

412-R-549 FOG SEAL

(Adopted 01-17-08)

The Standards Specifications are revised as follows:

SECTION 412, BEGIN LINE 1, INSERT AS FOLLOWS:

**SECTION 412 – FOG SEAL**

**412.01 Description**

*This work shall consist of applying asphalt emulsion to the pavement surface in accordance with 105.03.*

**MATERIALS**

**412.02 Materials**

10 *Materials shall be in accordance with the following:*

<i>Asphalt Emulsion, AE-PL.....</i>	<i>902.01(b)</i>
<i>Fine Aggregate.....</i>	<i>904.02</i>

**CONSTRUCTION REQUIREMENTS**

**412.03 Equipment**

*A distributor in accordance with 409.03(a) shall be used.*

20 **412.04 Weather Limitations**

*Fog seal operations shall not be conducted on a wet pavement, when the ambient air or pavement temperature is below 60°F (16°C), or when other unsuitable conditions exist, unless approved by the Engineer. Fog seal shall not be applied to travel or auxiliary lanes before May 1 or after October 1.*

**412.05 Preparation of Surface**

*Surfaces shall be clean and free of any foreign or loose material.*

30 *All castings, detector housings, and snowplowable raised pavement markers shall be covered to prevent coating with fog seal prior to application of the fog seal. These coverings shall be removed prior to opening to traffic.*

**412.06 Application of Asphalt Material**

*The asphalt material shall be applied uniformly at a rate within ± 0.02 gal./syd (0.065 L/sq m) of the rate shown on the plans. Asphalt material shall be applied in such a way as to ensure even and uniform coverage to the pavement surface.*

**412.07 Protection of Surface**

40 *Fine aggregate or other approved blotting material shall be applied to pedestrian crosswalks, driveways or other areas as directed by the Engineer. Brooming of ponded areas shall be required prior to placing traffic on treated surfaces, as directed.*

*Traffic shall not be permitted on the freshly sealed surface until the asphalt material has sufficiently cured to prevent tracking.*

**412.08 Method of Measurement**

*Fog seal will be measured by the square yard (square meter) complete in place.*

**412.09 Basis of Payment**

50 *Fog seal will be paid for at the contract unit price per square yard (square meter).*

*Payment will be made under:*

**Pay Item**

**Pay Unit Symbol**

*Fog Seal .....SYS (m2)*

60 *The costs of all asphalt materials, fine aggregate, surface preparation, and all other necessary incidentals shall be included in the cost of the pay item.*

SECTION 902, BEGIN LINE 125, INSERT AS FOLLOWS:

Characteristic <sup>(1)(2)</sup>	AASHTO Test Method	RS-2	HFRS-2	AE-90	AE-90S	AE-T	AE-150	AE-150L	AE-PL	AE-PMT <sup>(6)</sup>	AE-PMP <sup>(6)</sup>
Test on Emulsion											
Viscosity, Saybolt Furol at 25°C, min.	T 72			50			50				20+
Viscosity, Saybolt Furol at 25°C, max.	T 72					100		100	115	100	
Viscosity, Saybolt Furol at 50°C, min.	T 72	75	75	50			75				
Viscosity, Saybolt Furol at 50°C, max.	T 72	400	400				300				
Demulsibility w/35 mL, 0.02N CaCl <sub>2</sub> , %, min.	T 59	50	50		30						
Demulsibility w/50 mL, 0.10N CaCl <sub>2</sub> , %, min.	T 59			75		75				25+	25+
Oil Distillate by Distillation, mL/100 g Emul <sup>(3)</sup>	T 59	4.0	4.0	4.0	3.0	4.0	7.0	7.0	3.0	3.0	3.0
Residue by Distillation, %, min.	T 59	68	68	68	65 <sup>(5)</sup>	54	68	60	30		
Residue by Distillation, % max.	T 59					62		65			
Sieve Test, %, max.	T 59	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Penetrating Ability, mm, min.	902.02(w)								6		
Stone Coating Test, %	902.02(t)3a			90			90	90			
Settlement, %, max.	T 59	5	5	5							
Storage Stability, %, max.	T 59				1						
Asphalt Content by Distillation at 204°C, %, min.										54	45
Asphalt Content by Distillation at 204°C, %, max.										62	
Tests on Residue											
Penetration (0.1 mm) at 25°C, 100g, 5 s, min. <sup>(4)</sup>	T 49	100	100	100	90	50			40 <sup>(7)</sup>	50	300+
Penetration (0.1 mm) at 25°C, 100g, 5 s, max. <sup>(4)</sup>	T 49	200	200	200	150	200			90 <sup>(7)</sup>	200	
Penetration (0.1 mm) at 25°C, 50g, 5 s, min. <sup>(4)</sup>	T 49						100	100			
Penetration (0.1 mm) at 25°C, 50g, 5 s, max. <sup>(4)</sup>	T 49						300	300			
Ductility at 25°C, mm, min.	T 51	400	400	400		400					
Solubility in Org. Sol., %, min.	T 44	97.5	97.5	97.5	97.5	97.5	97.5	97.5	97.5	97.5	97.5
Float Test at 50°C, s, max. (4)	T 50										
Float Test at 60°C, s, min. (4)	T 50		1200	1200	1200	1200	1200	1200			
Force Ratio	T 300				0.3						
Elastic Recovery, at 4°C	T 301				58						
Polymer Content by Infrared										1.5+	1.5+

- Notes:
- (1) Broken samples or samples more than 10 days old will not be tested.
  - (2) Combined percentage of the residue and oil distillate by distillation shall be at least 70% (note the different units – ml for oil and % for residue).
  - (3) Oil distillate shall be in accordance with ASTM D 396, table 1, grade no. 1
  - (4) The Engineer may waive the test.
  - (5) Maximum temperature to be held for 15 minutes  $200 \pm 5^{\circ}\text{C}$ .
  - (6) Asphalt shall be polymerized prior to emulsification.
  - (7) *The indicated penetration values shall apply to AE-PL used for fog seal (Section 412).*
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