BY ADRIAN J. CRAVEN

Paving the Way at Indy

Mecca of U.S. automobile racing, the Indianapolis Motor Speedway was initially surfaced in 1909 with a mixture of crushed stone and tar. However, the track soon began to disintegrate as speeds exceeded 70 miles an hour, and up to 20 cars competed in the longer events of 300 miles. To prevent further problems, more than 3 million bricks, grouted in cement, were installed on the 2-mile circuit in late 1909. It was not until the '30s that the famed brickyard needed major resurfacing and the roughest stretches were paved with asphalt.

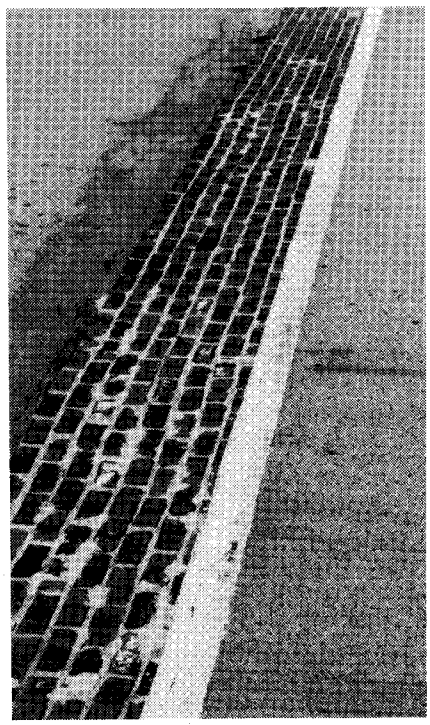
Since then, routine repairs keep the track in excellent condition. In 1988, the track again needed major resurfacing. The major recurring problem is reflective cracking. Reflective cracking was causing problems since the cars have a meager 2 inches of clearance. (Reflective cracking occurs when an existing crack in the concrete base is reflected through to a new surface.)

"Every time a car hit a reflective crack, the car bottomed out," says John Sikich of Road Fabrics Inc., La Grange, Ill., one of the installers. "Sparks would fly."

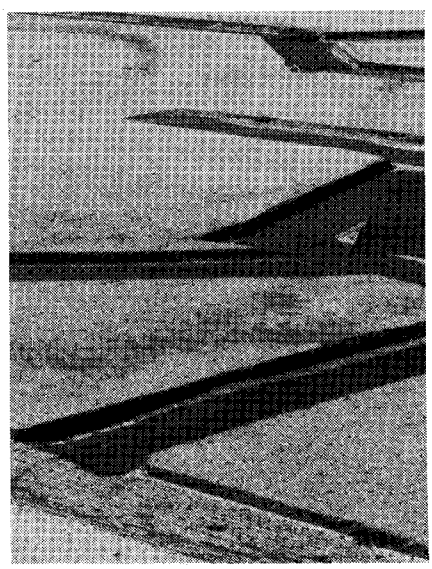
Much of the pavement stress that causes reflective cracking on the 2-mile oval track occurs on the steeply banked turns. Most cracks are on the turns that are super-elevated at 21 degrees and run across the track.

"I think there are two main reasons for the cracks," says Tom Grady of contractor Grady Bros. Inc. in Indianapolis. "The first is settlement of the track over the brick — not the most desirable subsurface. The second is the stress of high speeds and heavy tires on the track."

Grady Brothers, Inc., have done repaving work at the Speedway for over 50 years. Tom Grady's father worked on it in the 1930s. When the track was last repaired in 1976, the use of geotextiles was in its infancy. It was relatively unknown that geotextiles could be used to keep moisture out of paved surfaces, help retard reflective cracking and extend the track's service life.



This preserved section at the Indianapolis Motor Speedway shows the 3 million bricks that were originally laid underneath the track in 1909.



Before laying the asphalt overlay fabric, the reflective cracks in the curves were milled to a depth of 2 to 2½ inches.

Surprisingly, the fact that the track is raced so little - only each May - contributes to its condition.

"Being trafficked more would definitely help the surface of the track," says David Scheper of Grady Brothers, Inc. "It would help it settle. And there's a tremendous amount of oxidation that takes place on the asphalt; with the sun beating down, there's no shade at all out there."

Alternatives

To eliminate the reflective cracks would normally require placing another overlay on the track. Besides installing a thicker overlay, another alternative would have been using an unreinforced waterproof membrane on the track. This, however, could cause inadequate friction between the old and new asphalt concrete pavement layers. Without some possible pavement sharing, this friction is needed to resist the high shear forces on the track.

Instead, asphalt membrane interlayer systems were installed using two different pavement asphalt overlay fabrics to achieve high-quality rehabilitation on the high-speed curves and the pits area.

The two chosen pavement membranes were Petromat and Petrotac, both manufactured by Phillips Fibers Corp.

No formal design engineer selected these asphalt overlay fabrics because of their prior use by the Indianapolis Motor Speedway. In 1985, Speedway officials selected the fabric for the parking lot of the Speedway Shopping Center that they own. After three years of performance, they were comfortable to use the same products on the track.

Cracking in the Curves

Petrotac, a double-coated fabric manufactured by Phillips Fibers Corporation of Greenville, S.C., was specified and installed on the curves. This as-