



## Paving and saving at Southlake

**S**outhlake Mall, a busy shopping complex located just off I-75 south of Atlanta, faced a problem recently — its 50-acre parking lot. After years of heavy use, the lot was starting to show its age. Many areas of the lot were severely affected by longitudinal and transverse cracks; in some places, the deterioration was severe. Clearly, something had to be done before the problem got any worse.

"Approximately 12 percent of the parking lot area needed asphalt repair," says Jim Dykes of Dykes Paving and Construction Co., the company which handled the project. The original plan, he explains, was to completely remove the most severely damaged areas, then replace them with new base, binder and topping.

"But that was an extremely expensive approach," Dykes says.

And so Dykes proposed an alternate approach, one that would not only provide structural repairs on the worst areas but that would also enhance the overall structural integrity of the entire parking area.

His suggestion: use Permafex stone matrix asphalt to provide structural repairs in the worst areas, and then

Dykes Paving and Construction uses an innovative mix design on a 50-acre parking lot repair job near of Atlanta.

By Steve Hudson

apply a 3/4-inch thick, parking lot-wide overlay of an altogether new pavement material called Duraflex to enhance the structural integrity of the entire parking area.

Permafex paving, which Jim Dykes



This Ingersoll-Rand DD-25 roller stayed busy on the project.

invented in the early 70s and which has been used extensively since that time, provides a cost-effective means of repairing badly damaged asphalt without the need to remove old paving and replace it with new. It relies on a coarse stone aggregate that effectively locks the new Permafex course to the existing damaged pavement, and its performance qualities have been well established.

"We have been using Permafex for 18 years," Dykes says, "and we knew the Permafex would provide a proper repair to the badly damaged areas."

Typically, an asphalt repair job carried out with Permafex paving involves placement of 1 1/2 inches of Permafex, plus one inch of conventional asphalt topping. But Permafex was not needed over the entire Southlake Mall parking lot. Only certain areas were deteriorated to the point that they needed the Permafex treatment; the rest of the lot, though showing signs of wear and deterioration, did not need such extensive repair.

But it did need something — and that opened the door for Duraflex paving, a new paving product that Dykes

*continued* ▶

Various machines were used on this project, including a Case 252 roller (top), a Caterpillar PS-130 rubber tired roller (middle), and a Bobcat 853 (bottom).

has been developing.

Duraflex, Dykes explains, is an offshoot of Permafex. He adds that it grew out of a need for a less expensive alternative to Permafex for use in areas that are not so badly cracked.

"In fact," Dykes says, "we felt we would be able to repair the worst damage with Permafex, and then repave the entire 50-acre lot with Duraflex, for less than it would cost to repair just the badly damaged areas using traditional methods and placing a seal coat."

"It was a way to let the owner's paving dollars go farther," Dykes says, "while upgrading the parking lot structurally at the same time."

Duraflex is a paving material that uses 3/8-inch aggregate, with three times the amount of stone as conventional mixes, plus an excess amount of liquid to get a greater film thickness for better durability and flexibility.

Dykes had been experimenting with the Duraflex approach for some time and was confident in its ability to perform on projects such as the Southlake Mall parking lot. But Duraflex had never been used on a full-scale project.

"So we did a small parking lot as a test area for them to look at," he said. The test site was Dykes' own parking lot. "We also put down a test section of Duraflex on the Southlake Mall perimeter road." The goal was to test it on high-stress areas, he says, and both of those sites qualified.

Southlake Mall's owners monitored the test projects for an extended period of time — and they were very happy with what they saw. Where conventional mixes would have tended to reflect the cracks, he says, the Duraflex showed little if any reflection.

"It was almost a year later," he says, "but they finally called us back to place the Permafex-Duraflex combo on the entire 50-acre lot."

Dykes crews began work on the parking lot in early July. Work would be completed in sections in order to minimize disruption to the shopping mall's traffic flow.

The areas to be repaired with Permafex paving had to be dealt with first. Step one was to apply a latex modified



crack sealer to them using a hand hose fed from an asphalt distributor truck.

Once sealing was finished, crews applied a latex modified tack coat.

Why use the latex additives in the sealer and tack coat?

"This project needed something with a high enough tensile strength to hold the existing cracks together while keeping water from intruding," Dykes says. "We felt that conventional tack coats and sealers would not do the job, so we added the latex additives."

Dykes adds that the use of a latex additive in the tack coat eliminates problems with bleed-through.

"We put so much tack down that with conventional tacks it would bleed through," he says. "But the latex additive keeps it from doing that."

The next step was asphalt repair using Permafex. Some individual repair areas were fairly small; others were quite large, measuring up to about 5,000 sq. yd.

"We placed one inch of Permafex on all repair areas," Dykes says. The Permafex mix was spread by a Blaw-Knox PF172 and compacted using an Ingersoll-Rand and Case vibratory rollers

followed by a Caterpillar rubber tired traffic roller.

Next, Dykes' crews applied a latex-modified tack coat to the entire section being worked on.

Finally, that section was completed with placement of a three-quarter-inch mat of Duraflex pavement. Arriving at the jobsite in dump trucks, the mix was discharged into the Blaw-Knox PF-172 paver. Compaction was handled by the Ingersoll-Rand and Case steel wheeled rollers and by the Caterpillar PS-130 rubber-tired roller.

Another important piece of machinery was a small Bobcat 853 Unloader, used to help with clean-up.

"The mix is so sticky it's hard to pick up with shovels," Dykes says. "You need some kind of utility loader to remove it before trucks or other machines run over it."

Some special considerations are called for during the actual paving operation.

"Because of the stickiness of the latex tack coat," Dykes says, "we've had to fuel the tires down on the dump trucks to keep the tack from building up on the tires and being carried out to the road."

The Duraflex itself is much stiffer than ordinary mixes, which means that Dykes' crews must pay careful attention to joints. The Duraflex material becomes much harder to work as it cools, so quick blending of joints is important.

"Propane torches may be needed to heat and blend the material on cold joints," he says.

What is the future of Duraflex paving? Stone matrix asphalts have been used in Europe for many years, and they're getting more and more attention in the United States too — and not just for parking lot repair. In Georgia, for example, the Georgia DOT is planning a project using stone matrix asphalt on a highway near Savannah.

"The state will be using this in the future," Dykes predicts, "because it's going to prove to be a longer lasting paving system."

He sums it up like this:

"Duraflex lets you expand the work that owners can get for their money," he says. "Rather than just getting a 'paint job' on their damaged asphalt, they're able to spend that same money and add structural integrity at the same time." □