required by project design requirements.

2.03 Fabrication

A. Thermoplastic membrane Seal – Ship in the longest practical continuous length coiled on Manufacturer's standard reel 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 heat welded on the jobsite following Manufacturer's written instructions utilizing specialty heat-fusing equipment offered by the Manufacturer.

All factory and field heat-fused connections shall incorporate welding of the complete gland profile. This includes heat fusing of all internal and external web configurations.

C. Elastomeric Concrete Header – Ship in Manufacturer's approved containers on wooden pallets, shrink wrapped.

D. Wall Mount Plate (floor-to-wall condition) – Fabricated or preformed 16 Ga. galvanized steel 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.

E. Fire Barriers (if required) – Ship Manufacturer's standard assembly for the required hourly rating with ends prepared for field splicing. Assemblies shall be miter cut in the field to accommodate changes in direction.

2.04 Finishes

A. Thermoplastic membrane seal shall be supplied in standard color: black.

B. Elastomeric Concrete Header material shall be supplied in standard colors: black or charcoal grey.

PART 3 – EXECUTION

3.01 Installation

A. Preparation of the Work Area

1. The contractor shall provide a properly formed, solid concrete blockout constructed to the exact dimensions shown on Mercedes' shop drawings. The joint opening should comply with the dimensions shown. Any edge or area in need of repair shall utilize one of the Mercedes International's concrete repair materials to provide a solid and square blockout.

2. The contractor shall clean the concrete blockout of all contaminants and impurities by sandblasting immediately prior to SmidCrete® C application. 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 SmidCrete® C bond. Sandblast the recess surfaces to expose aggregate.

3. Areas adjacent to the joint must be masked with tape to assure neat, clean joint lines. [Remove tape prior to the curing process.]

4. The blockout area must be completely dry for the application of SmidCrete® C. Concrete must be fully cured (28 days where the concrete has a moisture content that is below 4%) prior to placement of SmidCrete® C. Blockouts requiring the use of patching compounds must be cured for 72 hours prior to placement of SmidCrete® C. Blow out the area thoroughly using compressed air.

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 Mercedes International. The base of the recess must be formed level and at the same elevation across the joint. The joint interfaces must be parallel to, and continuously equidistant from, each other. They are to be perpendicular to the base surfaces of the recess – making the corner a perfect "sharp" 90° angle.

B. Seal and Nosing Installation

1. The membrane gland element shall be unpackaged 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).

2. Install the membrane profile and SmidCrete® C nosing materials per the Manufacturer's Instructions and recommendations.

3. Once poured and cured, the elastomeric concrete shall allow traffic in approx. 2 hours.

3.02 Clean and Protect

A. Protect the system and its components during construction. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION