

Research from FHWA and results from state and local projects across the country indicate Safety Edge improves safety most on roads with significant accident rates, substandard geometry, narrow lanes, unpaved shoulders and paved shoulders less than three-feet wide. Many of the 56,000 miles of town roads in Wisconsin fit this description.

Jordan stresses that the majority of local rural roads have gravel or earth shoulders and, with fewer resources for maintaining those shoulders, the Safety Edge is an improvement worth considering.

"Installing the Safety Edge on new paving and resurfacing projects can reduce the crash risk for a driver who veers onto a shoulder with an edge drop-off," he notes. "Local roads may carry less traffic but they often have more hazards. Safety Edge is an effective way to reduce crash severity for run-off-the-road accidents and improve safety."

Limited access to the Safety Edge paver attachment is an issue right now, Jordan says. But TIC is supporting the use of the Safety Edge on local road resurfacing or rehabilitation projects with the loan of a Safety Edge shoe. TIC will provide the attachment to local governments wanting to try the technology on upcoming projects and hopes to offer a second one soon.

"As costs go down and more contractors gain experience with laying down a Safety Edge, counties and towns will have more options," Jordan notes. He agrees with WisDOT engineers that in time, Safety Edge probably will become a standard that is included in paving contracts.

More demos and tests

TIC plans a second Safety Edge Demonstration Day in collaboration with the Fond du Lac County Highway Department in the near future. It is part of a commitment

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Good gravel, good roads

MORE THAN 30,000 MILES of local gravel roads in Wisconsin serve the transportation needs of communities across the state. These basic roadways connect houses and farms to main thoroughfares. They also carry school buses, garbage trucks, milk trucks, farm machinery and logging equipment. Keeping them in good condition requires good design, quality materials and attention to ongoing maintenance.

The Wisconsin Transportation Information Center (TIC) will hold a **Gravel Road Maintenance** workshop at four Wisconsin locations in April. The workshop explores cost-effective methods for maintaining gravel roads, covering topics that include how to select gravel materials, shaping the road for best drainage and dust control. See the **Calendar** on page 12 for details and register online at tic.engr.wisc.edu.

Economic good sense

Workshop Instructor William Heiden, who has decades of experience in road construction and maintenance in the private sector and as a county road engineer, specializes in rural roadway problems, especially

dust control and soil stabilization on gravel roads. Heiden says he uses much of what he has learned over the years to show why regular, careful maintenance of gravel roads makes good economic sense. "Improper maintenance of gravel roads costs money," he notes, recounting how one county reduced its budget for managing unpaved roads by 60 percent with better planning and training.

The workshop offers a general overview of roadway shape, how that affects drainage and the way a road wears over time. Heiden concurs with recommendations in the TIC fact sheet on gravel roads that it is important to have enough crown on the road to allow water to drain away. This prevents water from standing on the surface, saturating and weakening the road structure as moisture is absorbed. This situation eventually causes potholes or a washboard effect.

Well-graded and compacted shoulders support the edge of a gravel road and provide an area to pull off or regain control. They also direct water run-off to adjacent ditches and away from the road. Even where there is little room for a shoulder, its shape should not

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Example of a road with an adequate layer of good-quality gravel.

Gravel Road Maintenance Workshop

Reshape and maintain local gravel roads.

Dates & locations

April 19 Richland Center
April 23 Trego
April 25 Marathon
April 26 Crandon

Keeping gravel roads in good condition requires good design, quality materials and attention to ongoing maintenance.

Good gravel, good roads

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Sound design and construction plus regular maintenance are the ingredients for keeping a good gravel road operating and free of problems.

Resources

Link to download *Gravel Roads*, TIC Bulletin #5. Reviews effective design and maintenance of gravel roads. Describes gravel types and special grading techniques.

<http://tic.engr.wisc.edu/Publications.lasso>

Link to *Gravel Roads Maintenance and Design Manual* from the South Dakota Local Technical Assistance Program. Addresses gravel road maintenance and when to pave a gravel road.

<http://ntlsearch.bts.gov/repository/record/ntl12188.html>

create a steep drop-off or ridges that hold water on the surface.

Gravel roads need regular maintenance to keep their shape. A simple design makes this easier, says Heiden, as long as maintenance crews know to preserve the original shape and slope when they regrade or repair it.

Find a good blend

Compacting a proper crown with good gravel is another aspect of preparing the road surface so it holds up to traffic and weather. A good gravel blend is a proportional mixture of hard stone for strength and stability, porous sand for drainage, and enough silt or clay for binding the surface mix together.

Heiden will discuss soil properties in the TIC workshop, differentiating between road base and surface materials. Choosing the right gradation of selected materials is better than using naturally occurring, unprocessed gravel, he observes, even in a state with access to good local sources.

The workshop includes a review of grading techniques, and a discussion of the type of equipment used to spread the gravel material and shape the road.

Correcting problems

Heiden calls reducing "roadside intimidation" a critical element of a gravel road maintenance program. This refers to controlling weeds and grass that crowd the roadway, keeping mailboxes, trees, power poles and fences back from the road edge, and prohibiting

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Careful design and regular maintenance prevents problems on gravel roads like washboarding **ABOVE** and severe potholes **BELOW**.

the grading of driveways that encroach on the road and disrupt the crown. Any of these hazards can cause drivers to drive in the center of the road, which produces a wear pattern that flattens the crown and reduces the road to two or three worn wheel tracks.

Blowing dust is another major problem on gravel roads. Heiden will discuss solutions to keep the dust under control by stabilizing the surface materials with dust suppressants like calcium chloride, magnesium chloride, lignum sulfates and polymers.

Know the road

Sound design and construction plus regular maintenance are the ingredients for keeping a good gravel road operating and free of problems. The *Gravel Road Maintenance* workshops and other resources included here offer elected officials, engineers, superintendents, equipment operators and others responsible for local roads practical insights about cost-effective management of their gravel roads. ■