



**PROJECT SPECIFICATIONS FOR RUBBERIZED EMULSION- SEALCOAT (TRMSS)**

**DESCRIPTION**

The TRMSS shall consist of a mixture of an approved rubber polymer modified emulsion, water and specified additives proportioned, mixed and uniformly spread over a properly prepared surface as directed by the Engineer. The completed TRMSS shall leave a homogeneous mat, adhere firmly to the prepared surface and have a weather resistant surface texture throughout its service life.

**MATERIALS**

**TIRE RUBBER MODIFIED SURFACE SEALER EMULSION (TRMSS)**

The emulsified seal coat product shall be a rubberized asphalt, clay stabilized, nonionic emulsion product designed to protect pavements from ultra violet degradation and water or weather conditions.

**MIX STABILITY**

The TRMSS shall possess sufficient stability so that premature breaking of the material in the distributor does not occur. The mixture shall be uniform and homogeneous during and after the application of the product.

**QUALITY REQUIREMENTS**

Manufacturers shall certify that materials meet the following requirements:

**TABLE 1  
TESTS ON RUBBERIZED POLYMER MODIFIED EMULSION**

VISCOSITY, KREB UNITS (KU) ASTM D-562	35 MIN. 65 MAX.
Residue by Evaporation % (ASTM D2939.08)	35 min. 45 max.
Sieve Test % retained in # 20 screen (ASTM D244) sec.44-47	.1 max. <sup>1</sup>
Weight per Gallon (lbs/gal)	8.3 min. 8.6 max.
Penetration of Residue, 25°C (77°F), 100 g, 5 sec. (ASTM D5)	15 min. – 55 max.
Percent Whole Ground Tire Rubber	10 min.
Softening Point °F (ASTM D36)	130 min
Solubility % (3 set average) (ASTM D2042)	97.5 min.

<sup>1</sup> Sieve test of original emulsion is 0.10 max.

**TABLE 2  
PERFORMANCE TESTS ON TRMSS**

WET TRACK ABRASION (ISSA TB-100)	LESS THAN 5% (2)
ACCELERATED WEATHER TESTING (ASTM G154)	PASS 1000 HRS. (3)

(2) Calculated weight loss, percent of original volume, 1-hour soak.

(3) UVA-340 lamp, 0.77 W/m<sup>2</sup> (v1.0 calibration) 8 hour UV light @ 50°C, 5 min. spray, 3:55 hours condensation @ 50°C.

Each load of TRMSS shall be accompanied with a Certificate of Analysis/Compliance.

### **MATERIALS**

The Contractor will permit the Engineer to take samples of the asphalt emulsion used in the project at the Engineer's discretion. Test results will be compared to specifications. Tests will be run at the expense of the buyer.

The buyer must notify the Contractor immediately if any test fails to meet the specifications.

### **NON-COMPLIANCE**

If any two successive tests fail on the material, the job shall be stopped. It is the responsibility of the Contractor, at his own expense, to prove to the Engineer that the conditions have been corrected. If any two successive tests on the material fail, the use of the product shall be suspended.

### **TRMSS**

Samples of the TRMSS will be taken directly from the storage unit(s) at the minimum rate of one sample per each day's use. Consistency and residual asphalt content tests may be made on the samples and compared to the specifications. Tests will be run at the expense of the buyer. The buyer must notify the Contractor immediately if any test fails to meet the specifications.

The Engineer may use the recorders and measuring facilities of the Distributor unit to determine application rates.

It is the responsibility of the Contractor to control product temperature and consistency.

## **RATE OF APPLICATION**

The TRMSS mixture shall be of proper consistency at all times so as to provide the application rate required by the surface condition. The average application rate, as measured by the Engineer shall be .08 to .15 gallons/square yard as directed by the Engineer.

The rate of application, once determined by the Engineer, shall not vary more than  $\pm .02$  gal/yd<sup>2</sup> while remaining within the design application rate.

## **EQUIPMENT**

All equipment, tools and machines used in performance of this work shall be maintained in satisfactory working condition at all times to ensure a high-quality product.

Transport equipment used to deliver TRMSS to the project shall be dedicated vessels to the TRMSS product. Transport equipment not designated specifically for TRMSS, are not permitted.

A truck mounted self-powered distributor truck equipped with a retort heating unit is required to apply the TRMSS. It shall be equipped with a full circulating spreader bar and a pumping system capable of applying modified asphalt materials within tolerance of the specified application rate and must give a uniform covering of the surface to be treated. A C.R.C. computer shall control the application of material. The distributor shall also include a tachometer, pressure gauge, volume measuring device and a thermometer. The distributor truck shall be ADOT bar certified within the previous six months.

## **AUXILIARY EQUIPMENT**

Suitable surface preparation equipment, traffic control equipment, hand tools and any other support equipment shall be provided as necessary to perform the work.

## **VERIFICATION**

Test strips will be made by each machine after calibration and prior to construction. Test strips shall be a portion of the project. Samples of TRMSS will be taken and verification made as to product consistency. Verification of rate of application will also be made. The TRMSS shall not be heated; it will be applied at ambient temperatures. Drying time shall be 4 to 6 hours (or less). A non-uniform surface appearance will be deemed a failure and all production will cease. Any unit failing to pass the tests after the third trial will not be permitted to work on the project. Test strips must be accepted or rejected within 24 hours after application.

## **WEATHER LIMITATIONS**

The TRMSS shall not be applied if either the pavement or air temperature is below 60°F and falling, but may be applied when both pavement and air temperatures are above

75°F and rising. No TRMSS shall be applied when there is danger that the finished product will freeze before 24 hours. The mixture shall not be applied when weather conditions prolong opening to traffic beyond a reasonable time.

### **NOTIFICATION**

All homeowners and businesses affected by the paving shall be notified one day in advance of the surfacing. Suitable tow-away signs may be posted prior to the surfacing. Should work not occur on the specified day, a new notification will be distributed.

The notification shall be in a form of written posting, stating the time and date that the surfacing will take place.

### **TRAFFIC CONTROL**

Suitable methods shall be used by the Contractor to protect the TRMSS from damage from all types of vehicular traffic. Opening to traffic does not constitute acceptance of the work. The Engineer shall be notified of the methods to be used.

In areas that are subject to an increased rate of sharp-turning vehicles, additional time may be required for a more complete cure of the TRMSS mat to prevent damage.

### **SURFACE PREPARATION**

Immediately prior to applying the TRMSS the surface shall be cleared of all loose material, oil spots, vegetation and other objectionable material. Any standard cleaning method will be acceptable. If water is used, cracks shall be allowed to dry thoroughly before TRMSS application. Manholes, valve boxes, drop inlets and other service entrances shall be protected from the TRMSS by a suitable method. The Engineer shall approve the surface preparation prior to surfacing.

### **CRACKS**

This work shall conform to the specifications for "Cracksealing" provided in Appendix A in this bid document.

### **APPLICATION**

The Contractor must demonstrate a successful history of application of TRMSS on projects within the last 12 months. Contractors who do not have a qualifying history will not be allowed to apply the product.

### **HANDWORK**

Areas which cannot be reached with the TRMSS distributor, shall be applied using hand spray equipment to provide complete and uniform coverage. The TRMSS shall be applied by hand spray equipment and a hand shield to protect all appurtenances. This

includes but is not limited to curbs, sidewalks, gutters, driveways and vegetation. The rate of application of the material spray shall be adjusted during the day to suit temperature, surface texture, humidity and dryness of the pavement.

No streaks shall be left in the finished surface. If excessive streaking develops, the job will be stopped until the Contractor proves to the Engineer that the situation has been corrected.

Care shall be exercised to leave no unsightly appearance from handwork. The same type finish as applied by the distributor shall be required. Handwork shall be completed during the machine applying process.

### **LINES**

Care shall be taken to measure straight lines along curbs and shoulders. No run-off on these areas will be permitted. Lines at intersections will be kept straight to provide good appearance.

### **CLEANUP**

All areas, such as man-ways, gutters and intersections shall have the TRMSS removed as specified by the Engineer. The Contractor shall remove any debris associated with the performance of the work on a daily basis.

### **INSPECTION**

To ensure quality, inspectors assigned to projects must be familiar with the materials, equipment and application of TRMSS.

Local conditions and specific project requirements must be considered when determining the parameters of field inspection.

### **PAYMENT**

The TRMSS shall be measured and paid for by the unit area or the weight of TRMSS used on the work completed and accepted by the buyer. If paid by the weight of the emulsion, the Contractor shall submit to the Engineer a certified affidavit and delivery tickets that show quantities of each material delivered to the job site and used on the project.

The price shall be full compensation for furnishing all materials; for preparation: mixing and applying these materials, for all labor: equipment, tools, test design, cleanup and incidentals necessary to complete and warrant the job as specified herein.