

THE SACRAMENTO BEE sacbee.com

This story is taken from Sacbee / Our Region / Top Stories

Research and rehab in gear for California's rough highways

jdowning@sacbee.com

Published Tuesday, Aug. 18, 2009

The pavement on California's highways is hard to ignore.

After decades of heavy traffic and a chronically low-maintenance budget, some stretches can be a teeth-rattling, axle-bending nightmare.

More than a quarter of our highway miles are in poor condition and 18 percent are in need of serious repair, the state Department of Transportation says. By one national transportation group's calculations, the state's major urban roads are the country's roughest.

At the University of California's Pavement Research Center in Davis, director John Harvey spends his days figuring out what to do about it.

Now, Harvey and Caltrans officials are about to launch a strategy they hope will pull the state's highway system out of crisis and set it on a course for long-term health.

Starting later this year, vans equipped with cameras, lasers and ground-penetrating radar will drive every lane of the state's highways, cataloging cracks and bumps and building a database of the layers of pavement beneath the surface of the road.

The system should help target repairs where they can do the most good for the least money.

"If we can pick our projects based on that engineering data, then we do the right project at the right time," said Michael Miles, Caltrans deputy director for maintenance and operations.

The point, he said, is to "predict when the pavement is failing. That way, (highways) won't get to the condition where they need a full rehab. Once they get there, it becomes very, very expensive."

In 2007, doing preventive maintenance on one lane of California highway over one mile cost an average of \$60,000, according to Caltrans' latest "State of the Pavement" report. Major rehabilitation work on the same amount of pavement, by contrast, costs an average of \$1.1 million.

By doing more quick and inexpensive repairs – re-sealing asphalt when small cracks appear, grinding down rough edges between concrete slabs – the state could cut the lifetime cost of a given stretch of road by as much as 20 percent, Harvey estimates. At the same time, fewer of the state's highways would fall into major disrepair.

"It's basically changing their whole philosophy," Harvey said.

To some degree, the shift is already under way. Caltrans more than doubled its annual spending on preventive maintenance from 2005 to 2008, to around \$250 million. The agency also managed to secure a total of \$6.1 million in new funding over the most recent two budget years for a "pavement management system" – including hiring the data-collection vans – to monitor conditions and coordinate maintenance on the 50,000 lane-miles the agency oversees.

Part of the reason maintenance has become so important is simply that California's highways are old. About 90 percent of the state's major routes were built between 1955 and 1975. Most were designed to last 20 years.

"There was a baby boom of pavement," Harvey said. "And now its health care costs are really high."

The UC Pavement Research Center was founded in the late 1940s at UC Berkeley to advise the state on the construction and maintenance of the highway network. The center now is headquartered at UC Davis, with a small team of staff researchers assisted by students.

Some of the center's work involves helping to devise road materials that last longer or cost less, but in recent years helping the state to manage maintenance and repairs has become a central focus.

Preventive maintenance, of course, doesn't address the thousands of highway miles already in need of major repairs.

In recent years, the state has spent less than half of the more than \$2 billion a year needed for serious highway repair, according to the California Transportation Commission. Federal stimulus funding for major highway repair – \$191 million to date – will close only a fraction of the gap.

Funding for highway maintenance and rehabilitation comes primarily from the state fuel tax, which hasn't been raised for more than a decade. Highway funding did get a boost under Proposition 42, passed in 2002, which allocated some of the sales tax on gasoline to road projects. Proposition 1B, which passed in 2006, allocated \$20 billion in bond funding to transportation but only \$750 million to highway rehabilitation.

Increased funding for preventive work will likely mean delays to repairs on some bad stretches of road, Miles said. But by keeping thousands of highway miles from deteriorating each year, the agency hopes it will be able to chip away at the backlog of failed pavement.

"You try to get ahead of it," Miles said.

Water and weather both break down pavement, but on major freeways truck traffic does the most damage. By contrast, "Cars on a highway are like people on a sidewalk," said Tom

Pyle, chief of Caltrans' Office of Rigid Pavement and Structural Concrete.

The beatings administered by trucks have gotten roughly twice as hard since the 1970s, mainly because trucks have switched to narrower, higher-pressure tires, Harvey said. The harder tires improve fuel efficiency, but concentrate the load on a smaller patch of rubber – increasing the pressure on the pavement.

If surface cracks in asphalt are caught early enough, Harvey said, a thin seal over the top can cheaply revive the road. Left untreated, they'll get wider and deeper, leading to more damage.

With concrete, a common problem is what's known as "slab curl." It happens when a slab begins to rock, creating a gap underneath and a height difference with its neighbors. Eventually, under pounding from heavy trucks, the compacted bed beneath the slab erodes and the concrete cracks.

That's the kind of serious damage below the surface that leads to potholes. Patching them doesn't fix the deeper problems, which is part of the reason patches don't last very long.

"It's like combing the hair on a cadaver," Harvey said.

Bringing a heavily damaged highway back to life takes serious work of the sort under way on long stretches of Interstate 80 this summer. Over Donner Pass, most of the concrete-slab roadway will be completely rebuilt over four summers, with the new roadway designed to last until 2050.

A major addition will be steel dowels connecting adjacent slabs, which helps prevent curl.

Most of the major resurfacing work in the Fairfield- Vacaville corridor is scheduled to be done by this fall, with work from Vacaville to Dixon set to start in 2012. Crews have been laying asphalt and high-strength fabric over the notoriously rough concrete pavement, which is 60 years old in places. The asphalt overlays should hold up for two decades.

ShareThis

Call The Bee's Jim Downing, (916) 321-1065.