

PLOT SUBMITTED: 02-JUL-1999 10:21  
 16982GNA.dgn  
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ITEM SPECIAL - ASPHALT CONCRETE PAVEMENT SURFACE HEATER DRUM MIX RECYCLING

DESCRIPTION. THIS WORK SHALL CONSIST OF PREPARING THE SURFACE, HEATING, SCARIFYING, MIXING IN HEATED DRUM MIX PLANT, APPLYING REJUVENATING AGENT AND RECOMPACTING THE PAVEMENT SURFACE IN ACCORDANCE WITH SPECIFICATIONS AND DETAILS SHOWN ON THE PLAN.

MATERIALS. THE ASPHALT REJUVENATING AGENT SHALL BE COMPOSED OF A PETROLEUM RESIN OIL BASE UNIFORMLY EMULSIFIED WITH WATER. THE MATERIAL SHALL HAVE A RECORD OF SATISFACTORY SERVICE AS AN ASPHALT REJUVENATING AGENT. SATISFACTORY SERVICE BEING BASED ON THE CAPABILITY OF THE MATERIAL TO INCREASE THE DUCTILITY, PENETRATION AND DURABILITY OF THE ASPHALT BINDER IN THE RECYCLED ASPHALT. EACH SHIPMENT DELIVERED TO THE PROJECT SHALL BE ACCOMPANIED BY A LETTER OF COMPLIANCE FROM THE MANUFACTURER THAT CERTIFIES THE MATERIAL CONFORMS TO THE FOLLOWING PHYSICAL PROPERTIES:

| <u>PROPERTY</u>                    | <u>LIMITS</u> | <u>ASTM TEST METHOD</u> |
|------------------------------------|---------------|-------------------------|
| VISCOSITY @ 25C, SFS               | 20-145        | D-244                   |
| SIEVE TEST, % BY WEIGHT            | 0.1 MAX.      | D-244 (1)               |
| PARTICLE CHARGE TEST               | POSITIVE      | D-244                   |
| CEMENT MIXING TEST, % BY WEIGHT    | 1.80 MAX.     | D-244                   |
| PUMPING STABILITY                  | (2)           |                         |
| 5 DAY SETTLEMENT TEST, % BY WEIGHT | 4.77 MAX.     | D-244                   |
| RESIDUE, % BY WEIGHT               | 53 MIN.       | D-244 (3)               |
| VISCOSITY @ 60C, CST (4)           | 990-4100      | D-2170                  |
| MALTENE DISTRIBUTION RATIO (4) (5) | 0.7-1.1       | D-2006-70               |
| PC/S RATIO (4) (6)                 | 0.5 MIN.      | D-2006-70               |
| ASPHALTENES, % BY WEIGHT (4)       | 10.8 MAX.     | D-2006-70               |

- (1) DISTILLED WATER SHALL BE USED IN PLACE OF THE SODIUM OLEATE SOLUTION.
- (2) PUMPING STABILITY IS DETERMINED BY CHARGING 450 ML OF EMULSION INTO AN 1 LITER BEAKER AND CIRCULATING THE EMULSION THROUGH A GEAR PUMP (ROPER 29.B22621) HAVING A 0.25 INCH INLET AND OUTLET. THE EMULSION PASSES IF THERE IS NO SIGNIFICANT OIL SEPARATION AFTER CIRCULATING FOR 10 MINUTES.
- (3) HEAT THE SAMPLE TO 300 +/- 5F, UNTIL FOAMING CEASES. THEN COOL THE SAMPLE IMMEDIATELY AND CALCULATE THE RESULTS.
- (4) TEST IS PERFORMED ON THE RESIDUE FROM THE EMULSION.
- (5) THE RATIO IS  $(PC+A1)/(S+A2)$  WHERE:  
 PC-POLAR COMPOUNDS  
 A1-FIRST ACIDAFFINS  
 A2-SECOND ACIDAFFINS  
 S -SATURATED HYDROCARBONS

EQUIPMENT. THE EQUIPMENT USED FOR CLEANING THE PAVEMENT SHALL BE CAPABLE OF CLEANING THE PAVEMENT IN ACCORDANCE WITH THIS SPECIFICATION.

THE EQUIPMENT USED FOR HEATING, SCARIFYING AND REMIXING SHALL BE A SELF-CONTAINED, SELF PROPELLED UNIT DESIGNED FOR THIS PURPOSE. THE HEATING UNIT SHALL BE OF THE RADIANT HEAT TYPE, WITH SUFFICIENT CAPACITY THE HEAT THE PAVEMENT MATERIAL AS NECESSARY FOR EFFICIENT SCARIFYING, REMIXING AND RECOMPACTION. DIRECT FLAME HEATING WILL NOT BE PERMITTED. THE HEATING UNIT SHALL HAVE SHUT-OFF CONTROLS CLEARLY IDENTIFIED AND EASILY OPERABLE BOTH FROM THE OPERATOR'S STATION AND FROM THE GROUND. THE SHUT-OFF CONTROL SYSTEM SHALL BE CAPABLE OF REDUCING THE HEATING ELEMENT TEMPERATURE FROM OPERATING TO NEAR AMBIENT IN APPROXIMATELY 30 SECONDS. THE MACHINE SHALL HAVE AN ADJUSTABLE, HEATED SCREED CAPABLE OF PLACING THE MIXTURE TO THE REQUIRED CROSS-SECTION, PROFILE AND ALIGNMENT IN AN ACCEPTABLE, FINISHED CONDITION READY FOR COMPACTION. ADEQUATE PROVISIONS SHALL BE MADE FOR THE SAFETY OF PERSONS IN THE VICINITY OF THE EQUIPMENT, AND FOR PREVENTING DAMAGE TO ADJACENT PROPERTY AND FACILITIES, PUBLIC OR PRIVATE. THE SCARIFYING UNIT SHALL BE CAPABLE OF LOOSENING AND REMIXING THE HEATED PAVEMENT MATERIAL TO THE SPECIFIED DEPTH IN A UNIFORM PATTERN AND IN CONDITION FOR IMMEDIATE RECOMPACTION.

THE RECYCLING UNIT SHALL BE CAPABLE OF LOOSENING THE HEATED ASPHALT PAVEMENT TO THE SPECIFIED DEPTH IN A UNIFORM PATTERN, LOADING EXISTING ASPHALT, ADDING HEATED AGGREGATE, ADDING HEATED REJUVENATOR IN THE PROPER AMOUNTS INTO A HEATED MIXING PLANT OF SUFFICIENT SIZE AS TO MIX FOR A MINIMUM OF 30 SECONDS AT 350 DEGREES F, PLACING AND LEVELING RECYCLED ASPHALT PAVEMENT IN CONDITION FOR IMMEDIATE RECOMPACTION. THE APPLICATION OF THE REJUVENATING AGENT AND AGGREGATE SHALL TAKE PLACE PRIOR TO THE MIXING OPERATION TO ALLOW FOR PREBLENDING. THE RATE OF APPLICATION SHALL BE HYDROSTATICALLY CONTROLLED AND METERED TO MAINTAIN THE SPECIFIED APPLICATION RATE FOR CHANGES IN THE OPERATING SPEED OF THE RECYCLER. A METER SHALL BE INCORPORATED INTO THE DISTRIBUTION SYSTEM FOR RECORDING THE QUALITY OF ASPHALT REJUVENATING AGENT APPLIED TO THE RECYCLED PAVEMENT MIXTURE. THE MIXING SHALL TAKE PLACE IN A HEATED ROTATING DRUM MIX PLANT FOR AT LEAST 30 SECONDS AT 350 DEGREES F, AND IN SUCH A MANNER AS TO ENSURE COMPLETE BLENDING. COMPACTION EQUIPMENT SHALL BE ROLLERS MEETING THE REQUIREMENTS OF 401.11.

WEATHER LIMITATIONS. SURFACE HEATER IN-PLACE DRUM MIX RECYCLING SHALL BE PERFORMED ONLY WHEN THE WEATHER IS DRY, THERE IS NO FREE WATER ON THE PAVEMENT, AND THE ATMOSPHERIC TEMPERATURE IS OVER 40 DEGREES F AND RISING.

CALCULATED  
 KAS  
 CHECKED  
 LDH  
 GENERAL NOTES  
 LAKE COUNTY  
 LAK-86-5.52  
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