# Modified Bonded Asphaltic Concrete Pavement NJSP-15-11C

**1.0 Description.** This work shall consist of the placement of a Polymer Modified Emulsion Membrane (PEM) or Cationic Modified Emulsion Membrane (CPEM) prior to a bituminous overlay of hot asphaltic concrete pavement. At the contractor’s option, the contractor may replace the PEM/CPEM with a Performance Graded (PG) Asphalt Binder prior to a bituminous overlay of hot asphaltic concrete pavement. The PEM/CPEM or PG Asphalt Binder shall be spray applied prior to the application of the hot asphaltic concrete pavement so as to produce a homogeneous surface in accordance with Secs 401, 402, or 403.

**2.0 Materials.**  All materials shall be in accordance with Division 1000, Material Details, and specifically as follows:

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| **Item** | **Section** |
| Polymer Modified Emulsion Membrane (PEM or CPEM) | 1015.20.6.2 |
| Performance Graded (PG) Asphalt Binder | 1015.10 |

The PG Asphalt Binder shall be modified to meet the following performance parameters. The test results shall be submitted to the engineer for approval at least 30 days prior to use. The PG binder component shall account for at least 95% of the total product composition by volume.

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| **Parameters\*** | **Test Method** | **Min** | **Max** |
| No-Pick-Up Time for Tack Coats; minutes | MoDOT TM 87 | - | 5 |
| Average Bond Strength; psi | MoDOT TM 88 or alternate method | 75 | - |
| Elastic Recovery, percent | AASHTO T 301 | 60 | - |

\*The PG Asphalt Binder product shall exhibit a laboratory “no-pick-up" time of 5 minutes or less per MoDOT TM-87. The PG Asphalt Binder product shall exhibit laboratory bond pull-off strengths (average of three test specimens) of a minimum of 75 psi in accordance with MoDOT TM-88 method or other approved research test methods at the target application rate prescribed within this specification. The elastic recovery may be waived if the product has proven performance in cold weather climates with freeze/thaw conditions.

**3.0 Construction Requirements.**  The PEM/CPEM or PG Asphalt Binder shall be applied in accordance with Sec 407 except as modified herein.

**3.1** Coldmilled Surfaces. All coldmilled surfaces shall be thoroughly cleaned with air blowing, air vacuuming, or other approved methods resulting in a cleaned surface free of all dust, loose material, grease, or other foreign material at the time the tack is applied to the satisfaction of the engineer. Historically, conventional sweeping equipment has not produced satisfactory results and will not be acceptable as the sole operation. .

**3.2 Requirements of Polymer Modified Emulsion Membrane (PEM or CPEM).**

**3.2.1 Equipment.**  No wheel, track or other part of the paving machine or any hauling equipment shall come in contact with the PEM/CPEM before the asphaltic concrete pavement mixture is applied.

**3.2.2 Application.** The target application rate of the PEM/CPEM shall be 0.20 gallons per square yard. The application rate shall be within +/- 0.02 gallons per square yard of the target application rate during construction. The average application rate used within the entire areas of the job limits shall be within +/- 1% of the target application rate. The PEM/CPEM shall be sprayed at a temperature of 120 - 180°F. The sprayer shall accurately and continuously monitor the application rate and provide a uniform coverage across the entire width to be overlaid.

**3.2.2.1** The application rate of the PEM/CPEM shall be verified by dividing the volume (of PEM/CPEM used) by the area of paving for that day.

**3.2.2.2** No water shall be added to the PEM/CPEM.

**3.3 Requirements of Performance Graded (PG) Asphalt Binder**

**3.3.1 Equipment.** The PG Asphalt Binder product shall be applied with an asphalt distributor that has been properly cleaned and set-up specifically for use of hot applied PG Asphalt Binder products. The distributor shall have the full circulating and heating capabilities in the tank and a heated spray bar.

**3.3.2 Application.** The target application rate of the PG Asphalt Binder shall be 0.15 gallons per square yard. The application rate shall be within +/- 0.02 gallons per square yard of the target application rate during construction. The average application rate used within the entire area of the job limits shall be within +/- 1% of the target application rate.

**3.3.3 Non-Tracking.**  The PG Asphalt Binder shall be modified to be non-tracking that does not stick to the tires, tracks or other parts of paving equipment or vehicles such that the surface to be overlaid becomes visible or void of tack prior to the placement of the asphaltic concrete pavement mixture. A test strip using the PG Asphalt Binder product of 200 feet long (maximum) shall be applied to the roadway. After application, the PG Asphalt Binder shall be non-tracking within 10 minutes or less. If the test strip exhibits unacceptable tracking, then work shall cease until the PG Asphalt Binder product is either reformulated, switched to a different PG Asphalt product, or a spray paver application method is utilized. The test strip shall be conducted until satisfactory results are achieved.

**3.3.4 Safety.**  Proper storage, handling, and application guidelines shall be followed carefully in accordance with the product manufacturer. A copy of this information shall be provided to the engineer. The information shall include the application temperature range, maximum allowable temperature for the product, and the particle charge.

**3.3.4.1** Safety procedures of all products shall be addressed in the contractor’s safety plan and a pre-construction meeting shall be held with the employees involved with the construction of the asphalt overlay to address all safety procedures, protocols, and personal protective equipment (PPE) of hot applied PG Asphalt Binder prior to application.

**4.0 Method of Measurement.** Measurement of the Polymer Modified Emulsion Membrane or PG Asphalt Binder shall be based on the volume in gallons in accordance with Sec 1015. Where required, measurement for coldmilling existing asphalt materials and cleaning the underlying pavement will be computed to the nearest square yard.

**5.0 Basis of Payment.** The accepted quantity of Polymer Modified Emulsion Membrane (PEM/CPEM) or PG Asphalt Binder shall be paid for at the contract unit price for 407-99.12, Misc. Modified Bonded Asphaltic Concrete Pavement, per gallon.

Where required, the accepted quantity for coldmilling and cleaning underlying pavement will be paid for at the contract unit price per square yard for Misc. Coldmilling Bituminous Pavement with Additional Cleaning, Item number 622-99.05.