Technology Applications

HIGHWAY TECHNET

The online highway technology resource

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TRIVIA QUESTION:
What are those little bumps in between the lanes on the freeway?

Seventh International Conference on Low-Volume Roads - Call For Papers.

The Conference Announcement and Call for Papers and Posters is now available on the web at:
http://www.nas.edu/trb/lvr7.html

Demonstration Project 105 | Featured Project:

VIRTUAL EXPO An online showcase of OTA's projects

Welcome to the Office of Technology Applications' (OTA)

Highway TechNet!

This site has been developed to give you access to the most comprehensive online highway technology resource on the Internet. Here you will find the latest information on the Federal Highway Administration's Research and Technology projects in areas of Pavements, Structures, Assessment & Marketing, Traffic and Safety. In addition, there are many other useful and interesting areas to explore:

- Stay current with late-breaking News.
- Find out about highway technology Events that are coming up.
- Search the site to quickly find exactly what you are looking for.
- Have Fun and learn new Facts about our nation's highways.

All of this and more is available to you on OTA's Highway TechNet--the online highway technology resource!

Projects Virtual Expo | Highway TechNet | Research & Development | FHWA

U.S. Department of Transportation
Federal Highway Administration

Designed and developed by Avalon Integrated Service Corp. under contract to the FHWA.

Battered by weather and increasing traffic loads, asphalt concrete pavements throughout the Nation are wearing out much sooner than expected. The result—rough pavements, higher maintenance and rehabilitation expenses, and more temporary work zones that slow traffic and endanger workers and motorists.

The solution is to build asphalt pavements designed to hold up better under the weather and traffic conditions found at each project site. That's where the Superpave* system comes in. Developed under the Strategic Highway Research Program (SHRP), the Superpave system gives pavement designers the tools needed to tailor asphalt mixes to specific traffic loads and climates. Thus, an asphalt mix for an Interstate highway near Chicago will be designed for extremely low winter temperatures and heavy traffic, while a mix for a quiet country road in Louisiana will be designed for hot summers and light traffic.

The Superpave system consists of three elements:

- A system for selecting the best asphalt binder (the "glue" that holds the mix together) for a job.
- A laboratory procedure for optimizing the mix design.
- Tests for predicting how well the mix will perform in real world conditions.

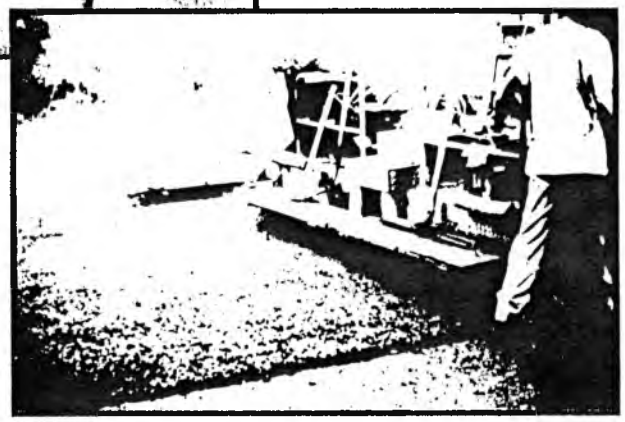
Pavements built with the Superpave system will be more durable and less likely to rut in extremely hot weather or to crack in extremely cold weather.

*Superpave is a trademark of the National Academy of Sciences.

Implementing the Superpave System

The Superpave system is being used to rehabilitate existing pavements and to build new pavements throughout the country. Only time will tell how well these pavements will perform in the years ahead, but the early results are very promising.

In March 1995, a Superpave mix was used to reconstruct a section of Interstate 10 east of Phoenix, Arizona. Since then, the pavement has held up well under heavy traffic loads and 17 consecutive days of temperatures above 43 °C (110 °F)—indicating that the pavement should be very resistant to permanent deformation.



At the other temperature extreme, a Superpave mix was used for an overlay on a low-volume road in Blue Earth County, Minnesota, which has some of the coldest weather in the Nation. The Superpave overlay, constructed in August 1995, shows far less low-temperature cracking than a nearby overlay built at the same time but with Minnesota's conventional mix.

And Maryland, with cold winters and hot, humid summers, is using the Superpave system to add a lane to the Baltimore Beltway (I-695). In fact, two-thirds of the States used the Superpave system for new design or reconstruction projects in 1996.

percent of all paved roads in the United States have asphalt surfaces.

- **The United States spends $15 billion a year on asphalt pavements—one-sixth of total highway operations expenditures.**

The Savings

Converting to the Superpave system could produce huge savings, according to an economic analysis by the Texas Transportation Institute (TTI)[1]. State and local highway agencies will save money even if they only use part of the Superpave system—the performance-graded (PG) binder specification—and use it only for overlays. Using a conservative projection that fewer than one-quarter of all overlays will benefit from the use of PG binders—and that those overlays would see only a 25 percent increase in service life—TTI projected that highway agencies could save between $484 million and $785 million annually, depending on how quickly they adopt the new specification. Motorists could save between $1.3 billion and $2.1 billion a year in user costs thanks to reductions in maintenance-related delays and vehicle wear and tear.

[1] *Created in 1950 as the research arm of the Texas Department of Transportation, the Texas Transportation Institute (TTI) has since become the largest university-based transportation research organization in the United States.*

This information was collected as part of a project to determine how the products developed and evaluated by the recently concluded Strategic Highway Research Program (SHRP) are being used to improve the condition and safety of the Nation's highway system. Conceived and funded by State highway departments, SHRP was conducted in the belief that even small improvements in highway construction and maintenance can yield substantial paybacks on the research investment.

Congress established SHRP in 1987 as a 5-year, $150-million project to develop and evaluate innovative technologies for roadway construction, maintenance, and operations. Program funding came from a set-aside of one-quarter of 1 percent of Federal-aid highway funds.

The Federal Highway Administration is coordinating the national program to help highway agencies implement and evaluate more than 100 SHRP products, which include new specifications, tests, and equipment. Funding for SHRP implementation was provided in the 1991 Intermodal Surface Transportation Efficiency Act.

RoadSavers

Publication No.: FHWA-SA-97-033

For more information, contact your SHRP implementation coordinator, the FHWA Division office in your State, or any of the following offices:

Federal Highway Administration
Office of Technology Applications
Attn: Mike Halladay, SHRP Implementation Coordinator
HTA-3
400 Seventh Street, SW
Washington, DC 20590
(telephone: 202-366-6503; fax: 202-366-7909; email: michael.halladay@fhwa.dot.gov)

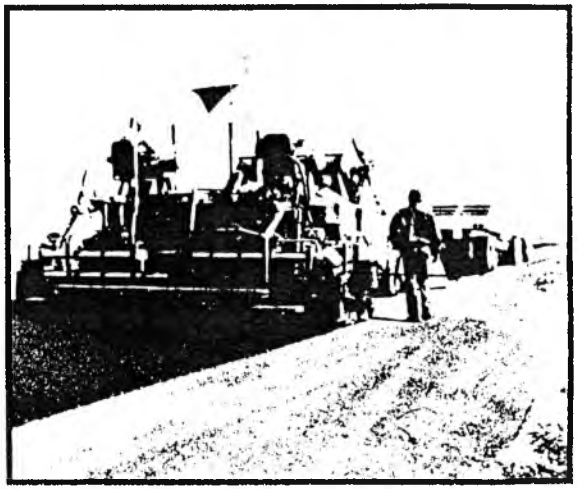
American Association of State Highway and Transportation Officials
Attn: Haleem Tahir, SHRP Implementation Coordinator
AMRL at NIST
Bldg. 226, Room A365
Gaithersburg, MD 20899
(telephone: 301-975-6704; fax: 301-330-1956; email: htahir@enh.nist.gov)

Transportation Research Board
Special Programs Division
Attn: Doug Shaffer, SHRP Coordinator
2101 Constitution Avenue, NW
Washington, DC 20418
(telephone: 202-334-1430; fax: 202-334-3471; email: dshaffer@nas.edu)

Texas Transportation Institute
Texas A&M University System
Attn: Jeffery L. Memmott, Research Economist
College Station, Texas 77843-3135
(telephone: 409-845-3405; fax: 409-845-9761; email: j-memmott@tamu.edu)

RoadSavers

The Superpave System



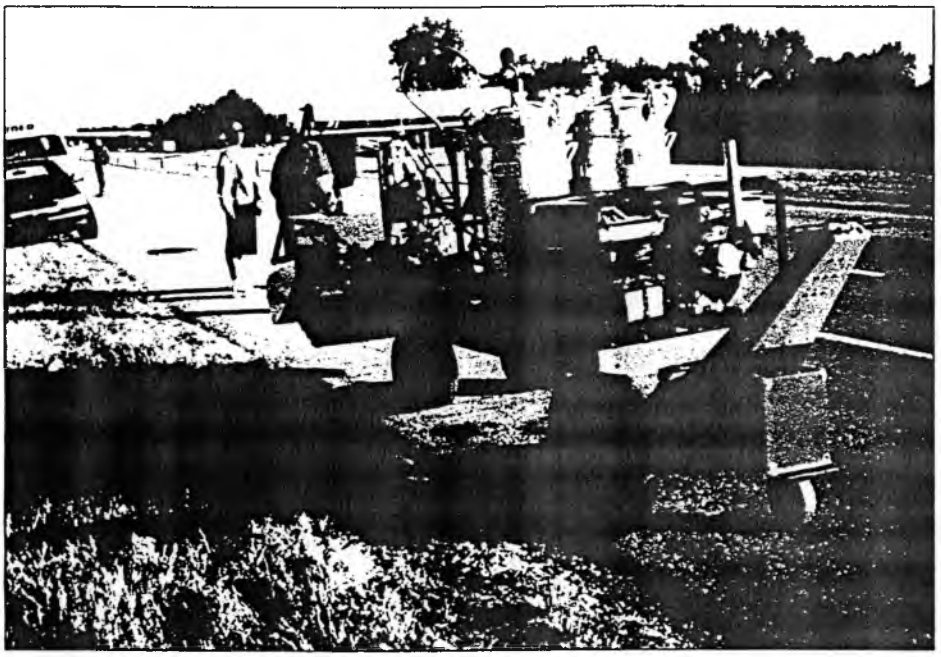
RESEARCH & TECHNOLOGY
TRANSPORTER

March 1997

U. S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

STRUCTURES

Spray Technology Has Binding Applications

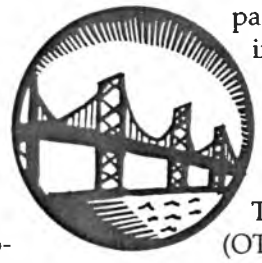


Convergent Spray Technology is applied in 4 hours as an anti-skid overlay on a bridge deck on Interstate 65 south of Huntsville.

A new spray technology makes it possible to install skid-resistant coatings to bridge decks in just one pass, rather than the three or more passes usually required to apply thin layers of binder and aggregate. Preliminary tests of the new Convergent Spray Technology indicate it creates more skid resistance than most conventional methods. There is an environmental bonus too: the new equipment can use recycled filler materials and solvent-free sprays.

With funding from FHWA's Priority Technologies Program, the Alabama Department of Transportation (ALDOT) is partnering with United Technologies/United States Booster, Inc., and the National Aeronautics and Space Administration's (NASA) Marshall Space Flight Center to adopt a process and equipment originally developed to apply heat-resistant coatings to the Space Shuttle's solid rocket boosters. The Alabama Division Administrator, Joe Wilkerson, initiated contacts with NASA in order to find technologies that could be developed for highway use. The spray technology is a result of his efforts.

ALDOT began testing the system last October on a bridge on Interstate 65 near Huntsville. The bridge was reopened just 4 hours after the coating, a mixture of ground flint and resin, was applied. Testing will continue for 2 years. ALDOT is very excited about this preliminary use of Convergent Spray Technology. If you have any questions about its use, please contact ALDOT's Bill Van Luchene at FHWA's Alabama Division Office, (334) 223-7379.



For more information about the field-based Priority Technologies Program which supports implementation of new technologies, particularly those that involve partnerships with the private sector to leverage Federal funds, contact your FHWA regional office, or the Office of Technology Applications (OTA). — *Dick McComb, (202) 366-2792, Richard.McComb@fhwa.dot.gov*