SECTION 916
BITUMINOUS MATERIALS

916-1 General.

All products supplied under this Specification shall be one of the products included on the Approved Product List (APL). Producers seeking evaluation of a product for inclusion on the APL shall submit an application in accordance with Section 6.

For liquid anti-strip agents, in addition to the above, producers shall include a report of test results from an independent laboratory confirming the material meets the requirements of this section. In lieu of submitting test results from an independent laboratory, the Department will evaluate the material. For each liquid anti-strip agent, the producer will submit one pint of a representative sample of liquid anti-strip agent to the State Materials Office when submitting the APL application to the Department's Product Evaluation Section.

Any marked variation from the original test values for a material below the established limits or evidence of inadequate quality control or field performance of a material will be considered sufficient evidence that the properties of the material have changed, and the material will be removed from the APL.

916-~~1~~ *2* Superpave PG Asphalt Binder:

916-~~1~~*2*.1 Requirements: Superpave Performance Graded (PG) asphalt binders, identified as PG 52-28, PG 58-22, ~~and~~ PG 67-22*,* ~~shall meet the requirements of 916-1, and AASHTO M 320-10 Table 1.~~ *p*~~P~~olymer ~~M~~*m*odified *a*~~A~~sphalt (PMA) *binders, PG 76-22 (PMA) and PG 82-22 (PMA),* ~~or~~ *and* ~~A~~*a*sphalt ~~R~~*r*ubber *b*~~B~~inders (ARB), ~~identified as PG 76-22 (PMA),~~ PG 76-22 (ARB), ~~and PG 82-22 (PMA),~~ shall meet the requirements of 916-~~1~~*2* and AASHTO M332-14. All PG asphalt binders shall meet the following additional requirements:

1. The intermediate test temperature at 10 rad/sec. for the Dynamic Shear Rheometer (DSR) test (AASHTO T315-12) shall be 26.5ºC for PG grades PG 67 and higher.

2. An additional high temperature grade of PG 67 is added for which the high test temperature at 10 rad/sec for the DSR test (AASHTO T315-12) shall be 67ºC.

3. All PG asphalt binders having a high temperature designation of PG 67 or lower shall be prepared without modification.

4. All PMA binders having a high temperature designation higher than PG 67 shall be produced with a styrene-butadiene-styrene (SBS) or styrene-butadiene (SB) elastomeric polymer modifier and the resultant binder shall meet all requirements of this Section.

5. Polyphosphoric acid may be used as a modifier not exceeding 0.5% by weight of asphalt binder for PG 76-22 (PMA), PG 76-22 (ARB), and PG 82-22 (PMA) binders.

6. PG 76-22 (ARB) shall meet the additional requirements of 916-~~1~~*2*.1.1.

7. ~~Do not substitute a PG binder with~~ *All PG asphalt binders having a high temperature designation of PG 67 or lower shall not have* a high temperature *true* grade more than 5.9°C higher than the specified PG grade, (for example, if a PG 58-22 is specified, do not supply a PG 64-22 or higher).

For all PG binder used in all hot mix asphalt, silicone may be added to the PG binder at the rate of 25 cubic centimeters of silicone mixed to each 5,000 gallons of PG binder. If a disbursing fluid is used in conjunction with the silicone, the resultant mixture containing the full 25 cubic centimeters of silicone shall be added in accordance with the manufacturer's recommendation. The blending of the silicone with the PG binder shall be done by the supplier

prior to the shipment. When the asphalt binder will be used with a foaming warm mix technology, refer to the technology supplier's guidance on the addition of silicone.

Where an anti-strip additive is required, per the requirements of Sections 334 and 337, the amount shall be from 0.25% to 0.75% by weight of asphalt binder. The anti-strip additive shall meet the requirements of 916-~~5~~*4*. The anti-strip additive shall be introduced into the PG binder by the supplier during loading.

916-~~1~~*2*.1.1 Additional Requirements for PG 76-22 (ARB): The following additional requirements apply only to PG 76-22 (ARB):

1. The asphalt binder shall contain a minimum of 7.0% ground tire rubber (GTR) by weight of asphalt binder.
2. The GTR shall meet the requirements of Section 919.
3. Polymer modification is optional for PG 76-22 (ARB).
4. Use of excess PG 76-22 (ARB): The Contractor may use excess PG 76-22 (ARB) in other asphalt concrete mixes requiring the use of a PG 67-22 binder by blending with straight PG 67-22 binder so that the total amount of ground tire rubber in the binder is less than 2.0%. The Contractor may use excess PG 76-22 (ARB) in asphalt concrete mixtures requiring the use of a PG 52-28 or PG 58-22 by blending with the designated binder in such proportions that the total amount of ground tire rubber in the binder is less than 1.0%.

916-2.2 Compliance with Materials Manual: *Producers of Superpave PG binders shall meet the requirements of Section 3.5, Volume II of the Department's Material Manual, which may be viewed at the following URL:*
http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Section35V2.shtm

916-~~1~~*2*.~~2~~ *3* Reporting: ~~The report, in accordance with 916-5, shall consist of the~~ ~~s~~*S*pecification compliance testing *results shall be reported for the tests in the table below, unless noted otherwise.* ~~and q~~*Q*uality control (QC) testing ~~of the following as applicable by these specifications~~ *results shall be reported for original binder DSR (G/sin δ and phase angle, as applicable).*

SUPERPAVE PG ASPHALT BINDER		
Test and Method	Conditions	Specification Minimum/Maximum Value
~~Original Binder~~		
Superpave PG Asphalt Binder Grade		Report
A~~pproved P~~*p*~~roduct L~~*l*~~ist~~ Number		Report
Modifier *(name and type)*	~~Modified binders only~~*Polymer, Ground Tire Rubber with Approved Product List (APL) number and any Rejuvenating Agents*	Report
Original Binder		
Solubility, AASHTO T 44-13	in Trichloroethylene	Minimum 99.0% (Not applicable for PG 76-22 (ARB))

Flash Point, AASHTO T-48-06 (2010)	Cleveland Open Cup	Minimum 450ºF
Rotational Viscosity, AASHTO T 316-13	275ºF	Maximum 3 Pa·s[(a)]
Dynamic Shear -Rheometer [(b)], AASHTO T-315-12	$G^*/\sin\delta$	Minimum 1.00 kPa
	Phase Angle, δ[(~~b~~c)] PG 76-22 (PMA) and PG 76-22 (ARB)[(~~c~~d)] PG 82-22 (PMA)	Maximum 75 degrees Maximum 65 degrees
Separation Test, ASTM D 7173-11 and Softening Point, AASHTO T-53-11	163±5°C 48 hours	Maximum 15°F (PG 76-22 (ARB) only)
Rolling Thin Film Oven Test Residue (AASHTO T 240-09)		
Rolling Thin Film Oven, AASHTO T-240-13	Mass Change %	Maximum 1.00
~~Dynamic Shear Rheometer, AASHTO T 315-12~~ *Multiple Stress Creep Recovery, $J_{nr,\,3.2}$ AASHTO M322-14*	~~G*/sin δ~~*Grade Temperature* (Unmodified binders only)	~~Minimum 2.20 kPa~~*"S" = 4.50kPa^{-1} max*
Multiple Stress Creep Recovery, $J_{nr,\,3.2}$[(~~c, d~~d, e)] AASHTO ~~T 350~~*M332-14*	67°C (Modified binders only)	"V" = 1.0 kPa^{-1} max "E" = 0.5 kPa^{-1} max Maximum $J_{nr,diff}$ = 75%
Multiple Stress Creep Recovery, %Recovery[(~~c, d~~d, e)] AASHTO M-332-14	67°C (Modified binders only)	$\%R_{3.2}$ ~~>~~≥ $29.37 (J_{nr,\,3.2})^{-0.2633}$
Pressure Aging Vessel Residue (AASHTO R 28-12)		
Dynamic Shear Rheometer, AASHTO T-315-12	$G^*\sin\delta$, 10 rad/sec.	Maximum 5000 kPa[(ef)]
Creep Stiffness, AASHTO T-313-12	S (Stiffness), @ 60 sec. m-value, @ 60 sec.	Maximum 300 MPa Minimum 0.300

(a) Binders with values higher than 3 Pa·s should be used with caution and only after consulting with the supplier as to any special handling procedures, including pumping capabilities.

(b) Dynamic Shear Rheometer (AASHTO T 315) shall be performed on original binders for the purposes of QC testing only.

(~~b~~c) The original binder phase angle (AASHTO T 315-12) shall be performed at grade temperature.

(~~c~~d) AASHTO T 315-12 and AASHTO T 350-14 will be performed at a 2 mm gap for PG 76-22 (ARB)

(~~d~~e) All binders with a high temperature designation >67 will be tested at 67°C. PG 76-22 (PMA) and PG 76-22 (ARB) shall pass a "V" graded and PG 82-22 (PMA) shall pass an "E" grade per AASHTO M 332-14.

(~~e~~f) For all PG grades of a PG 67 or higher, perform the PAV residue testing at 26.5°C with a maximum of 5000 kPa.

~~**916-1.3 Certification and Verification:** The supplier shall furnish certification on the bill of lading for each shipment of PG asphalt binder delivered to a Department project that includes: the quantity, the PG asphalt binder grade (including the Approved Product List (APL) number), PG binder LOT designation, the customer name, the delivery location, a statement that the binder is in conformance with 916-1 and the supplier's Quality Control Program, and the quantity of silicone and anti-strip agent addition, as applicable, including product designation~~

~~(APL number as applicable). Additionally, for PG 76-22 (ARB), provide a certification statement on the bill of lading that a minimum of 7.0% GTR by weight of asphalt binder is used in the formulation of the PG 76-22 (ARB). Any special handling or temperature requirements shall be indicated on the certification and are solely the responsibility of the Contractor to follow.~~

~~The Department may sample and test PG asphalt binder from the supplier's storage tank, the delivery vehicle, and/or Contractor's storage tank to verify and determine specification compliance. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that PG asphalt binder product. Further shipment of that PG asphalt binder product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.~~

916-~~2~~ *3* ~~Emulsified~~ Asphalt~~s~~ *Emulsions*.

916-23.1 Compliance with Materials Manual: *Producers of asphalt emulsions shall meet the requirements of Section 3.4, Volume II of the Department's Material Manual, which may be viewed at the following URL:*
http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Section34V2.shtm

916-~~2~~*3*.~~1~~ *2* Requirements: Use a prime coat ~~or non-tracking tack coat listed on the APL~~ meeting the requirements of AASHTO M140-08 for anionic emulsions, AASHTO M208-01 (2009) for cationic emulsions, or as ~~provided~~ *specified* below. For anionic emulsions, the cement mixing test will be waived ~~when the emulsion is used in non-mix applications, such as prime or tack coats~~.

SPECIAL MS-EMULSION		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	minimum 45 seconds
Storage Stability	24 hour	maximum 1%
Sieve Test	50 mL $CaCl_2$ 0.10 N	maximum 0.10%
Demulsibility		minimum 65%
Residue by Distillation		minimum 62%
Naphtha Content	500ºF. Dist.	maximum 8% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 50
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Absolute Viscosity	140ºF	minimum 800 poise
Solubility	in Trichloroethylene	minimum 97.5%
Maximum application temperature shall be 170ºF.		

ASPHALT EMULSION PRIME (AEP)		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	20/150 seconds

Settlement	5 days[a]	maximum 5%
Storage Stability	24 hour[b]	maximum 1%
Sieve Test		maximum 0.1%
Residue		minimum 55%
Naphtha Content	500ºF. Dist	maximum 12% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	40/200
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than 5 days.
(b) The 24-hour (one day) storage stability test may be used instead of the 5 day settlement test.

EMULSION PRIME (RS TYPE)		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	minimum 75 seconds
Storage Stability	24 hour	maximum 1.0%
Sieve Test		maximum 0.1%
Naphtha Content		5/15% by volume
Residue		minimum 55%
Tests on Residue:*		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 50
Viscosity	140ºF	minimum 800 poise
Solubility	in Trichloroethylene	minimum 97.5%

* Residue by distillation shall be in accordance with AASHTO T 59-13 except that the maximum temperature shall be 329°F, plus or minus 10ºF [165°C, plus or minus 5ºC] and the sample shall be maintained at this temperature for 20 minutes.

EPR-1 PRIME[a]		
Tests	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	6/24 seconds
Sieve Test[b]		maximum 0.1%
Residue by Distillation[c]		minimum 20%
Particle Charge Test[d]		positive
Test on Residue:[e]		
Flash Point	COC	minimum 410ºF
Viscosity	140ºF	600/1000cSt

(a) EPR-1 Prime shall not be diluted, In the event that EPR-1 Prime is not used in a 12 hour period, the material shall be thoroughly mixed by circulation or other suitable means prior to use.
(b)Distilled water shall be used in place of 2% sodium oleate solution.
(c) Residue by distillation shall be in accordance with AASHTO T 59-13 with the exception that a 50 g sample is heated to 300ºF [149ºC] until foaming ceases, then cooling immediately and calculating results.
(d) Caution: this material has a positive particle charge, and therefore should not be mixed with materials having a negative particle charge.
(e) Residue by distillation shall be in accordance with AASHTO T 59-13 except that the maximum temperature shall be 329°F,

EPR-1 PRIME[a]		
Tests	Conditions	Minimum/Maximum
Tests on Emulsion:		
plus or minus 10ºF [165°C, plus or minus 5ºC] and the sample shall be maintained at this temperature for 20 minutes.		

CRS-1h QCT ~~TACK~~		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 100 seconds
Storage Stability	24 hour	maximum 1%
Demulsibility	35 ml 0.8% Sodium Dioctyl Sulfosuccinate[a]	minimum 60%
Sieve Test		maximum 0.10%
Residue by Distillation	500°F. Distillation	minimum 55%
Naphtha Portion	500°F. Distillation.[b]	maximum 3% by volume
Particle charge		positive
Tests on Residue From Distillation Test:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 40
Viscosity	140°F	minimum 1600 poise
Ductility	77°F	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%
(a) The demulsibility test shall be made within 30 days from the date of shipment. (b) When CRS-1h QCT has been modified to include naphtha, the 24 hour storage stability will be waived.		

NTSS-1hm ~~TACK~~		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 500 seconds
Storage Stability	24 hour	maximum 1%
~~Settlement~~	~~5 days~~	~~maximum 5%~~
Residue by Distillation		minimum 50%
Naphtha Content	500°F. Distillation	maximum 1% by volume
Sieve Test		maximum 0.30%[a]
Tests on Residue From Distillation Test:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	maximum 20
Softening Point AASHTO T 53-11		minimum 149°F
Dynamic Shear Rheometer AASHTO T-315-12	G*sin δ, ~~179.6~~*82*°~~F~~*C* @ 10 rad/sec	minimum 1.00 kPa
(a) Sieve test may be waived if no application problems are present in the field.		

NTCRS-1hm ~~TACK~~

Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 100 seconds
Storage Stability	24 hour	maximum 1%
Demulsibility		minimum 60%
Residue by Distillation		minimum 55%
Sieve Test		maximum 0.~~15~~*10*%
Particle Charge		positive
Tests on Residue From Distillation Test:		
Penetration (0.1mm)	77°F, 100 g, 5 seconds	maximum 70
Ductility	77°F	minimum 40 cm
Solubility	in Trichloroethylene	minimum 97.5%

EM-50-TT ~~TACK~~		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	~~0 –~~*maximum* 100 seconds
Storage Stability	24 hour	maximum 1%
Residue by Distillation		minimum 50%
Sieve Test		maximum 0.10%
Tests on Residue From Distillation Test:		
Penetration (0.1mm)	77°F, 100 g, 5 seconds	maximum 20
Softening Point AASHTO T 53-11		minimum 149°F
Absolute Viscosity	300°F	1000 – 2000 cP
Solubility	in Trichloroethylene	minimum 97.5%

~~EMULSIFIED ASPHALT GRADE CRS-1HBC~~*CBC-1H*		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122°F	15 - 100 seconds
Storage Stability	24 hour	maximum 1%
Residue by Distillation		minimum 58%
Sieve Test		maximum 0.10%
Particle Charge		positive
Tests on Residue from Distillation Test:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	40 - 90
Softening Point, ASTM D36		minimum 120 F

CBC-1		
Test	*Conditions*	*Minimum/Maximum*
Tests on Emulsion:		

CBC-1		
Test	*Conditions*	*Minimum/Maximum*
Saybolt Furol Viscosity	*77°F*	*15 - 100 seconds*
Storage Stability	*24 hour*	*maximum 1%*
Residue by Distillation		*minimum 30%*
Sieve Test		*maximum 0.10%*
Particle Charge		*positive*
Tests on Residue from Distillation Test:		
Penetration (0.1 mm)	*77°F, 100 g, 5 seconds*	*75 - 175*
Dynamic Shear Rheometer AASHTO T315-12	*G*sin δ, 76°C @ 10 rad/sec*	*minimum 1.00kPa*

PATT		
Test	*Conditions*	*Minimum/Maximum*
Tests on Emulsion:		
Saybolt Furol Viscosity	*77°F*	*maximum 100 seconds*
Storage Stability	*24 hour*	*maximum 1%*
Residue by Distillation		*minimum 50%*
Naphtha Content	*500°F Distillation*	*Maximum 3% by volume*
Sieve Test		*maximum 0.30%*
Tests on Residue from Distillation Test:		
Penetration (0.1 mm)	*77°F, 100 g, 5 seconds*	*Minimum 40*
Solubility	*in Trichlorethylene*	*Minimum 97.5*
Dynamic Shear Rheometer AASHTO T315-12	*G*sin δ, 76°C @ 10 rad/sec*	*minimum 1.00kPa*
~~*Storage Stability test may be waived if no application problems are present in the field.*~~		

~~**916-2.2 Certification, and Verification:** The supplier shall furnish certification on the bill of lading for each shipment of emulsified asphalt delivered to a Department project that includes: the producer's name and location, the quantity, the emulsified asphalt type (including APL number and tank number), emulsified asphalt LOT or Batch designation, the customer name, and a statement that the emulsion is in conformance with the material requirements in 916-2 and the supplier's QC Plan. Any special handling or temperature requirements shall be indicated on the certification and are the sole responsibility of the Contractor.~~

~~The Department may sample and test emulsified asphalt from the supplier's storage tank and/or delivery vehicle to verify and determine specification compliance. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that emulsified asphalt product. Further shipment of that emulsified asphalt product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.~~

916-~~3~~ *4* Liquid Anti-strip Agents.

916-~~3~~*4*.1 Requirements: Liquid anti-strip agents shall be tested in accordance with FM 5-508. Tensile strength ratios will be calculated for the following two conditions and

expressed as percentages: 1) conditioned mixture without anti-strip to unconditioned mixture without anti-strip and 2) conditioned mixture with anti-strip to unconditioned mixture without anti-strip. A 20% gain in tensile strength ratio for condition 2 as compared to condition 1 shall be required.

916-~~3~~*4*.2 Mix Design Verification: Inclusion of a liquid anti-strip agent on the APL does not guarantee that the anti-strip will be approved for use in an asphalt mixture. Specifications may require subsequent moisture susceptibility testing per FM 1-T283 for the particular mix design. Results from this testing may indicate the need for a larger dosage rate of anti-strip agent (up to 0.75% maximum) or a different anti-strip agent to meet the specification requirements.

~~**916-4 Approved Product List (APL).**~~

~~**916-4.1 General:** Any product supplied under this specification shall be one of the products included on the APL. Manufacturers seeking evaluation of a product for inclusion on the APL shall submit an application in accordance with Section 6 and send a sample of the material to the State Materials Office (SMO) to be tested for compliance with the requirements of this specification. Also include split sample testing results from the supplier's lab or an independent lab for comparison to the SMO's test results. Any marked variation from these original test values or evidence of inadequate QC or field performance of a material will be considered sufficient evidence that the properties of the material have changed, and the material will be removed from the APL. Suppliers shall not ship any product until notified that the product is on the APL and the QC Plan meets the requirements of 916-5 and has been approved by the Department.~~

~~**916-4.2 Superpave PG Asphalt Binders:** For each binder grade, submit to the SMO one quart of a representative sample. In addition, for modified binders, indicate the original PG binder grade, the modifier product designation, and modifier type on the product evaluation application and in the QC Plan. Additionally, for PG 76-22 (ARB), provide a certification statement on the product evaluation application and in the QC Plan that a minimum of 7.0% GTR is used in the formulation of the PG 76-22 (ARB).~~

~~**916-4.3 Emulsified Asphalt:** For each emulsified asphalt product, submit to the SMO one gallon of a representative sample.~~

~~**916-5 Quality Control (QC) Program.**~~

~~**916-5.1 General:** The supplier of the PG asphalt binder or emulsified asphalt shall at a minimum have a Quality Control Program meeting the requirements of this Section, AASHTO R 26-01 (2009), and AASHTO PP 71-11. A QC Plan)shall be submitted in an electronic format to the SMO for approval. The requirements of the QC Plan shall apply to the supply location of the PG asphalt binder or emulsified asphalt for use on Department projects only. Any special handling requirements such as rack blending of a PG asphalt binder and the manufacture of polymer and or rubber modified asphalt binder shall be described in the QC Plan.~~

~~**916-5.2 Identification of Personnel and Supply Locations:** The supplier's primary and secondary representatives responsible for QC shall be identified by name, title, address, telephone, fax and e-mail address. At least one of the representatives shall be located at the supply location. The supply locations shall be identified by name, address and telephone.~~

~~**916-5.3 Specification Compliance and QC Testing:** Specification compliance testing shall consist of complete testing of each PG asphalt binder or emulsified asphalt shipped in accordance with the material requirements in 916-1 and 916-2 of these Specifications. Specification compliance testing shall be conducted by a testing laboratory that participates at~~

least annually in the AASHTO Materials Reference Laboratory (AMRL) Proficiency Sample Program for PG asphalt binder or emulsified asphalts, as applicable. Results of specification compliance testing shall be available to the supplier within five working days of sampling. The primary testing lab and any other labs to be used for specification compliance testing shall be identified in the supplier's QC Plan. The results from each AMRL Proficiency Sample for each testing laboratory shall be forwarded by the supplier for each supply location in electronic format to the SMO within one week of receiving the results. Acceptable performance in the AMRL Proficiency Sample Program shall be a minimum score of 3 for each test. A rating of less than 3 shall require identification of appropriate action on the part of the supplier and be acceptable to the SMO.

Results of QC testing shall be available to the supplier within five hours of sampling. A QC test result outside the specification limits will require immediate sampling and testing for specification compliance and appropriate action taken. The QC testing and location where the test will be done shall be identified in the supplier's QC Plan. In the event that testing equipment goes out of service, the supplier may elect to test at a qualified lab identified in the supplier's QC Plan. The QC testing results shall be supplied within 48 hours of the sampling.

916-5.3.1 Superpave PG Asphalt Binders: QC testing at a minimum shall consist of testing a representative sample of each PG asphalt binder shipped by the supplier in accordance with AASHTO T 315-12 Test Method for Determining Rheological Properties of Asphalt Binder using a DSR.

916-5.3.2 Emulsified Asphalts: QC testing at a minimum shall consist of testing a representative sample of each emulsified asphalt shipped by the supplier in accordance with AASHTO T 72-10 Standard Method of Test for Saybolt Viscosity, AASTHO T 59-12 Standard Test Method for Emulsified Asphalt: Oversized Particles in Emulsified Asphalts (Sieve Test) and Residue by Distillation or Evaporation .

916-5.4 Frequency of Sampling and Testing: Sampling of PG asphalt binders and emulsified asphalts shall be done in accordance with AASHTO T 40-02 (2006). Initial specification compliance testing shall be performed and reported for each PG asphalt binder grade and emulsified asphalt type for each new LOT of material which will be further subjected to QC testing in accordance with 916-5.3. A new LOT will occur when the material in a tank changes or the specification compliance tests are no longer representative of the material in the tank.

Any PG asphalt binder or emulsified asphalt shipped to a Department project during any one calendar month shall be tested at least once during that month for specification compliance in accordance with 916-5.3.

Split samples of any PG asphalt binder or emulsified asphalt will be provided when requested by a representative of the Department. When split samples are requested by the Department, the results from both parties will be made available within 10 working days.

916-5.4.1 Additional PG Asphalt Binder Testing is as follows:

(1) Samples shall be obtained by the supplier and tested for QC testing in accordance with 916-5.3. A single, 1-quart representative sample of each PG asphalt binder shall be obtained and tested by the supplier each calendar week; for each rack blended PG asphalt binder, additional representative samples shall be obtained daily.

(2) When split samples are requested, three representative 1-quart samples will be obtained by the supplier under the direction of the Department. One sample will be

~~submitted to the SMO, one will be tested by the supplier for specification compliance and one will be tested by the supplier for QC.~~

~~(3) For each rack blended PG asphalt binder, identify minimum daily Process Control (PC) testing in the QC Plan.~~

~~(4) Each QC, specification compliance, Department split samples and additional daily rack blended samples shall be adequately identified and retained for not less than eight weeks at the supply location.~~

~~**916-5.4.2 Additional Emulsified Asphalt Testing is as follows:**~~

~~(1) Samples shall be obtained by the supplier and tested for QC testing in accordance with 916-5.3. A single, 1-gallon representative sample of each emulsified asphalt shall be obtained and tested by the supplier for each LOT.~~

~~(2) When split samples are requested, three representative 1-gallon samples will be obtained by the supplier under the direction of the Department. One sample will be submitted to the SMO, one will be tested by the supplier for specification compliance and one will be tested by the supplier for QC.~~

~~(3) Each QC, specification compliance, and Department split samples shall be adequately identified and retained for not less than four weeks at the supply location.~~

~~**916-5.5 Reporting:** A monthly report by the supplier containing specification compliance and QC test results in accordance with this Section and the supplier's QC Plan shall be submitted by the supplier to the SMO in electronic format, using the form provided by the Department, within seven calendar days following the end of the month. Test results for split samples shall also be included. PC test results shall not be included. Copies of the submitted monthly reports and supporting test reports shall be available at the supply location for a minimum of three years.~~

~~**916-5.6 Notification and Evaluation:** In the event that a specification compliance test is outside specification requirements or a QC test is outside limits established by the supplier as part of their QC Plan, shipments of that product to Department projects will cease immediately and the Contractor and the SMO will be notified and the product retested for specification compliance (re-sampling as appropriate). Resume shipment of the product when the retest for specification compliance meets all requirements and with the approval of the SMO.~~