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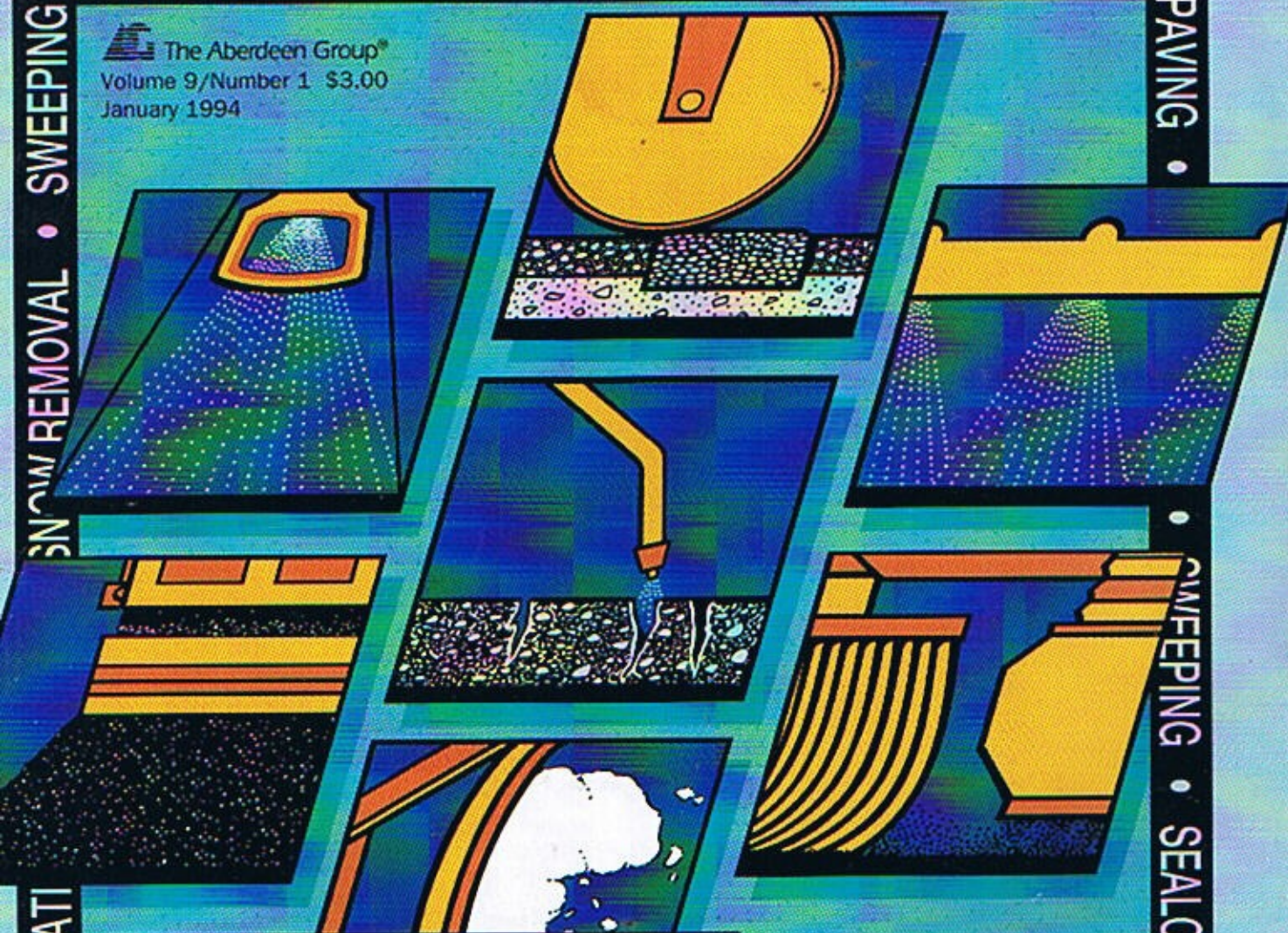
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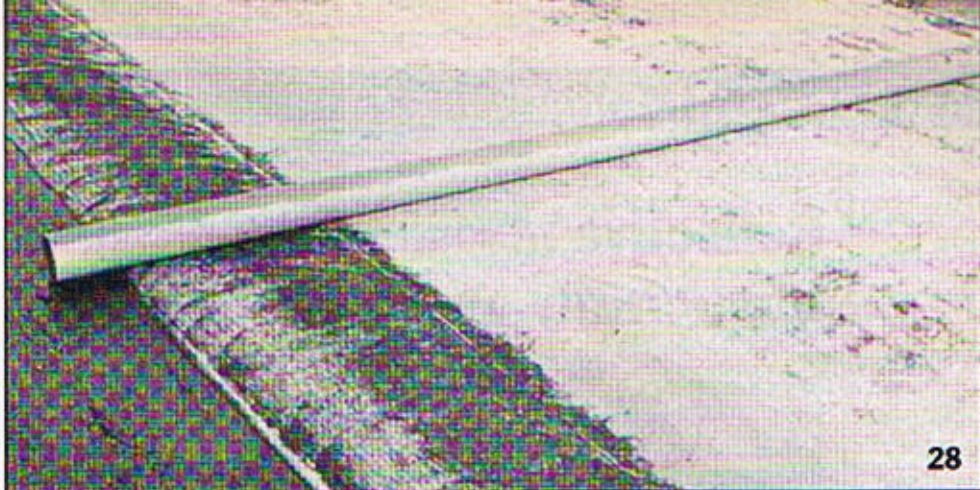
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"Heck, this is decent money."

**Cover:** This National Pavement Maintenance Expo issue begins the magazine's ninth year. Designed by Sue Schwenkler, the cover is based on icons depicting the various segments of the pavement maintenance industry.

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# Paving fabric tack coats

*Heat of asphalt cement, water in emulsions determine effectiveness*

By Mounque Barazone

**B**oth hot asphalt cements and emulsions have been used successfully in installing paving fabric. One Los Angeles County study reported that hot oils are the predominant choice by contractors and agencies because they make construction easier.

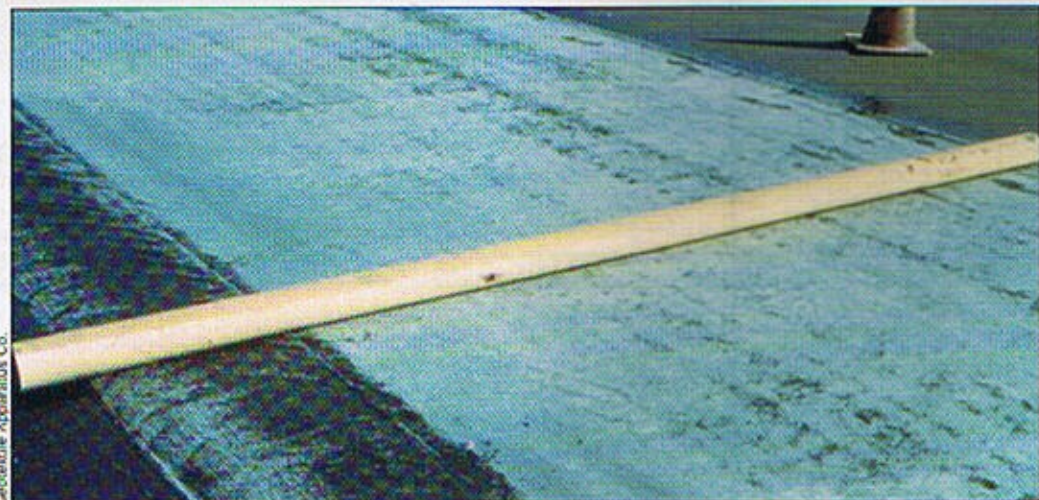
Prior to starting the job the distributor truck should be checked for proper spread rate. Clogged valves must be cleared, otherwise streaking of the oil occurs and full saturation and bonding of the fabric is not accomplished.

Heat shrinkage and melting from hot oil is a major problem that is being tackled by the engineers but not really acknowledged by all the manufacturers. Caltrans, Texas, Los Angeles County and the federal government have developed tests to address both the asphalt retention and area change (shrinkage) of

paving fabrics. None are standardized at this time.

Texas, Los Angeles County, and Caltrans all have noted shrinkage of polypropylene fabrics when placed in hot oils over 250° F. Polyester fabrics have not been prone to shrinkage problems as their shrinkage point is over 400° F.

A Los Angeles County test studied fabrics for shrinkage and damage due to heat exposure. The results found no problems with fabrics at 240° F and serious shrinkage and damage at 280° F. Based on these results, the study's first specification was to require that fabric be placed onto the tack coat after it had cooled to 240° F as measured by a surface temperature gun. If a surface temperature gun is not available, the fabric should be placed 1 to 5 minutes after the oil spreading, depending on the ambient tem-



Fabric installed too soon after the oil is sprayed will shrink. Note the width of the shrunken fabric relative to the length of the roll, indicating the fabric shrank 6 inches to 1 foot.





perature and temperature of the old asphalt pavement. The hotter the oil temperature the longer the waiting period for installing the fabric.

The specification was opposed by manufacturers of propylene fabric and after numerous committee meetings was made less stringent. The committee chose an allowable amount of shrinkage (damage) to the fabric during construction not to exceed 6 inches per roll.

### Using emulsions

Rapid-set emulsions work well in the membrane system, but the emulsion must break completely prior to the fabric being placed in the emulsion. This slows the overlay and installation process. Also, runoff problems have occurred in the application of emulsions on sloped and crowned roadways, making the application rate difficult to control.

Under no circumstances can fabric be placed in the emulsion until all water has evaporated from the emulsion. If the fabric is placed before all the water has escaped, escaping steam can create bubbles in the overlay. Another study reported that moisture can cause stripping problems of the asphalt after a brief period of time.

Since a 4-ounce fabric absorbs .20 gallons per square yard as a residual, cutback emulsion must

be placed at a thicker rate. The residual after it has broken must be enough to saturate the fabric, old asphalt, and new asphalt—and make a bond.

Petroleum-based solvent cutbacks should never be used as tack or to secure overlaps. They are damaging to most synthetic fabrics.

### Asphalt construction

The thickness of the asphalt must not be less than 1½ inches if installed under ideal climatic conditions, 70° F or above. For temperatures between 50° F and 70° F overlay thickness should not be less than 2 inches. Overlays should not be attempted when the air temperature is less than 50° F. The heat from the overlay draws the tack coat up through the fabric, making a bond. If sufficient residual heat is not present to continue the drawing of the tack up through the fabric, then the bonding process is disrupted; the results being slippage, stripping, and eventual overlay failure. Rolling the asphalt immediately after placement helps to concentrate the heat and supply pressure to start the process of the oil moving up into and through the fabric.

### Recycling fabric

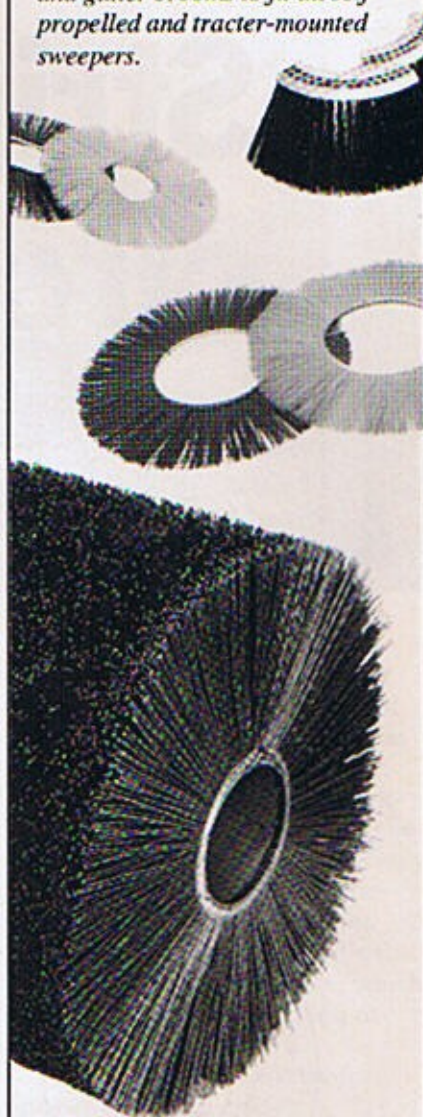
Caltrans found polypropylene fabric to be recyclable during experimental milling research. Cohesion values for both the hot and cold recycle briquettes with fabric exceeded the cohesion values of the control mixes.

The fabric also seemed to provide some tensile reinforcement to the asphalt mix. The surface abrasion test results showed a significant improvement in the hot recycle briquettes and no detriment in the cold recycle briquettes. Polyester manufacturers have run tests showing that their product is also recyclable. **PM**

*Mounque Barazone is president of Geotextile Apparatus Co. (GAC), San Diego. This is the final installment in a four-part series on the state of the art of paving fabric.*

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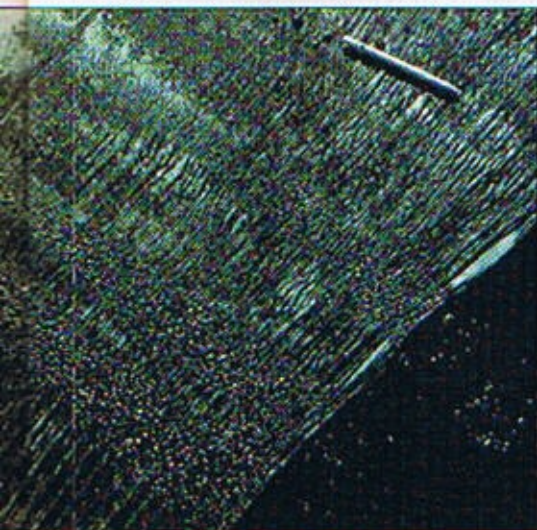
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A close-up of heat-damaged fabric.