



Local Operational Research Assistance (OPERA) Program

Evaluation of a Cement-Stabilized Gravel Road

Upgrading a gravel road to a bituminous surface road can cost hundreds of thousands of dollars per mile. Some gravel roads have increasing traffic but lack the truck volumes needed to warrant a full reconstruction project with a bituminous surfacing. With ever-tightening budgets, it is important to find an alternate low-cost construction method.

McLeod County undertook a rehabilitation project of County Road 54 in 2018 using cement-stabilized full-depth reclamation to increase the road strength, along with the application a double chip-seal surface. Unfortunately, the road has not performed as desired. The chip-seal surface has debonded in many areas, exposing the stabilized surface.

Testing for condition, strength, and structural stability

McLeod County received a \$20,000 grant through the Minnesota Local Road Research Board Local Operational Research Assistance (OPERA) Program to evaluate the road for potential causes of its poor performance and to determine potential repair and rehabilitation options. The goal is to improve the condition of the road, so it performs as intended.

The county worked with American Engineering Testing Inc. to review the construction records and perform several structural tests on the road to determine the thickness of the stabilized layer and evaluate the condition and strength of the cement stabilization.

Finding construction process shortcomings

The evaluation showed that the stabilization wasn't fully effective. It found issues related to the construction process, including working larger areas than were possible to obtain final compaction within the timeframe required. In addition, the micro-milling might have resulted in fines being left on the road surface that were not fully removed by sweeping prior to the application of the chip seal. The application of a scrub seal prior to placing the chip seal might have improved the bonding of the chip seal.

Project Leader

John Brunkhorst

Agency

McLeod County Public Works
1400 Adams Street Southeast
Hutchinson, MN 55350

Phone

320-484-4321

OPERA Funding

\$20,000





McLeod County received an OPERA grant to evaluate a recently reconstructed gravel road for potential causes of its poor performance and to determine potential repair and rehabilitation options.



Next steps for McLeod County focus on working with the contractor for resolution and identifying appropriate fixes for current conditions. Those fixes may include adding gravel to the current surface or paving the entire road.

McLeod County also shared its findings with the McLeod County Board and county residents as well as other county engineers in Minnesota. It is hoped other agencies may benefit from the lessons learned from this case study in their road projects.

The Local OPERA Program encourages maintenance employees from all cities and counties to get involved in operational, “hands-on” research. OPERA helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide.



McLeod County Road 54 (highlighted green), 6 miles south of Hutchinson, Minnesota

Prepared by:

Minnesota Local Technical Assistance Program (LTAP)
Center for Transportation Studies
University of Minnesota
440 University Office Plaza
2221 University Avenue S.E.
Minneapolis, MN 55414
612-626-1077 | mnltap@umn.edu | mnltap.umn.edu

Local OPERA Program partners: Minnesota Local Road Research Board (LRRB), Minnesota Department of Transportation (MnDOT), and Minnesota Local Technical Assistance Program (LTAP) at the Center for Transportation Studies, University of Minnesota.

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