

## SECTION 02967

# SURFACE REPAVING

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Soften, scarify, rejuvenate, mix, and level reclaimed material.
- B. Furnish and place new surfacing material.
- C. Place and compact reclaimed and new material in one operation to produce a monolithic pavement.

#### 1.2 RELATED SECTIONS

- A. Section 02741: Hot Mix Asphalt.
- B. Section 02745: Asphalt Material.
- C. Section 02786: Plant Mix Seal Coat (Open-graded).
- D. Section 02966: Recycled Surface.

#### 1.3 REFERENCES

- A. AASHTO T 48: Flash and Fire Points by Cleveland Open Cup.
- B. AASHTO T 59: Testing Emulsified Asphalt.
- C. AASHTO T 201: Kinematic Viscosity of Asphalts (Bitumens).
- D. AASHTO T 227: Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method.
- E. AASHTO T 228: Specific Gravity of Semi-Solid Bituminous Materials.
- F. AASHTO T 240: Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test).
- G. ASTM D 2006-71: Rostler Test Method.

## **1.4 SUBMITTALS**

- A. Written sequence of operations. Submit at least two weeks prior to start of operations for approval by the Engineer.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Asphalt Concrete Pavement: Refer to Section 02741.
- B. Plant Mix Seal Coat: Refer to Section 02786.
- C. Asphalt Cement: Refer to Section 02745.

### **2.2 EQUIPMENT**

- A. Indicate at the Preconstruction Meeting the type of repaving equipment to be used.
- B. Use equipment capable of processing hot mix asphalt or plant mix seal coat.
- C. Have the equipment on the project in operating condition prior to beginning work and with sufficient time for the Engineer to evaluate.

### **2.3 HEATING UNIT**

- A. May or may not be an integral part of the scarification unit.
- B. Adequate in number and type to heat the pavement.
- C. For specific requirements, refer to Section 02966, Part 2, article, "Heater/Scarifier Equipment."

### **2.4 RECYCLING UNIT**

- A. Single piece of equipment.
- B. Self-contained, self-propelled, automated unit capable of scarifying to the depth required.
- C. Capable of automatically applying a rejuvenating agent when required to within  $\pm 5$  percent of the rate specified.

- D. Capable of mixing, redistributing to a uniform depth over the width being processed, and leveling the reclaimed material in one pass.
- E. Capable of applying a new asphalt concrete pavement immediately on the reclaimed material.
- F. Incorporate a spring release for manhole and valve box protection.
- G. Screed to have automatic controls to produce a surface of uniform slope, grade, and texture.

## **2.5 ASPHALT REJUVENATING AGENT**

- A. Composed of a petroleum base resin oil uniformly emulsified with water or non-emulsified agent and conforming to Table 1.

**Table 1**

<b>Asphalt Rejuvenating Agent</b>			
<b>Non-Emulsified Agent</b>	<b>AASHTO</b>	<b>Min.</b>	<b>Max.</b>
Viscosity at 140 degrees F, CST	T 201	50	150
Flash point, COC, C	T 48	425	--
Saturates, Wt., percent	Rostler method	--	25
Test on Residue from RFTO, 325 degrees F	T 240	--	--
Viscosity Ratio <sup>2</sup>	T 240	--	3
Wt. Change, ±, percent	T 240		4
Specific Gravity	T 228, T 227	Report	Report
<b>Emulsified Agent</b>	<b>AASHTO</b>	<b>Min.</b>	<b>Max.</b>
Viscosity at 77 degrees F, SFS	T 59	15	85
Residue, percent	T 59	60	--
Cement Mixing Test, percent	T 59	--	2.0
Sieve Test, percent	T 59	Pos.	Pos.
Particle Charge Test	T 59	Pos.	Pos.
BASE OIL <sup>1,2</sup>			
<b>Recovered From Emulsified Agent</b>	<b>AASHTO</b>	<b>Min.</b>	<b>Max.</b>
Viscosity at 140 degrees F, CST	T 201	50	150
Flash Point, COC, C	T 48	425	--
Saturates, Wt., percent	Rostler Method	--	25
Test on Resident from RFTO, 325 °F	R 240		
Viscosity Ratio <sup>2</sup>	T 240	--	3
Wt. Change, ±, percent	T 240	--	4
Specific Gravity	T 228, T 227	Report	Report
1 Values obtained on the emulsion's residue may vary from the emulsified rejuvenating agent.			
2 Viscosity Ratio = $\frac{\text{Viscosity of Residue RTFO, 140 }^\circ\text{F, CST}}{\text{Original Viscosity 140 F}^\circ, \text{CST}}$			

## **2.6 QUALITY CONTROL - SCARIFIER TEST**

- A. Adding rejuvenating agent, mixing, and leveling of reclaimed material or placing of new surfacing is not required during the test as only the depth of scarification is being tested.
- B. Unlimited testing and retesting is not allowed.
  - 1. Adjust as necessary if after two successive control section tests, the results are inconclusive or not in specification.
  - 2. The Engineer conducts one additional test. If the results of this test are inconclusive or out of specification, do not use the equipment or processes.
- C. Demonstrate the ability to heat and scarify to the required depth in a 6 inch control section at no additional cost to the Department.
  - 1. Divide control section into four sublots.
  - 2. The Engineer determines the depth of scarification (by differential leveling) at one (at least) location (randomly selected) in each subplot.
  - 3. Operate heaters and scarifiers at the same speed and in the same manner during the test as during actual paving operations.
  - 4. Record the following data during the test:
    - a. Air temperature (in the shade).
    - b. Pavement temperature.
    - c. Wind speed.
    - d. Cloud cover.
    - e. Speed of equipment (feet/minute).
    - f. Spacing of equipment.
    - g. Number of burners operating.
    - h. Pressure on scarifier.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Clean the pavement of all loose dirt, leaves, and other materials.
- B. Protect from head damage the area on and adjacent to the work.
- C. Not more than 24 hours before the start of operations, have all appropriate utility companies and city or county service functions (including but not limited to gas and sanitary sewer) check all valve boxes, manholes, and other service openings

for dangerous concentrations of flammable or explosive gases or liquids to determine if they are within safe limits.

- D. Obtain approval for equipment, processes, operating conditions, and methods of construction before operations begin.

### **3.2 REPAVING OPERATION**

- A. Sequence of Operations: Process ramps, cross reads, and secondary routes before the primary route.
- B. With a single piece of equipment, scarify, add rejuvenating agent when required, mix, level, and place new surfacing.
- C. Repave the surface at the same or slower speed, spacing of equipment, and manner of operation as used during the successful test.
- D. Cut back the edge of the previous, adjacent pass a minimum of 2 inches during the subsequent pass.
- E. Place the new surface on top of the recycled mix when the temperature of the recycled mix is between 200 degrees F and 250 degrees F.
- F. Complete compaction of the surfacing before the temperature of the mix drops below 200 degrees F.

### **3.3 FIELD QUALITY CONTROL**

- A. Engineer samples and tests gradation, asphalt content, density, and smoothness of the new material under Section 02741, or Section 02786.
  - 1. Engineer obtains samples from laydown hopper or screed auger.
- B. Department determines thickness of the new surfacing or Plant Mix Seal coat for each subplot as described in Section 02741, Part 1, article, "Acceptance," paragraph F by calculating the paver yield for two consecutive truck loads of paving mixture.
  - 1. The combined yield for two consecutive trucks constitutes a single test.
  - 2. A tolerance of  $\pm 15$  percent of the designated thickness is allowed.
  - 3. The calculations, results, station, location and respective weigh ticket numbers is documented for each subplot.

END OF SECTION

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July 3, 2002