# Asphalt

If you are watching a NASCAR race, you are probably looking at an asphalt racetrack. It's what the drivers want, and in some cases what they demand.

Of the 33 NASCAR tracks across the country, 31 are paved with an asphalt surface. Of the 88 racetracks listed for the NASCAR Short Track Series, 66 are asphalt, 21 are clay or dirt, and one is concrete.

## Why Asphalt?

NASCAR tracks have their own unique personalities and character. They have a wide variety of lengths, banking angles and shapes. The banked turns range from 12 to 36 degrees. Most tracks are oval shaped but there are also quad- and tri-ovals, D-shaped layouts and road courses.

At racing speeds, drivers need a smooth surface, and asphalt pavements can be built to smoothness standards unmatched by other surface types. Asphalt allows designers to customize mixes not only for smoothness, but also to fit specific conditions and needs. By carefully selecting the right aggregates and asphalt binder, the designer can develop an asphalt mix that meets all of the track's performance needs.

Chicagoland Speedway, which was paved in 2000 and opened in 2001, has been praised by drivers many times for its superb grip, smooth transitions and competitive layout. IndyCar Series co-champion, Scott Sharp, likes the track because it's smooth, fast and cars can get in and out of the corners effortlessly.

## Materials

The asphalt surface at Chicagoland Speedway succeeds because good materials and the right mix design were used according to racetrack design consultant Kevin Forbes.

Racetrack pavement designers look for an aggregate blend that resists shoving and that affords good tire friction without excessive wear. They look for a pavement with a strong aggregate skeleton—slag has commonly been used on racetracks in the Midwest. And designers are also looking for an asphalt that binds materials together well and resists cracking.

"We learned a lot since 1995 and have applied it to racetrack pavements at Kansas City and Chicagoland," says Forbes. "We are starting to really understand the dynamics and idiosyncrasies that surround racetrack paving."

"Materials are a key factor," says Ross Bentsen, Manager of Engineering Services for Chicago Testing Laboratory, and smoothness specs supervisor on the Chicagoland track paving.

"For one thing, we use all crushed materials," says Bentsen, "and for the surface we use slag because of its friction properties. We'll use PG 82-22 polymer modified asphalt in the surface mix to ensure the pavement has at least a 190-degree softening point. We don't want the pavement to move under the car."

## Coarse or Fine Mixes

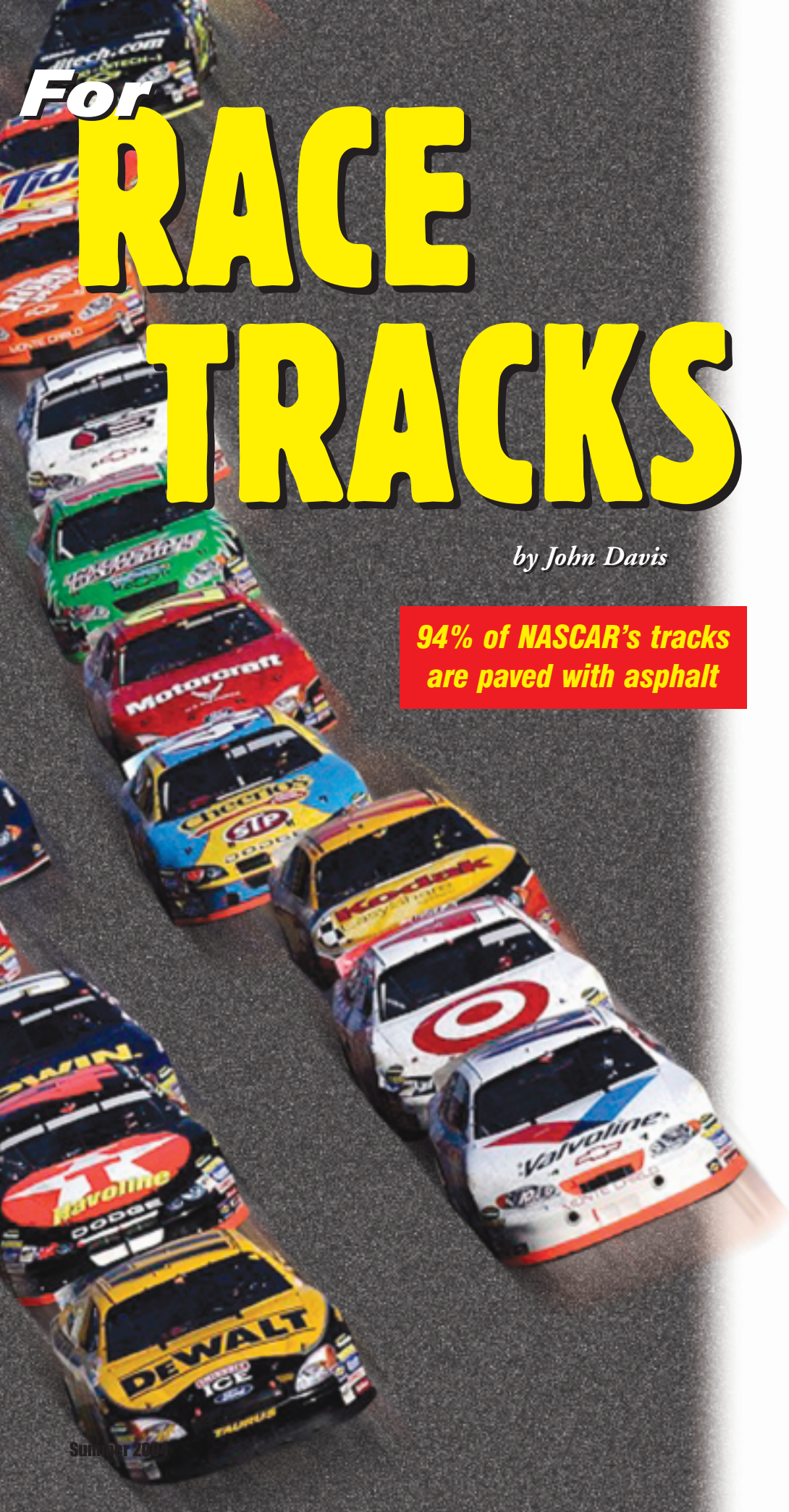
Fine, dense-graded asphalt mix was typically used for racetrack surfaces throughout the 1980s and into the 1990s. But in the mid 1990s some racetrack consultants began to design mixes with larger rock.


Photo: Autostock Images

# For RACE TRACKS

*by John Davis*

**94% of NASCAR's tracks are paved with asphalt**




"We used to think that that finer rock was better, now we think bigger rock is better," says Forbes. "For so long, racetracks were always worried about trying to produce a smooth, even surface. We liked it smooth, because of the concerns about tire wear. That concern was a myth because tire engineers can make tires to withstand the most abrasive of surfaces."

Forbes thinks a coarser rock structure is more crack resistant than a fine rock structure. "The other thing we are doing is changing the chemistry of the glue that holds the rocks together. We're changing it so it behaves more like a fluid in extreme cold temperatures and doesn't get brittle and crack like glass."

## Construction

Building a NASCAR track is much like building a highway but designers require much closer tolerances, smoother surfaces, the use of materials transfer vehicles and fewer joints. Building the banks may require special equipment and the use of bottom dumps rather than end dumps.

"When you pave a NASCAR track, the whole operation slows down," says Bentsen. "It's a slow go, about 15 feet per minute.

"Given the tight specifications required, shuttle buggies are the only way to go. They help us get an even, smooth mat. And the profilagraph specification isn't exceptionally hard to meet," adds Bentsen, "but final acceptance of rideability is when a NASCAR driver runs a race car over the pavement and says it's OK. That's when we and the owners accept it." ▲