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### Acronyms in this issue

<ul style="list-style-type: none"> <li>AASHTO American Association of State Highway and Transportation Officials</li> <li>CTRE Center for Transportation Research and Education</li> <li>FHWA Federal Highway Administration</li> </ul>	<ul style="list-style-type: none"> <li>Iowa DOT Iowa Department of Transportation</li> <li>ISU Iowa State University</li> <li>LTAP Local Technical Assistance Program</li> <li>MUTCD Manual on Uniform Traffic Control Devices</li> </ul>
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## Low-volume road lessons from the Land Down Under

ENGINEERS and road builders in Australia and New Zealand have a penchant for technical excellence and careful research. With this mindset and little money to waste, they have come up with some solutions for maintaining and upgrading aggregate roads that deserve careful consideration in the Upper Midwest.

Such is the conclusion of Charles T. (Chuck) Jahren, Iowa State University professor-in-charge of construction engineering. While on sabbatical from ISU recently, Dr. Jahren studied a number of road-building practices, including seal coating, hot mix asphalt, and stabilization, in Australia and New Zealand.

This article briefly describes Australian practices; New Zealand practices will be covered in a future issue of *Technology News*.

### Australia's road network

With a land mass 78 percent that of the United States, Australia has just 20 million people, 85 percent of whom live in the urban areas of Melbourne and Sydney. Ninety percent of vehicle miles are thus driven on 20 percent of the roads.

Of the country's 500,000 miles of roads, 40 percent are bound surface, 40 percent are aggregate, and 20 percent are natural surface.

"Whinging" (Aussie lingo for complaining) about road conditions is not common in Australia, where maintaining some 400,000 miles of rural roads at the service level expected by most Americans is simply cost prohibitive. Accustomed to driving long distances in the outback, for example, Australian

motorists are more tolerant than Americans of dust on gravel roads and less likely to blame a transportation agency for damage to their autos from flying rocks.

Another difference between countries is that there is no highway trust fund in Australia, which means all transportation funding comes out of general funds,

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It's not uncommon in Australia to see four-wheel drive vehicles with bullbars (to protect the radiator and headlights from errant kangaroos) and snorkel (black air intake pipe going up the right windshield support with air cleaner on top, to get the air intake above the road dust). *Photos here and bottom of page 3 courtesy of Chuck Jahren.*

excellent method for rebar tie-wire inspection, assessing potholes, and inspecting roads for rutting.

**For more information**

For more information contact Associate Professor Edward Jaselskis, Department of Civil and Construction Engineering, Iowa State University, 515-294-0250, ejaselsk@iastate.edu. •



Laser scanned 3D images of existing bridges, like this one in Pennsylvania, could help agencies reduce rehabilitation costs.

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making it “very political,” according to Dr. Jahren. In the state of Western Australia, all maintenance has been privatized.

**Road building basics**

**Gravel roads.** More progressive road agencies build gravel roads with a four percent cross fall that allows them to shed water and resist pothole development. Gravel roads are built in two layers: a strong bottom layer with clean crushed stone to provide strength, and a top layer of crushed stone mixed with clay binder to mitigate dust and corrugation.

**Paved roads.** Most paved roads in Australia (including a few four-lane expressways) are actually layers

Australians’ road use expectations are slightly different from ours.



of unbound aggregate with a seal coat surface. Superior quality control of the base construction process helps make this method successful. However, differences in weather, vehicle loads, maintenance practices (these can be fragile roads that require immediate maintenance action when problems develop), and user expectations (sometimes these roads do get bumpy as they age) may cause challenges if we attempt to transfer the technology here.

**Cementitious stabilization.** Seal coat roads are often rehabilitated through cementitious stabilization. Australia’s and New Zealand’s practices minimize additive requirements and add quality control efforts in comparison to our regional practice.

**For more information**

The Minnesota Local Road Research Board funded a report of Dr. Jahren’s findings. For a copy, call the Minnesota Department of Transportation’s Office of Research Services, 651-282-2274. Ask for report number P2002-01. It is also online: [mnroad.dot.state.mn.us/research/](http://mnroad.dot.state.mn.us/research/). (Click on “Products,” then on “Online reports.”)

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**LTAP Advisory Board**

The people listed below help guide and direct the policies and activities of Iowa’s Local Technical Assistance Program (LTAP). Contact any of the advisory board members to comment, make suggestions, or ask questions about any aspect of LTAP.

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